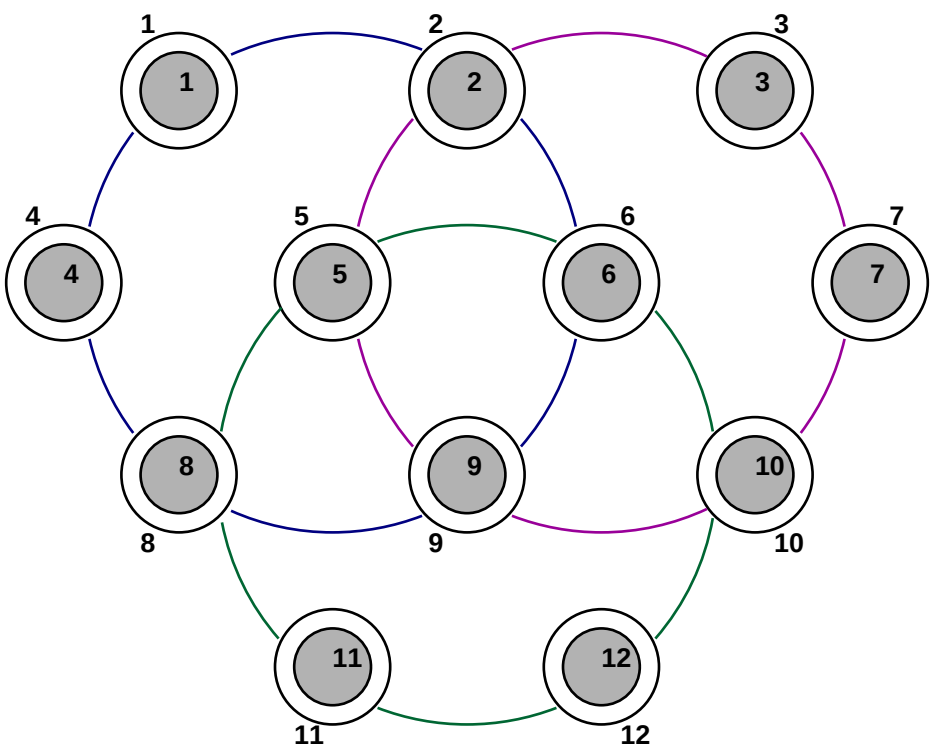
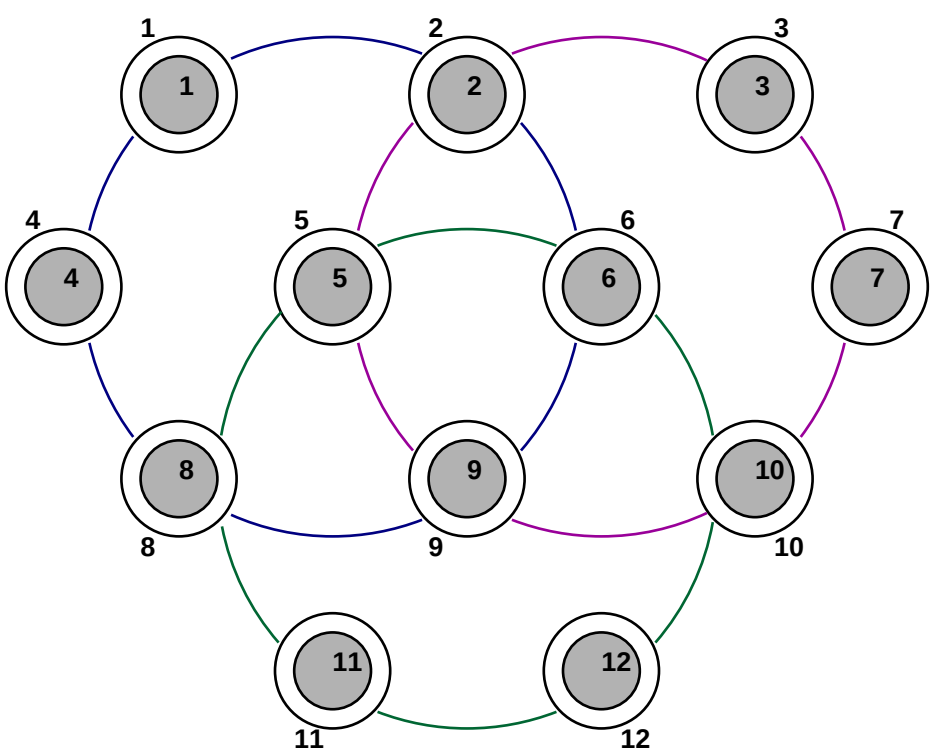
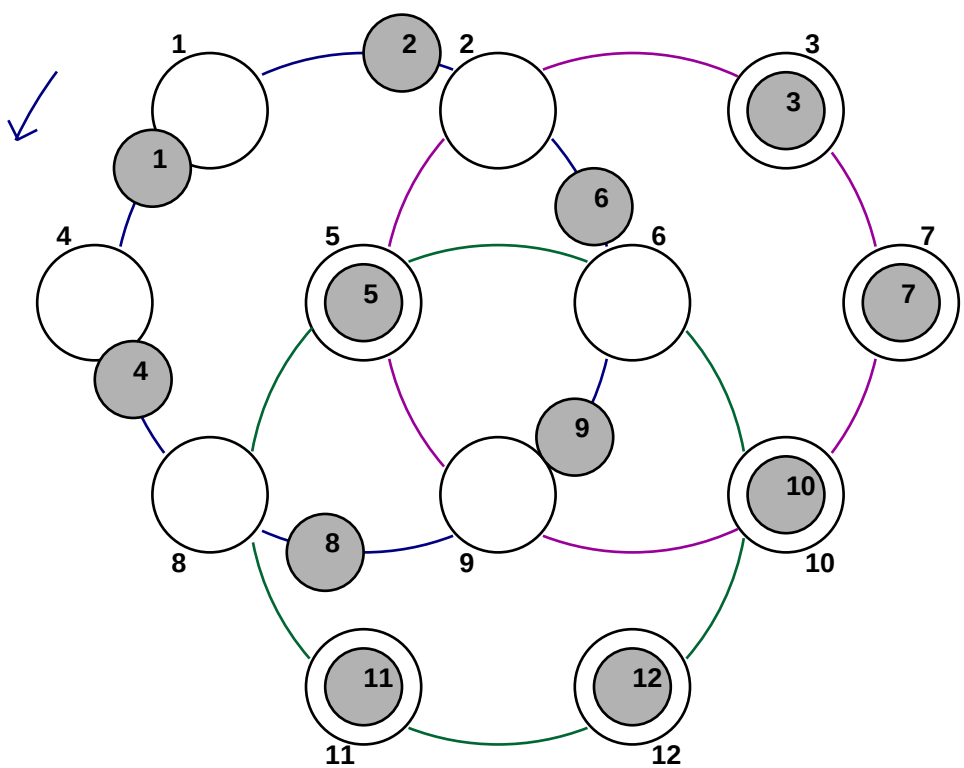


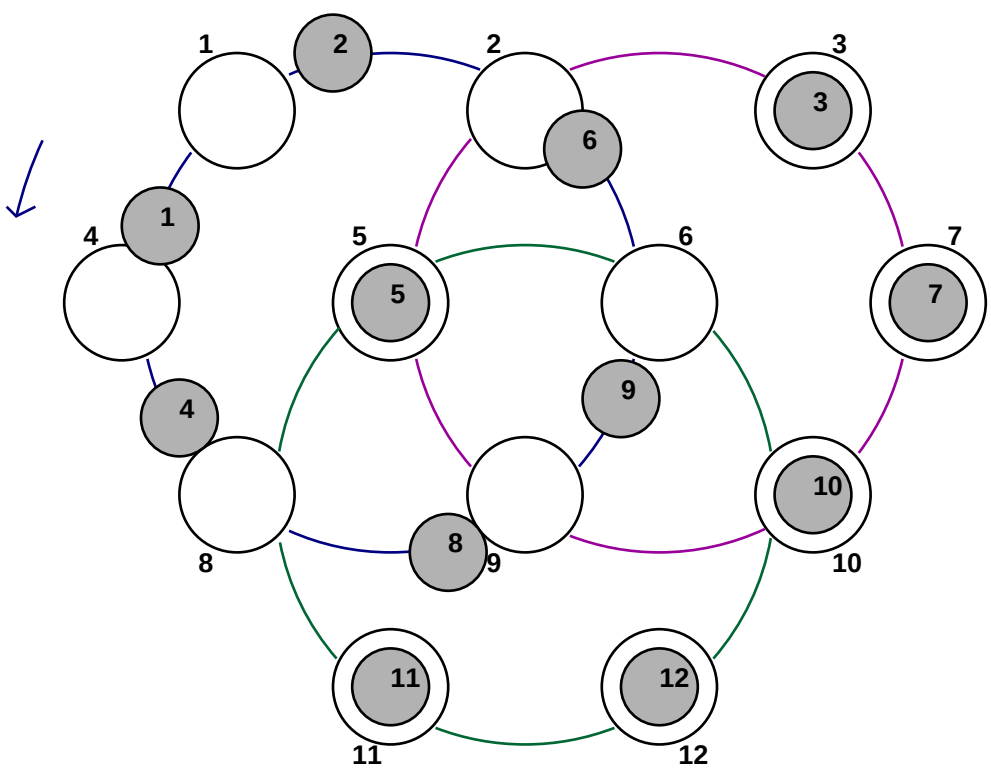
This is the Blithe 12

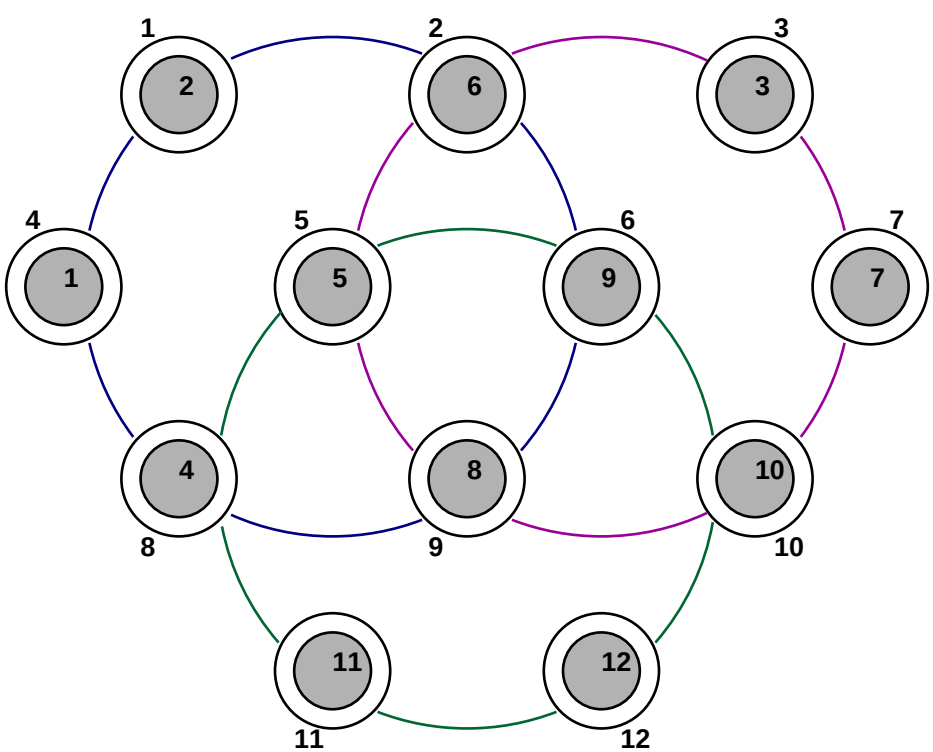
The purpose of this project is to show that the numbers can be permuted in any manner and still be returned to the positions that match their number.

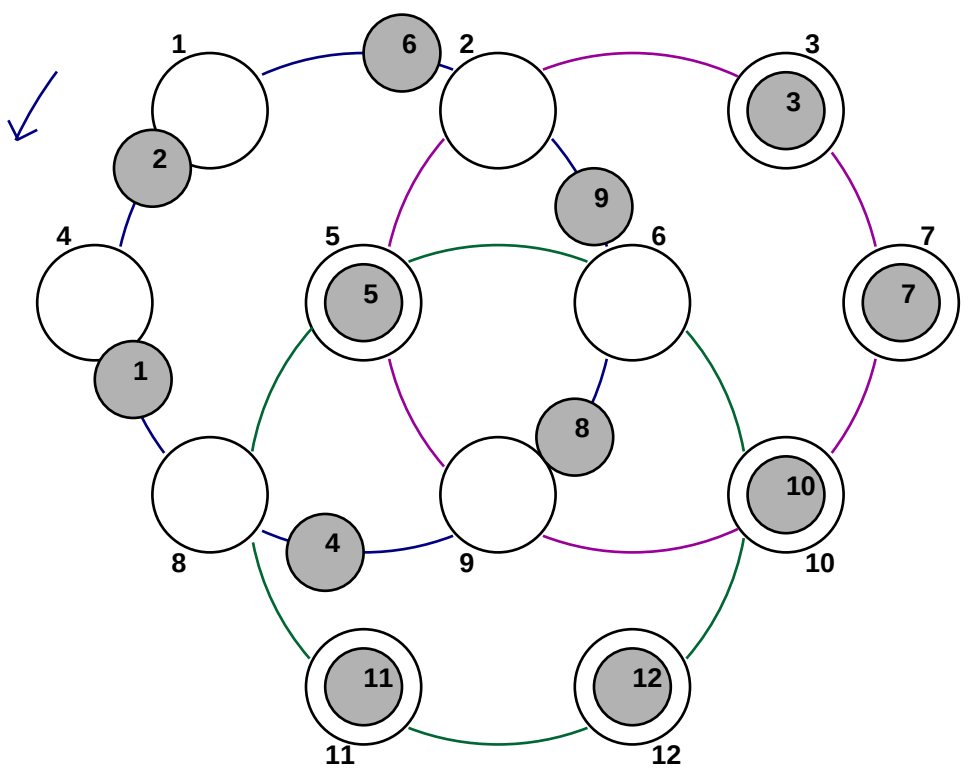
The first set of permutations includes multiple counter-clockwise moves of the upper left circle which will be refer to as the blue circle.

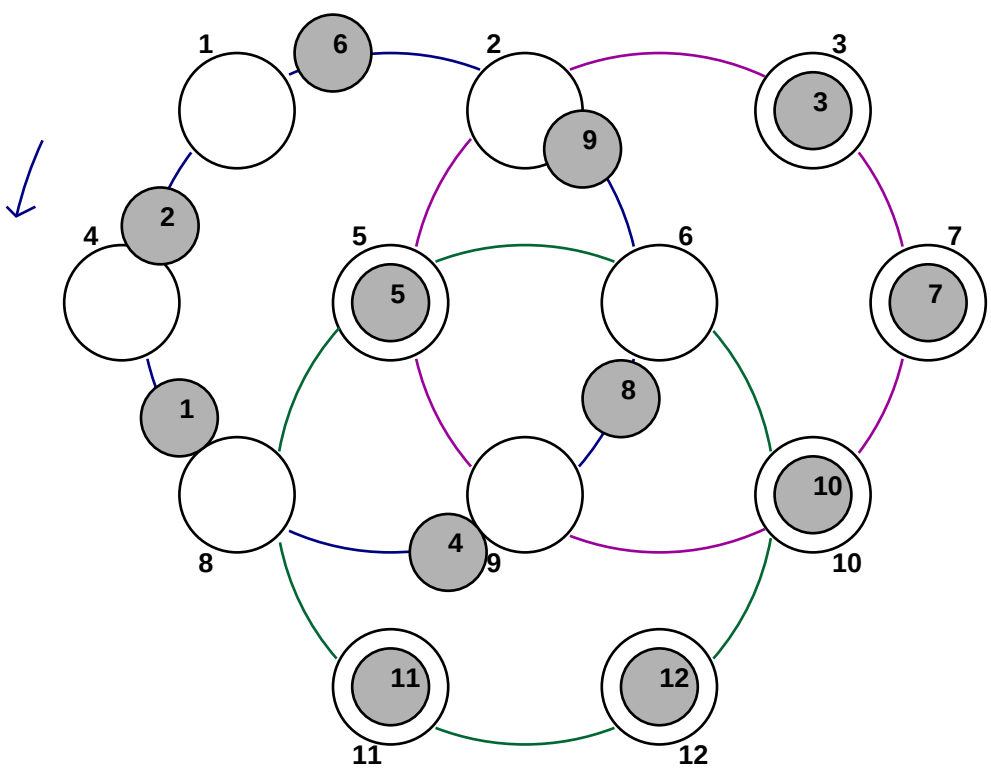

1
2
3
4
5
6
7
8
9
10
11
12

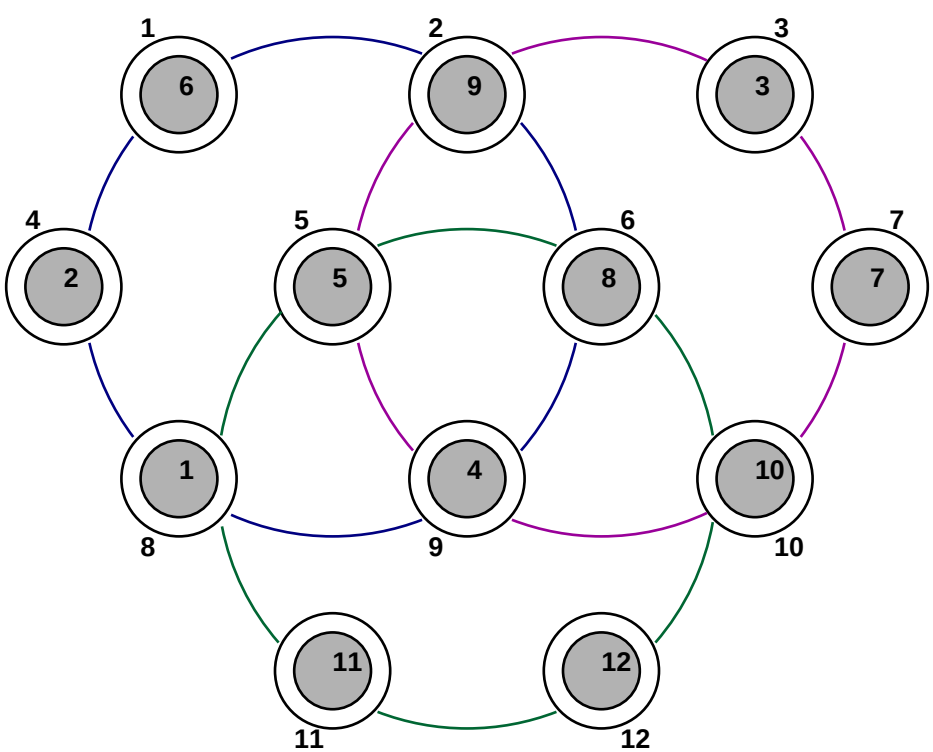

1
2
2
3
3
1
6
4
5
6
7
5
7
4
9
10
8
8
9
10
11
12
11
12

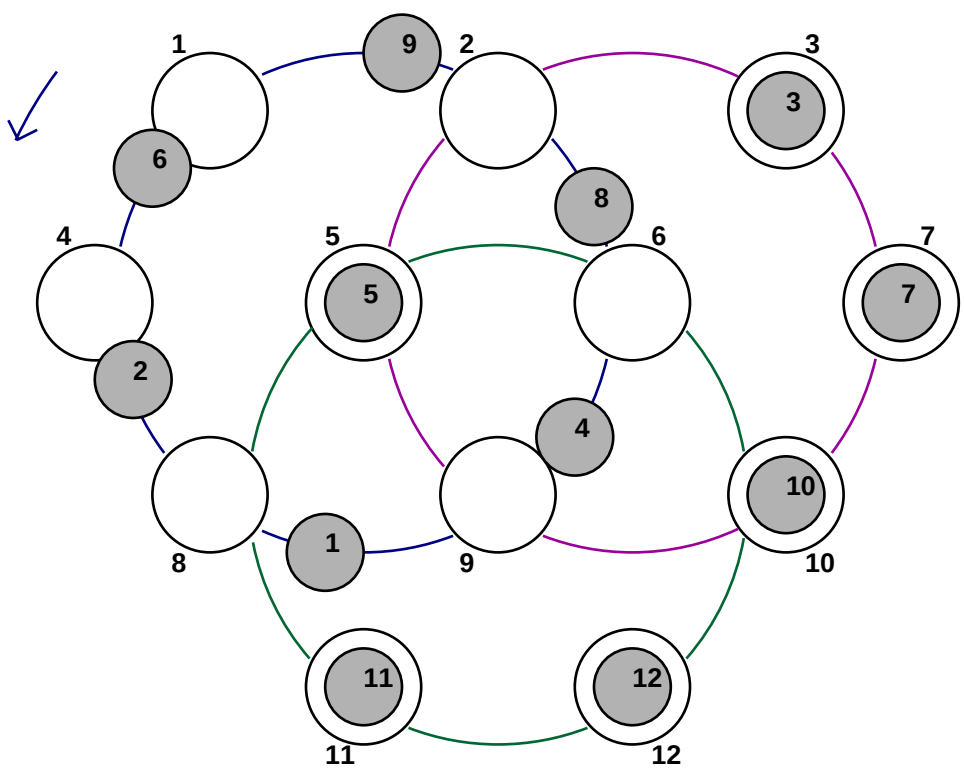

1
2
2
3
3
6
1
4
5
5
6
7
7
9
4
10
8
8
9
10
11
12
11
12

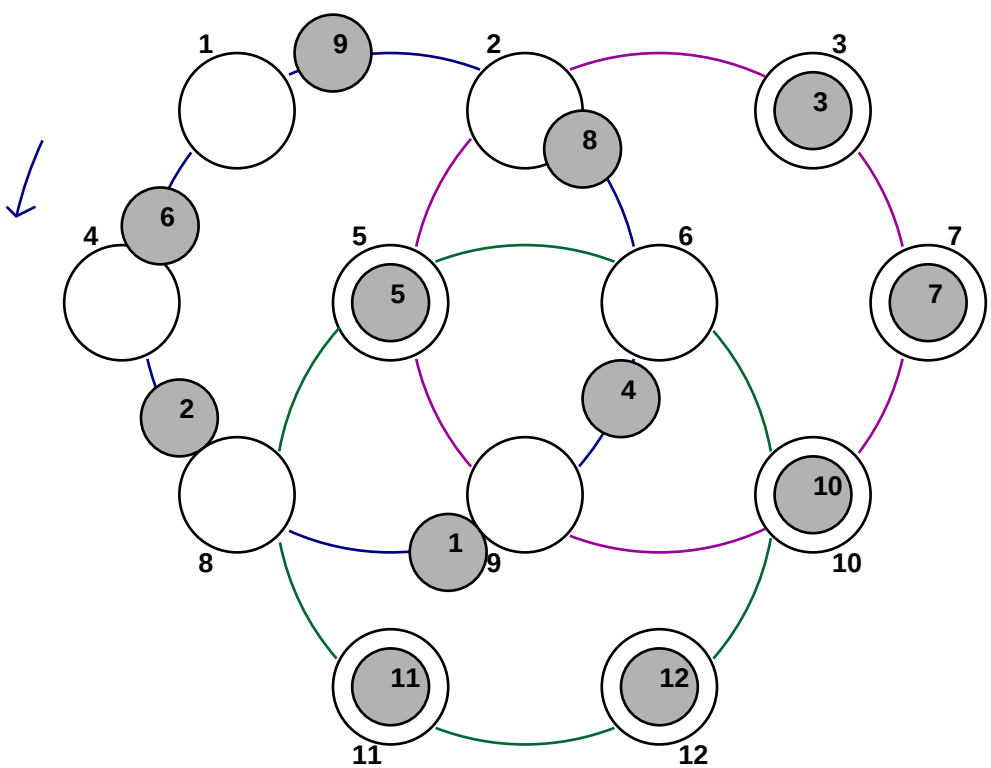

1
2
2
6
3
3
4
1
5
5
6
9
7
7
4
8
8
10
10
9
11
11
12
12

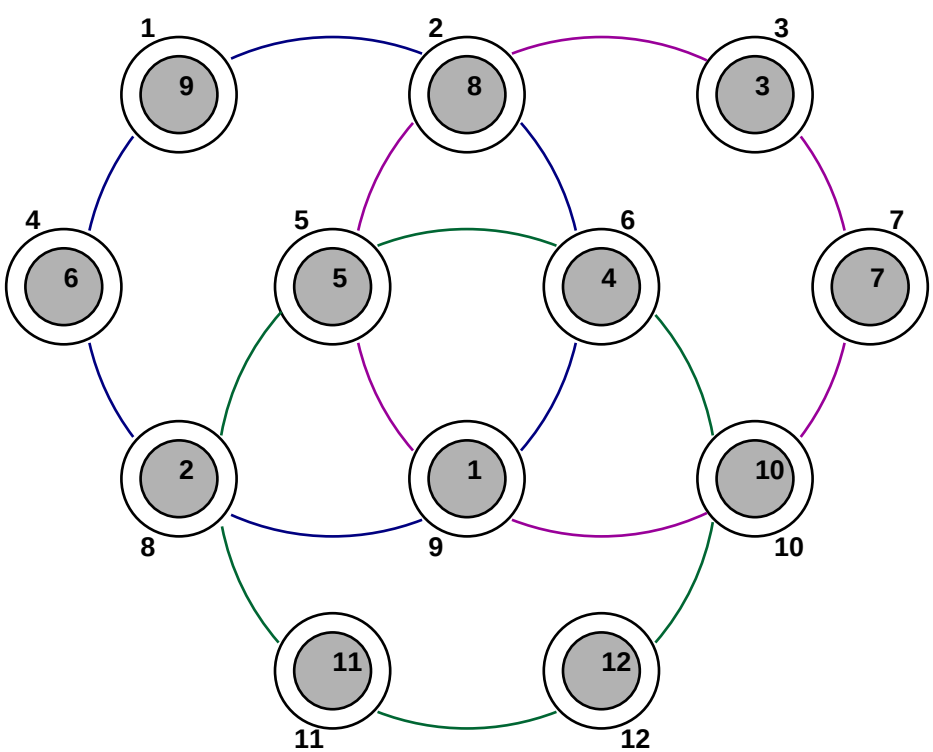

1
6
2
3
3
2
9
4
5
6
7
5
7
1
8
10
4
8
9
10
11
12
11
12

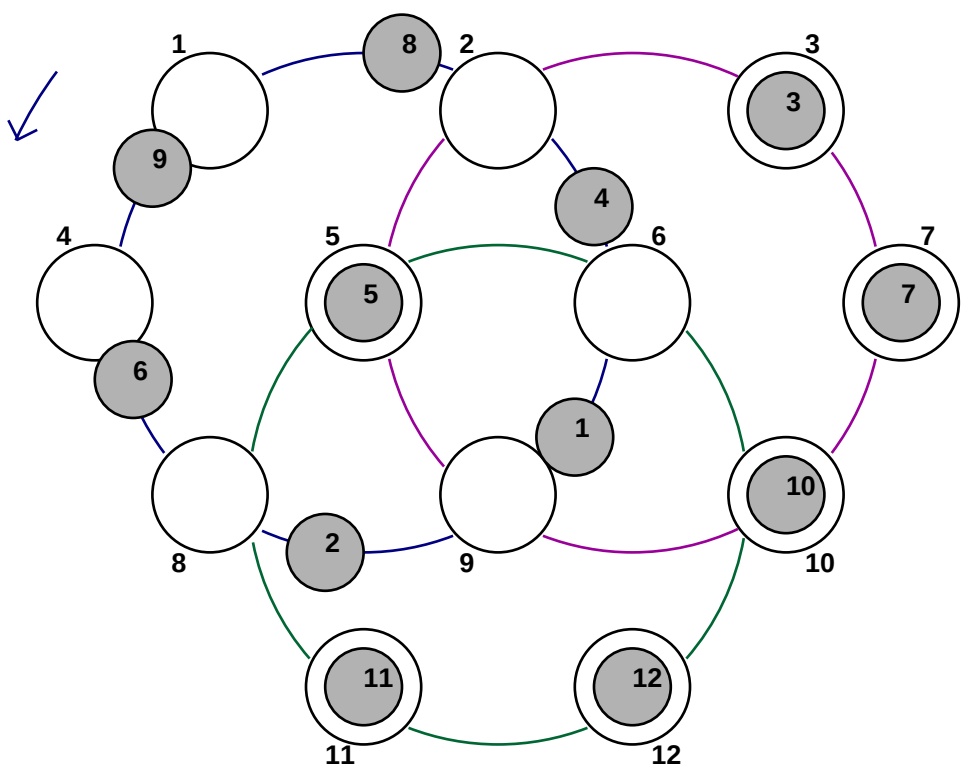

1
6
2
3
3
9
2
4
5
6
7
5
5
7
8
1
10
4
9
8
10
11
12
11
12

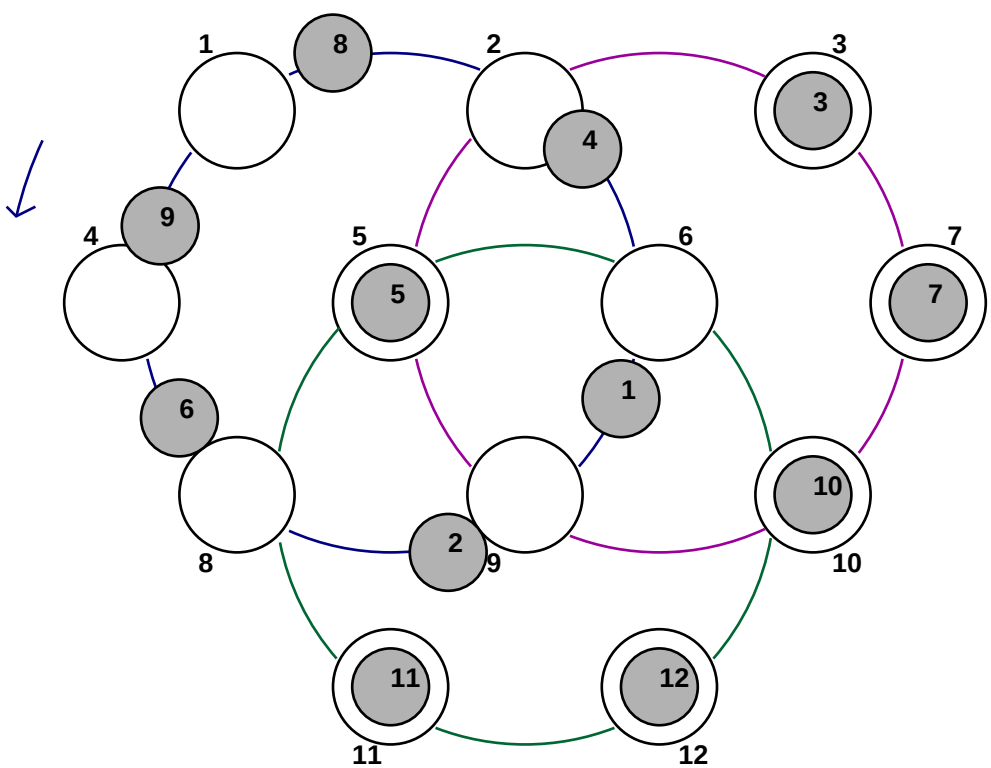

1
6
2
9
3
3
4
2
5
5
6
8
7
7
1
8
4
9
10
10
11
11
12
12

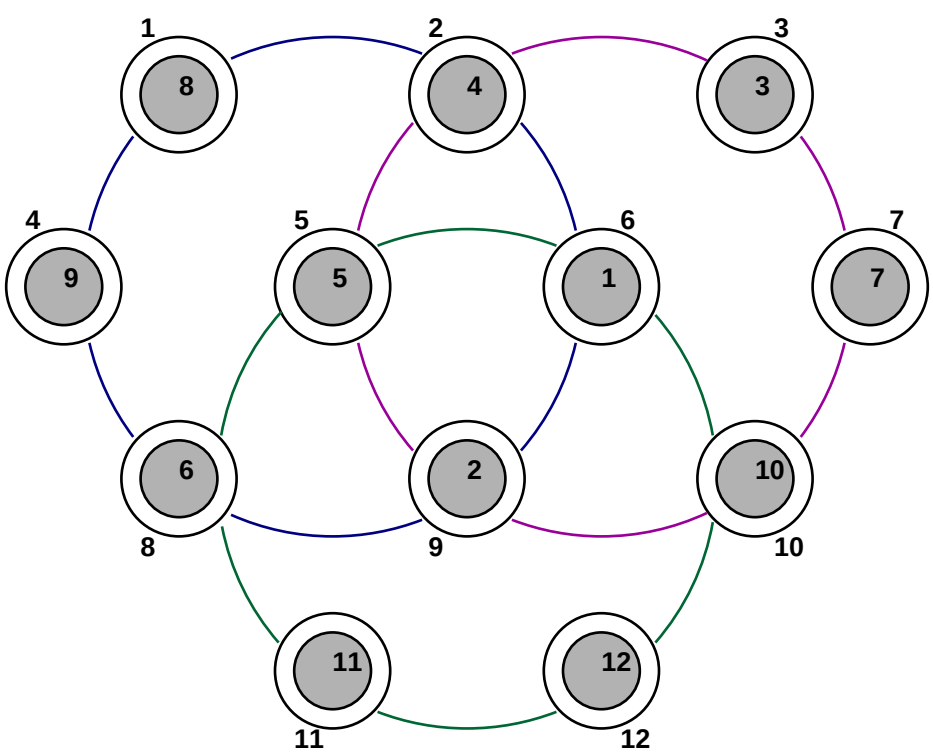

1
9
2
3
3
6
8
4
5
6
7
5
7
2
4
10
1
8
9
10
11
12
11
12

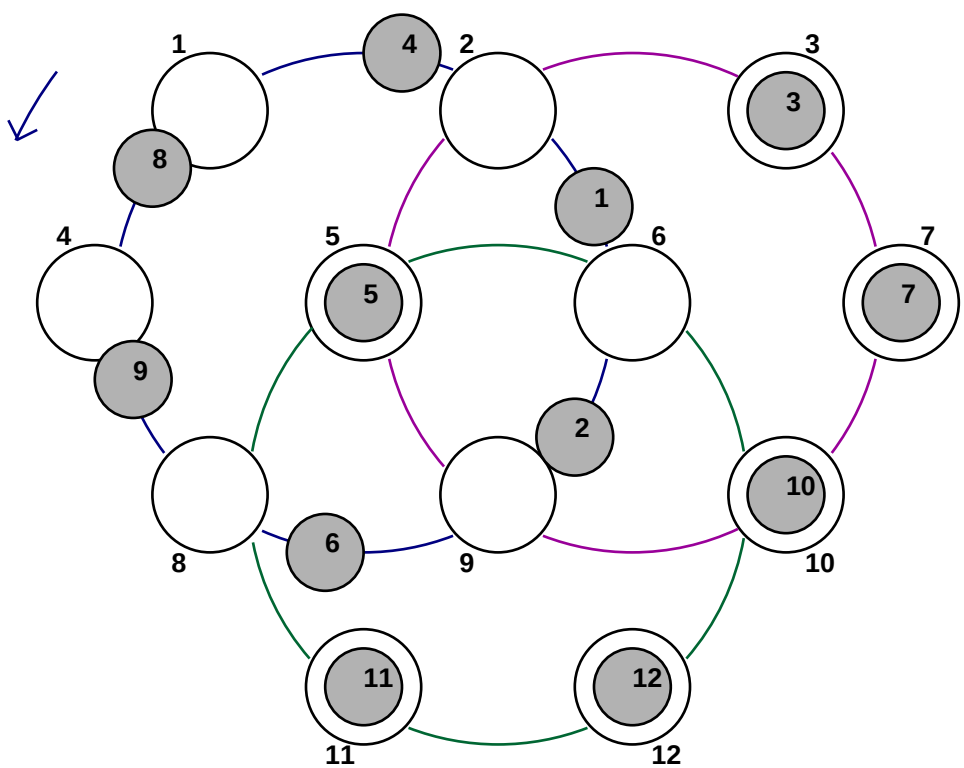

1
9
2
3
3
8
6
4
5
6
7
5
7
4
2
10
1
9
8
10
11
12
11
12

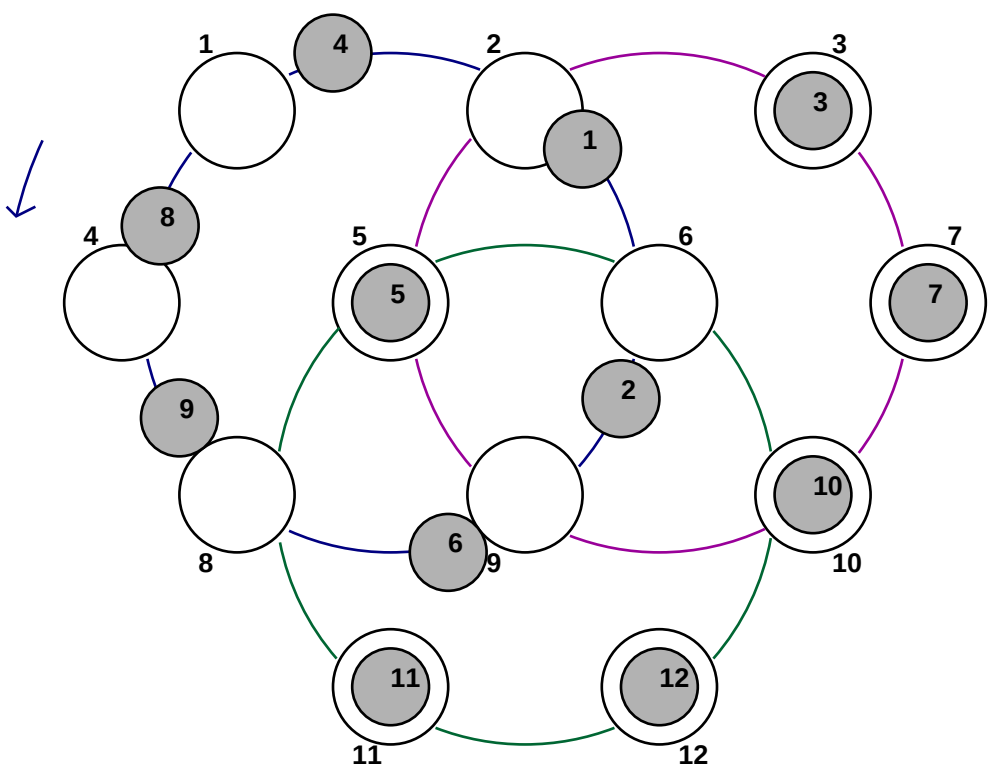

1
9
2
8
3
3
4
6
5
5
6
4
7
7
2
8
1
9
10
10
11
11
12
12

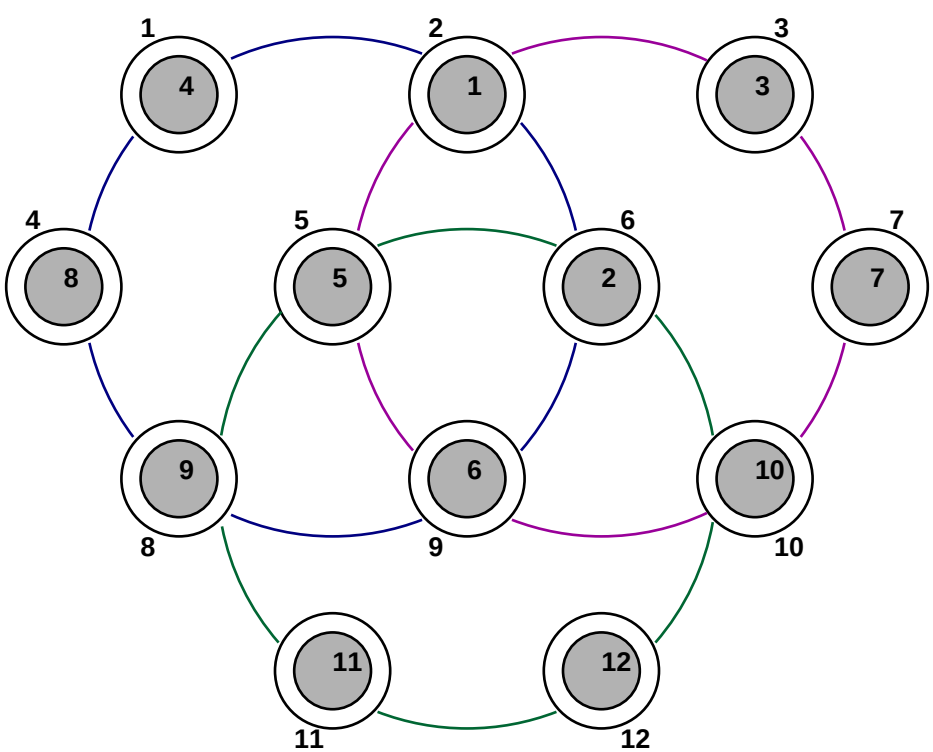

1
8
2
3
3
9
4
4
5
6
7
5
7
6
1
10
2
8
9
10
11
12
11
12

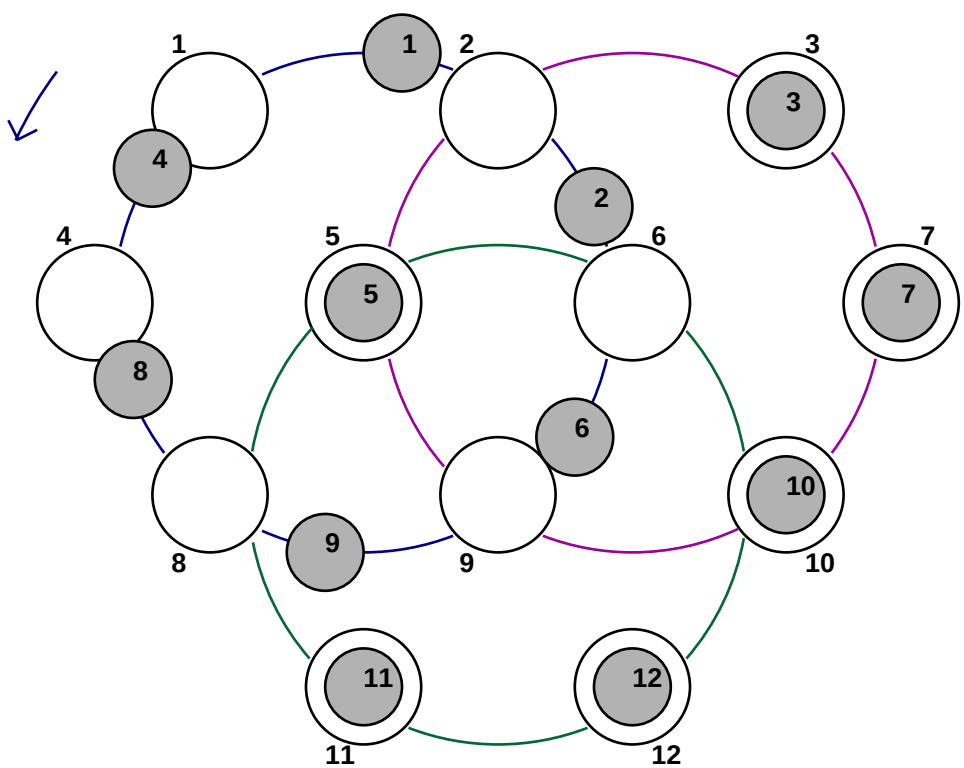

1
8
2
3
3
4
9
4
5
5
6
7
7
1
6
10
2
8
9
10
11
12
11
12

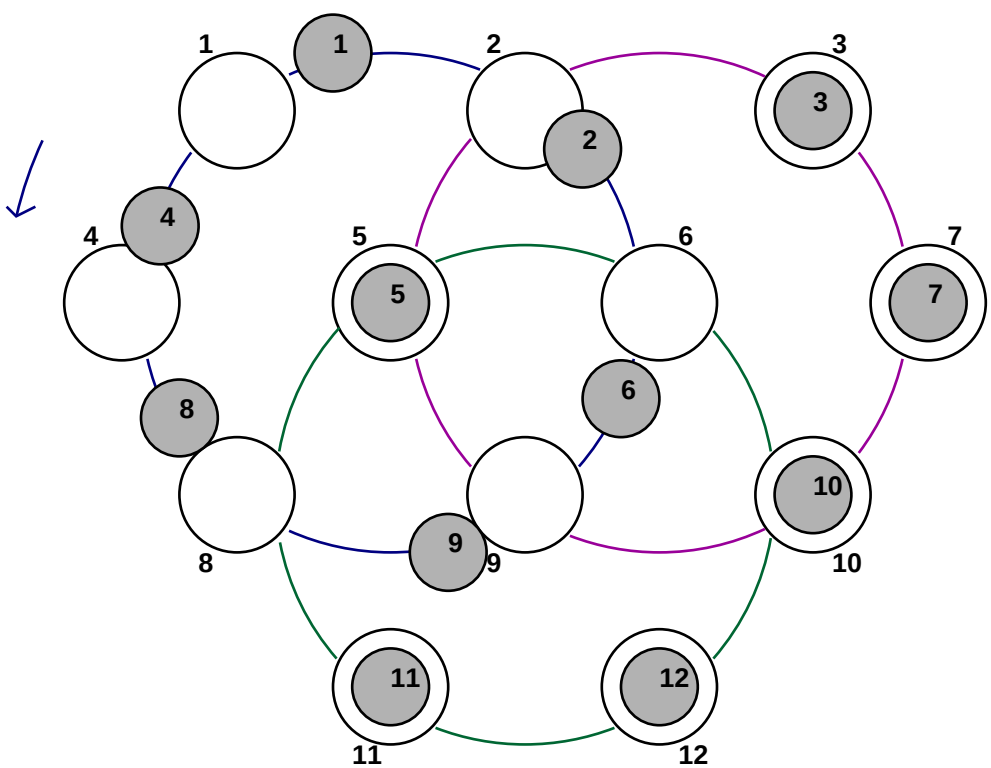

1
8
2
4
3
3
4
9
5
5
6
1
7
7
6
6
8
2
9
10
10
11
11
12
12

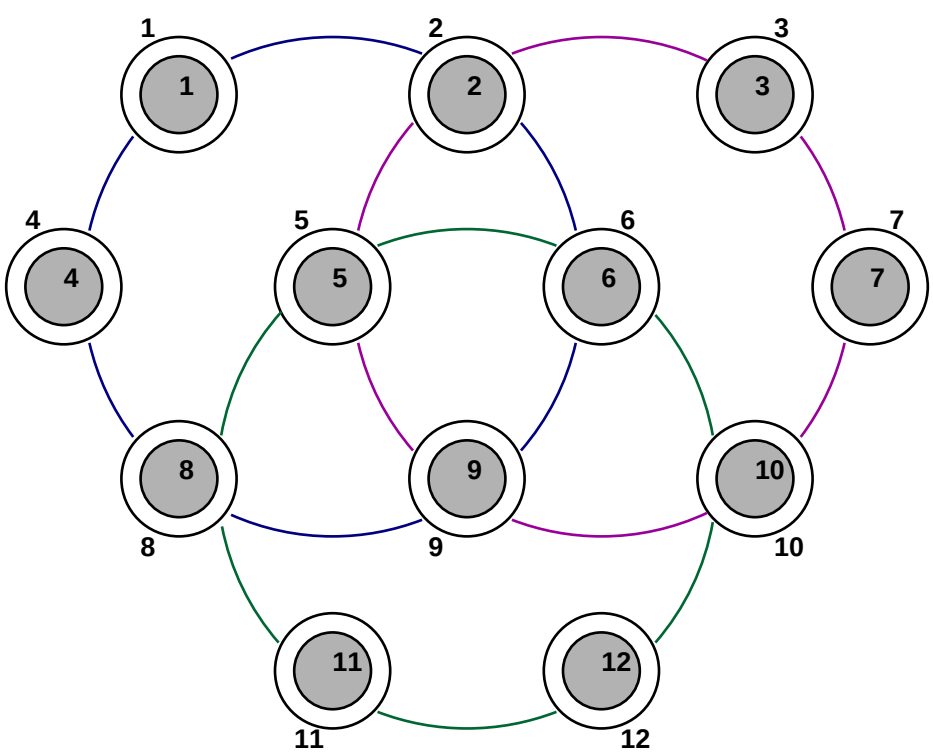

1
4
2
3
3
8
1
4
5
6
7
5
7
9
2
10
8
6
9
10
11
12
11
12


1
4
2
3
3
1
8
4
5
6
7
5
7
2
9
10
6
8
9
10
11
12
11
12

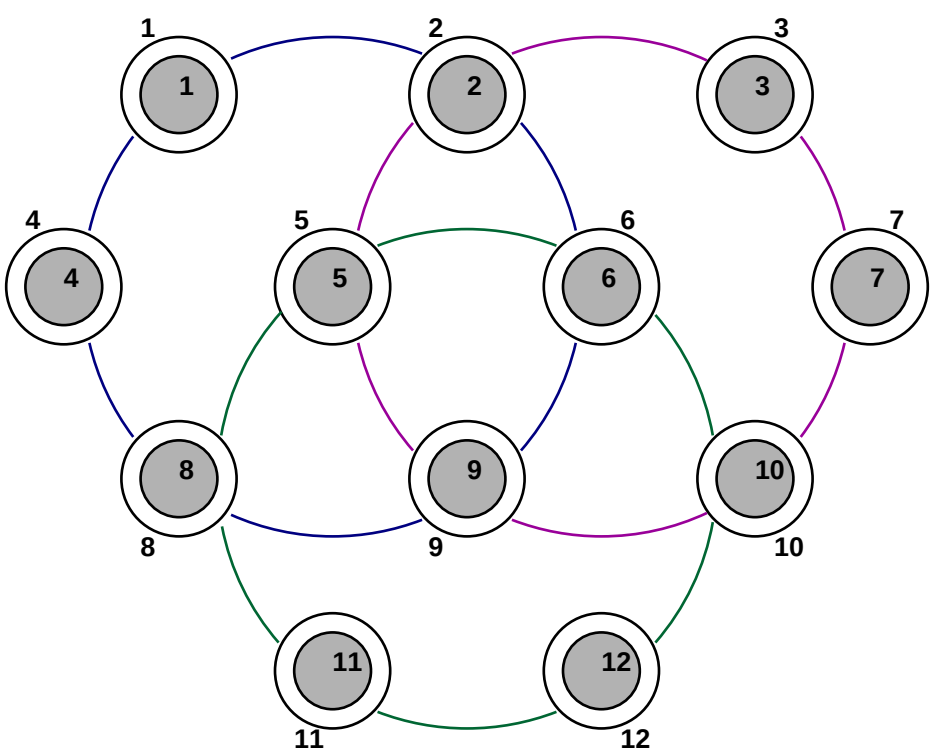

1
4
2
1
3
3
4
8
5
5
6
2
7
7
9
8
6
9
10
10
11
11
12
12

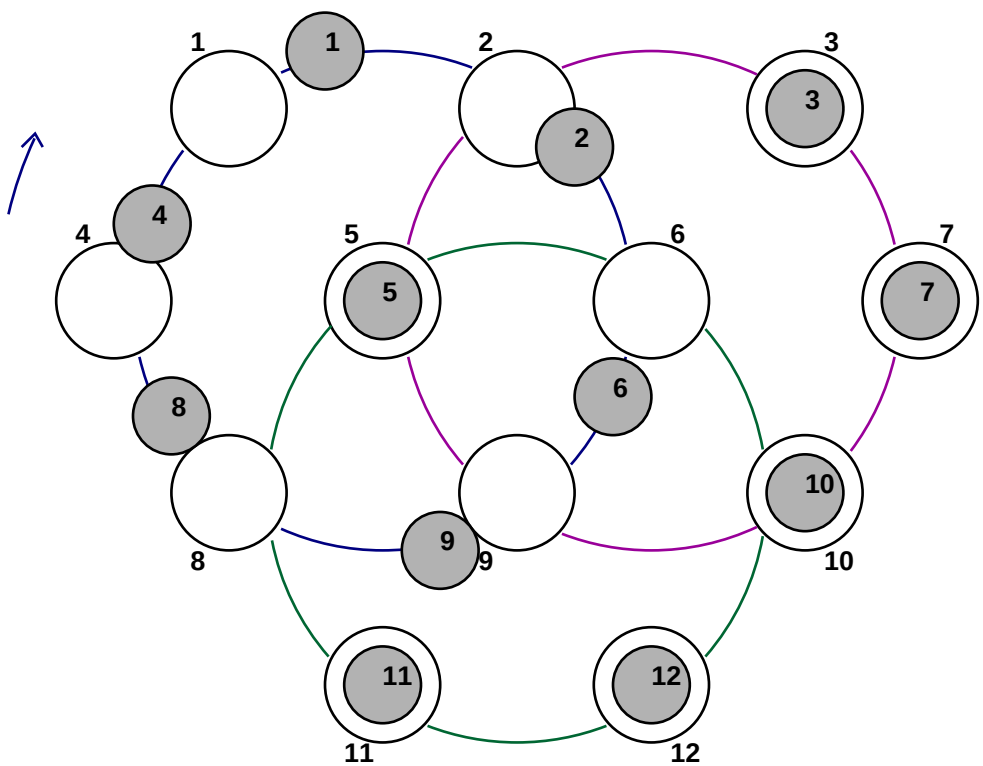

1
1
2
3
3
4
2
4
5
5
6
7
7
8
6
10
8
9
9
10
11
12
11
12

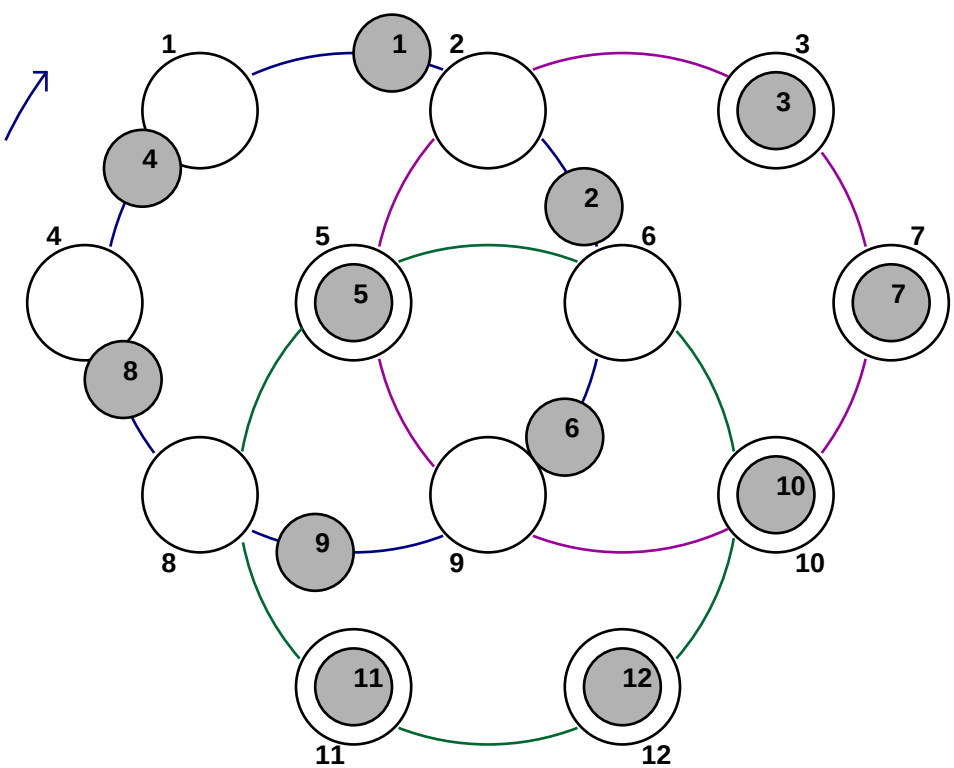

1
1
2
3
2
3
4
4
5
5
6
7
7
6
8
8
10
9
9
10
11
12
11
12

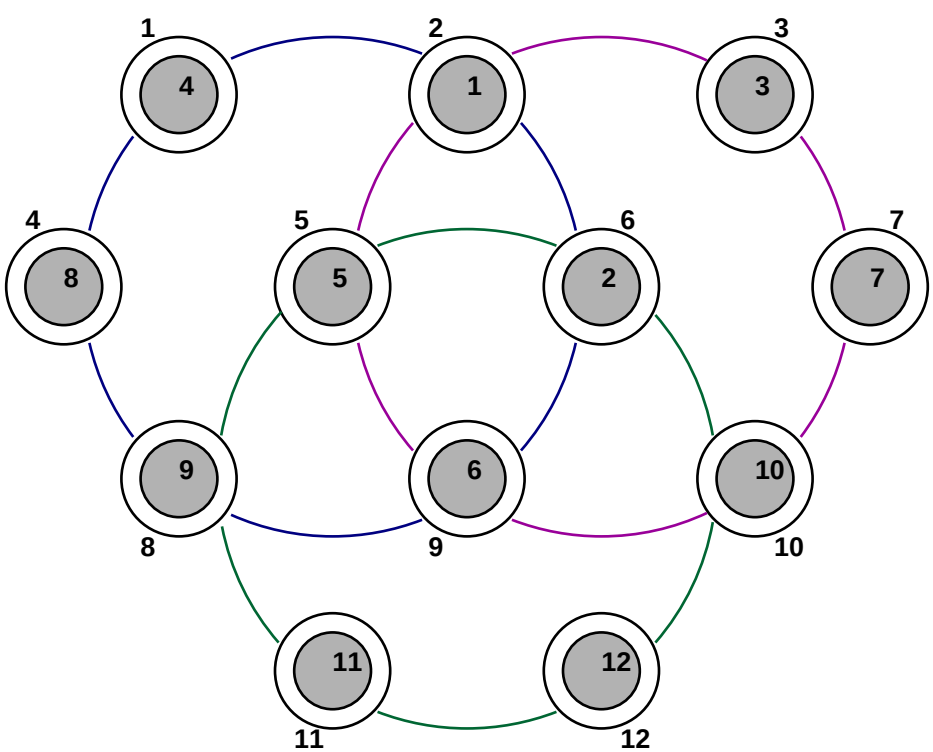

1
2
3
4
5
6
7
8
9
10
11
12

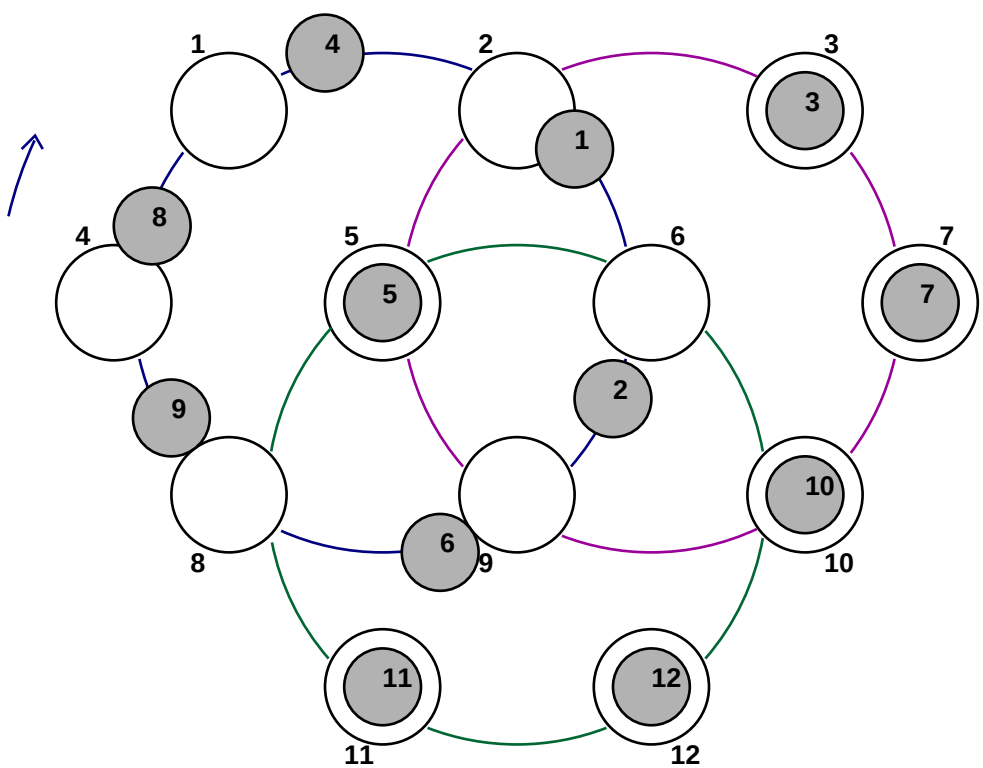
The second set of permutations includes multiple clockwise moves of the blue circle.

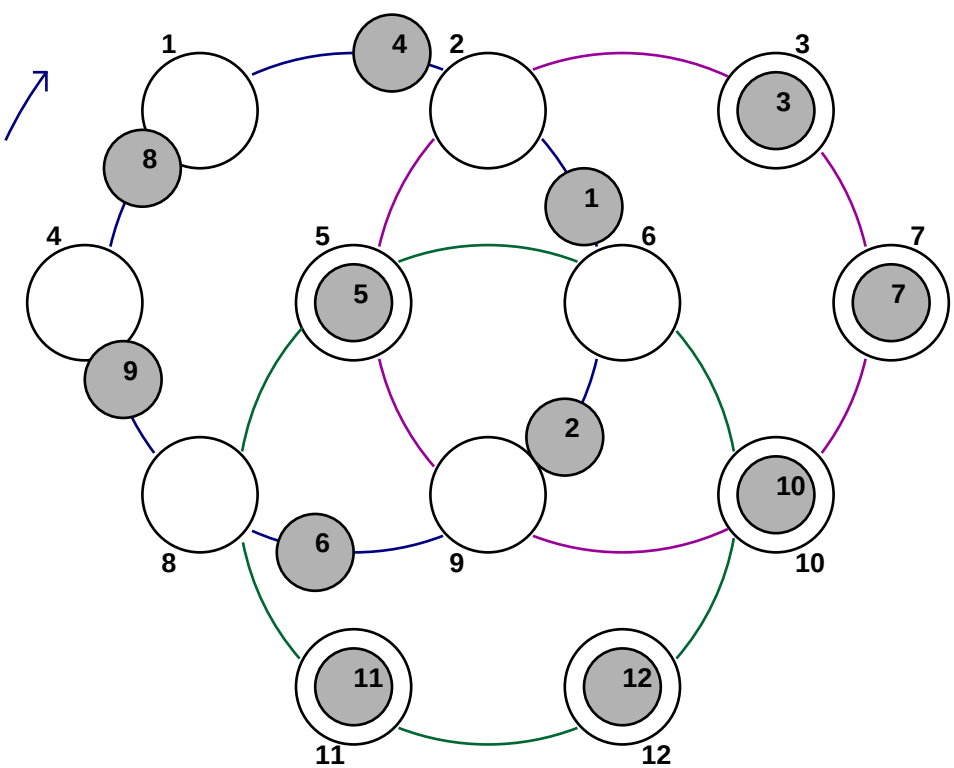

1
2
3
4
5
6
7
8
9
10
11
12

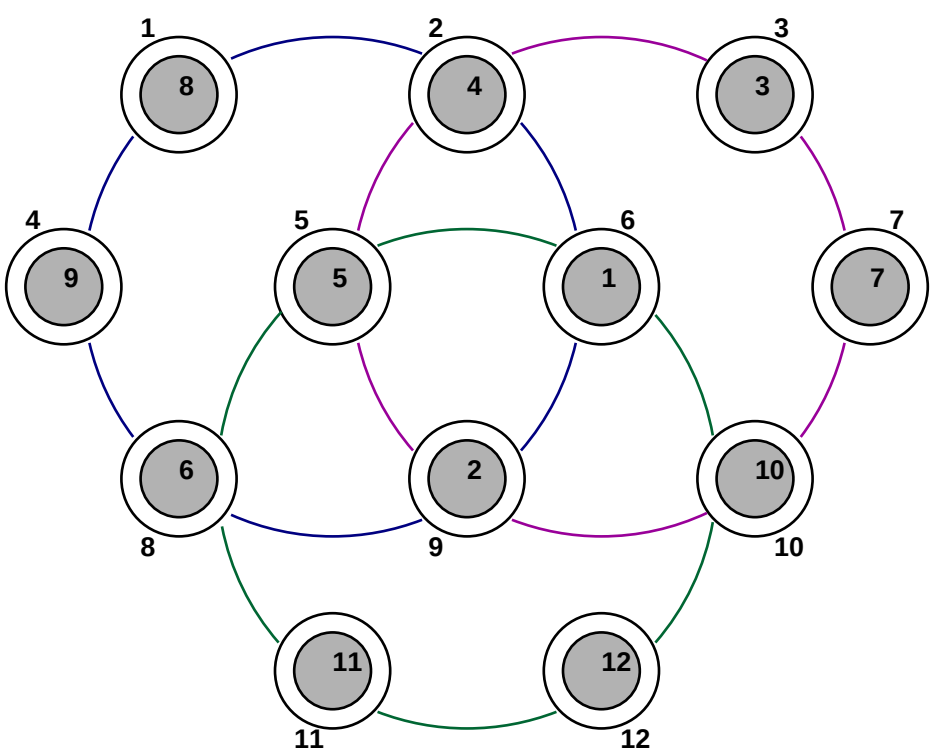

1
1
2
3
2
3
4
4
5
5
6
7
7
6
8
8
10
9
9
10
11
12
11
12

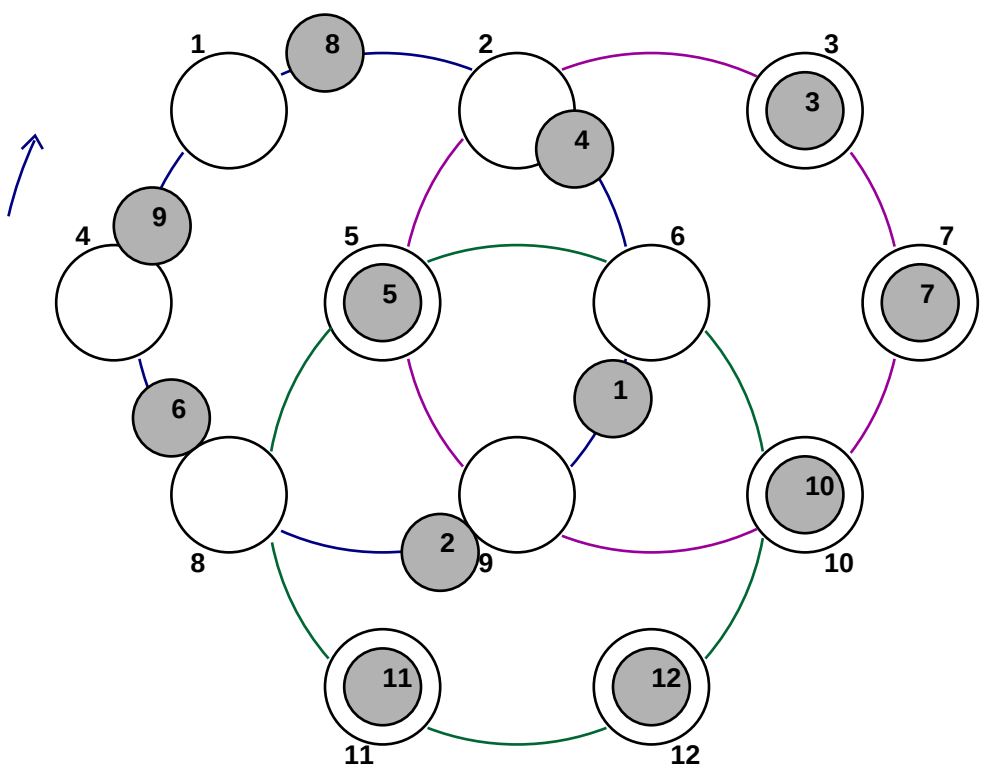

1
2
3
4
5
6
7
8
9
10
11
12

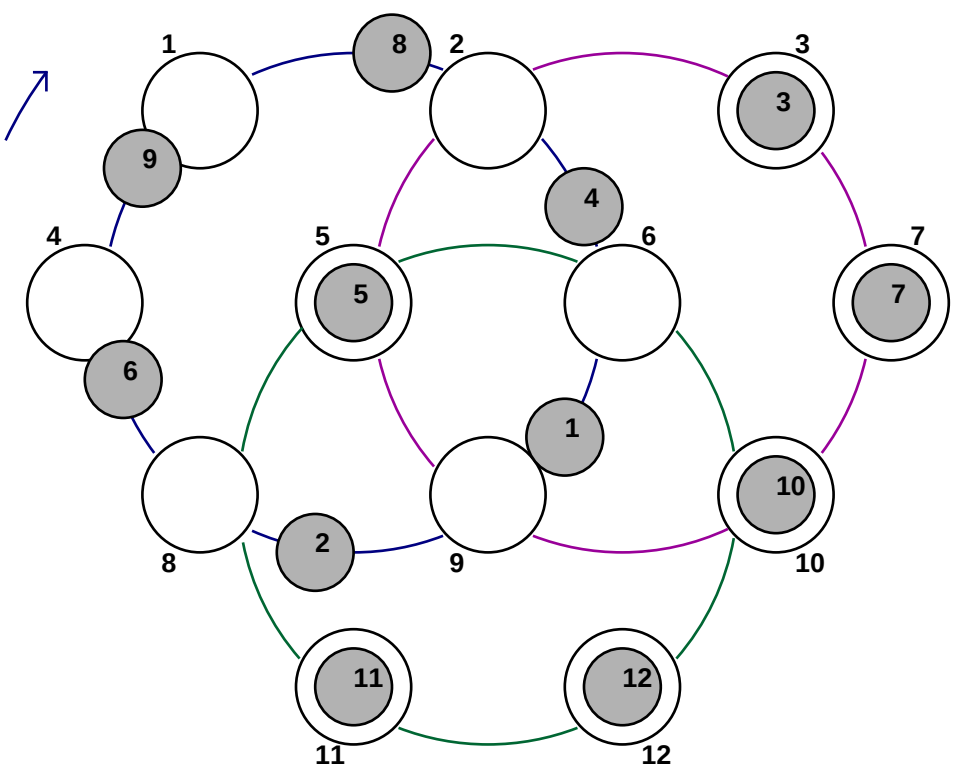

1
4
2
1
3
3
4
8
5
5
6
2
7
7
9
8
6
9
10
10
11
11
12
12

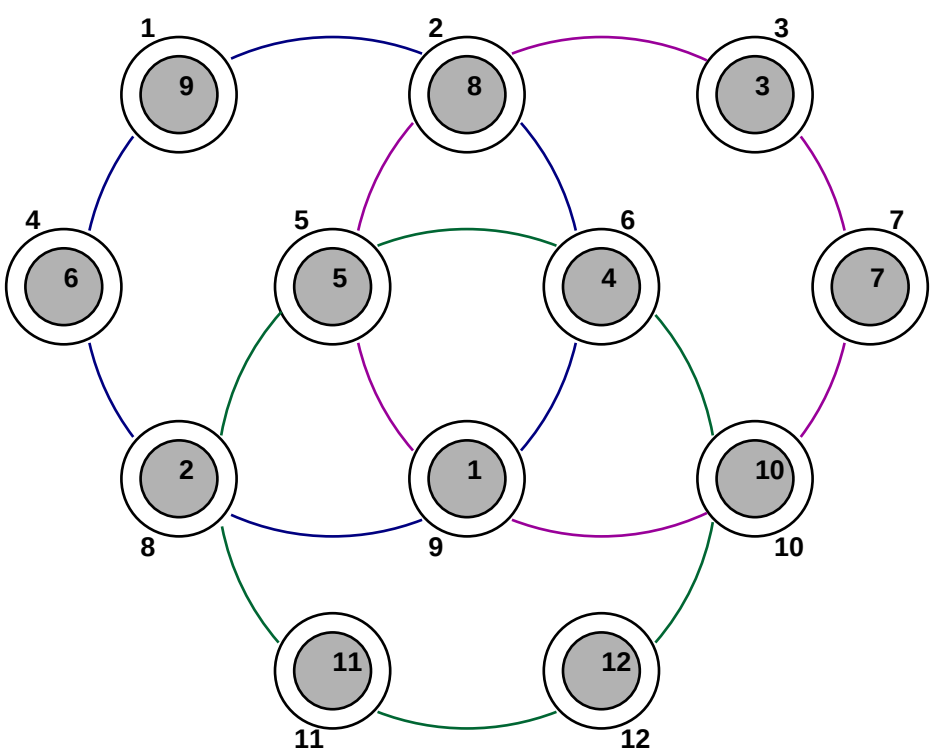

1
4
2
3
3
1
8
4
5
6
7
5
7
2
9
10
6
8
9
10
11
12
11
12

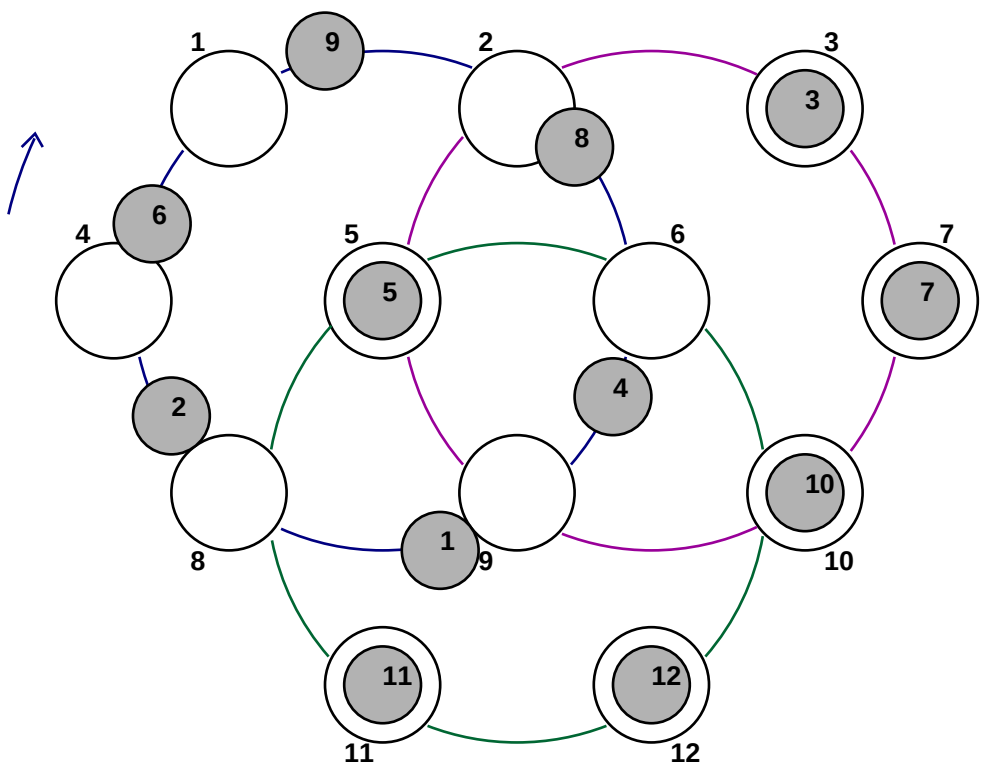

1
4
2
3
3
8
1
4
5
6
7
5
7
9
2
10
8
6
9
10
11
12
11
12

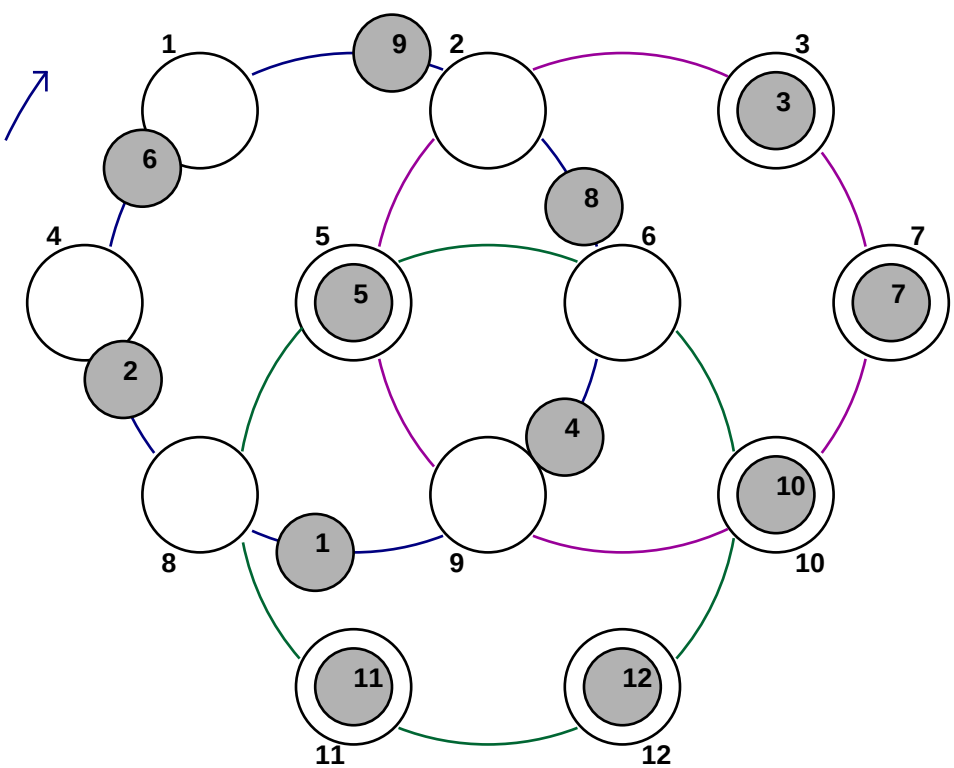

1
8
2
4
3
3
4
9
5
5
6
1
7
7
6
6
8
2
9
10
10
11
11
12
12

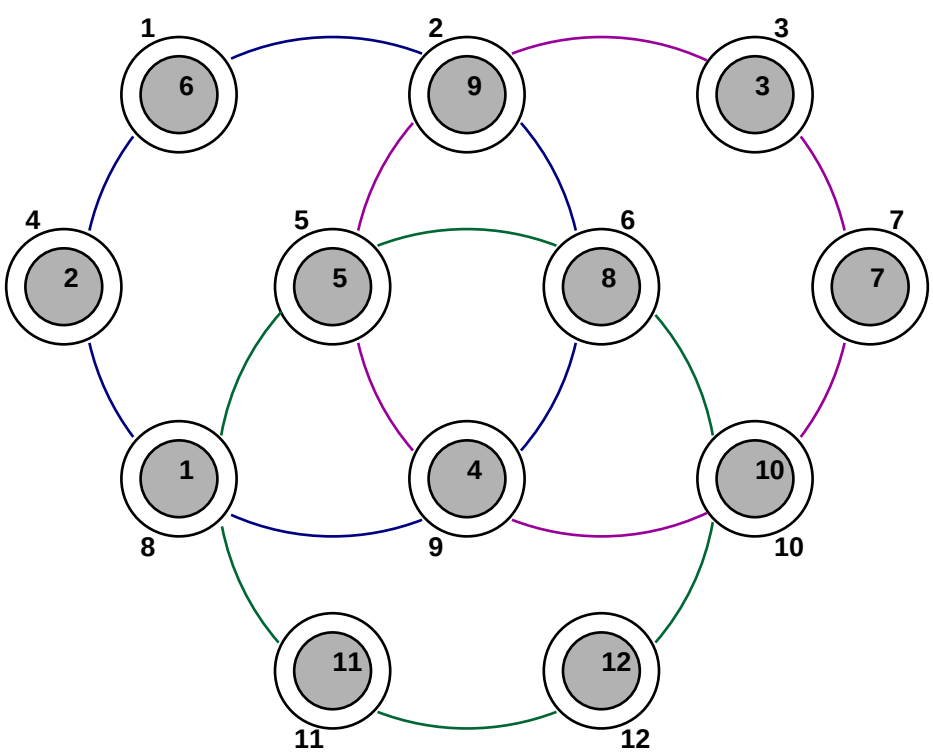

1
8
2
3
3
4
9
4
5
5
6
7
7
1
6
10
2
8
9
10
11
12
11
12

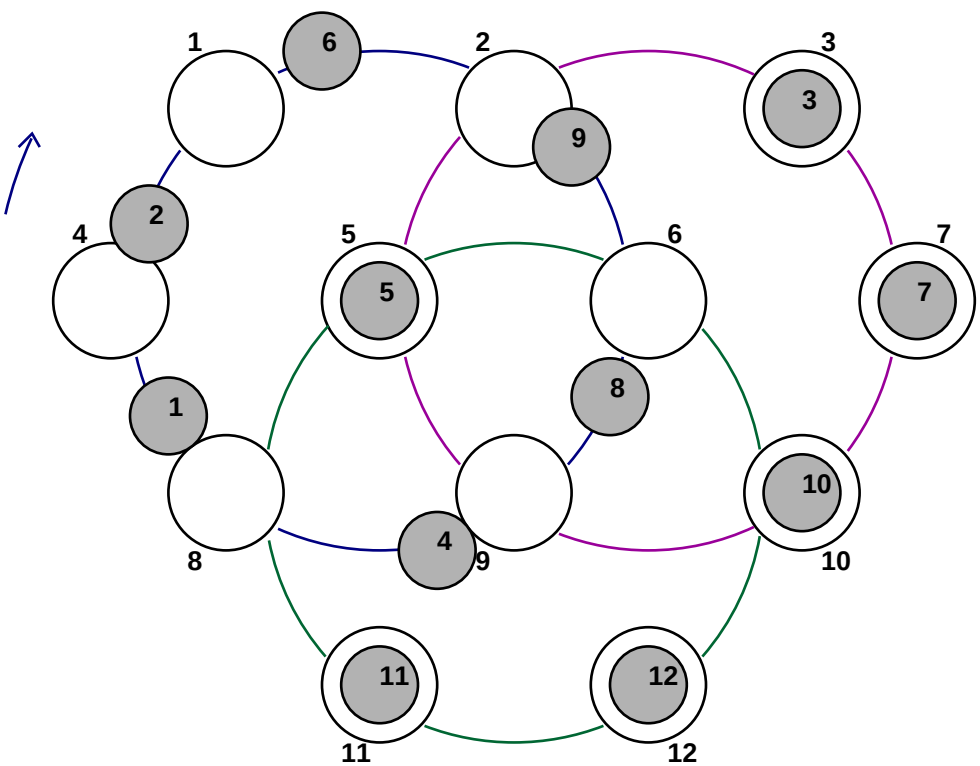

1
8
2
3
3
9
4
4
5
6
7
5
7
6
1
10
2
8
9
10
11
12
11
12

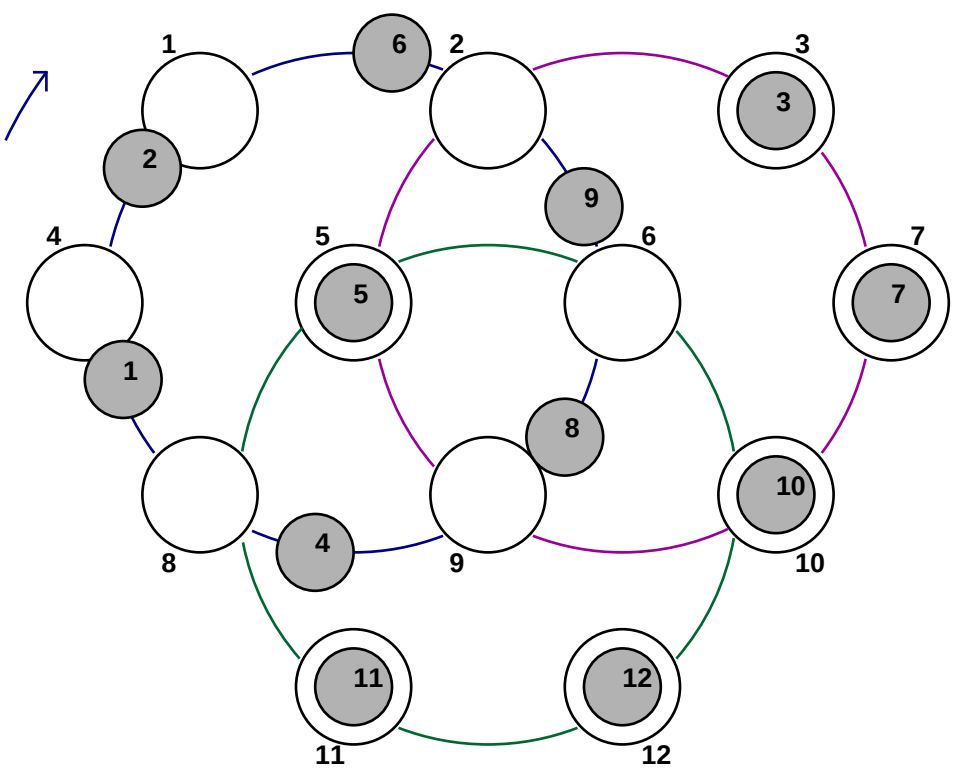

1
9
2
8
3
3
4
6
5
5
6
4
7
7
2
8
1
9
10
10
11
11
12
12

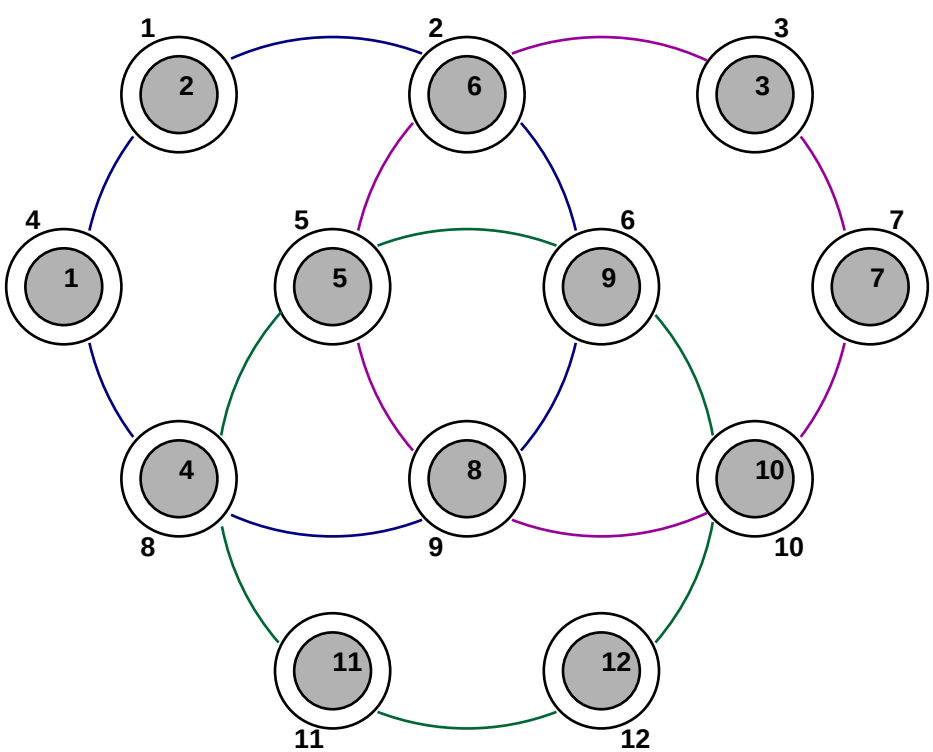

1
9
2
3
3
8
6
4
5
5
6
7
7
4
2
10
1
9
8
10
11
12
11
12

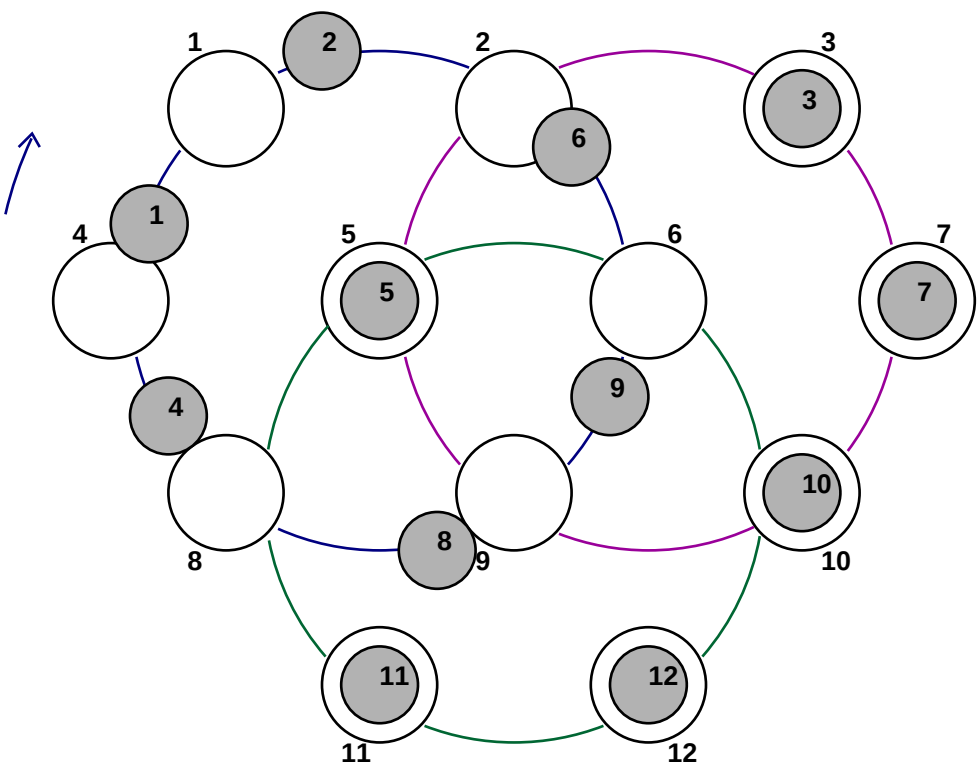

1
9
2
3
3
6
8
4
5
6
7
5
7
2
4
10
1
8
9
10
11
12
11
12

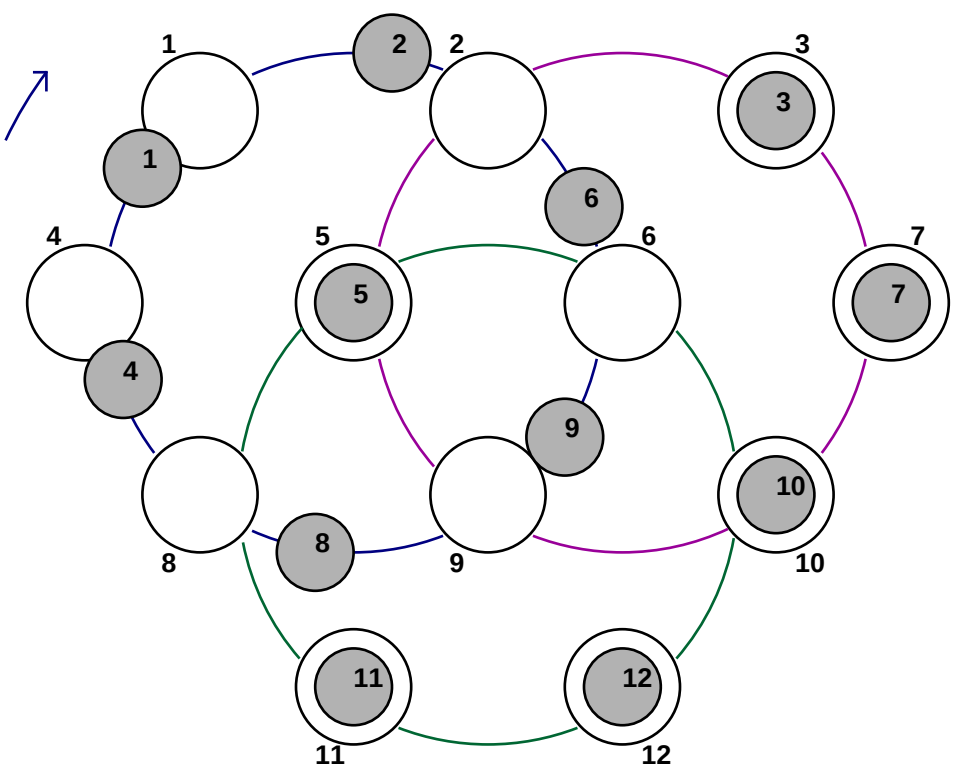

1
6
2
9
3
3
4
2
5
5
6
8
7
7
1
8
4
9
10
10
11
11
12
12

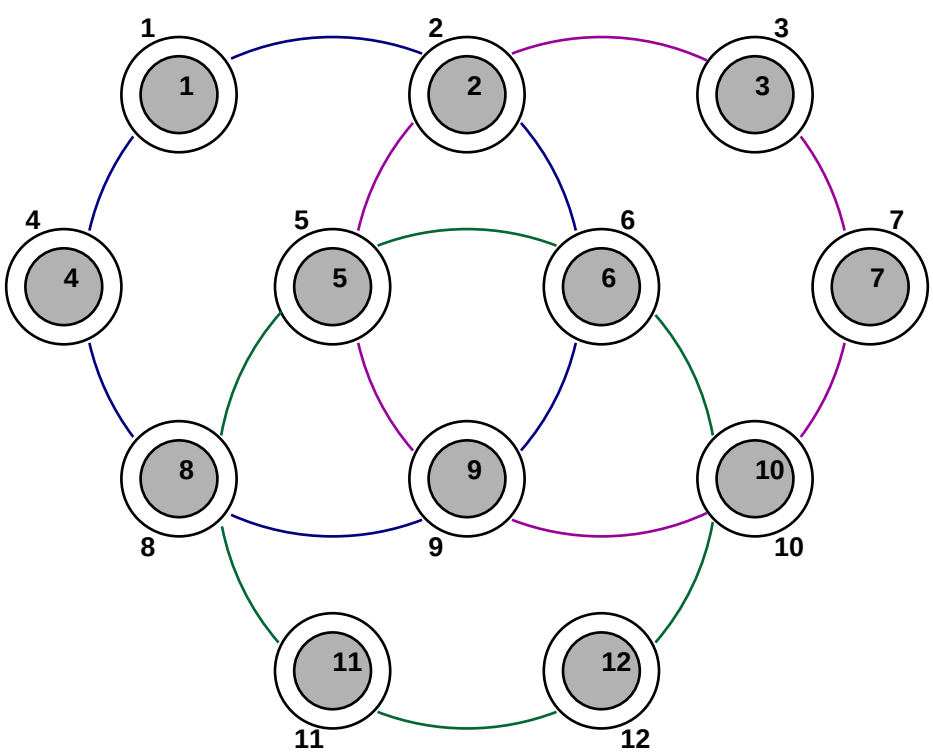

1
6
2
3
3
9
2
4
5
6
7
5
7
8
1
10
4
9
8
10
11
12
11
12


1
6
2
3
3
2
9
4
5
6
7
5
7
1
8
10
4
8
9
10
11
12
11
12

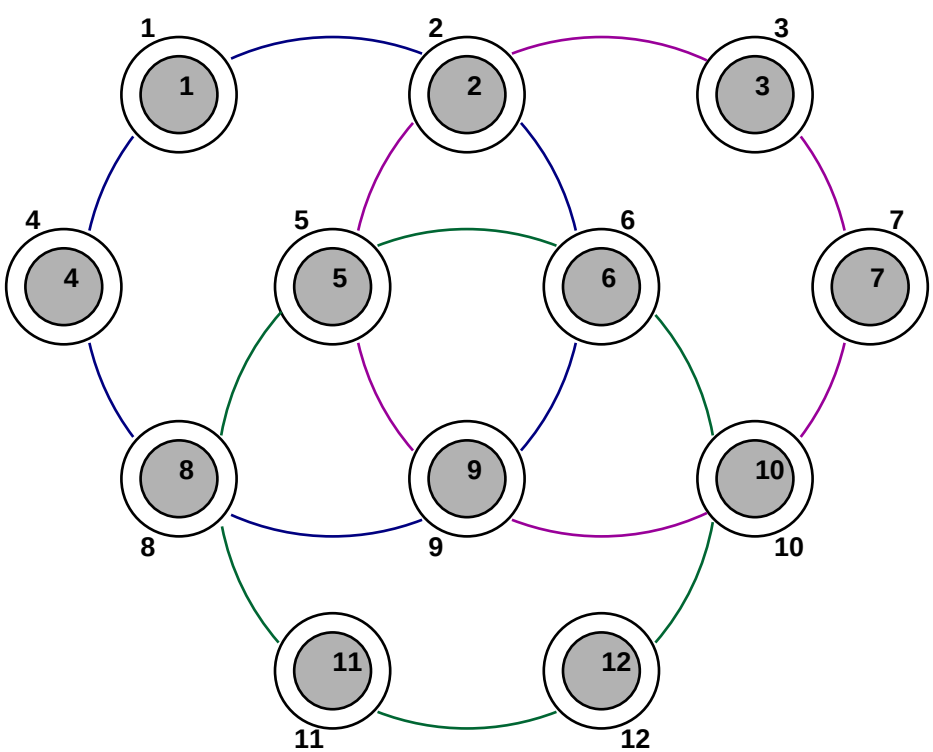

1
2
2
6
3
3
4
1
5
5
6
9
7
7
4
8
8
10
10
9
11
11
12
12

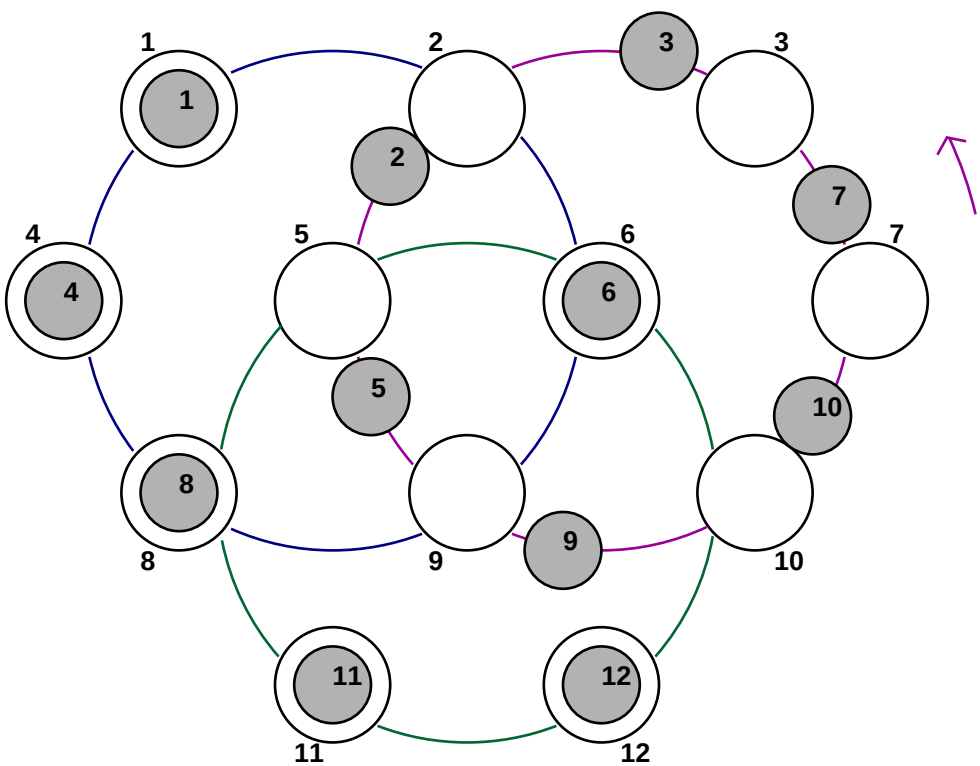

1
2
2
3
3
6
1
4
5
6
7
5
7
9
4
10
8
9
10
8
11
12
11
12

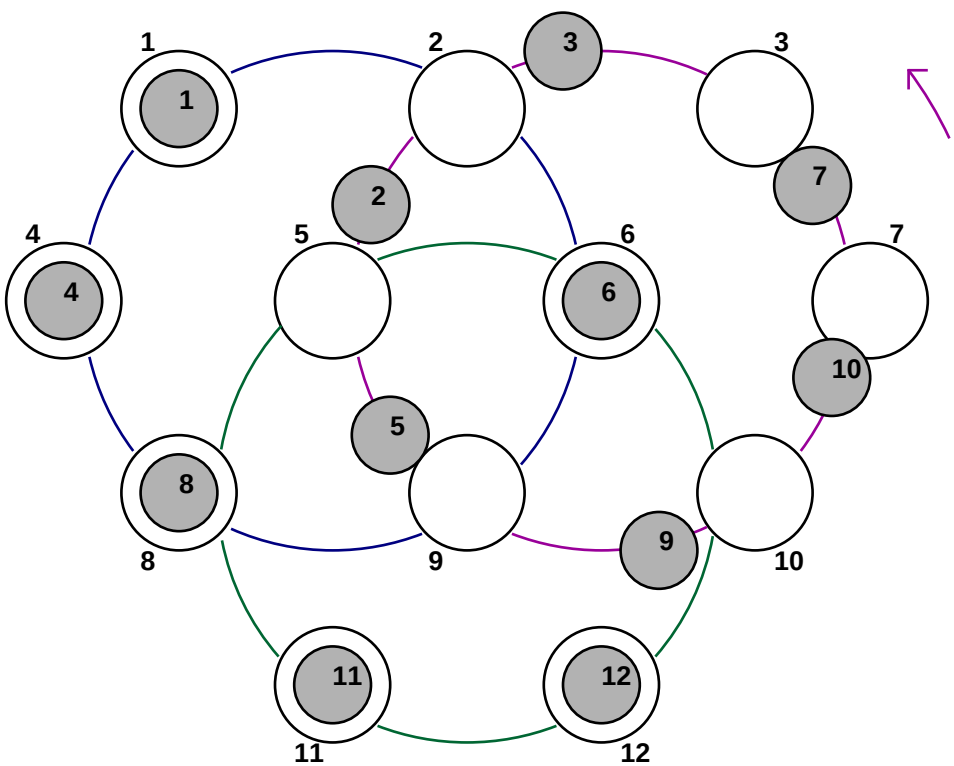

1
2
2
3
3
1
6
4
5
6
7
5
7
4
9
10
8
8
9
10
11
12
11
12

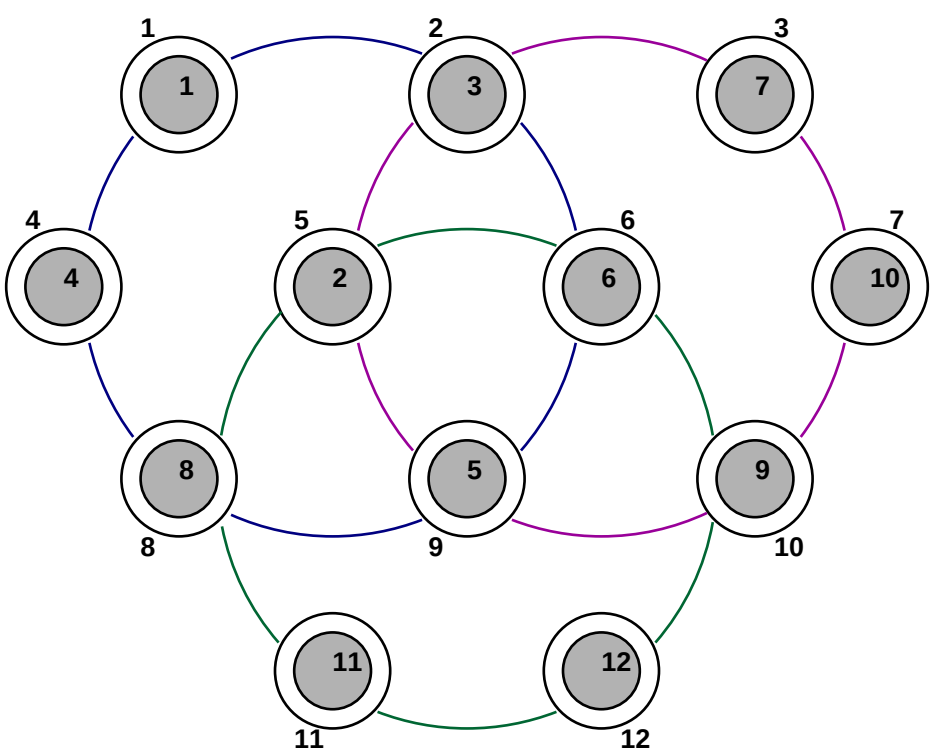

1
2
3
4
5
6
7
8
9
10
11
12

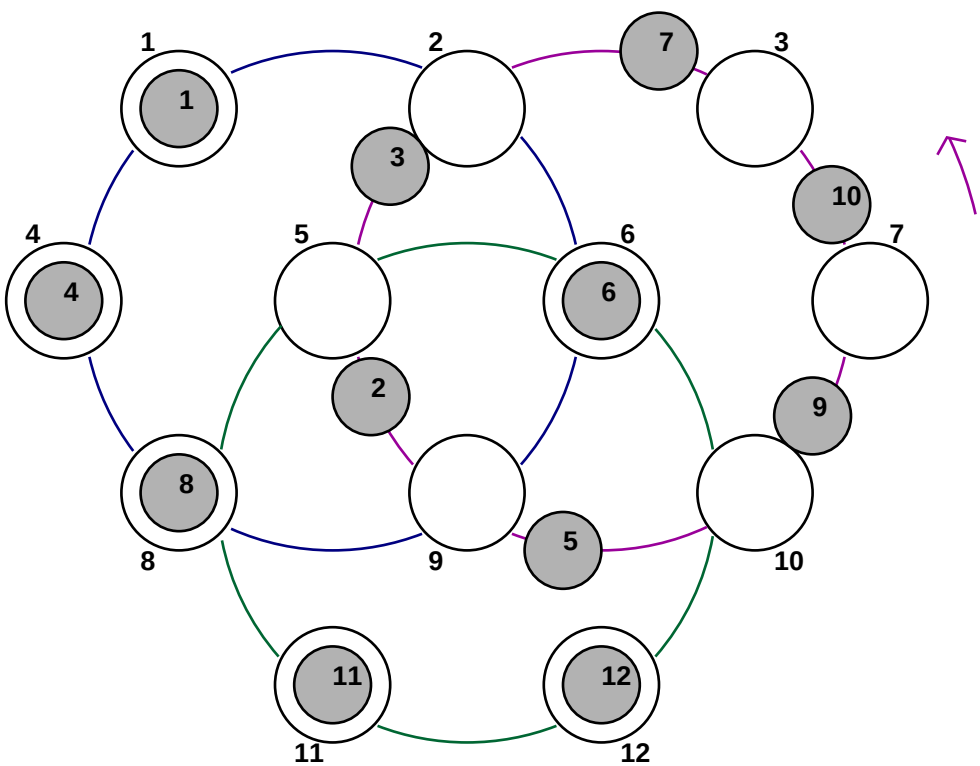
The third set of permutations includes multiple counter-clockwise moves of the upper right circle which will be refer to as the purple circle.

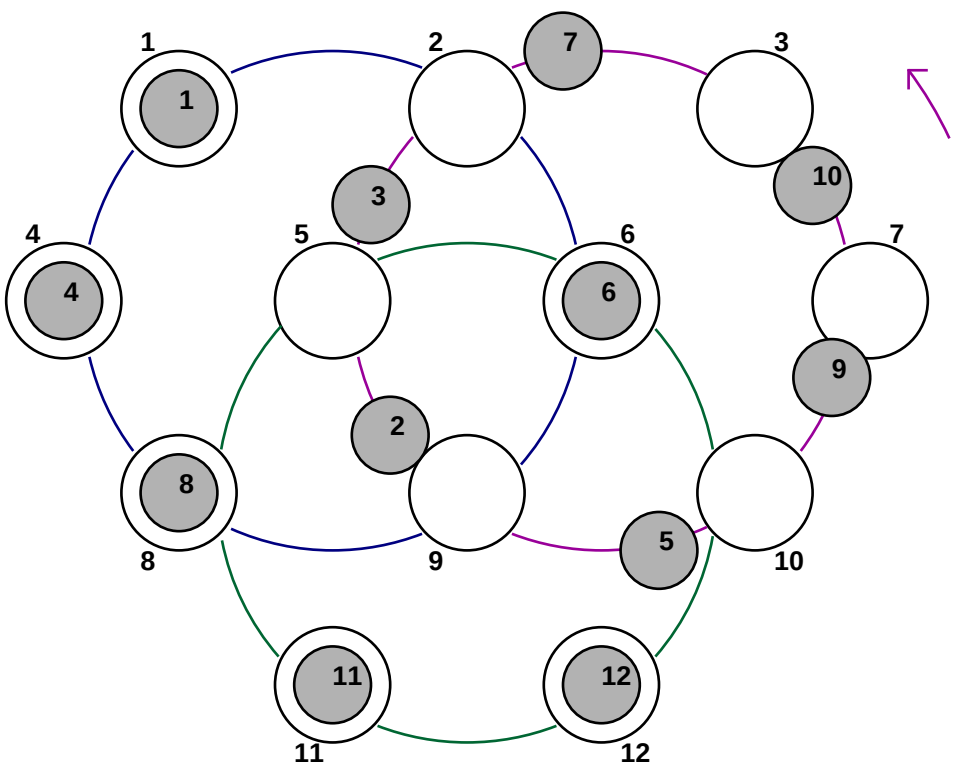

1
2
3
4
5
6
7
8
9
10
11
12

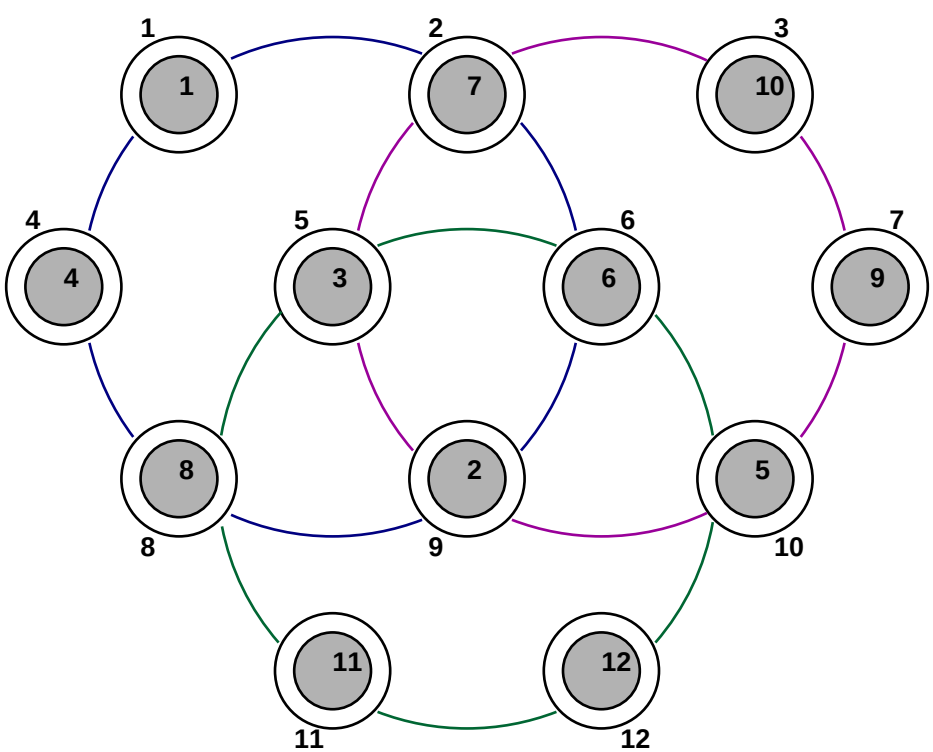

1
2
3
3
1
2
7
4
5
6
7
4
6
5
10
8
9
10
8
9
11
12
11
12

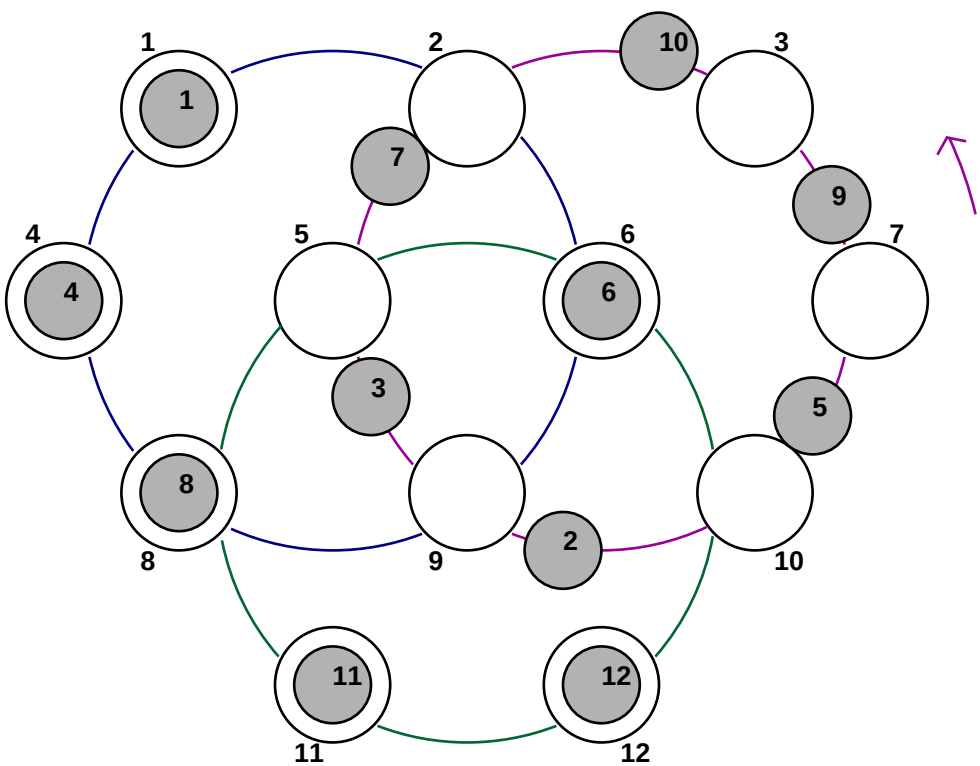

1
2
3
3
1
2
7
4
5
6
7
4
6
10
5
8
9
10
8
9
11
12
11
12

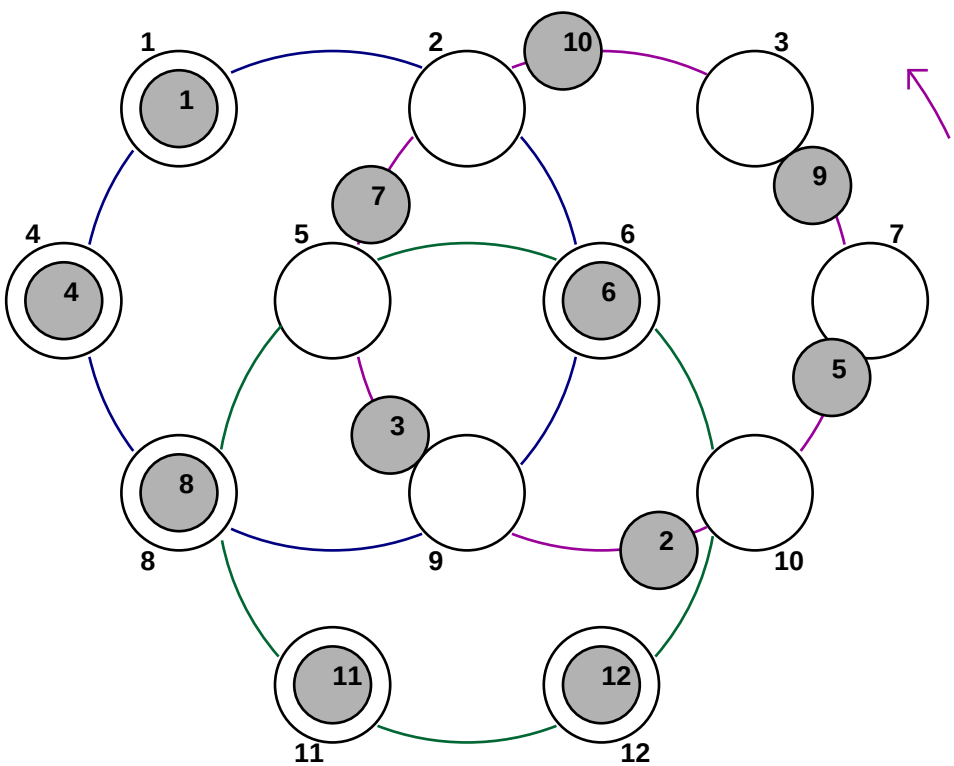

1
2
3
1
3
7
4
5
6
7
4
2
6
10
8
5
9
8
9
10
11
12
11
12

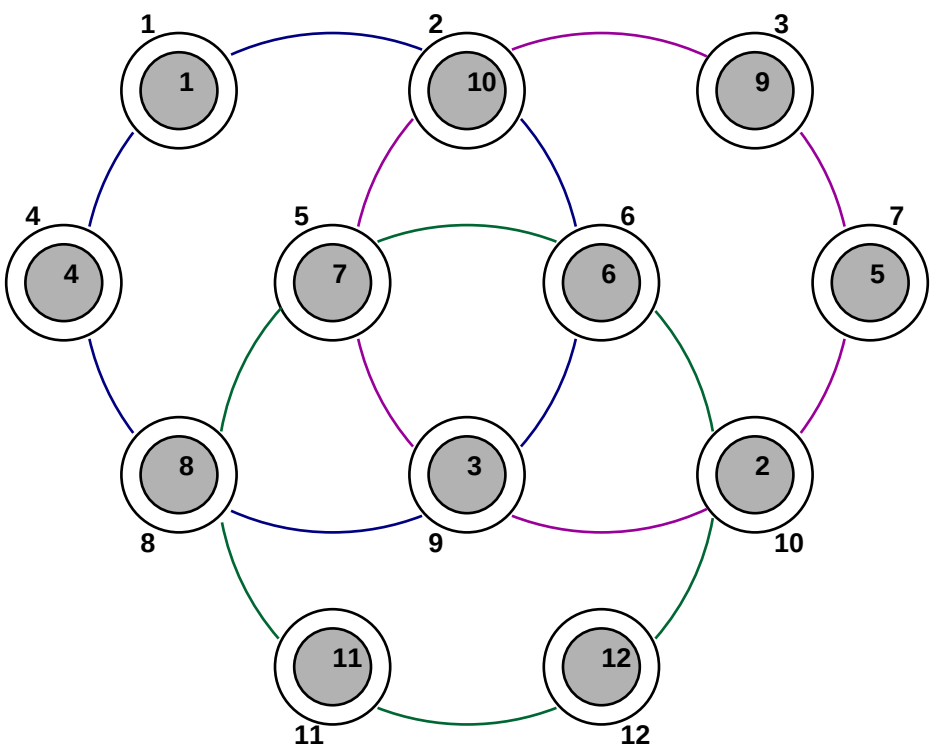

1
2
7
3
1
3
10
4
5
6
7
4
6
2
9
8
9
5
10
8
11
12
11
12

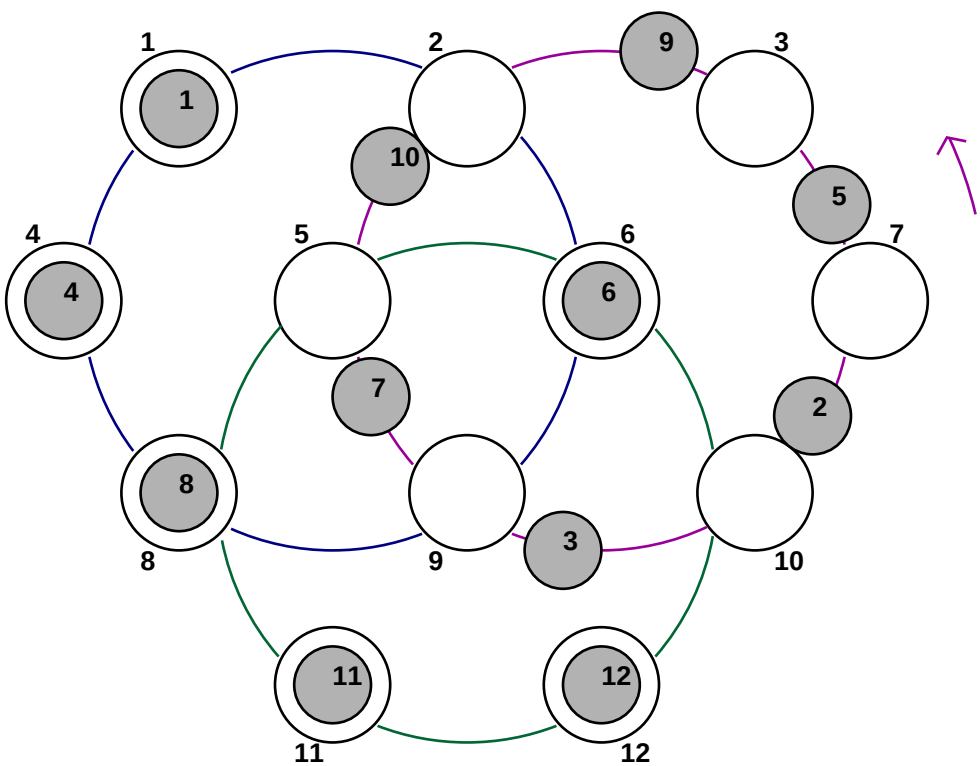

1
2
7
3
1
10
3
4
5
6
7
4
6
9
2
8
8
9
5
10
11
12
11
12

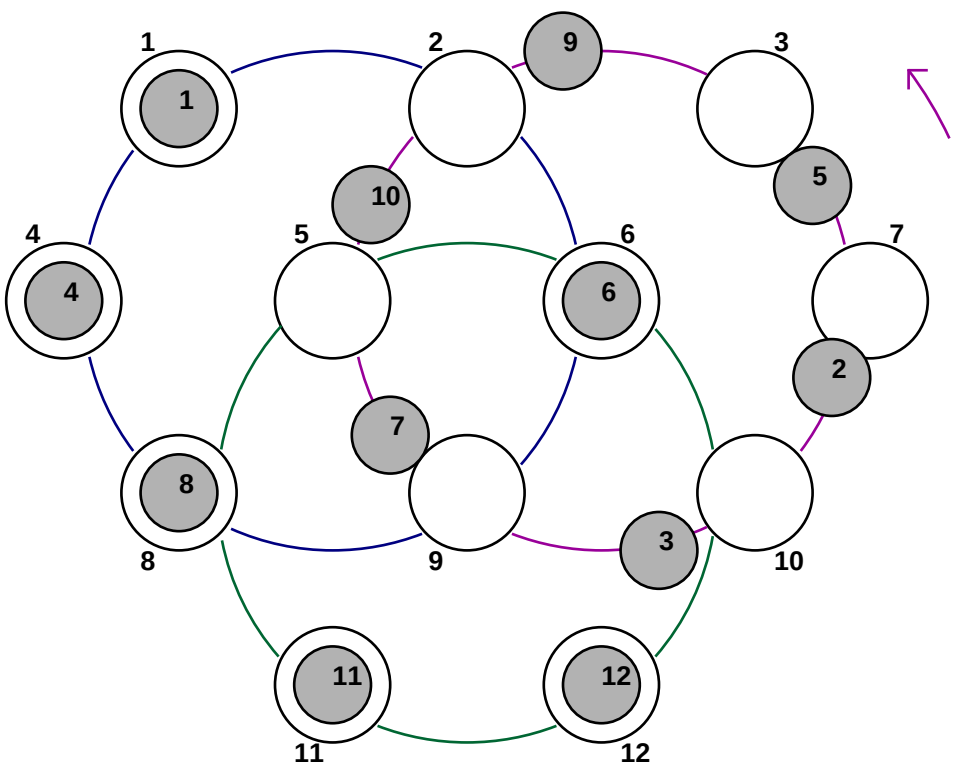

1
2
3
1
7
10
4
5
6
7
4
3
6
9
8
2
5
8
9
10
11
12
11
12

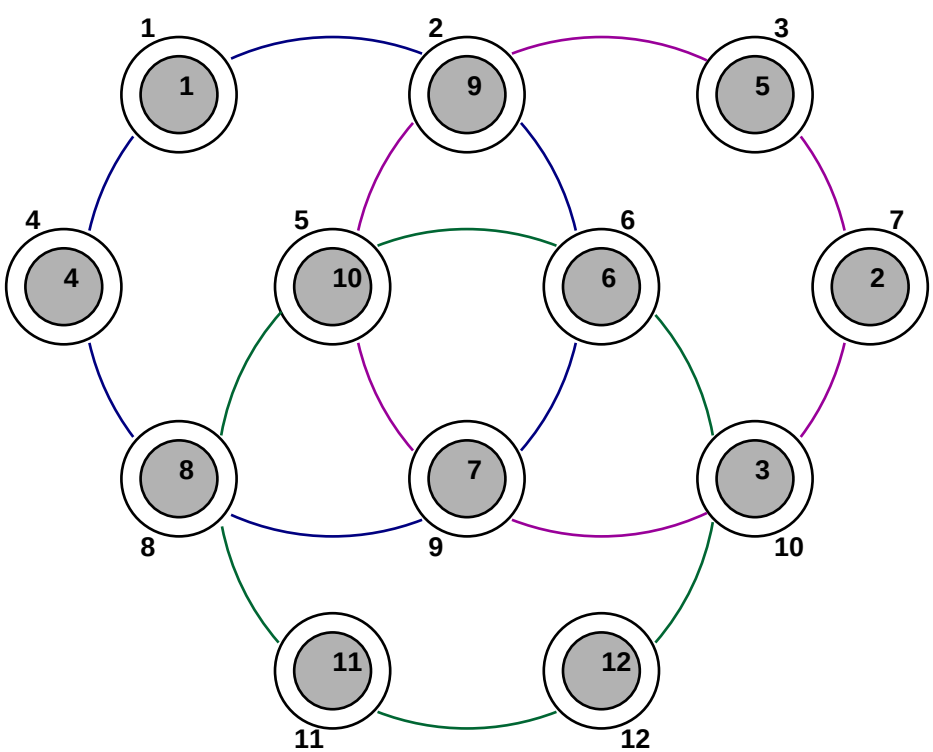

1
2
10
3
1
7
9
4
5
6
7
4
6
3
5
8
8
9
2
10
11
12
11
12

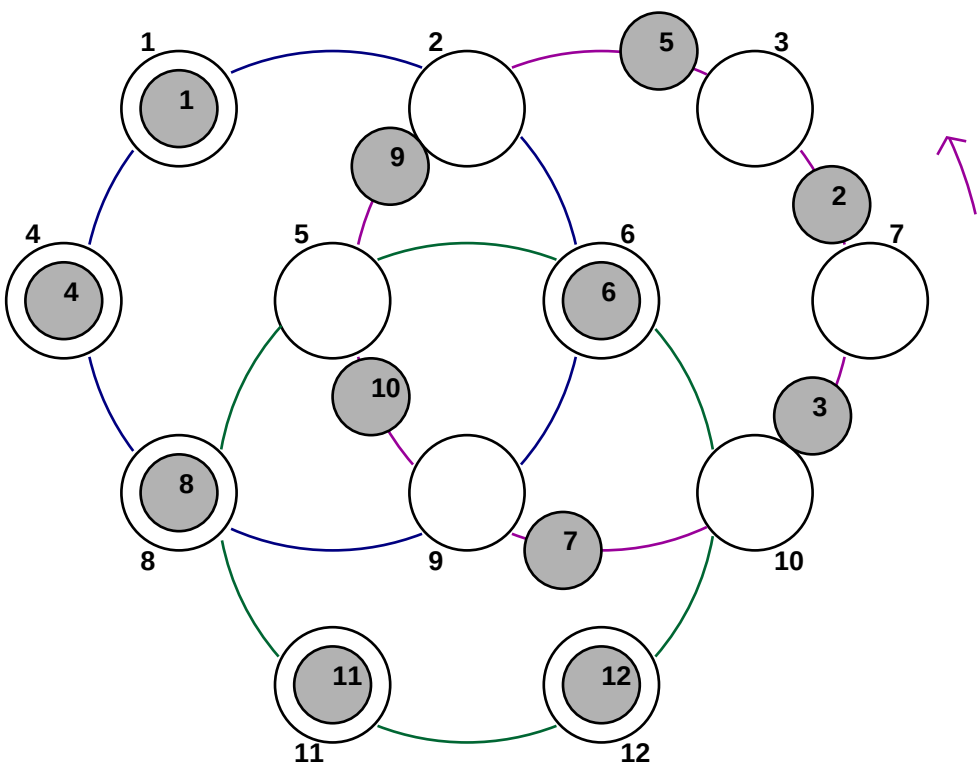

1
2
10
3
1
9
7
4
5
6
7
4
6
5
3
8
2
8
9
10
11
12
11
12

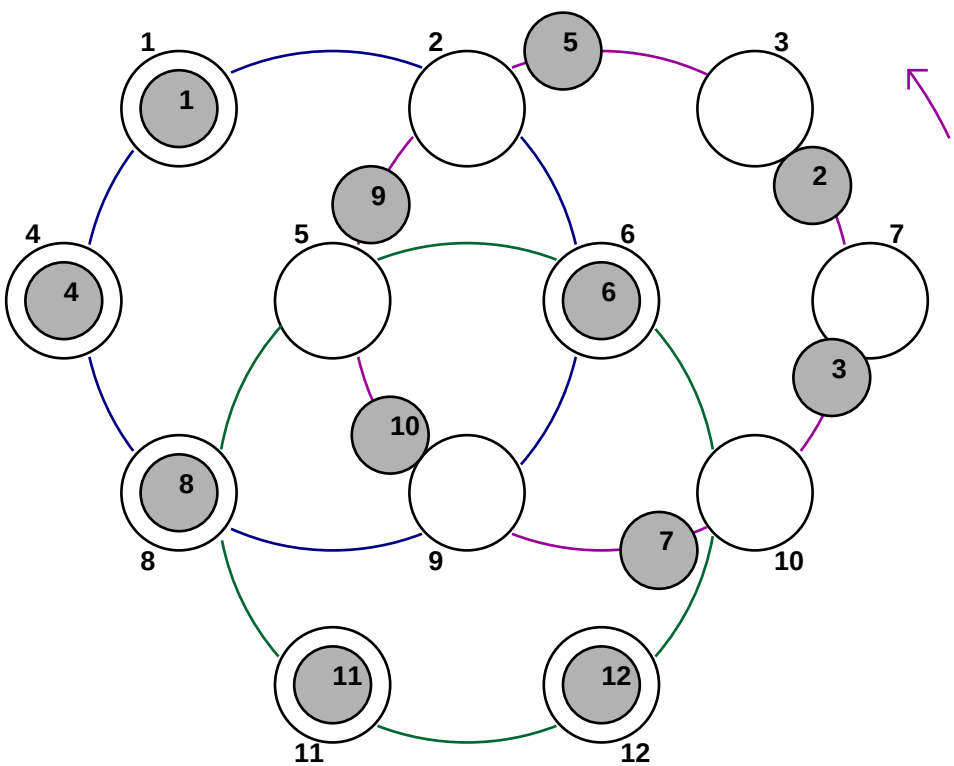

1
2
3
1
10
9
4
5
6
7
4
7
6
5
8
3
2
8
9
10
11
12
11
12

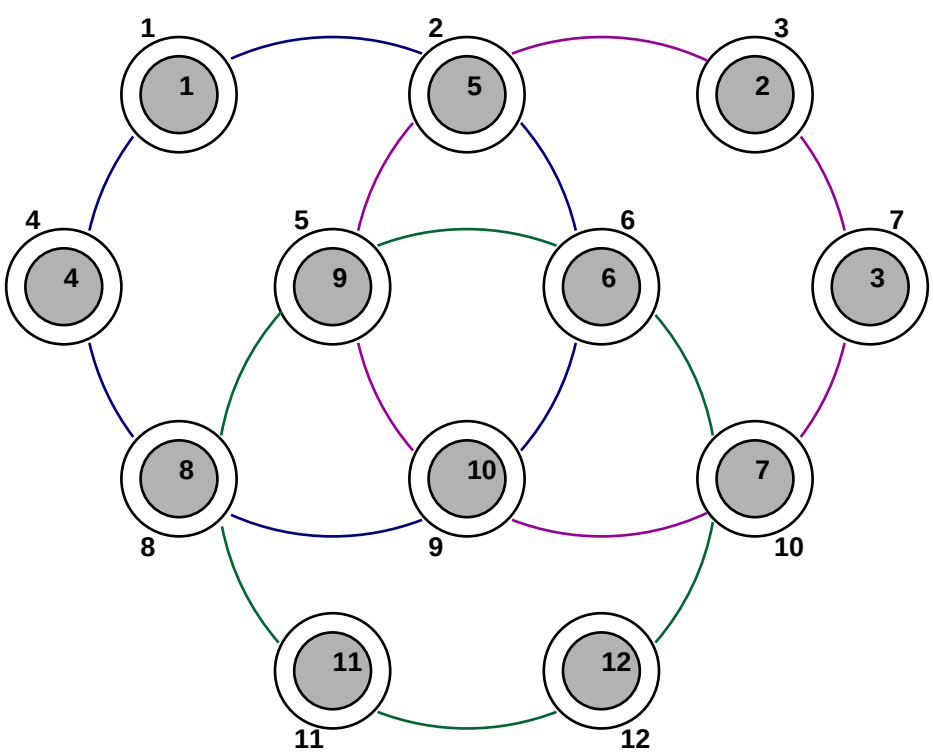

1
2
9
3
1
10
5
4
5
6
7
4
6
7
2
8
8
9
3
10
11
12
11
12

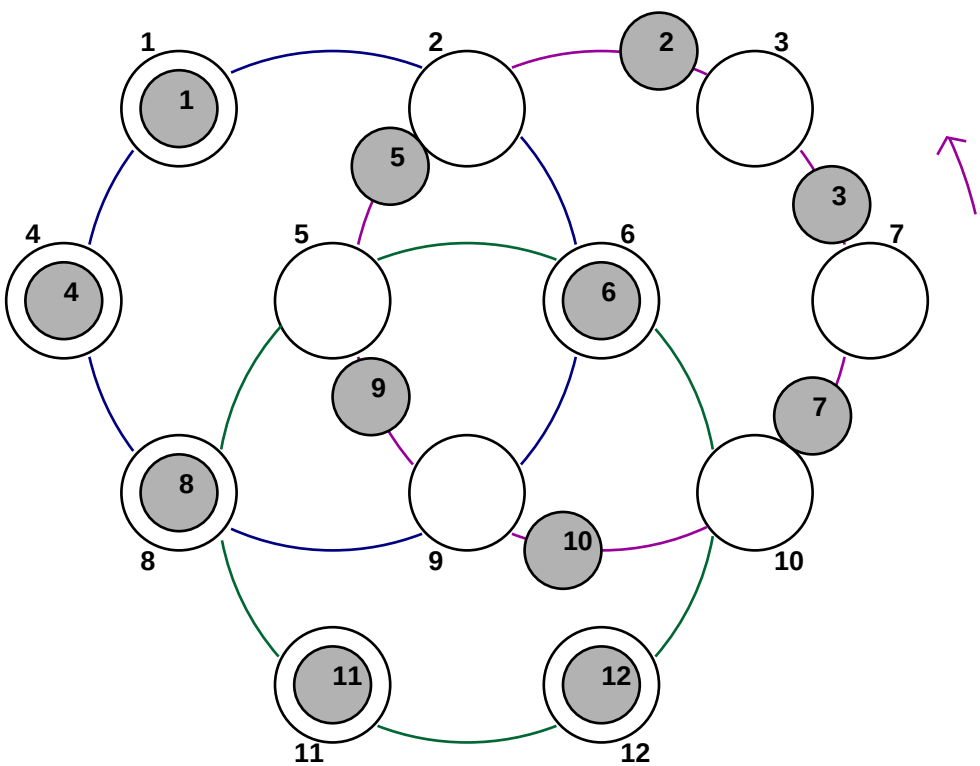

1
2
9
3
1
10
5
4
5
6
7
4
6
2
7
8
8
9
3
10
11
12
11
12

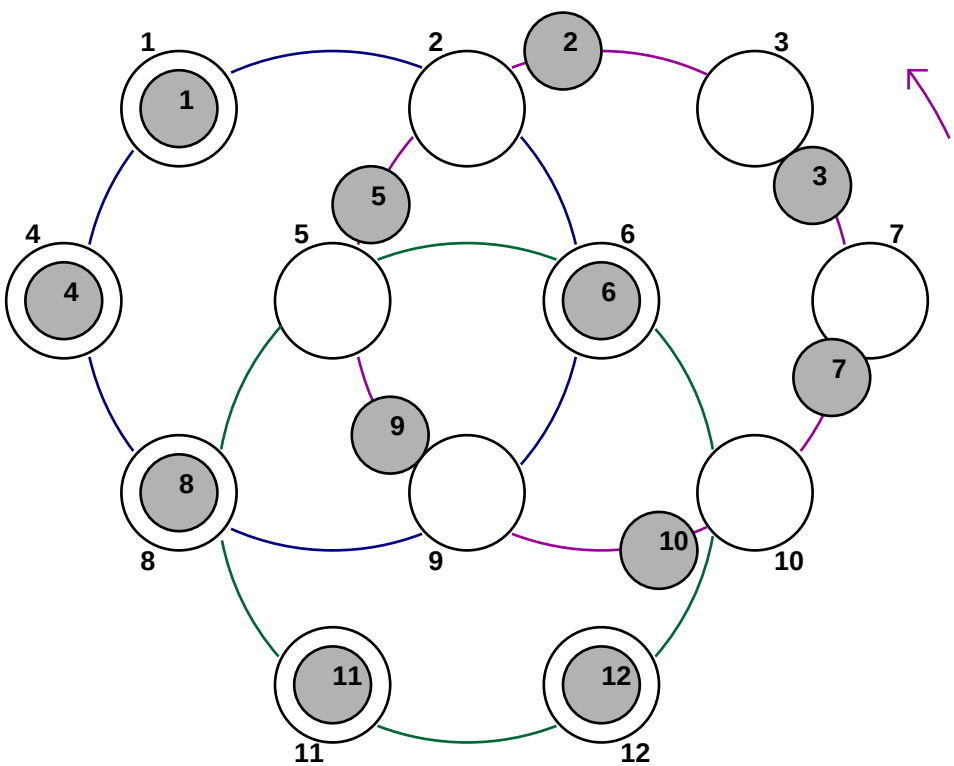

1
2
3
1
9
5
4
5
6
7
4
10
6
2
8
7
3
8
9
10
11
12
11
12

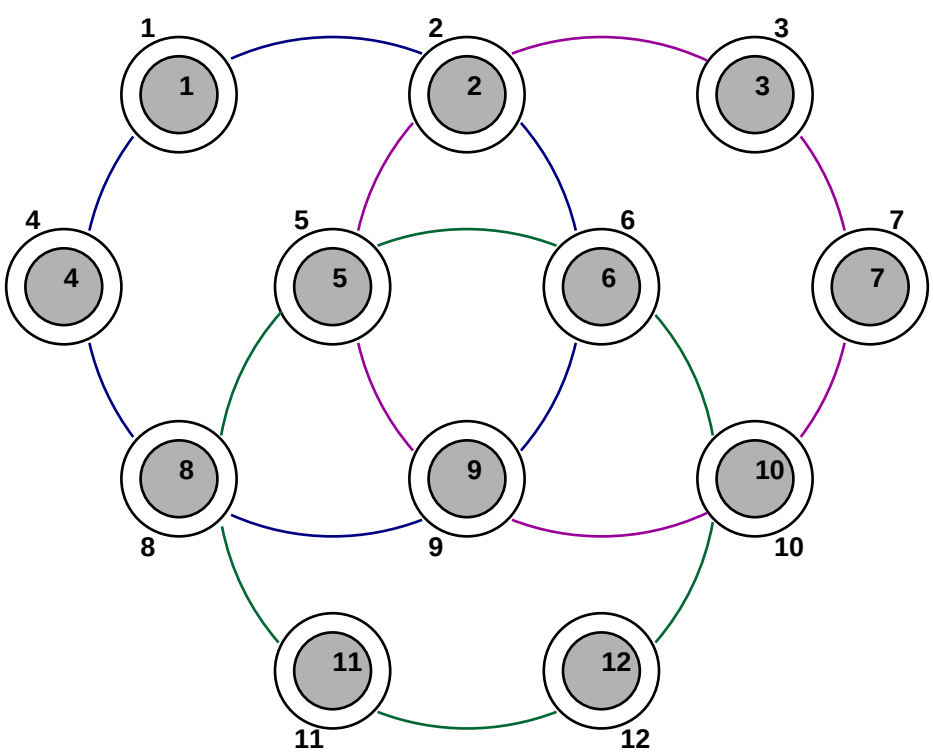

1
2
5
3
1
9
2
4
5
6
7
4
6
10
3
8
8
9
7
10
11
12
11
12


1
2
5
3
1
2
9
4
5
6
7
4
6
3
10
8
8
9
7
10
11
12
11
12

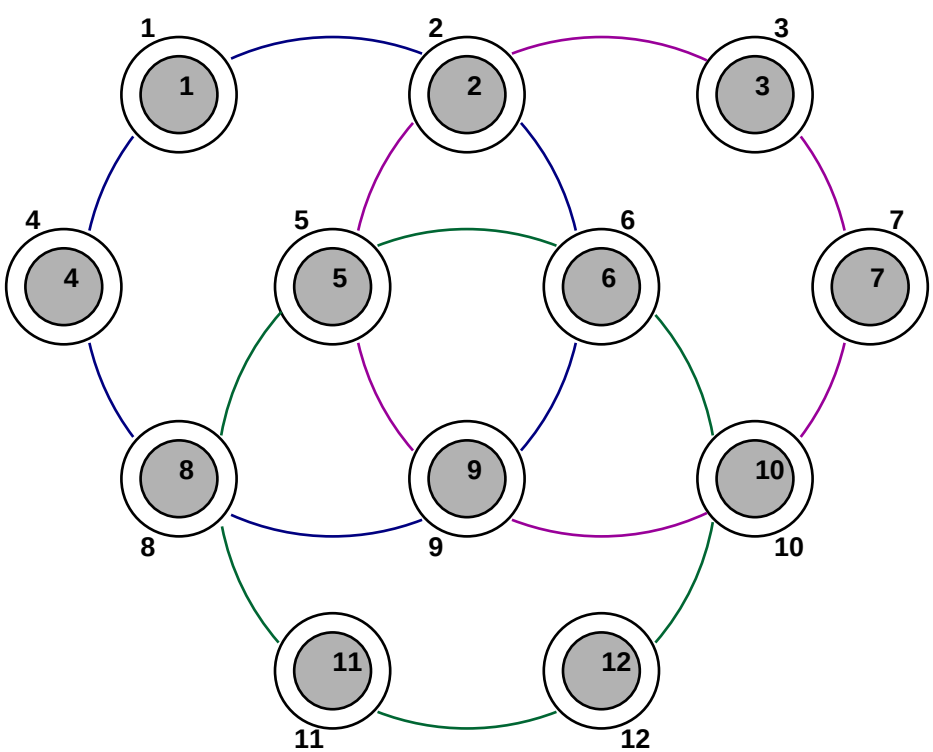

1
2
3
1
5
2
4
5
6
7
4
9
6
3
8
10
7
8
9
10
11
12
11
12

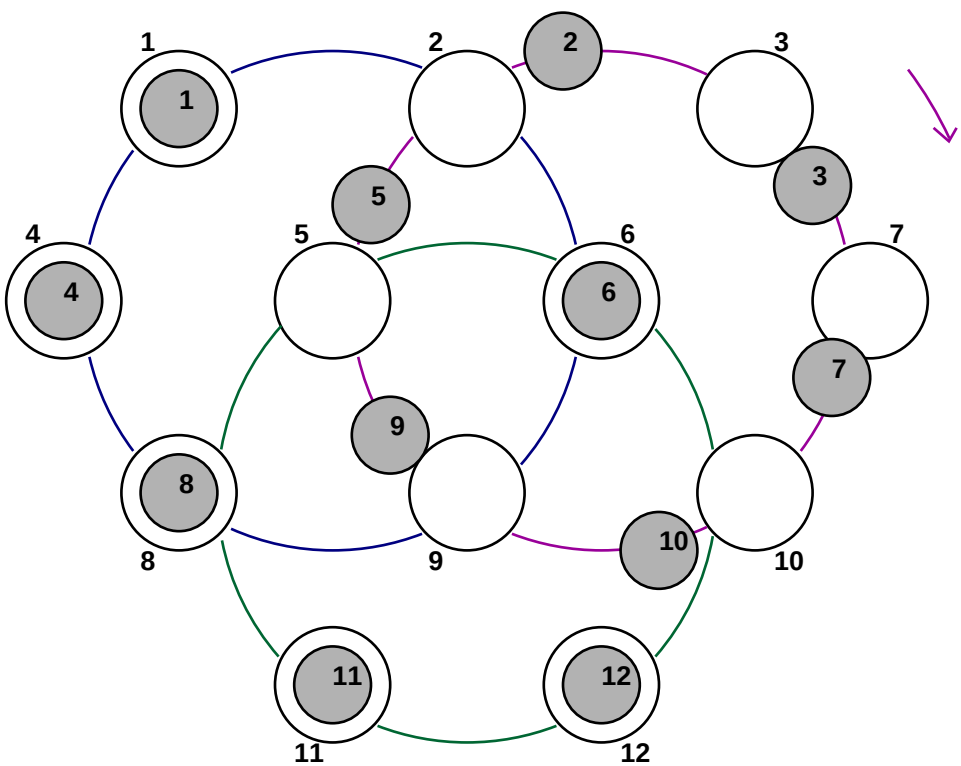

1
2
2
3
1
5
3
4
5
6
7
4
6
9
7
8
8
9
10
10
11
12
11
12

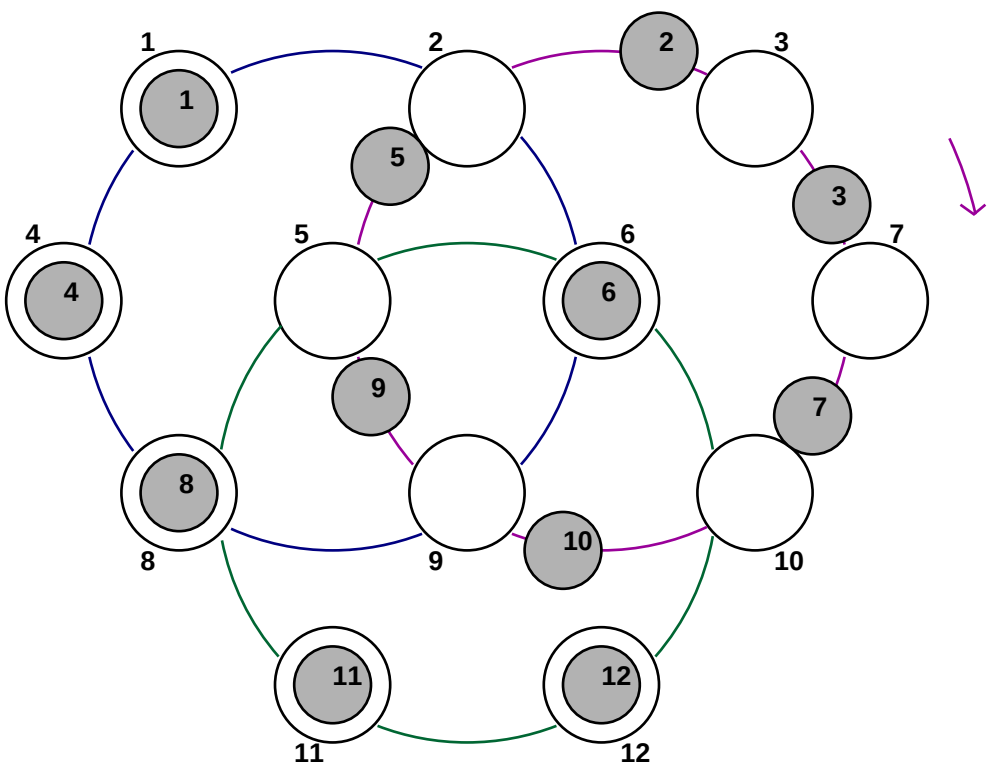

1
2
2
3
1
5
3
4
5
6
7
4
6
7
9
8
8
9
10
10
11
12
11
12

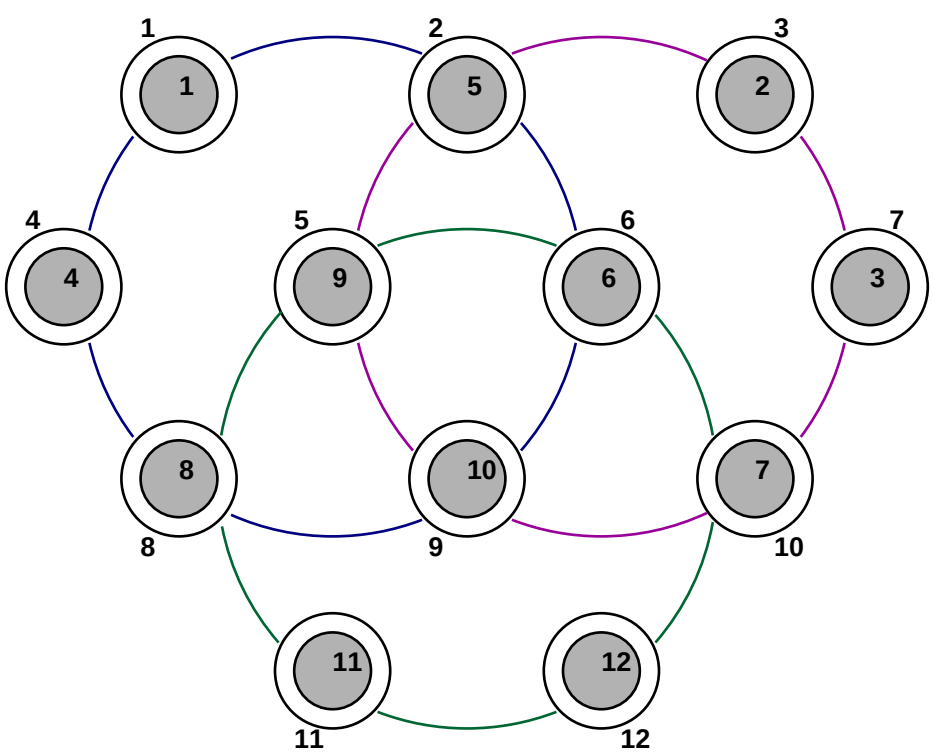

1
2
3
4
5
6
7
8
9
10
11
12

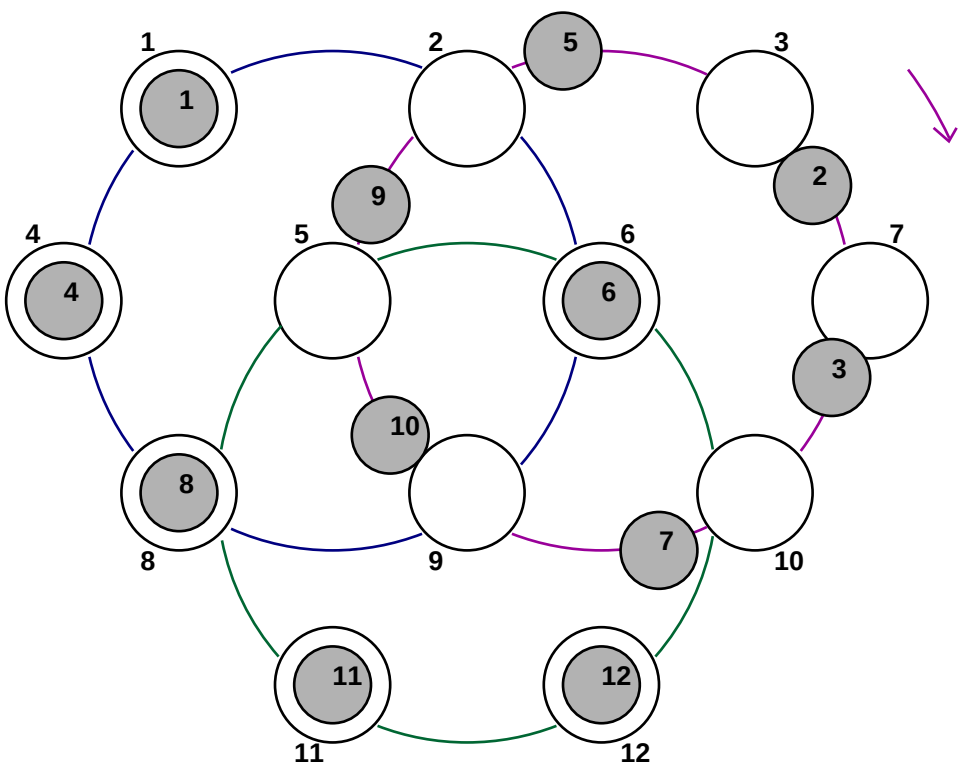
The forth set of permutations includes multiple clockwise moves of the purple circle.

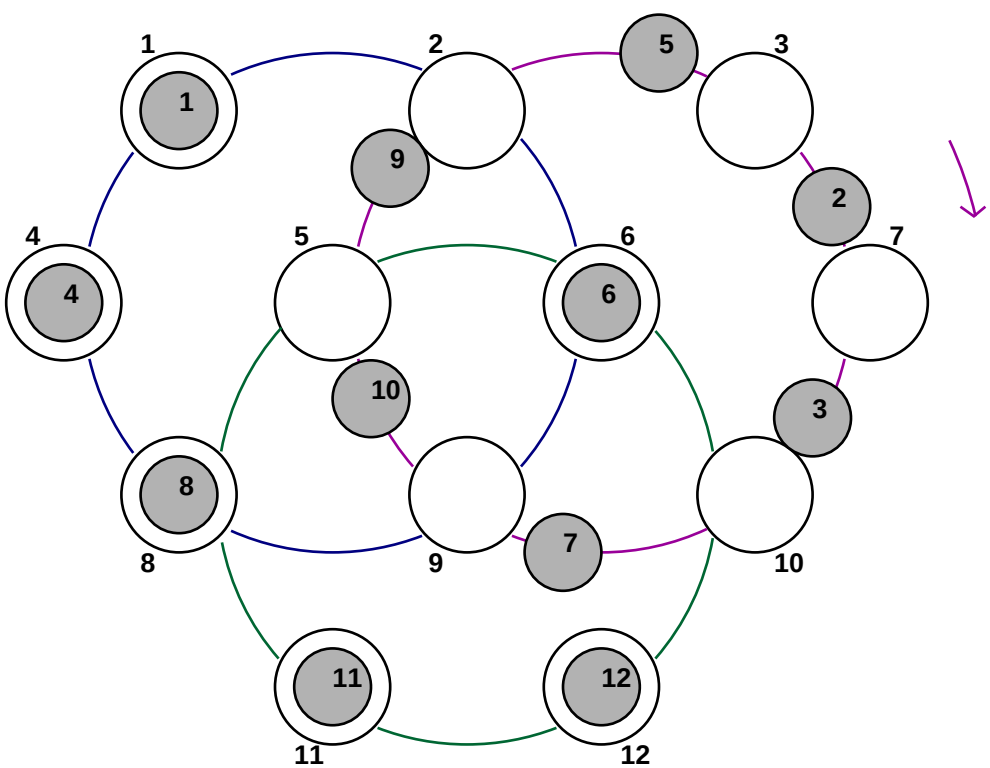

1
2
3
4
5
6
7
8
9
10
11
12

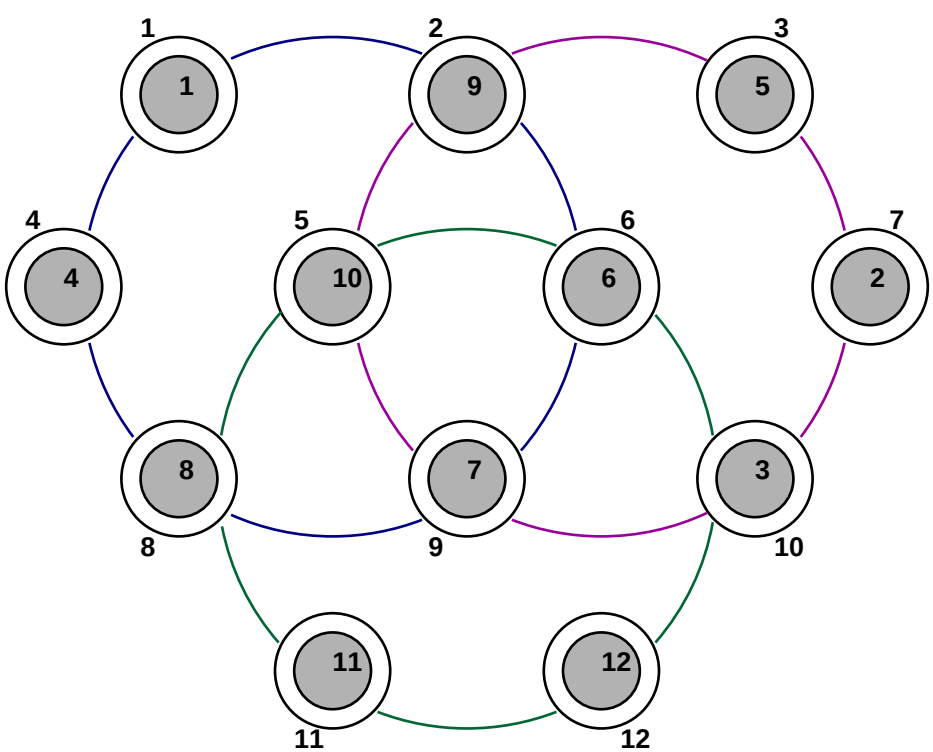

1
2
2
3
1
3
5
4
5
6
7
4
6
7
9
8
8
9
10
10
11
12
11
12

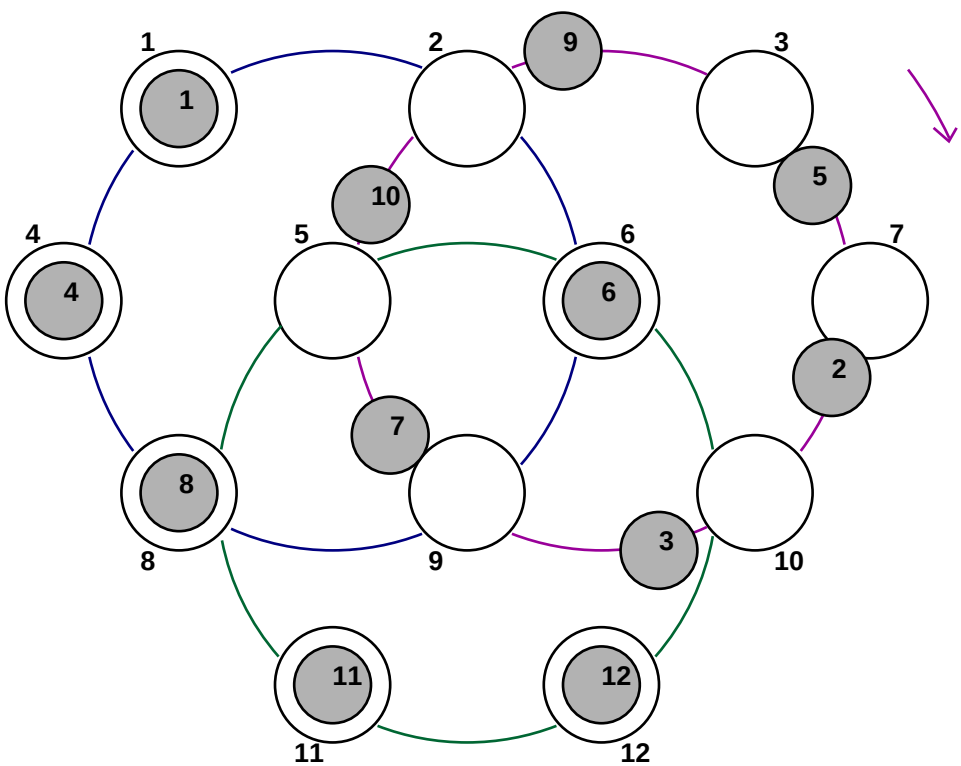

1
2
2
3
1
5
3
4
5
6
7
4
6
9
7
8
9
10
8
10
11
12
11
12

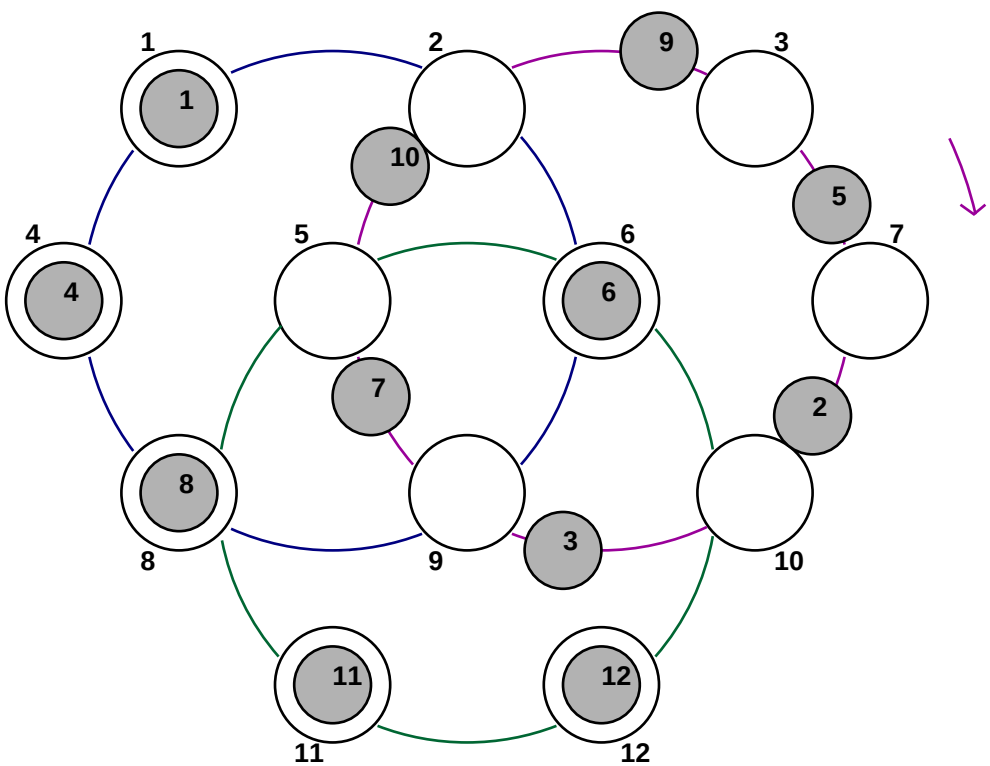

1
2
3
1
5
2
4
5
6
7
4
9
6
3
8
10
7
8
9
10
11
12
11
12

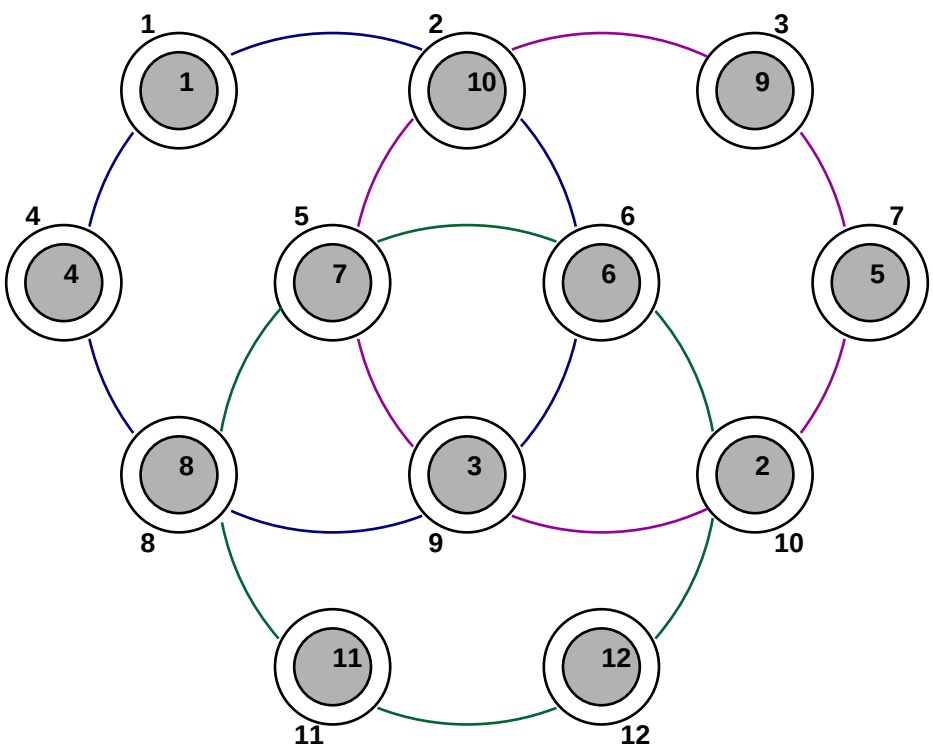

1
2
5
3
1
9
2
4
5
6
7
4
6
3
10
8
8
9
7
10
11
12
11
12

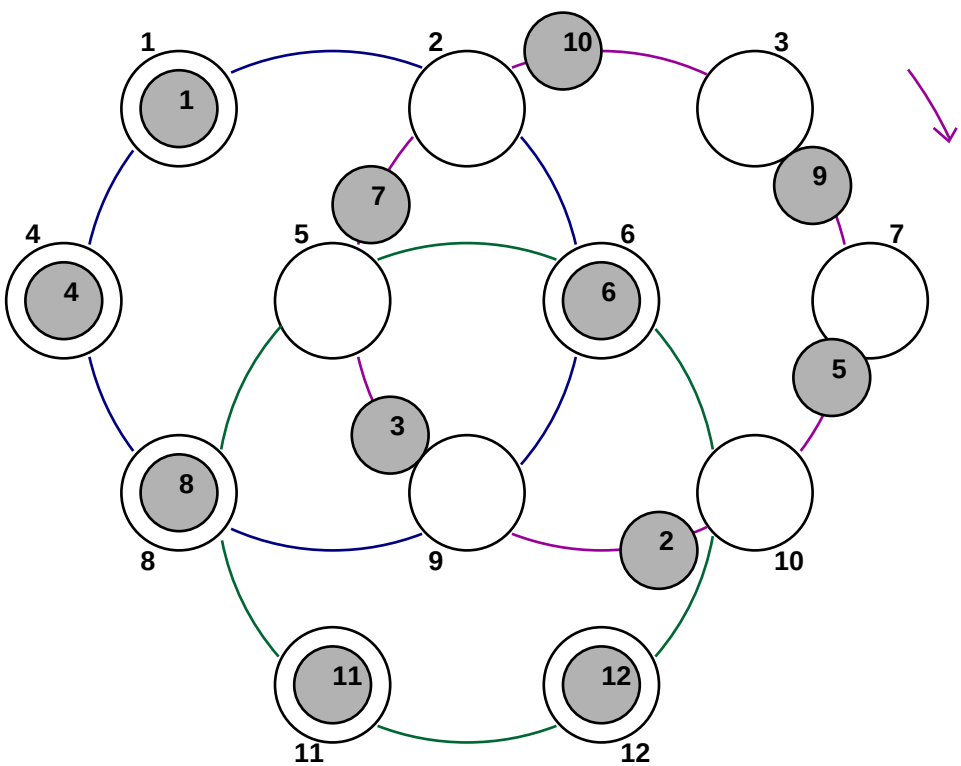

1
2
5
3
1
9
2
4
5
6
7
4
6
10
3
8
8
9
7
10
11
12
11
12

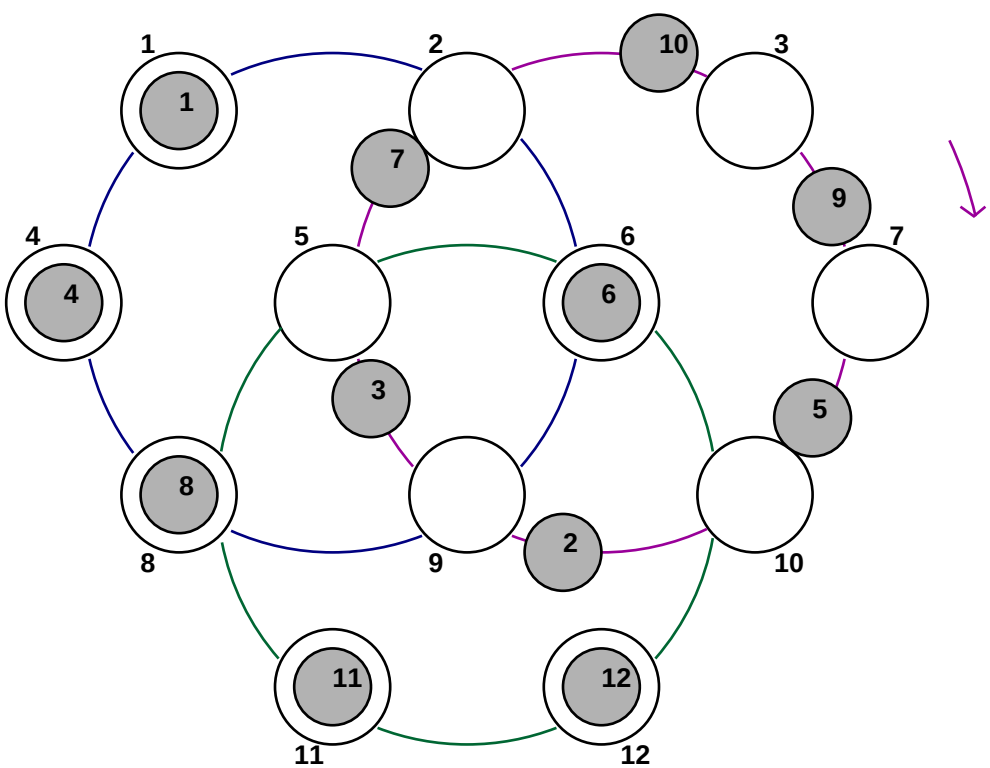

1
2
3
1
9
5
4
5
6
7
4
10
6
2
8
7
3
8
9
10
11
12
11
12

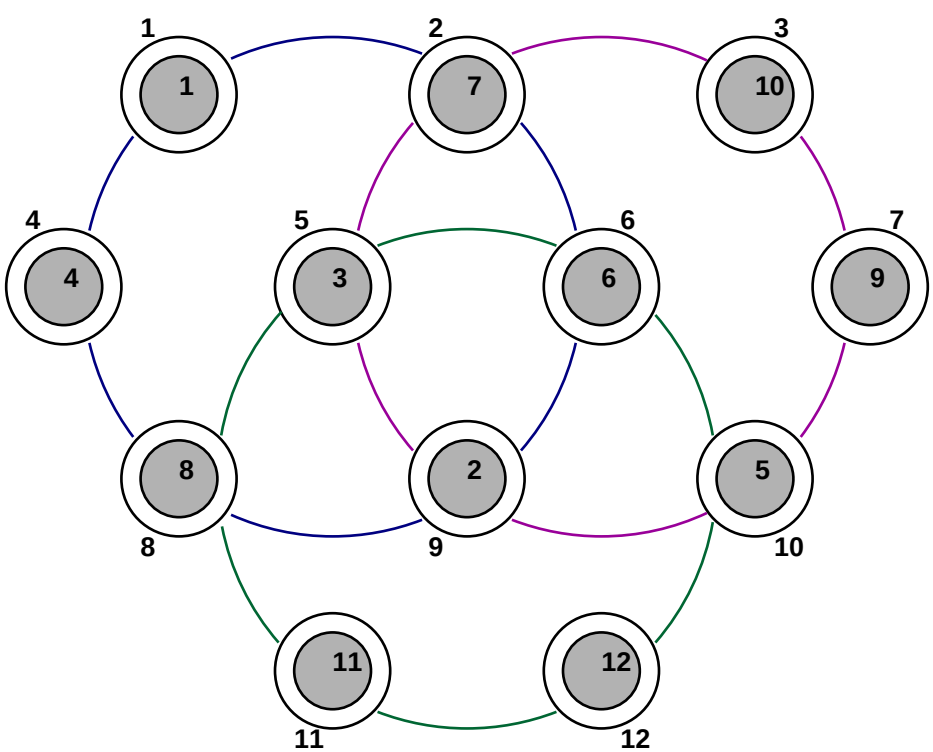

1
2
3
4
5
6
7
8
9
10
11
12

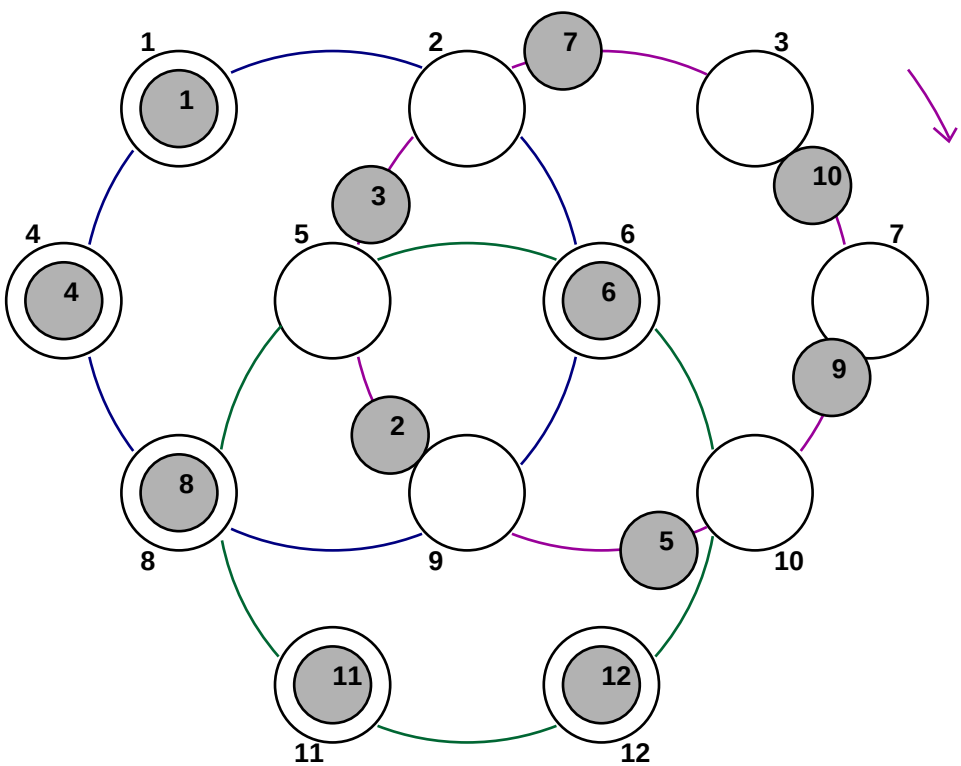

1
2
9
3
1
10
5
4
5
6
7
4
6
7
2
8
8
9
3
10
11
12
11
12

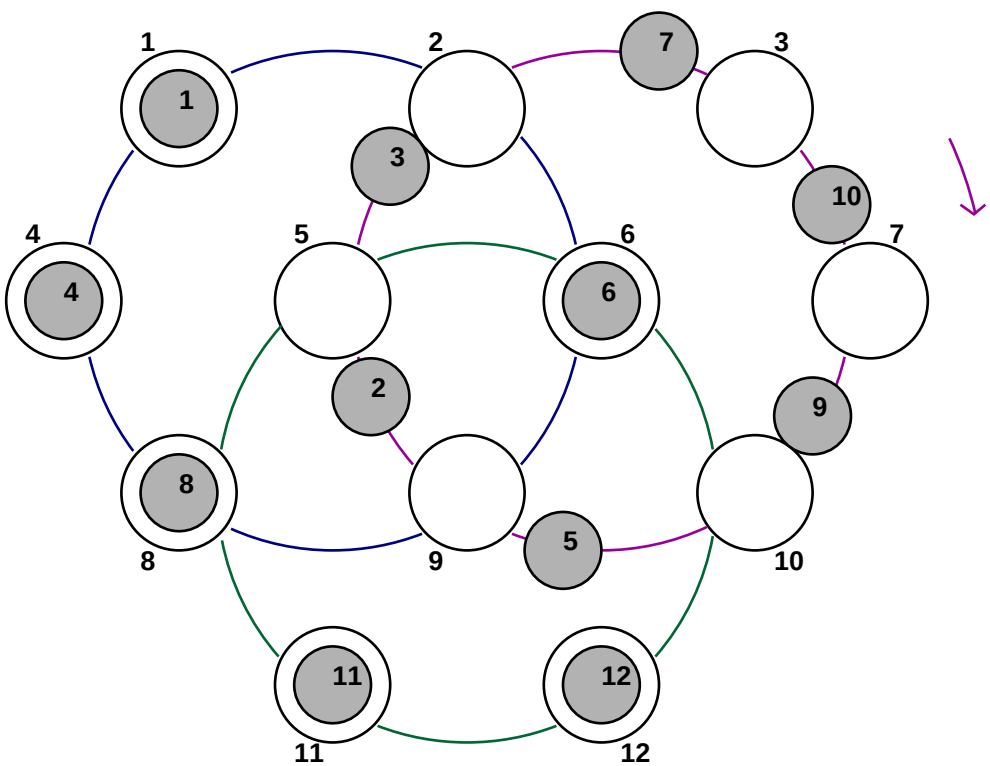

1
2
3
1
10
9
4
5
6
7
4
7
6
5
8
3
2
8
9
10
11
12
11
12

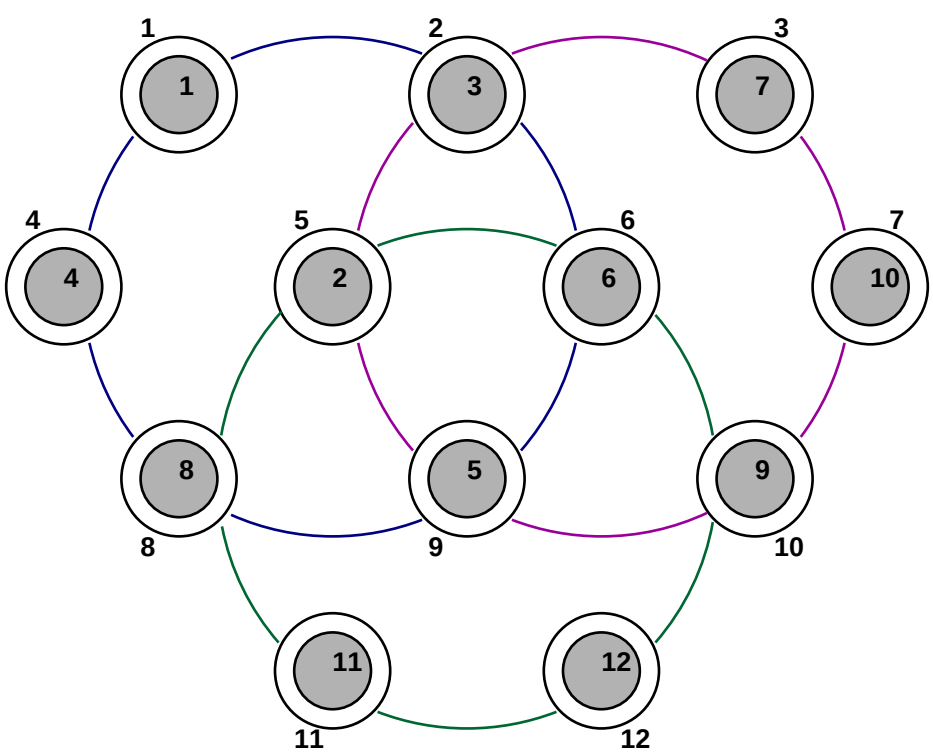

1
2
10
3
1
9
7
4
5
6
7
4
6
5
3
8
2
8
9
10
11
12
11
12

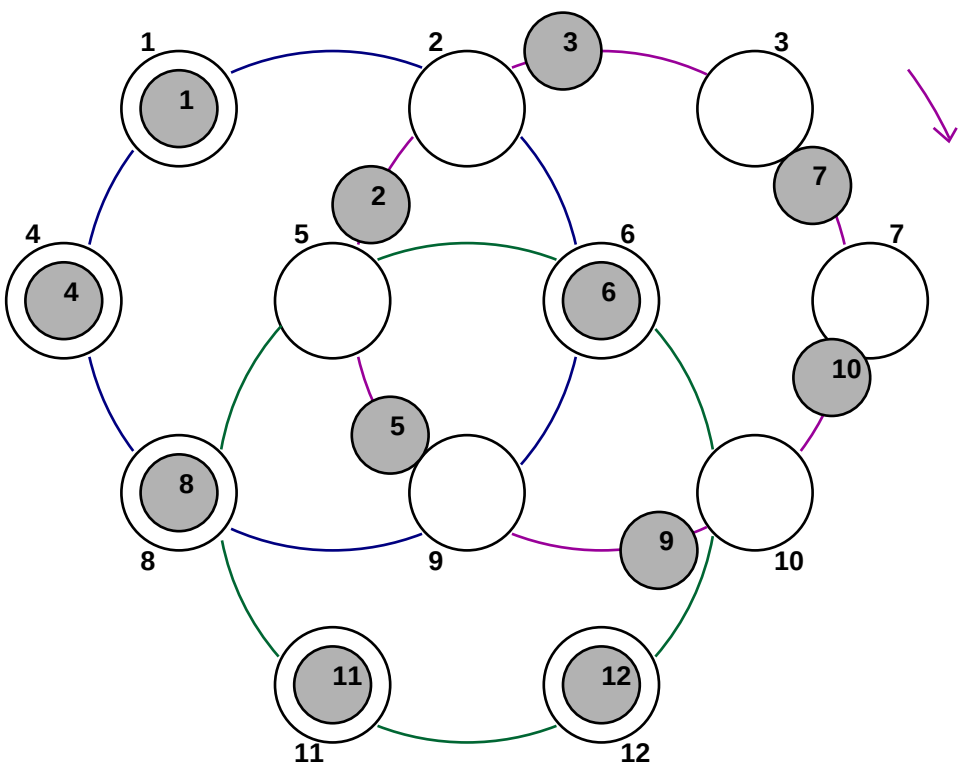

1
2
10
3
1
7
9
4
5
6
7
4
6
3
5
8
8
9
2
10
11
12
11
12

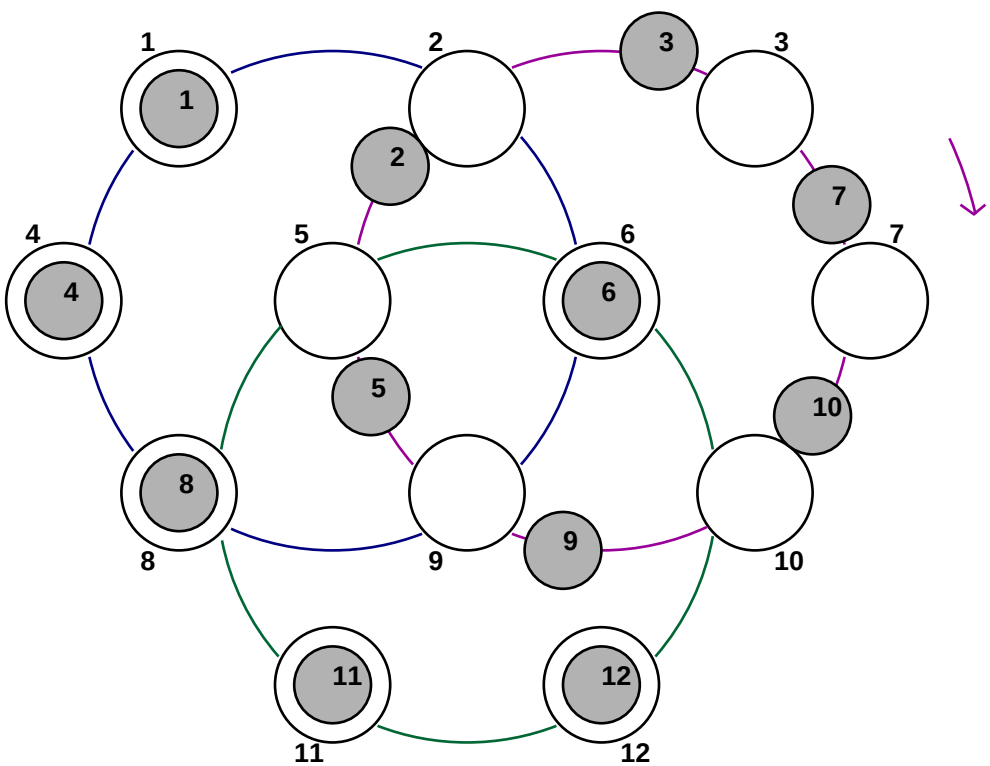

1
2
3
1
7
10
4
5
6
7
4
3
6
9
8
2
5
8
9
10
11
12
11
12

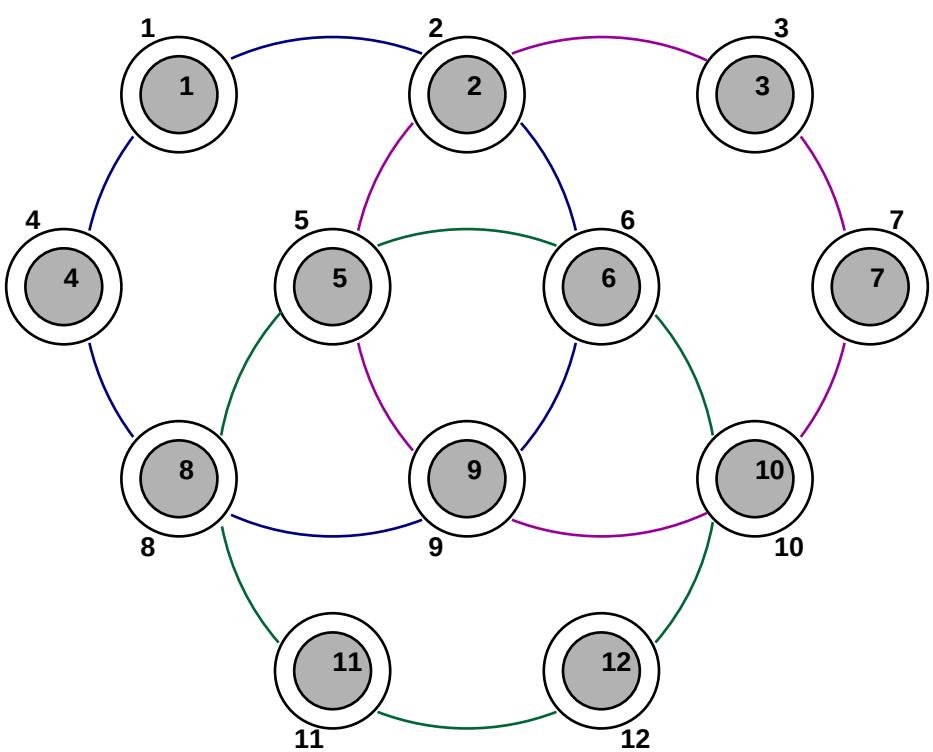

1
2
7
3
1
10
3
4
5
6
7
4
6
9
2
8
8
9
5
10
11
12
11
12


1
2
7
3
1
3
10
4
5
6
7
4
6
2
9
8
8
9
5
10
11
12
11
12

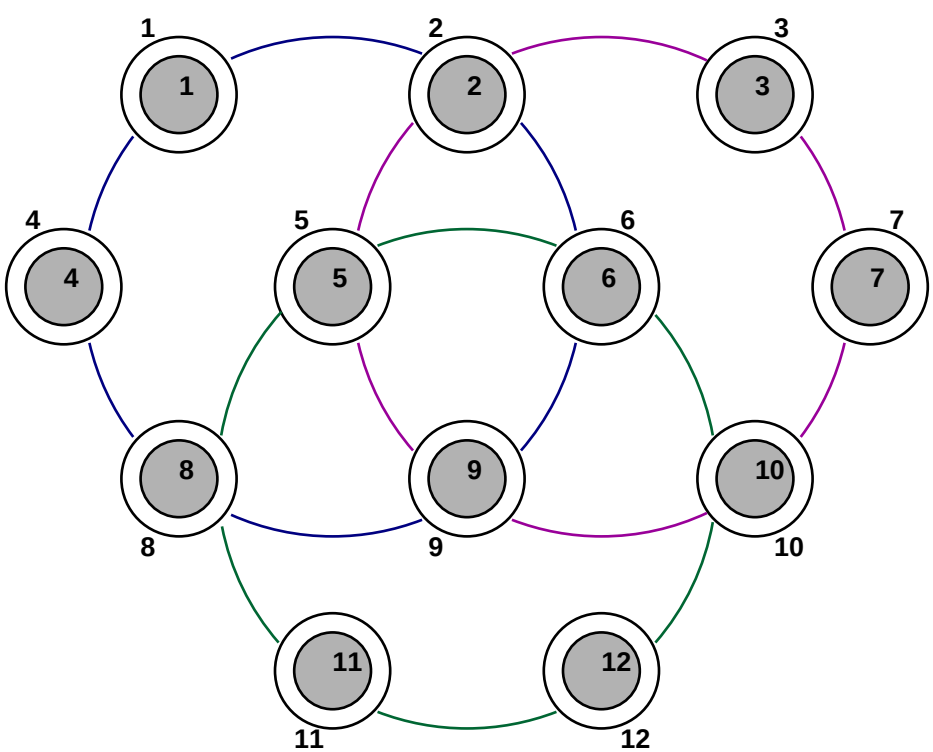

1
2
3
1
3
7
4
5
6
7
4
2
6
10
8
5
9
8
9
10
11
12
11
12

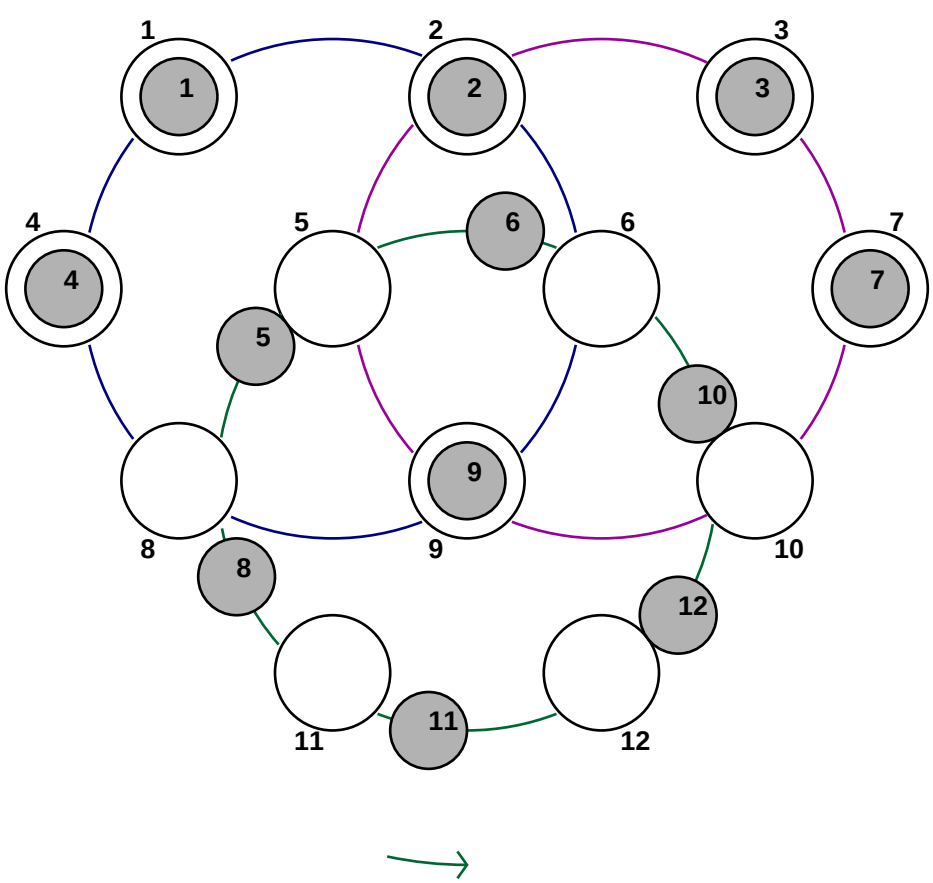

1
2
3
3
1
2
7
4
5
6
7
4
6
10
5
8
9
10
8
9
11
12
11
12

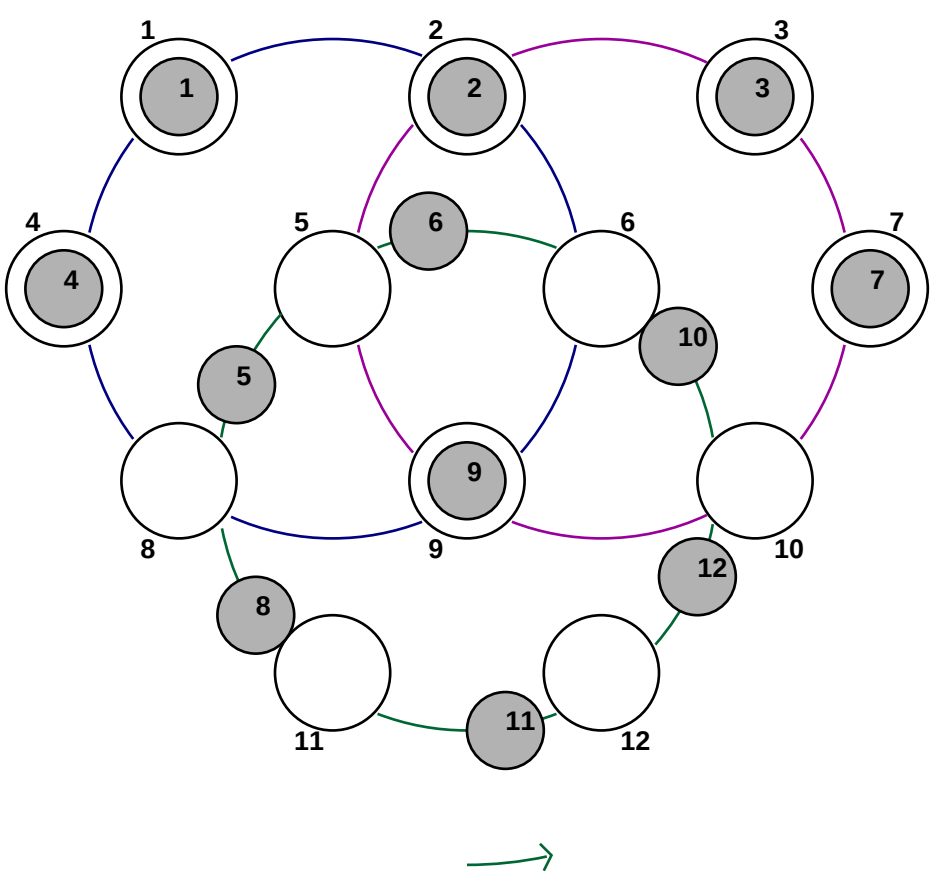

1
2
3
3
1
2
7
4
5
6
7
4
6
5
10
8
9
10
8
9
11
12
11
12

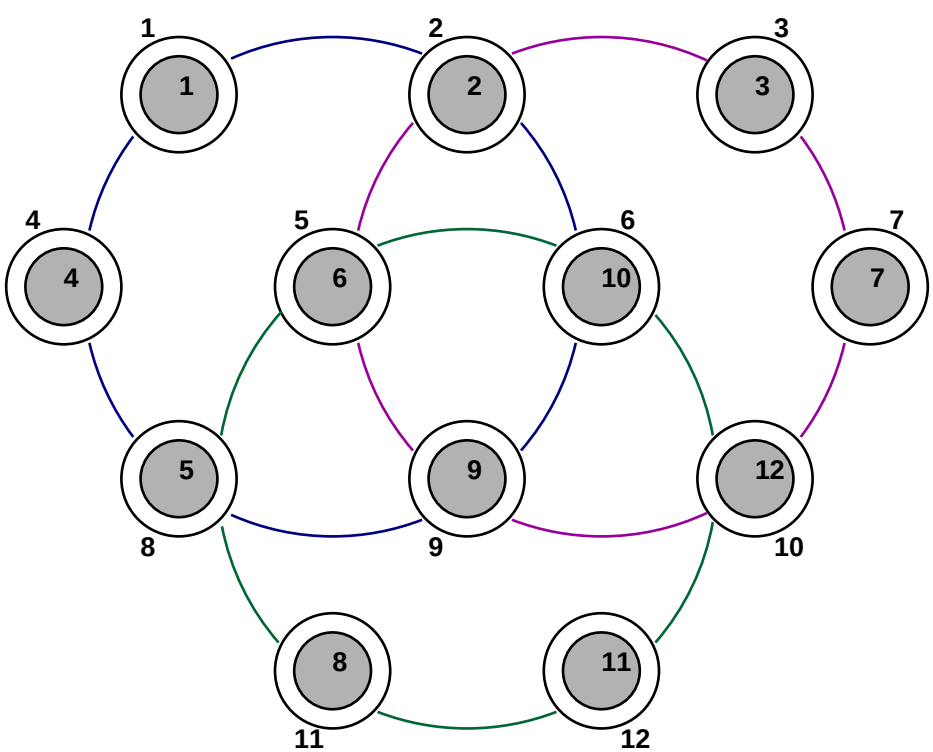

1
2
3
4
5
6
7
8
9
10
11
12

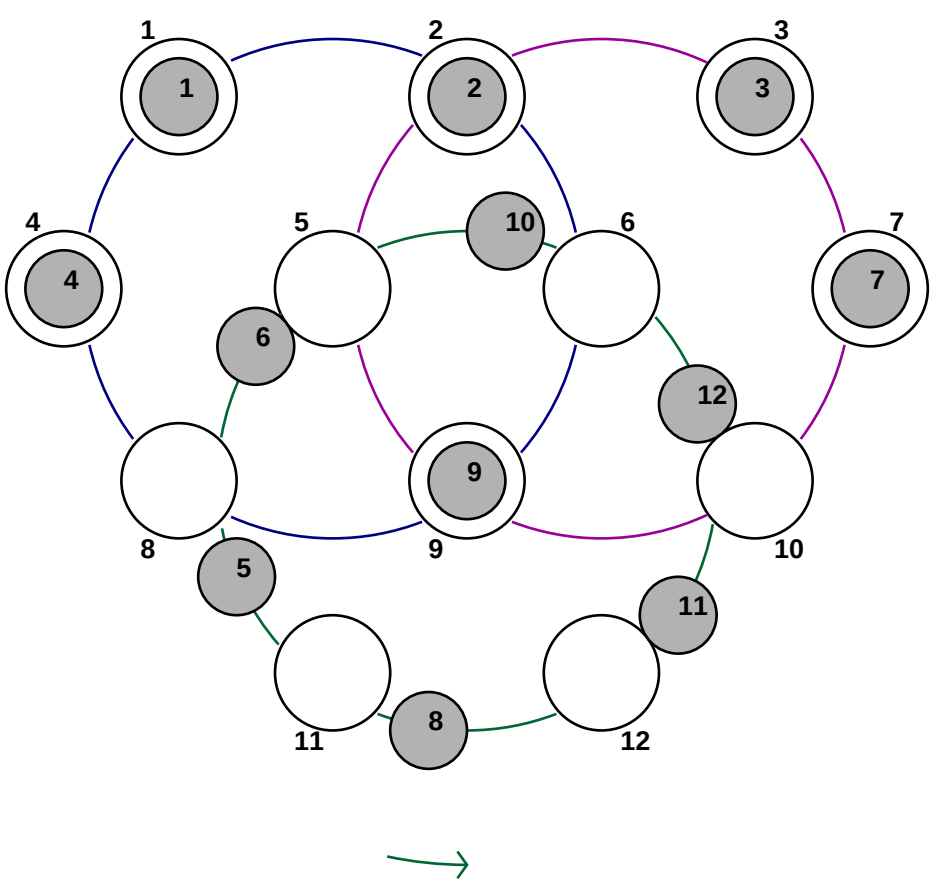
The fifth set of permutations includes multiple counter-clockwise moves of the lower circle which will be refer to as the green circle.

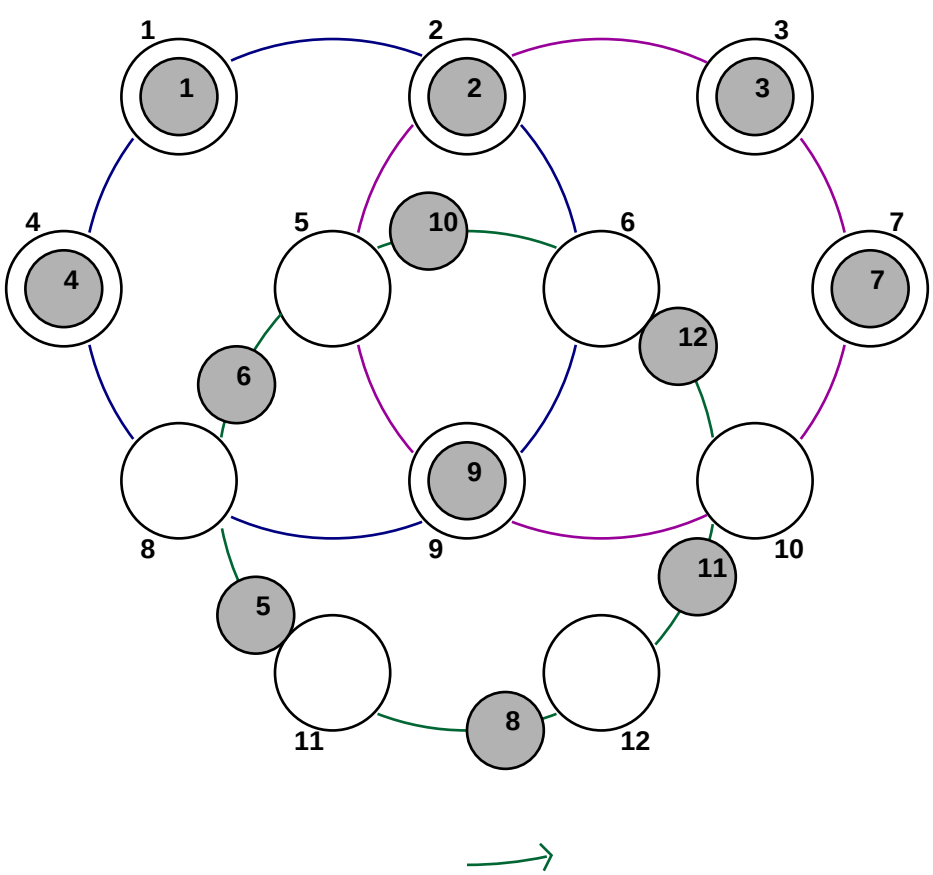

1
2
3
4
5
6
7
8
9
10
11
12

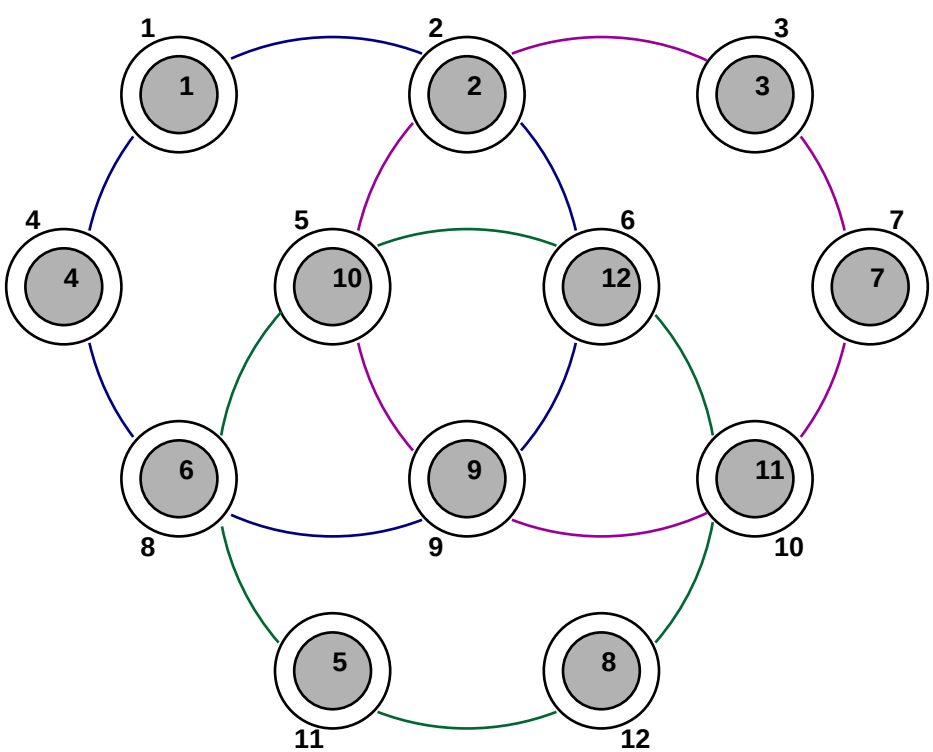

1
2
3
4
5
6
6
7
5
10
9
8
9
10
8
12
11
11
12

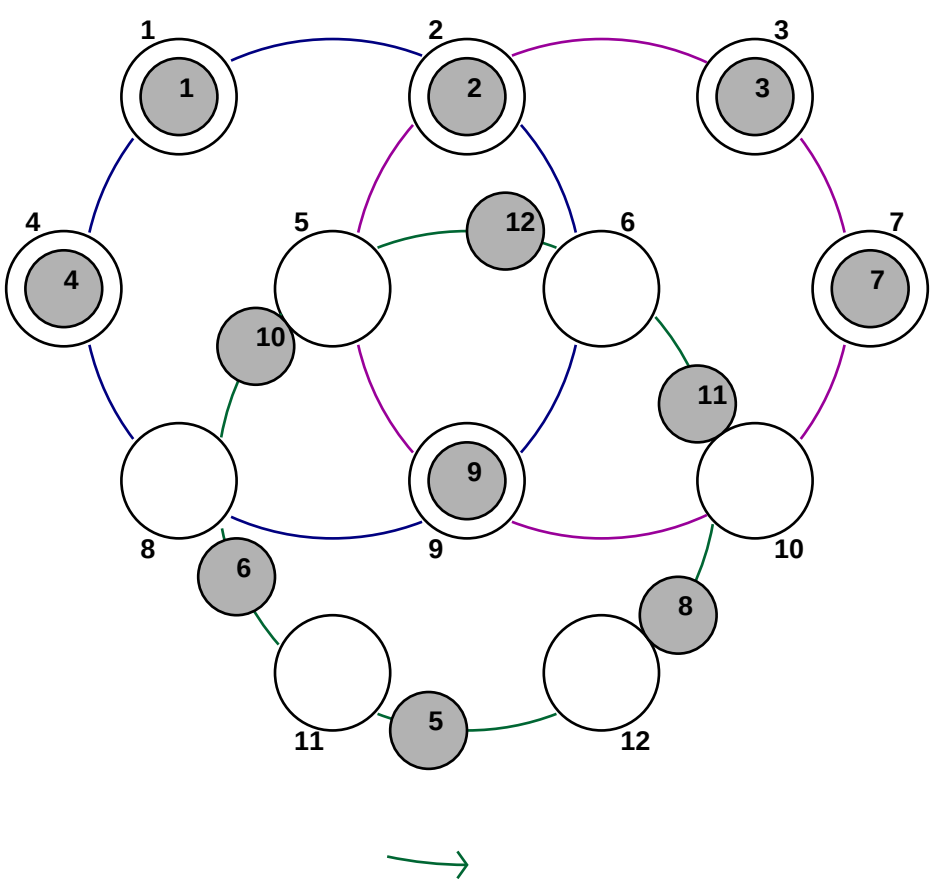

1
2
3
4
5
6
6
7
10
5
9
8
9
10
12
8
11
11
12

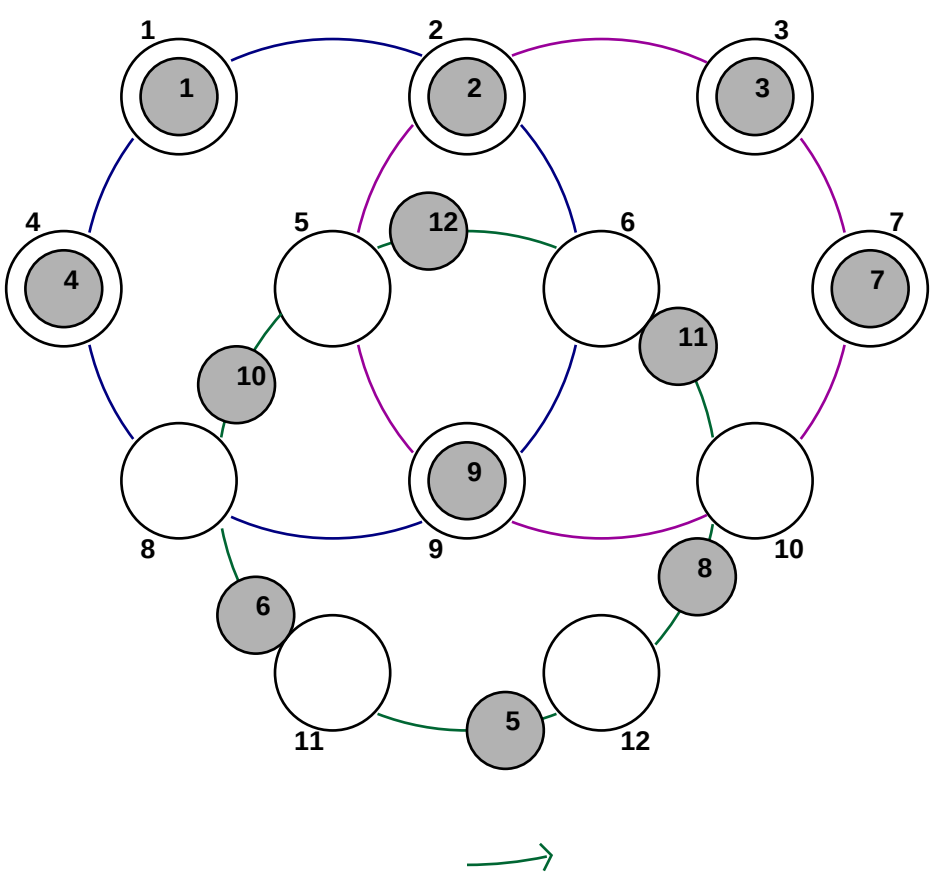

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
6
10
7
5
9
12
8
11

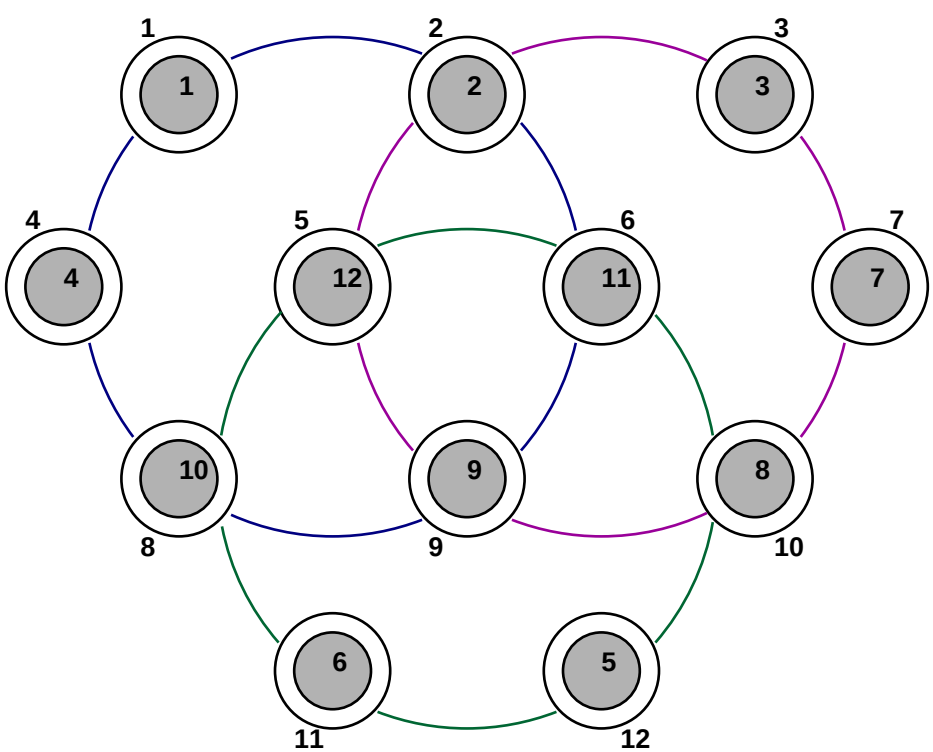

1
2
3
4
5
10
6
7
6
12
9
8
9
10
5
11
8
11
12

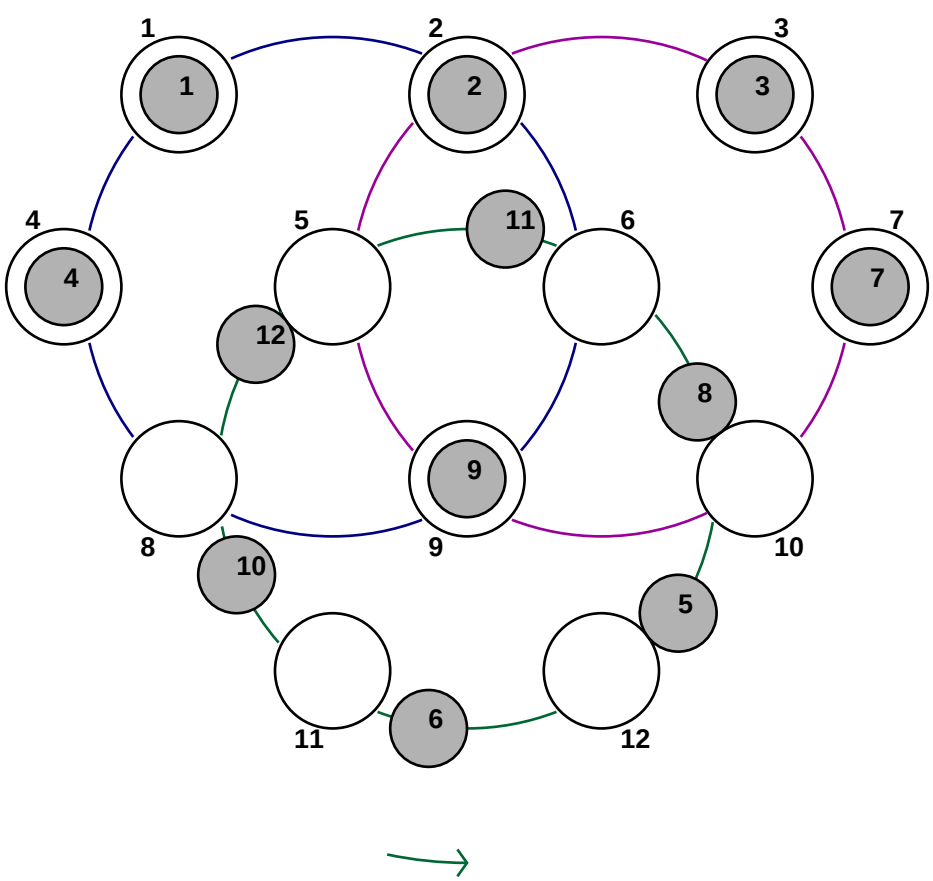

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
10
7
12
6
9
5
11
8

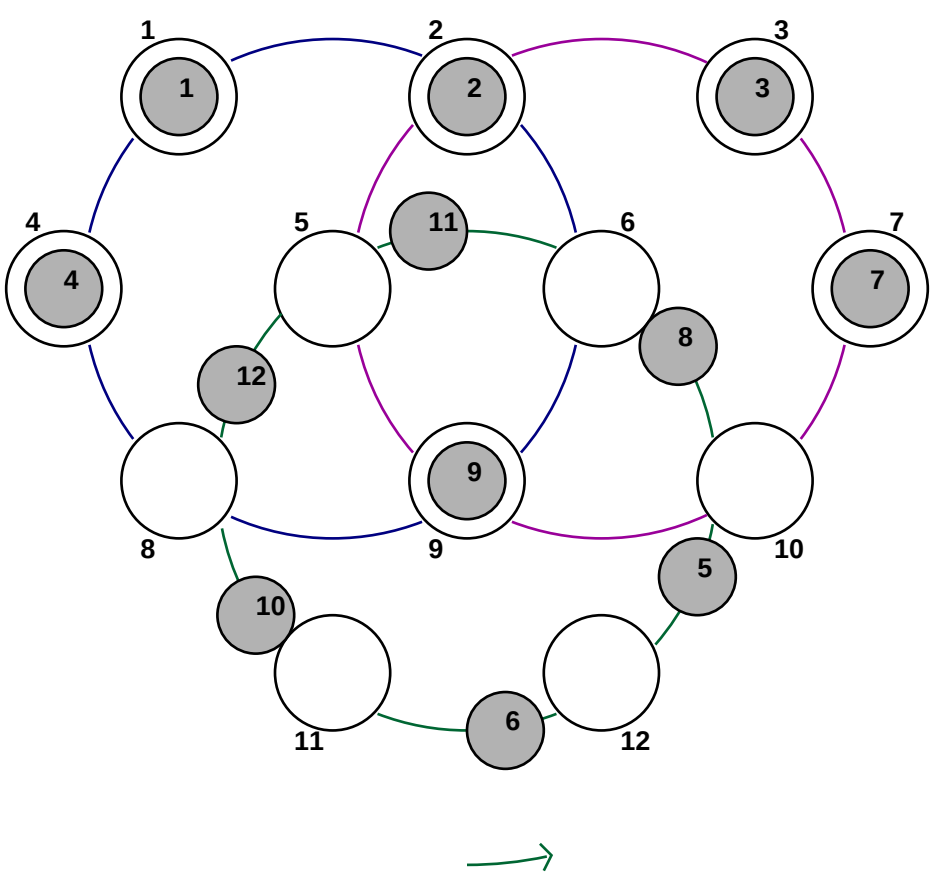

1
1
2
2
3
3
4
4
5
10
6
12
7
7
6
8
9
9
11
10
5
11
8
12

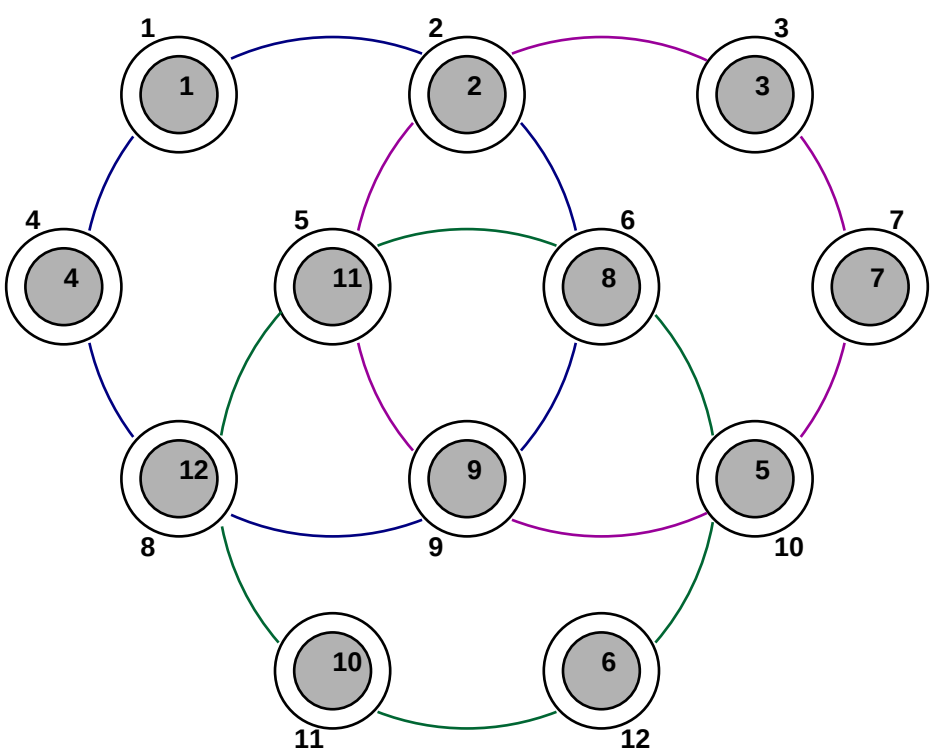

1
2
3
4
5
12
6
7
10
11
9
8
6
10
8
11
5
12

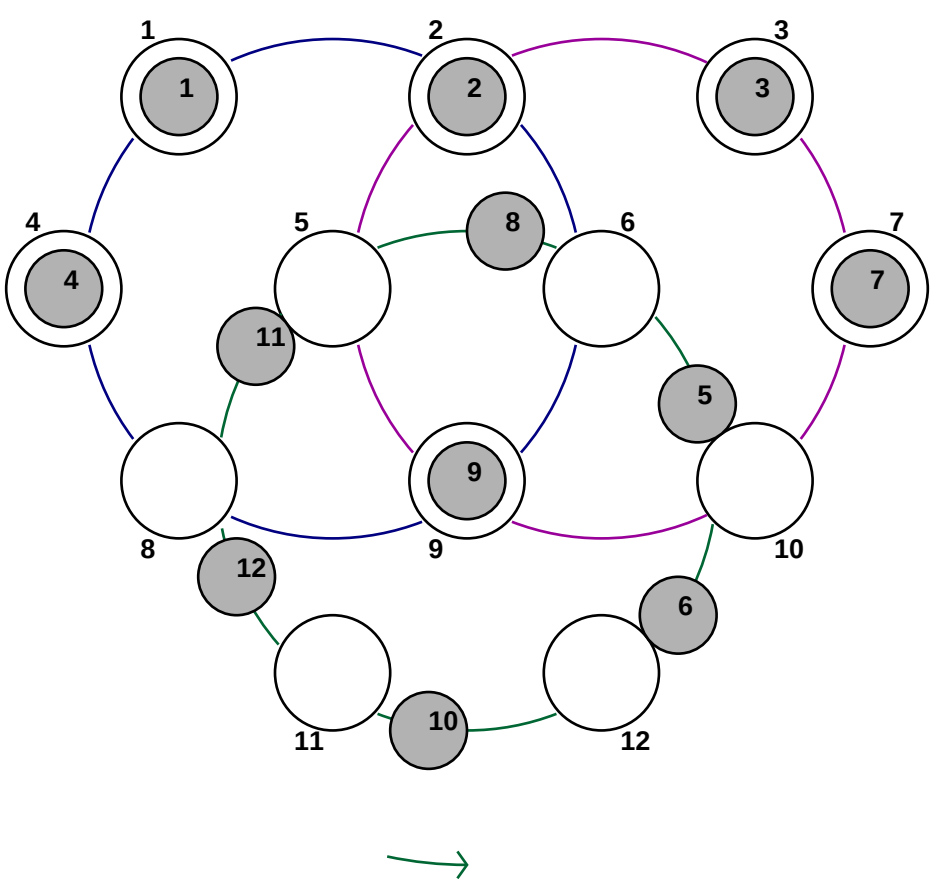

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
12
7
11
10
9
6
8
5

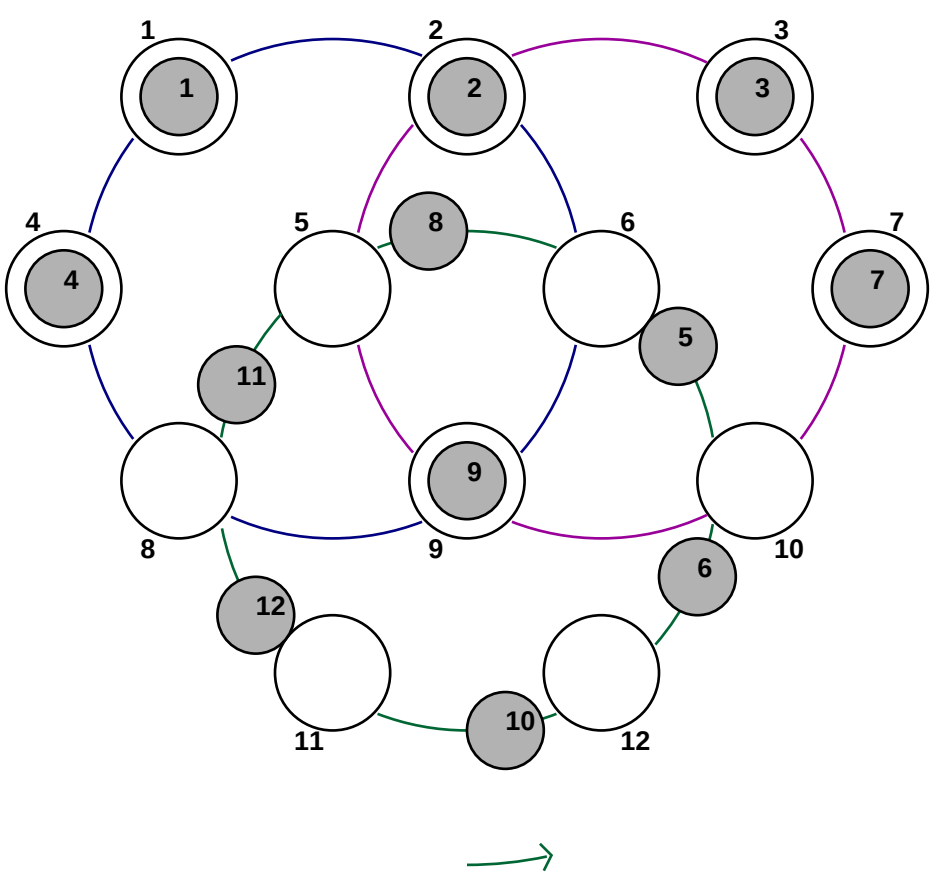

1
2
3
4
5
6
7
8
9
10
11
12

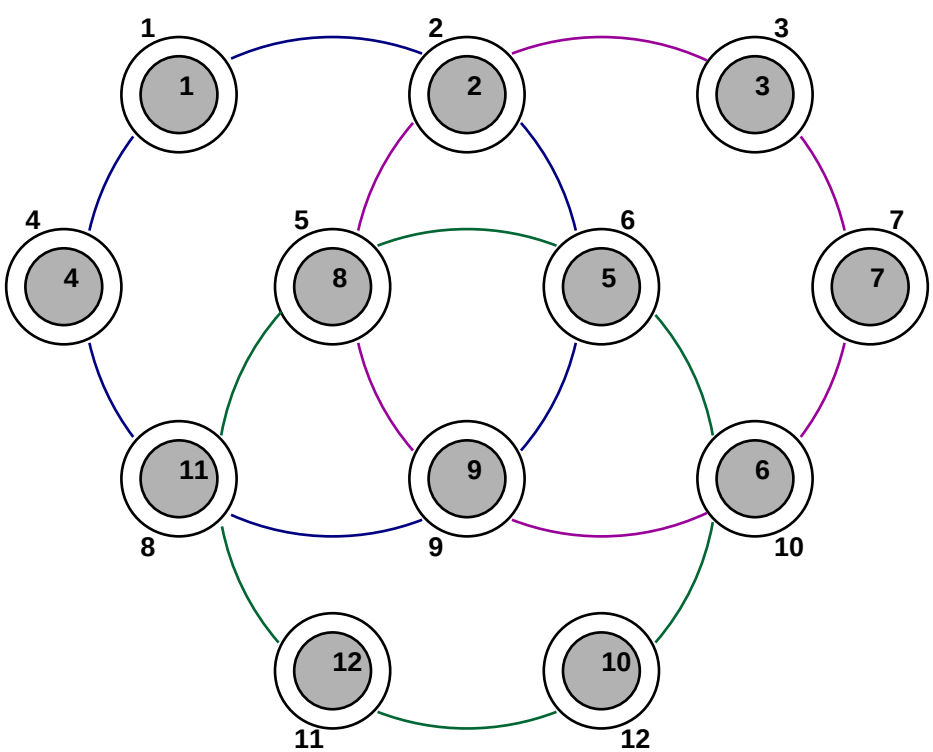

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
7
12
8
9
10
5
6

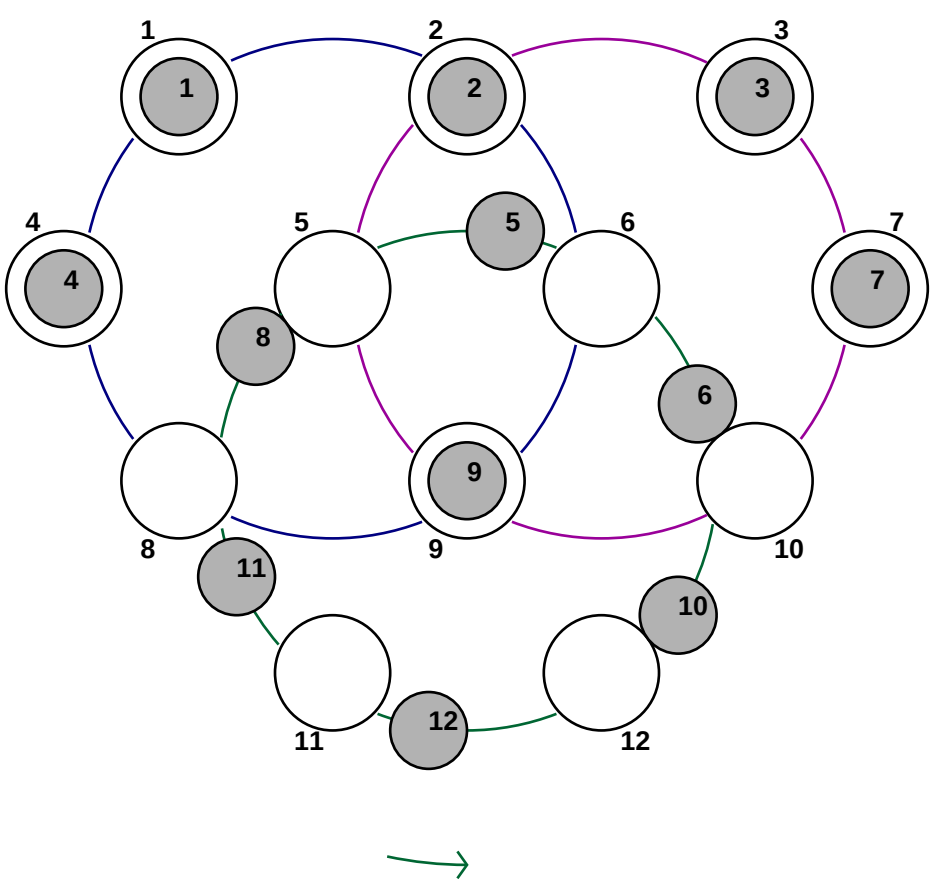

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
7
12
8
9
5
10
6

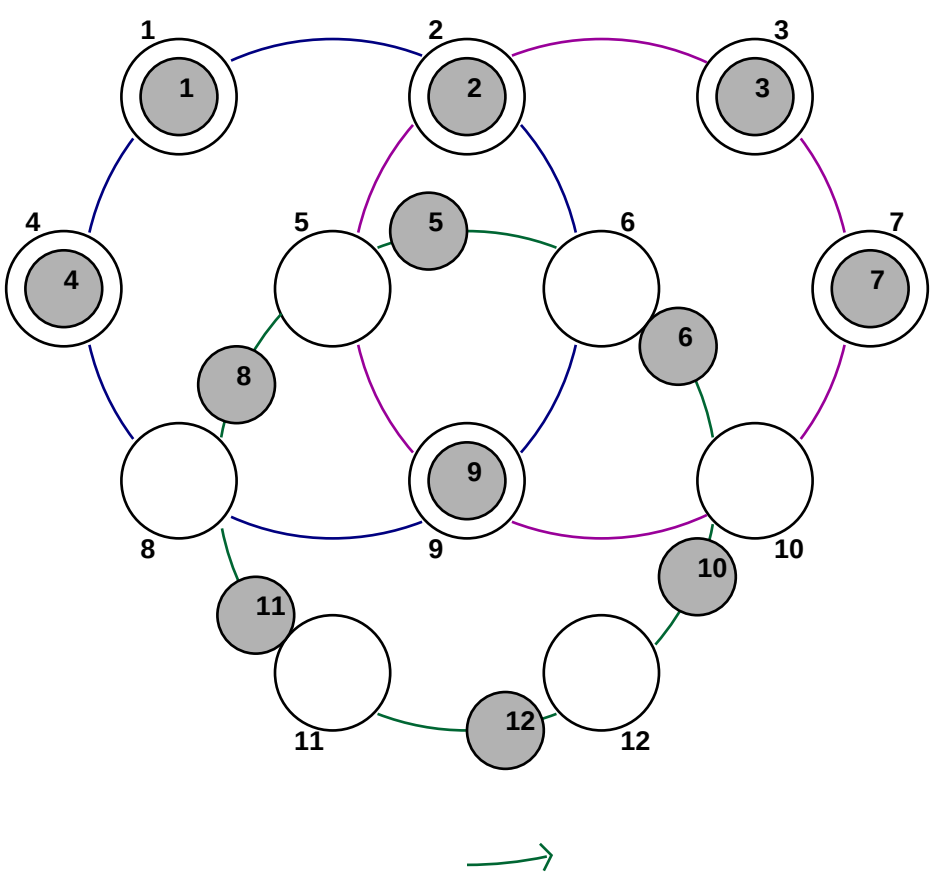

1
2
3
4
5
6
7
8
9
10
11
12

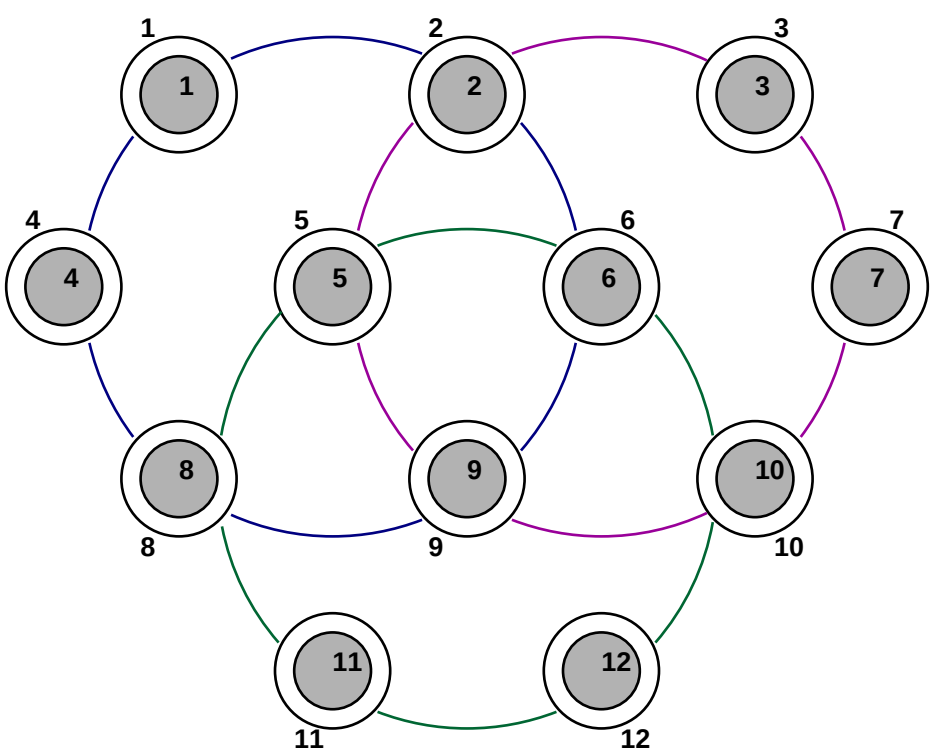

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
8
5
9
12
6
10


1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
8
7
5
11
9
6
12
10

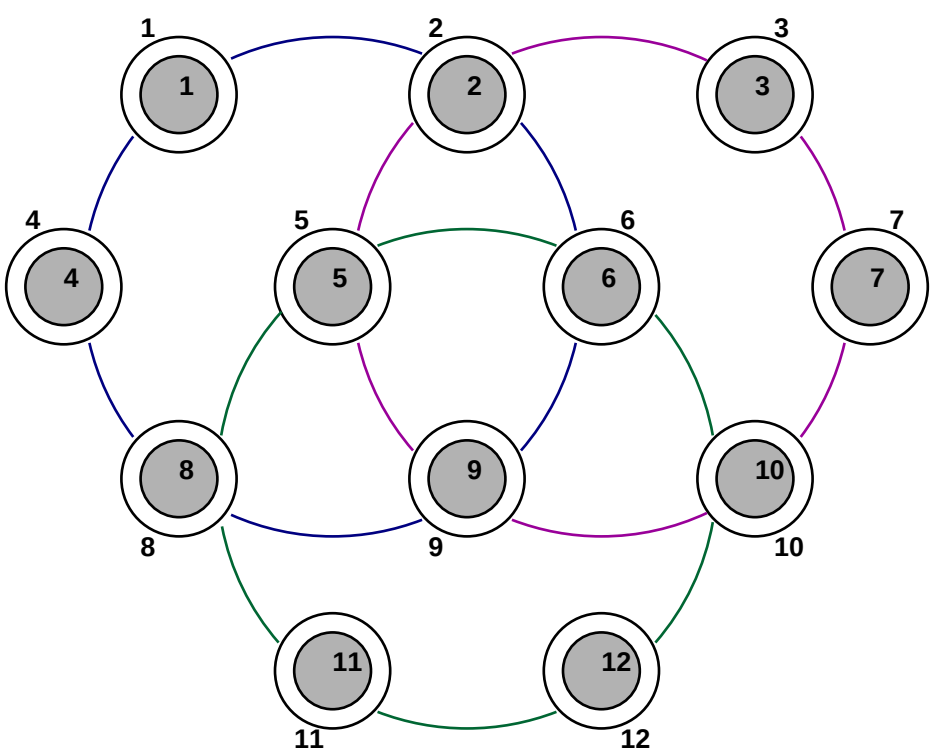

1
2
3
4
5
6
7
8
9
10
11
12

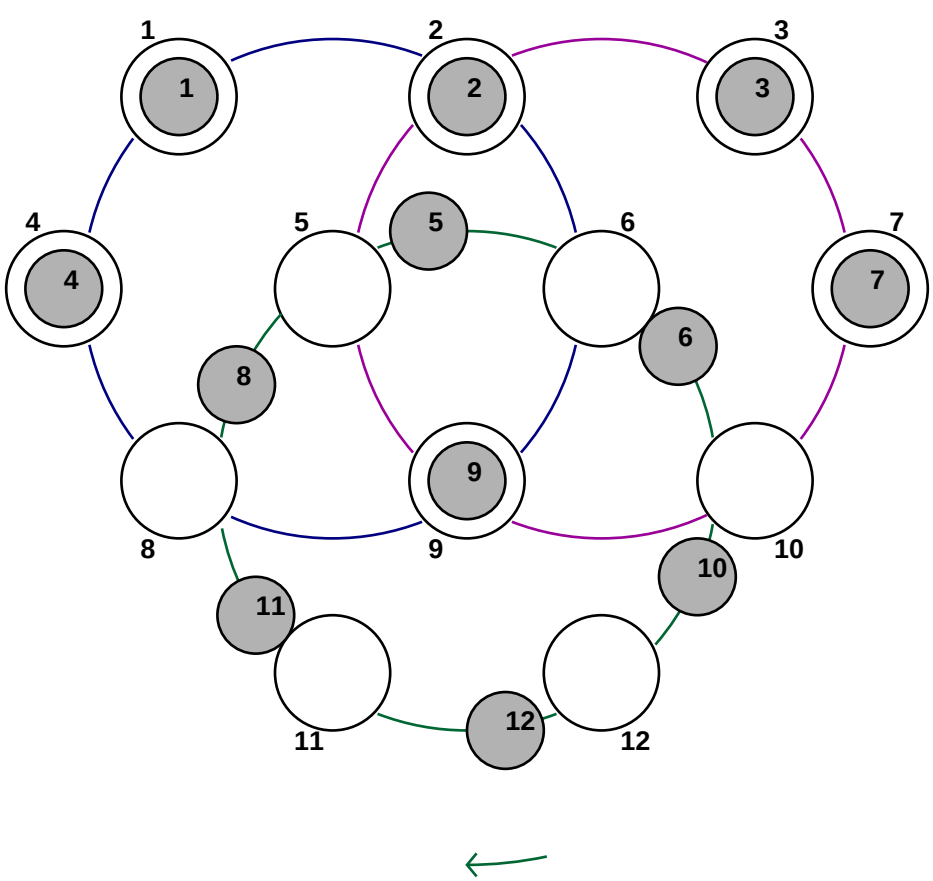

1
2
3
4
5
6
7
8
9
10
11
12

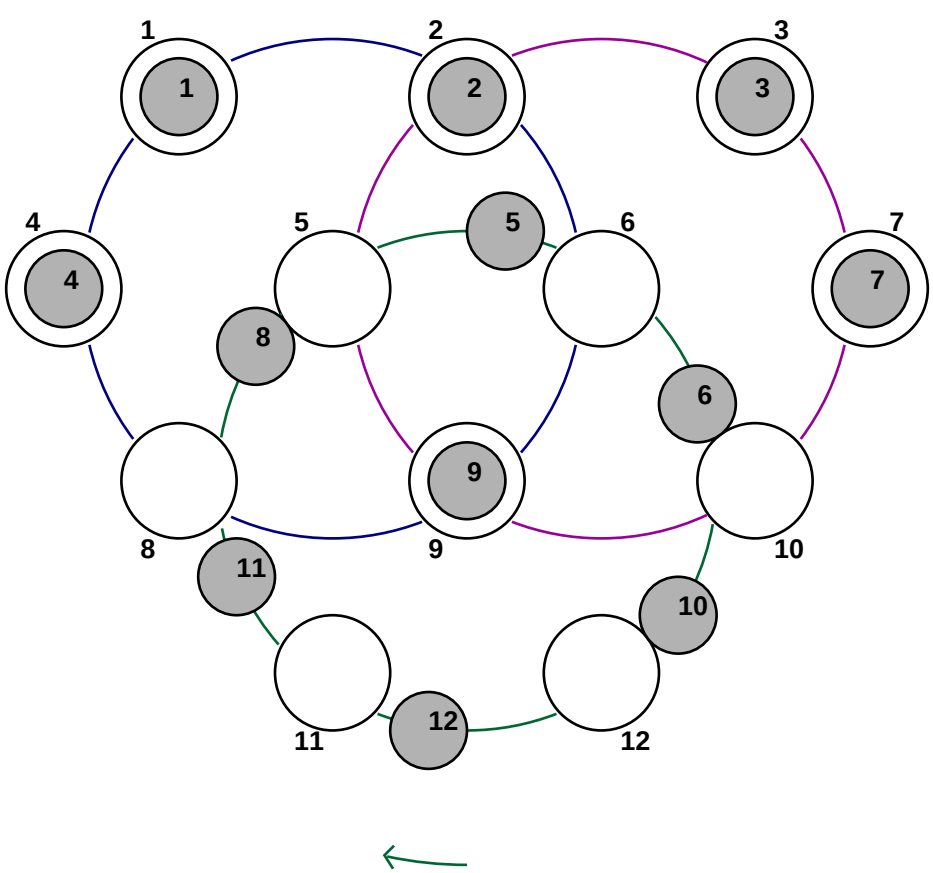

1
2
3
4
5
6
7
8
9
10
11
12

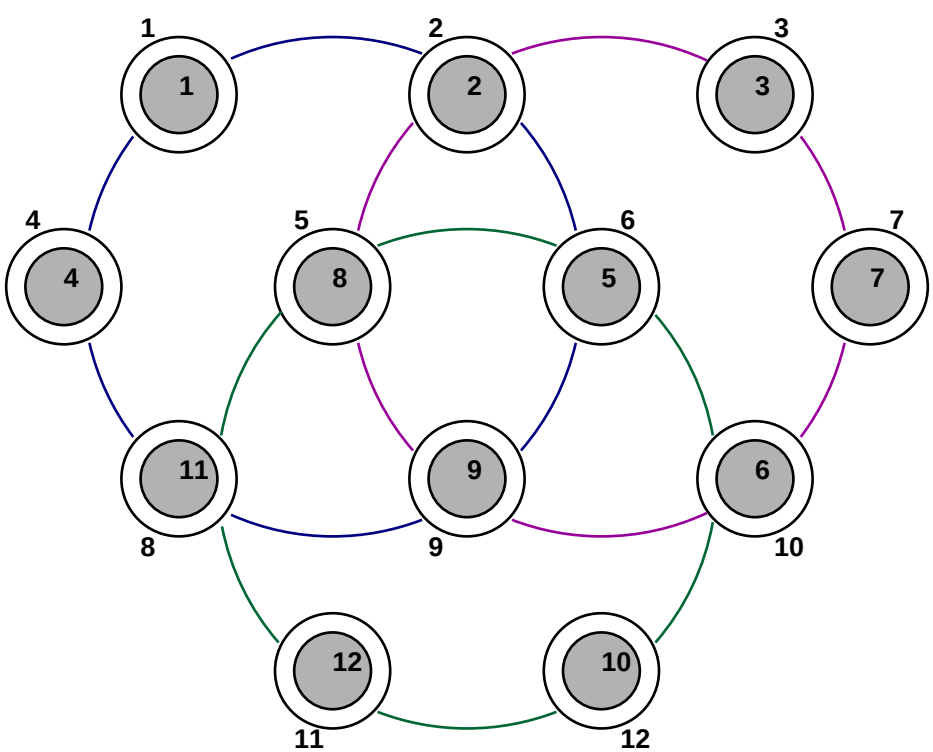

1
2
3
4
5
6
7
8
9
10
11
12

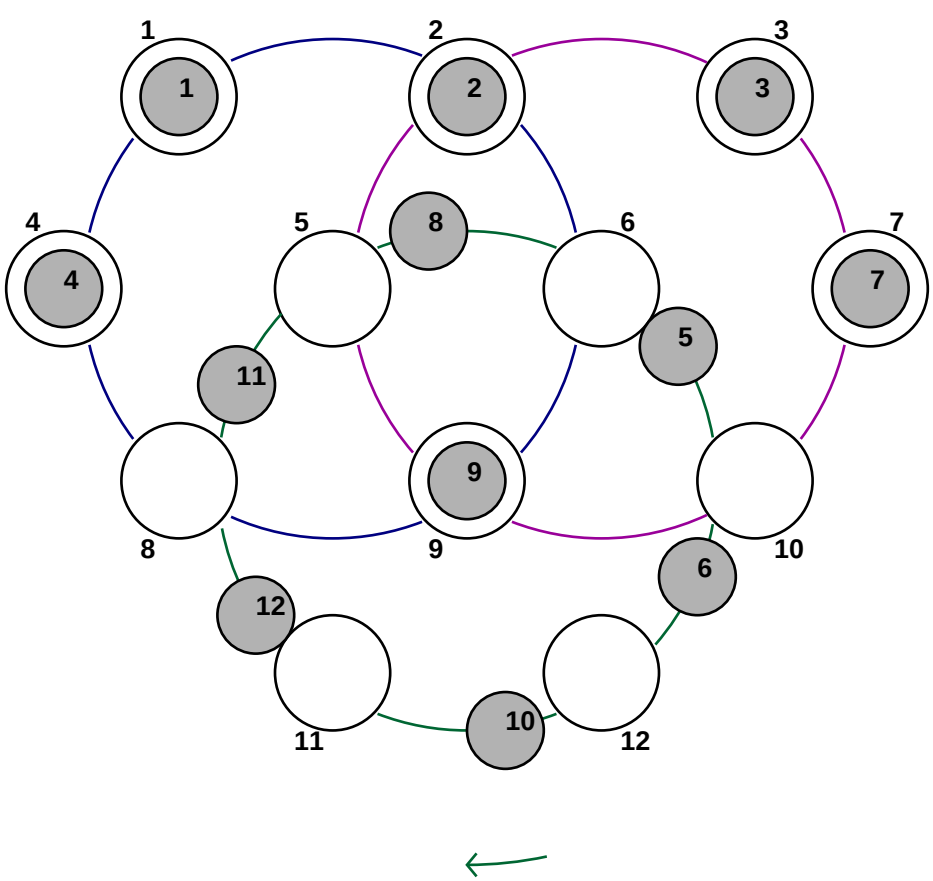
The sixth set of permutations includes multiple clockwise moves of the green circle.

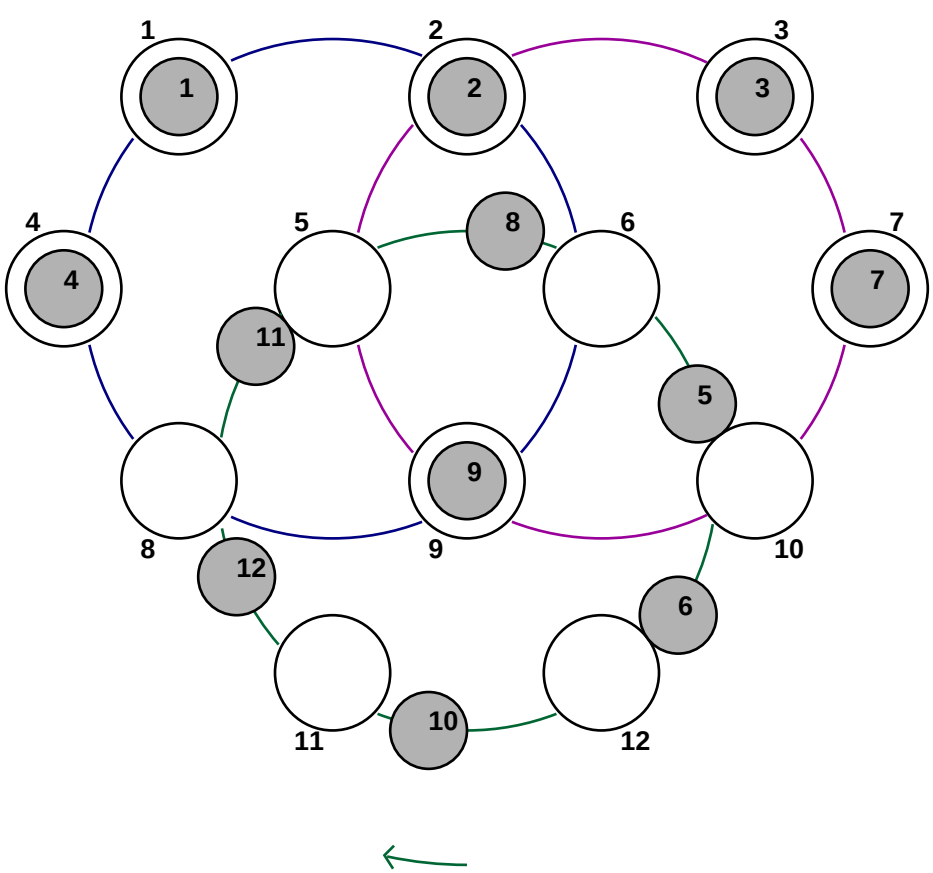

1
2
3
4
5
6
7
8
9
10
11
12

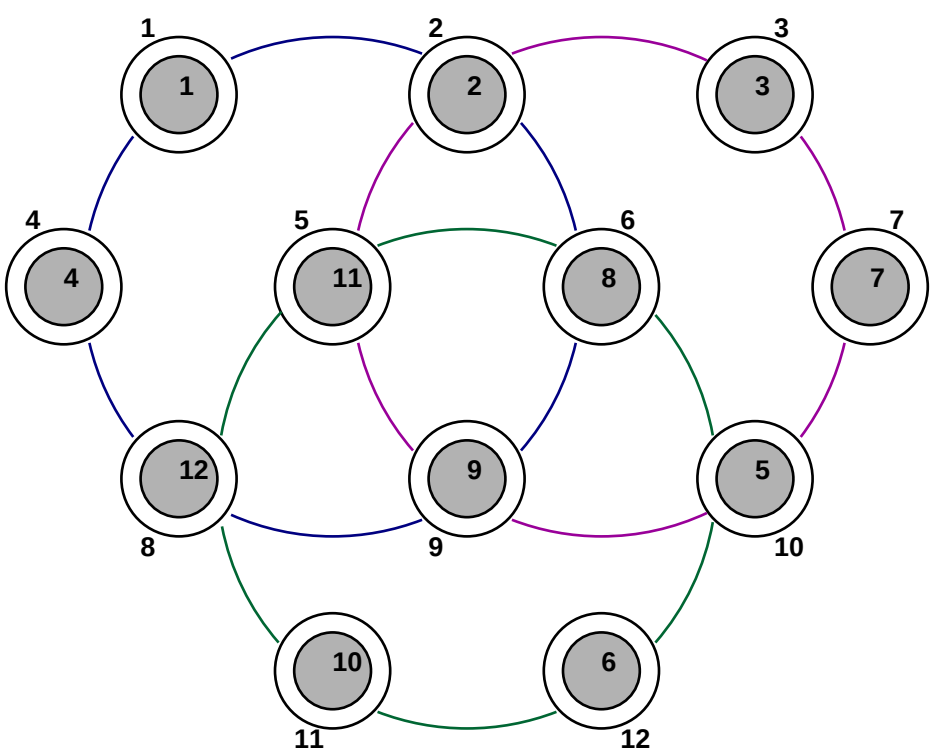

1
2
3
4
5
6
7
8
9
10
11
12

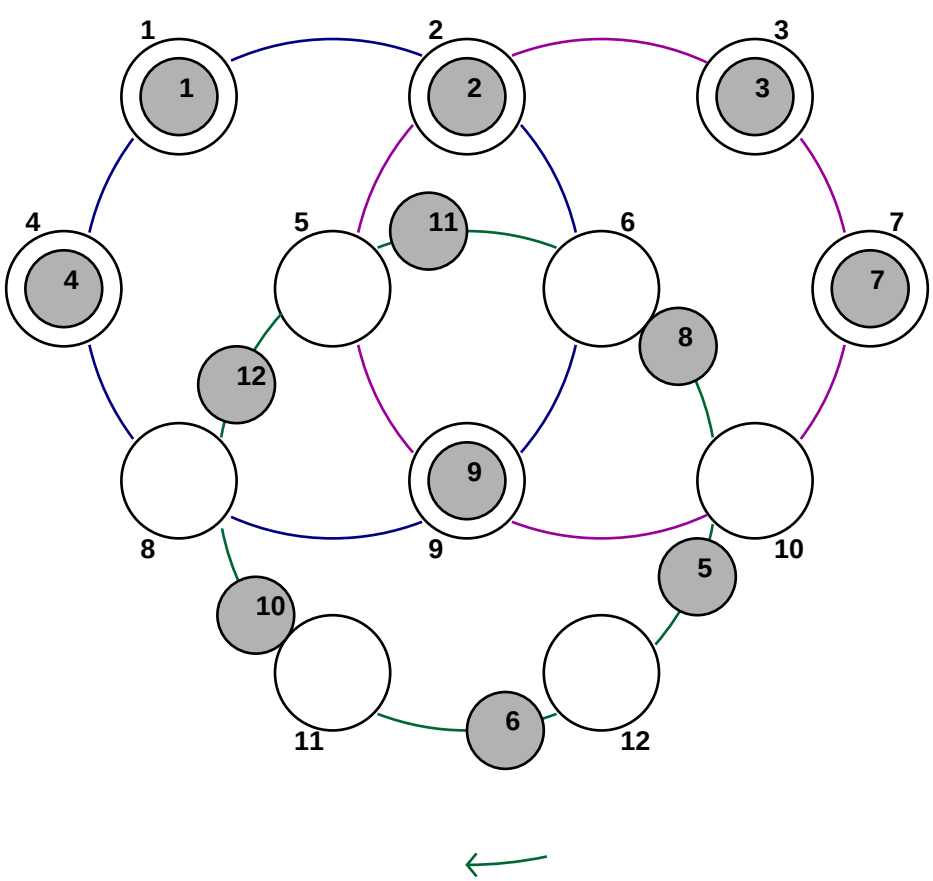

1
2
3
4
5
6
7
8
9
10
11
12

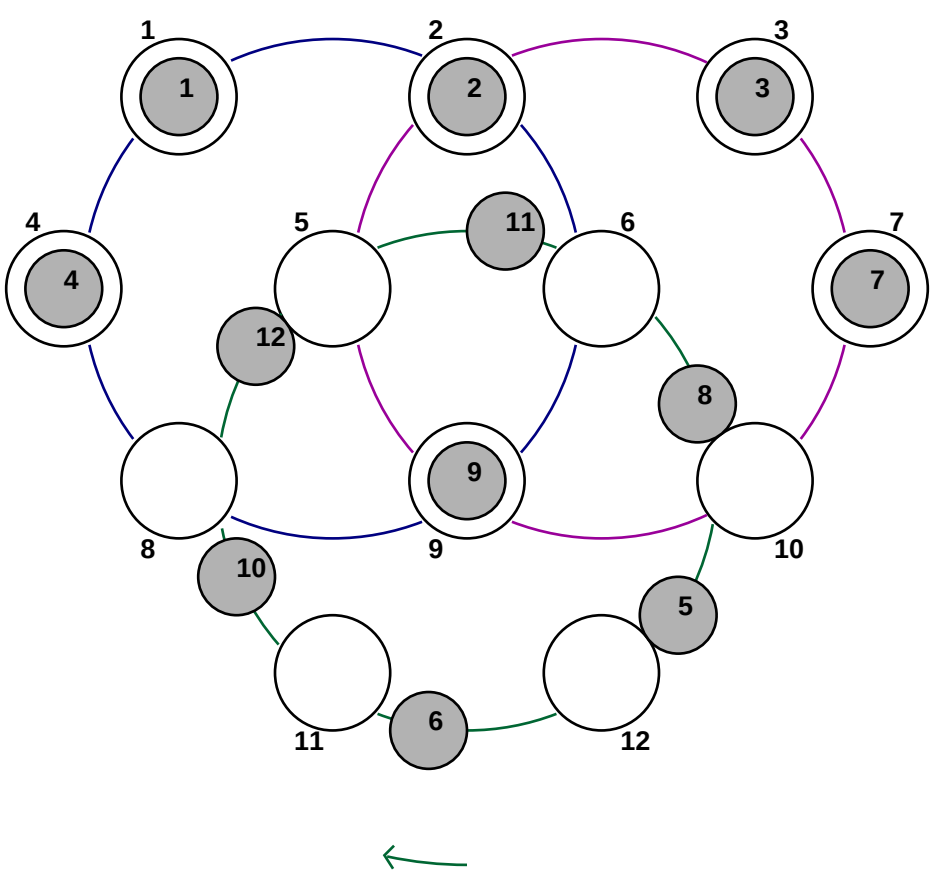

1
2
3
4
5
6
7
8
9
10
11
12

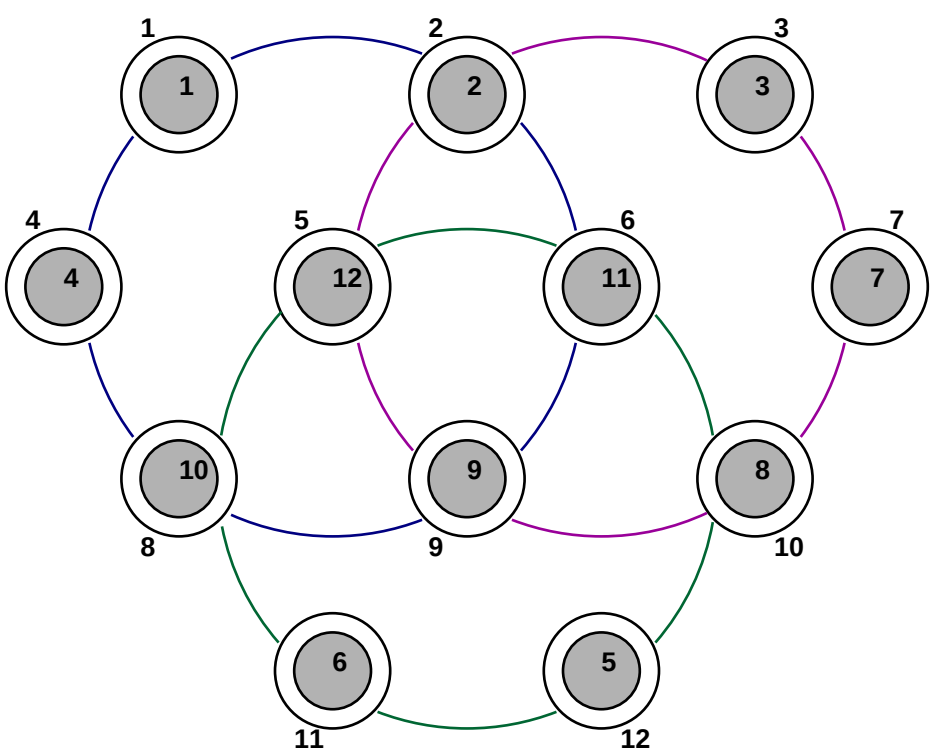

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
8
7
5
11
9
6
12
10

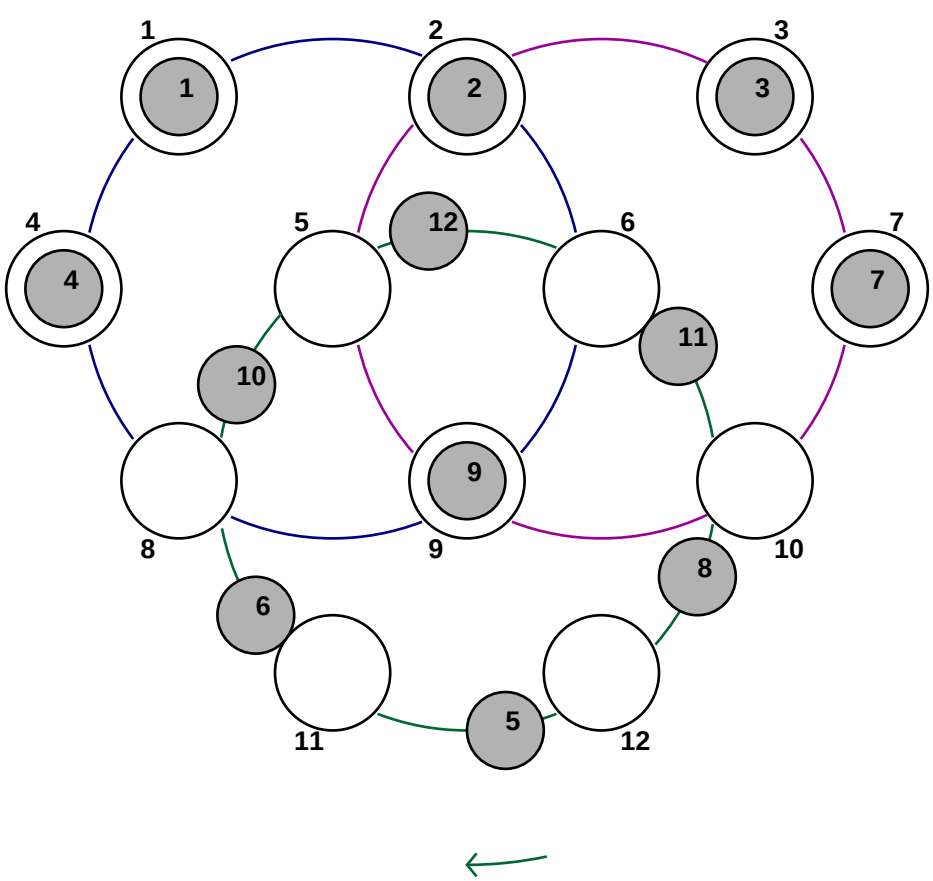

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
8
5
7
9
12
6
10

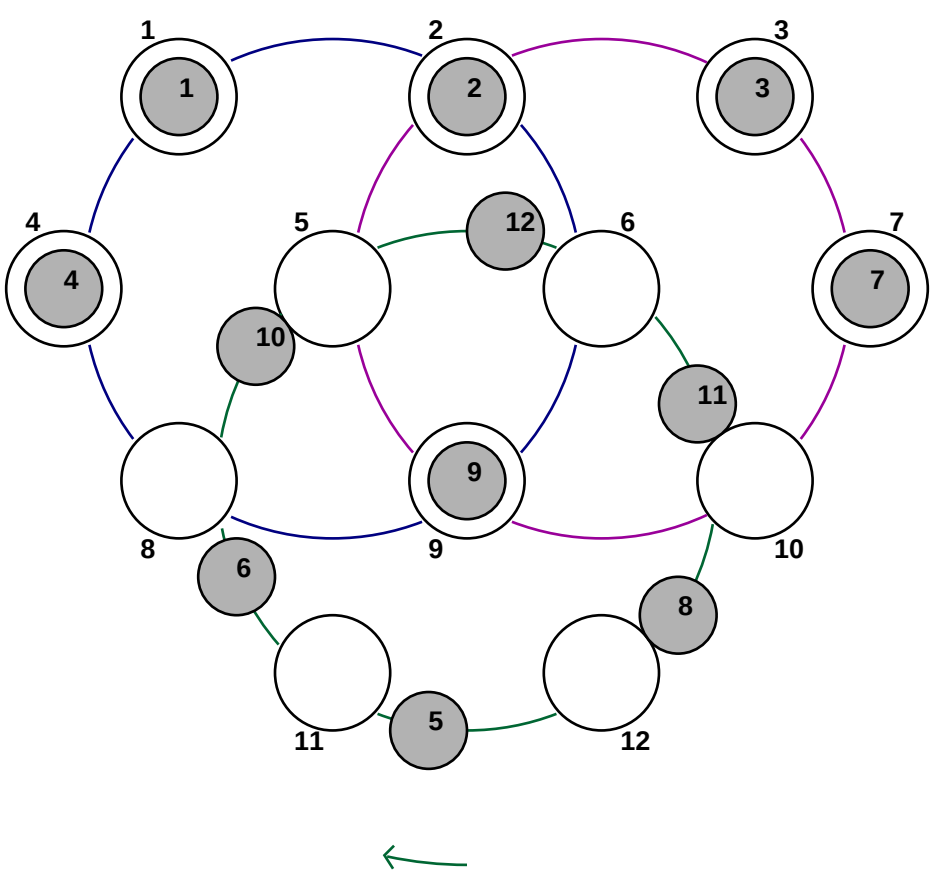

1
2
3
4
5
6
7
8
9
10
11
12

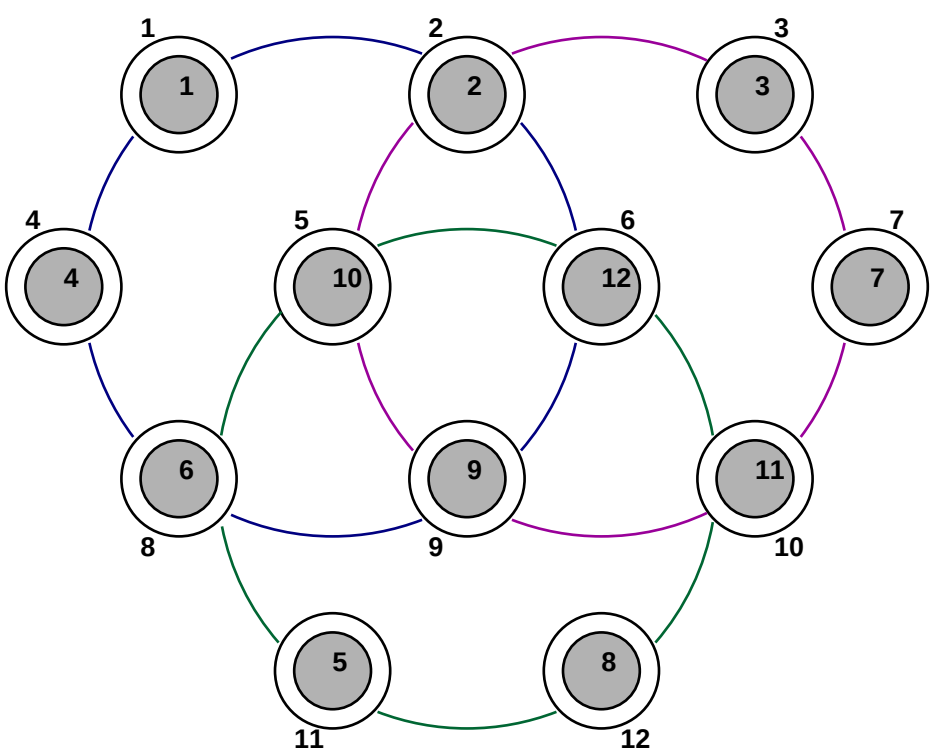

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
7
12
8
9
5
10
6

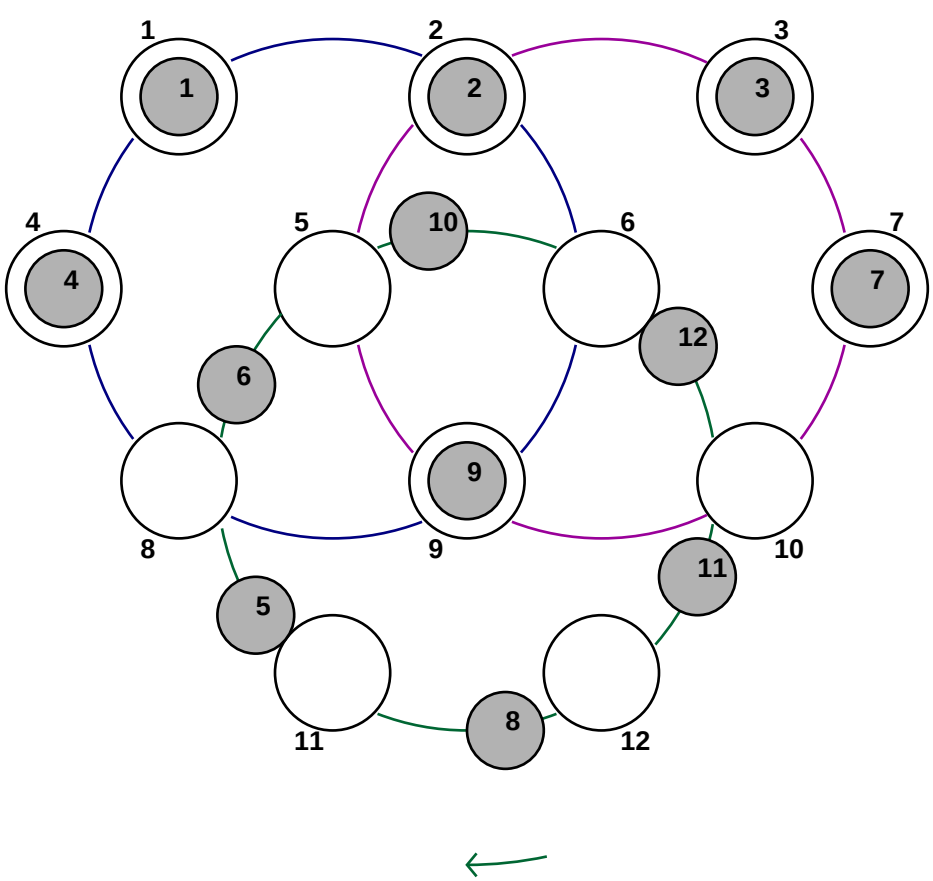

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
7
12
8
9
10
5
6

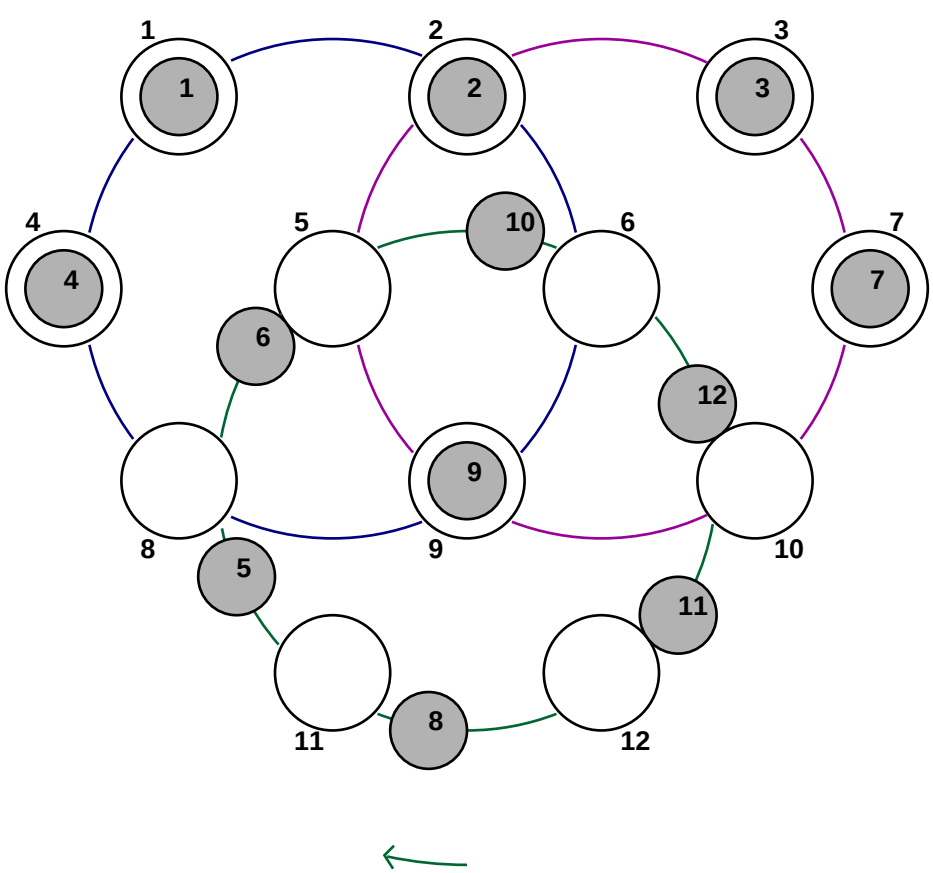

1
2
3
4
5
6
7
8
9
10
11
12

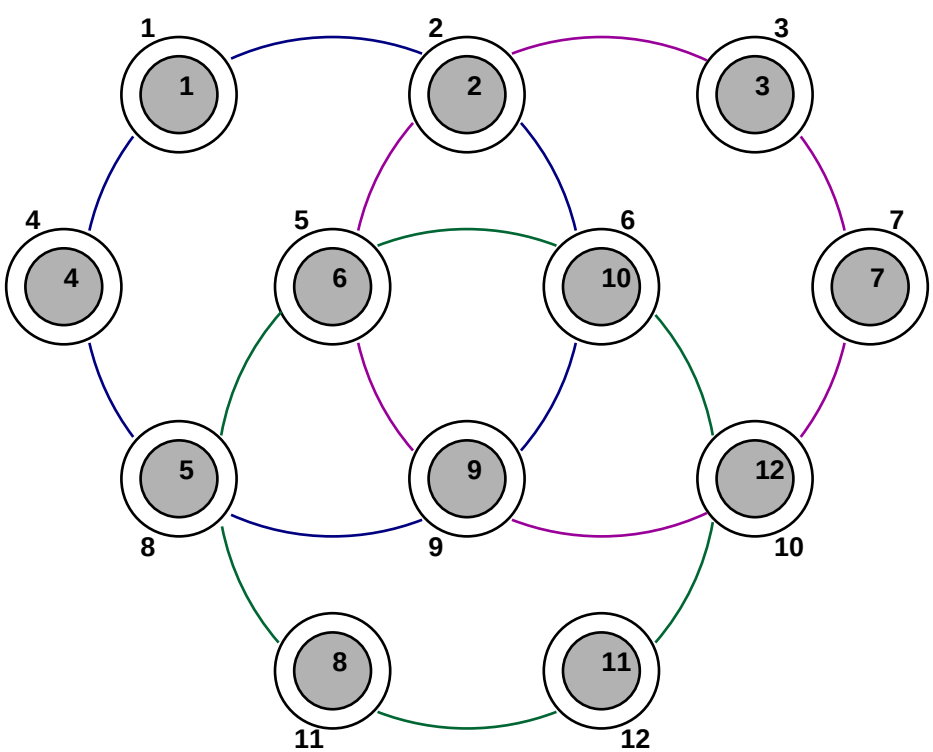

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
12
7
11
10
9
6
8
5

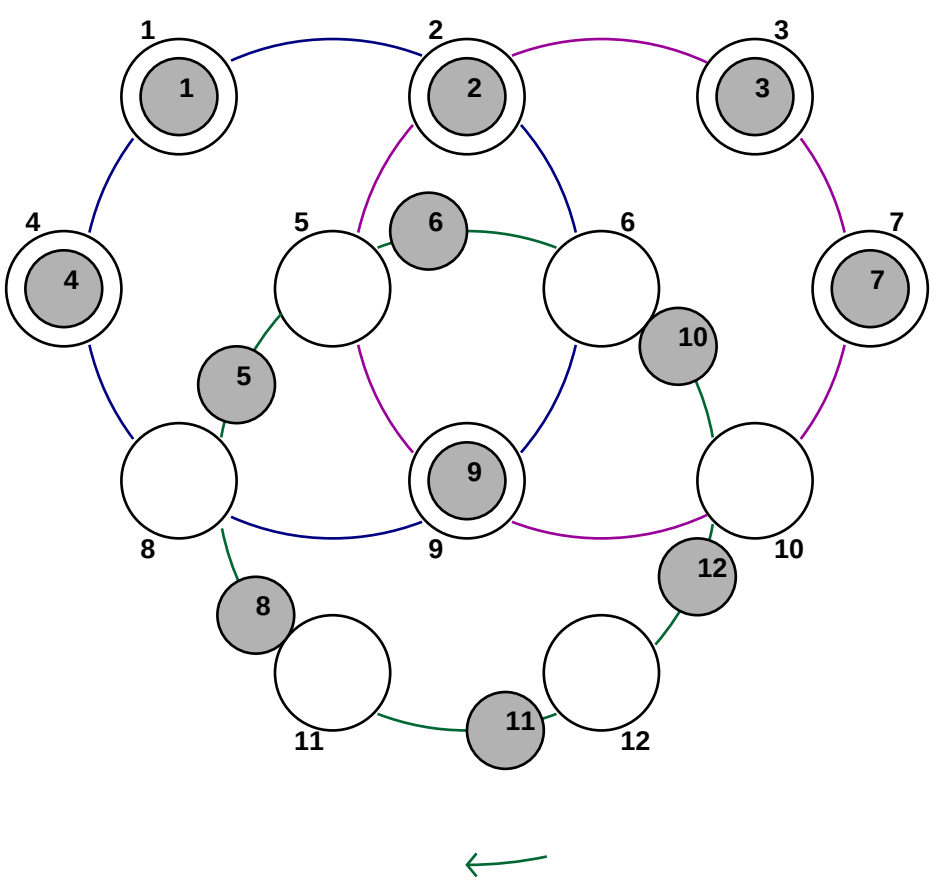

1
2
3
4
5
12
6
7
10
11
9
8
6
10
8
5
11
12

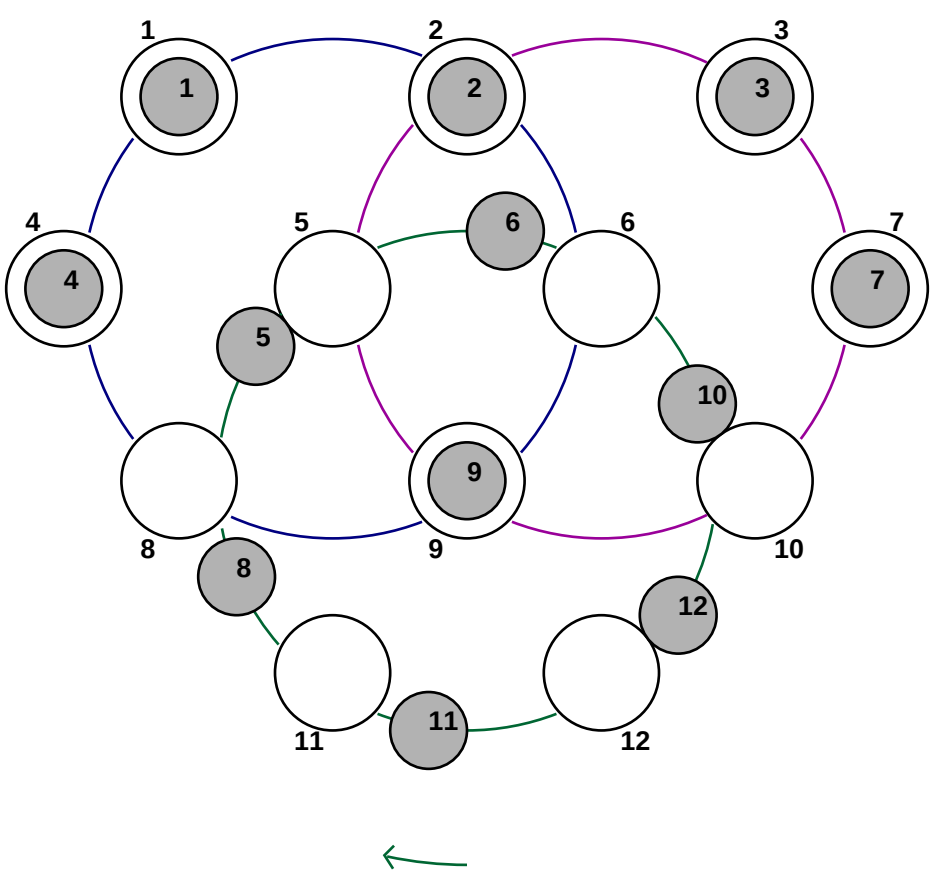

1
1
2
2
3
3
4
4
5
10
6
12
7
7
6
8
9
9
11
10
5
11
8
12

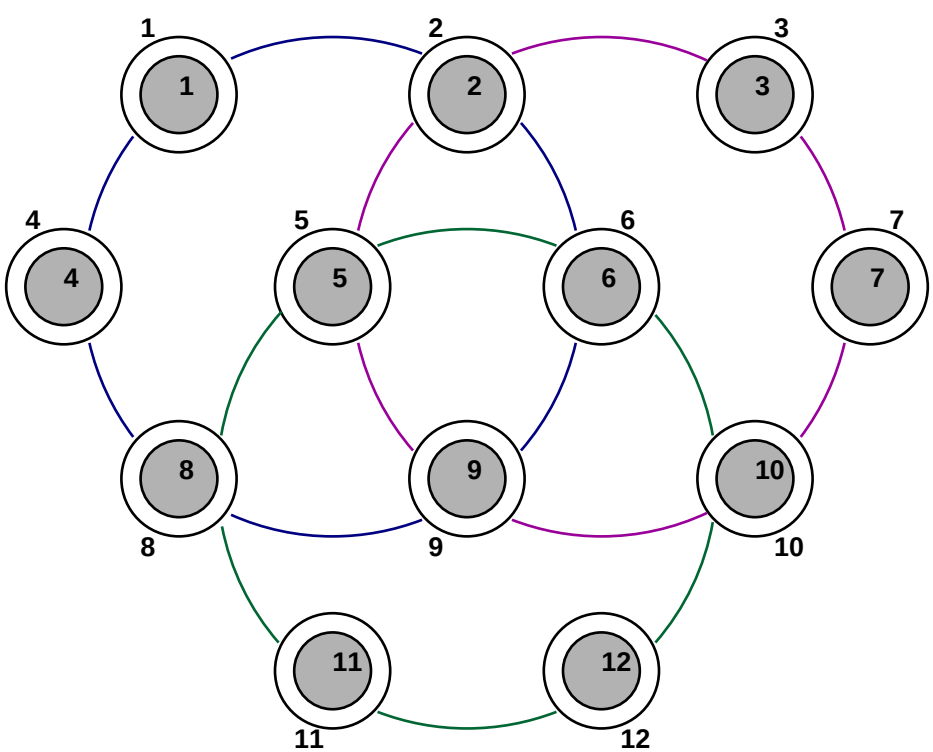

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
10
7
6
12
9
5
11
8


1
2
3
4
5
10
6
7
6
12
9
8
9
10
5
11
8
11
12

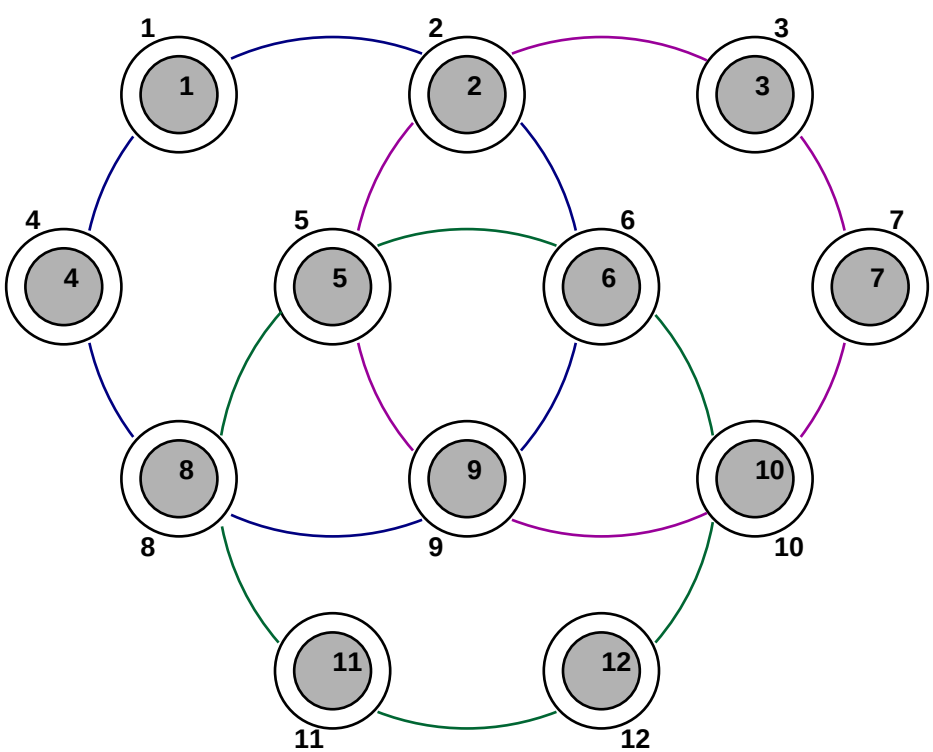

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
6
10
7
5
9
12
8
11

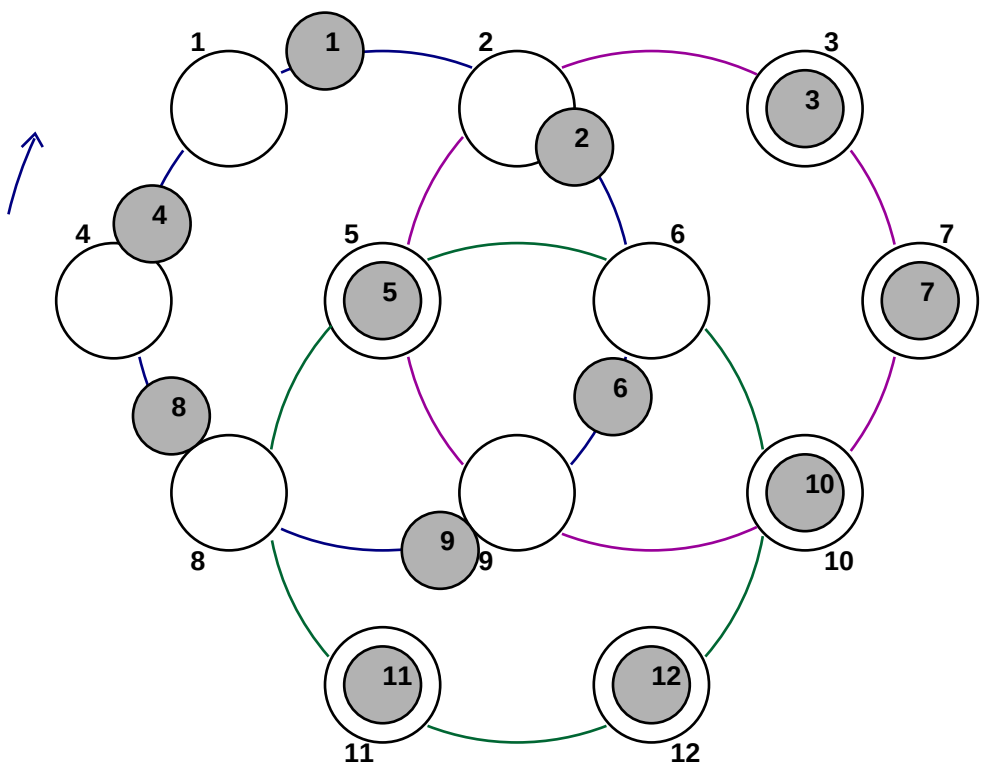

1
2
3
4
5
6
6
7
10
5
9
8
9
10
12
8
11
11
12

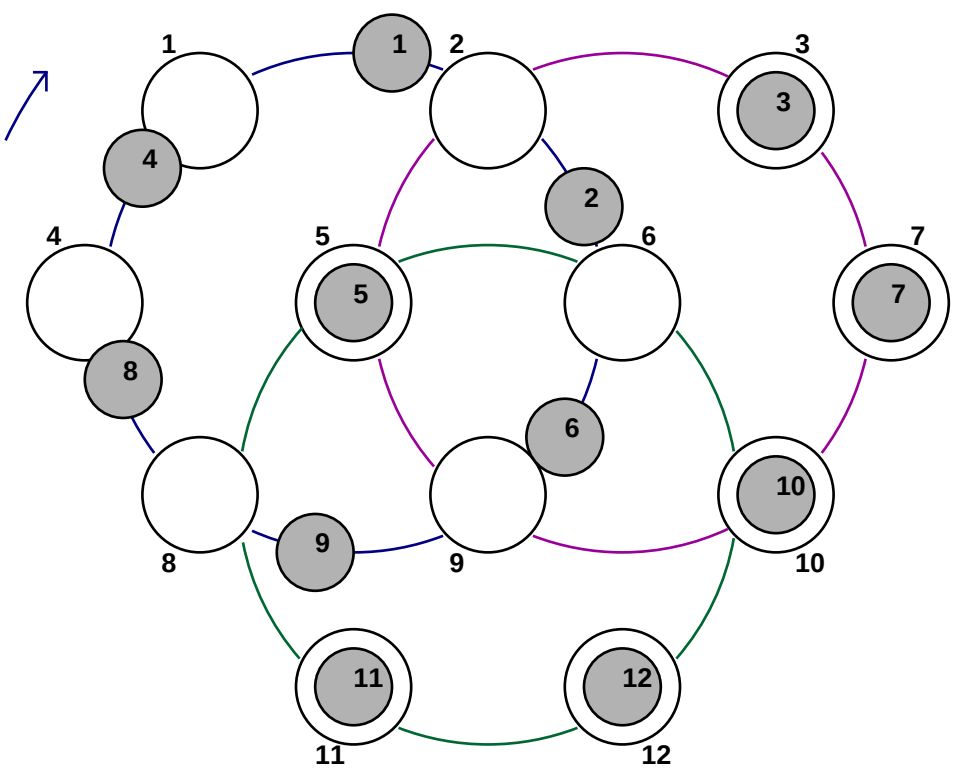

1
2
3
4
5
6
6
7
5
10
9
8
9
10
8
12
11
11
12

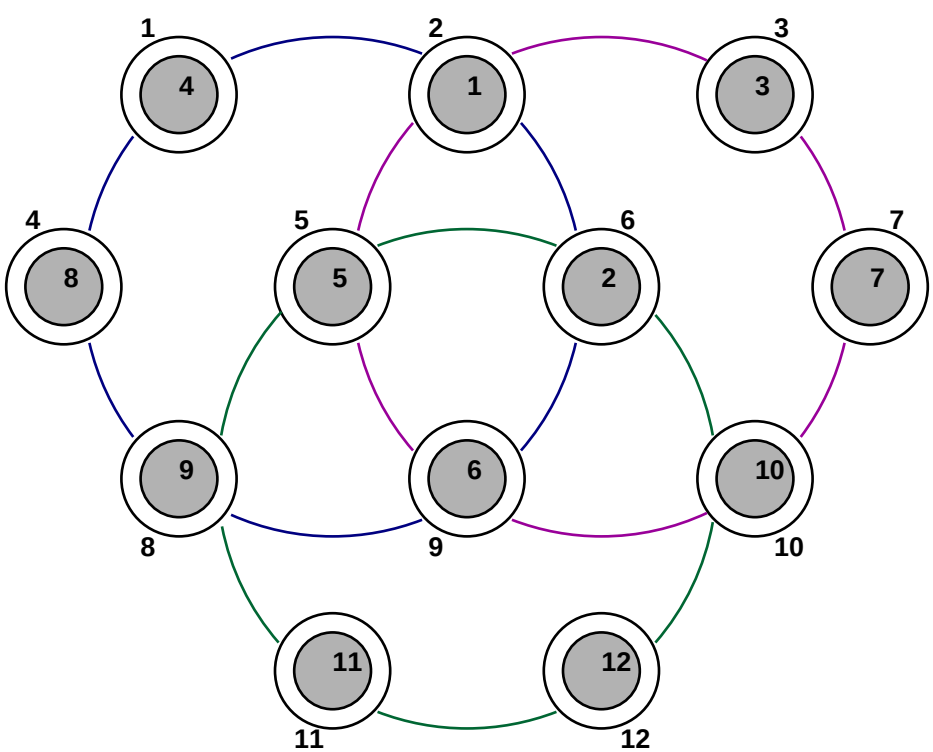

1
2
3
4
5
6
7
8
9
10
11
12

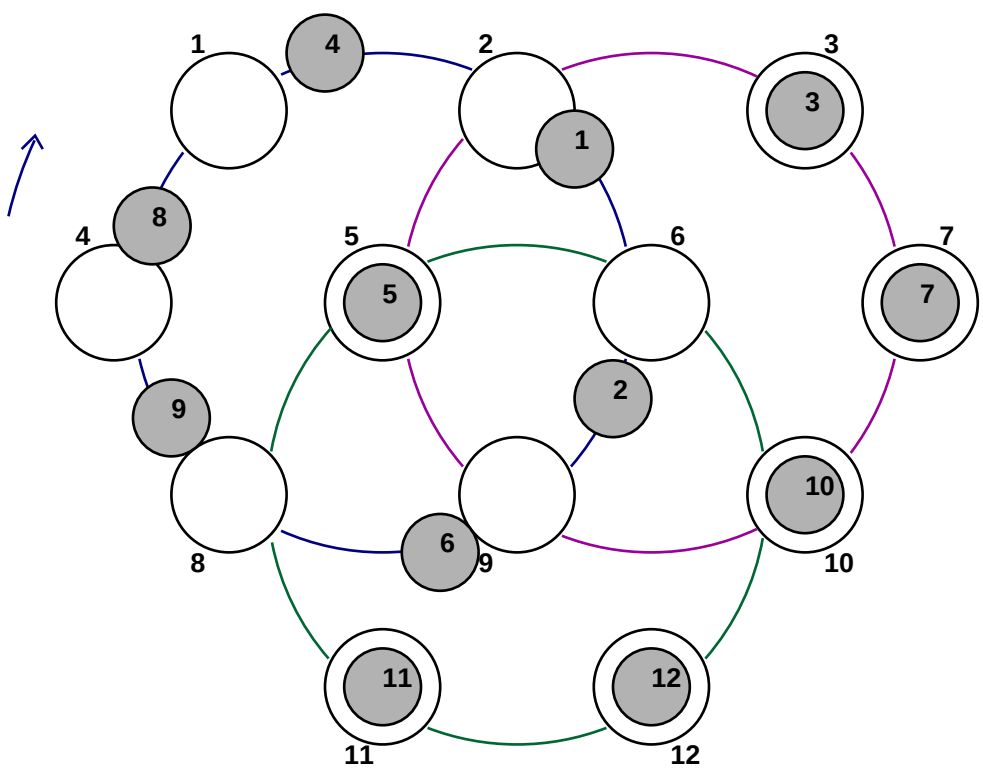
These moves can also be used together in different orders.
Here is an example of such a permutation.

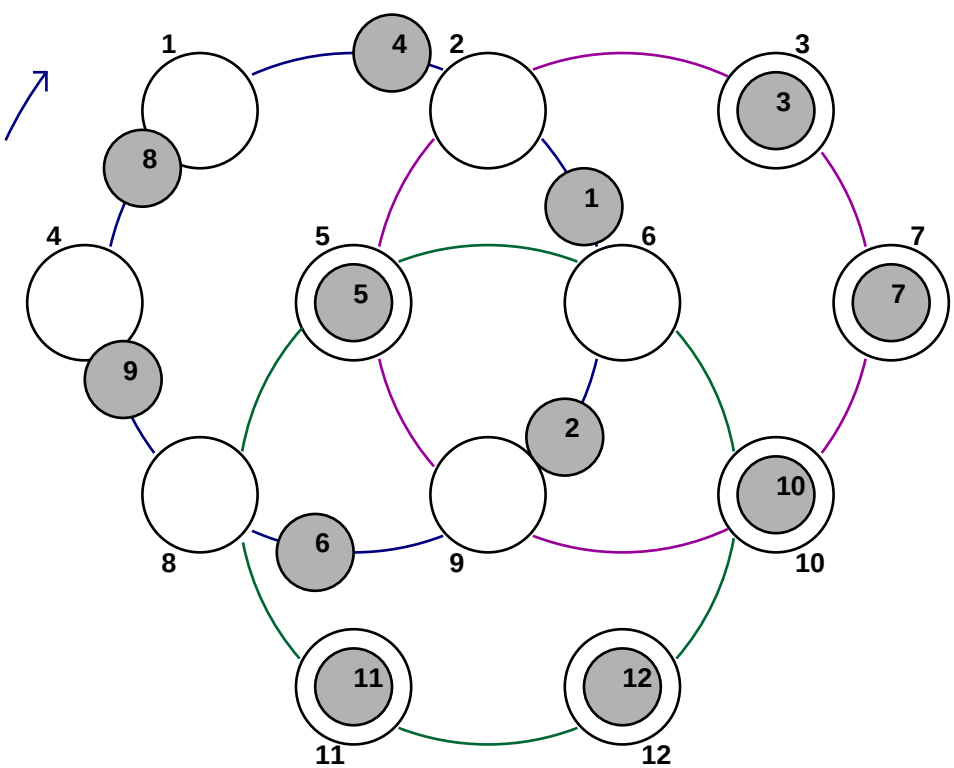

1
2
3
4
5
6
7
8
9
10
11
12

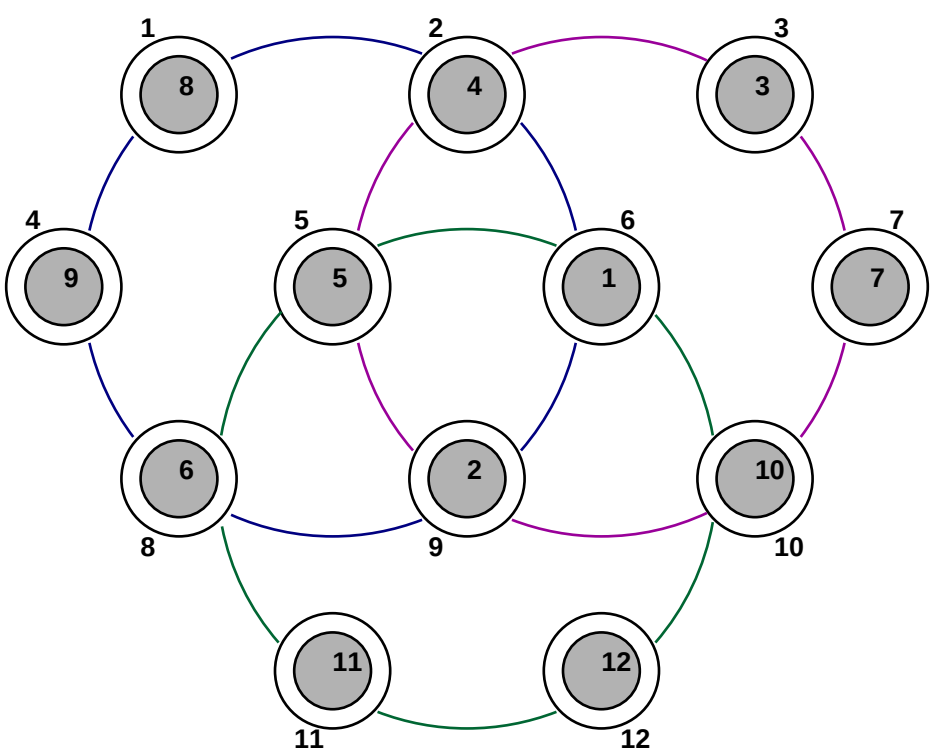

1
1
2
3
2
3
4
4
5
5
6
7
7
6
8
8
10
9
9
10
11
12
11
12

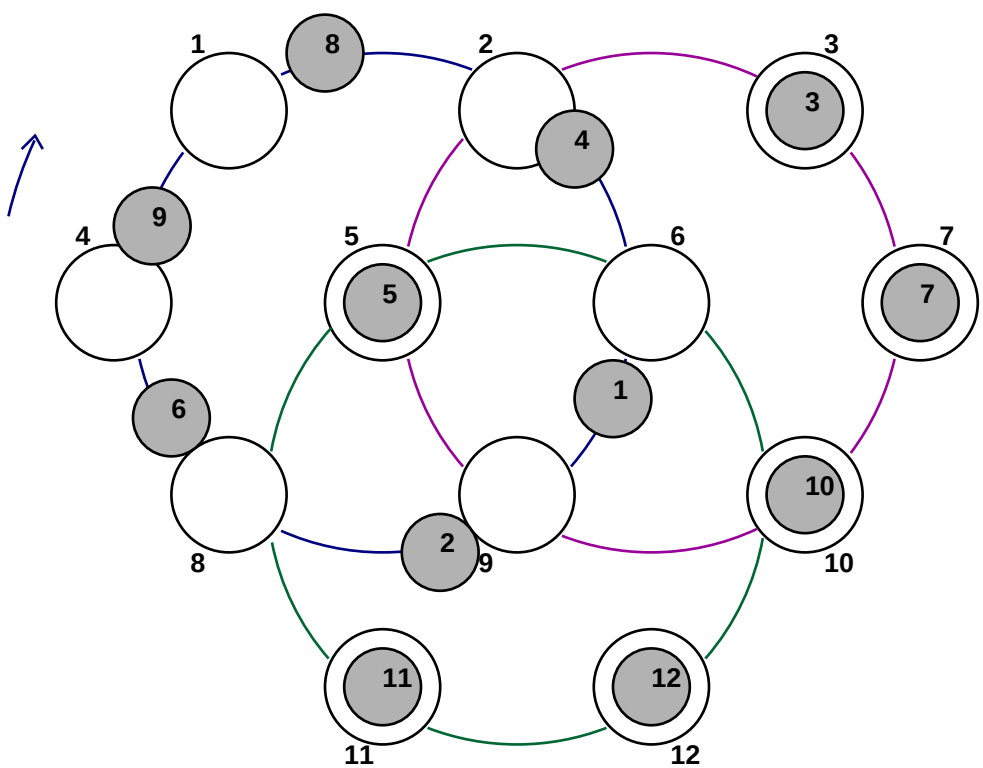

1
2
3
4
5
6
7
8
9
10
11
12

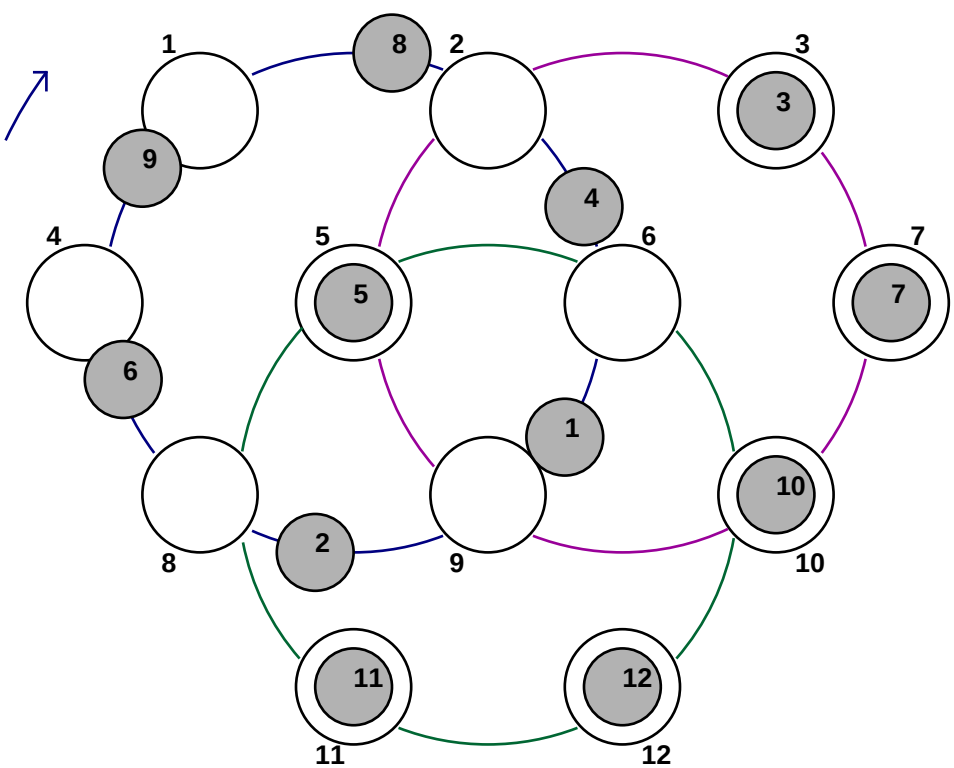

1
4
2
1
3
3
4
8
5
5
6
2
7
7
9
8
6
9
10
10
11
11
12
12

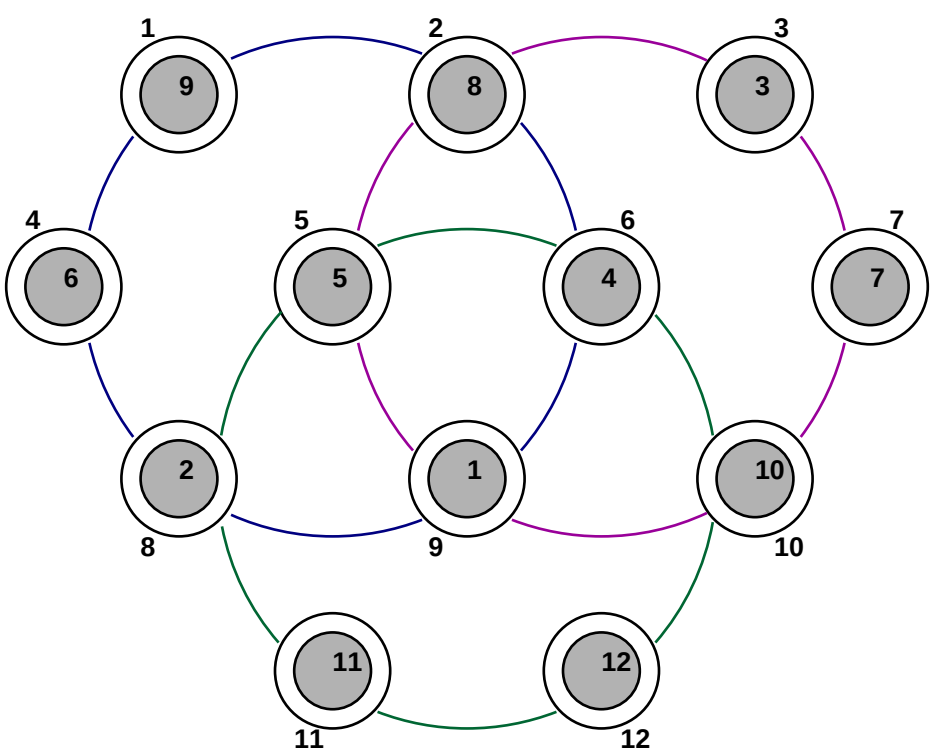

1
4
2
3
3
1
8
4
5
6
7
5
7
2
9
10
6
8
9
10
11
12
11
12

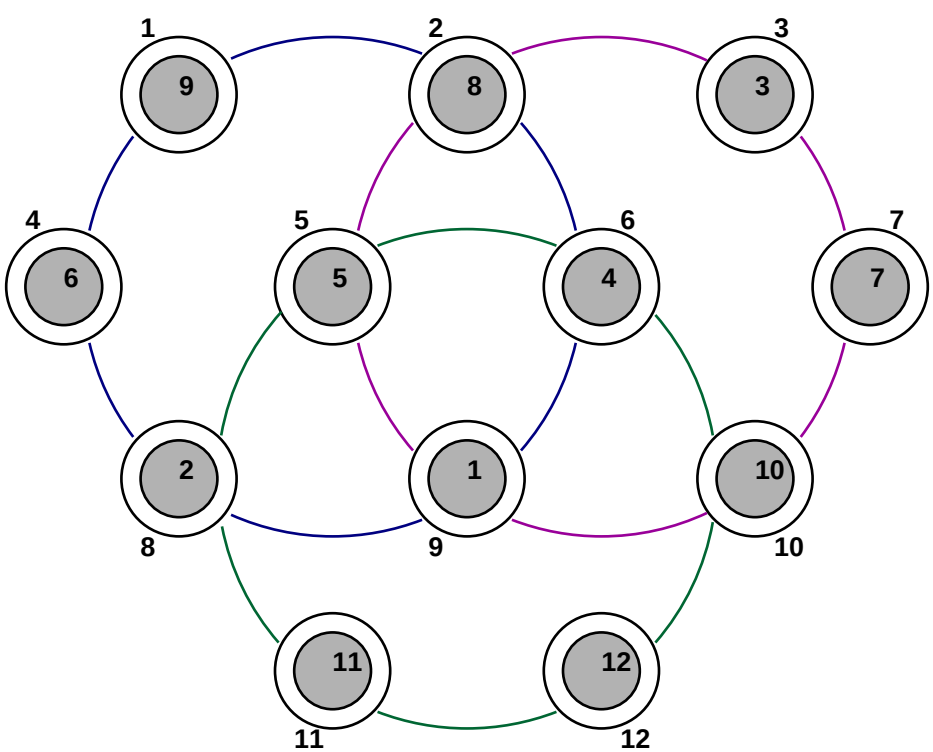

1
4
2
3
3
8
1
4
5
6
7
5
7
9
2
10
8
6
9
10
11
12
11
12

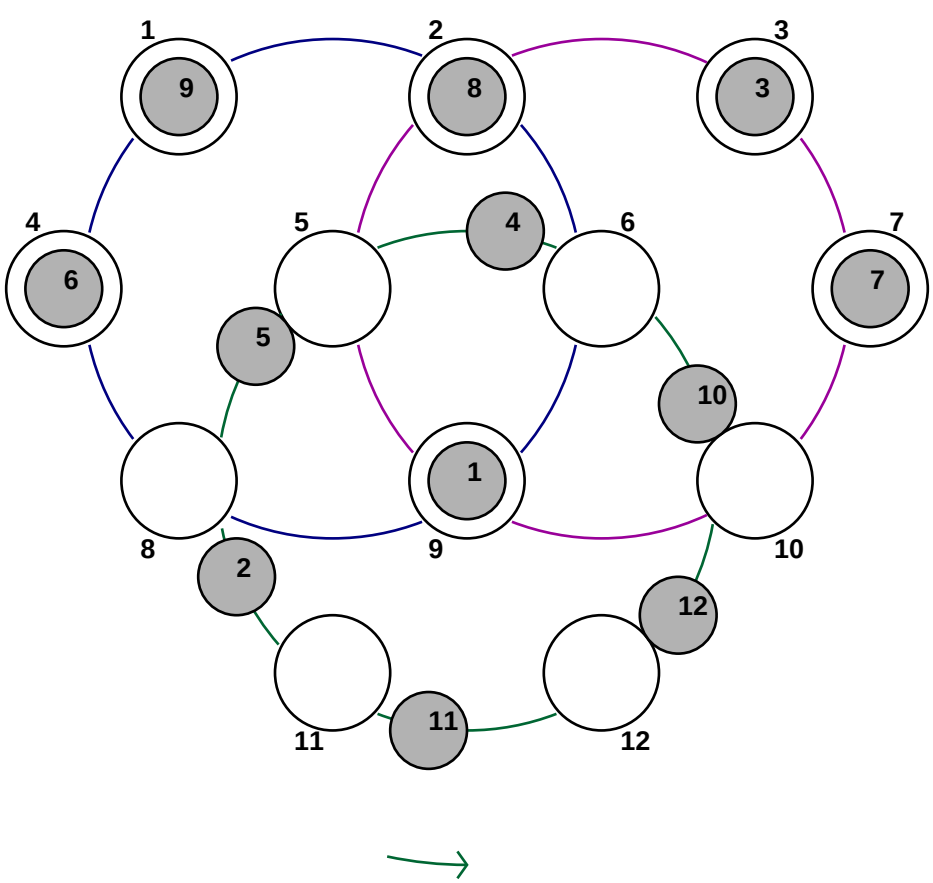

1
8
2
4
3
3
4
9
5
5
6
1
7
7
6
6
8
2
9
10
10
11
11
12
12

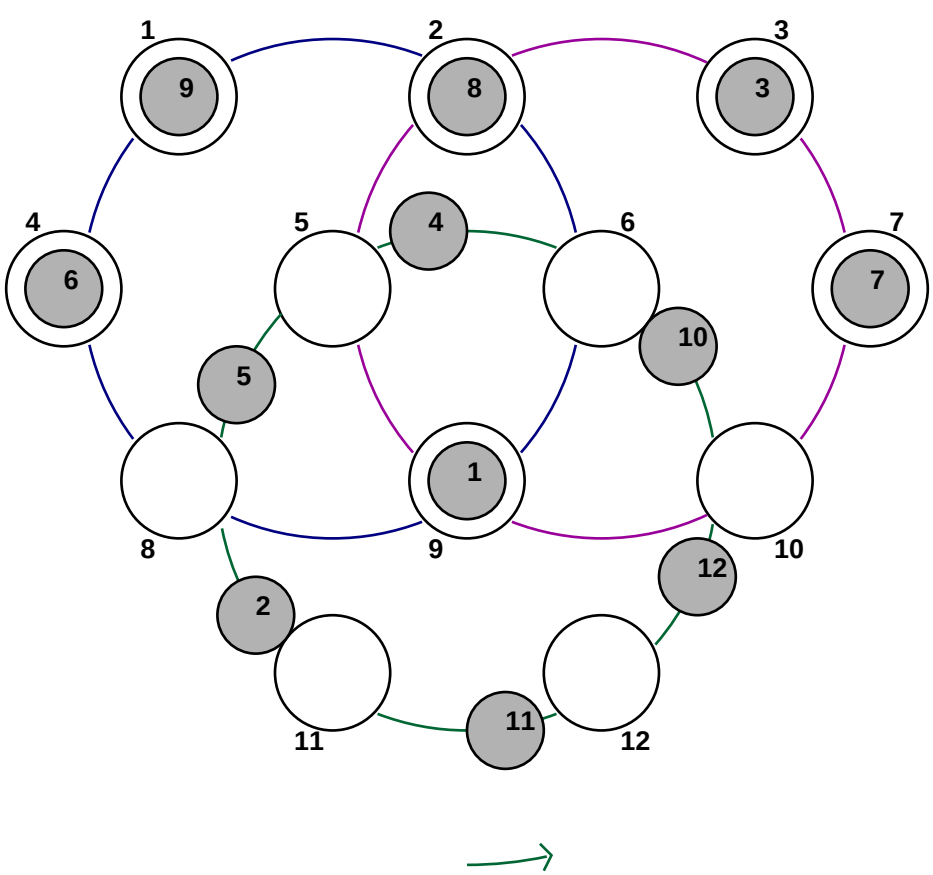

1
8
2
3
3
4
9
4
5
5
6
7
7
1
6
10
2
8
9
10
11
12
11
12

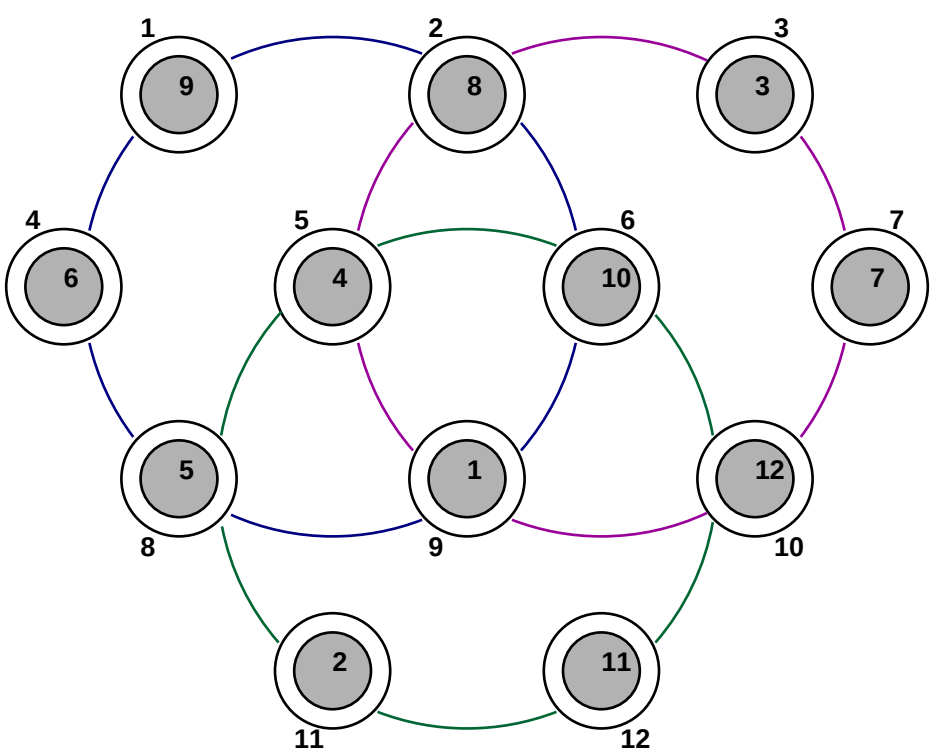

1
8
2
3
3
9
4
4
5
6
7
5
7
6
1
10
2
8
9
10
11
12
11
12

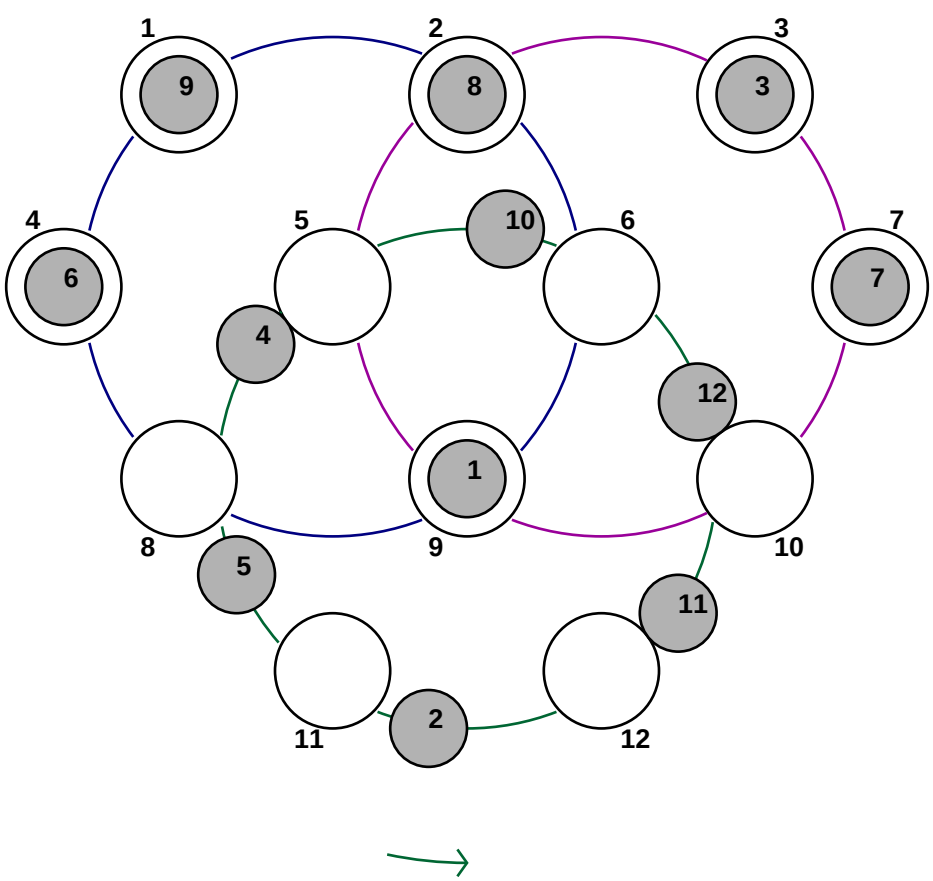

1
9
2
8
3
3
4
6
5
5
6
4
7
7
2
8
1
9
10
10
11
11
12
12

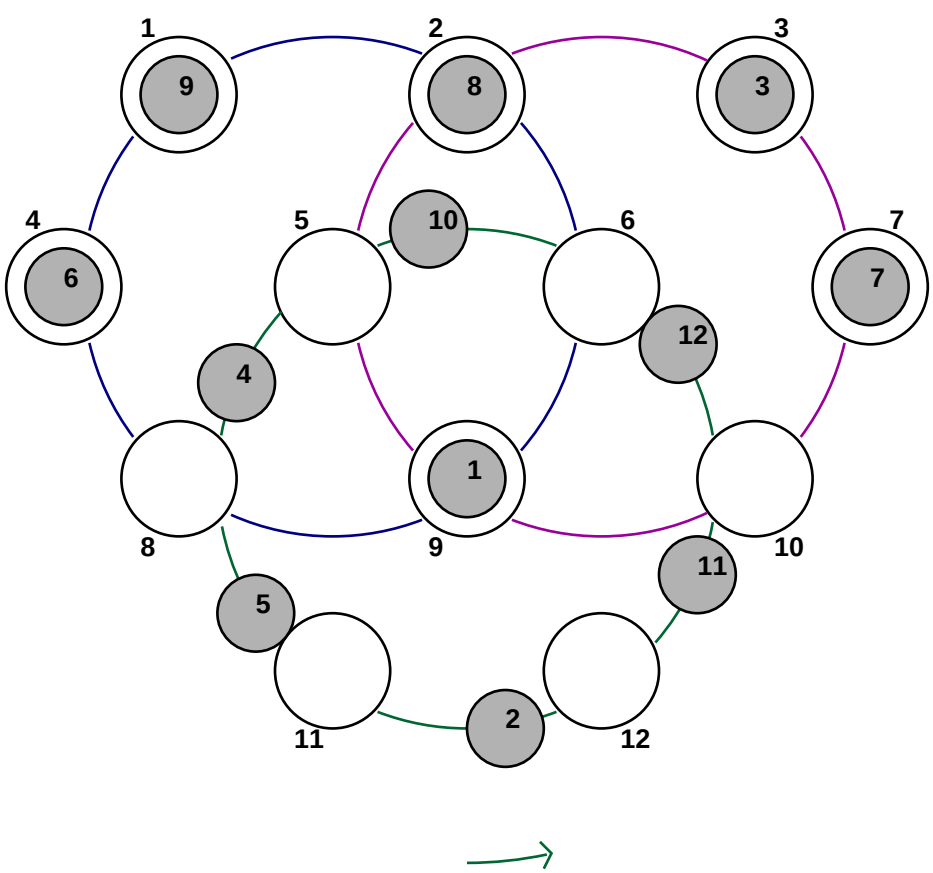

1
9
2
8
3
3
4
6
5
5
6
4
7
7
2
8
1
9
10
10
11
11
12
12

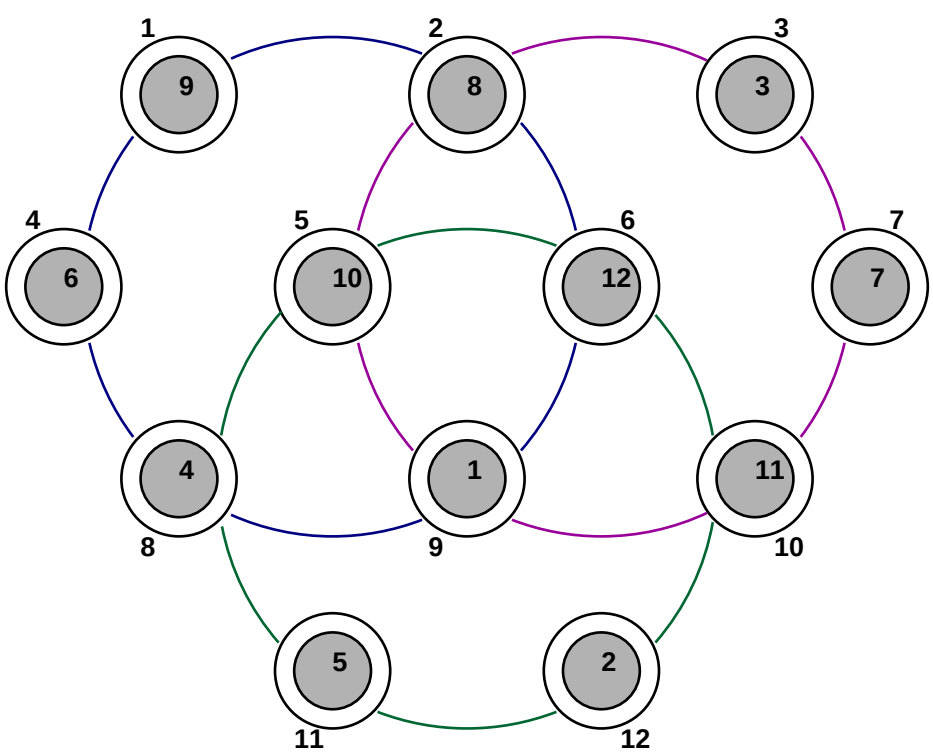

1
2
3
9
8
3
4
5
4
6
7
6
7
5
10
1
8
9
10
2
12
11
11
12

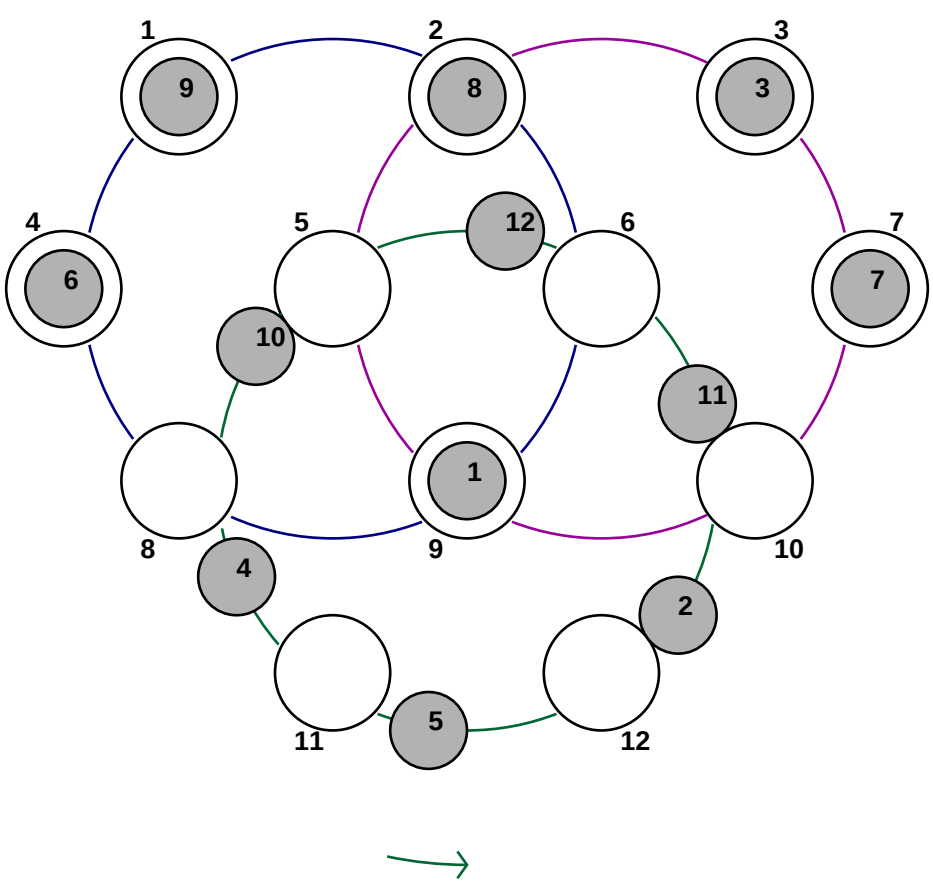

1
2
3
9
8
3
4
5
4
6
6
7
6
7
10
5
1
8
9
10
12
2
11
11
12

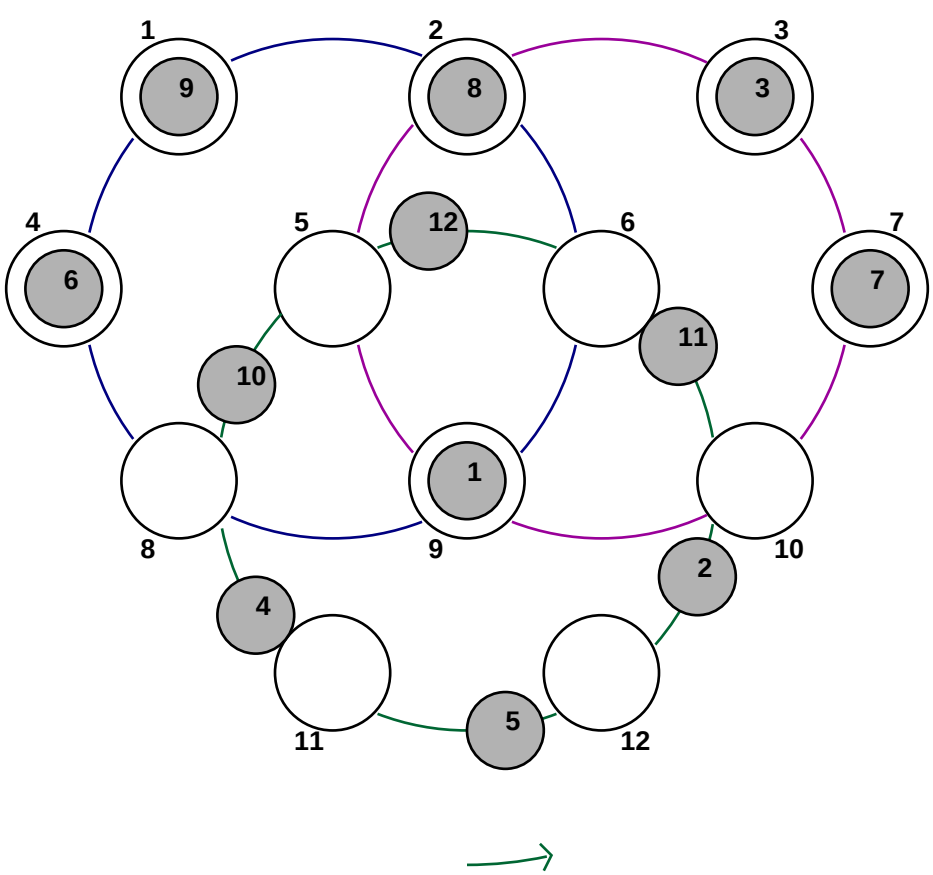

1
9
2
8
3
3
4
6
5
4
6
10
7
7
5
8
1
9
12
10
2
11
11
12

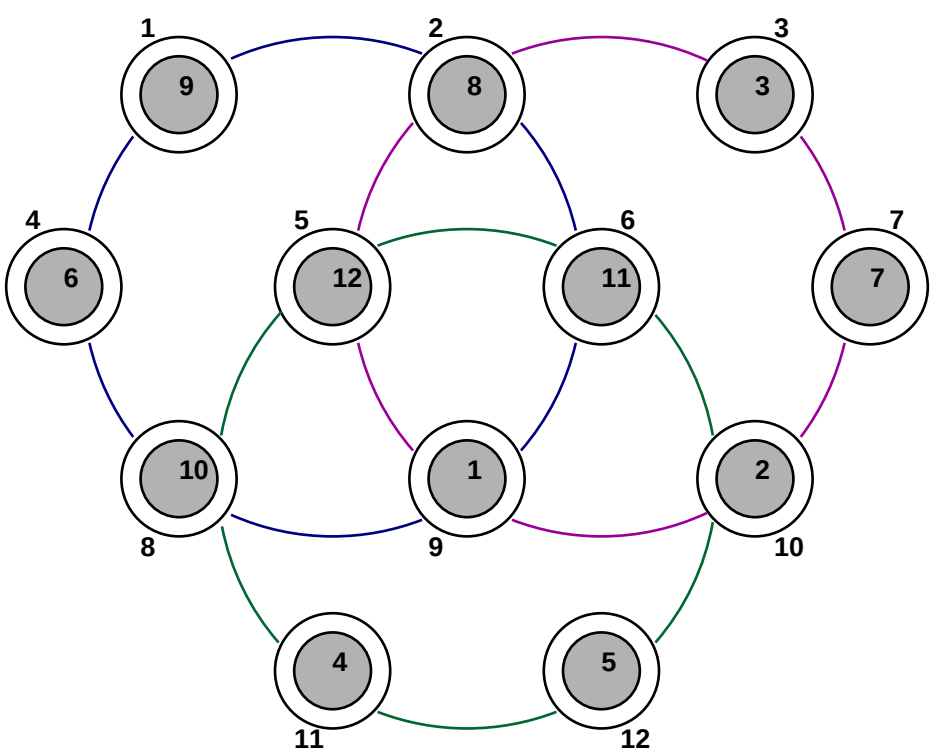

1
2
3
9
8
3
4
5
10
6
7
6
7
4
12
1
8
9
10
5
11
11
2
12

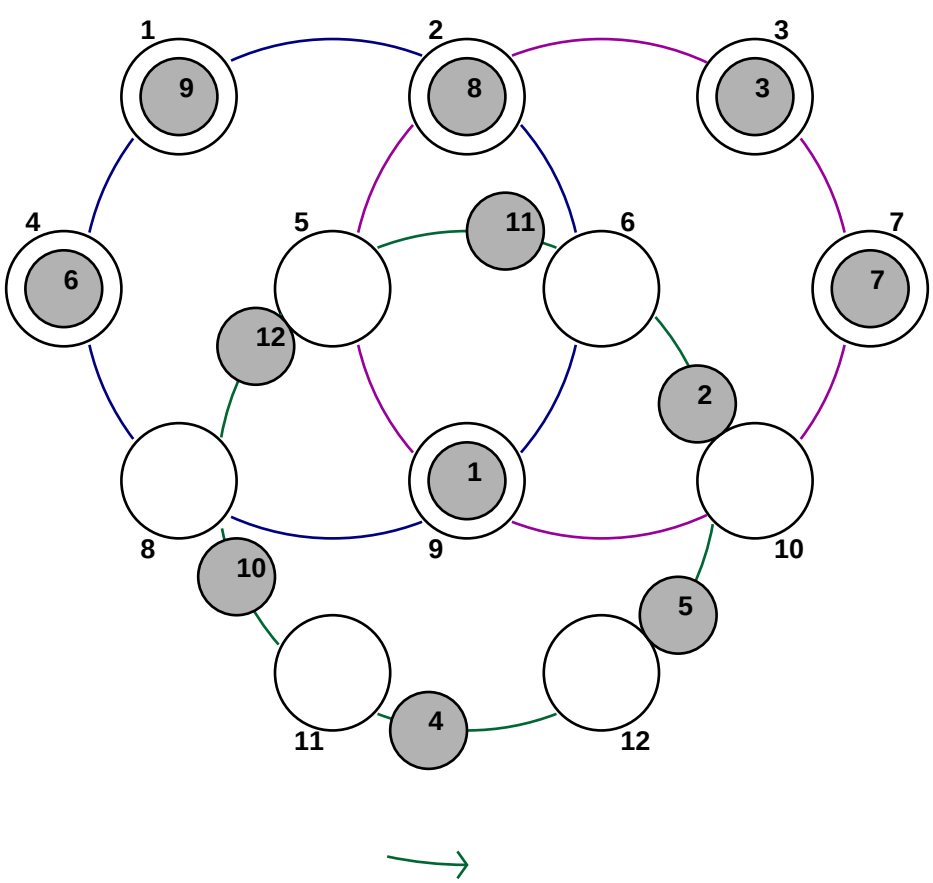

1
2
3
9
8
3
4
5
10
6
7
6
7
12
4
1
8
9
10
11
5
11
2
12

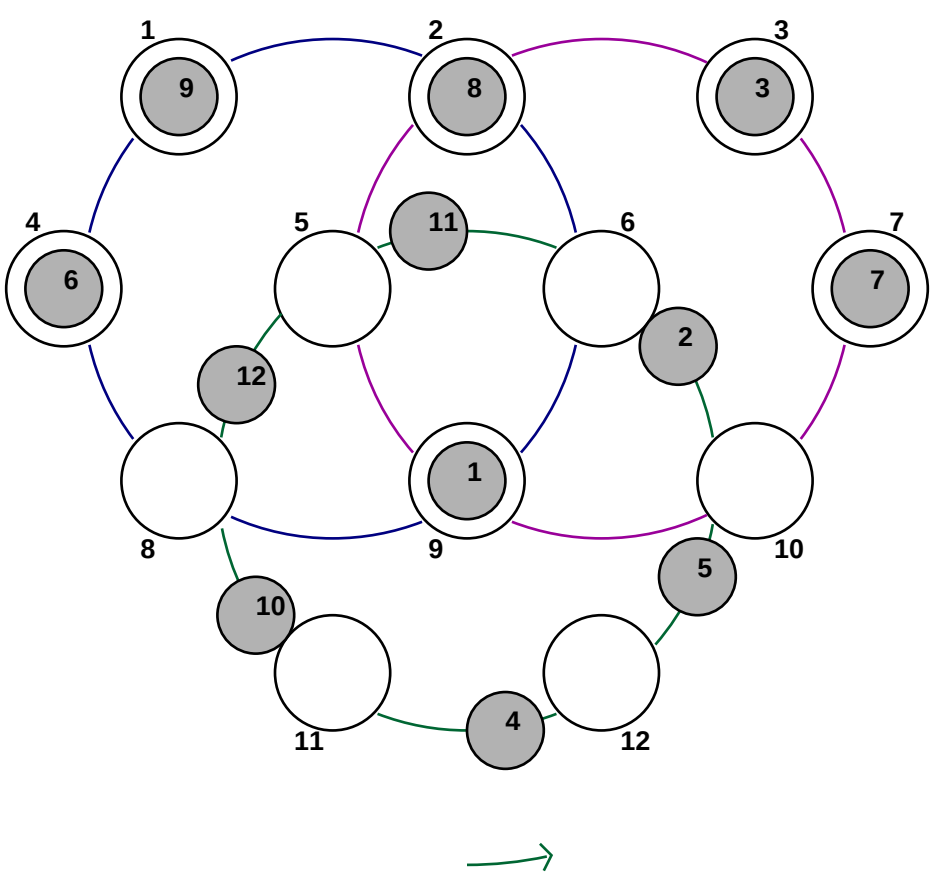

1
9
2
8
3
3
4
6
5
10
6
12
7
7
4
4
8
1
9
11
10
5
11
2
12

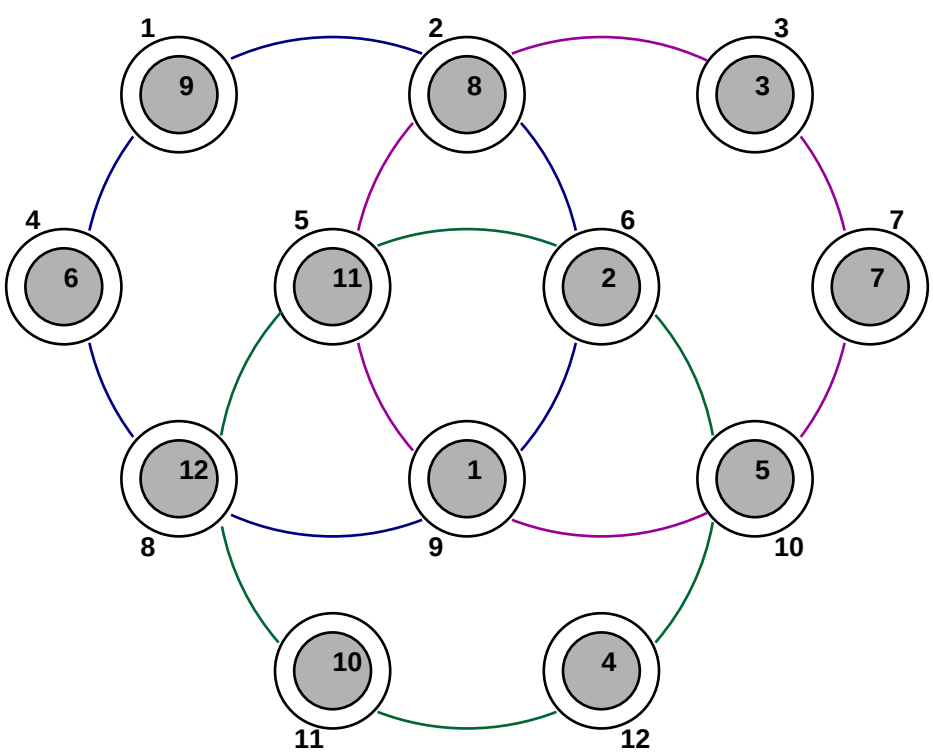

1
2
3
9
8
3
4
5
12
6
7
6
7
10
11
1
8
9
10
4
2
11
5
12

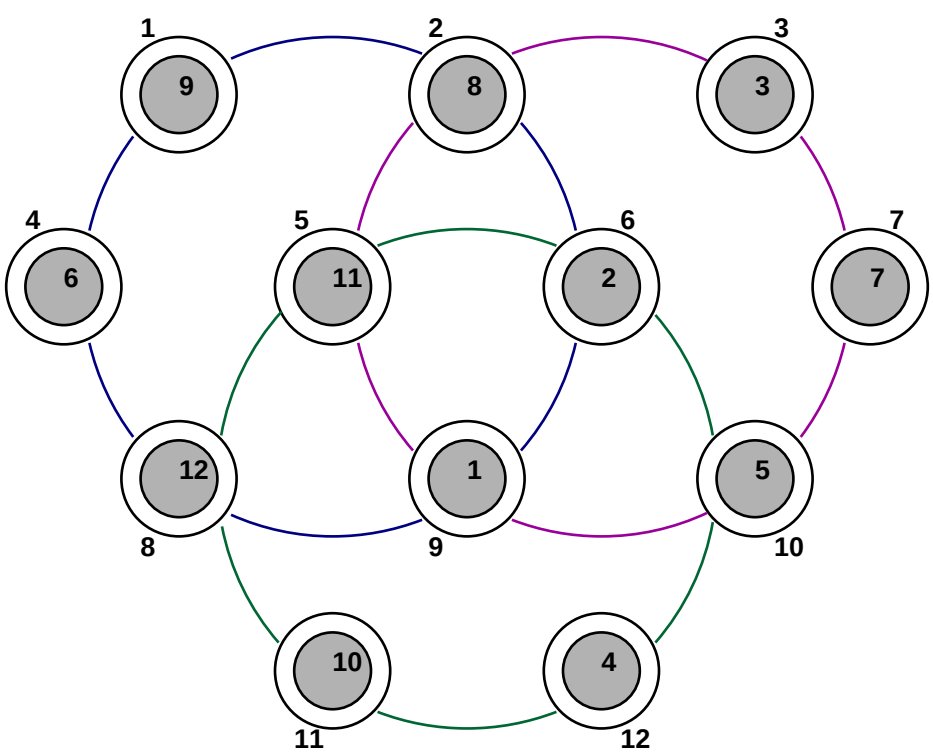

1
2
3
9
8
3
4
5
12
6
7
6
7
11
10
1
8
9
10
2
4
11
5
12

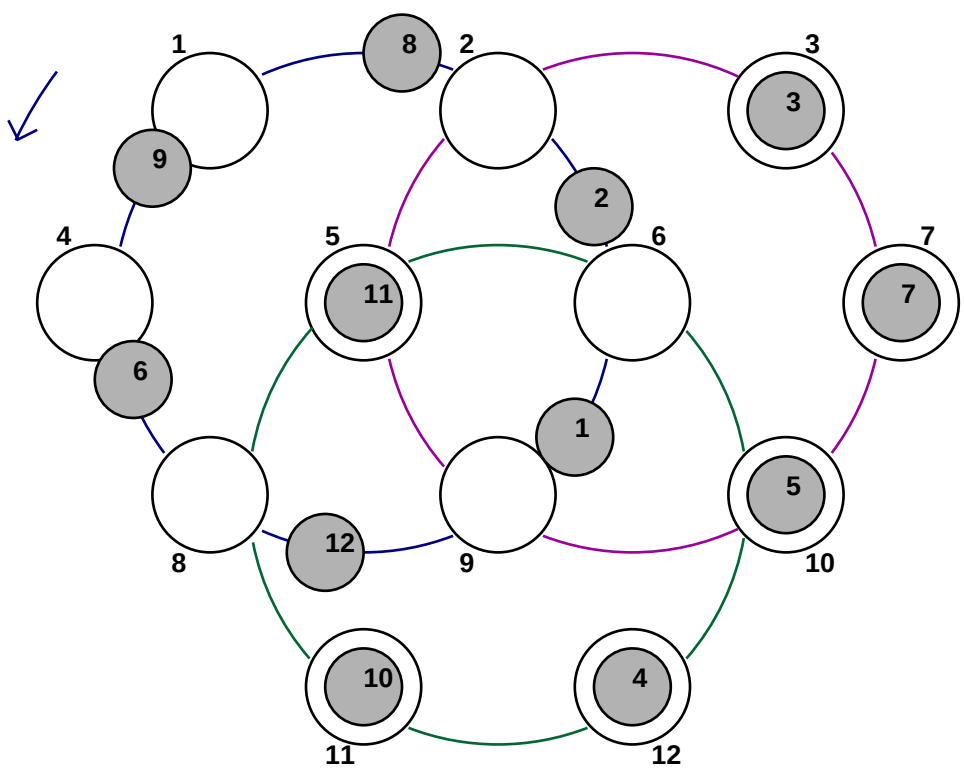

1
9
2
8
3
3
4
6
5
12
6
11
7
7
10
8
1
9
2
10
4
11
5
12

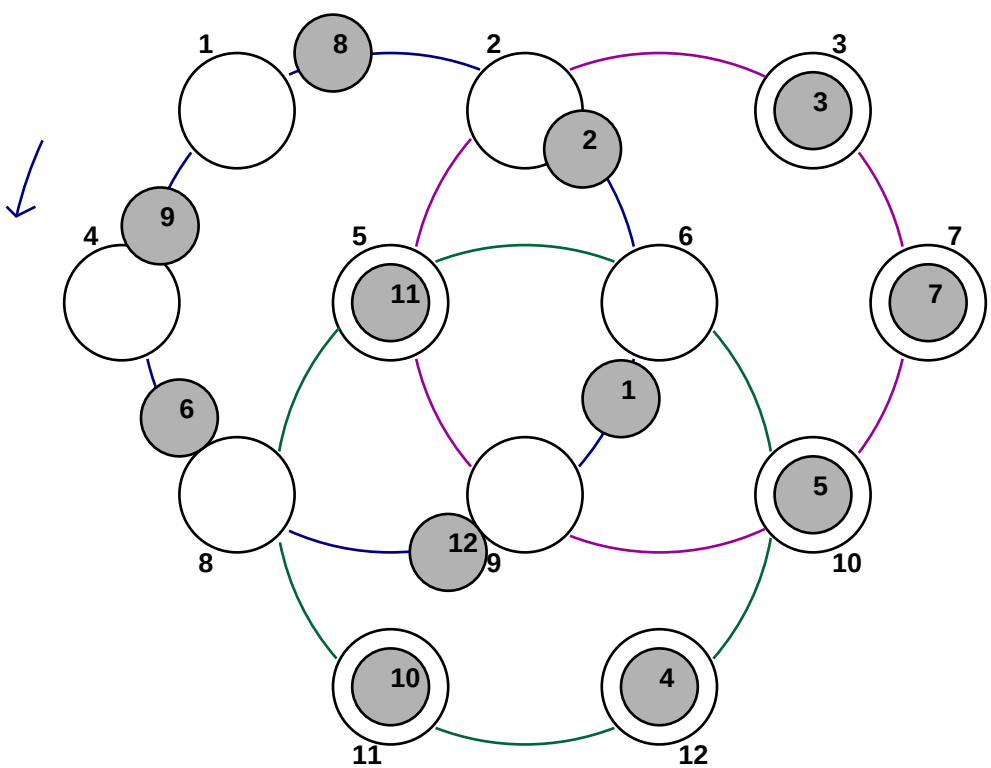

1
2
3
9
8
3
4
5
11
6
7
6
7
12
2
1
8
9
10
10
5
11
4
12

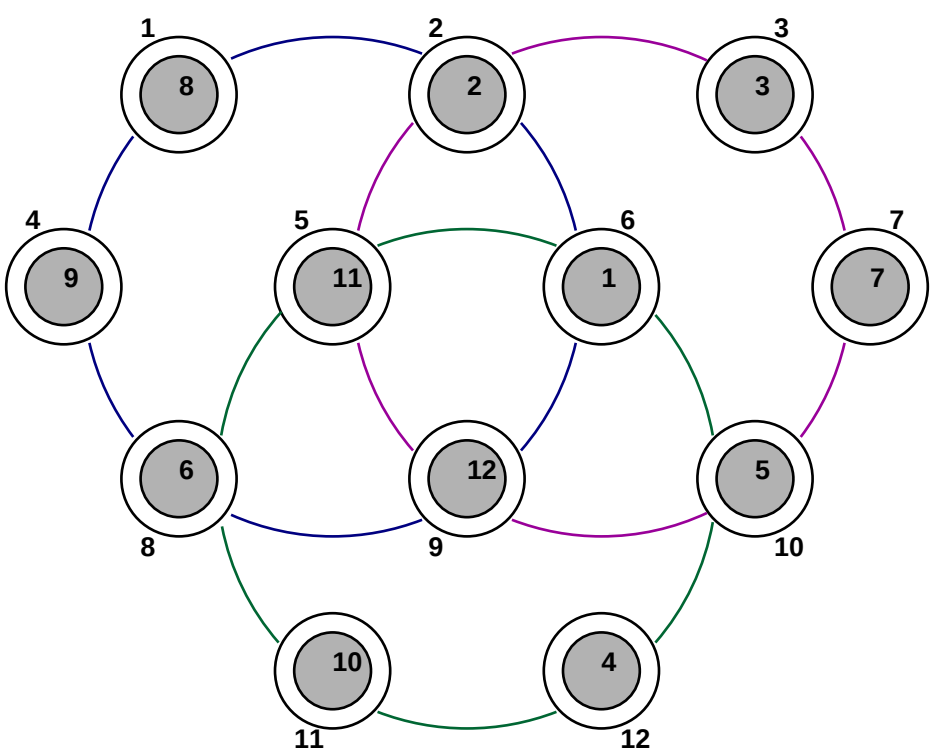

1
9
2
8
3
3
4
6
5
11
6
7
7
2
12
1
8
9
10
5
10
11
4
12

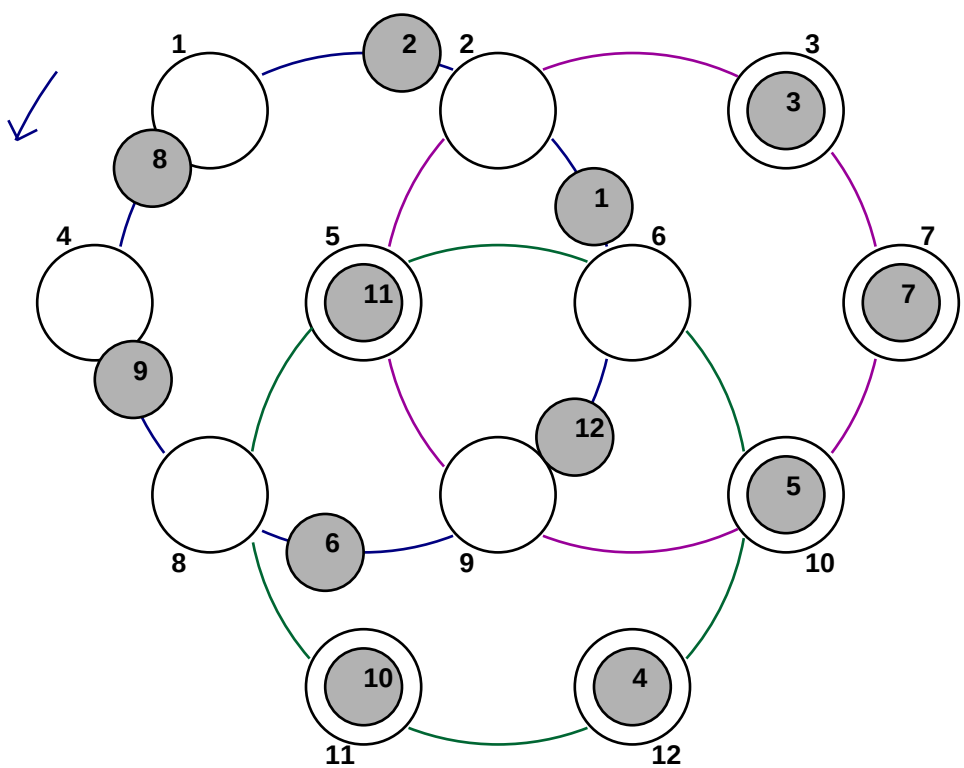

1
9
2
8
3
3
4
6
5
11
6
2
7
7
12
8
1
9
5
10
10
11
4
12

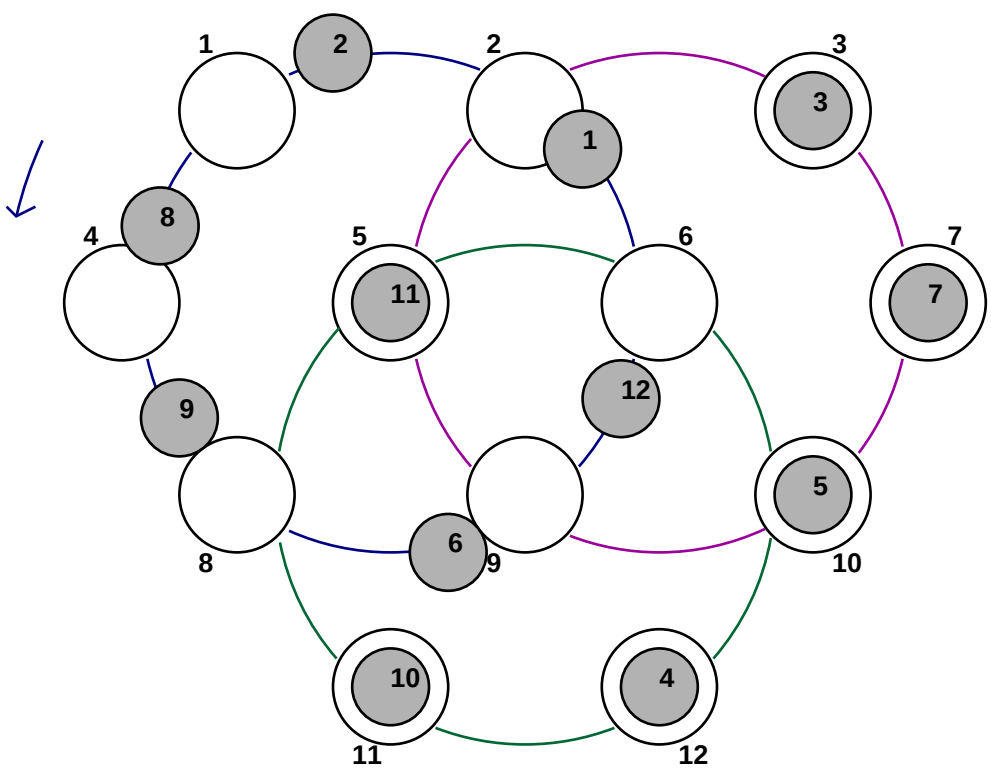

1
9
2
8
3
3
4
6
5
11
6
2
7
7
12
8
1
9
5
10
10
11
4
12

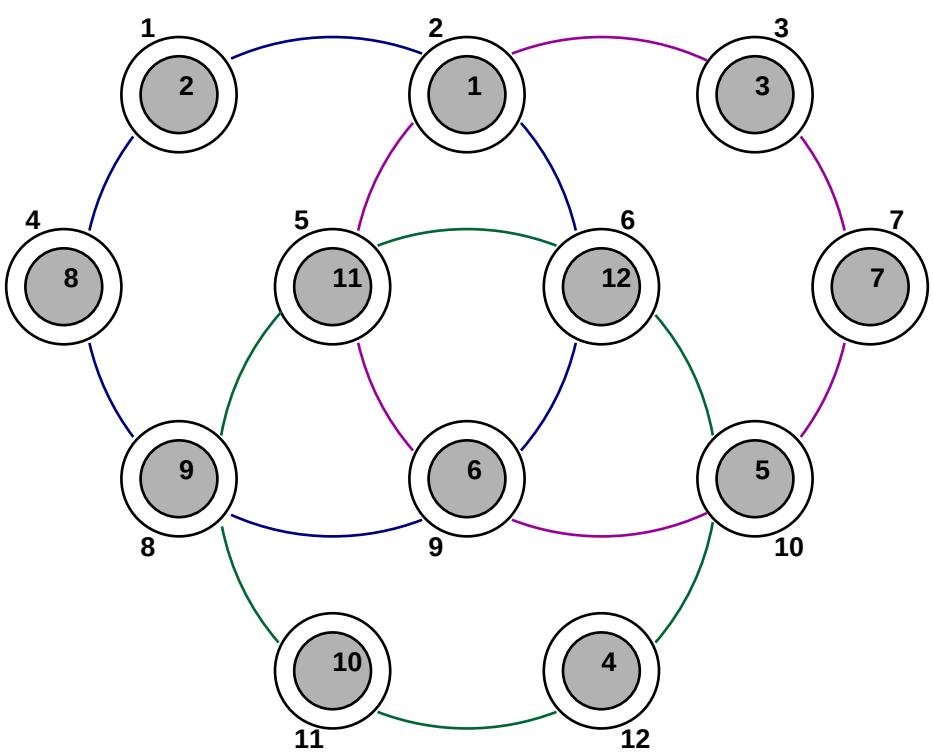

1
8
2
3
3
9
2
4
5
6
7
11
7
6
1
5
12
8
9
10
10
4
11
12

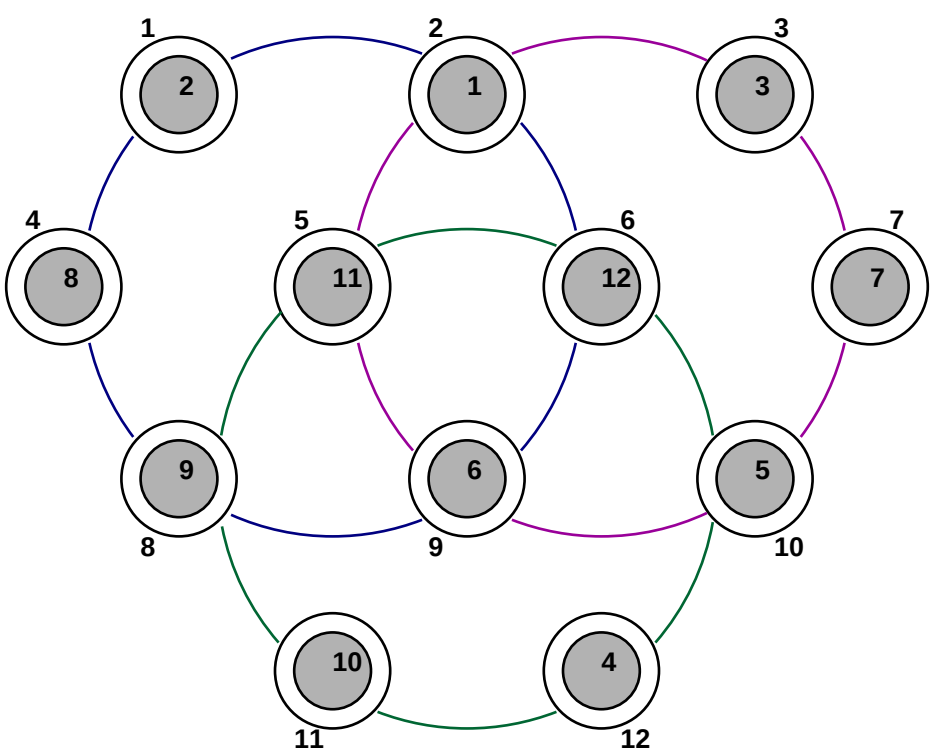

1
8
2
3
3
2
9
4
5
6
7
11
7
1
6
5
8
12
9
10
10
4
11
12

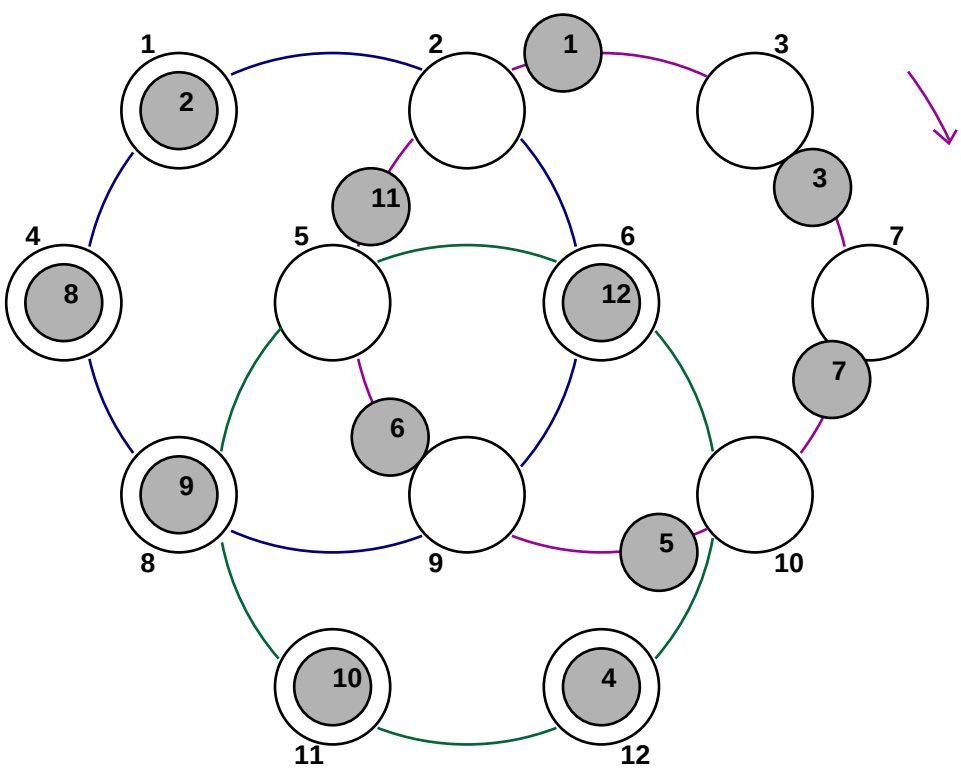

1
8
2
2
3
3
4
9
5
11
6
1
7
7
6
8
12
9
5
10
10
11
4
12

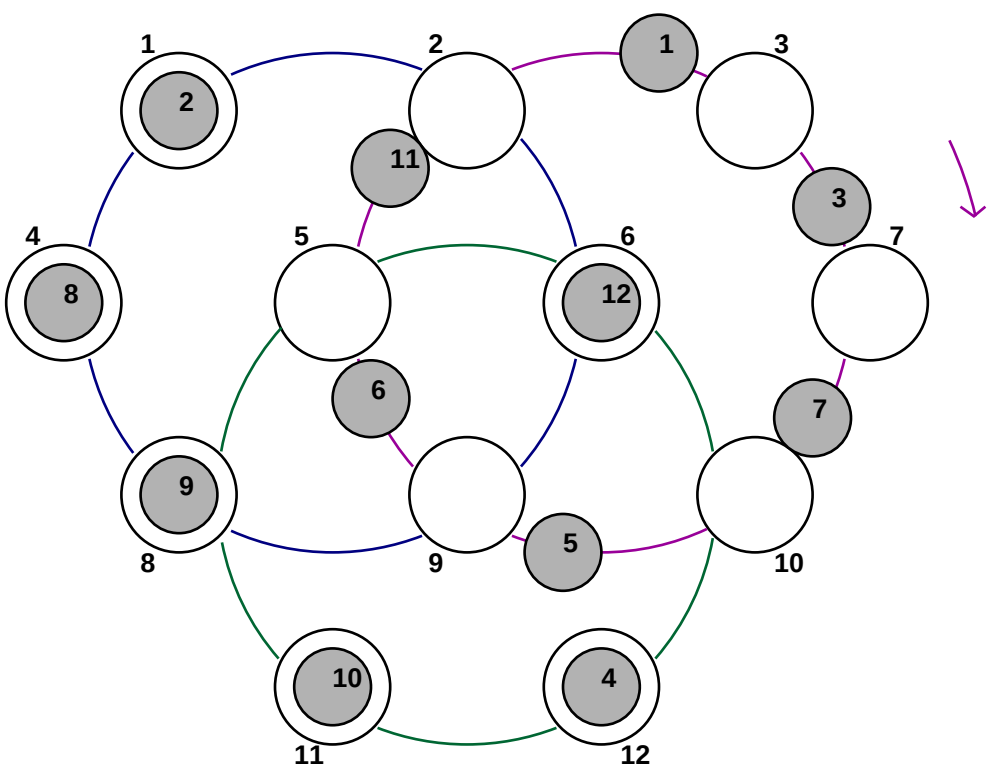

1
2
2
3
3
8
1
4
5
6
7
11
7
9
12
5
8
6
9
10
10
4
11
12

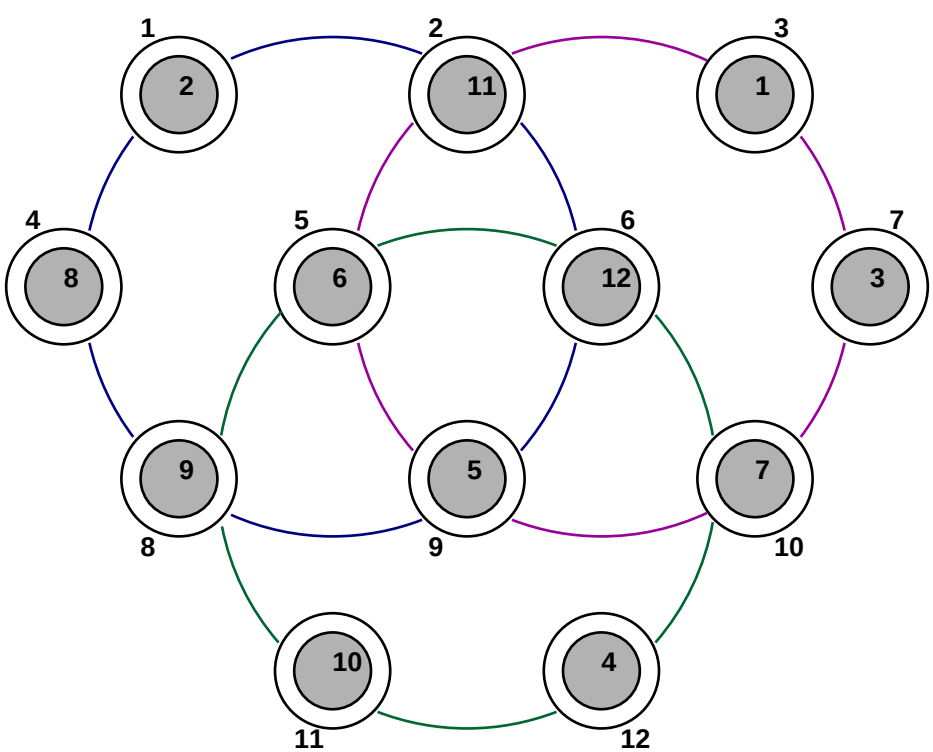

1
2
2
3
3
1
8
4
5
6
7
11
7
12
9
5
6
8
9
10
10
4
11
12

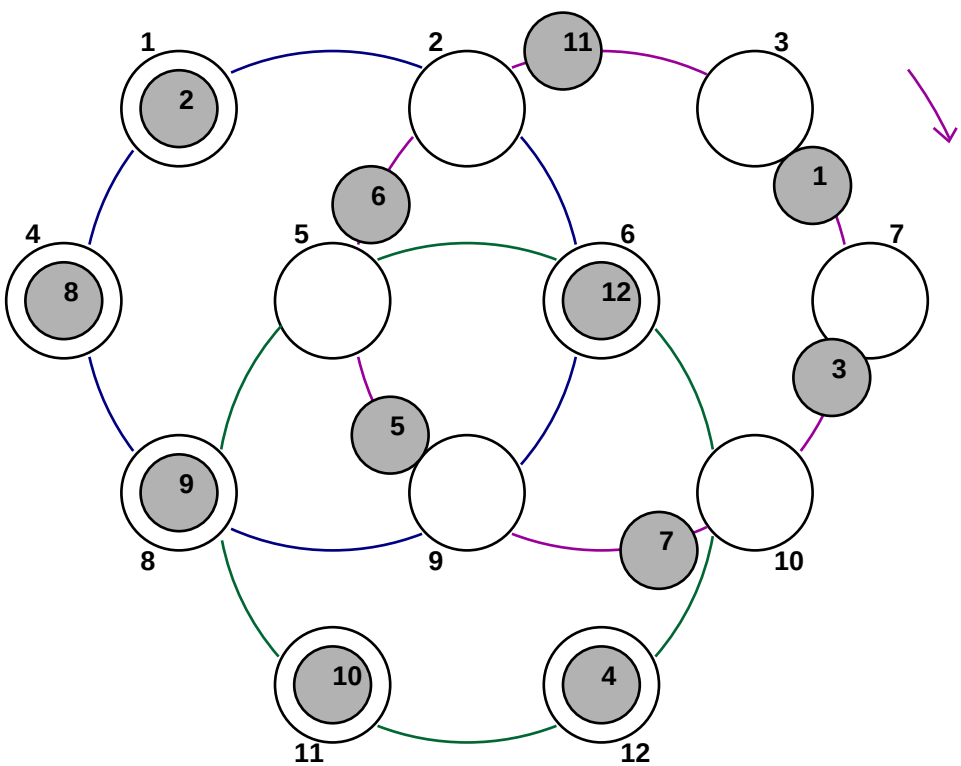

1
2
2
1
3
3
4
8
5
11
6
12
7
7
9
8
6
9
5
10
10
11
4
12

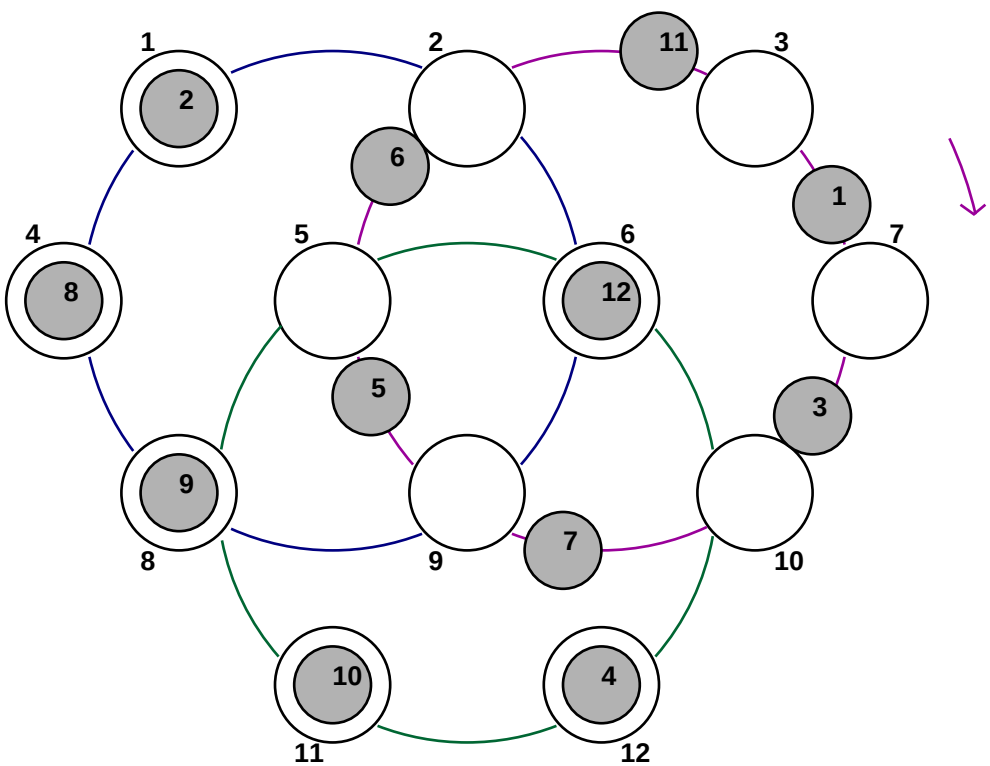

1
2
2
1
3
3
4
8
5
11
6
12
7
7
9
8
6
9
5
10
10
11
4
12

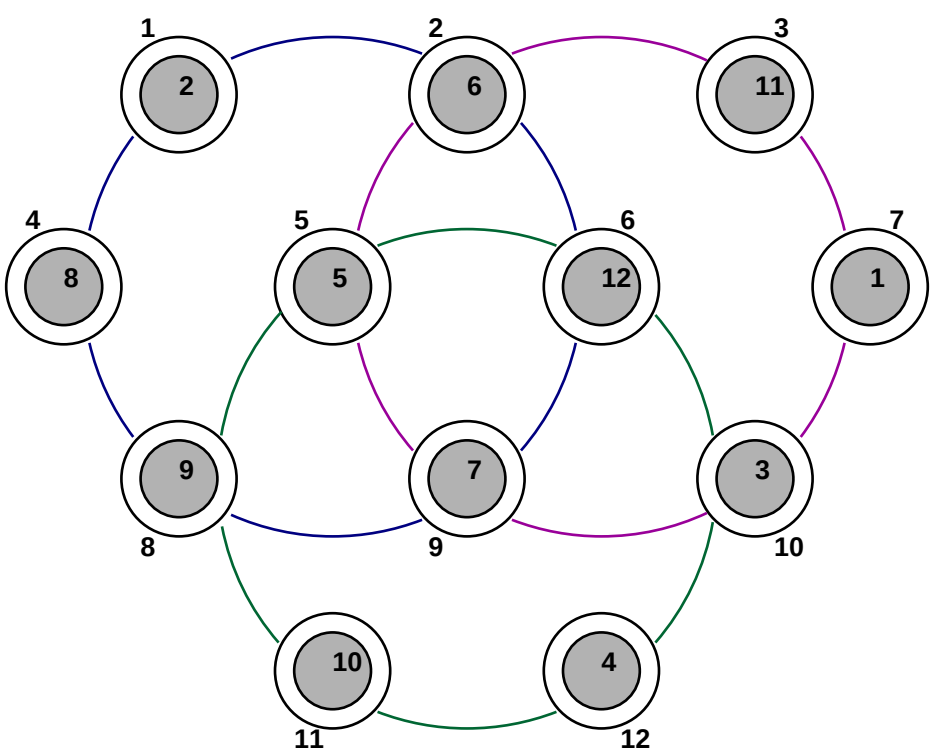

1
2
1
3
2
3
11
4
5
6
7
8
12
7
6
9
5
8
9
10
10
4
11
12

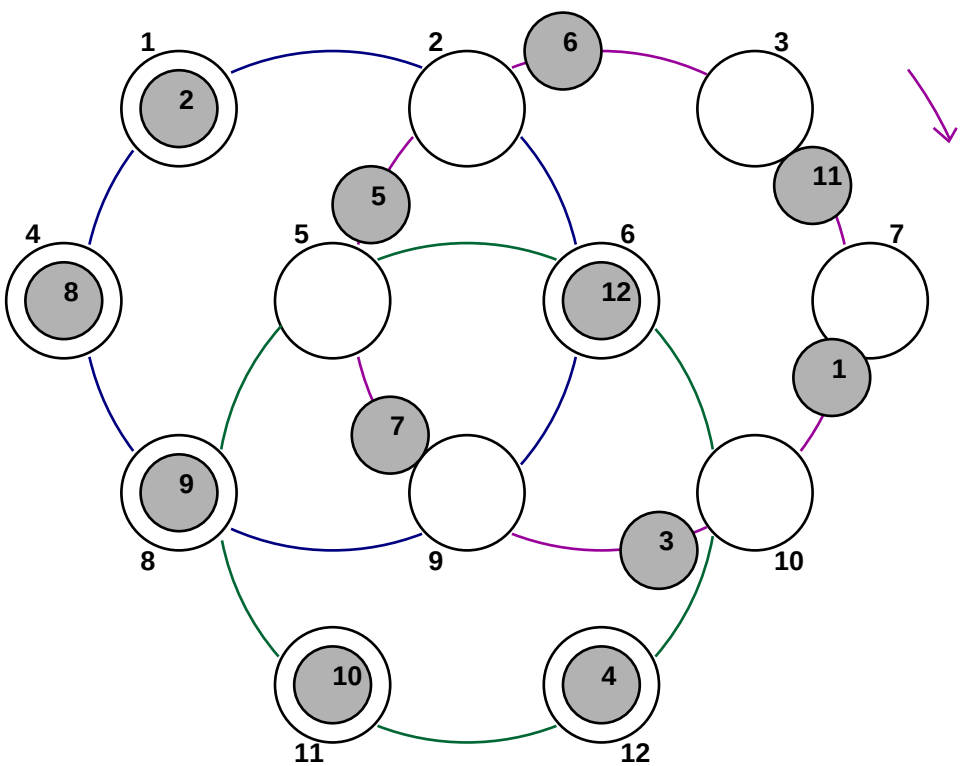

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
6
7
8
9
10
11
12

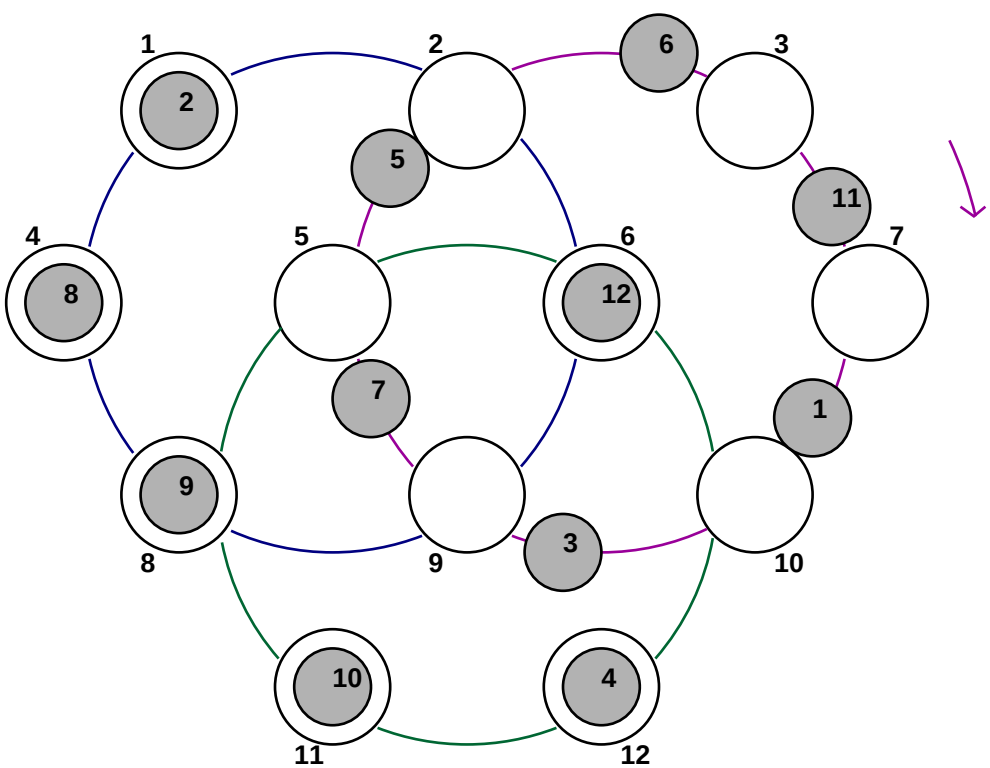

1
2
2
11
3
1
4
8
5
6
6
12
7
3
9
8
5
9
7
10
10
11
4
12

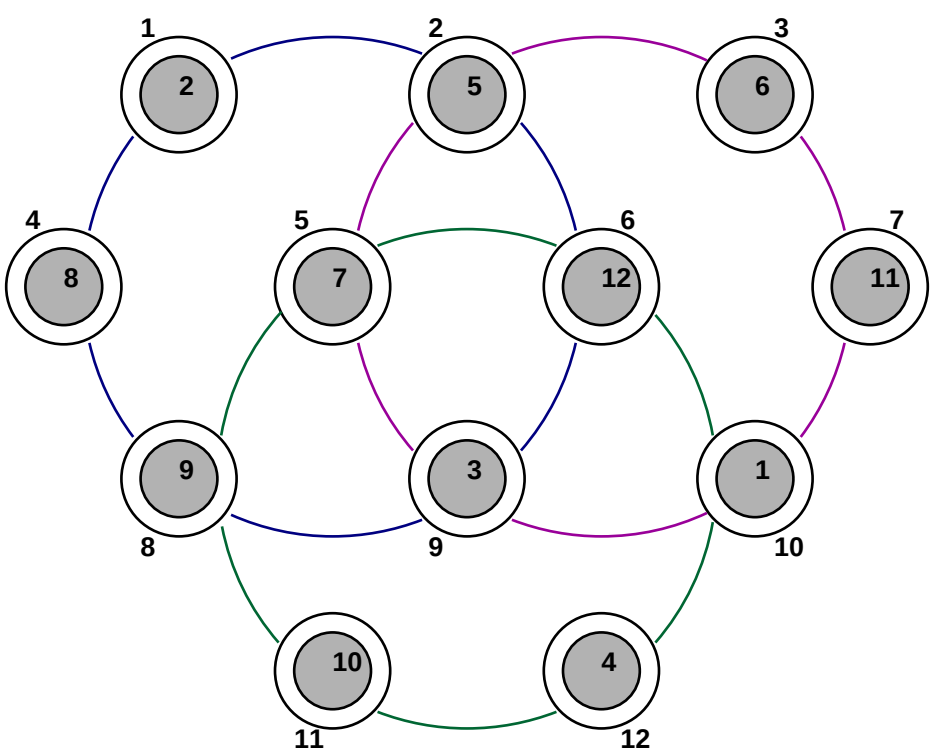

1
2
11
3
2
1
6
4
5
6
7
8
12
3
5
9
8
9
7
10
10
4
11
12

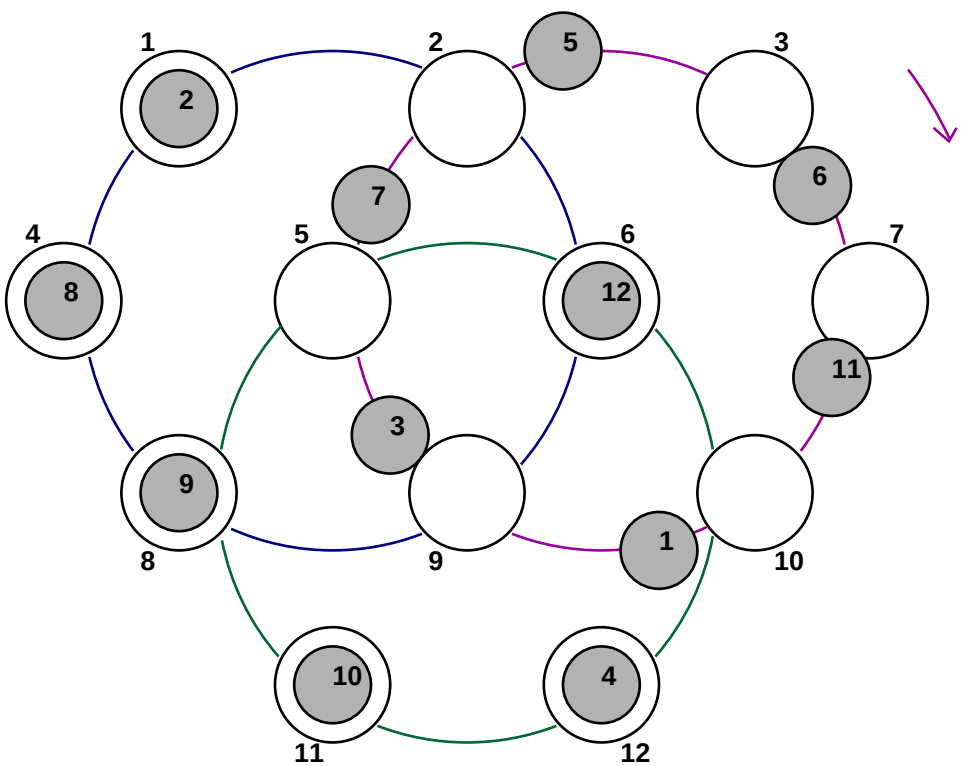

1
2
11
3
2
6
1
4
5
6
7
8
12
5
3
9
9
7
8
9
10
10
4
11
12

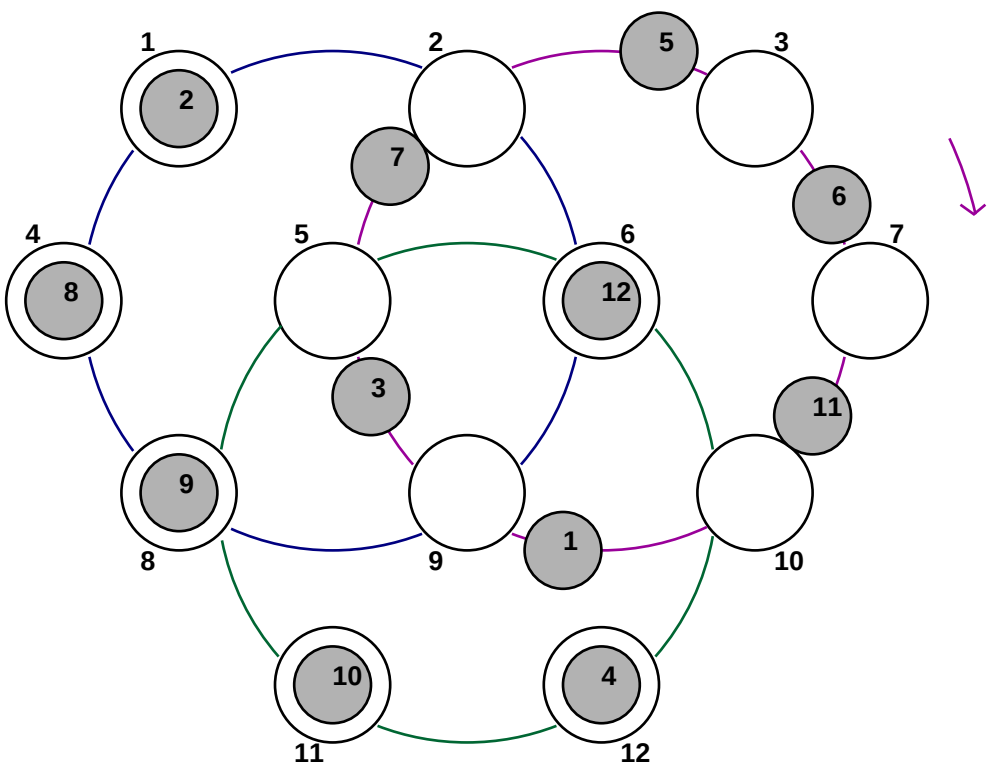

1
2
2
6
3
11
4
8
5
5
6
12
7
1
9
8
7
9
3
10
10
11
4
12

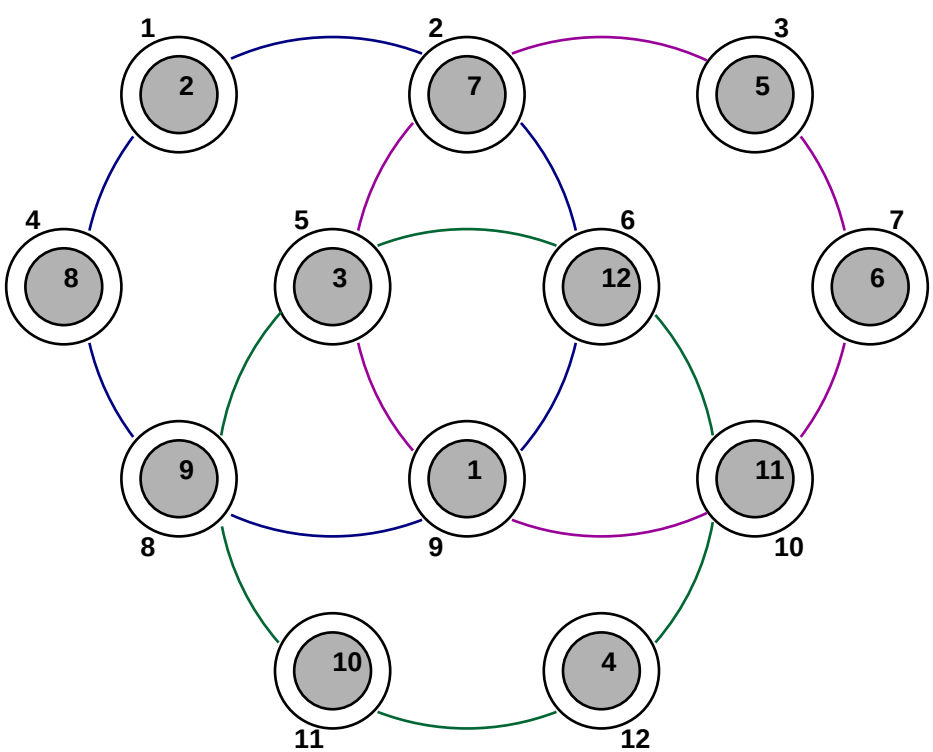

1
2
6
3
11
5
4
5
6
7
8
12
1
7
9
3
8
9
10
10
4
11
12

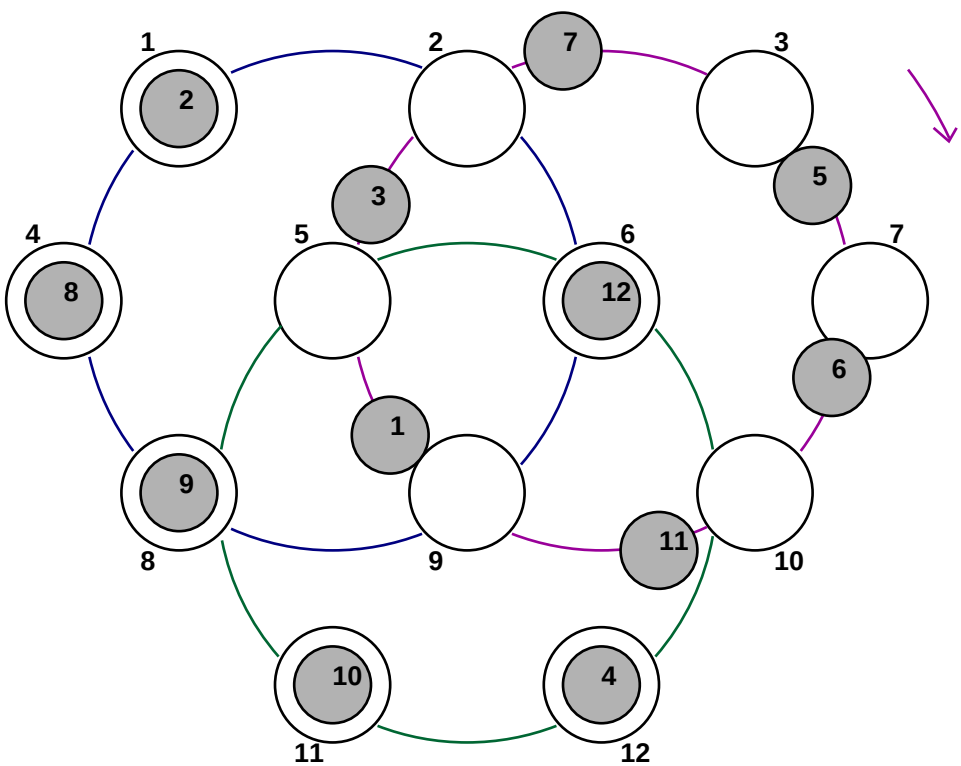

1
2
6
3
2
5
11
4
5
6
7
8
12
7
1
9
3
8
9
10
10
4
11
12

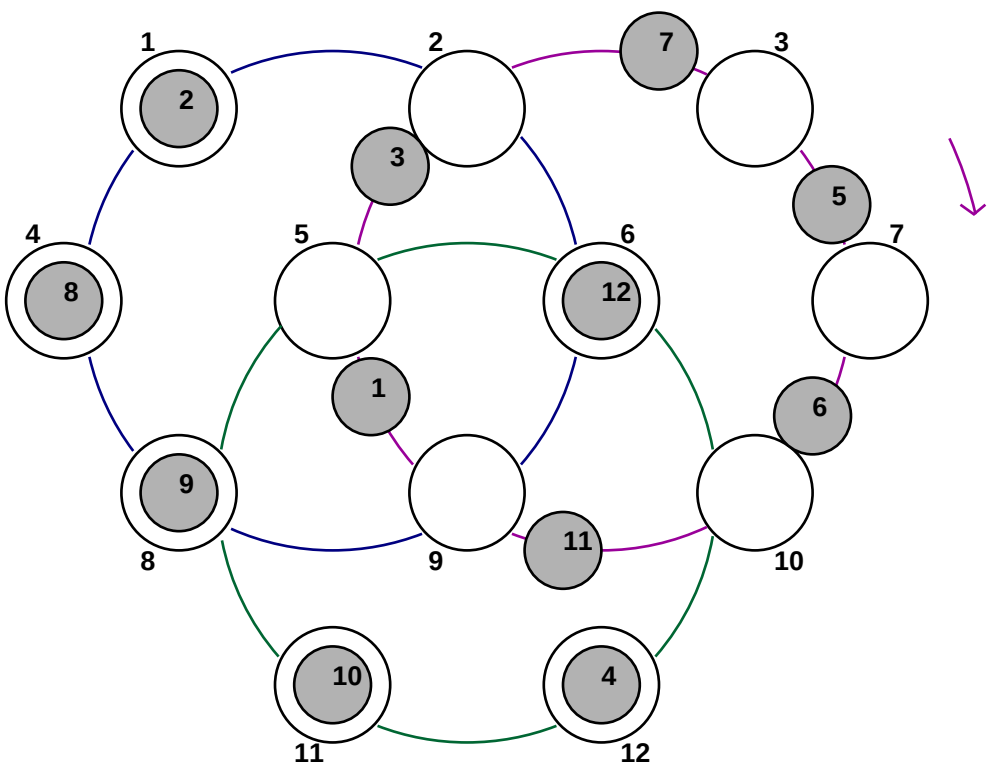

1
2
2
5
3
6
4
8
5
7
6
12
7
11
9
8
3
9
1
10
10
11
4
12

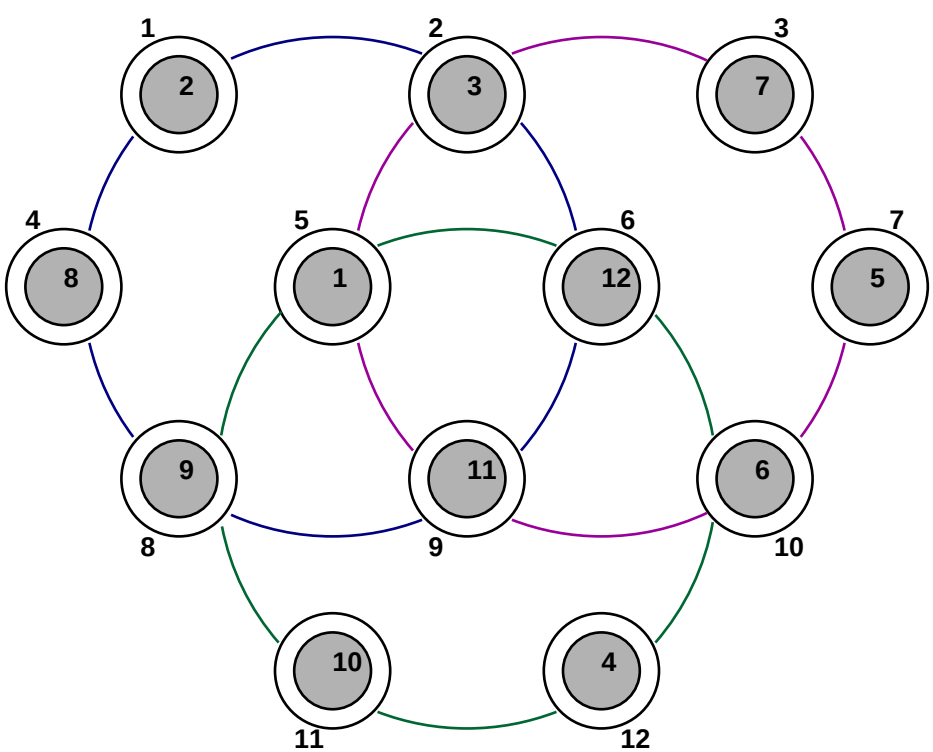

1
2
5
3
6
7
4
5
6
7
8
12
11
3
9
1
8
9
10
10
4
11
12


1
2
2
5
3
7
6
4
8
5
6
12
7
3
11
9
8
9
1
10
10
11
4
12

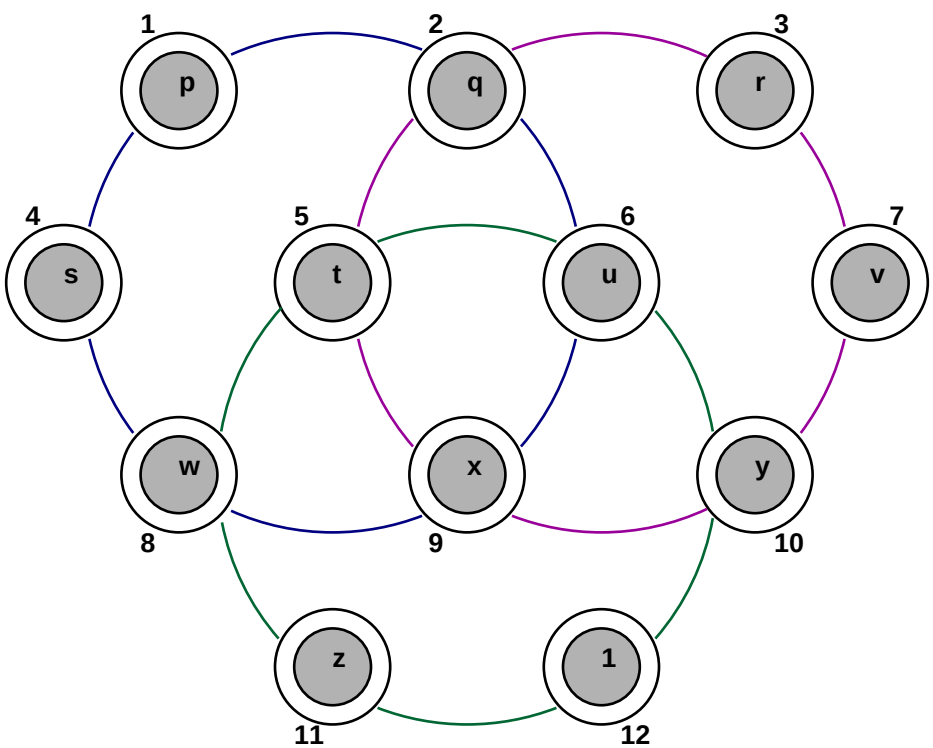

1
2
2
7
3
5
4
8
5
3
6
12
7
6
9
8
1
9
11
10
10
11
4
12


1
2
7
3
2
5
3
4
5
6
7
8
12
6
1
9
11
8
9
10
10
4
11
12


1
2
7
3
2
3
5
4
5
6
7
8
12
1
6
9
9
11
8
9
10
10
4
11
12

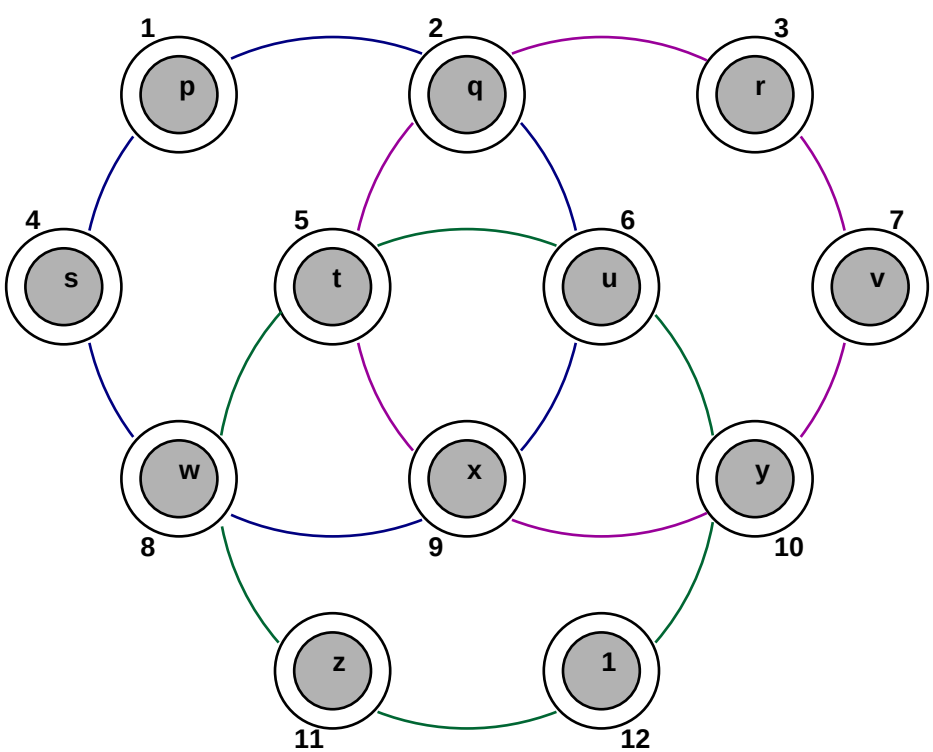

1
2
2
3
3
7
4
8
5
1
6
12
7
5
9
8
11
9
6
10
10
11
4
12

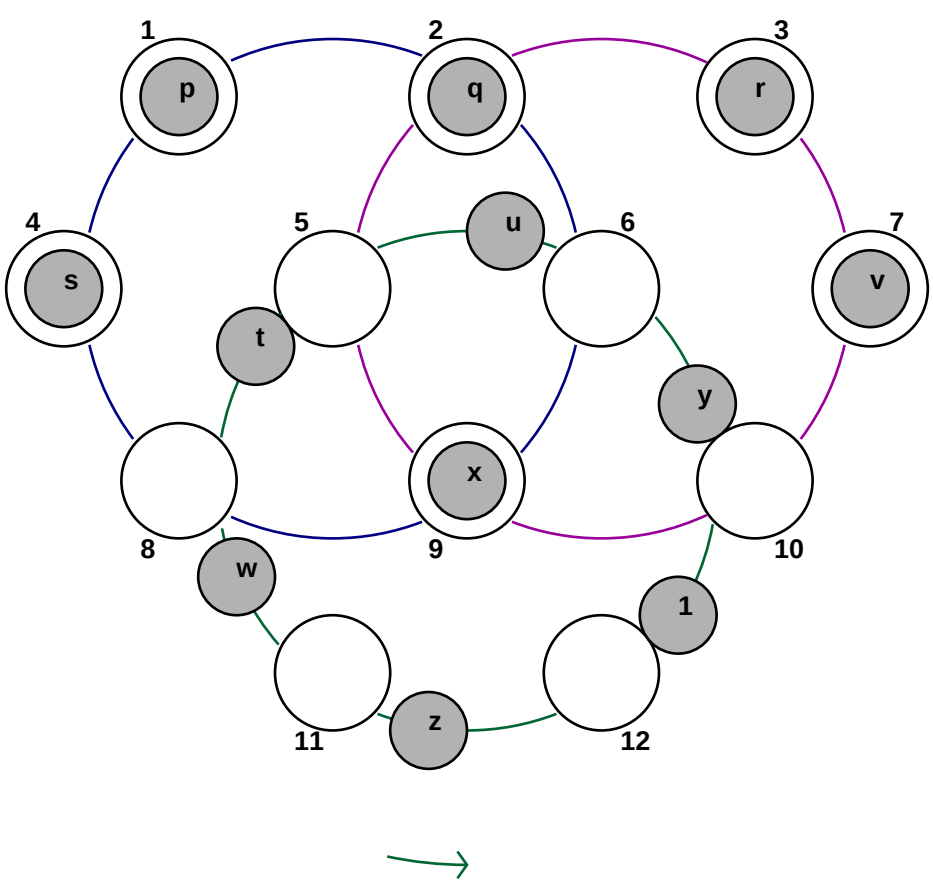
Letters will be used to represent numbers in showing that any permutation can be returned to the case when the numbers match their position.

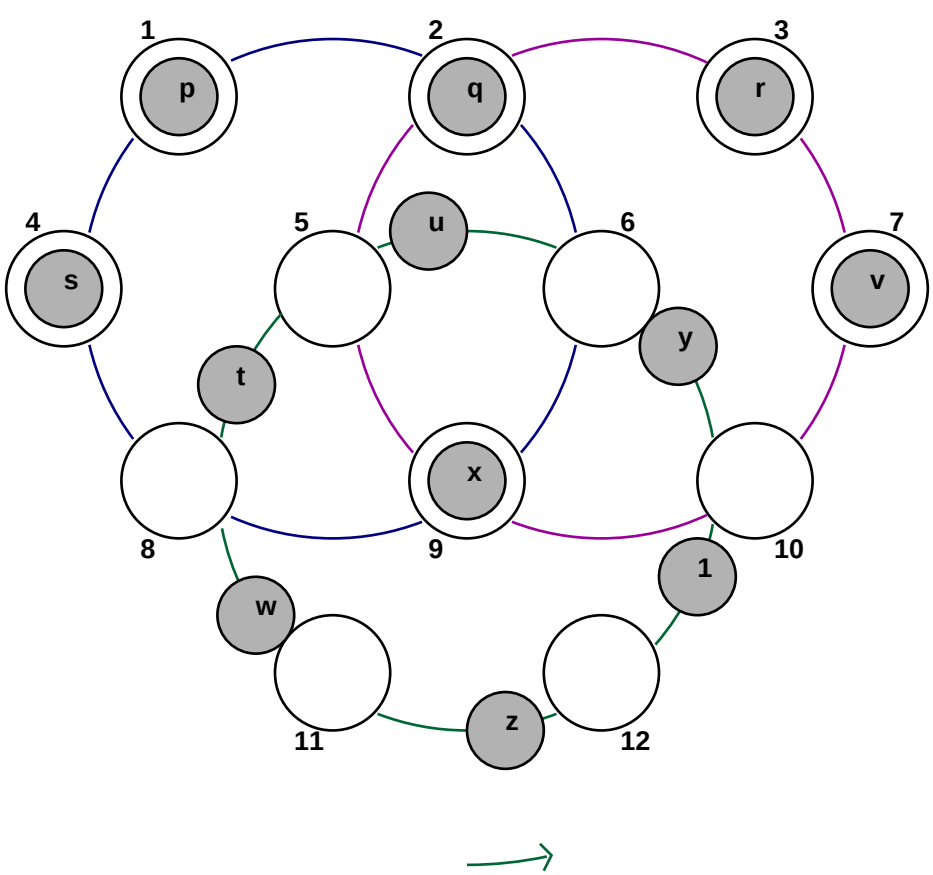


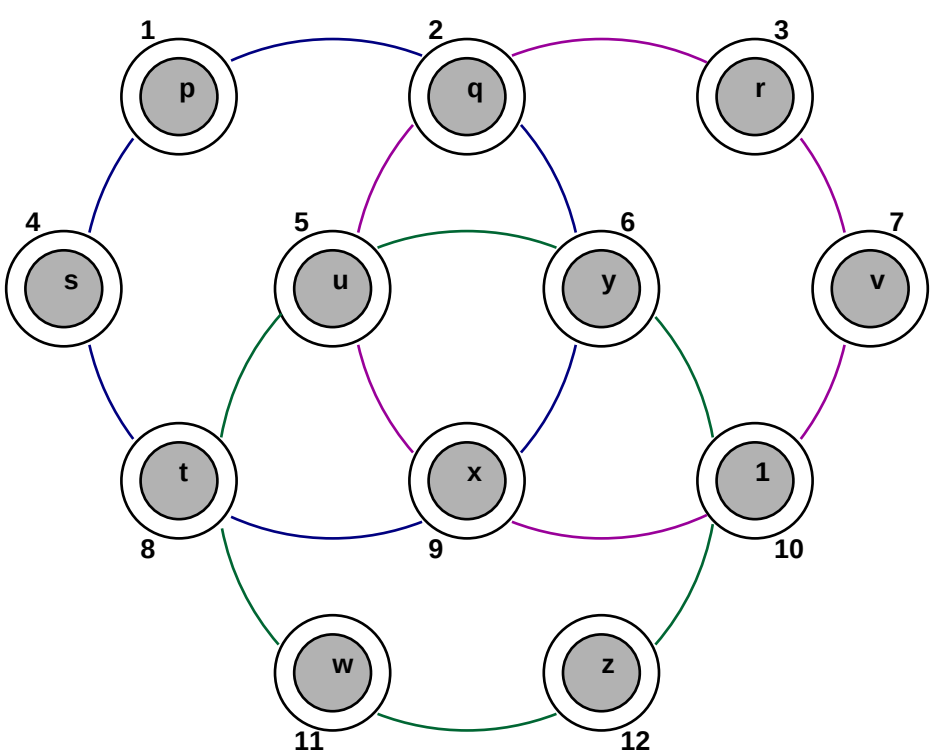
Let p, q, r, s, t, u, v, w, x, y, z be any of the unrepresented numbers.
The number 1 is in position 12. From this position, the number 1 can be moved to any position.

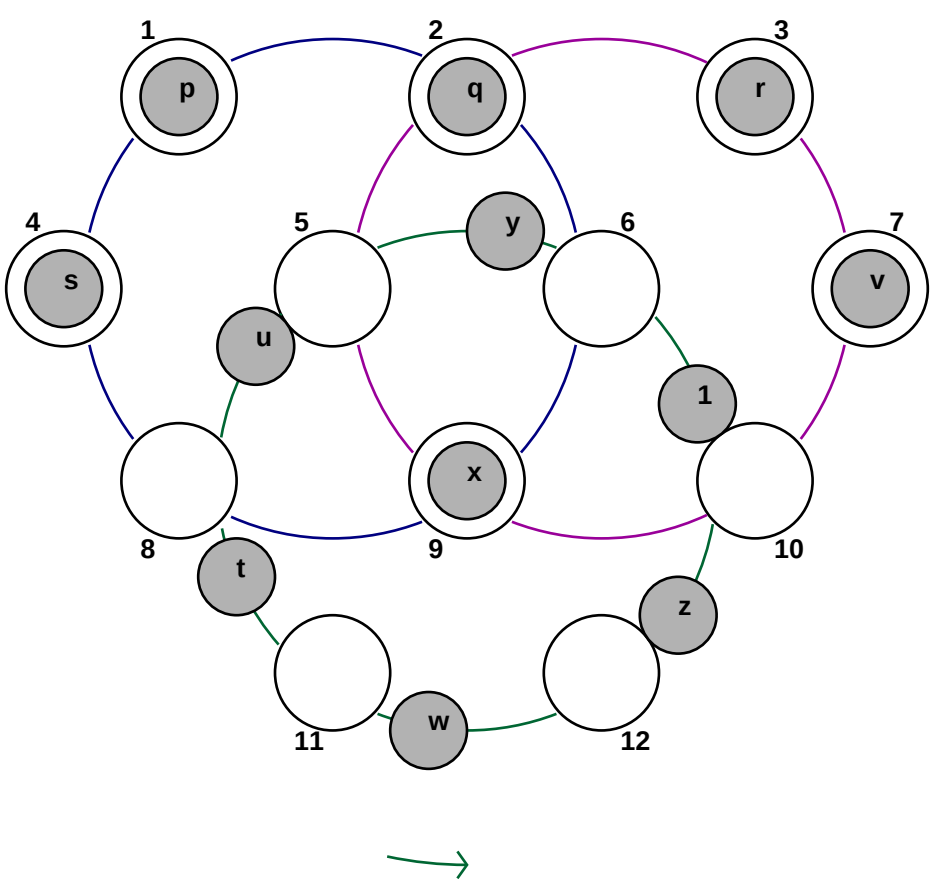
The number 1 can be placed in every position of the green circle by moving the green circle in either a clockwise or counter-clockwise pattern.

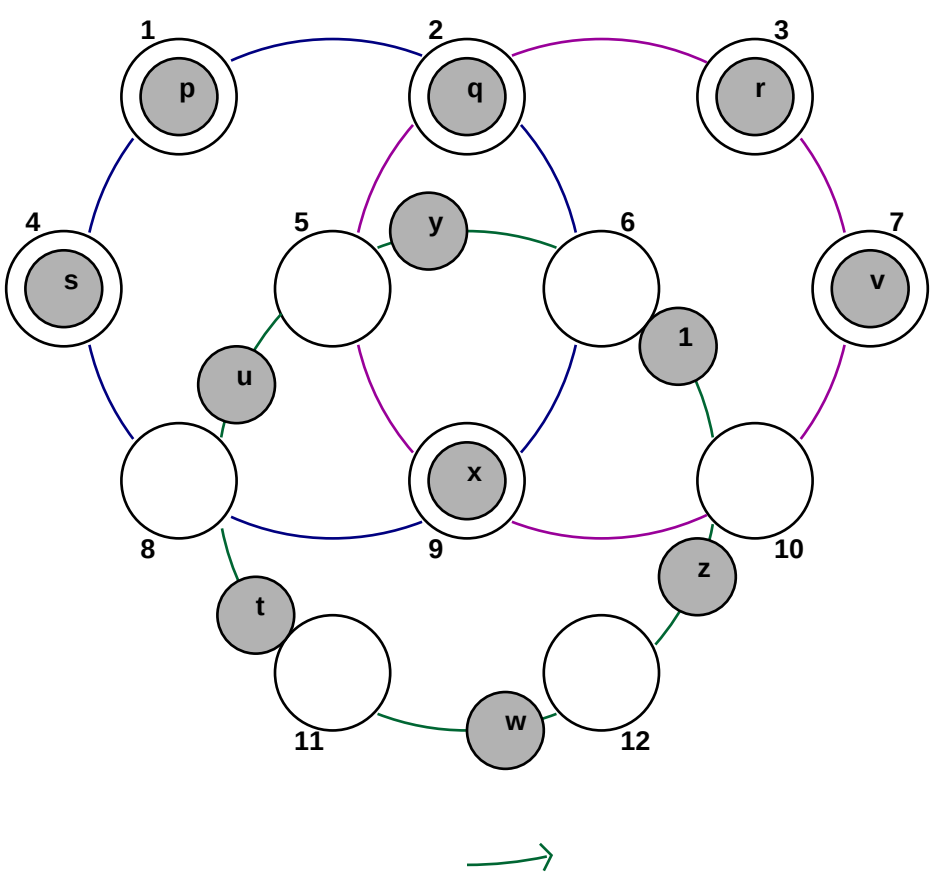

1
p
2
q
3
r
4
s
5
t
6
u
7
v
w
8
x
9
y
10
z
11
1
12

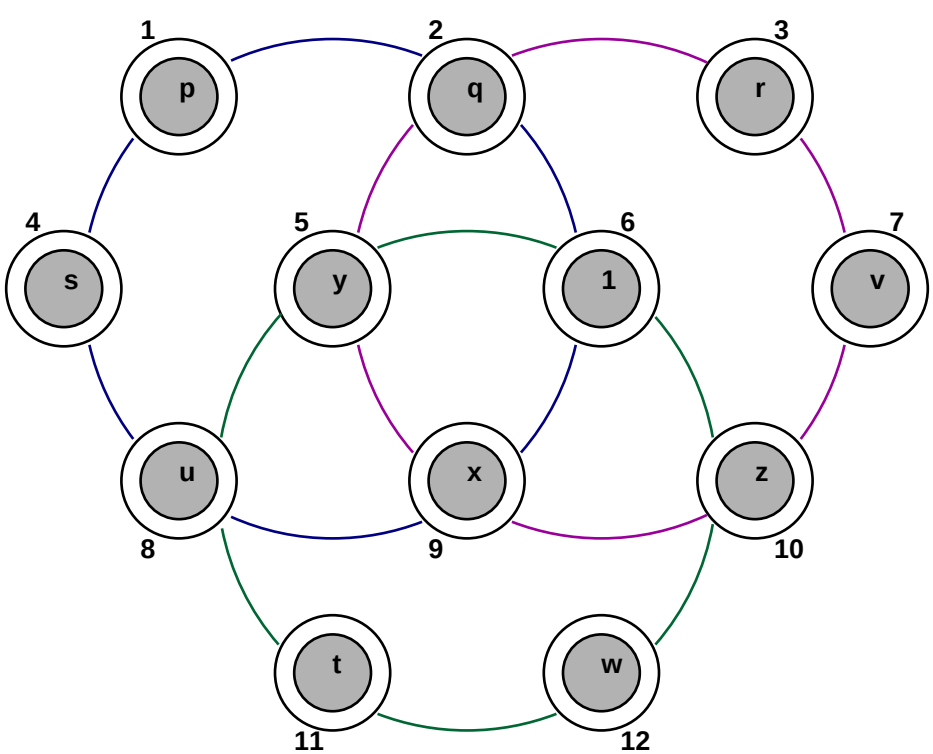

1
2
3
p
q
r
4
5
u
6
7
s
v
t
y
x
8
9
10
w
1
z
11
12

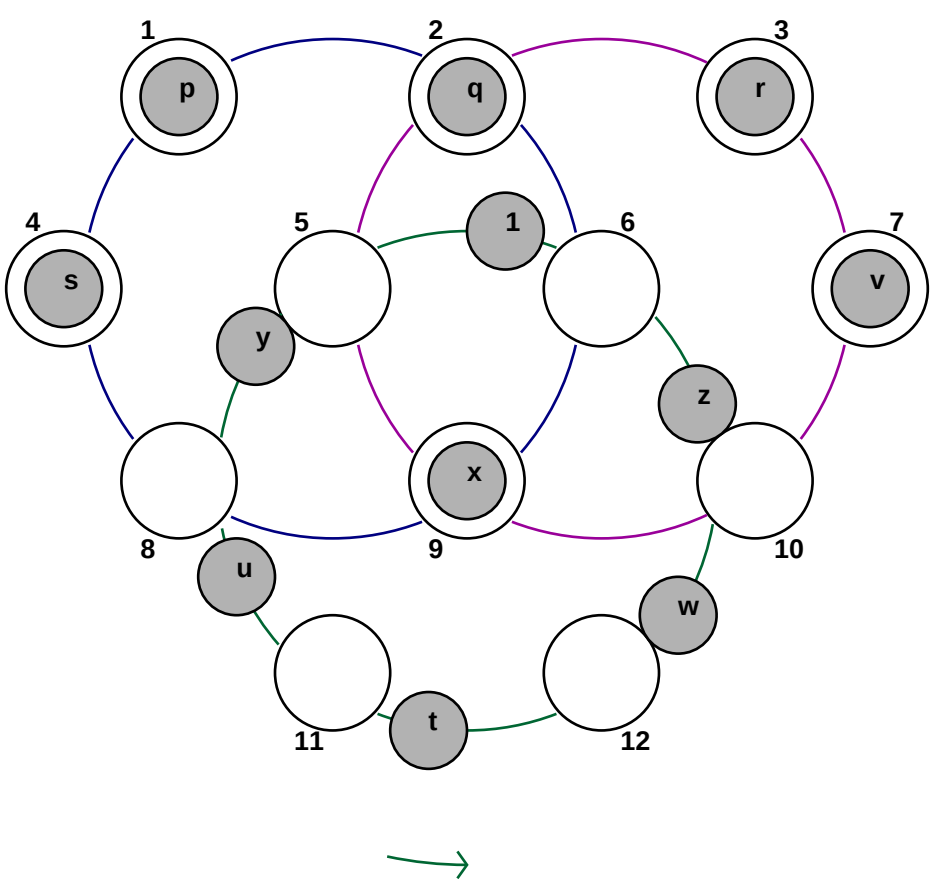

1
2
3
p
q
r
4
5
u
6
7
s
v
y
t
x
8
9
10
1
w
z
11
12

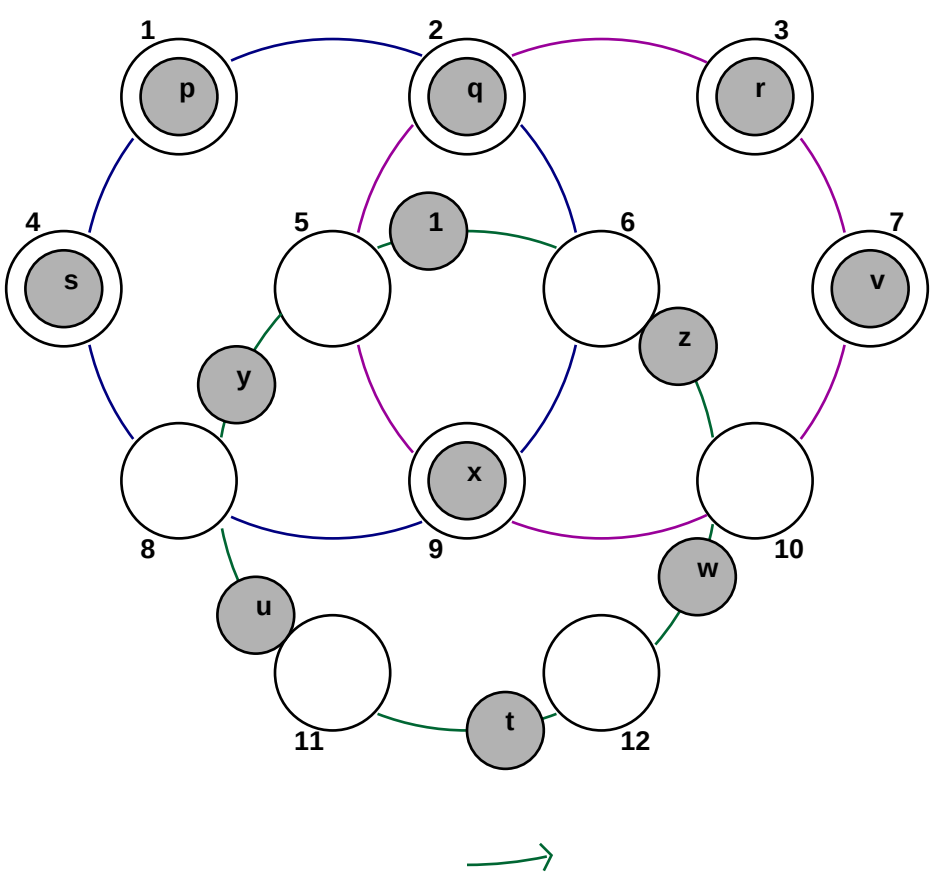

1
p
2
q
3
r
4
s
5
u
6
y
7
v
t
8
x
9
1
10
w
11
z
12

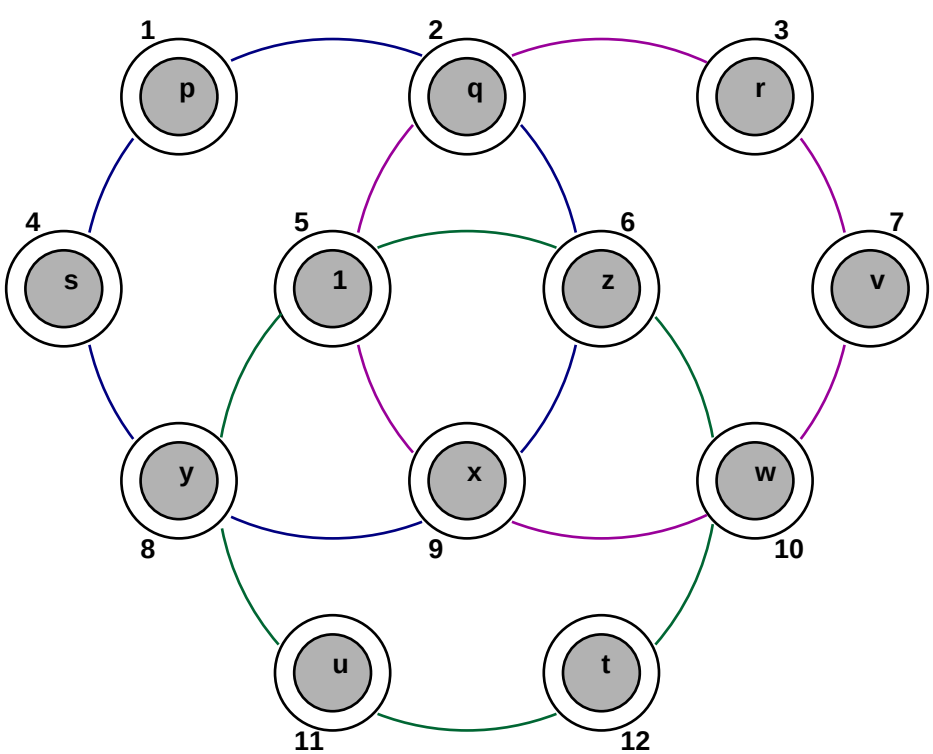

1
2
3
p
q
r
4
5
y
6
7
s
v
u
1
x
8
9
10
t
z
11
w
12

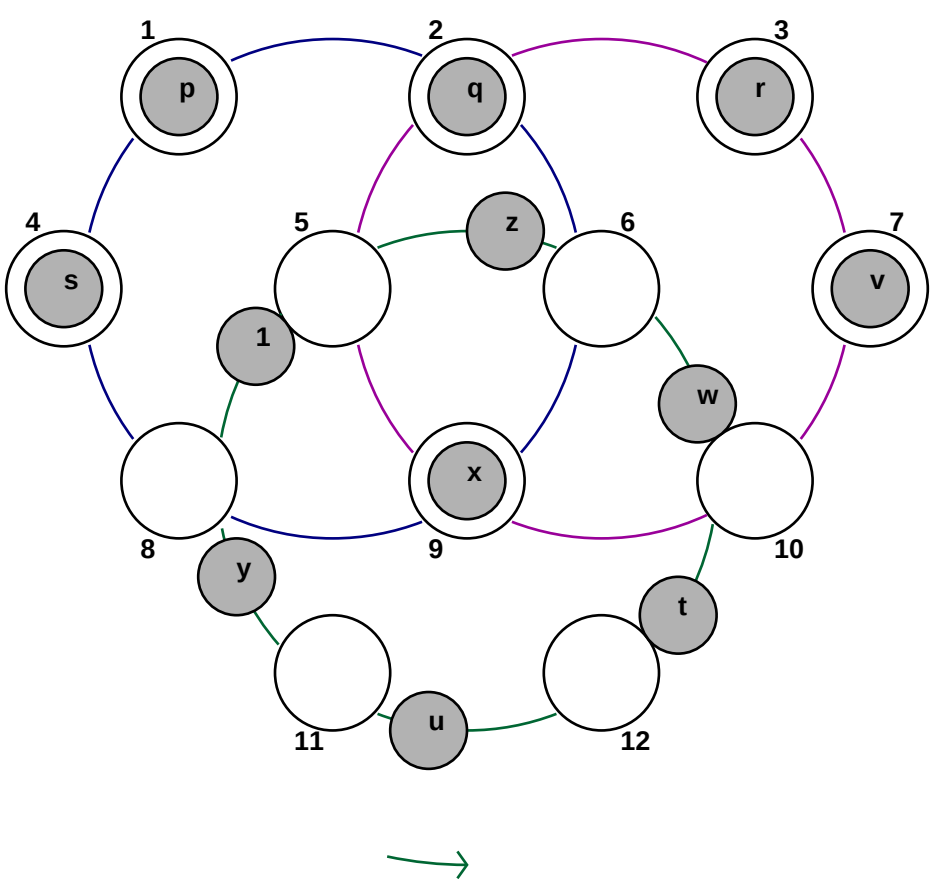

1
2
3
p
q
r
4
5
y
6
7
s
v
1
u
x
8
9
10
z
t
11
w
12

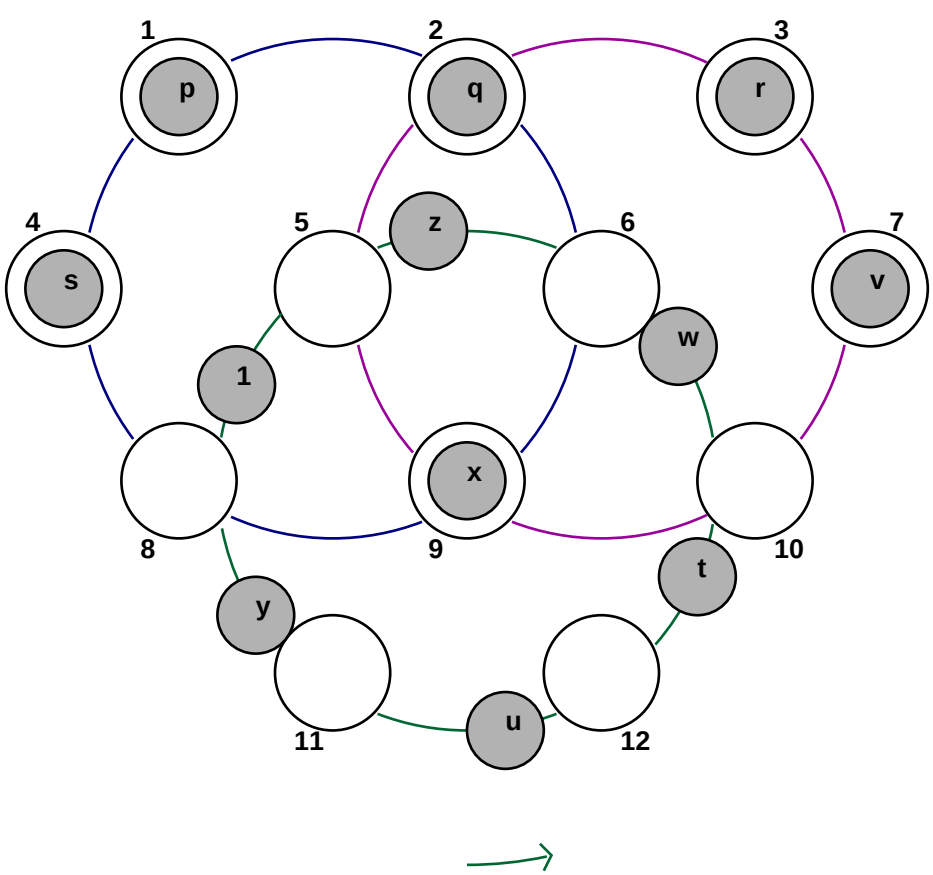

1
p
2
q
3
r
4
s
5
y
6
1
7
v
u
8
x
9
z
10
t
11
w
12

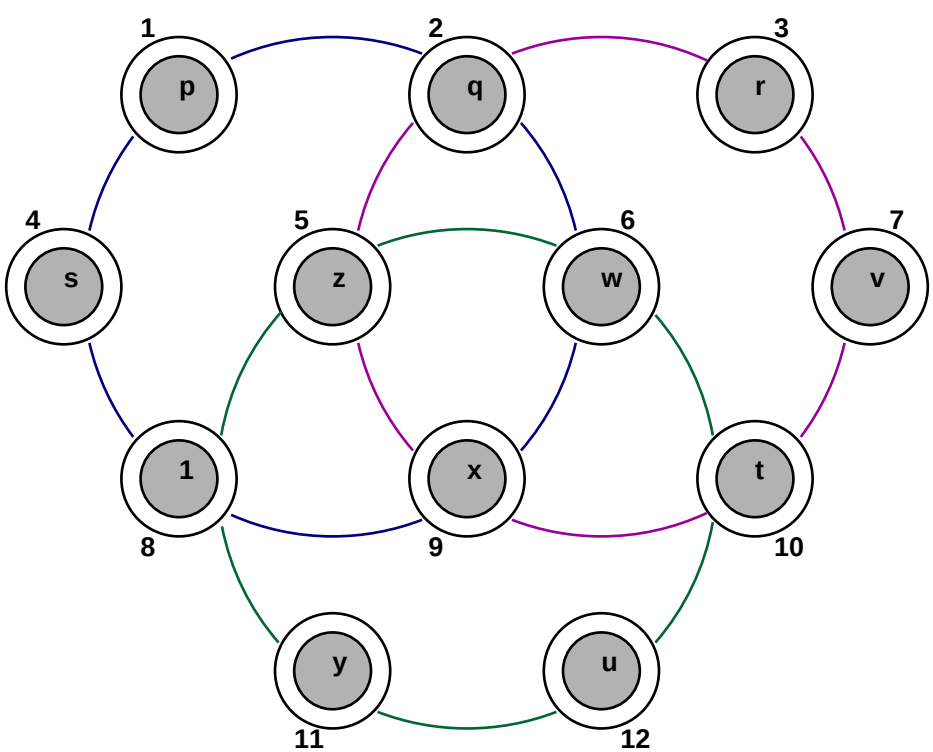

1
2
3
p
q
r
4
5
1
6
7
s
v
y
z
x
8
9
10
u
w
11
t
12

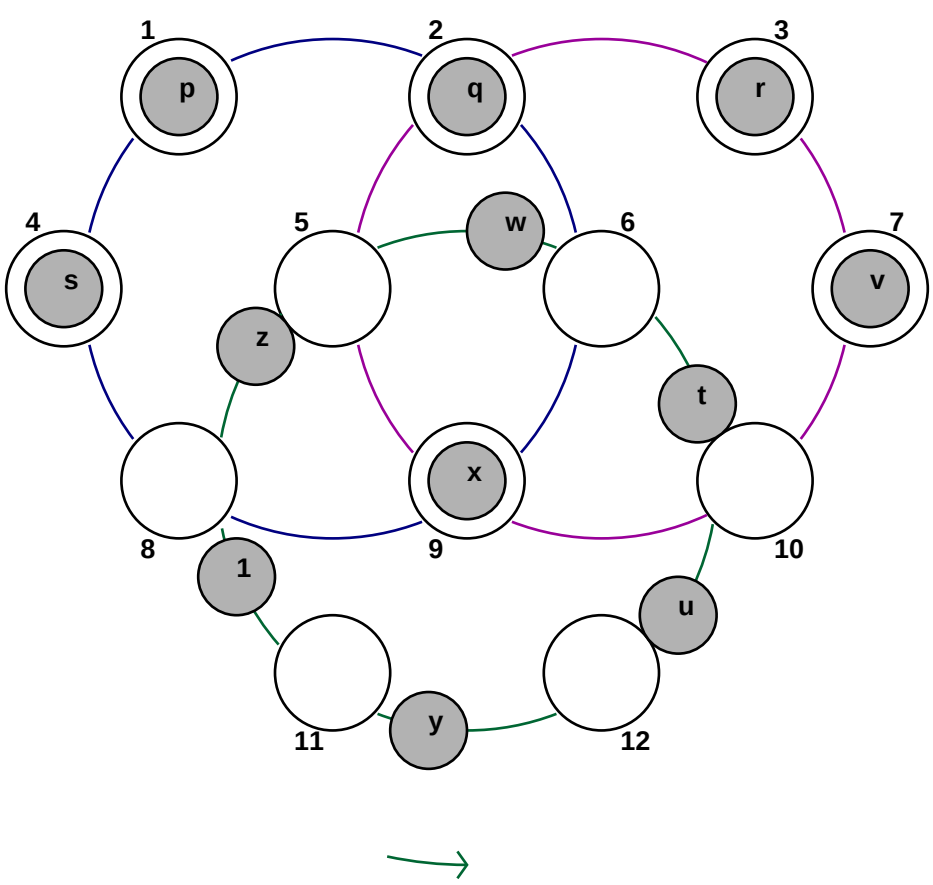

1
2
3
p
q
r
4
5
1
6
7
s
v
z
y
x
8
9
10
w
u
11
t
12

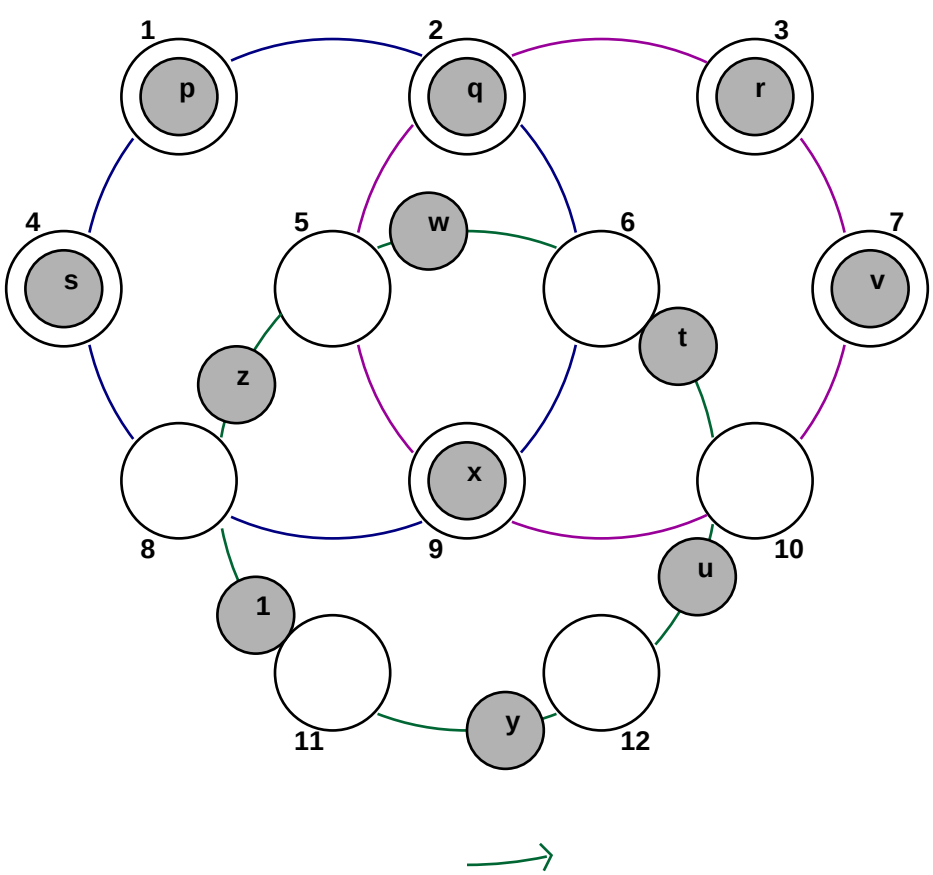

1
p
2
q
3
r
4
s
5
1
6
z
7
v
y
x
w
8
9
10
u
t
11
12

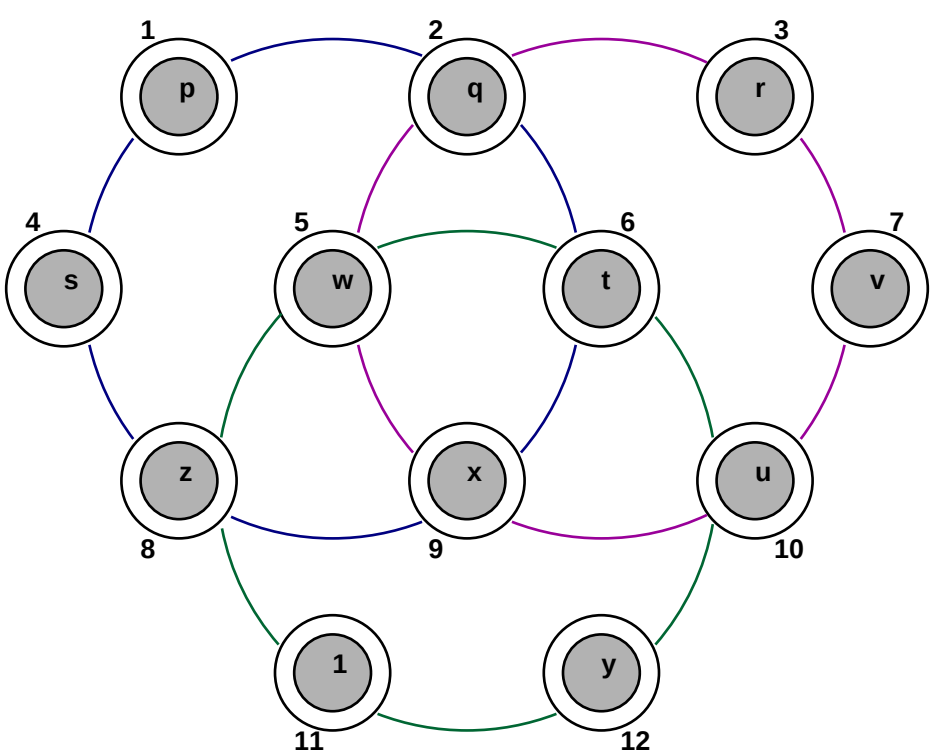

1
2
3
p
q
r
4
5
z
6
7
s
v
1
w
x
8
9
10
y
t
11
u
12

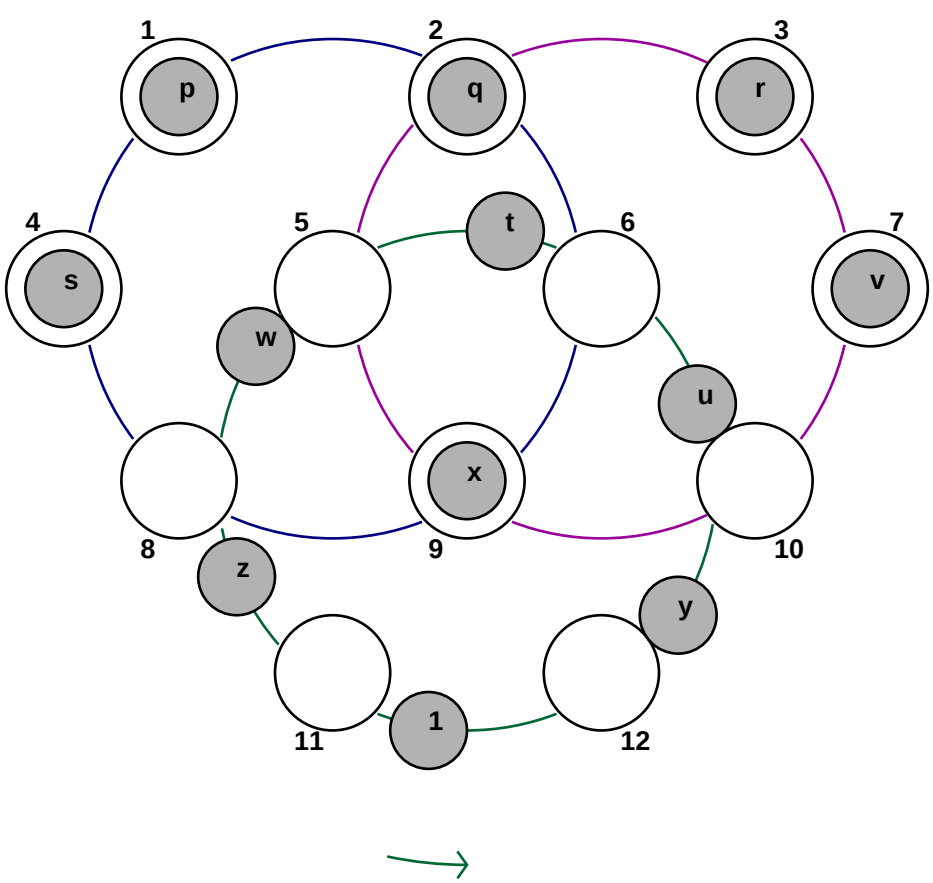

1
2
3
p
q
r
4
5
z
6
7
s
v
w
1
x
8
9
10
t
y
11
u
12

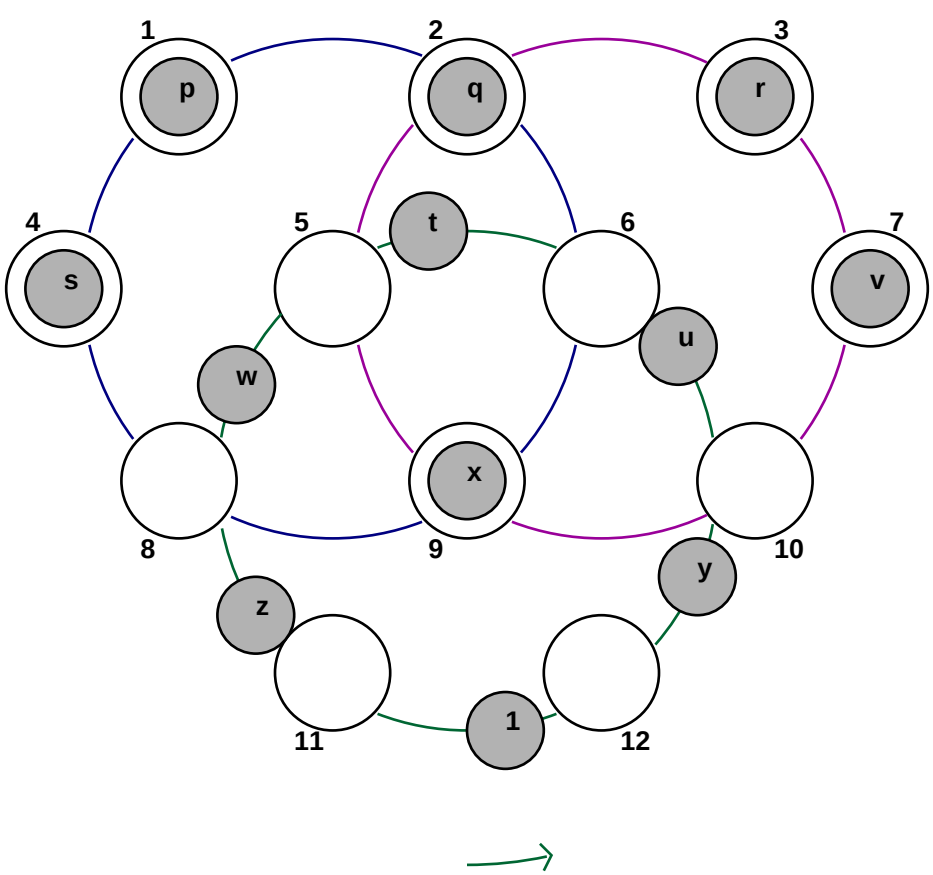

1
p
2
q
3
r
4
s
5
z
6
w
7
v
1
8
x
9
t
10
y
11
u
12

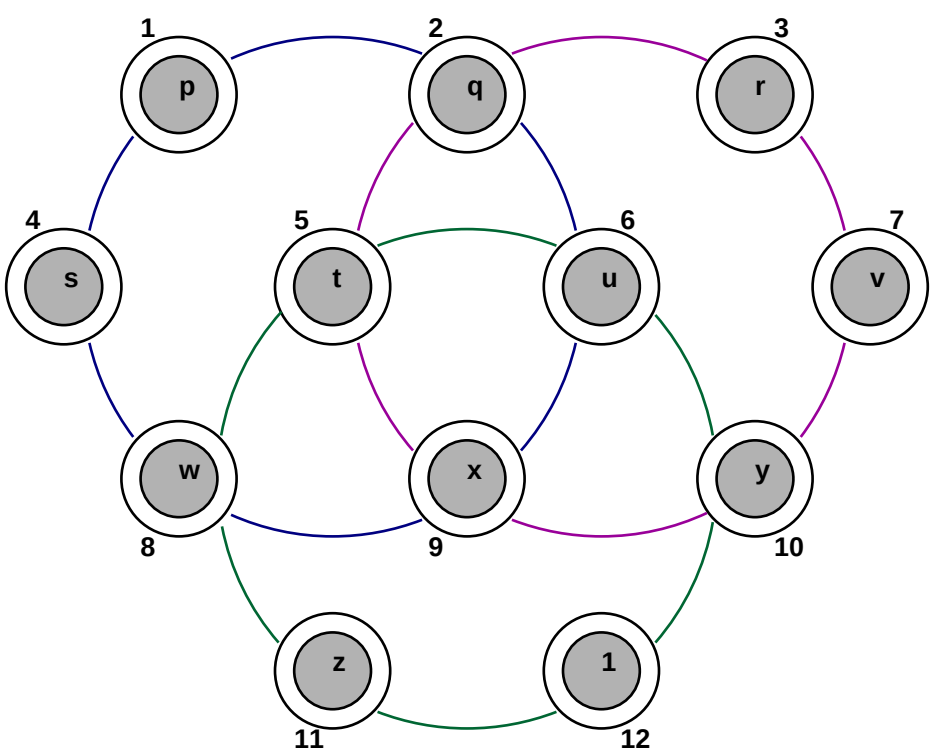

1
2
3
p
q
r
4
5
w
6
7
s
v
z
t
x
8
9
10
1
u
11
y
12


1
2
3
p
q
r
4
5
w
6
7
s
v
t
z
x
8
9
10
u
1
11
y
12

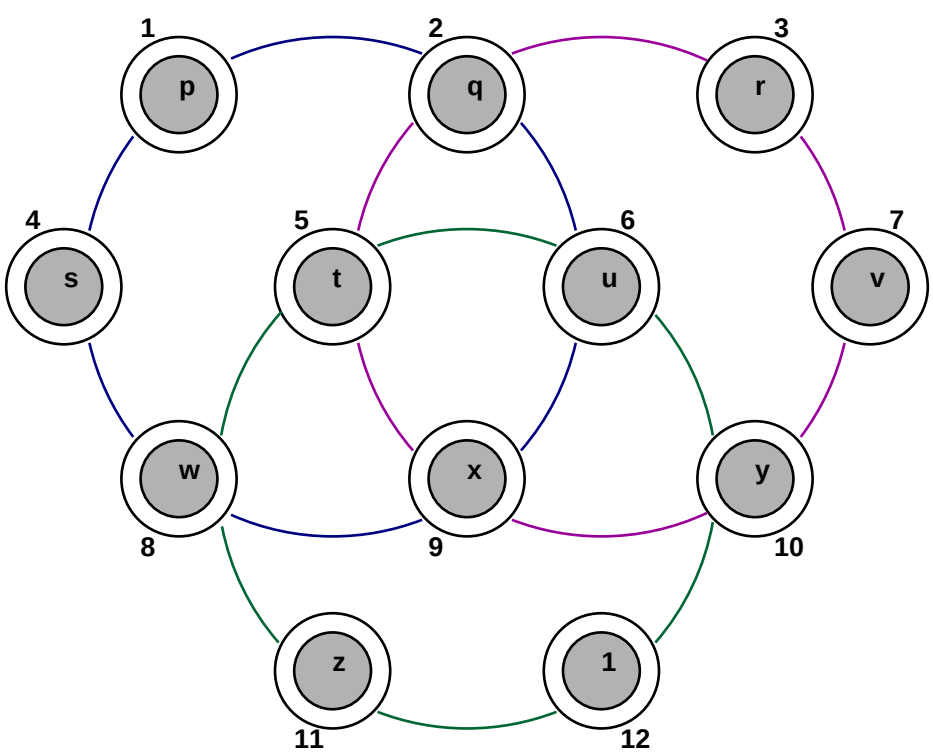

1
p
2
q
3
r
4
s
5
w
6
t
7
v
z
8
x
9
u
10
1
11
y
12

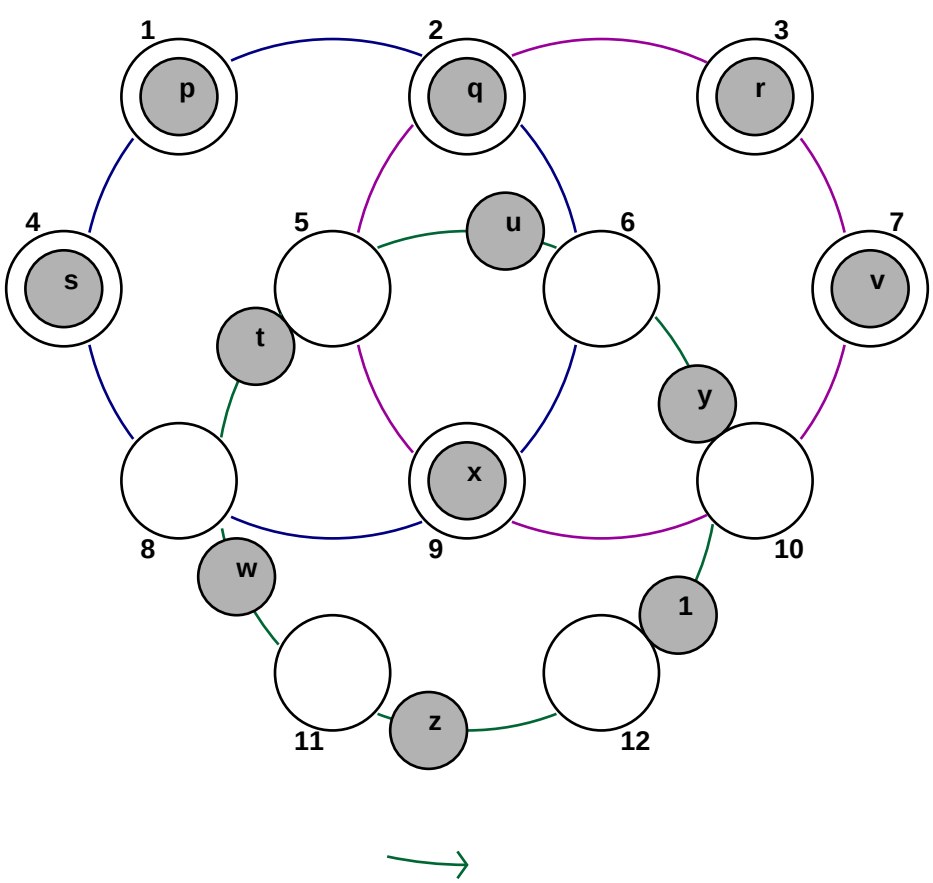

1
2
3
p
q
r
4
5
t
6
7
s
v
w
u
x
8
9
10
z
y
11
1
12

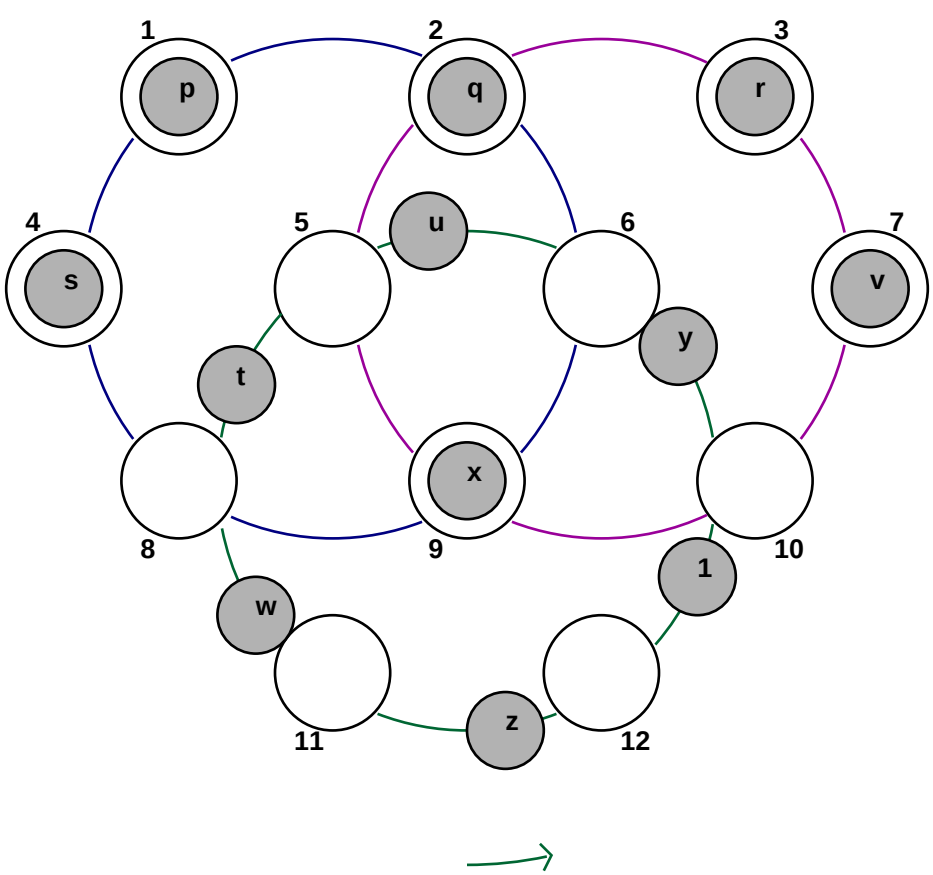

1
2
3
p
q
r
4
5
t
6
7
s
v
u
w
x
8
9
10
y
z
11
1
12

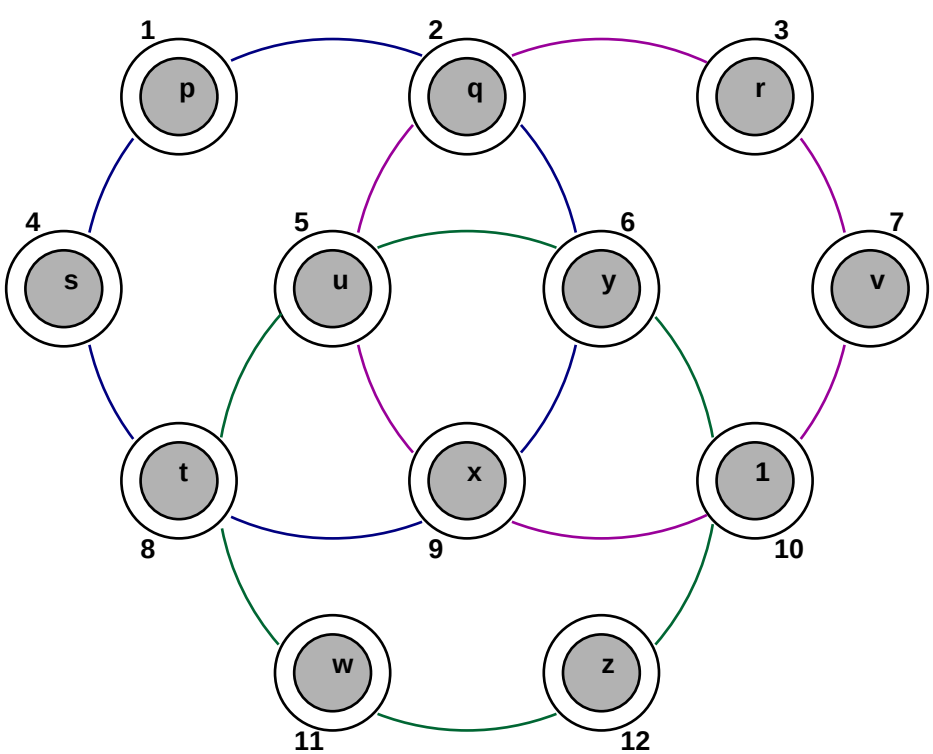

1
p
2
q
3
r
4
s
5
t
6
u
7
v
w
8
x
9
y
10
z
11
1
12

The number 1 can be placed in the purple circle by moving the green circle counter-clockwise once.

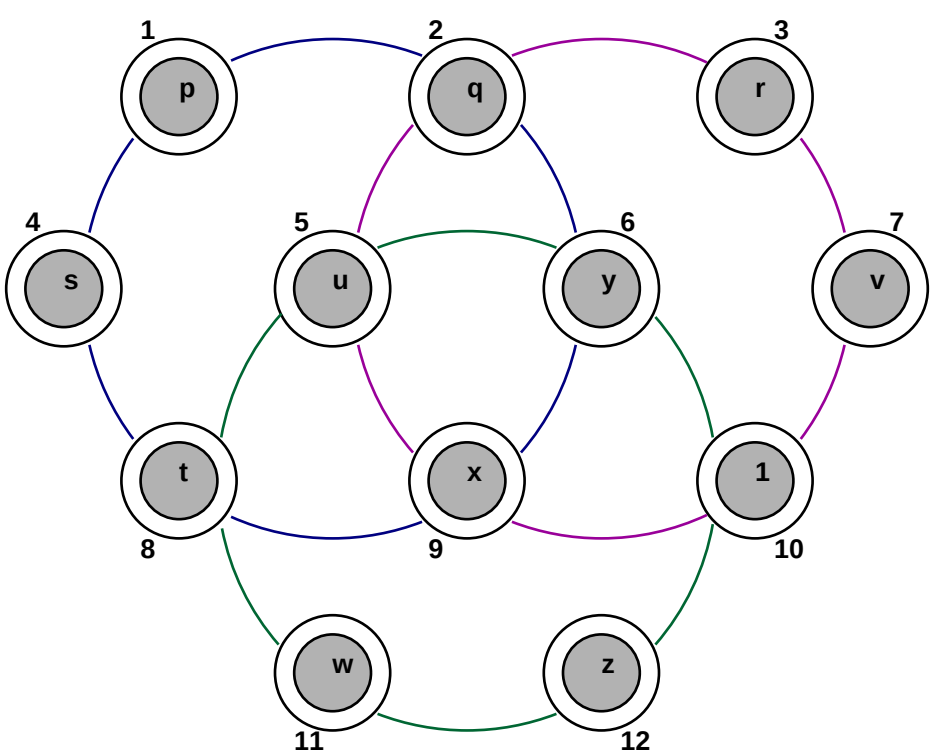

1
p
2
q
3
r
4
s
5
t
6
u
7
v
w
8
x
9
y
10
z
11
1
12

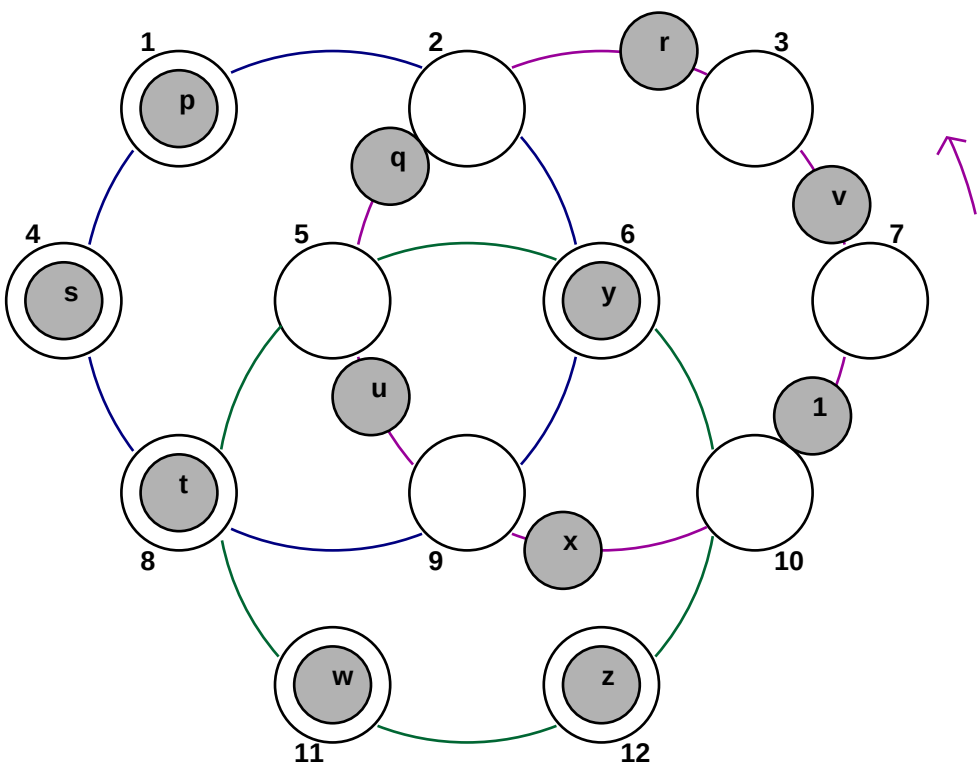

1
2
3
p
q
r
4
5
u
6
7
s
v
t
y
x
8
9
10
w
1
z
11
12

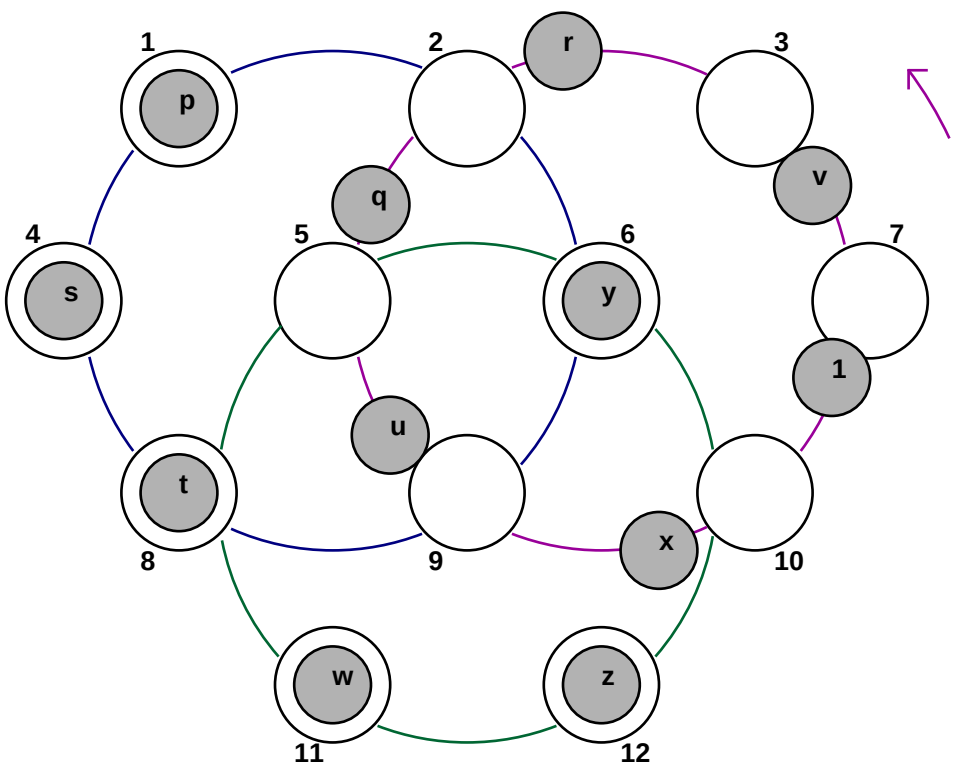

1
2
3
p
q
r
4
5
u
6
7
s
v
y
t
x
8
9
10
1
w
z
11
12

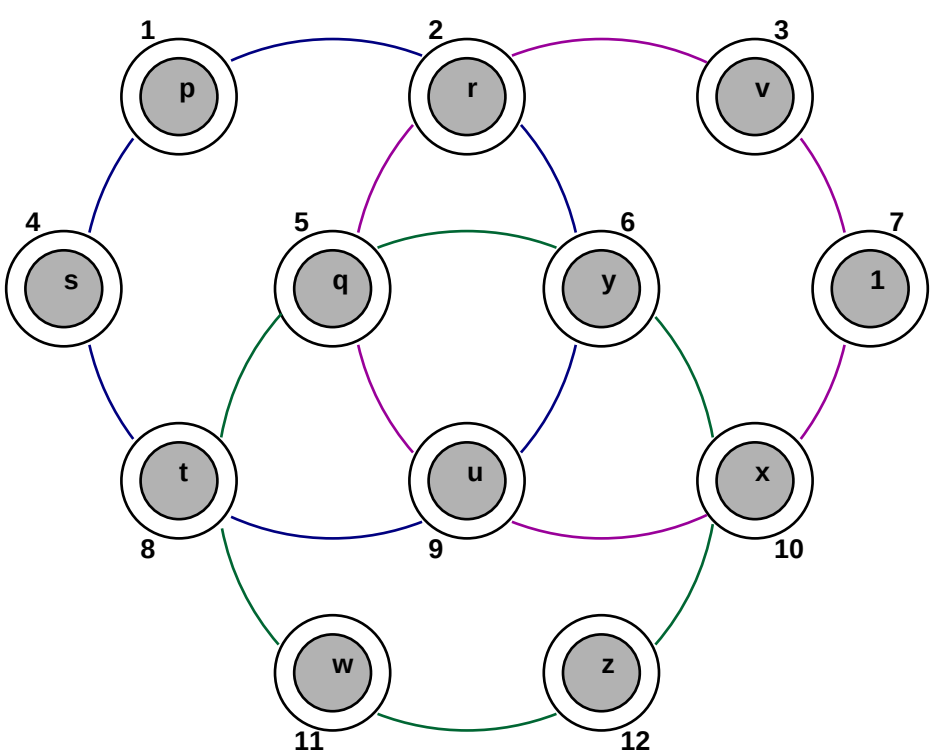

1
p
2
q
3
r
4
s
5
u
6
y
7
v
t
8
x
9
1
10
w
11
z
12

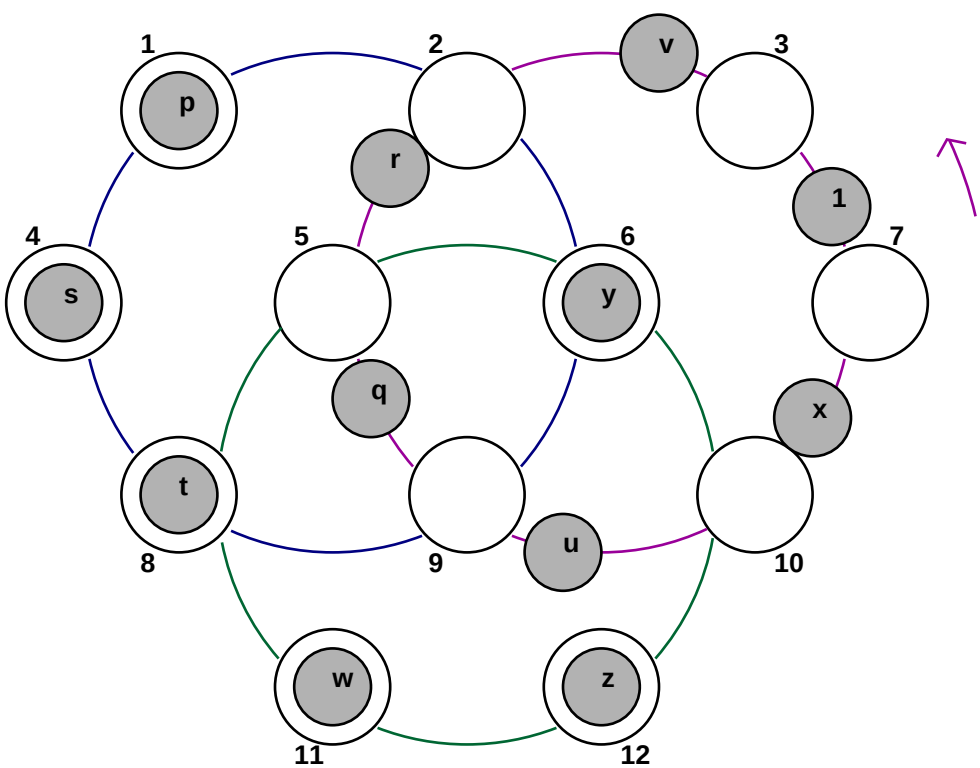
The number 1 can be placed in every position of the purple circle by moving the purple circle in either a clockwise or counter-clockwise pattern.

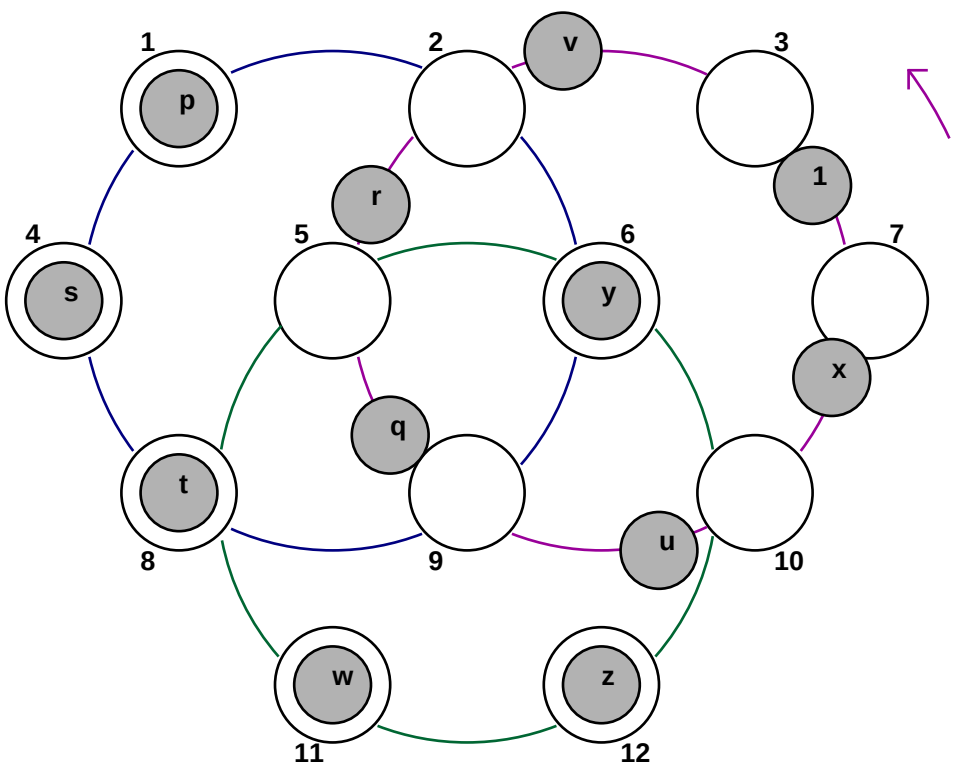

1
p
2
q
3
r
4
s
5
u
6
y
7
v
t
8
x
9
1
10
w
11
z
12

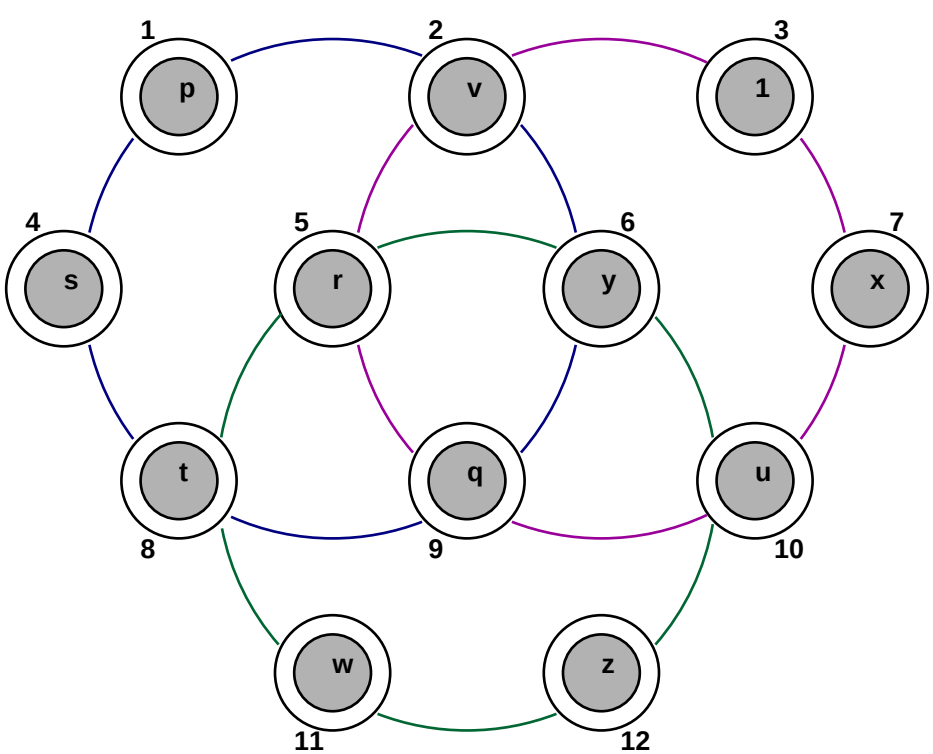

1
2
r
3
p
q
v
4
5
6
7
s
y
u
1
t
x
8
9
10
w
z
11
12

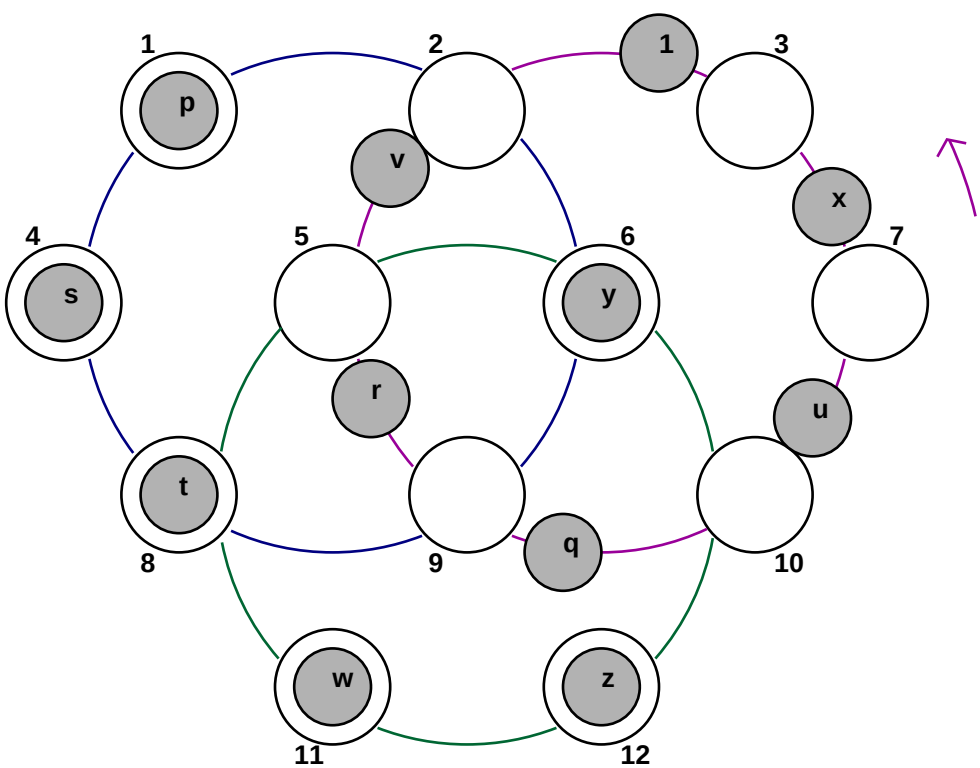

1
2
r
3
p
v
q
4
5
6
7
s
y
1
u
t
x
8
9
10
w
z
11
12

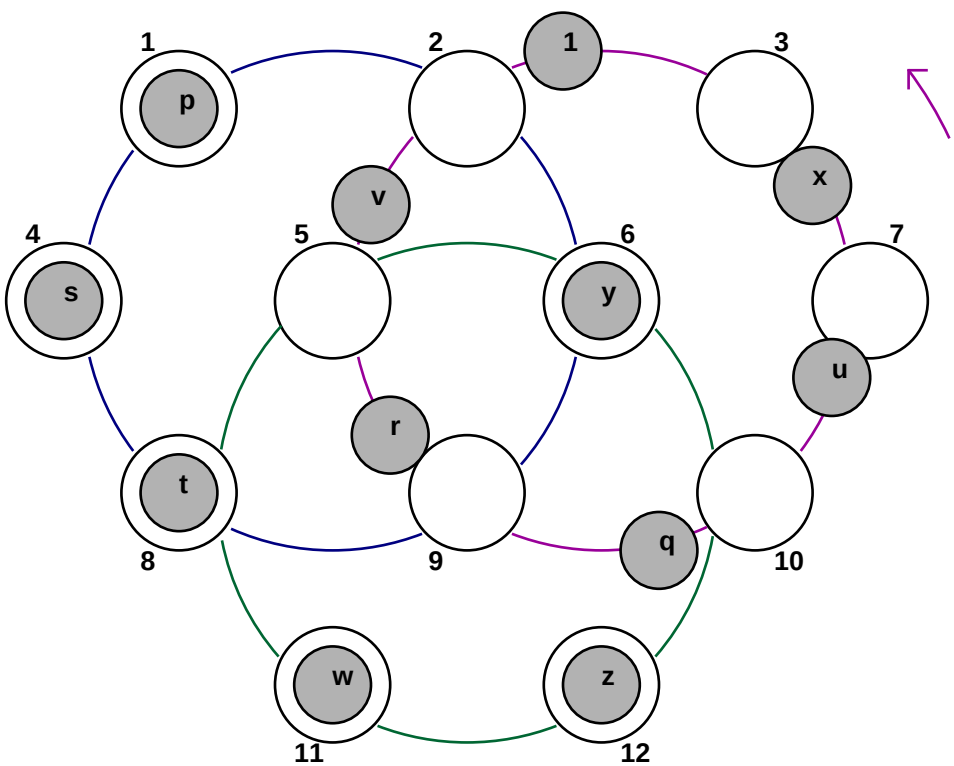

1
p
2
r
3
v
4
s
5
q
6
y
7
1
t
8
u
9
x
10
w
11
z
12

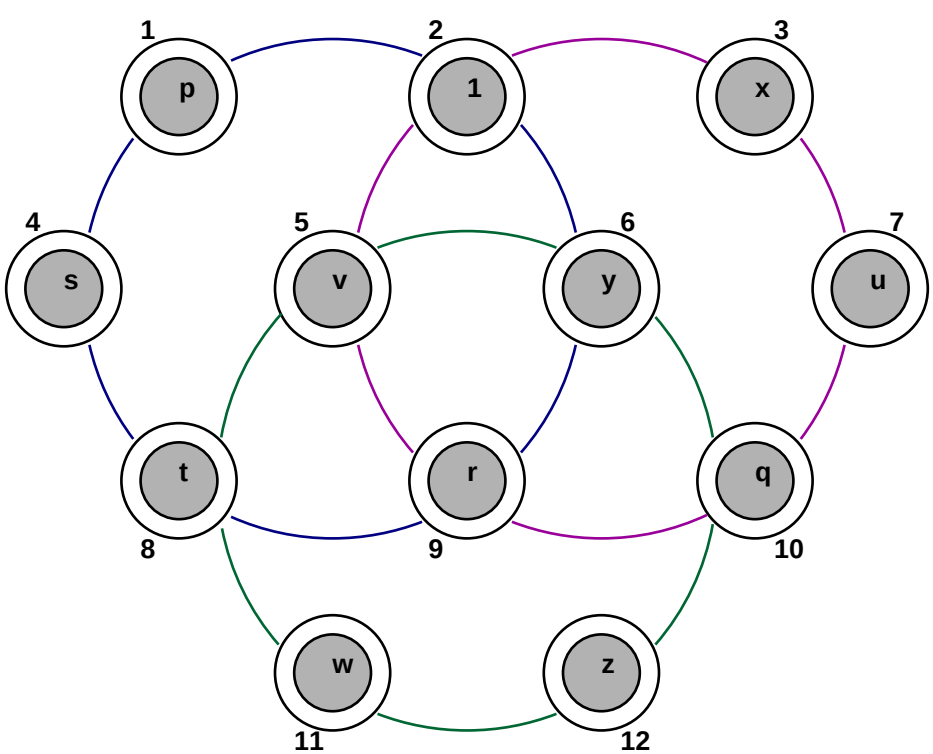

1
2
v
3
p
r
1
4
5
6
7
s
y
q
x
t
8
9
u
10
w
z
11
12

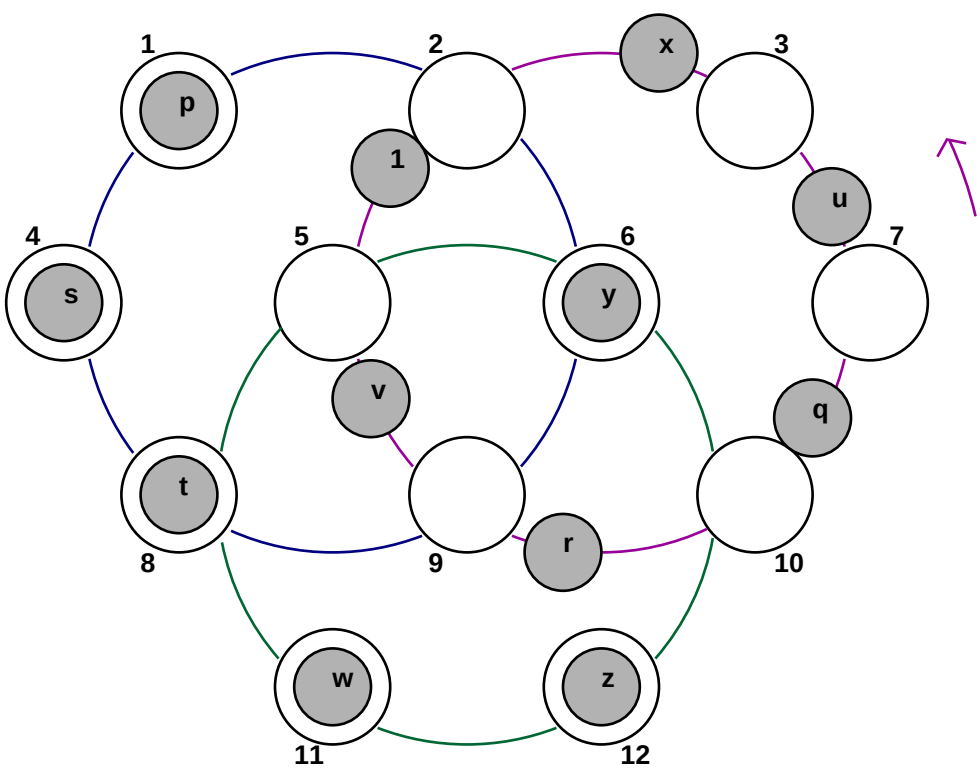

1
2
v
3
p
r
1
4
5
6
7
s
y
x
q
t
8
9
u
10
w
z
11
12

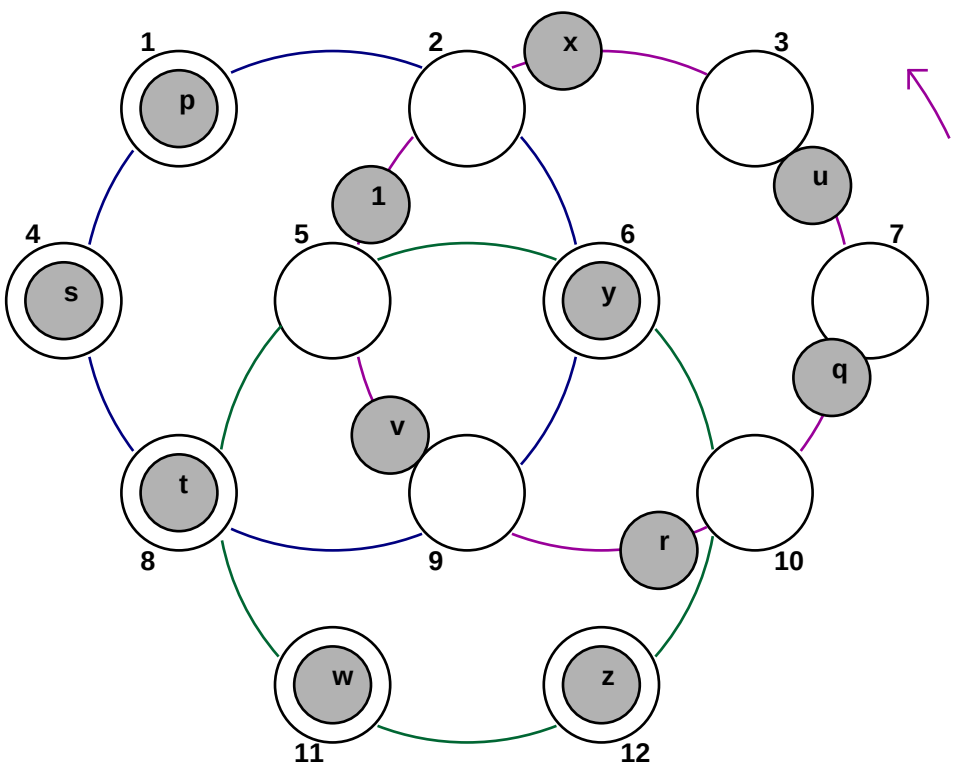

1
p
2
v
3
1
4
s
5
r
6
y
7
x
t
8
q
9
u
10
w
11
z
12

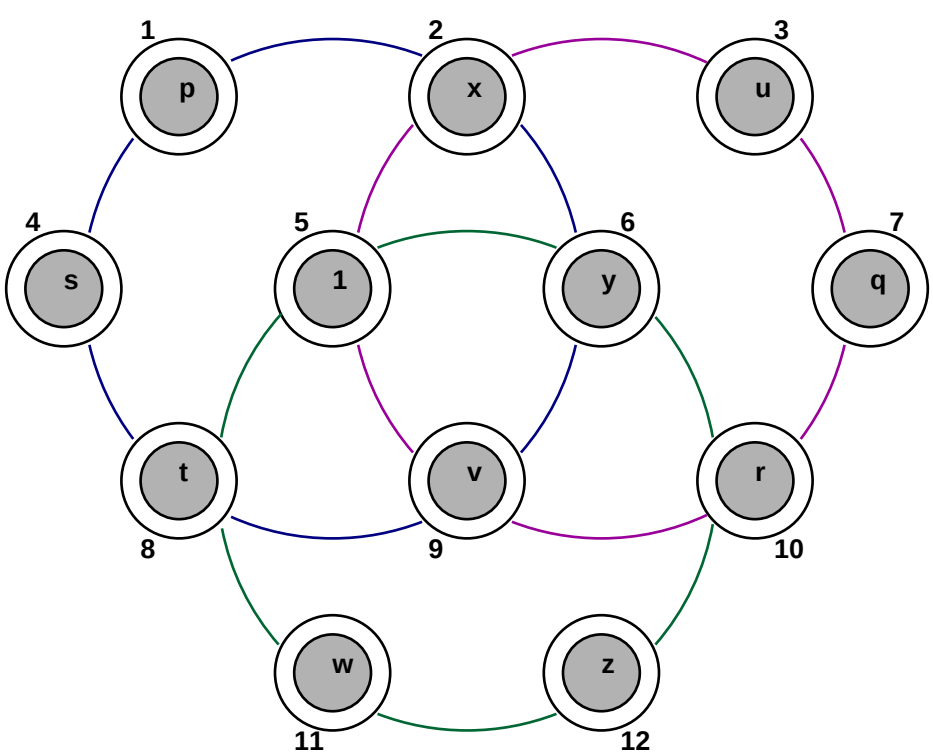

1
p
2
v
1
3
x
4
s
5
6
y
7
r
u
t
8
9
q
10
w
11
z
12

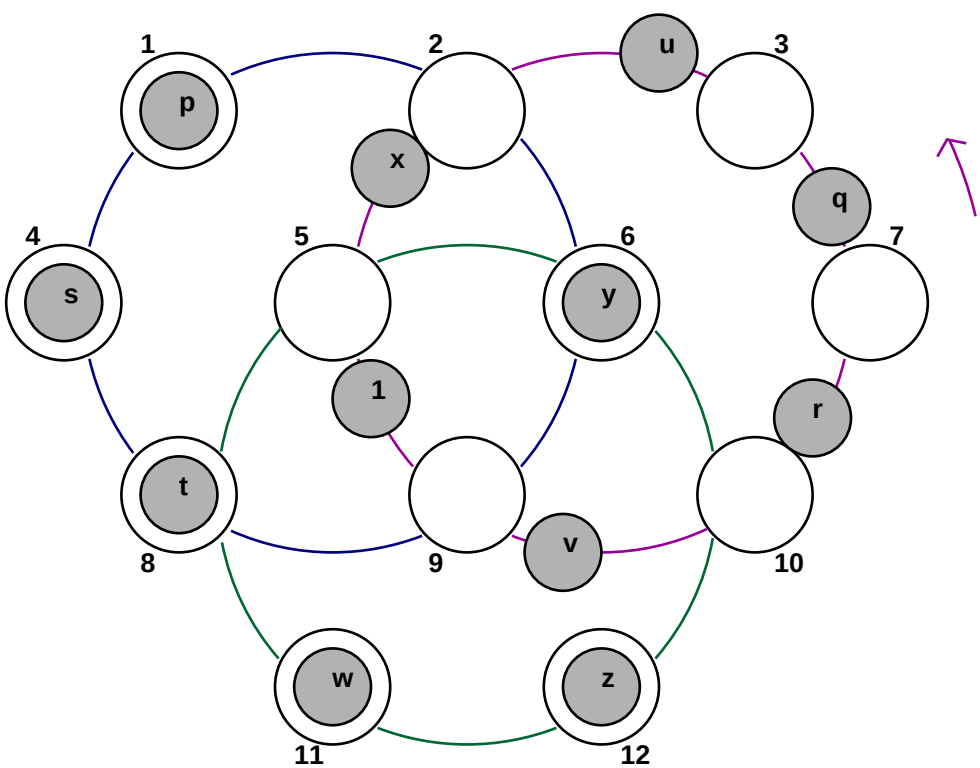

1
2
1
3
p
x
v
4
5
6
7
s
y
u
r
t
8
9
q
10
w
z
11
12

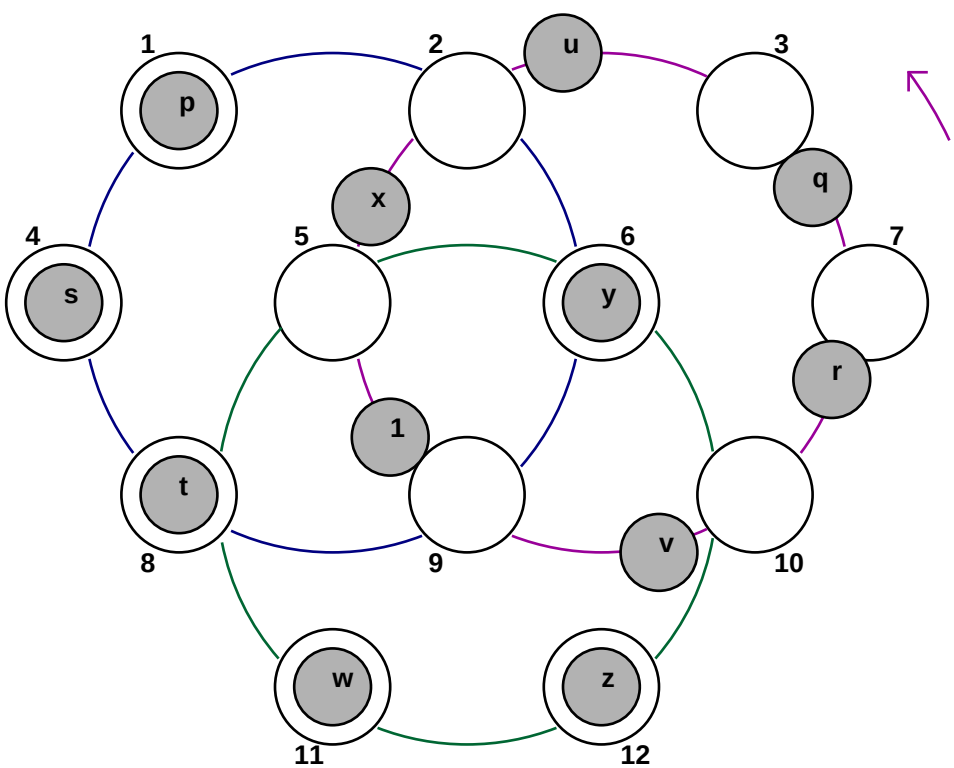

1
p
2
1
3
x
4
s
5
v
6
y
7
u
t
r
q
8
9
10
w
z
11
12

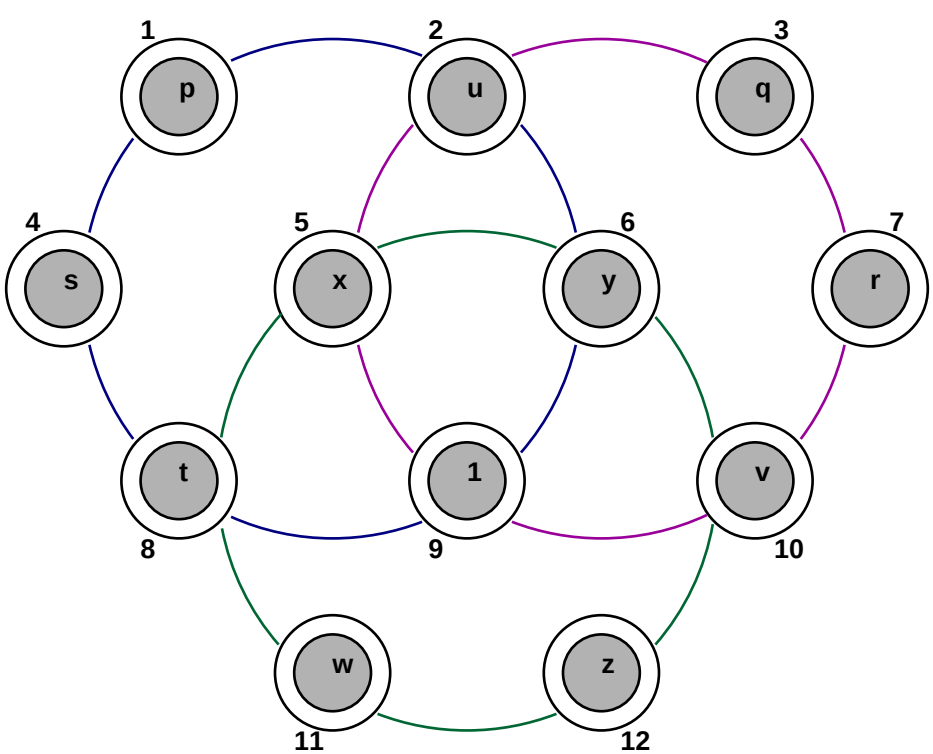

1
2
x
3
p
1
u
4
5
6
7
s
y
v
q
t
r
8
9
10
w
z
11
12

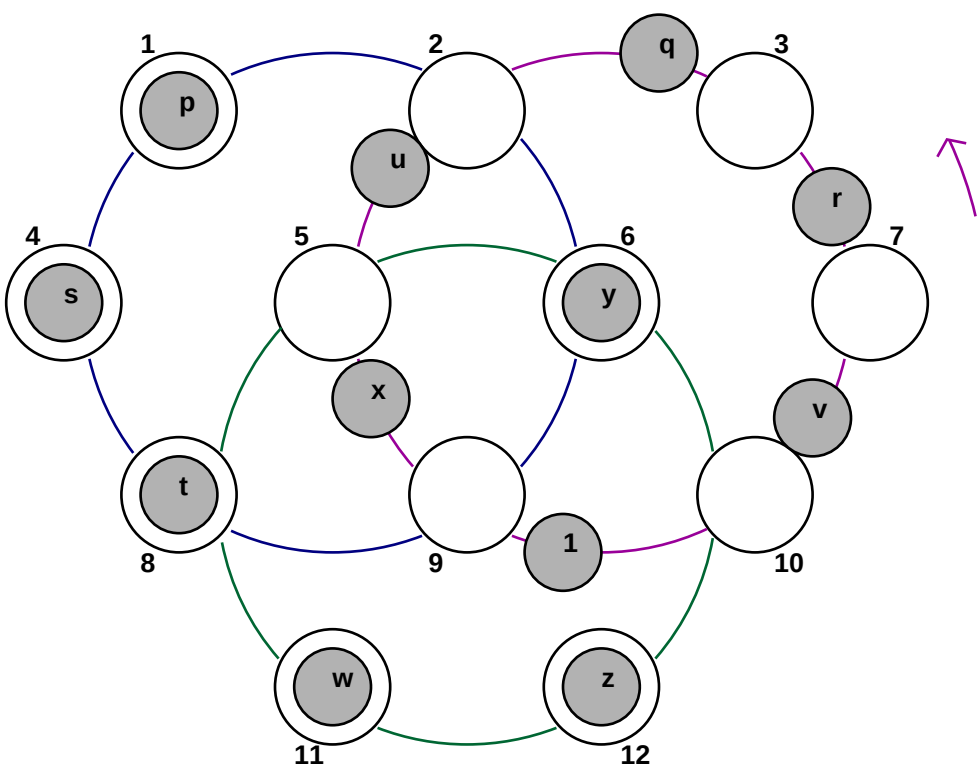

1
2
x
3
p
u
1
4
5
6
7
s
y
q
v
t
8
9
r
10
w
z
11
12

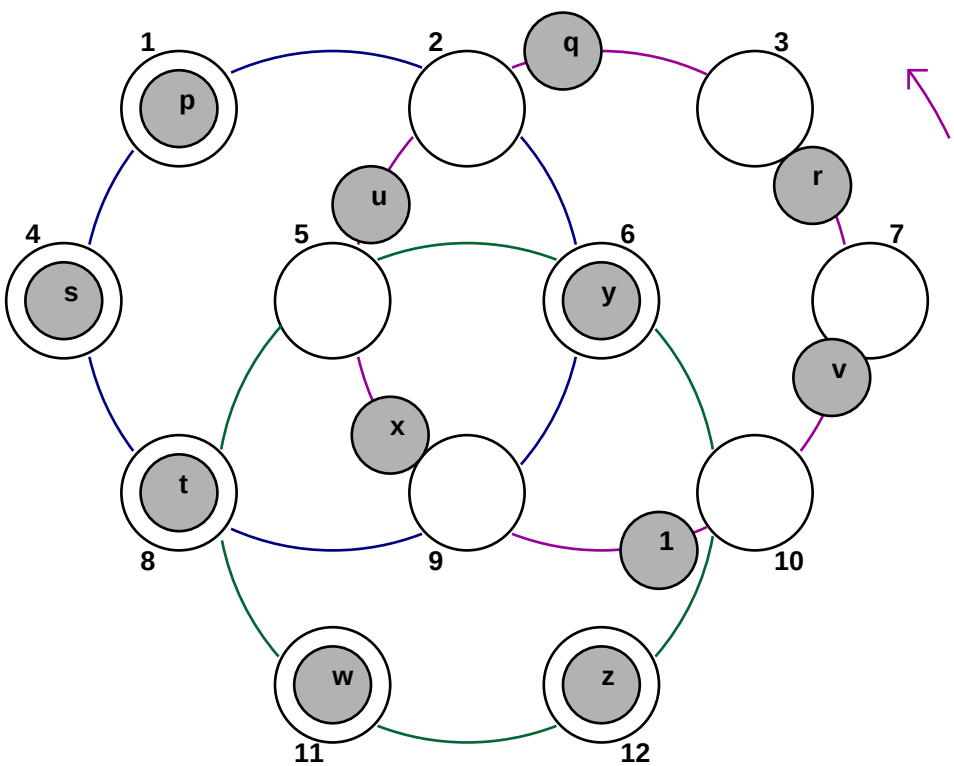

1
p
2
x
3
u
4
s
5
1
6
y
7
q
t
v
r
8
9
10
w
z
11
12

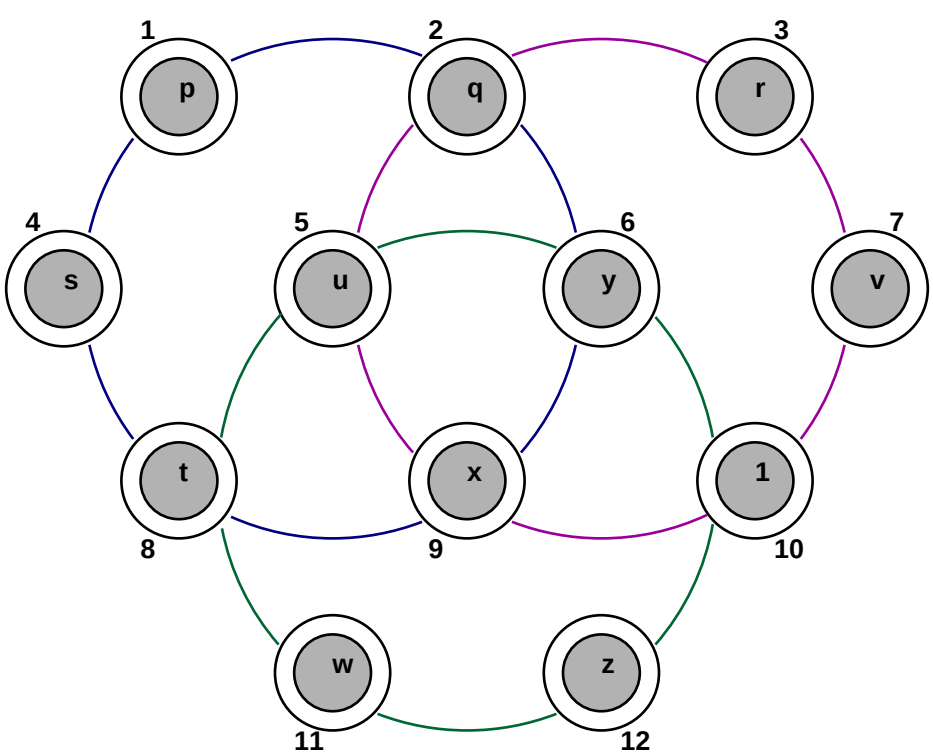

1
2
u
3
p
x
q
4
5
6
7
s
y
1
r
t
8
9
v
10
w
z
11
12


1
2
u
3
p
x
q
4
5
6
7
s
y
r
1
t
8
9
v
10
w
z
11
12

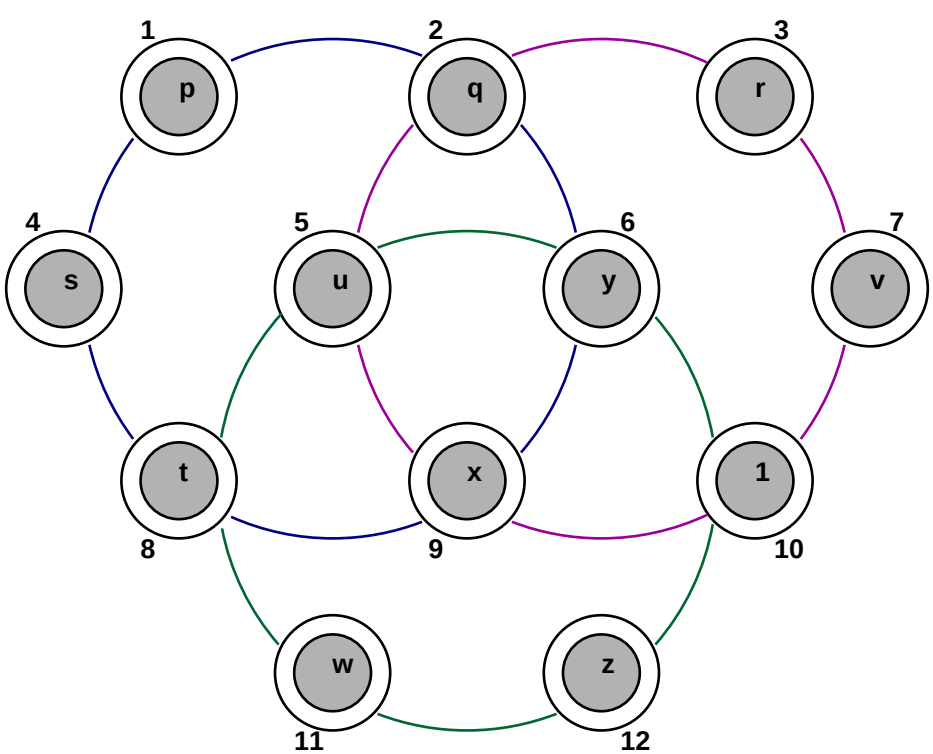

1
p
2
u
3
q
4
s
5
x
6
y
7
r
t
1
v
8
9
10
w
z
11
12

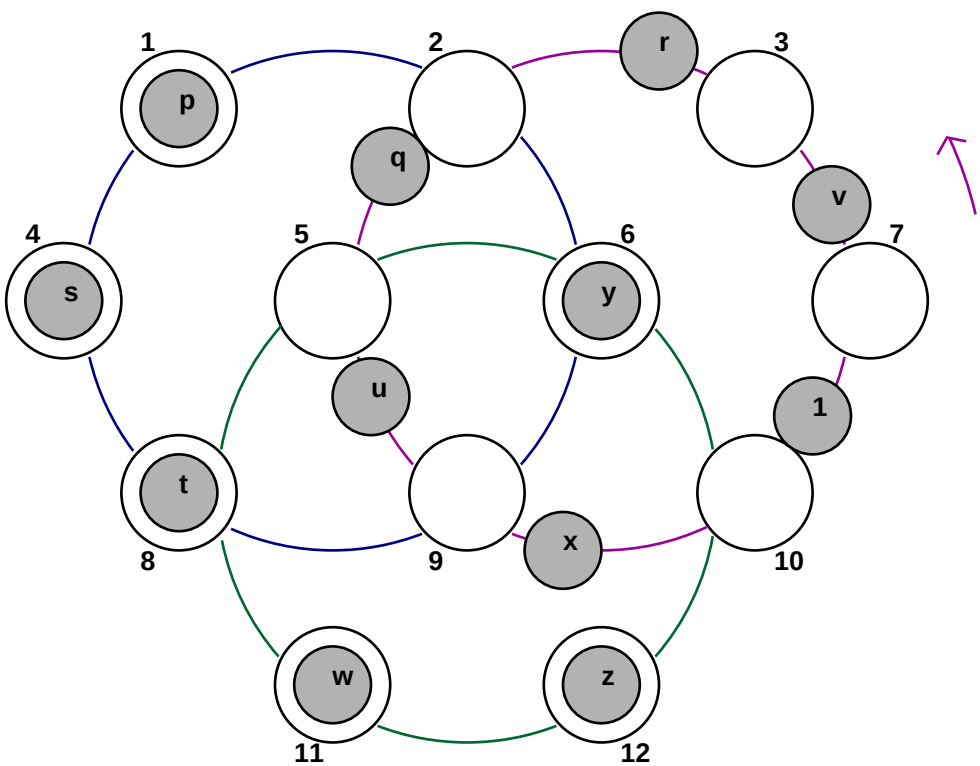

1
2
q
3
p
u
r
4
5
6
7
s
y
x
v
t
1
8
9
10
w
z
11
12

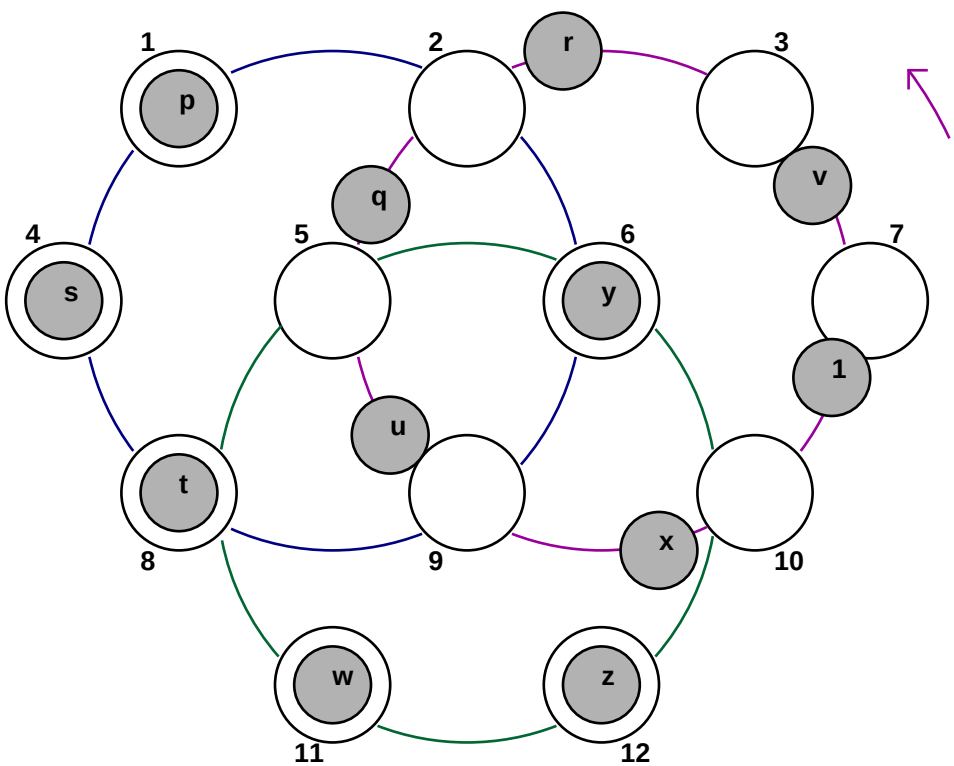

1
2
q
3
p
r
u
4
5
6
7
s
y
v
x
t
1
8
9
10
w
z
11
12

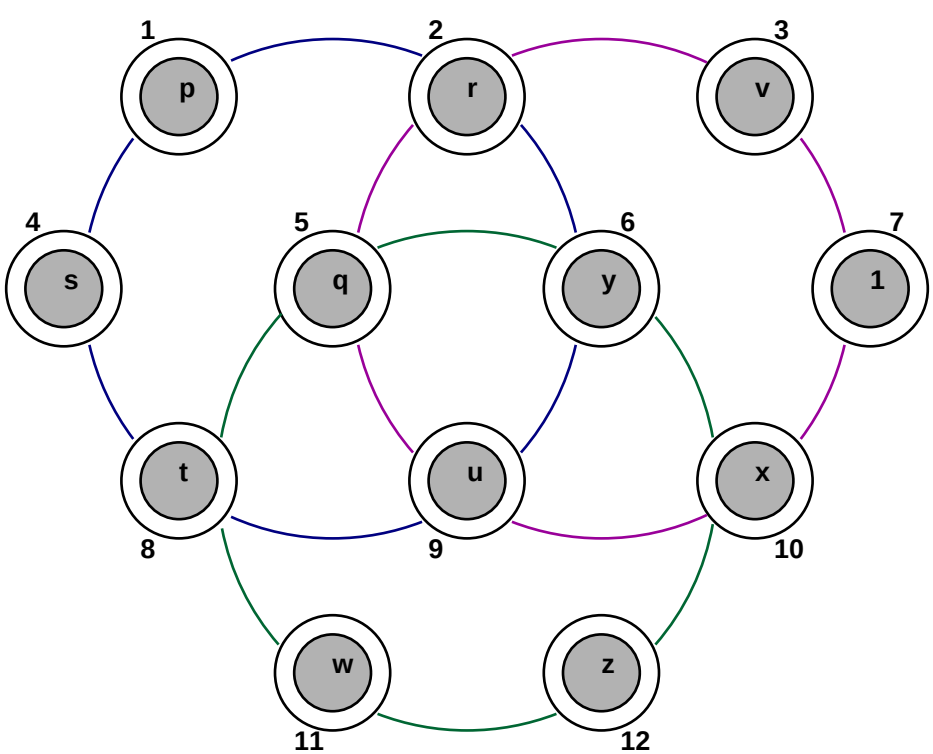

1
p
2
q
3
r
4
s
5
u
6
y
7
v
t
8
x
9
1
10
w
11
z
12

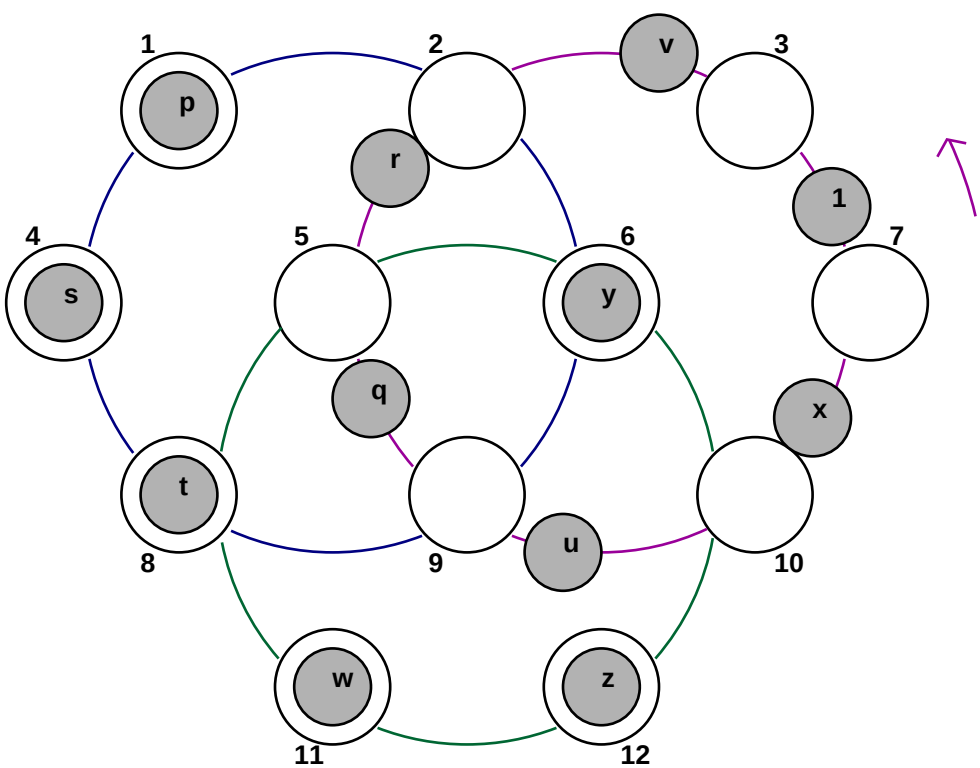
The number 1 can be placed in the blue circle by moving the purple circle 3 times in a clockwise or counter-clockwise pattern.

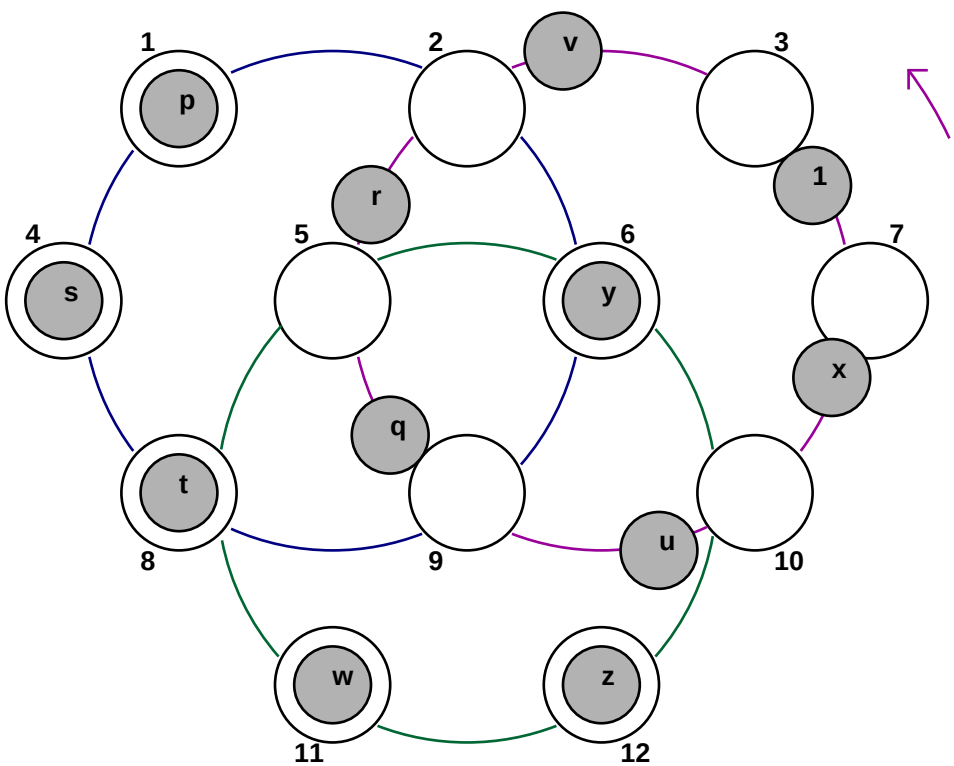

1
p
2
q
3
r
4
s
5
u
6
y
7
v
t
8
x
9
1
10
w
11
z
12

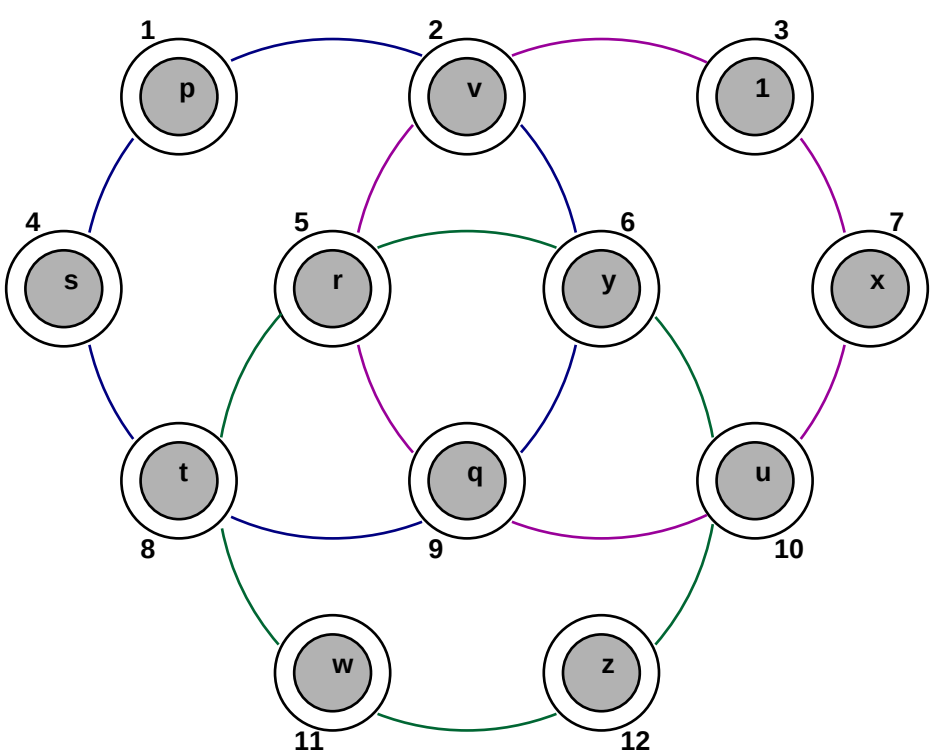

1
2
r
3
p
q
v
4
5
6
7
s
y
u
1
t
x
8
9
10
w
z
11
12

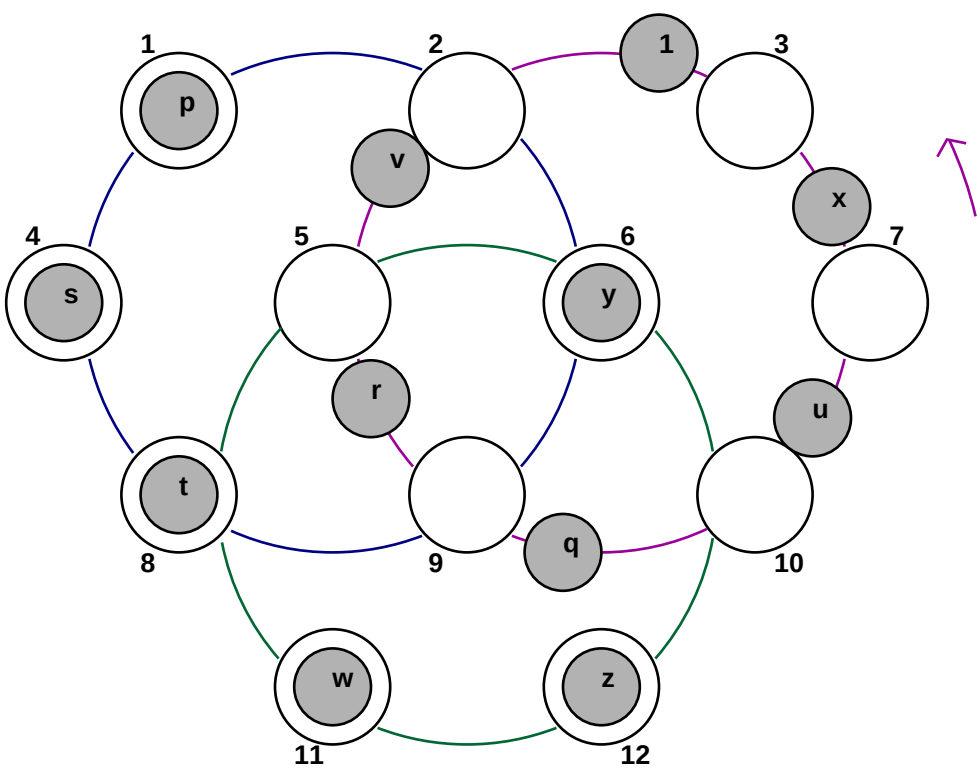

1
2
r
3
p
v
q
4
5
6
7
s
y
1
u
t
x
8
9
10
w
z
11
12

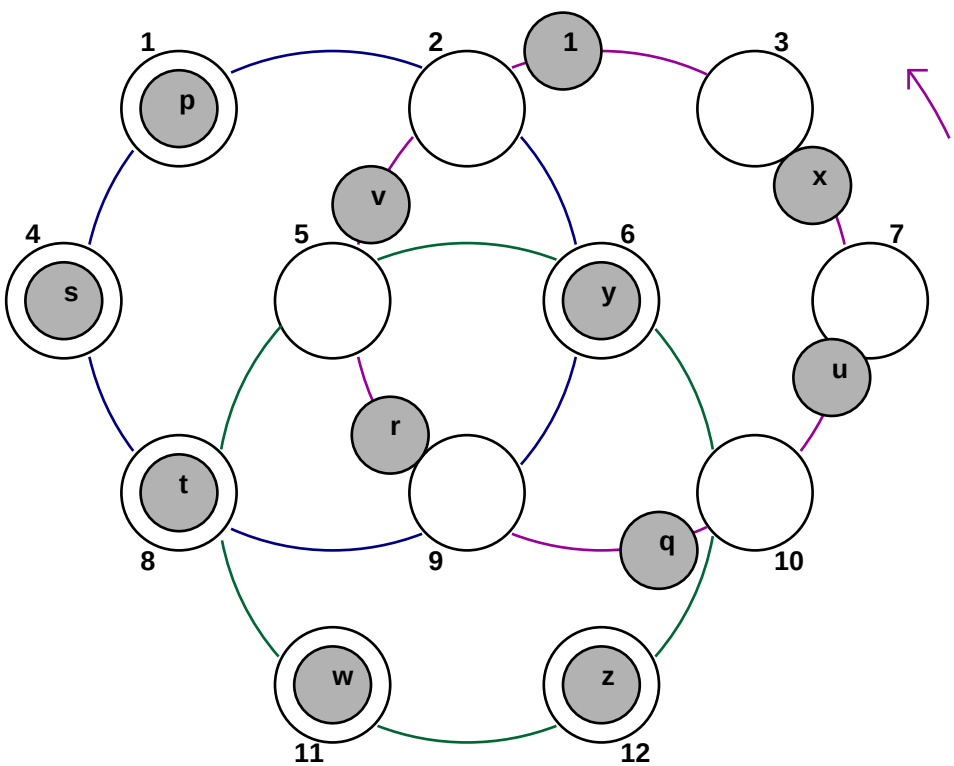

1
p
2
r
3
v
4
s
5
q
6
y
7
1
t
8
u
9
x
10
w
11
z
12

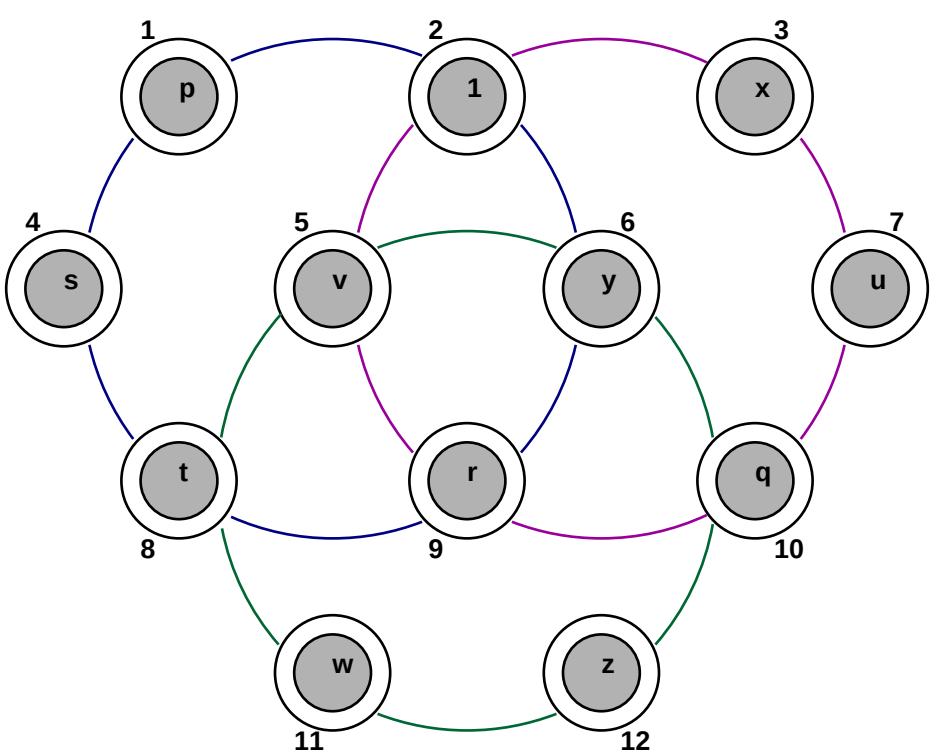

1
2
v
3
p
r
1
4
5
6
7
s
y
q
x
t
8
9
u
10
w
z
11
12


1
2
v
3
p
r
1
4
5
6
7
s
y
x
q
t
8
9
u
10
w
z
11
12

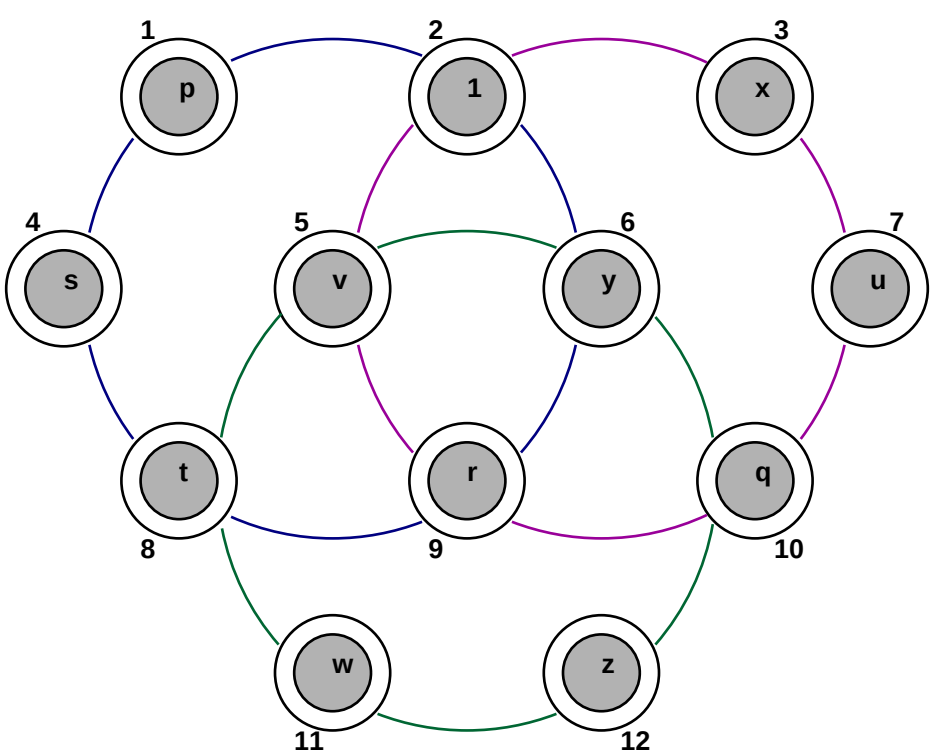

1
p
2
v
3
1
4
s
5
r
6
y
7
x
t
8
q
9
u
10
w
11
z
12

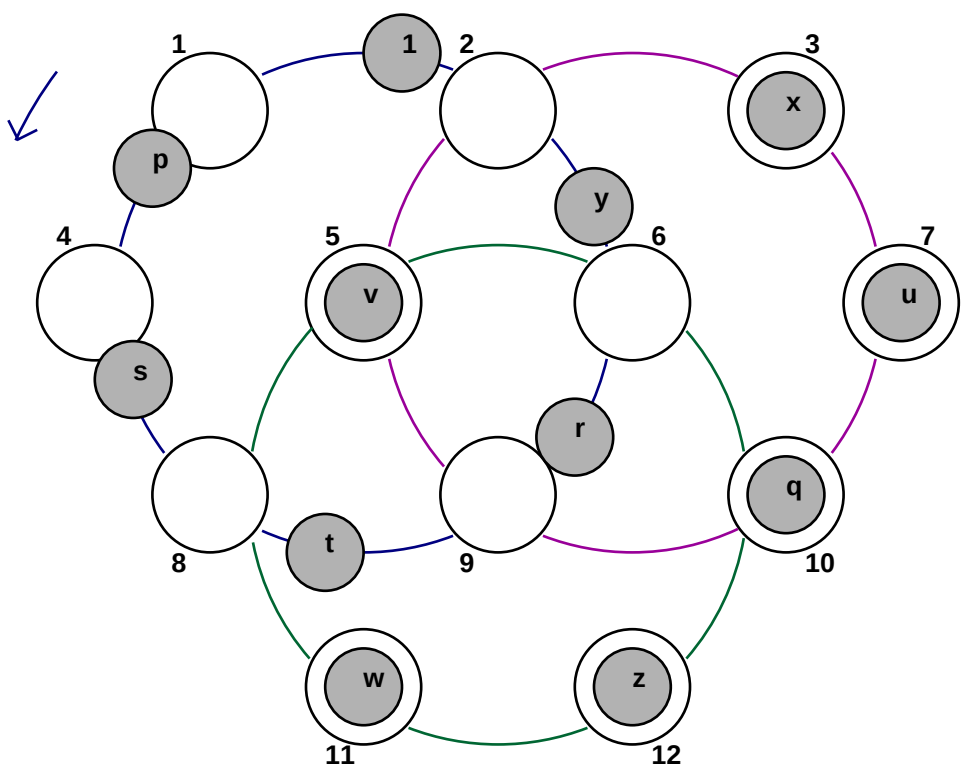

1
p
2
v
1
3
x
4
s
5
6
y
7
r
u
t
8
9
q
10
w
11
z
12

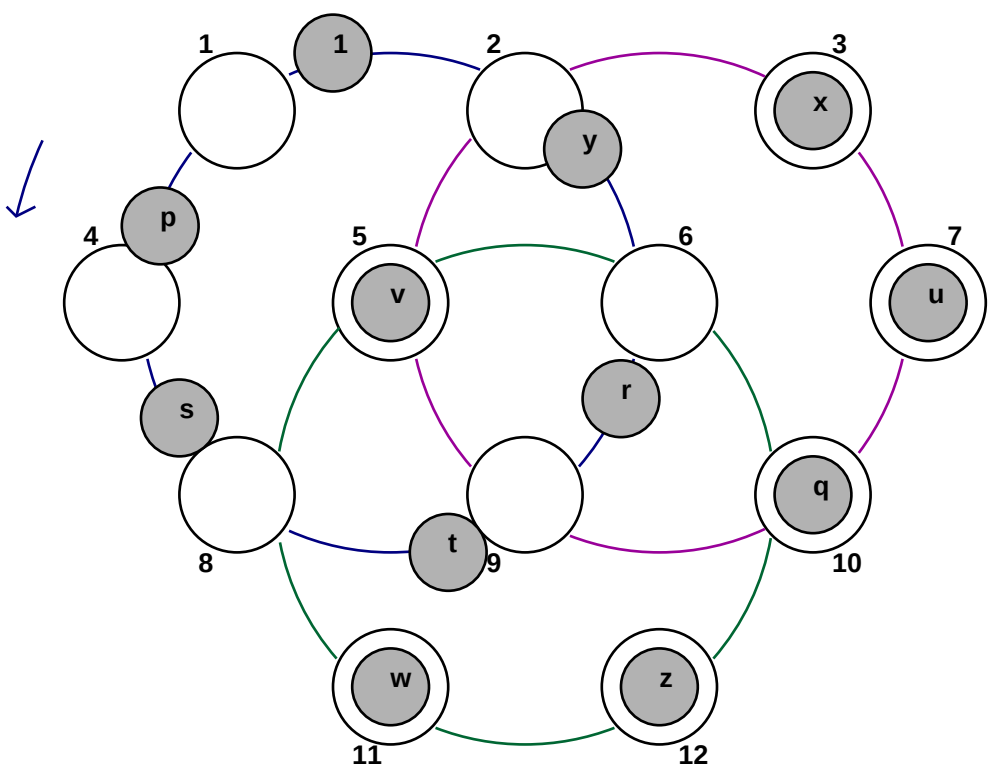

1
2
1
3
p
x
v
4
5
6
7
s
y
u
r
t
8
9
q
10
w
z
11
12

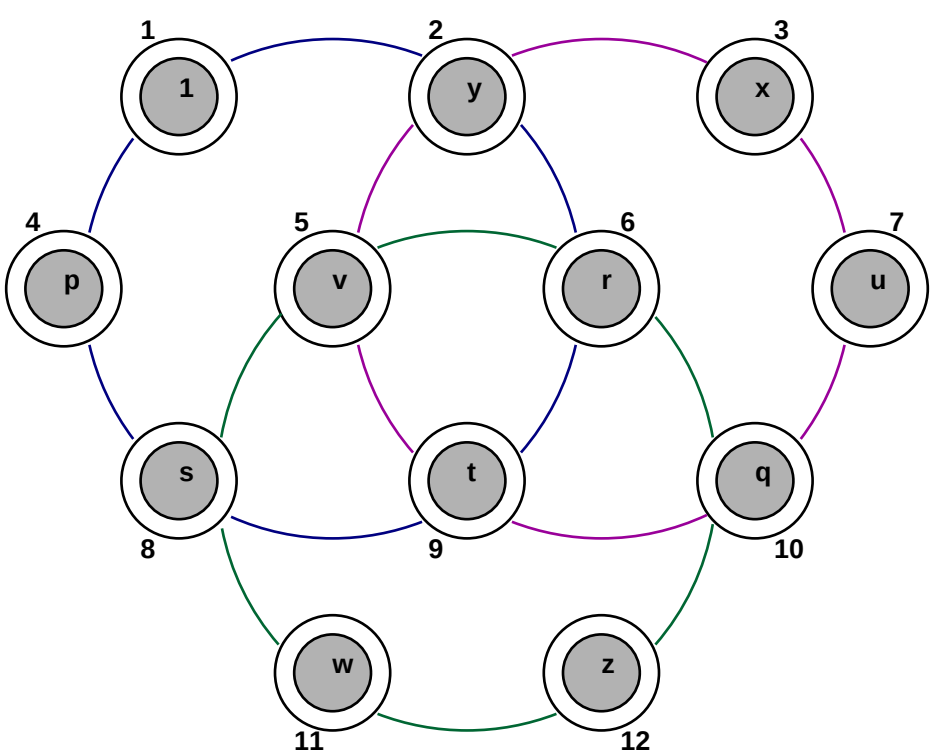

1
p
2
1
3
x
4
s
5
v
6
y
7
u
t
r
q
8
9
10
w
z
11
12

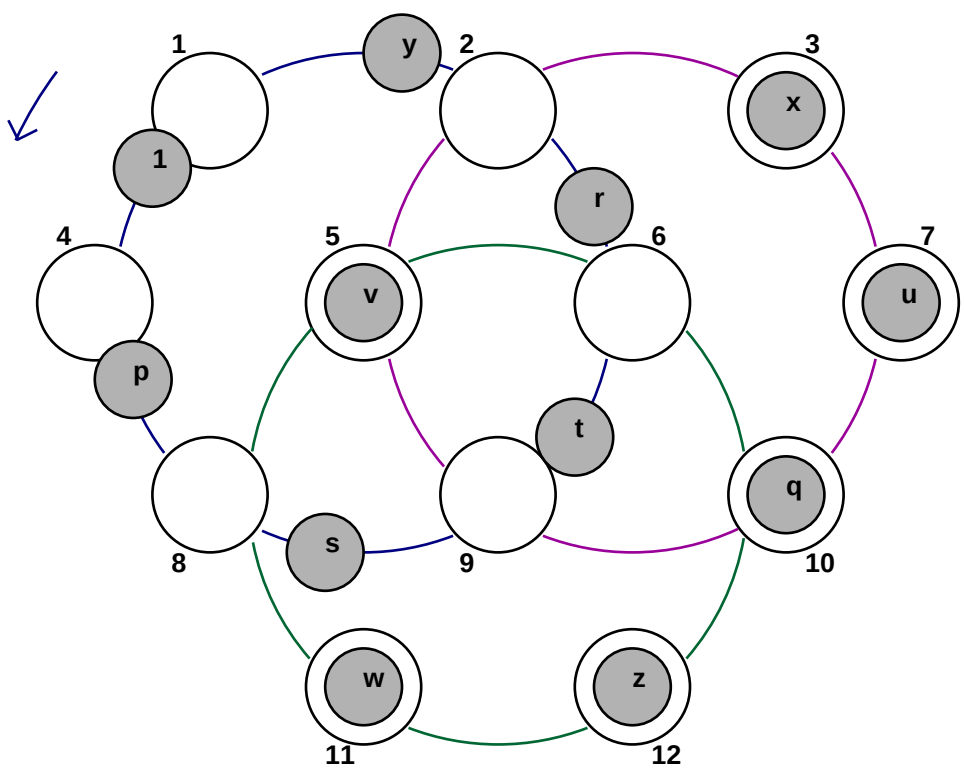
The number 1 can be placed in every position of the blue circle by moving the blue circle in either a clockwise or counter-clockwise pattern.

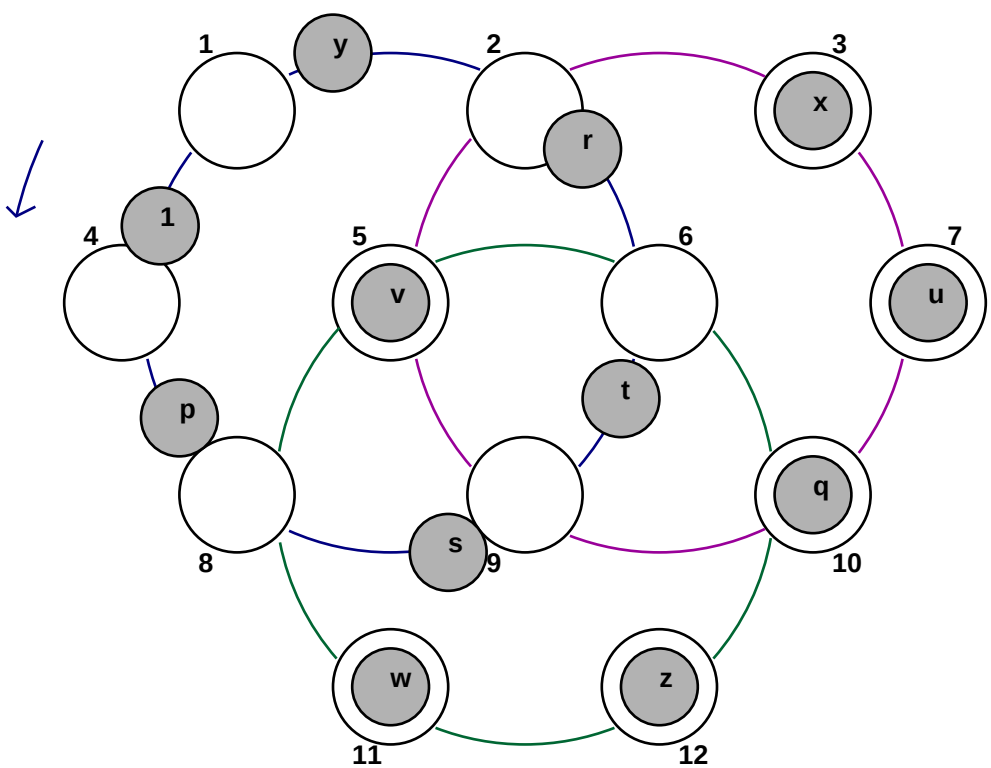

1
p
2
1
3
x
4
s
5
v
6
y
7
u
t
r
q
8
9
10
w
z
11
12

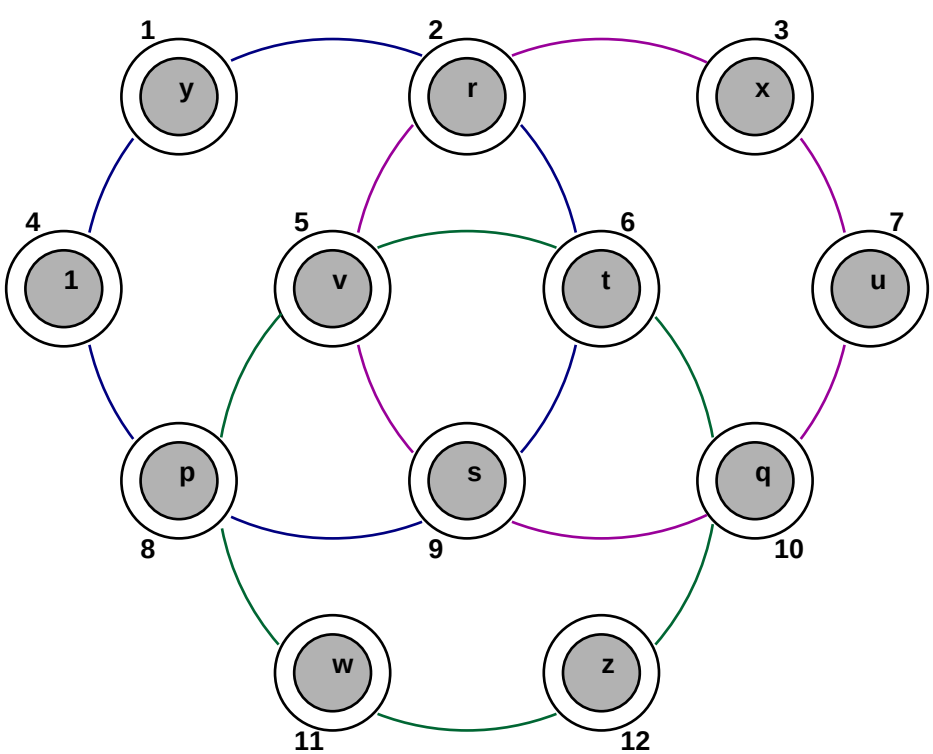

1
1
2
3
x
p
y
4
5
6
7
v
u
s
r
q
t
8
9
10
w
z
11
12

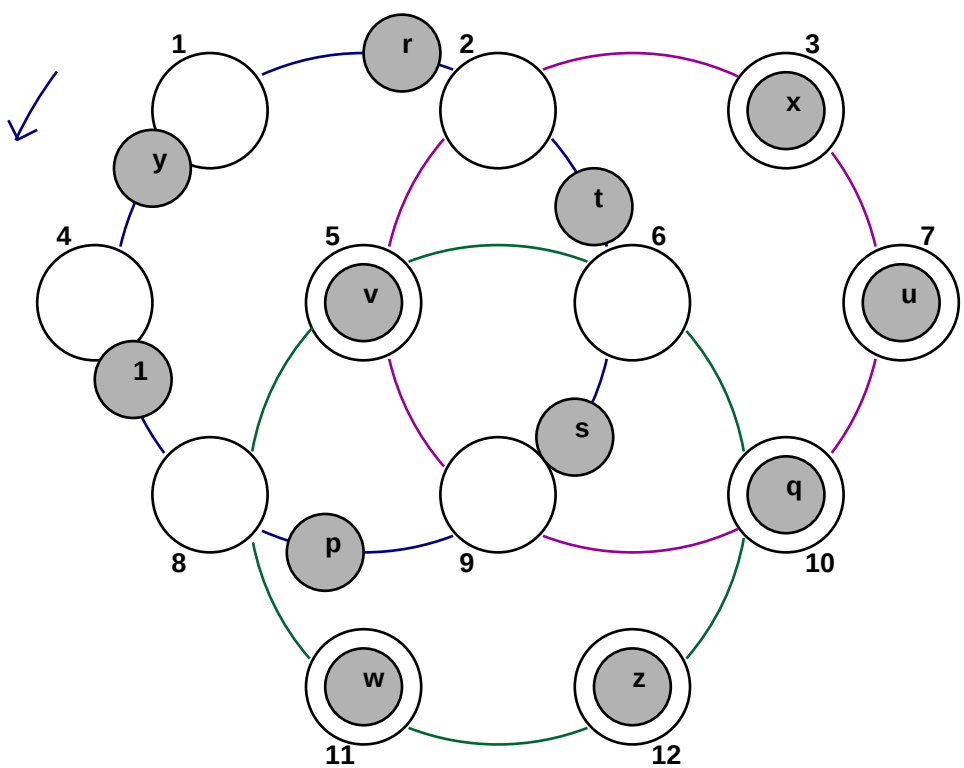

1
1
2
3
x
y
p
4
5
6
7
v
u
r
s
q
t
8
9
10
w
z
11
12

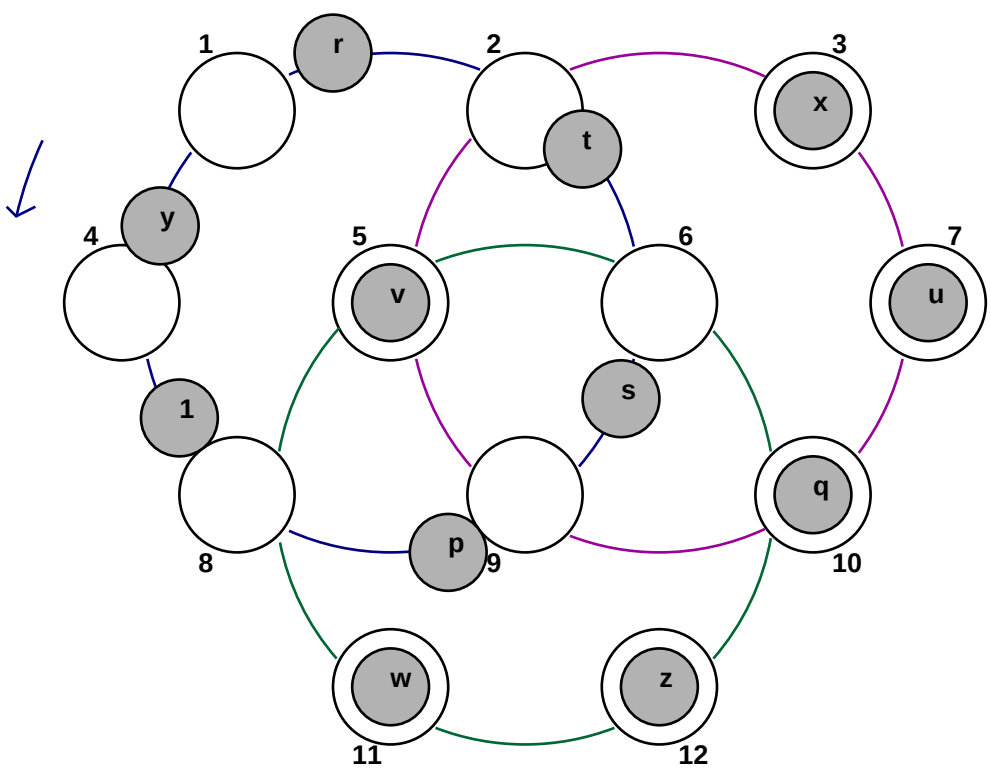

1
2
3
1
y
x
4
5
6
7
p
v
r
u
s
t
q
8
9
10
w
z
11
12

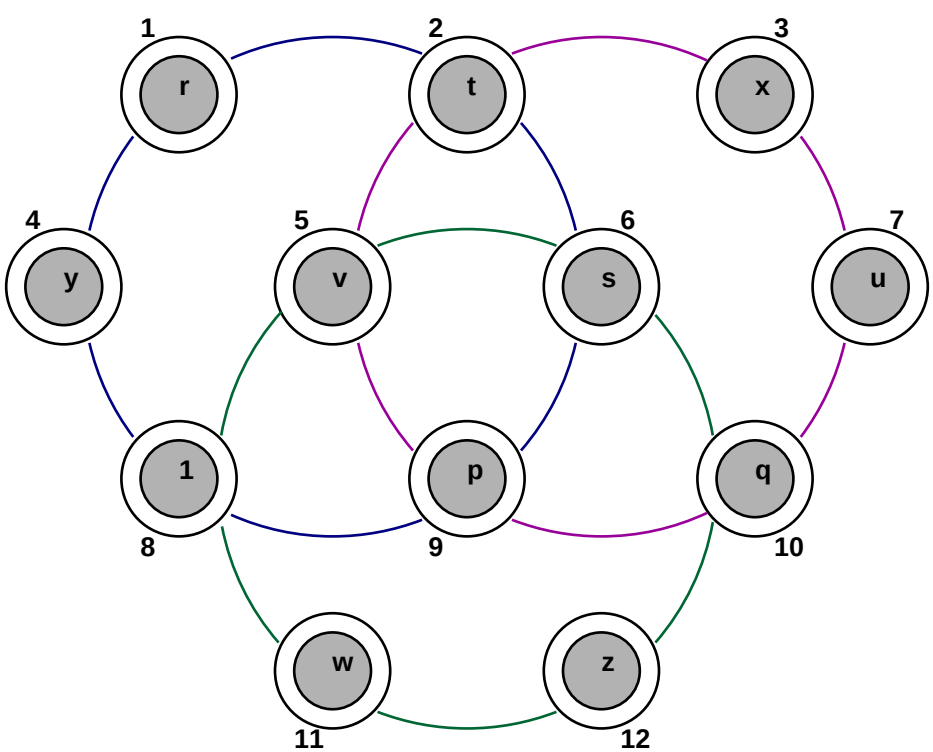

1
y
2
3
x
1
r
4
5
6
7
v
u
p
t
q
s
8
9
10
w
z
11
12

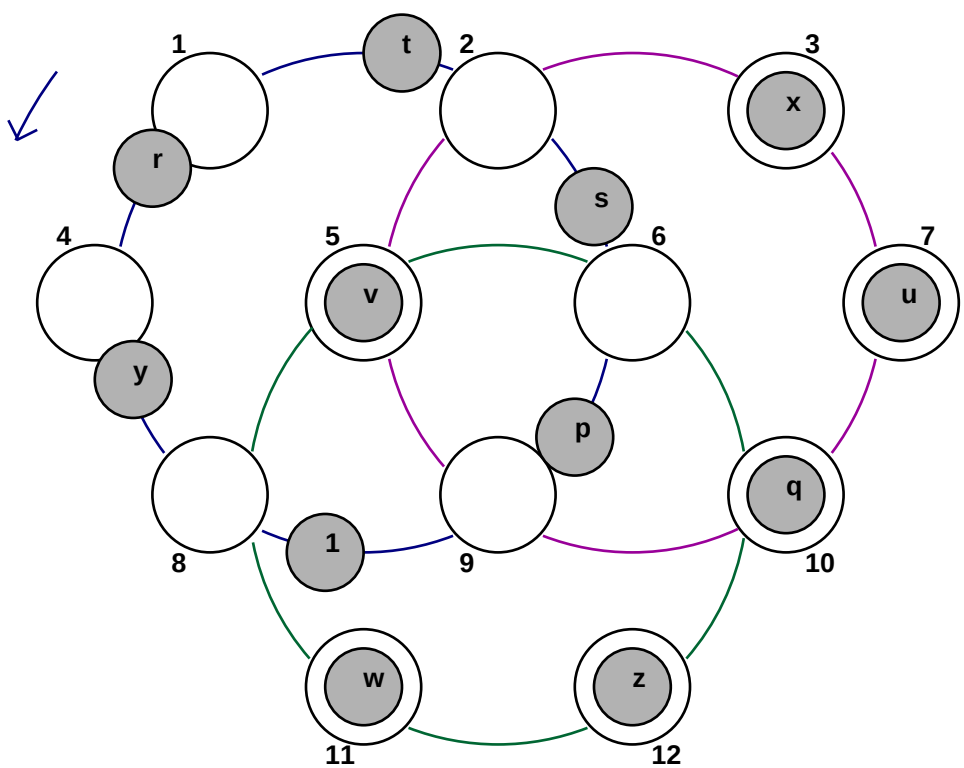

1
y
2
3
x
r
1
4
5
6
7
v
u
t
p
q
s
8
9
10
w
z
11
12

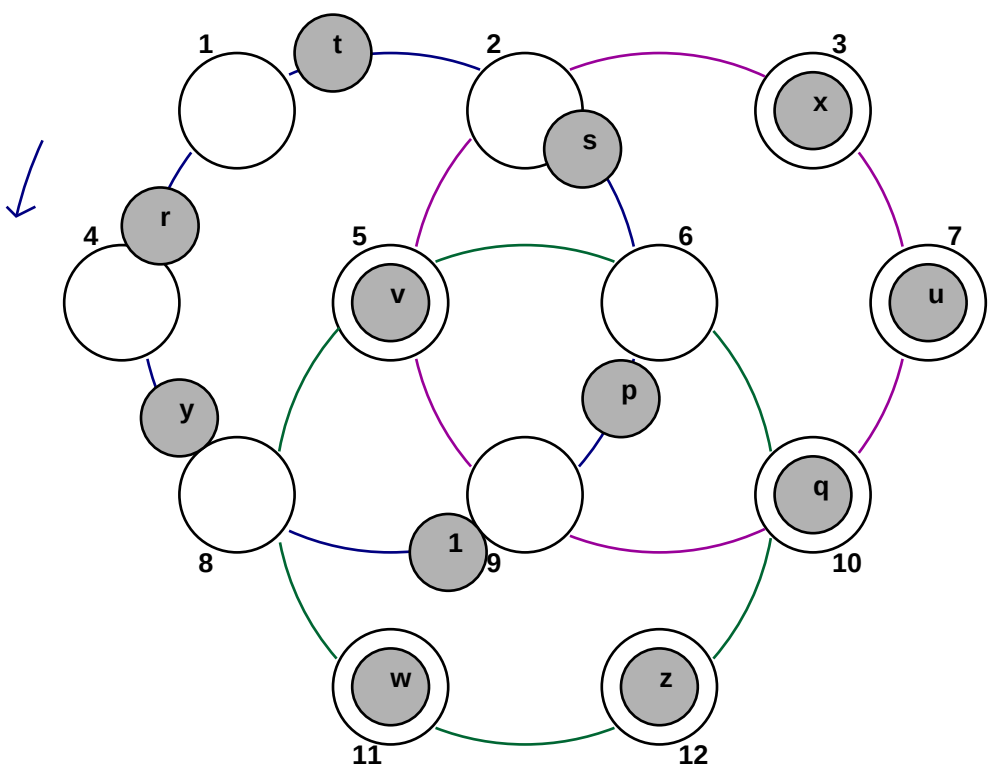

1
y
2
r
3
x
4
1
5
v
6
t
7
u
p
8
s
9
q
10
w
11
z
12

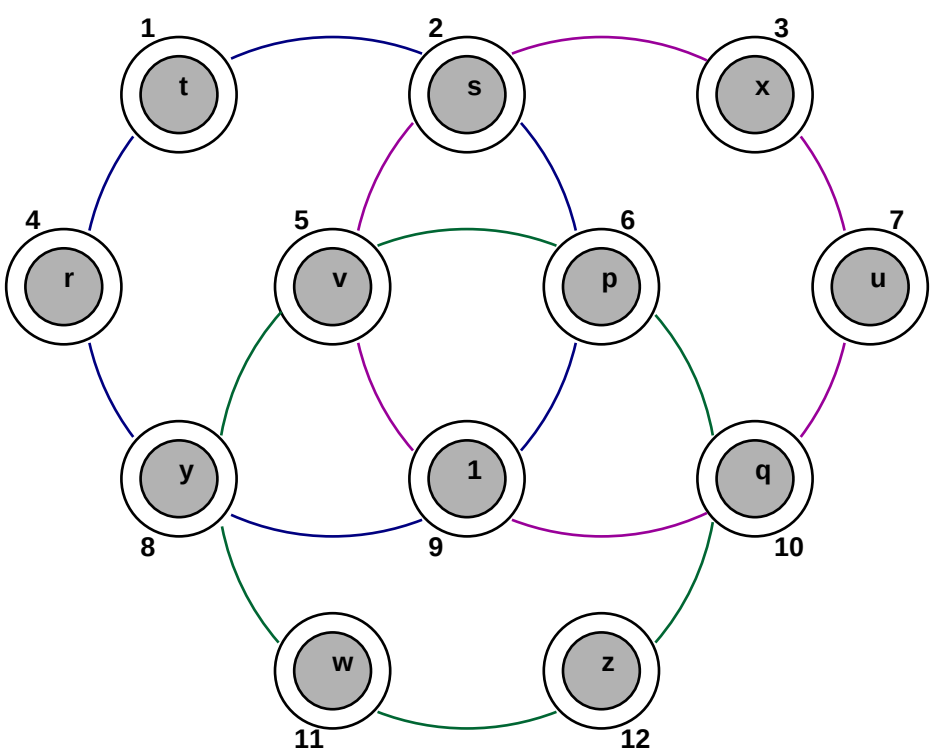

1
r
2
3
x
y
t
4
5
6
7
v
u
1
s
q
p
8
9
10
w
z
11
12

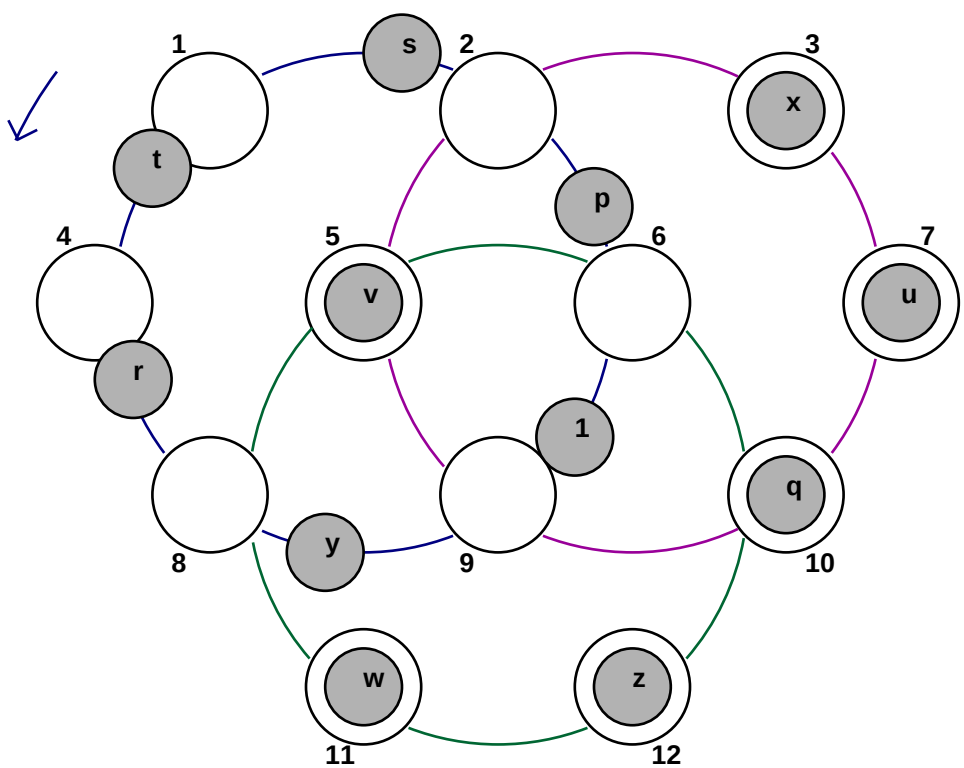

1
r
2
3
x
t
y
4
5
6
7
v
u
s
1
q
p
8
9
10
w
z
11
12

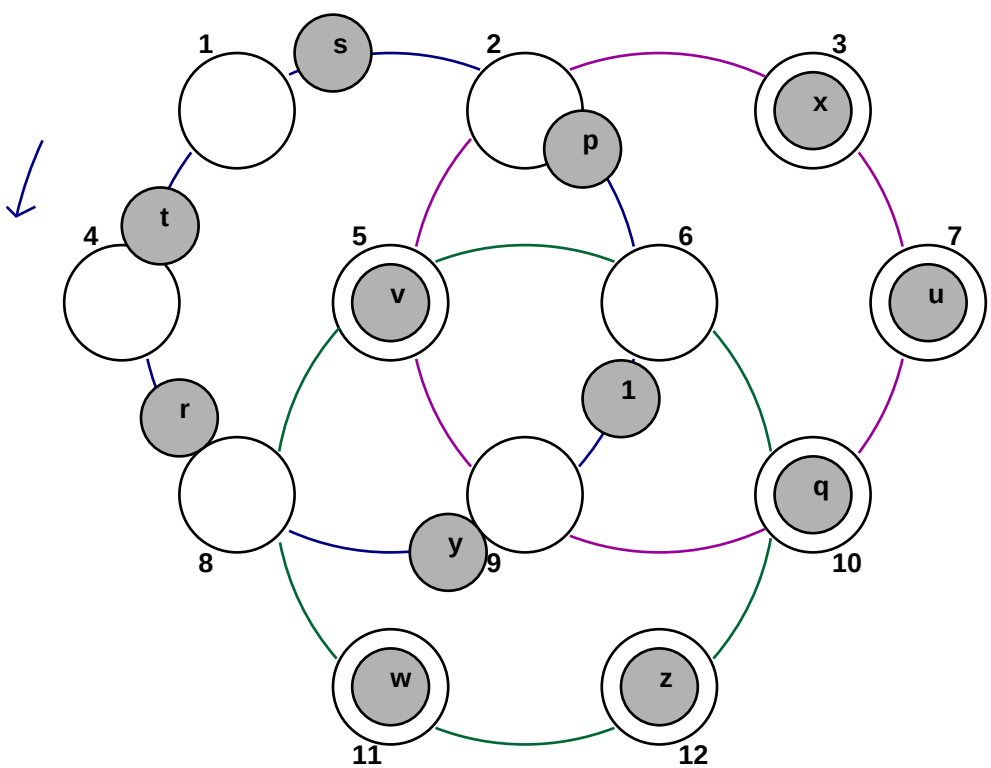

1
r
2
t
3
x
4
y
5
v
6
s
7
u
1
8
p
9
q
10
w
11
z
12

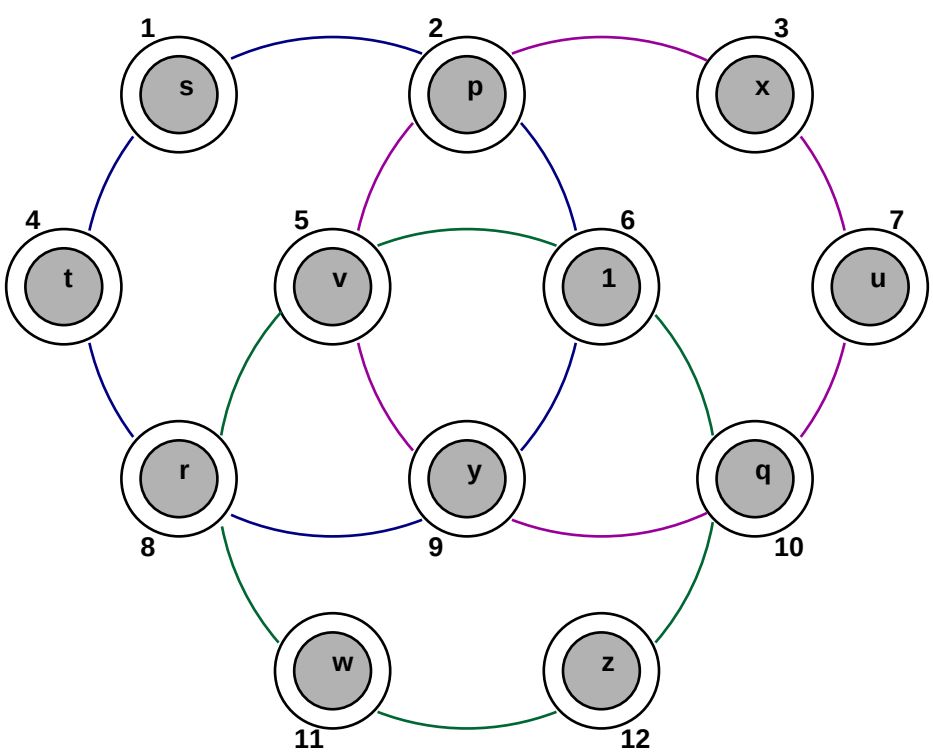

1
t
2
3
x
r
s
4
5
6
7
v
u
y
p
q
8
1
9
10
w
z
11
12

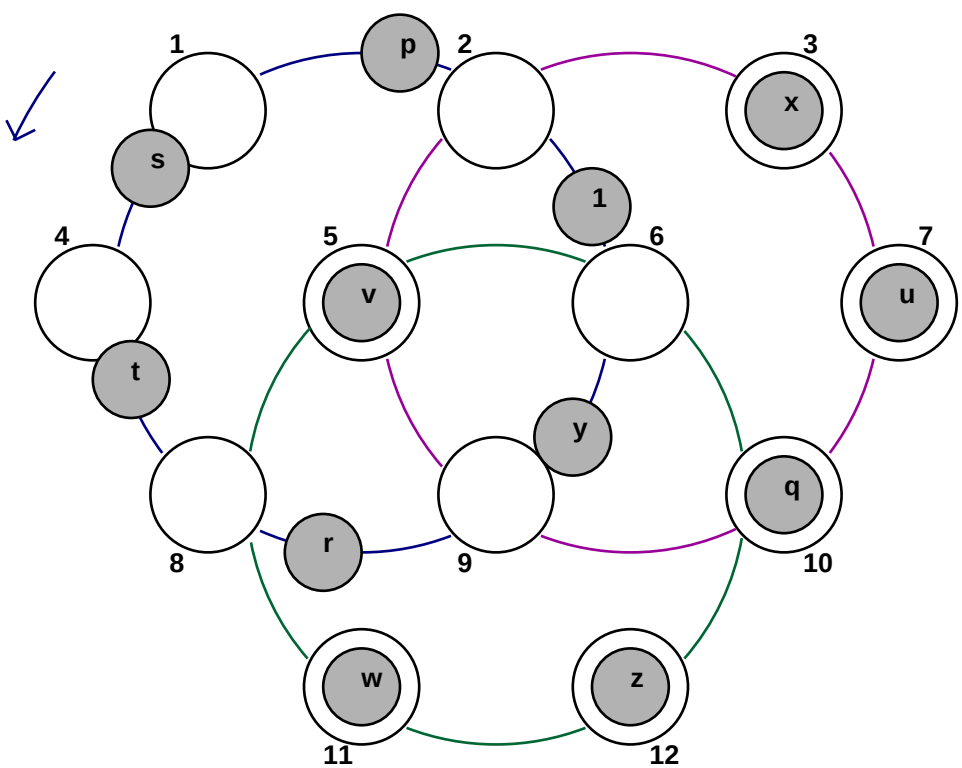

1
t
2
3
x
s
r
4
5
6
7
v
u
p
y
q
1
8
9
10
w
z
11
12

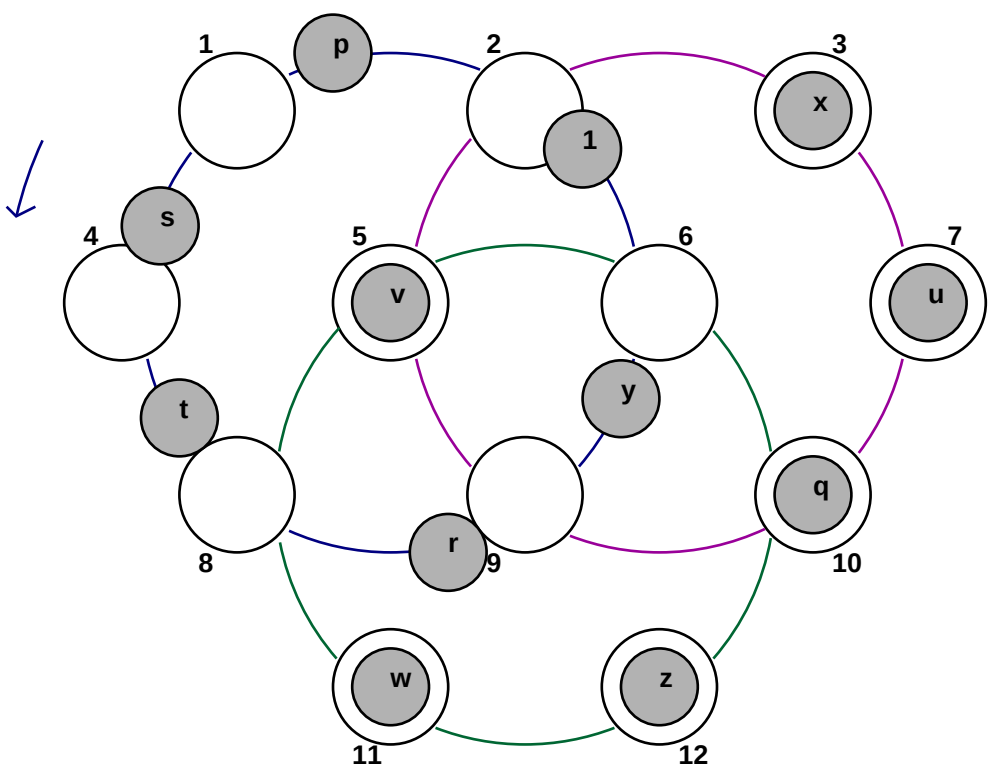

1
t
2
s
3
x
4
r
5
v
6
p
7
u
y
1
q
8
9
10
w
z
11
12

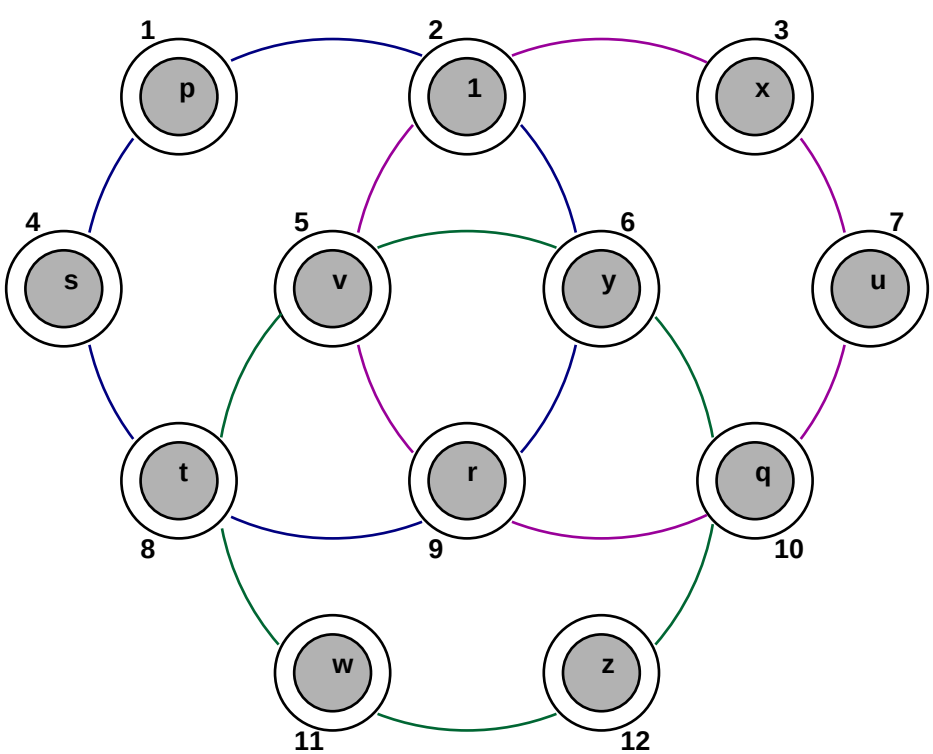

1
s
2
3
x
t
p
4
5
6
7
v
u
r
1
q
y
8
9
10
w
z
11
12


1
s
2
3
x
p
t
4
5
6
7
v
u
1
r
q
y
8
9
10
w
z
11
12

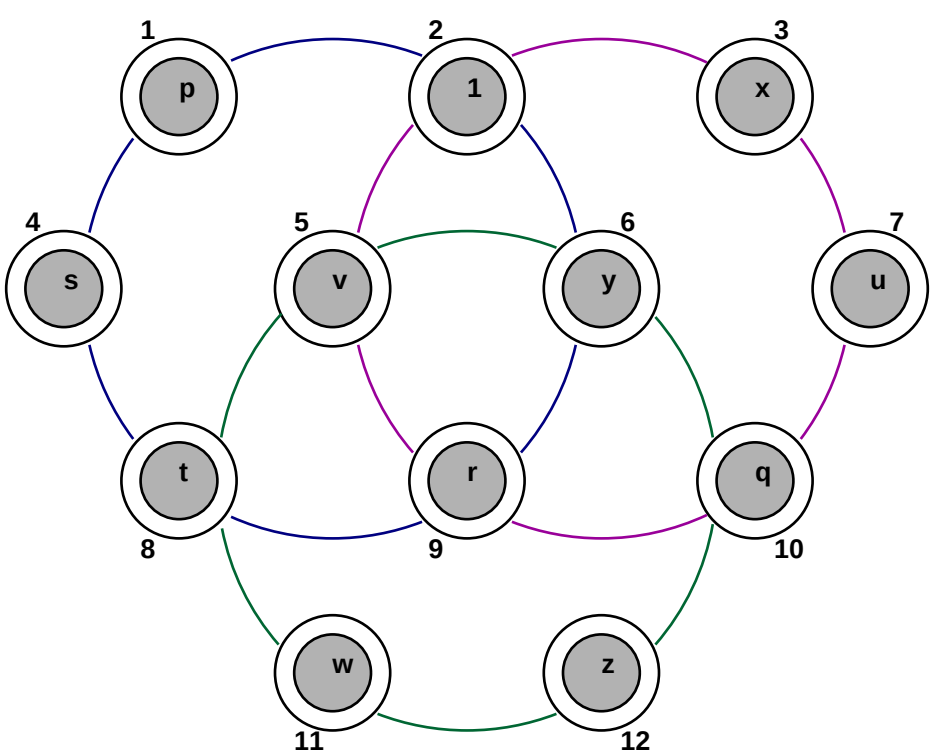

1
s
2
p
3
x
4
t
5
v
6
1
7
u
r
y
q
8
9
10
w
z
11
12

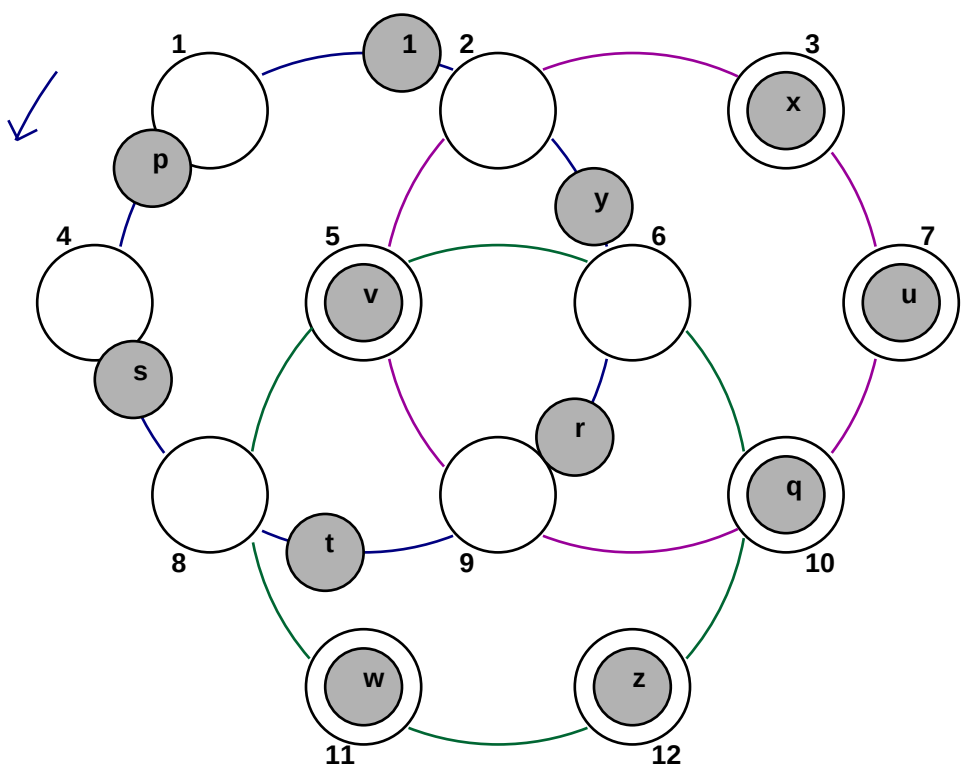

1
p
2
3
x
s
1
4
5
6
7
v
u
t
y
q
r
8
9
10
w
z
11
12

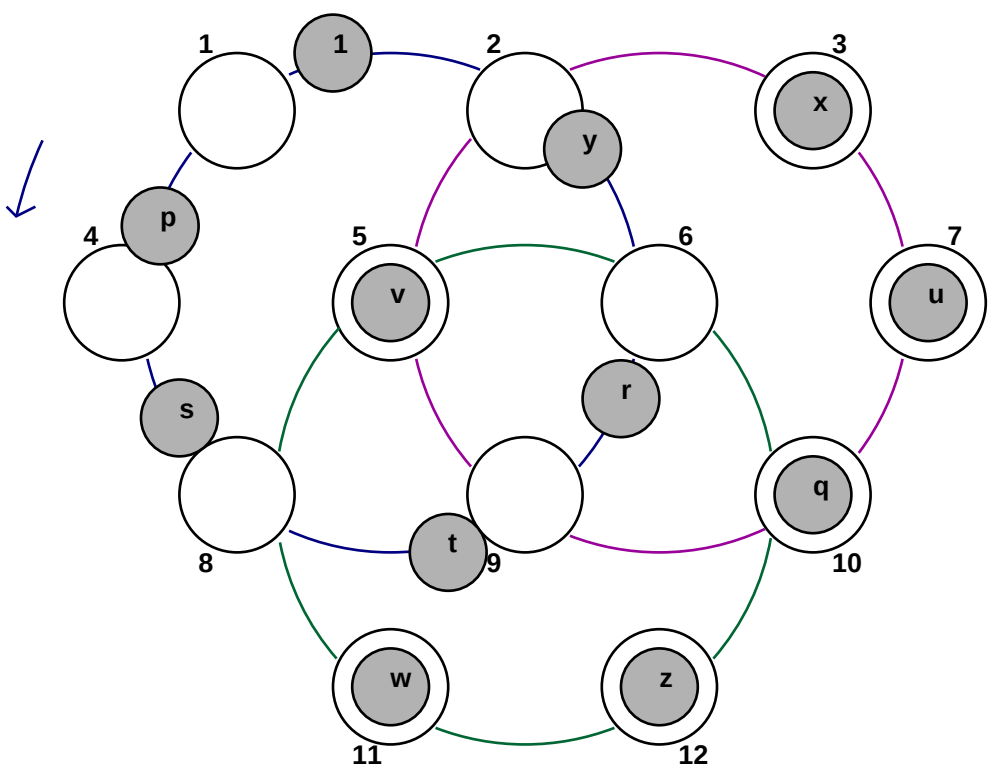

1
p
2
3
x
1
s
4
5
6
7
v
u
y
t
q
r
8
9
10
w
z
11
12

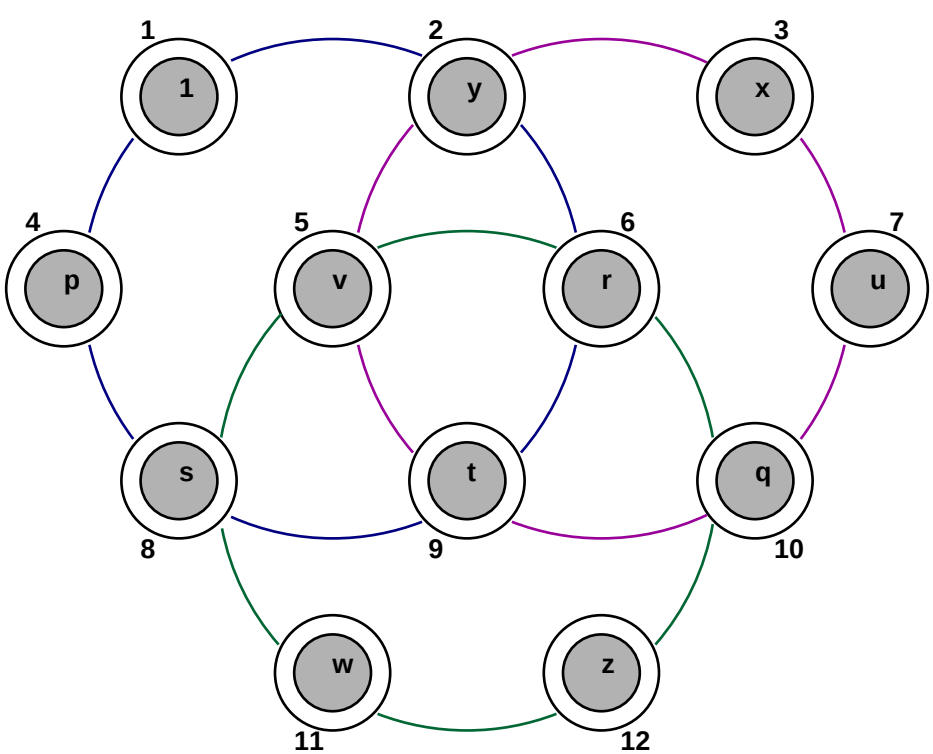

1
p
2
1
3
x
4
s
5
v
6
y
7
u
t
r
q
8
9
10
w
z
11
12

The number 1 can be placed in position 1
by moving the blue circle once counter-clockwise.


1
p
2
1
3
x
4
s
5
v
6
y
7
u
t
r
q
8
9
10
w
z
11
12


1
1
2
3
x
p
y
4
5
6
7
v
u
s
r
q
t
8
9
10
w
z
11
12


1
1
2
3
x
y
p
4
5
6
7
v
u
r
s
q
t
8
9
10
w
z
11
12

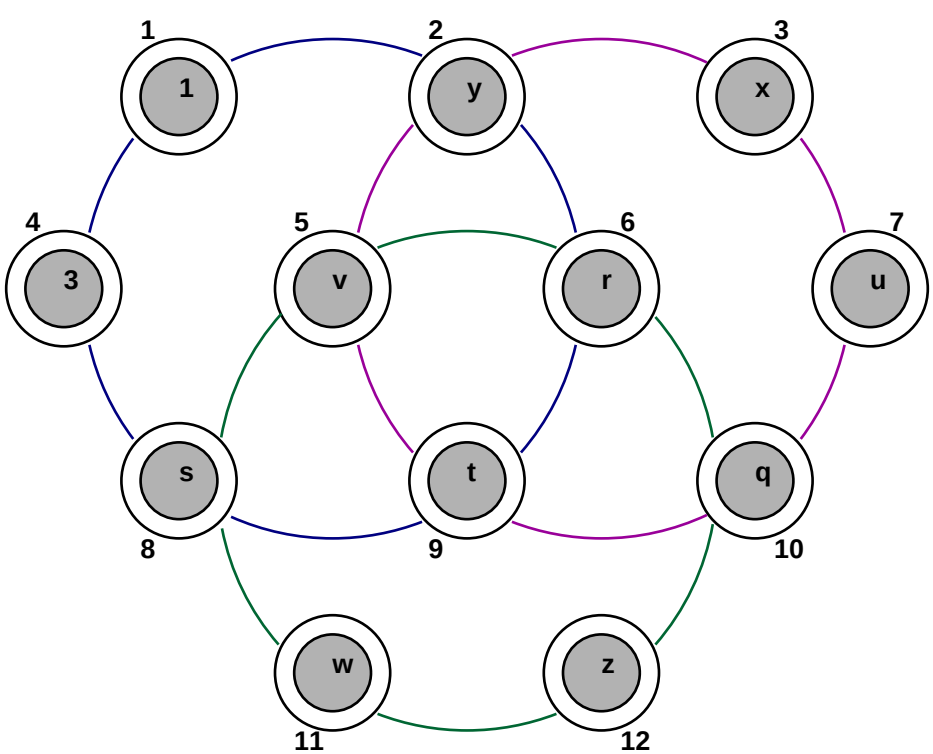

1
2
3
1
y
x
4
5
6
7
p
v
r
u
s
t
q
8
9
10
w
z
11
12

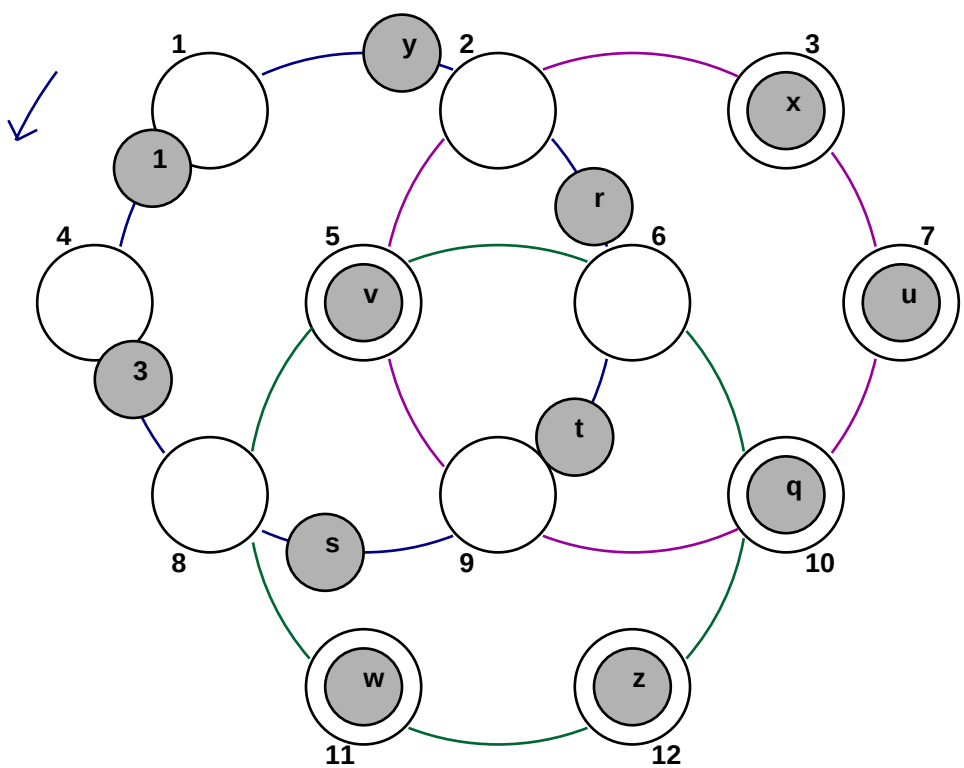
It has been shown that 1 can be moved to position 1 from any position.

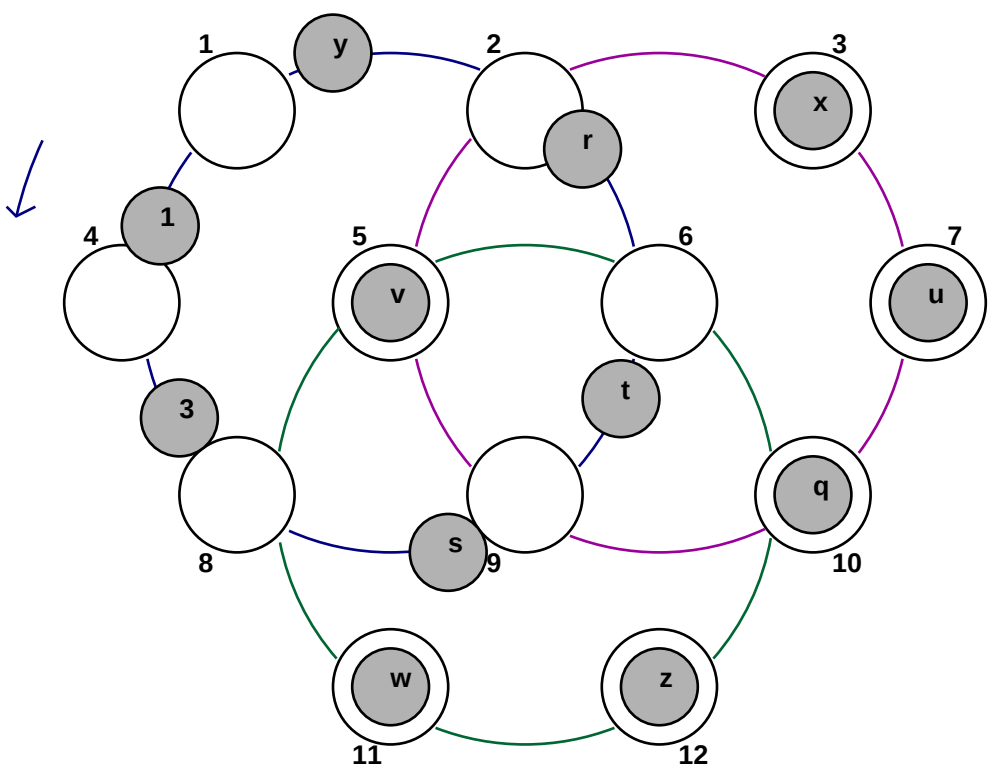
Now let p = 3.

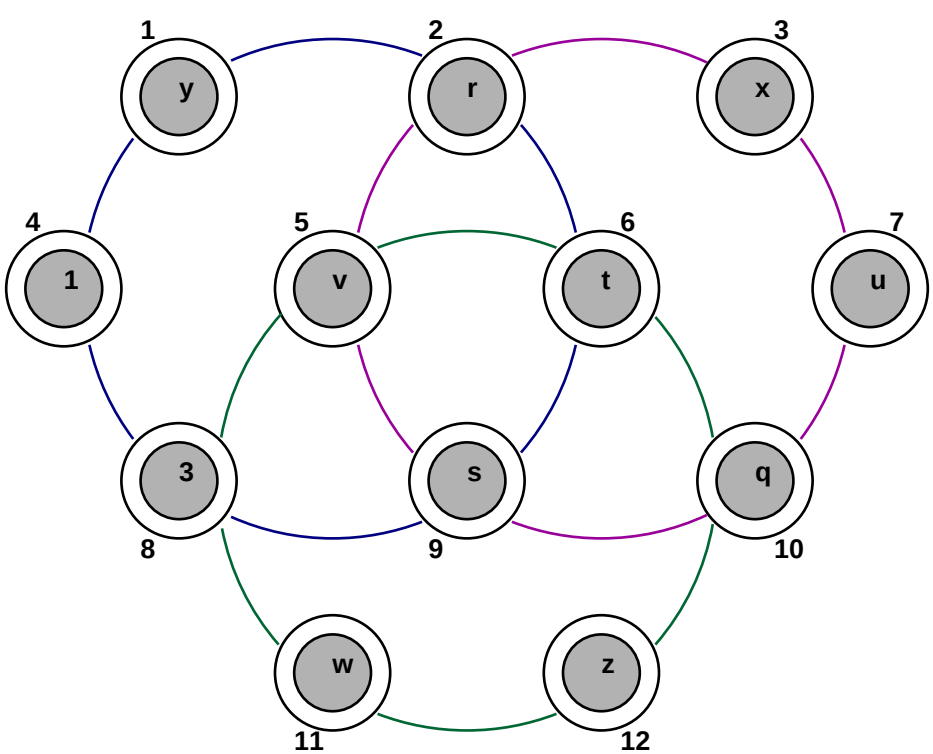
Number 3 can be moved from every position, other than position 1, to position 3, while keeping number 1 in position 1.

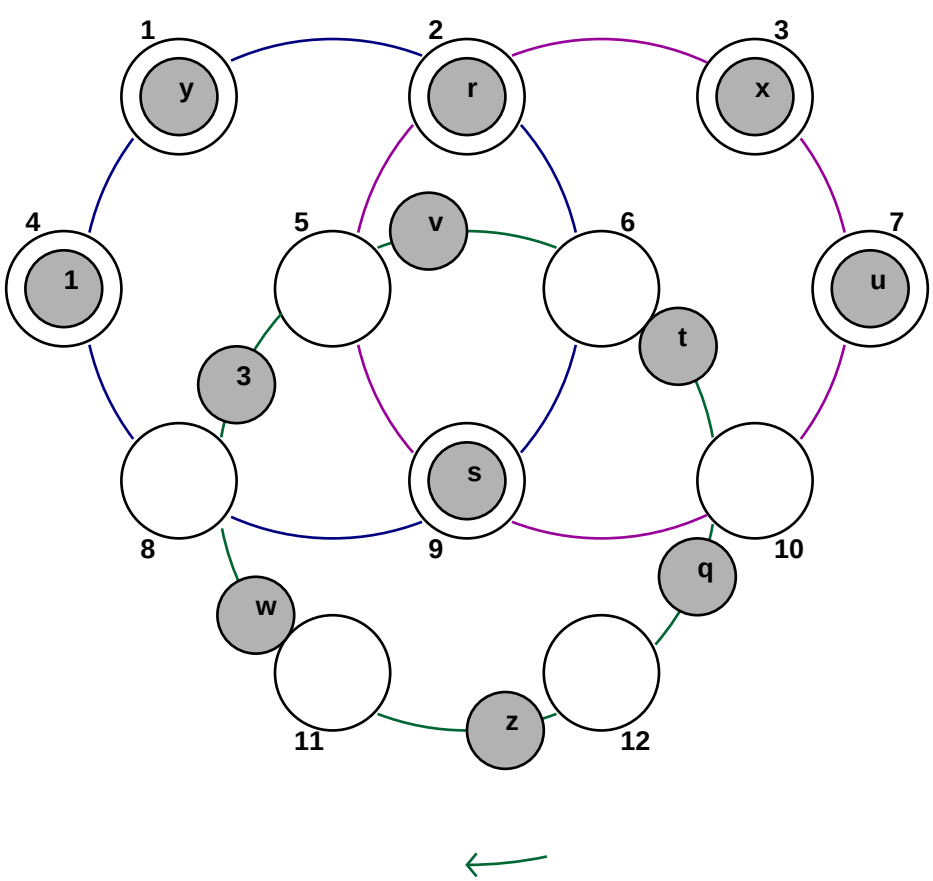
Number 3 can be moved to position 4 while keeping number 1 in position 1 through the following moves.

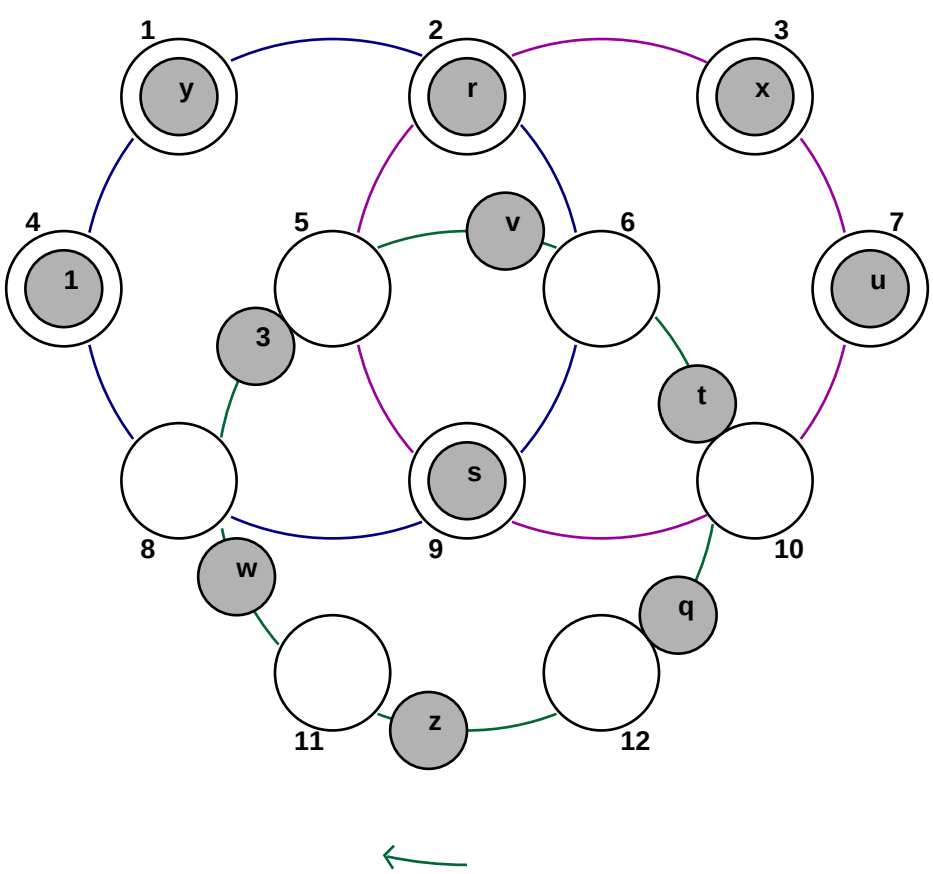

1
1
2
y
3
x
4
3
5
v
6
r
7
u
s
8
t
9
q
10
w
11
z
12

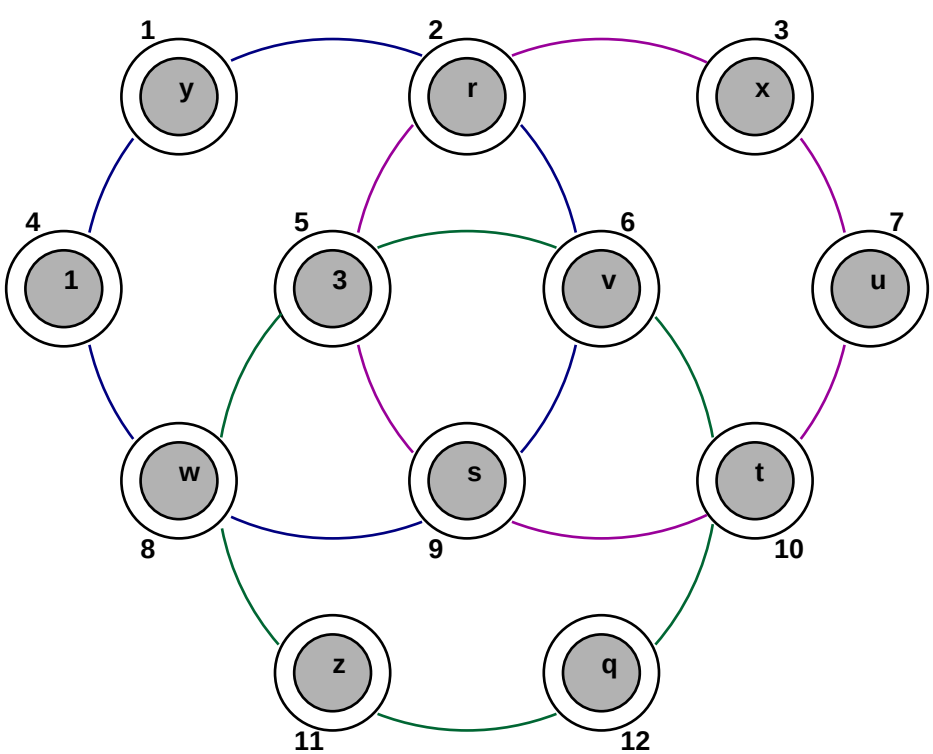

1
y
2
3
x
1
r
4
5
6
7
v
u
3
t
q
s
8
9
10
w
z
11
12

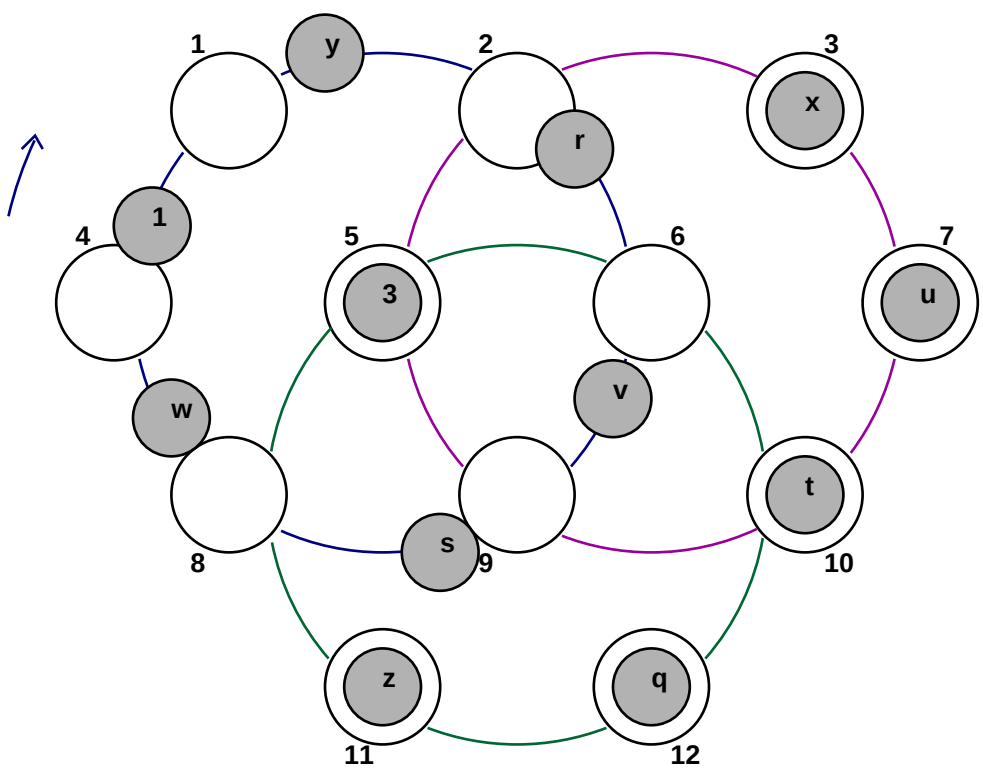

1
y
2
3
x
r
1
4
5
6
7
v
u
t
3
q
s
8
9
10
w
z
11
12

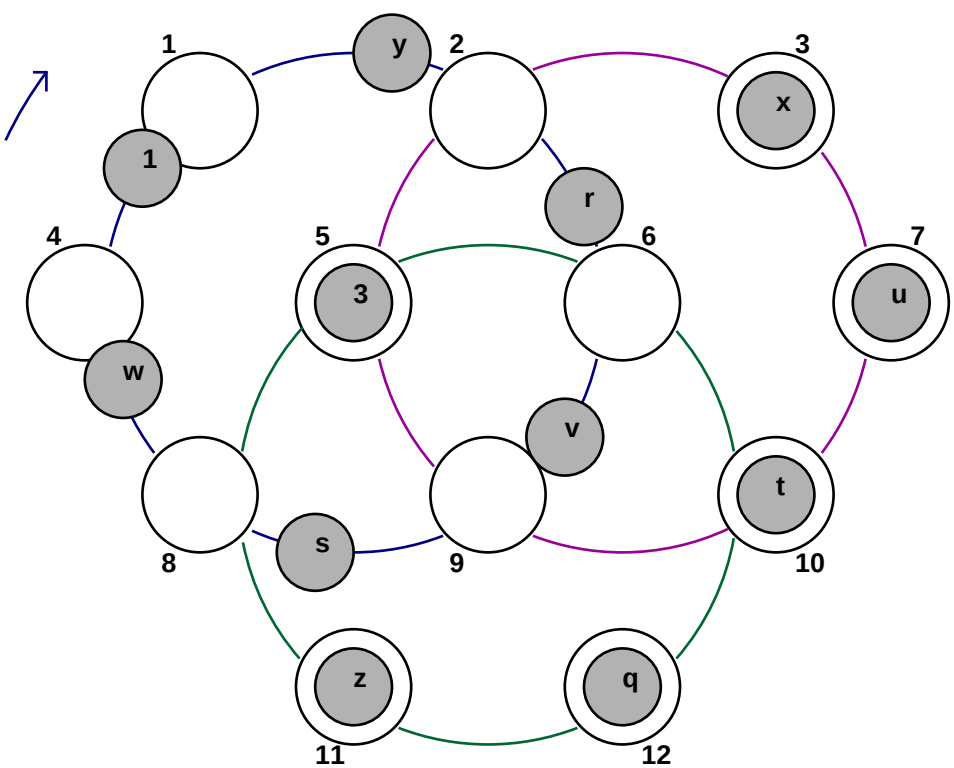

1
y
2
r
3
x
4
1
5
v
6
t
7
u
3
8
s
9
q
10
w
11
z
12

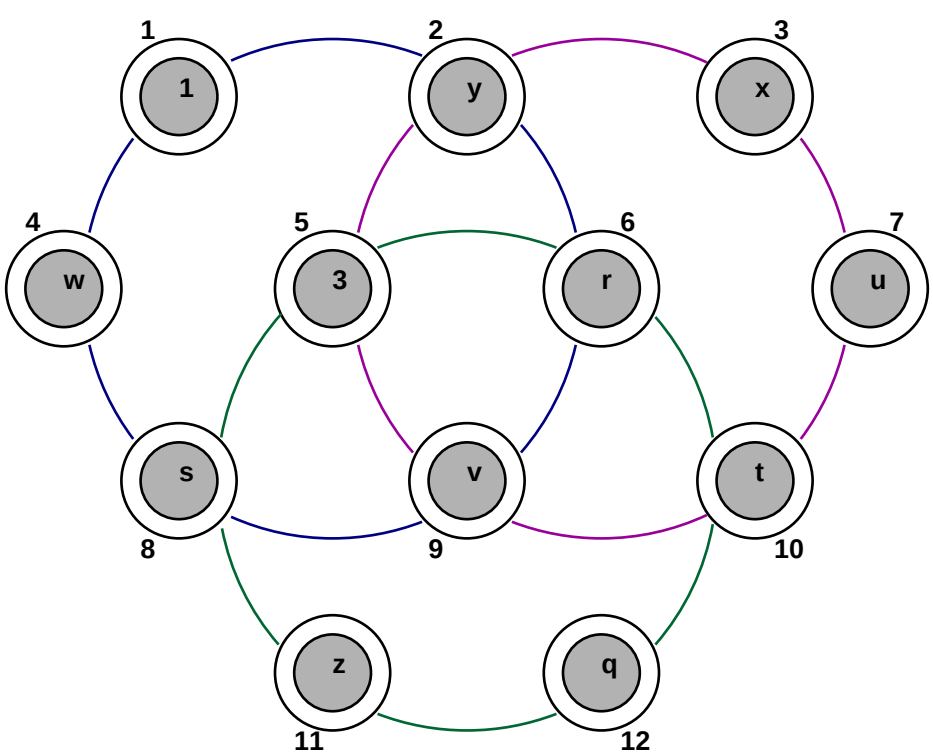

1
2
3
y
r
x
4
5
v
6
7
1
u
t
3
s
8
9
10
q
w
11
z
12

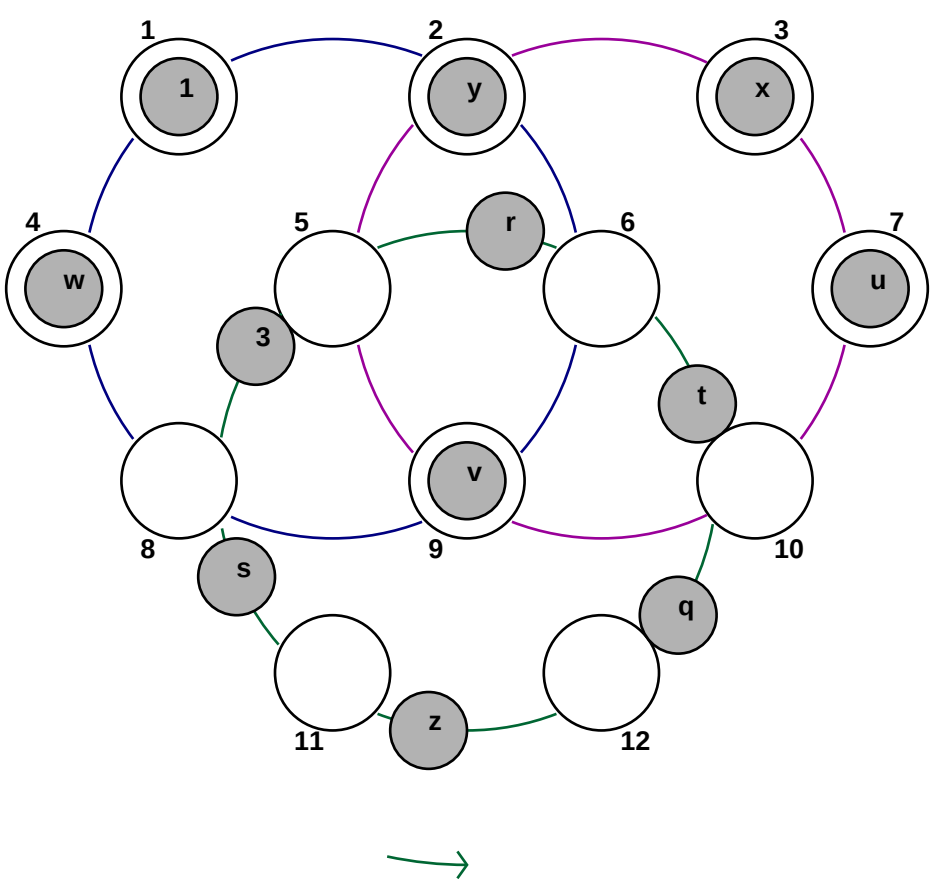

1
2
3
y
r
x
4
5
v
6
7
1
u
3
t
s
8
9
10
w
q
11
z
12

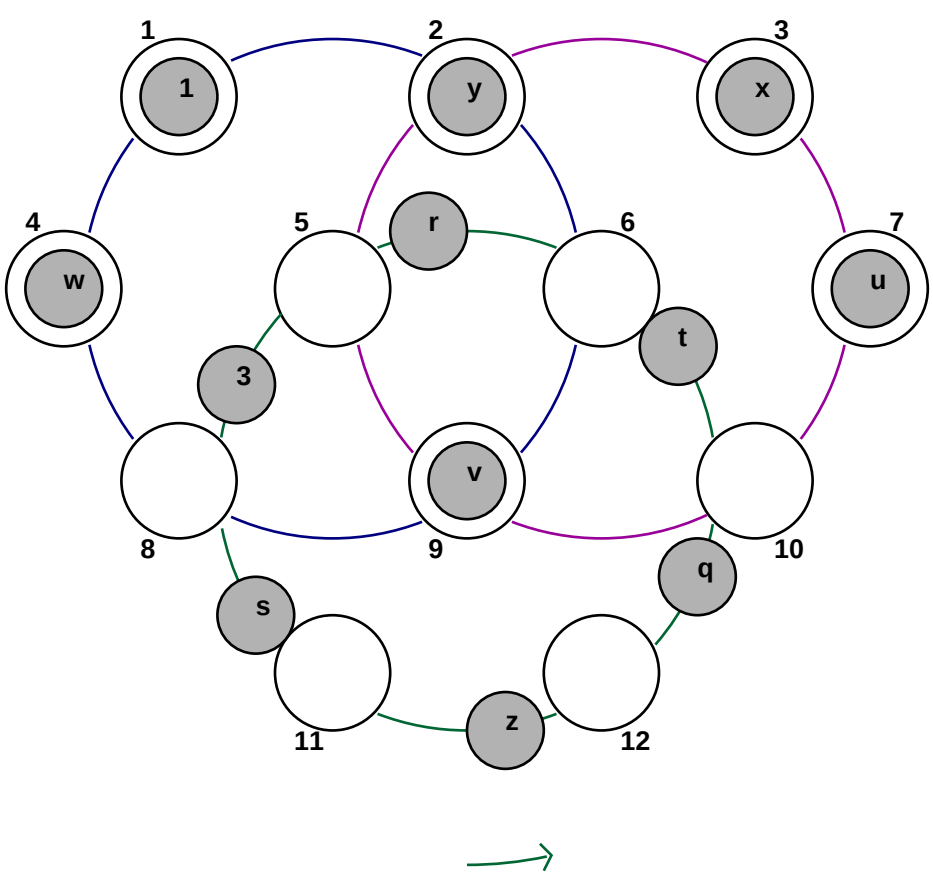

1
y
2
r
3
x
4
1
5
3
6
v
7
u
w
8
s
9
t
10
z
11
q
12

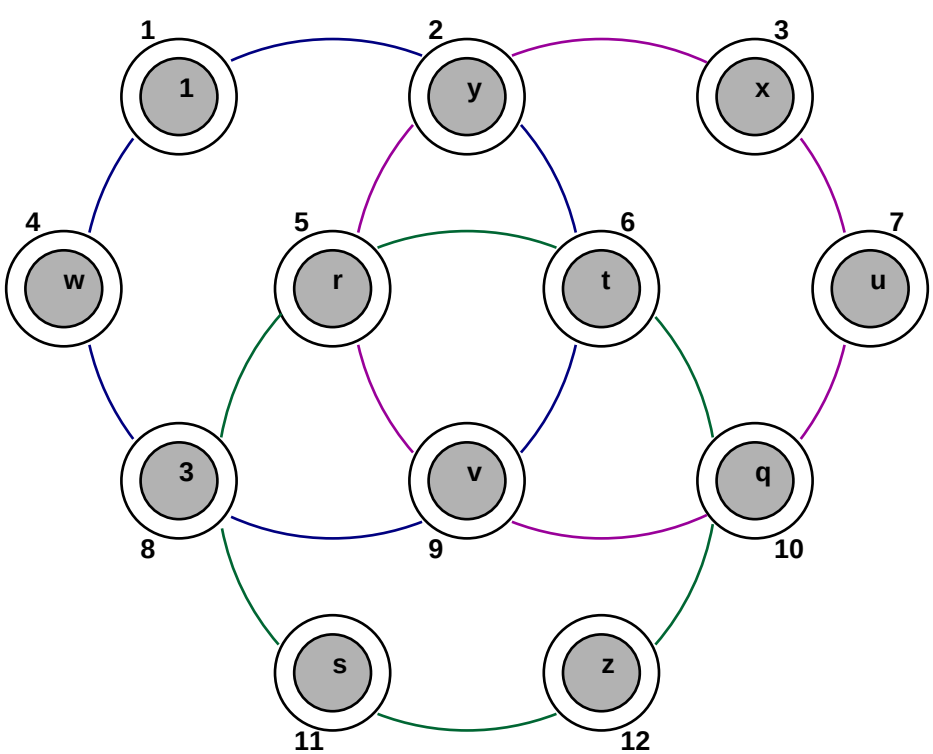

1
y
2
3
x
r
1
4
5
6
7
3
u
v
w
t
s
8
9
10
z
q
11
12


1
y
2
3
x
1
r
4
5
6
7
3
u
w
v
t
s
8
9
10
z
q
11
12


1
1
2
y
3
x
4
w
5
3
6
r
7
u
s
v
t
8
9
10
z
q
11
12

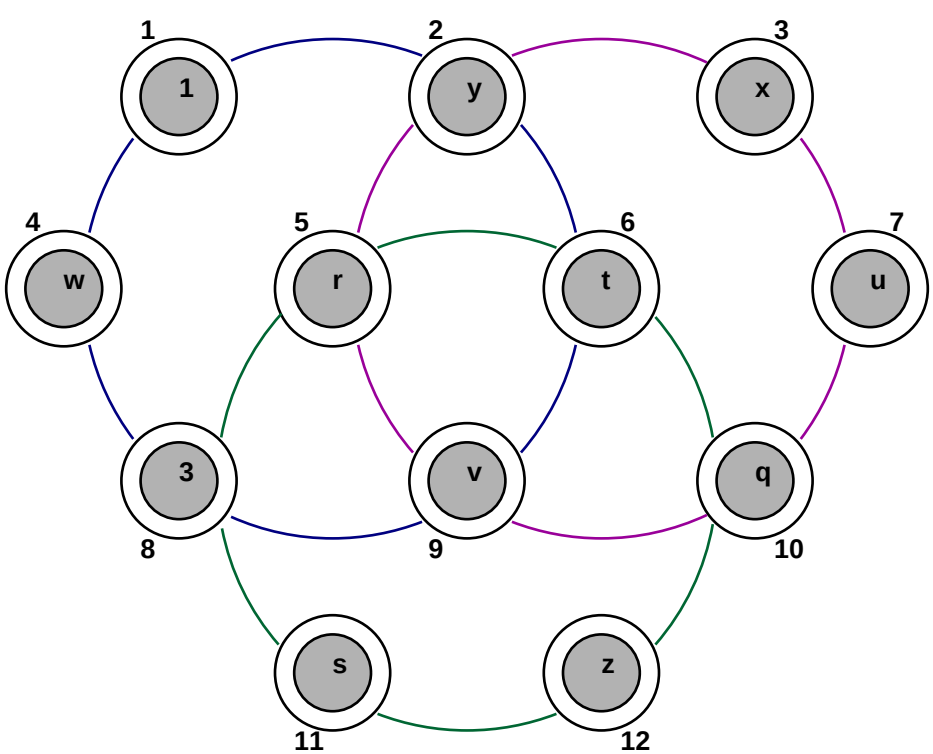

1
2
3
1
y
x
4
5
r
6
7
w
u
3
t
v
8
9
10
s
q
z
11
12

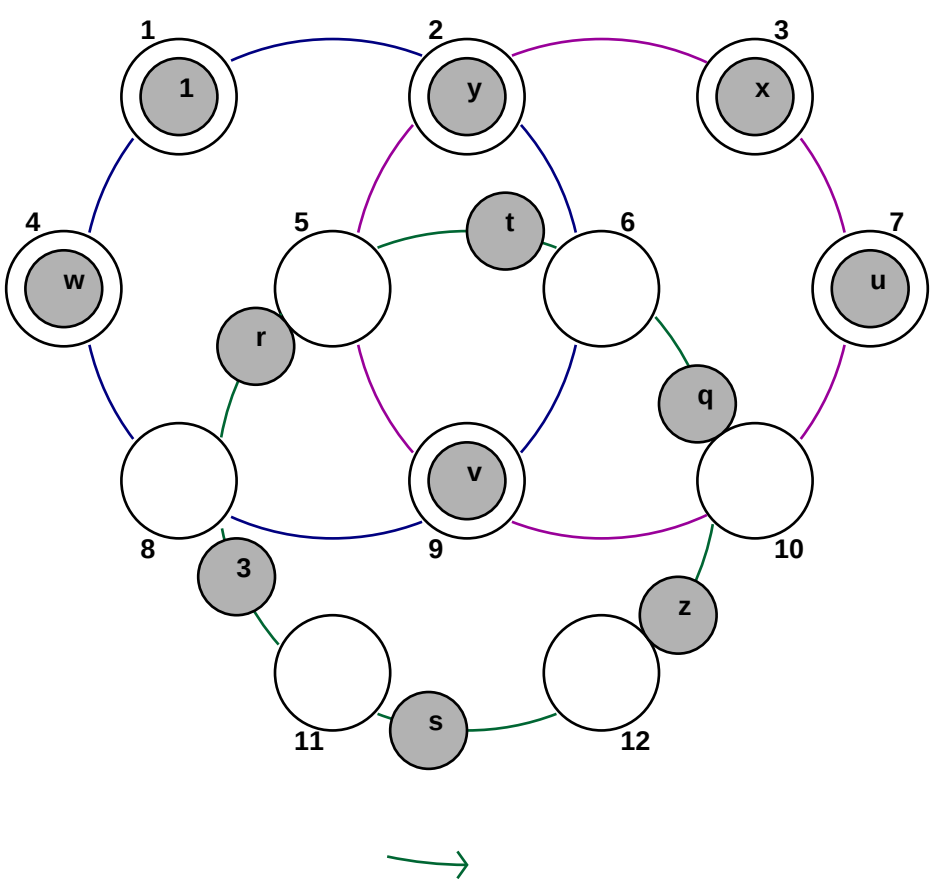

1
2
3
1
y
x
4
5
r
6
7
w
u
t
3
v
8
9
10
q
s
11
z
12

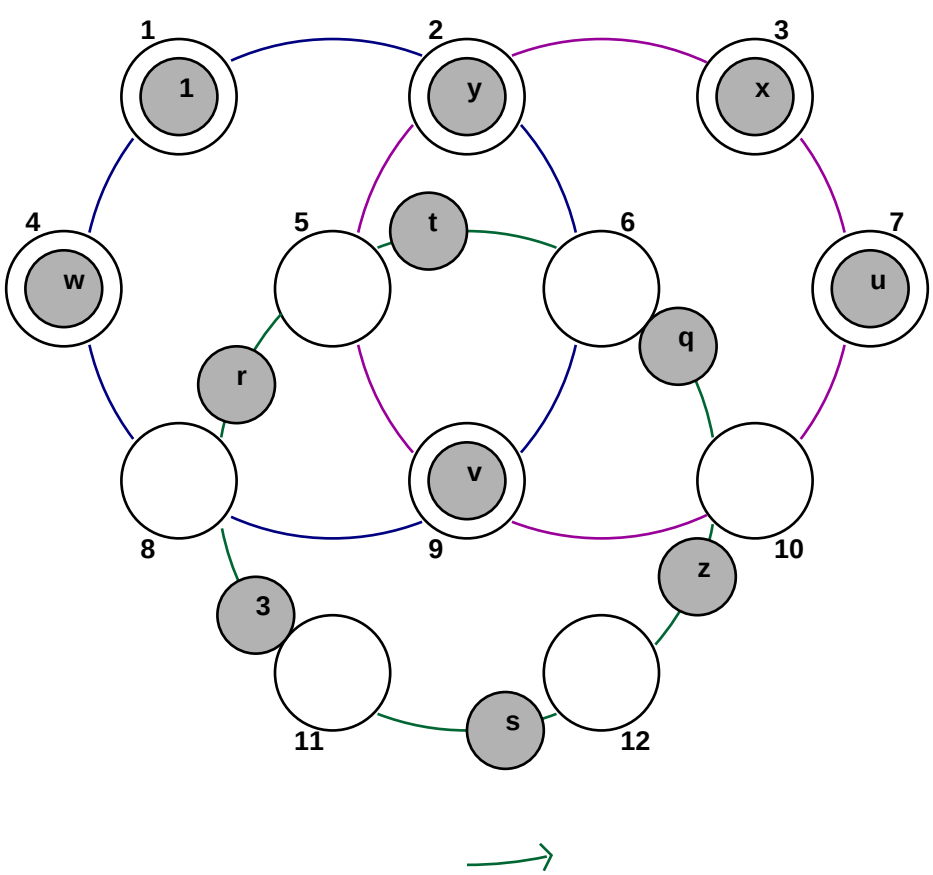

1
2
3
1
y
x
4
5
6
7
w
r
t
u
3
v
q
8
9
10
s
z
11
12

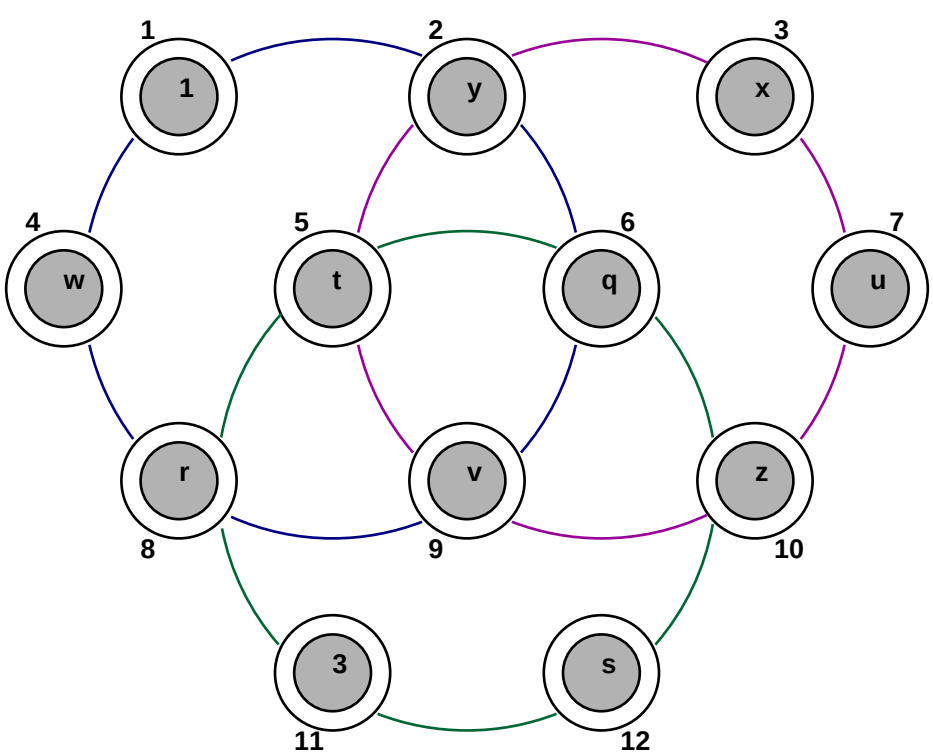
Number 3 can has been moved into the green circle.

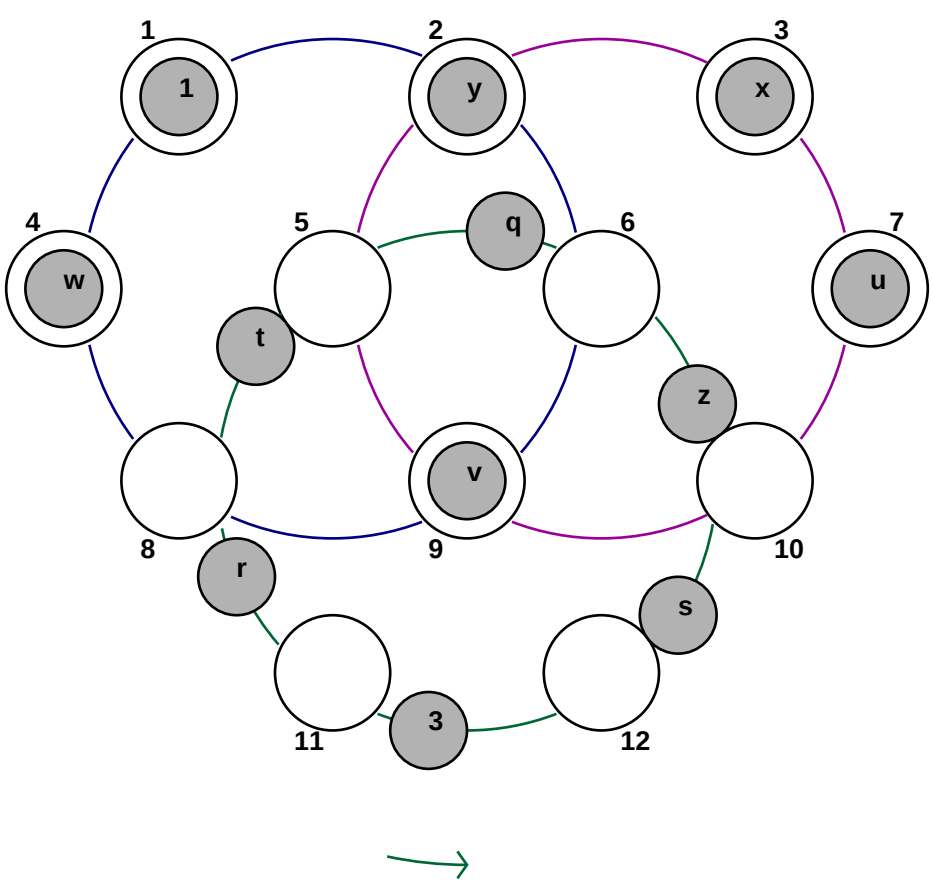
The number 3 can be moved to every position in the green circle by moving the green circle in a clockwise or counter-clockwise pattern. Number 1 will continue to remain in position 1.

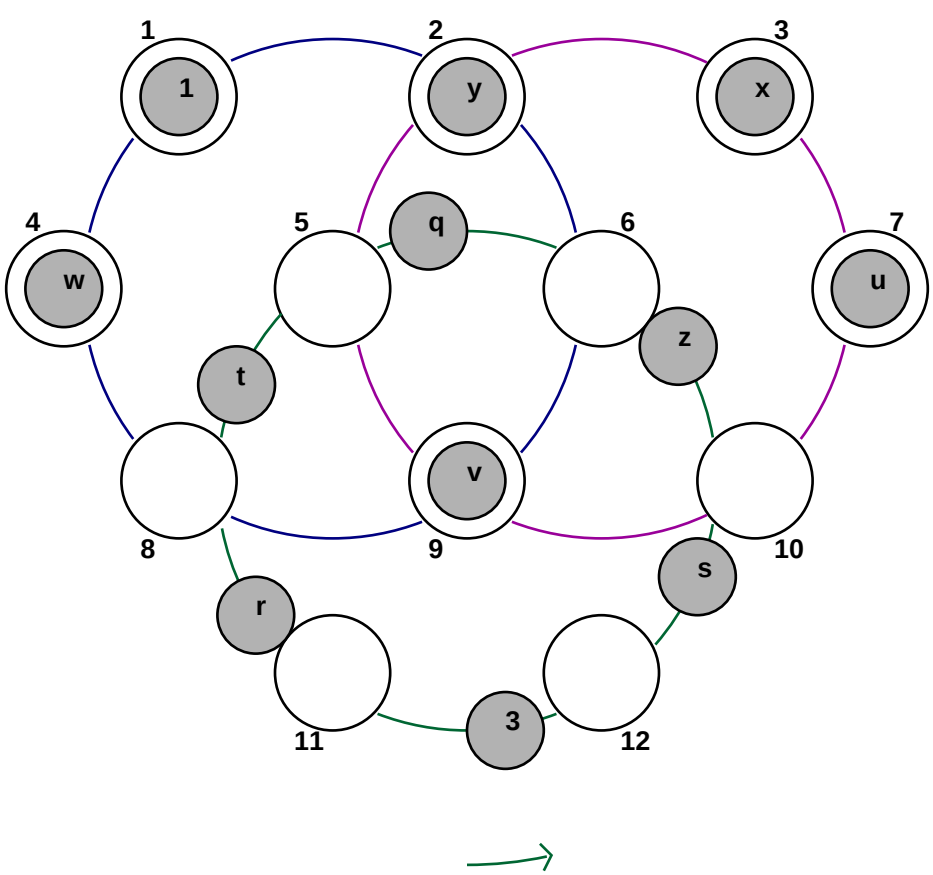

1
2
3
1
y
x
4
5
6
7
w
r
t
u
3
v
q
8
9
10
s
z
11
12

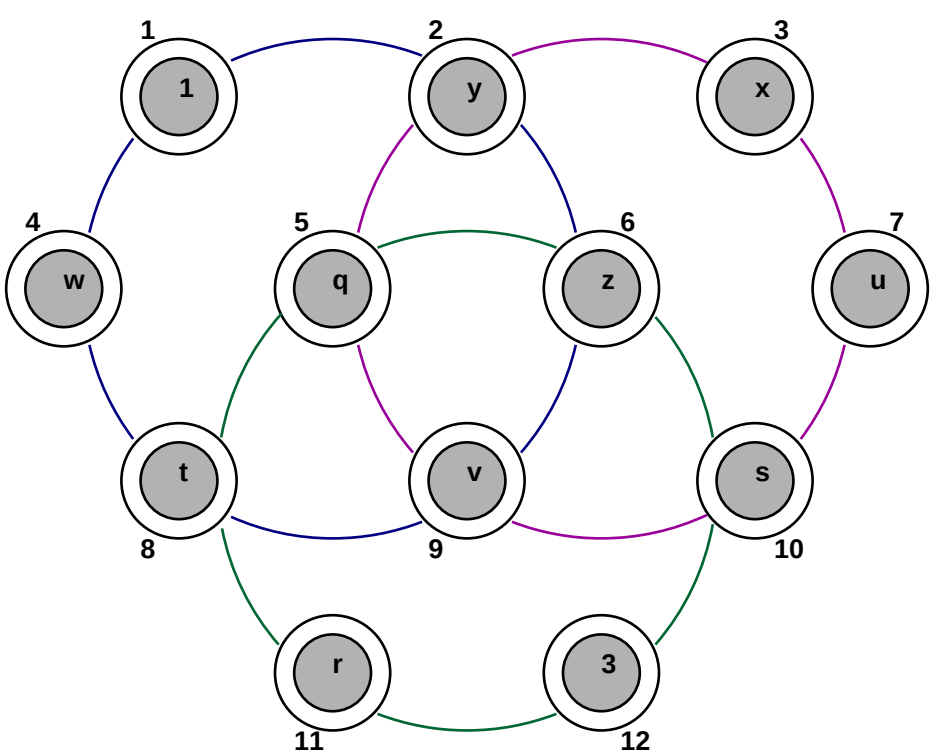

1
2
3
1
y
x
4
5
t
6
7
w
u
r
q
v
8
9
10
3
z
11
s
12

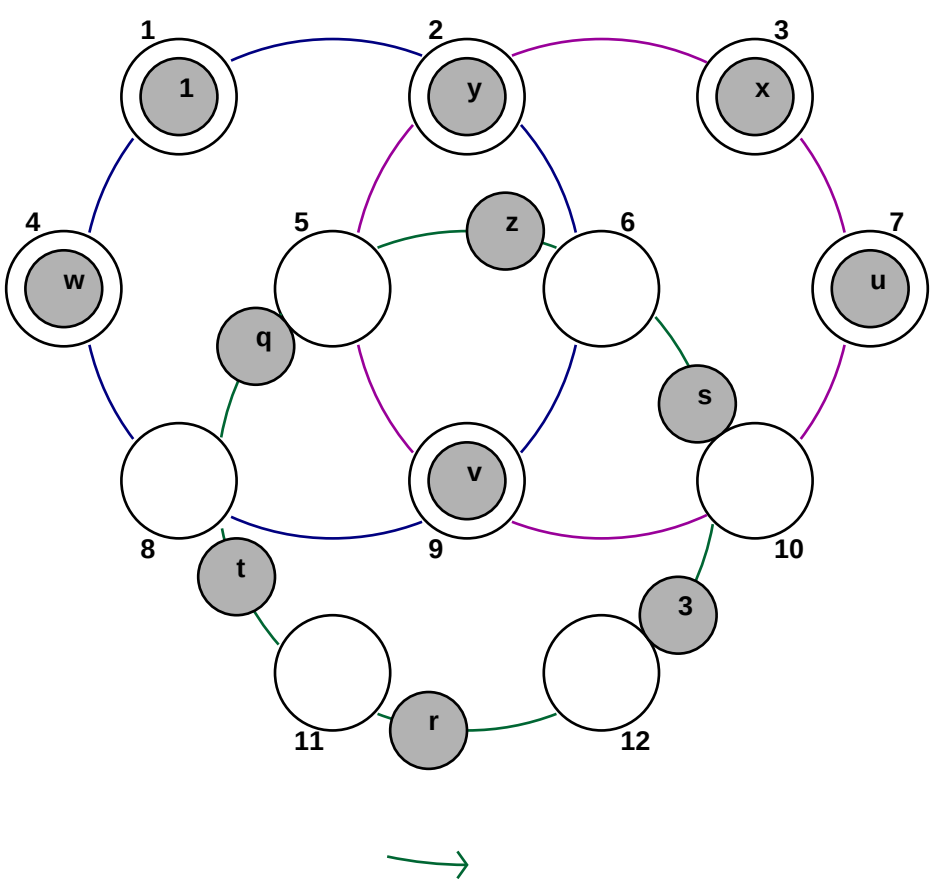

1
2
3
1
y
x
4
5
t
6
7
w
u
q
r
v
8
9
10
z
3
s
11
12

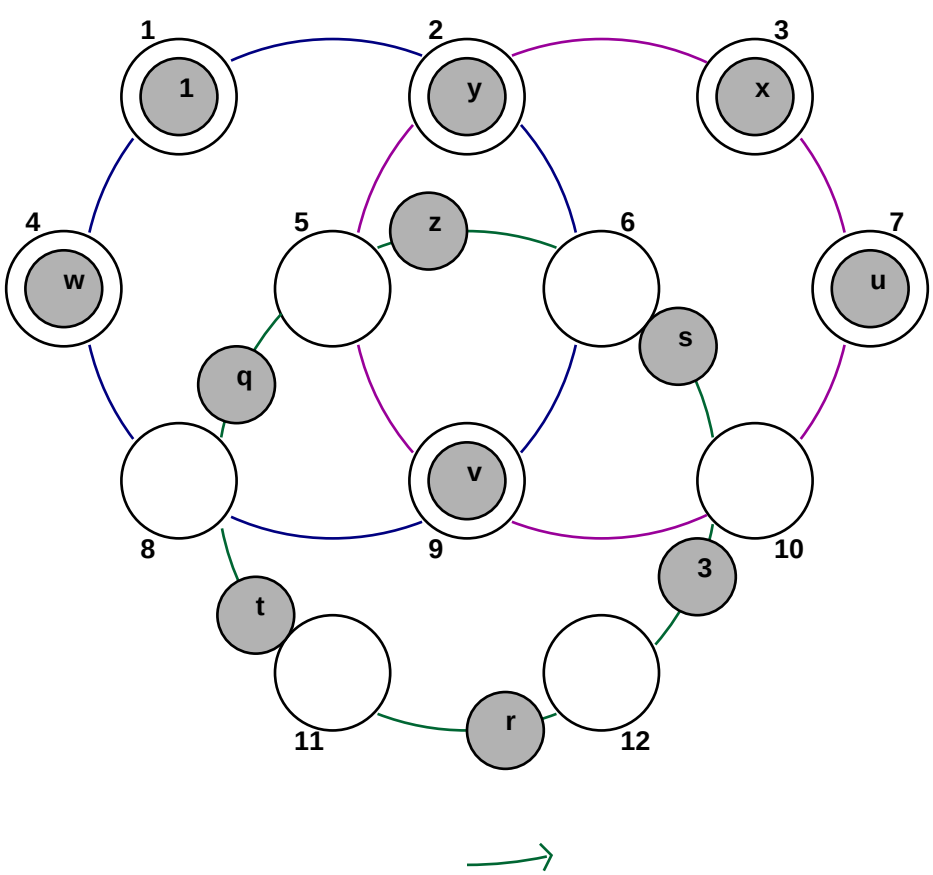

1
1
2
y
3
x
4
w
5
t
6
q
7
u
r
8
v
9
z
10
3
11
s
12

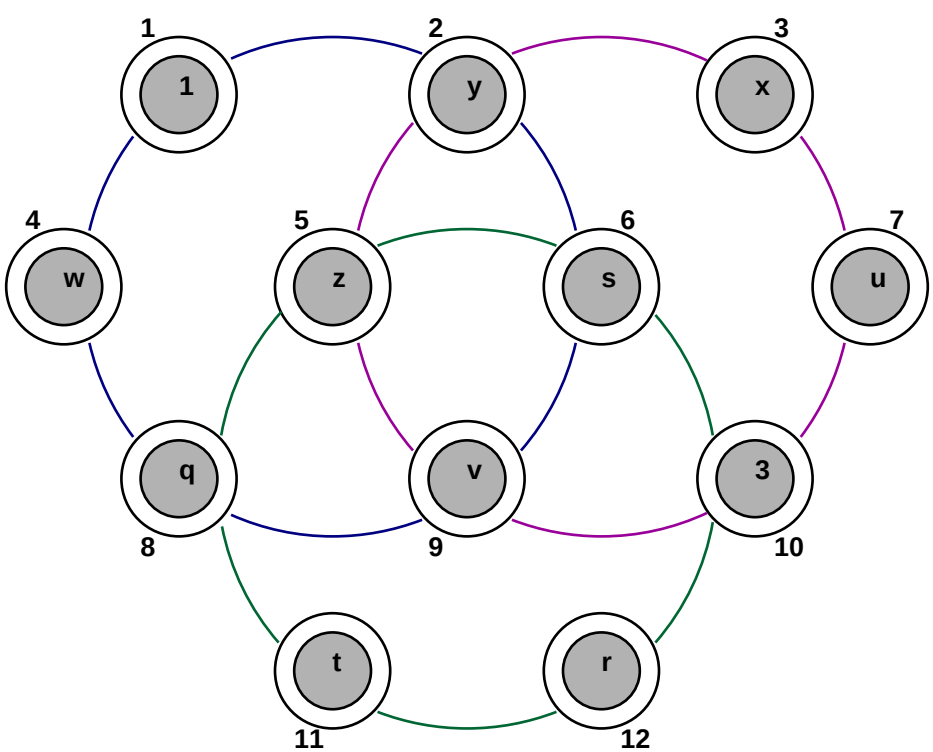

1
2
3
1
y
x
4
5
q
6
7
w
u
t
z
v
8
9
10
r
s
3
11
12

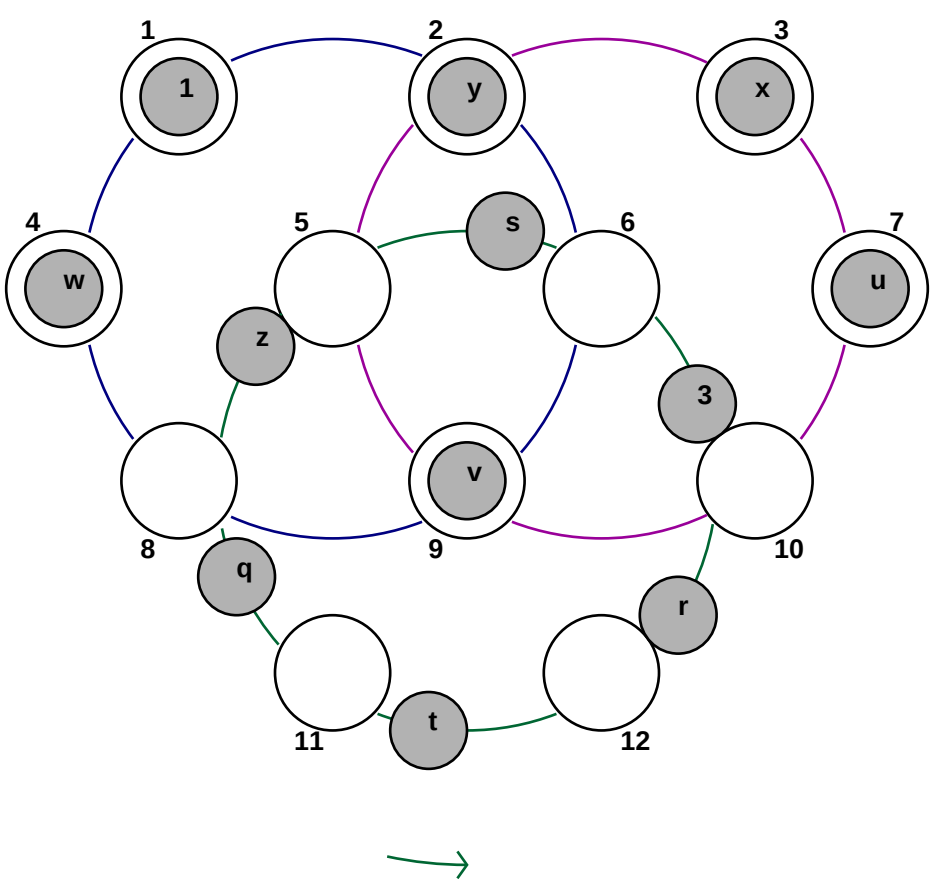

1
2
3
1
y
x
4
5
q
6
7
w
u
z
t
v
8
9
10
s
r
11
3
12

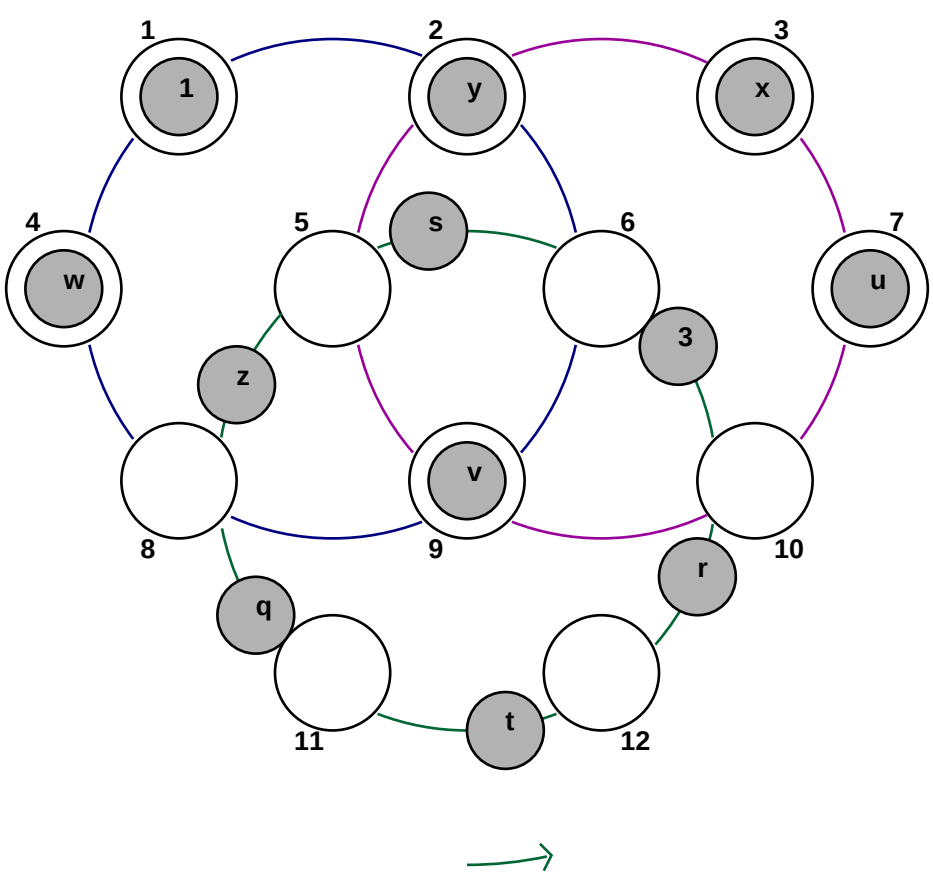

1
1
2
y
3
x
4
w
5
q
6
z
7
u
t
8
v
9
s
10
r
11
3
12

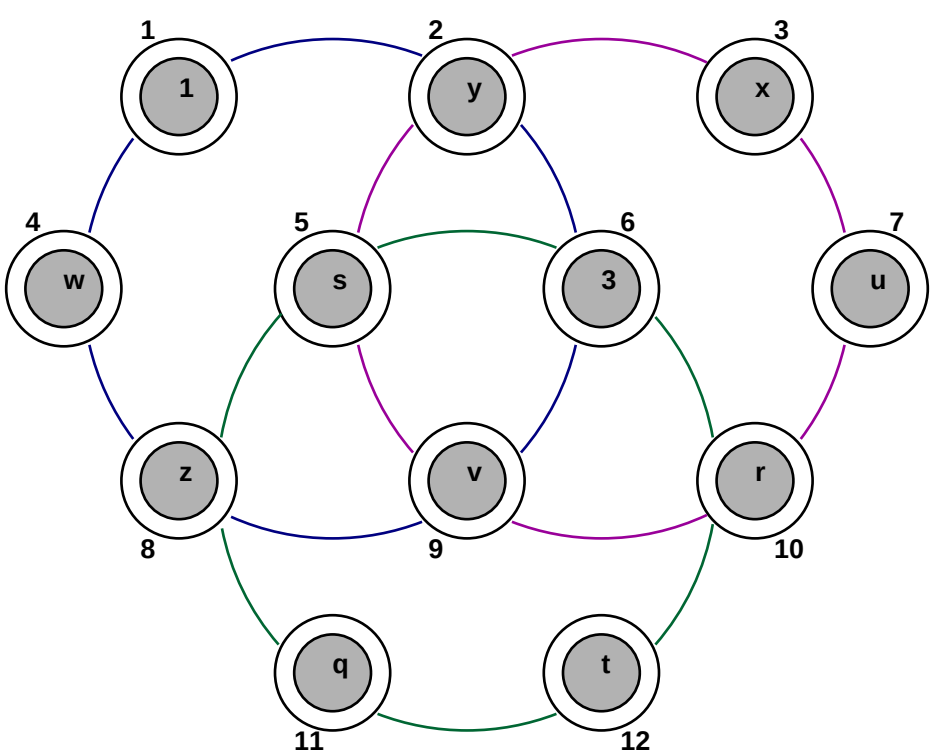

1
2
3
1
y
x
4
5
z
6
7
w
u
q
s
v
8
9
10
t
3
r
11
12

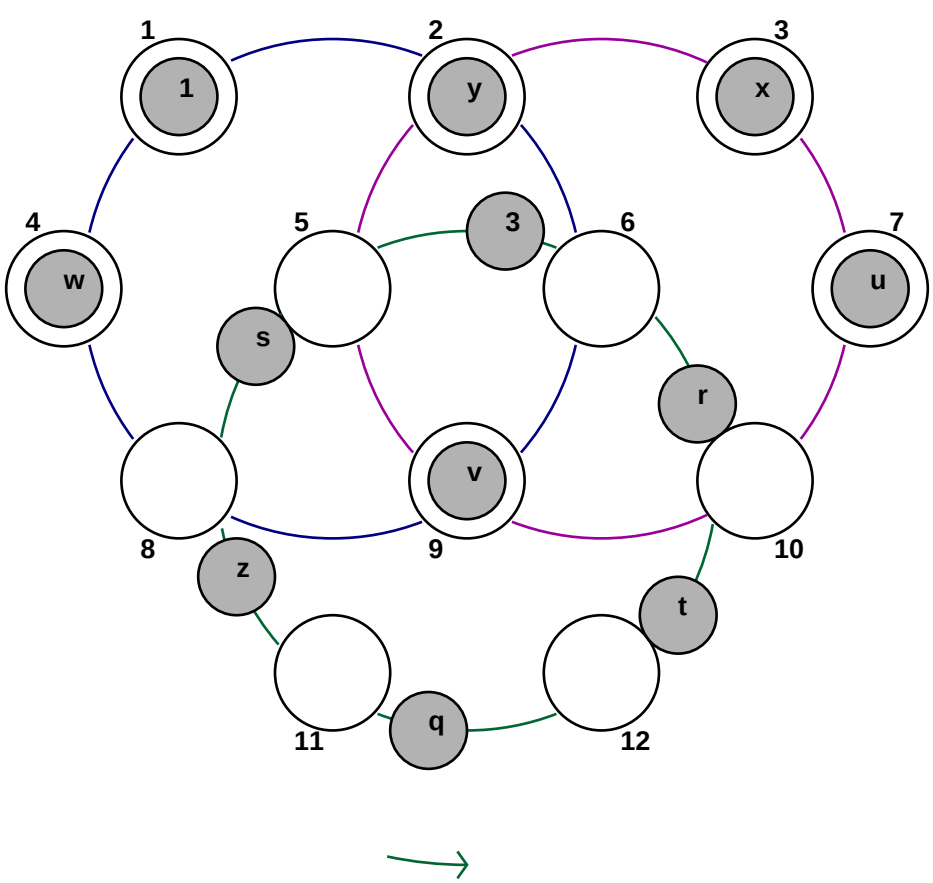

1
2
3
1
y
x
4
5
z
6
7
w
u
s
q
v
8
9
10
3
t
11
r
12

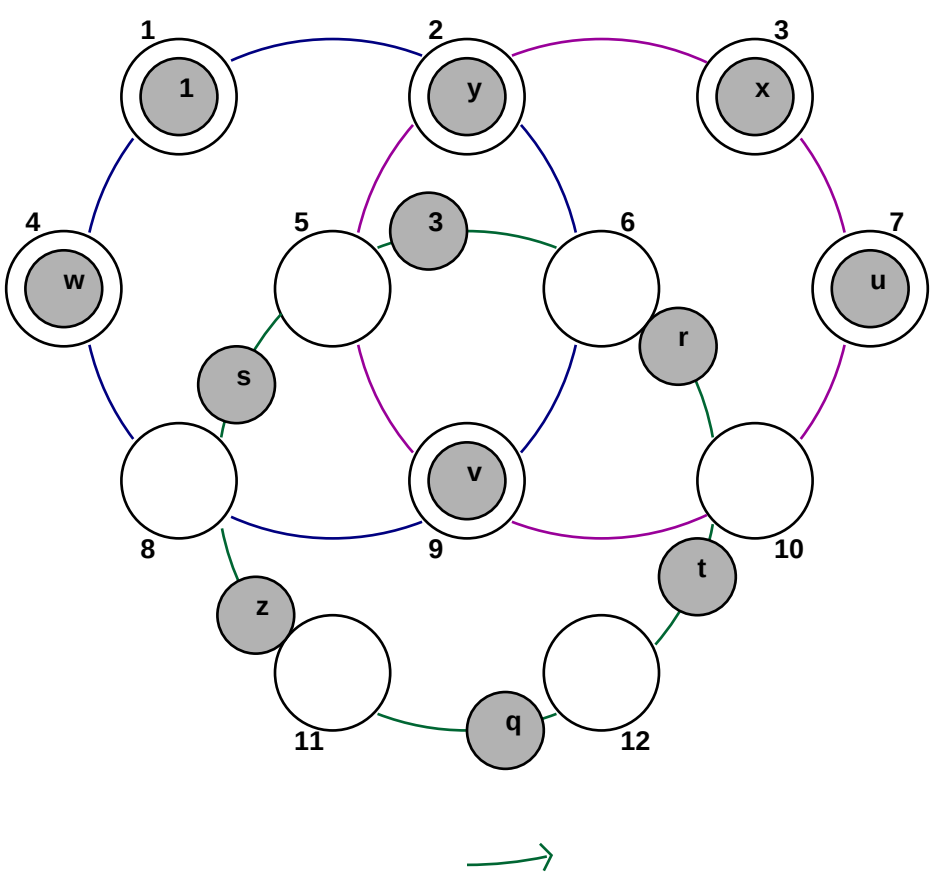

1
2
3
1
y
x
4
5
6
7
w
z
s
u
q
v
3
8
9
10
t
r
11
12

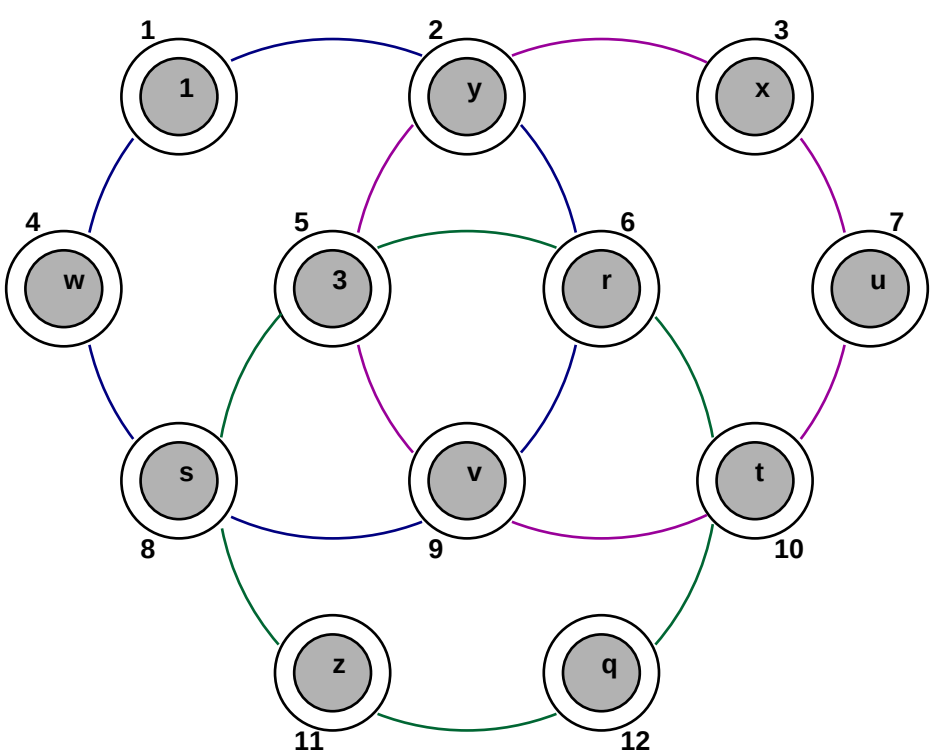

1
2
3
1
y
x
4
5
s
6
7
w
u
z
3
v
8
9
10
q
r
11
t
12

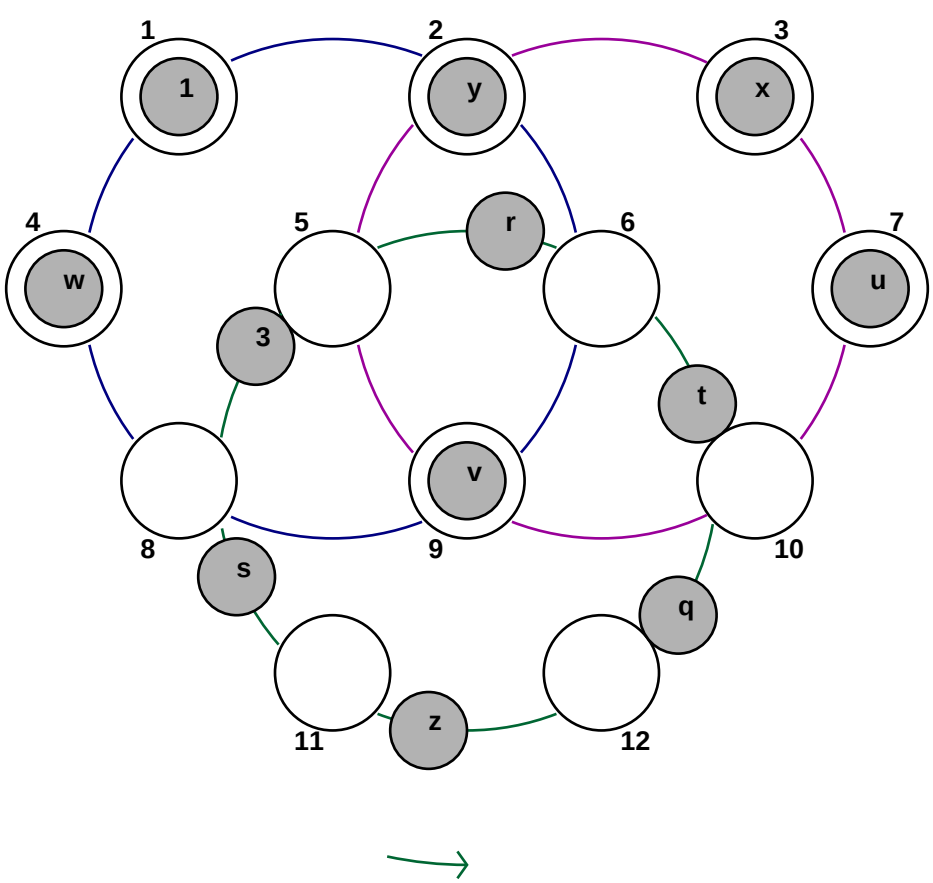

1
2
3
1
y
x
4
5
s
6
7
w
u
3
z
v
8
9
10
r
q
11
t
12

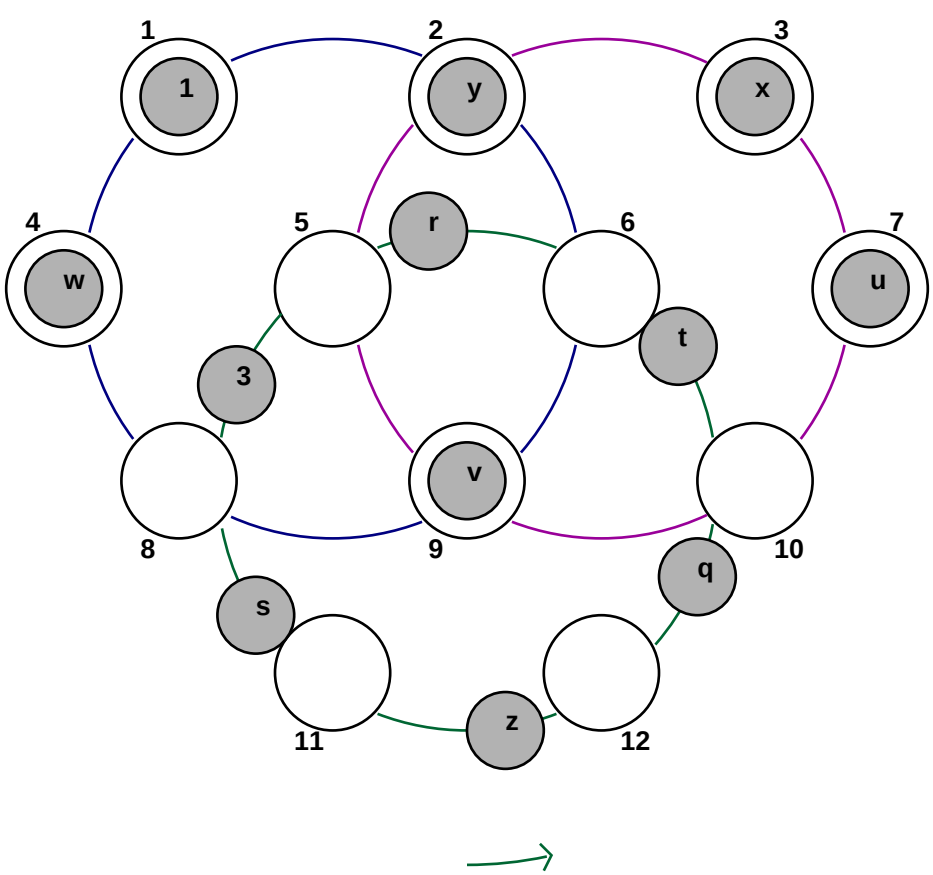

1
2
3
1
y
x
4
5
6
7
w
s
3
u
z
v
r
8
9
10
q
t
11
12

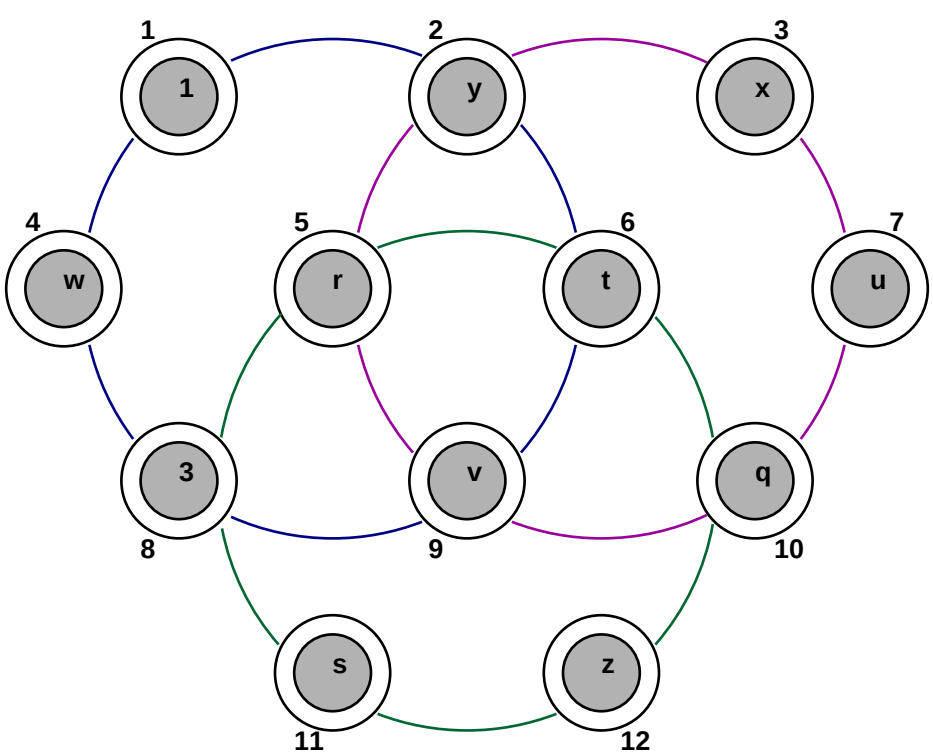

1
2
3
1
y
x
4
5
3
6
7
w
u
s
r
v
8
9
10
z
t
11
q
12


1
2
3
1
y
x
4
5
3
6
7
w
u
r
s
v
8
9
10
t
z
11
q
12

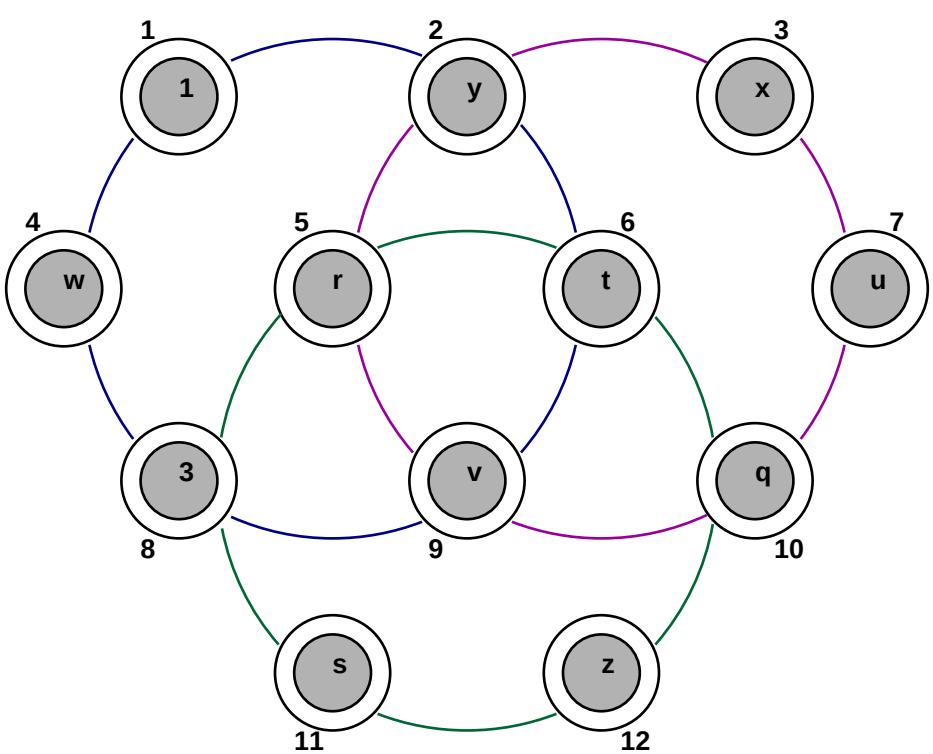

1
1
2
y
3
x
4
w
5
3
6
r
7
u
s
v
t
8
9
10
z
q
11
12

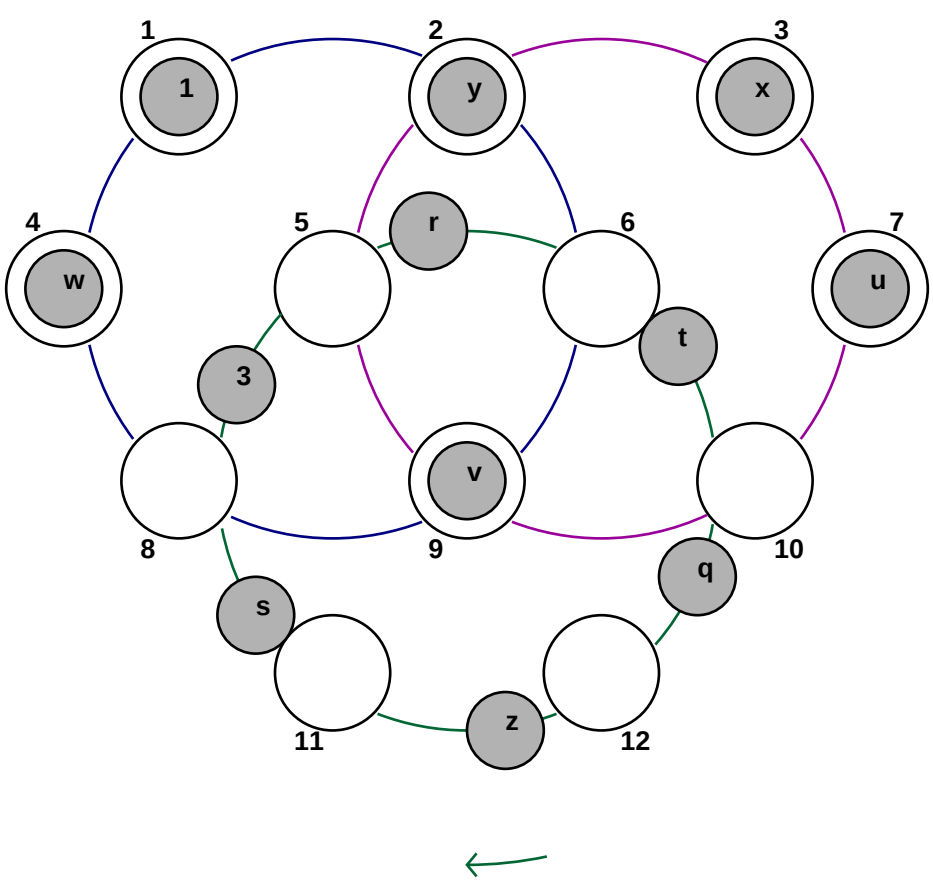

1
2
3
1
y
x
4
5
r
6
7
w
u
3
t
v
8
9
10
s
q
z
11
12

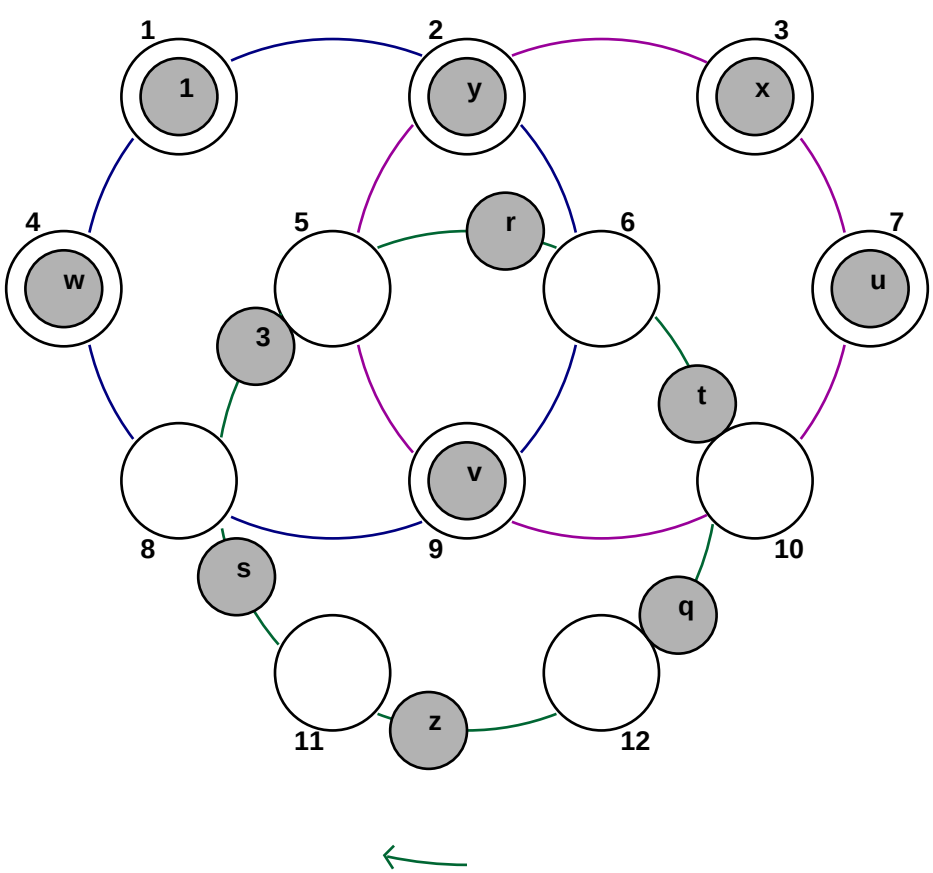

1
2
3
1
y
x
4
5
r
6
7
w
u
t
3
v
8
9
10
q
s
11
z
12

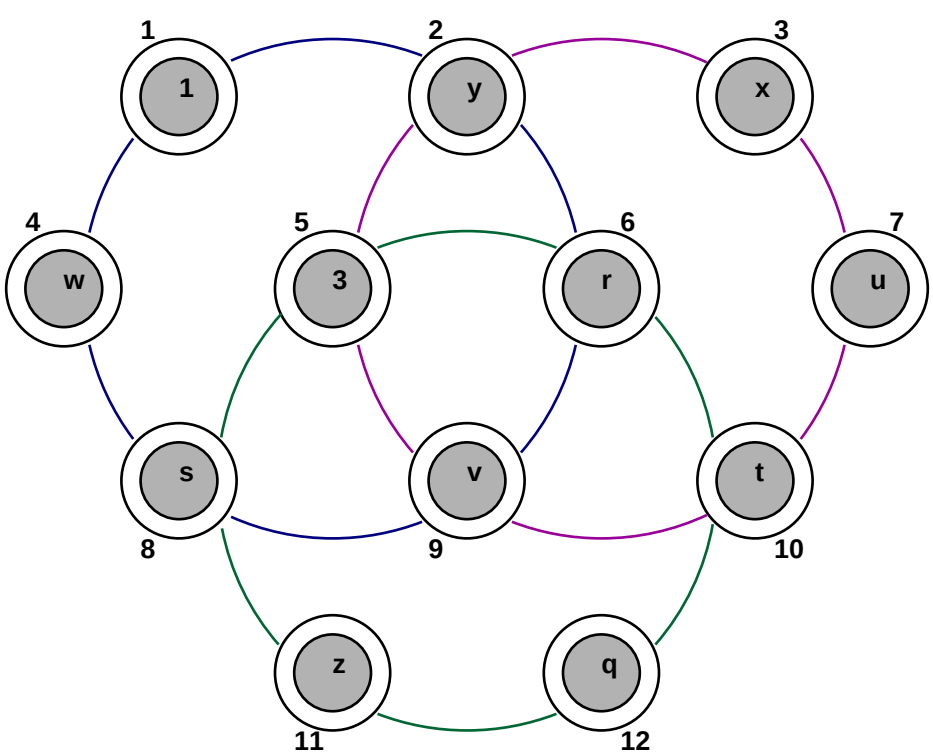

1
2
3
1
y
x
4
5
6
7
w
r
t
u
3
v
q
8
9
10
s
z
11
12

Number 3 can be moved into the purple circle by by moving the green circle once clockwise. Number 1 will continue to remain in position 1.

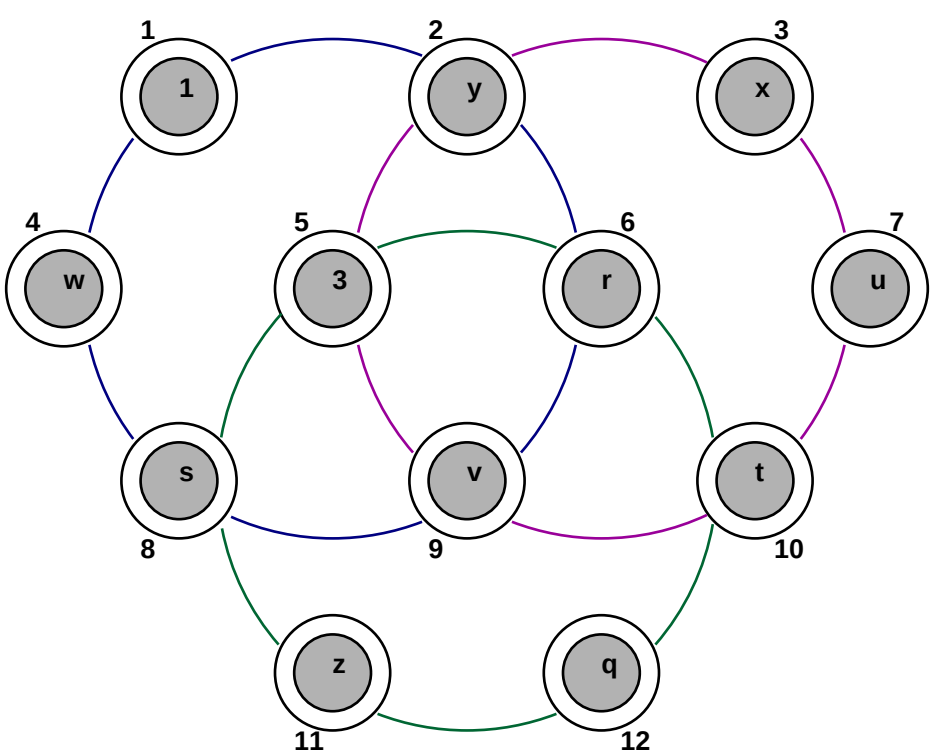

1
2
3
1
y
x
4
5
6
7
w
r
t
u
3
v
q
8
9
10
s
z
11
12

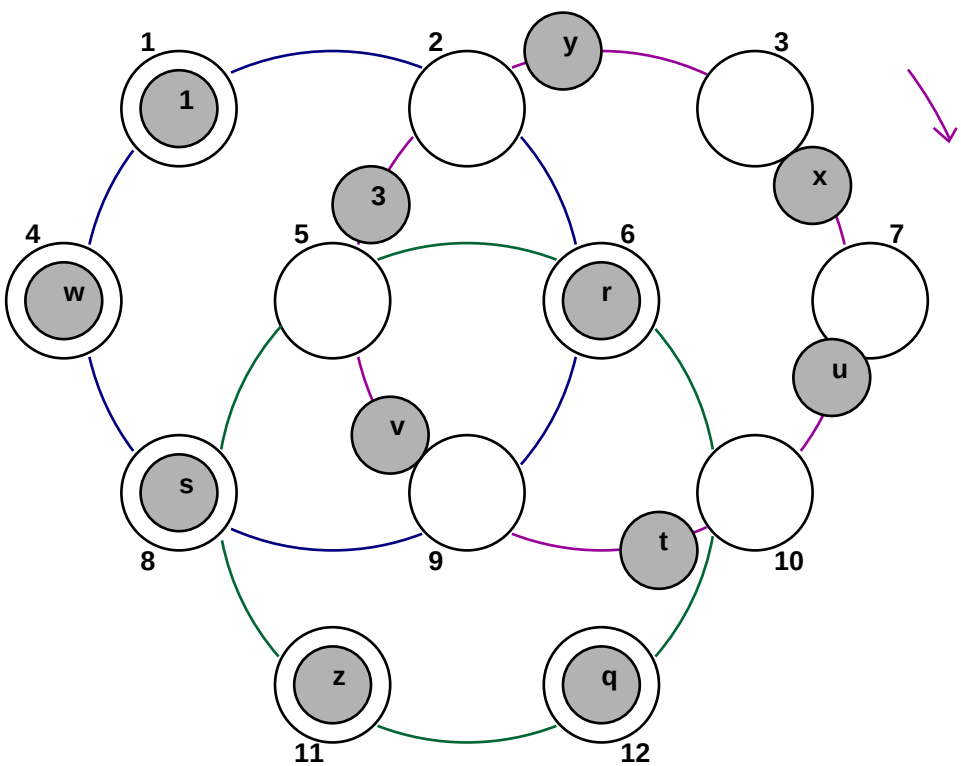

1
2
3
1
y
x
4
5
r
6
7
w
u
t
3
v
8
9
10
q
s
11
z
12

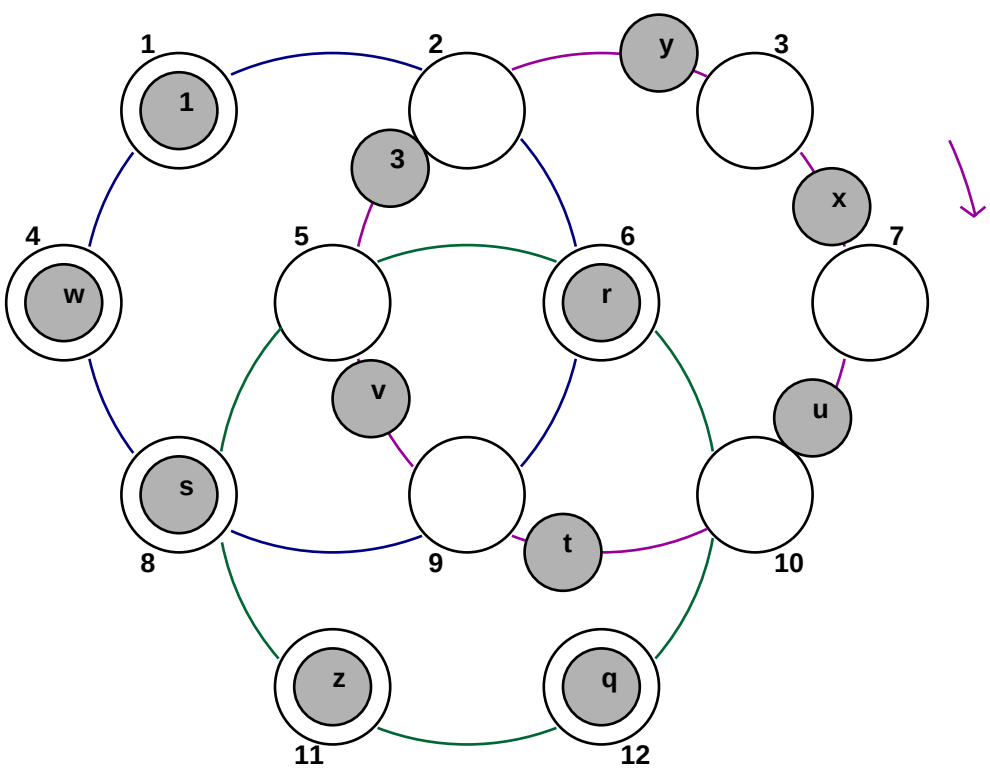

1
2
3
1
y
x
4
5
r
6
7
w
u
3
t
v
8
9
10
s
q
z
11
12

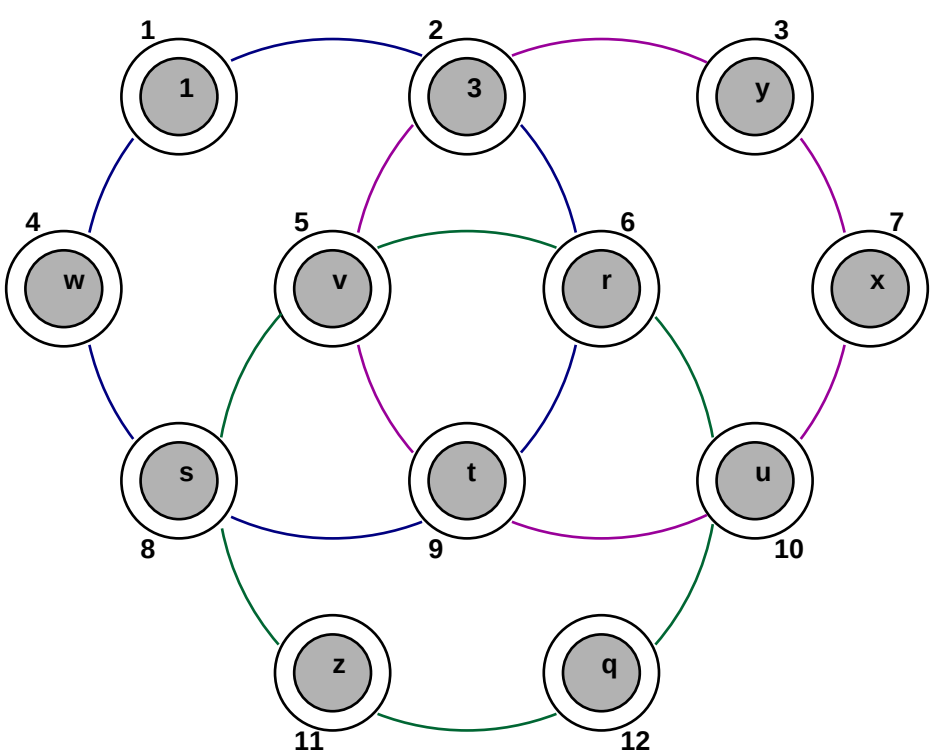

1
1
2
y
3
x
4
w
5
3
6
r
7
u
s
v
t
8
9
10
z
q
11
12

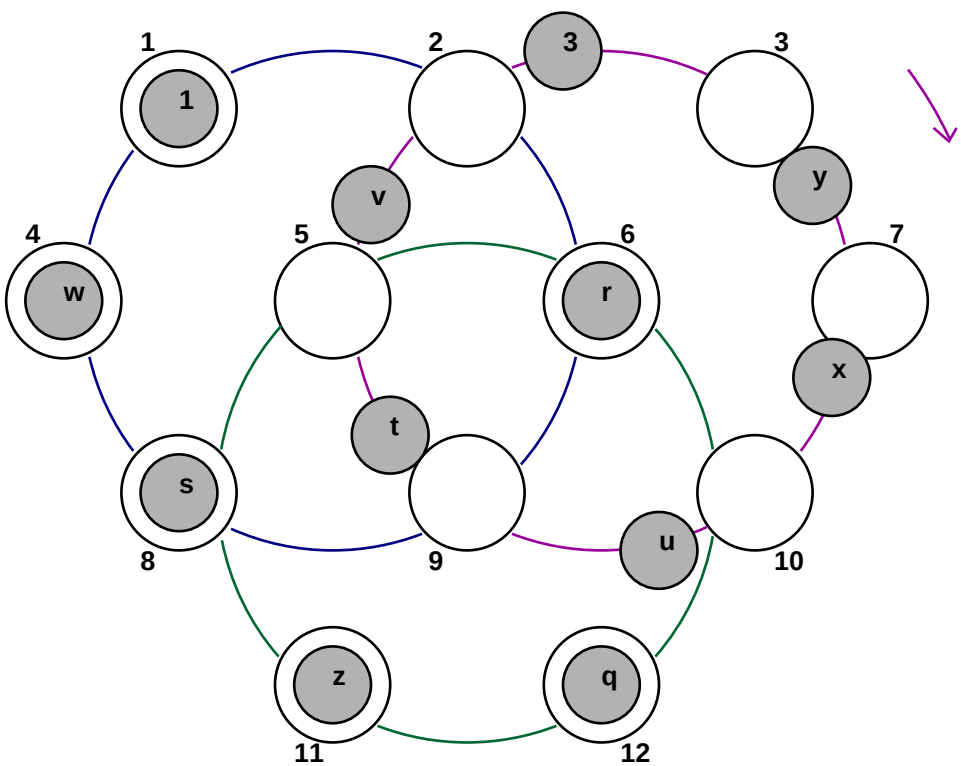
Number 3 can be moved into every position in the purple circle by moving the purple circle either clockwise or counter-clockwise.

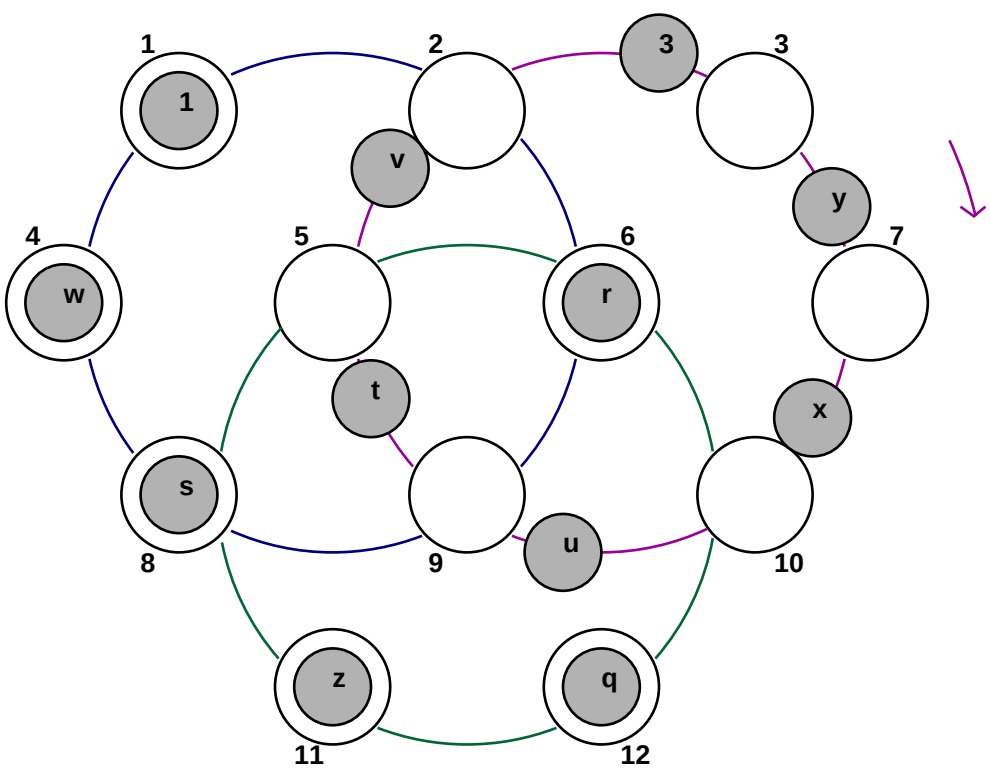

1
1
2
y
3
x
4
w
5
3
6
r
7
u
s
v
t
8
9
10
z
q
11
12

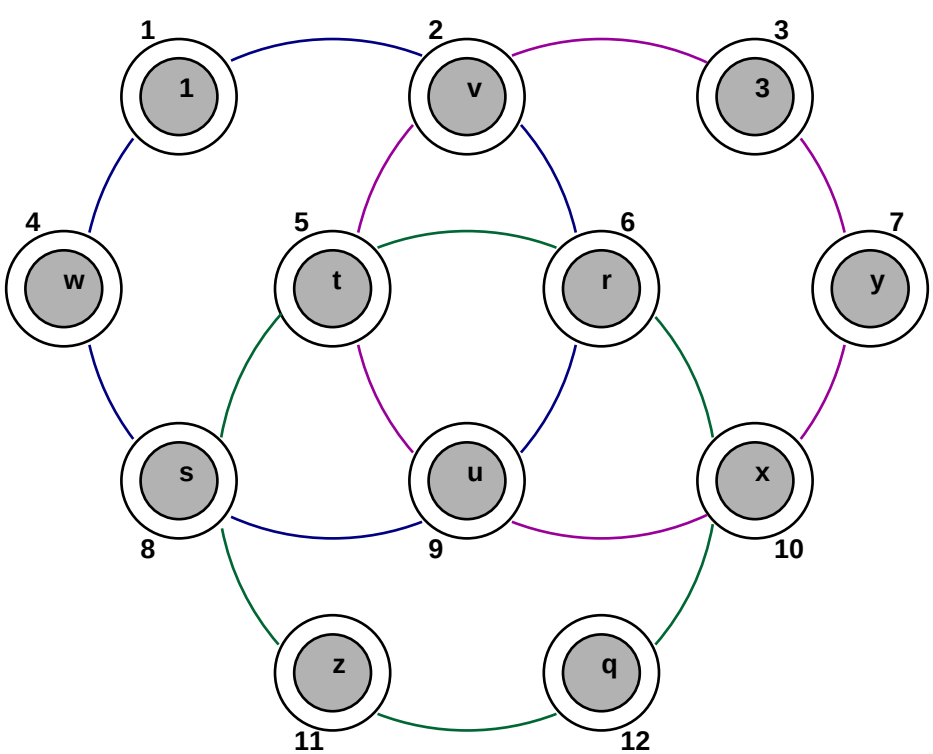

1
2
y
3
1
x
3
4
5
6
7
w
r
u
v
s
t
8
9
10
z
q
11
12

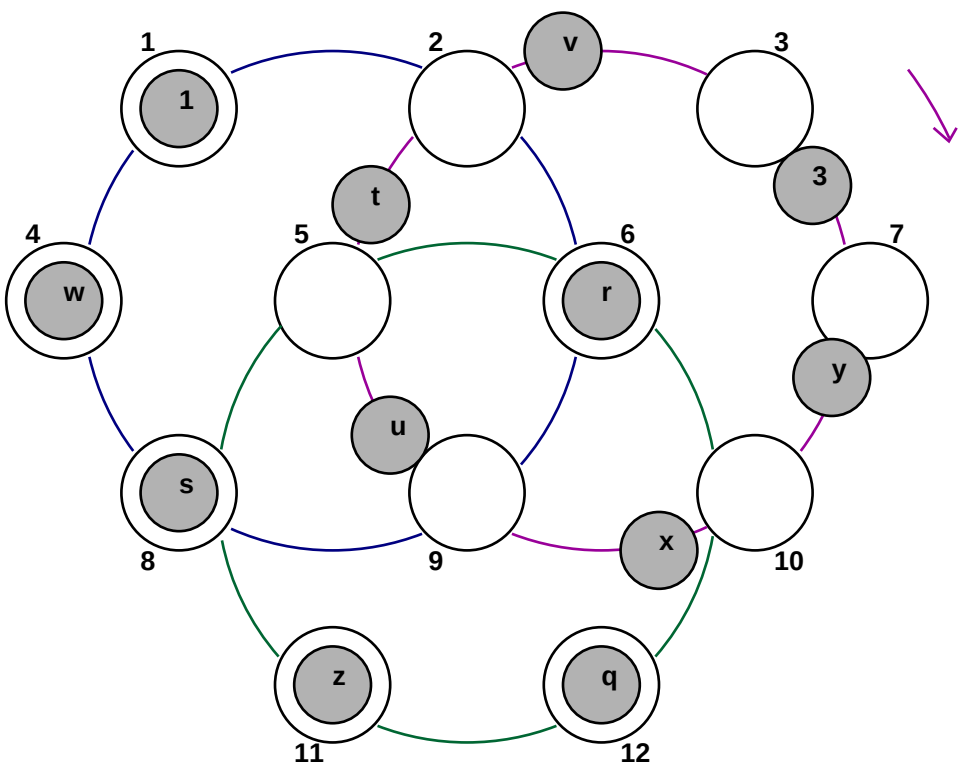

1
2
y
3
1
3
x
4
5
6
7
w
r
v
u
s
t
8
9
10
z
q
11
12

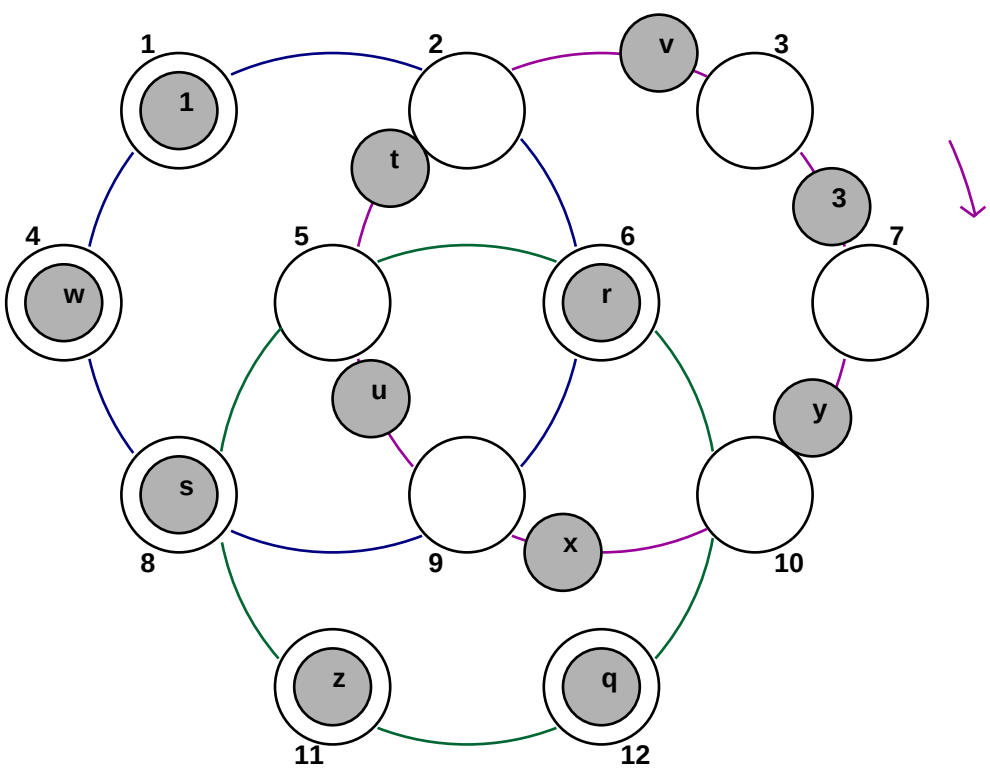

1
2
3
1
3
y
4
5
6
7
w
v
r
x
s
t
u
8
9
10
z
q
11
12

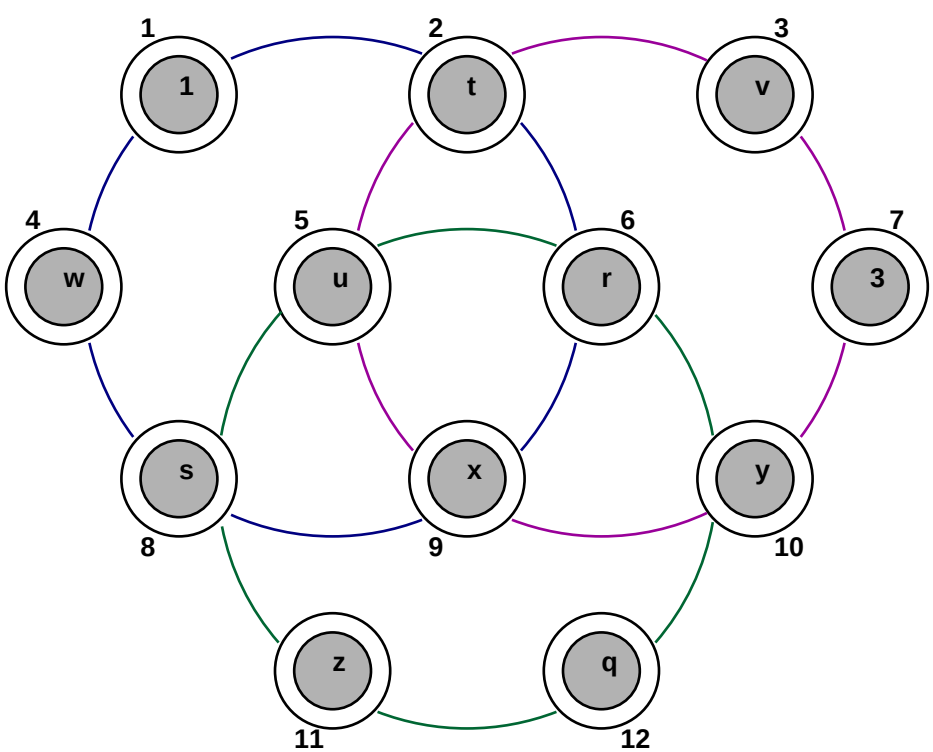

1
1
2
3
3
y
v
4
w
5
6
r
7
x
t
s
8
9
u
10
z
11
q
12

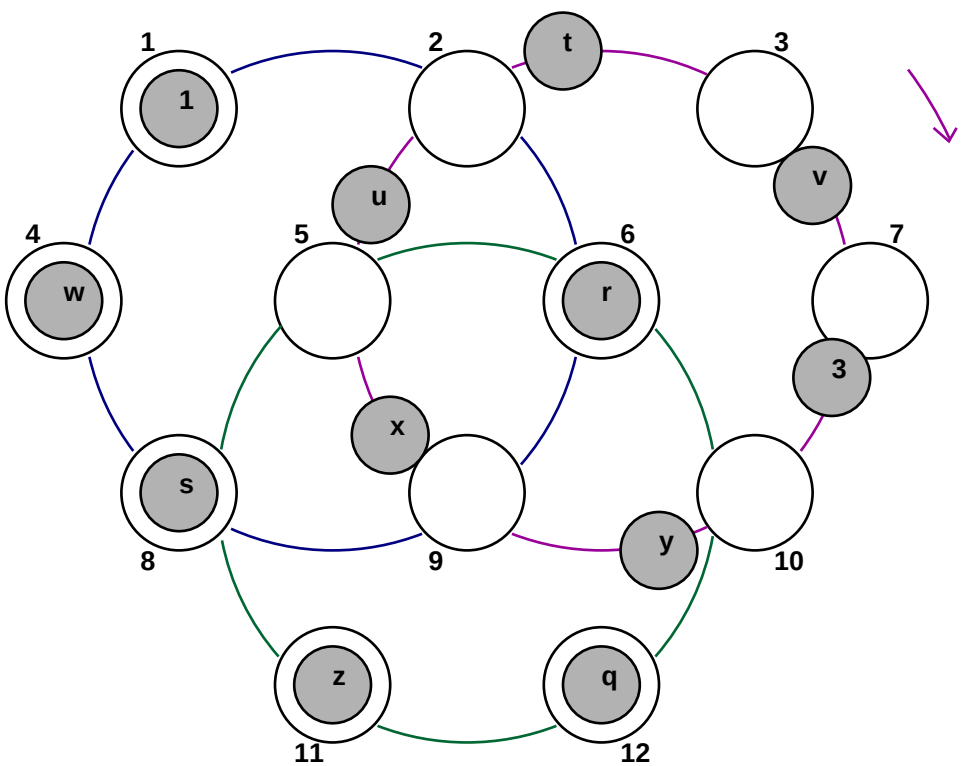

1
1
2
3
3
v
y
4
w
5
6
r
7
t
x
s
8
9
u
10
z
11
q
12

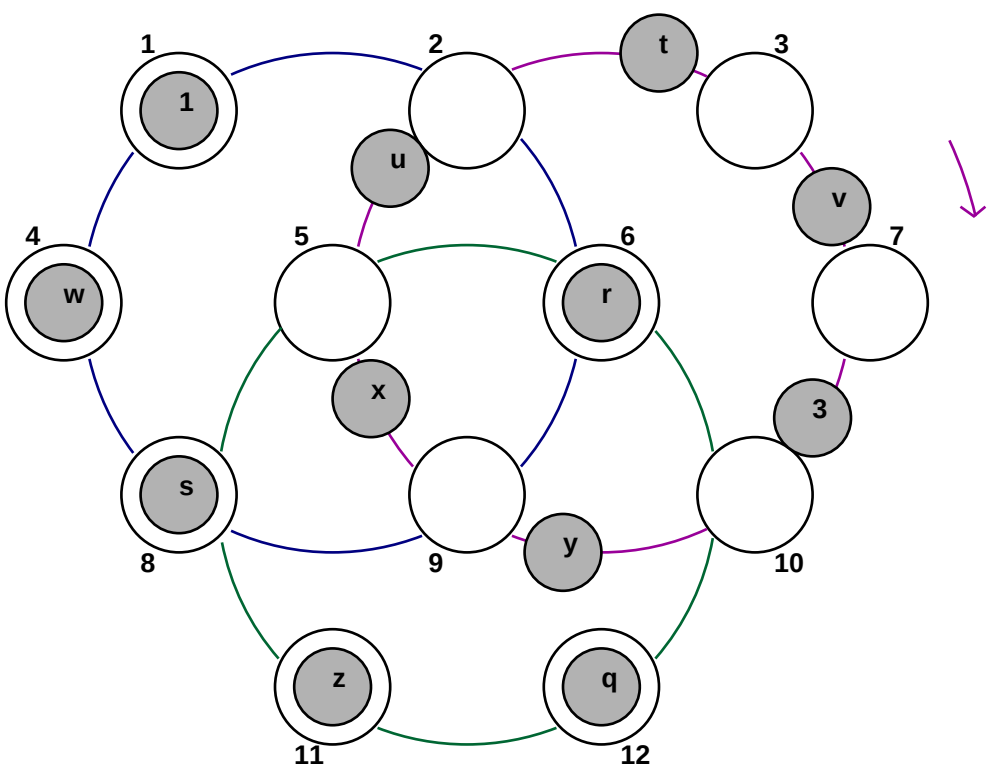

1
2
3
1
v
3
4
5
6
7
w
t
r
y
s
u
x
8
9
10
z
q
11
12

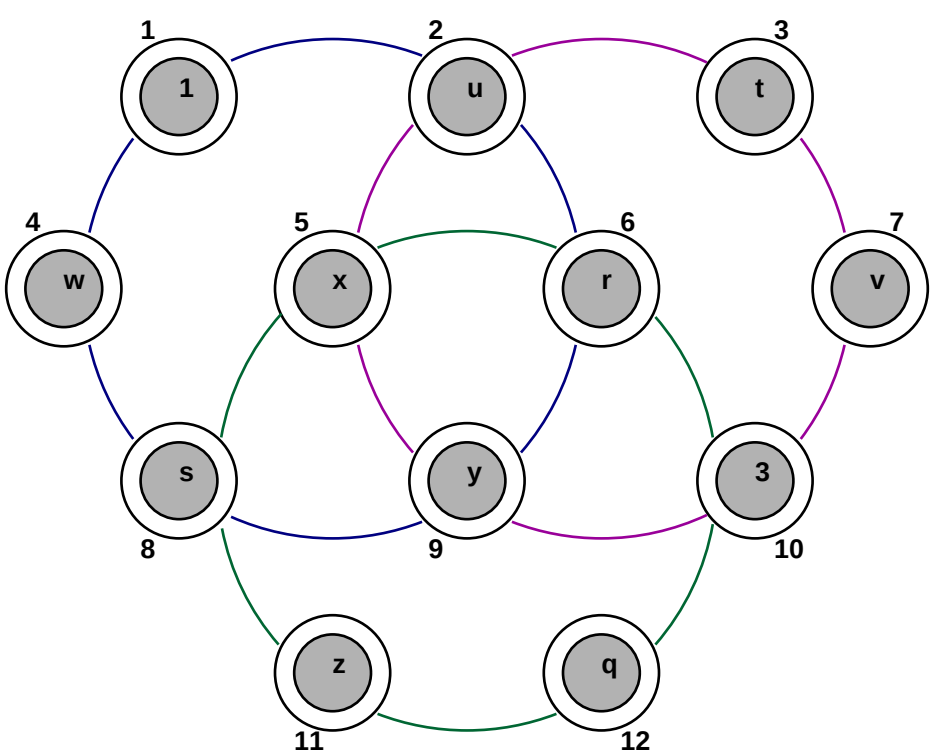

1
2
v
3
1
t
3
4
5
6
7
w
r
y
u
s
x
8
9
10
z
q
11
12

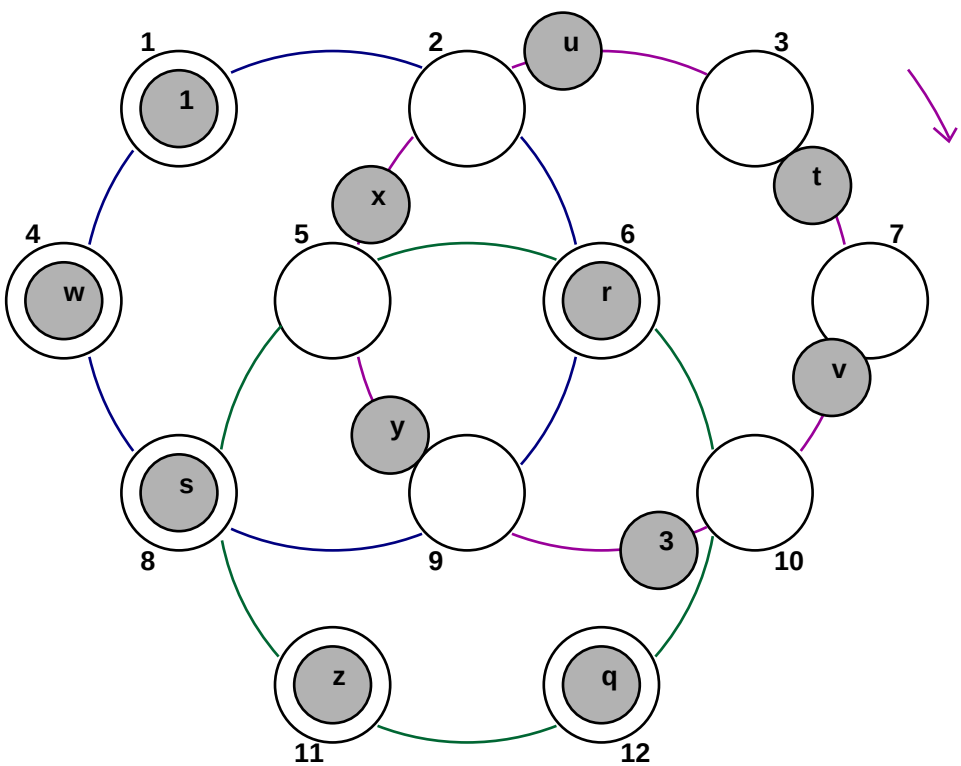

1
2
v
3
1
t
3
4
5
6
7
w
r
u
y
s
x
8
9
10
z
q
11
12

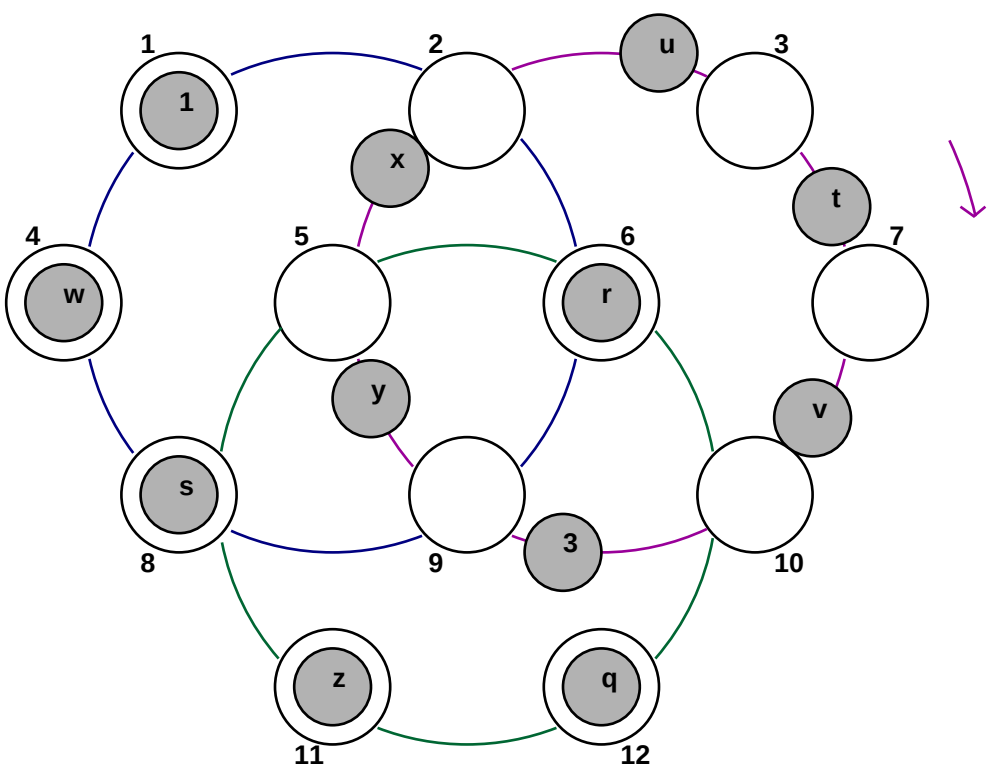

1
1
2
t
3
v
4
w
5
u
6
r
7
3
s
8
x
9
y
10
z
11
q
12

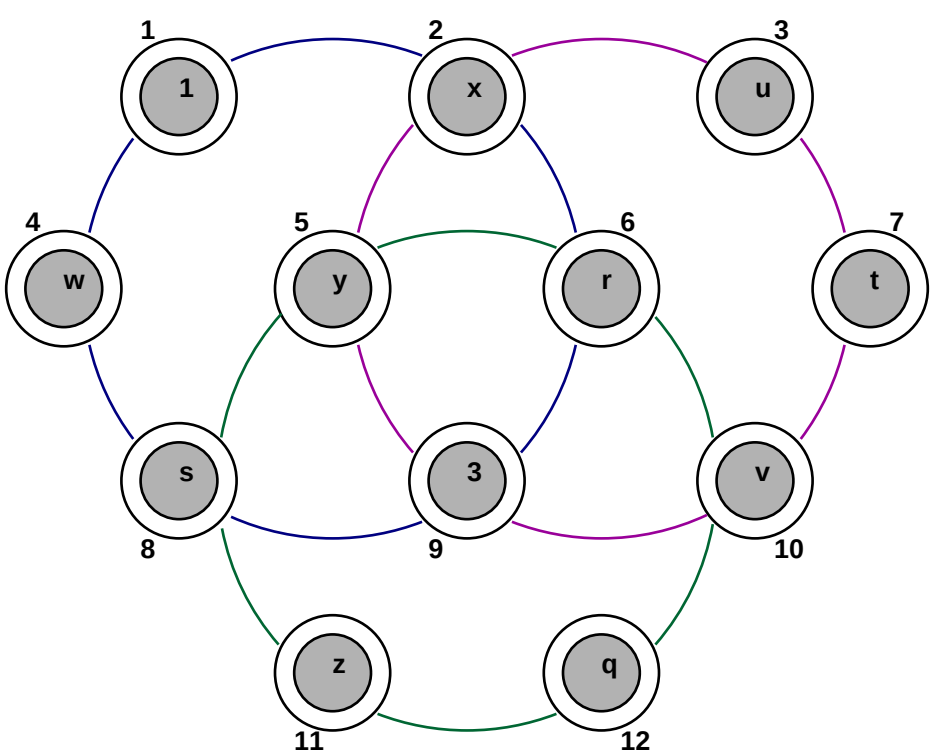

1
2
t
3
1
u
v
4
5
6
7
w
r
3
x
s
y
8
9
10
z
q
11
12

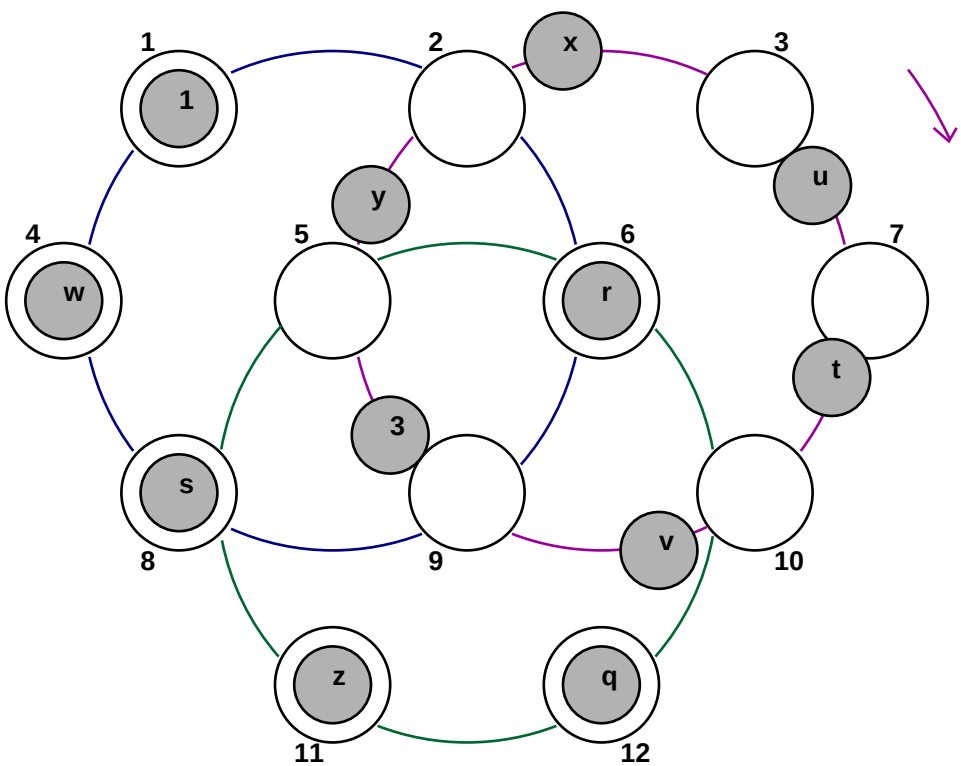

1
2
t
3
1
u
v
4
5
6
7
w
r
x
3
s
y
8
9
10
z
q
11
12

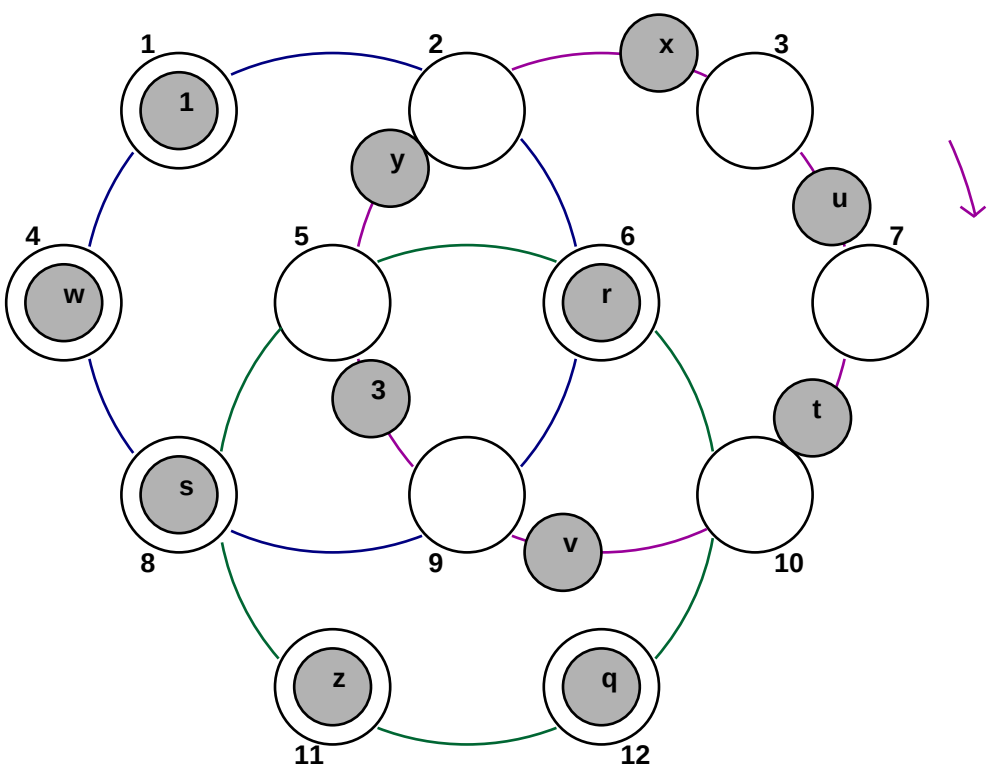

1
2
3
1
u
t
4
5
6
7
w
x
r
v
s
y
3
8
9
10
z
q
11
12

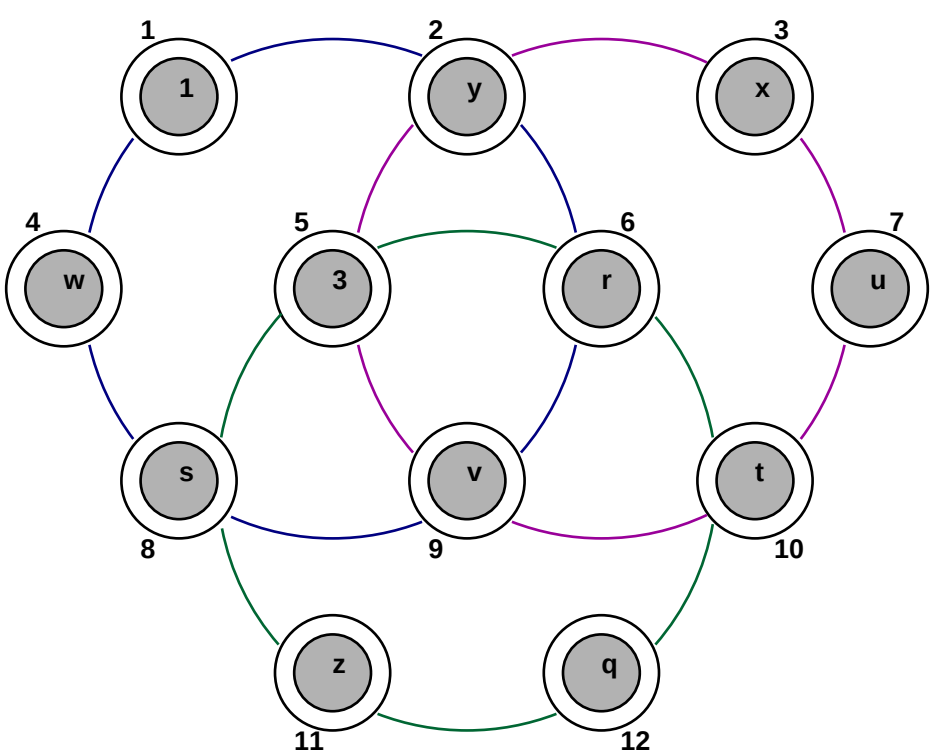

1
2
u
3
1
x
t
4
5
6
7
w
r
v
y
s
3
8
9
10
z
q
11
12


1
2
u
3
1
x
t
4
5
6
7
w
r
y
v
s
3
8
9
10
z
q
11
12

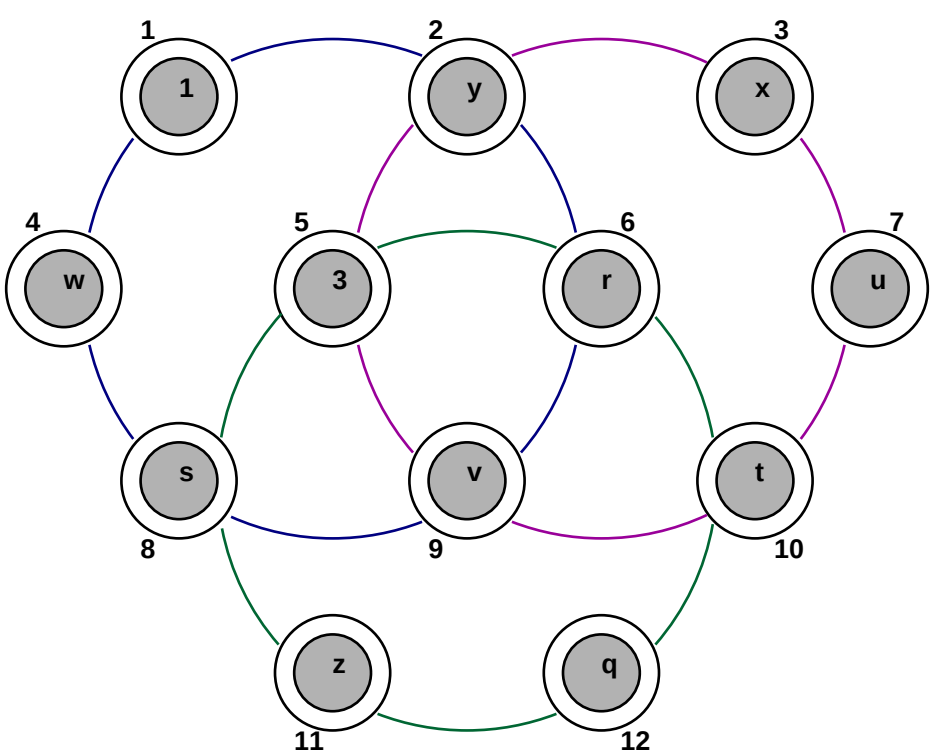

1
2
3
1
x
u
4
5
6
7
w
y
r
t
s
3
v
8
9
10
z
q
11
12

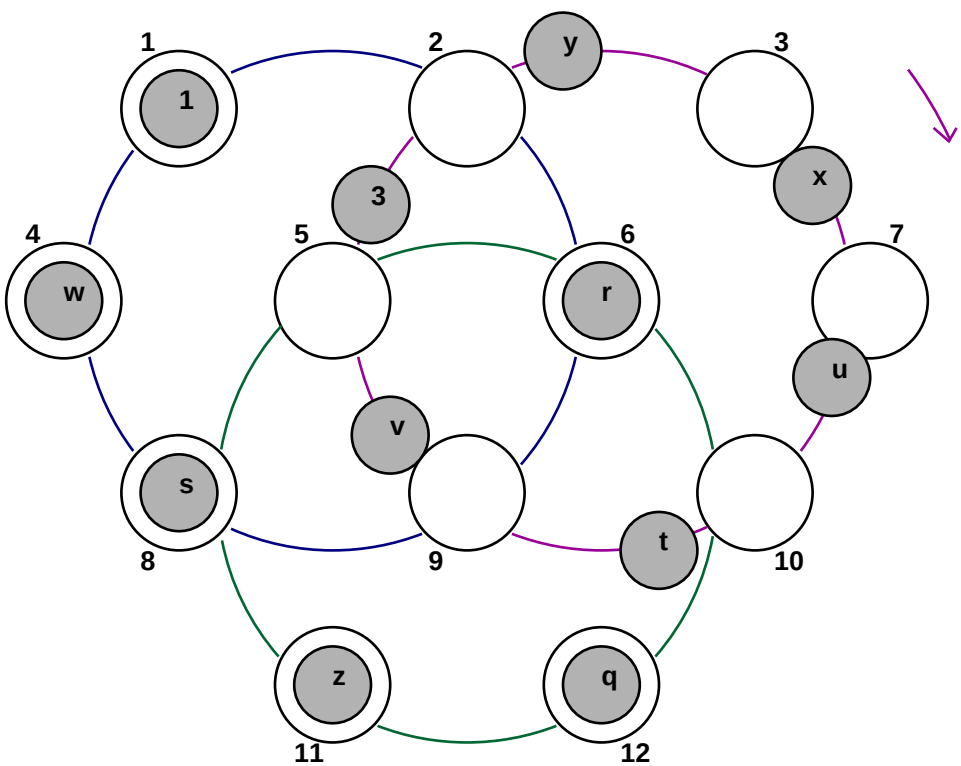

1
2
3
4
5
6
7
8
9
10
11
12
x
y
u
w
r
t
3
s
v
z
q

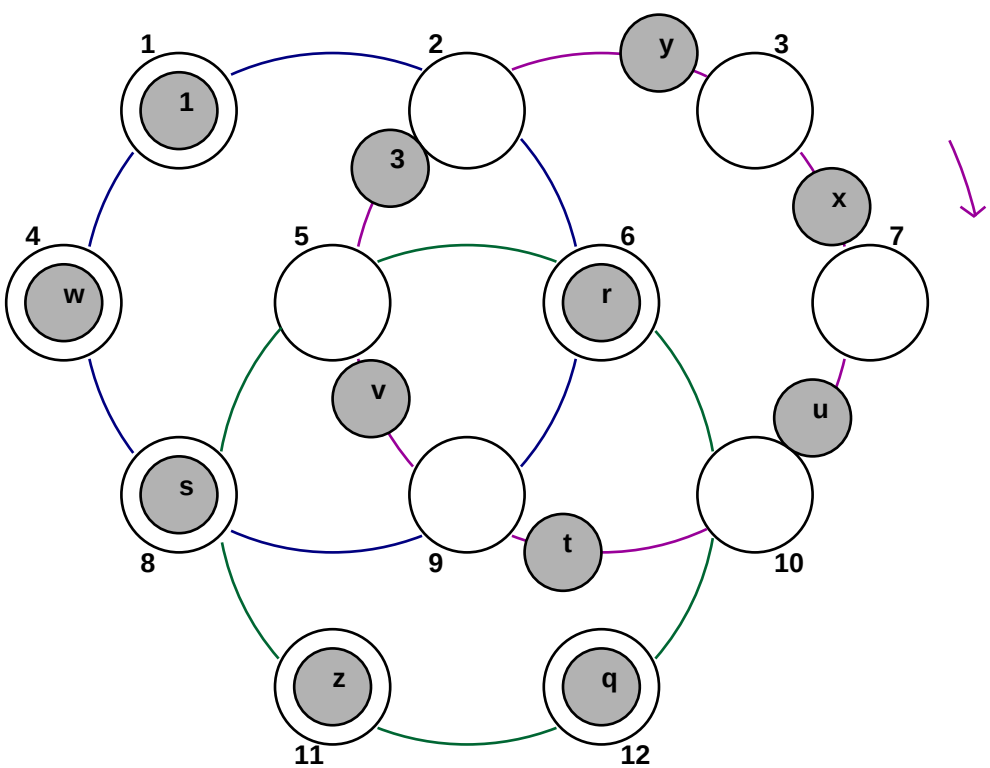

1
2
x
3
1
y
u
4
5
6
7
w
r
3
t
s
8
9
v
10
z
q
11
12

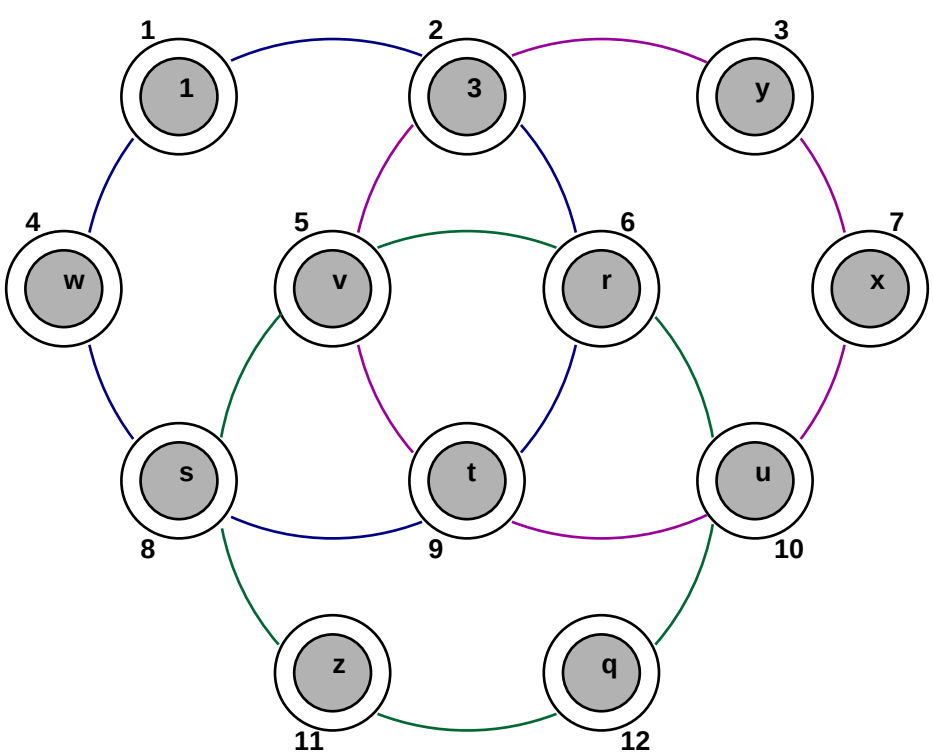

1
1
2
y
3
x
4
w
5
3
6
r
7
u
s
v
t
8
9
10
z
q
11
12

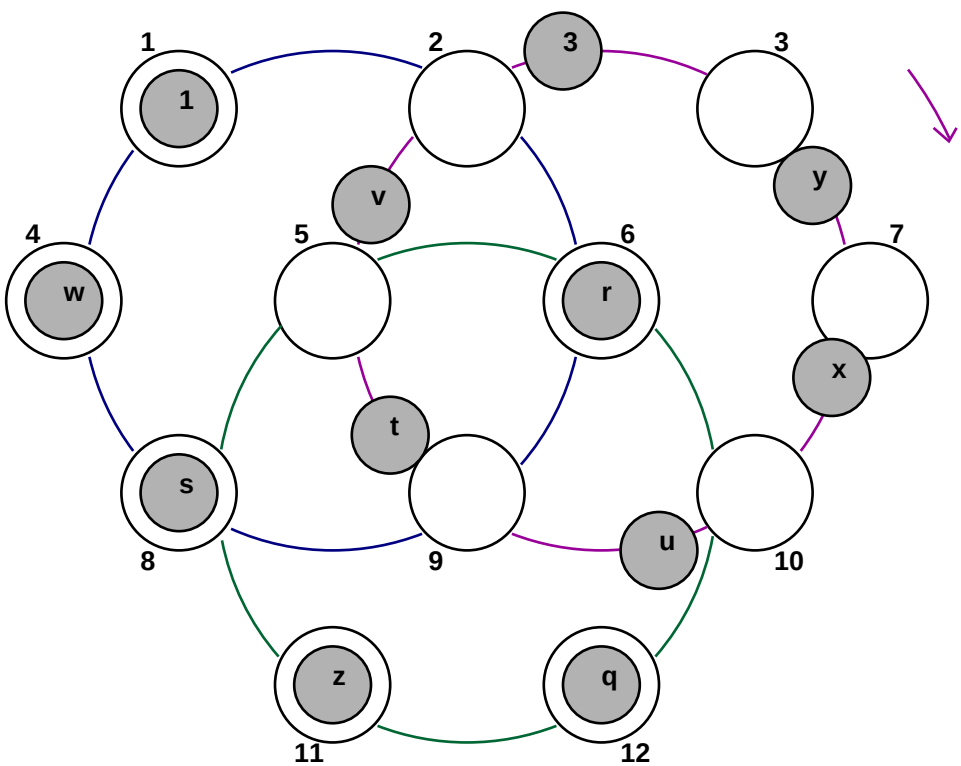
Number 3 can be moved into position 3
by moving the purple circle clockwise twice.

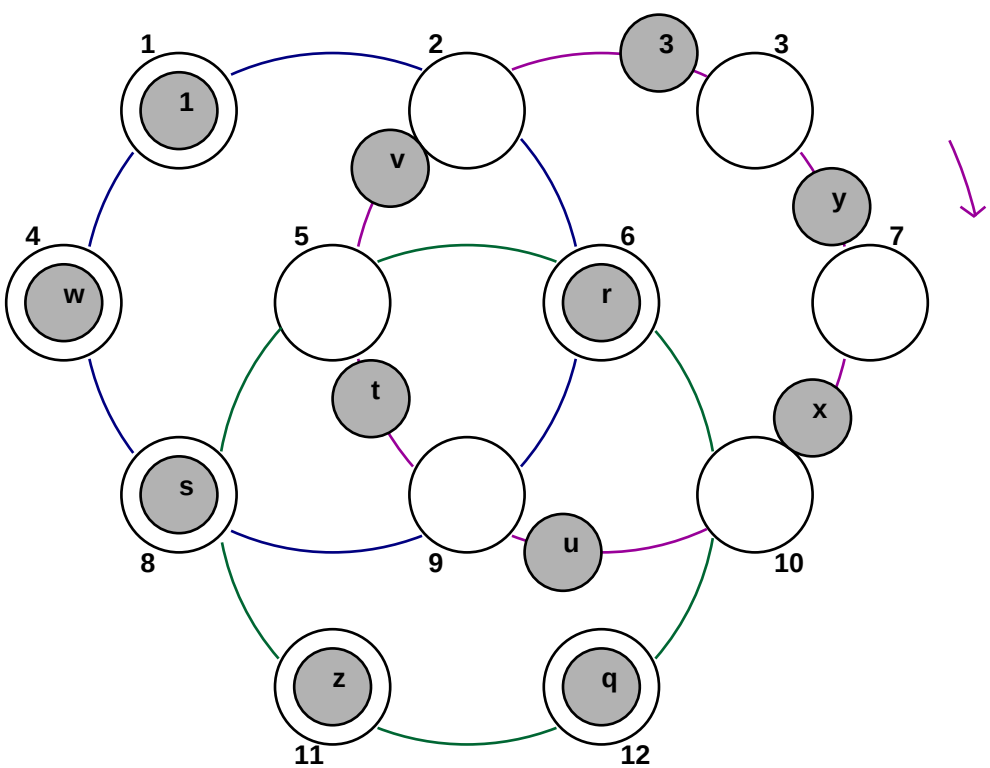

1
1
2
y
3
x
4
w
5
3
6
r
7
u
s
v
t
8
9
10
z
q
11
12

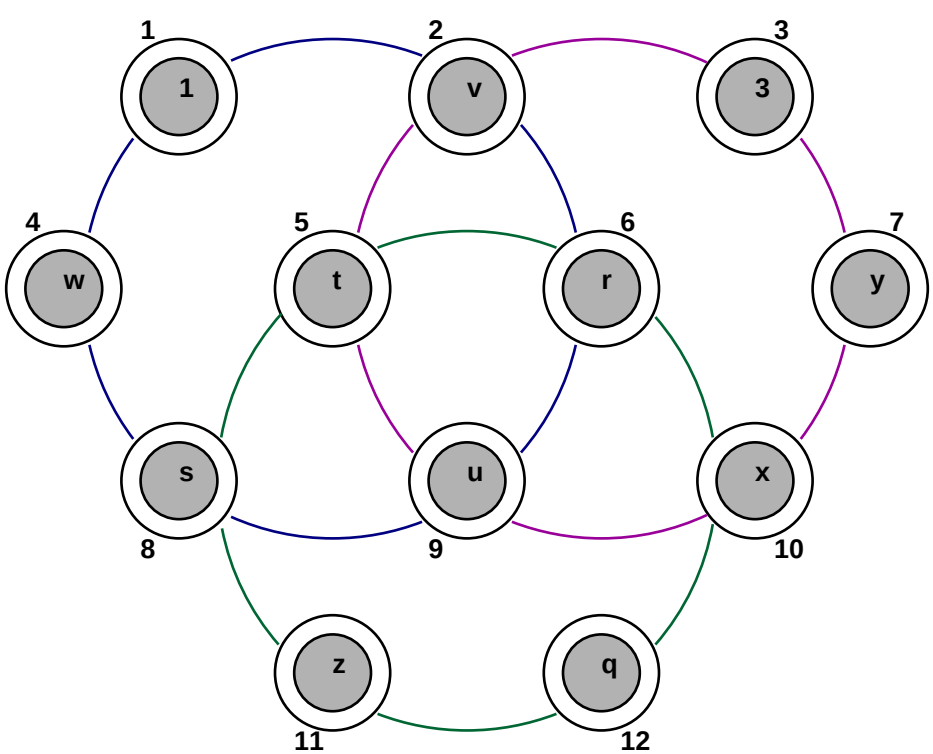

1
2
y
3
1
x
3
4
5
6
7
w
r
u
v
s
t
8
9
10
z
q
11
12


1
2
y
3
1
3
x
4
5
6
7
w
r
v
u
s
t
8
9
10
z
q
11
12


1
2
3
1
3
y
4
5
6
7
w
v
r
x
s
t
u
8
9
10
z
q
11
12


1
1
2
3
3
y
v
4
w
5
6
r
7
x
t
s
8
9
u
10
z
11
q
12


1
1
2
3
3
v
y
4
w
5
6
r
7
t
x
s
8
9
u
10
z
11
q
12

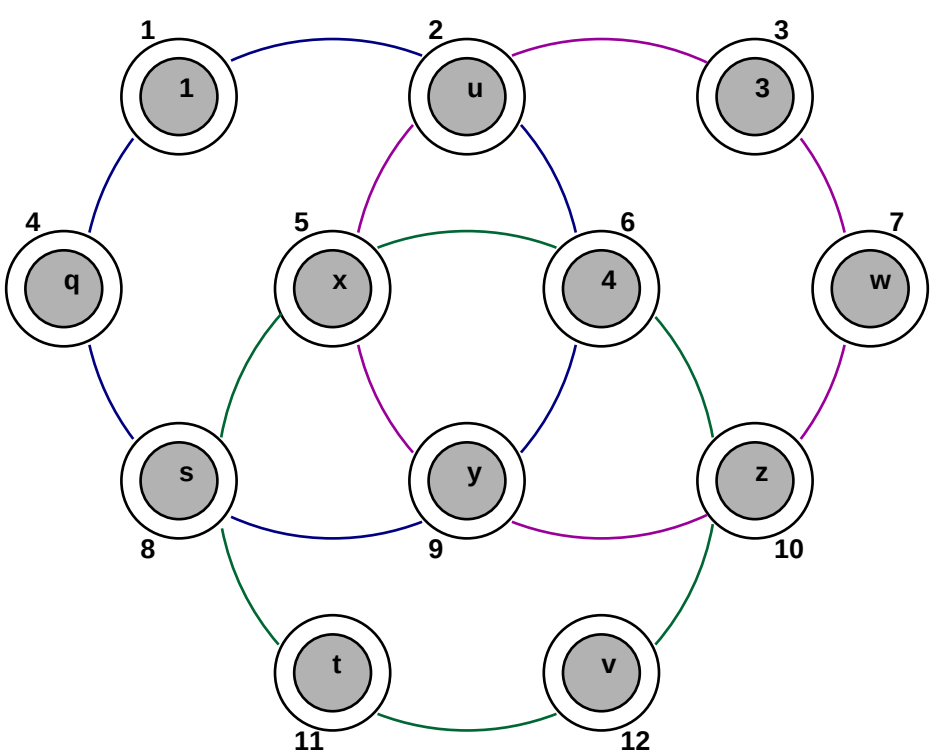

1
2
3
1
v
3
4
5
6
7
w
t
r
y
s
u
x
8
9
10
z
q
11
12

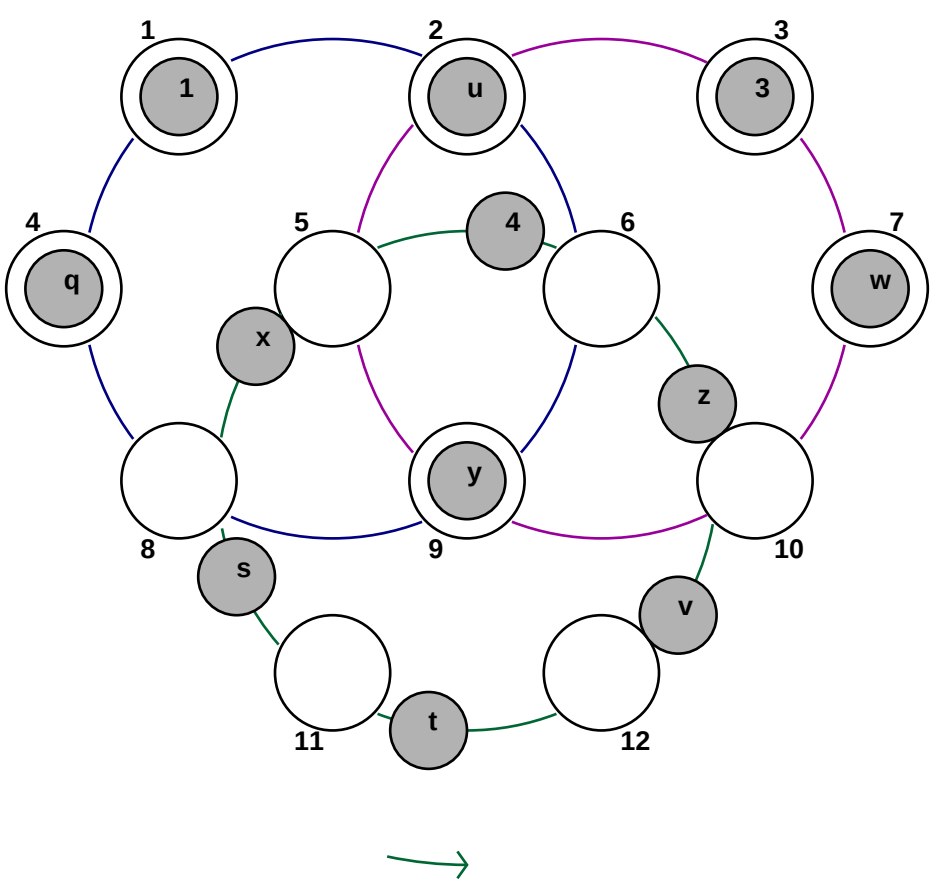
It has been shown that 3 can be moved to position 3 from any position while keeping number 1 in position 1.

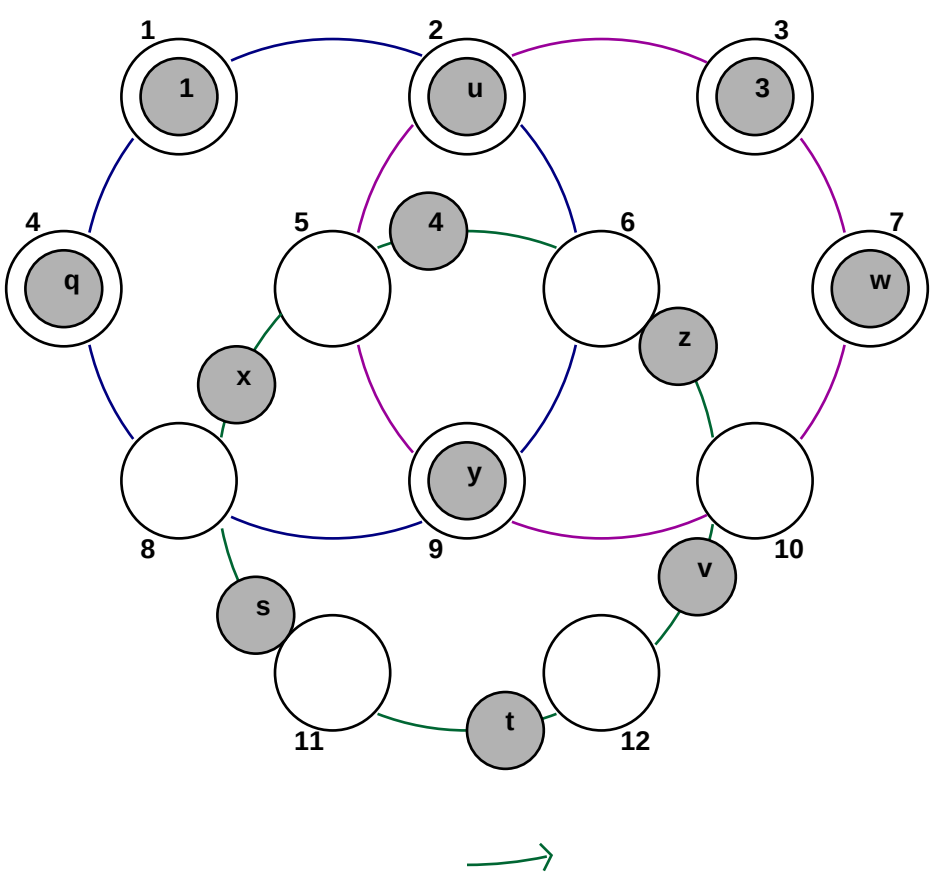
Now let r = 4.

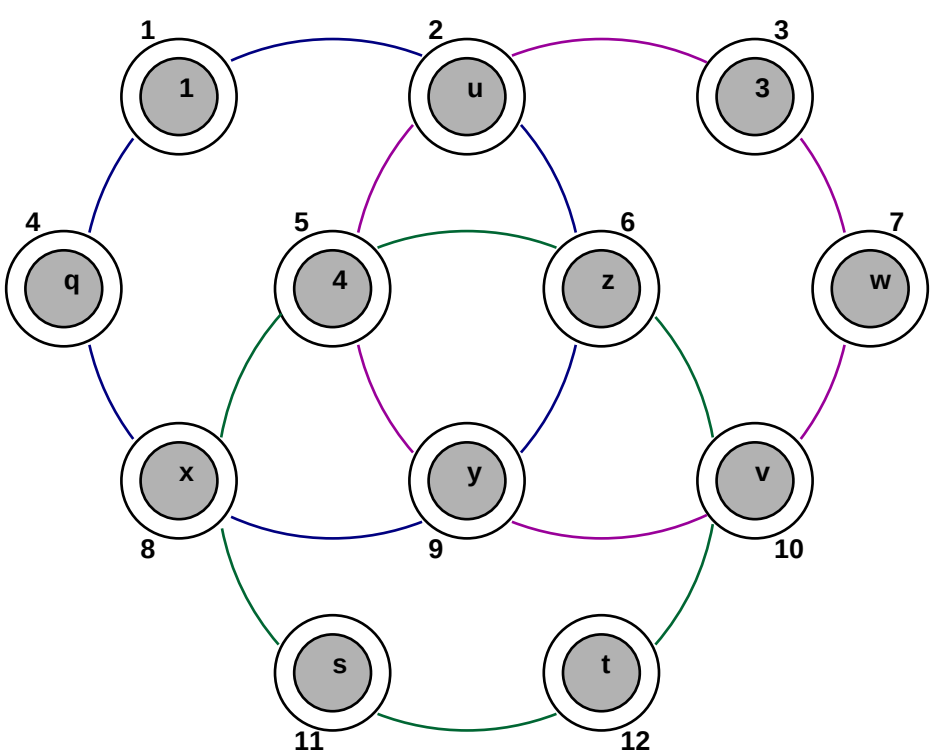
Number 4 can be moved into every position in the green circle by moving in a clockwise or counter-clockwise pattern.

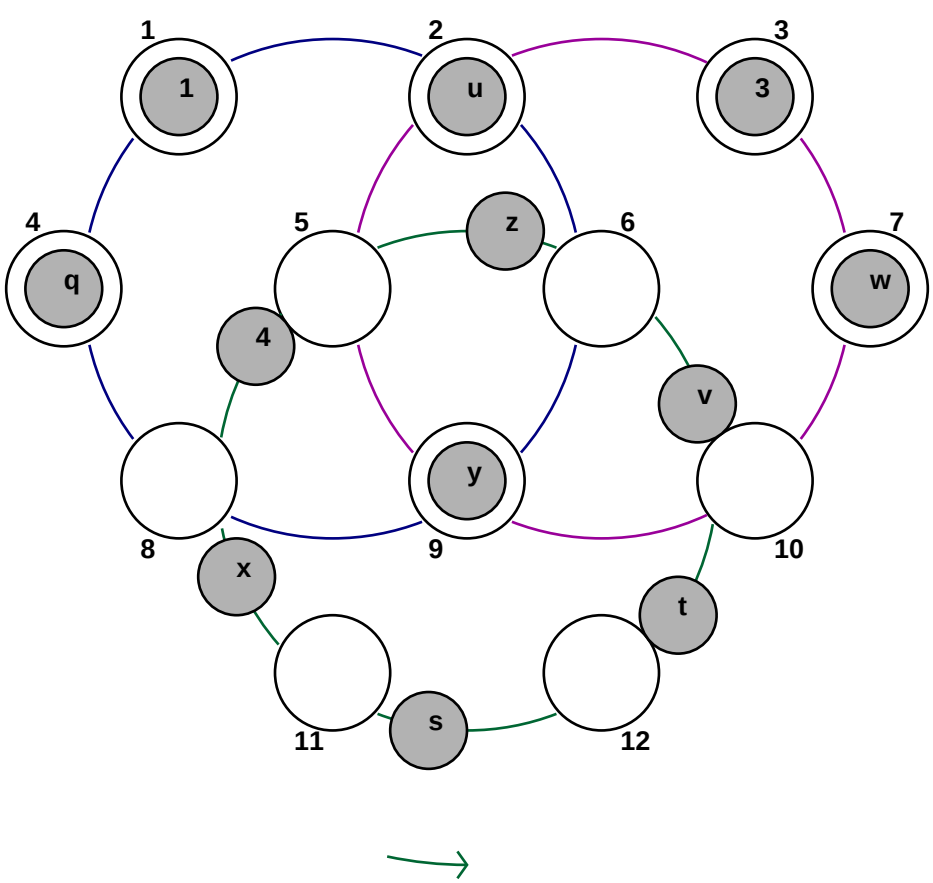
Both Numbers 1 and 3 will remain in their correct positions

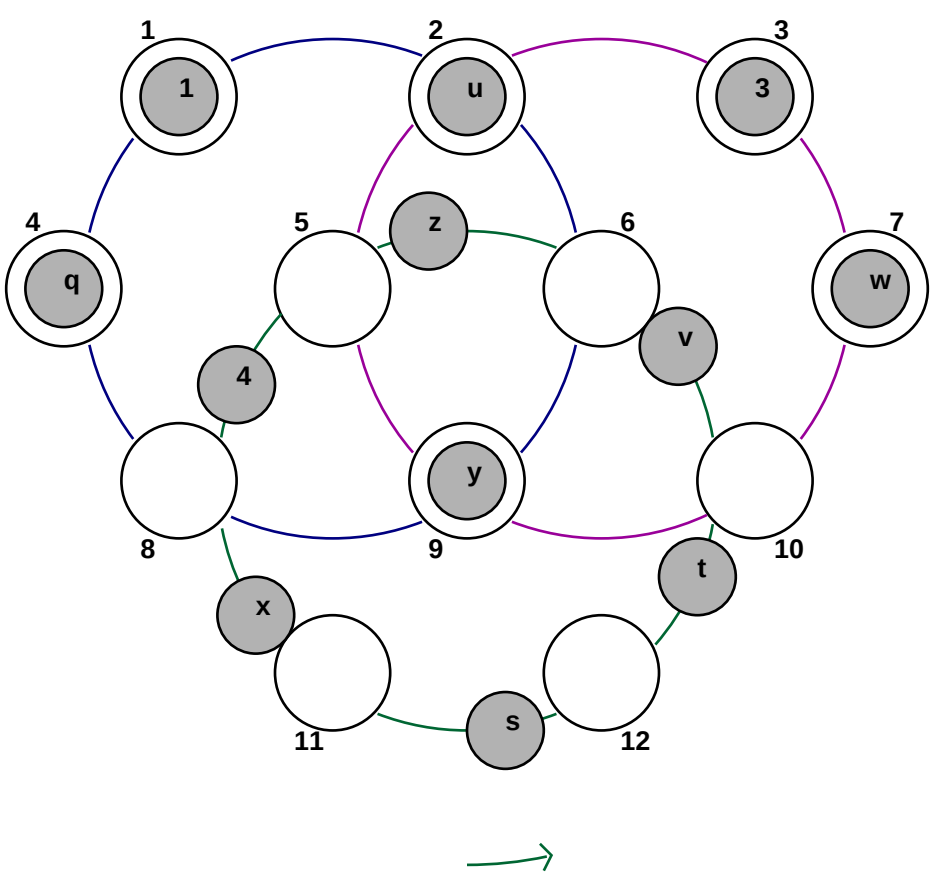

1
2
3
1
u
3
4
5
6
7
q
x
4
w
s
y
z
8
9
10
t
v
11
12

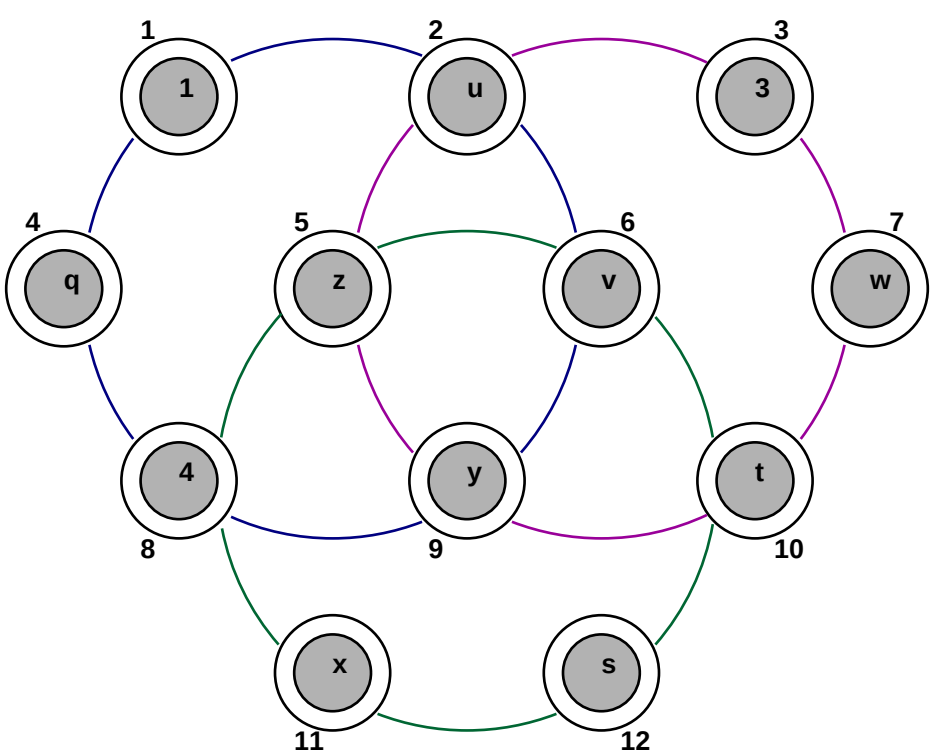

1
2
3
1
u
3
4
5
6
7
4
q
w
x
z
y
8
9
10
s
v
11
12
t

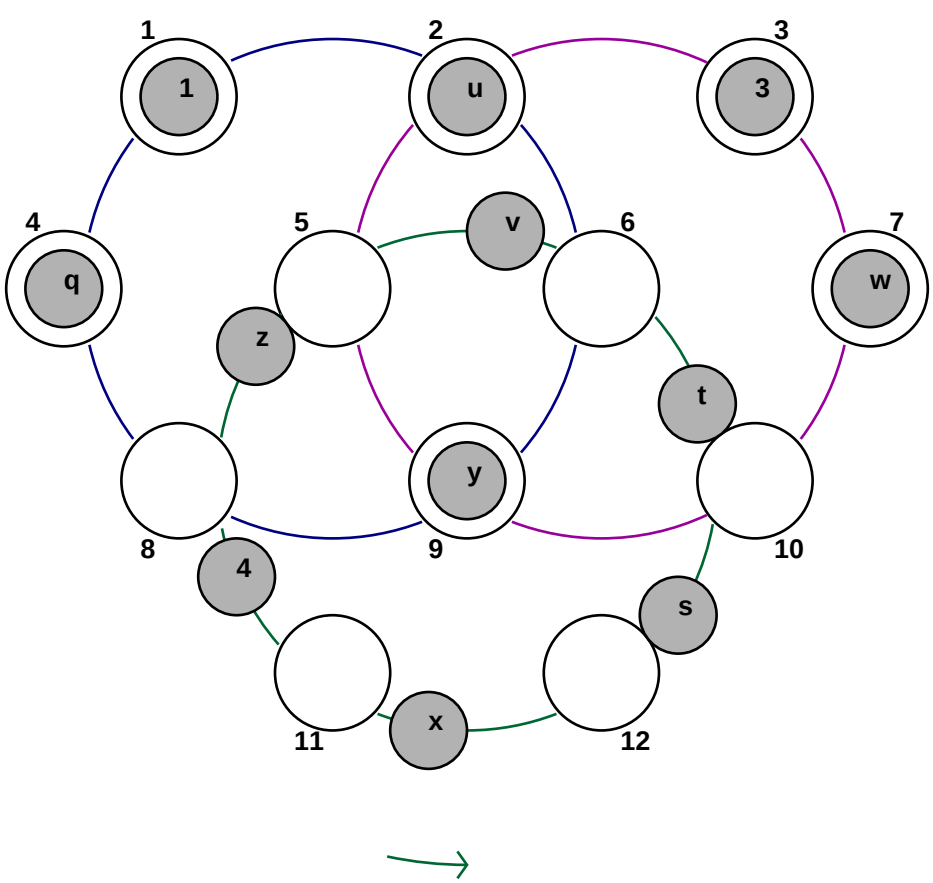

1
2
3
1
u
3
4
5
6
7
4
q
w
z
x
y
8
9
10
v
s
t
11
12

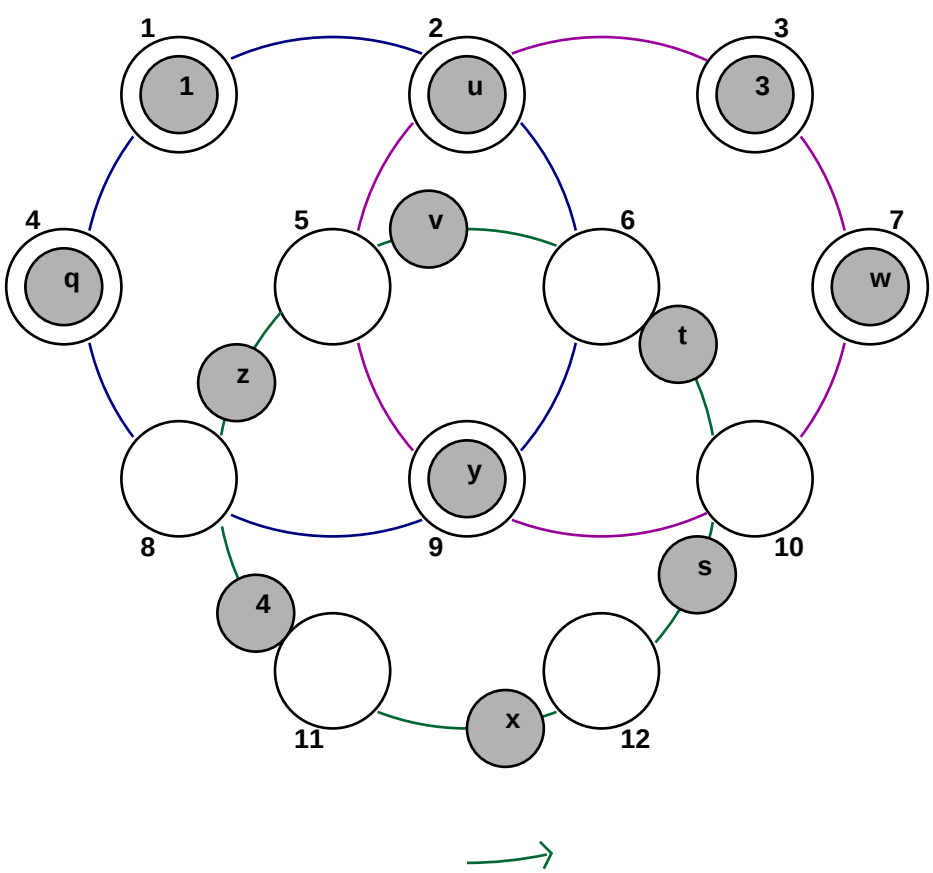

1
2
3
1
u
3
4
5
6
7
q
4
z
w
x
y
v
8
9
10
s
t
11
12

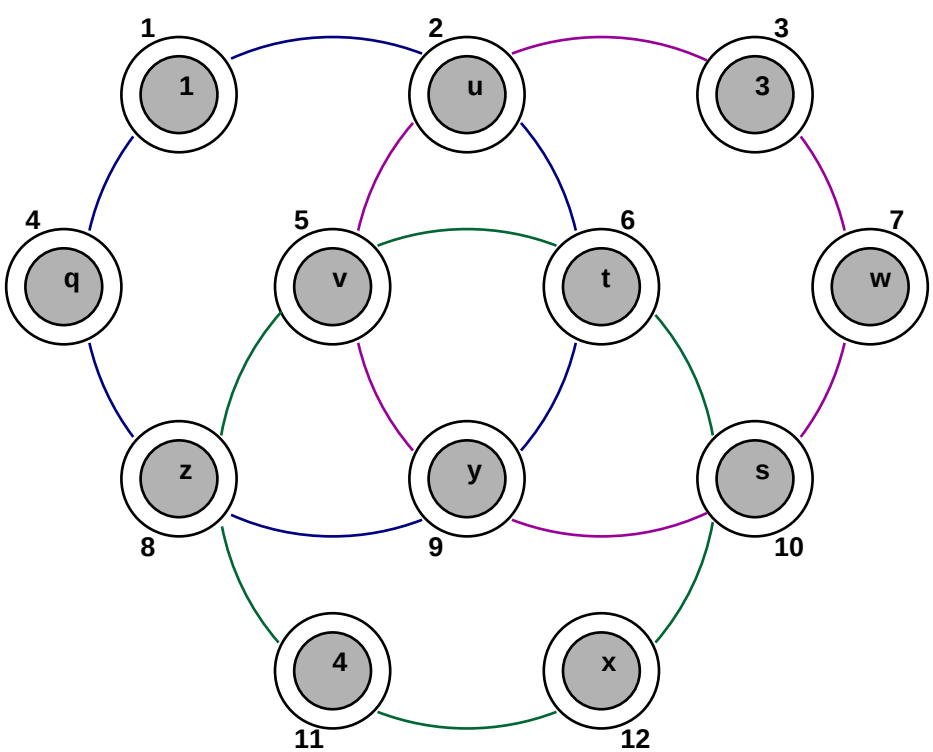

1
2
3
1
u
3
4
5
z
6
7
q
w
4
v
y
8
9
10
x
t
11
s
12

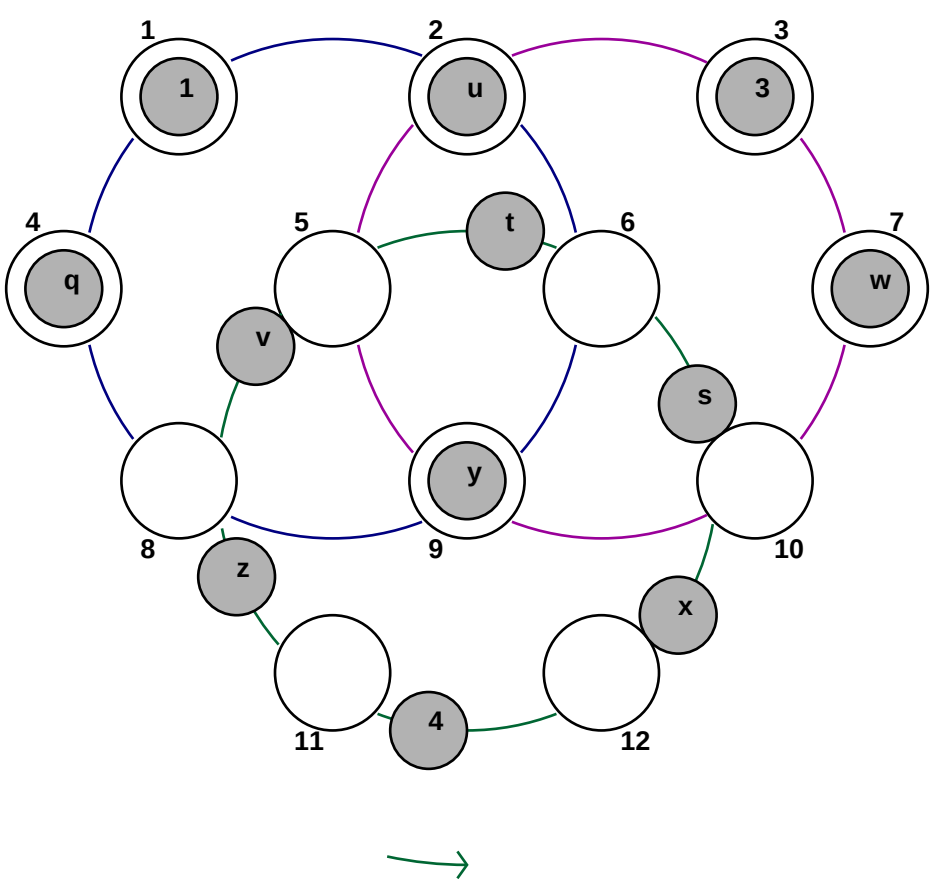

1
2
3
1
u
3
4
5
z
6
7
q
w
v
4
y
8
9
10
t
x
11
s
12

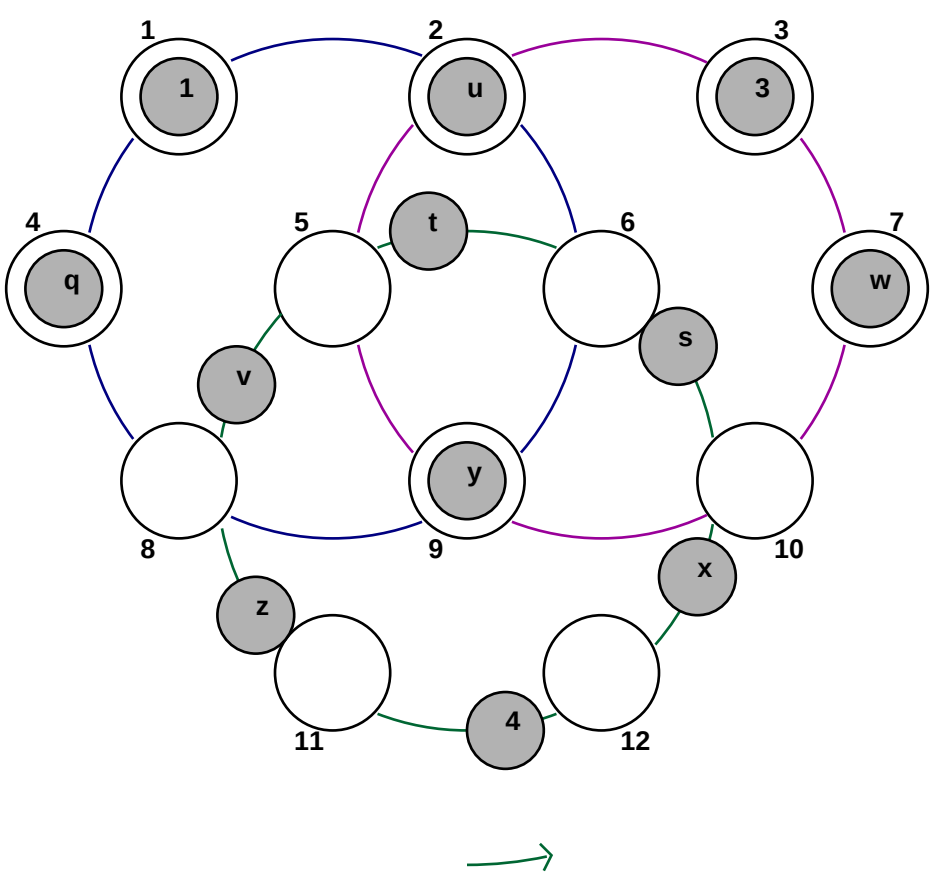

1
2
3
1
u
3
4
5
6
7
q
z
v
w
4
y
t
8
9
10
x
s
11
12

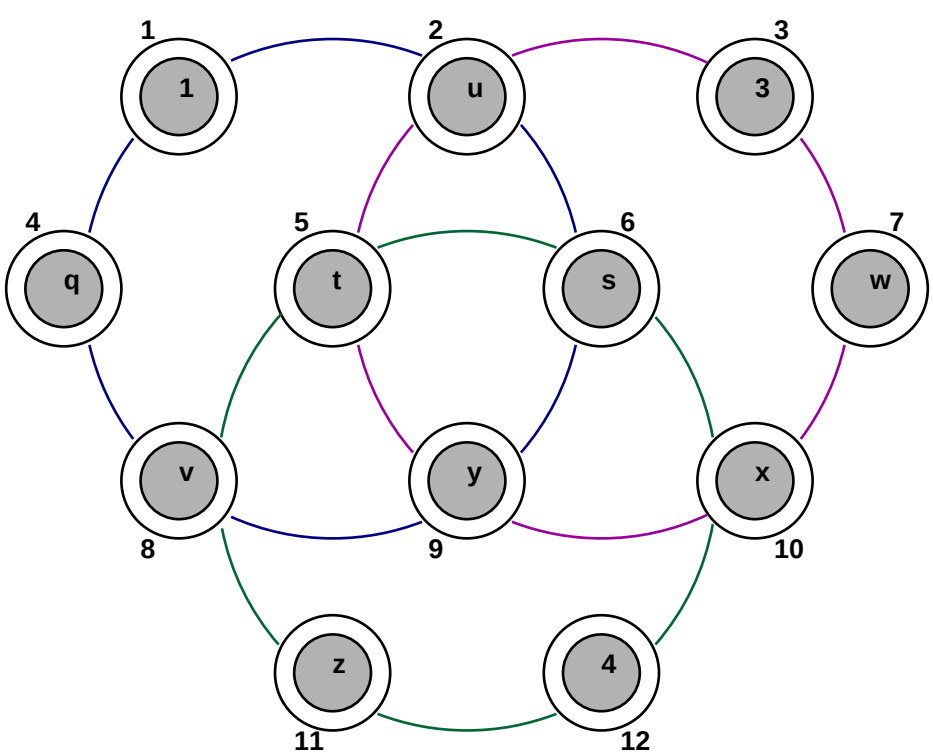

1
2
3
1
u
3
4
5
v
6
7
q
w
z
t
y
8
9
10
4
s
x
11
12

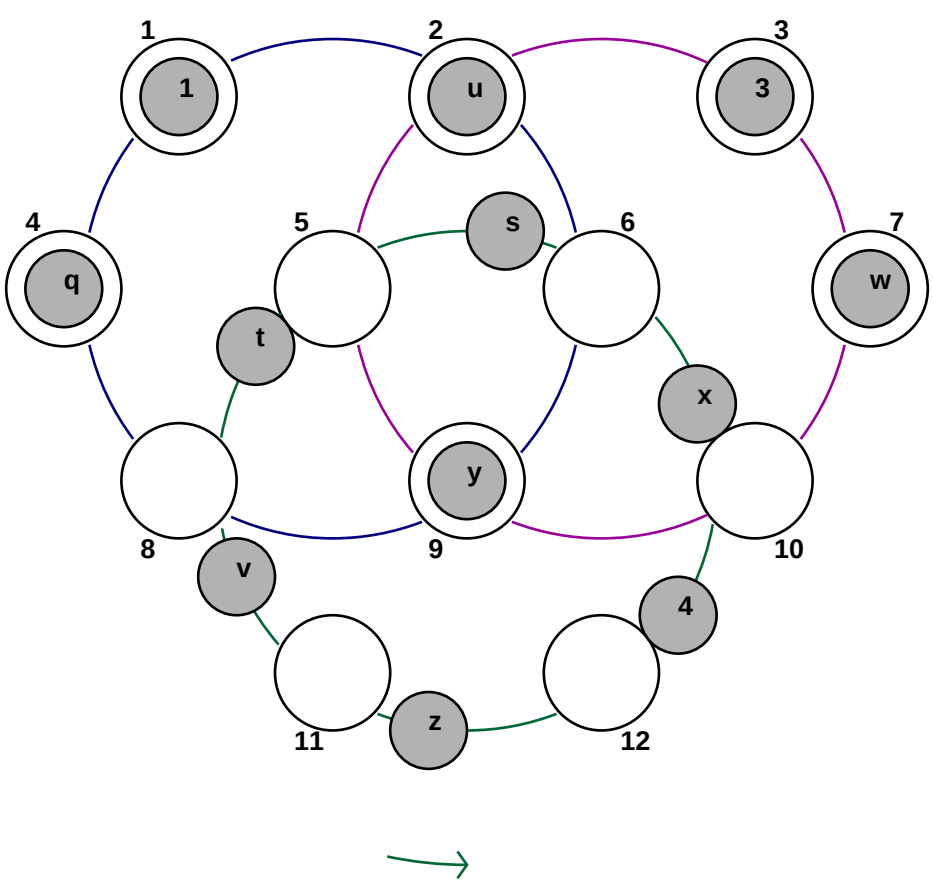

1
2
3
1
u
3
4
5
v
6
7
q
w
t
z
y
8
9
10
s
4
11
x
12

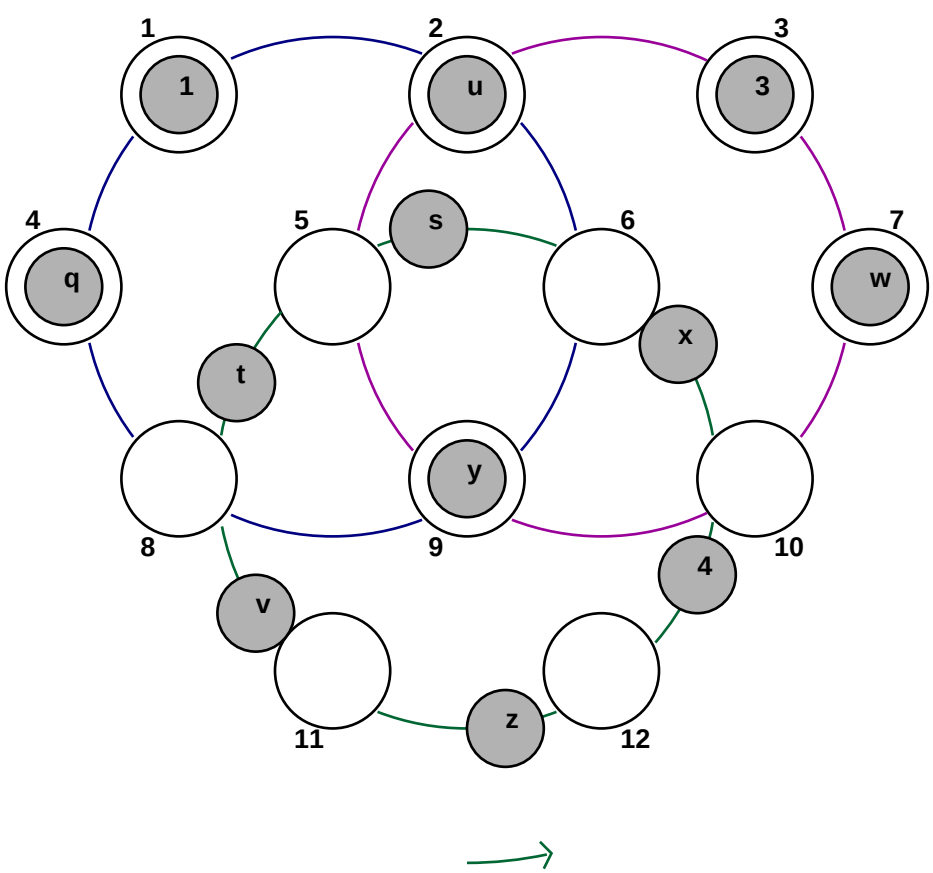

1
2
3
1
u
3
4
5
6
7
q
v
t
w
z
y
s
8
9
10
4
x
11
12

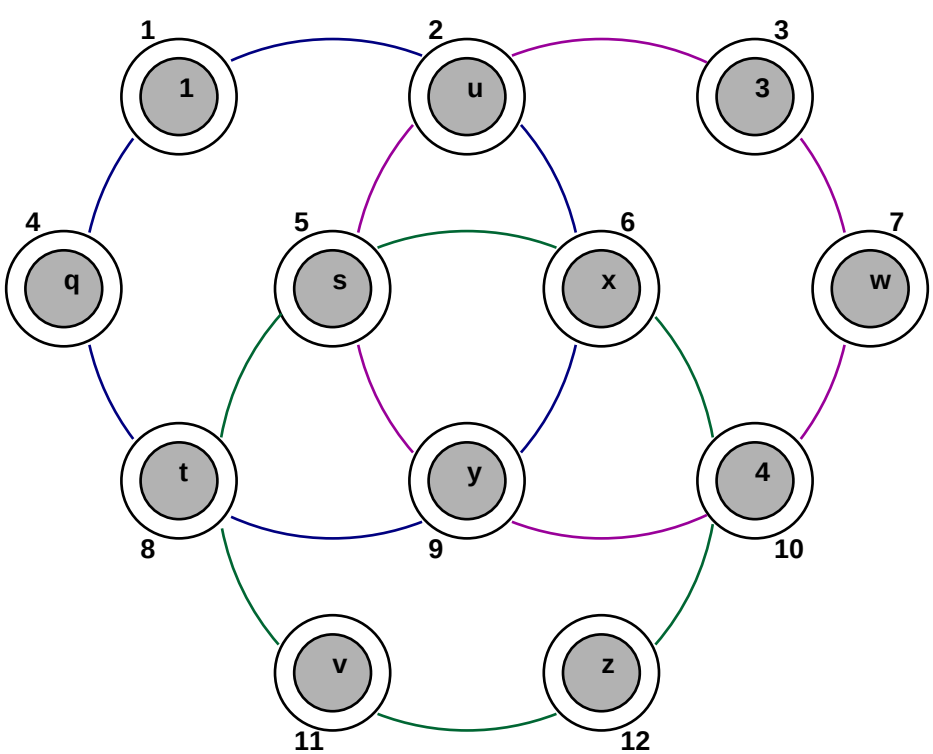

1
2
3
1
u
3
4
5
t
6
7
q
w
v
s
y
8
9
10
z
x
4
11
12

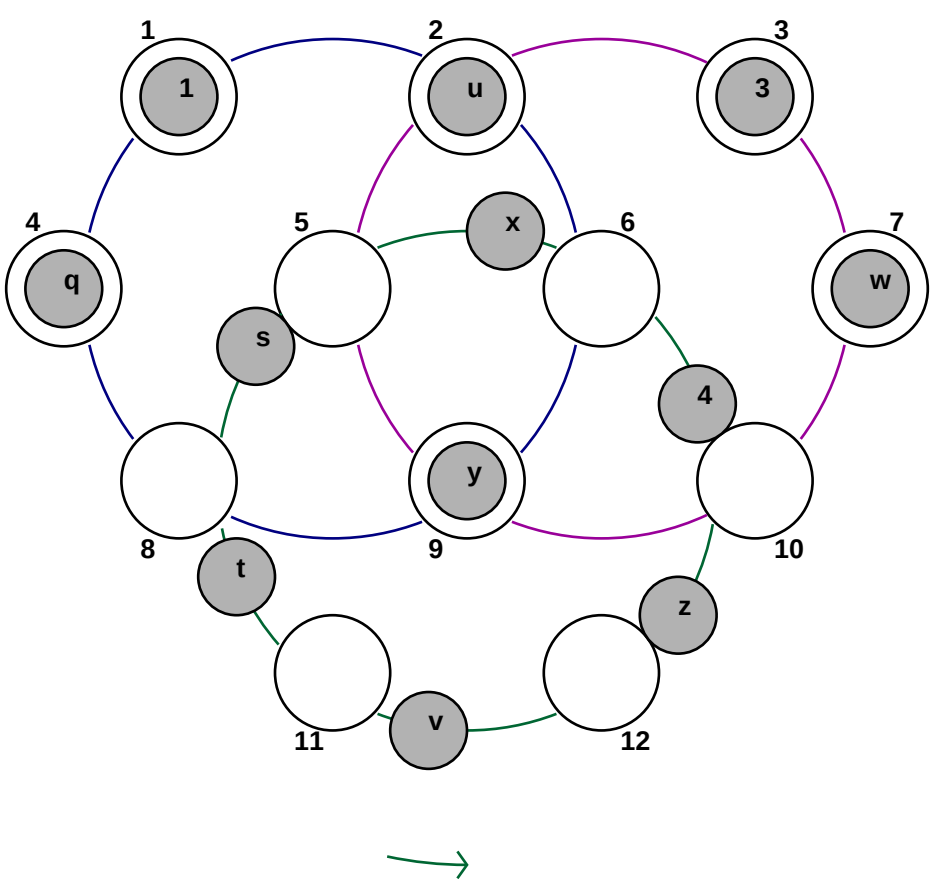

1
2
3
1
u
3
4
5
t
6
7
q
w
s
v
y
8
9
10
x
z
11
4
12

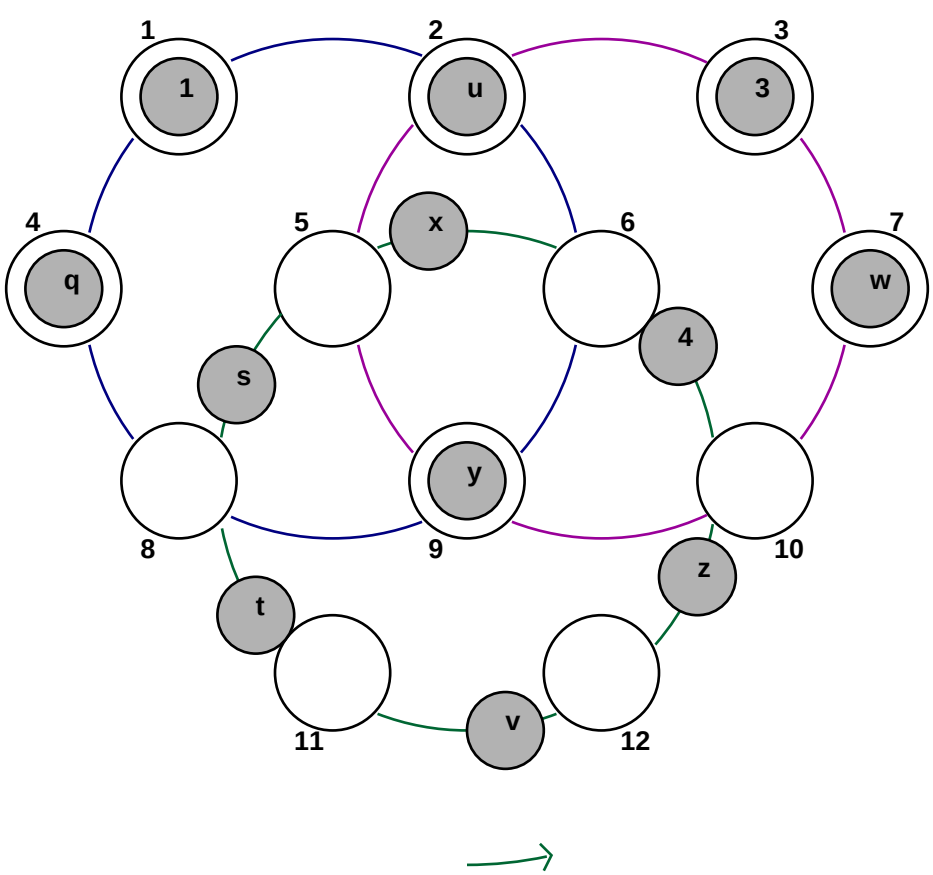

1
2
3
1
u
3
4
5
6
7
q
t
s
w
v
y
x
8
9
10
z
4
11
12

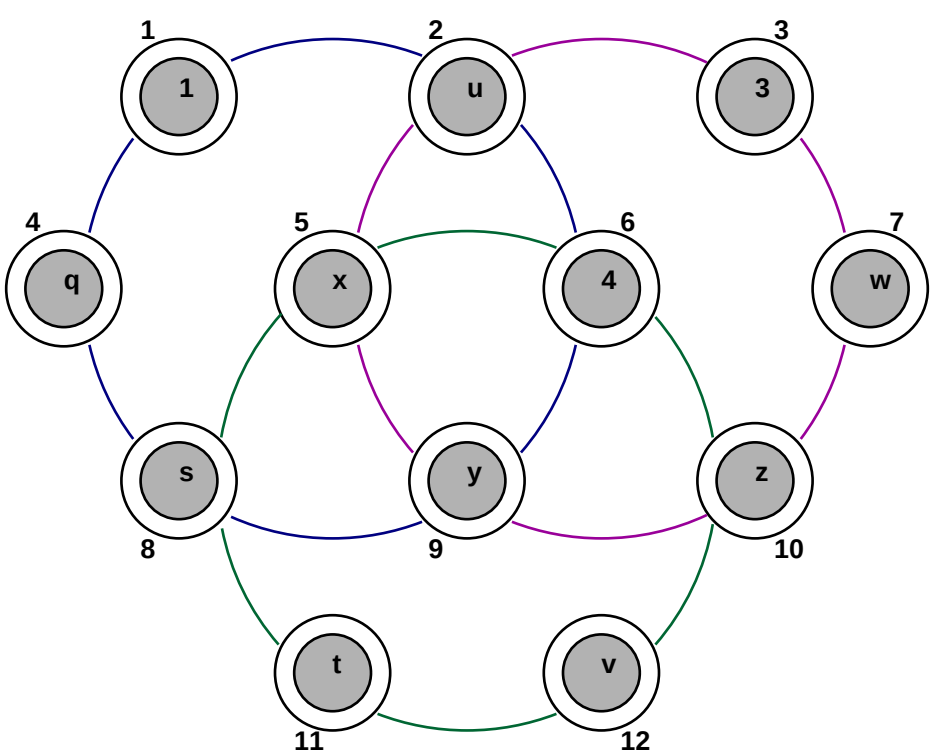

1
2
3
1
u
3
4
5
6
7
s
q
w
t
x
y
8
9
10
v
4
z
11
12


1
2
3
1
u
3
4
5
6
7
s
q
w
x
t
y
8
9
10
4
v
11
z
12

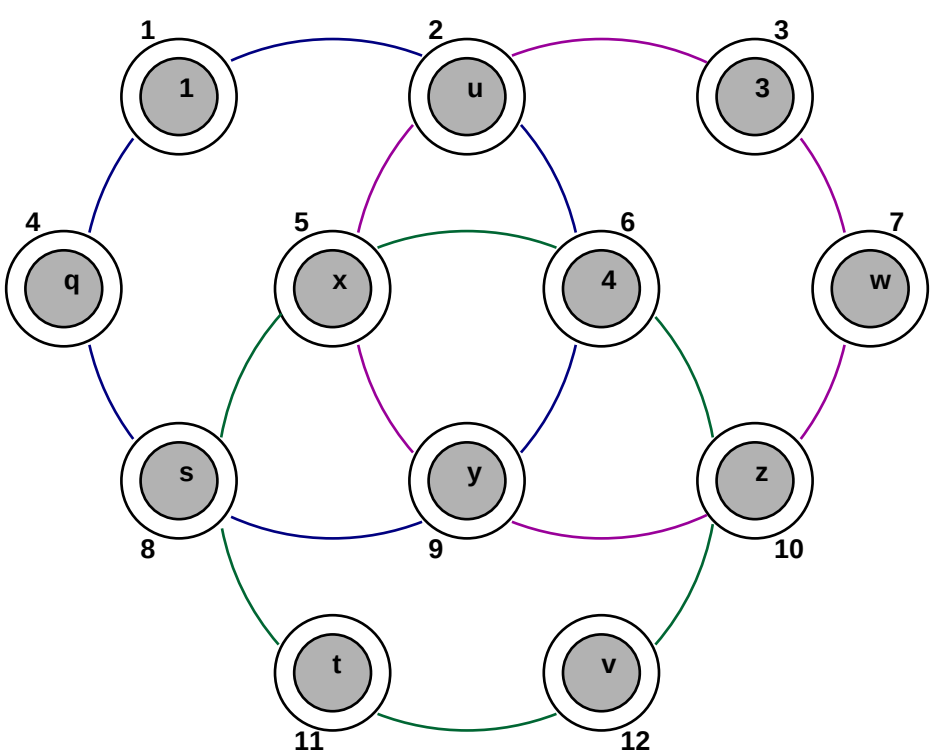

1
2
3
1
u
3
4
5
6
7
q
s
x
w
t
y
4
8
9
10
v
z
11
12

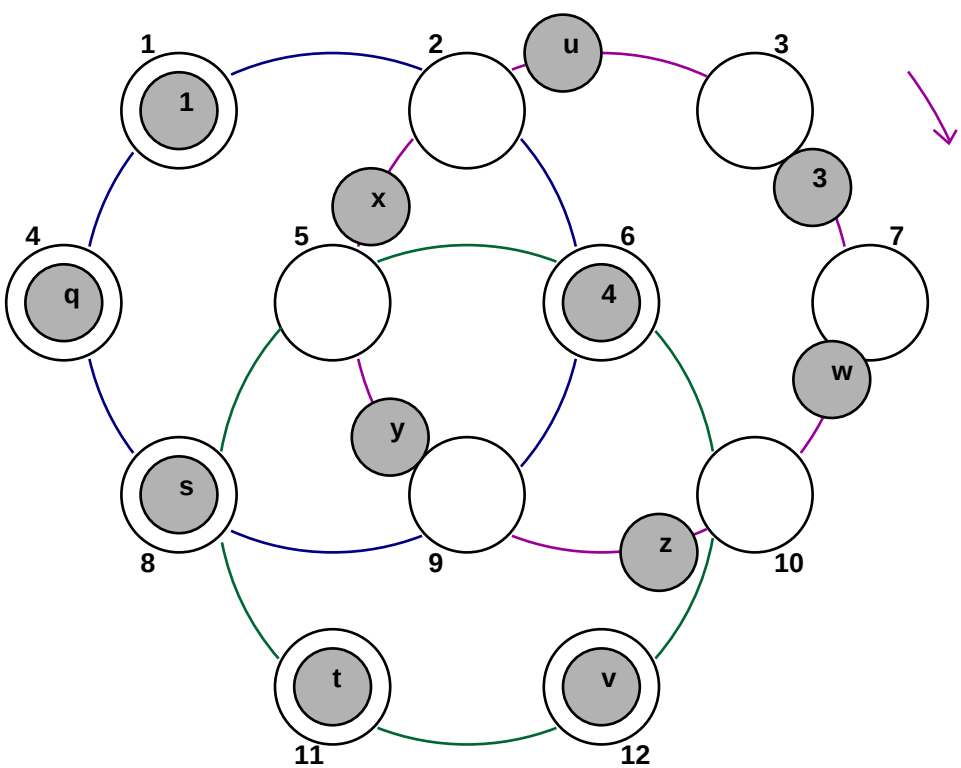

1
2
3
1
u
3
4
5
6
7
x
q
w
s
4
y
8
9
10
t
z
11
12
v

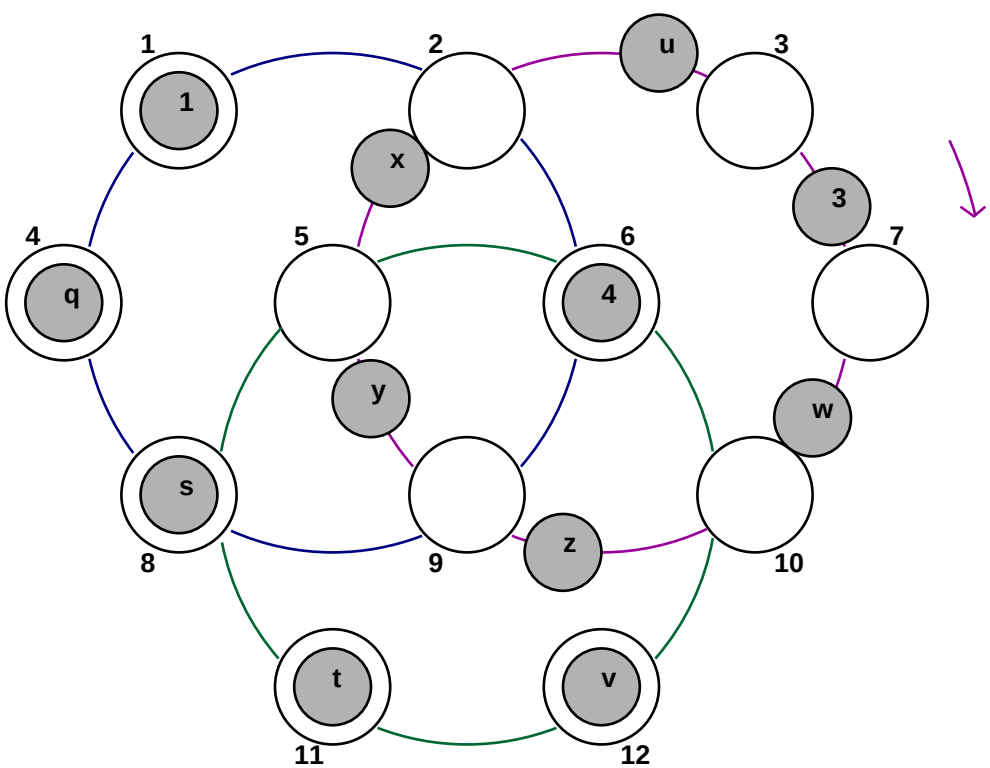

1
2
3
1
u
3
4
5
6
7
x
q
w
4
s
y
8
9
10
z
t
11
12
v

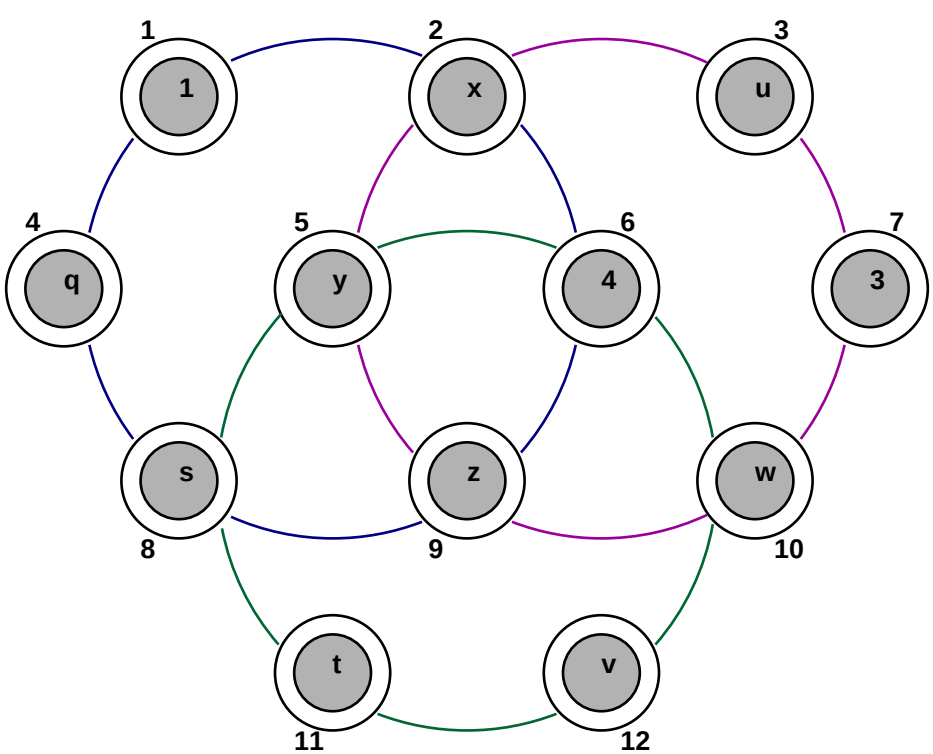

1
2
3
1
u
3
4
5
6
7
q
x
4
w
s
y
z
8
9
10
t
v
11
12

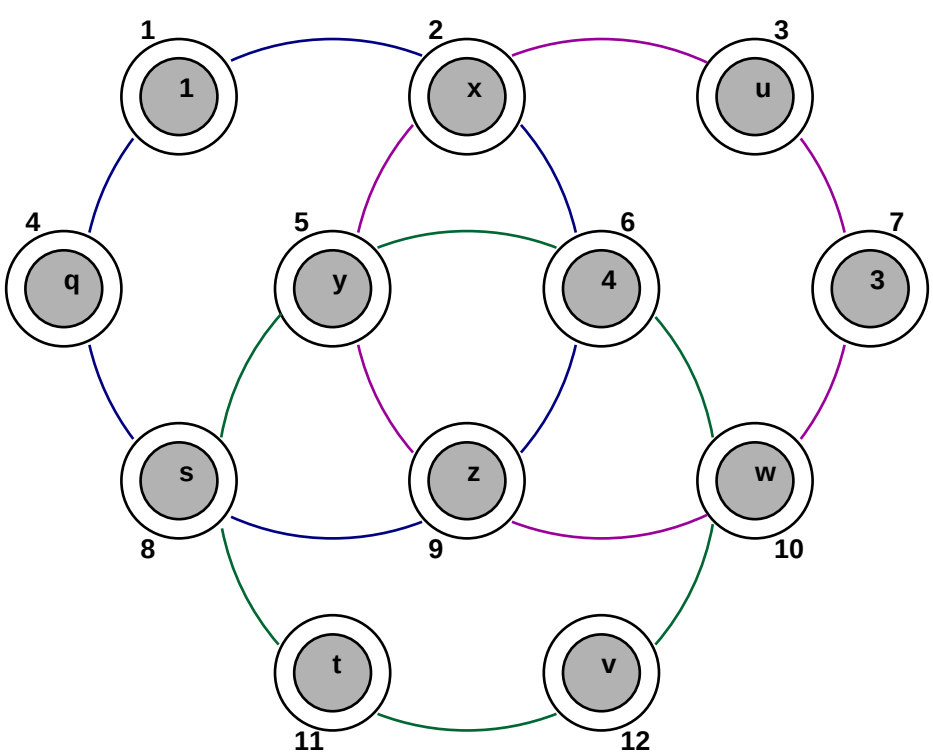
Number 4 can be moved into position 7 while keeping numbers 1 and 3 in position by the following moves.

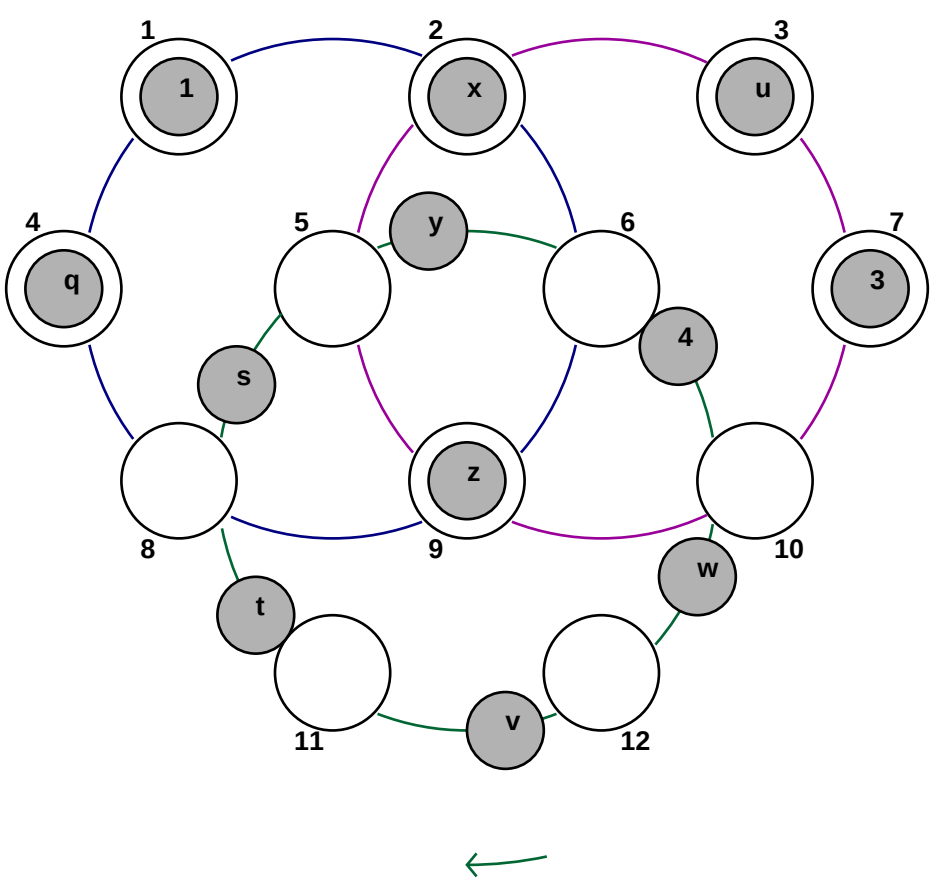

1
2
3
1
u
3
4
5
6
7
q
x
4
w
s
y
z
8
9
10
t
v
11
12

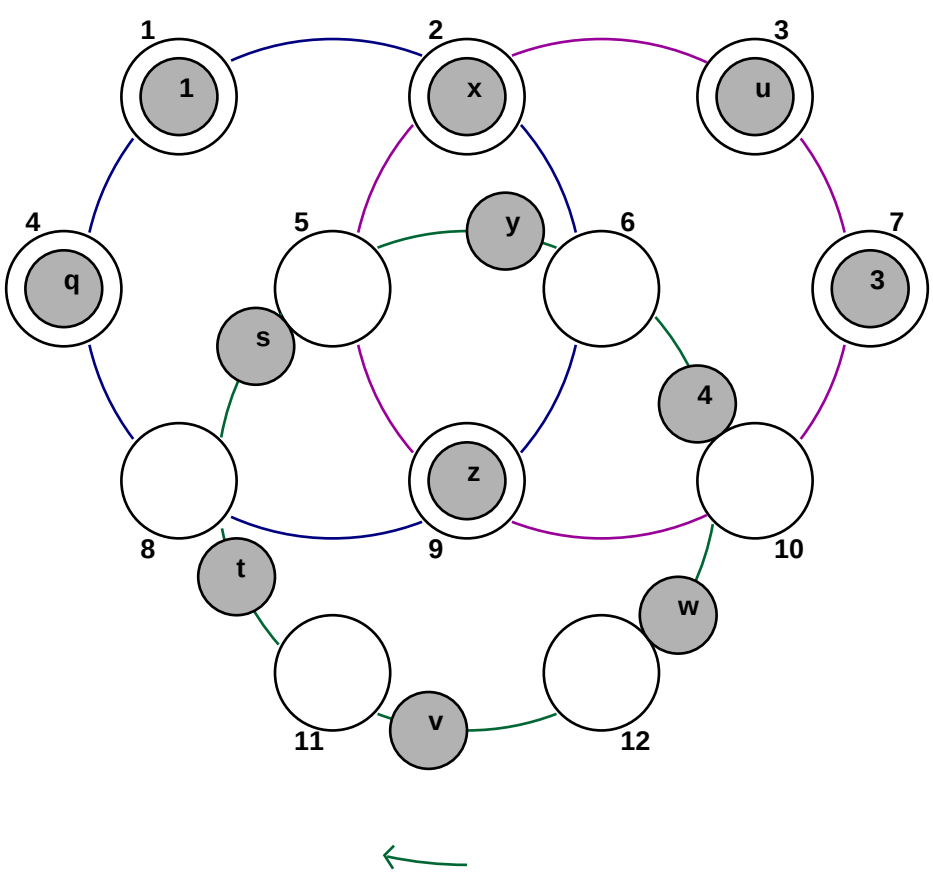

1
2
u
3
1
x
3
4
5
6
7
q
4
w
y
s
z
8
9
10
t
v
11
12

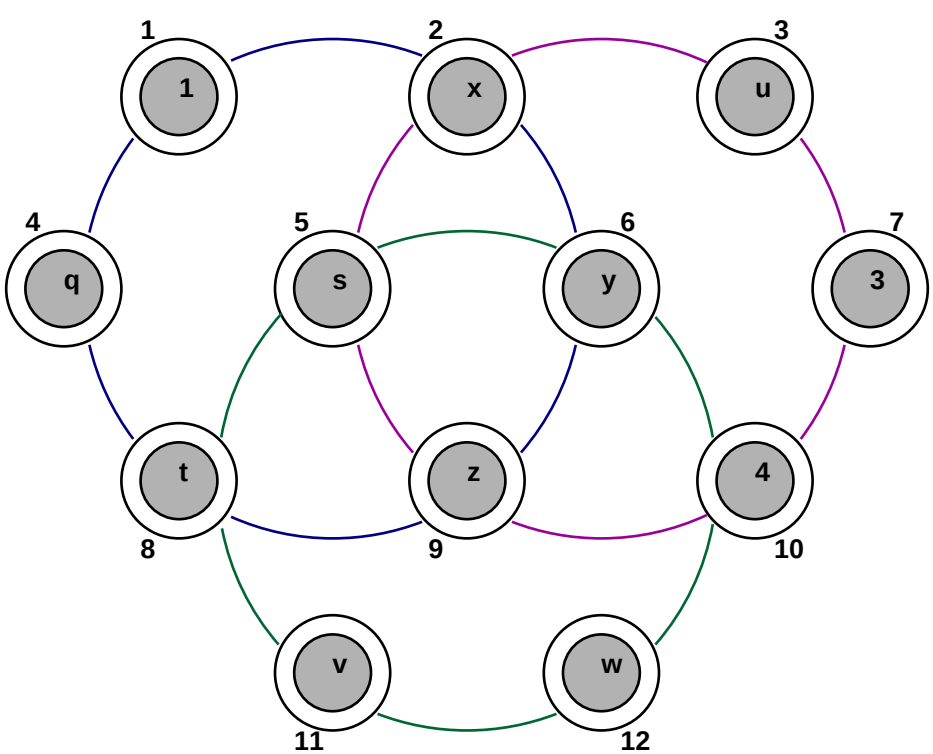

1
2
u
3
1
x
3
4
5
6
7
q
4
y
w
s
8
9
z
10
t
v
11
12

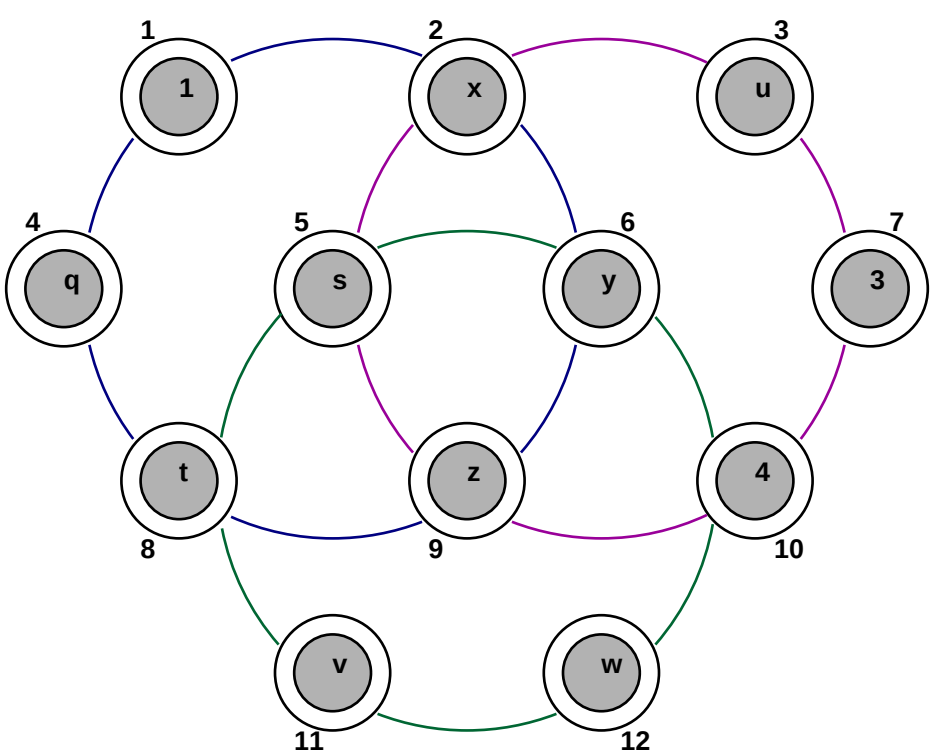

1
2
3
1
x
u
4
5
6
7
q
y
4
3
s
z
w
8
9
10
t
v
11
12

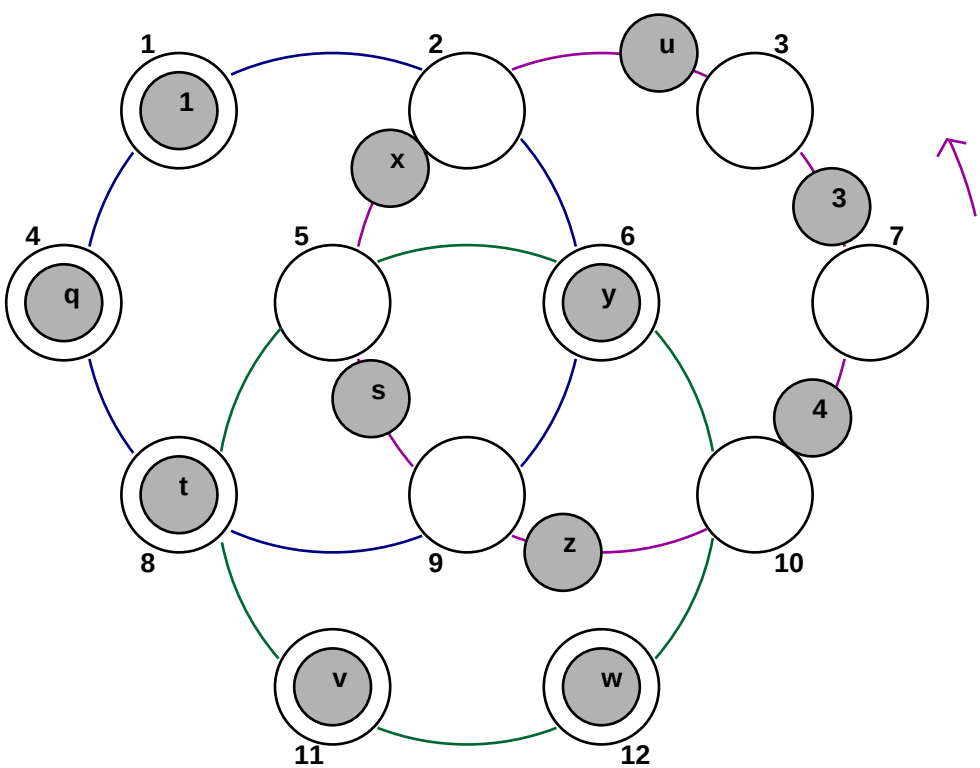

1
2
3
1
x
u
4
5
6
7
q
y
4
3
s
z
w
8
9
10
t
v
11
12

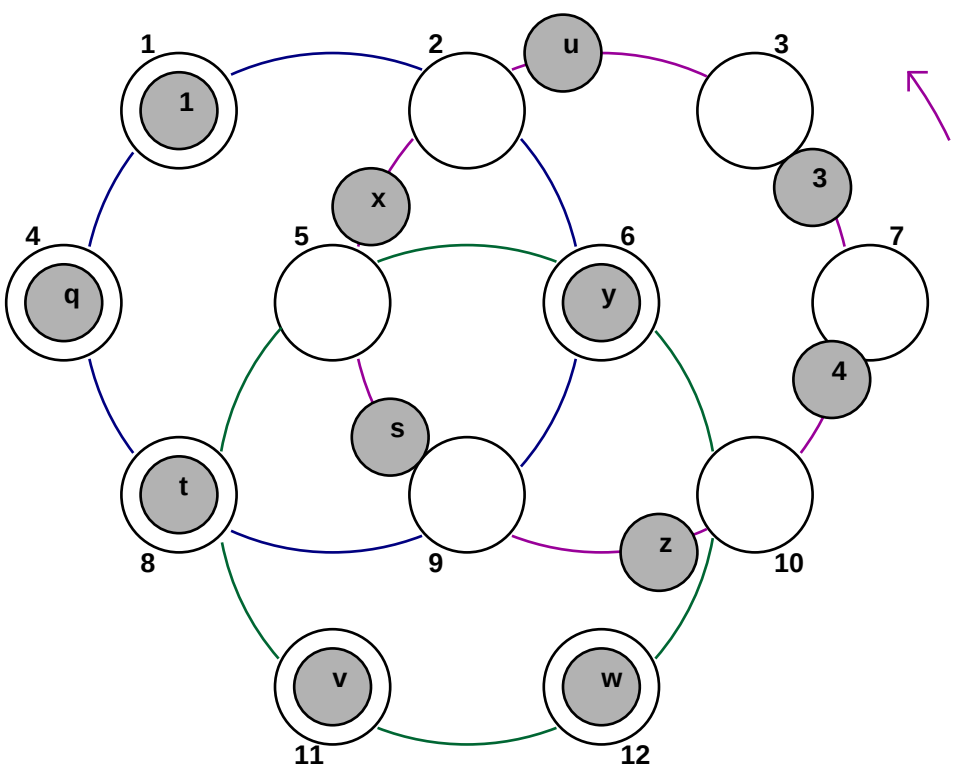

1
2
3
1
x
u
4
5
y
6
7
q
3
4
s
z
8
9
10
w
t
11
v
12

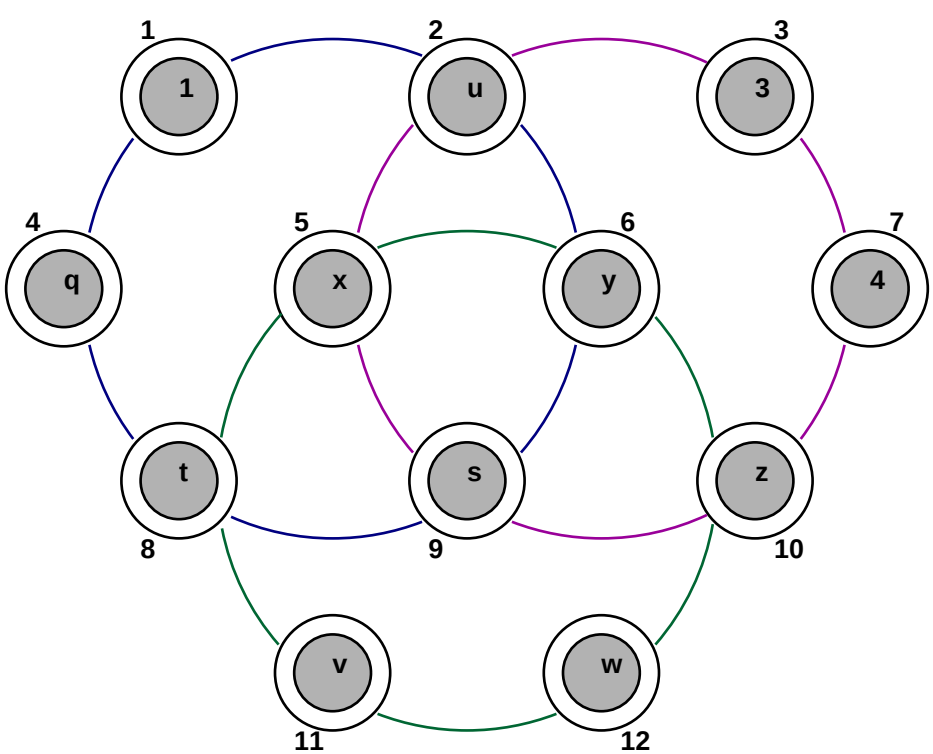

1
2
3
1
x
u
4
5
y
6
7
q
3
s
4
z
8
9
10
t
w
v
11
12


1
2
3
1
x
u
4
5
6
7
q
s
y
3
t
z
4
8
9
10
v
w
11
12

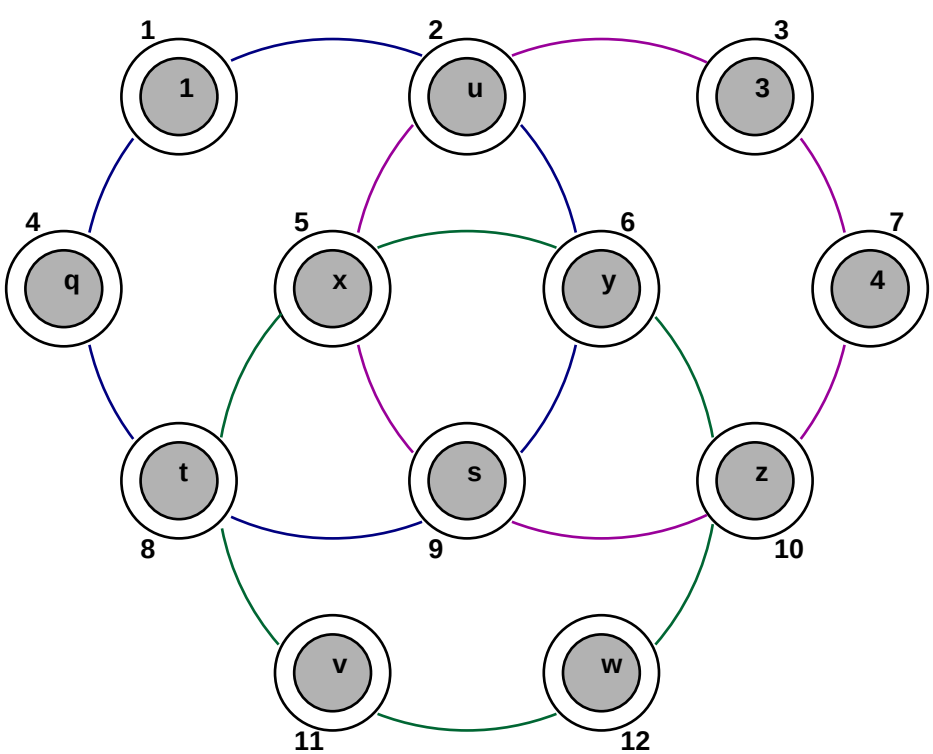

1
2
3
1
x
u
4
5
6
7
q
s
y
3
t
z
4
8
9
10
v
w
11
12

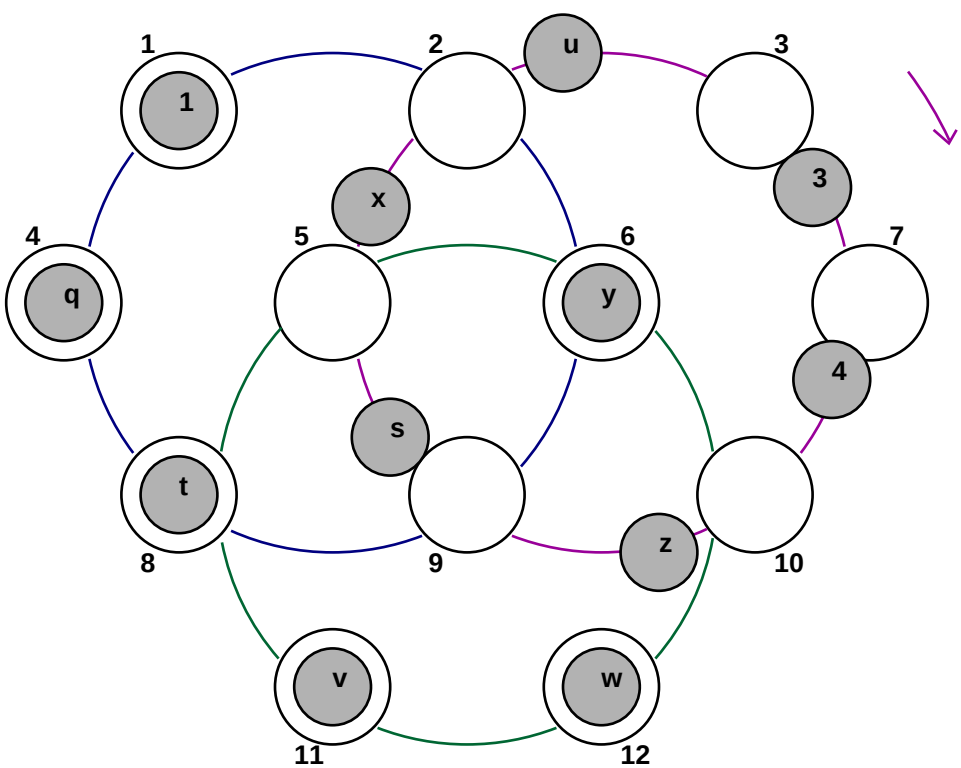

1
2
u
3
1
x
3
4
5
6
7
q
y
s
4
t
8
9
z
10
v
w
11
12

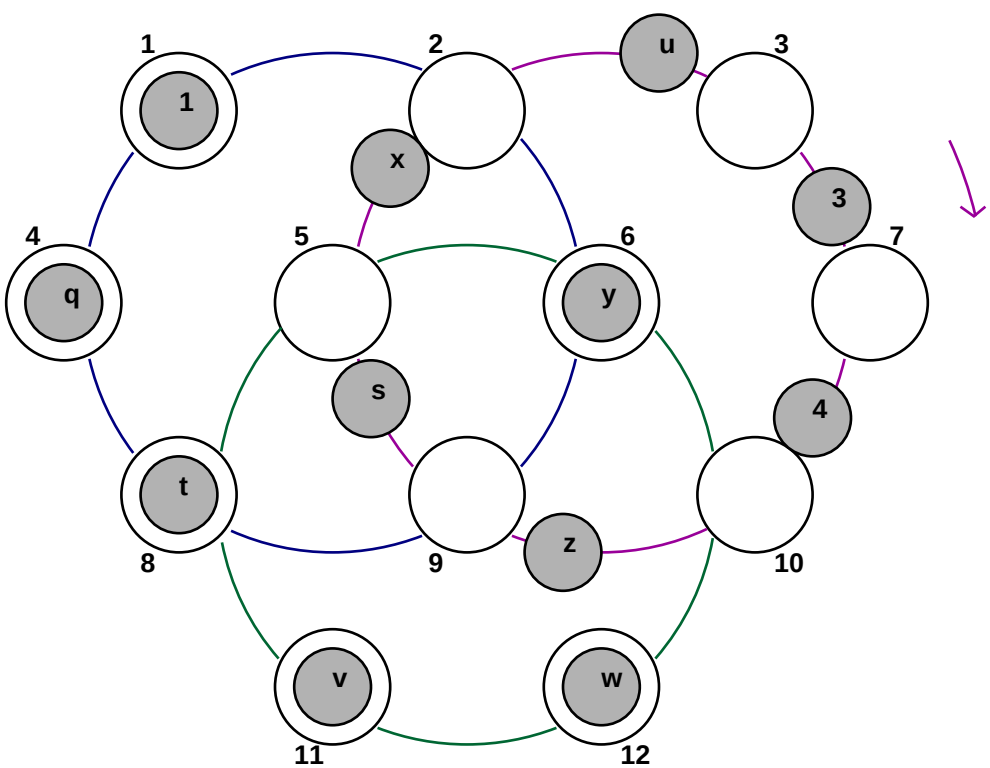

1
2
u
3
1
x
3
4
5
6
7
q
y
4
s
t
z
8
9
10
v
w
11
12

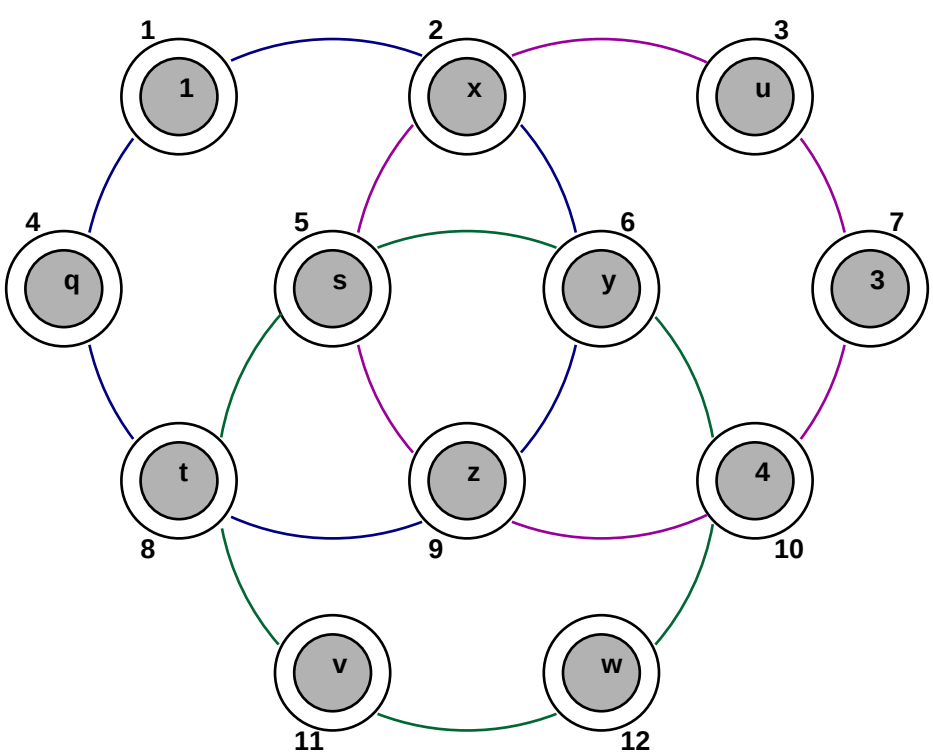

1
2
3
1
u
3
4
5
6
7
q
x
y
4
t
s
z
8
9
10
v
w
11
12

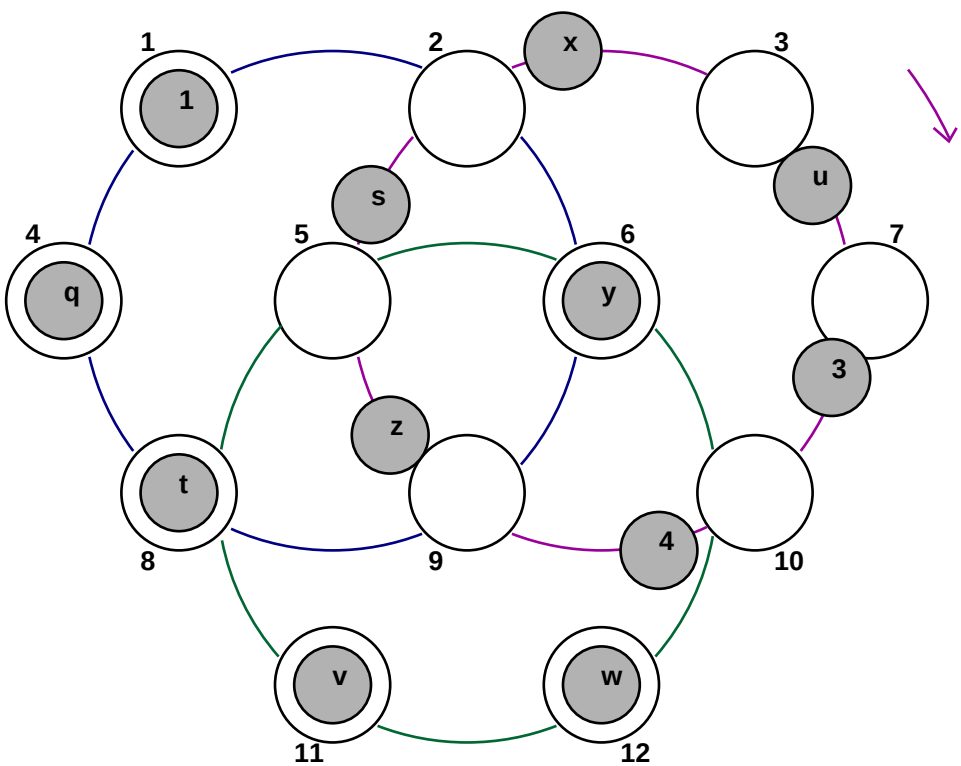
Number 4 can be moved into position 2 while keeping numbers 1 and 3 in position by the following moves.

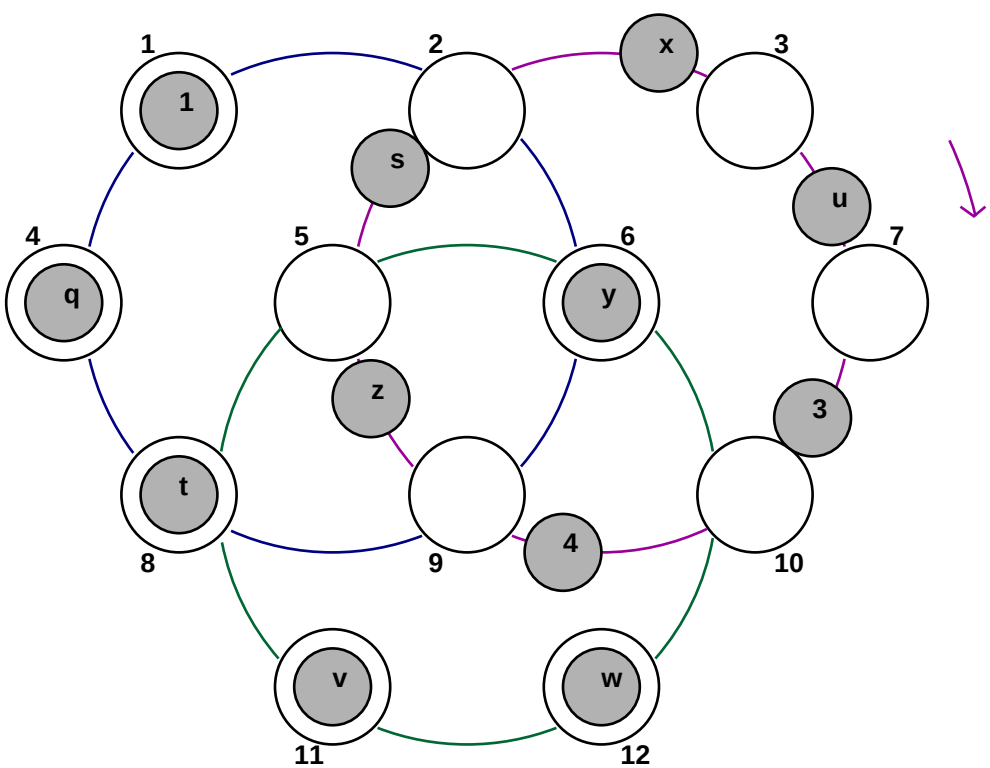

1
2
3
1
u
3
4
5
6
7
q
x
y
4
t
s
z
8
9
10
v
w
11
12

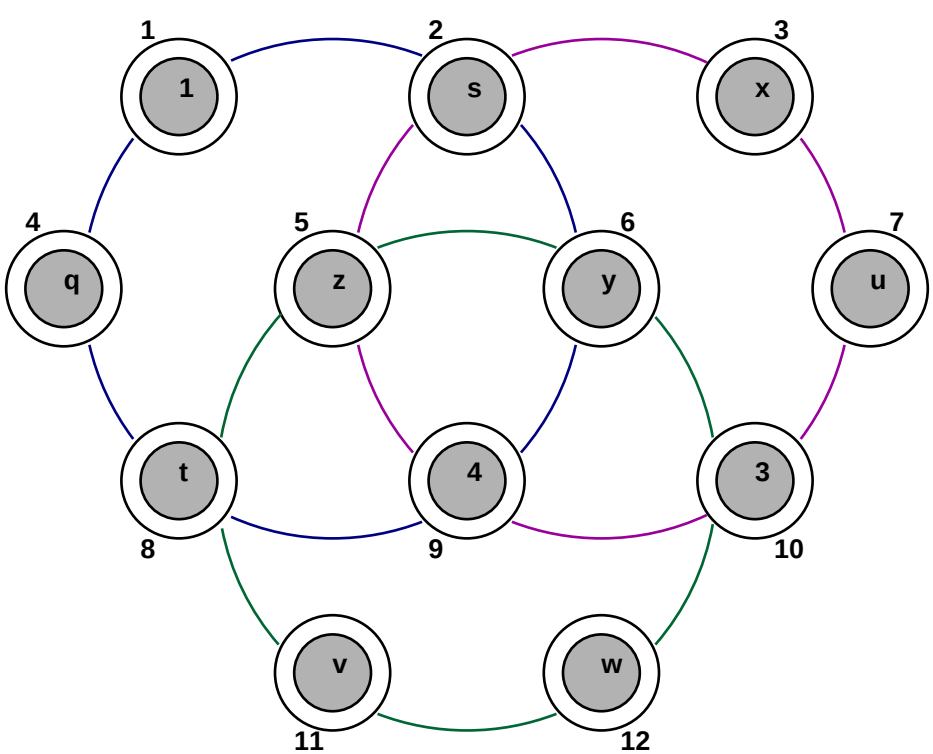

1
2
u
3
1
x
3
4
5
6
7
q
y
4
s
t
z
8
9
10
v
w
11
12

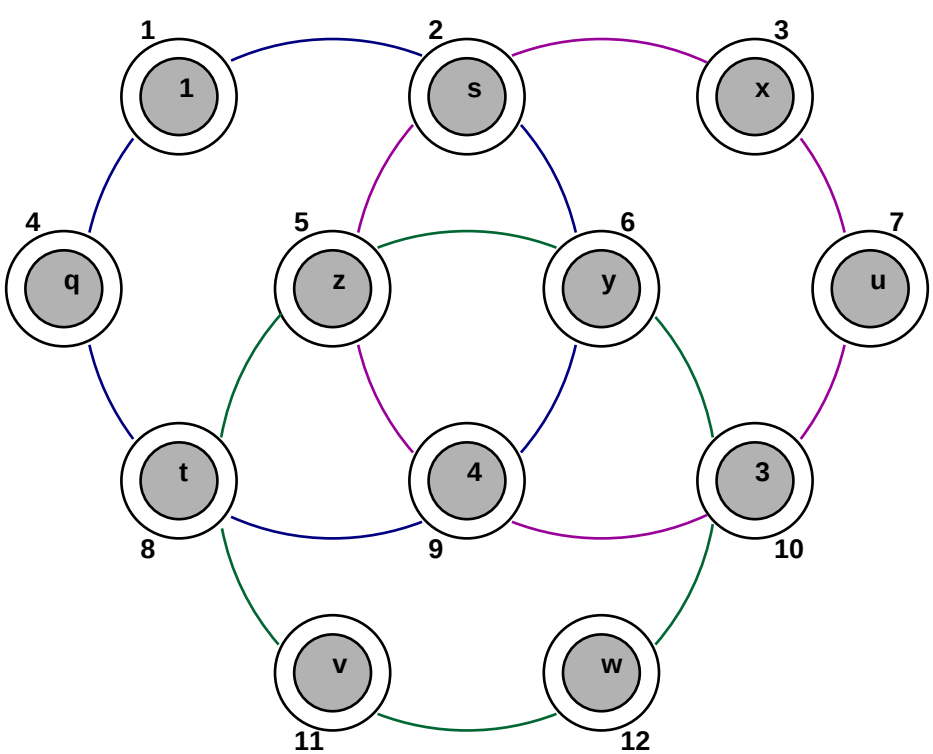

1
2
u
3
1
x
3
4
5
6
7
q
y
s
4
t
8
9
z
10
v
w
11
12

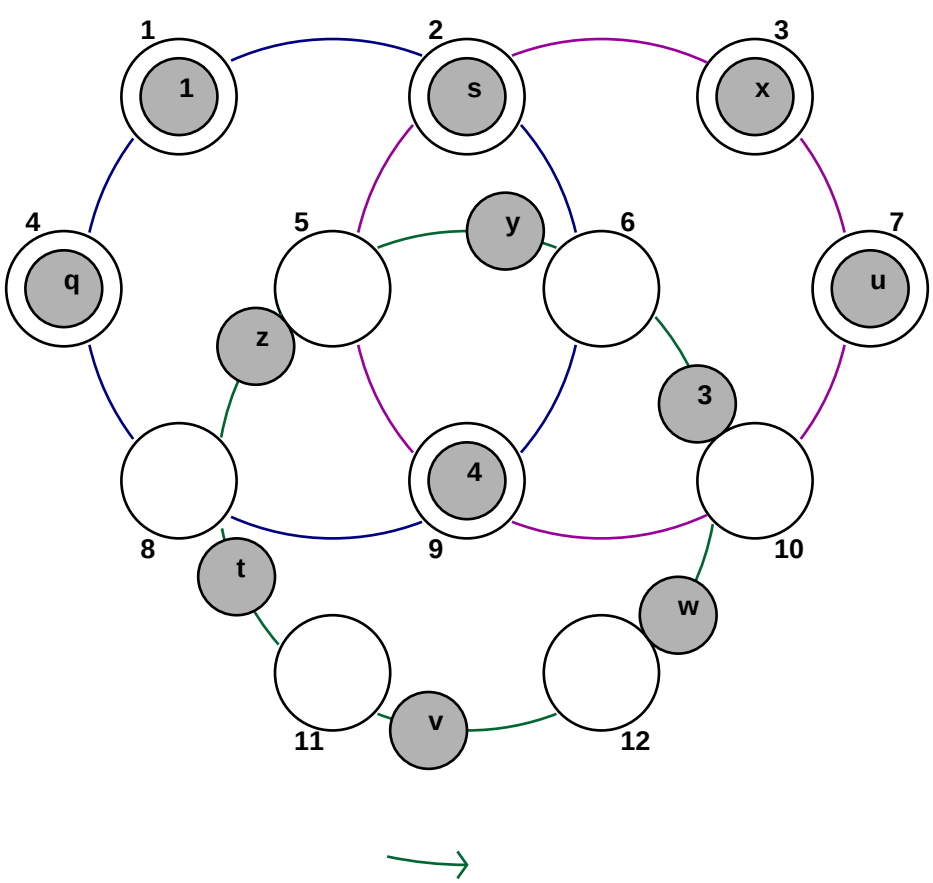

1
2
3
1
x
u
4
5
6
7
q
s
y
3
t
z
4
8
9
10
v
w
11
12

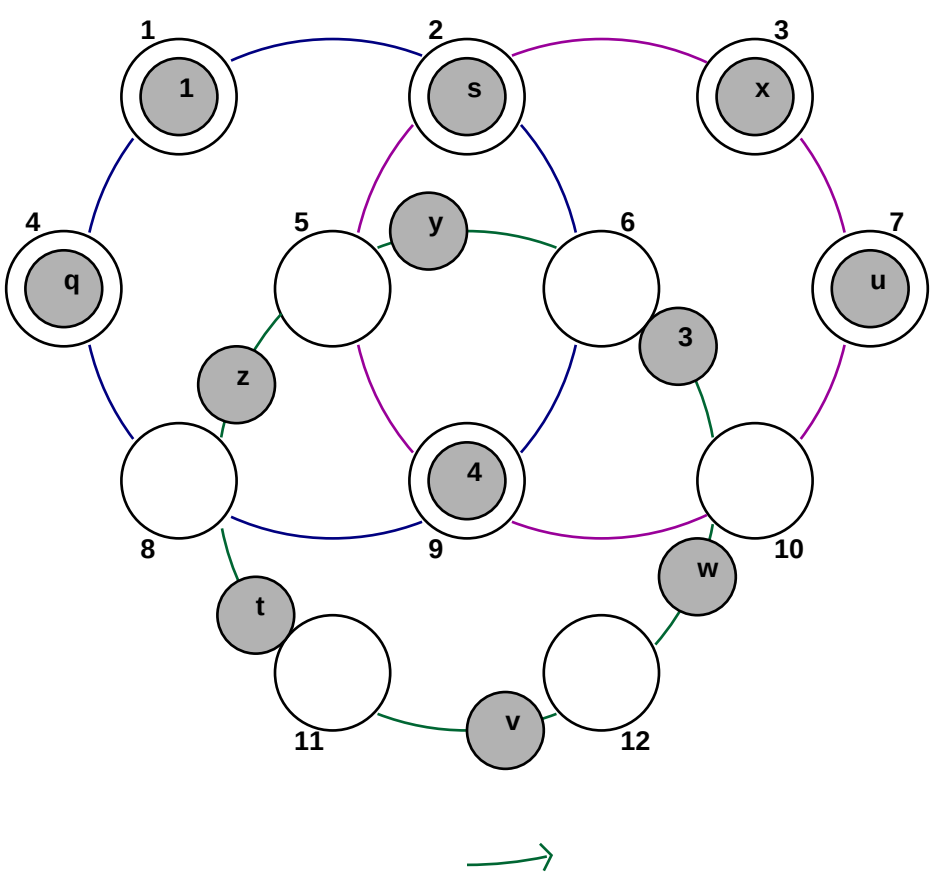

1
2
x
3
1
u
s
4
5
6
7
q
y
3
z
t
4
8
9
10
v
w
11
12

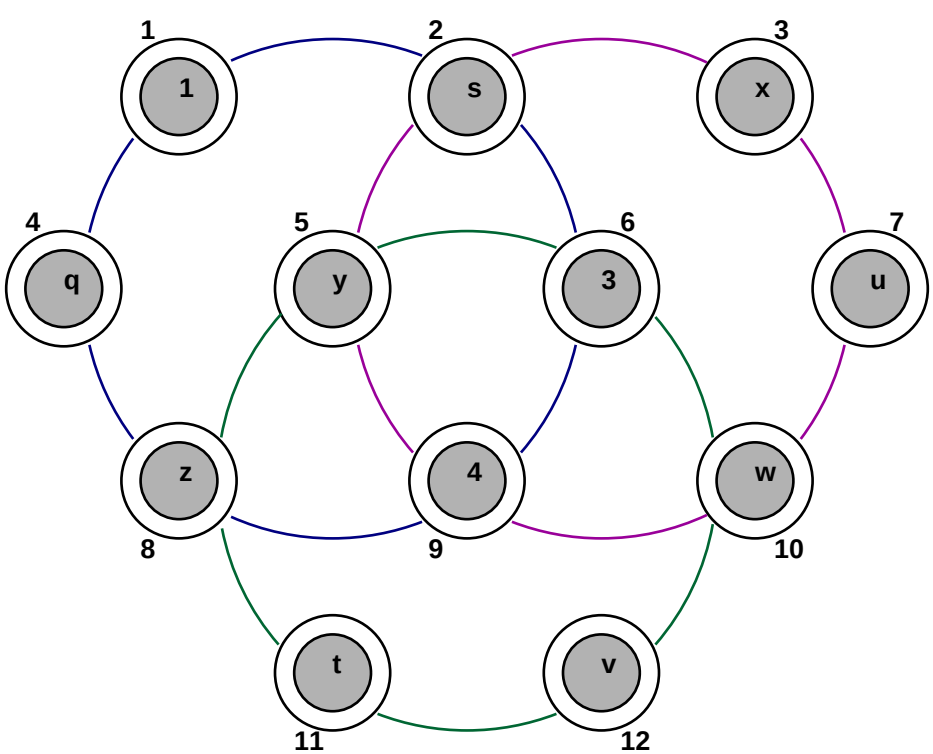

1
2
x
3
1
s
u
4
5
6
7
q
y
z
3
t
4
8
9
10
v
w
11
12

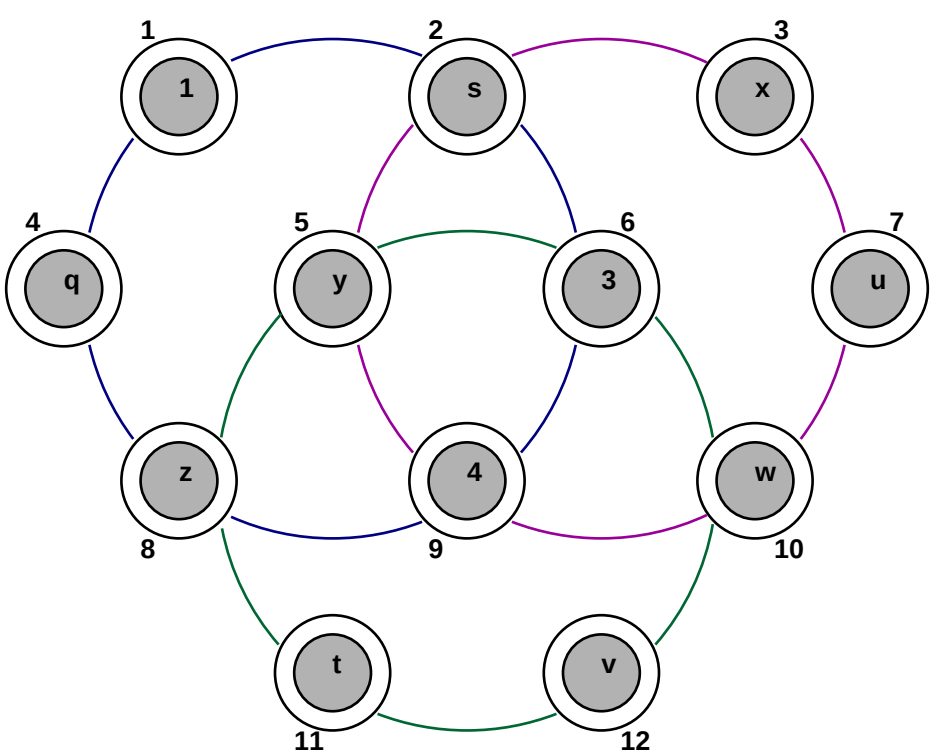

1
2
3
1
s
x
4
5
6
7
q
z
y
u
t
4
3
8
9
10
v
w
11
12

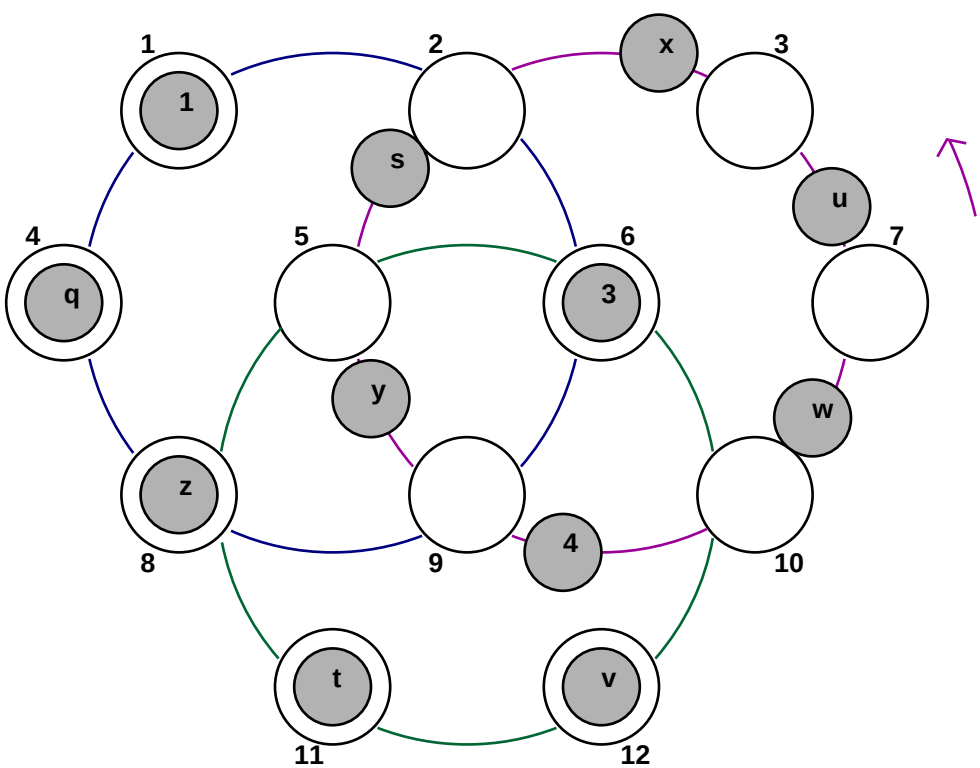

1
2
3
1
s
x
4
5
6
7
q
z
y
u
t
4
3
8
9
10
v
w
11
12

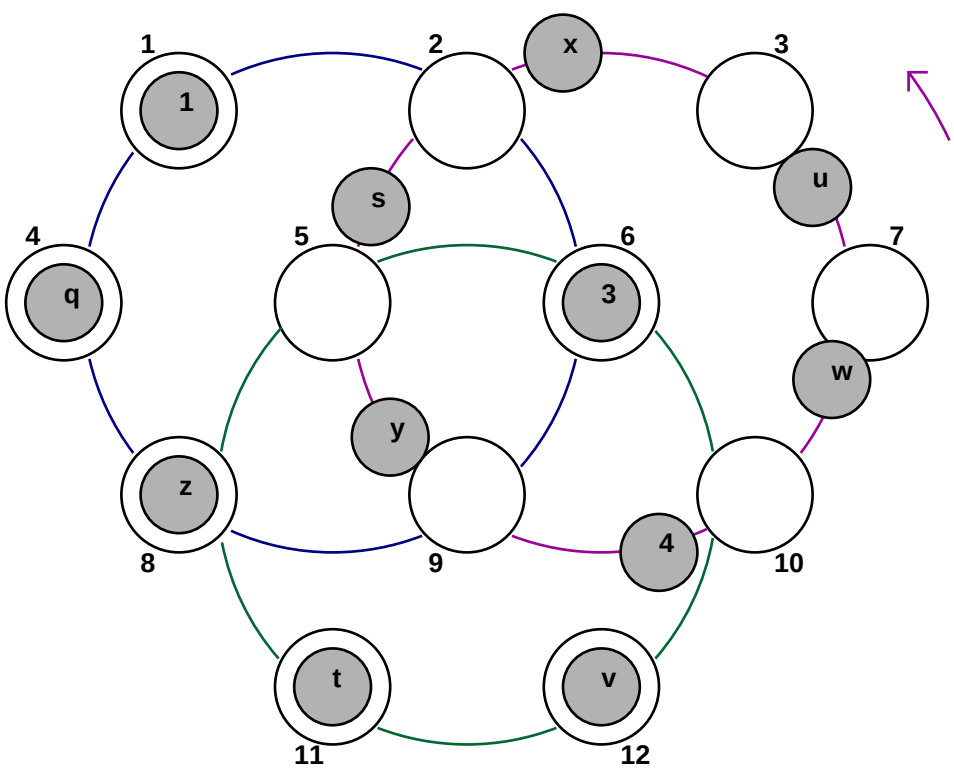

1
2
3
1
s
x
4
5
y
6
7
q
u
z
3
4
8
9
10
t
w
11
v
12

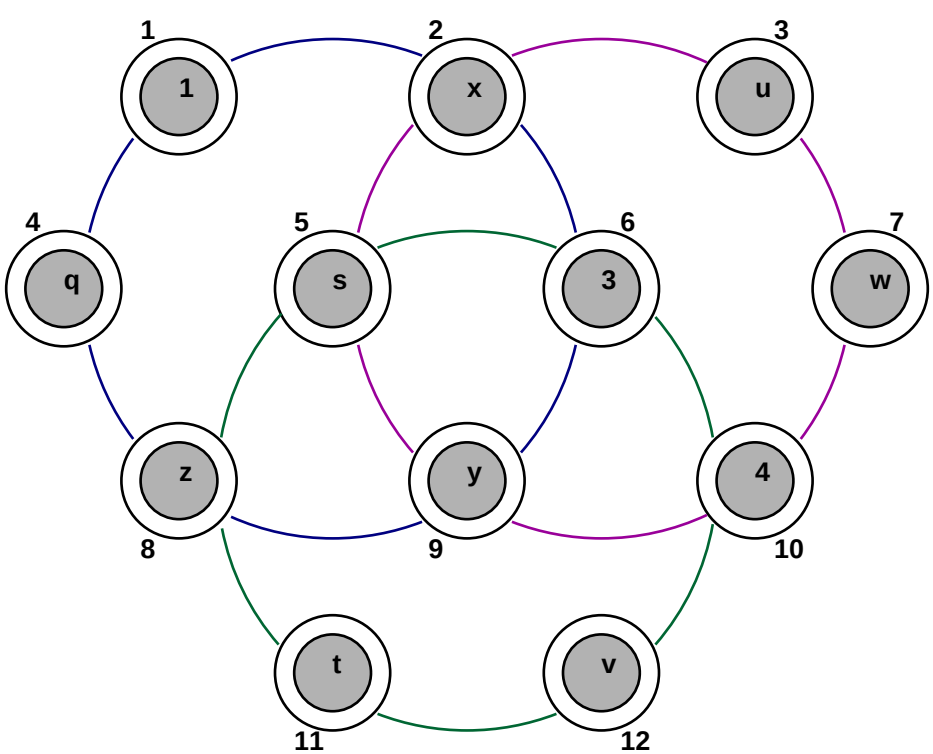

1
2
3
1
s
x
4
5
6
7
y
q
u
3
z
4
8
9
10
w
t
11
12
v

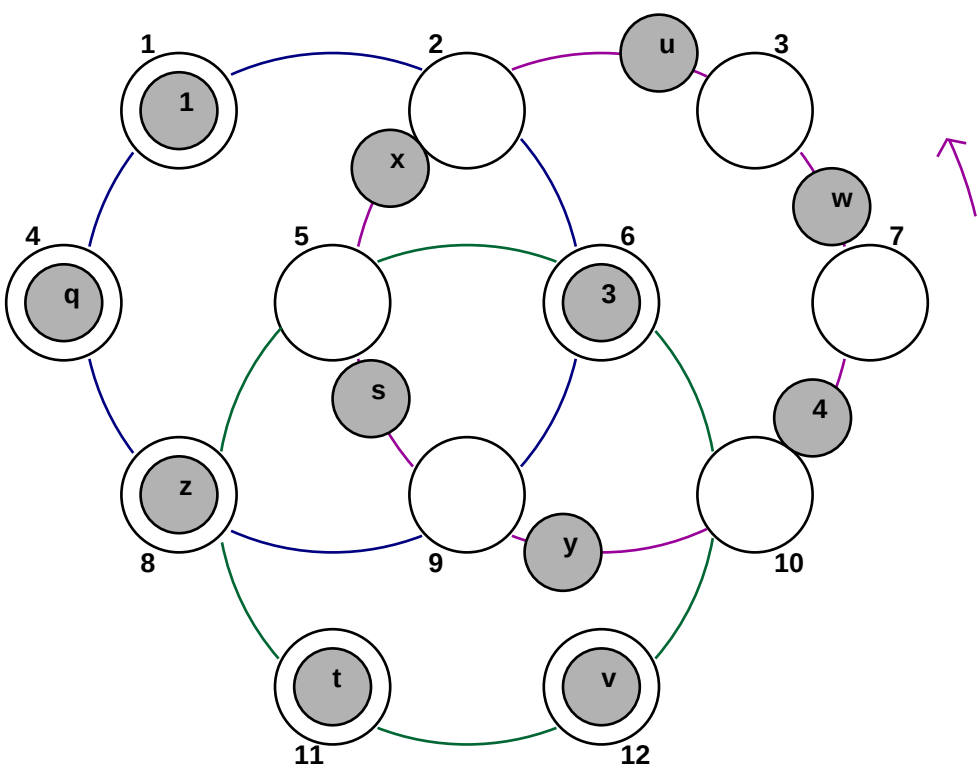

1
2
3
1
s
x
4
5
6
7
q
y
3
u
z
4
w
8
9
10
t
v
11
12

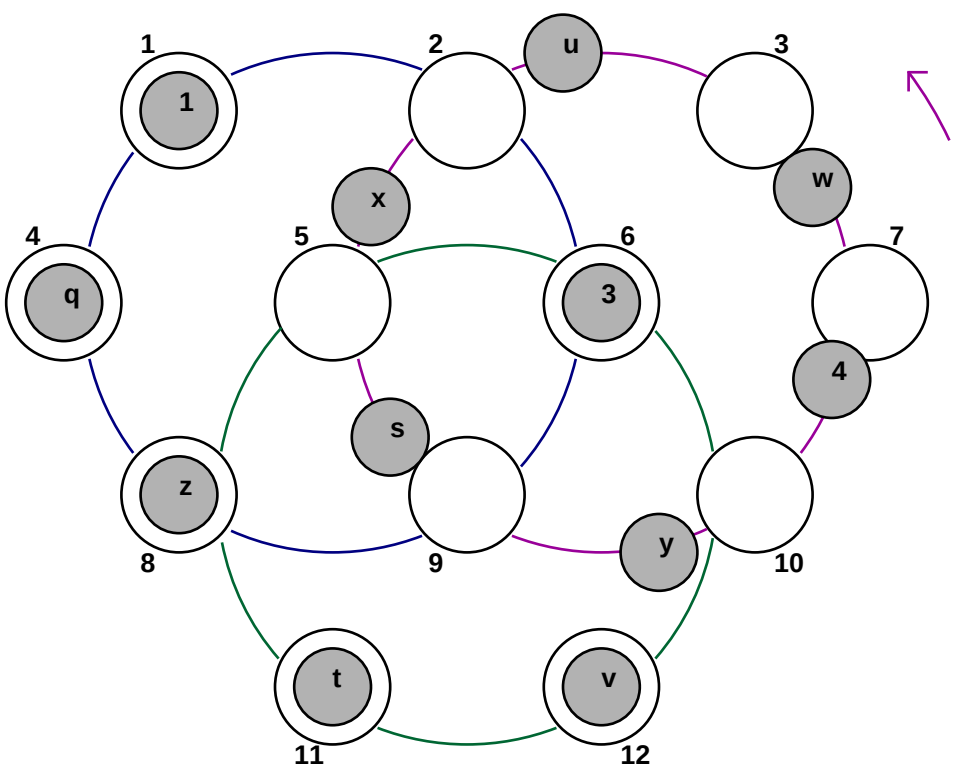

1
2
3
1
s
x
4
5
6
7
q
y
3
u
z
4
w
8
9
10
t
v
11
12

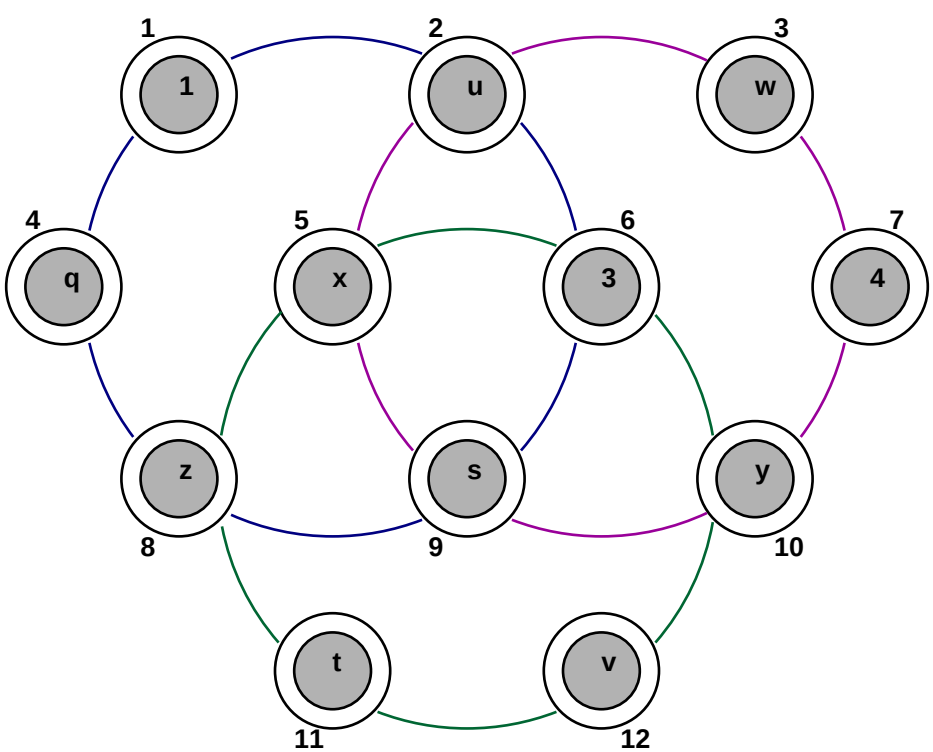

1
2
x
3
1
s
u
4
5
6
7
q
3
y
w
z
8
9
4
10
t
v
11
12

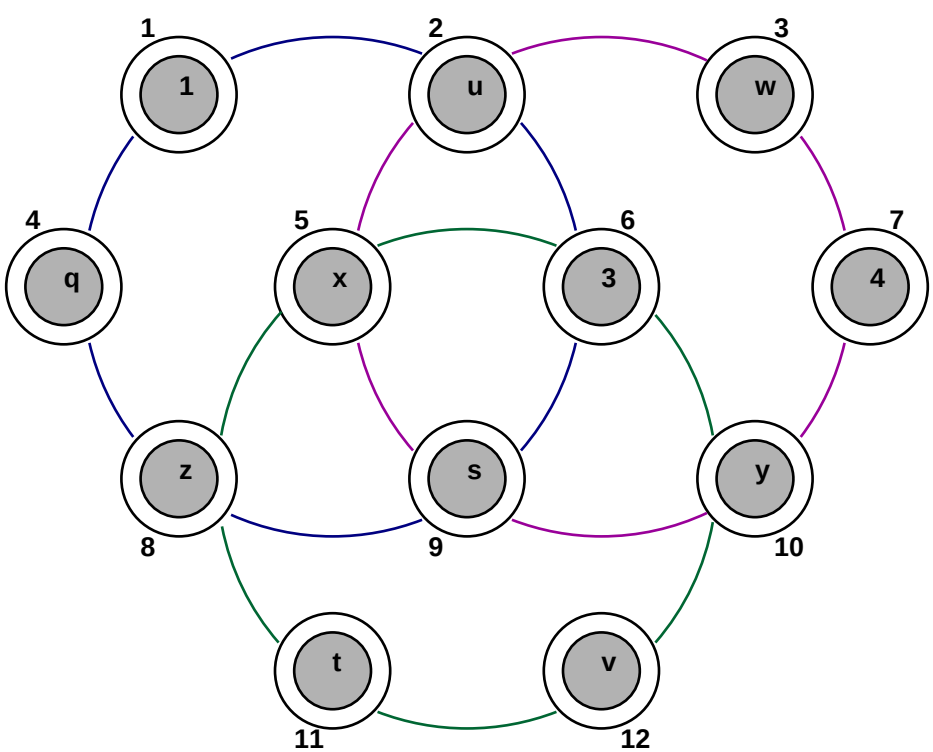

1
2
x
3
1
u
s
4
5
6
7
q
3
w
y
z
8
9
4
10
t
v
11
12

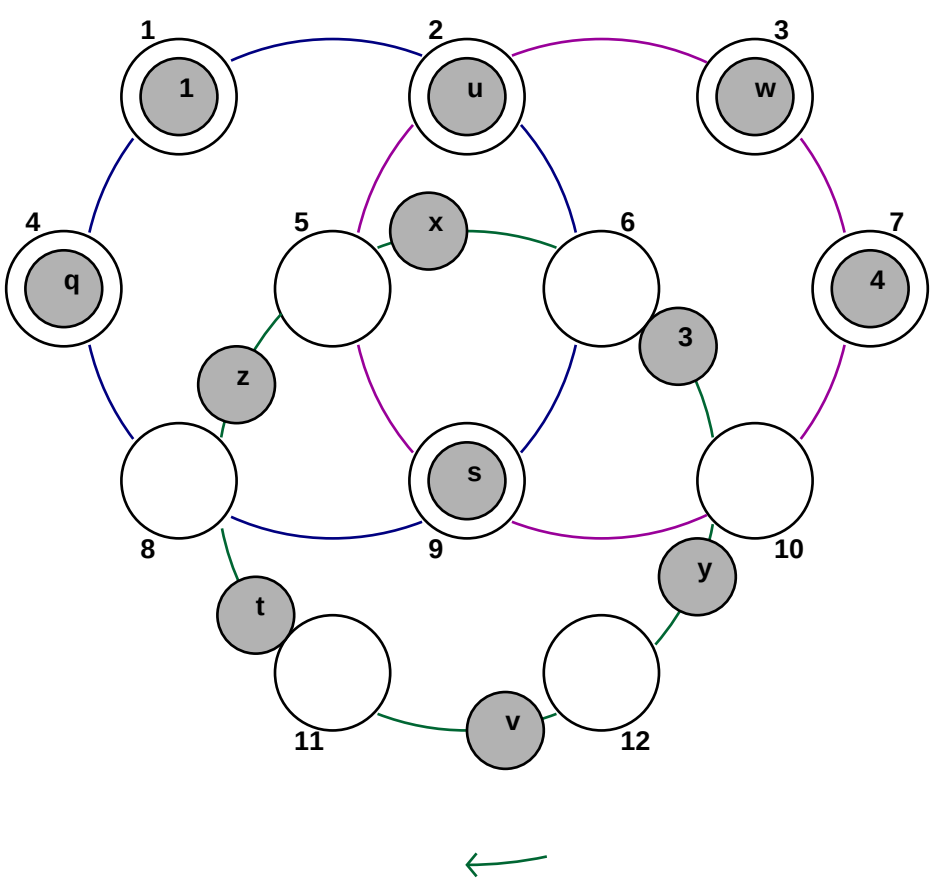

1
1
2
x
3
u
4
q
5
s
6
3
7
w
z
8
y
9
4
10
t
11
v
12

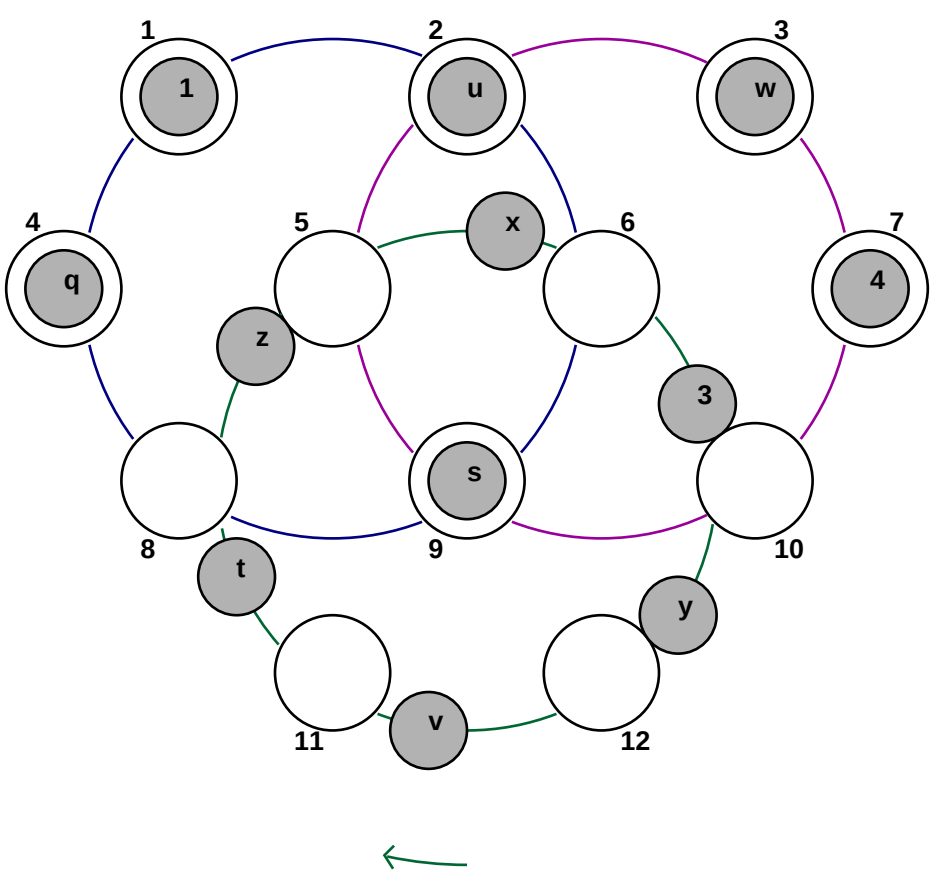

1
2
u
3
1
x
w
4
5
6
7
q
3
s
4
z
y
8
9
10
t
v
11
12

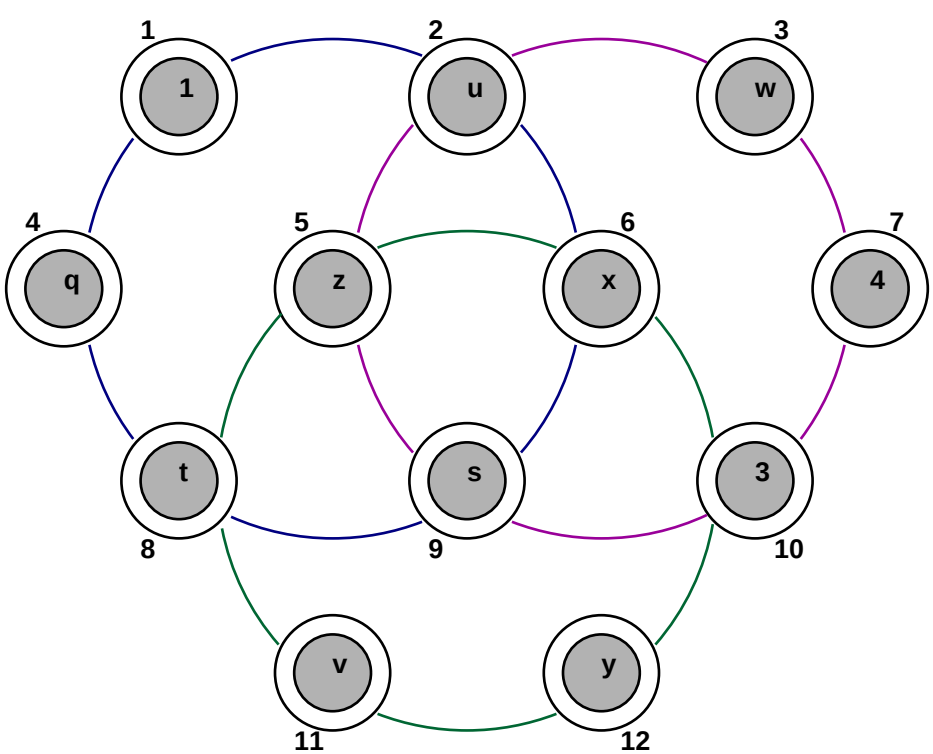

1
2
u
3
1
x
w
4
5
6
7
q
3
4
s
z
y
8
9
10
t
v
11
12

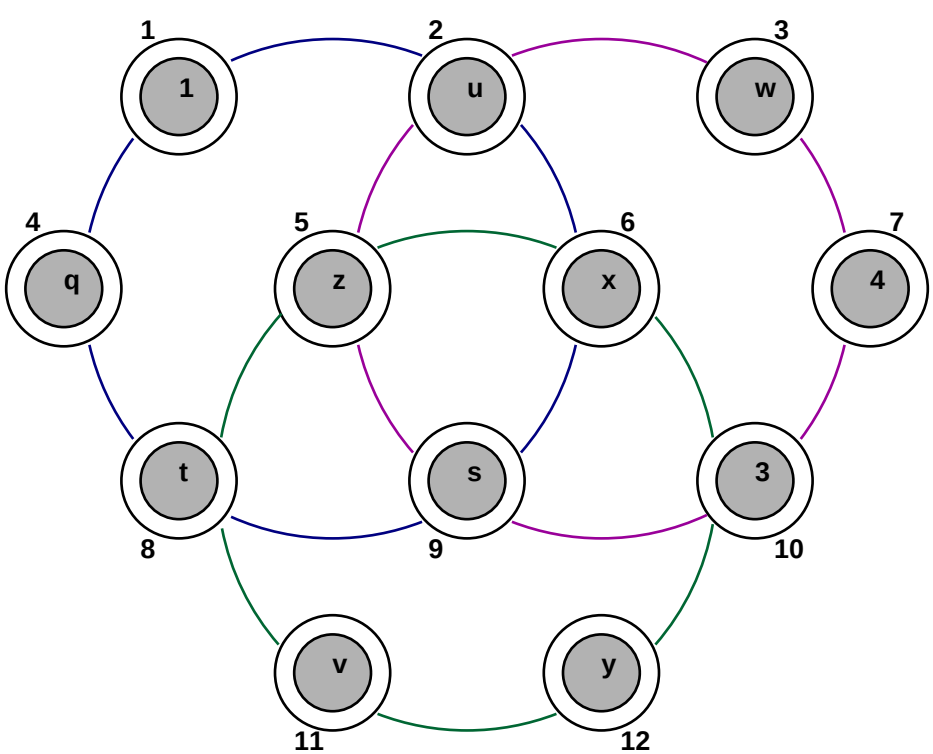

1
2
3
1
u
w
4
5
6
7
q
x
3
4
z
s
y
8
9
10
t
v
11
12

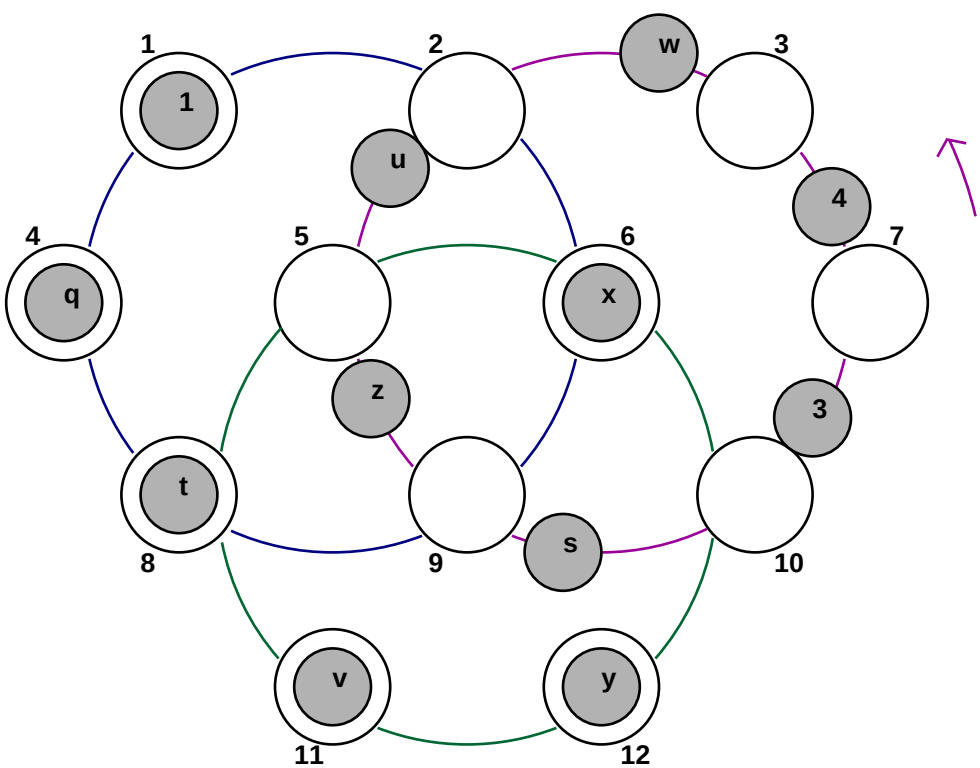

1
2
3
1
u
w
4
5
6
7
q
x
3
4
z
s
y
8
9
10
t
v
11
12

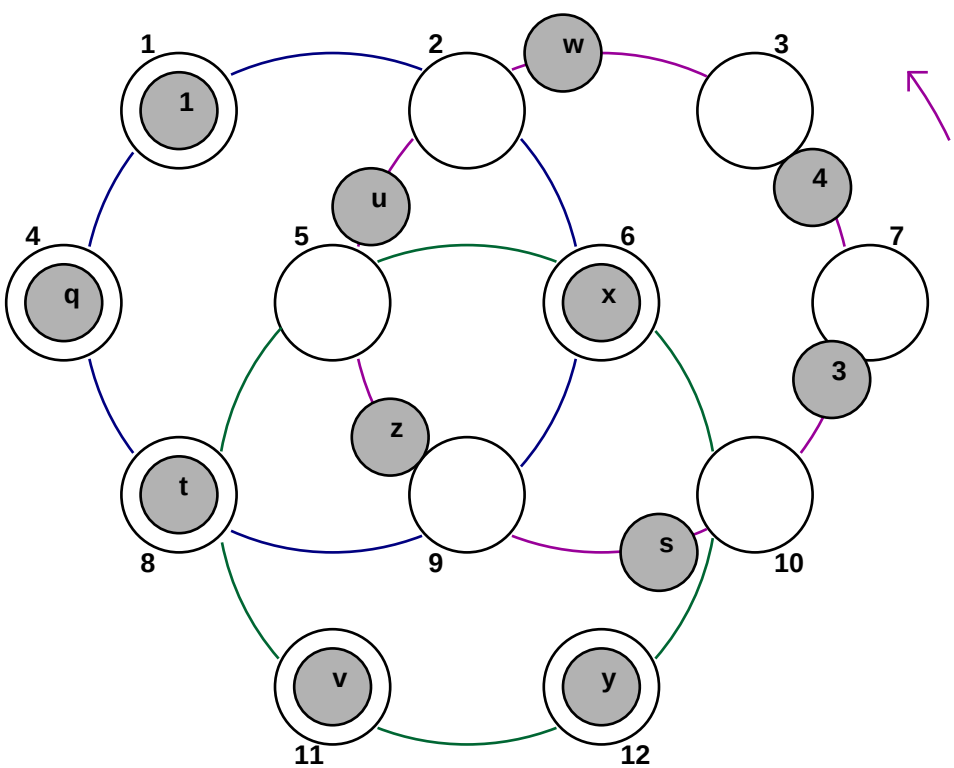

1
2
3
1
u
w
4
5
6
7
x
q
4
3
z
s
8
9
10
y
t
11
12
v

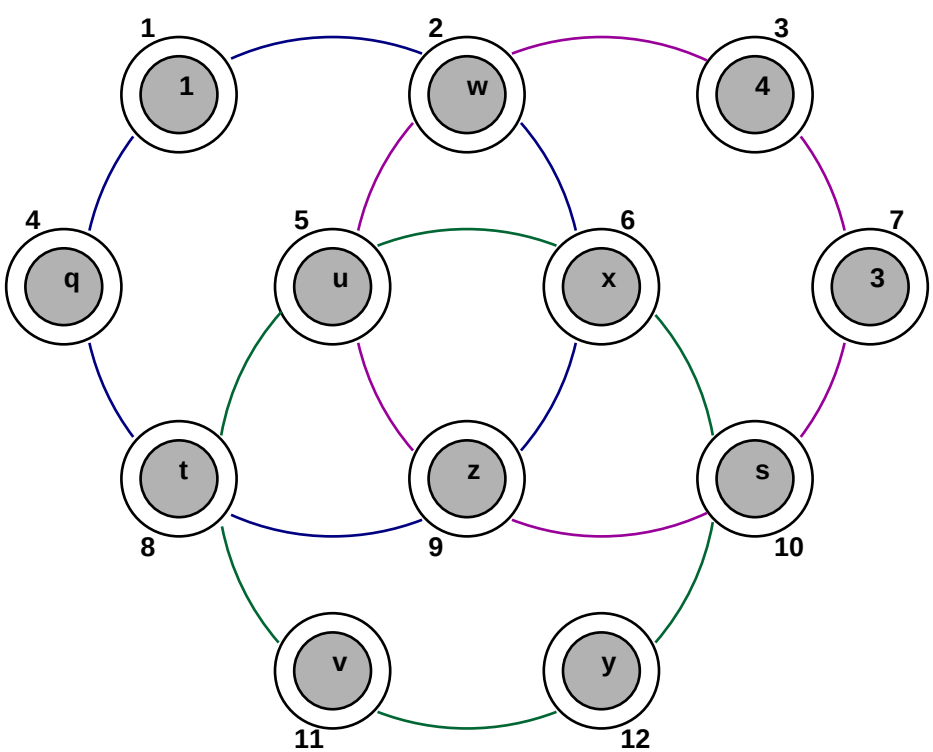

1
2
3
1
u
w
4
5
6
7
x
q
4
z
3
s
8
9
10
t
y
11
12
v

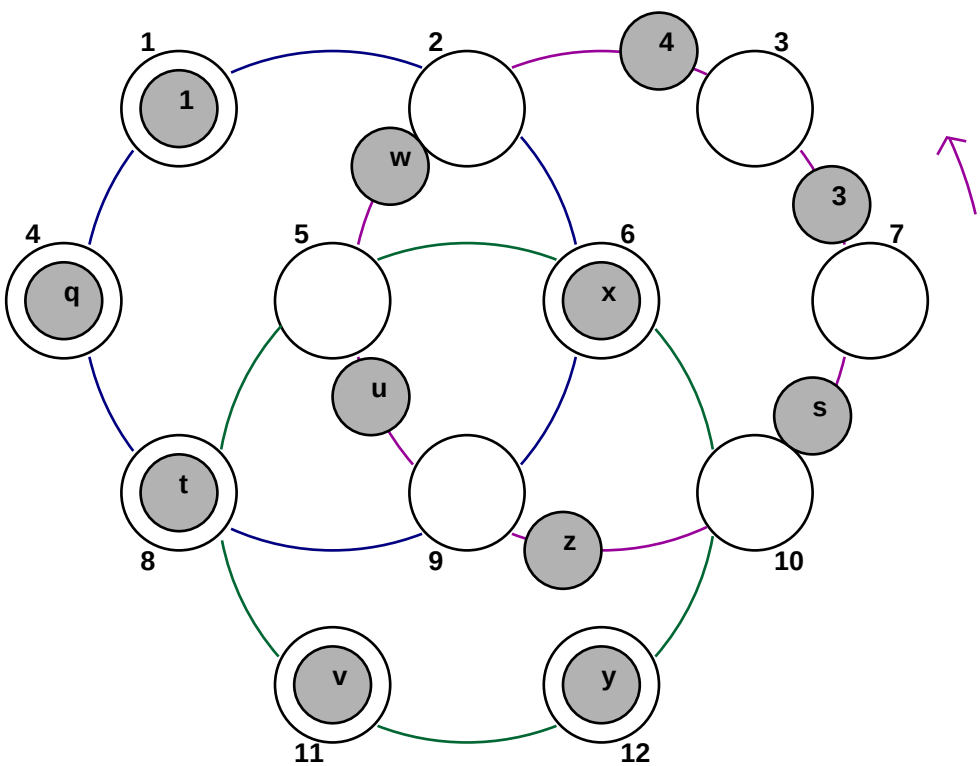

1
2
3
1
u
w
4
5
6
7
q
z
x
4
t
s
3
8
9
10
v
y
11
12

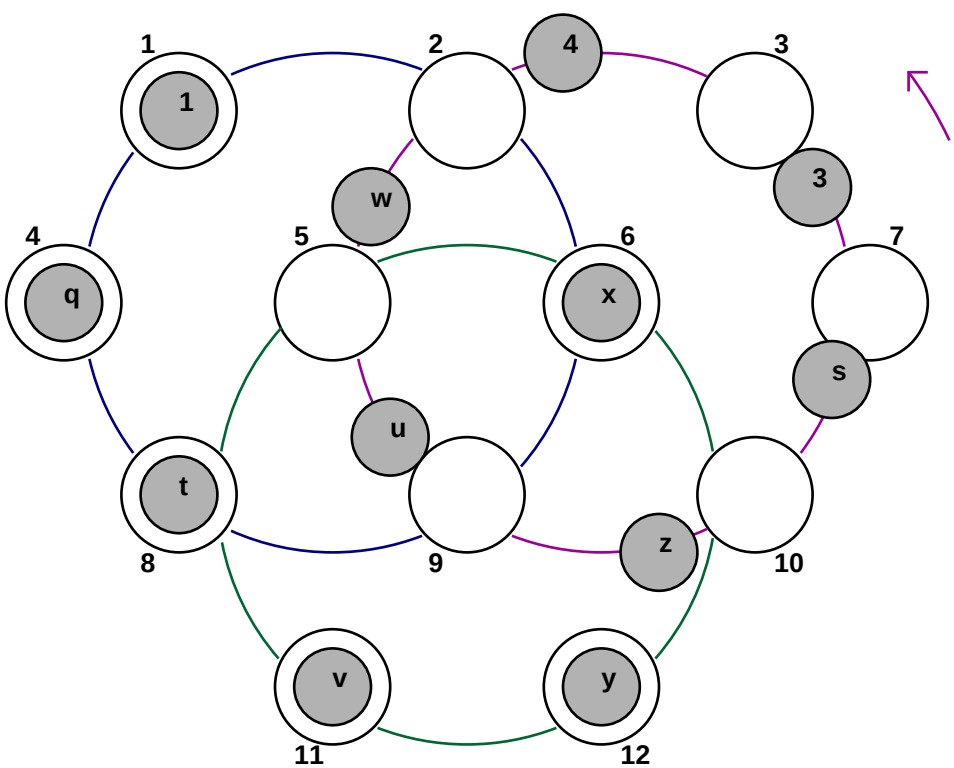

1
2
3
1
u
w
4
5
6
7
q
z
x
4
t
s
3
8
9
10
v
y
11
12

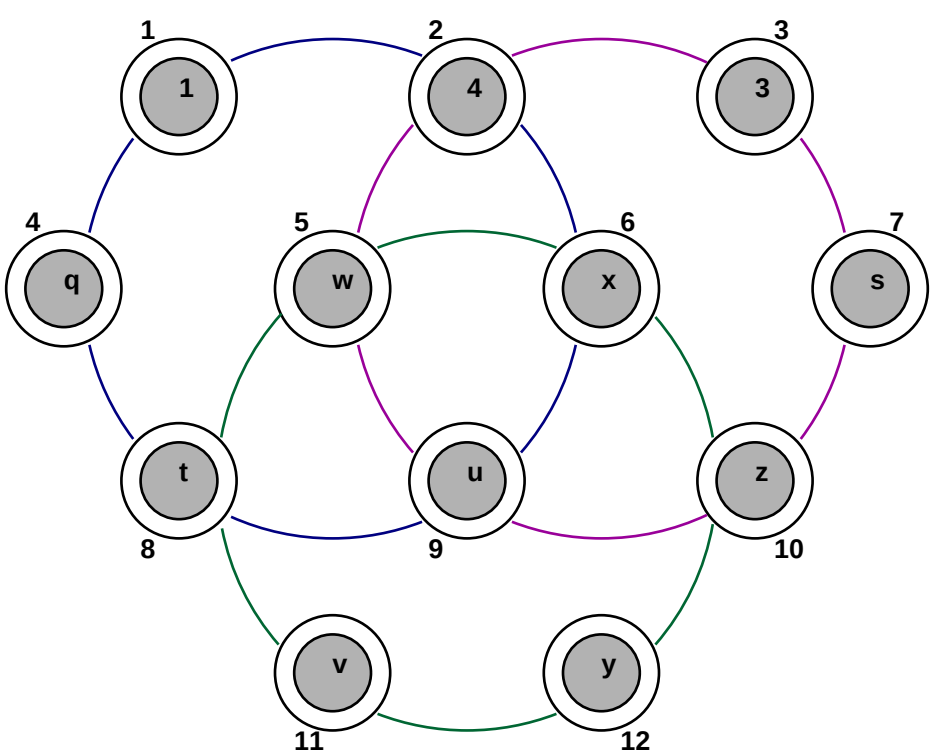

1
2
w
3
1
u
4
4
5
6
7
q
x
z
3
t
s
8
9
10
v
y
11
12


1
2
w
3
1
u
4
4
5
6
7
q
x
3
z
t
s
8
9
10
v
y
11
12

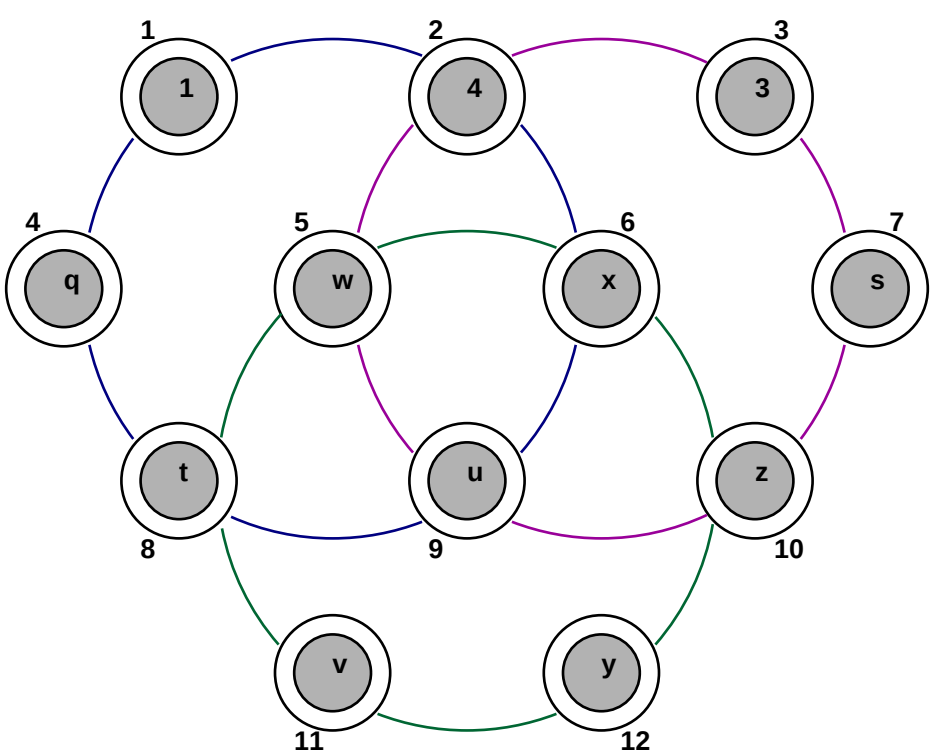

1
1
2
w
3
4
4
q
5
u
6
x
7
3
t
8
z
9
s
10
v
11
y
12

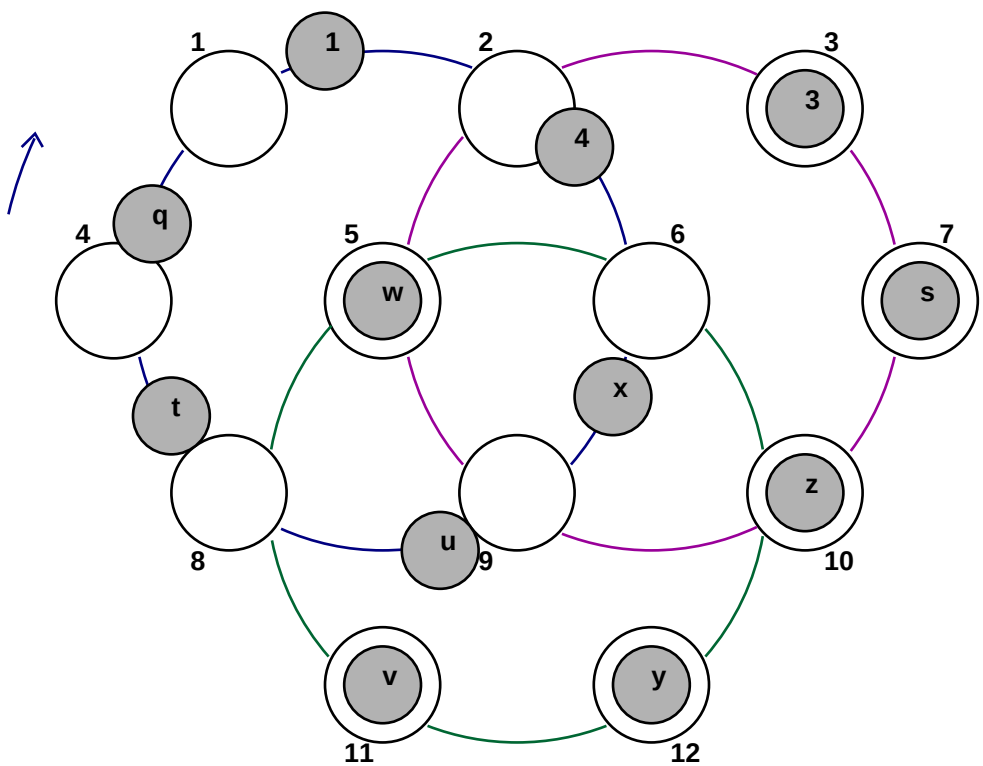

1
2
4
3
1
w
3
4
5
6
7
q
x
u
s
t
8
9
z
10
v
y
11
12

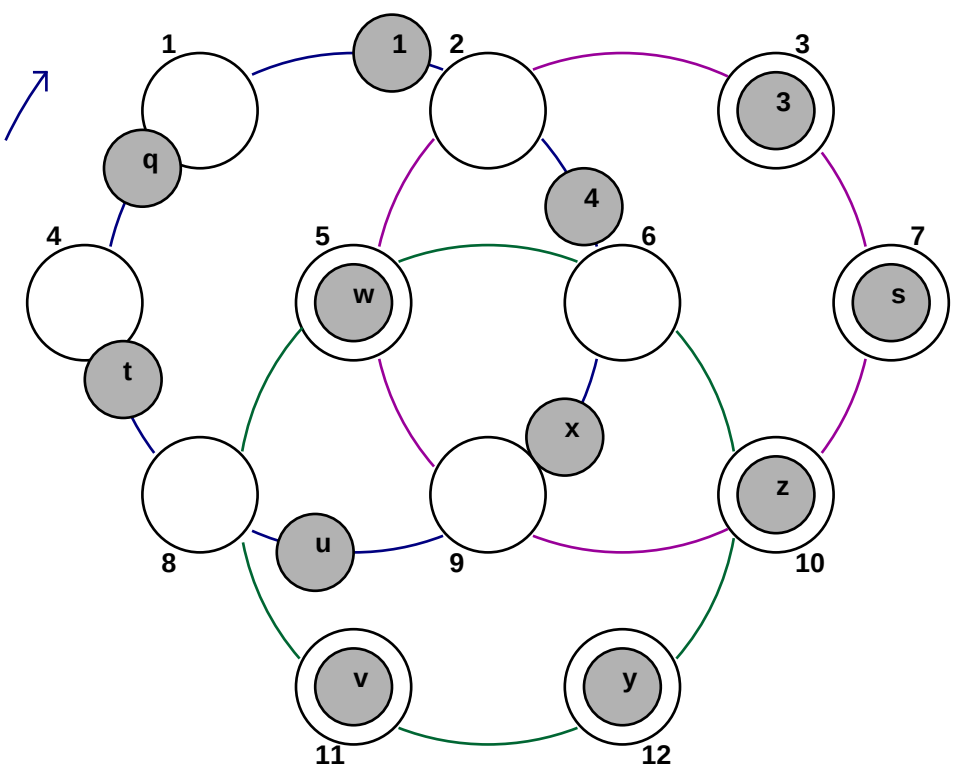

1
2
4
3
1
w
3
4
5
6
7
q
x
s
u
t
z
8
9
10
v
y
11
12

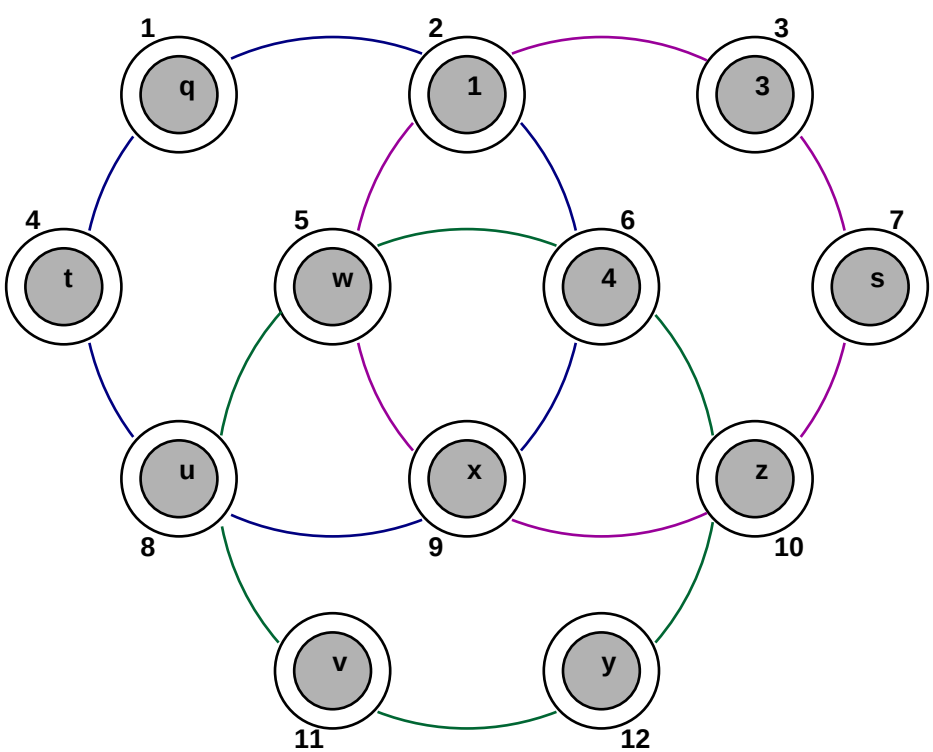

1
2
3
1
4
3
4
5
6
7
q
w
x
s
t
u
z
8
9
10
v
y
11
12

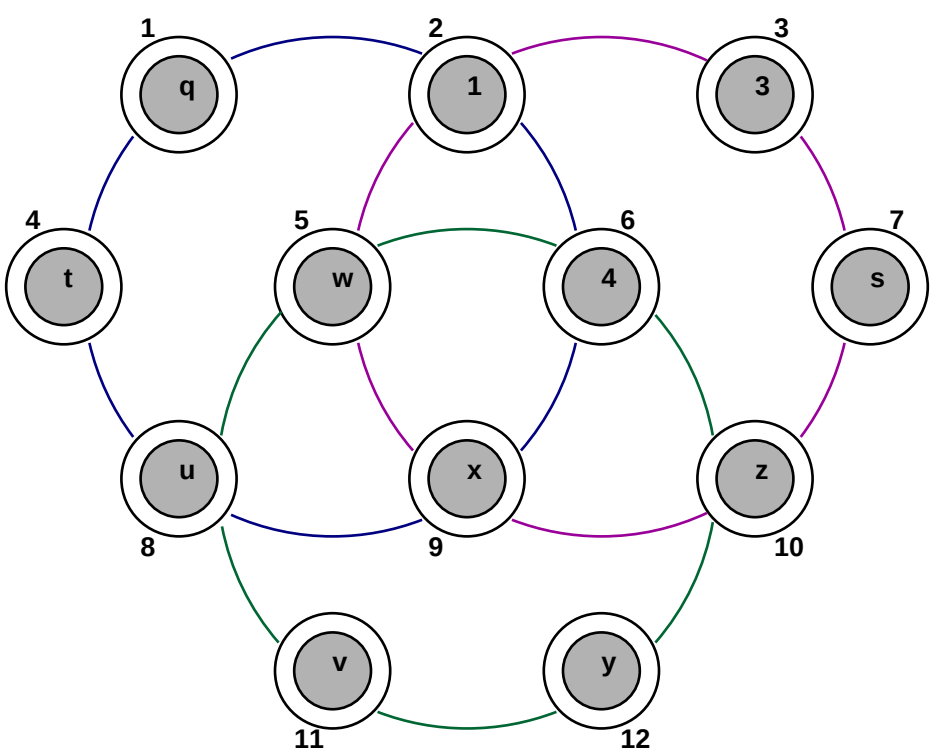
Number 4 can be moved into position 9 while keeping numbers 1 and 3 in position by the following moves.

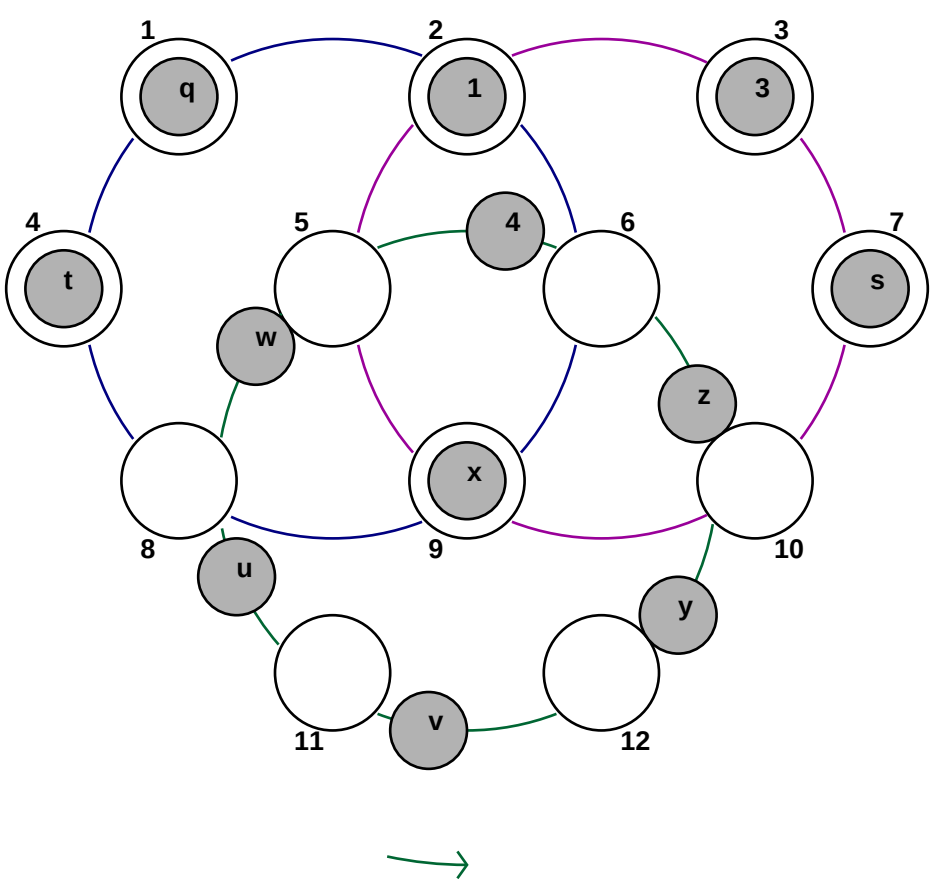

1
2
3
1
4
3
4
5
6
7
q
w
x
s
t
u
z
8
9
10
v
y
11
12

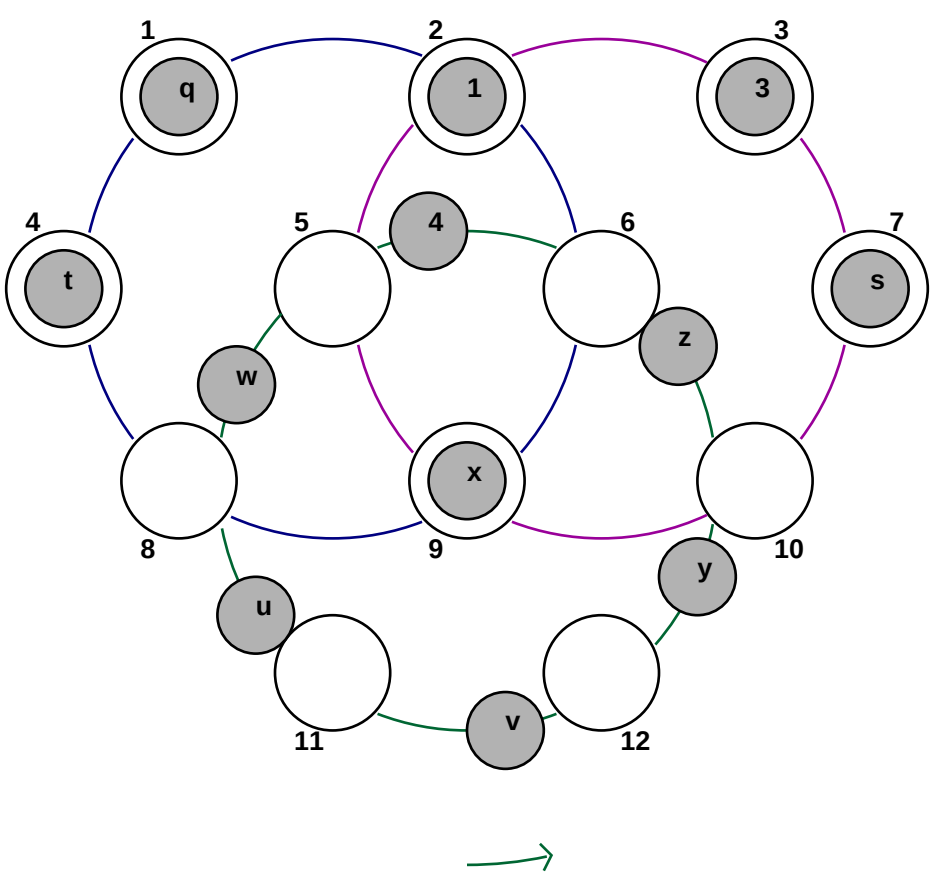

1
1
2
3
3
4
q
4
5
6
7
w
s
x
t
z
8
u
9
10
v
y
11
12

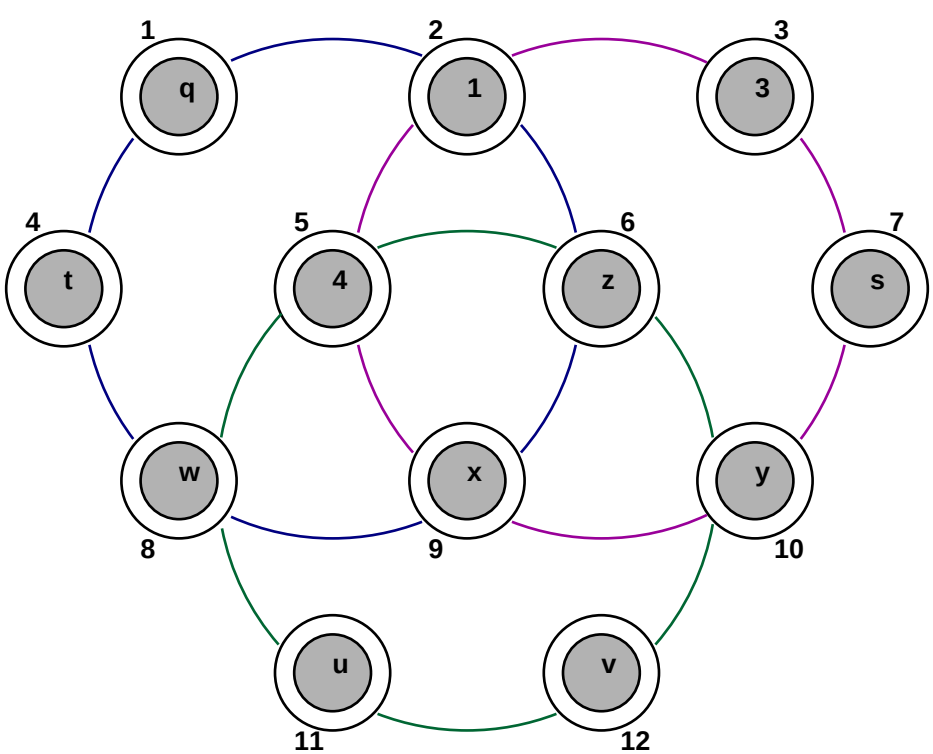

1
1
2
3
3
q
4
4
5
6
7
w
s
t
x
8
u
9
z
10
v
y
11
12

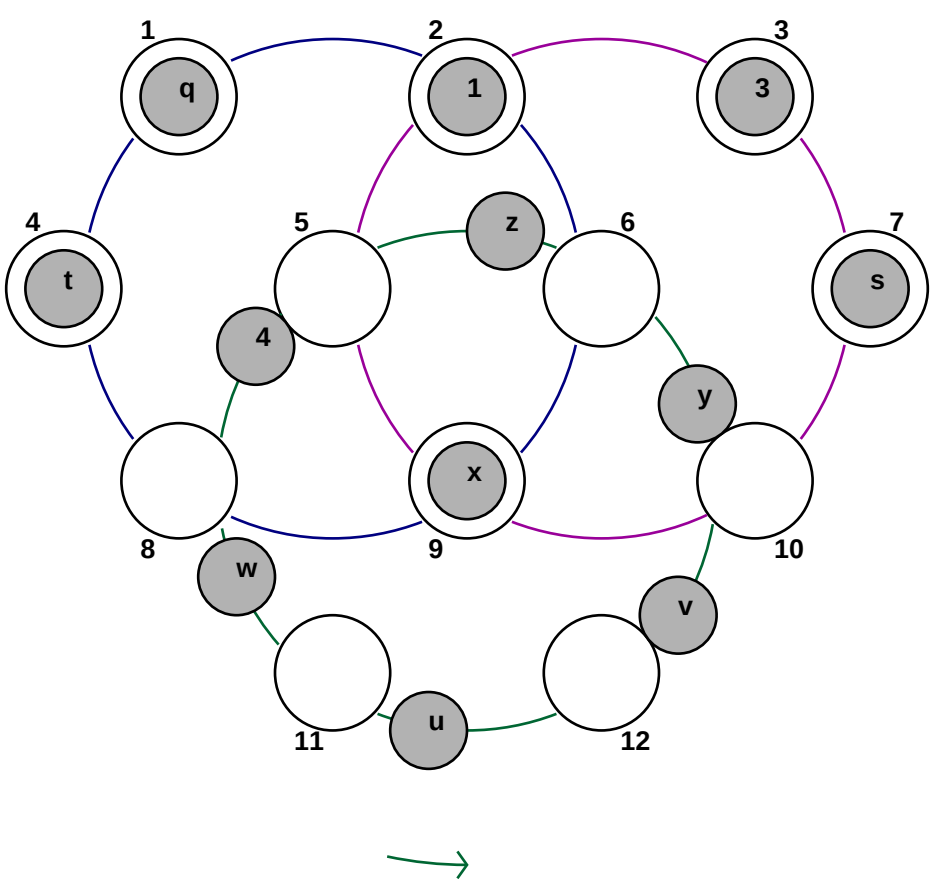

1
q
2
1
3
3
4
t
5
w
6
4
7
s
u
8
x
9
z
10
v
11
y
12

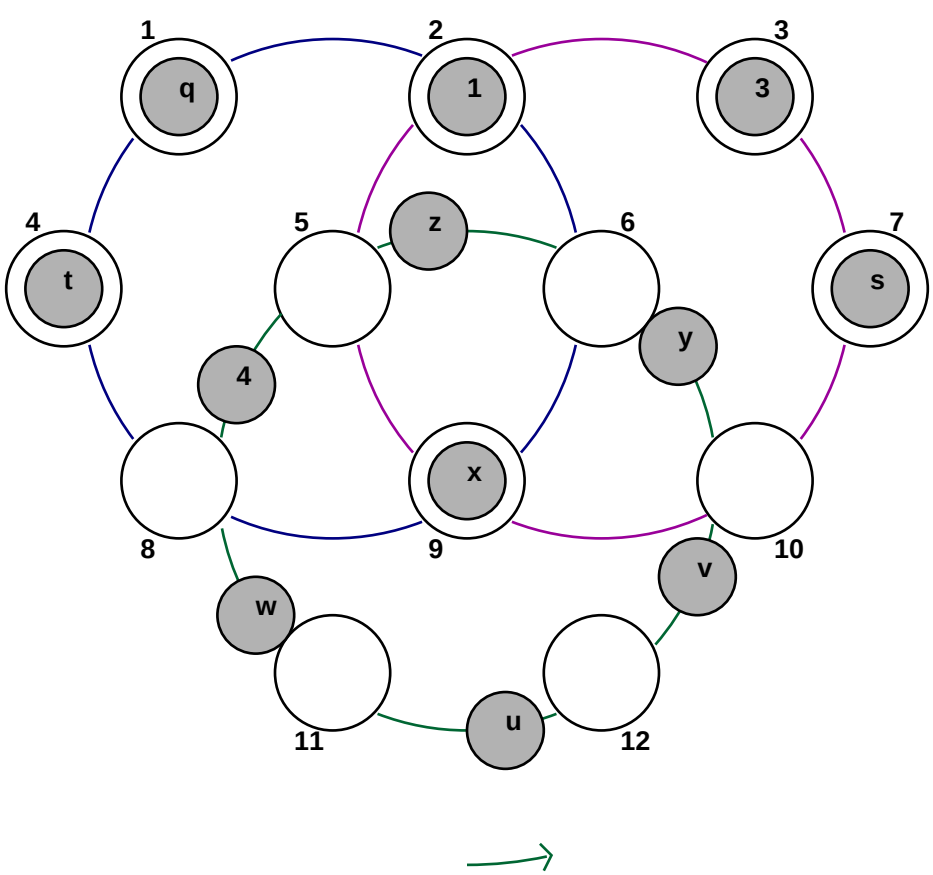

1
q
2
1
3
3
4
t
5
w
6
4
7
s
u
8
x
9
z
10
v
11
y
12

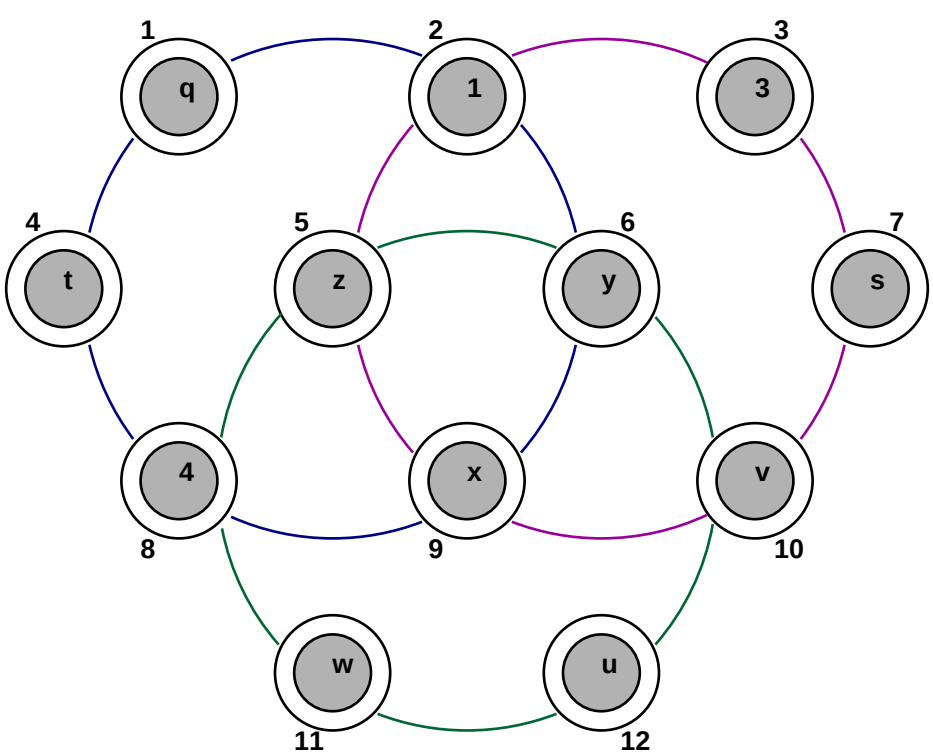

1
2
3
q
1
3
4
5
4
6
7
t
s
w
z
x
8
9
10
u
y
11
v
12

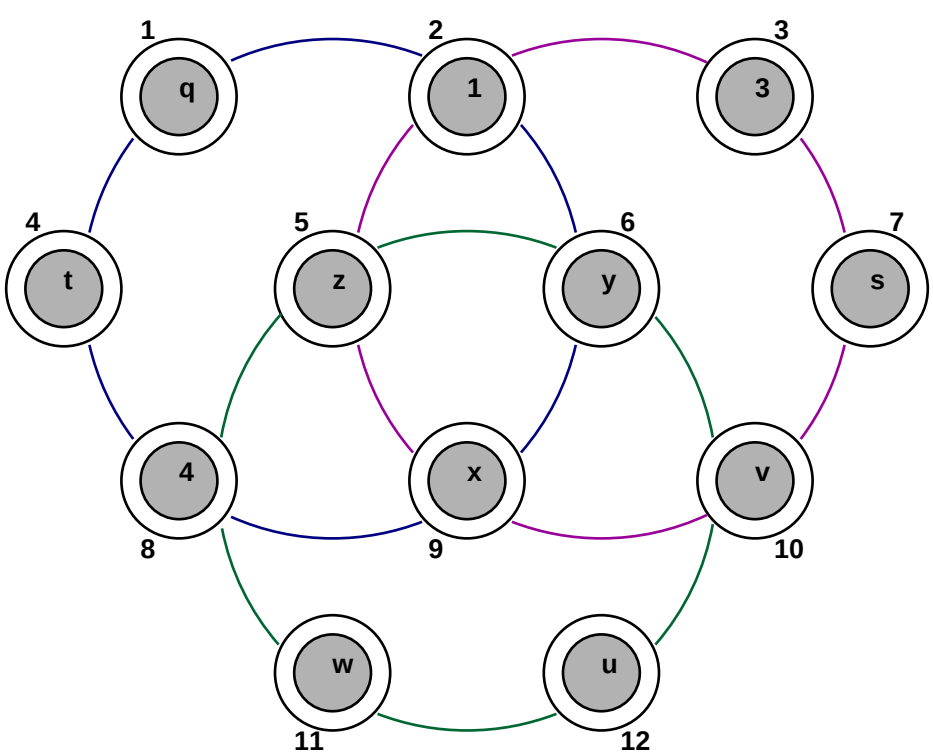

1
2
3
q
1
3
4
5
6
7
t
4
s
z
w
x
8
9
10
y
u
11
v
12

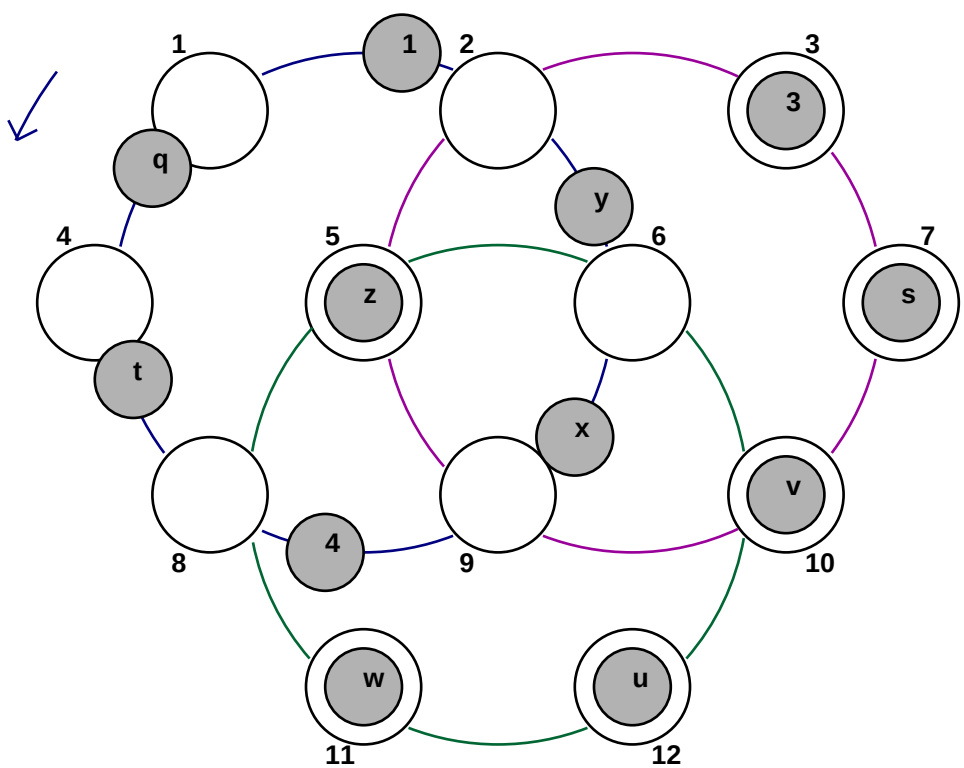

1
q
2
1
3
3
4
t
5
4
6
z
7
s
w
8
x
9
y
10
u
11
v
12

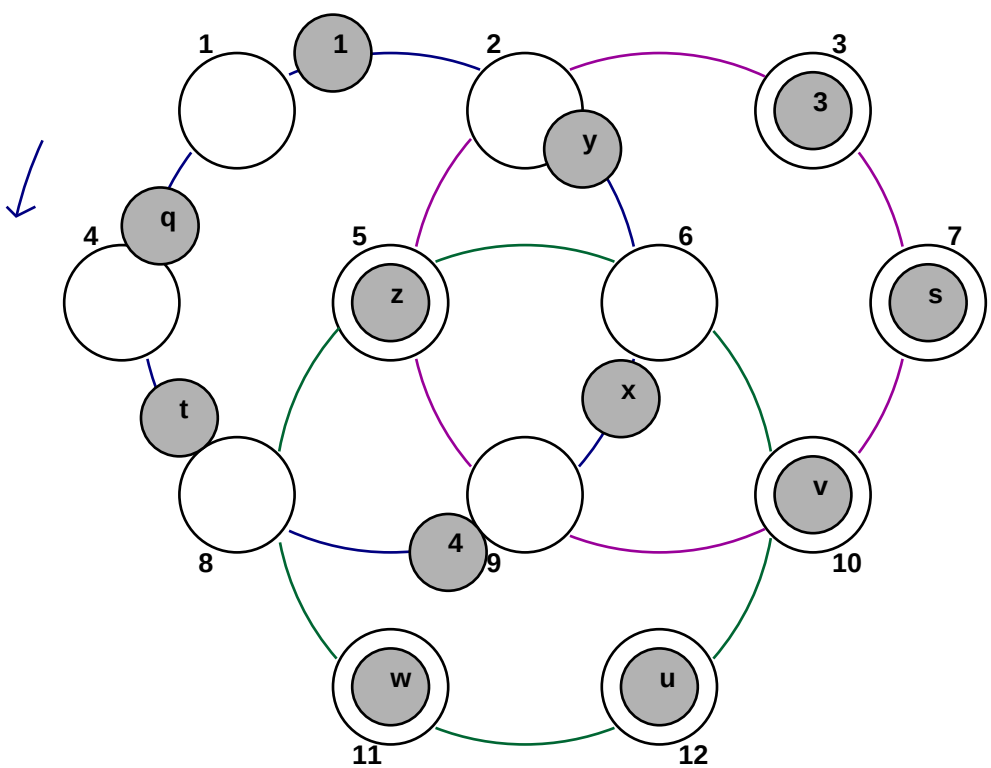

1
2
3
q
1
3
4
5
z
6
7
t
s
4
y
x
8
9
10
w
v
11
u
12

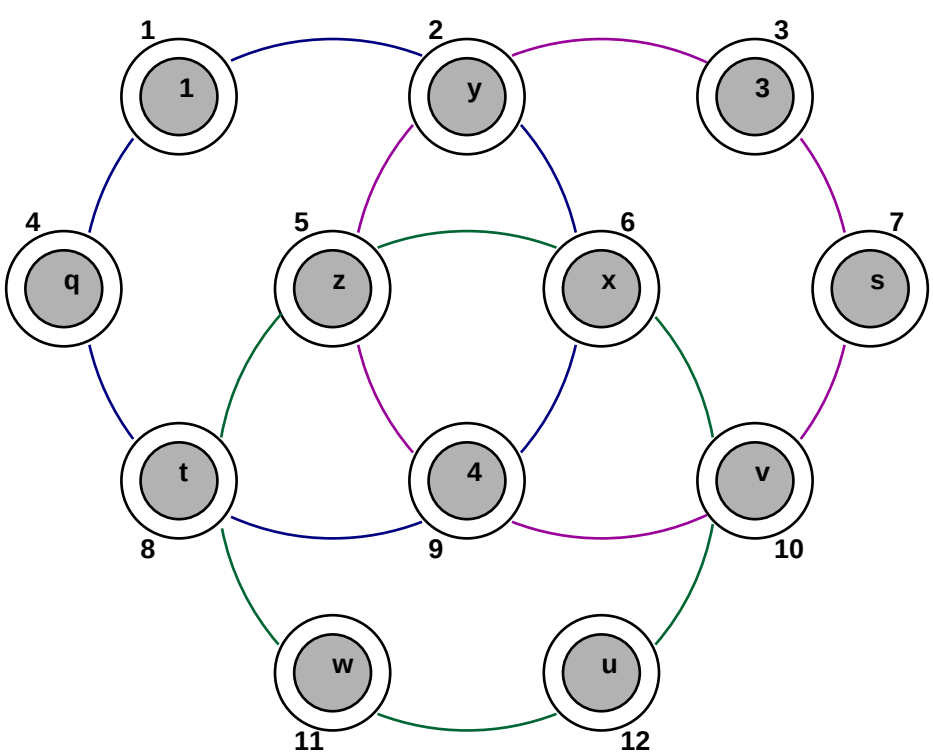

1
2
3
q
1
3
4
5
z
6
7
t
s
y
4
x
8
9
10
v
w
11
u
12


1
q
2
1
3
3
4
t
5
z
6
y
7
s
4
8
x
9
v
10
w
11
u
12

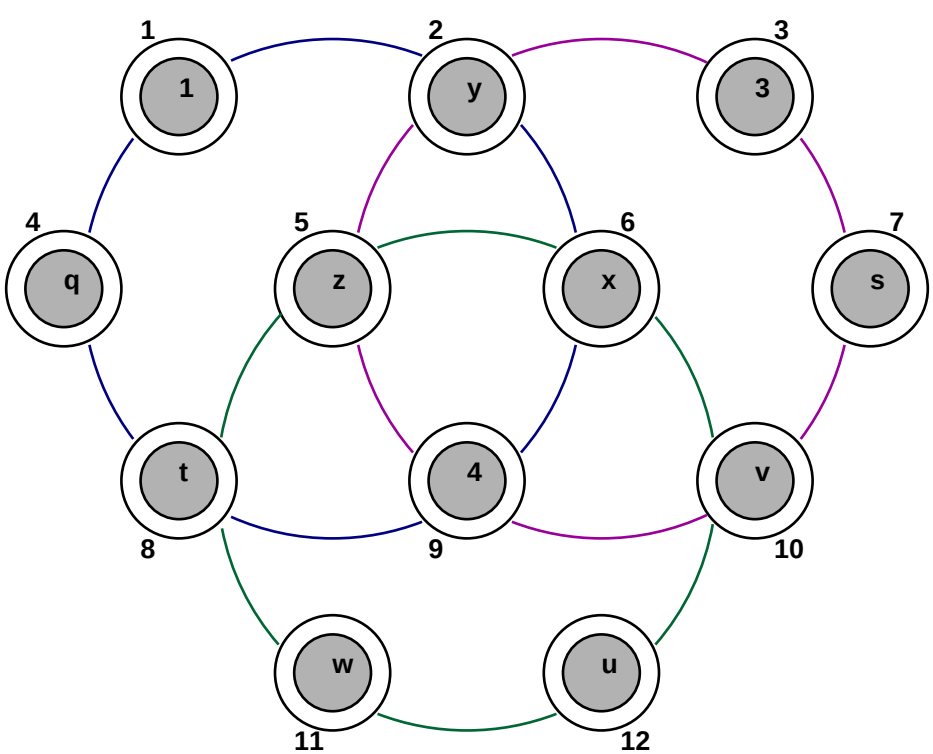

1
q
2
1
3
3
4
t
5
z
6
y
7
s
4
8
x
9
v
10
w
11
u
12

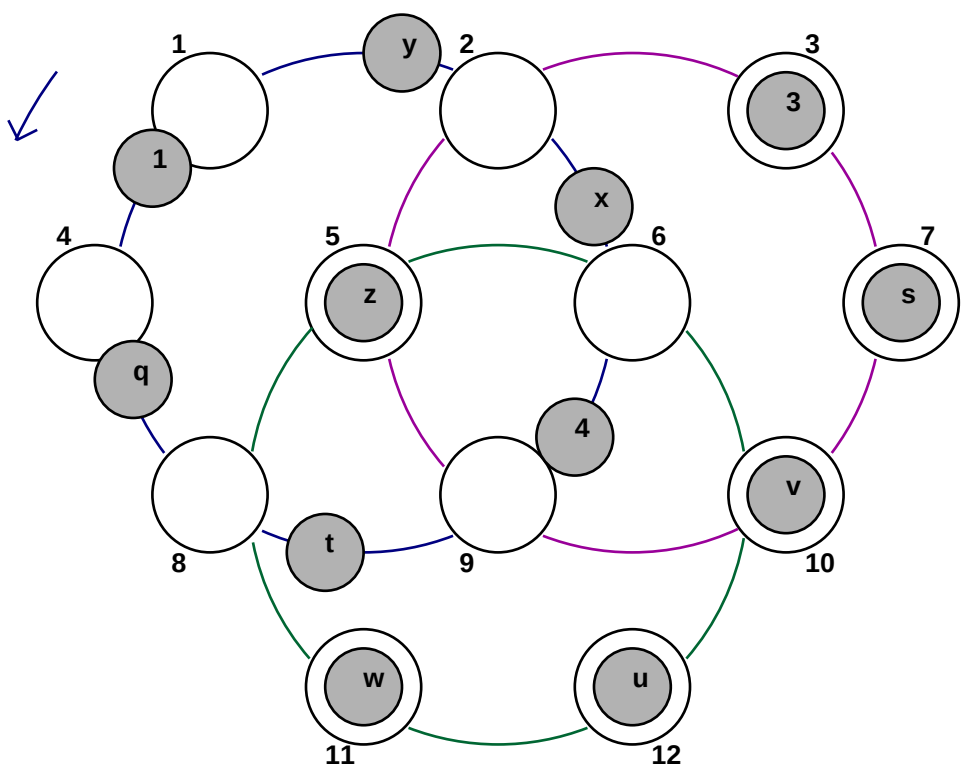

1
1
2
3
3
q
y
4
5
6
7
z
s
t
x
v
4
8
9
10
w
u
11
12

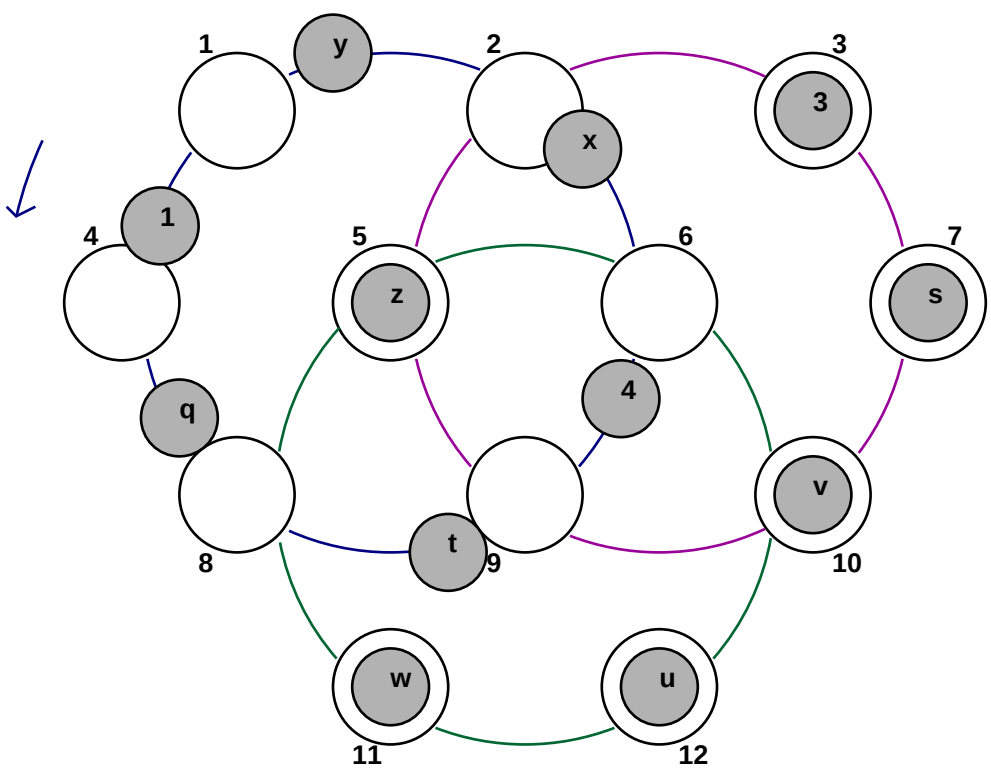

1
1
2
3
3
y
q
4
5
6
7
z
s
x
t
v
4
8
9
10
w
u
11
12

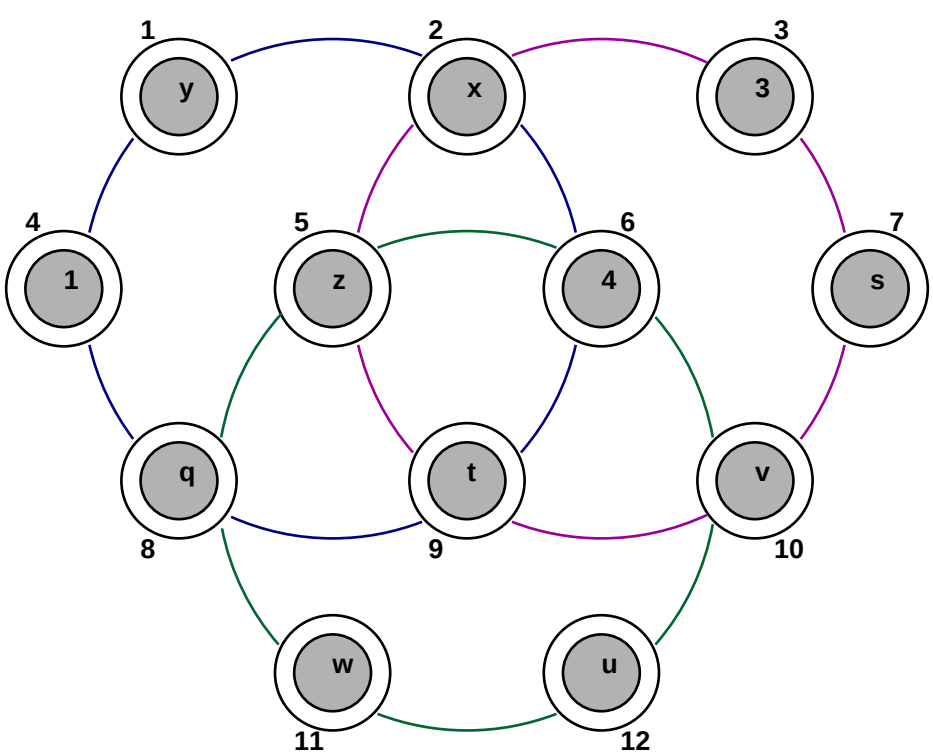

1
2
3
1
y
3
4
5
6
7
q
z
x
s
t
4
v
8
9
10
w
u
11
12

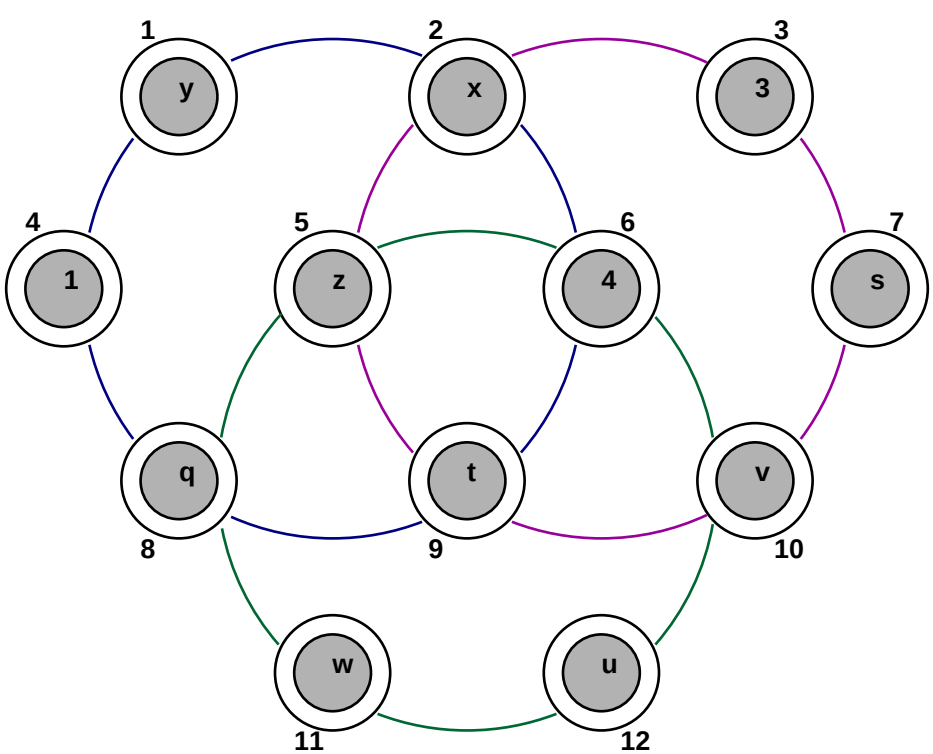
Number 4 can be moved into position 4 while keeping numbers 1 and 3 in position by the following moves.

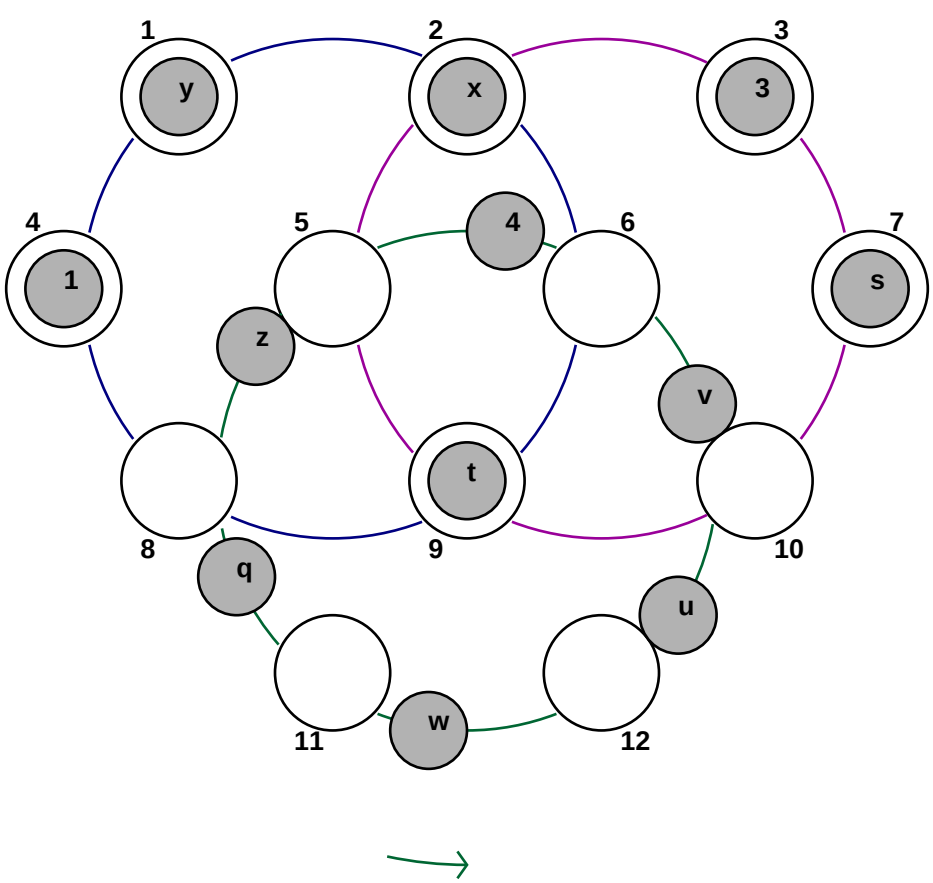

1
2
3
1
y
3
4
5
6
7
q
z
x
s
t
4
v
8
9
10
w
u
11
12

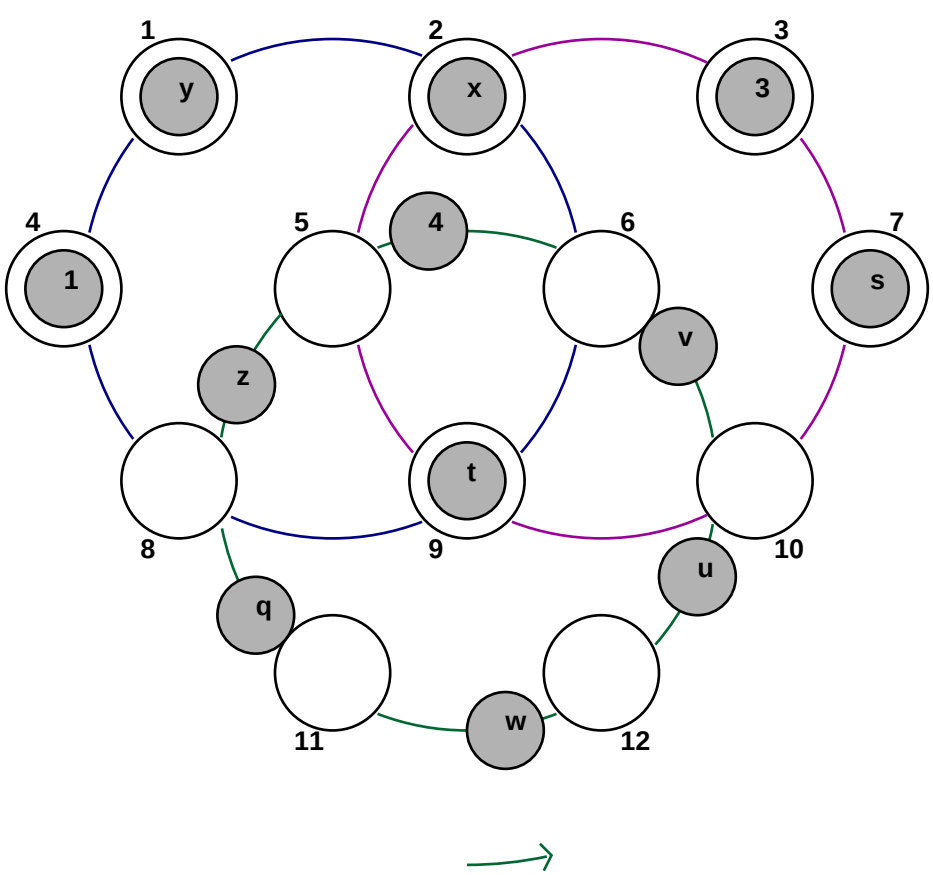

1
y
2
3
3
1
x
4
5
6
7
z
s
q
4
v
t
8
9
10
w
u
11
12

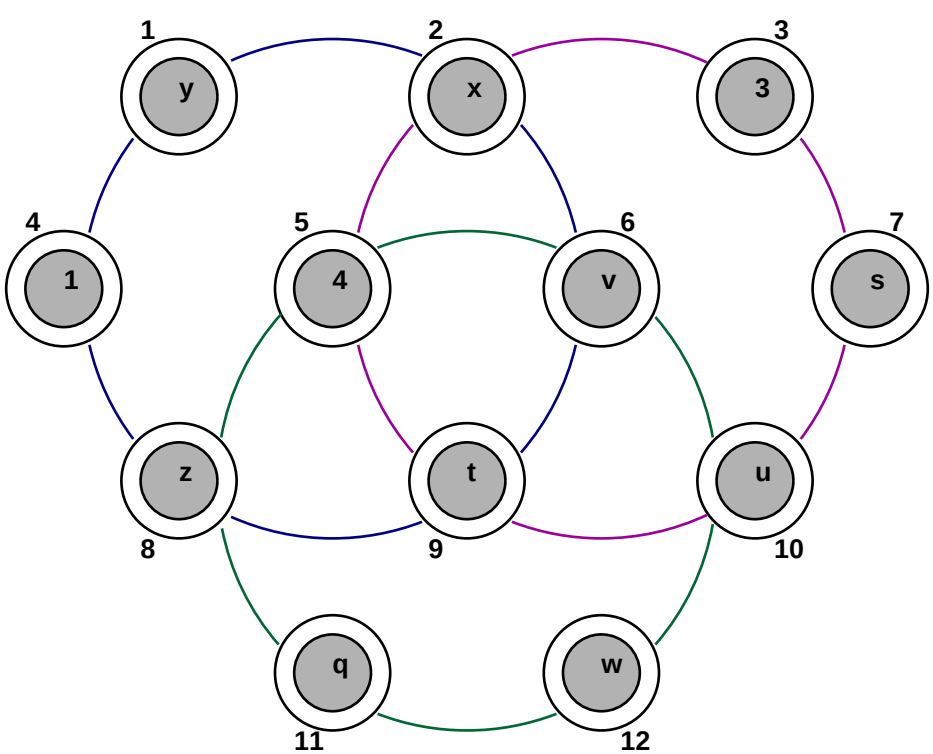

1
y
2
3
3
x
1
4
5
6
7
z
s
4
q
v
t
8
9
10
w
u
11
12

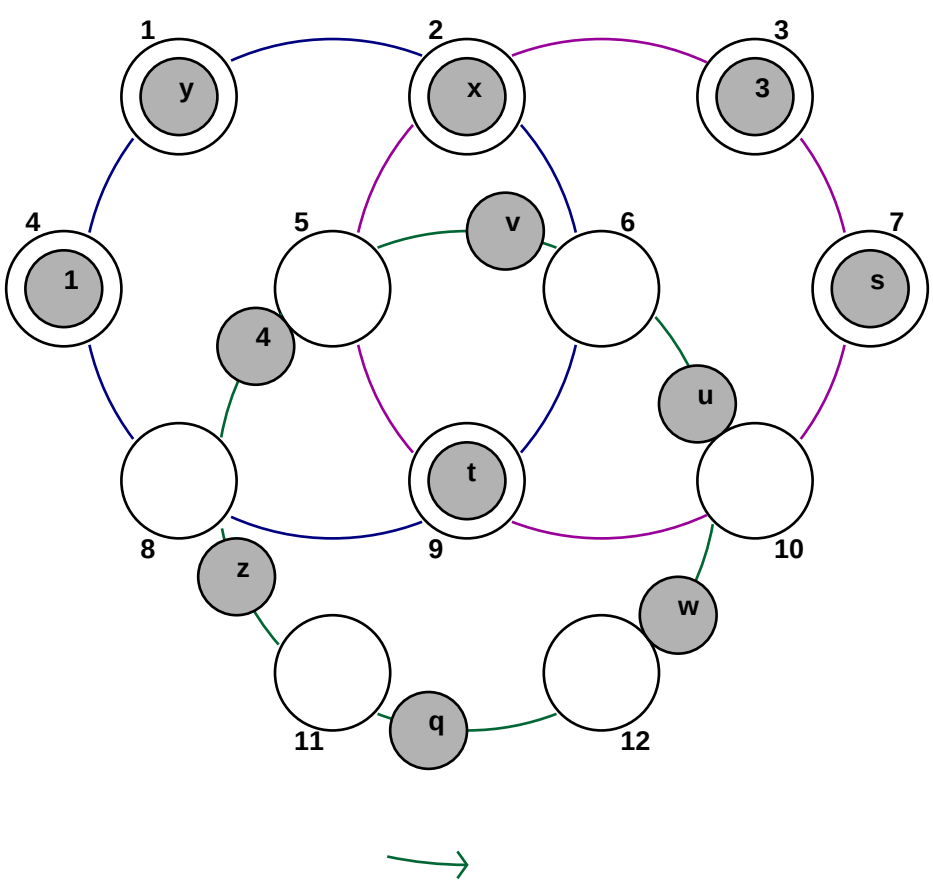

1
y
2
x
3
3
4
1
5
z
6
4
7
s
q
8
t
9
v
10
w
11
u
12

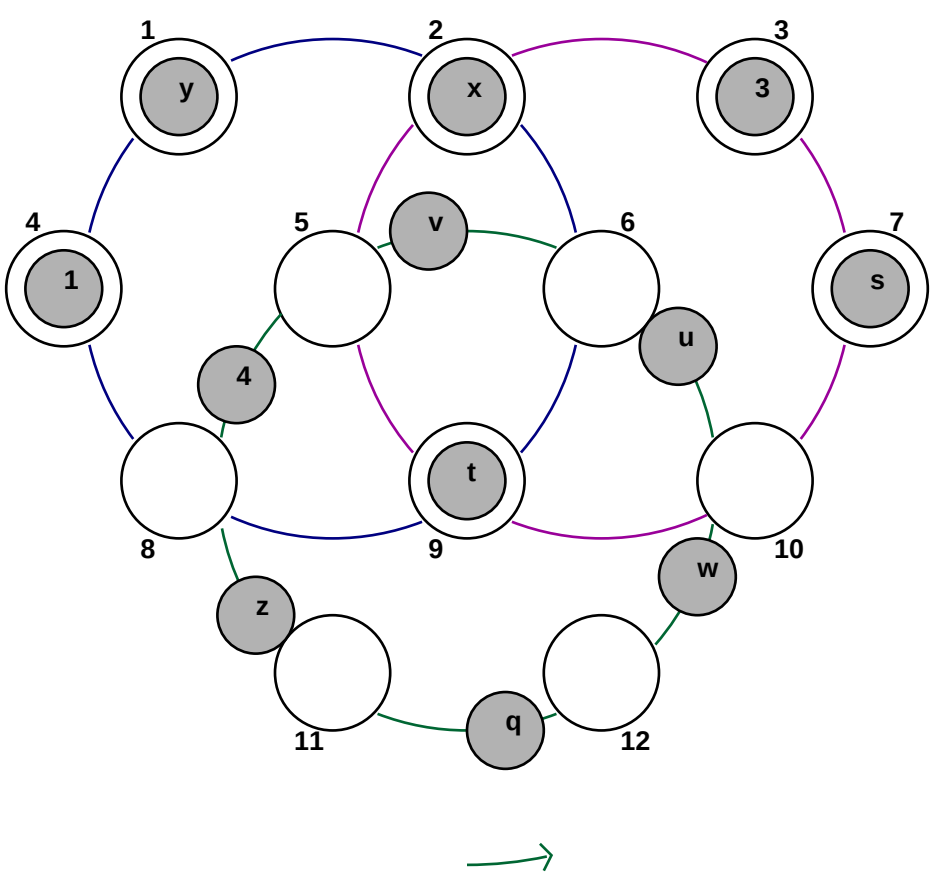

1
y
2
x
3
3
4
1
5
z
6
4
7
s
q
8
t
9
v
10
w
11
u
12

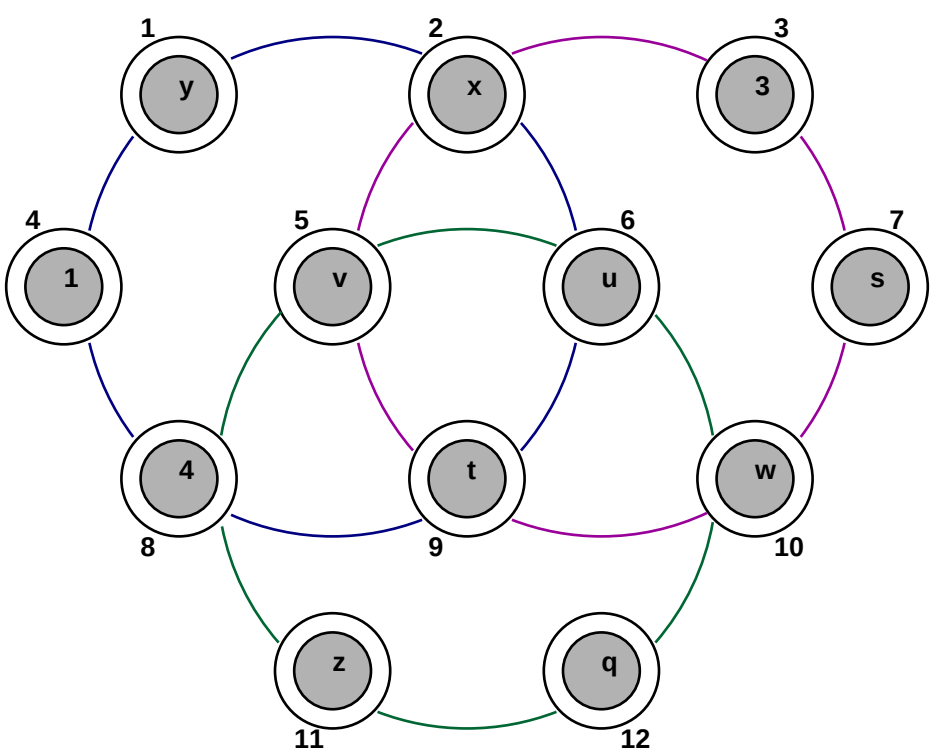

1
2
3
y
x
3
4
5
4
6
7
1
s
z
v
t
8
9
10
q
u
11
w
12

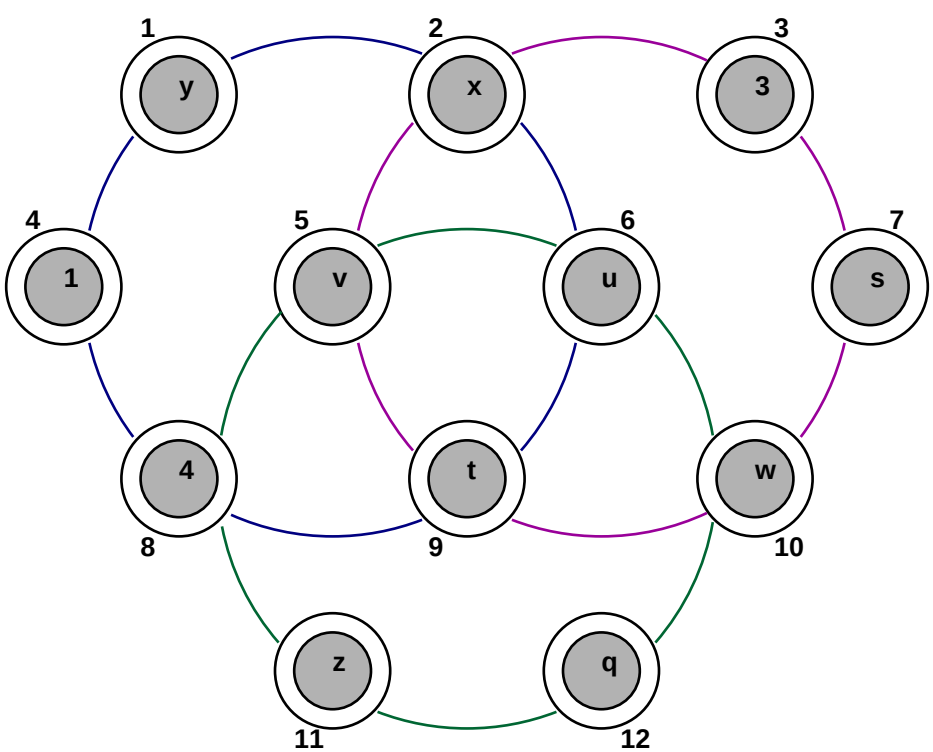

1
2
3
y
x
3
4
5
4
6
7
1
s
v
z
t
8
9
10
u
q
11
w
12

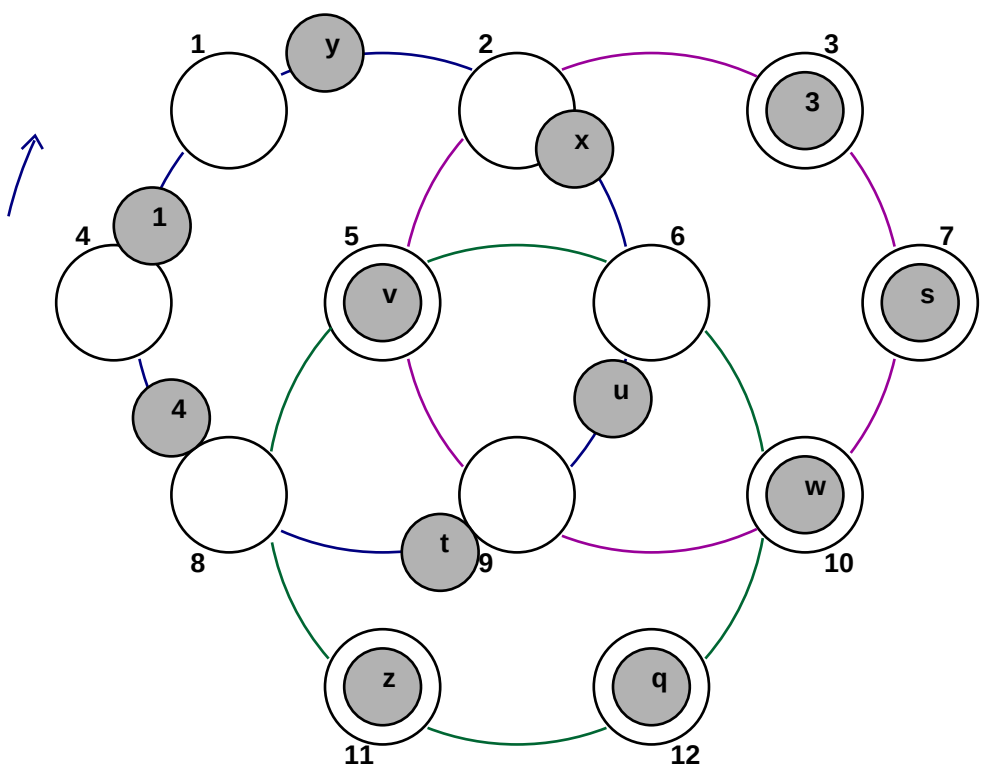

1
y
2
x
3
3
4
1
5
4
6
v
7
s
z
8
t
9
u
10
q
11
w
12

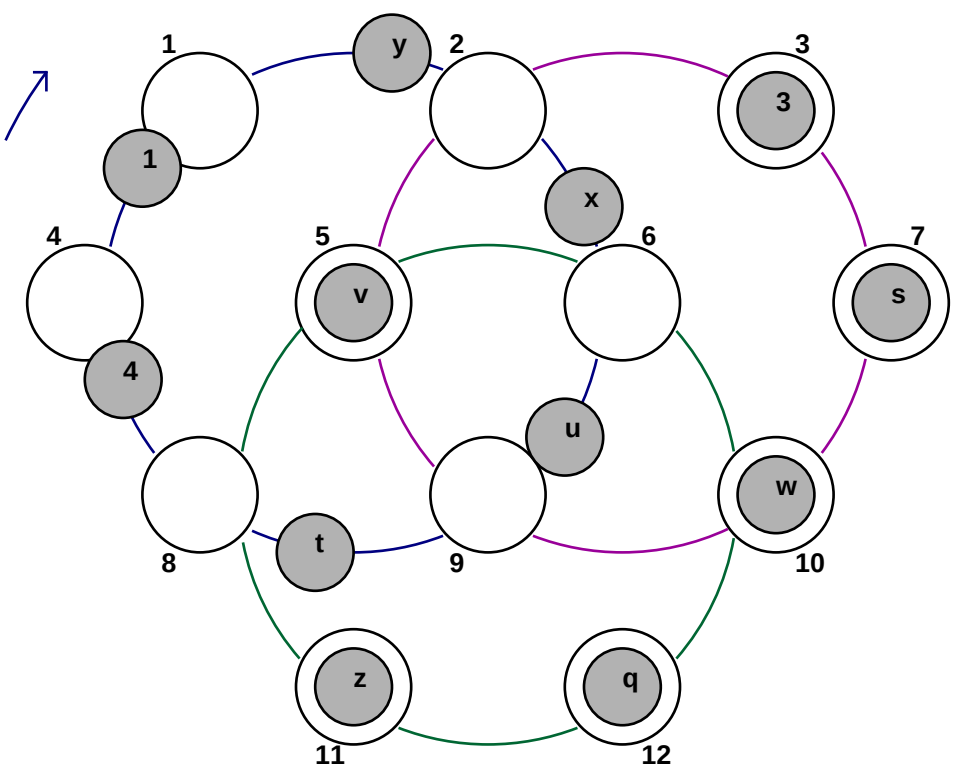

1
2
3
y
x
3
4
5
v
6
7
1
s
4
u
t
8
9
10
z
w
11
q
12

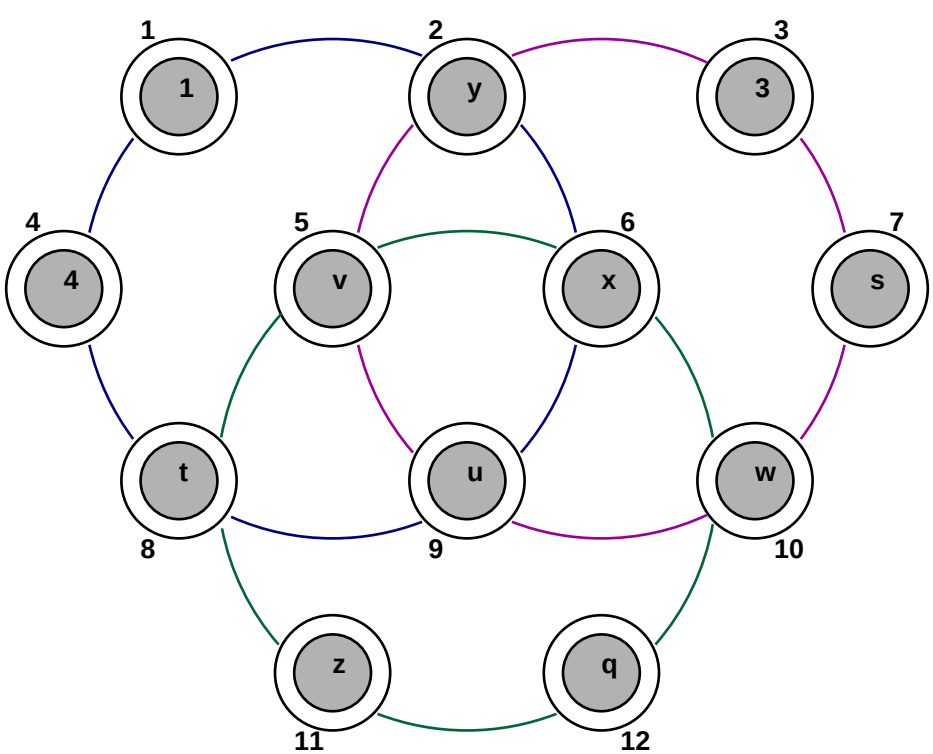

1
2
3
y
x
3
4
5
v
6
7
1
s
u
4
t
8
9
10
w
z
11
q
12


1
y
2
x
3
3
4
1
5
v
6
u
7
s
4
8
t
9
w
10
z
11
q
12


1
y
2
x
3
3
4
1
5
v
6
u
7
s
4
8
t
9
w
10
z
11
q
12


1
y
2
3
3
x
1
4
5
6
7
v
s
u
4
w
t
8
9
10
z
q
11
12


1
y
2
3
3
1
x
4
5
6
7
v
s
4
u
w
t
8
9
10
z
q
11
12

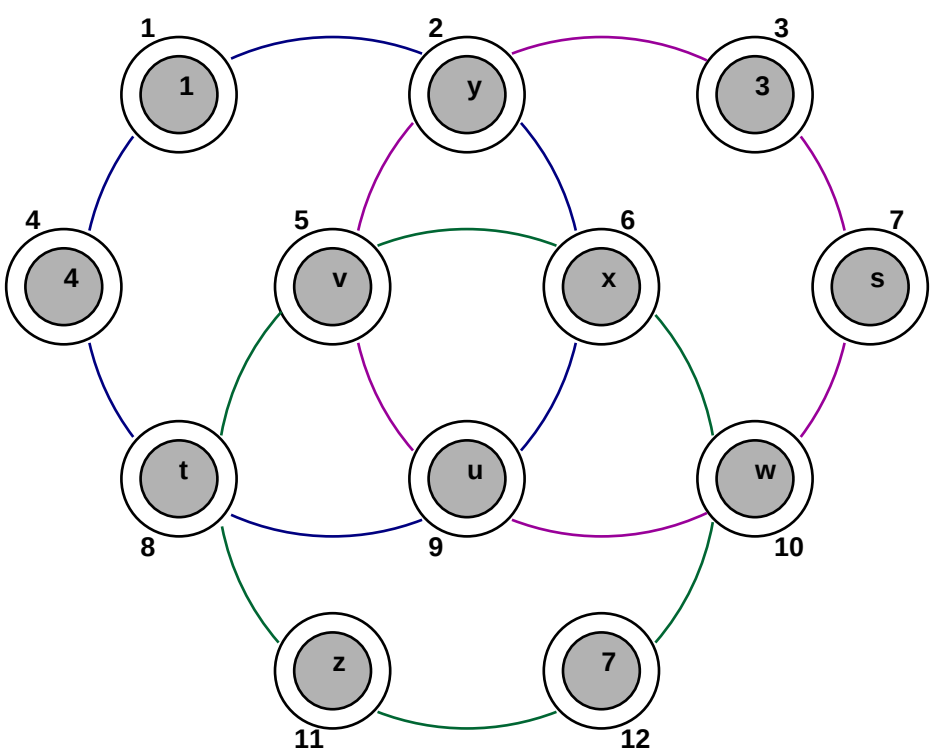

1
2
3
1
y
3
4
5
6
7
4
v
x
s
t
u
w
8
9
10
z
q
11
12

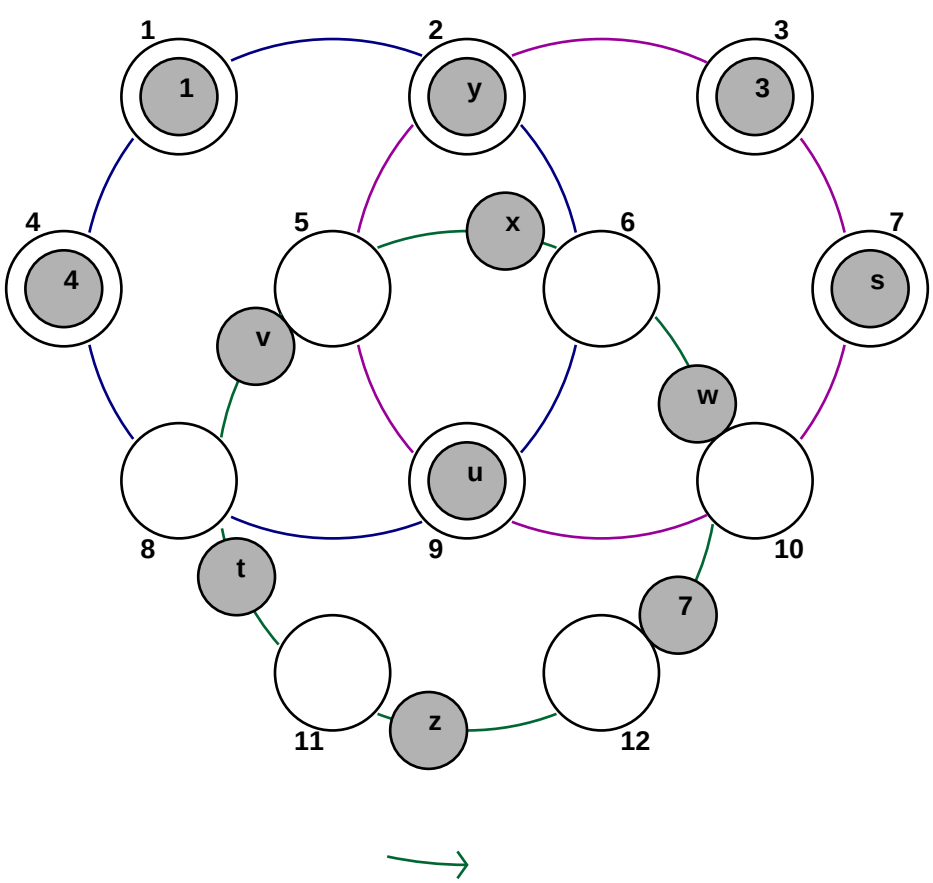
It has been shown that 4 can be moved to position 4 from any position while keeping numbers 1 and 3 in their respective positions.

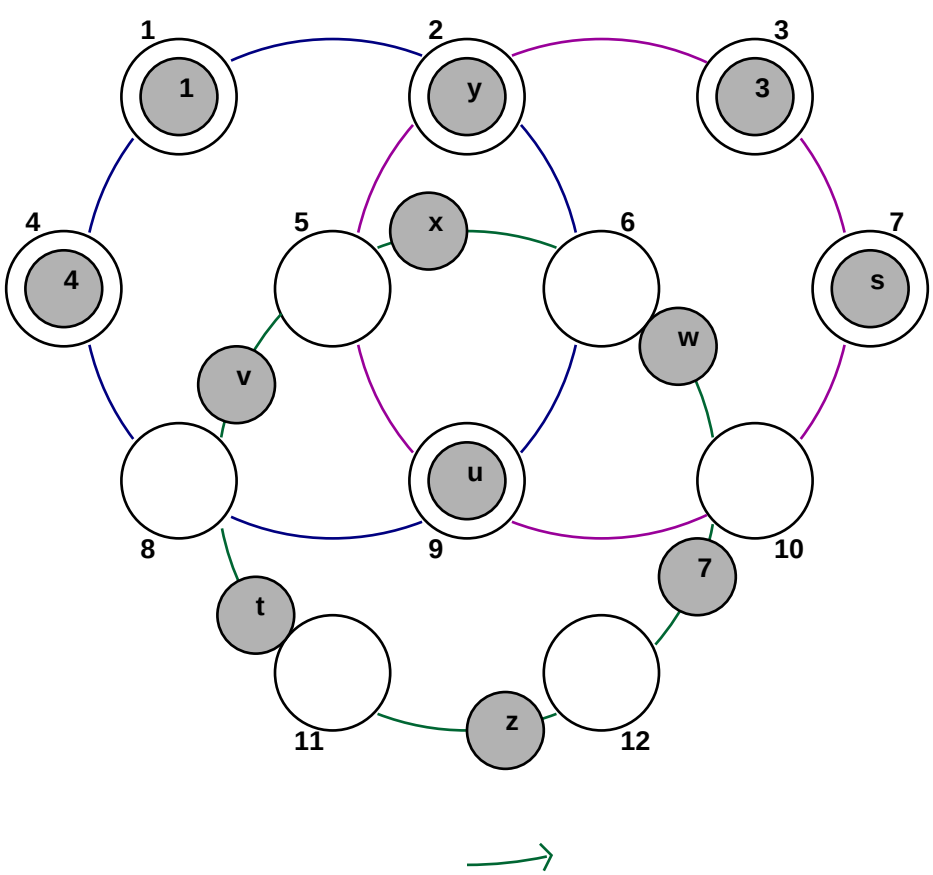
Now let q = 7.

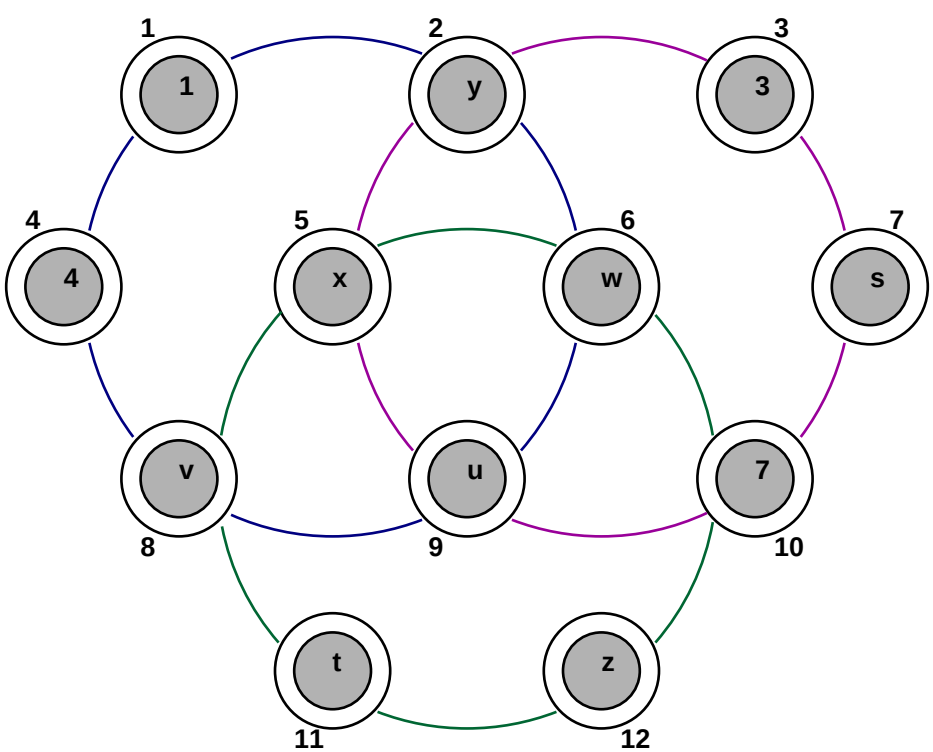
Number 7 can be moved into every position in the green circle by moving in a clockwise or counter-clockwise pattern.

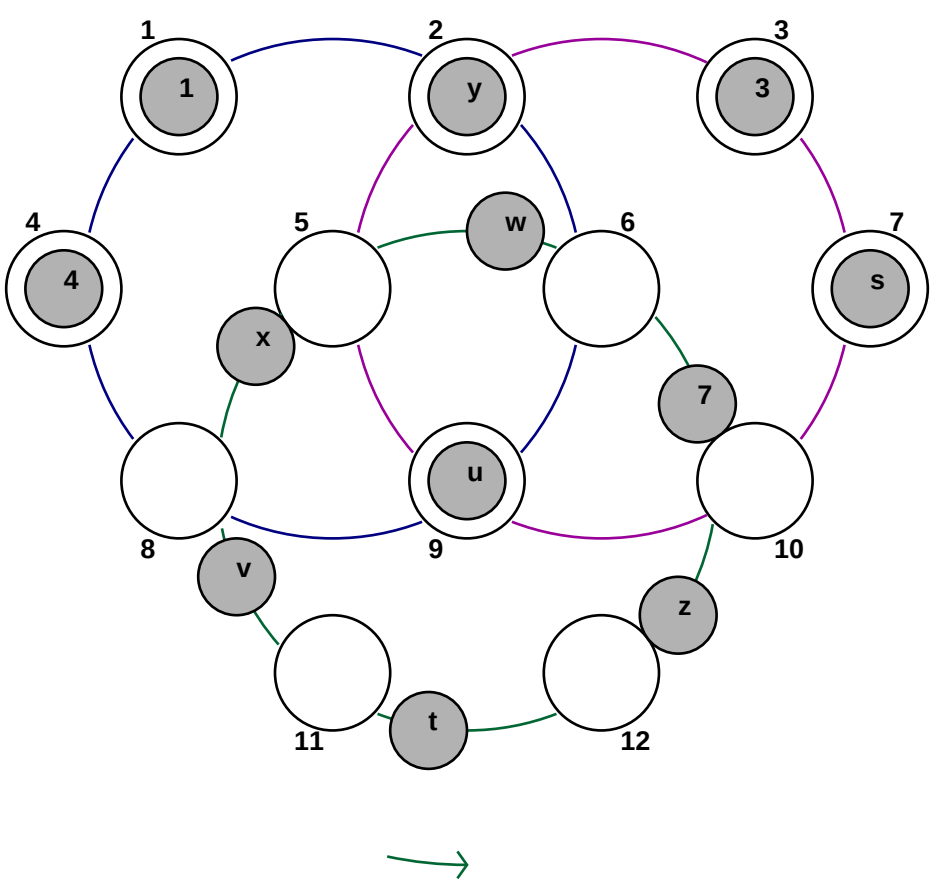
Numbers 1, 3, and 4 will remain in their correct positions.

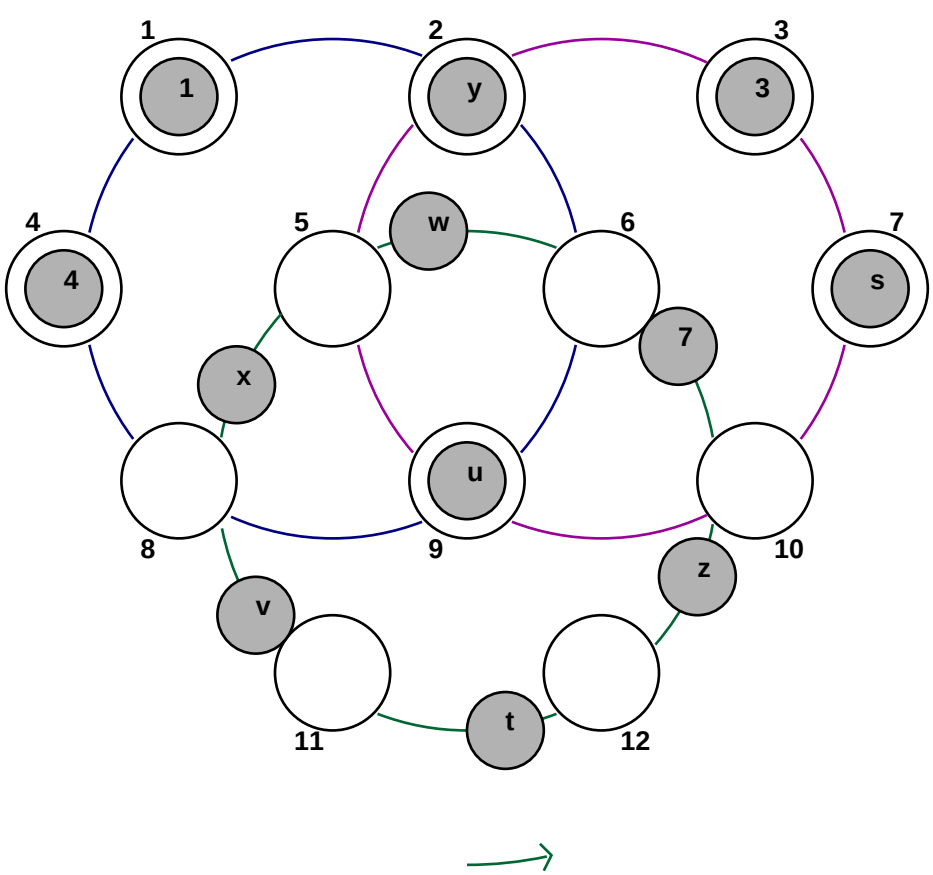

1
2
3
1
y
3
4
5
6
7
4
v
x
s
t
u
w
8
9
10
z
7
11
12

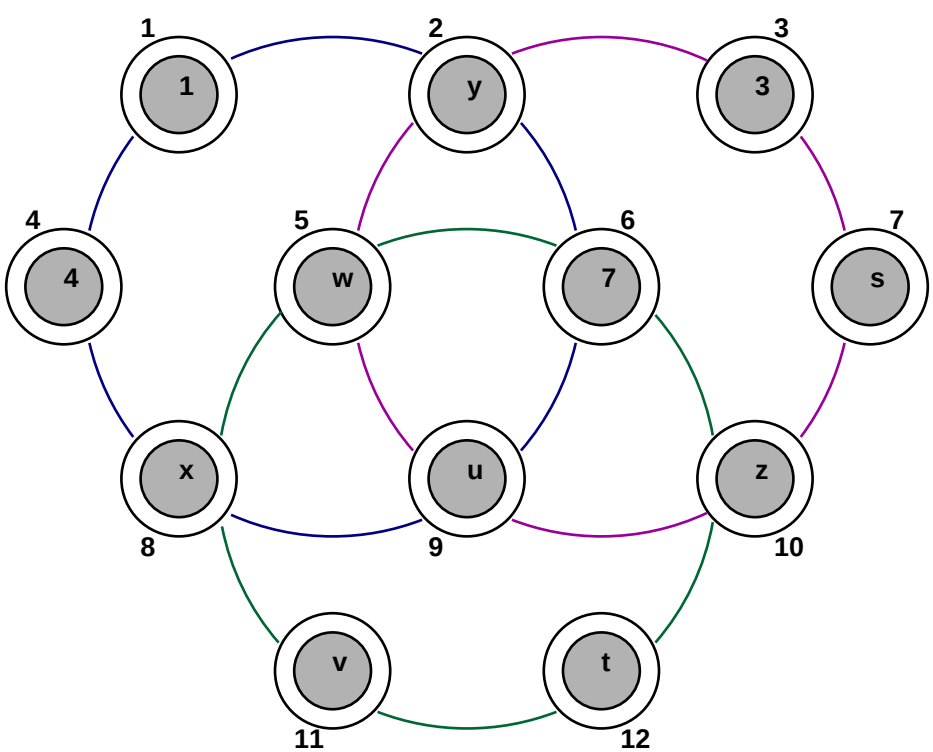

1
2
3
1
y
3
4
5
6
7
x
4
s
v
w
u
8
9
10
t
7
11
z
12

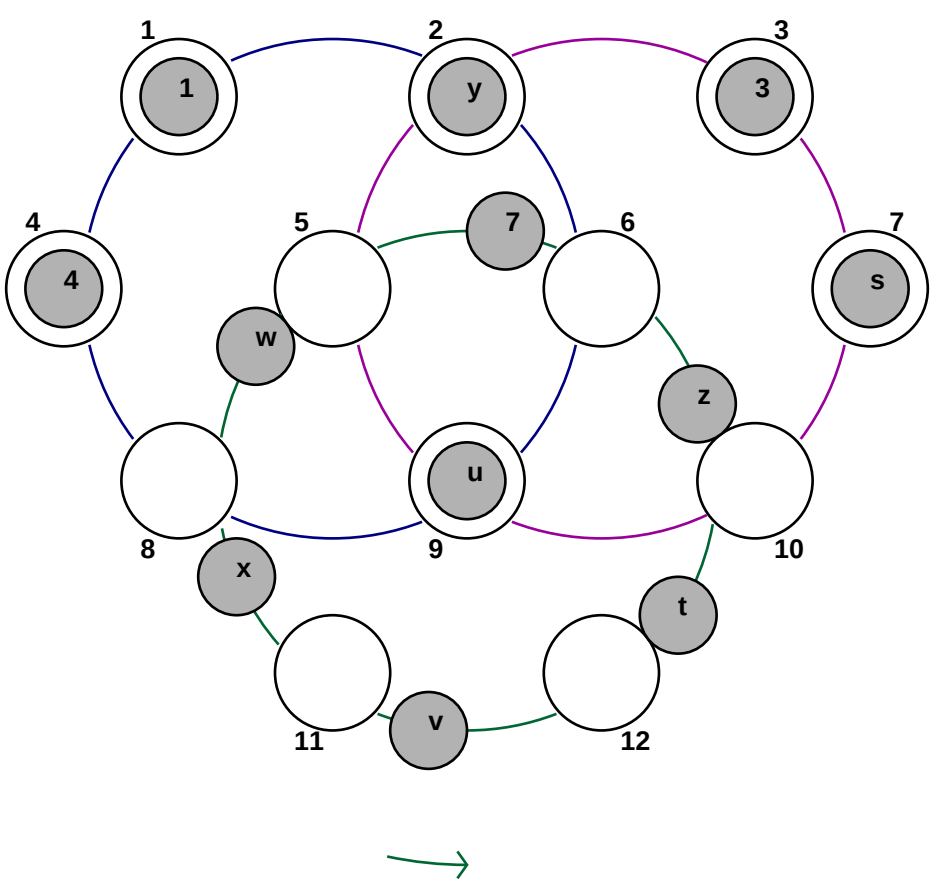

1
2
3
1
y
3
4
5
6
7
x
4
s
w
v
u
8
9
10
7
t
11
z
12

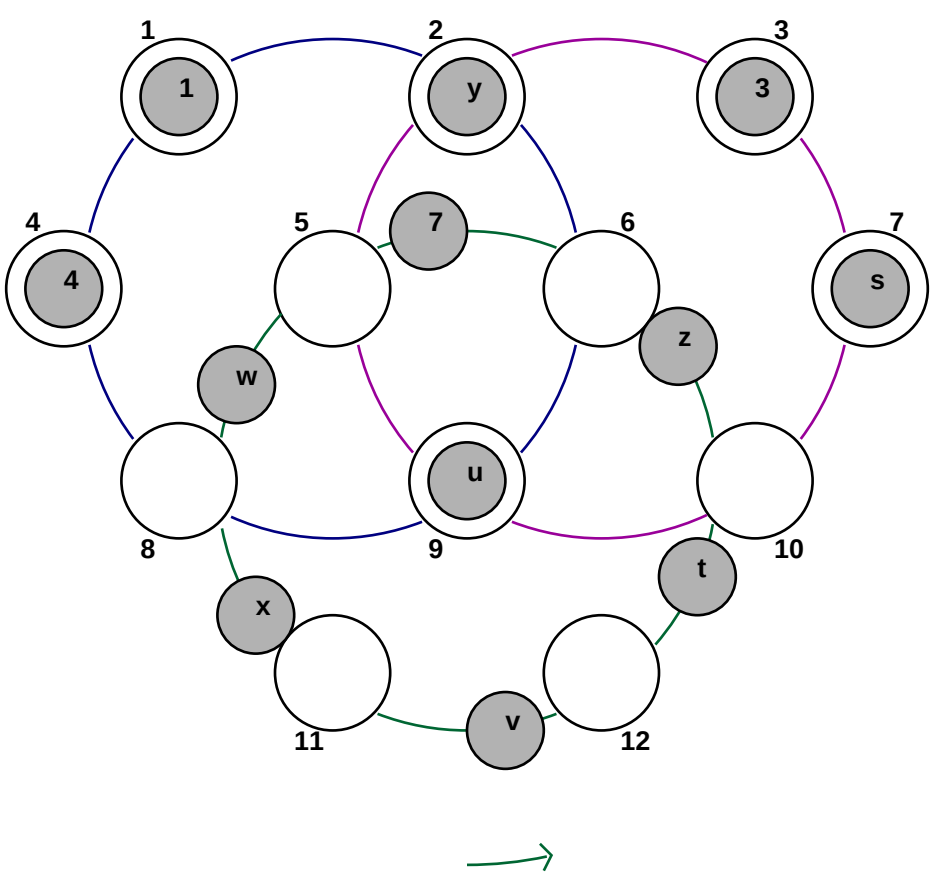

1
2
3
1
y
3
4
5
6
7
4
x
w
s
v
u
7
8
9
10
t
z
11
12

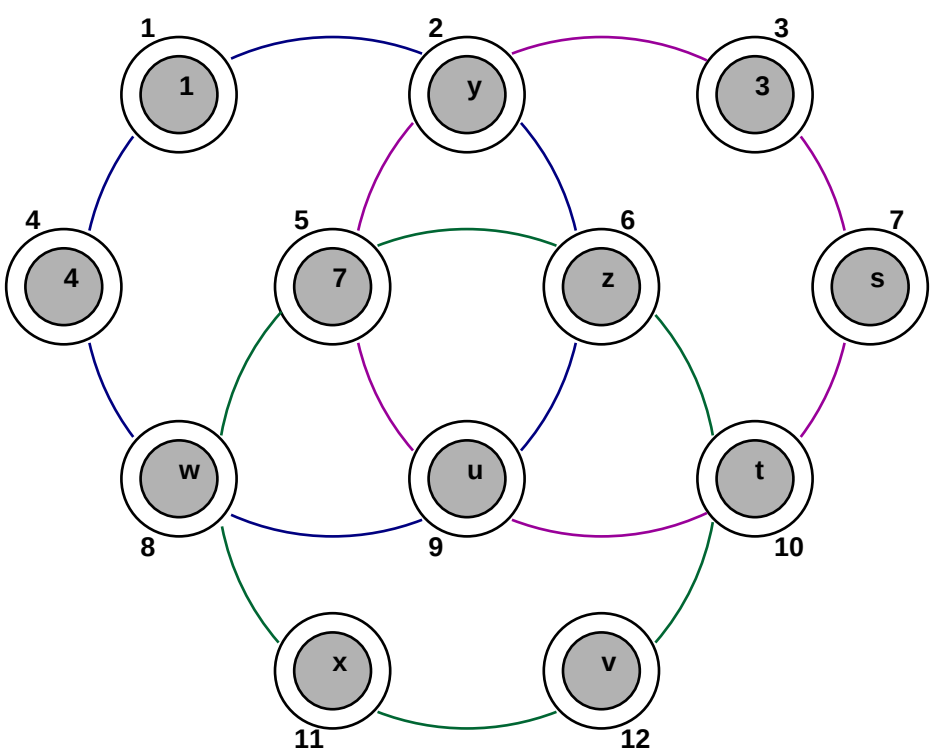

1
2
3
1
y
3
4
5
6
7
w
4
s
x
7
u
8
9
10
v
z
11
12
t

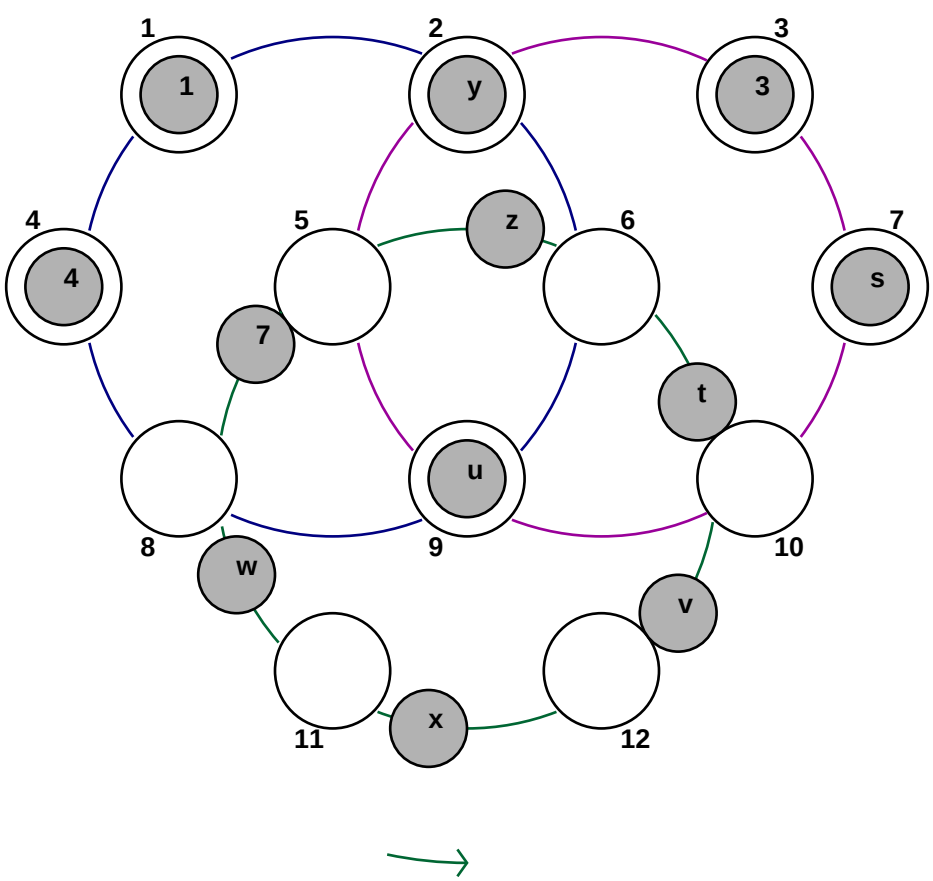

1
2
3
1
y
3
4
5
w
6
7
4
s
7
x
u
8
9
10
z
v
11
t
12

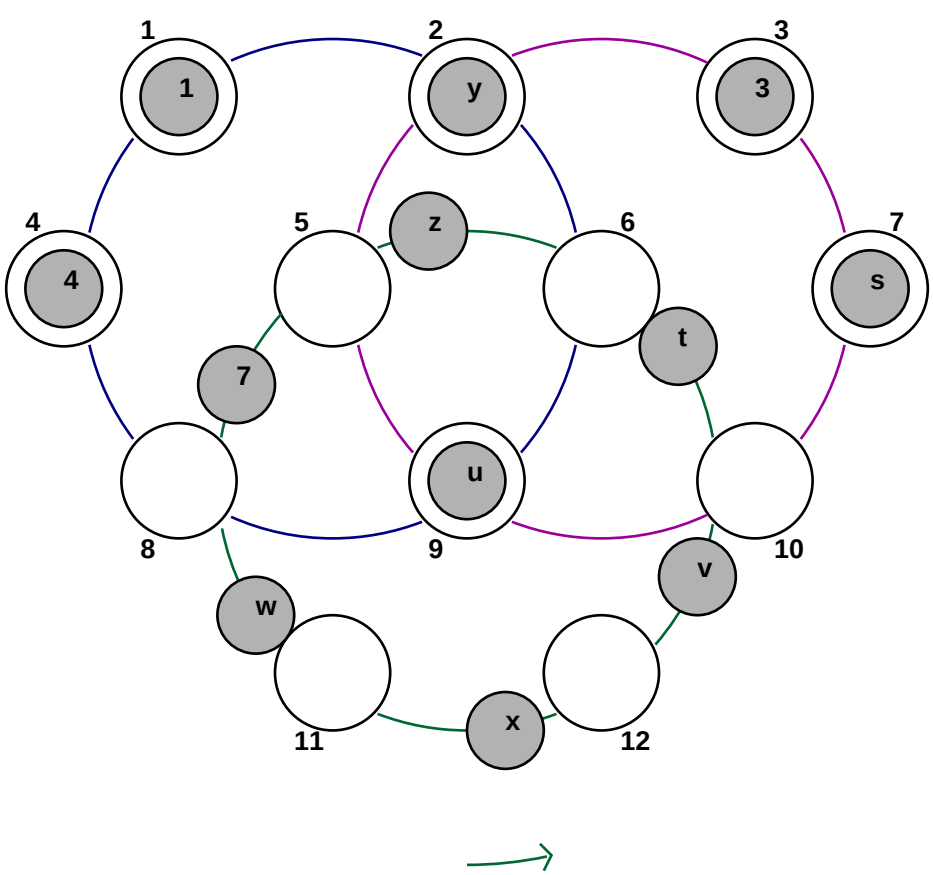

1
2
3
1
y
3
4
5
6
7
4
w
7
s
x
u
z
8
9
10
v
t
11
12

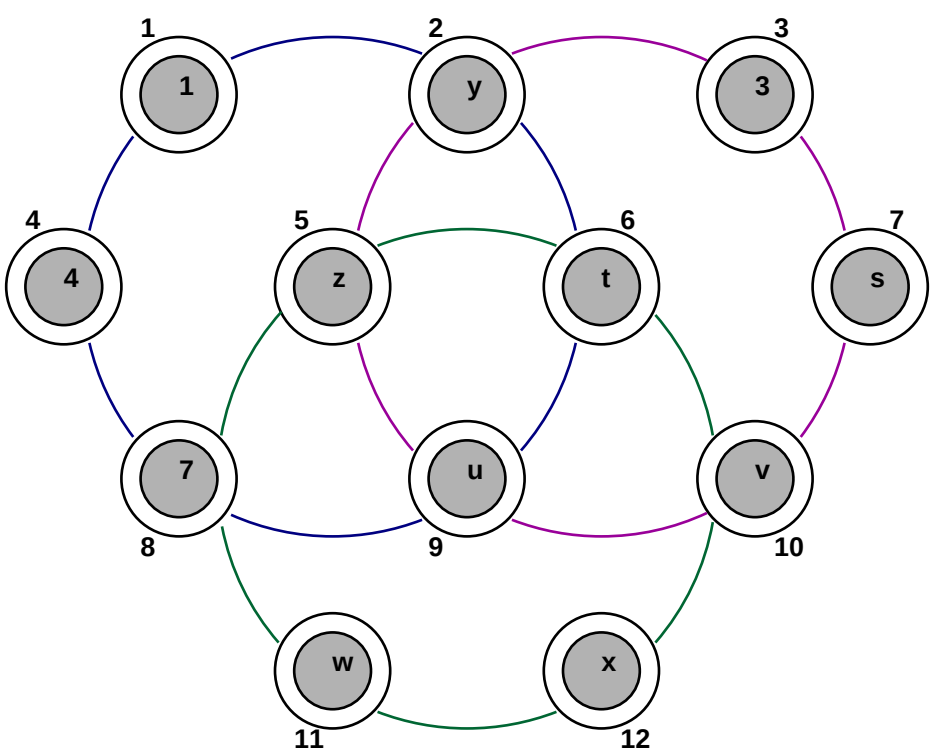

1
2
3
1
y
3
4
5
7
6
7
4
s
w
z
u
8
9
10
x
t
11
v
12

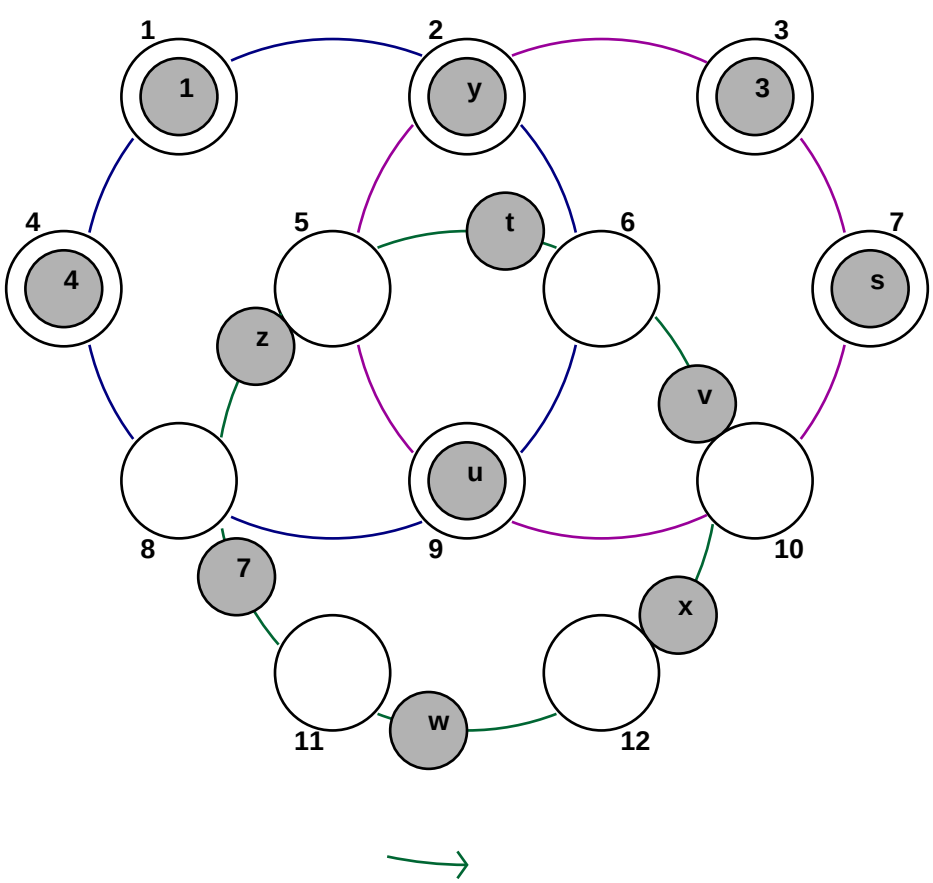

1
2
3
1
y
3
4
5
7
6
7
4
s
z
w
u
8
9
10
t
x
11
v
12

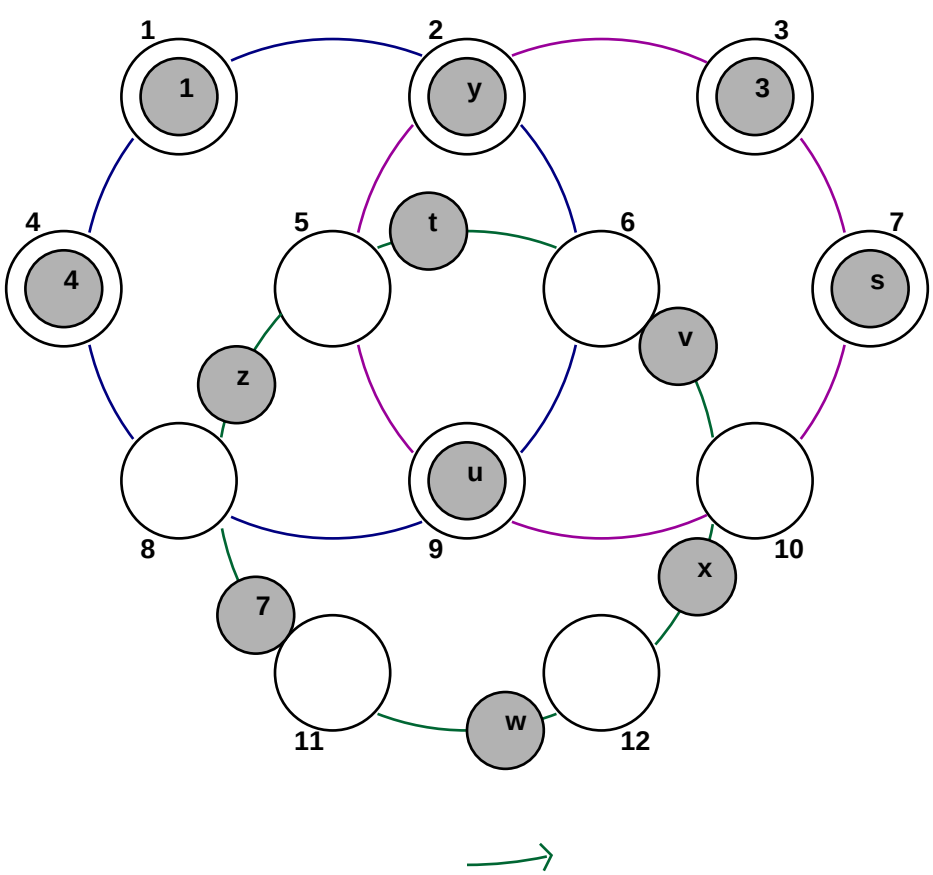

1
2
3
1
y
3
4
5
6
7
4
7
z
s
w
u
t
8
9
10
x
v
11
12

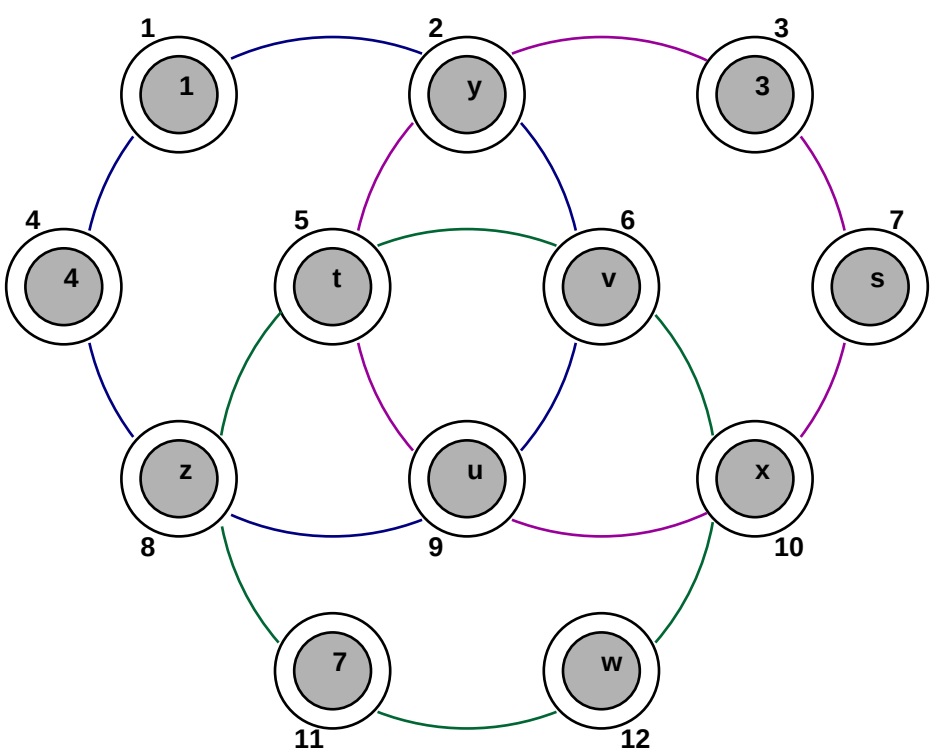

1
2
3
1
y
3
4
5
z
6
7
4
s
7
t
u
8
9
10
w
v
11
x
12

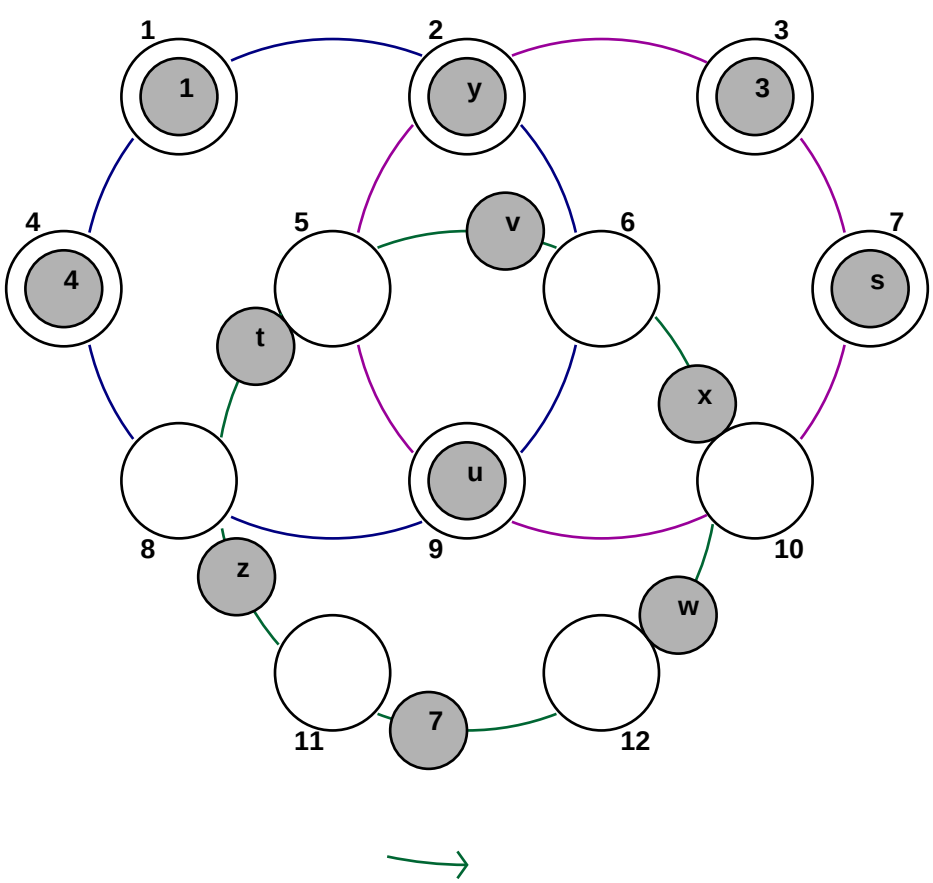

1
2
3
1
y
3
4
5
z
6
7
4
s
t
7
u
8
9
10
v
w
11
x
12

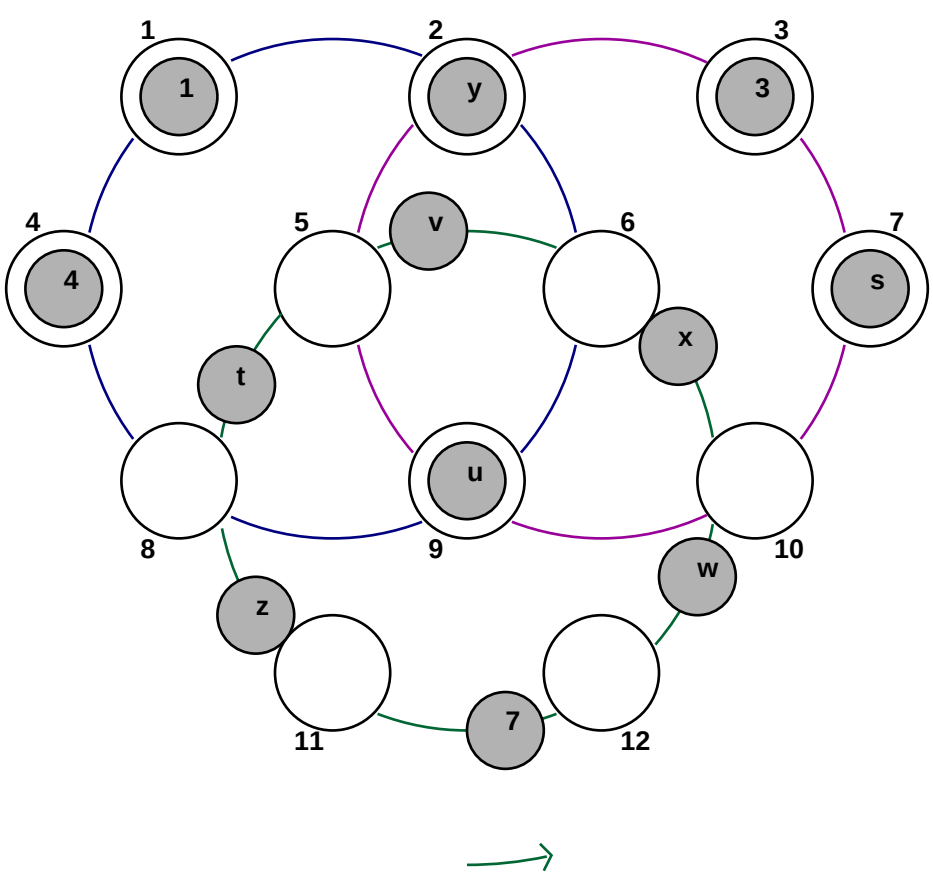

1
2
3
1
y
3
4
5
6
7
4
z
t
s
7
u
v
8
9
10
w
x
11
12

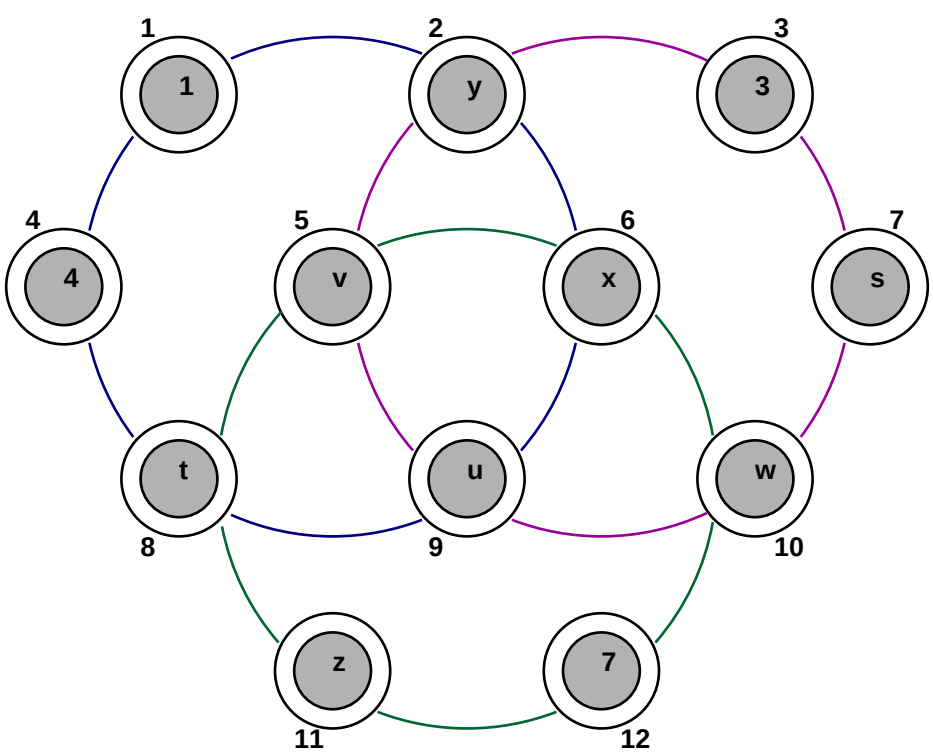

1
2
3
1
y
3
4
5
t
6
7
4
s
z
v
u
8
9
10
7
x
11
w
12


1
2
3
1
y
3
4
5
t
6
7
4
s
v
z
u
8
9
10
x
7
11
w
12

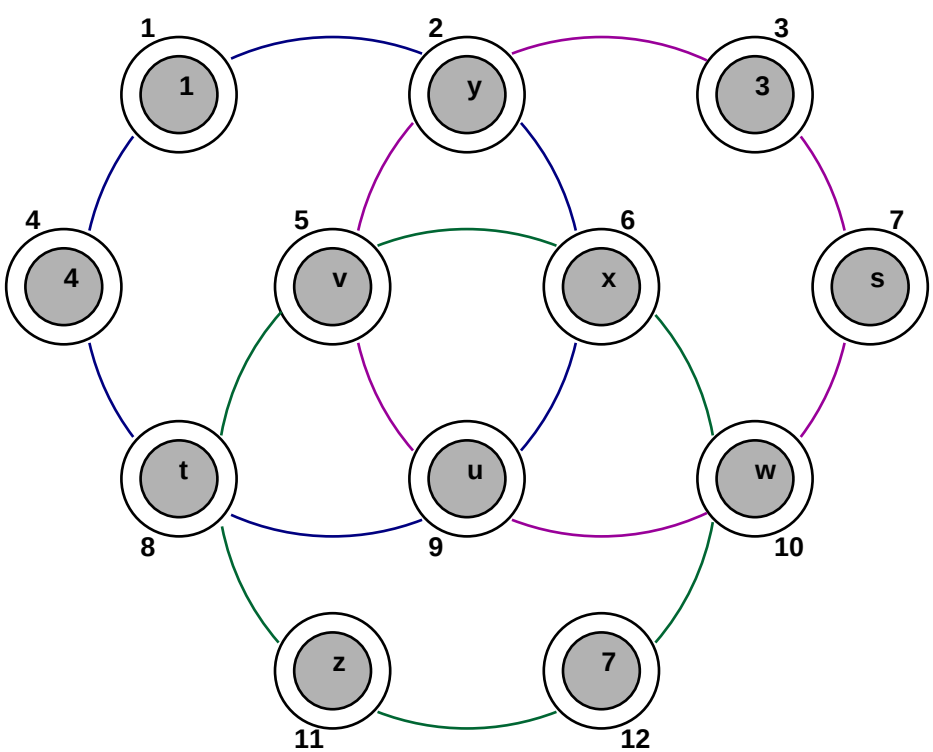

1
2
3
1
y
3
4
5
6
7
4
t
v
s
z
u
x
8
9
10
7
w
11
12

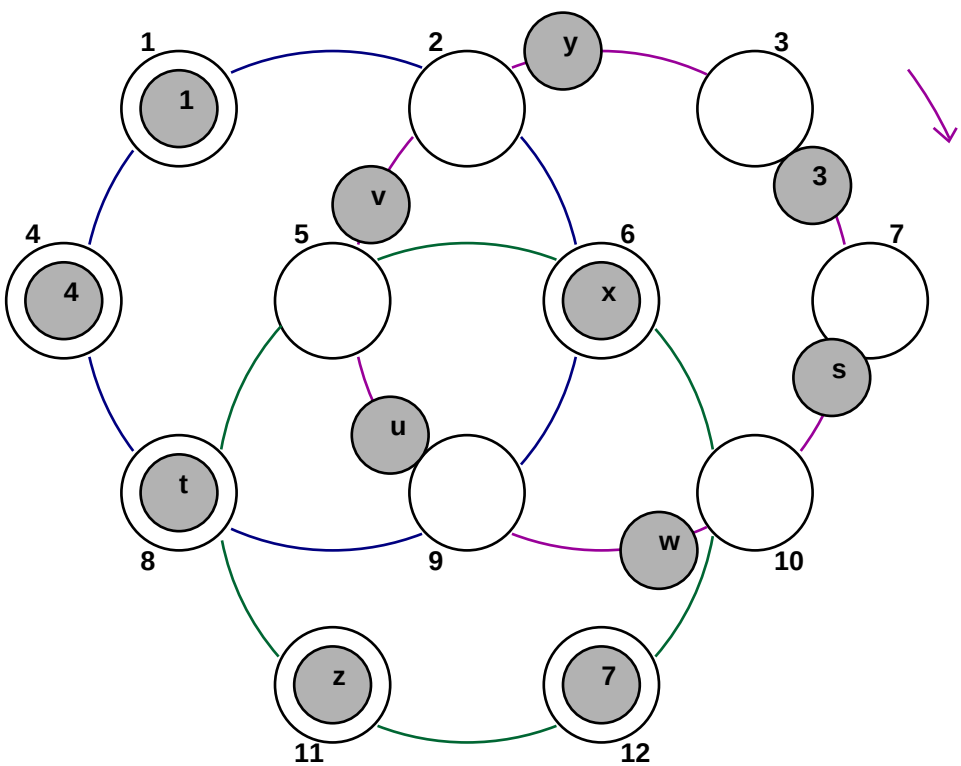

1
2
3
1
y
3
4
5
6
7
v
4
s
t
x
u
8
9
10
z
w
11
7
12

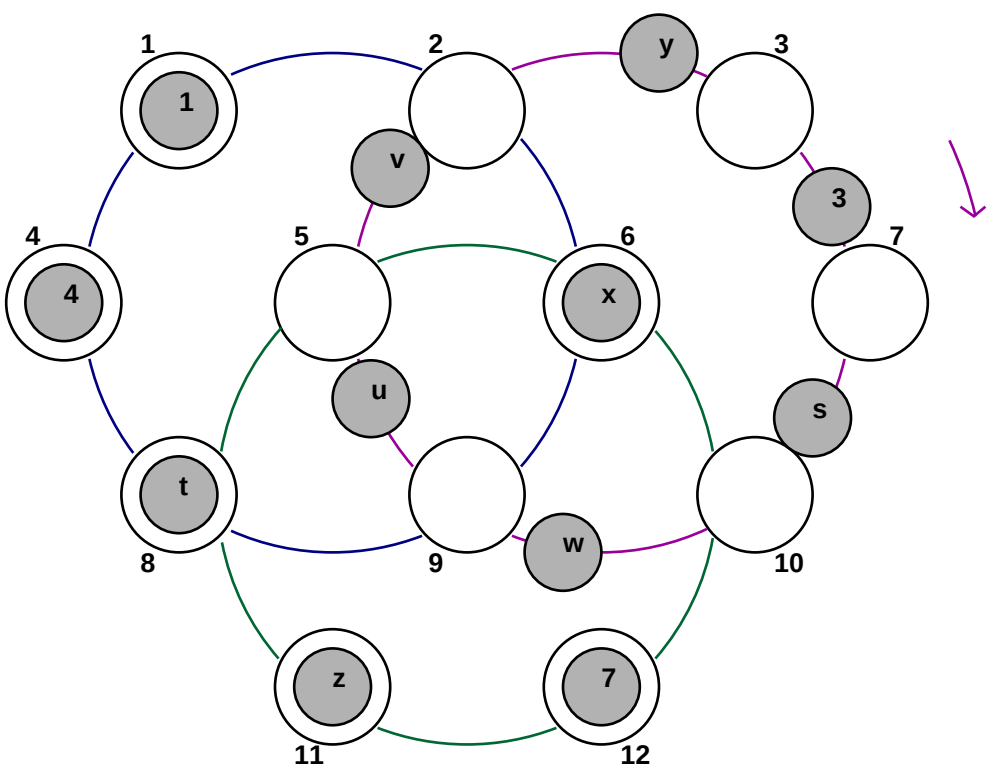

1
2
3
1
y
3
4
5
v
6
7
4
s
x
t
u
8
9
10
w
z
11
7
12

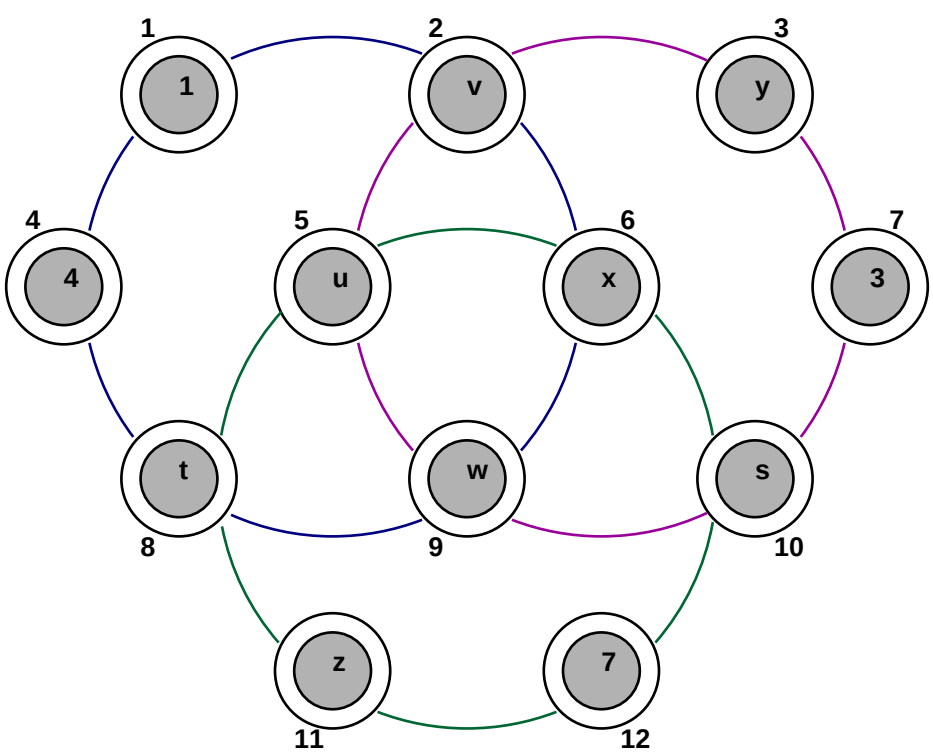

1
2
3
1
y
3
4
5
6
7
4
v
x
s
t
u
w
8
9
10
z
7
11
12

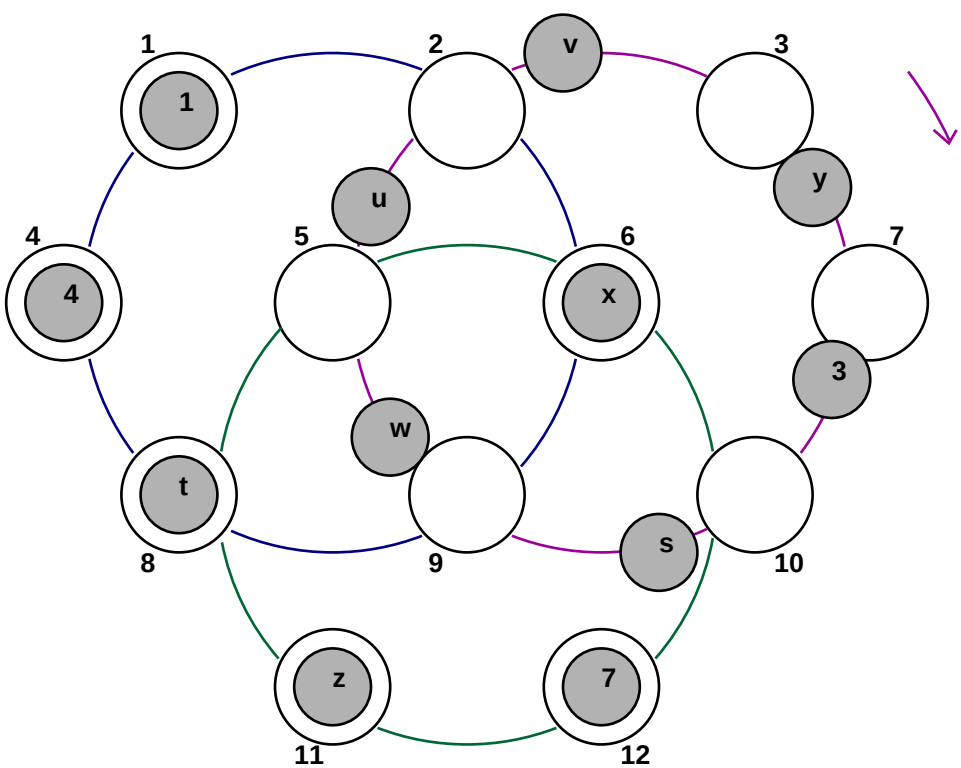
Number 7 can be moved into position 2 while keeping numbers 1, 3, and 4 in position by the following moves.

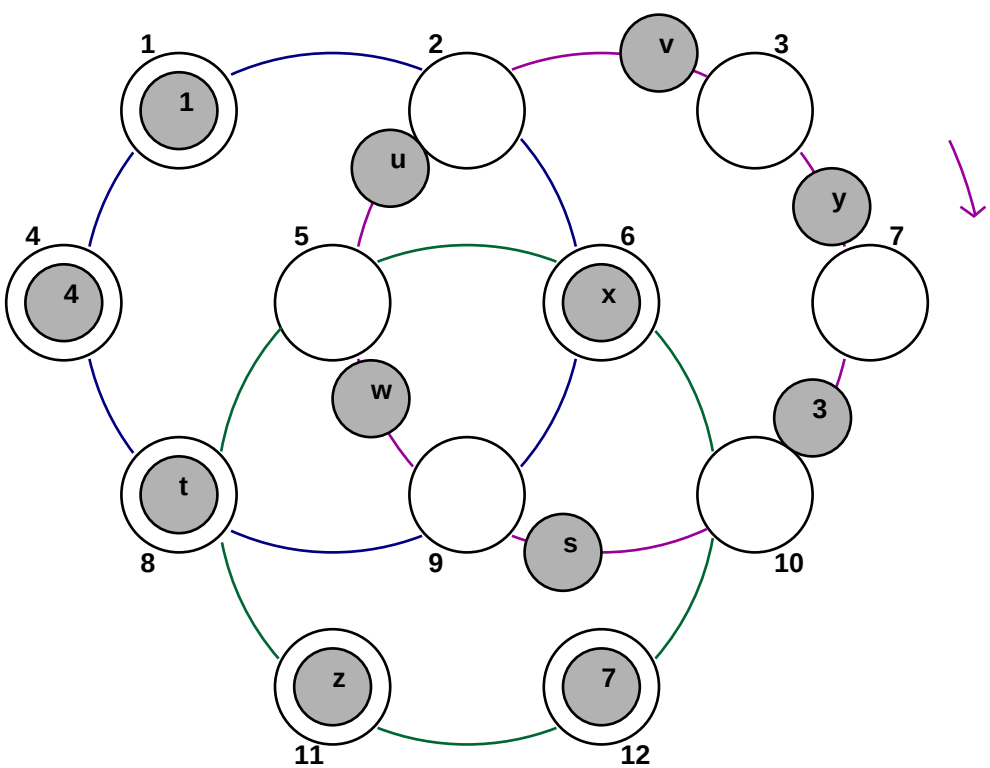

1
2
3
1
y
3
4
5
6
7
4
v
x
s
t
u
w
8
9
10
z
7
11
12

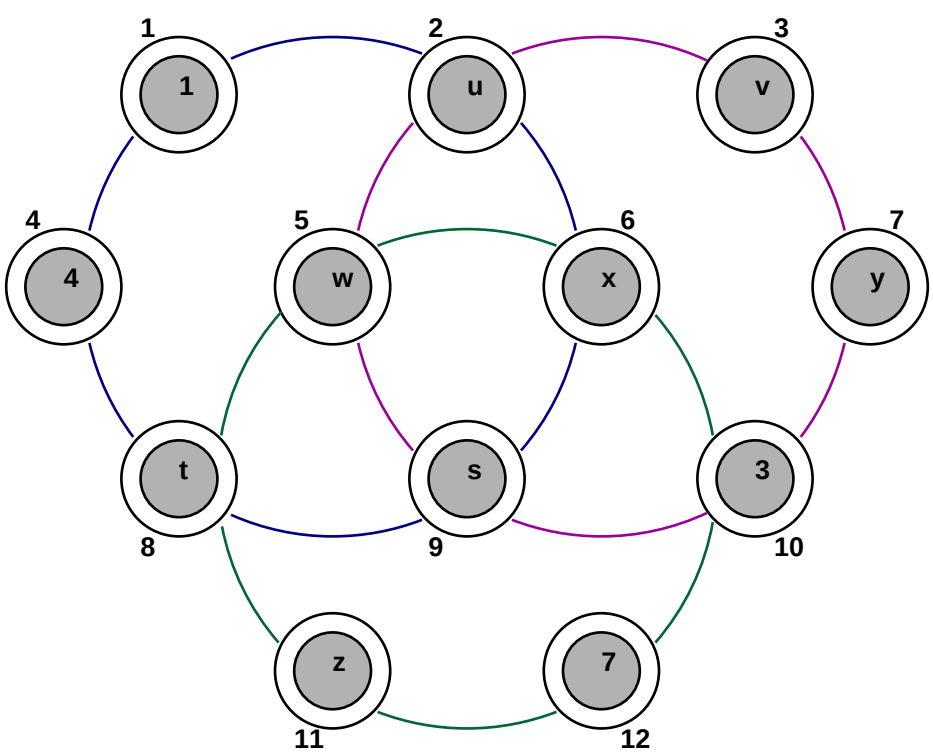

1
2
y
3
1
3
v
4
5
6
7
4
x
s
u
t
8
9
w
10
z
7
11
12

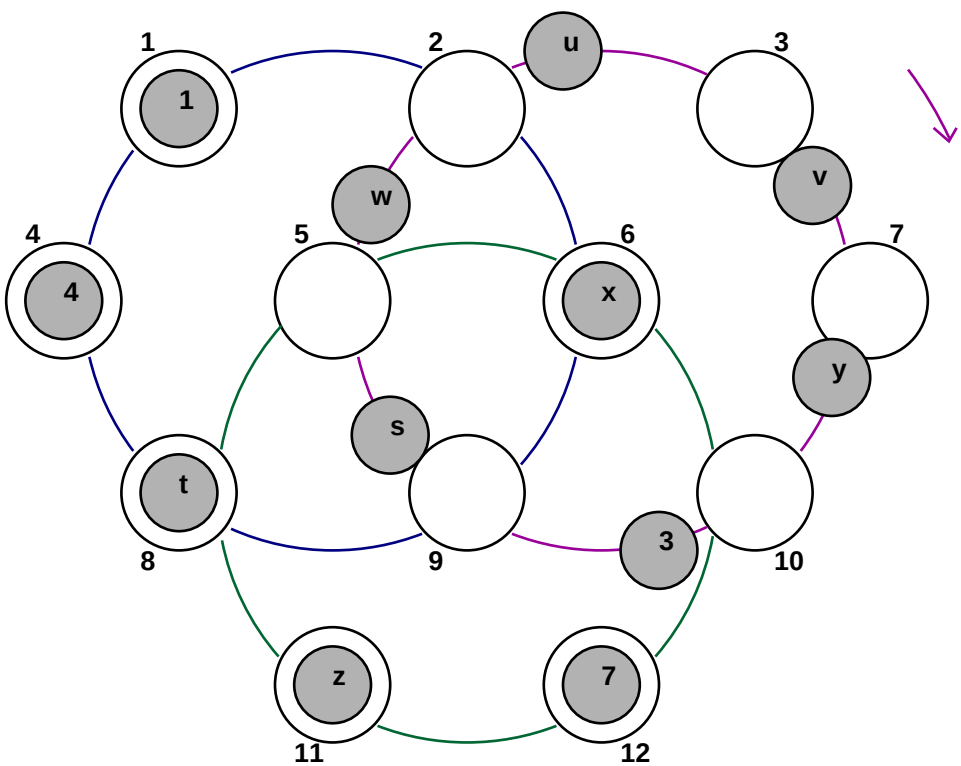

1
2
y
3
1
v
3
4
5
6
7
4
x
u
s
t
8
9
w
10
z
7
11
12

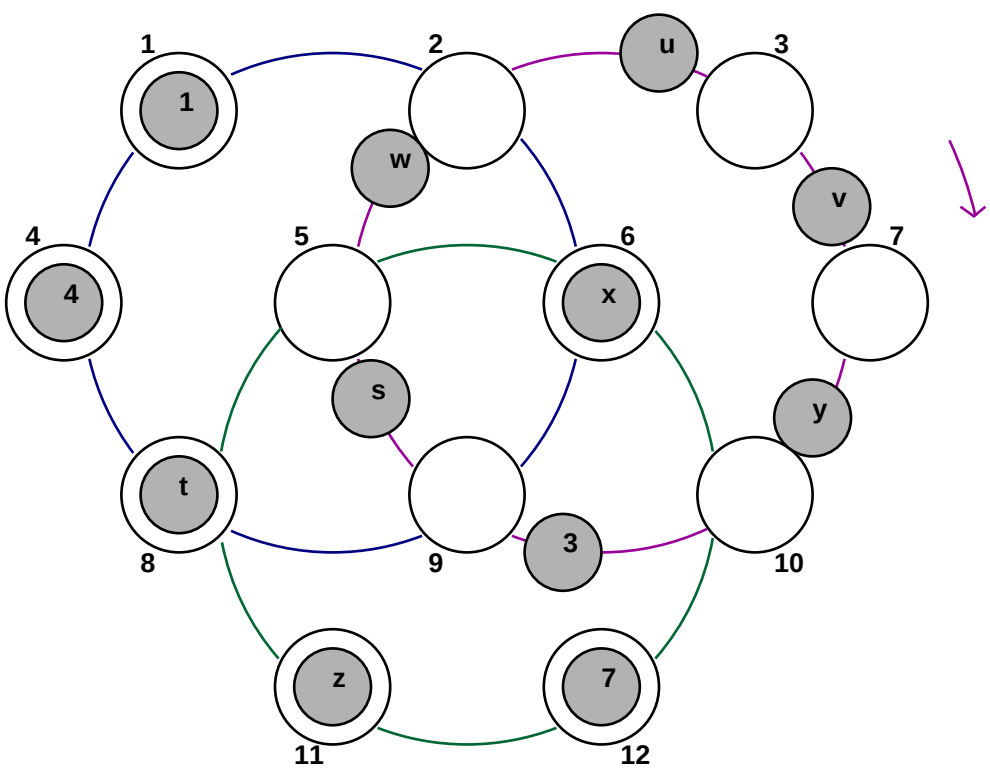

1
1
2
v
3
y
4
4
5
u
6
x
7
3
t
8
w
9
s
10
z
11
7
12

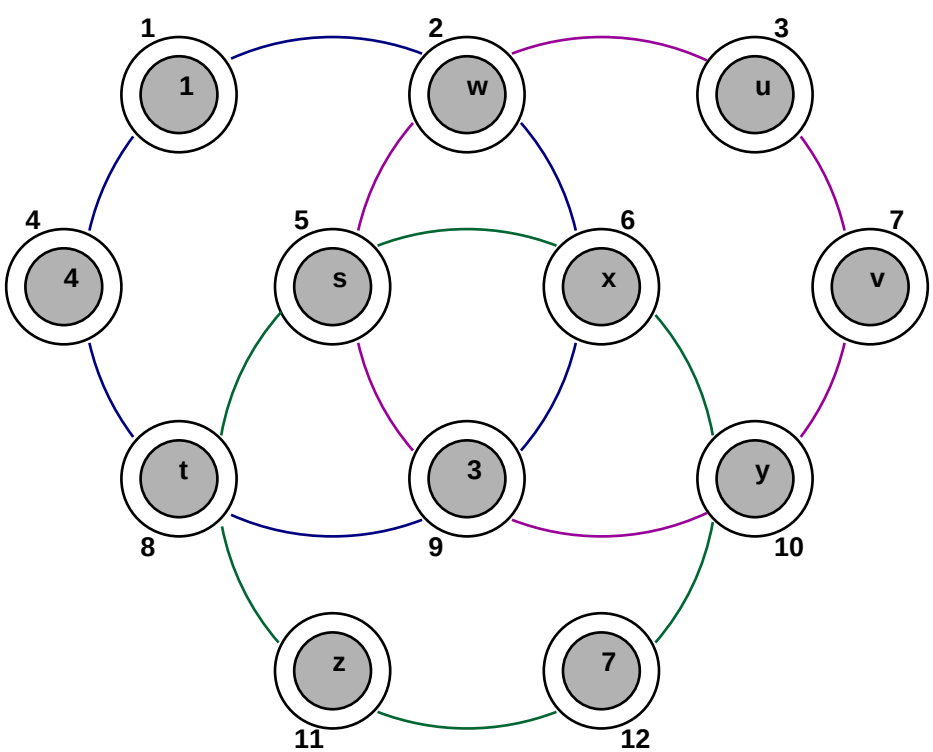

1
2
v
3
1
y
u
4
5
6
7
4
x
3
w
t
s
8
9
10
z
7
11
12

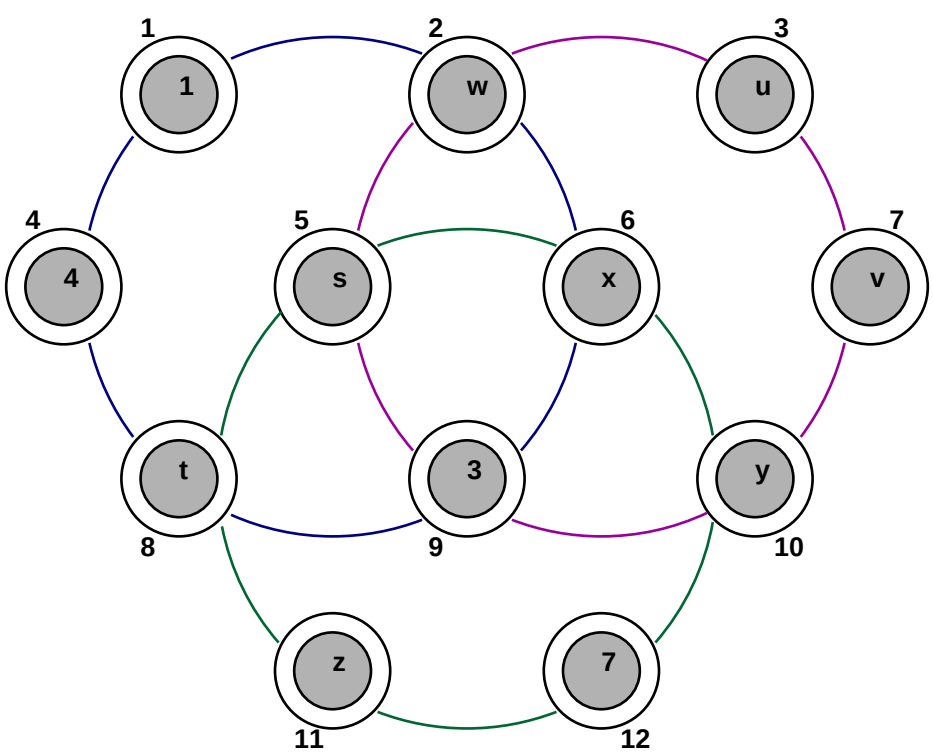

1
2
v
3
1
u
y
4
5
6
7
4
x
w
3
t
9
s
10
8
z
7
11
12

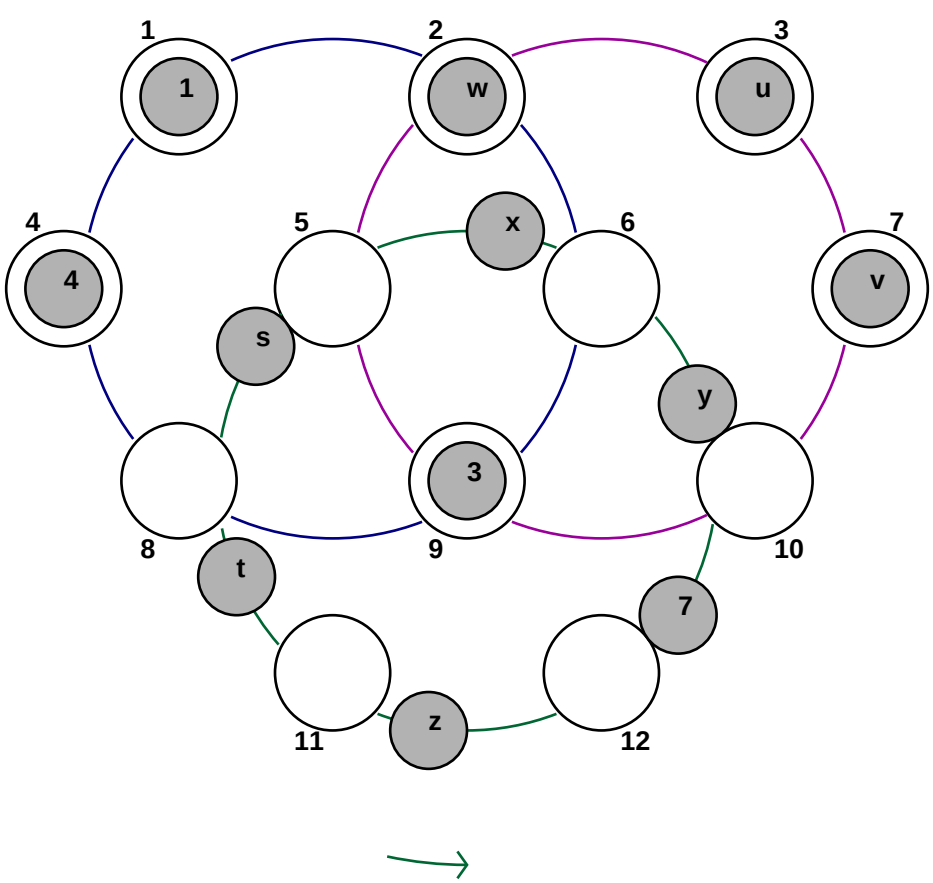

1
2
3
1
u
v
4
5
6
7
4
w
x
y
t
s
3
8
9
10
z
7
11
12

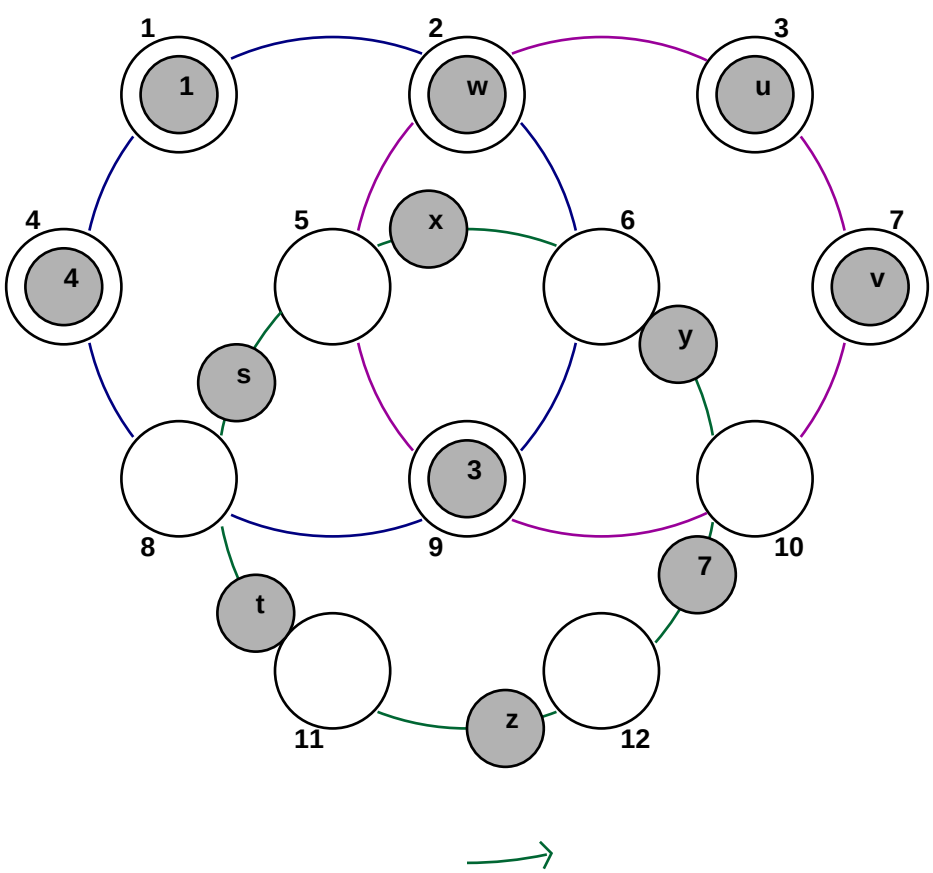

1
2
u
3
1
w
v
4
5
6
7
4
x
y
s
t
3
8
9
10
z
7
11
12

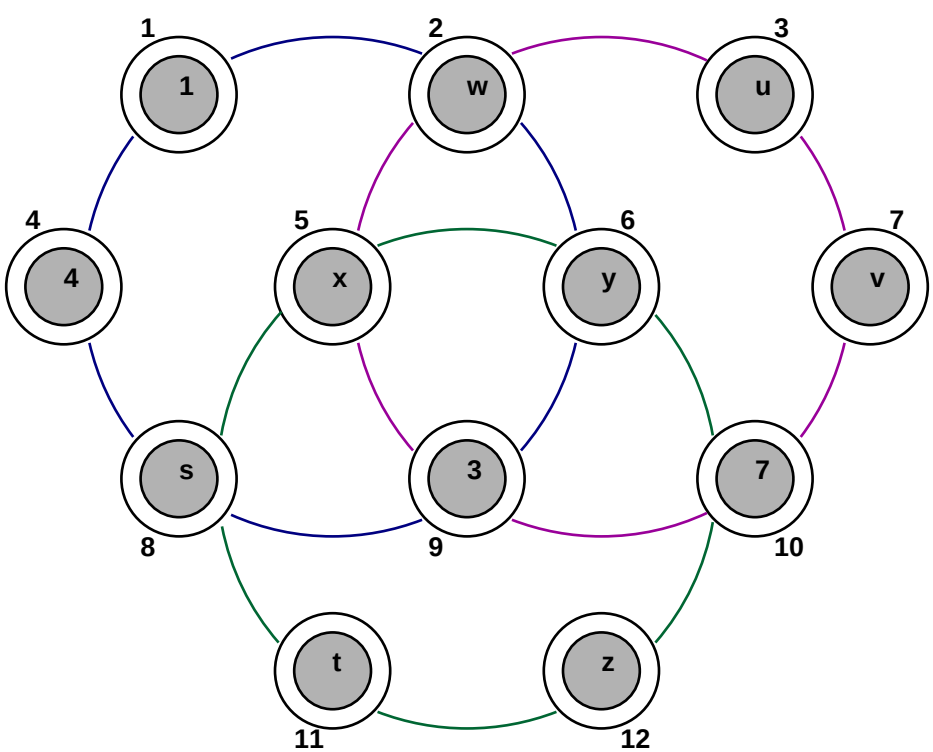

1
2
u
3
1
w
v
4
5
6
7
4
x
s
y
t
8
9
3
10
z
7
11
12

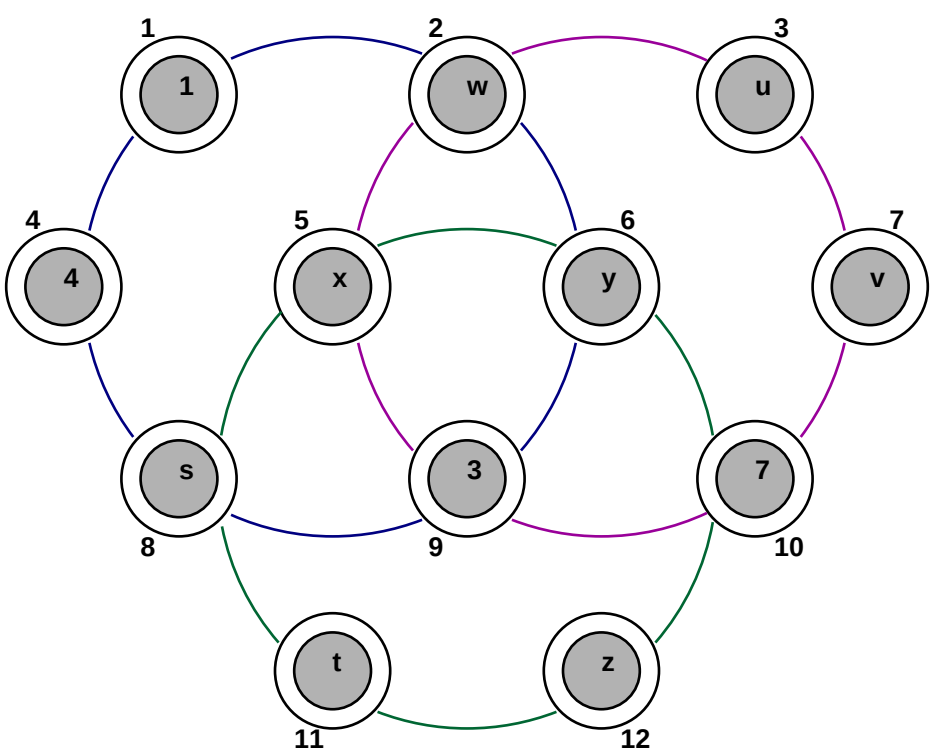

1
2
3
1
w
u
4
5
6
7
4
s
x
v
t
3
y
8
9
10
z
7
11
12

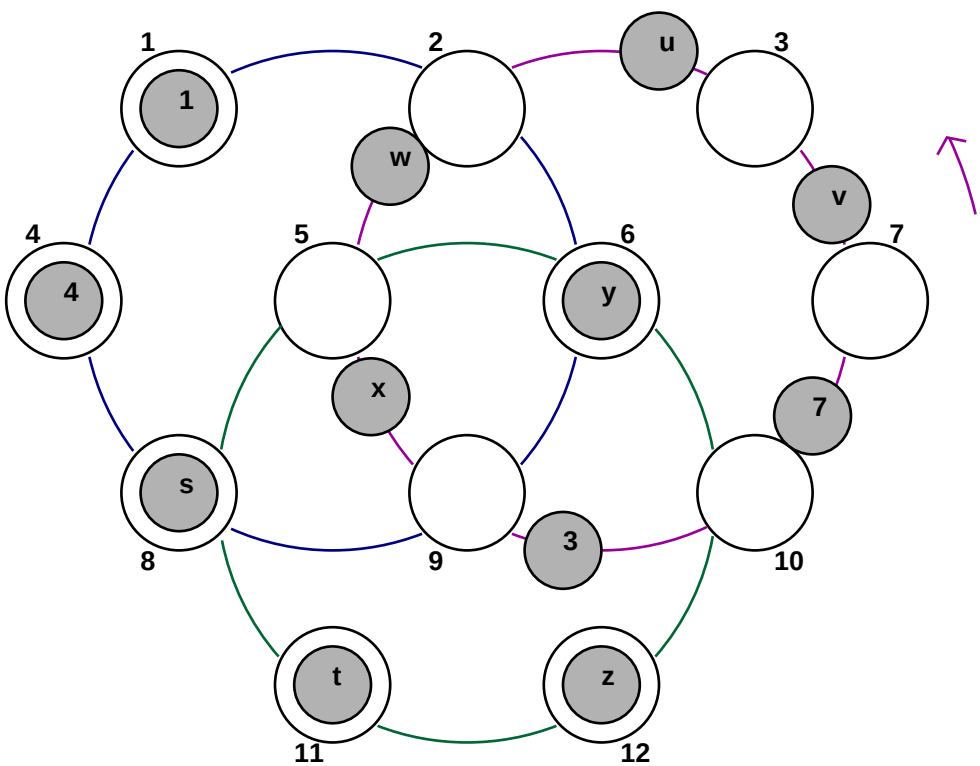

1
2
3
1
w
u
4
5
6
7
4
s
x
v
t
3
y
8
9
10
z
7
11
12

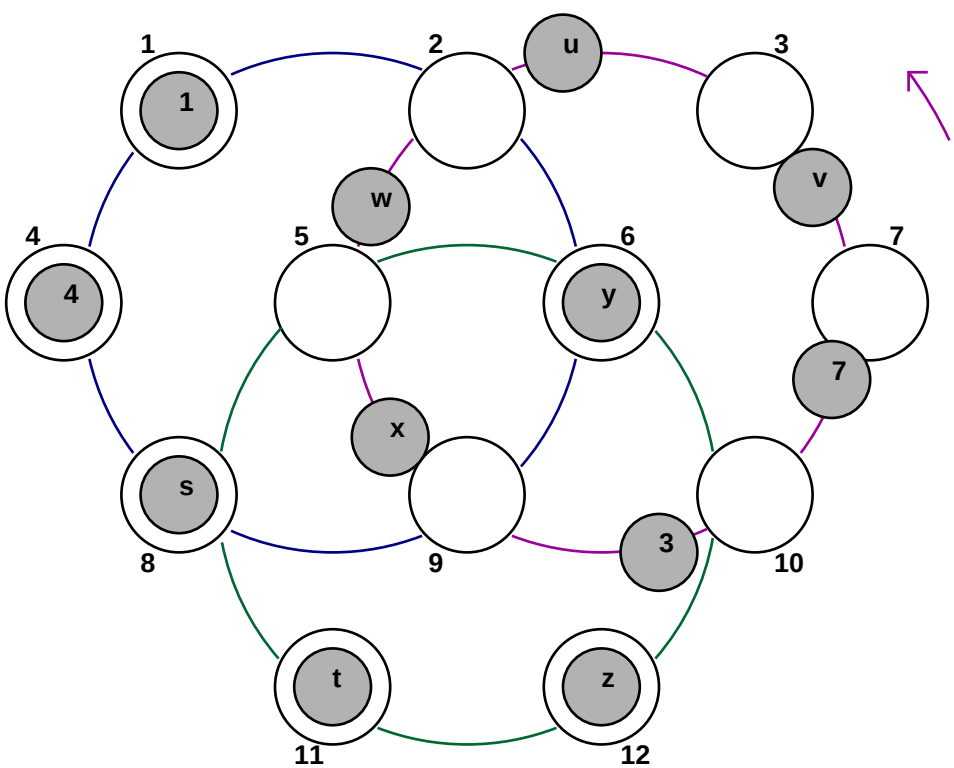

1
2
3
1
w
u
4
5
6
7
x
4
v
s
y
3
8
9
10
t
7
z
11
12

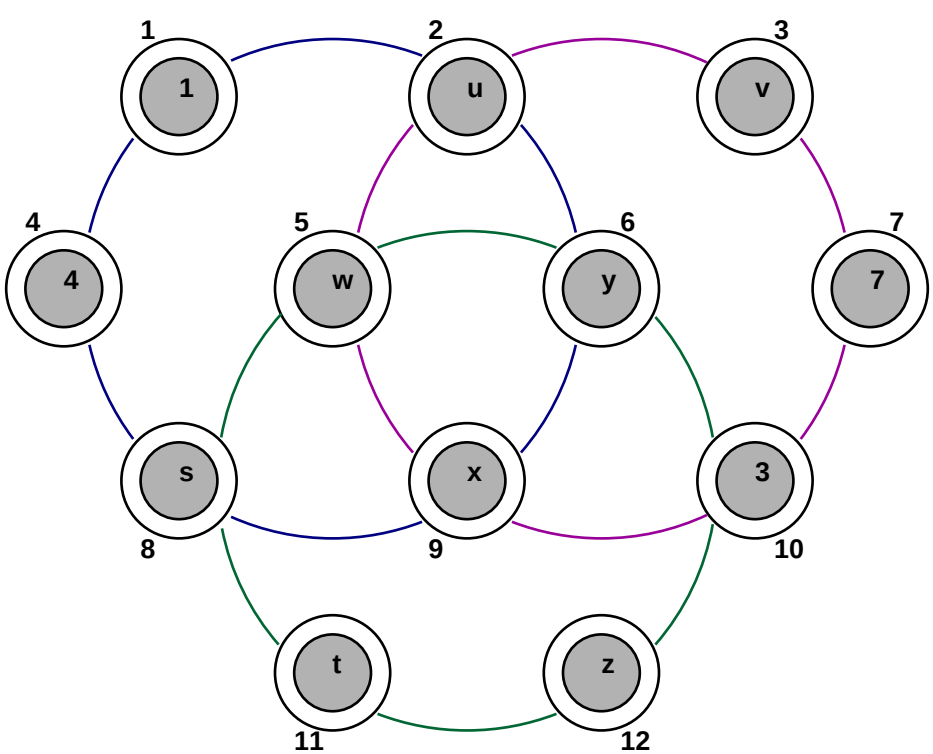

1
2
3
1
w
u
4
5
6
7
x
4
v
y
s
3
8
9
10
7
t
11
z
12

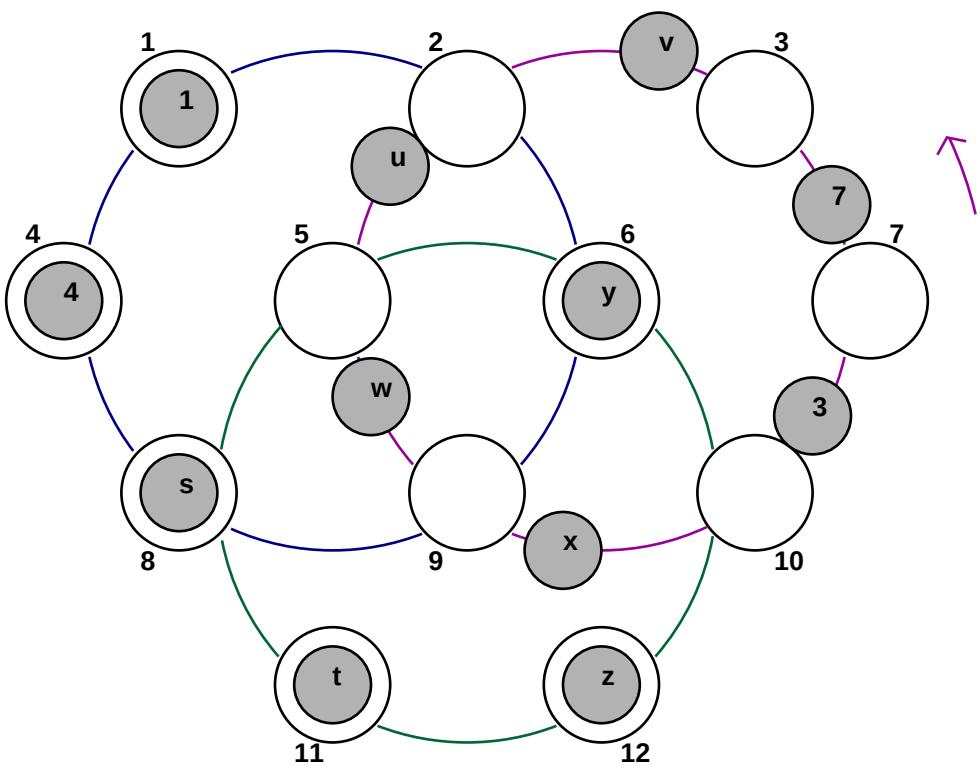

1
2
3
1
w
u
4
5
6
7
4
x
y
v
s
3
7
8
9
10
t
z
11
12

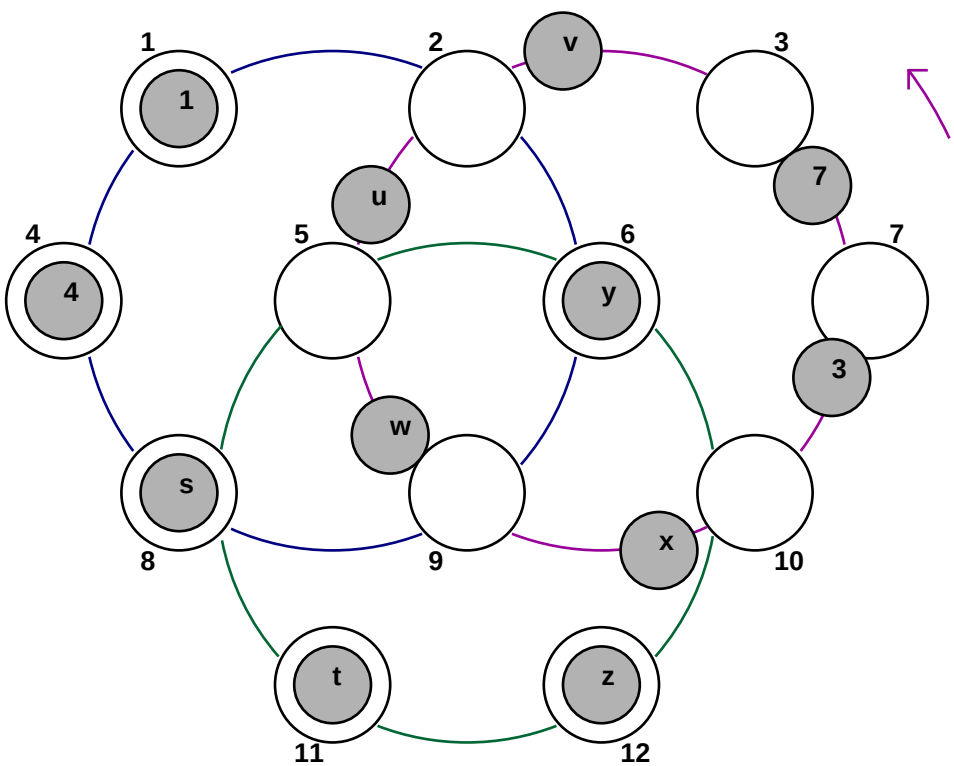

1
2
3
1
w
u
4
5
6
7
4
x
y
v
s
3
7
8
9
10
t
z
11
12

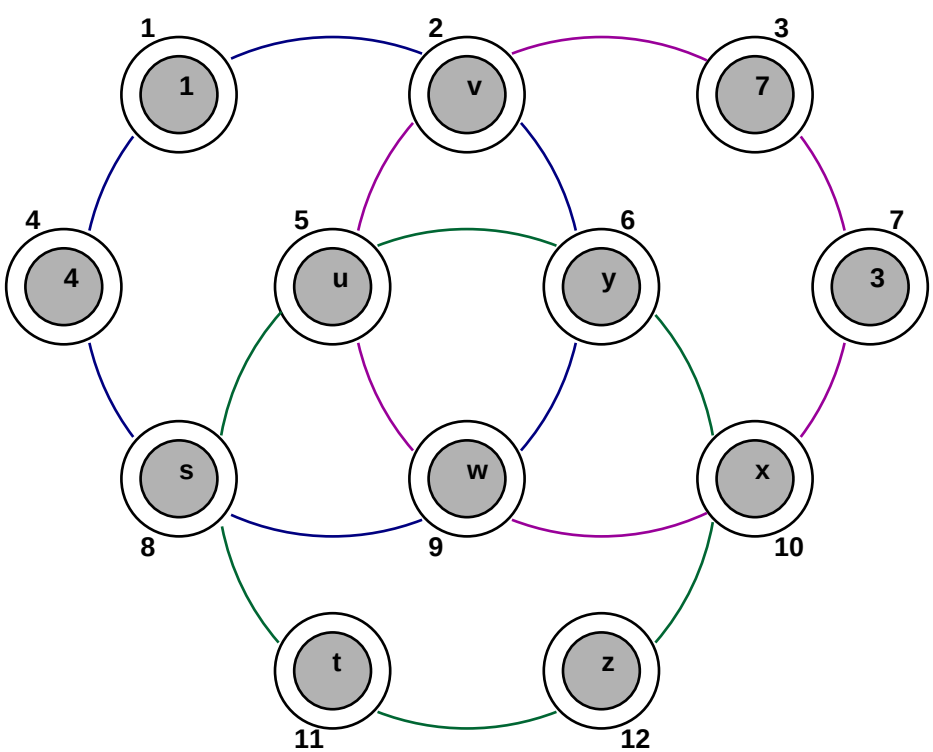

1
2
u
3
1
w
v
4
5
6
7
4
y
x
7
s
3
8
9
10
t
z
11
12

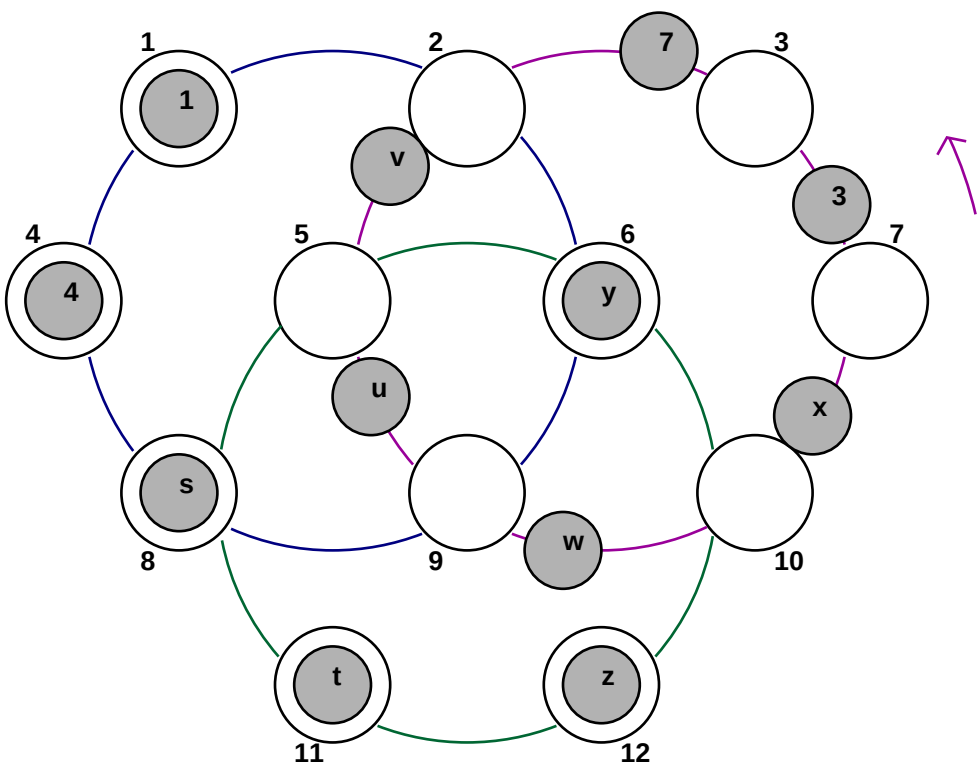

1
2
u
3
1
w
v
4
5
6
7
4
y
7
x
s
3
8
9
10
t
z
11
12

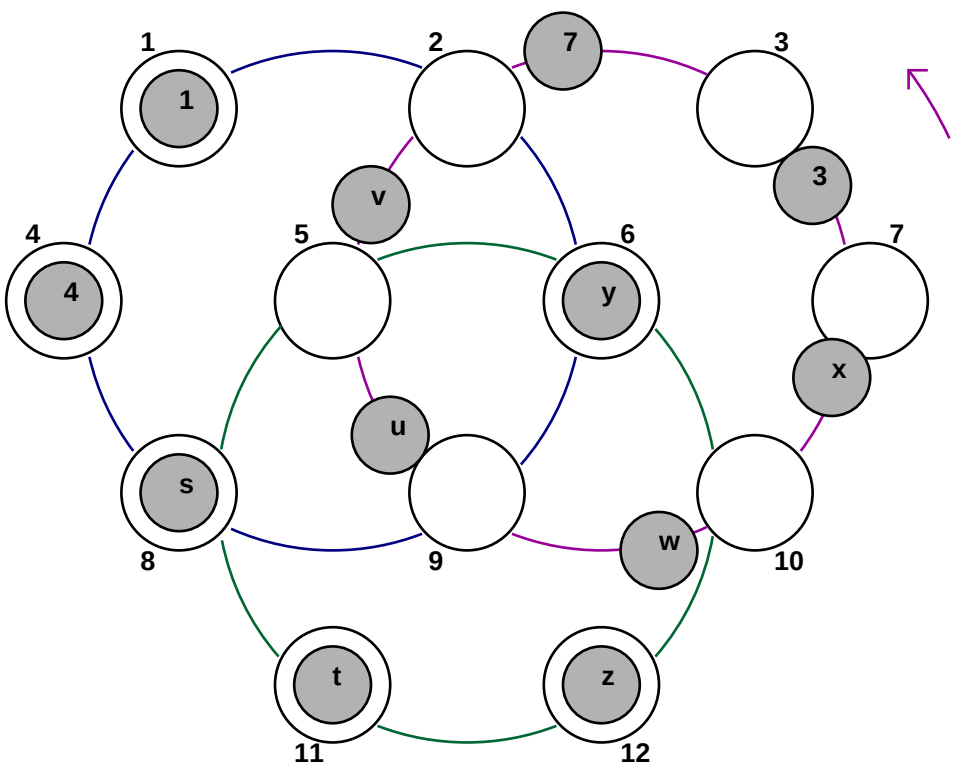

1
2
3
1
u
v
4
5
6
7
4
w
y
7
s
x
3
8
9
10
t
z
11
12

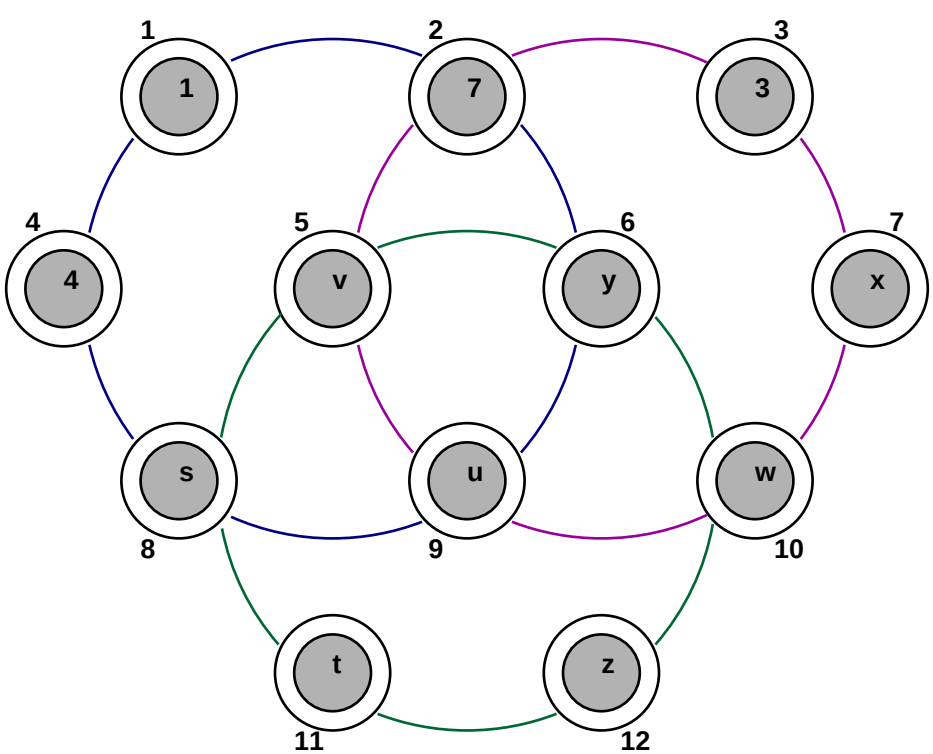

1
2
v
3
1
u
7
4
5
6
7
4
y
w
3
s
x
8
9
10
t
z
11
12


1
2
v
3
1
7
u
4
5
6
7
4
y
3
w
s
x
8
9
10
t
z
11
12

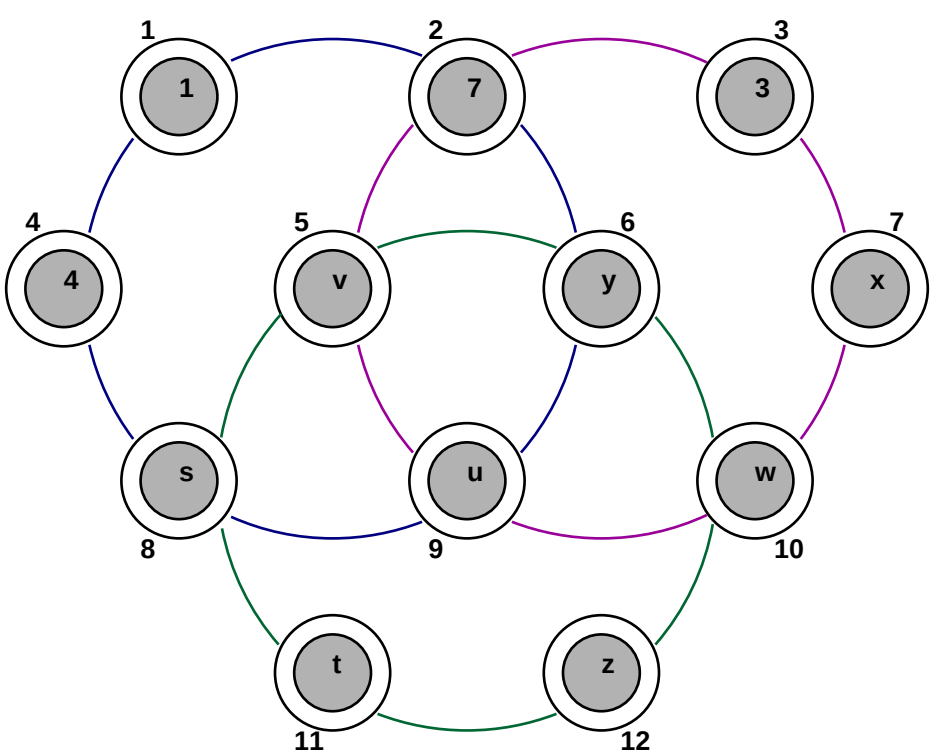

1
1
2
v
3
7
4
4
5
u
6
y
7
3
s
8
w
9
x
10
t
11
z
12

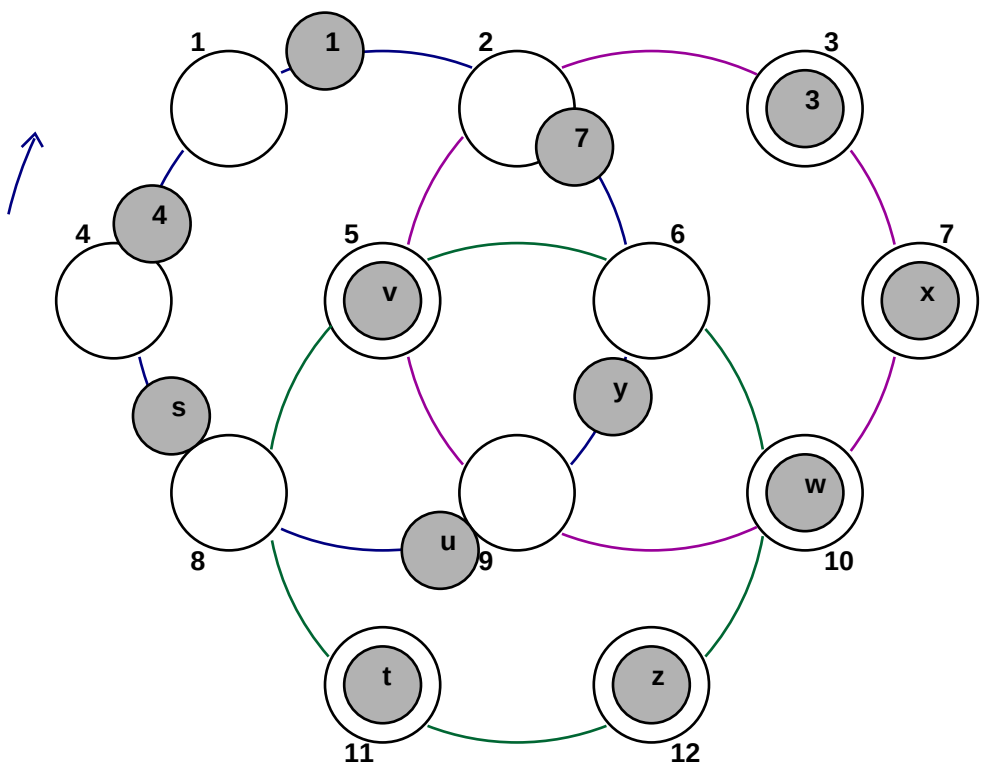

1
2
7
3
1
v
3
4
5
6
7
4
y
u
x
s
9
w
8
10
t
z
11
12

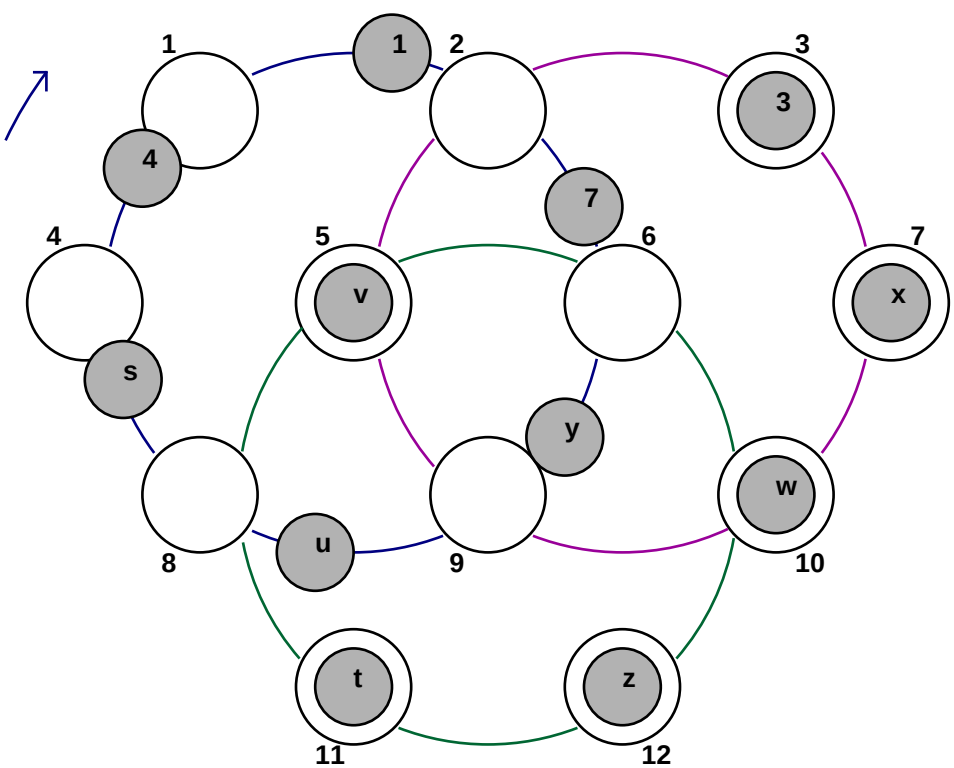

1
2
7
3
1
v
3
4
5
6
7
4
y
x
u
s
w
8
9
10
t
z
11
12

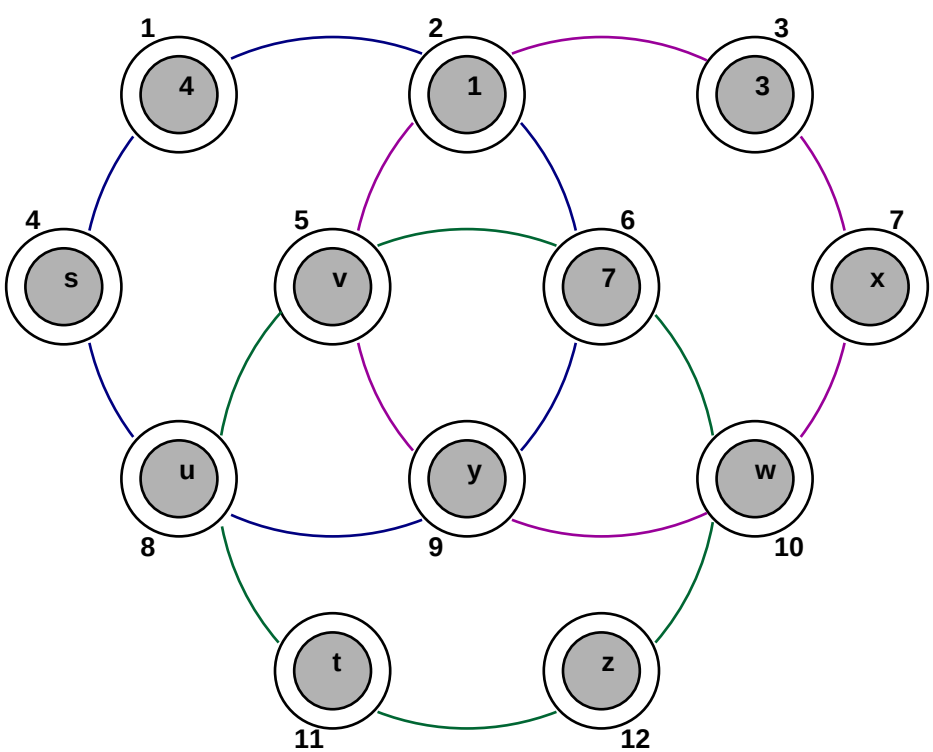

1
2
3
1
7
3
4
5
6
7
4
v
y
x
s
u
w
8
9
10
t
z
11
12

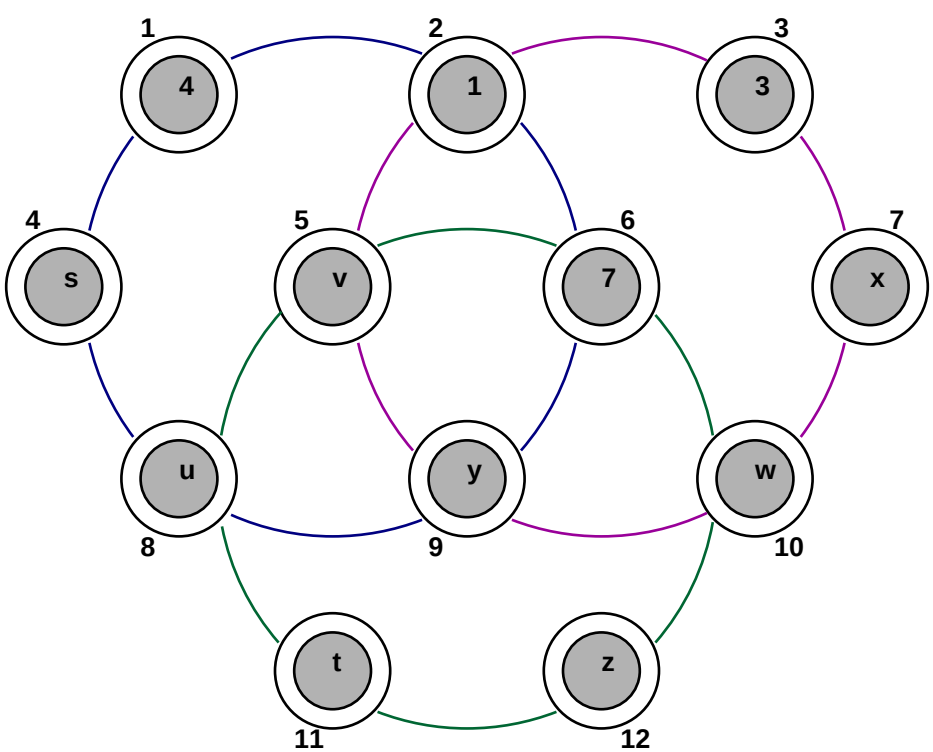
Number 7 can be moved into position 9 while keeping numbers 1, 3, and 4 in position by the following moves.

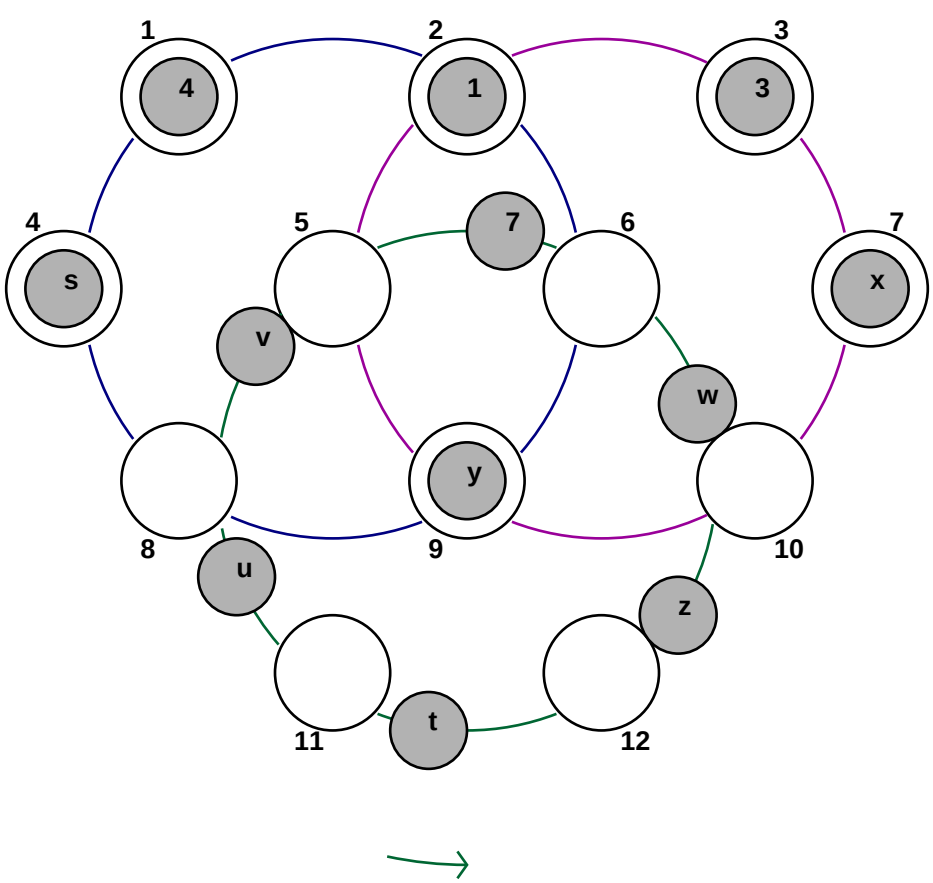

1
2
3
1
7
3
4
5
6
7
4
v
y
x
s
u
w
8
9
10
t
z
11
12

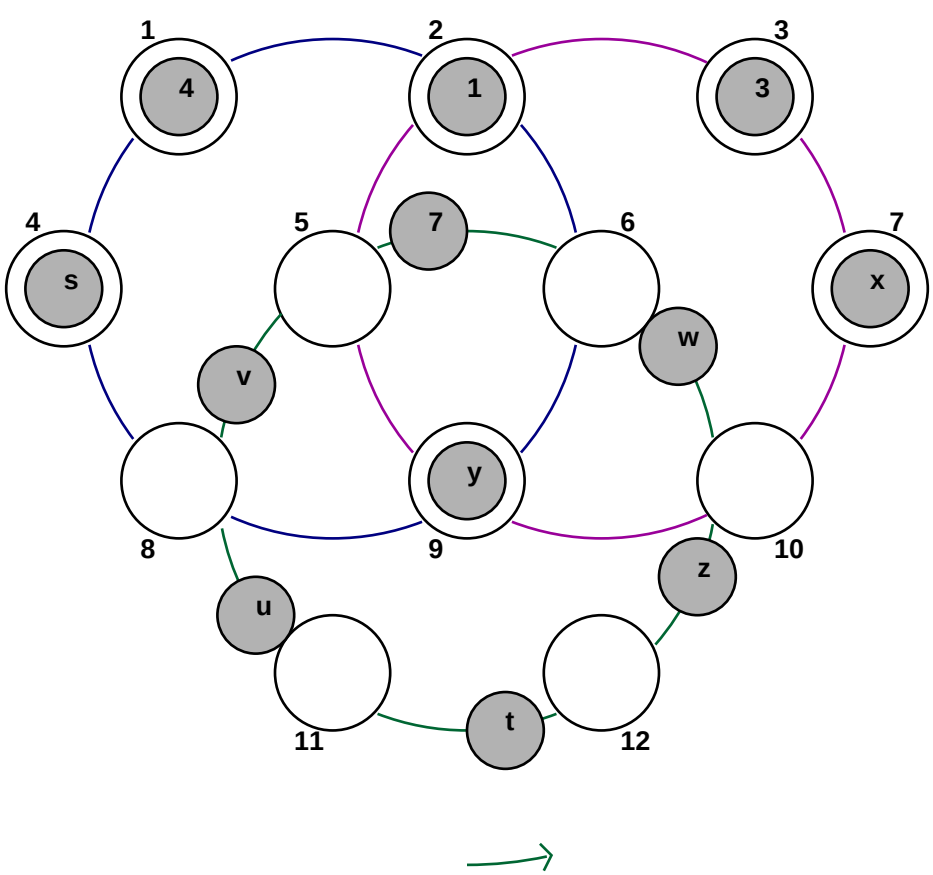

1
1
2
3
3
7
4
4
5
6
7
v
x
y
s
w
u
8
9
10
t
z
11
12

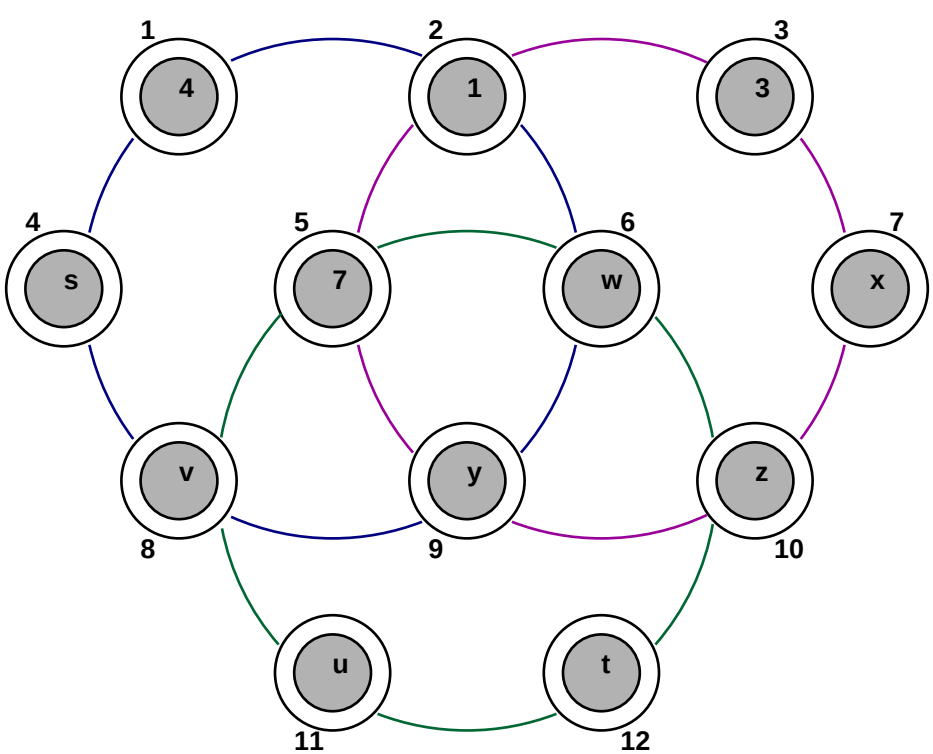

1
1
2
3
3
4
4
7
4
5
6
7
v
x
s
y
w
u
8
9
10
t
z
11
12

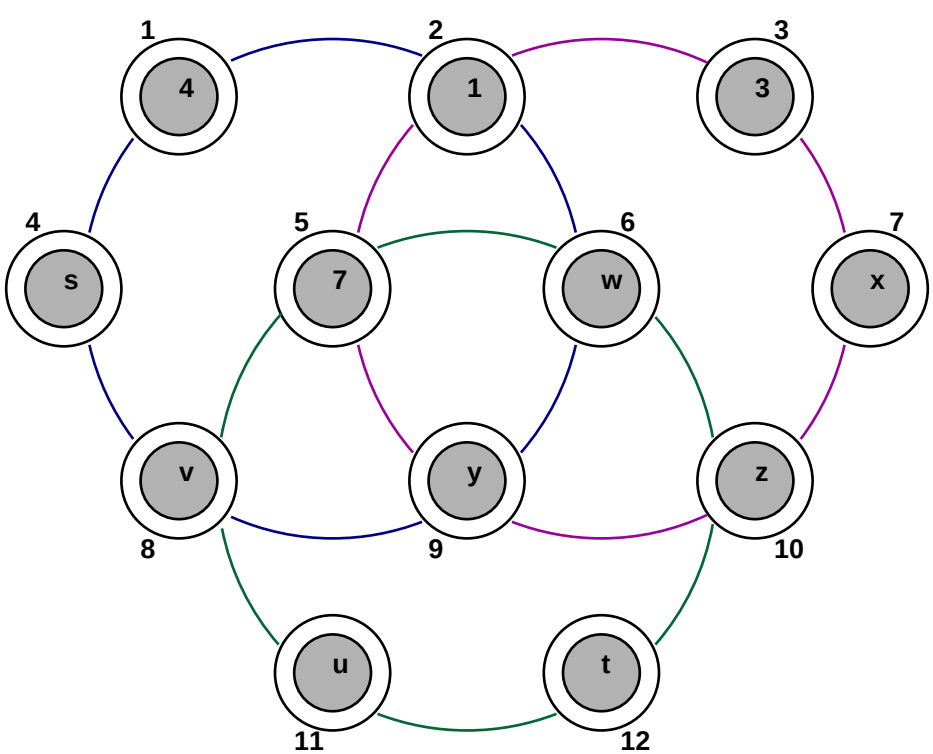

1
4
2
1
3
3
4
s
5
v
6
7
7
x
u
8
y
9
w
10
t
11
z
12

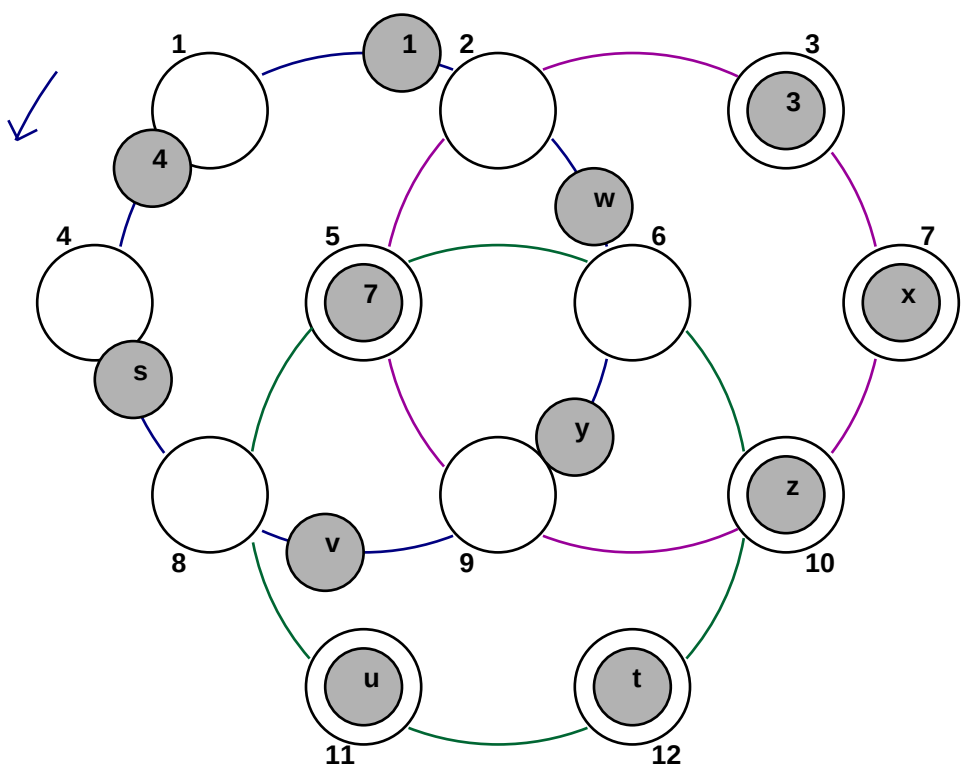

1
4
2
1
3
3
4
s
5
v
6
7
7
x
u
8
y
9
w
10
t
11
z
12

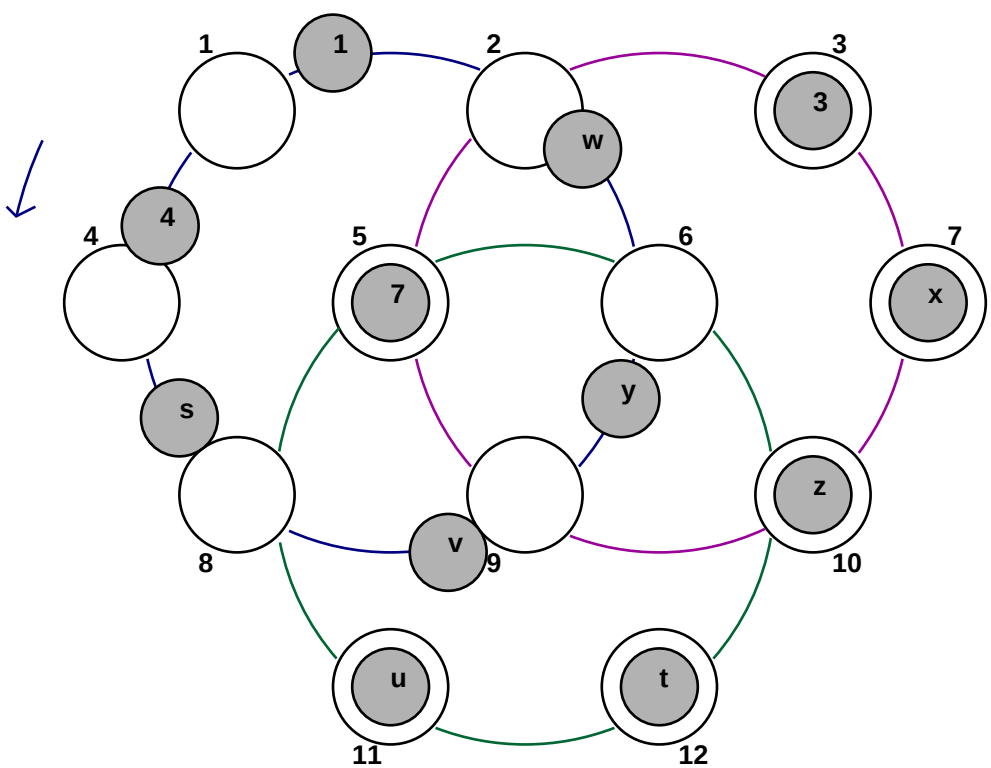

1
2
3
4
1
3
4
5
7
6
7
s
x
v
w
y
8
9
10
u
z
t
11
12

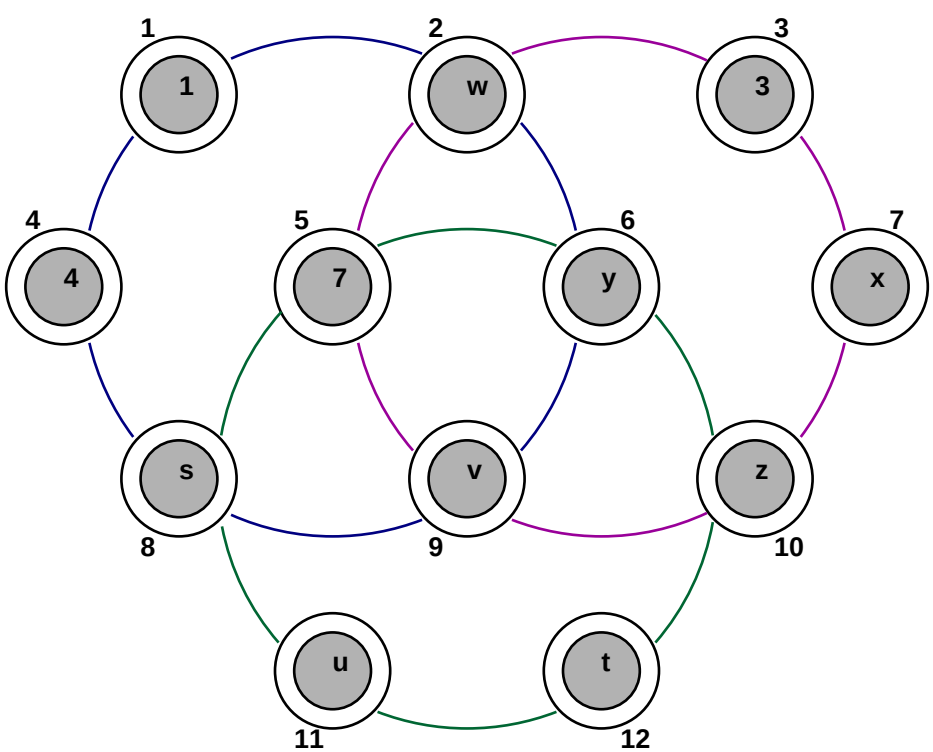

1
2
3
4
1
3
4
5
7
6
7
s
x
w
v
y
8
9
10
z
u
t
11
12

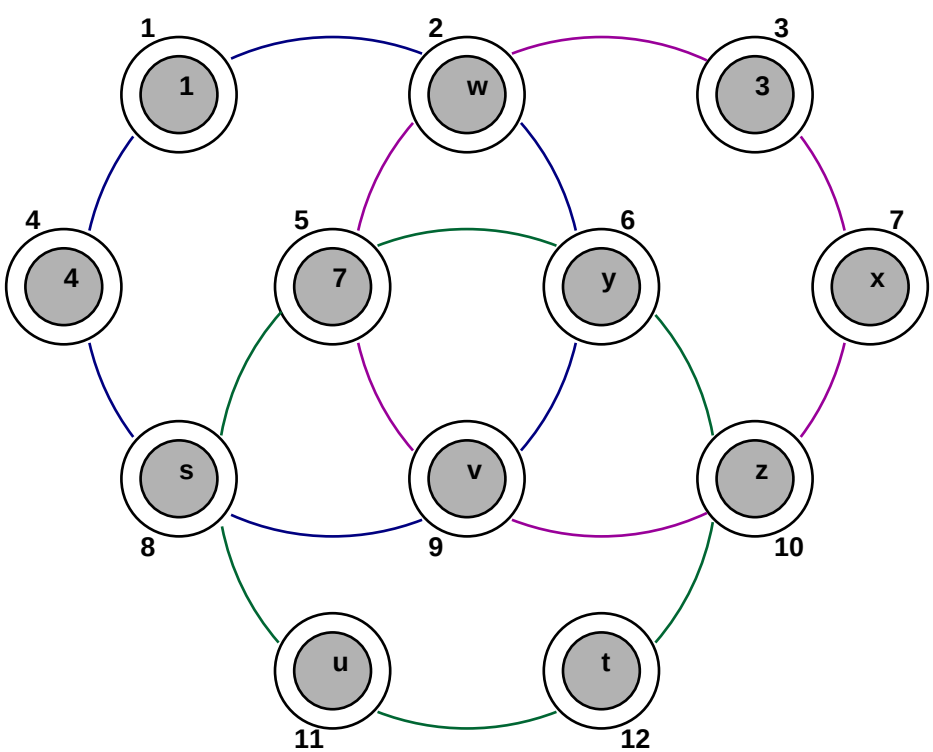

1
4
2
1
3
3
4
s
5
7
6
w
7
x
v
8
y
9
z
10
u
11
t
12

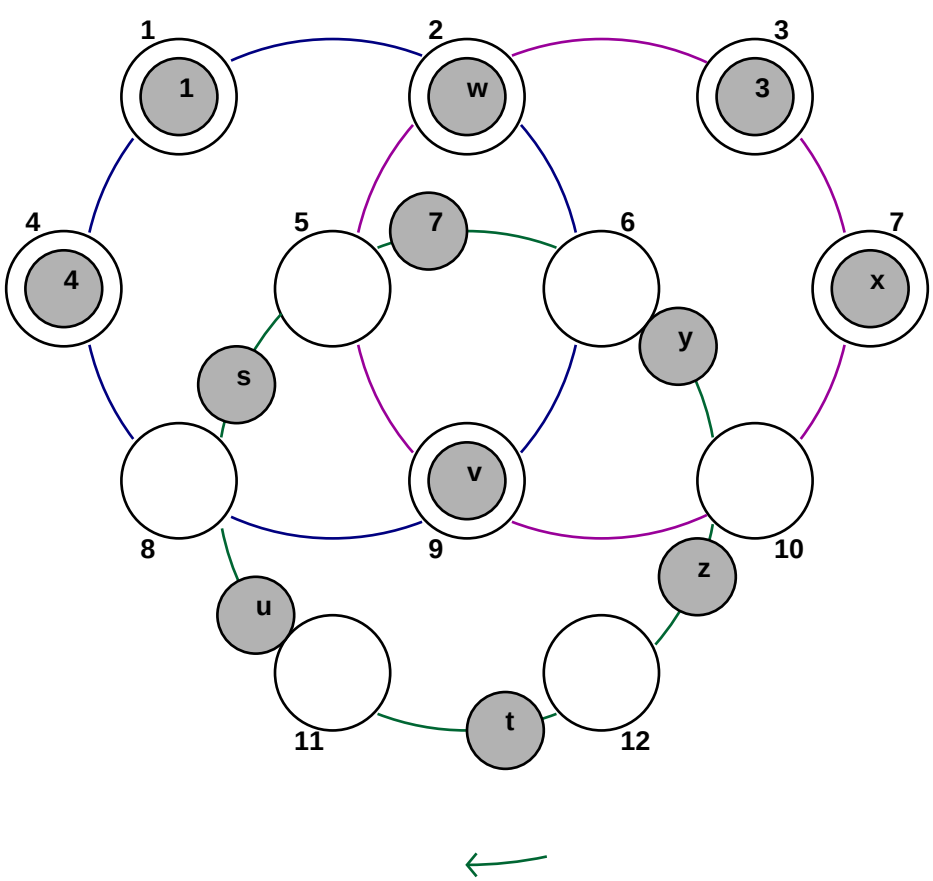

1
4
2
1
3
3
4
s
5
7
6
w
7
x
v
8
y
9
z
10
u
11
t
12

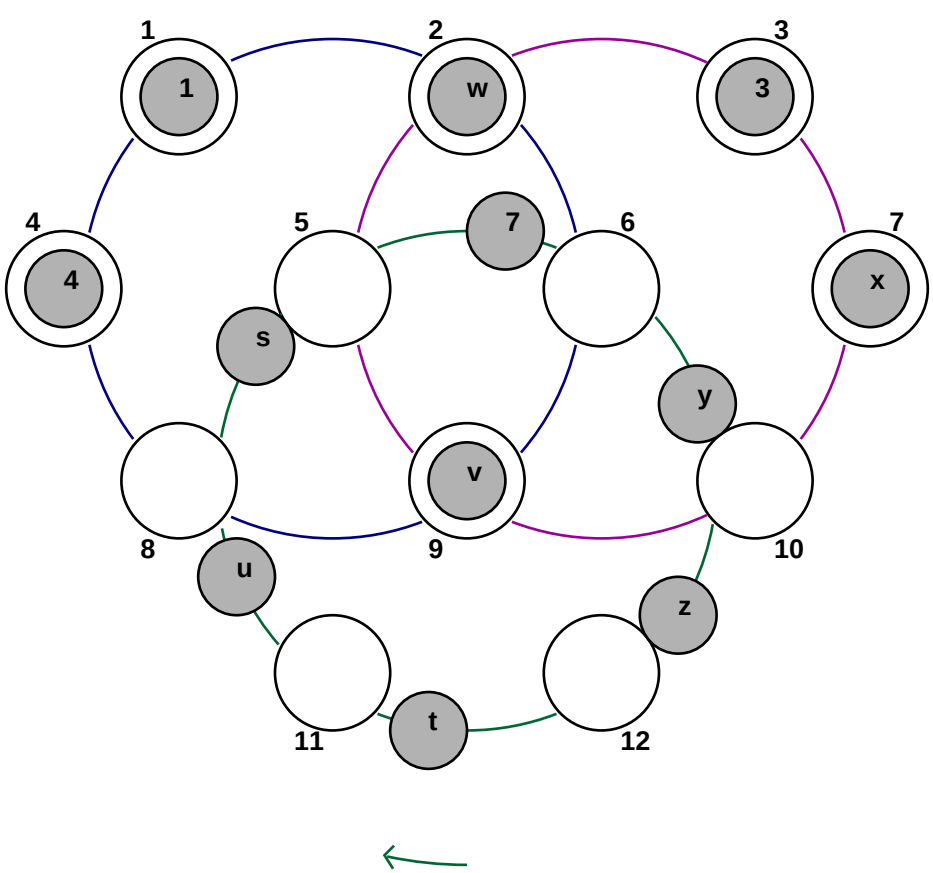

1
1
2
3
3
4
4
w
4
5
6
7
7
x
s
y
z
8
v
9
10
u
t
11
12

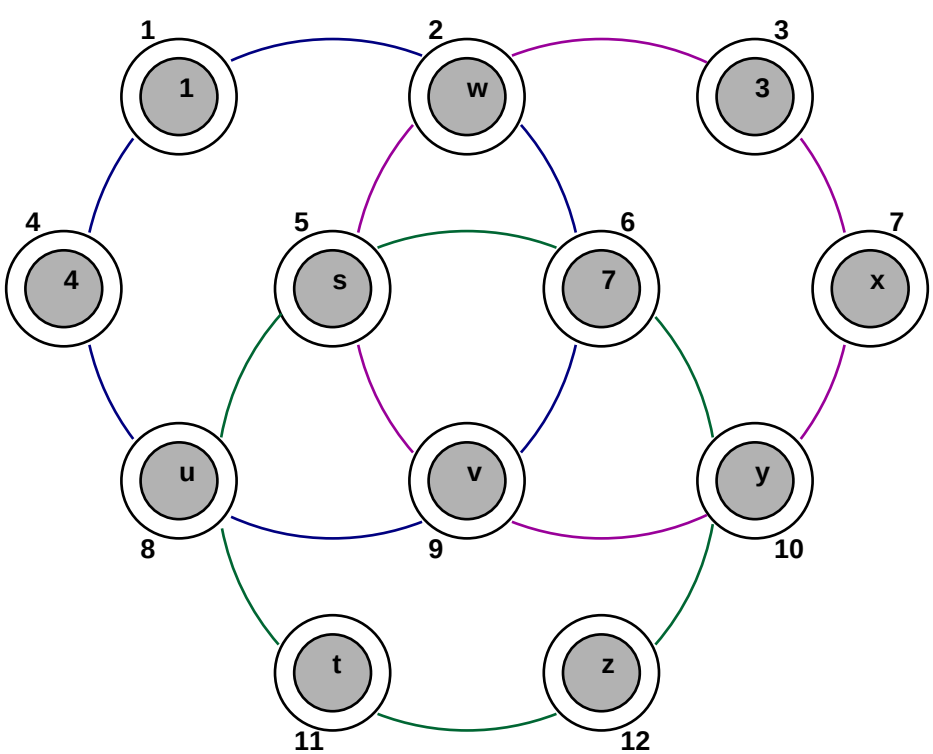

1
1
2
3
3
w
4
4
4
5
6
7
7
x
y
s
z
v
8
9
10
u
t
11
12

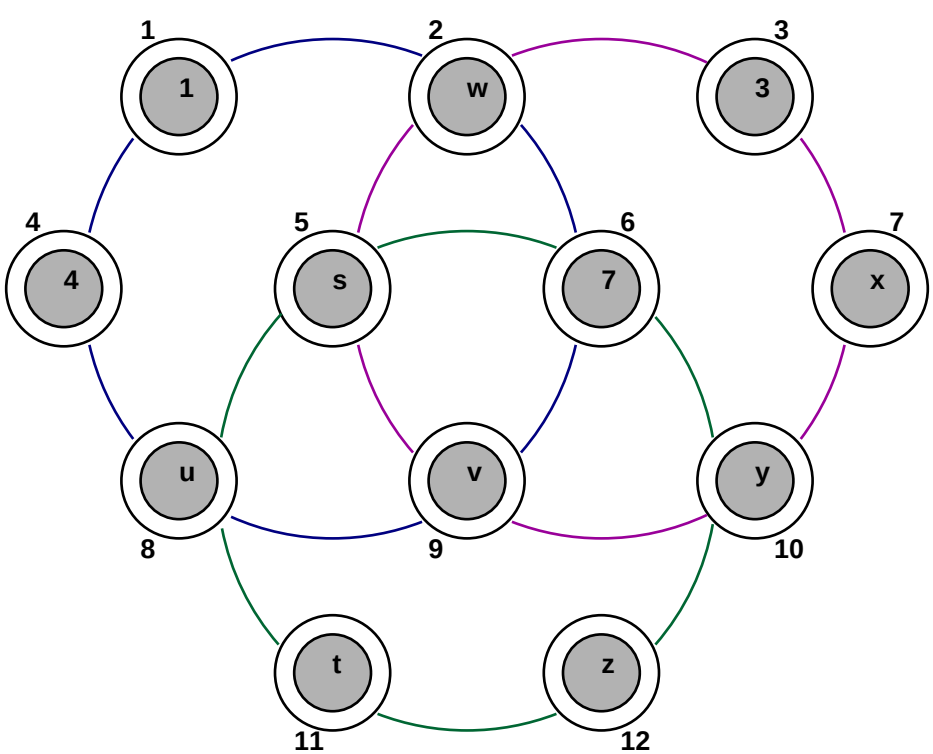

1
2
3
1
w
3
4
5
6
7
4
7
y
x
s
v
z
8
9
10
u
t
11
12

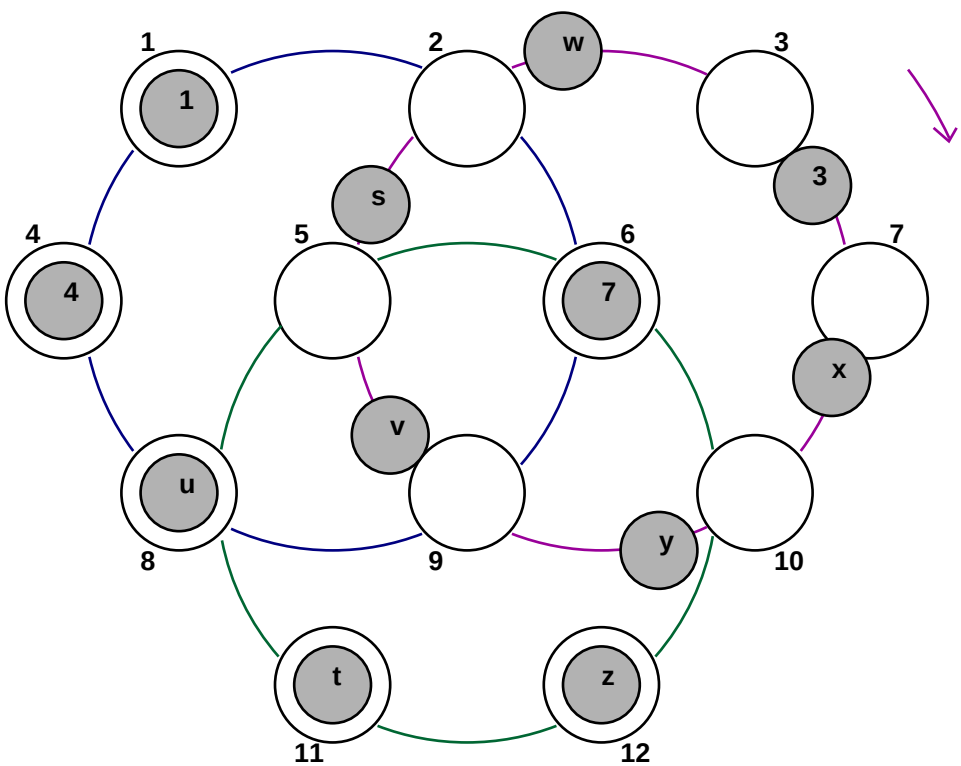

1
2
3
1
w
3
4
5
6
7
4
7
y
x
s
v
z
8
9
10
u
t
11
12

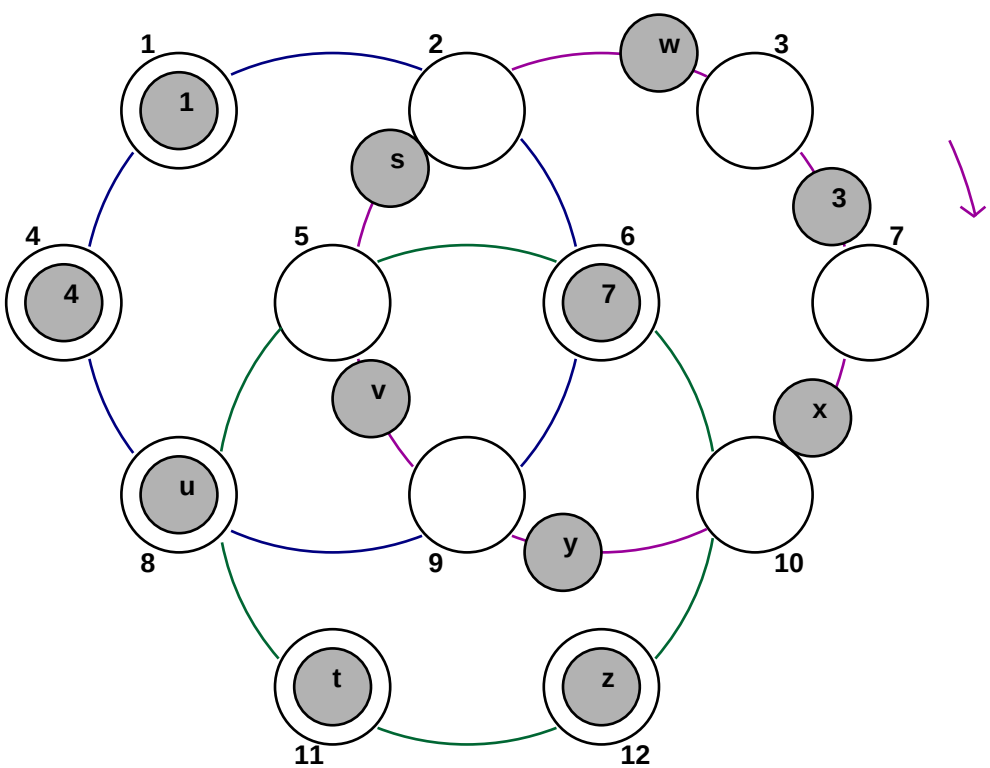

1
2
3
1
w
3
4
5
7
6
7
4
x
y
s
v
8
9
10
z
u
t
11
12

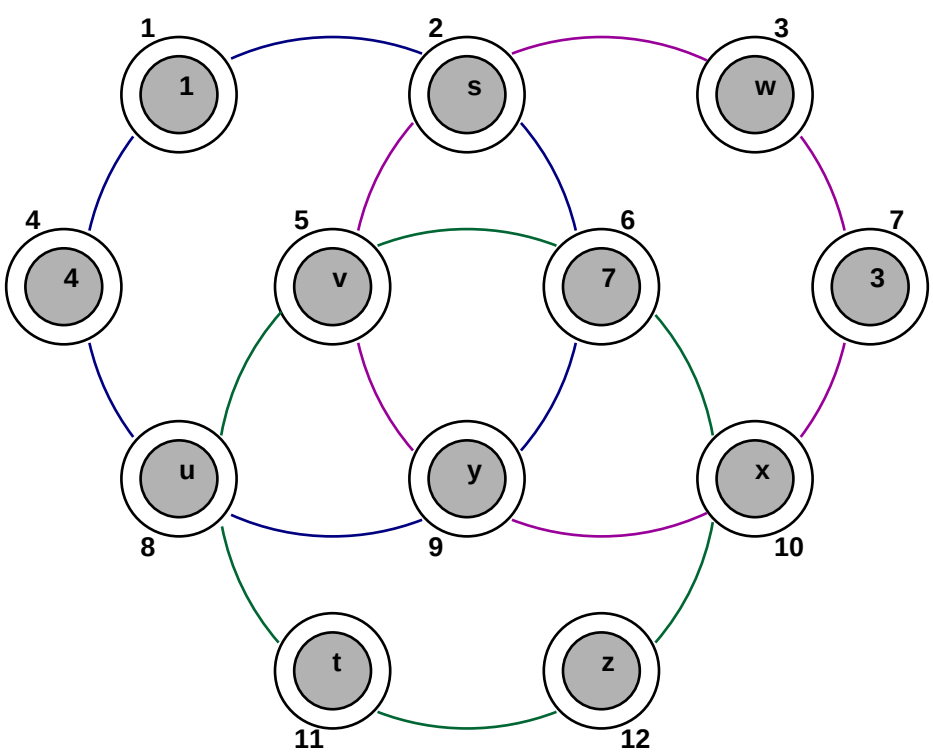

1
2
3
1
w
3
4
5
6
7
4
7
x
s
y
v
8
9
10
u
z
11
12
t

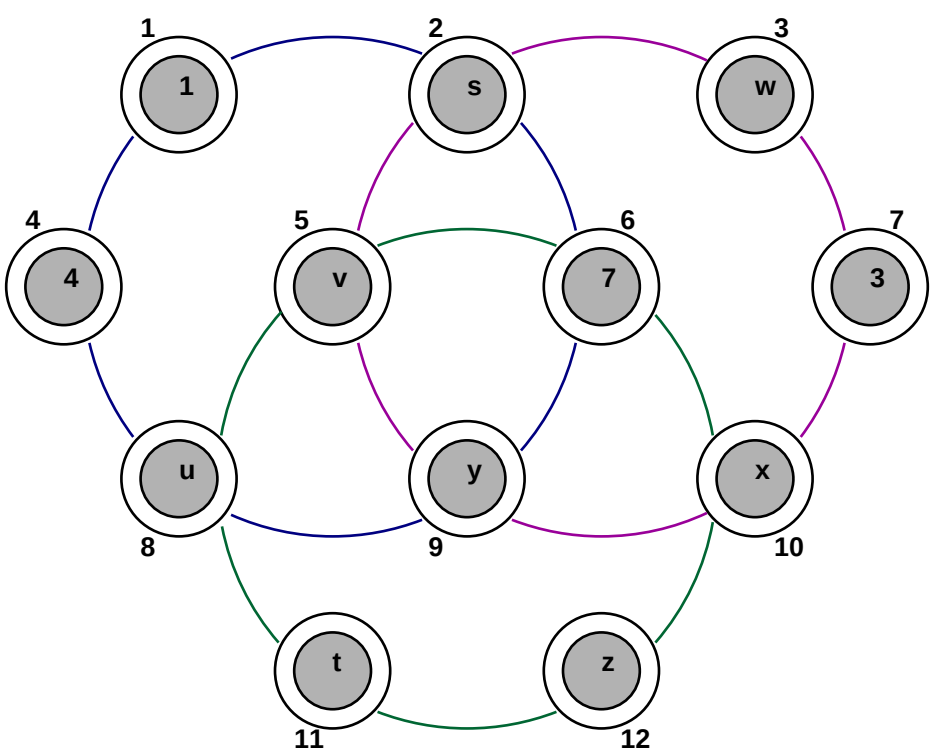

1
2
3
1
w
3
4
5
6
7
4
s
7
x
u
v
y
8
9
10
t
z
11
12

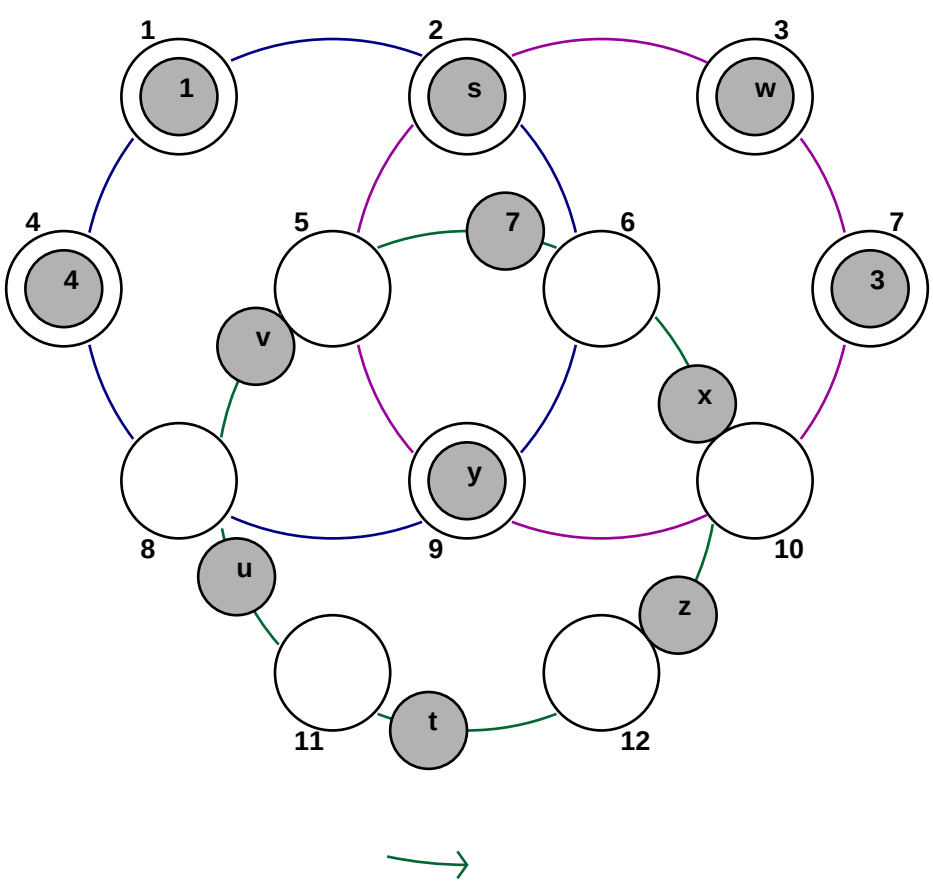

1
2
3
1
w
3
4
5
6
7
4
s
7
x
u
v
y
8
9
10
t
z
11
12

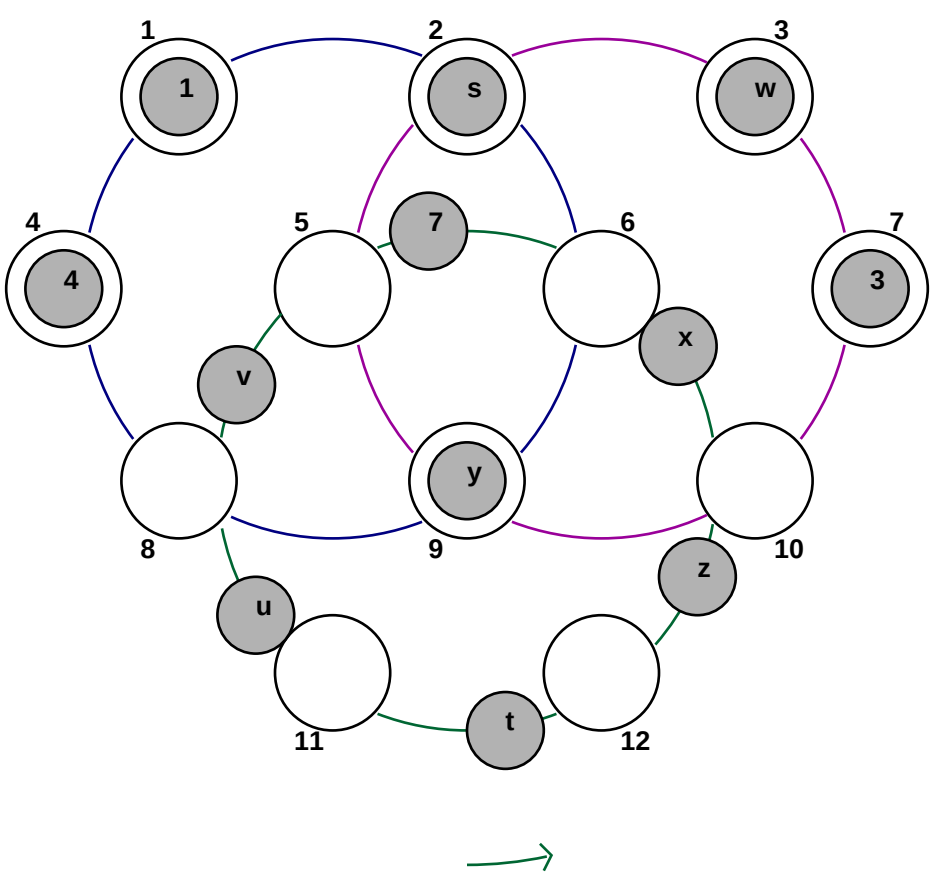

1
2
w
3
1
3
s
4
5
6
7
4
7
x
v
u
y
8
9
10
t
z
11
12

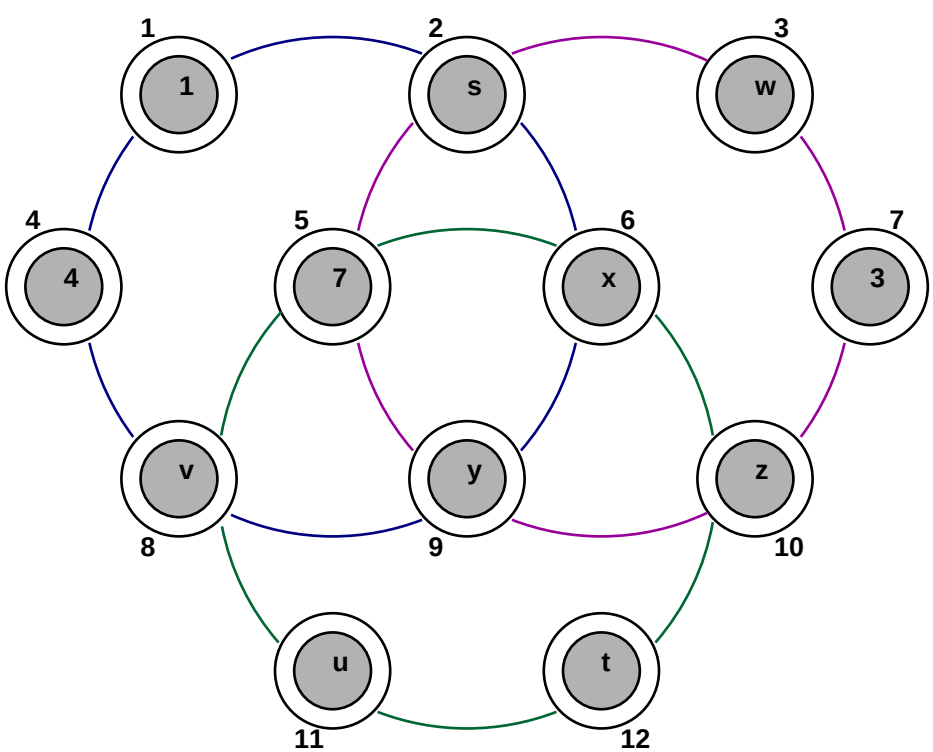

1
2
w
3
1
s
3
4
5
6
7
4
7
v
x
u
8
9
y
10
t
z
11
12

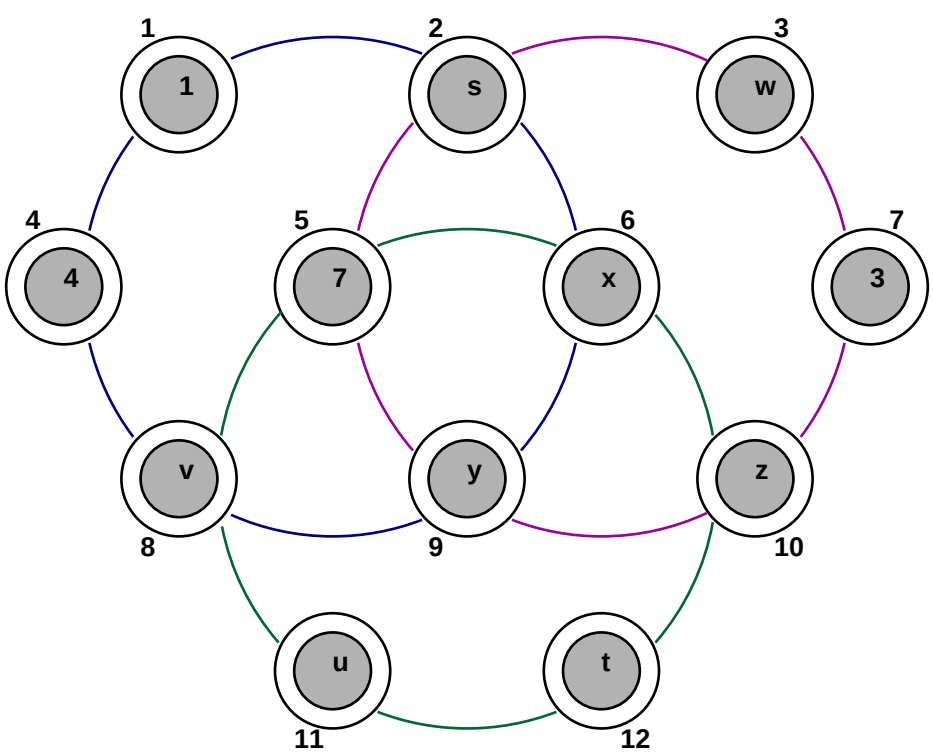

1
1
2
s
3
w
4
4
5
v
6
7
7
3
u
8
y
9
x
10
t
11
z
12

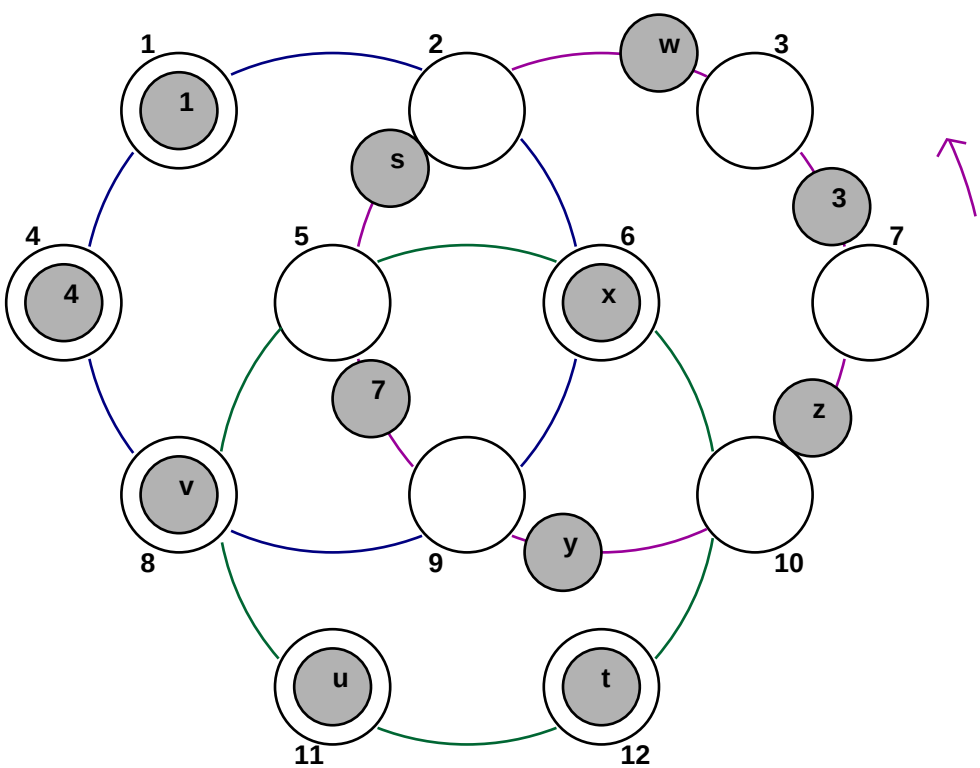

1
1
2
s
3
w
4
4
5
v
6
7
7
3
u
8
y
9
x
10
t
11
z
12

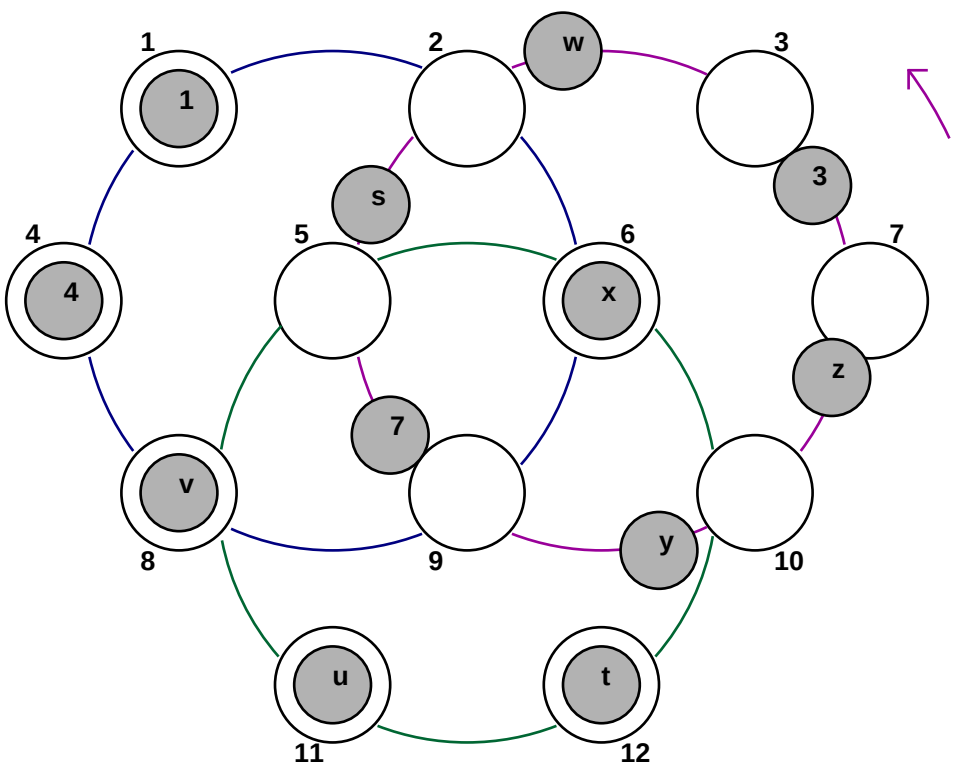

1
2
3
1
s
w
4
5
7
6
7
4
3
v
x
y
8
9
10
u
z
11
t
12

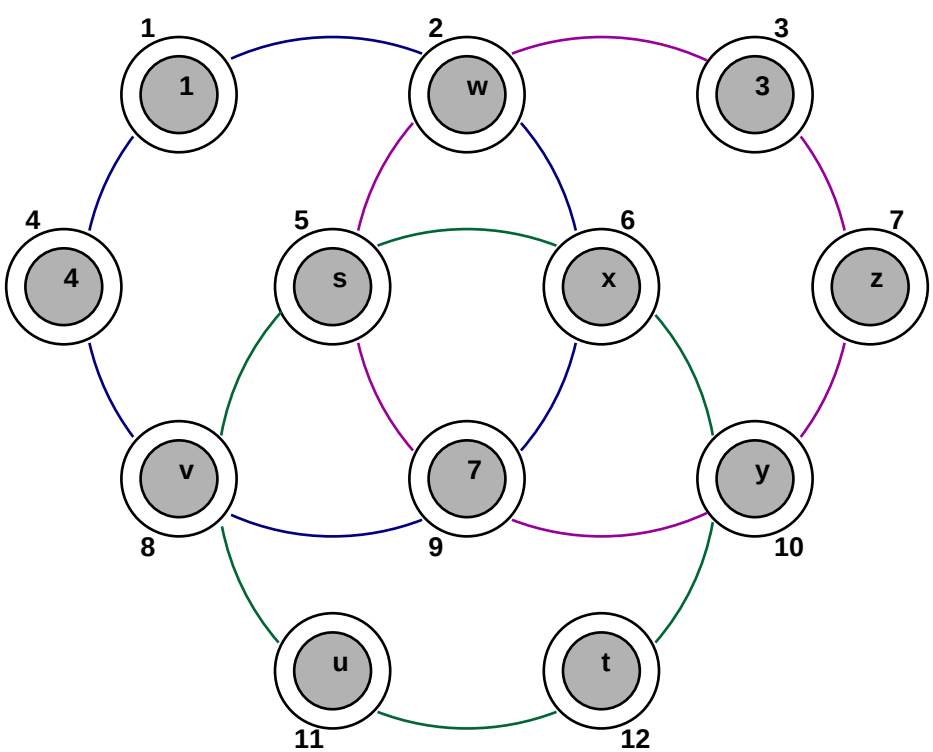

1
2
3
1
s
w
4
5
6
7
4
7
3
x
v
y
8
9
10
z
u
t
11
12


1
1
2
s
3
w
4
4
5
7
6
x
7
3
v
8
y
9
z
10
u
11
t
12

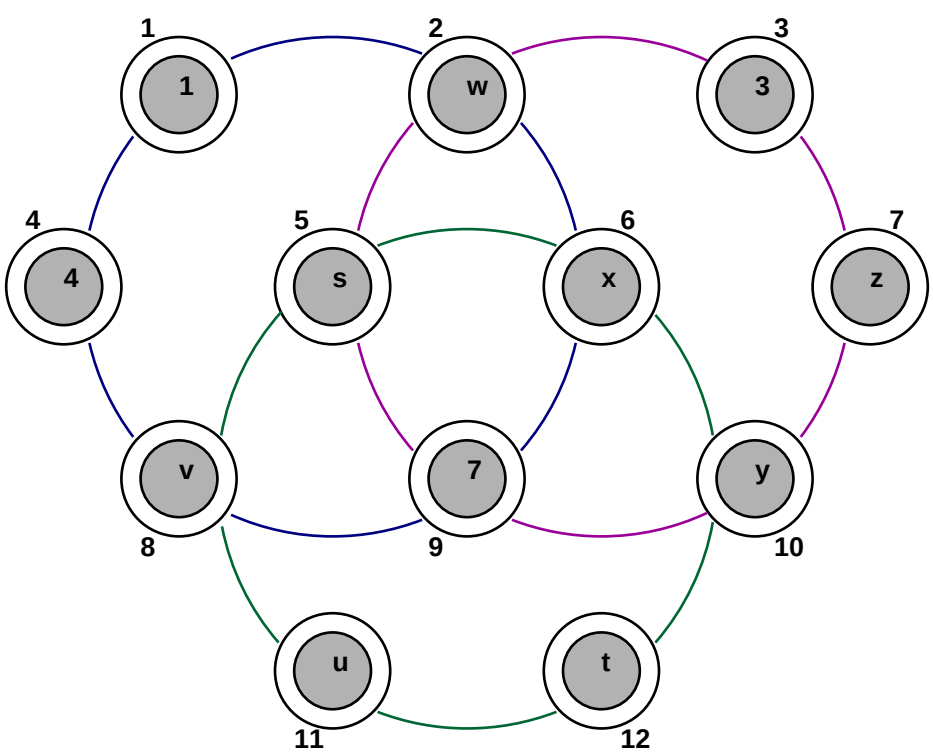

1
1
2
s
3
w
4
4
5
7
6
x
7
3
v
8
y
9
z
10
u
11
t
12

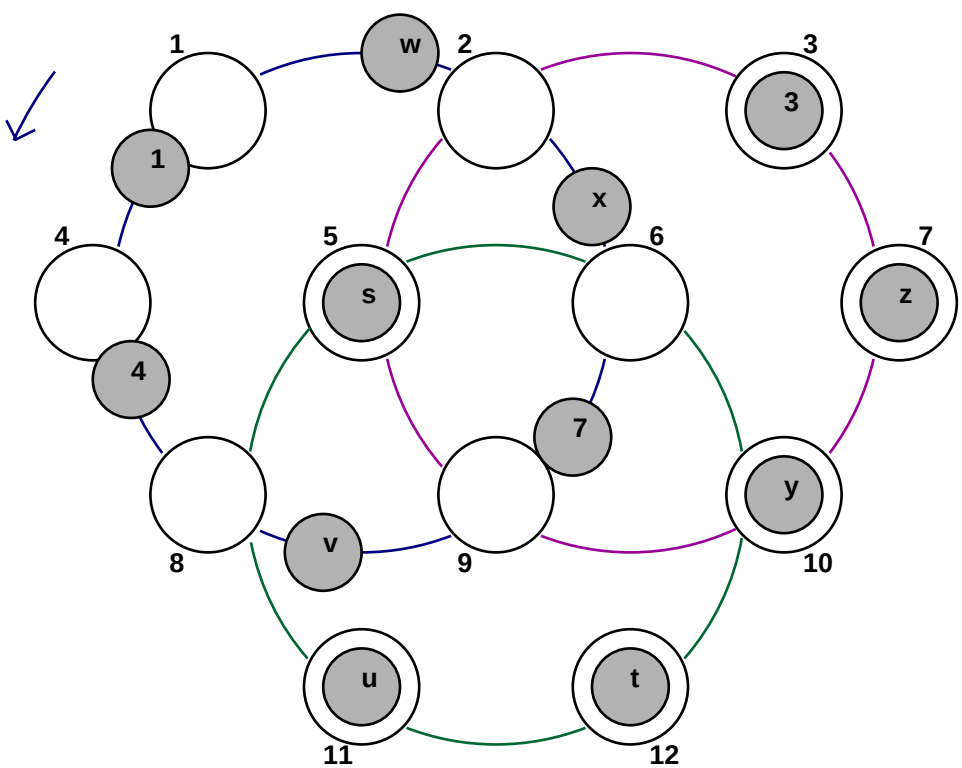

1
2
w
3
1
s
3
4
5
6
7
4
x
7
z
v
y
8
9
10
u
t
11
12

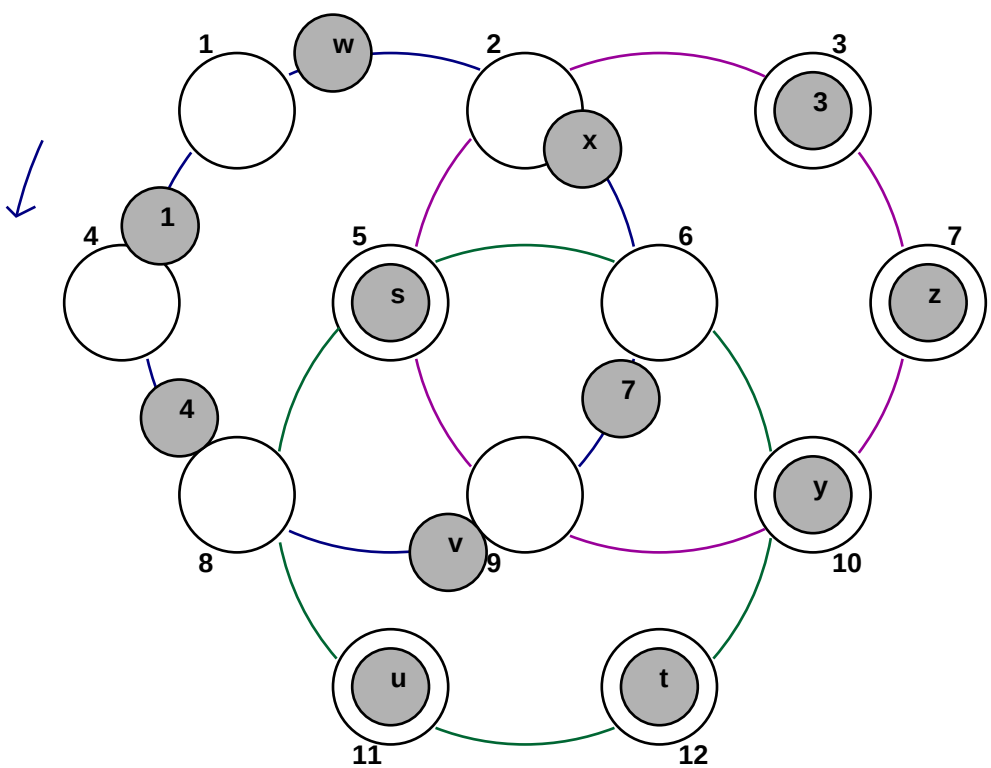

1
2
w
3
1
3
s
4
5
6
7
4
x
z
7
v
8
9
y
10
u
t
11
12

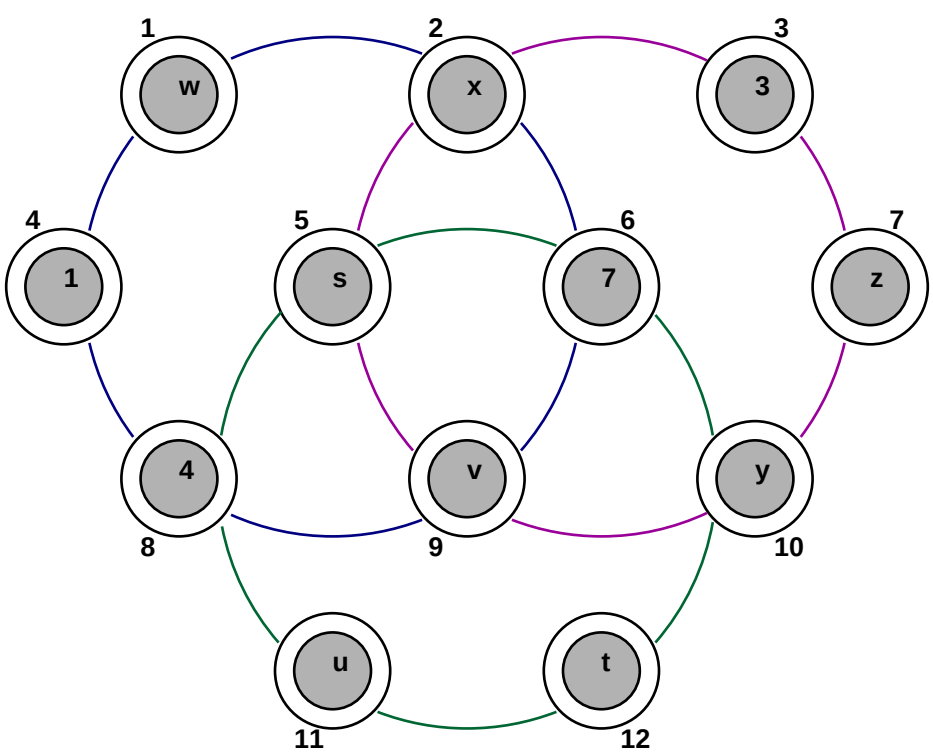

1
2
3
1
w
3
4
5
6
7
4
s
x
z
v
7
y
8
9
10
u
t
11
12

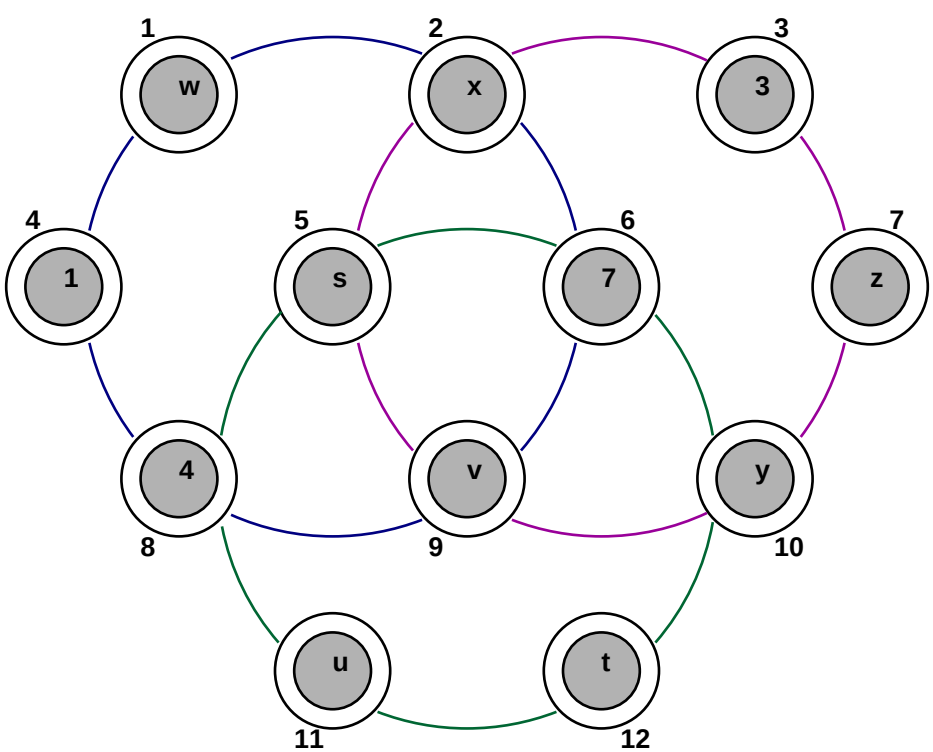
Number 7 can be moved into position 7 while keeping numbers 1, 3, and 4 in position by the following moves.

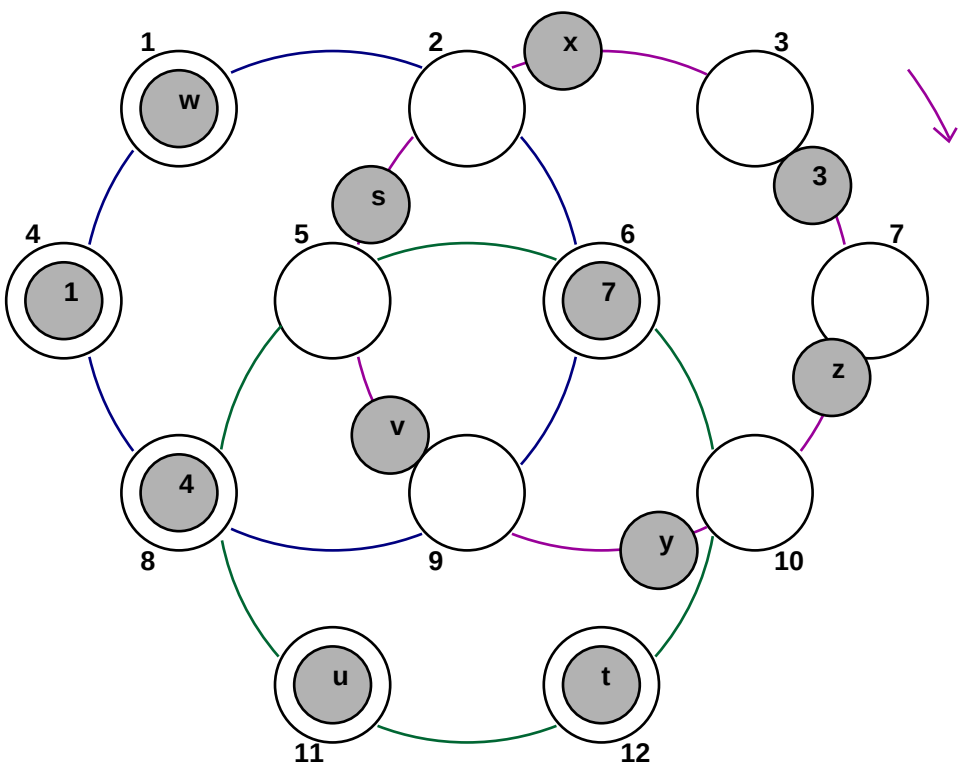

1
2
3
1
w
3
4
5
6
7
4
s
x
z
v
7
y
8
9
10
u
t
11
12

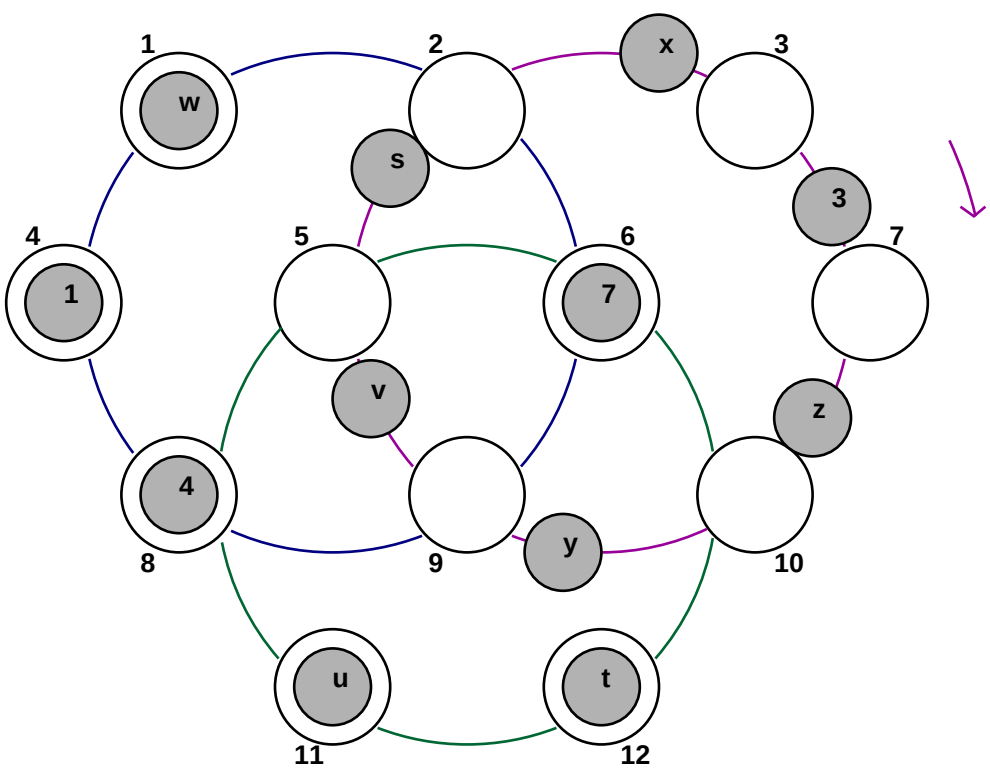

1
w
2
3
3
1
x
4
5
6
7
s
z
4
7
y
v
8
9
10
u
t
11
12

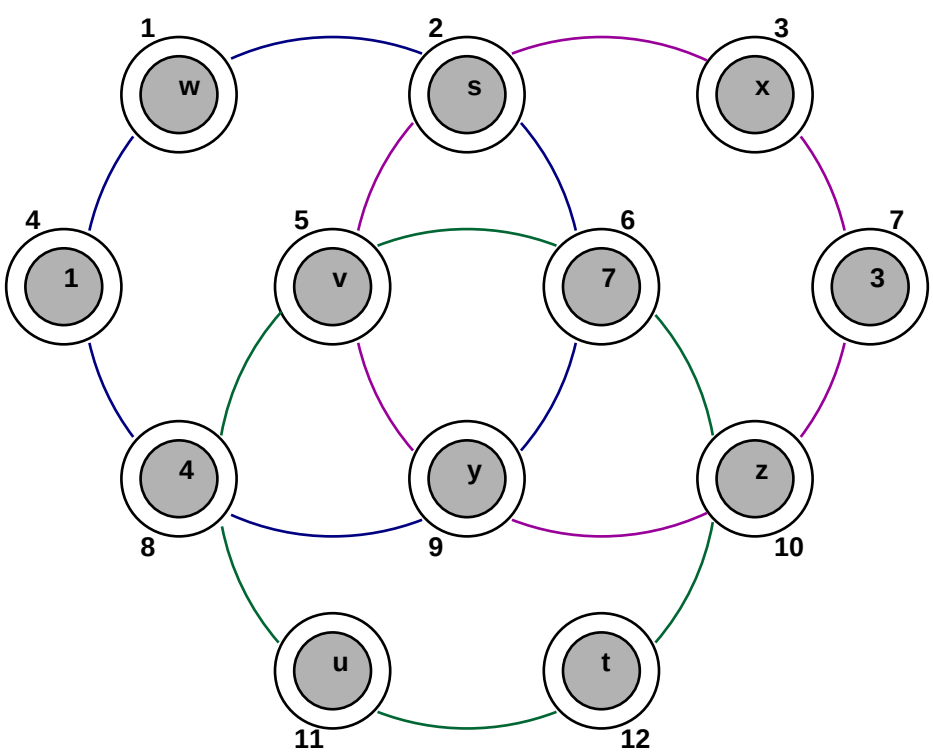

1
w
2
3
3
x
1
4
5
6
7
s
z
7
4
y
v
8
9
10
u
t
11
12

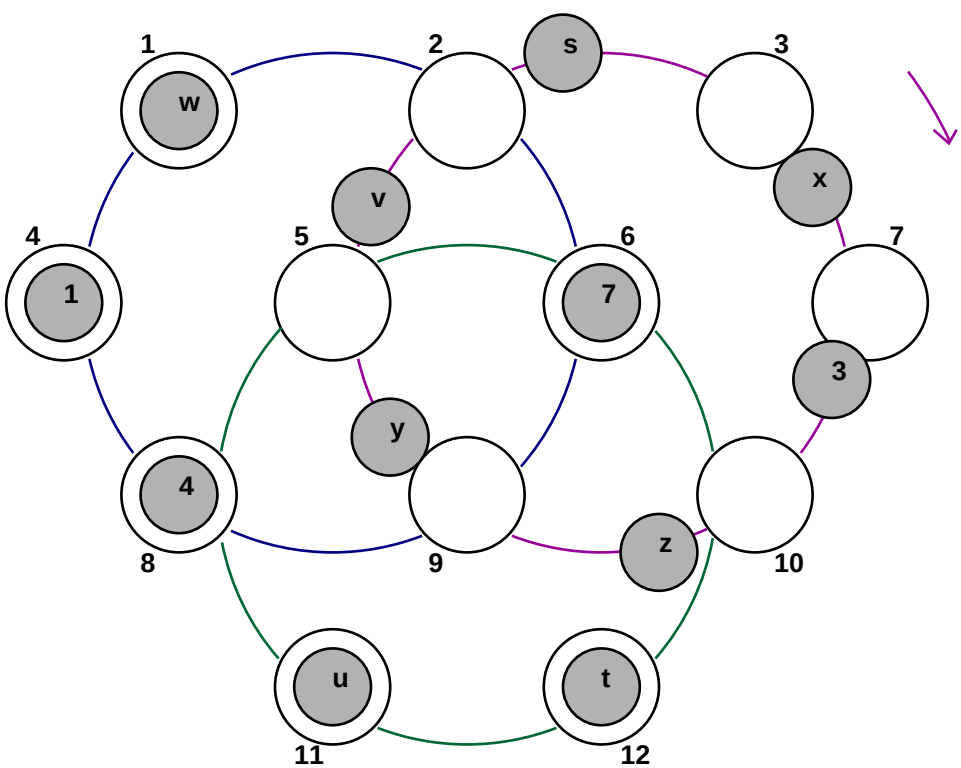

1
w
2
x
3
3
4
1
5
s
6
7
7
z
4
4
v
y
8
9
10
u
t
11
12

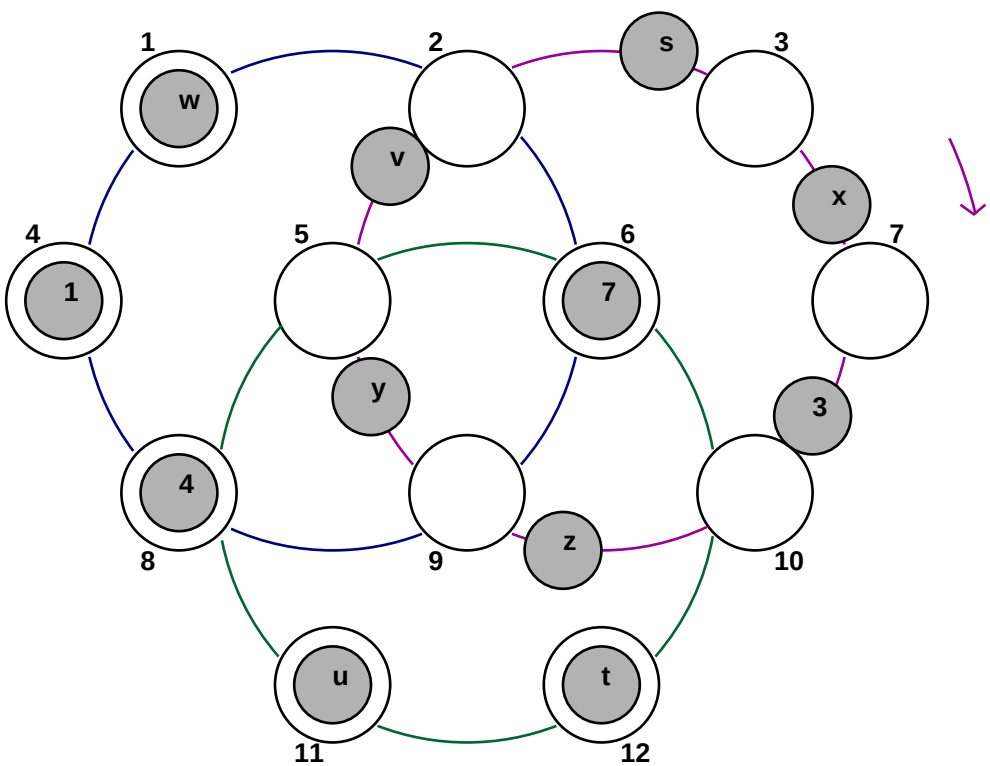

1
w
2
x
3
3
4
1
5
s
6
7
7
z
4
4
v
y
8
9
10
u
t
11
12

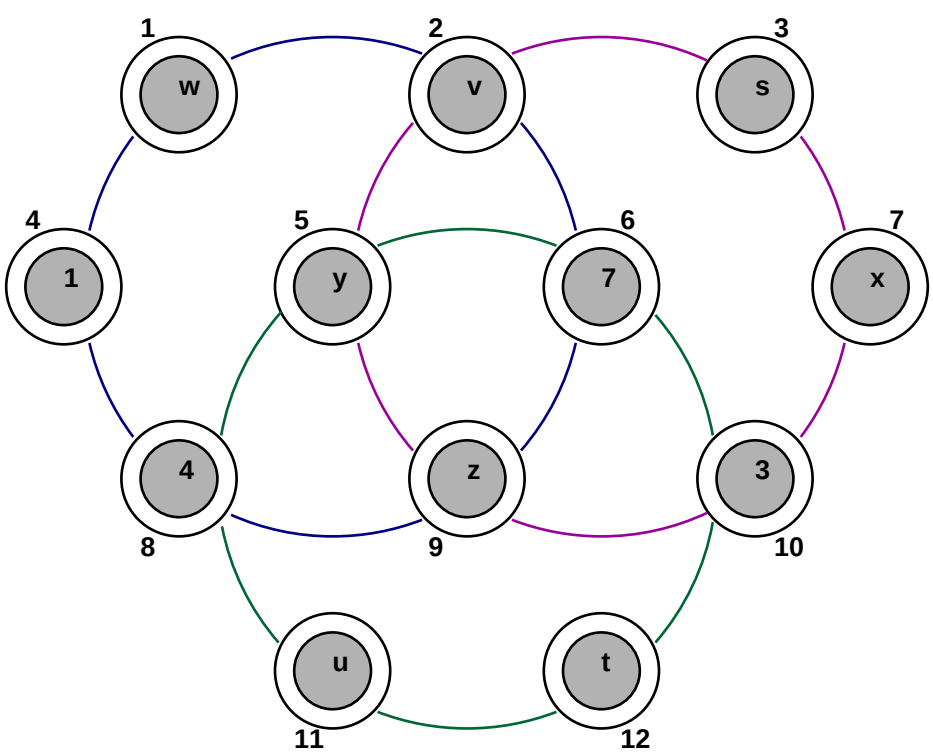

1
w
2
x
3
3
s
4
1
5
6
7
7
z
v
4
8
9
y
10
u
t
11
12

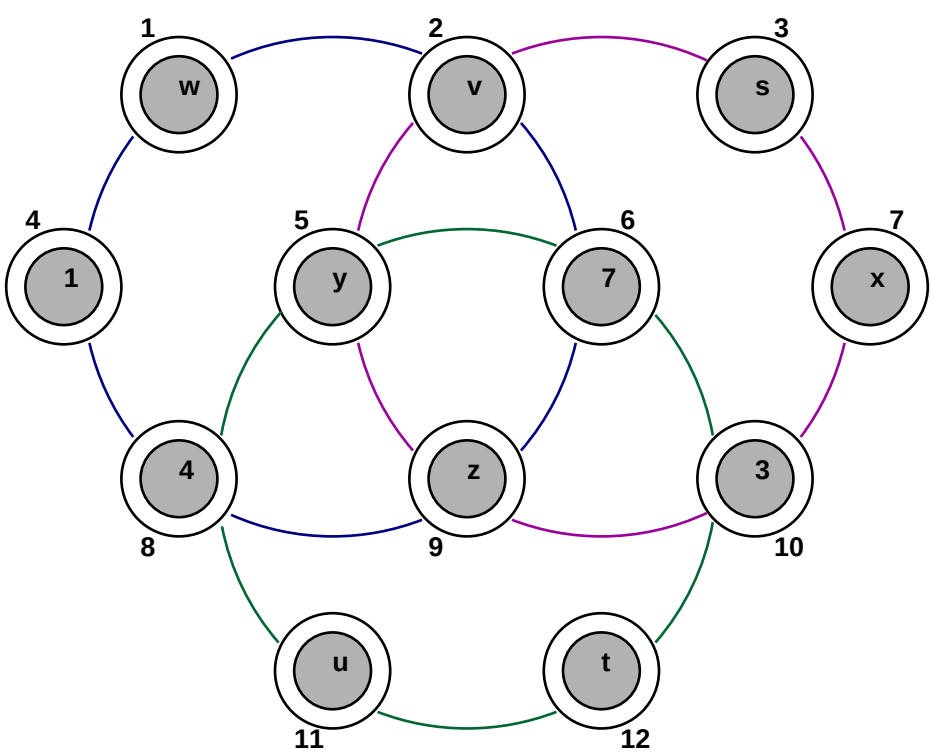

1
w
2
x
3
s
3
4
1
5
6
7
7
v
z
4
8
9
y
10
u
t
11
12

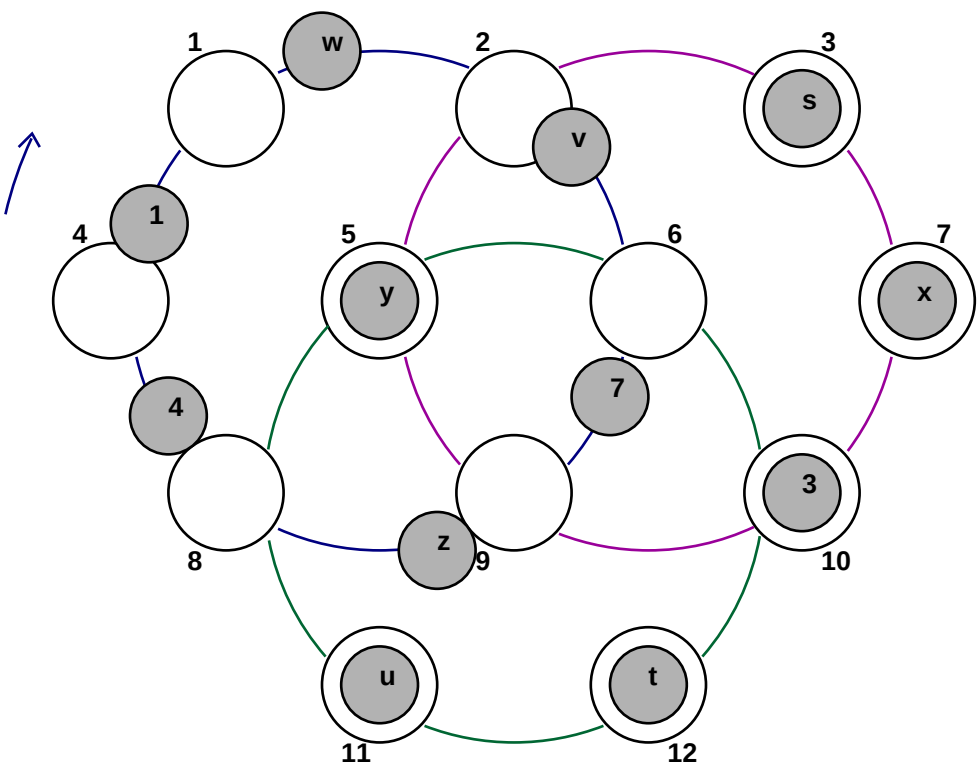

1
w
2
s
3
x
4
1
5
v
6
7
7
3
4
4
y
z
8
9
10
u
t
11
12

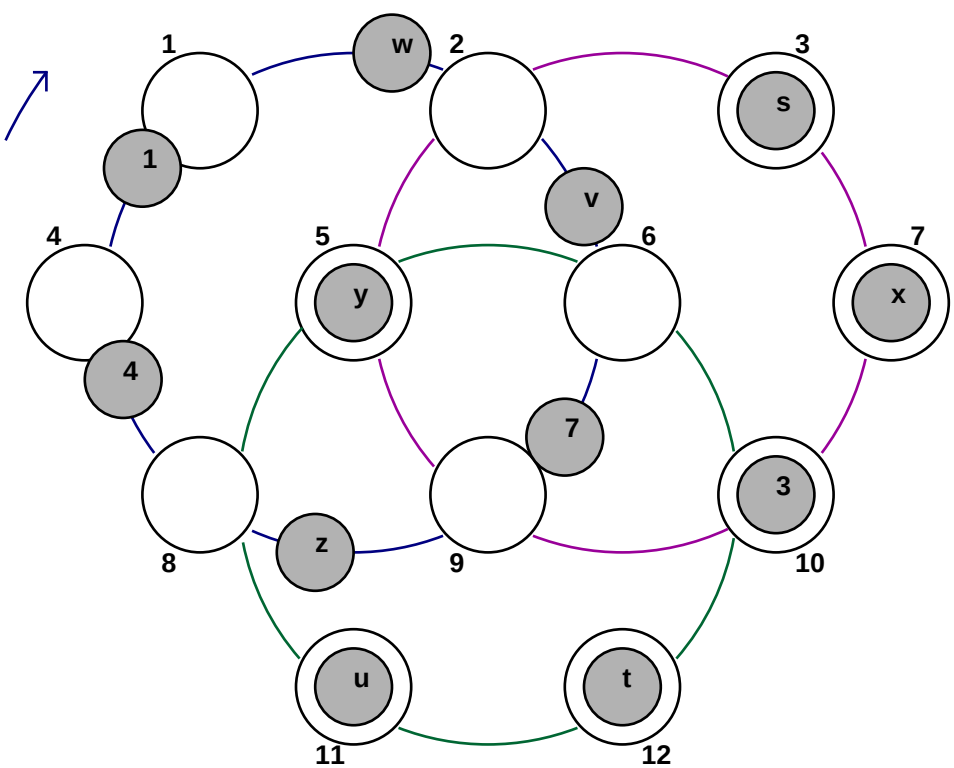

1
w
2
s
3
x
v
4
1
5
6
7
7
3
y
4
8
9
z
10
u
t
11
12

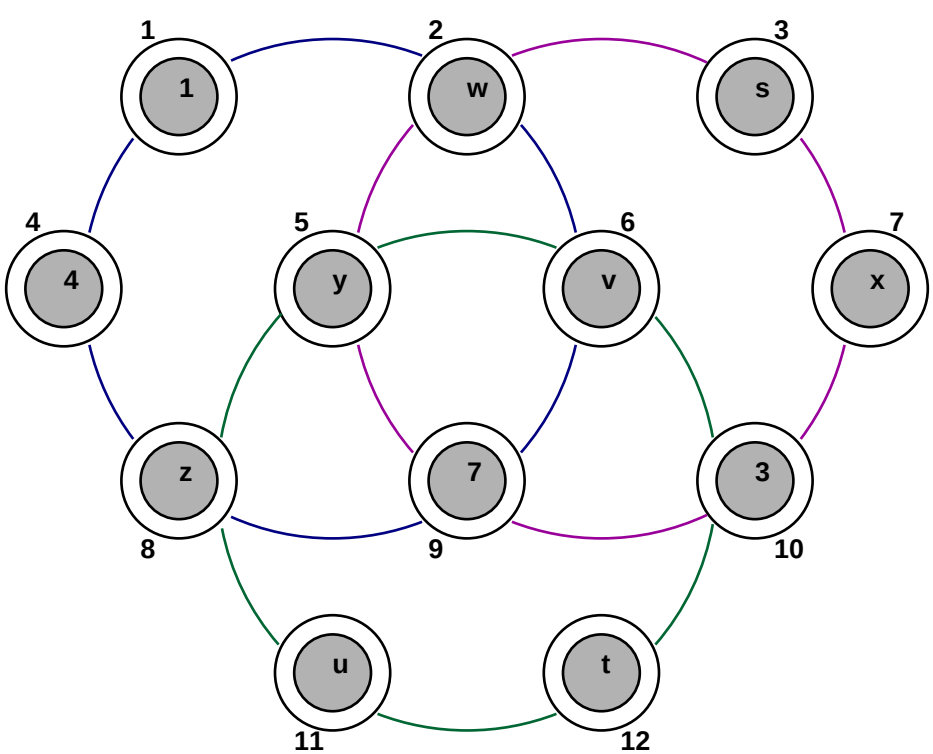

1
2
s
3
w
v
x
4
5
6
7
1
7
y
3
4
8
9
z
10
u
t
11
12

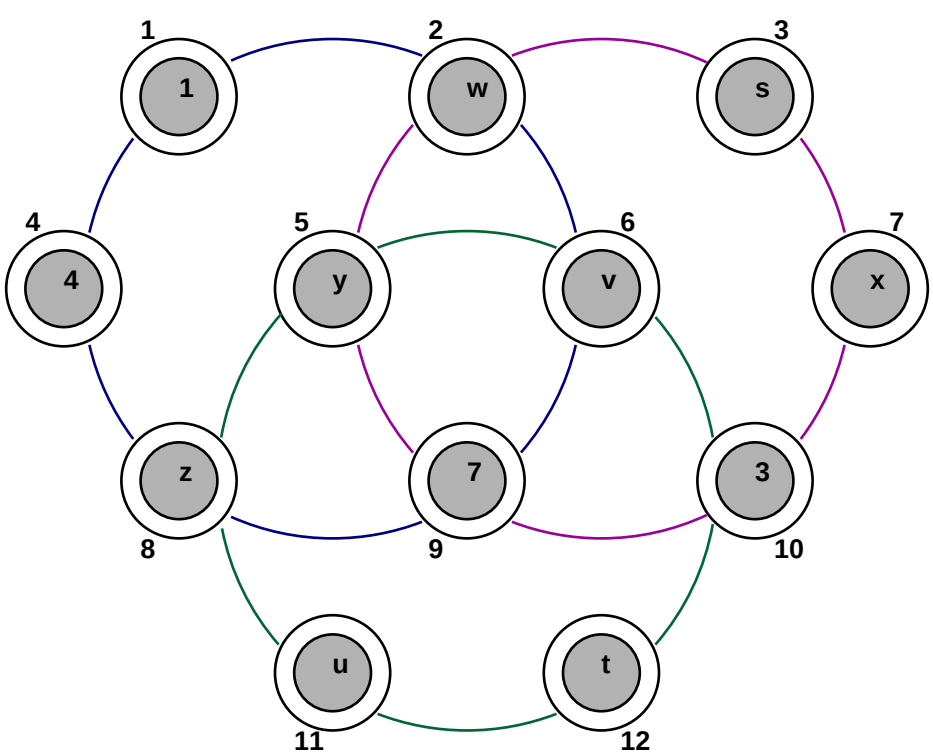

1
w
2
v
3
s
4
1
5
y
6
7
7
x
4
8
z
9
3
10
u
11
t
12

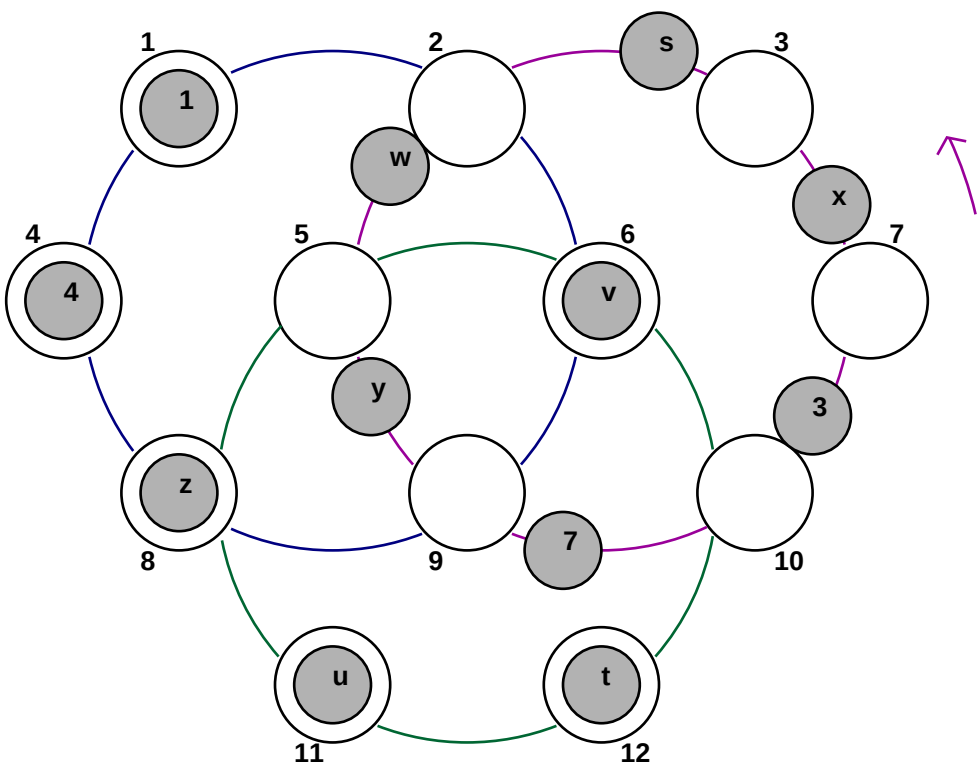

1
w
2
v
3
s
4
1
5
y
6
7
7
x
4
8
z
9
3
10
u
11
t
12

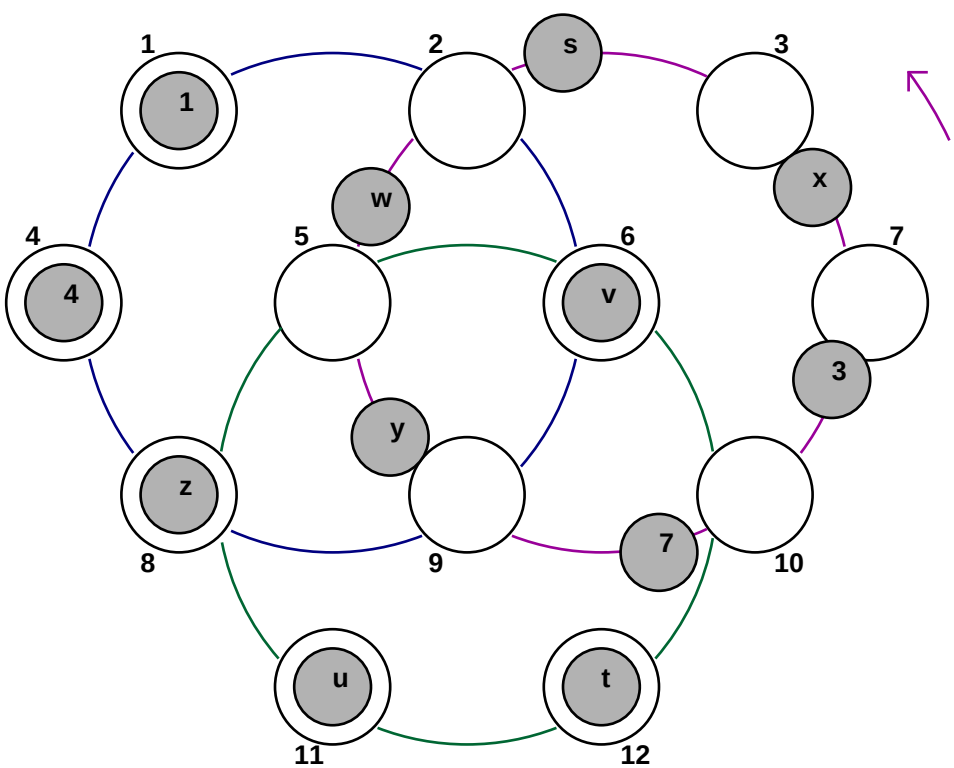

1
w
2
3
s
v
1
4
5
6
7
y
x
7
4
3
z
8
9
10
u
t
11
12

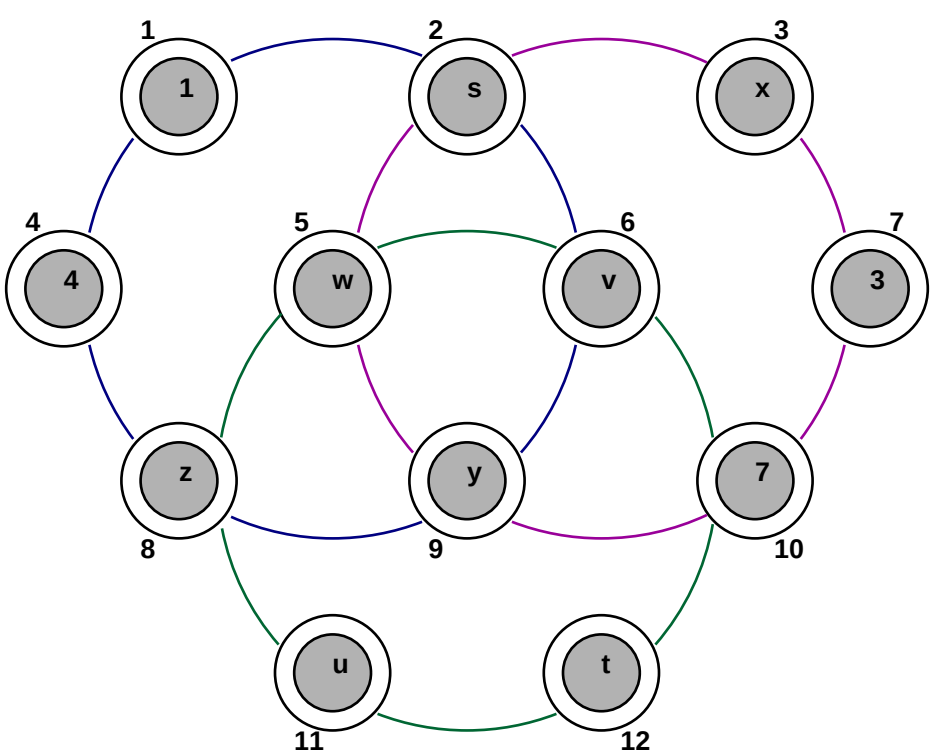

1
w
2
3
s
1
v
4
5
6
7
y
x
4
7
3
z
8
9
10
u
t
11
12

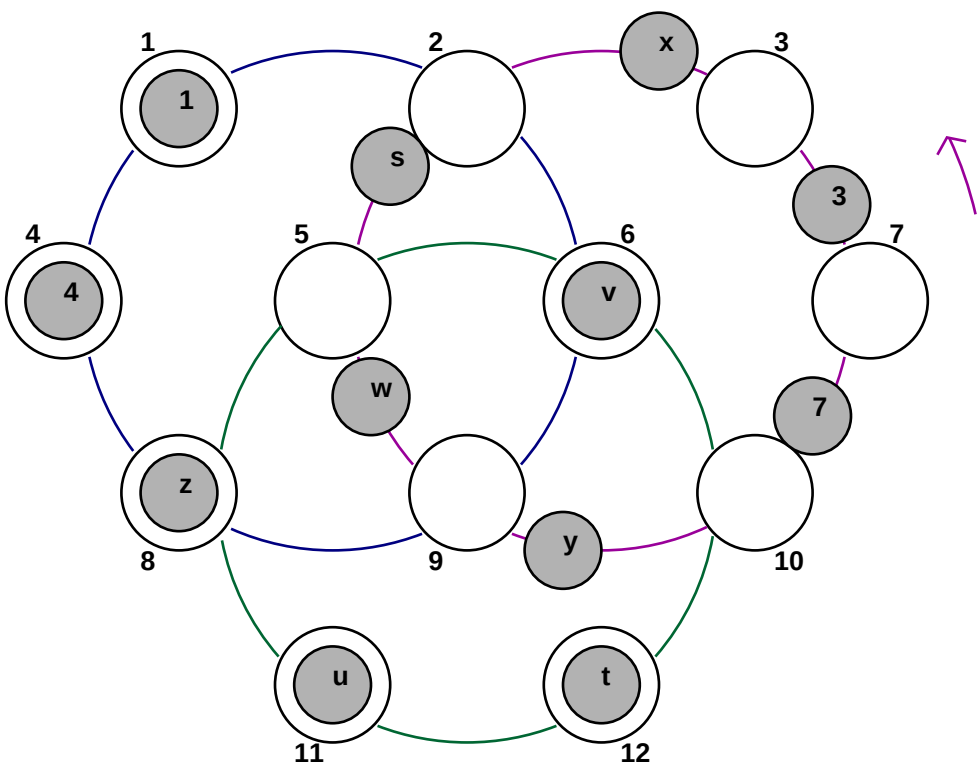

1
1
2
w
3
s
4
4
5
y
6
v
7
x
z
8
7
9
3
10
u
11
t
12

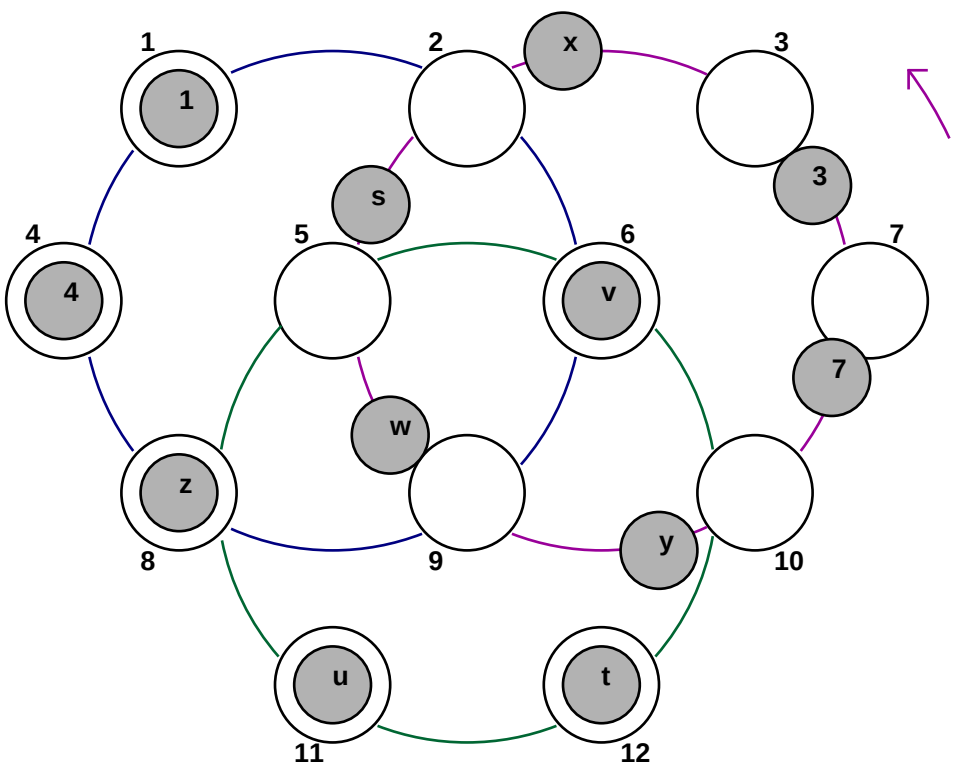

1
1
2
w
3
s
4
4
5
y
6
v
7
x
z
8
7
9
3
10
u
11
t
12

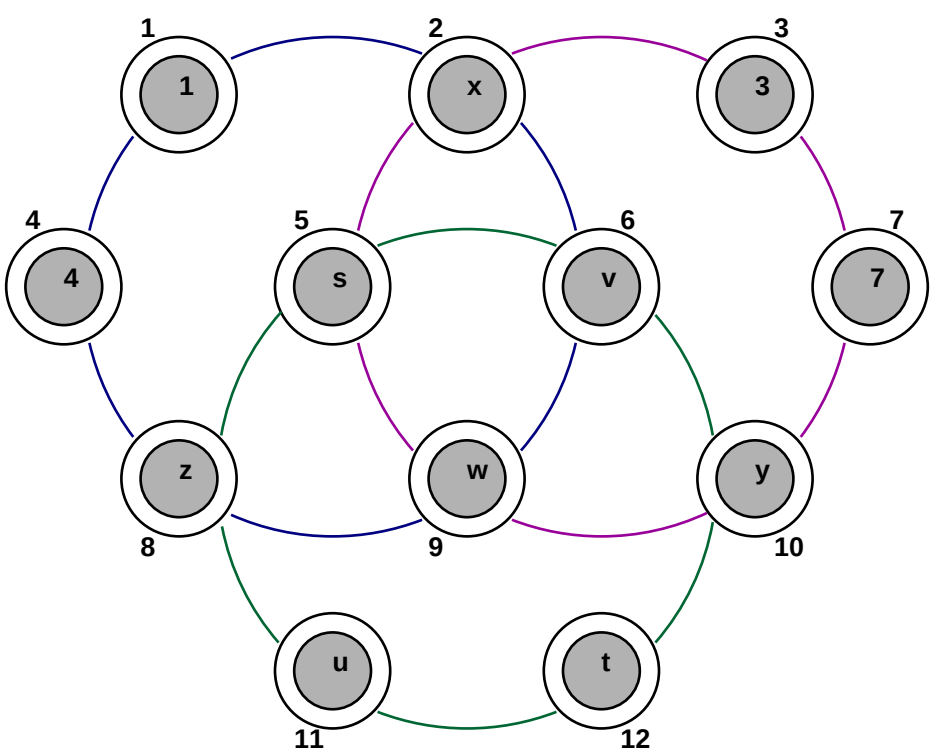

1
2
s
3
1
w
x
4
5
6
7
4
v
y
3
z
7
8
9
10
u
t
11
12


1
2
s
3
1
x
w
4
5
6
7
4
v
3
y
z
7
8
9
10
u
t
11
12


1
1
2
s
3
x
4
4
5
w
6
v
7
3
z
8
y
9
7
10
u
11
t
12


1
2
x
3
1
s
3
4
5
6
7
4
v
w
7
z
8
9
y
10
u
t
11
12


1
2
x
3
1
3
s
4
5
6
7
4
v
7
w
z
8
9
y
10
u
t
11
12

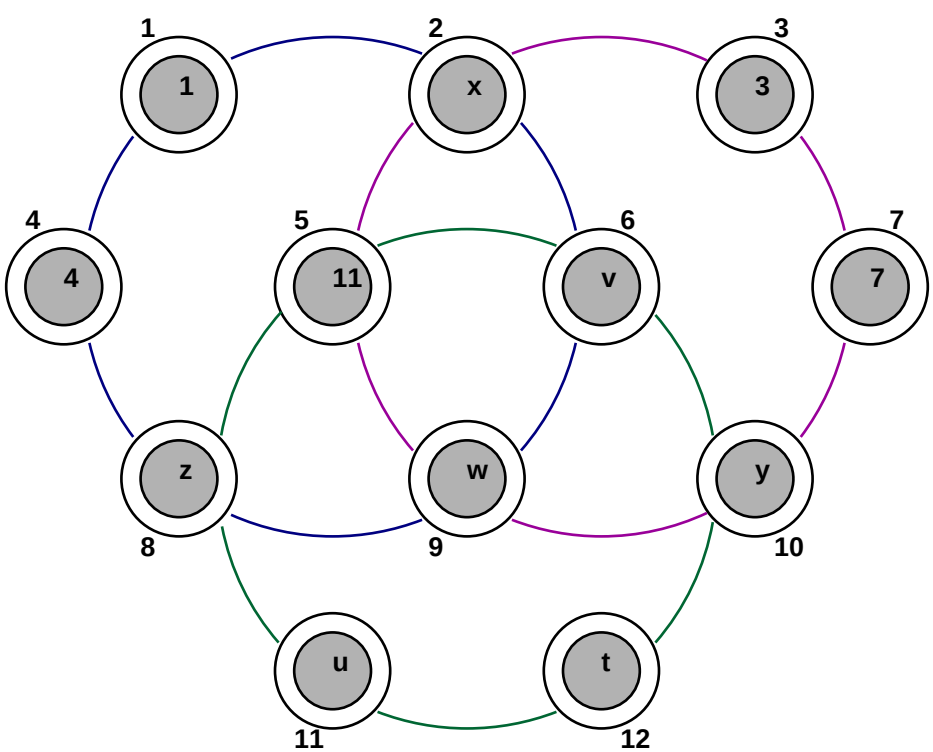

1
2
3
1
x
3
4
5
6
7
4
s
v
7
z
w
y
8
9
10
u
t
11
12

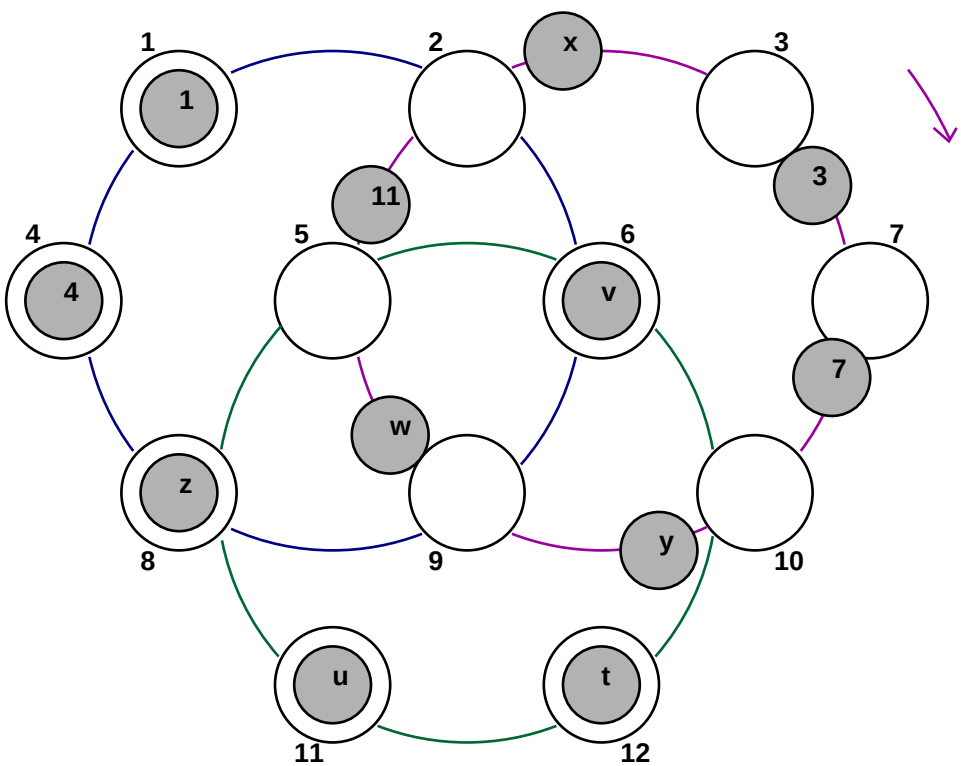
It has been shown that 7 can be moved to position 7 from any position while keeping numbers 1, 3, and 4 in their respective positions.

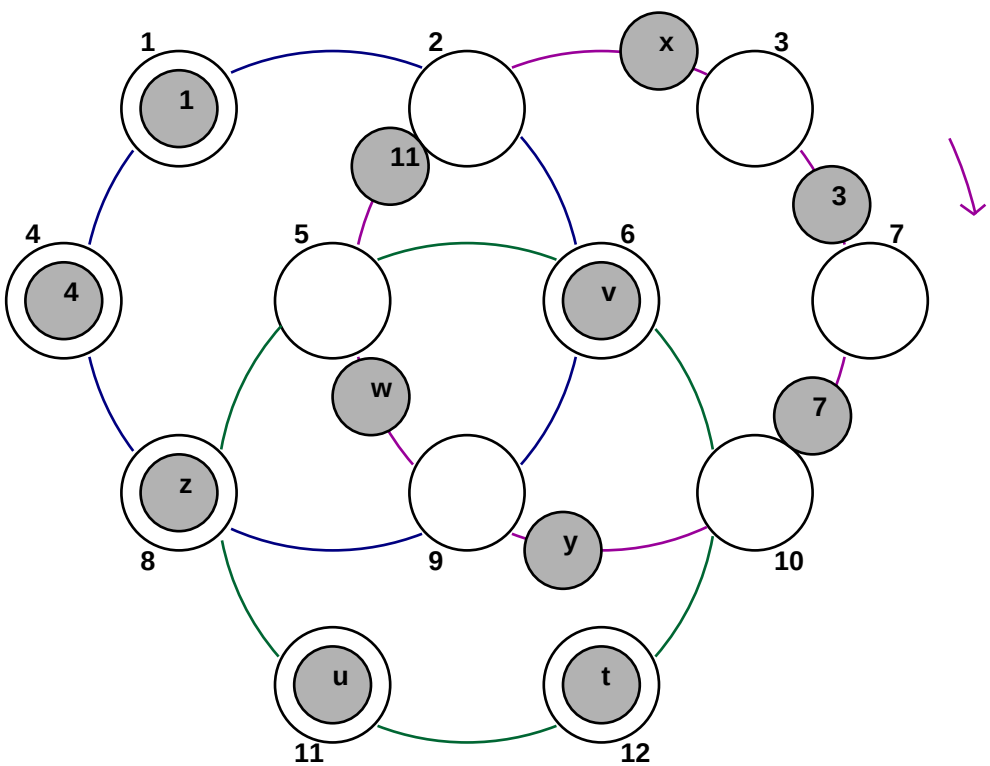
Now let s = 11.

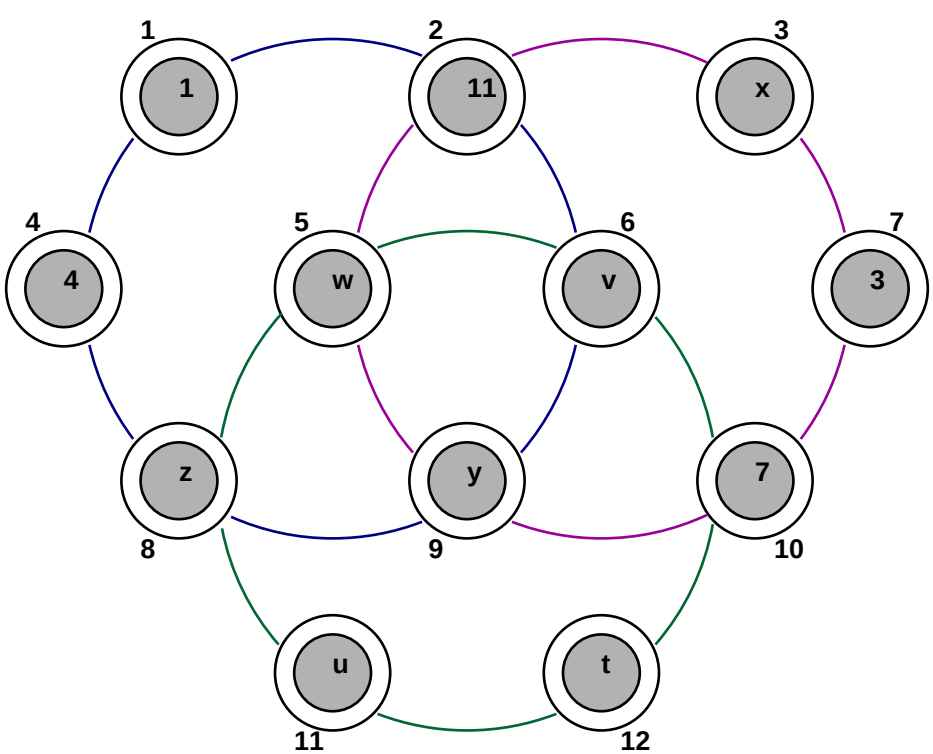
Number 11 can be moved into position 2
by moving in the following pattern.

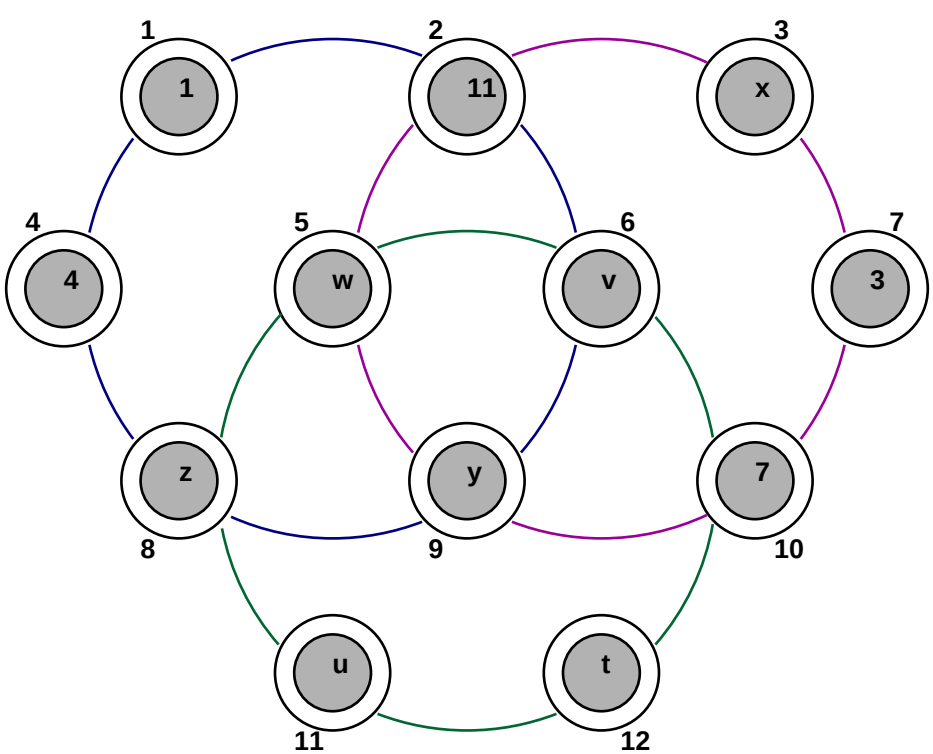
Numbers 1, 3, 4, and 7 will remain in their correct positions.

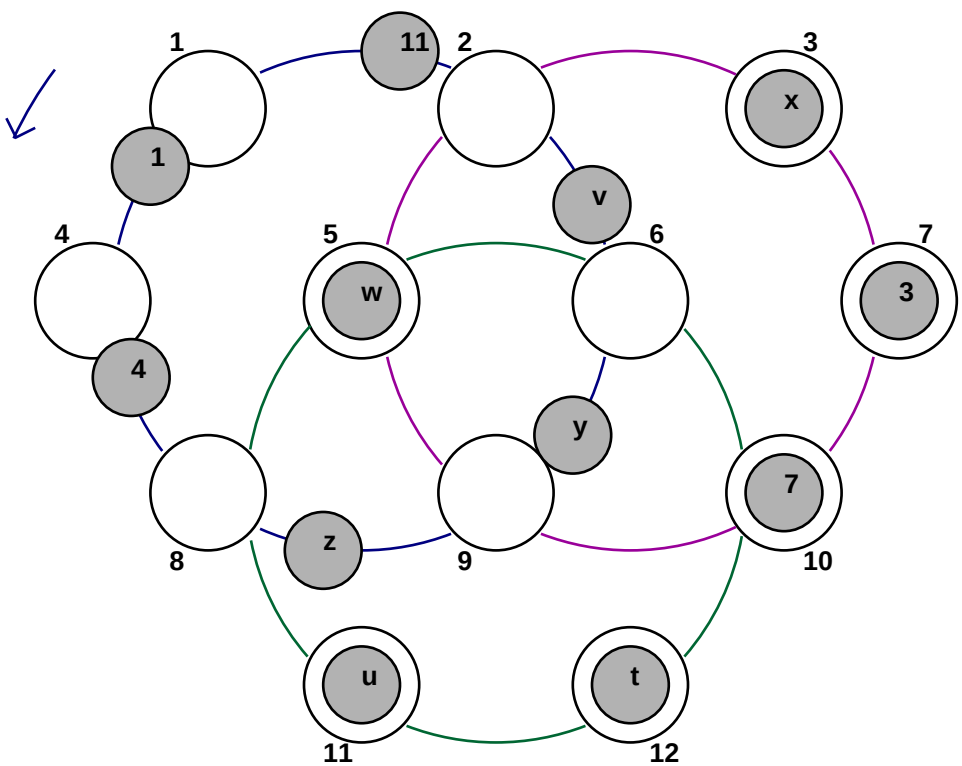

1
2
3
1
x
3
4
5
6
7
4
11
v
7
z
w
y
8
9
10
u
t
11
12

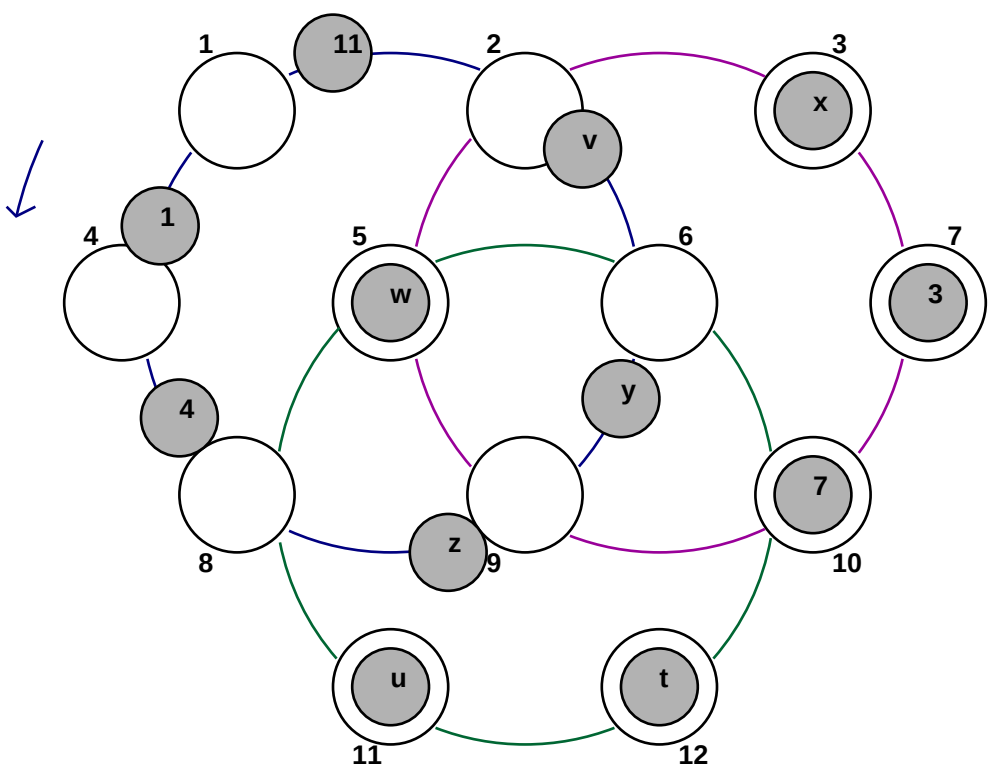

1
2
x
3
1
11
3
4
5
6
7
4
v
7
w
z
y
8
9
10
u
t
11
12

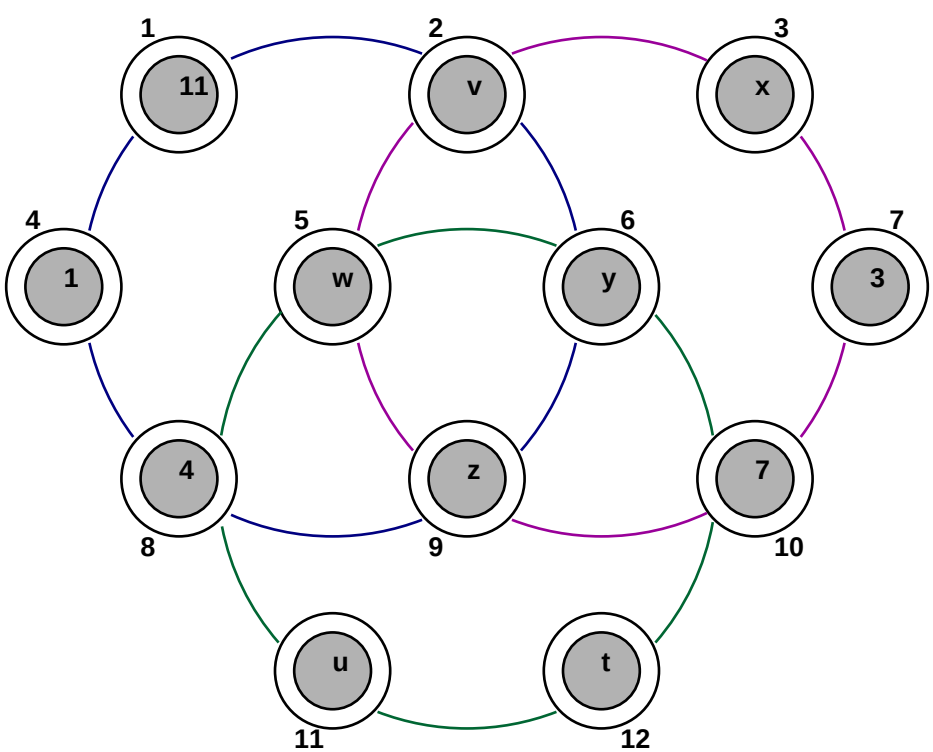

1
2
x
3
1
11
3
4
5
6
7
4
v
w
7
z
8
9
y
10
u
t
11
12

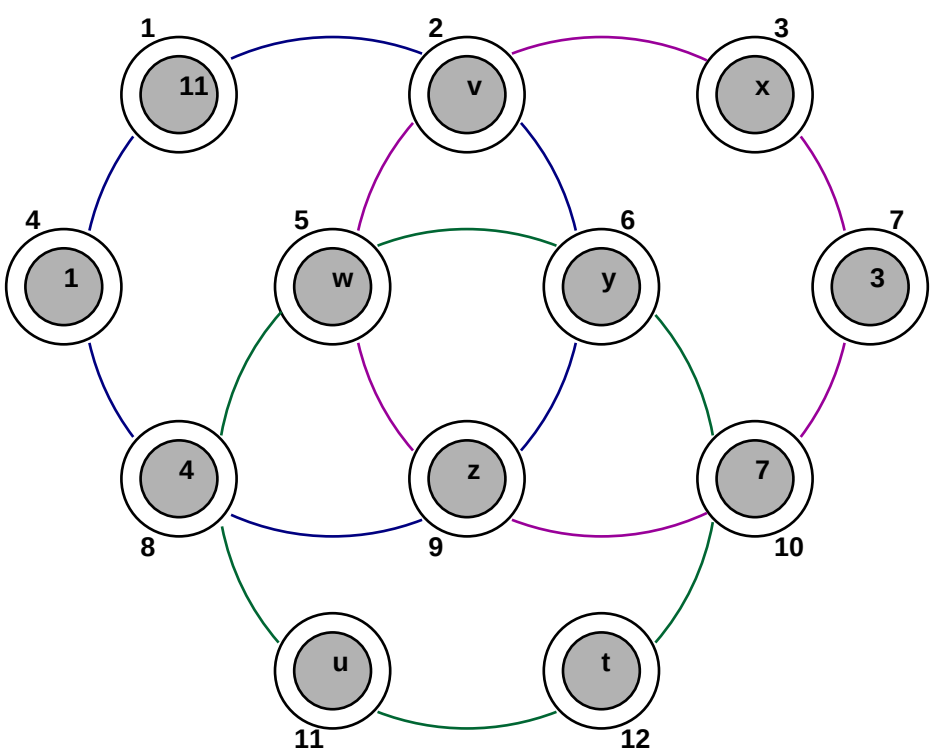

1
2
3
1
11
x
4
5
6
7
4
w
v
3
z
y
7
8
9
10
u
t
11
12

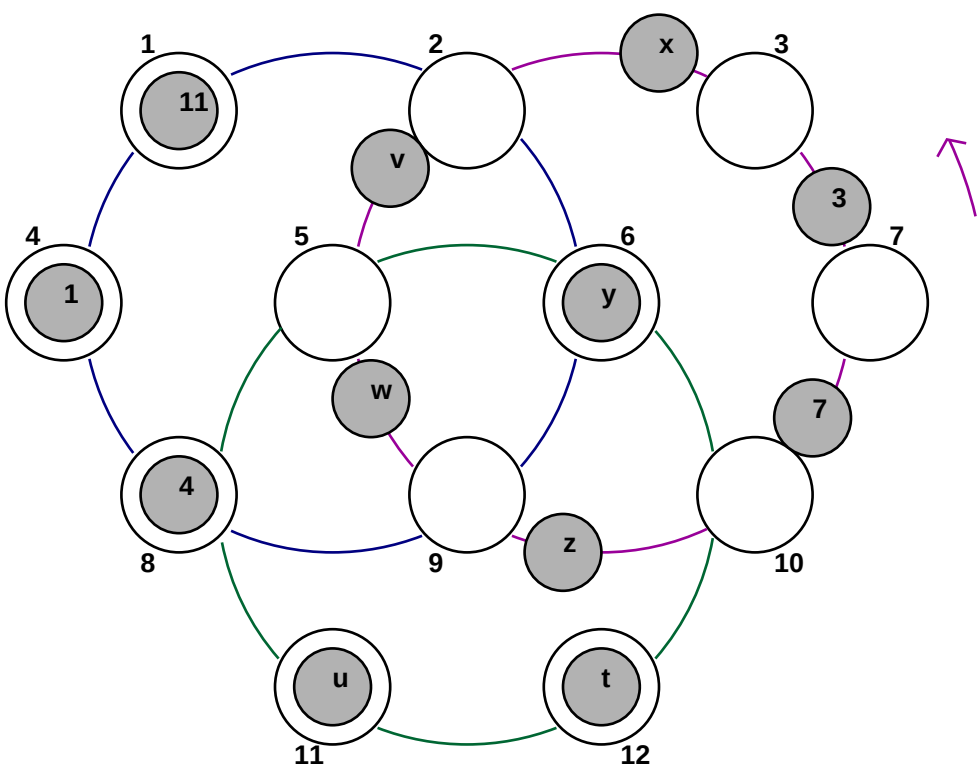

1
2
3
1
11
x
4
5
6
7
4
w
v
3
z
y
7
8
9
10
u
t
11
12

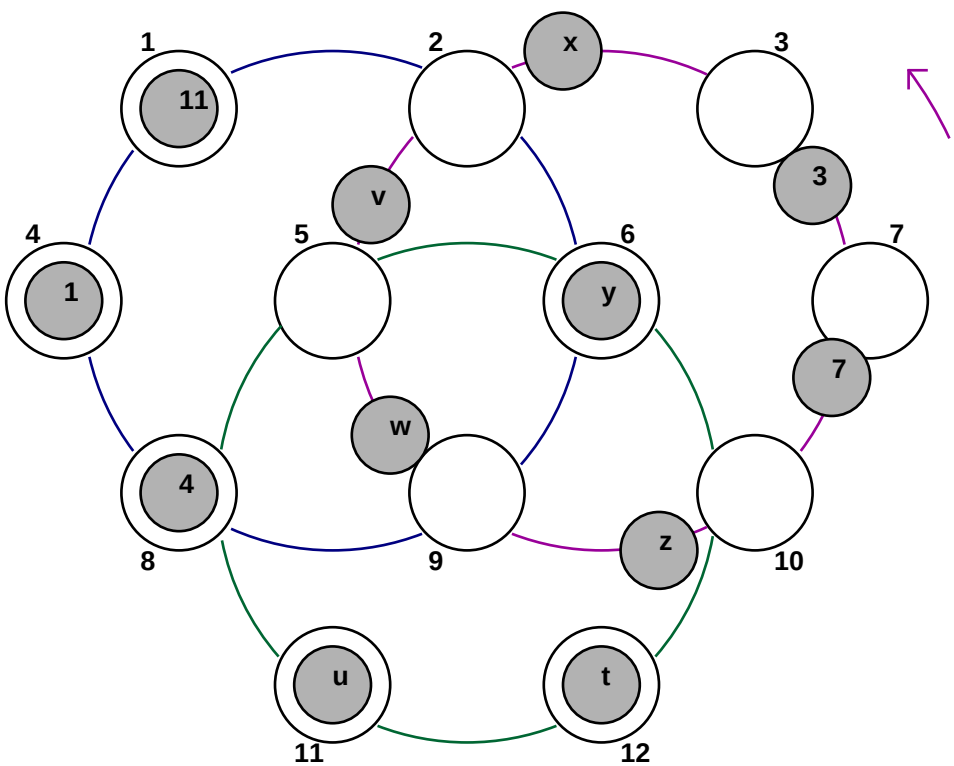

1
11
2
3
x
1
v
4
5
6
7
w
3
4
y
7
z
8
9
10
u
t
11
12

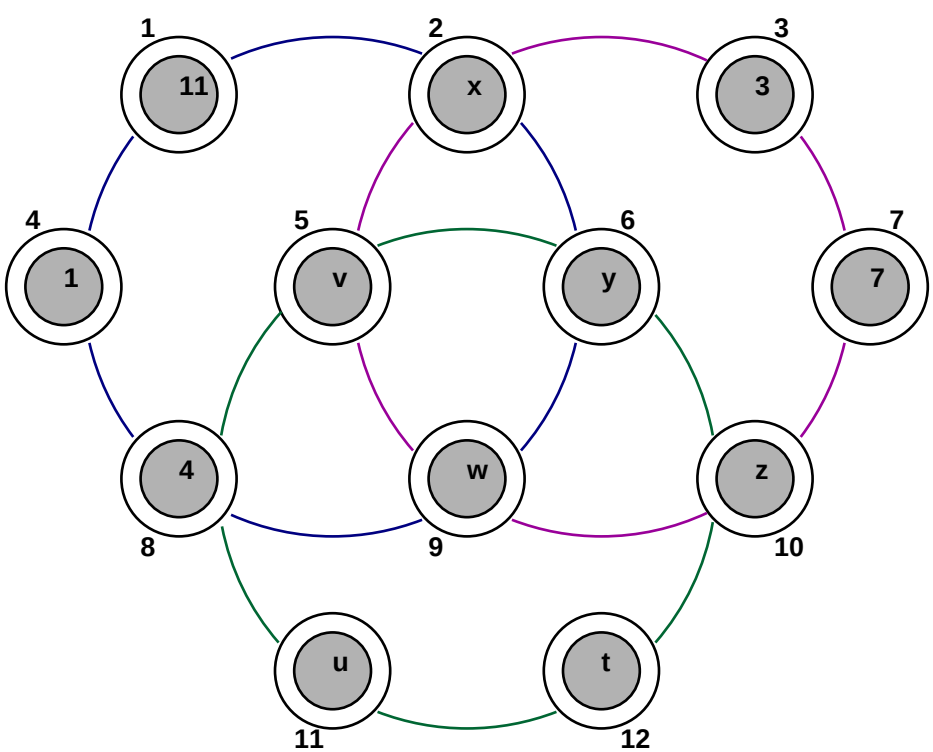

1
11
2
3
x
v
1
4
5
6
7
w
3
y
4
7
z
8
9
10
u
t
11
12

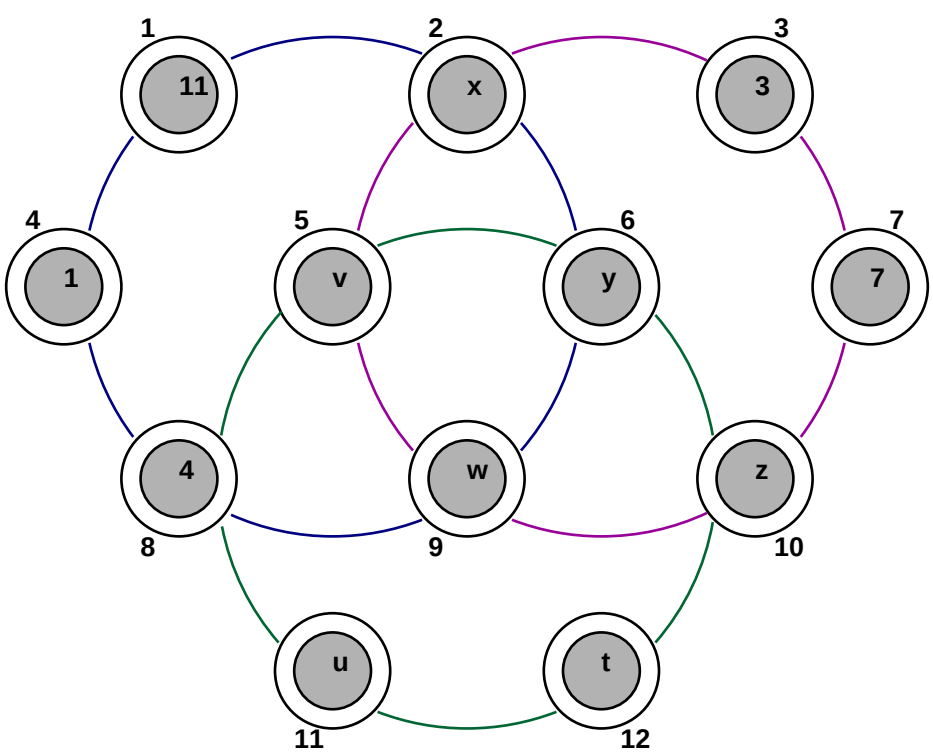

1
11
2
v
3
x
4
1
5
w
6
y
7
3
4
8
z
9
7
10
u
11
t
12

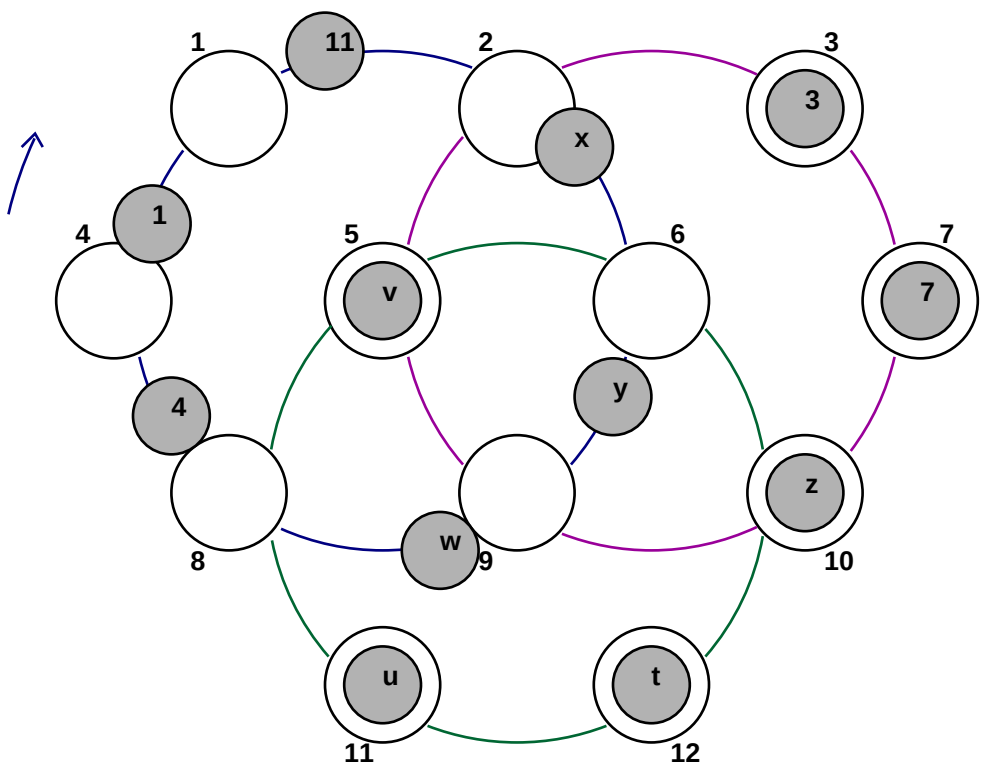

1
11
2
v
3
x
4
1
5
w
6
y
7
3
4
8
z
9
7
10
u
11
t
12

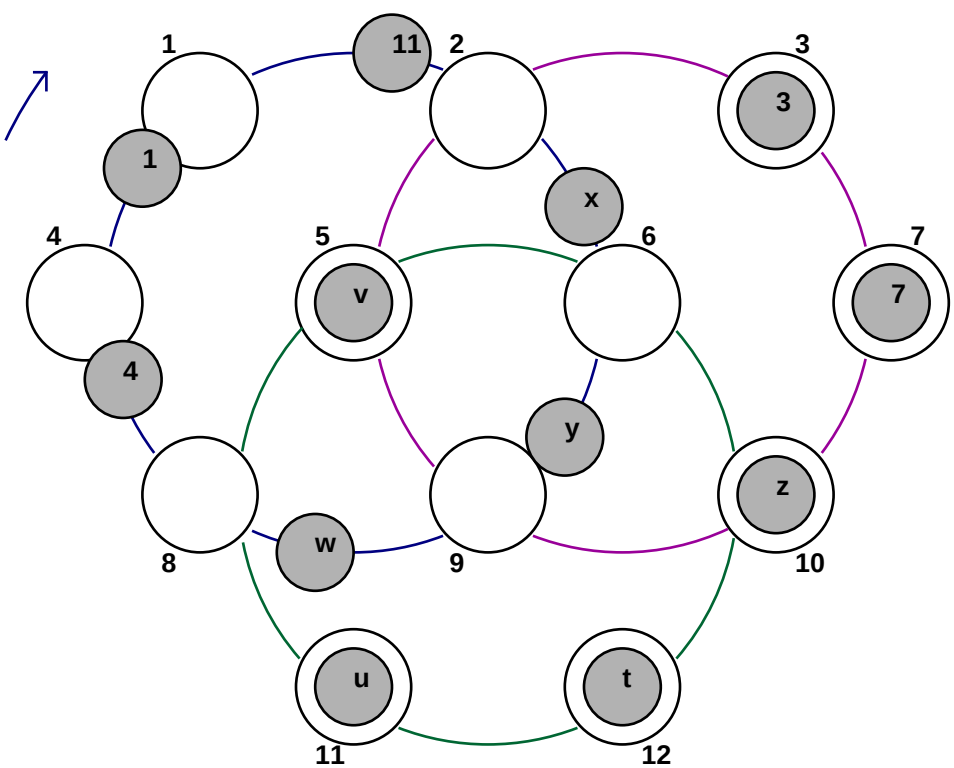

1
11
2
x
3
v
3
4
1
5
6
y
7
w
7
4
8
9
z
10
u
11
t
12

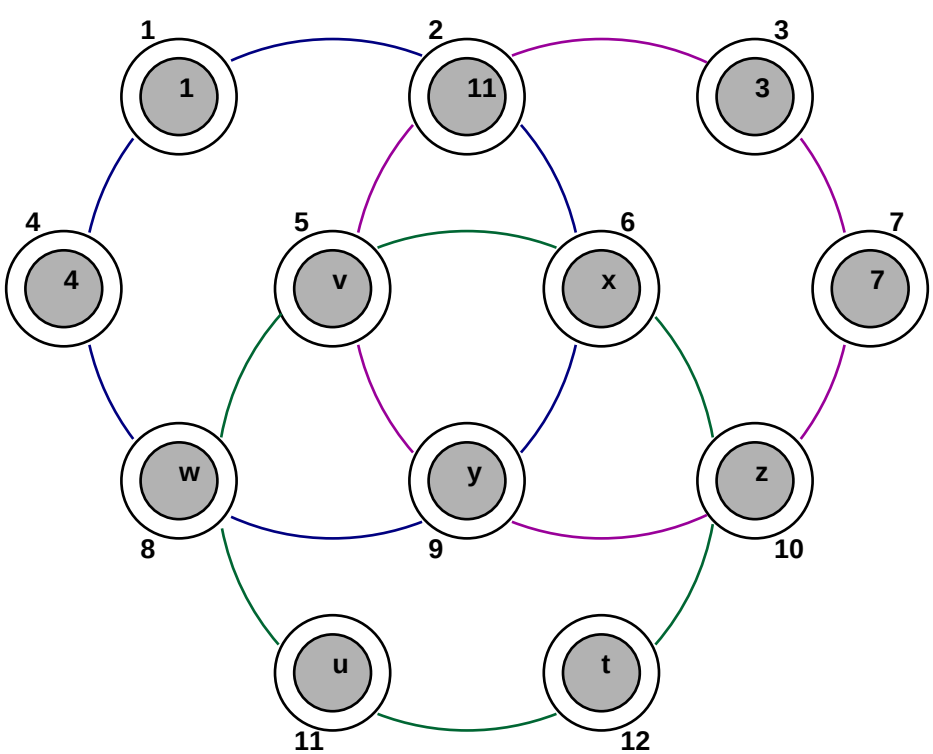

1
11
2
x
3
3
v
4
1
5
6
y
7
7
w
4
8
9
z
10
u
11
t
12


1
11
2
x
3
3
4
1
5
v
6
y
7
7
4
8
w
9
z
10
u
11
t
12

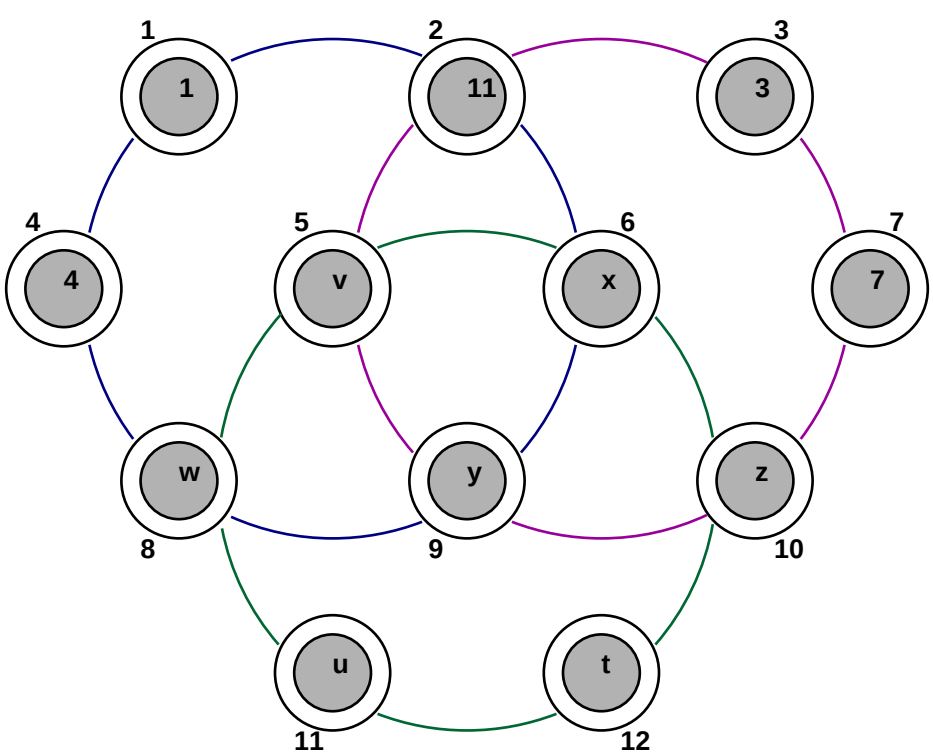

1
11
2
x
3
3
4
1
5
v
6
y
7
7
4
8
w
9
z
10
u
11
t
12

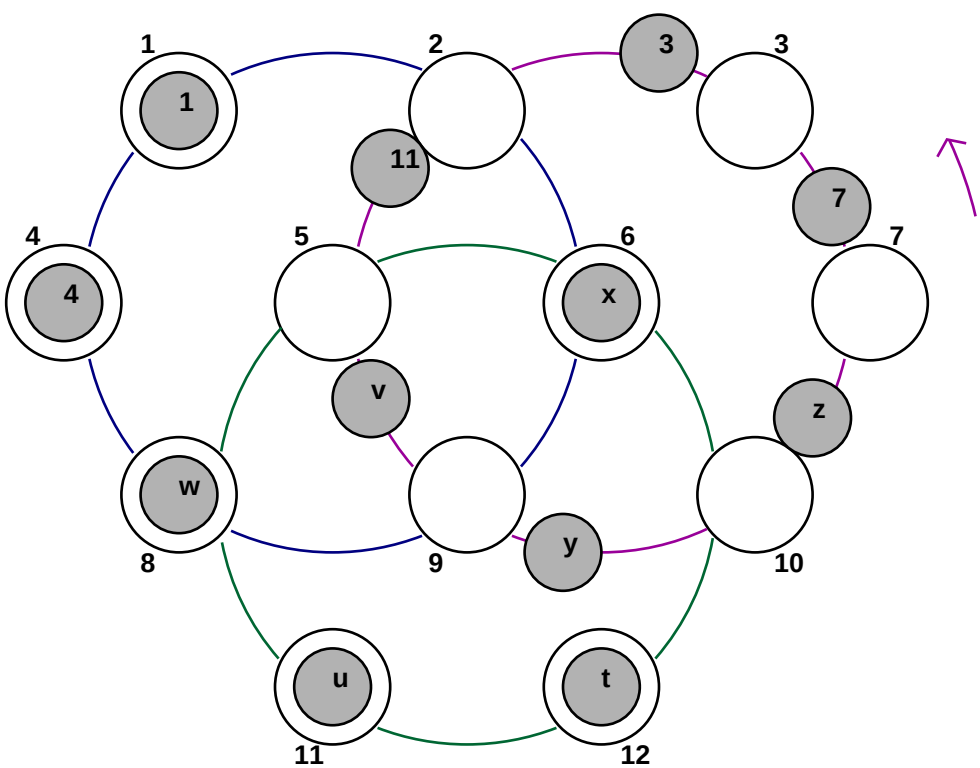

1
11
2
3
x
3
1
4
5
6
7
v
7
y
4
z
w
8
9
10
u
t
11
12

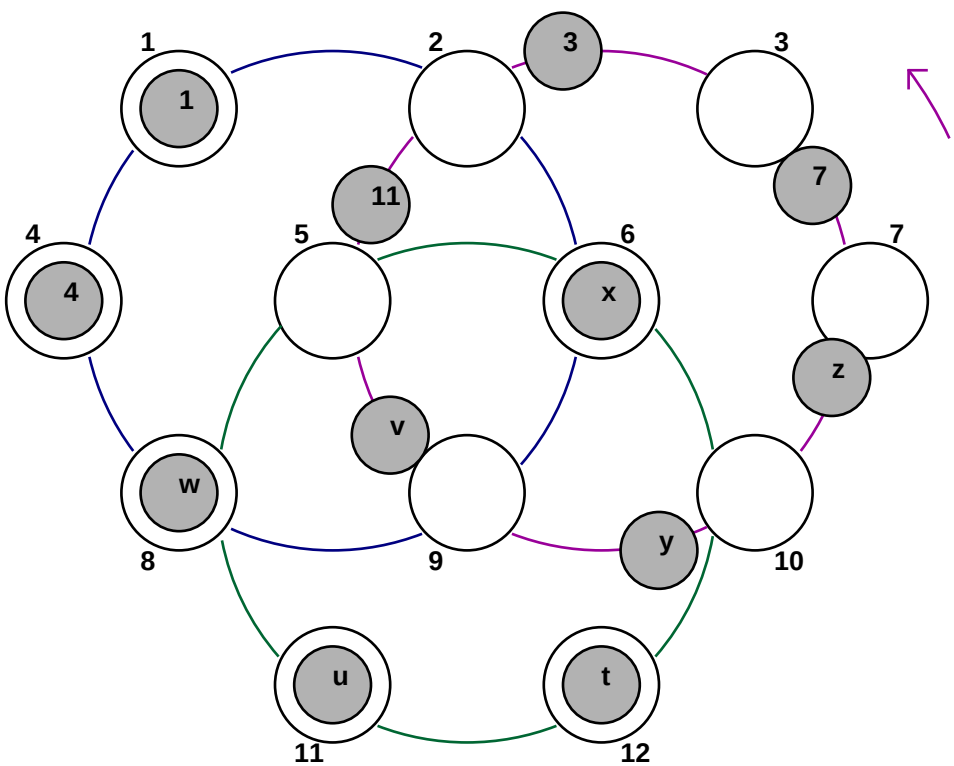

1
11
2
3
3
1
x
4
5
6
7
v
7
4
y
z
w
8
9
10
u
t
11
12

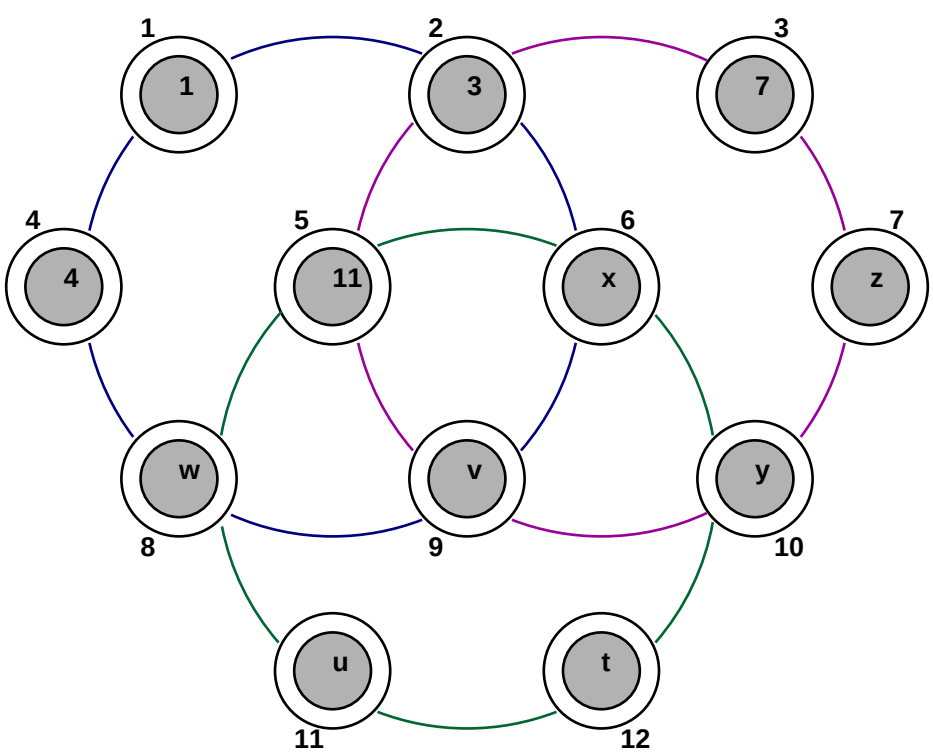

1
2
3
1
11
3
4
5
6
7
4
v
x
7
w
y
z
8
9
10
u
t
11
12

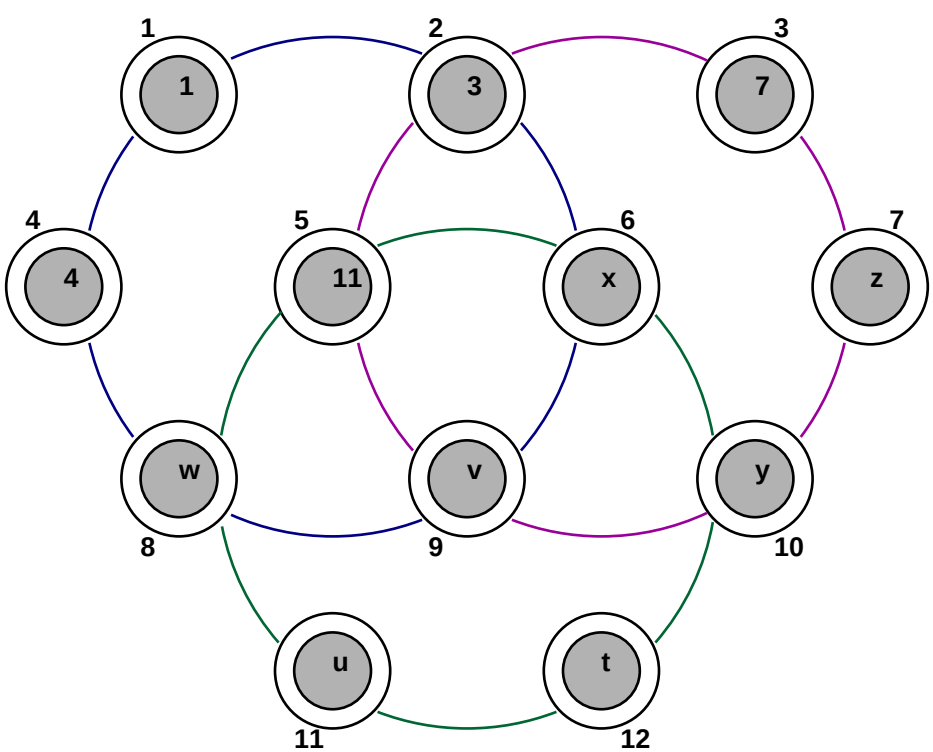
Number 11 can be moved into position 9 while keeping numbers 1, 3, 4, and 7 in position by the following moves.

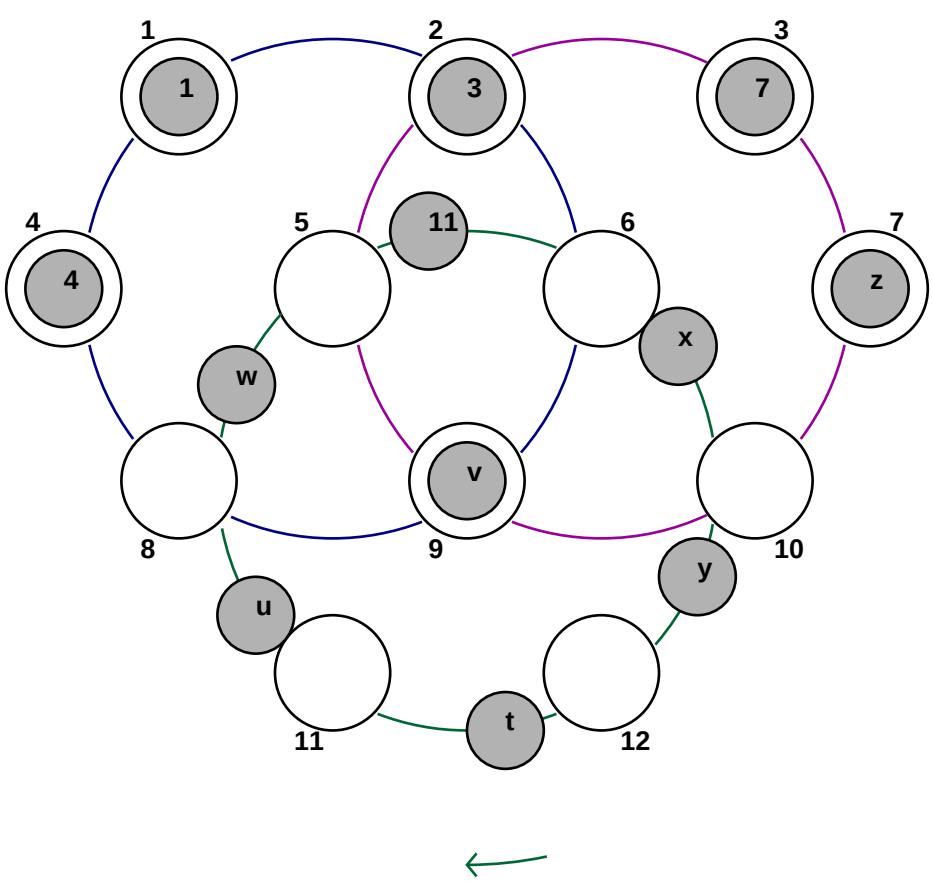

1
2
3
1
11
3
4
5
6
7
4
v
x
7
w
y
z
8
9
10
u
t
11
12

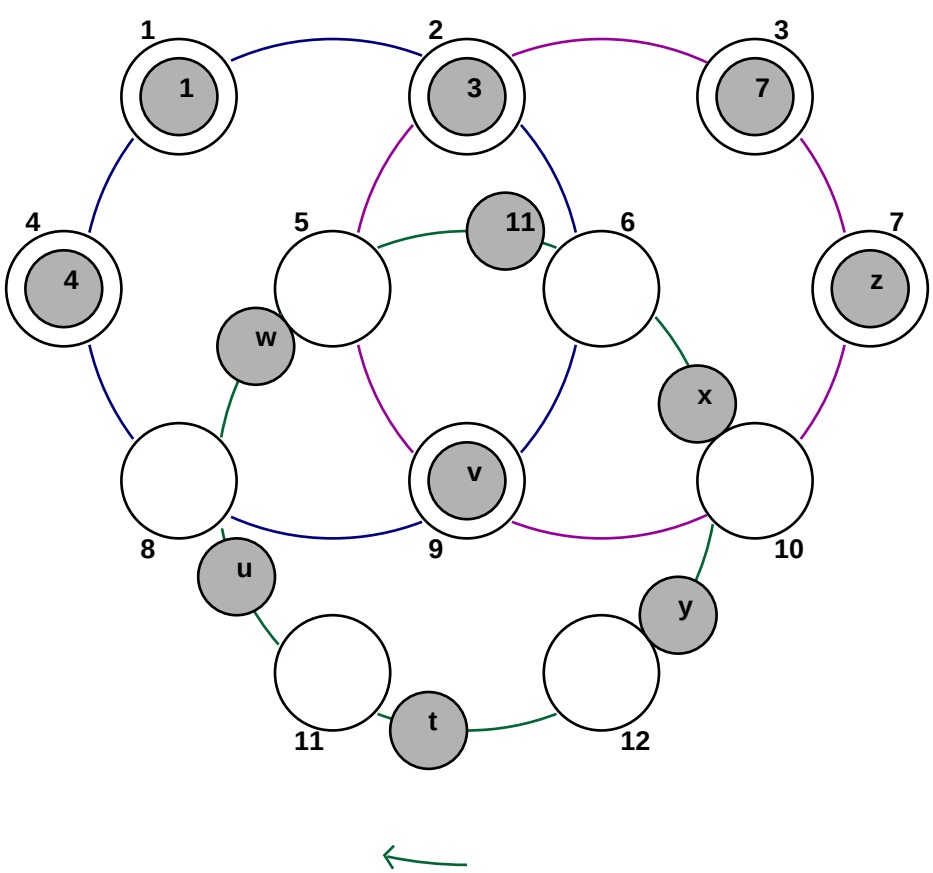

1
1
2
3
3
11
7
4
4
5
6
x
7
v
z
w
8
9
y
10
u
11
t
12

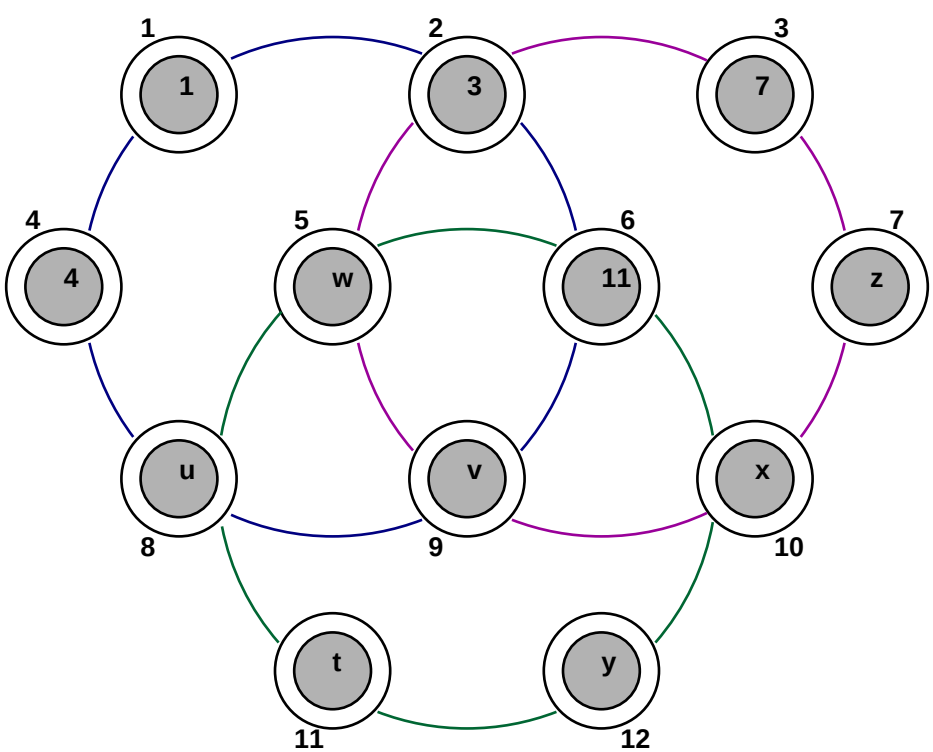

1
1
2
3
3
7
11
4
4
5
6
x
7
z
v
w
8
9
y
10
u
t
11
12

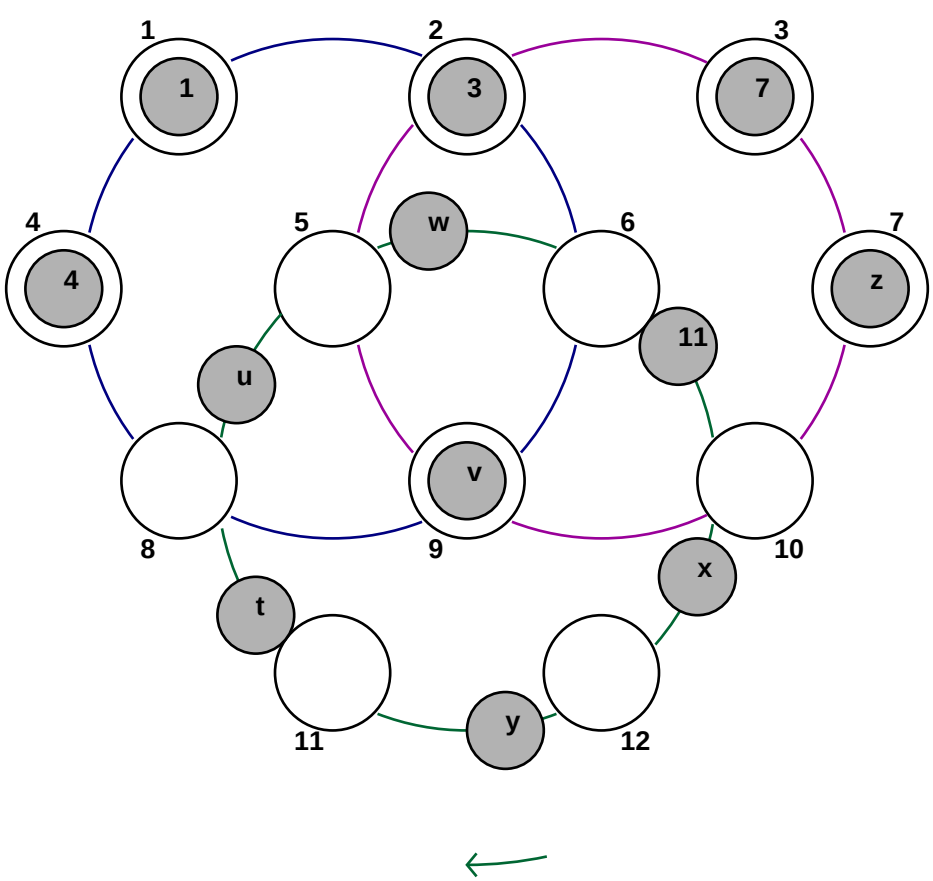

1
2
3
1
3
7
4
5
6
7
4
11
x
z
w
v
y
8
9
10
u
t
11
12

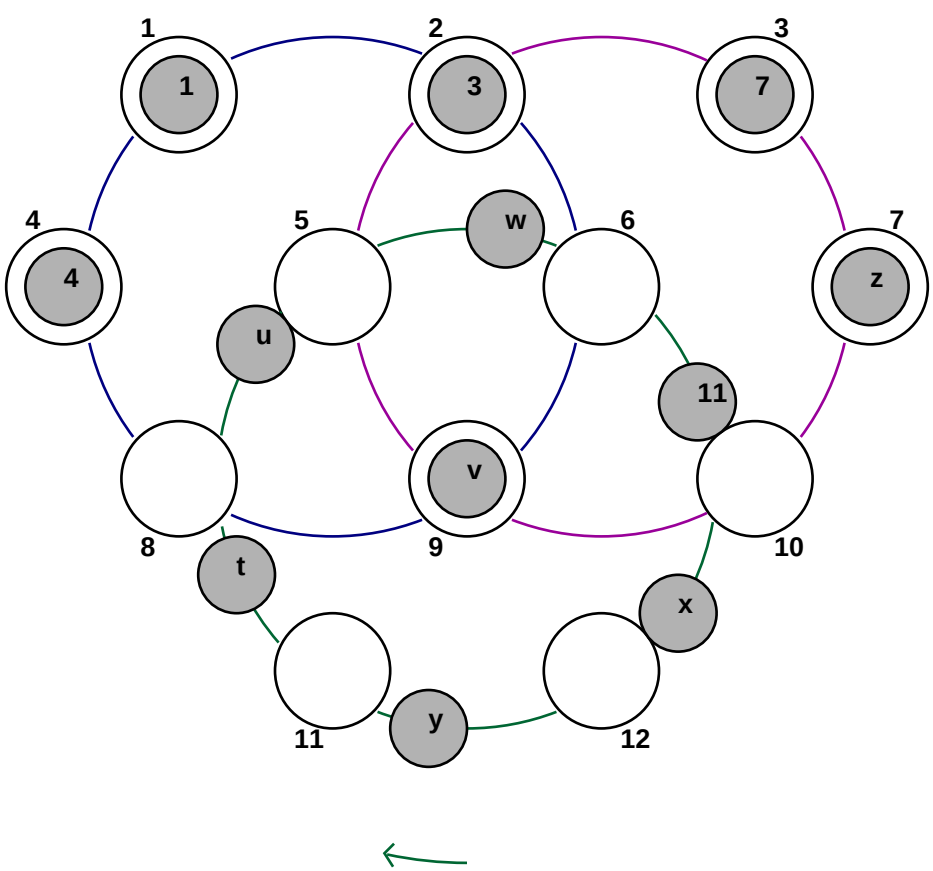

1
2
3
1
3
7
4
5
6
7
4
11
x
z
w
v
y
8
9
10
u
t
11
12

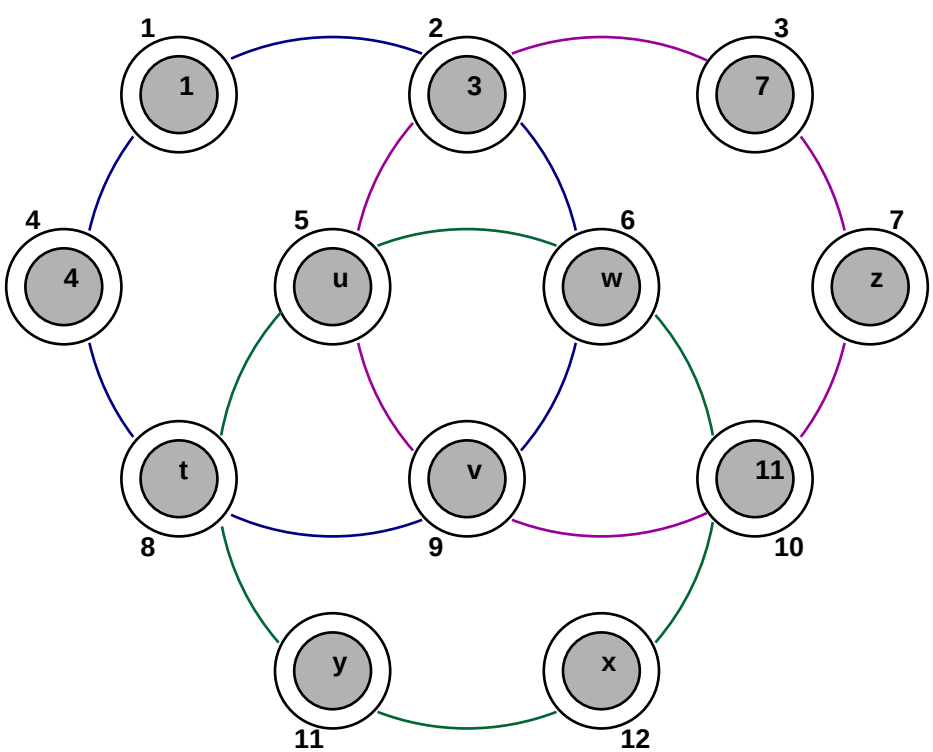

1
2
3
1
3
7
4
5
11
6
7
4
z
x
w
v
8
9
10
y
u
11
t
12

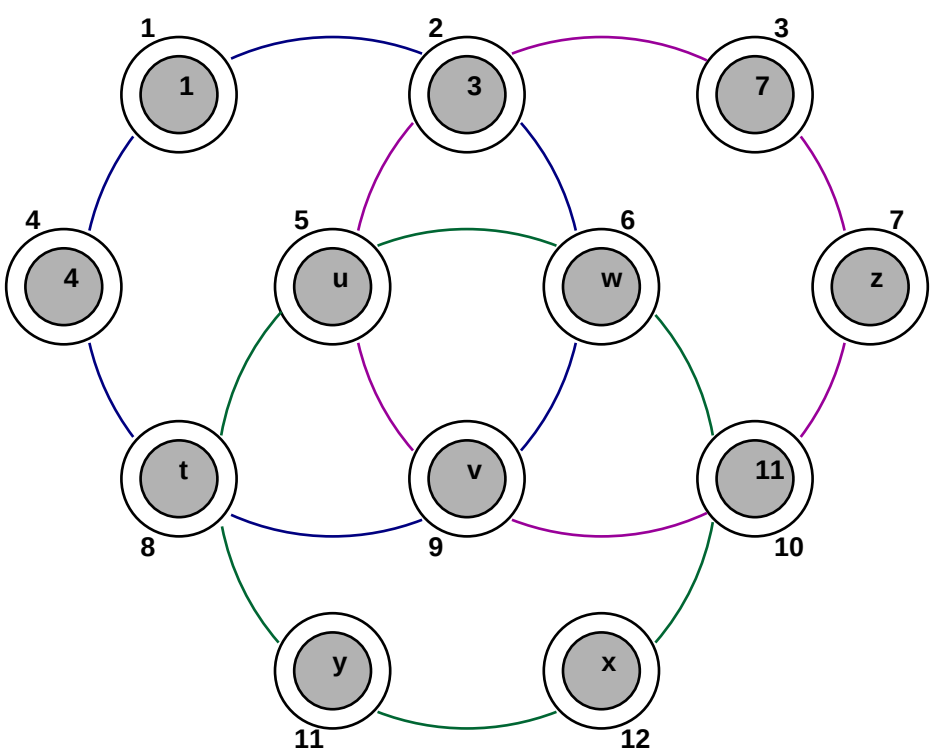

1
2
3
1
3
7
4
5
11
6
7
4
z
w
x
v
8
9
10
u
y
11
t
12

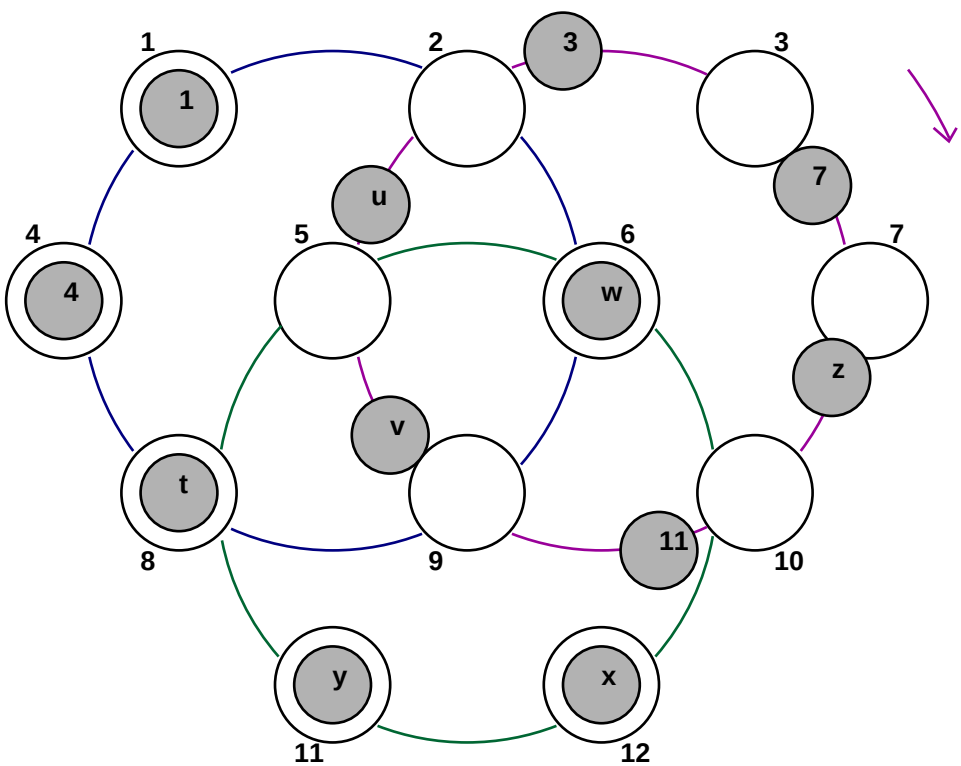

1
2
3
1
3
7
4
5
6
7
4
w
11
z
u
v
x
8
9
10
t
y
11
12

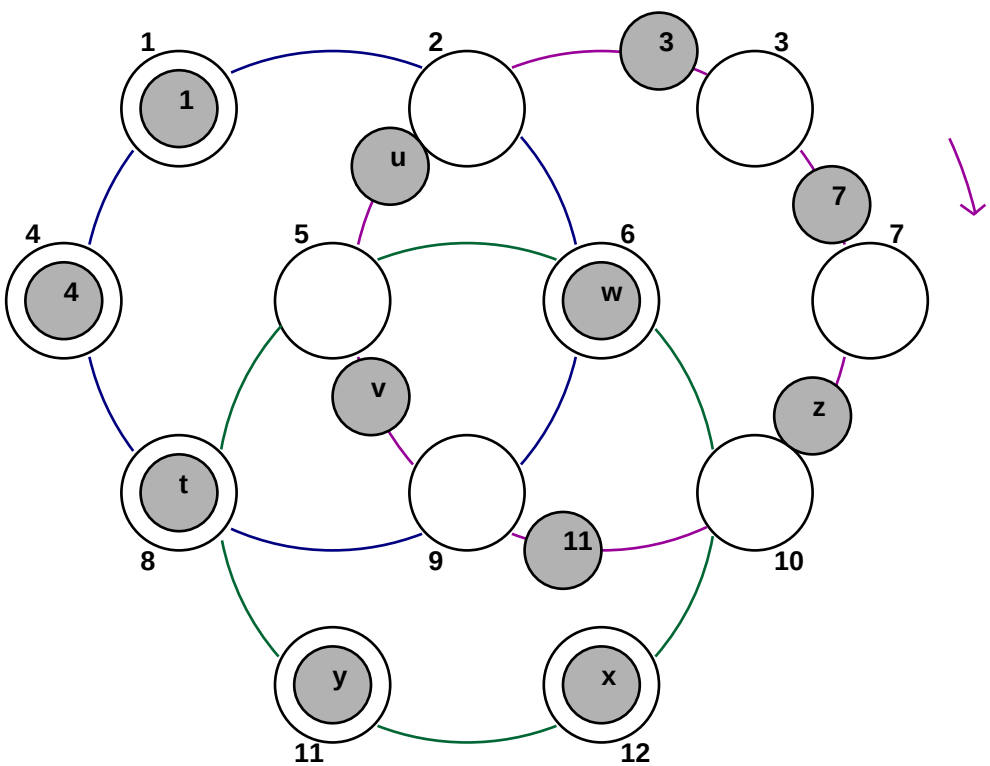

1
2
3
1
3
7
4
5
6
7
w
4
z
11
u
v
8
9
10
x
t
11
12
y

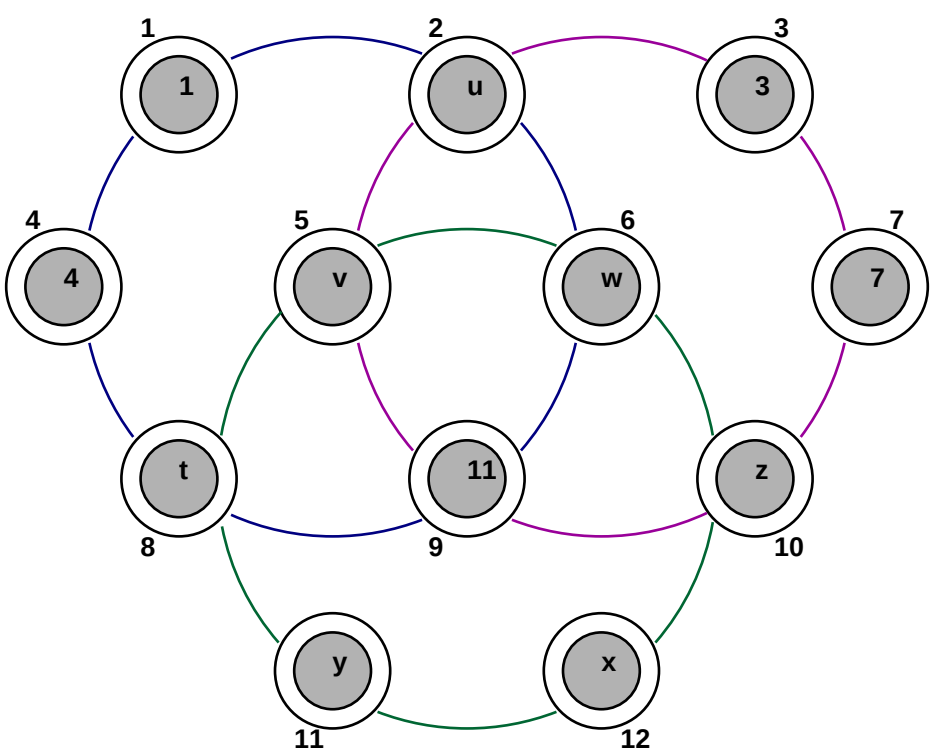

1
2
3
1
3
7
4
5
6
7
w
4
z
u
11
v
8
9
10
t
x
11
12
y


1
2
3
1
3
7
4
5
6
7
4
u
w
z
t
v
11
8
9
10
y
x
11
12

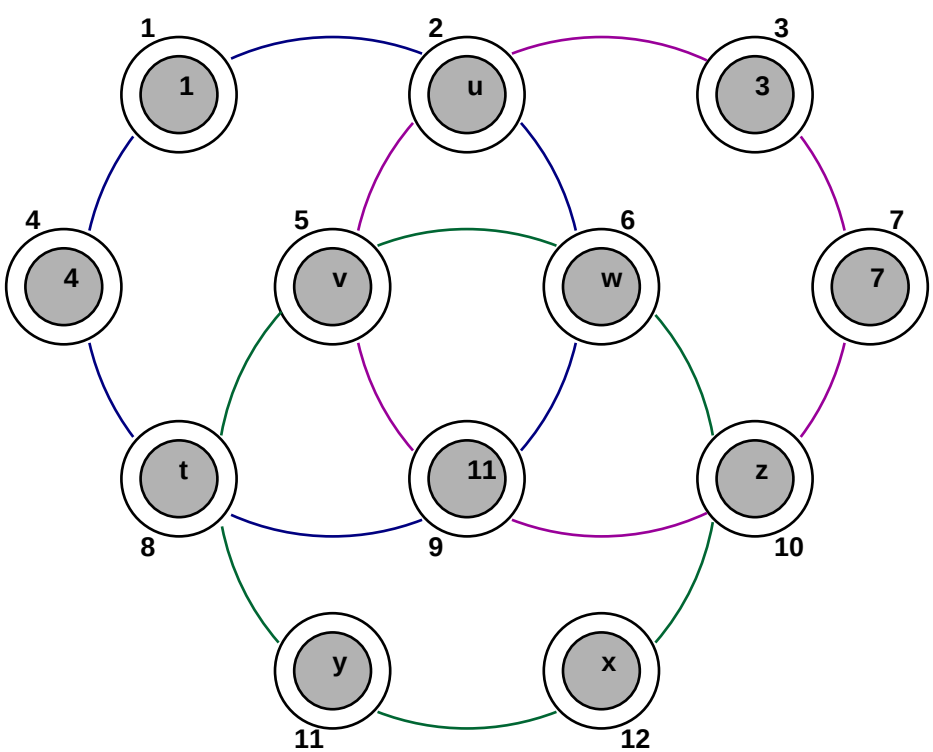

1
2
3
1
3
7
4
5
6
7
4
u
w
z
t
v
11
8
9
10
y
x
11
12

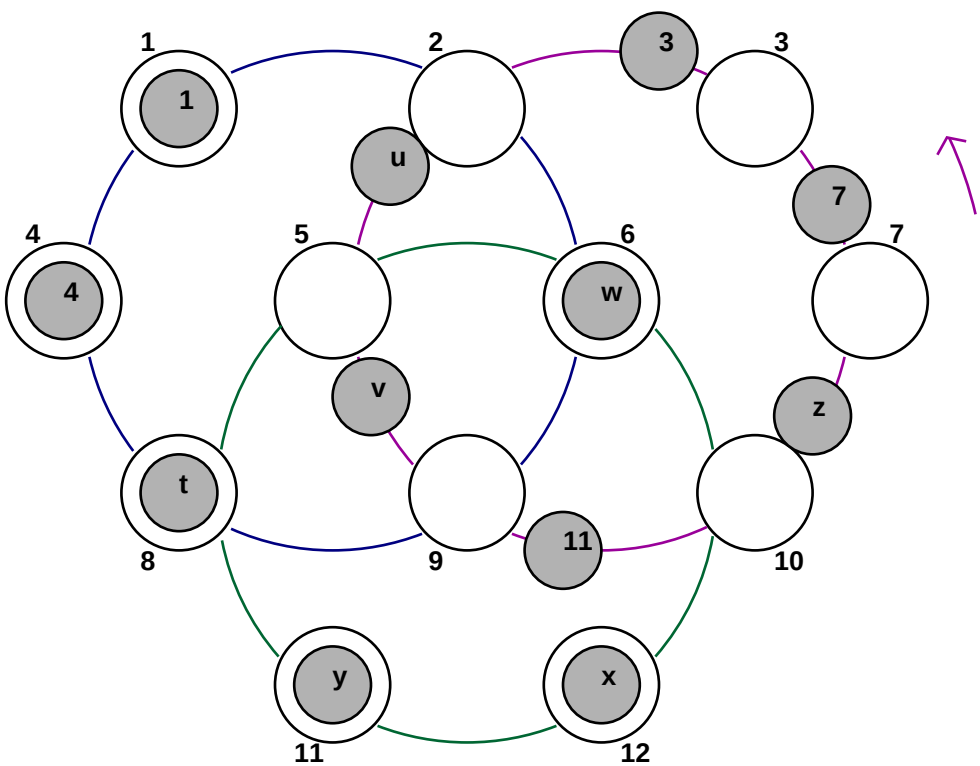

1
1
2
3
3
7
u
4
4
5
6
w
7
z
v
t
8
9
11
10
y
x
11
12

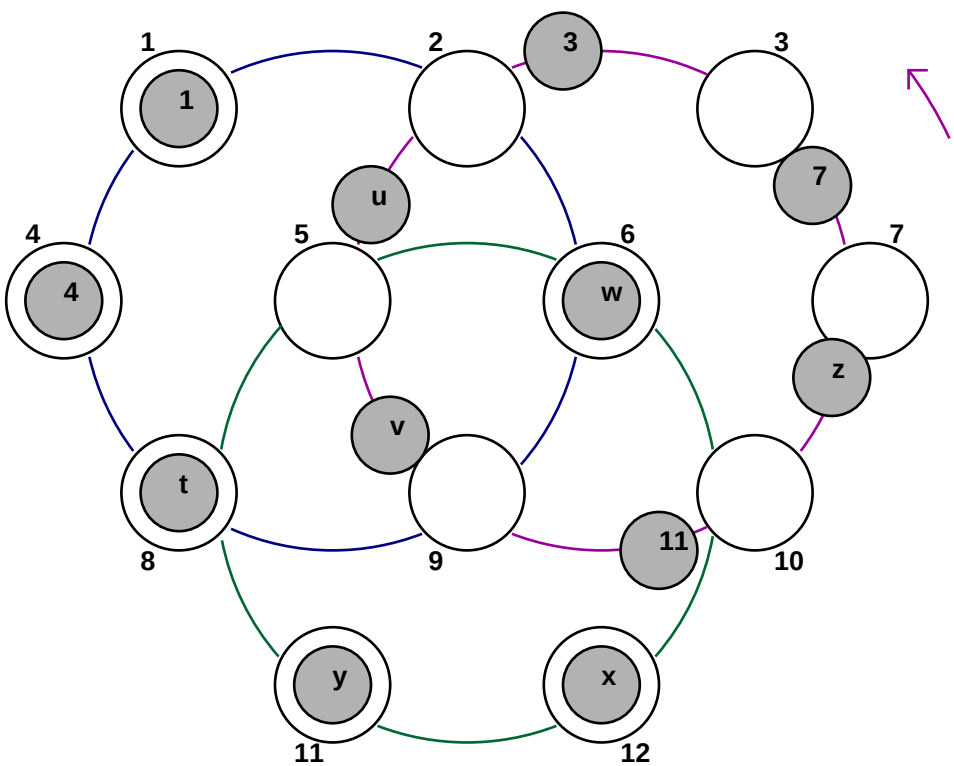

1
2
3
3
1
u
7
4
5
6
7
4
w
v
z
t
8
9
11
10
y
x
11
12

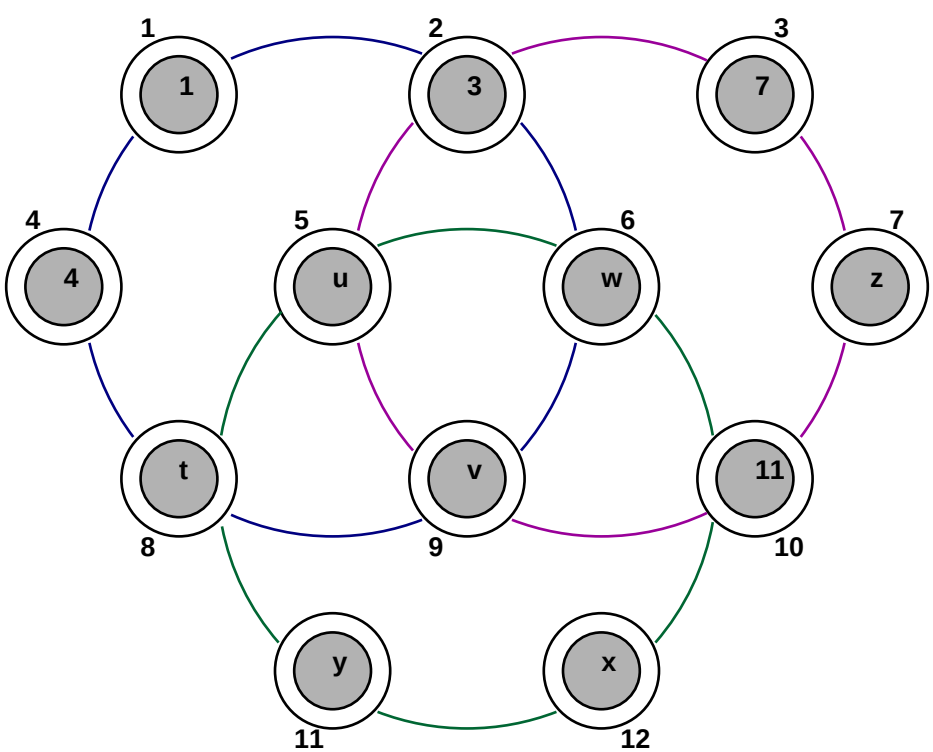

1
2
3
1
u
3
4
5
6
7
4
v
w
7
t
11
z
8
9
10
y
x
11
12

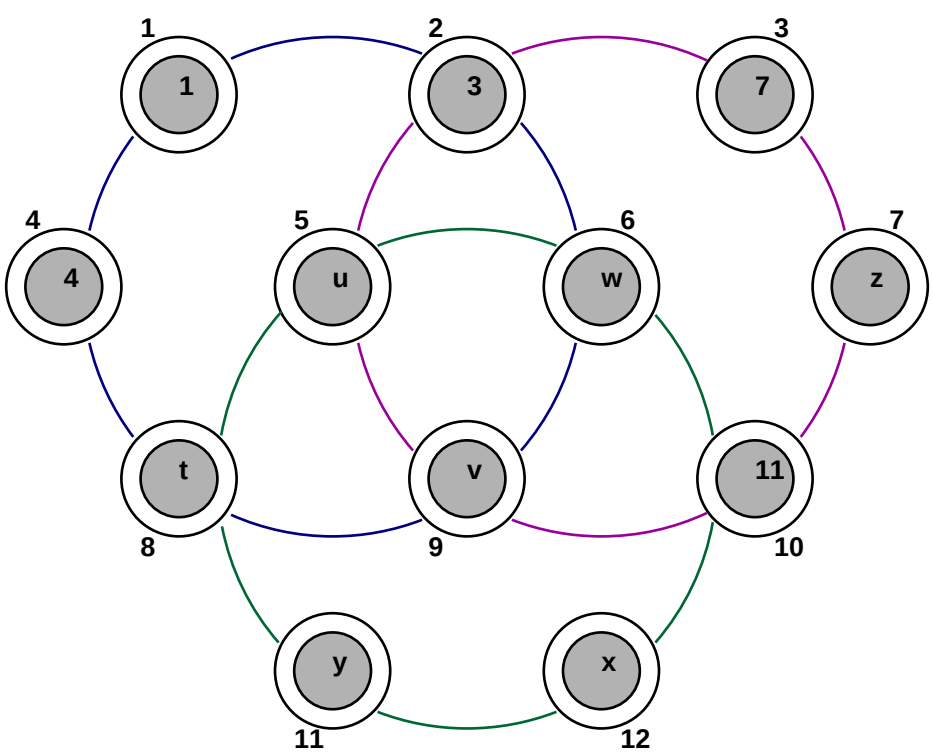
Number 11 can be moved into the green circle while keeping numbers 1, 3, 4, and 7 in position by the following moves.

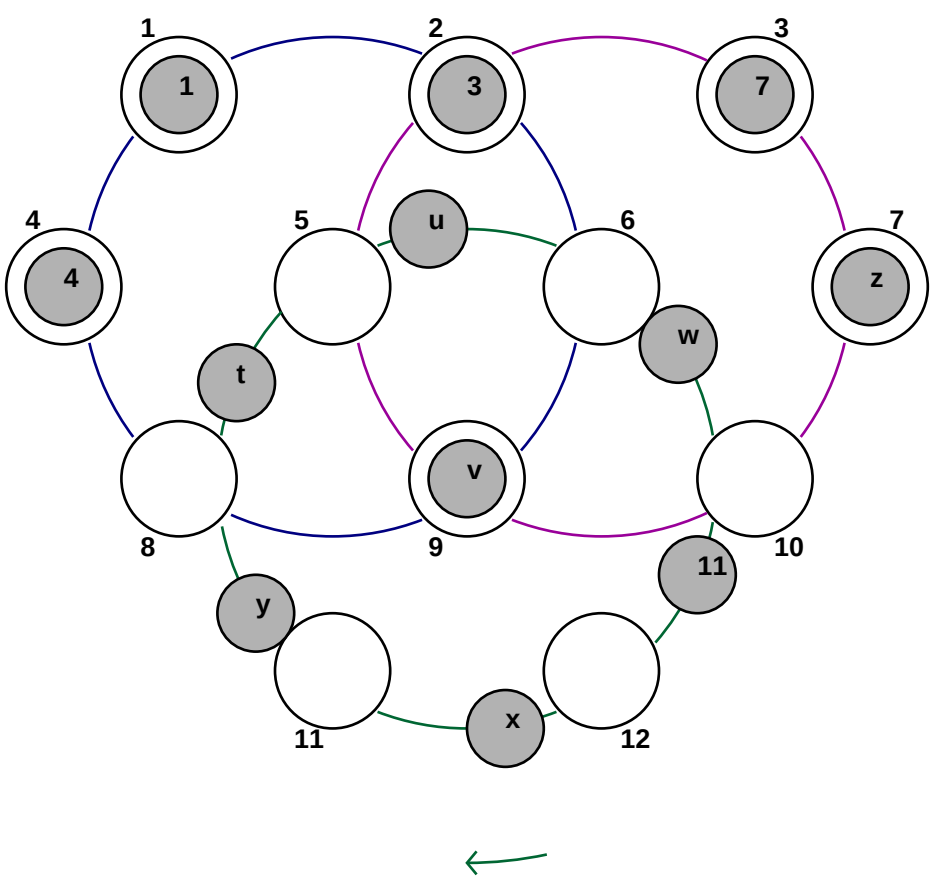

1
2
3
1
u
3
4
5
6
7
4
v
w
7
t
11
z
8
9
10
y
x
11
12

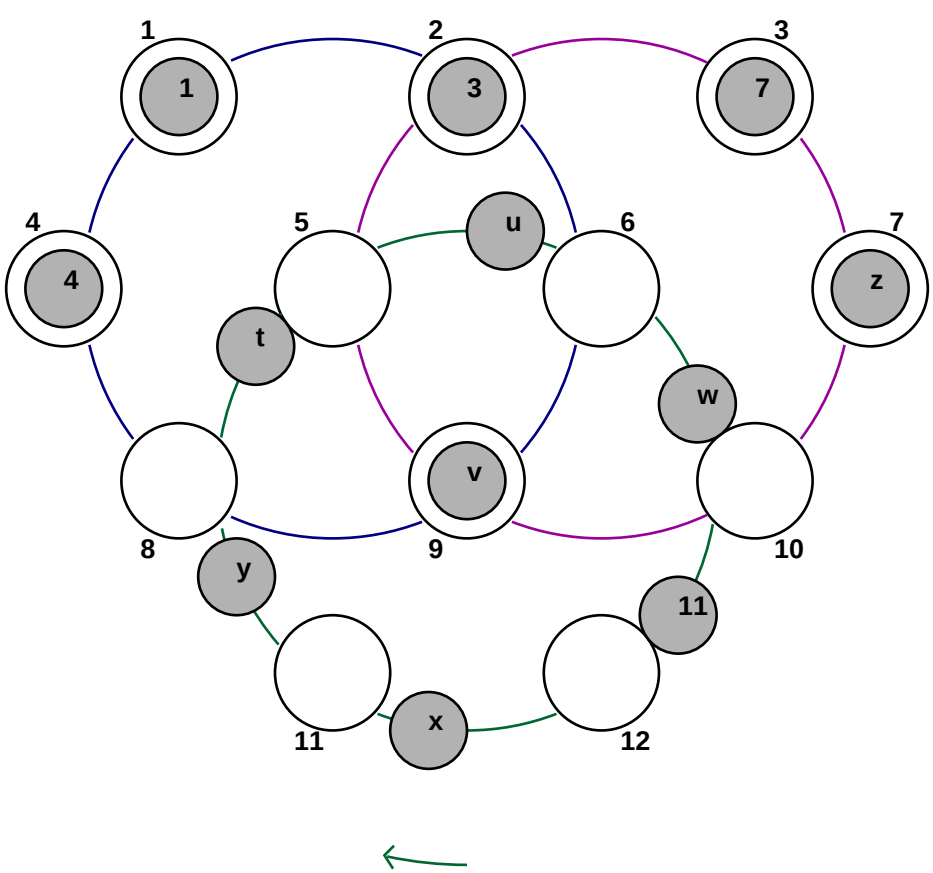

1
1
2
3
3
u
7
4
4
5
6
7
w
v
z
t
8
9
11
10
y
x
11
12

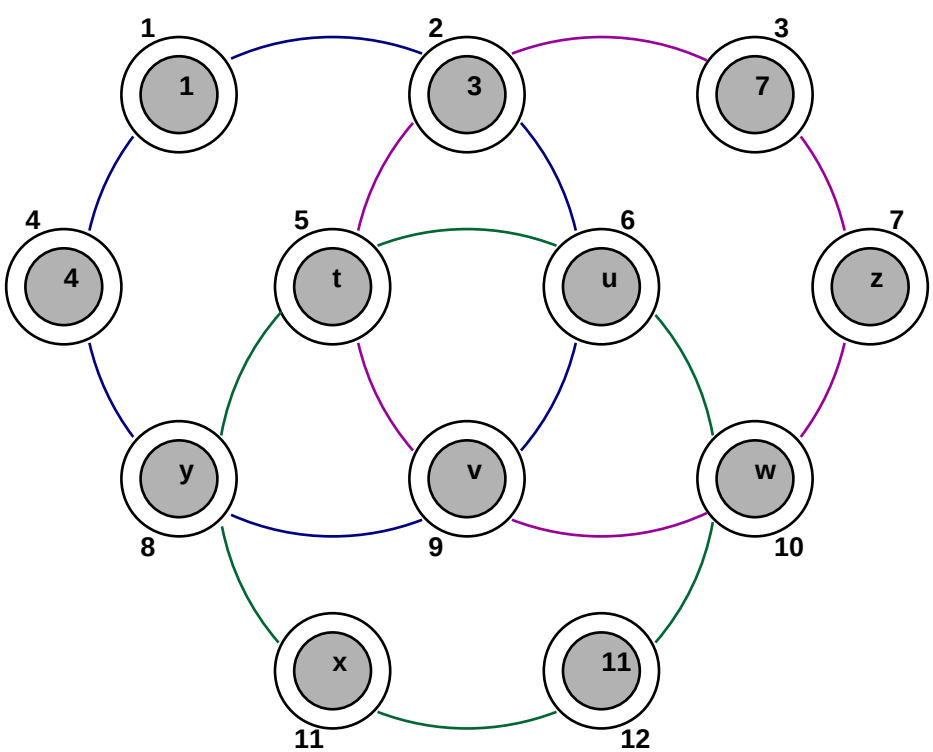

1
2
3
3
1
u
7
4
5
6
7
4
w
z
v
t
11
8
9
10
y
x
11
12

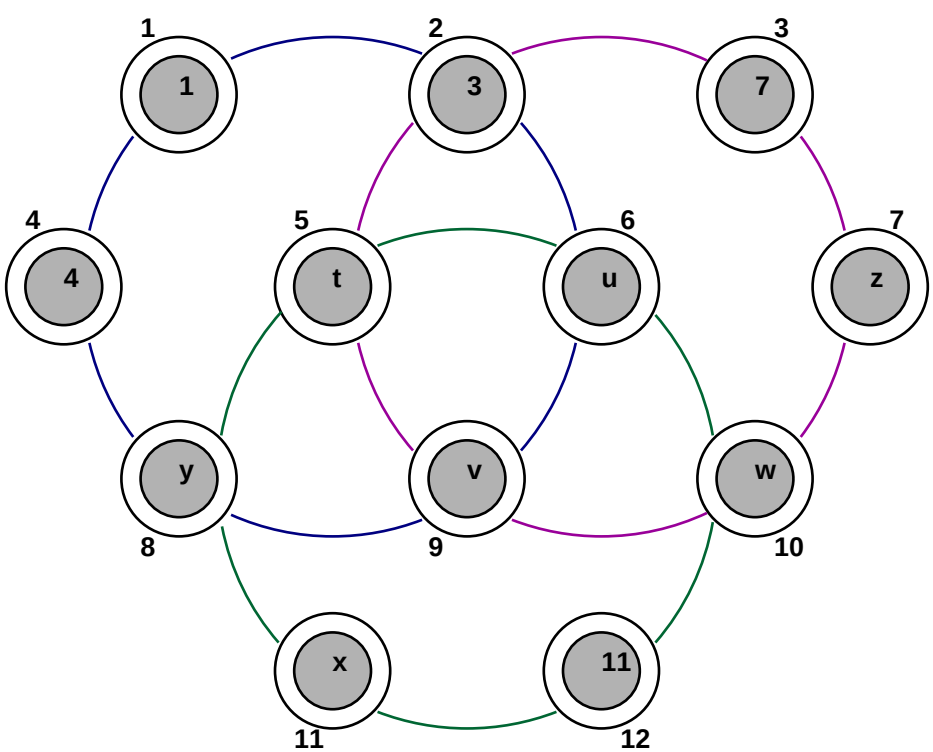

1
2
3
1
3
7
4
5
6
7
4
u
w
z
t
v
11
8
9
10
y
x
11
12

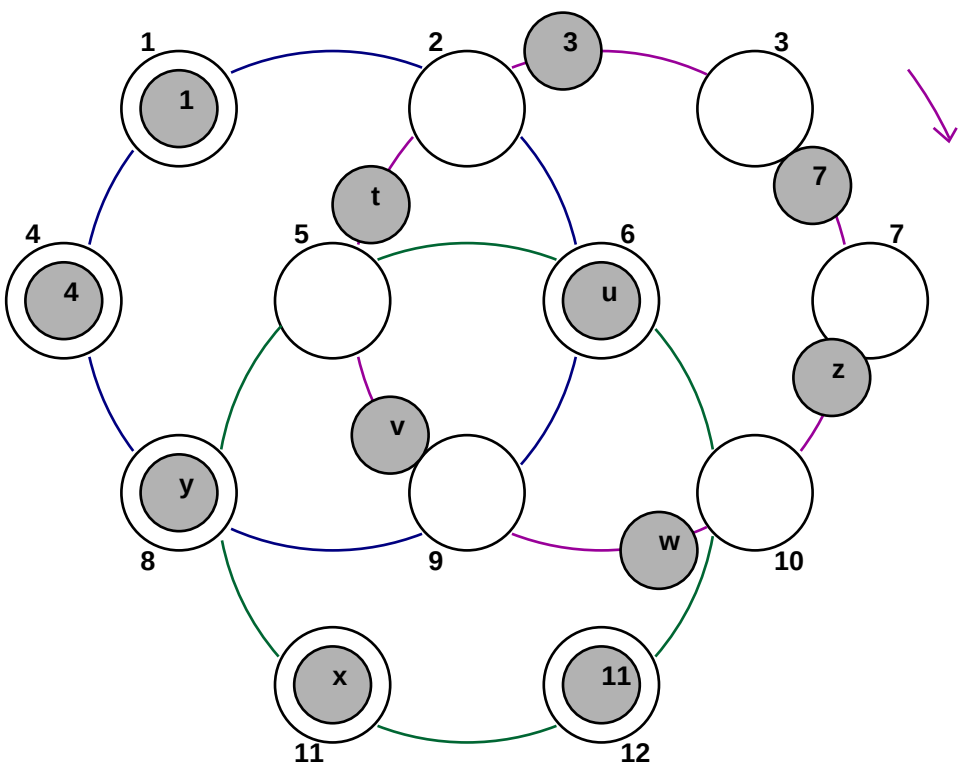

1
2
3
1
3
7
4
5
6
7
4
u
w
z
t
v
11
8
9
10
y
x
11
12

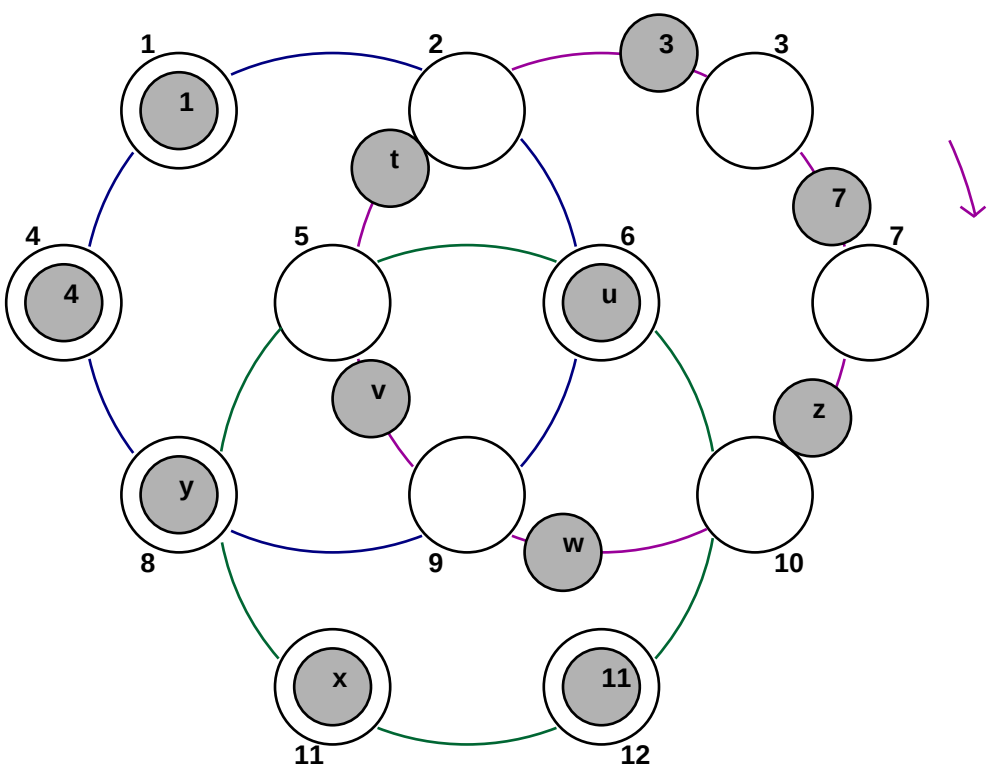

1
2
3
1
3
7
4
5
u
6
7
4
z
w
t
v
8
9
10
11
y
11
12
x

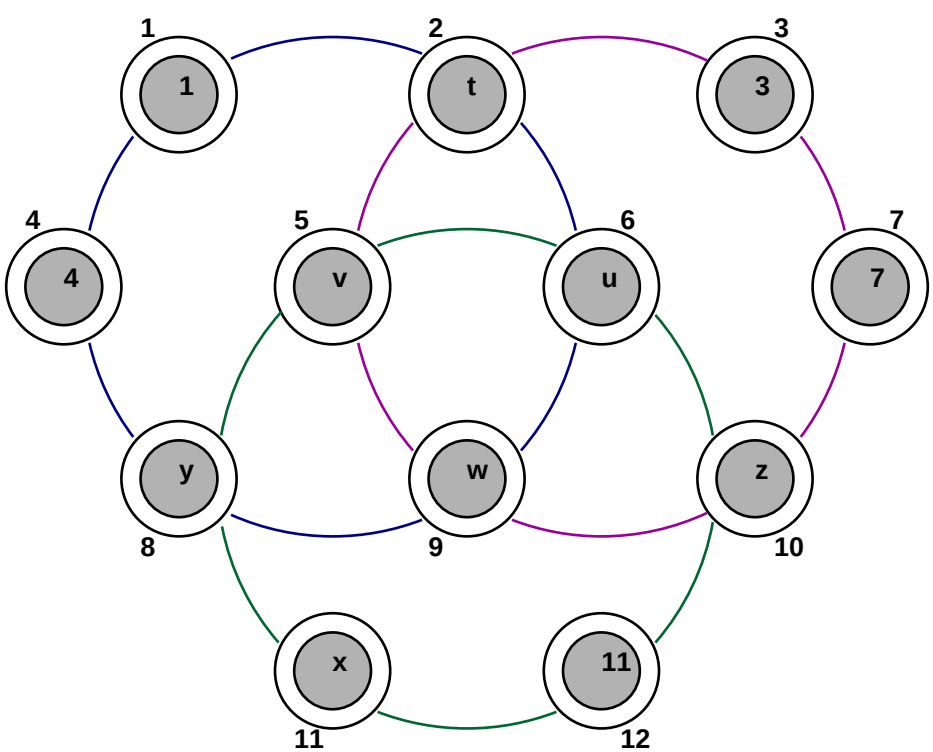

1
2
3
1
3
7
4
5
6
7
u
4
z
t
w
v
8
9
10
y
11
x
11
12


1
2
3
1
3
7
4
5
6
7
4
t
u
z
y
v
w
8
9
10
x
11
11
12

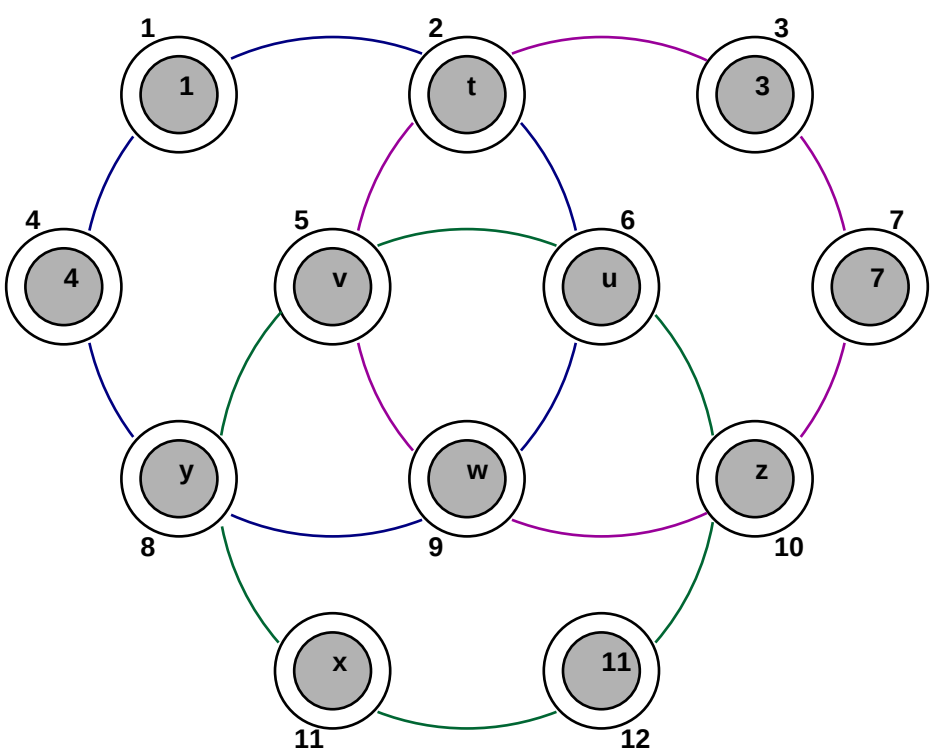

1
2
3
1
3
7
4
5
6
7
4
t
u
z
y
v
w
8
9
10
x
11
11
12

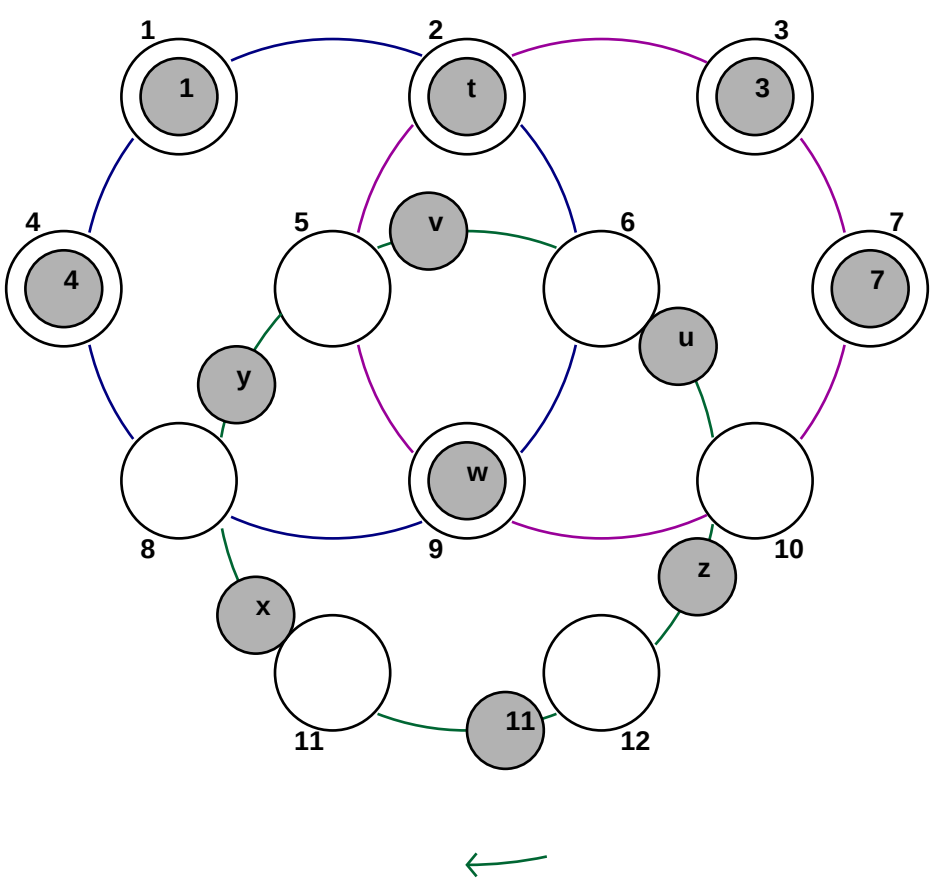

1
1
2
3
3
7
t
4
4
5
6
u
7
z
v
y
8
9
w
10
x
11
11
12

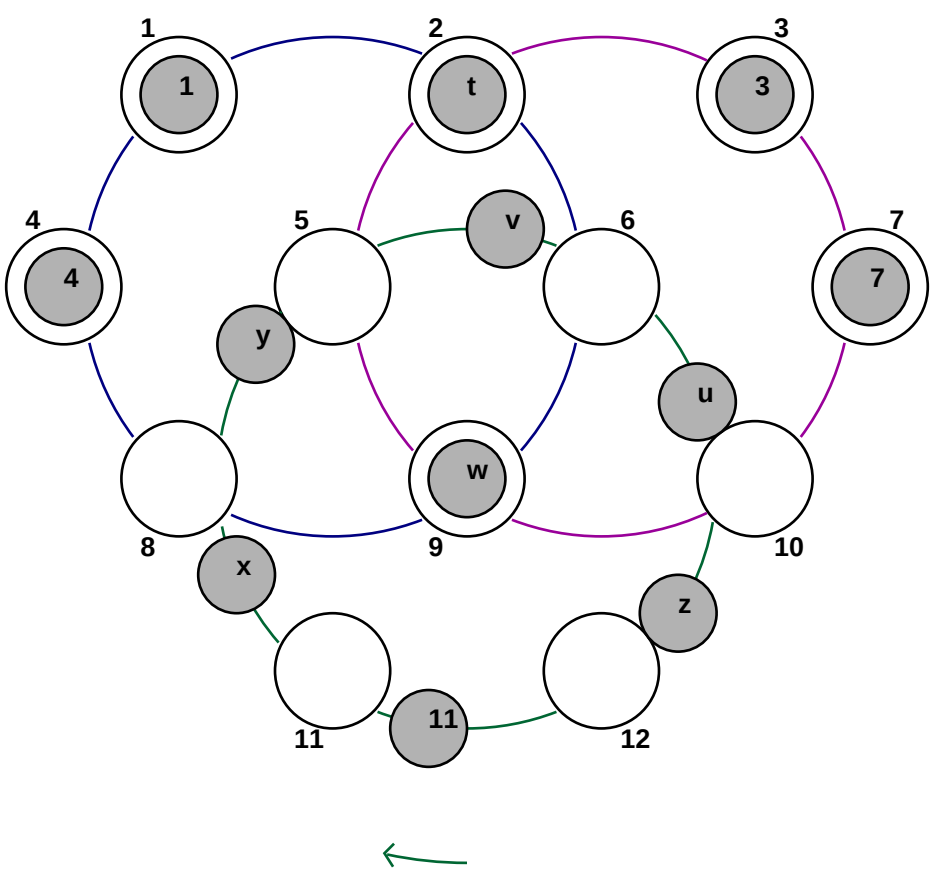

1
1
2
3
3
t
7
4
4
5
6
7
u
v
z
y
8
9
w
10
x
11
11
12

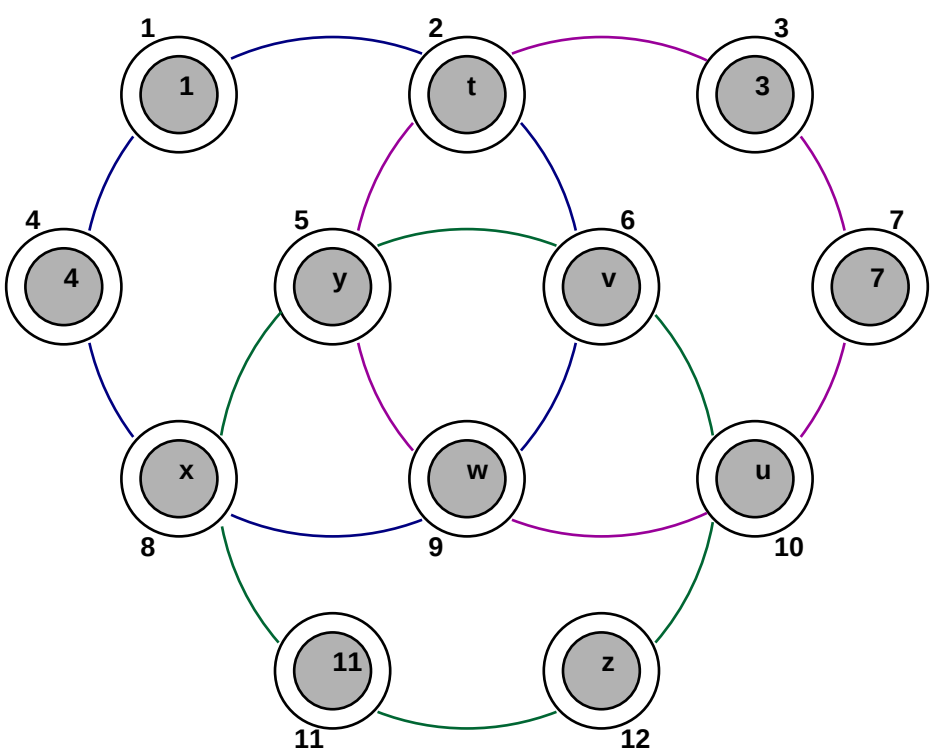

1
2
3
1
t
3
4
5
6
7
4
v
u
7
y
w
z
8
9
10
x
11
11
12

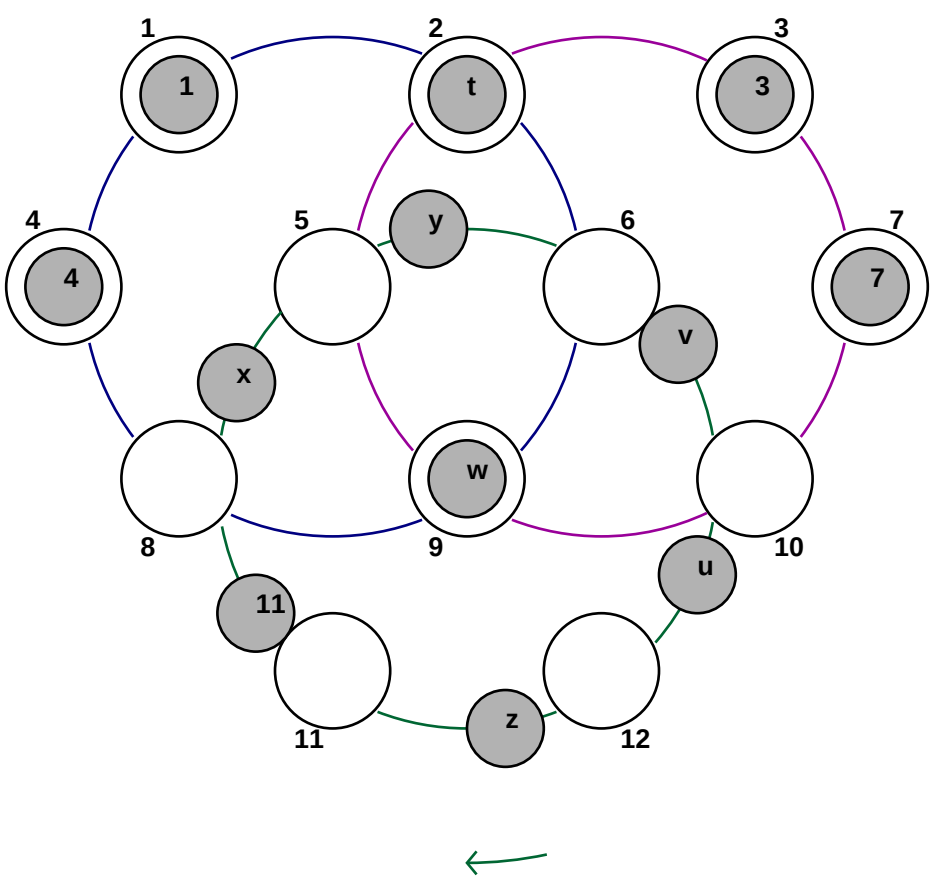
Number 11 can be moved into every position in the green circle by moving the green circle in a clockwise or counter-clockwise pattern. Numbers 1, 3, 4, and 7 will remain in their correct positions.

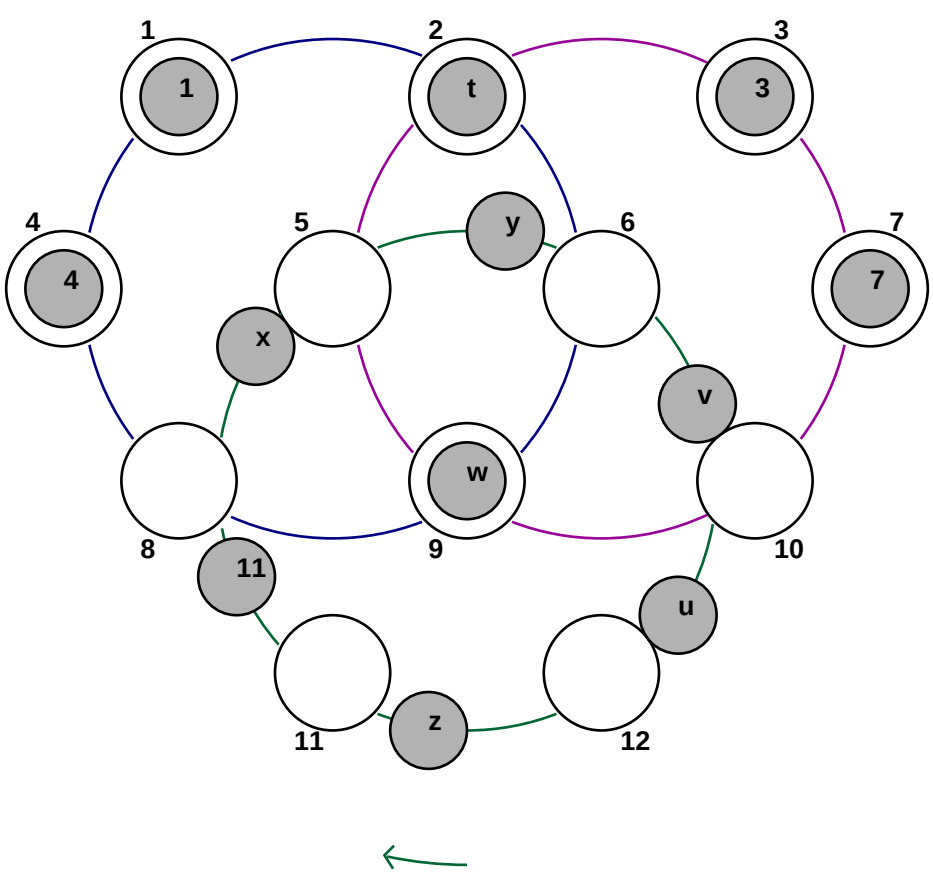

1
2
3
1
t
3
4
5
6
7
4
v
u
7
y
w
z
8
9
10
x
11
11
12

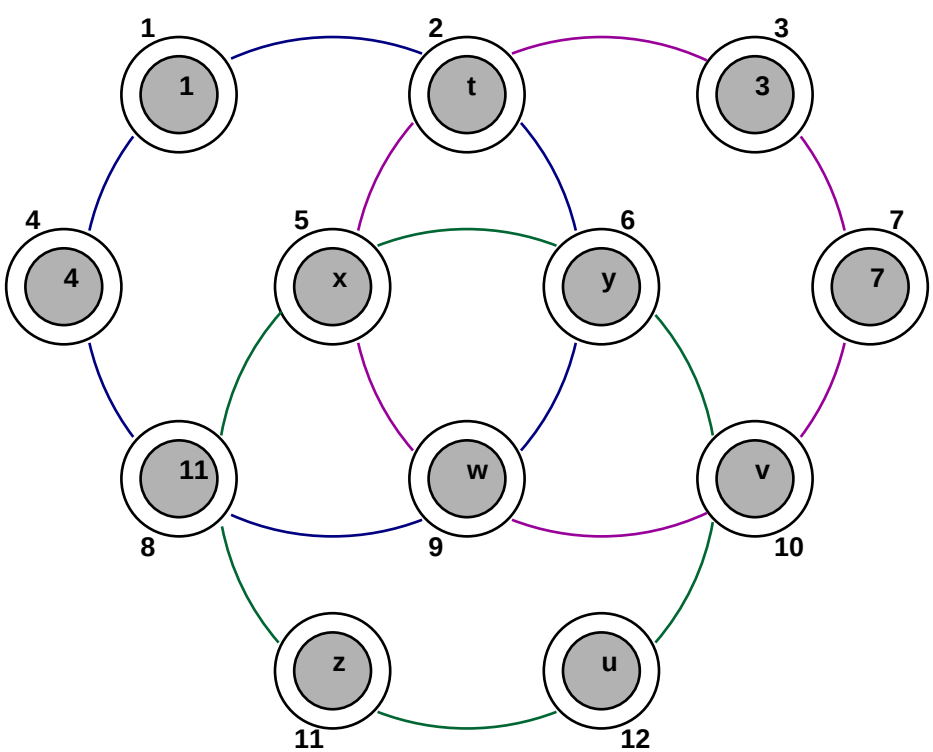

1
2
3
1
t
3
4
5
v
6
7
4
7
u
y
w
8
9
10
z
x
11
11
12

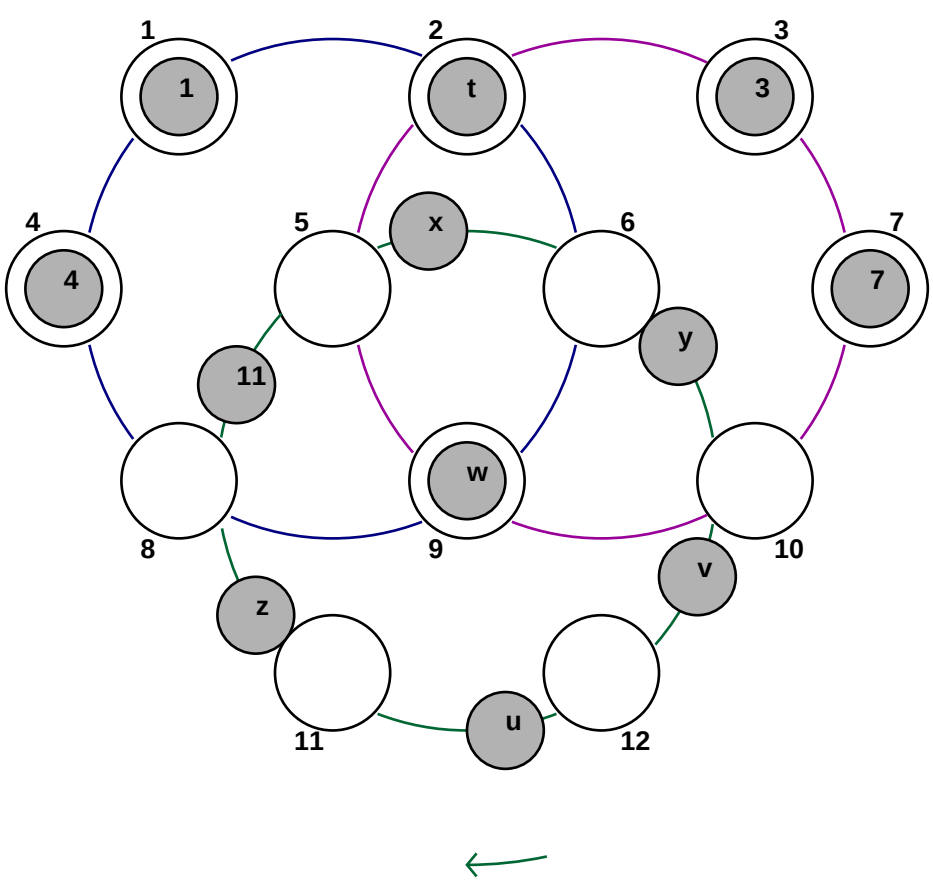

1
2
3
1
t
3
4
5
v
6
7
4
7
y
u
w
8
9
10
x
z
11
11
12

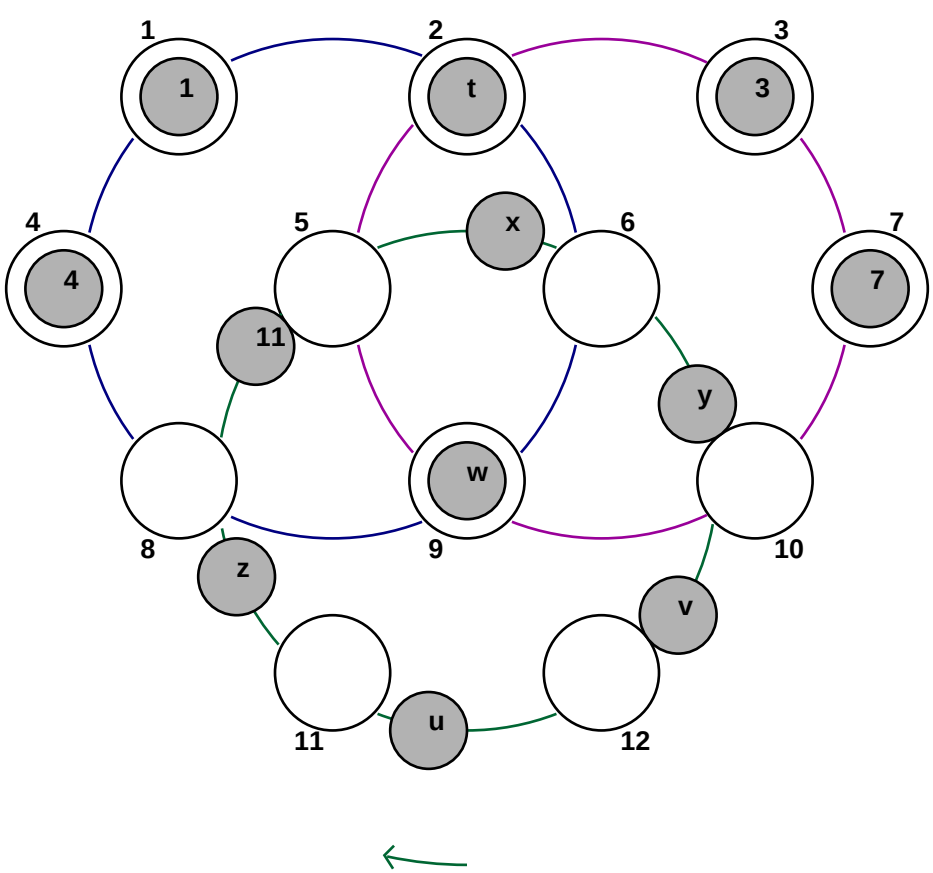

1
2
3
1
t
3
4
5
6
7
4
y
v
7
x
w
u
8
9
10
11
z
11
12

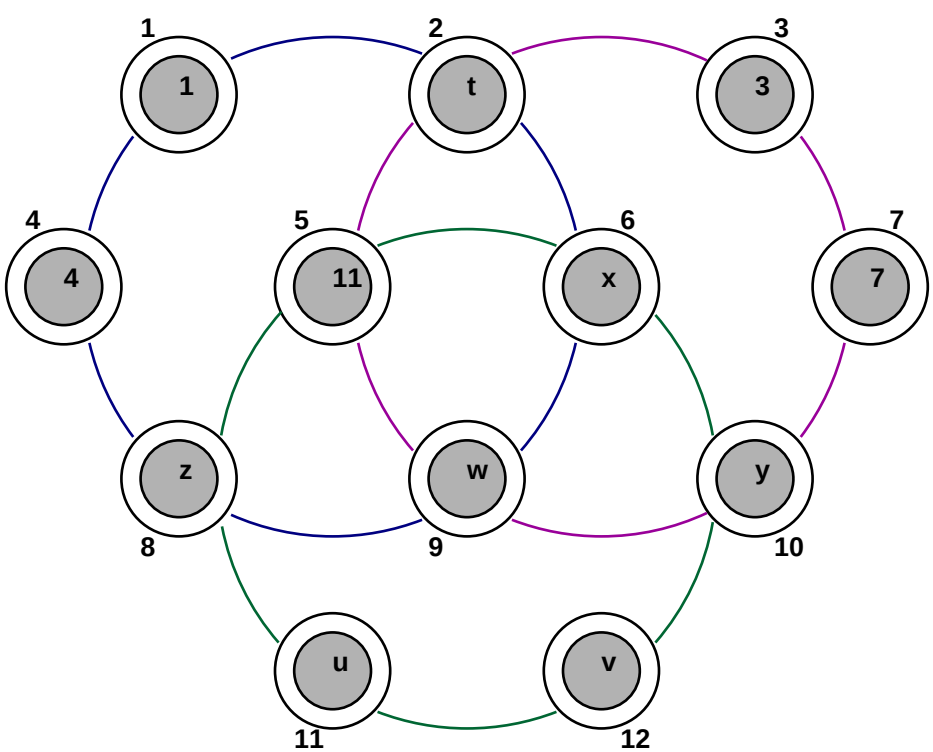

1
2
3
1
t
3
4
5
6
7
y
4
7
v
x
w
8
9
10
u
11
11
z
12

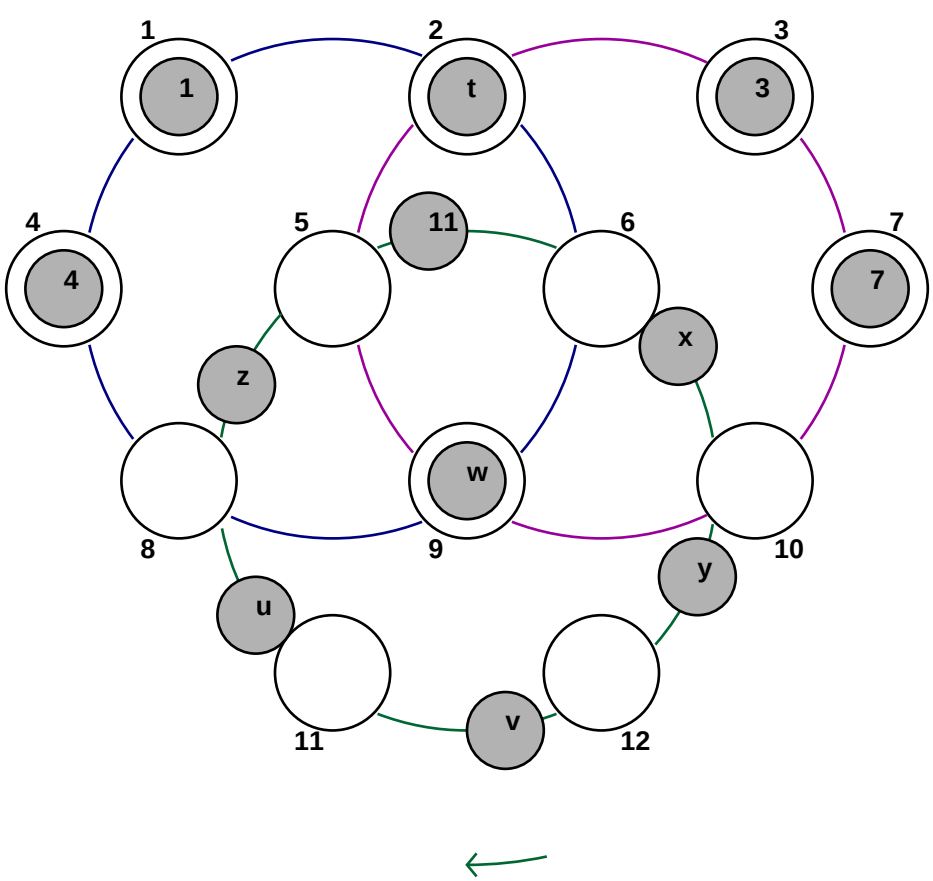

1
2
3
1
t
3
4
5
6
7
y
4
7
x
v
w
8
9
10
11
u
11
z
12

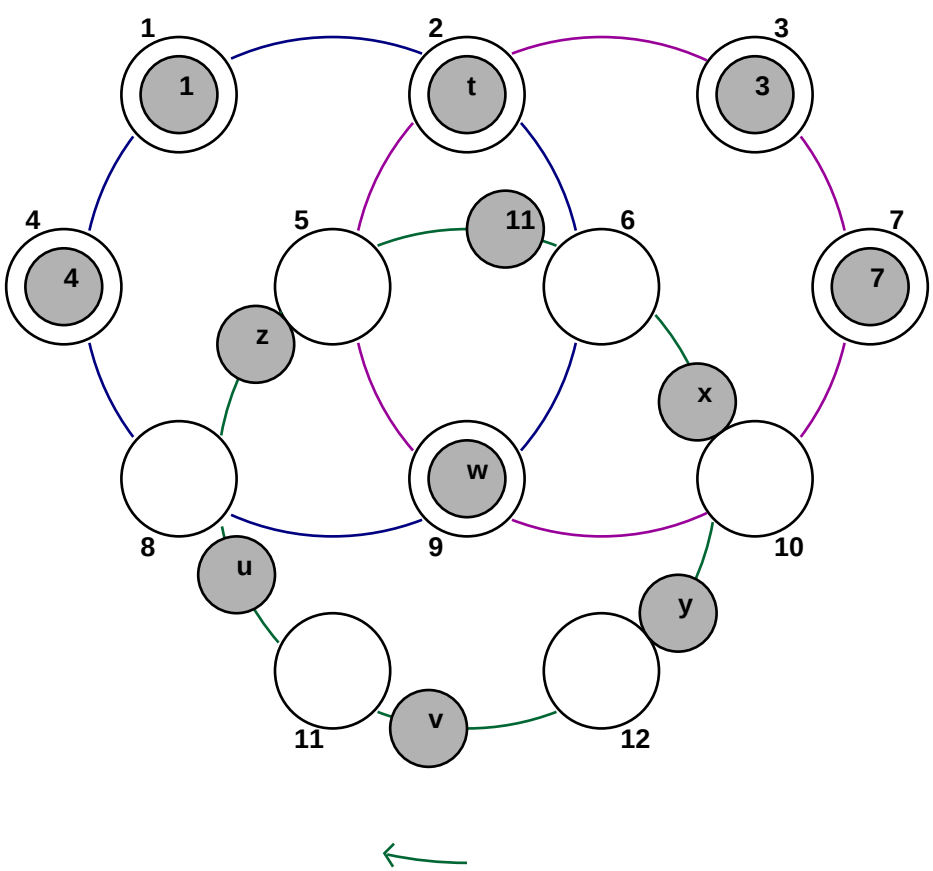

1
2
3
1
t
3
4
5
6
7
4
x
y
7
11
w
v
8
9
10
z
u
11
12

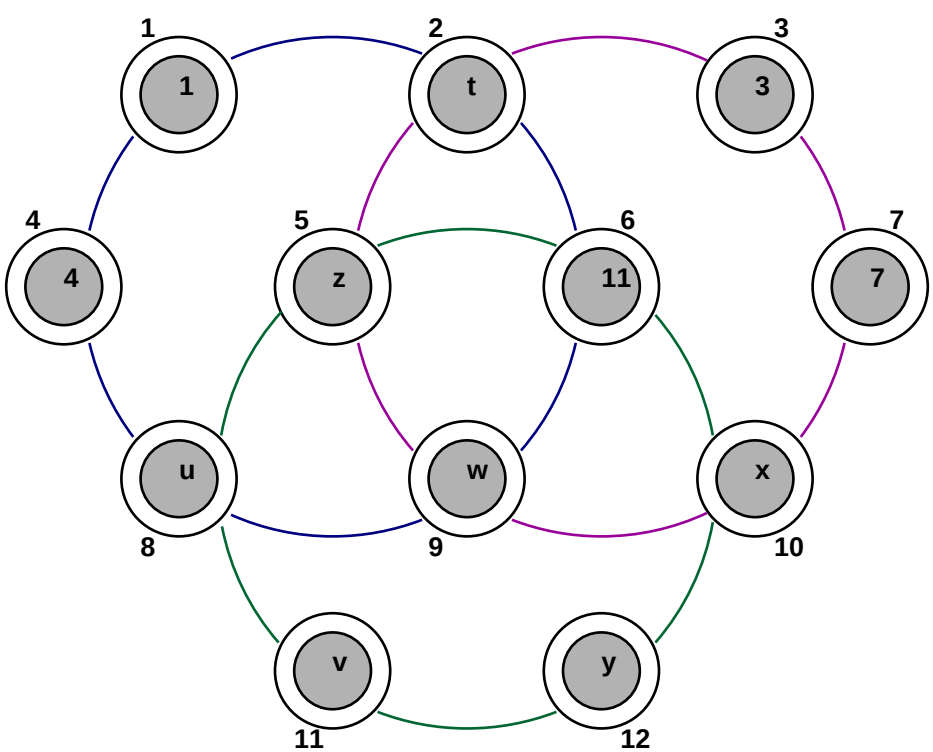

1
2
3
1
t
3
4
5
6
7
x
4
7
y
11
w
8
9
10
v
z
11
12
u

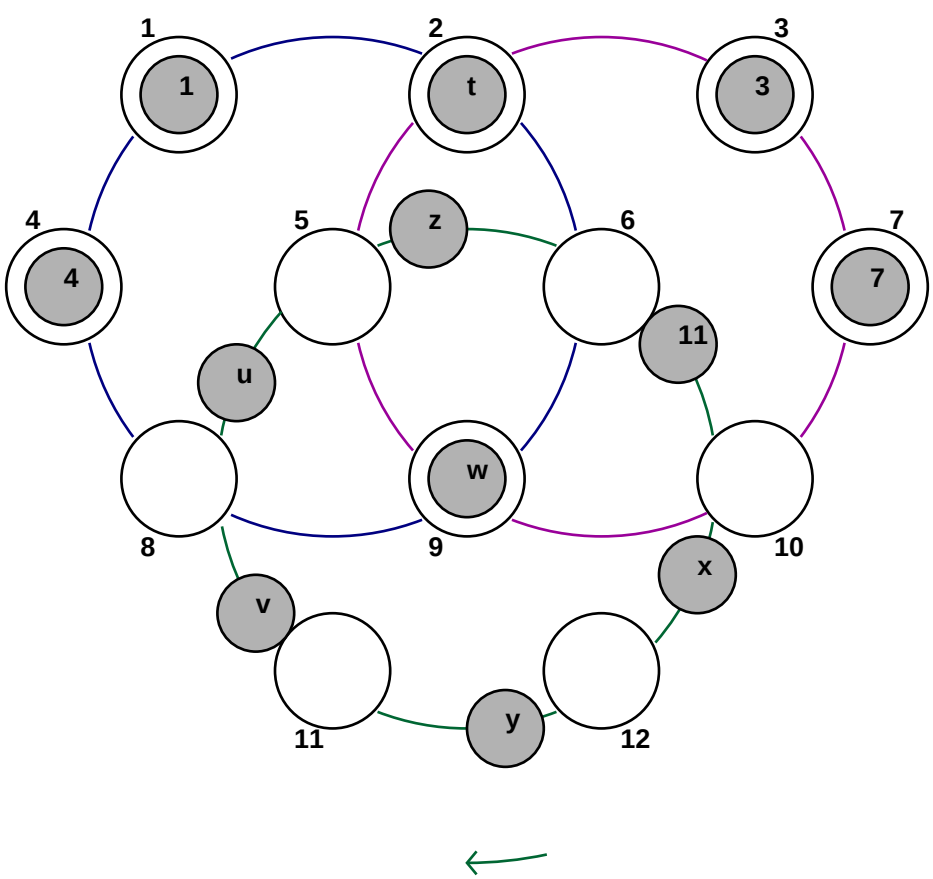

1
2
3
1
t
3
4
5
6
7
x
4
7
11
y
w
8
9
10
z
v
11
12
u

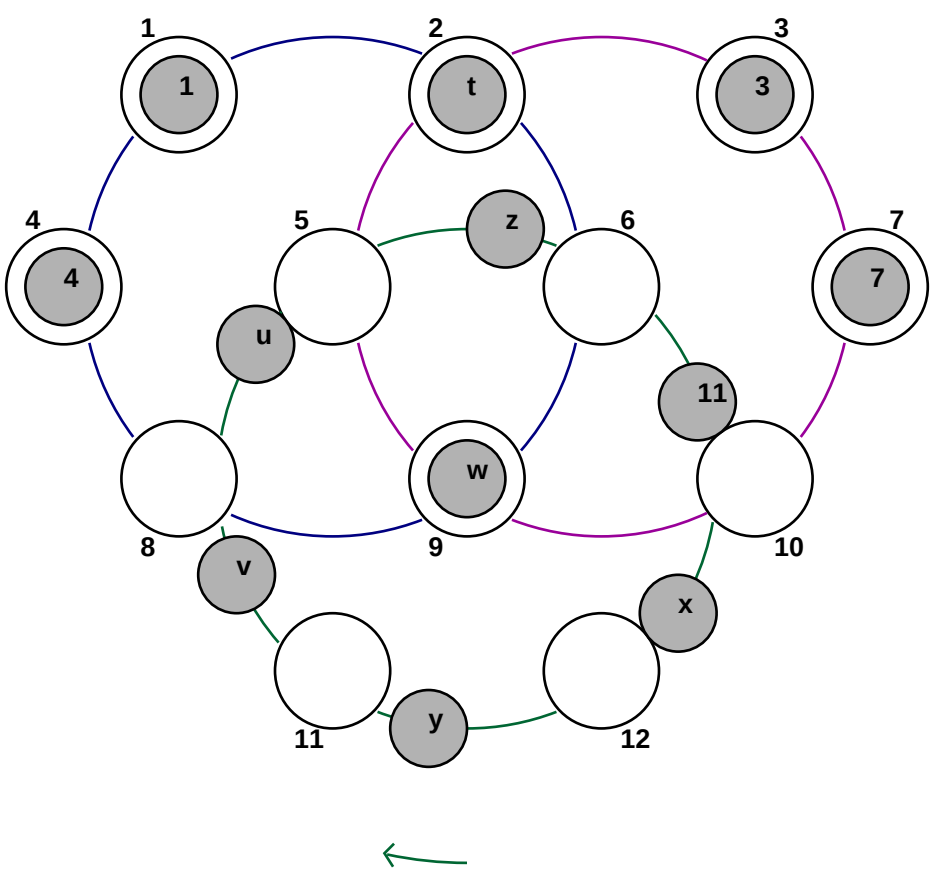

1
2
3
1
t
3
4
5
6
7
4
11
x
7
z
w
y
8
9
10
u
v
11
12

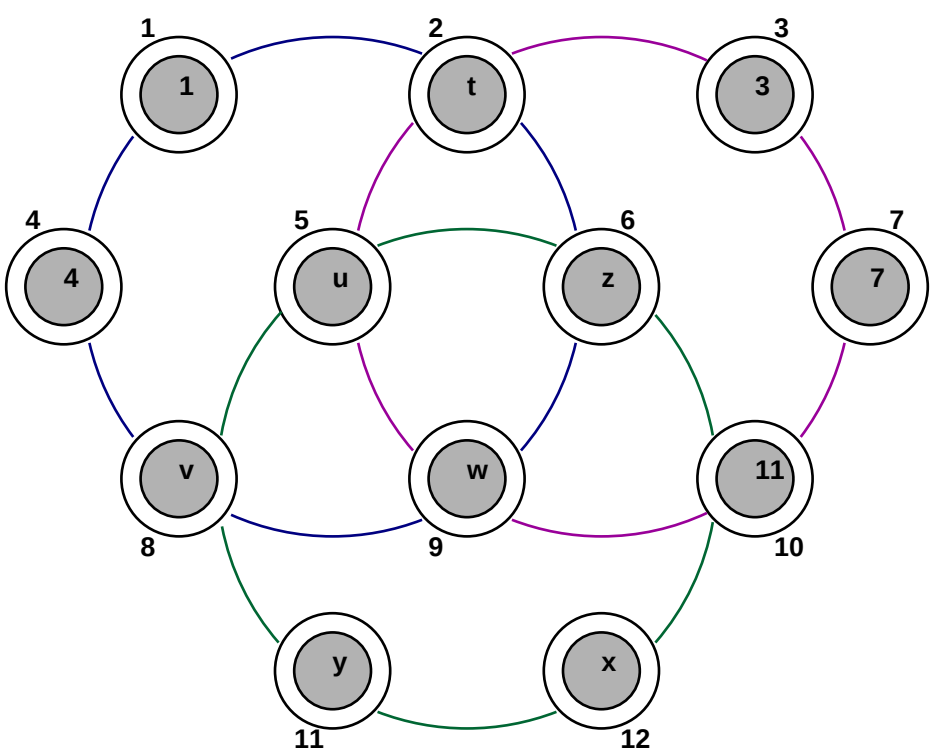

1
2
3
1
t
3
4
5
11
6
7
4
7
x
z
w
8
9
10
y
u
11
v
12

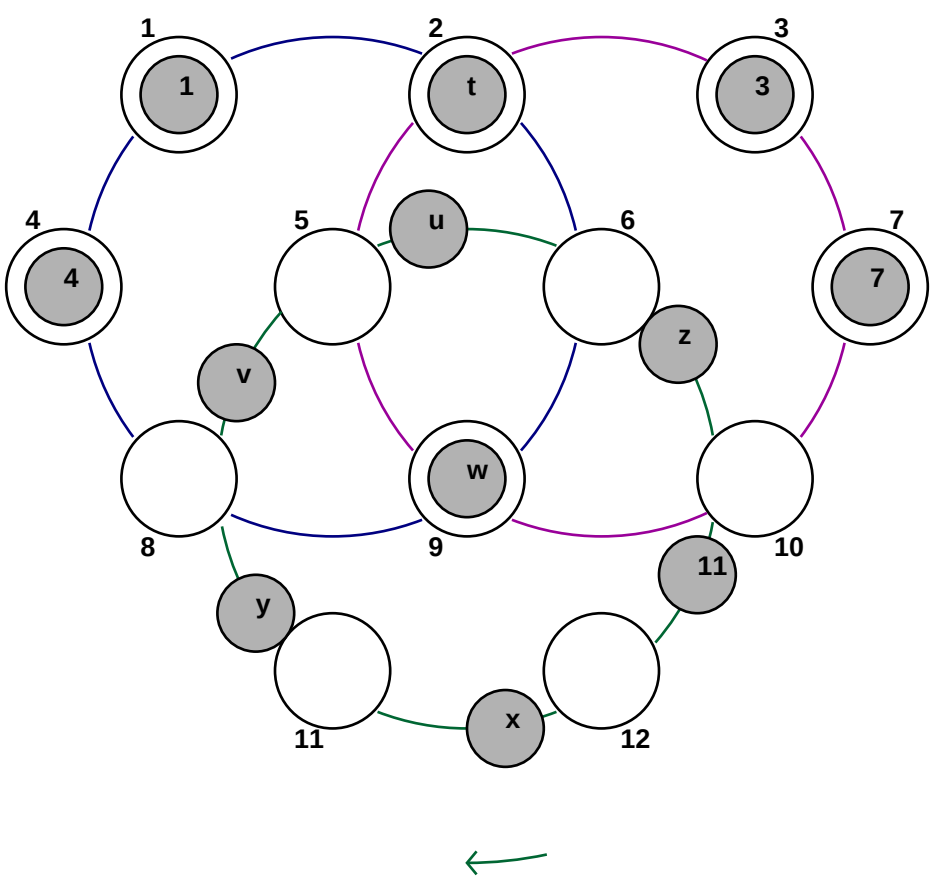

1
2
3
1
t
3
4
5
11
6
7
4
7
z
x
w
8
9
10
u
y
11
v
12

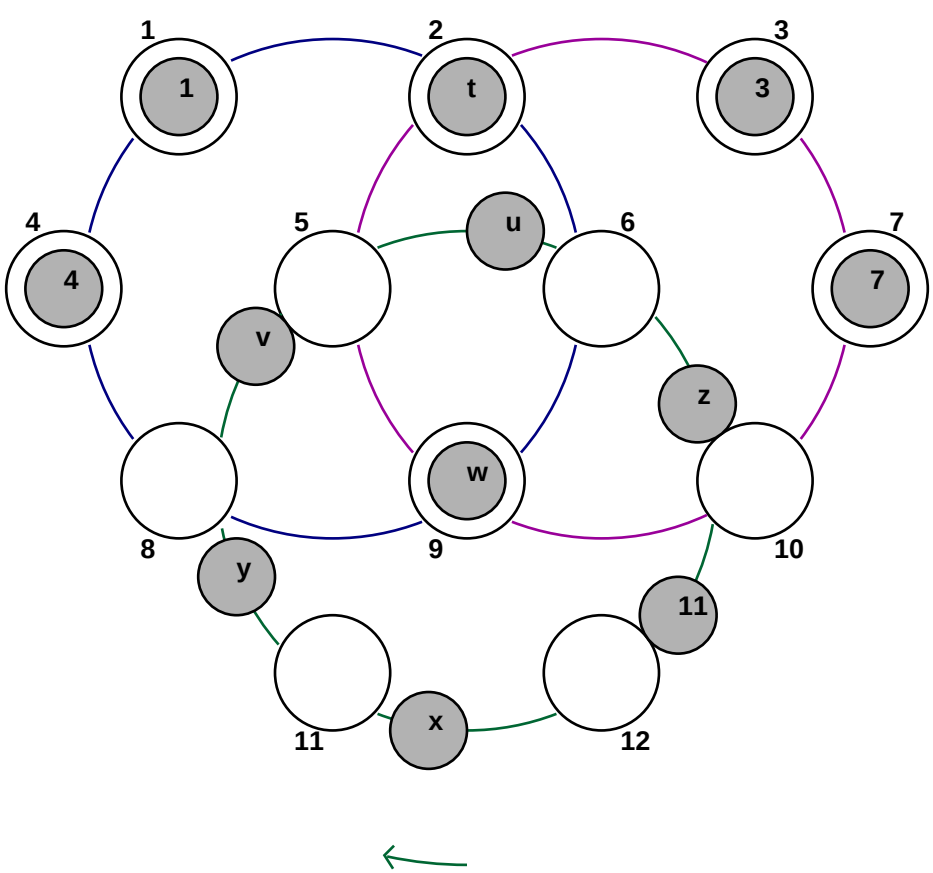

1
2
3
1
t
3
4
5
6
7
4
z
11
7
u
w
x
8
9
10
v
y
11
12

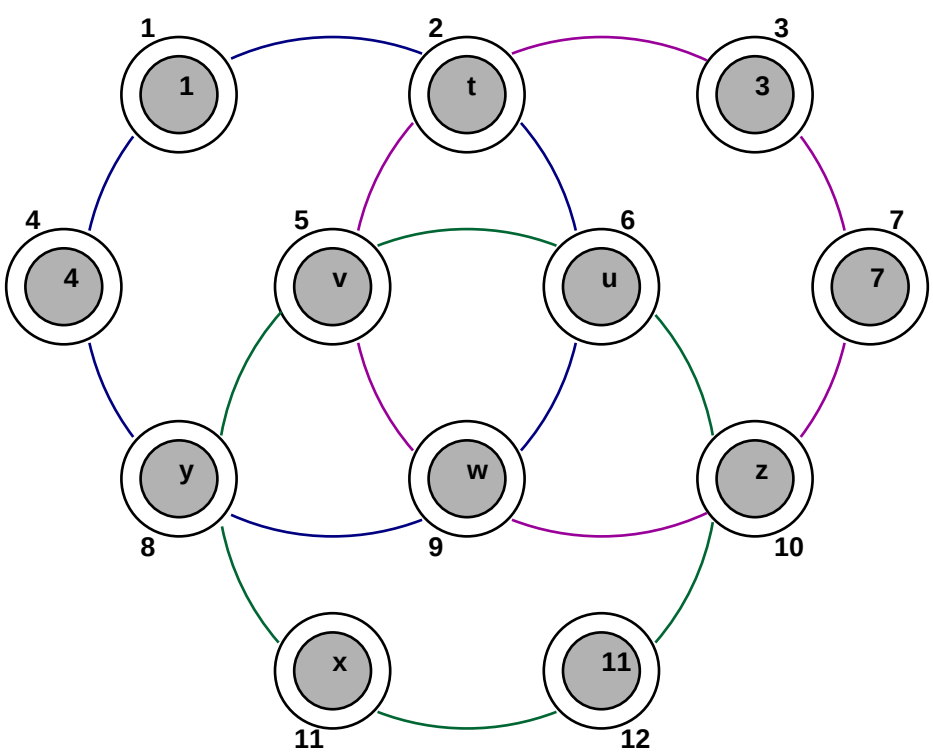

1
2
3
1
t
3
4
5
z
6
7
4
7
11
u
w
8
9
10
x
v
11
y
12


1
2
3
1
t
3
4
5
6
7
z
4
7
u
11
w
8
9
10
v
x
11
12
y

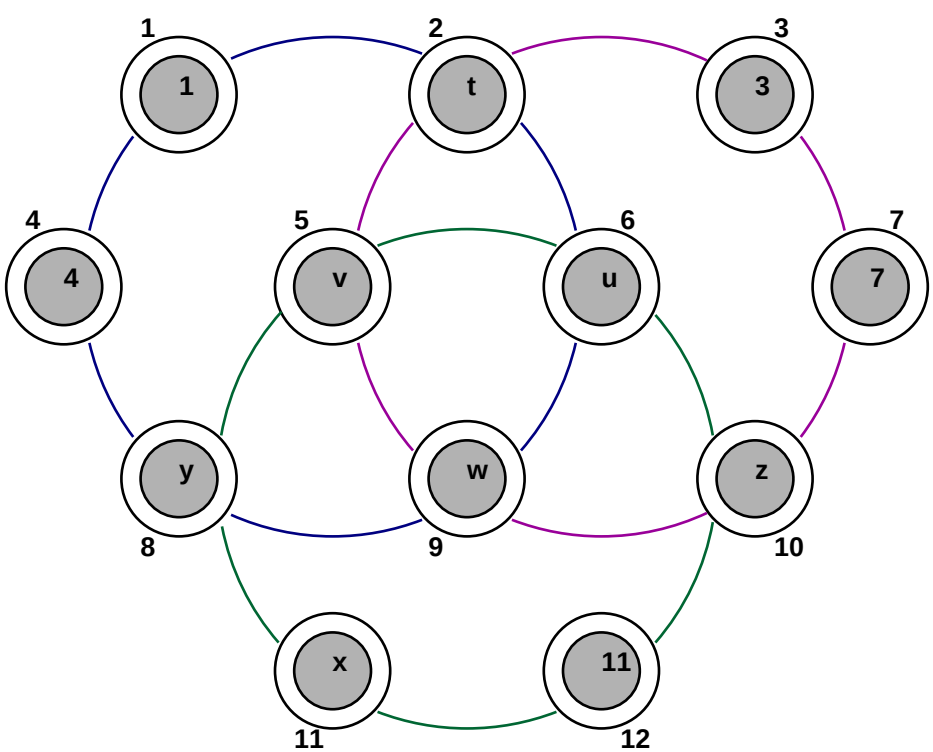

1
2
3
1
t
3
4
5
6
7
4
u
z
7
v
w
11
8
9
10
y
x
11
12

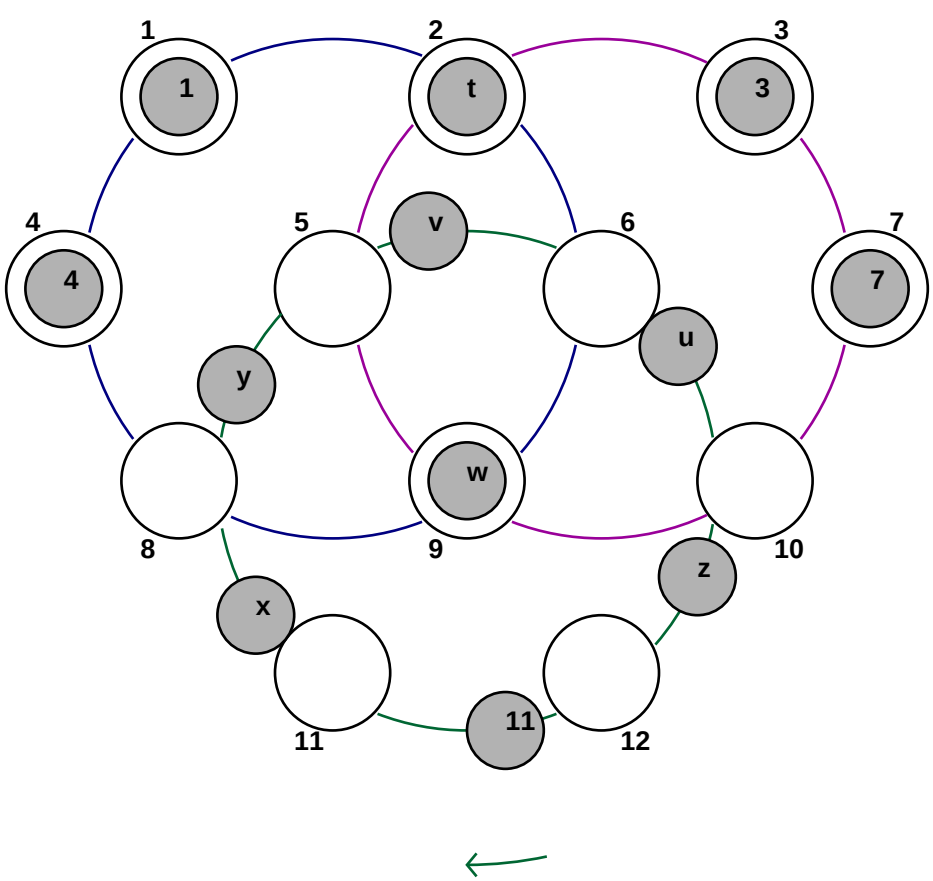

1
2
3
1
t
3
4
5
u
6
7
4
7
z
v
w
8
9
10
11
y
11
12
x

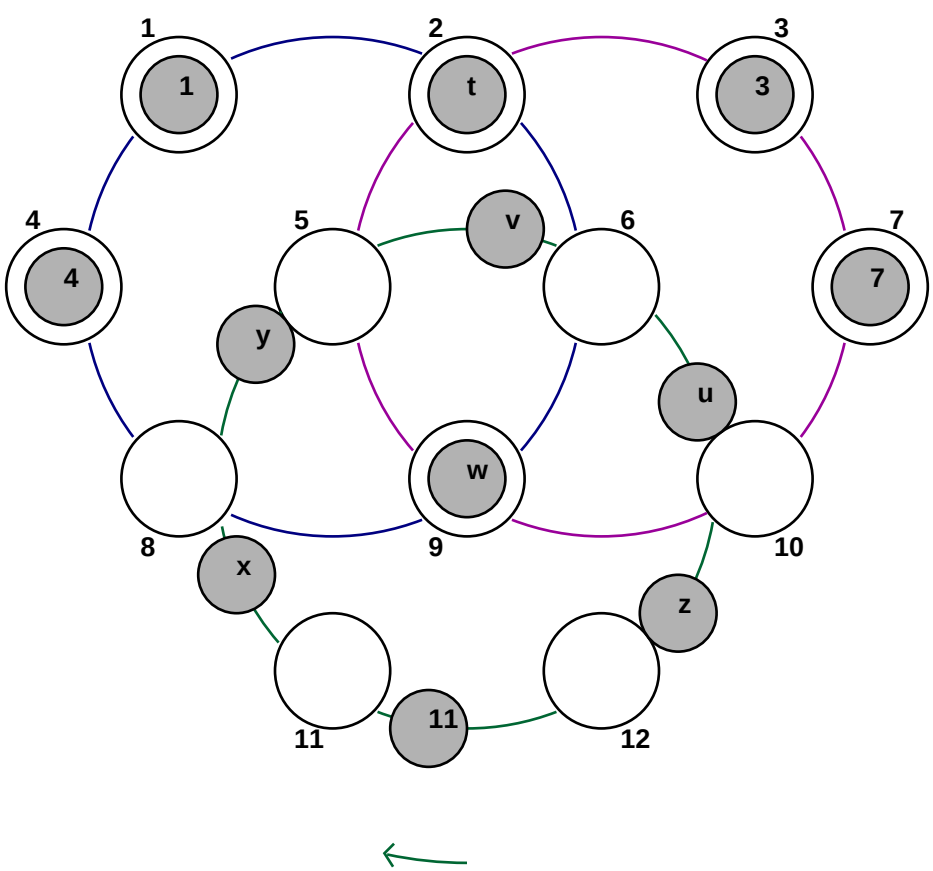

1
2
3
1
t
3
4
5
u
6
7
4
7
v
z
w
8
9
10
y
11
x
11
12

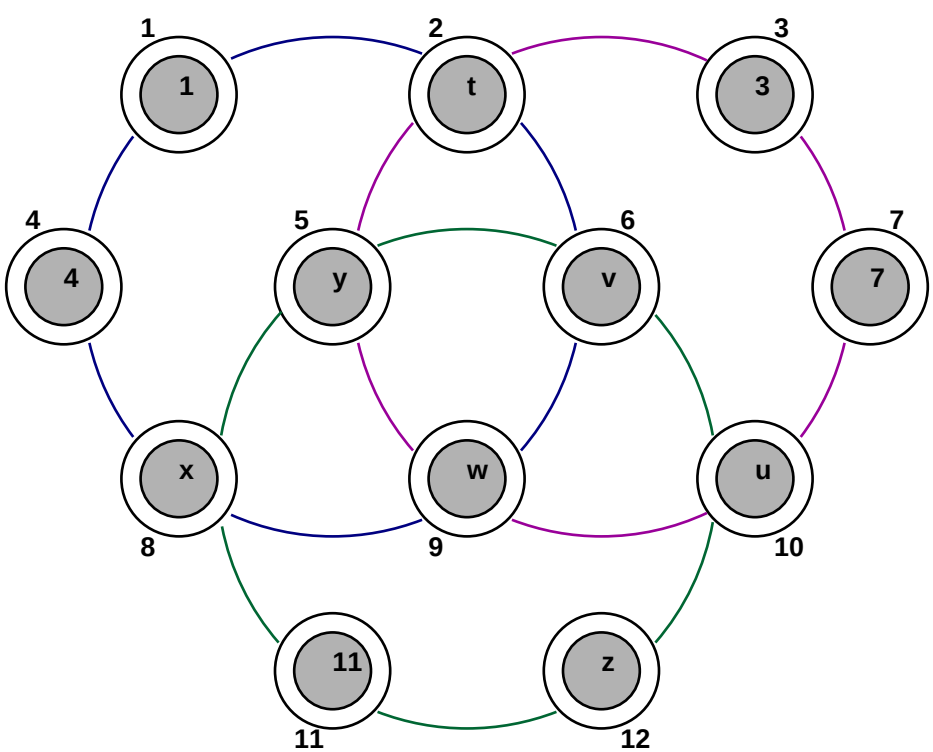

1
2
3
1
t
3
4
5
6
7
4
v
u
7
y
w
z
8
9
10
x
11
11
12

Number 11 can be moved into position 11 by moving the green circle clockwise once.
Numbers 1, 3, 4, and 7 will remain in their correct positions.


1
2
3
1
t
3
4
5
6
7
4
v
u
7
y
w
z
8
9
10
x
11
11
12


1
2
3
1
t
3
4
5
v
6
7
4
7
u
y
w
8
9
10
z
x
11
11
12


1
2
3
1
t
3
4
5
v
6
7
4
7
y
u
w
8
9
10
x
z
11
11
12

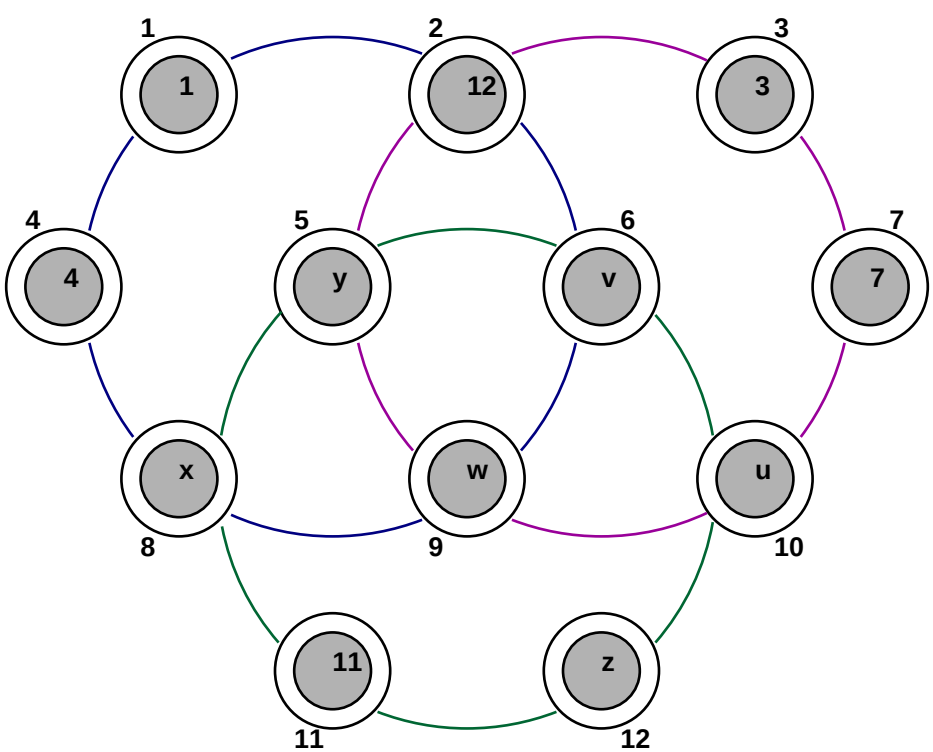

1
2
3
1
t
3
4
5
6
7
4
y
v
7
x
w
u
8
9
10
11
z
11
12

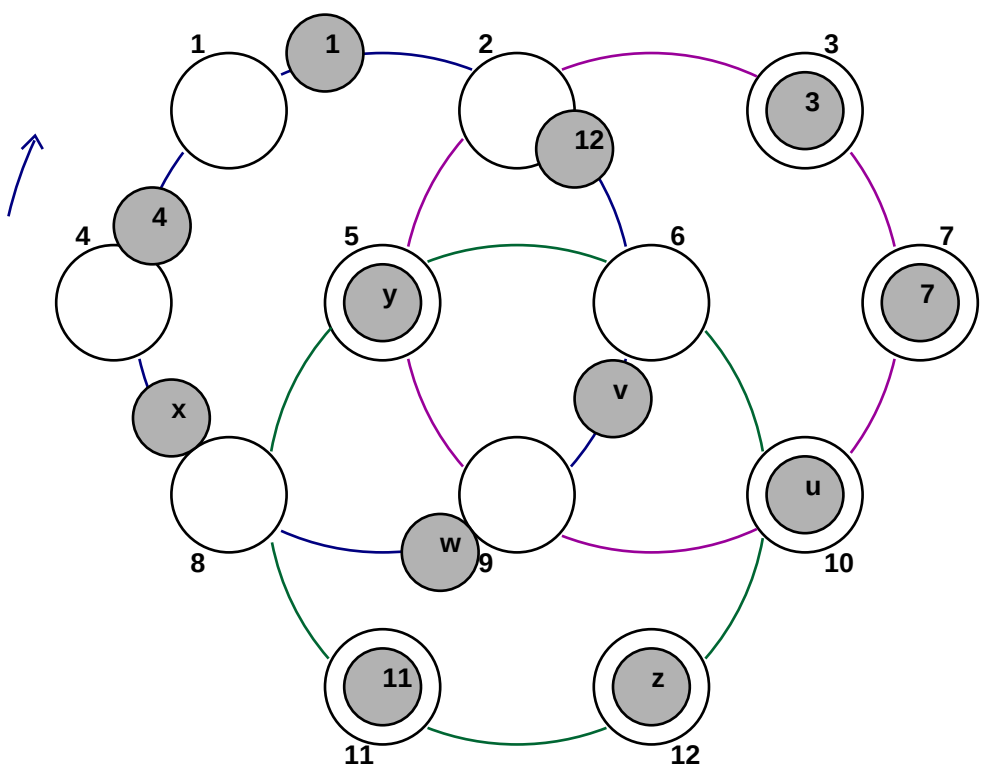
It has been shown that 11 can be moved to position 11 from any position while keeping numbers 1, 3, 4 and 7 in their respective positions.

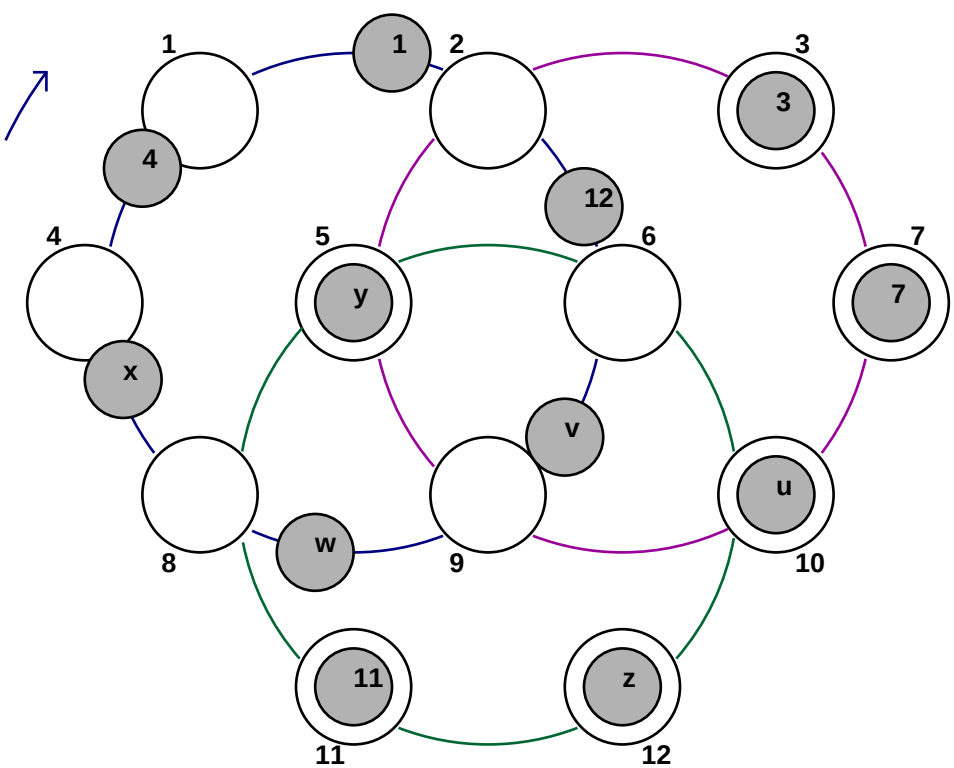
Now let t = 12.

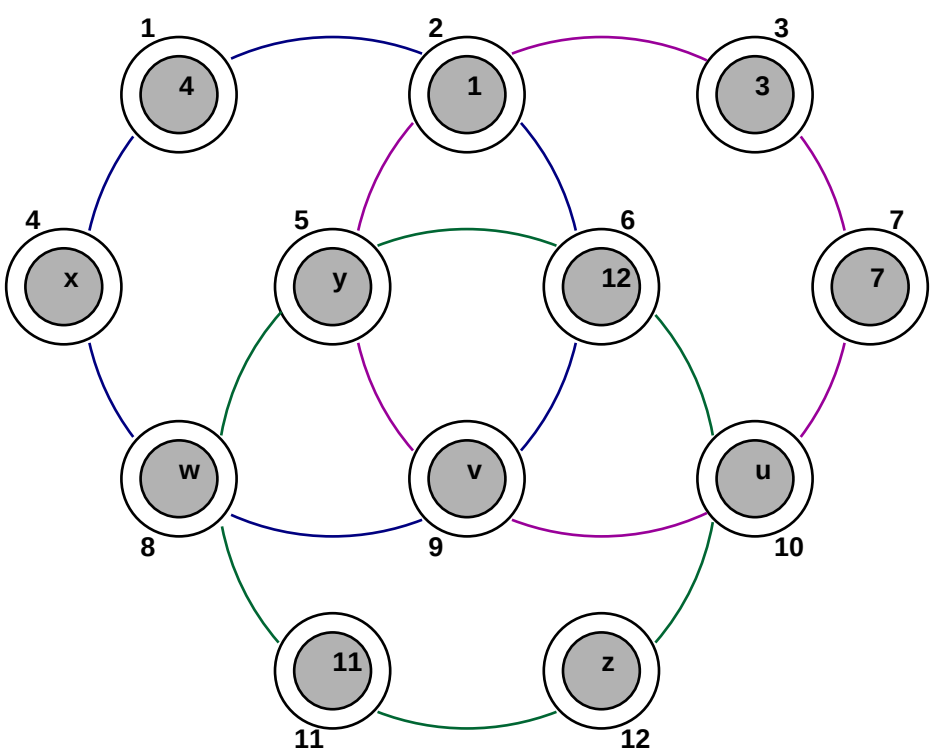
Number 12 can be moved into position 6
by moving in the following pattern.

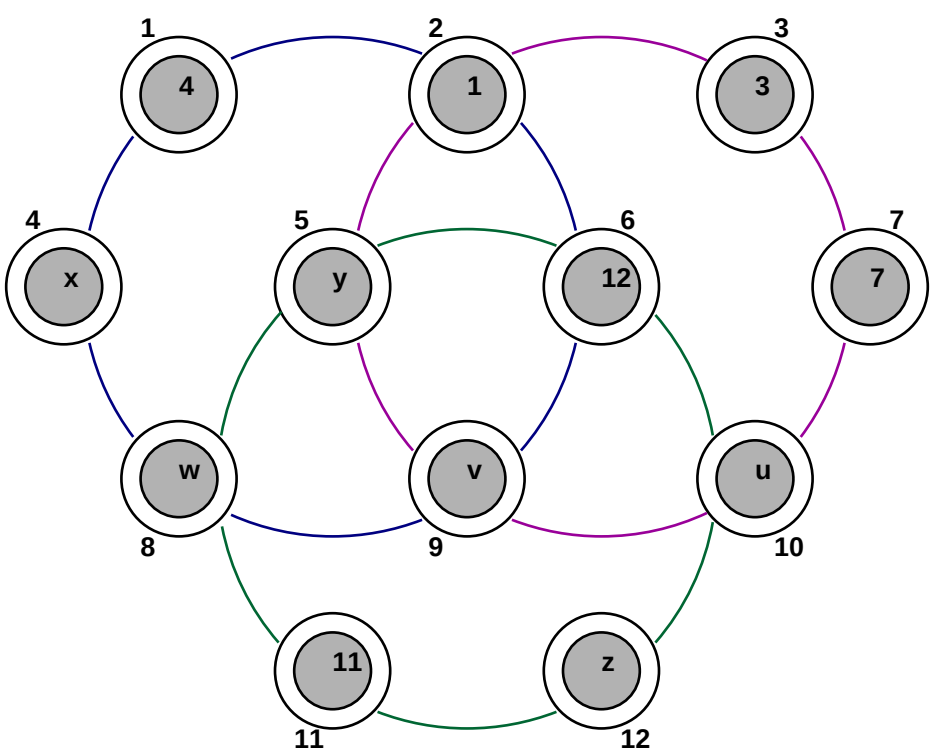
Numbers 1, 3, 4, 7, and 11 will remain in their correct positions.

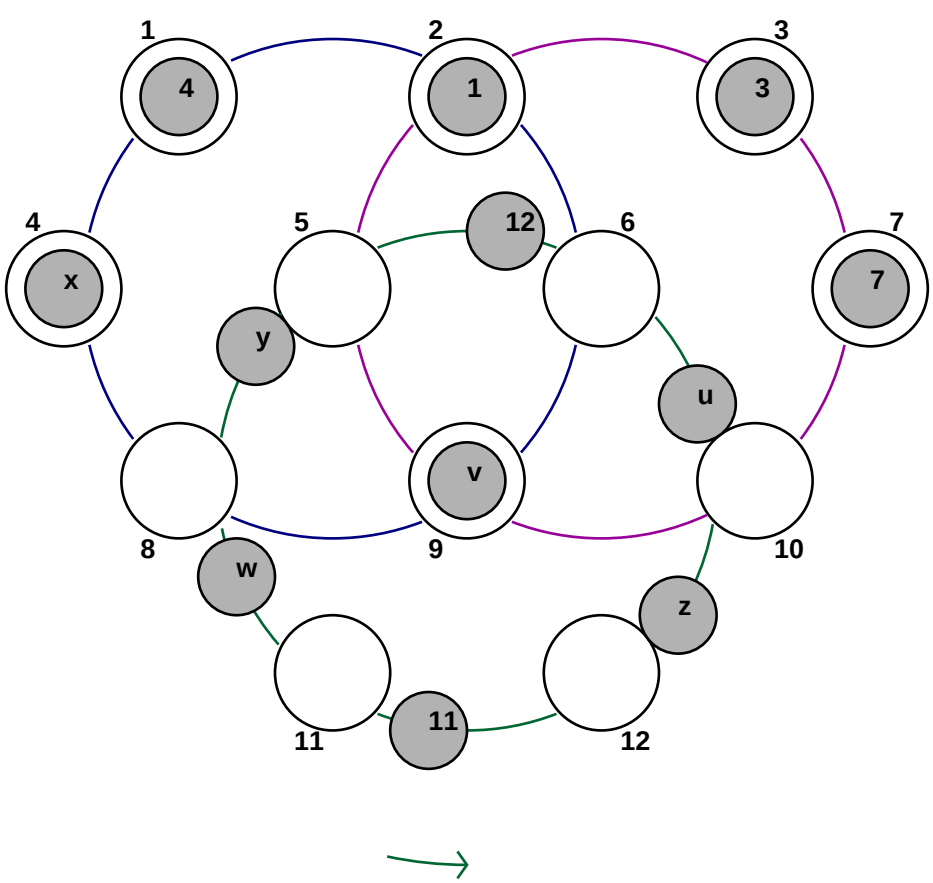

1
2
3
1
12
3
4
5
6
7
4
y
v
7
x
w
u
8
9
10
11
z
11
12

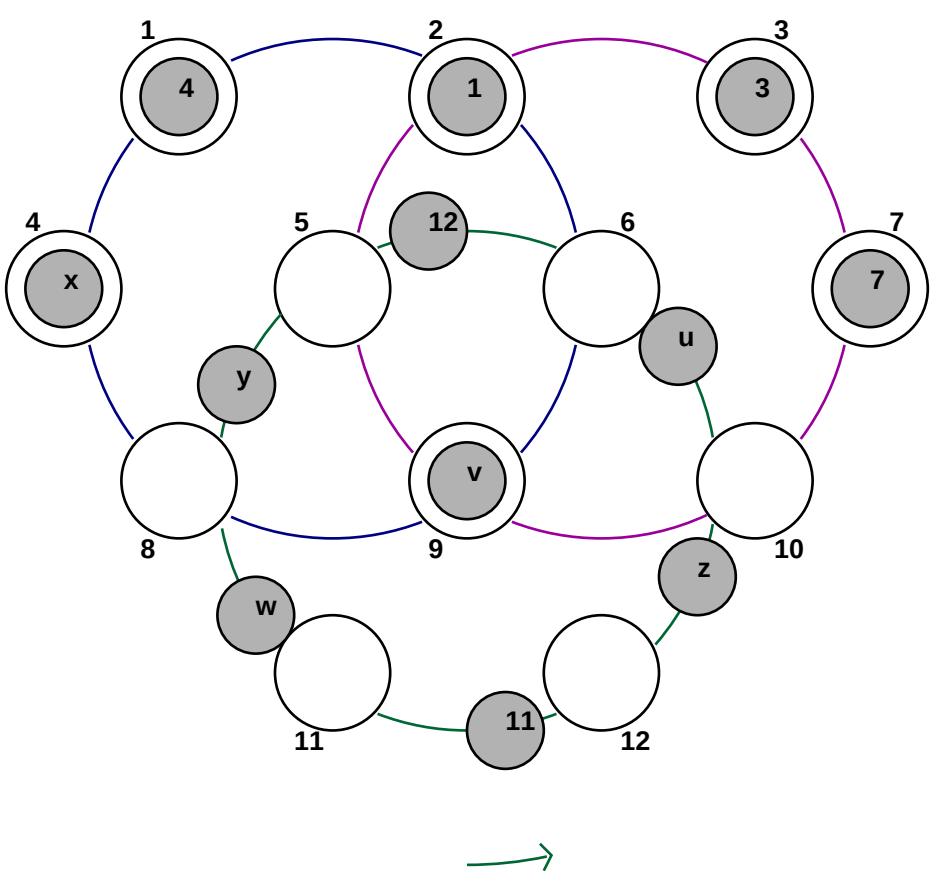

1
1
2
3
3
12
4
4
5
6
7
y
7
v
x
u
w
8
9
10
11
z
11
12

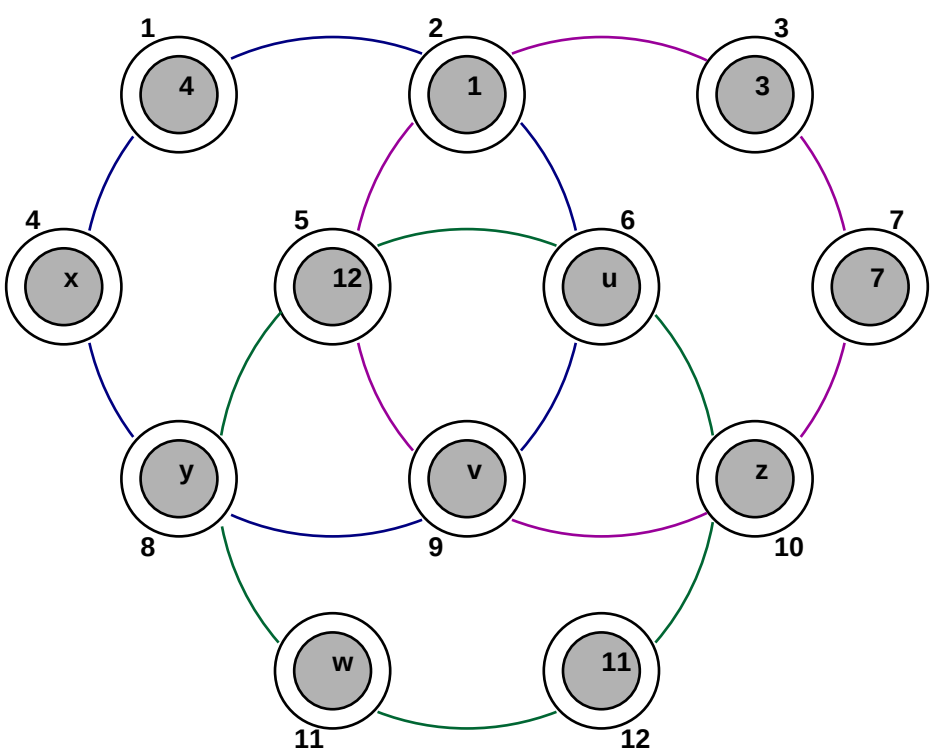

1
2
3
4
5
6
7
8
9
10
11
12
1
3
4
12
y
7
x
v
u
w
11
z

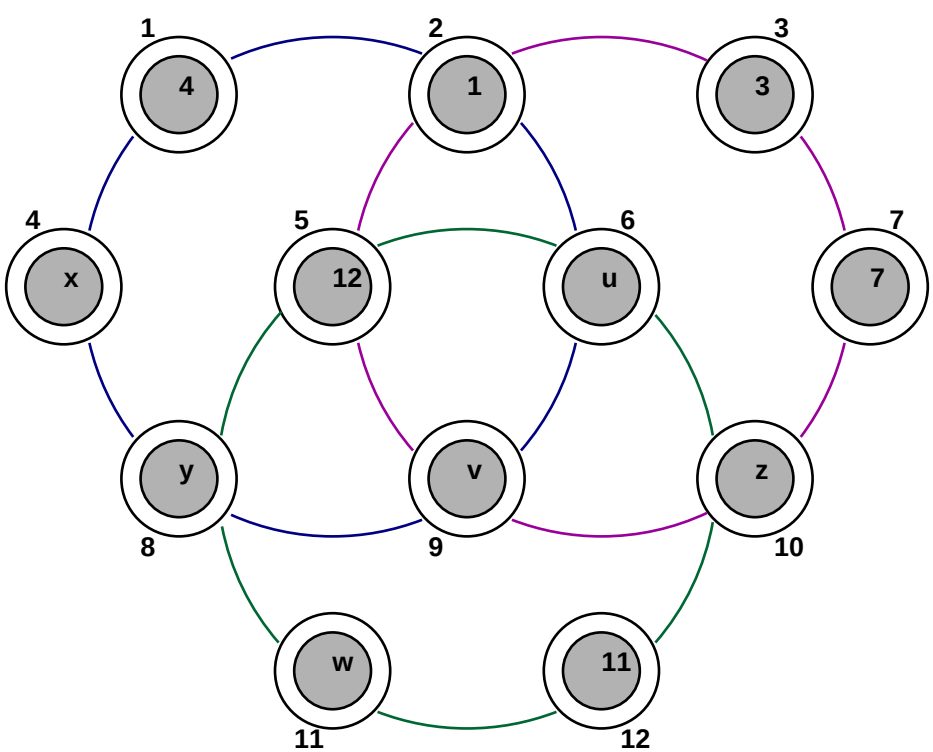

1
4
2
1
3
3
4
x
5
y
6
12
7
7
w
8
v
9
u
10
11
11
z
12

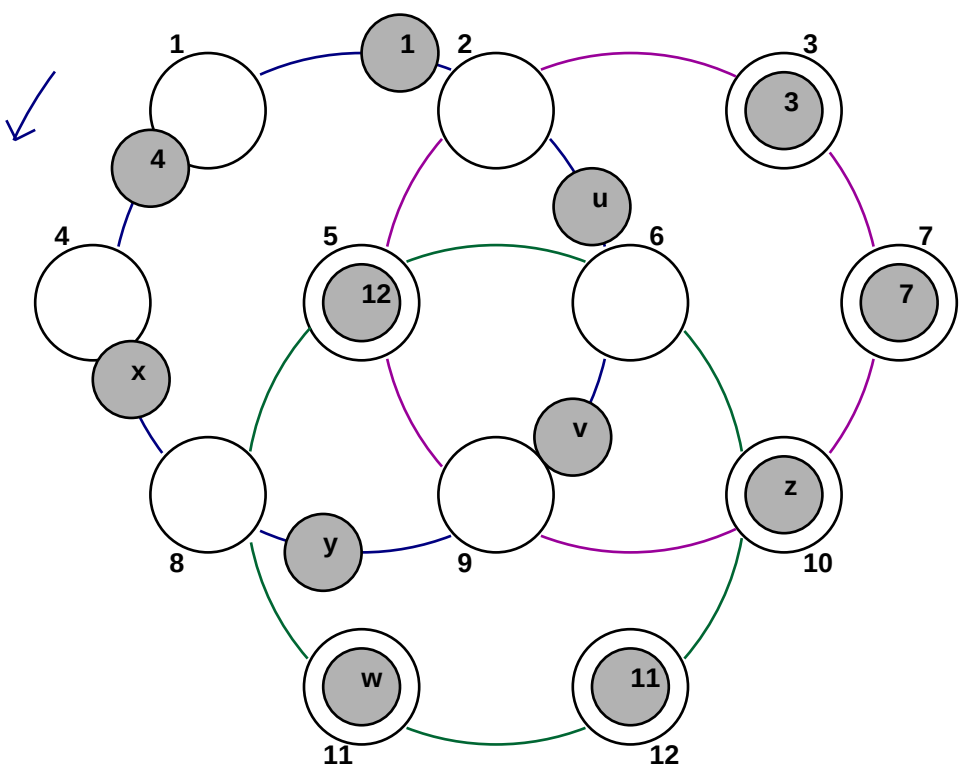

1
4
2
1
3
3
4
x
5
y
6
12
7
7
w
8
v
9
u
10
11
11
z
12

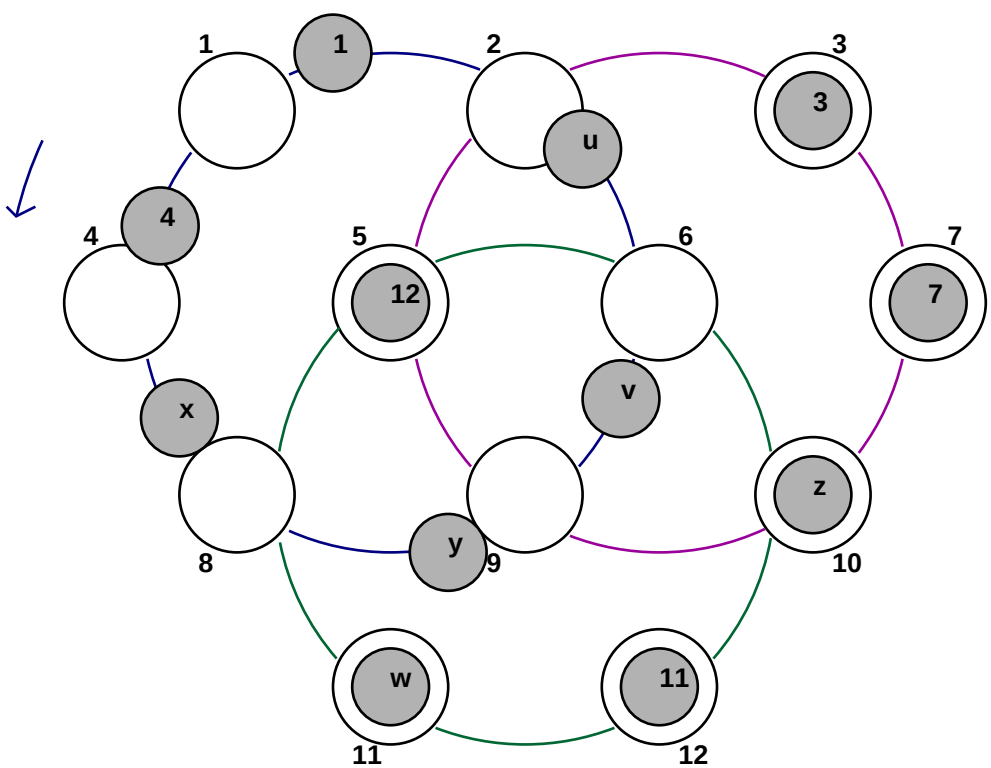

1
4
2
1
3
3
4
x
5
12
6
7
7
y
u
v
8
9
10
w
z
11
11
12

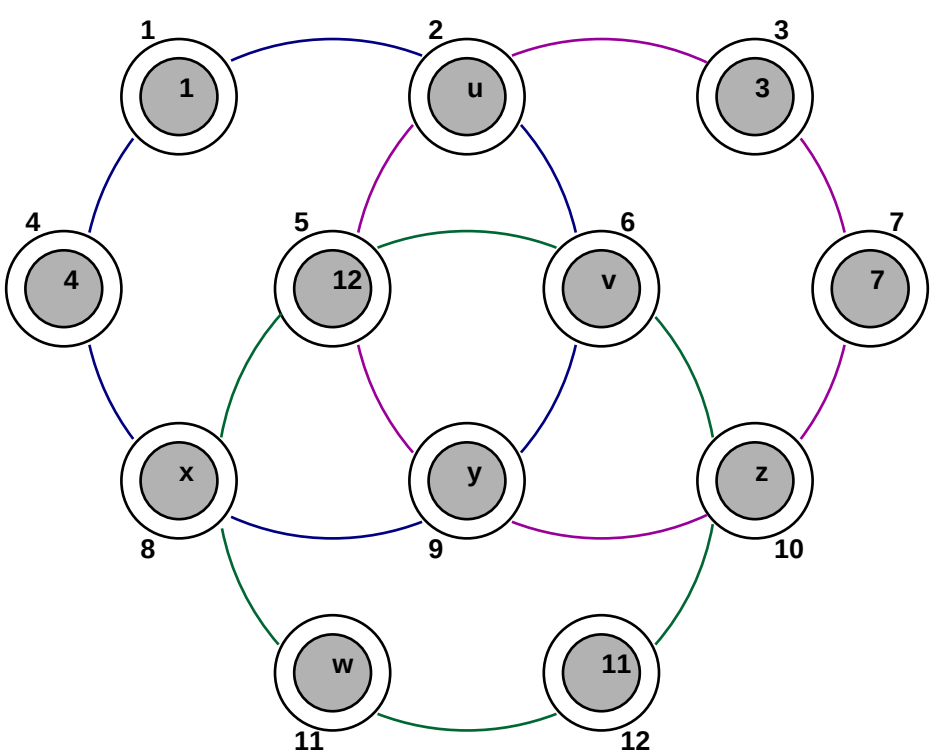

1
2
3
4
1
3
4
5
12
6
7
x
7
u
y
v
8
9
10
z
w
11
11
12

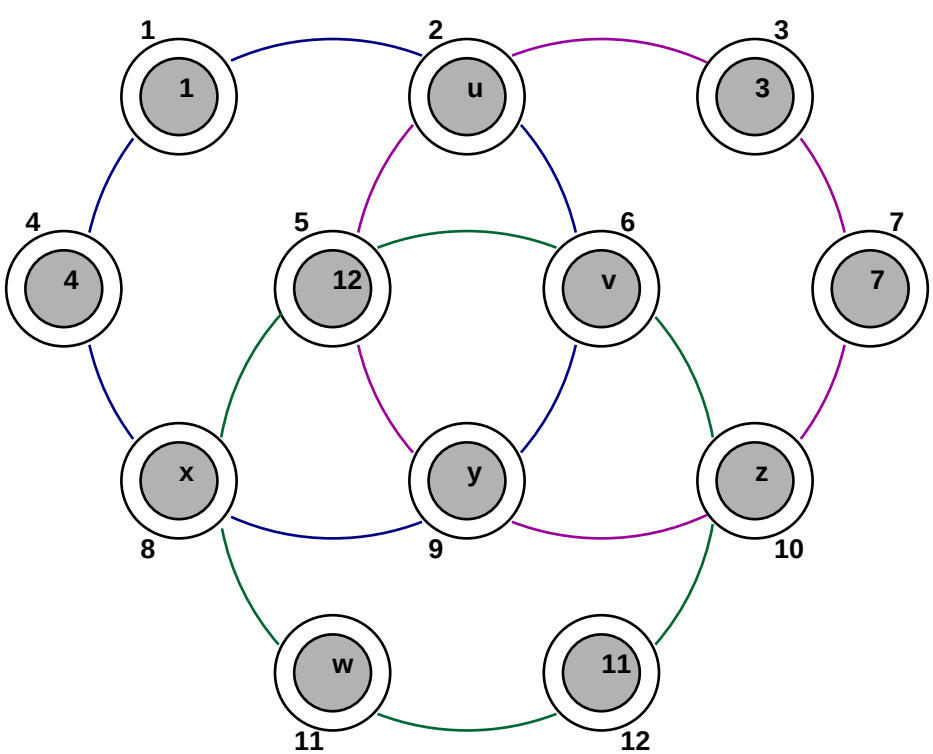

1
4
2
1
3
3
4
x
5
12
6
u
7
7
y
8
v
9
z
10
w
11
11
12

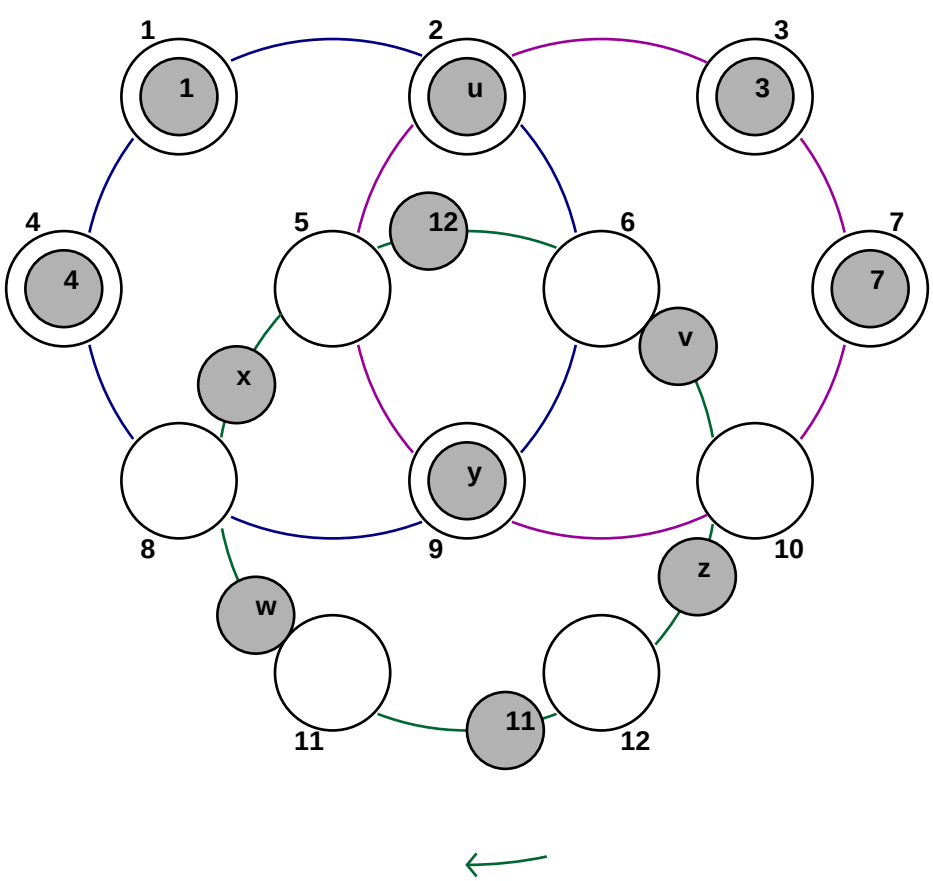

1
4
2
1
3
3
4
x
5
12
6
u
7
7
y
8
v
9
z
10
w
11
11
12

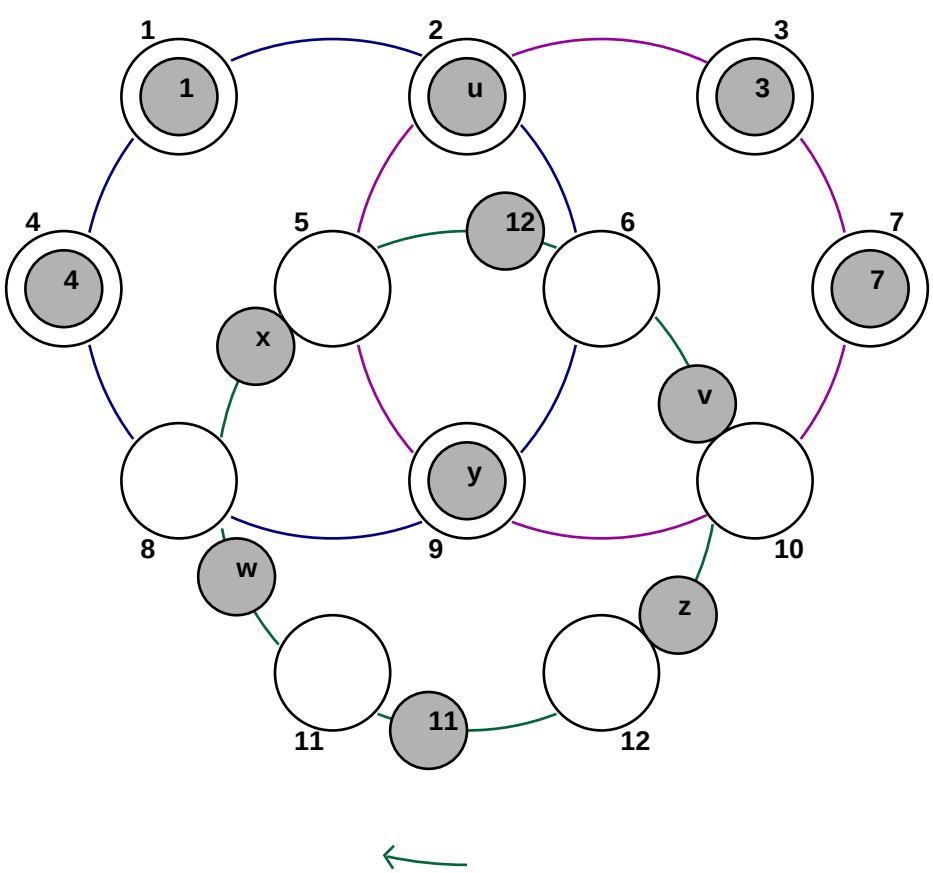

1
1
2
3
3
4
4
u
4
5
6
7
12
7
x
v
z
y
8
9
10
w
11
11
12

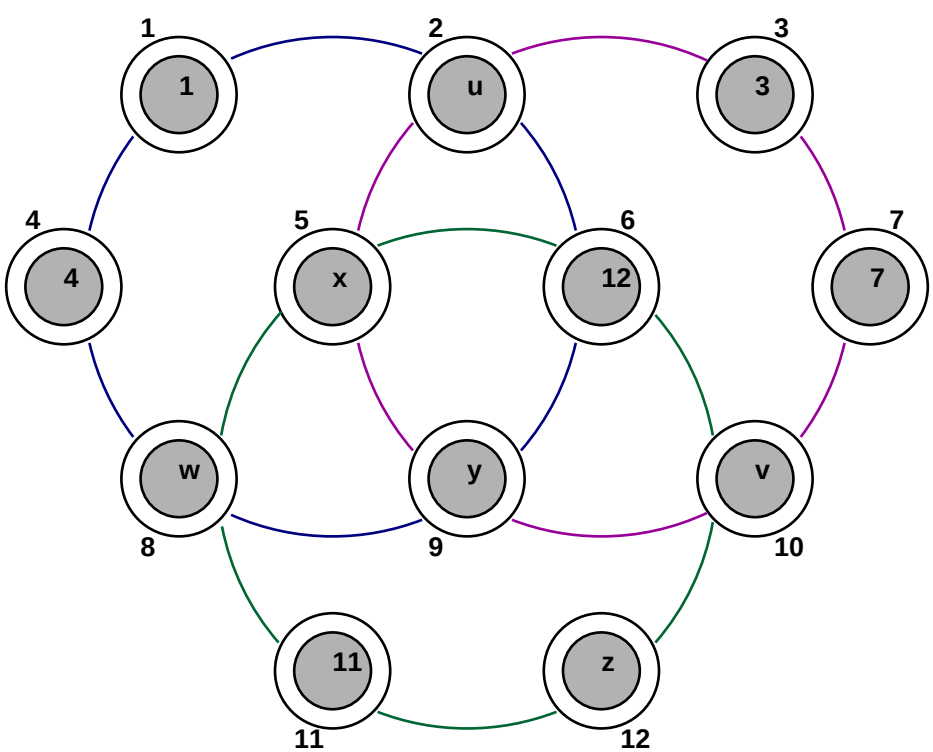

1
1
2
3
3
u
4
4
5
6
7
12
7
v
x
z
y
8
9
10
w
11
11
12


1
2
3
1
u
3
4
5
6
7
4
12
v
7
x
y
z
8
9
10
w
11
11
12

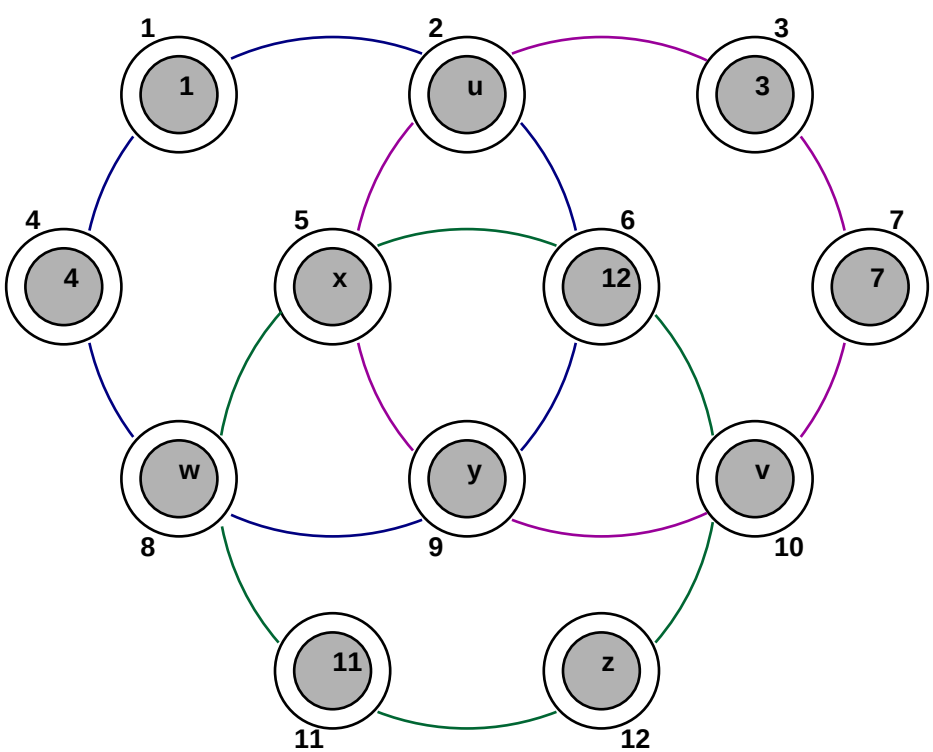

1
2
3
1
u
3
4
5
6
7
4
12
v
7
x
y
z
8
9
10
w
11
11
12

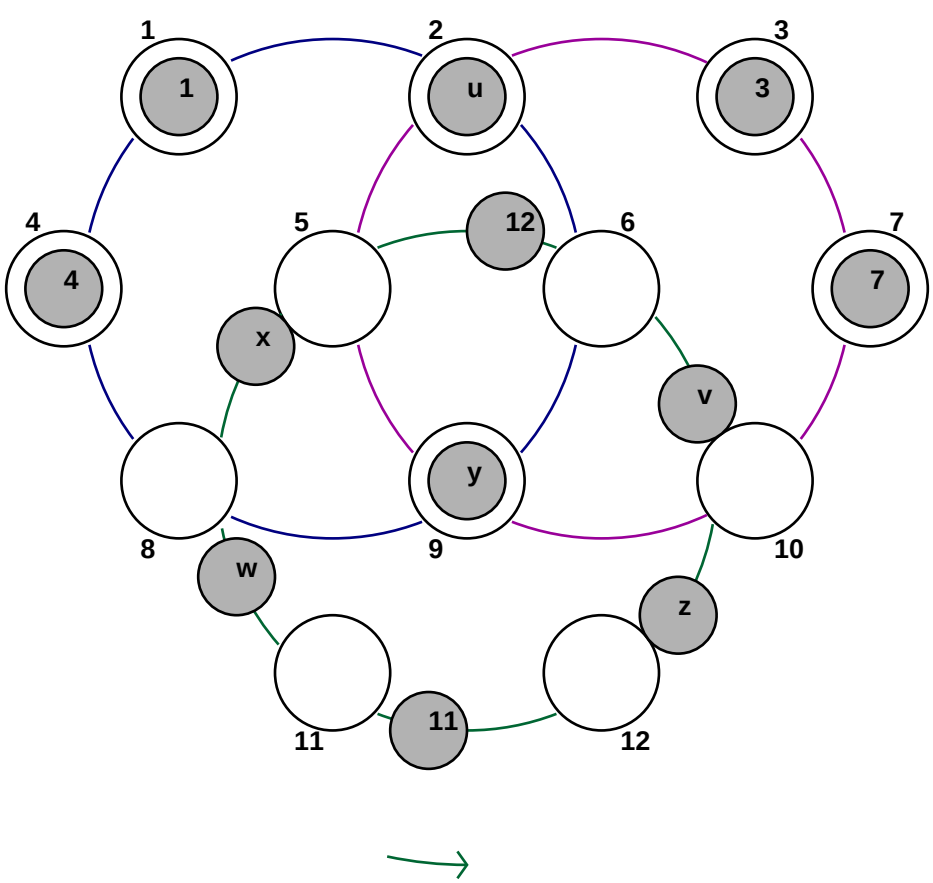

1
2
3
1
u
3
4
5
12
6
7
4
7
v
x
y
8
9
10
z
w
11
12
11

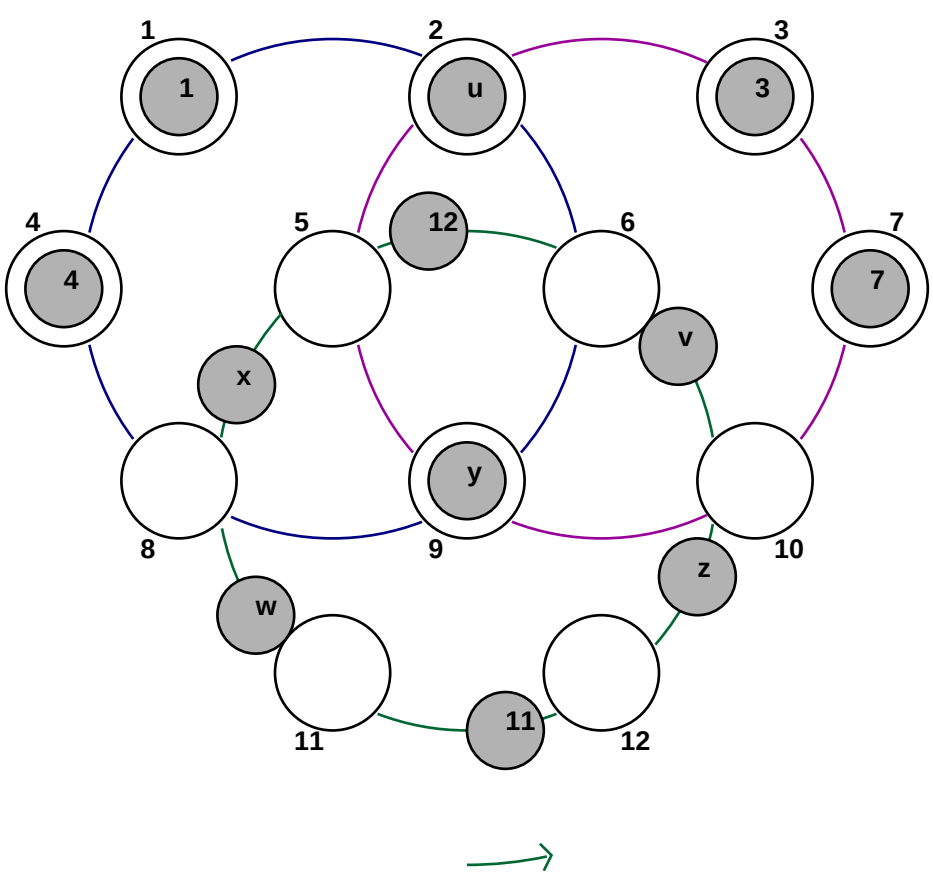

1
2
3
1
u
3
4
5
12
6
7
4
7
x
v
y
8
9
10
w
z
11
12
11

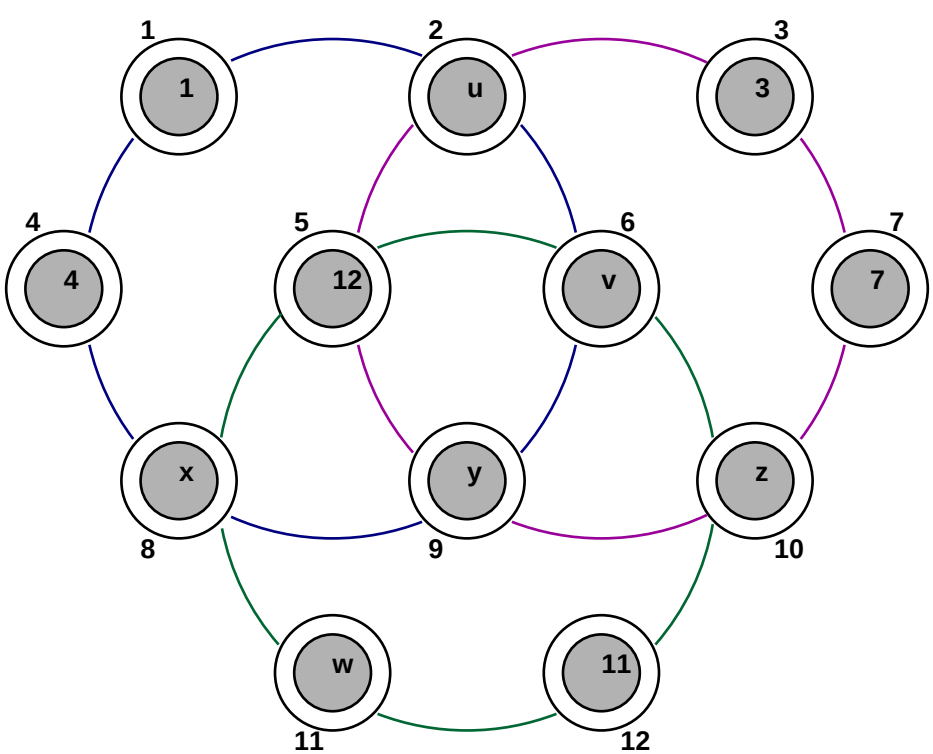

1
2
3
1
u
3
4
5
6
7
4
x
12
7
w
y
v
8
9
10
11
z
11
12

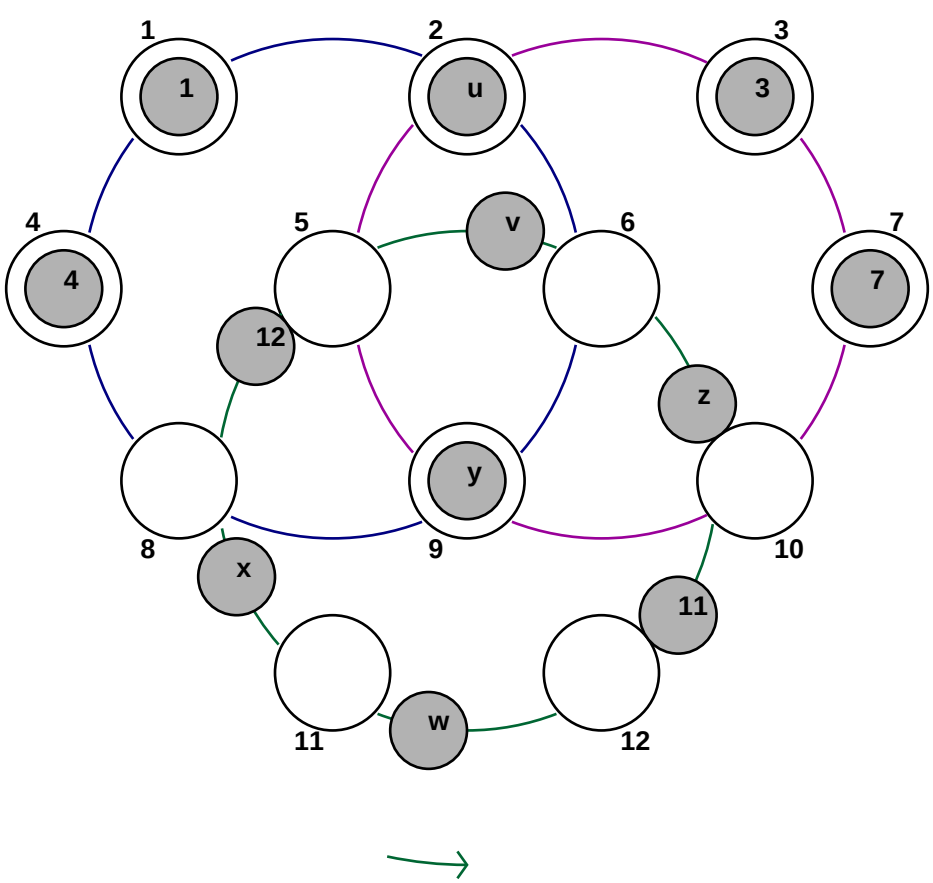
Number 12 can be moved into position 8 while keeping numbers 1, 3, 4, 7, and 11 in position by the following moves.

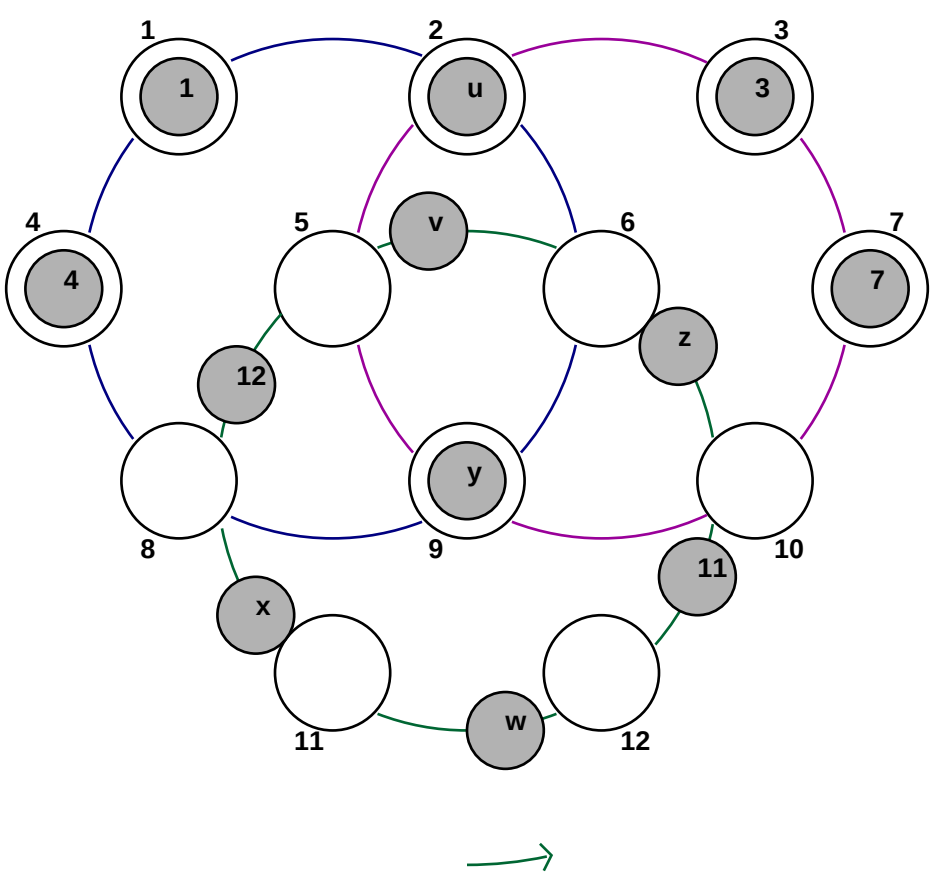

1
2
3
1
u
3
4
5
6
7
4
x
12
7
w
y
v
8
9
10
11
z
11
12

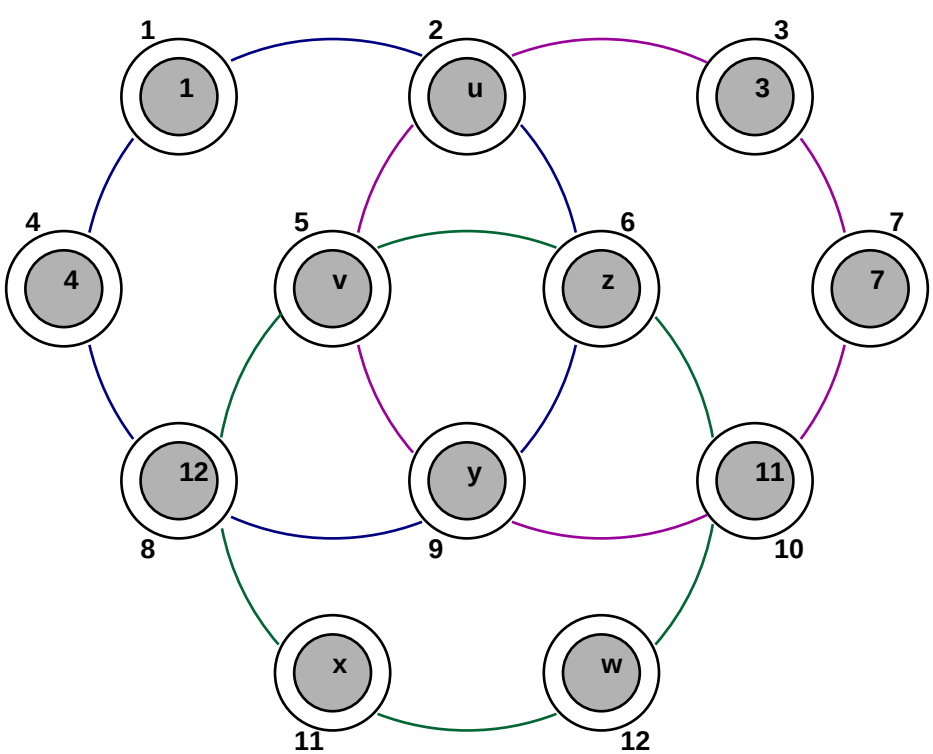

1
2
3
1
u
3
4
5
12
6
7
4
7
x
v
y
8
9
10
w
z
11
12
11

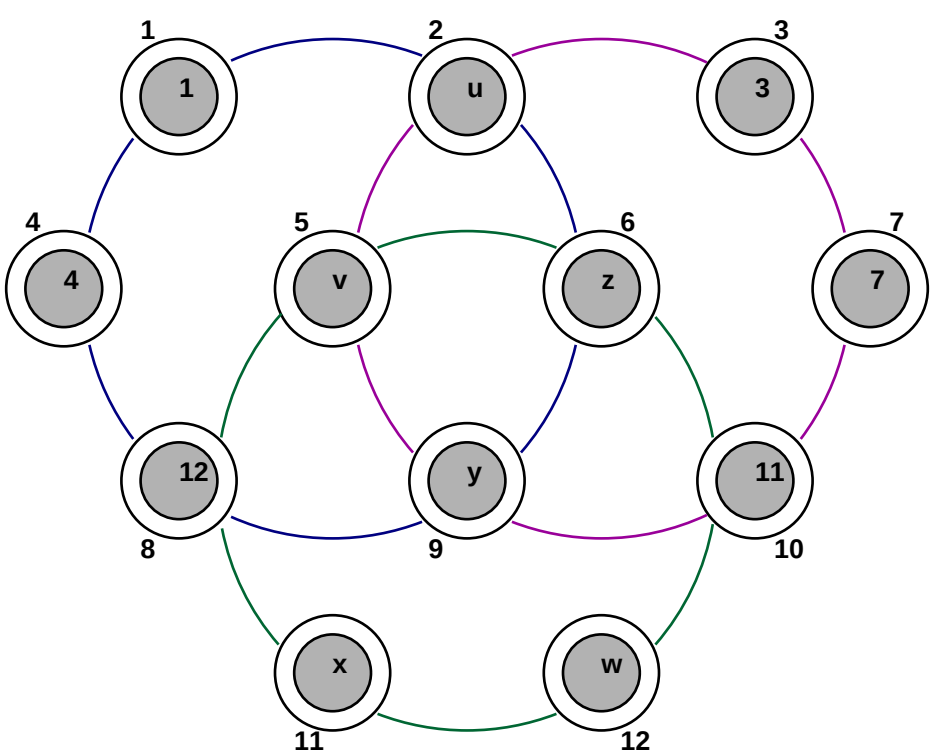

1
2
3
1
u
3
4
5
12
6
7
4
7
v
x
y
8
9
10
z
w
11
11
12

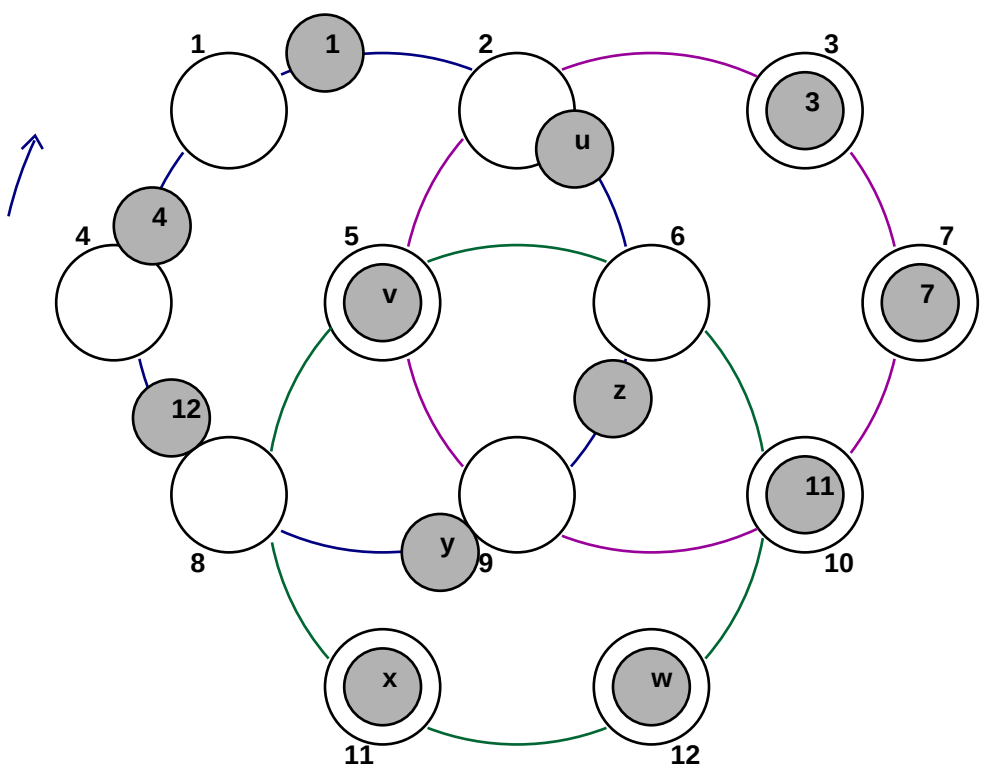

1
2
3
1
u
3
4
5
6
7
4
12
v
7
x
y
z
8
9
10
w
11
11
12

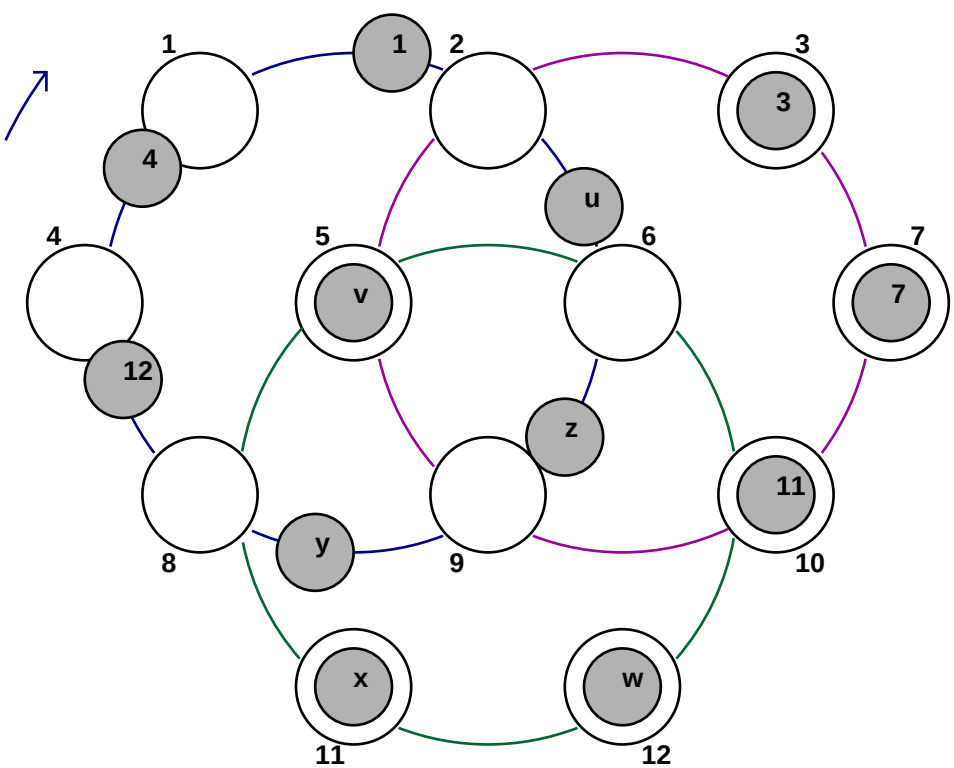

1
2
3
1
u
3
4
5
v
6
7
4
7
12
z
y
8
9
10
x
11
w
11
12

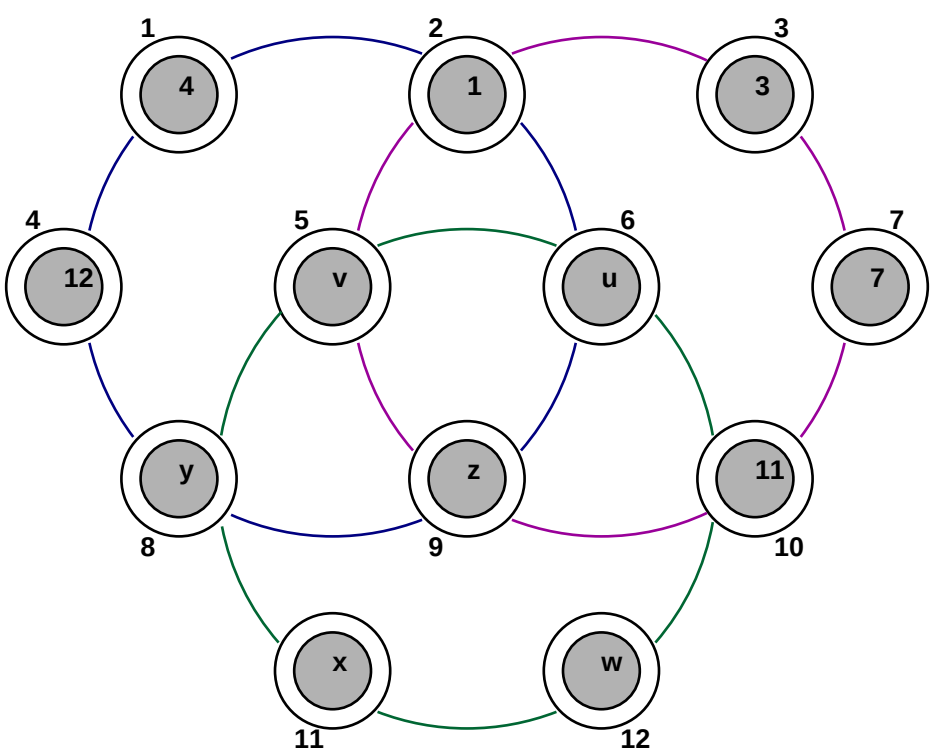

1
2
3
1
u
3
4
5
v
6
7
4
7
z
12
y
8
9
10
11
x
11
w
12

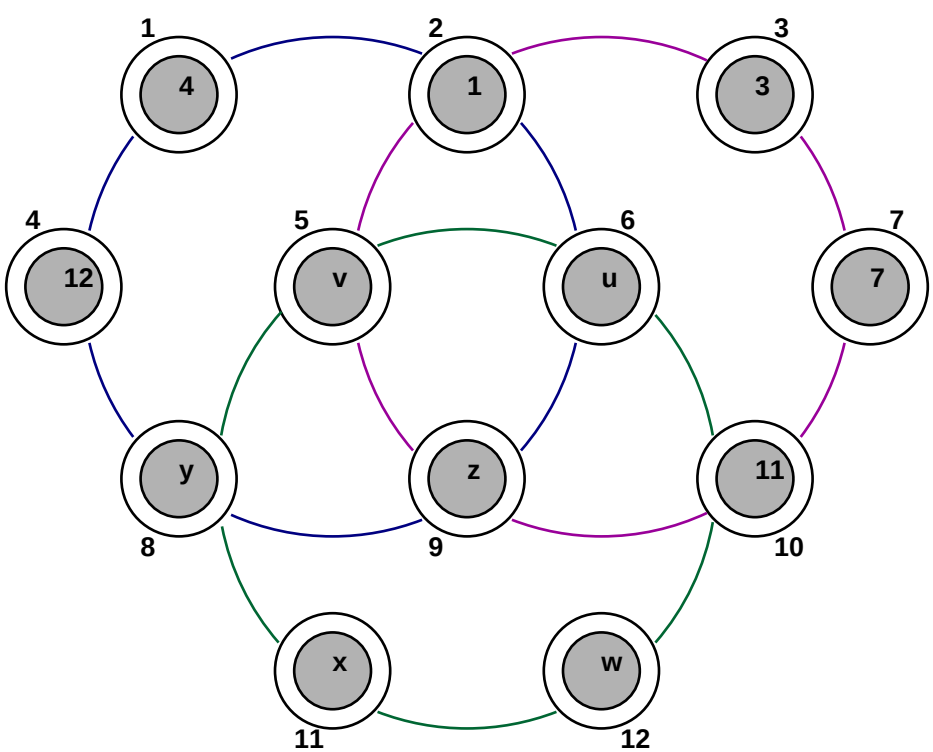

1
2
3
1
u
3
4
5
6
7
4
v
z
7
12
y
11
8
9
10
x
w
11
12

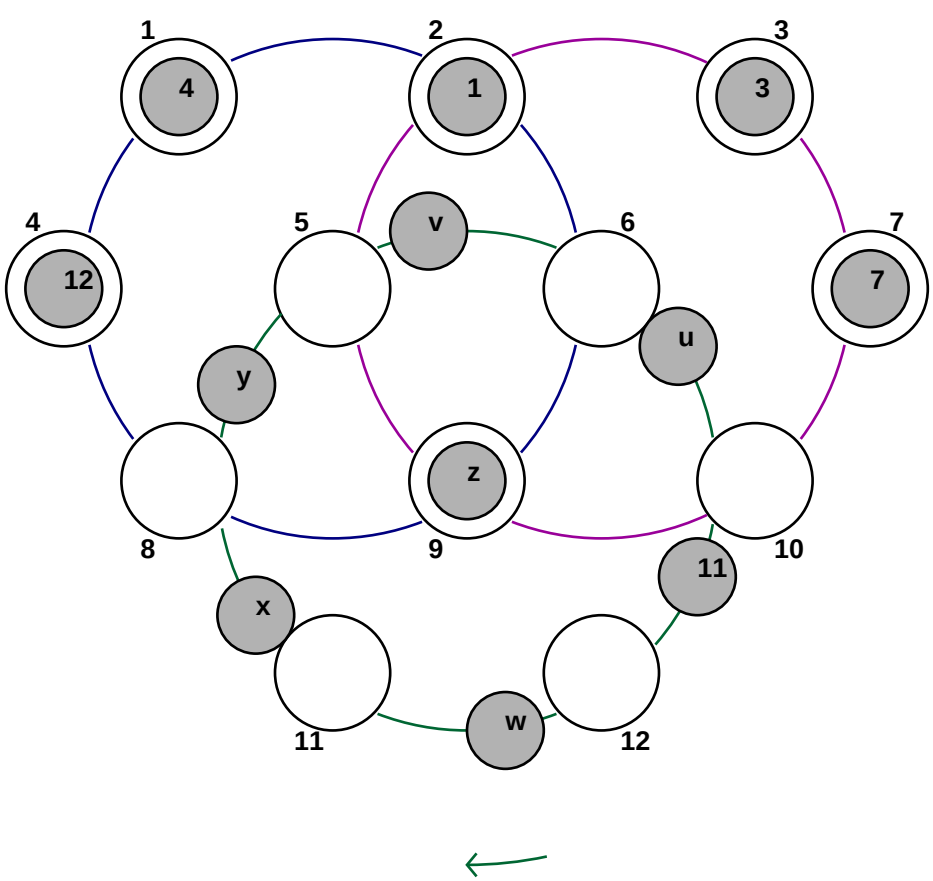

1
2
3
1
u
3
4
5
6
7
4
v
z
7
12
y
11
8
9
10
x
w
11
12

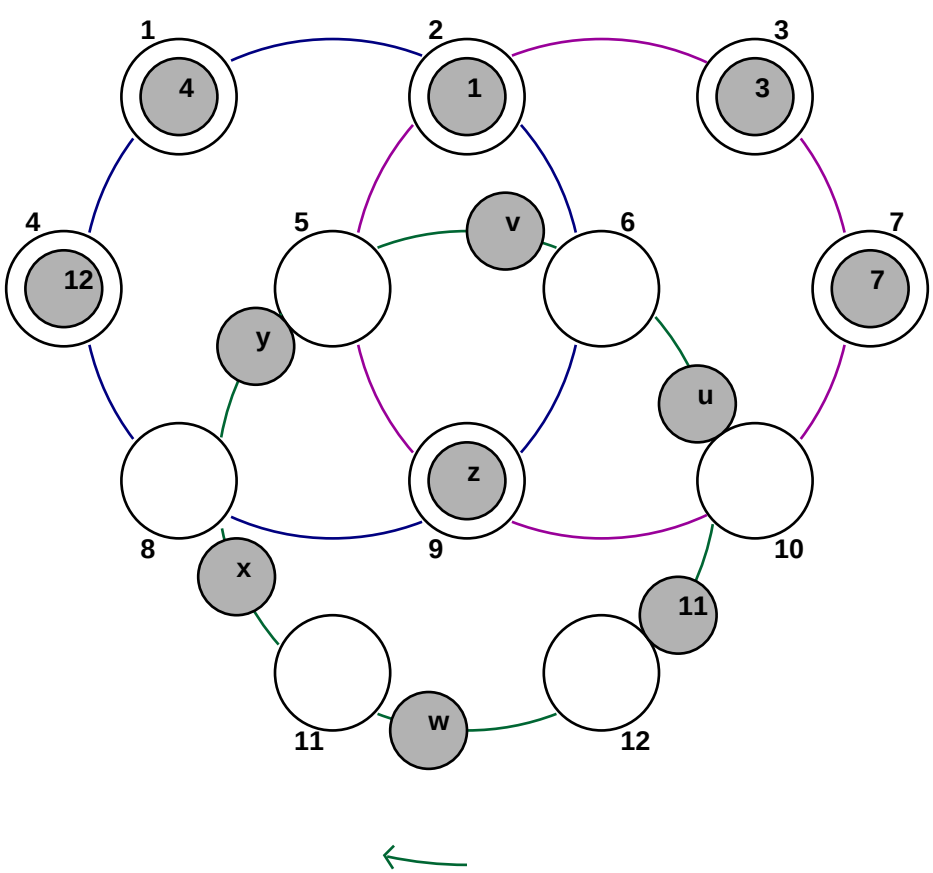

1
1
2
3
3
u
4
4
5
6
7
v
7
z
12
11
y
8
9
10
x
w
11
12

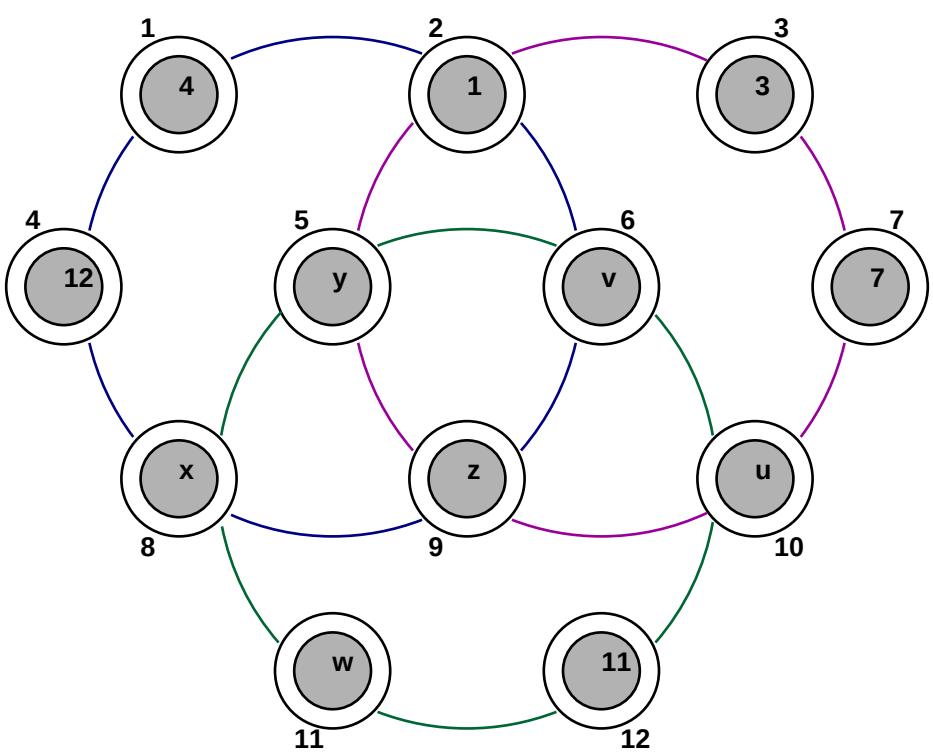

1
1
2
3
3
4
4
u
4
5
6
7
v
7
12
z
11
y
8
9
10
x
w
11
12

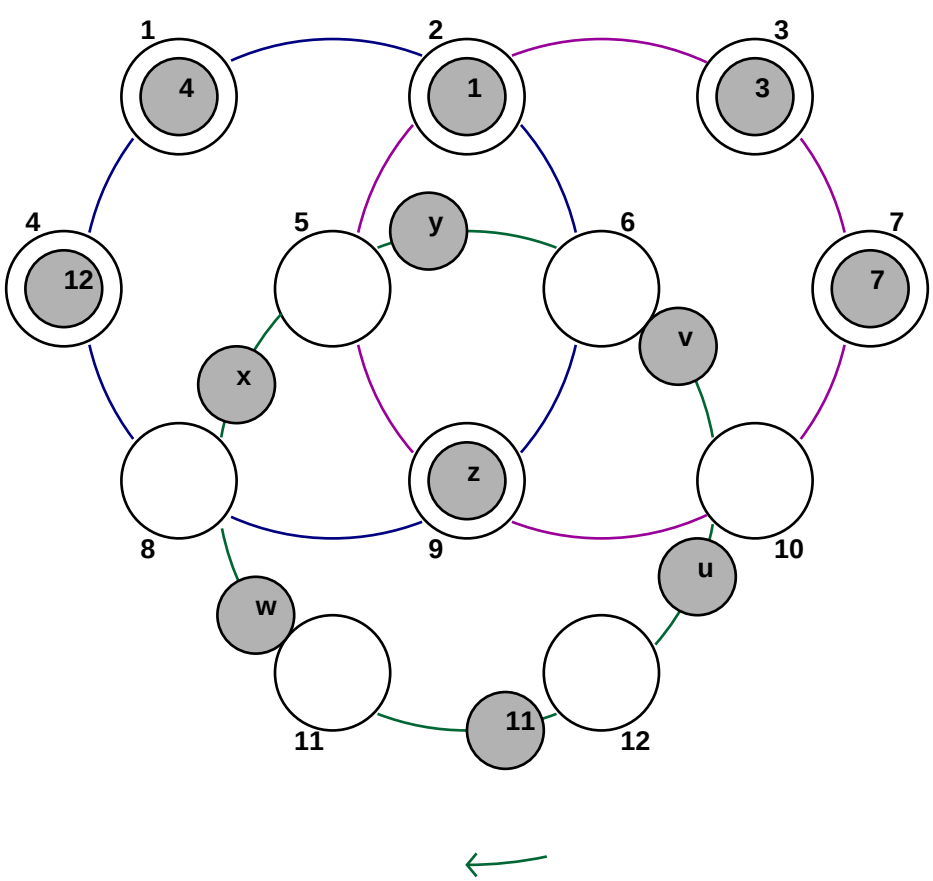

1
4
2
1
3
3
4
12
5
v
6
u
7
7
y
8
z
9
11
10
x
11
w
12

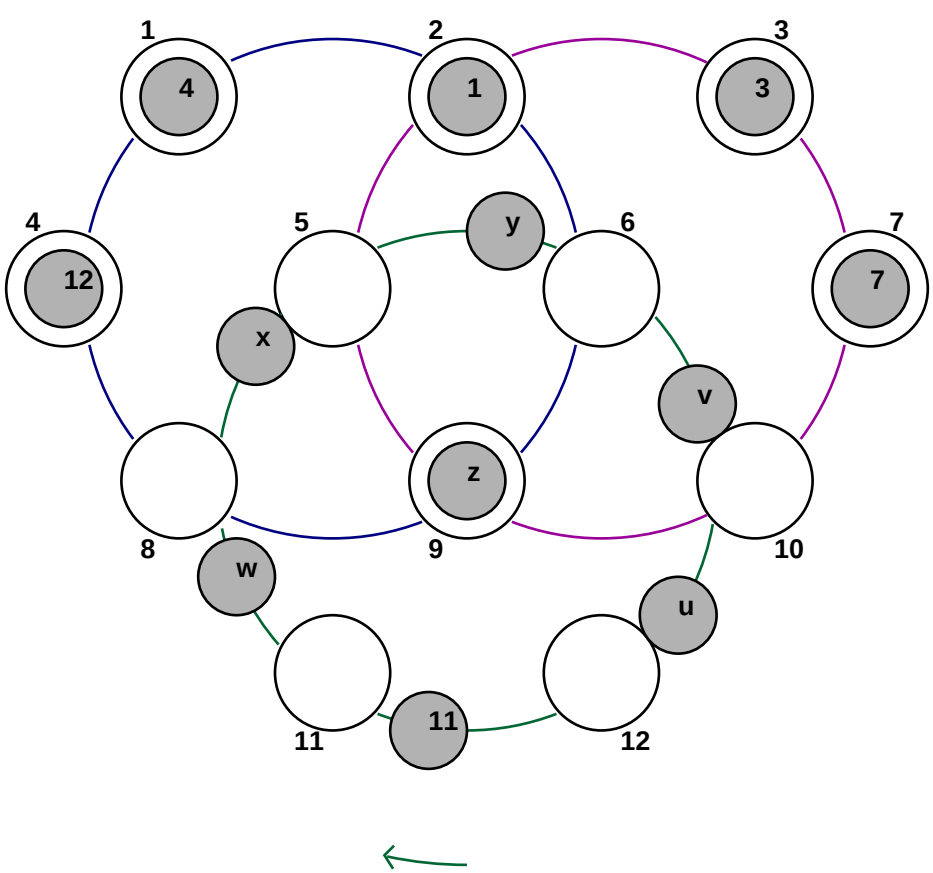

1
4
2
1
3
3
4
12
5
v
6
u
7
7
y
8
z
9
11
10
x
11
w
12

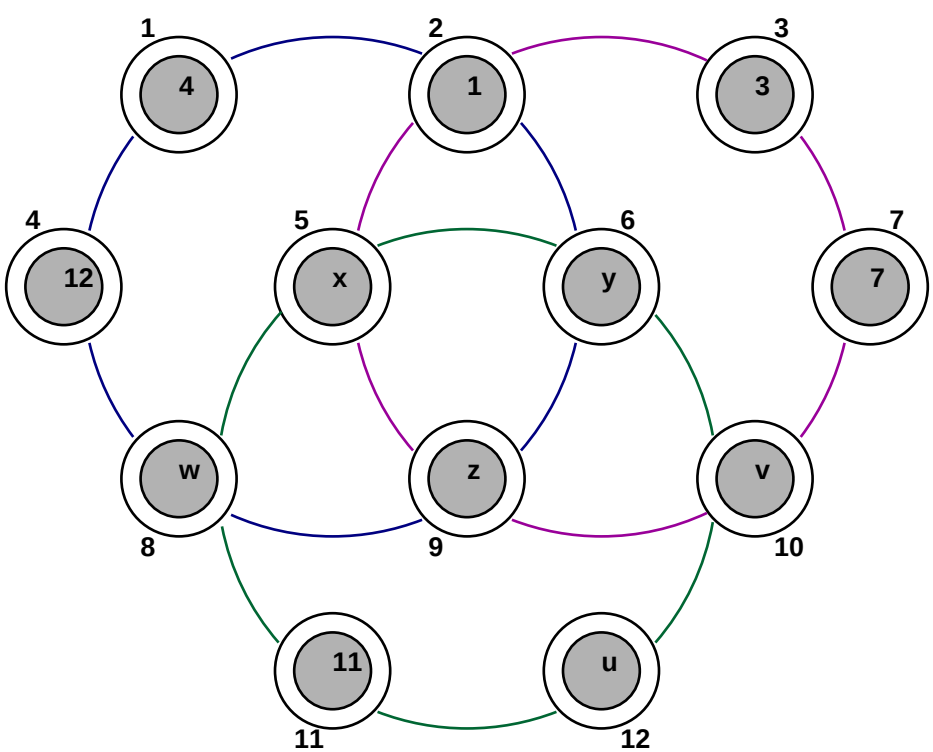

1
4
2
1
3
3
4
12
5
v
6
7
7
u
y
z
8
9
10
11
x
11
w
12

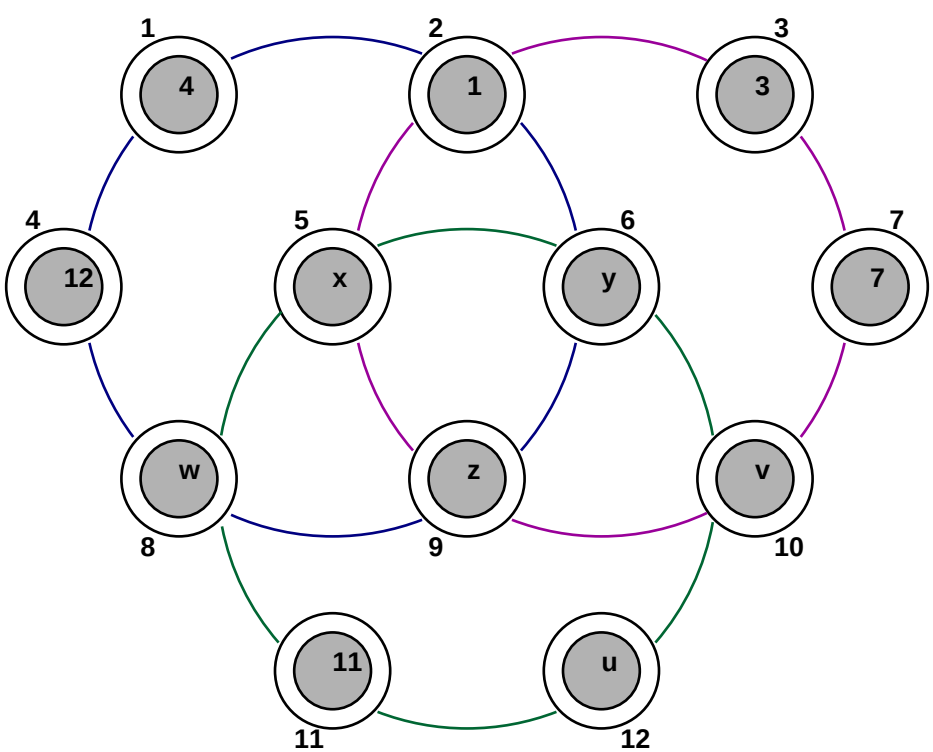

1
2
3
4
1
3
4
5
v
6
7
12
7
y
u
z
8
9
10
x
11
11
w
12

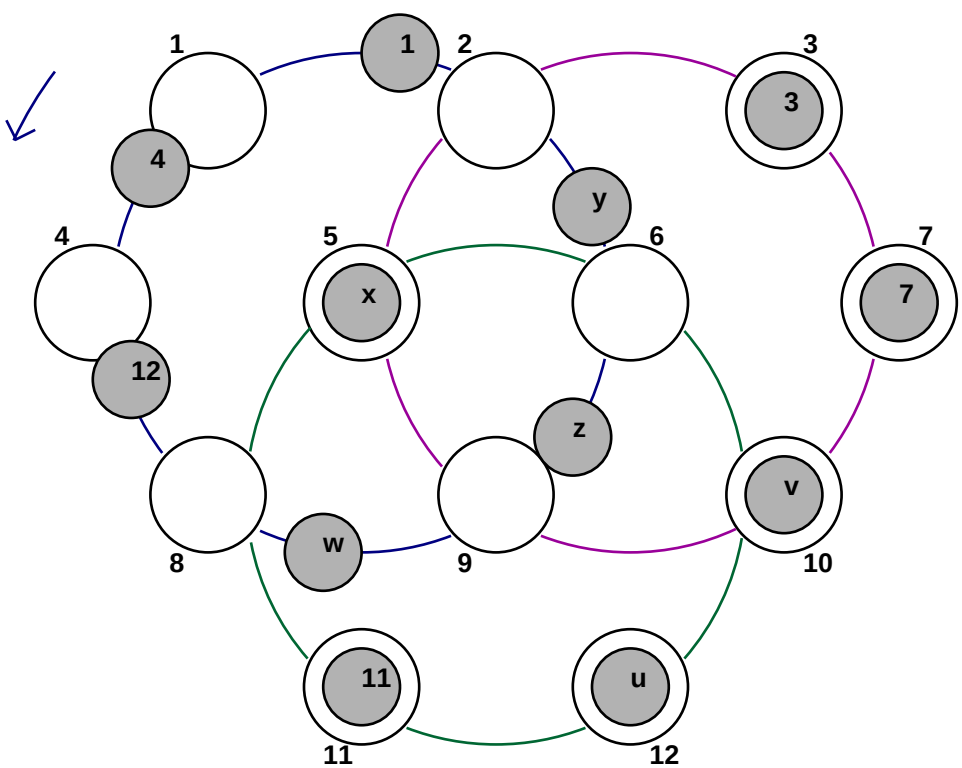

1
4
2
1
3
3
4
12
5
y
6
v
7
7
x
8
z
9
u
10
w
11
11
12

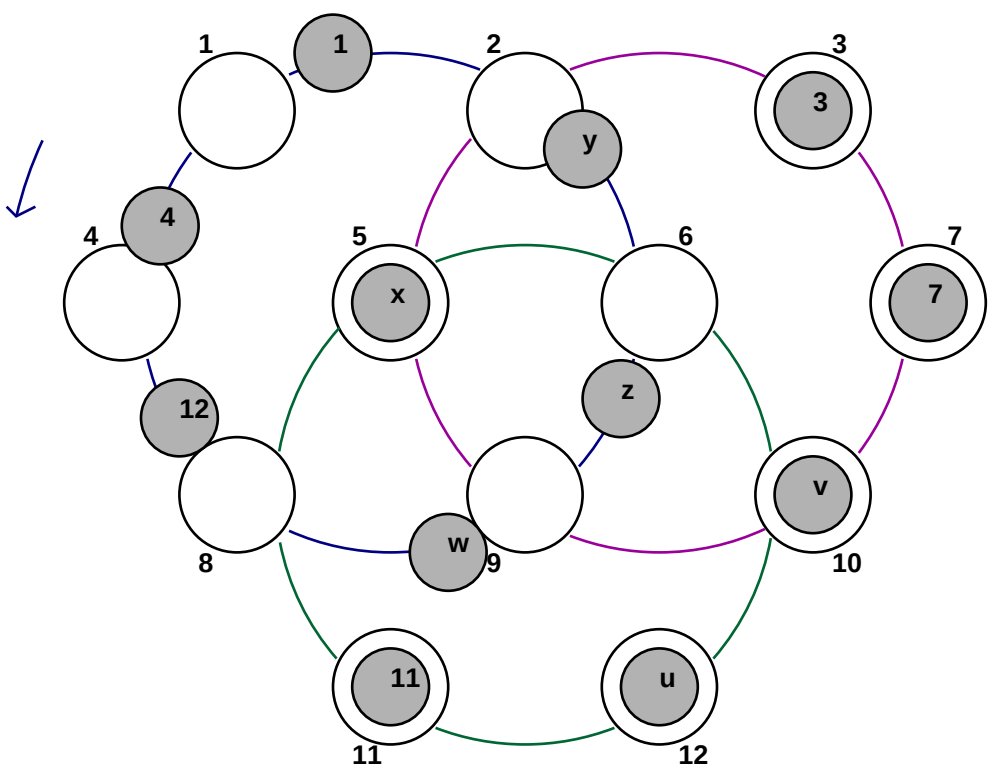

1
2
3
4
1
3
4
5
6
7
y
12
7
v
x
z
8
9
10
u
w
11
12
11

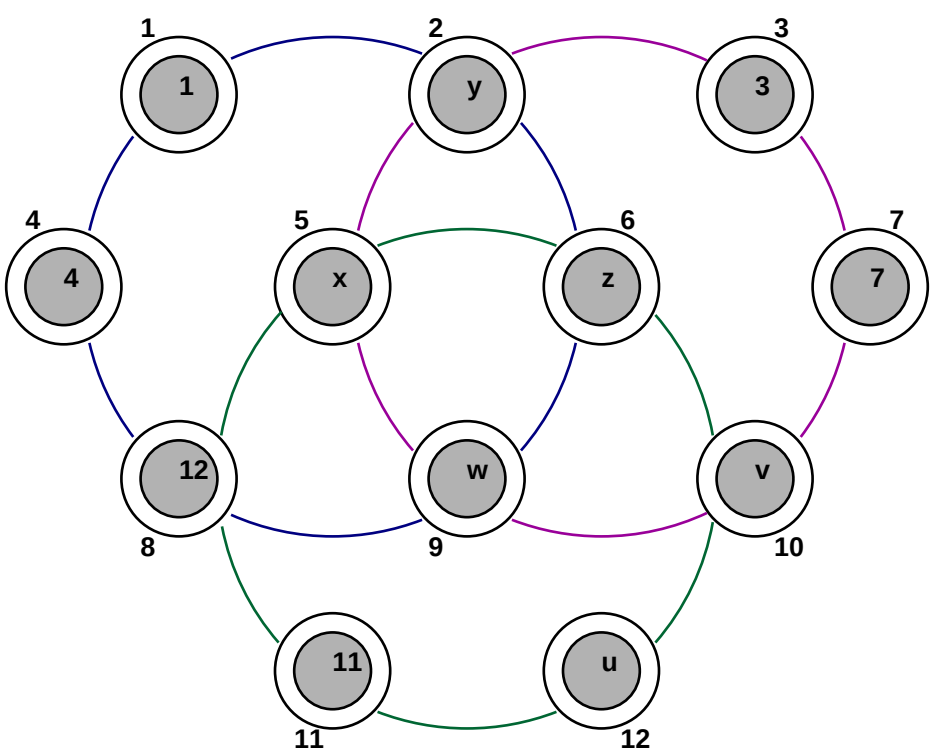

1
2
3
4
1
3
4
5
6
7
y
12
7
x
v
8
9
10
z
w
u
11
12
11


1
4
2
1
3
3
4
12
5
x
6
y
7
7
w
8
z
9
v
10
11
11
u
12

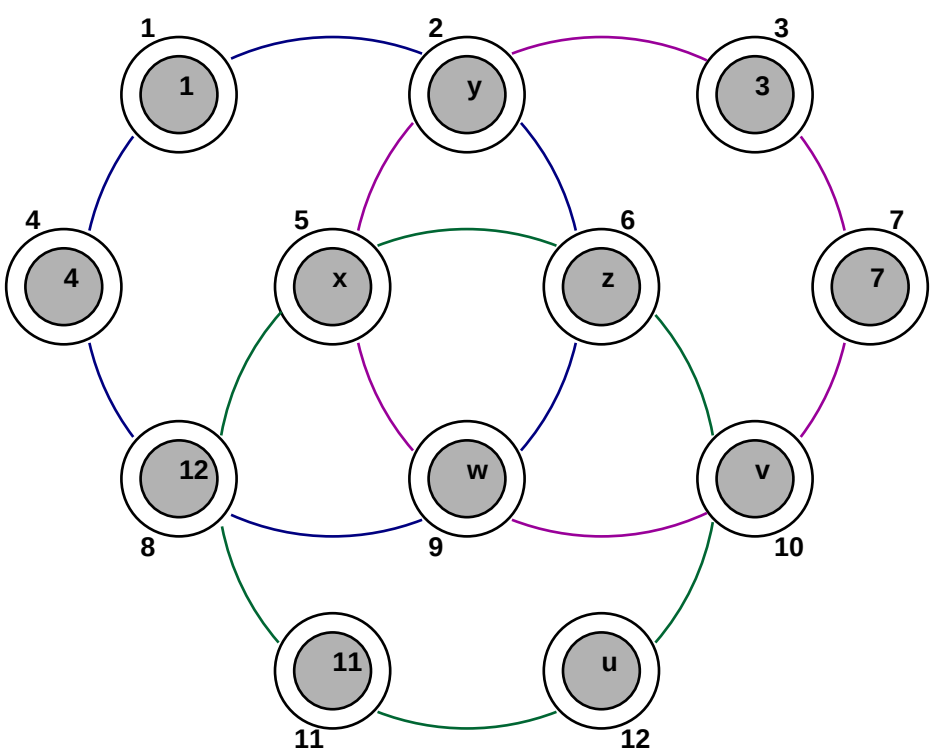

1
4
2
1
3
3
4
12
5
x
6
y
7
7
w
8
z
9
v
10
11
11
u
12

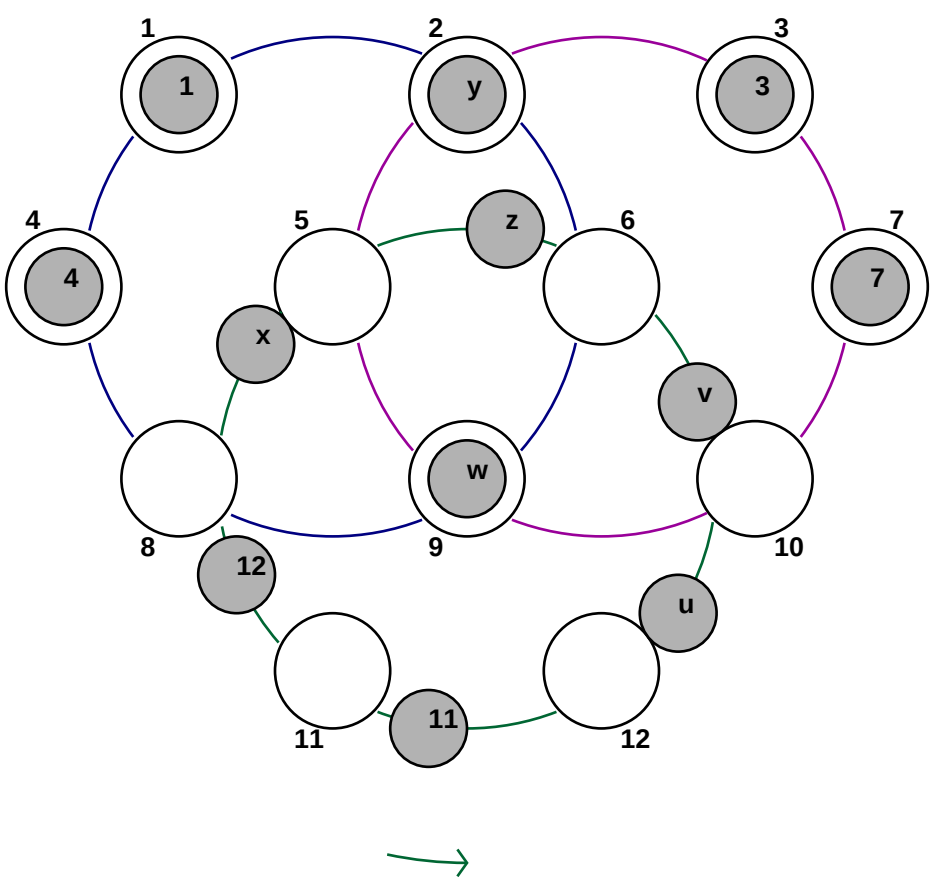

1
1
2
3
3
4
4
y
4
5
6
7
x
7
12
z
v
w
8
9
10
11
u
11
12

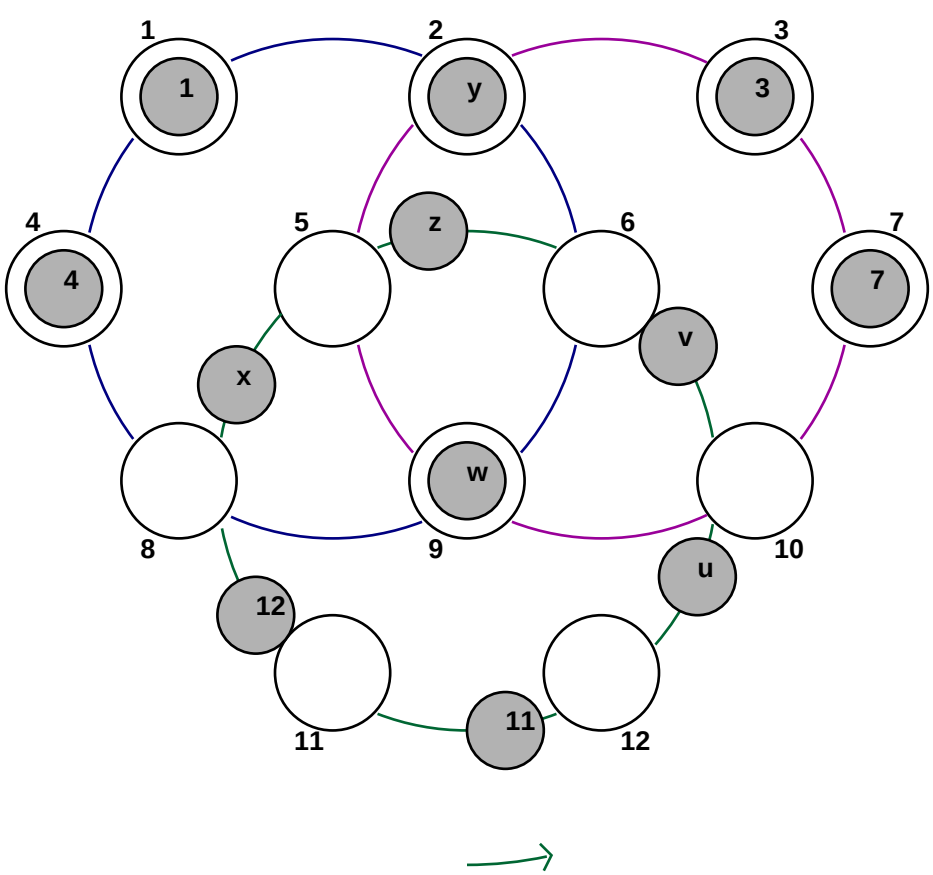

1
1
2
3
3
y
4
4
5
6
7
x
7
z
12
v
w
8
9
10
11
u
11
12

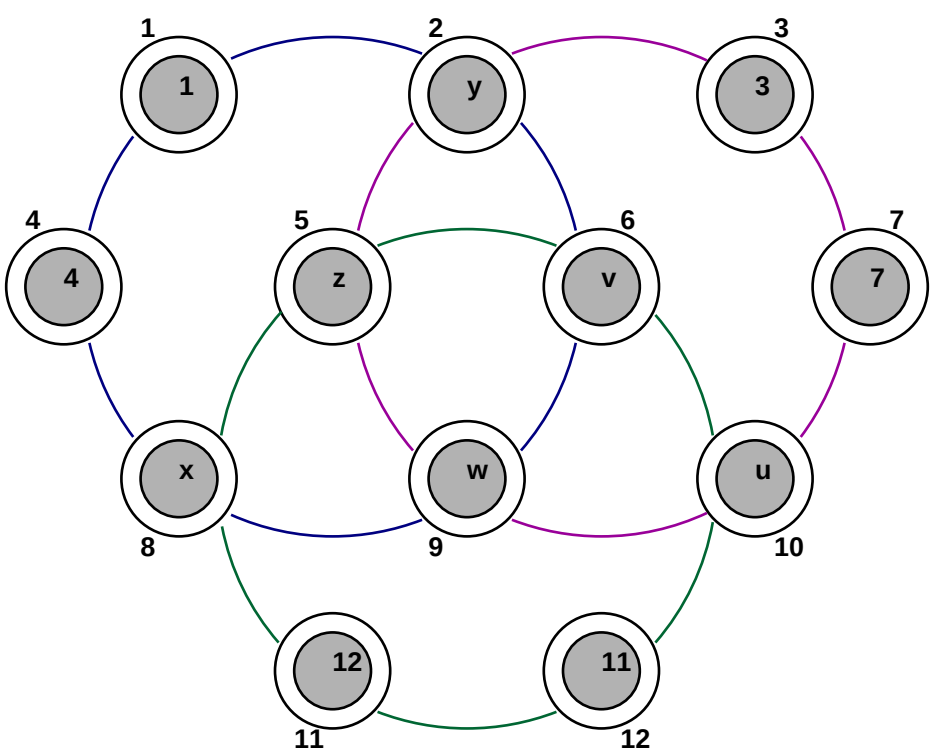

1
2
3
1
y
3
4
5
6
7
4
x
z
7
12
w
v
8
9
10
11
u
11
12

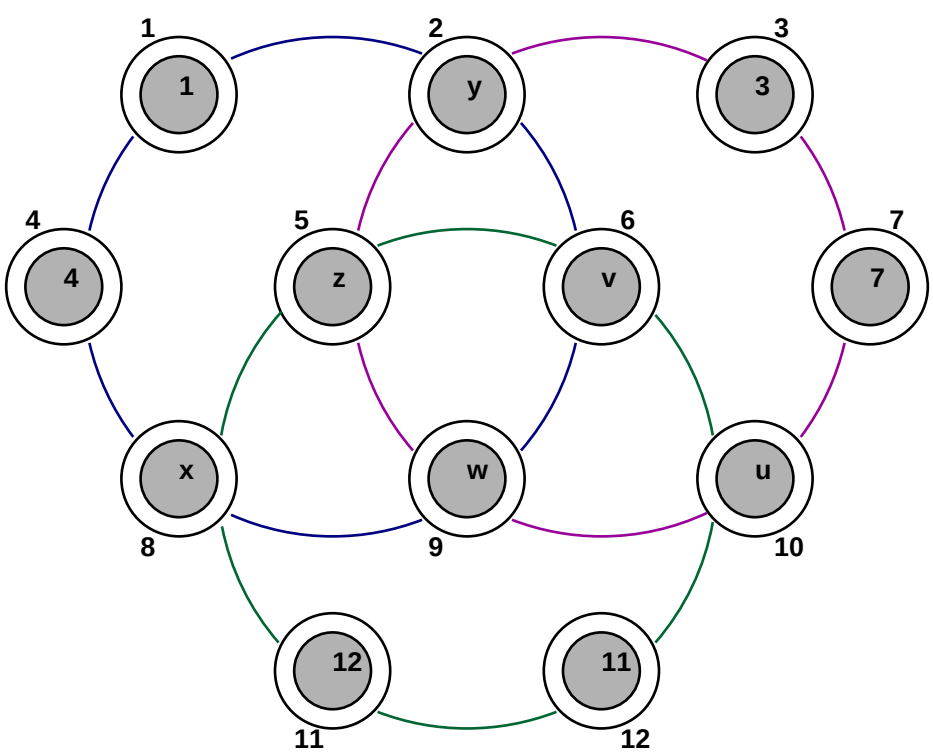
Number 12 can be moved into position 9 while keeping numbers 1, 3, 4, 7, and 11 in position by the following moves.

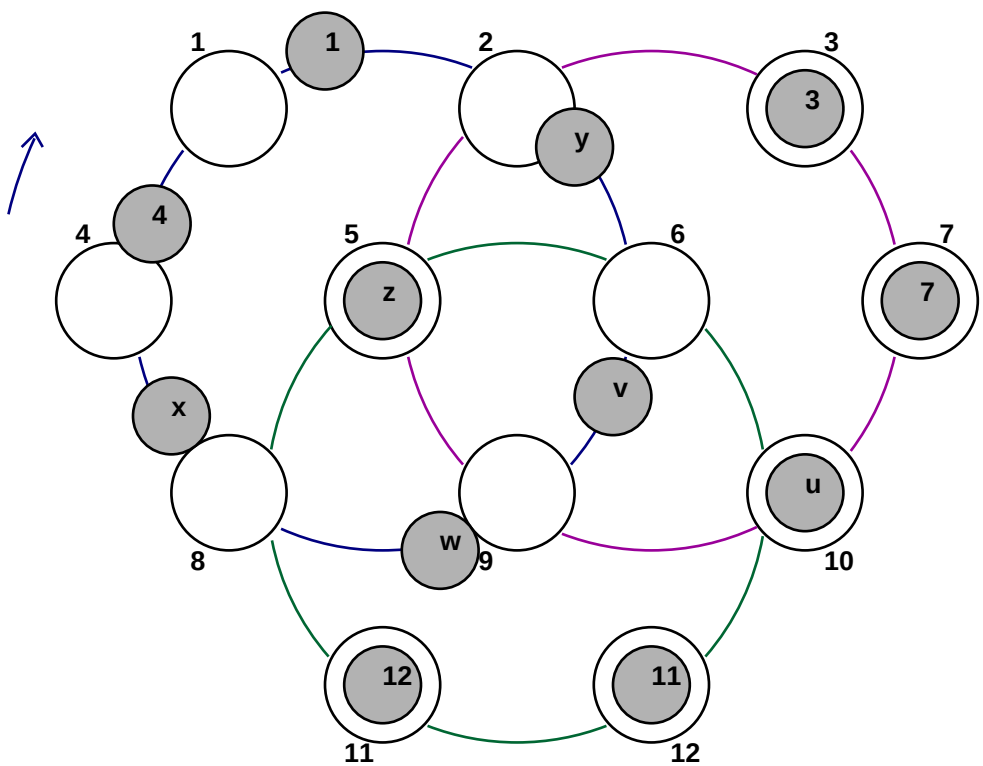

1
2
3
1
y
3
4
5
6
7
4
x
z
7
12
w
v
8
9
10
11
u
11
12

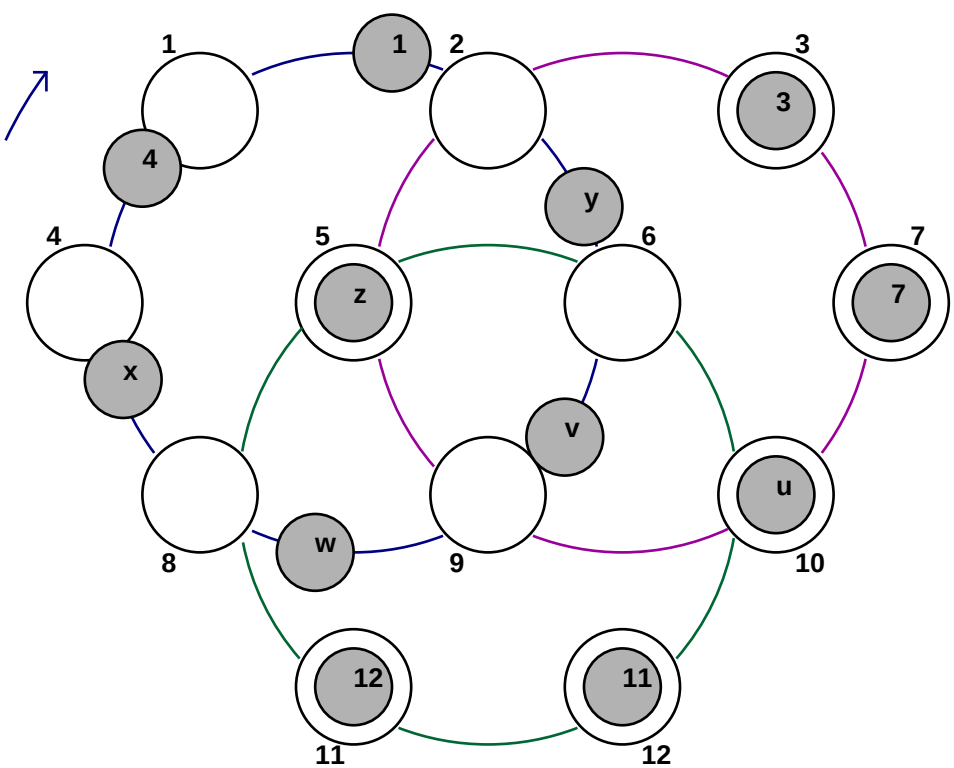

1
2
3
1
y
3
4
5
z
6
7
4
7
x
v
w
8
9
10
12
u
11
11
12

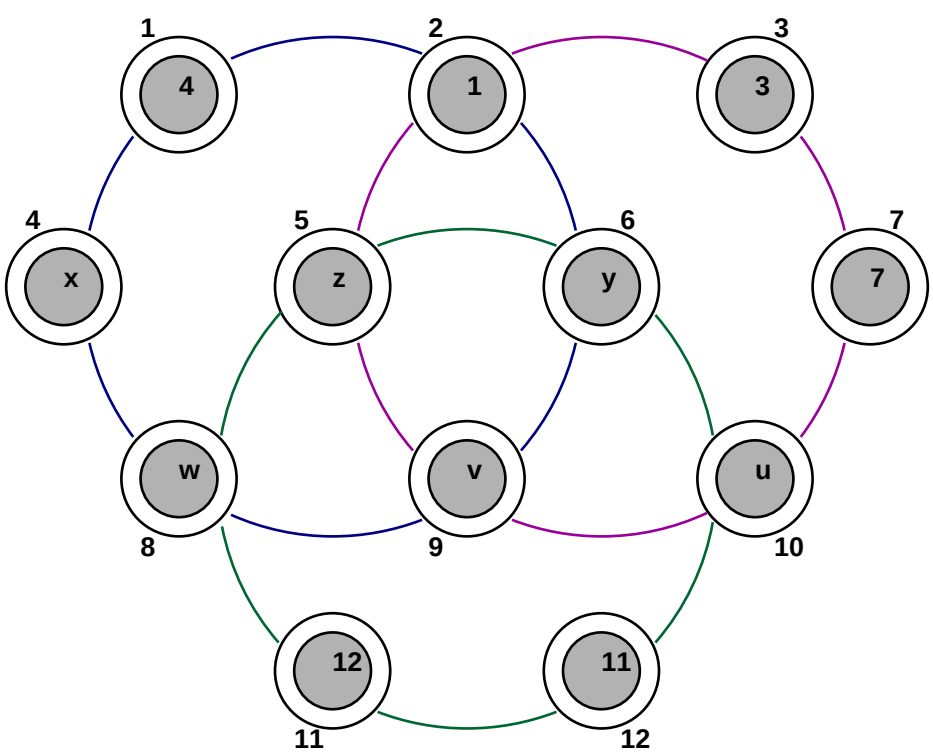

1
2
3
1
y
3
4
5
z
6
7
4
7
v
x
w
8
9
10
u
12
11
11
12

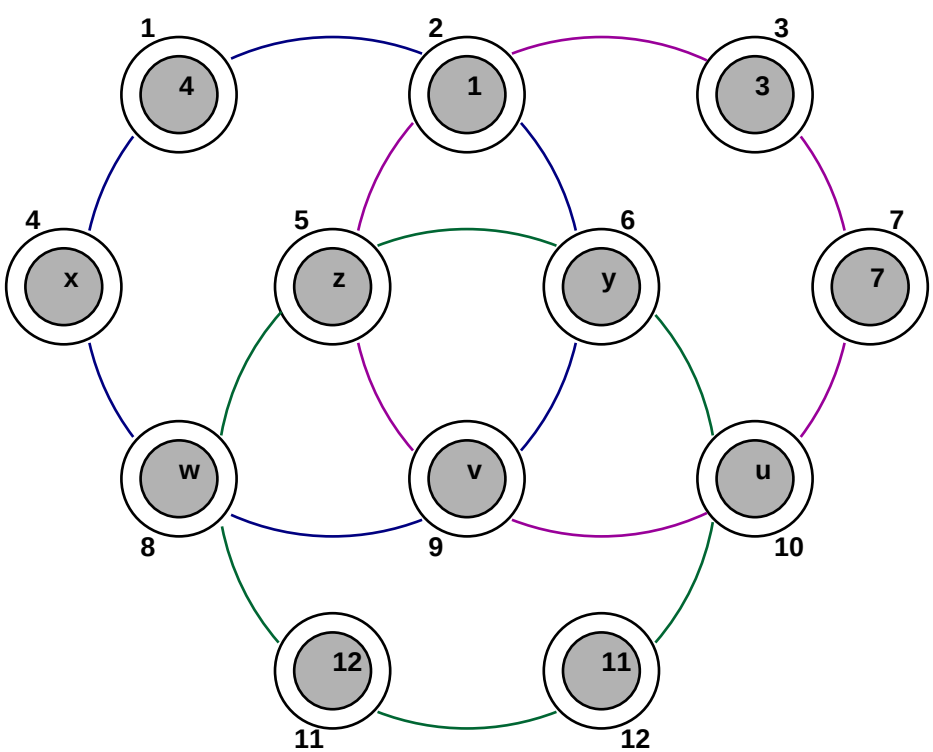

1
2
3
1
y
3
4
5
6
7
4
z
v
7
x
w
u
8
9
10
12
11
11
12

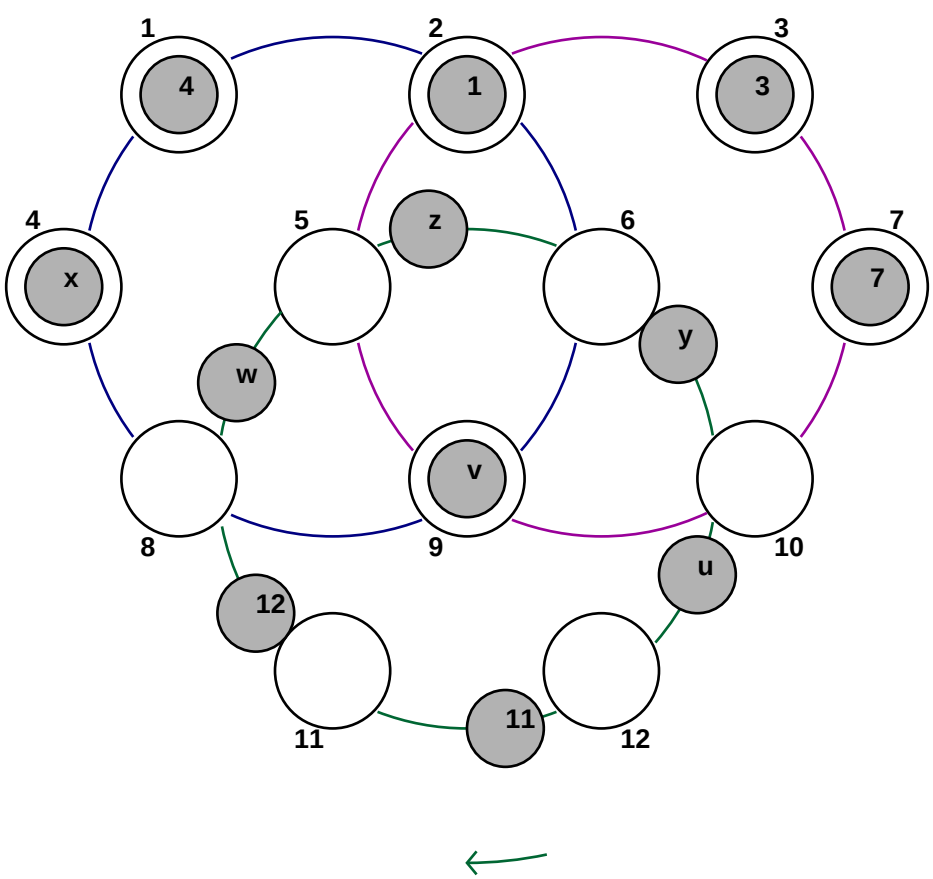

1
2
3
1
y
3
4
5
6
7
4
z
v
7
x
w
u
8
9
10
12
11
11
12

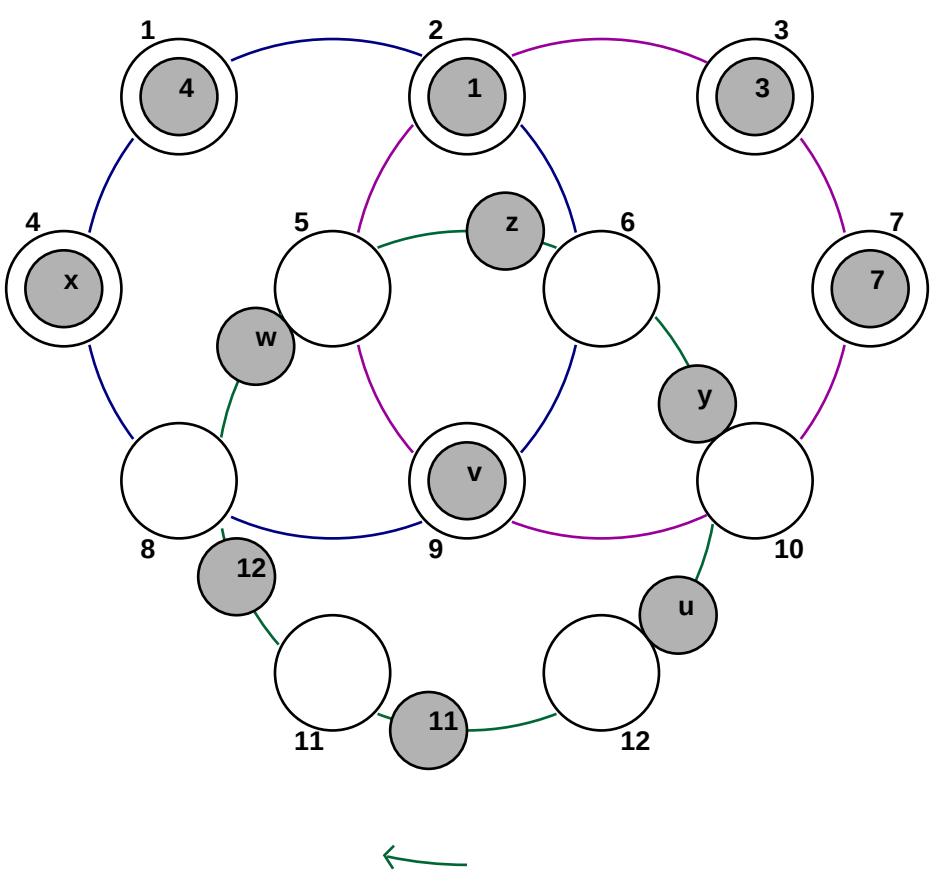

1
1
2
3
3
y
4
4
5
6
7
z
7
v
x
u
w
8
9
10
12
11
11
12

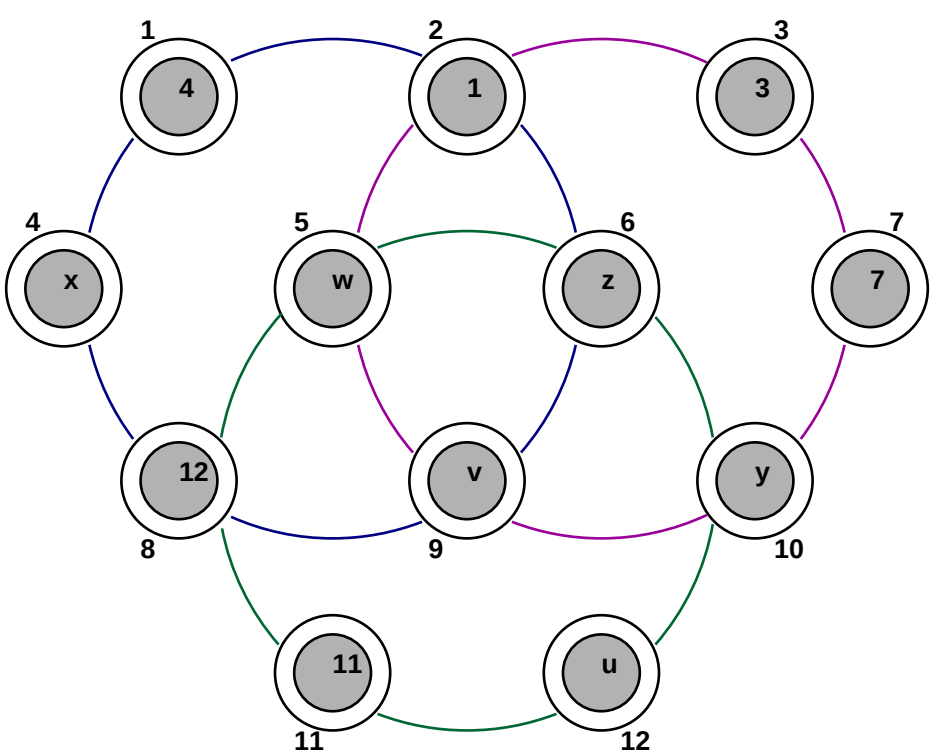

1
1
2
3
3
4
4
y
4
5
6
7
z
7
x
v
u
w
8
9
10
12
11
11
12

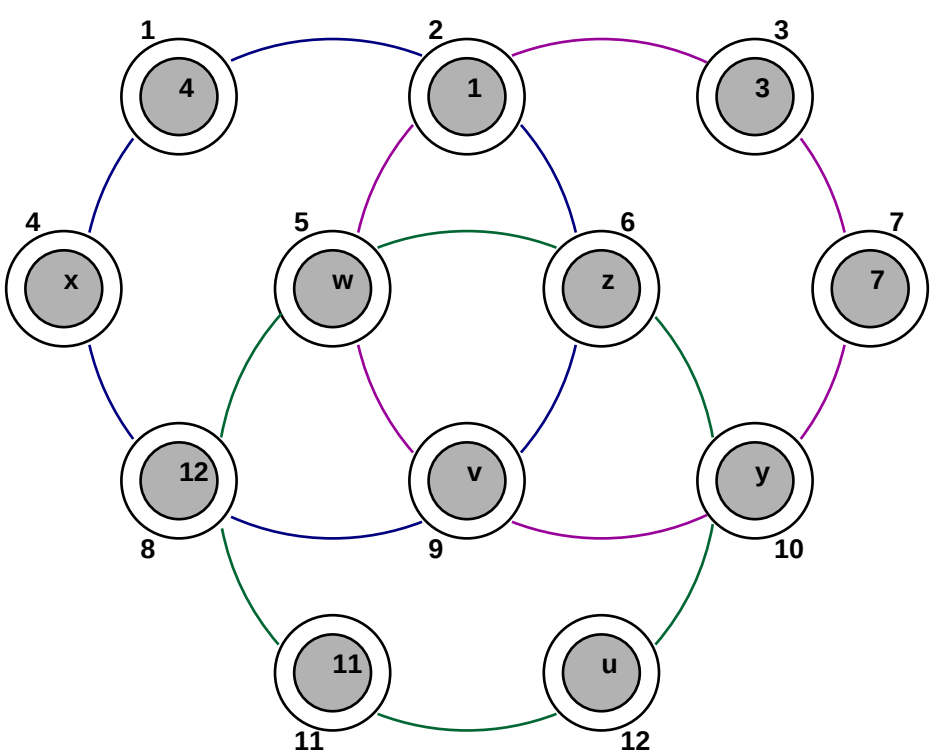

1
4
2
1
3
3
4
x
5
z
6
y
7
7
w
8
v
9
u
10
12
11
11
12

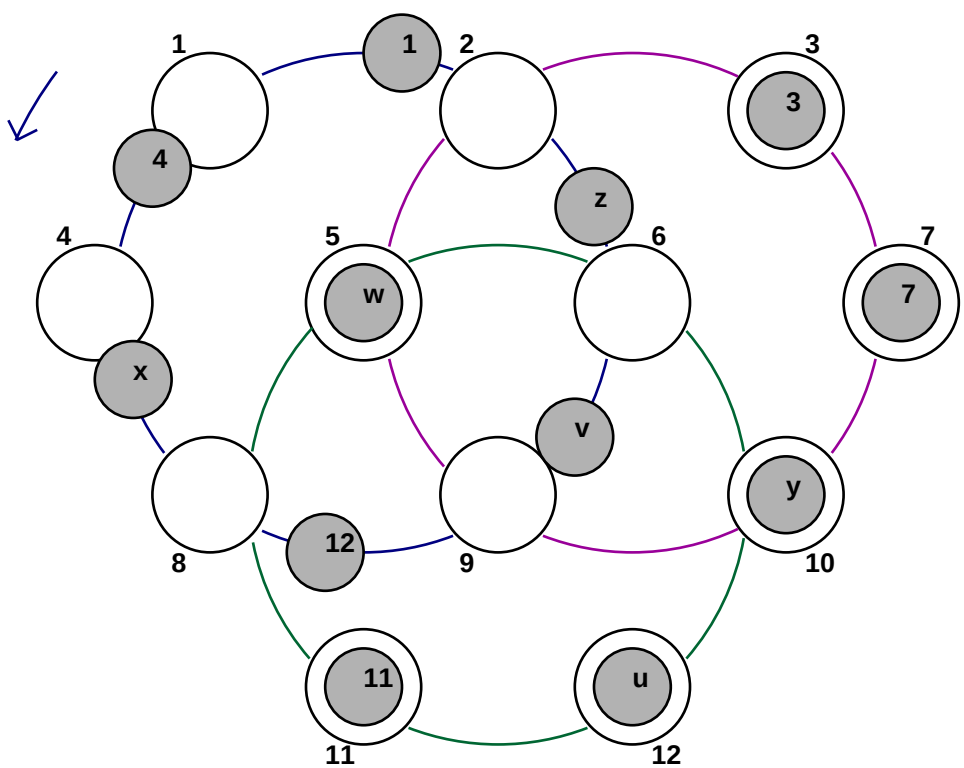

1
4
2
1
3
3
4
x
5
z
6
y
7
7
w
8
v
9
u
10
12
11
11
12

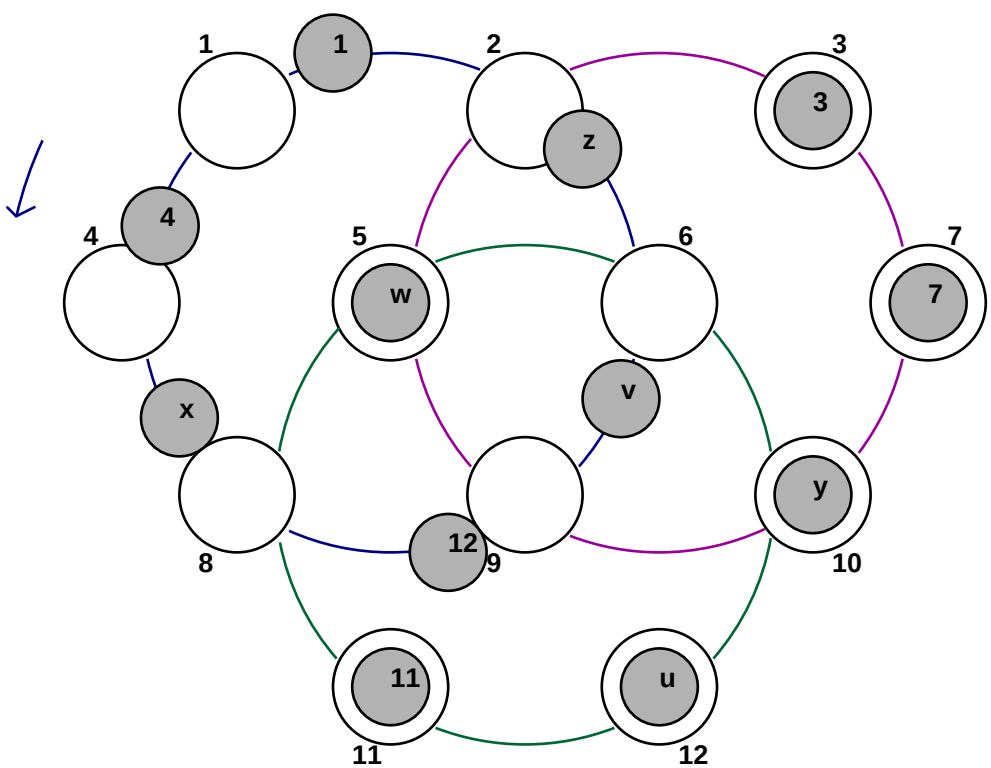

1
2
3
4
1
3
4
5
6
7
z
x
7
y
w
v
8
9
10
u
12
11
12
11

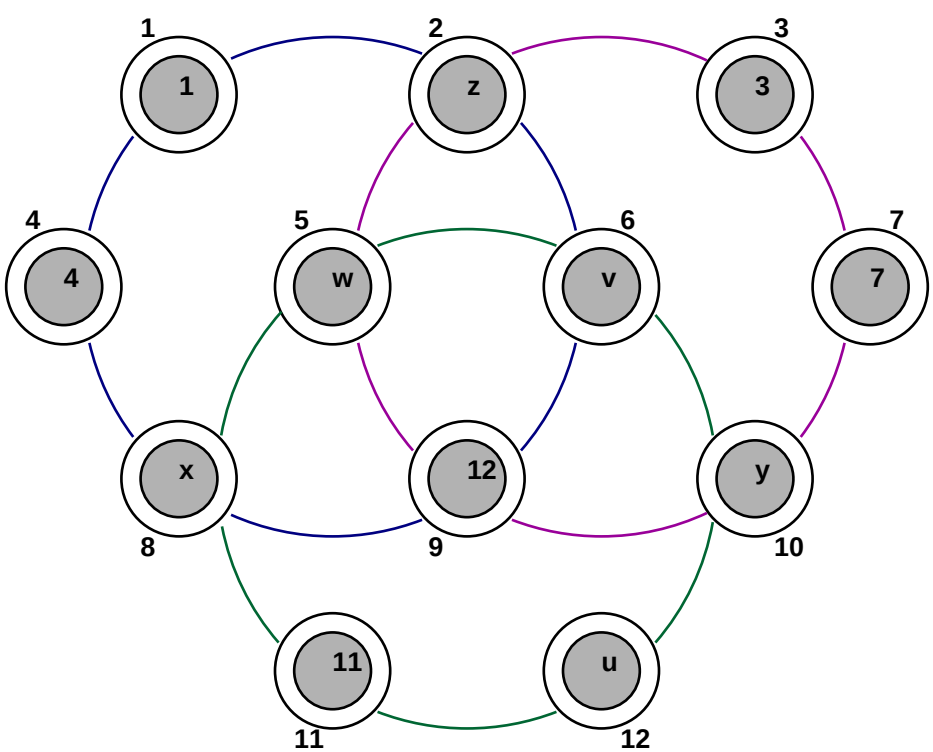

1
2
3
4
1
3
4
5
z
6
7
x
7
w
y
v
8
9
10
12
u
11
11
12


1
4
2
1
3
3
4
x
5
w
6
z
7
7
12
8
v
9
y
10
11
11
u
12

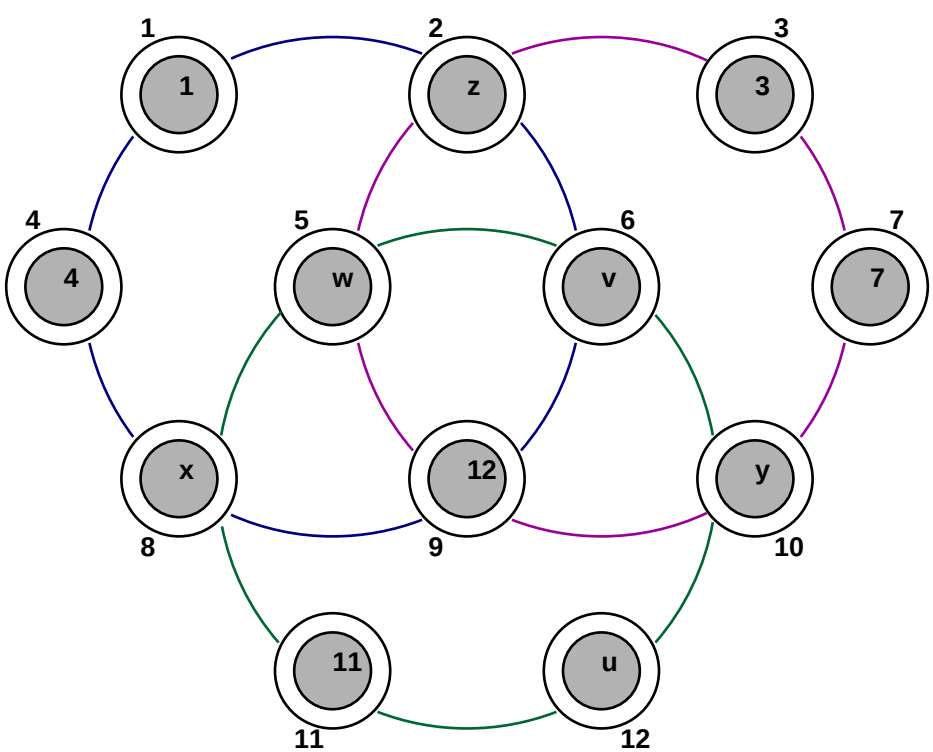

1
4
2
1
3
3
4
x
5
w
6
z
7
7
12
8
v
9
y
10
11
11
u
12

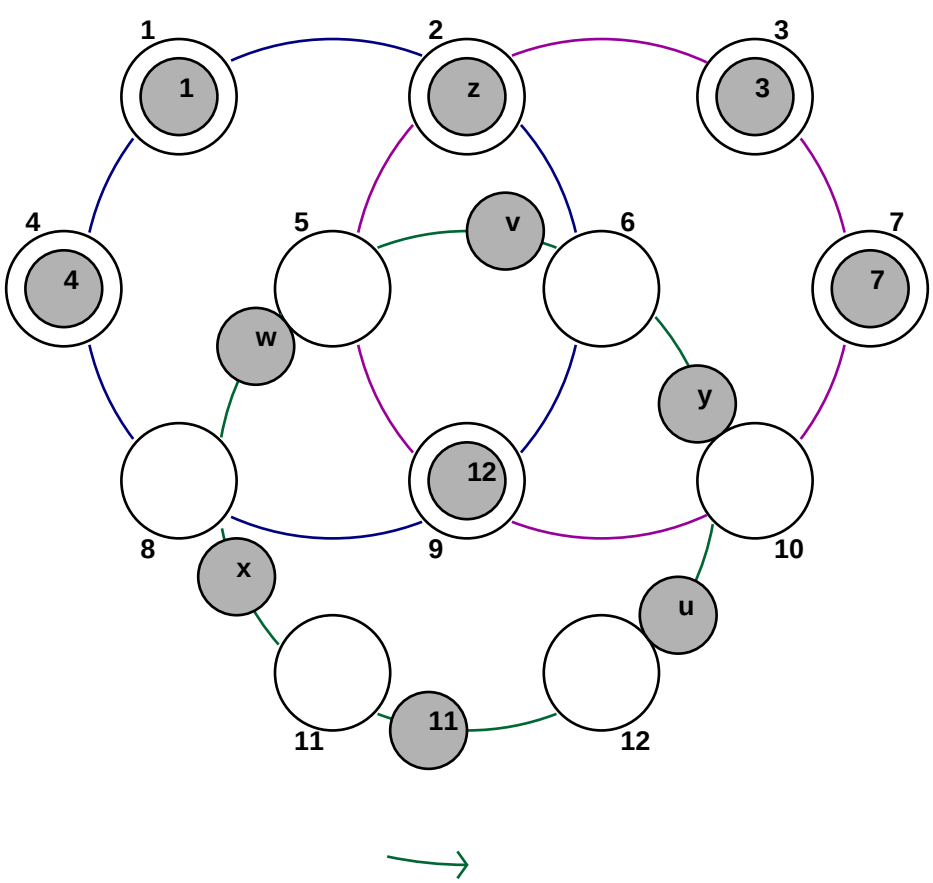

1
1
2
3
3
4
4
z
4
5
6
7
w
7
x
v
y
12
8
9
10
11
u
11
12

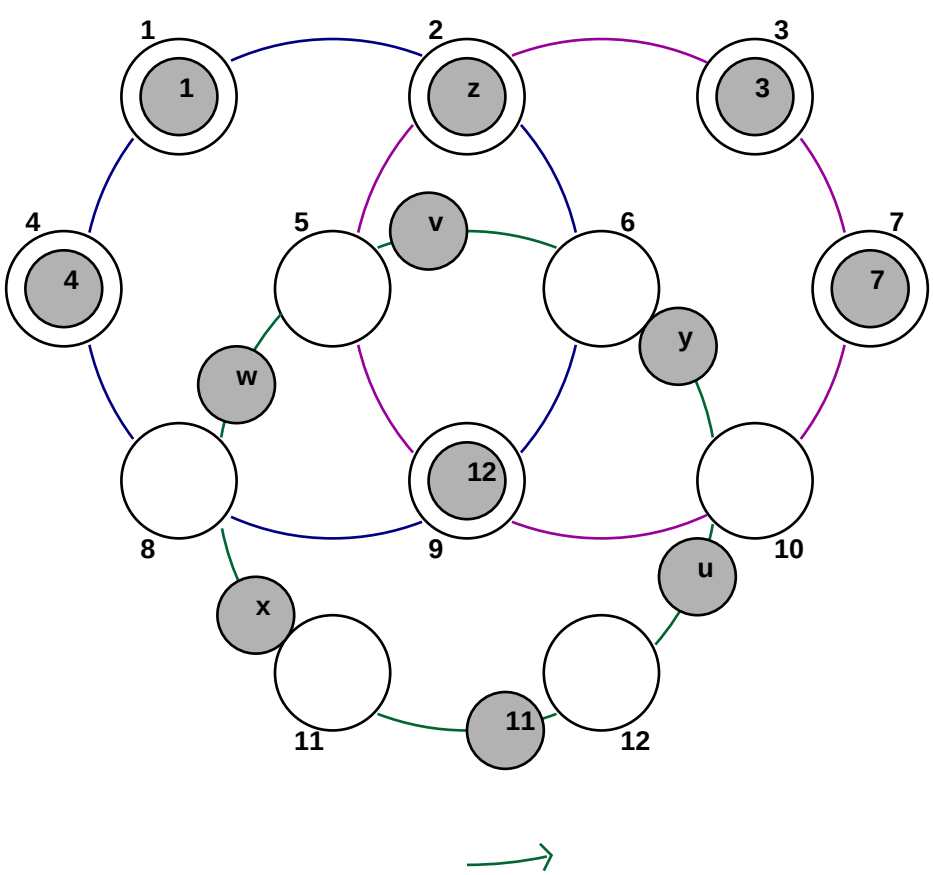

1
1
2
3
3
z
4
4
5
6
7
w
7
v
x
y
12
8
9
10
11
u
11
12

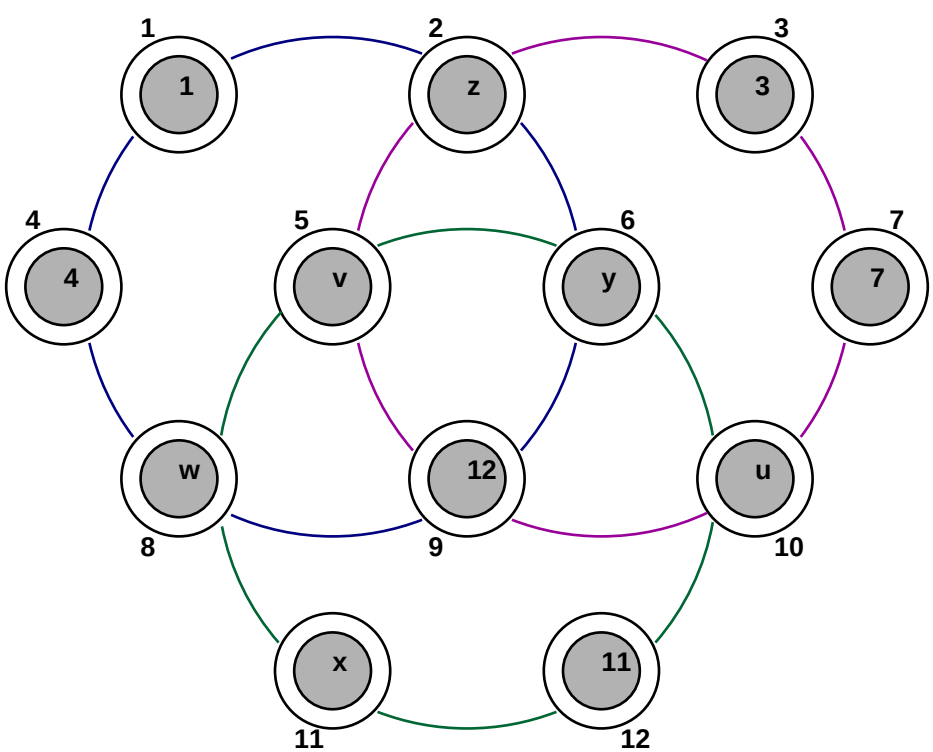

1
2
3
1
z
3
4
5
6
7
4
w
v
7
x
12
y
8
9
10
11
u
11
12

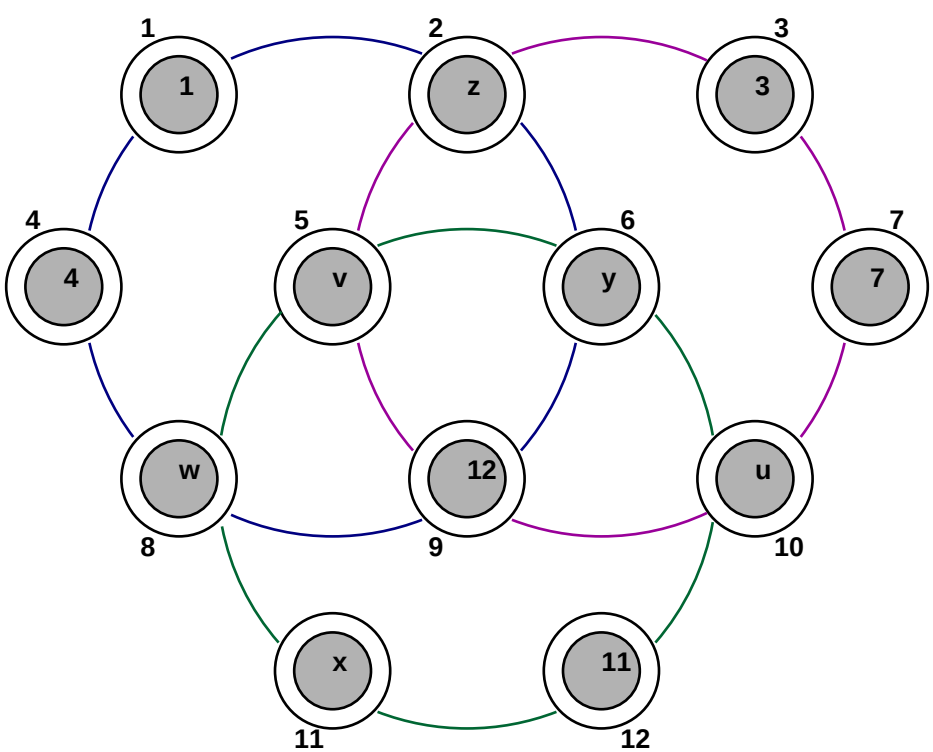
Number 12 can be moved into position 5 while keeping numbers 1, 3, 4, 7, and 11 in position by the following moves.

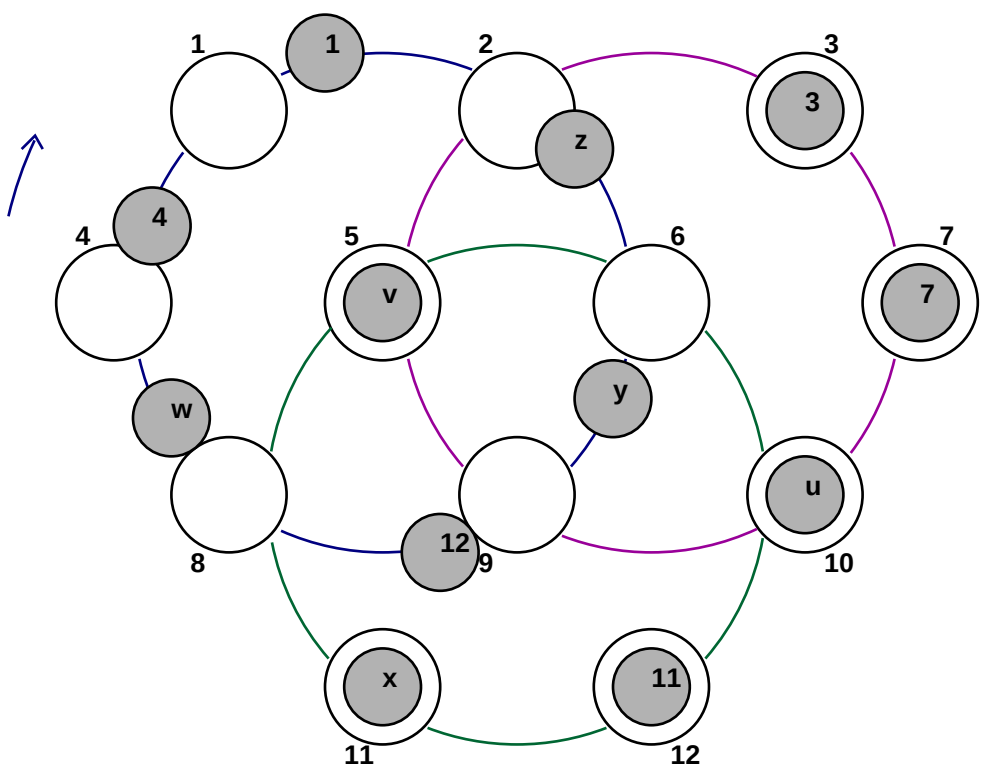

1
2
3
1
z
3
4
5
6
7
4
w
v
7
x
12
y
8
9
10
11
u
11
12

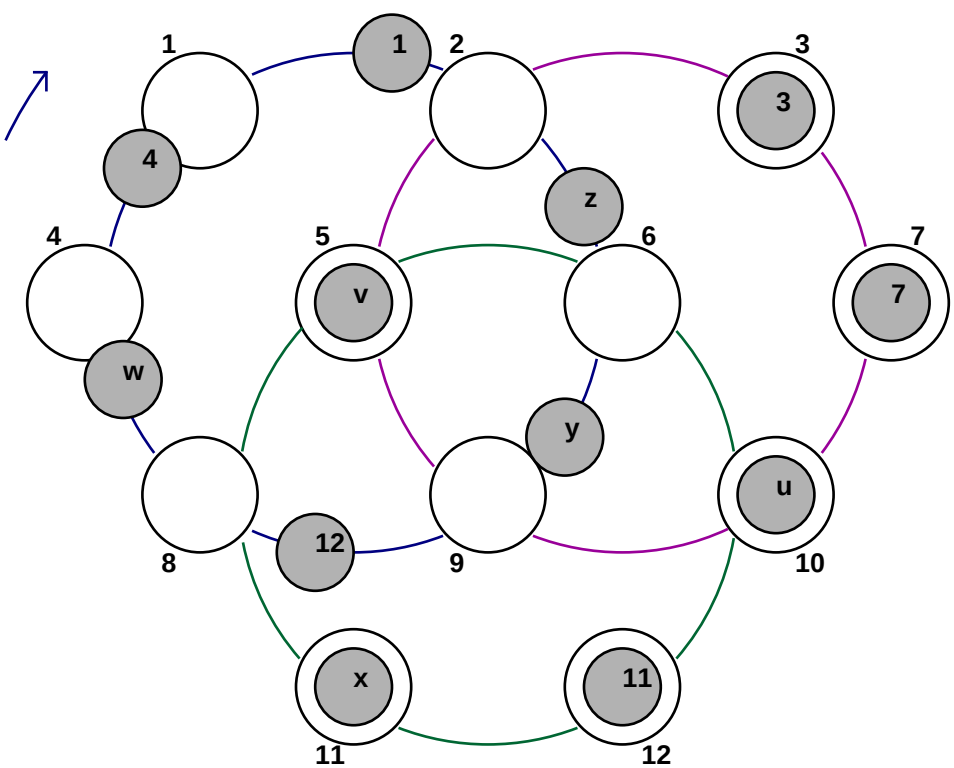

1
2
3
1
z
3
4
5
v
6
7
4
7
w
y
12
8
9
10
x
u
11
11
12

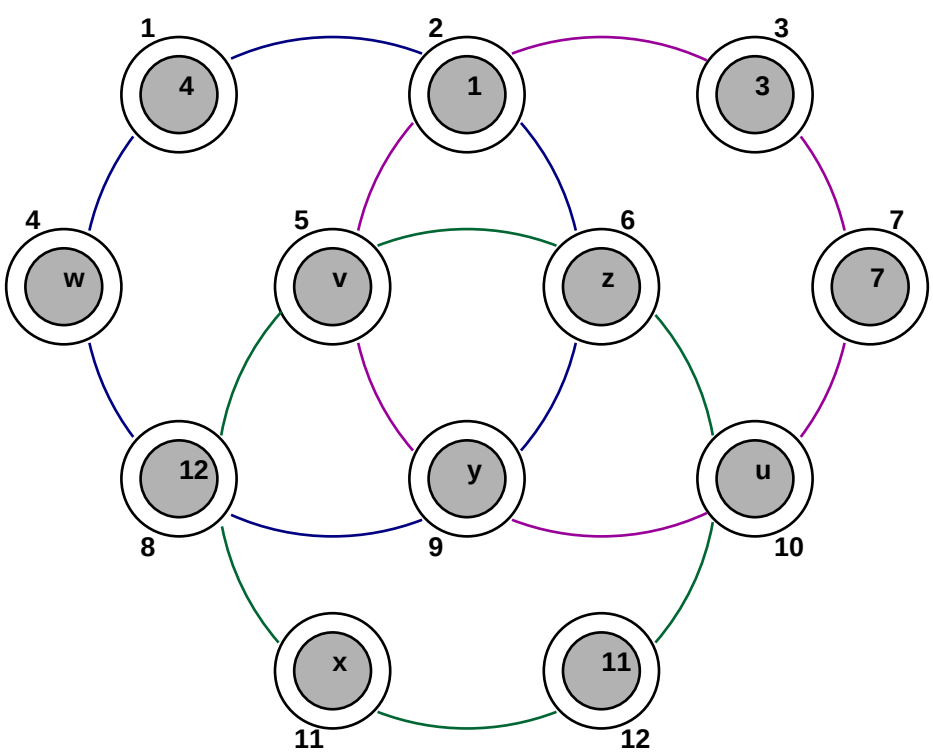

1
2
3
1
z
3
4
5
v
6
7
4
7
y
w
12
8
9
10
u
x
11
11
12

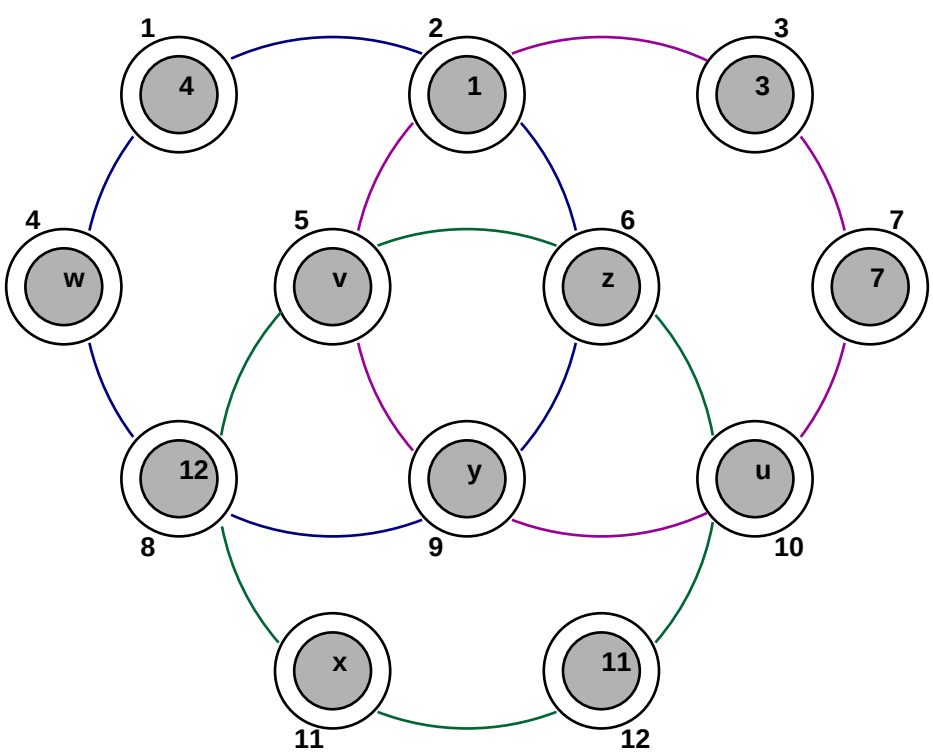

1
2
3
1
z
3
4
5
6
7
4
v
y
7
w
12
u
8
9
10
x
11
11
12

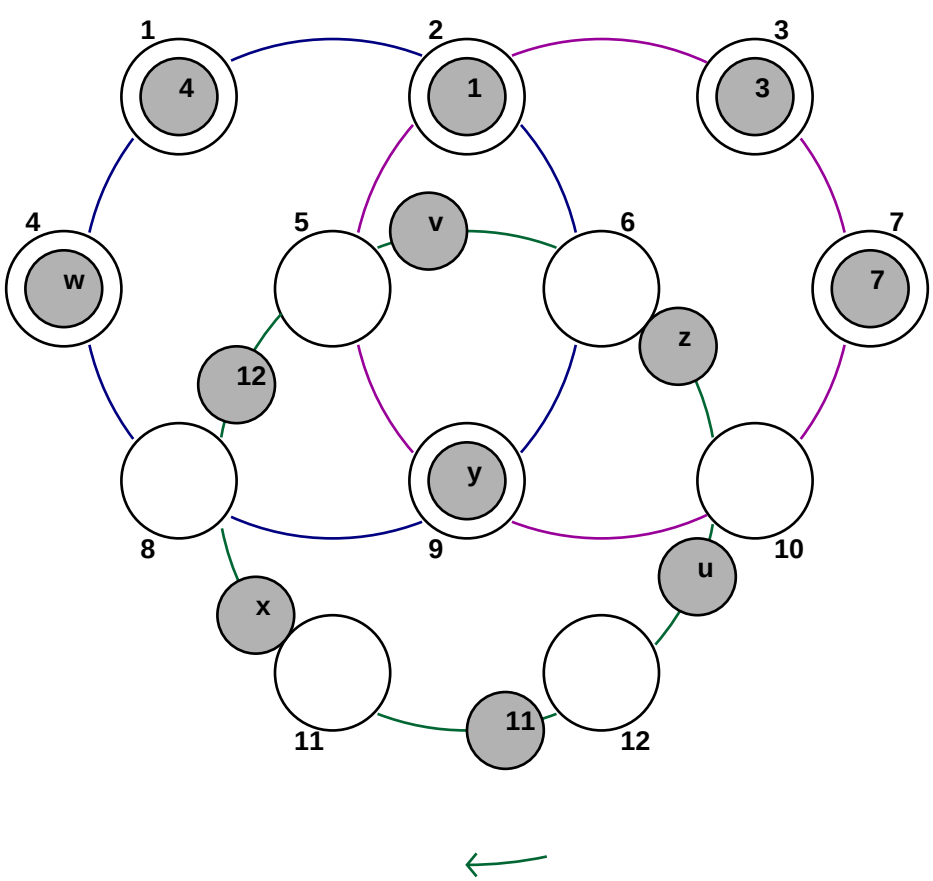

1
2
3
1
z
3
4
5
6
7
4
v
y
7
w
12
u
8
9
10
x
11
11
12

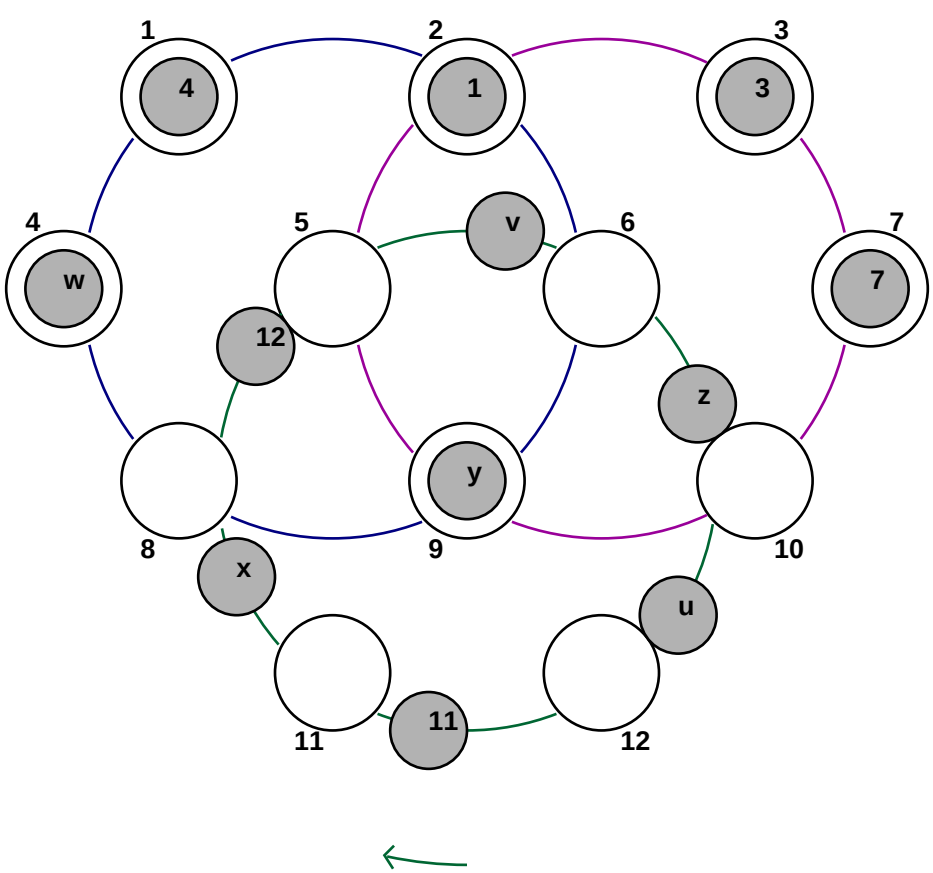

1
1
2
3
3
z
4
4
5
6
7
v
7
y
w
u
12
8
9
10
x
11
11
12

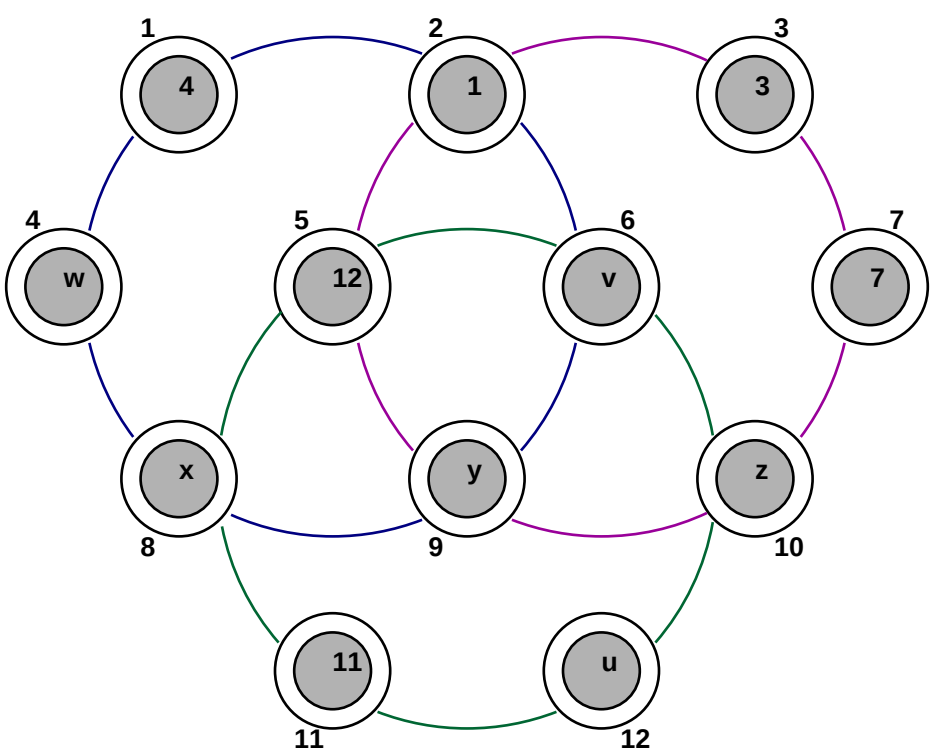

1
1
2
3
3
4
4
z
4
5
6
7
v
7
w
y
u
8
12
9
10
x
11
11
12

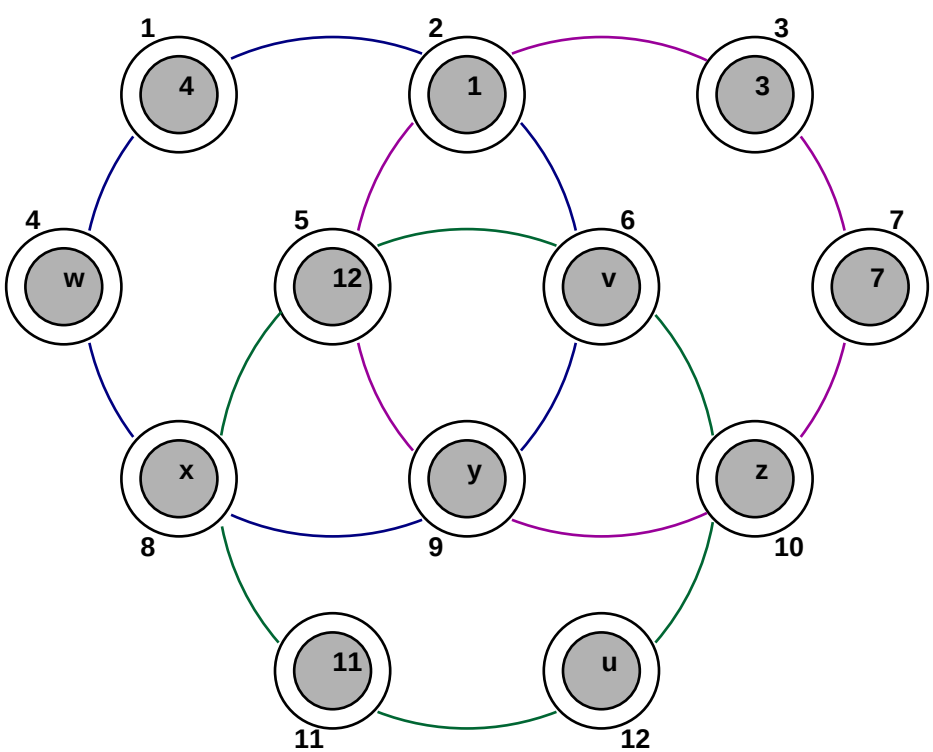

1
2
3
4
1
3
4
5
6
7
w
v
z
7
12
y
u
8
9
10
x
11
11
12

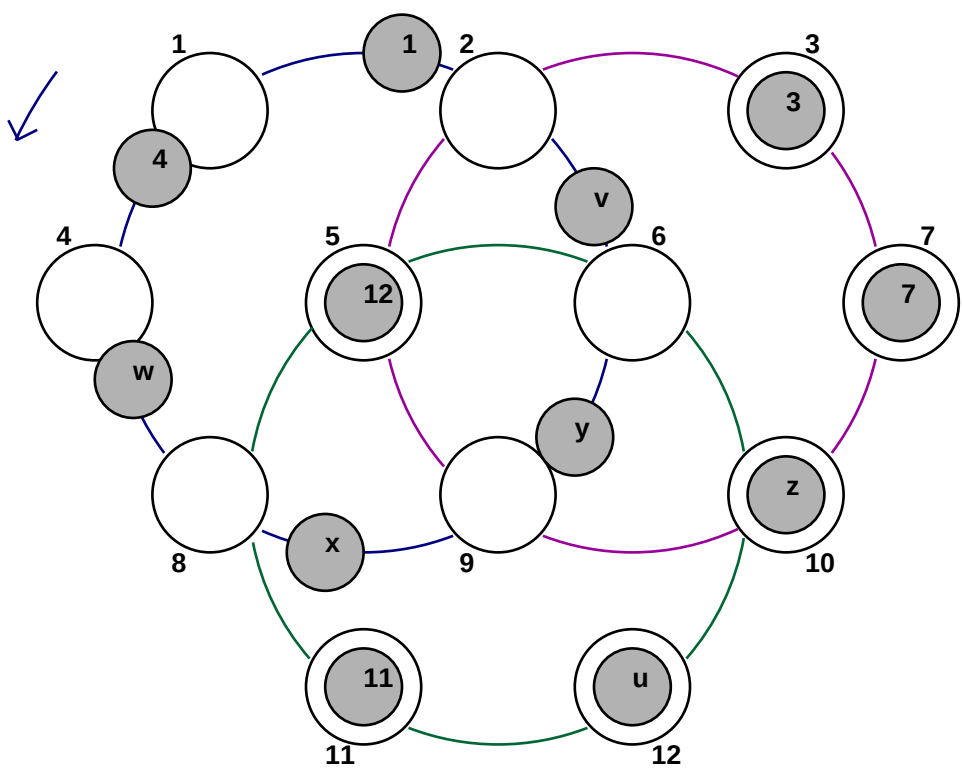

1
2
3
4
1
3
4
5
6
7
w
v
z
7
12
y
u
8
9
10
x
11
11
12

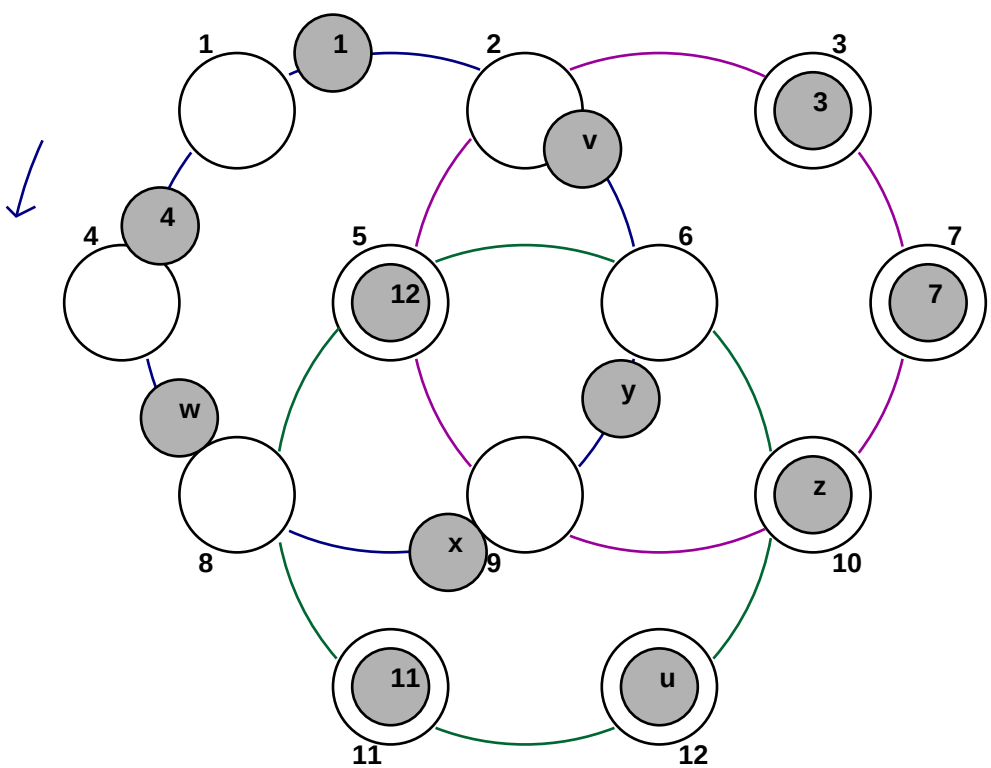

1
2
3
4
1
3
4
5
v
6
7
w
7
z
12
y
8
9
10
u
x
11
11
12

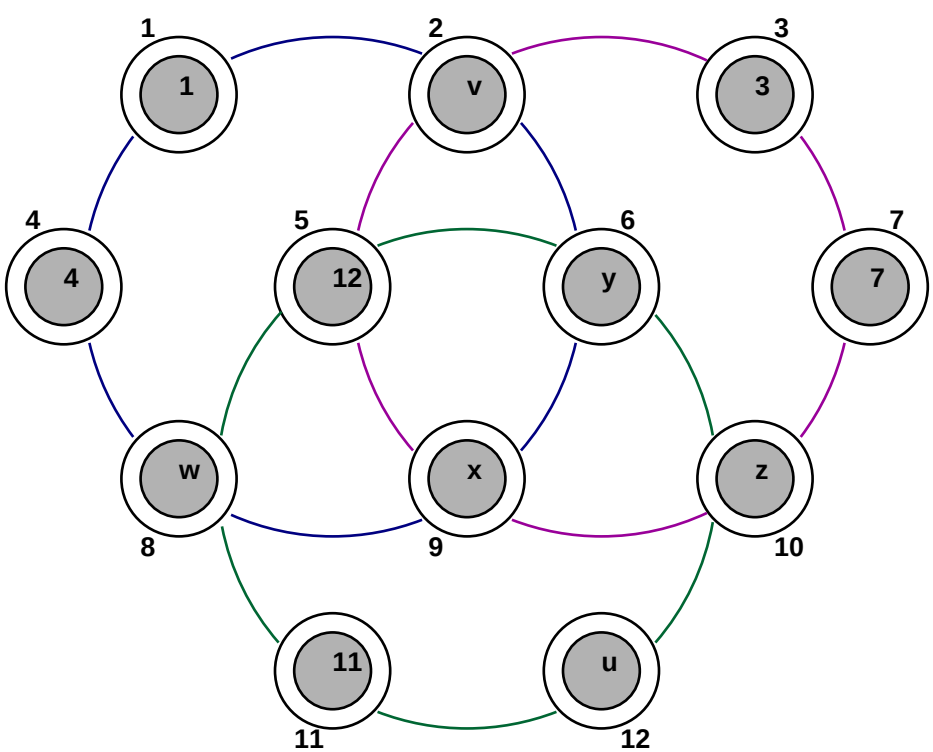

1
2
3
4
1
3
4
5
v
6
7
w
7
12
z
y
8
9
10
x
u
11
11
12


1
4
2
1
3
3
4
w
5
12
6
v
7
7
x
8
y
9
z
10
11
11
u
12

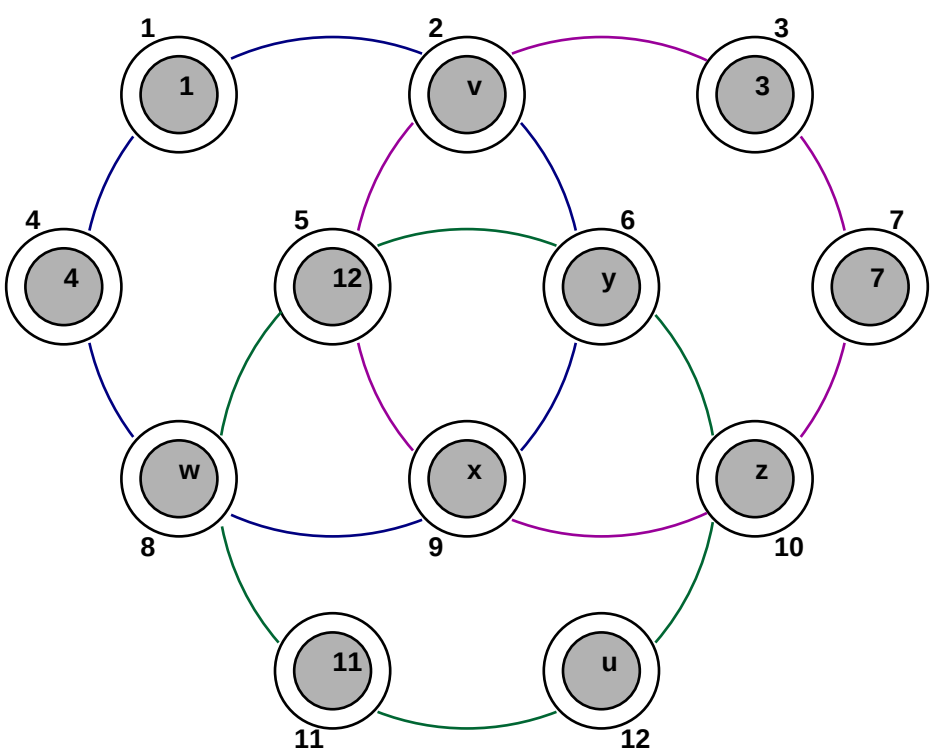

1
4
2
1
3
3
4
w
5
12
6
v
7
7
x
8
y
9
z
10
11
11
u
12

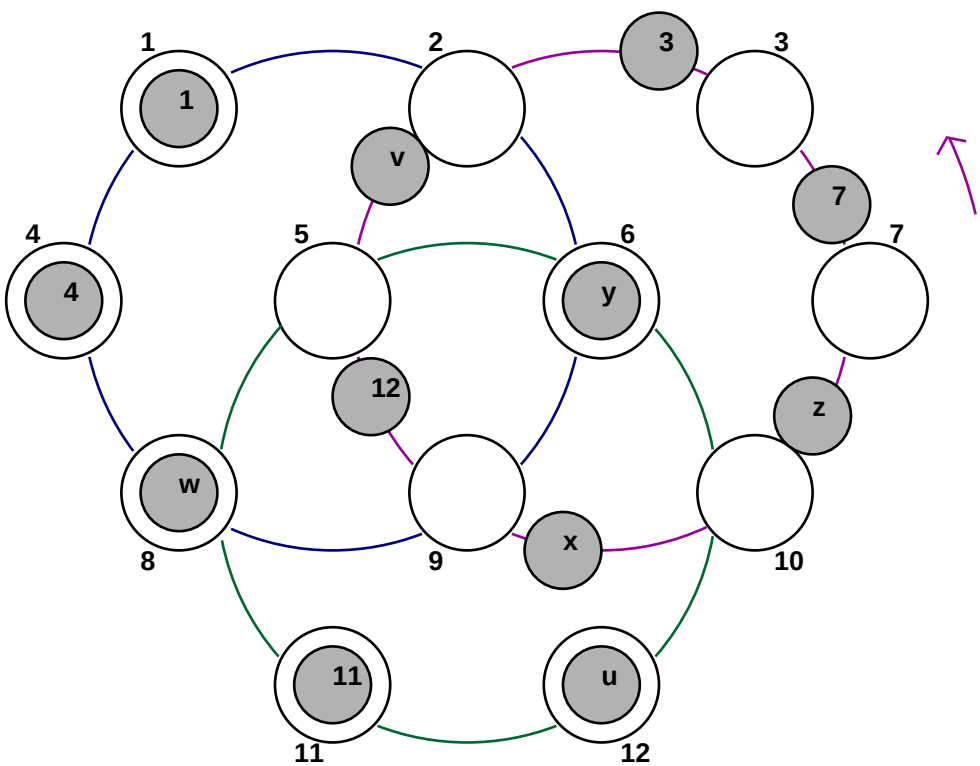

1
1
2
3
3
4
4
v
4
5
6
7
12
7
w
y
8
x
9
z
10
11
u
11
12

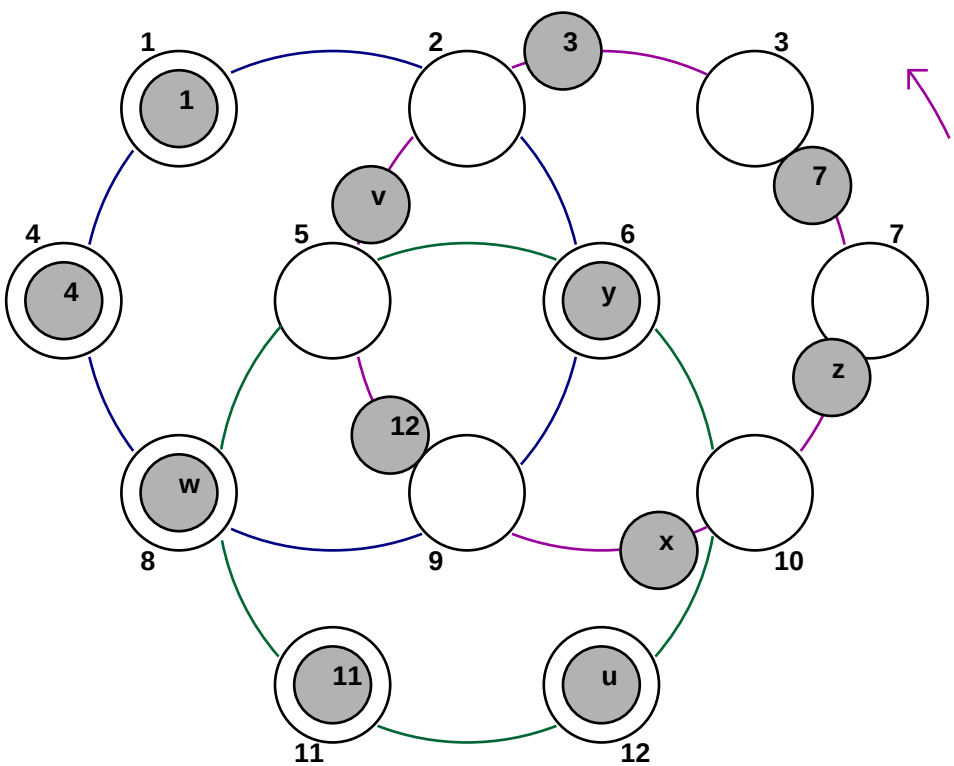

1
1
2
3
3
v
4
4
5
6
7
12
7
y
w
z
x
8
9
10
11
u
11
12

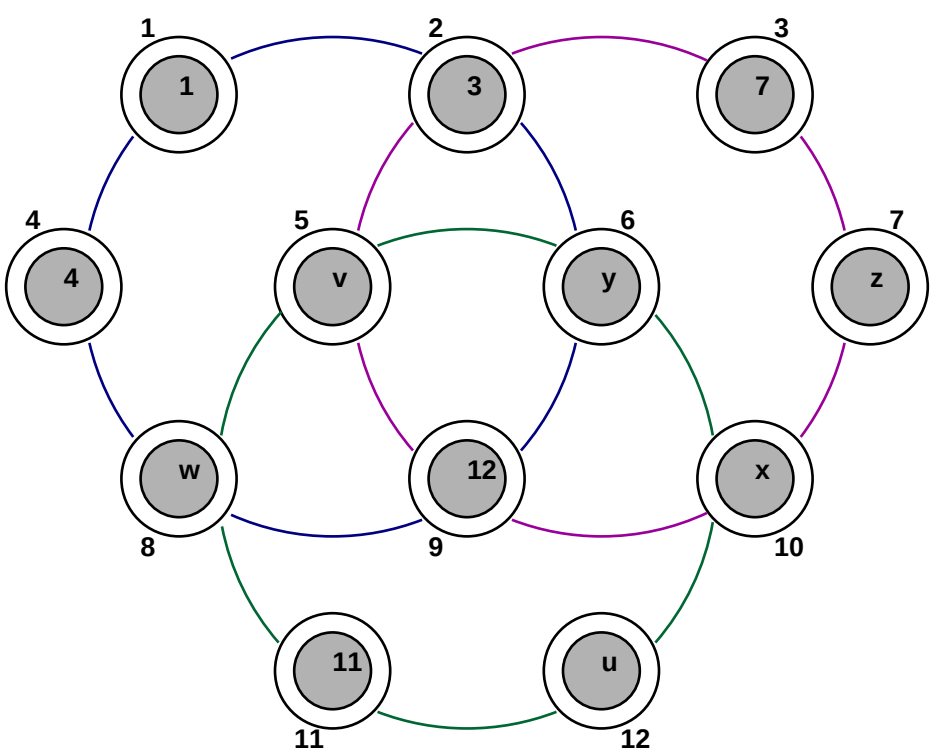

1
2
3
1
v
3
4
5
6
7
4
12
y
7
w
x
z
8
9
10
11
u
11
12

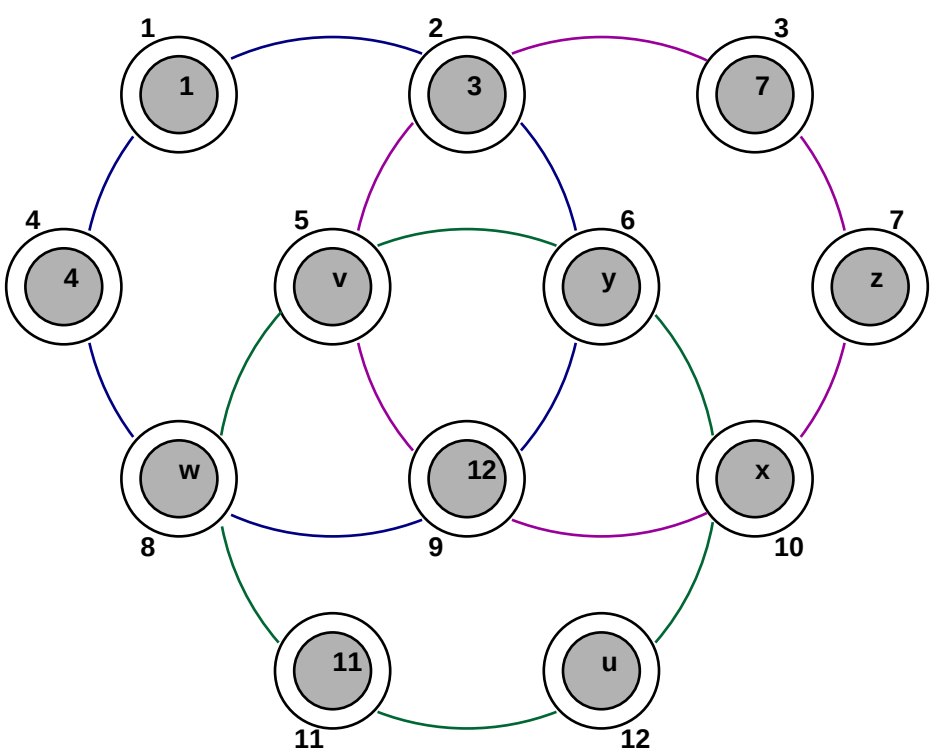
Number 12 can be moved into position 10 while keeping numbers 1, 3, 4, 7, and 11 in position by the following moves.

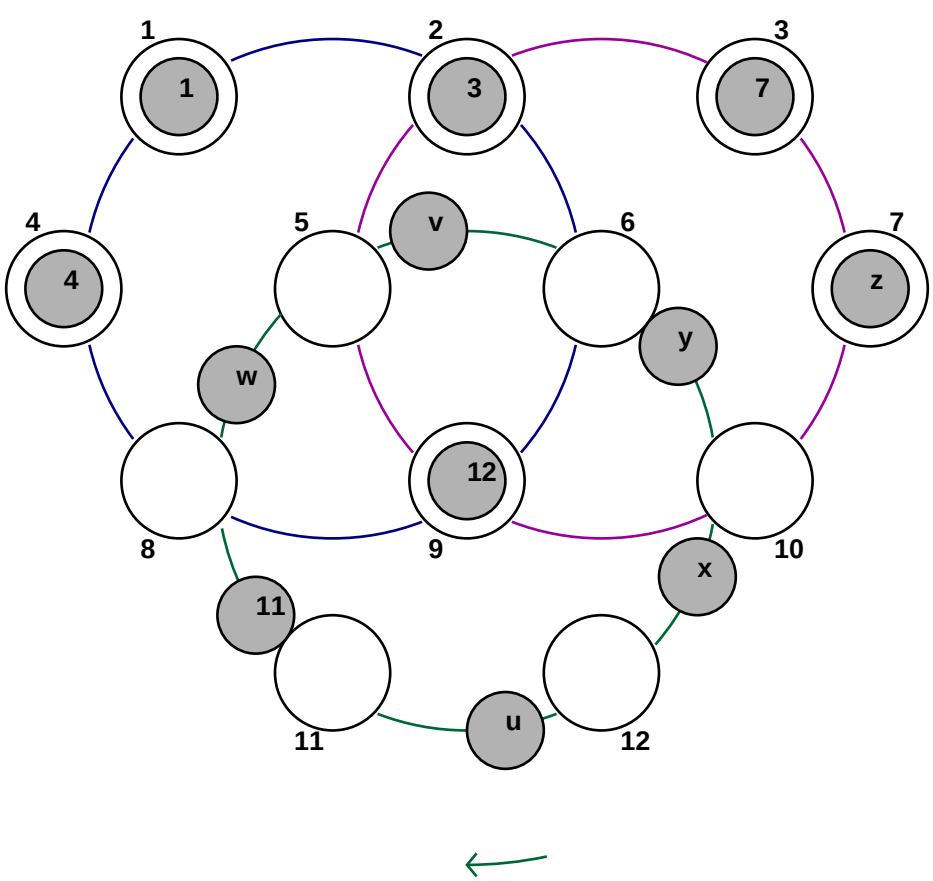

1
2
3
1
v
3
4
5
6
7
4
12
y
7
w
x
z
8
9
10
11
u
11
12

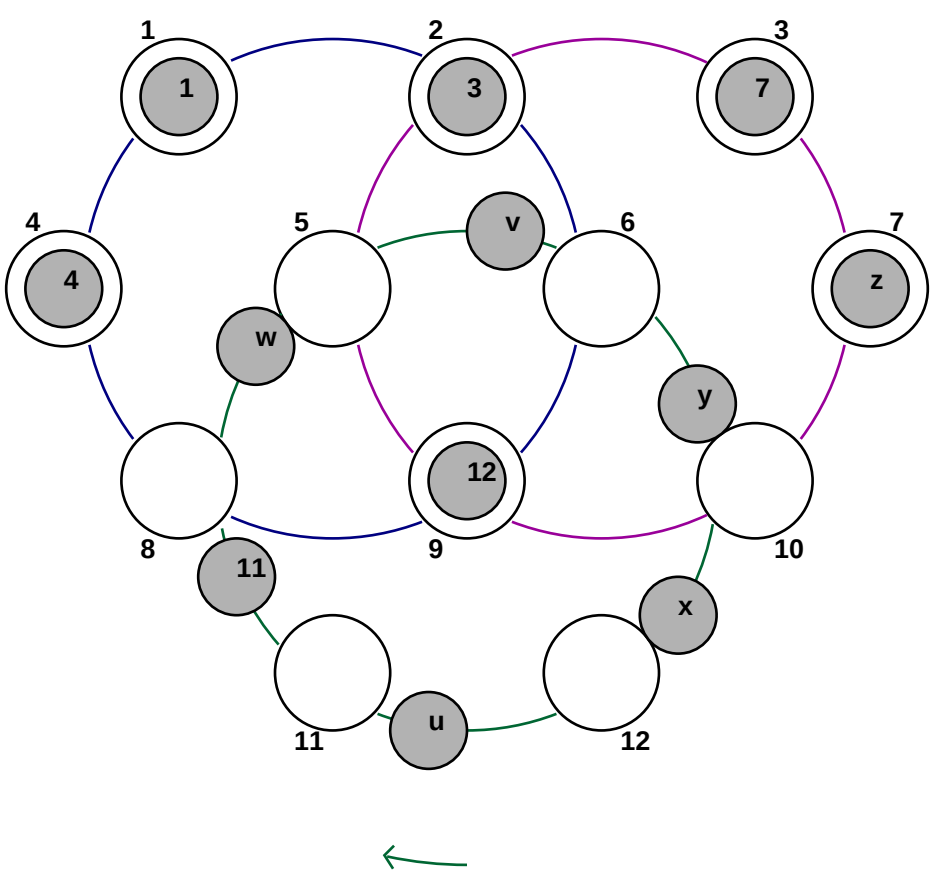

1
1
2
3
3
v
7
4
4
5
6
7
y
12
z
w
8
9
x
10
11
11
u
12

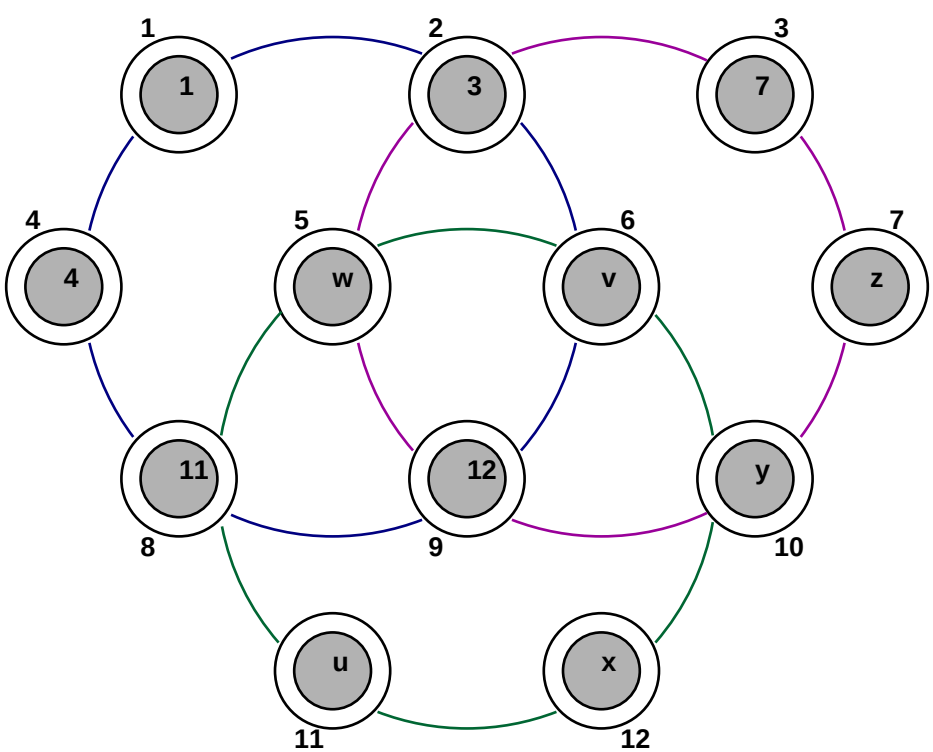

1
1
2
3
3
7
v
4
4
5
6
y
7
z
12
w
8
9
x
10
11
11
u
12

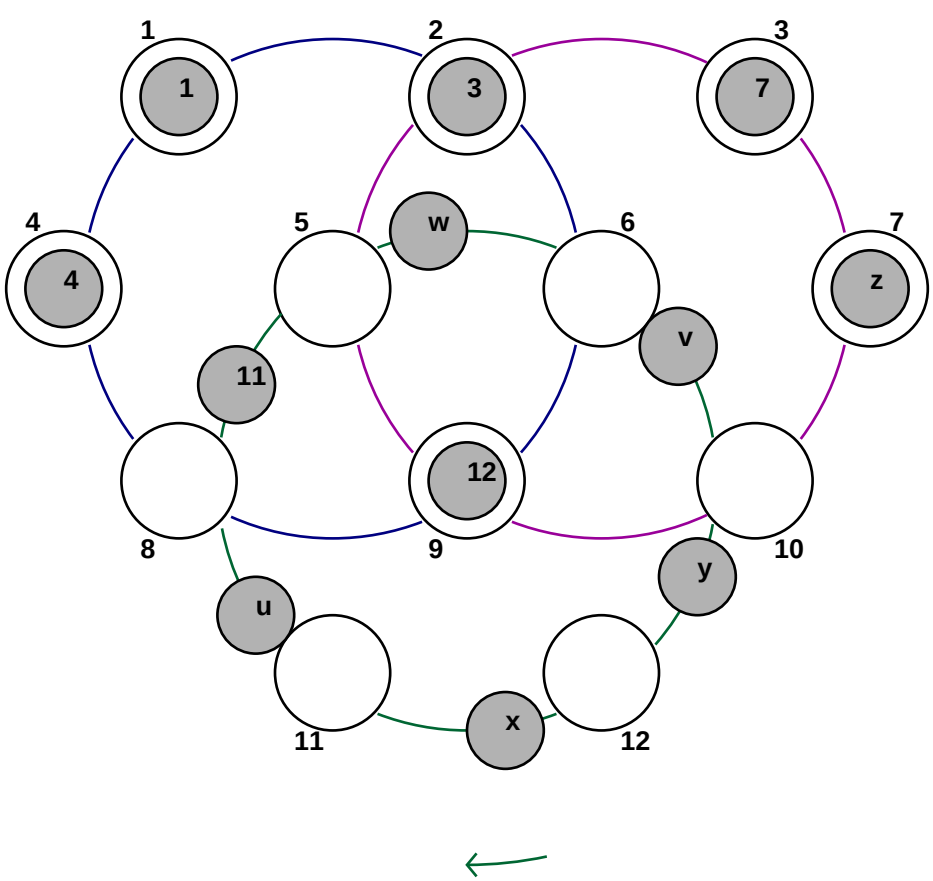

1
2
3
1
3
7
4
5
6
7
4
v
y
z
w
12
x
8
9
10
11
u
11
12

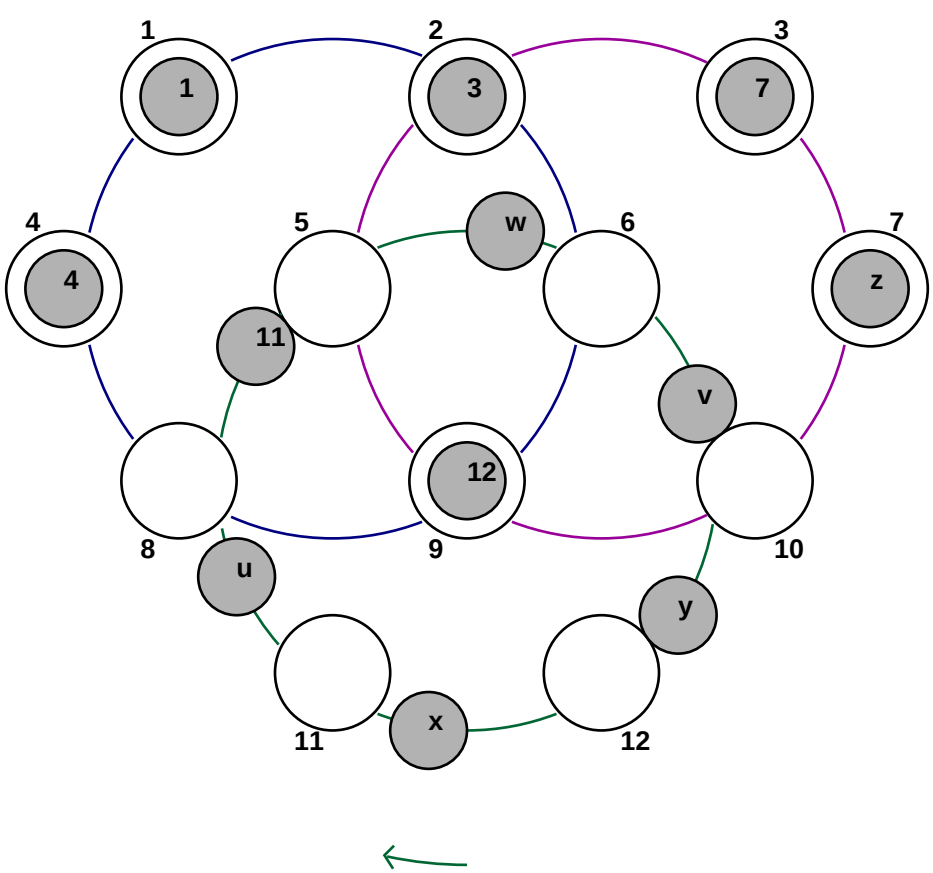

1
2
3
1
3
7
4
5
6
7
4
v
y
z
w
12
x
8
9
10
11
u
11
12

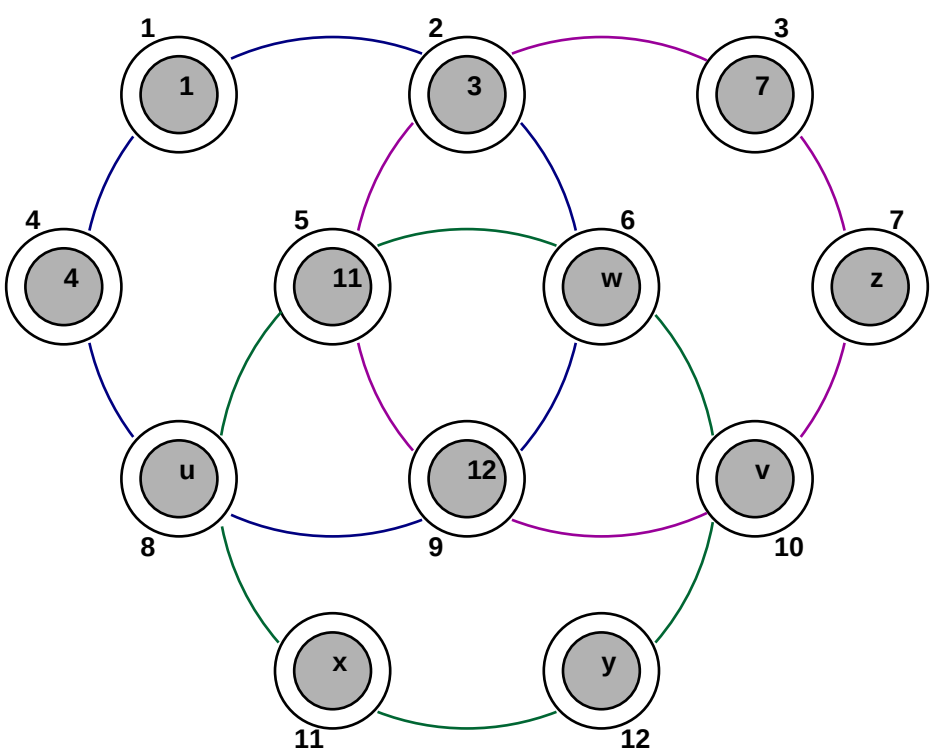

1
2
3
1
3
7
4
5
6
7
v
4
z
y
w
12
8
9
10
x
11
11
u
12

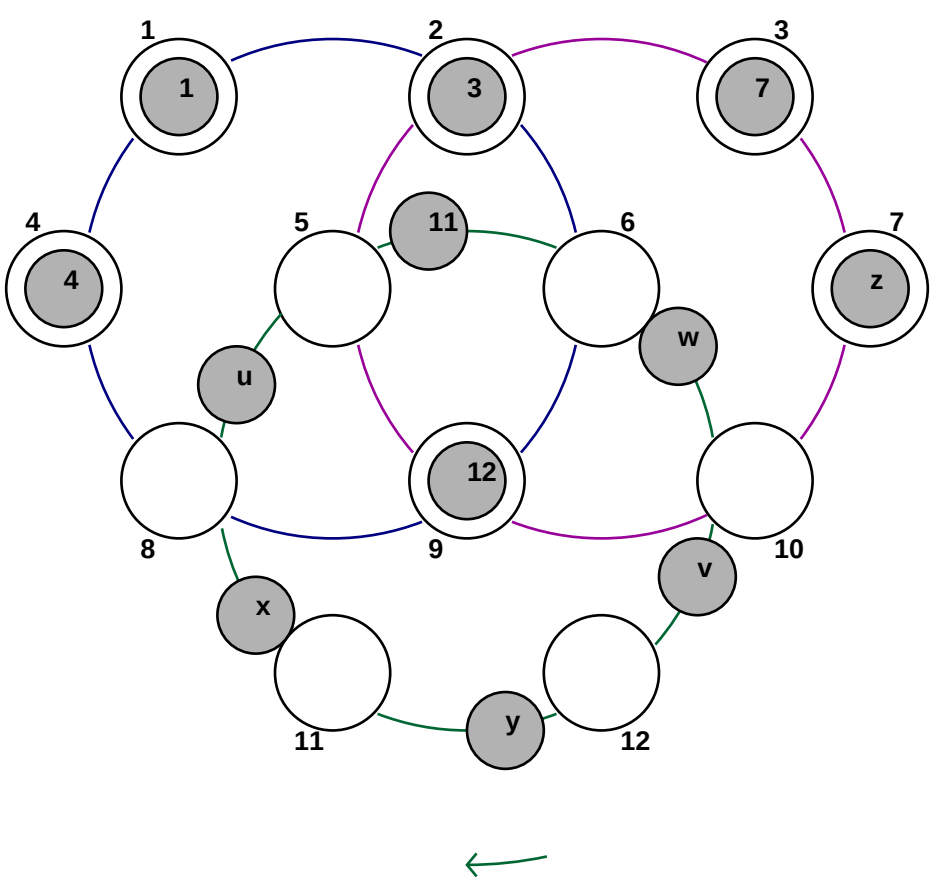

1
2
3
1
3
7
4
5
v
6
7
4
z
w
y
12
8
9
10
11
x
11
u
12

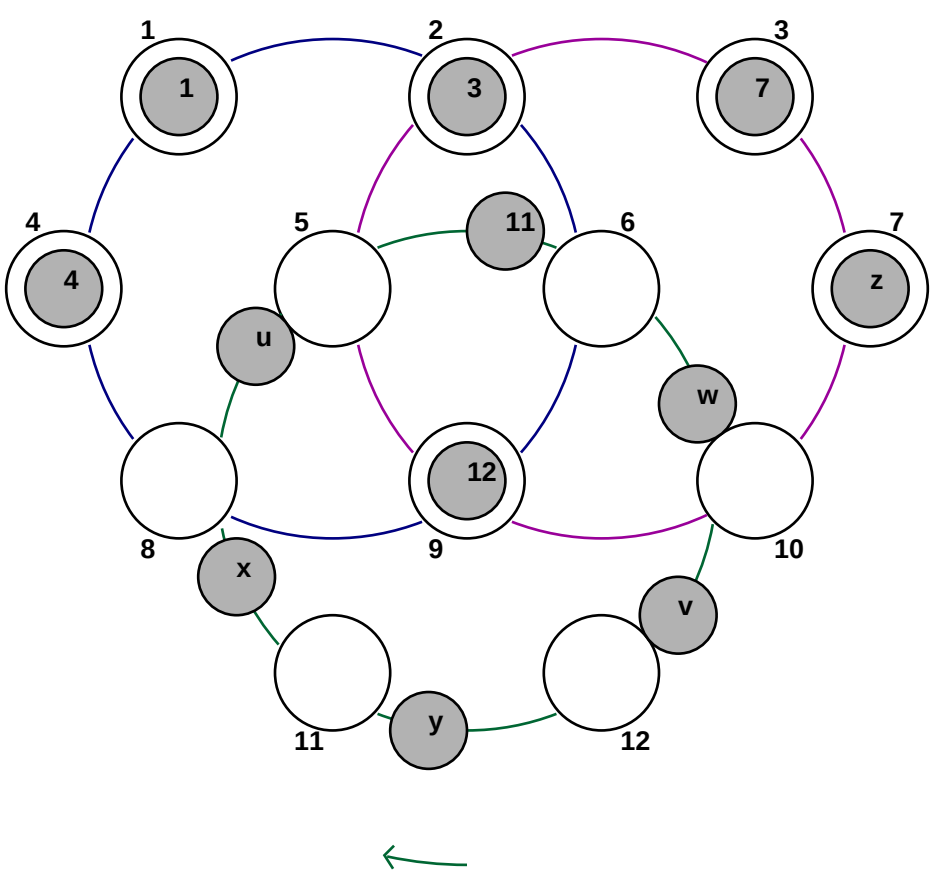

1
2
3
1
3
7
4
5
6
7
4
w
v
z
11
12
y
8
9
10
u
x
11
12

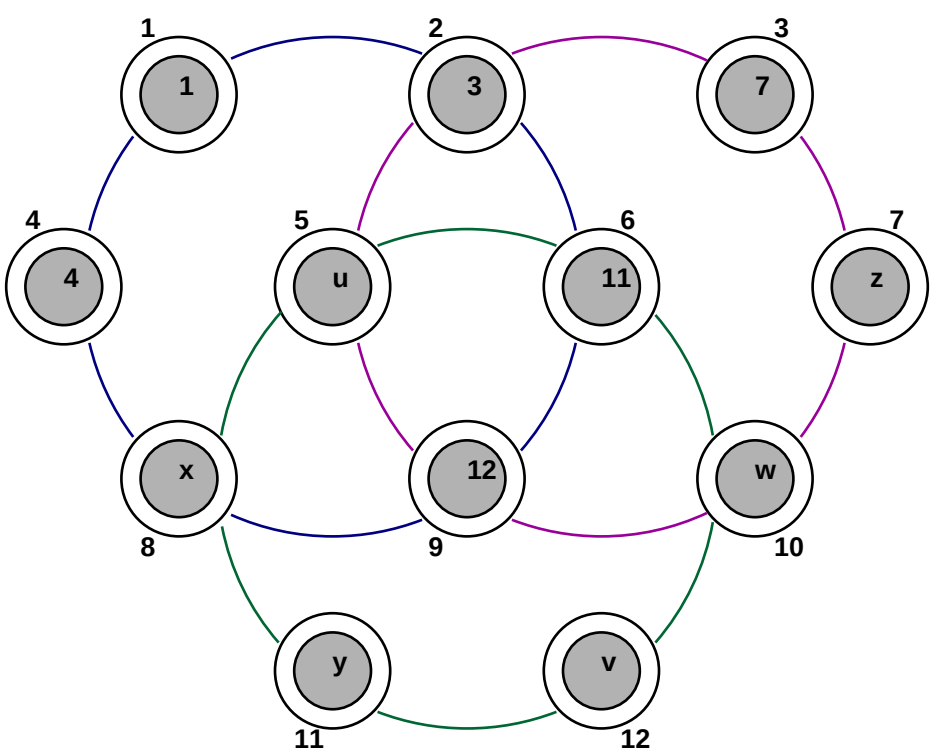

1
2
3
1
3
7
4
5
6
7
w
4
z
v
11
12
8
9
10
y
u
11
12
x

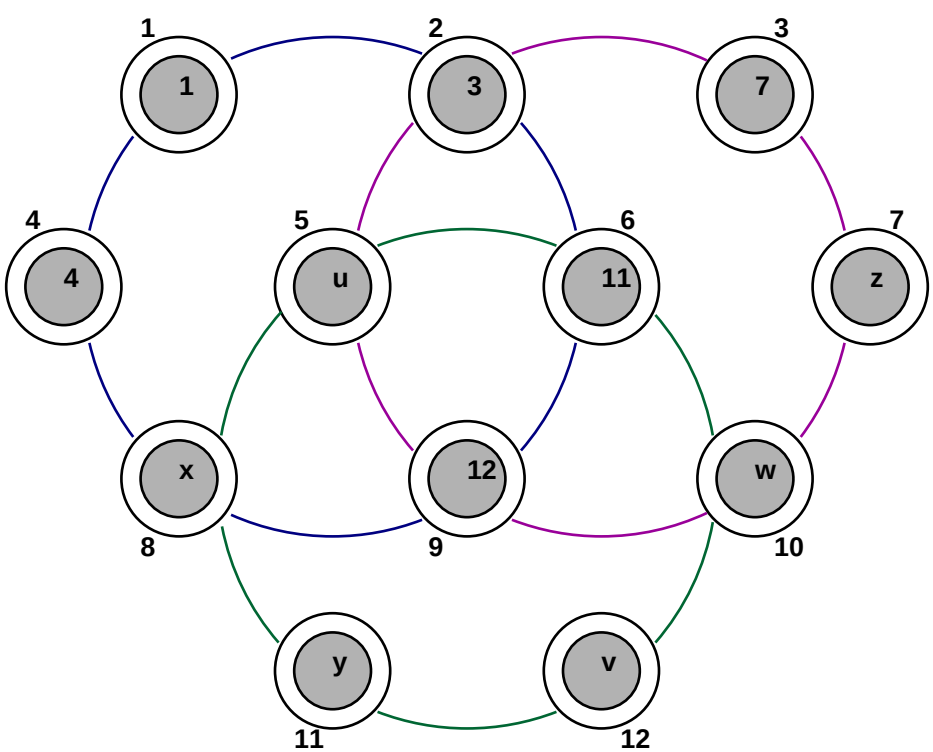

1
2
3
1
3
7
4
5
6
7
w
4
z
11
v
12
8
9
10
u
y
11
x
12

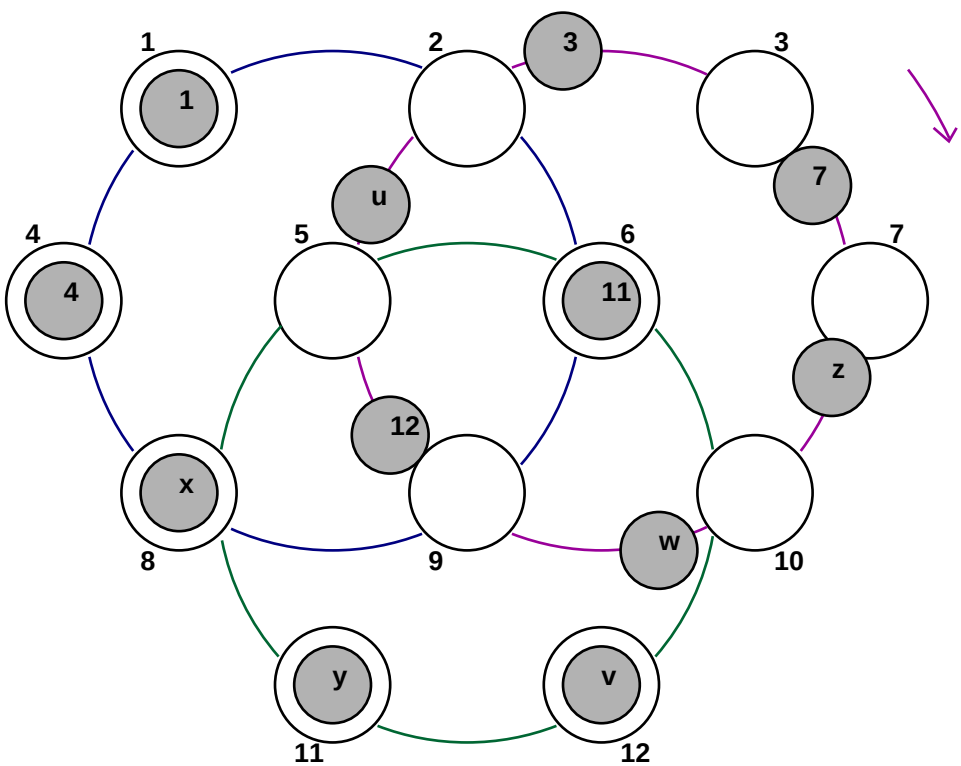

1
2
3
1
3
7
4
5
6
7
4
11
w
z
u
12
v
8
9
10
x
y
11
12

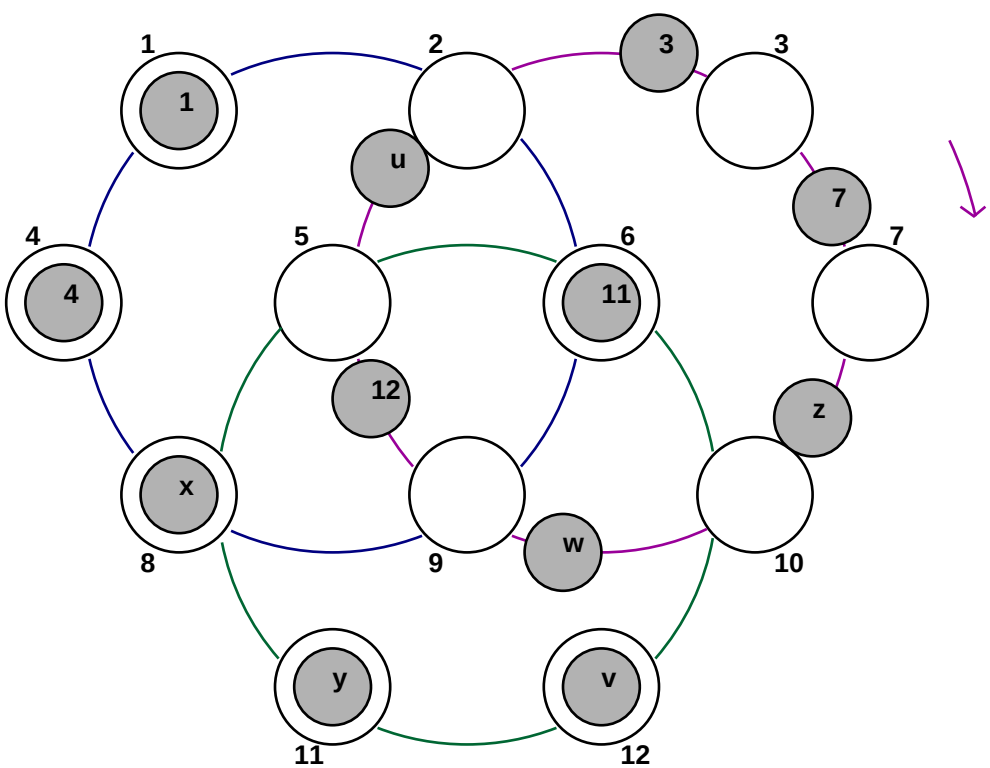

1
2
3
1
3
7
4
5
11
6
7
4
z
w
u
12
8
9
10
v
x
11
y
12

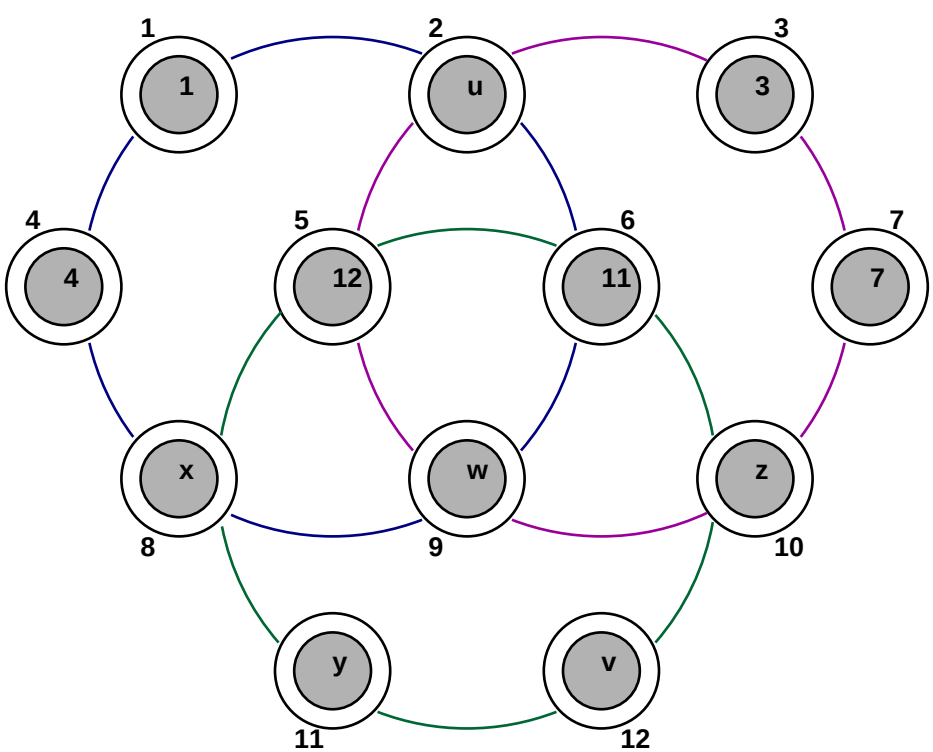

1
2
3
1
3
7
4
5
11
6
7
4
z
u
w
12
8
9
10
x
v
11
y
12

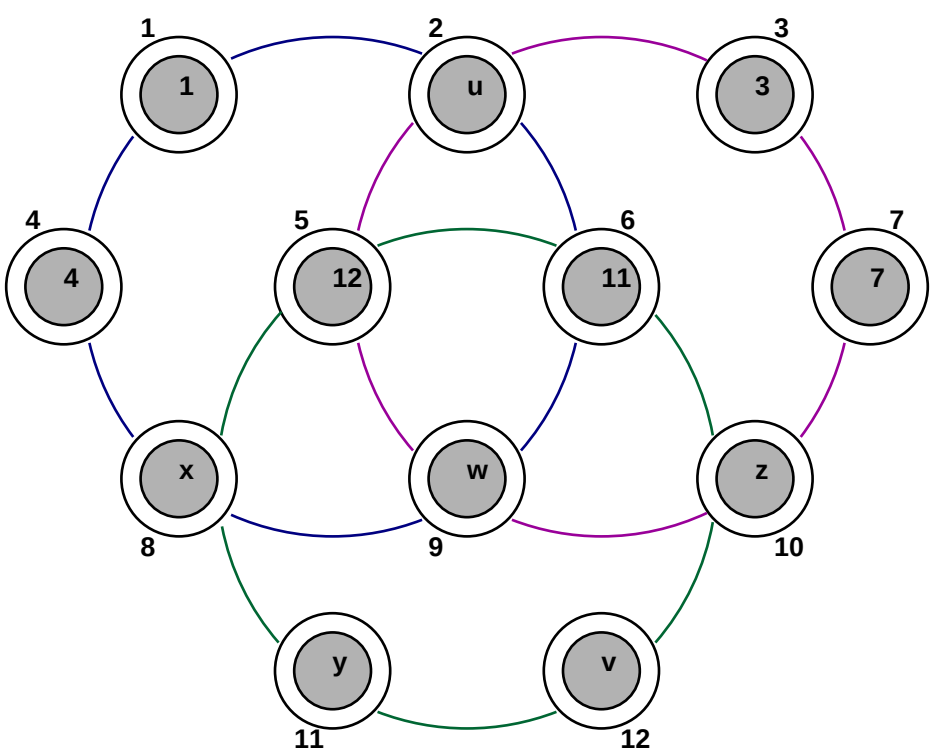

1
2
3
1
3
7
4
5
6
7
4
u
11
z
x
12
w
8
9
10
y
v
11
12

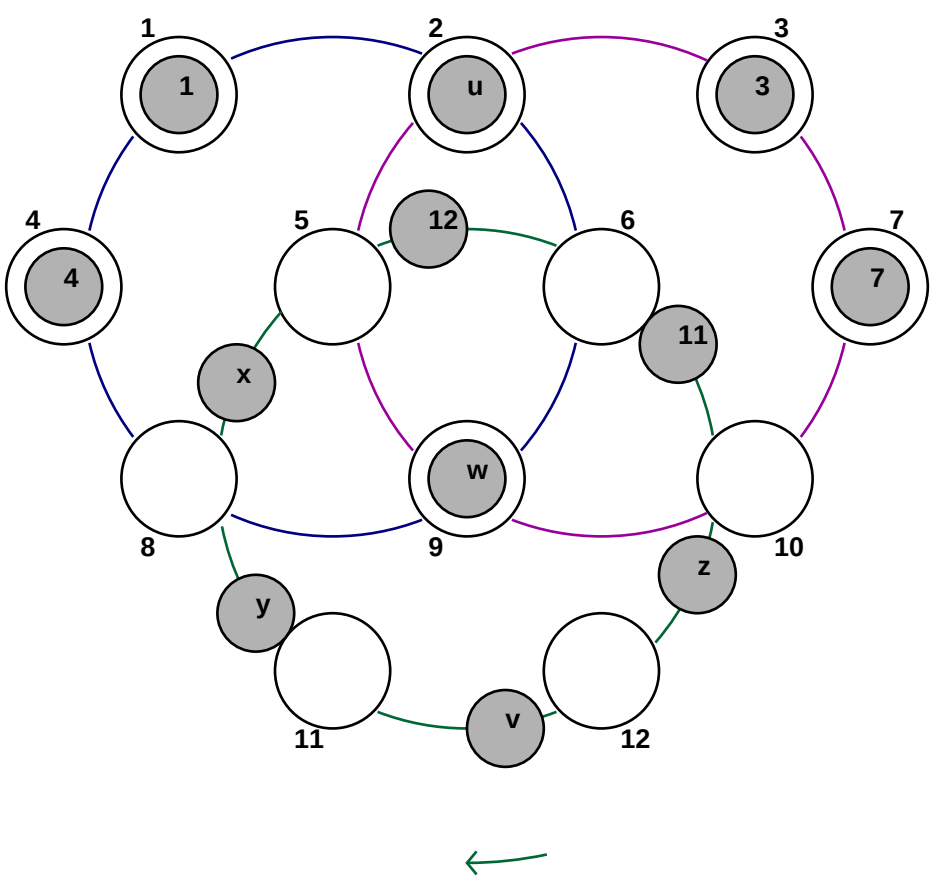

1
2
3
1
3
7
4
5
6
7
4
u
11
z
x
12
w
8
9
10
y
v
11
12

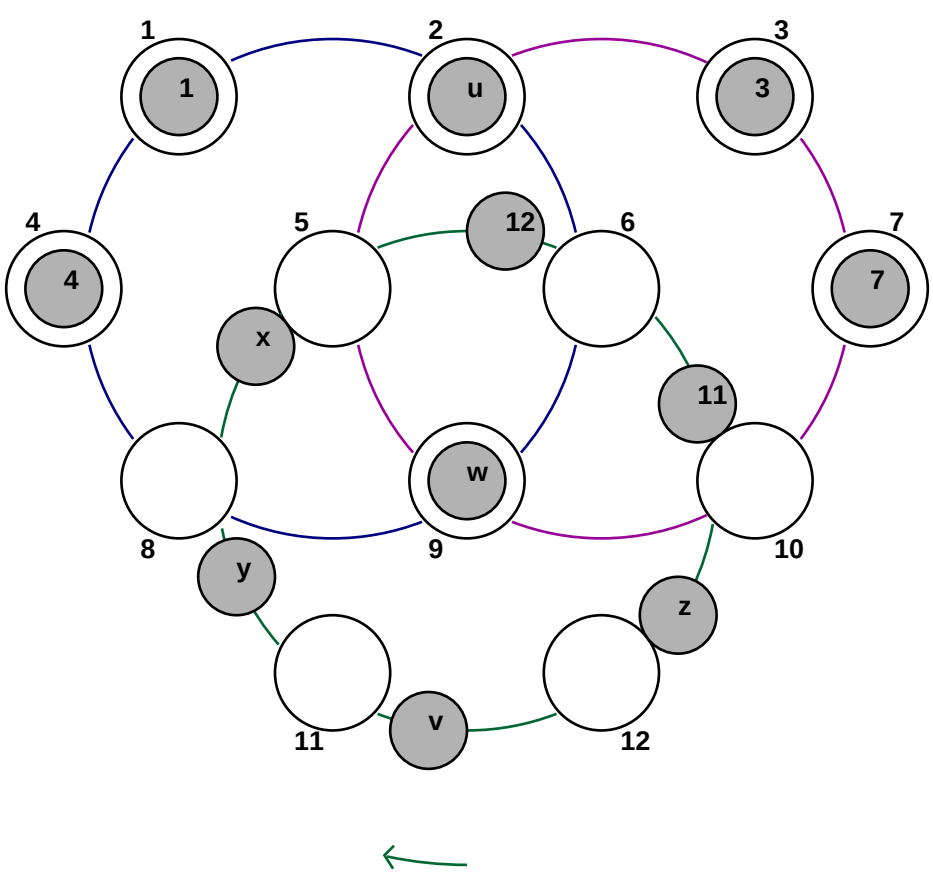

1
1
2
3
3
7
u
4
5
6
7
4
11
z
12
x
8
9
w
10
y
v
11
12

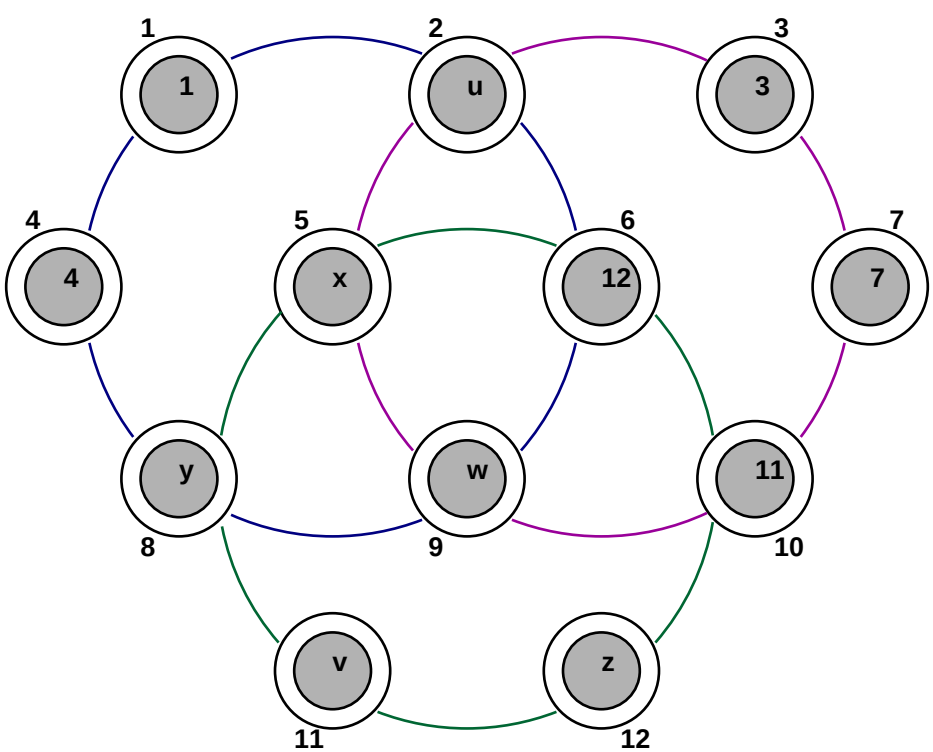

1
2
3
3
1
u
7
4
5
6
7
4
11
12
z
x
8
9
w
10
y
v
11
12

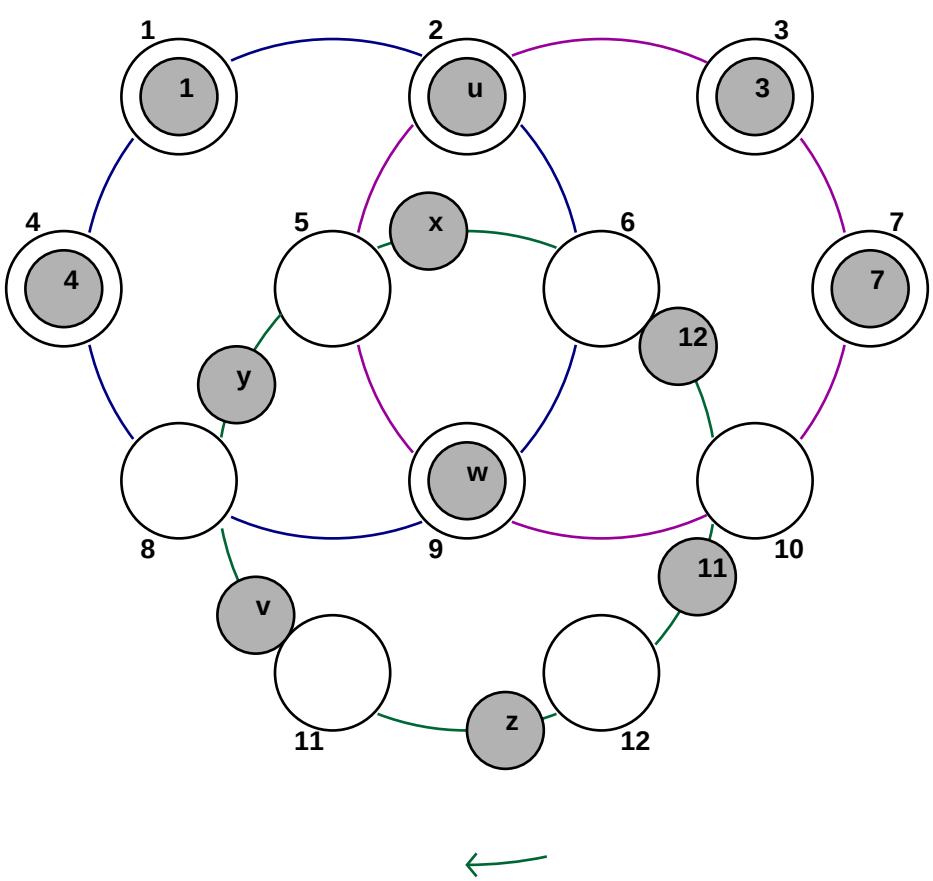

1
2
3
1
u
3
4
5
6
7
4
12
11
7
x
w
z
8
9
10
y
v
11
12

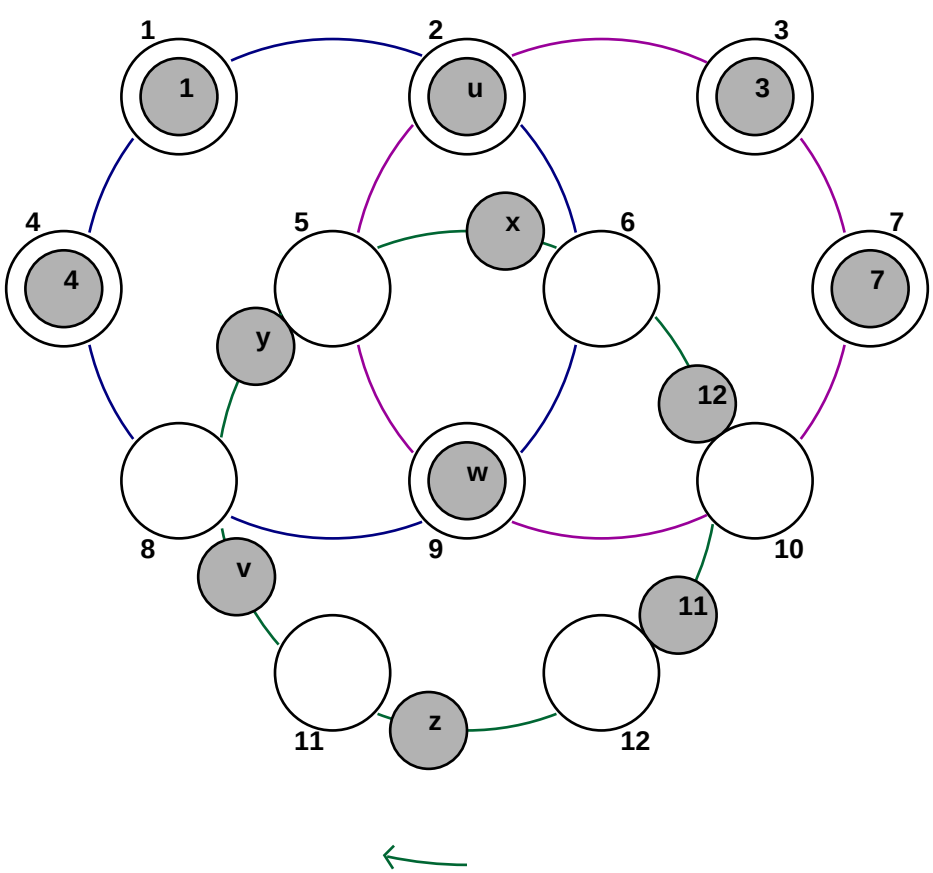

1
2
3
1
u
3
4
5
6
7
4
12
11
7
x
w
z
8
9
10
y
v
11
12

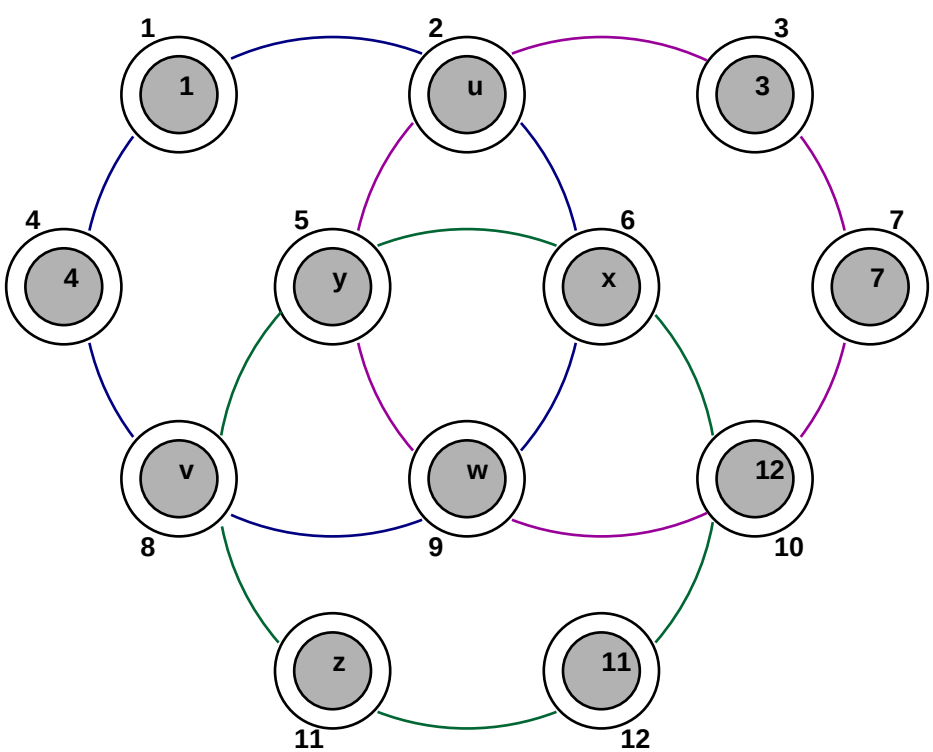

1
2
3
1
u
3
4
5
12
6
7
4
7
11
x
w
8
9
10
z
y
11
v
12

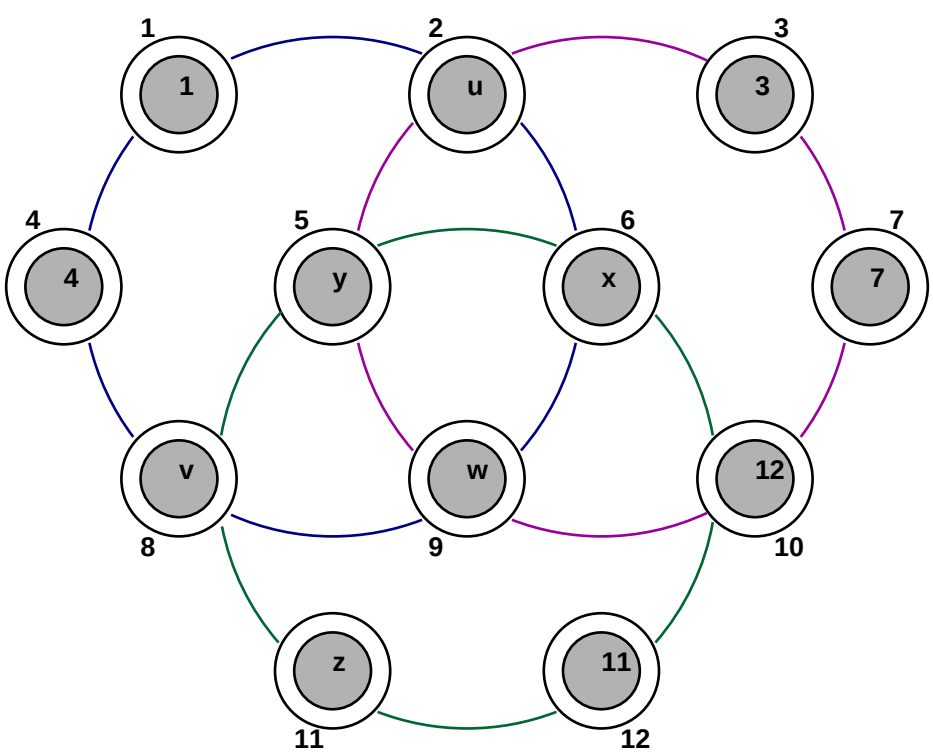

1
2
3
1
u
3
4
5
12
6
7
4
7
x
11
w
8
9
10
y
z
11
v
12

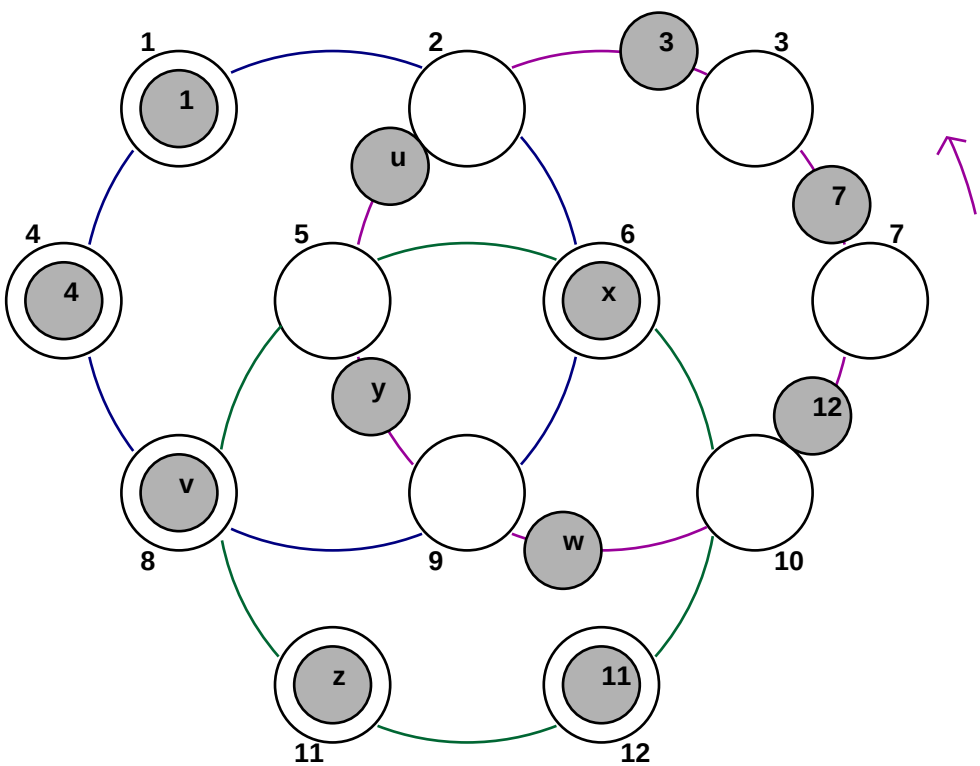

1
2
3
1
u
3
4
5
6
7
4
x
12
7
y
w
11
8
9
10
v
z
11
12

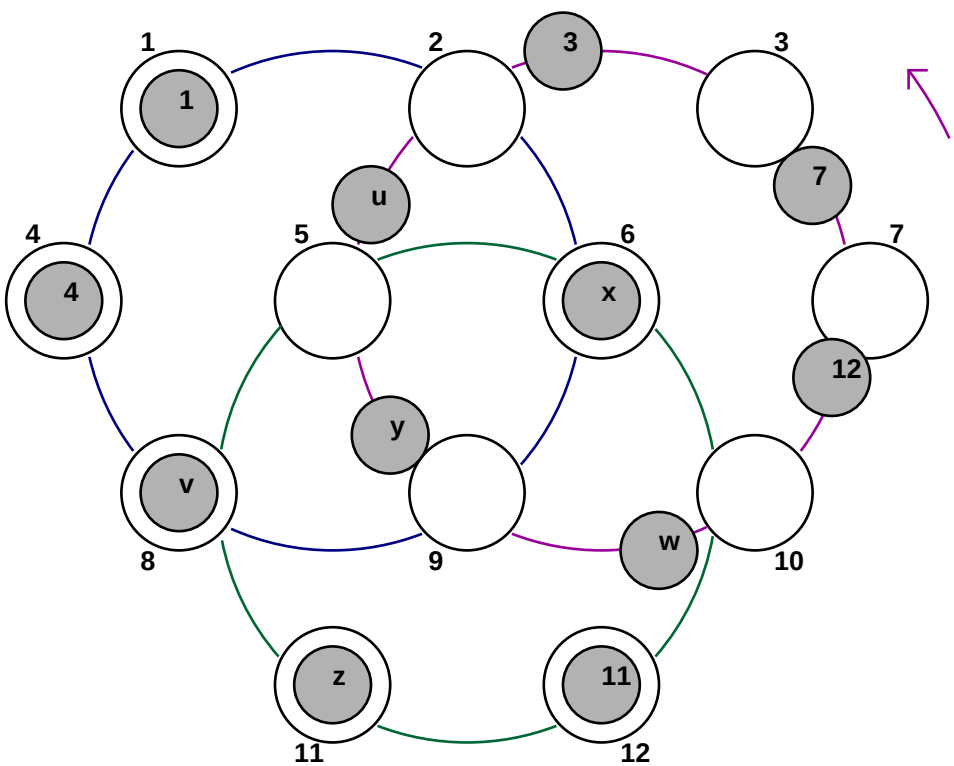

1
2
3
1
u
3
4
5
6
7
x
4
7
12
y
w
8
9
10
11
v
11
z
12

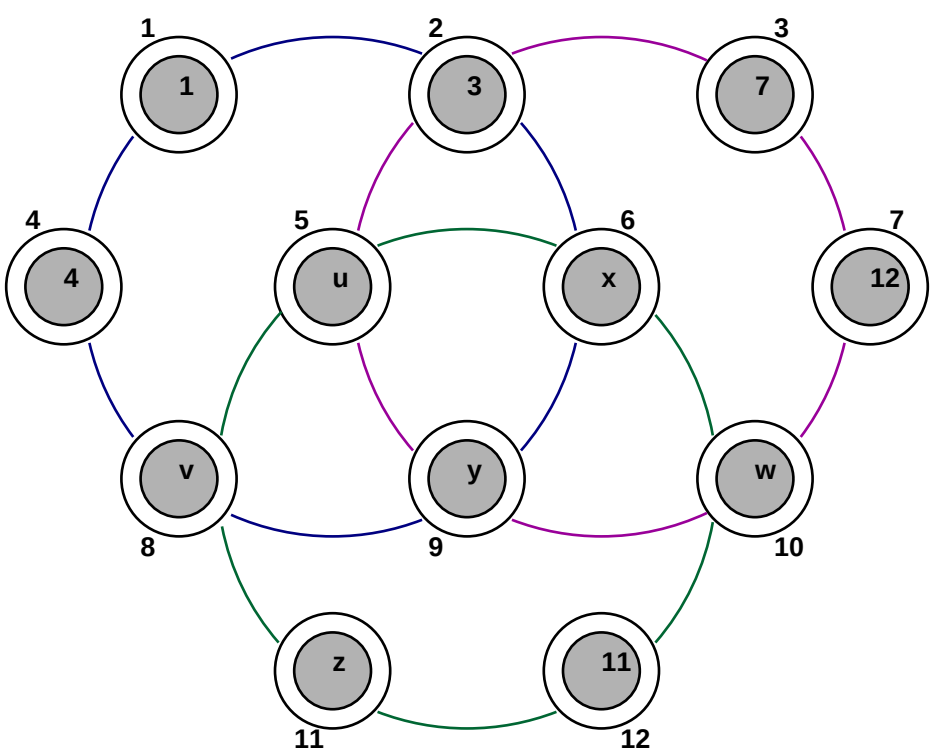

1
2
3
1
u
3
4
5
6
7
x
4
7
y
12
w
8
9
10
v
11
z
11
12

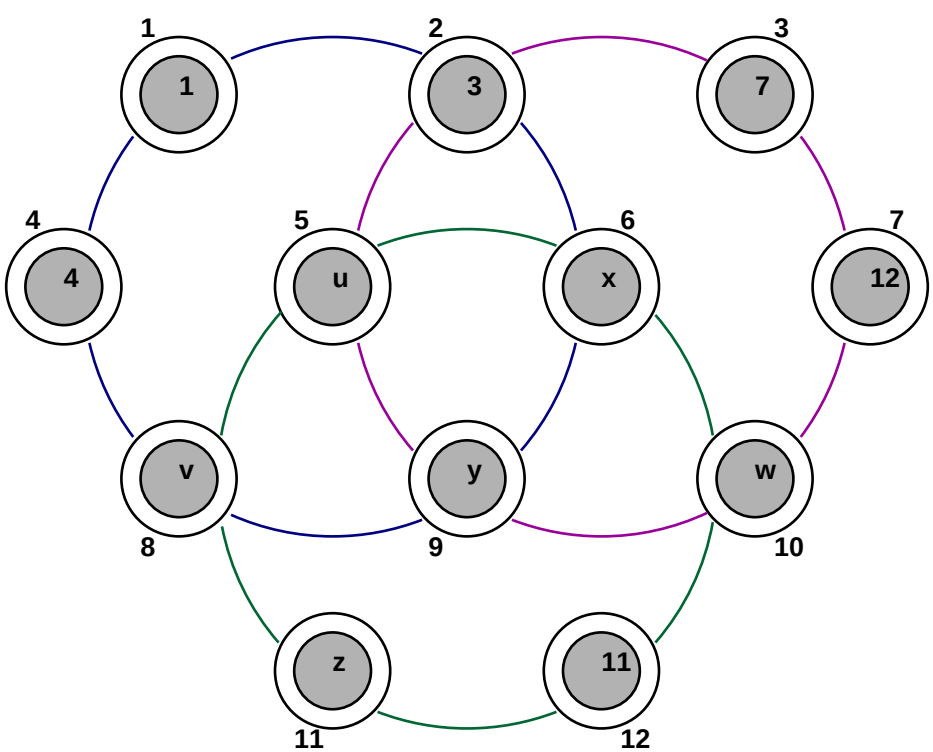

1
2
3
1
u
3
4
5
6
7
4
y
x
7
v
w
12
8
9
10
z
11
11
12

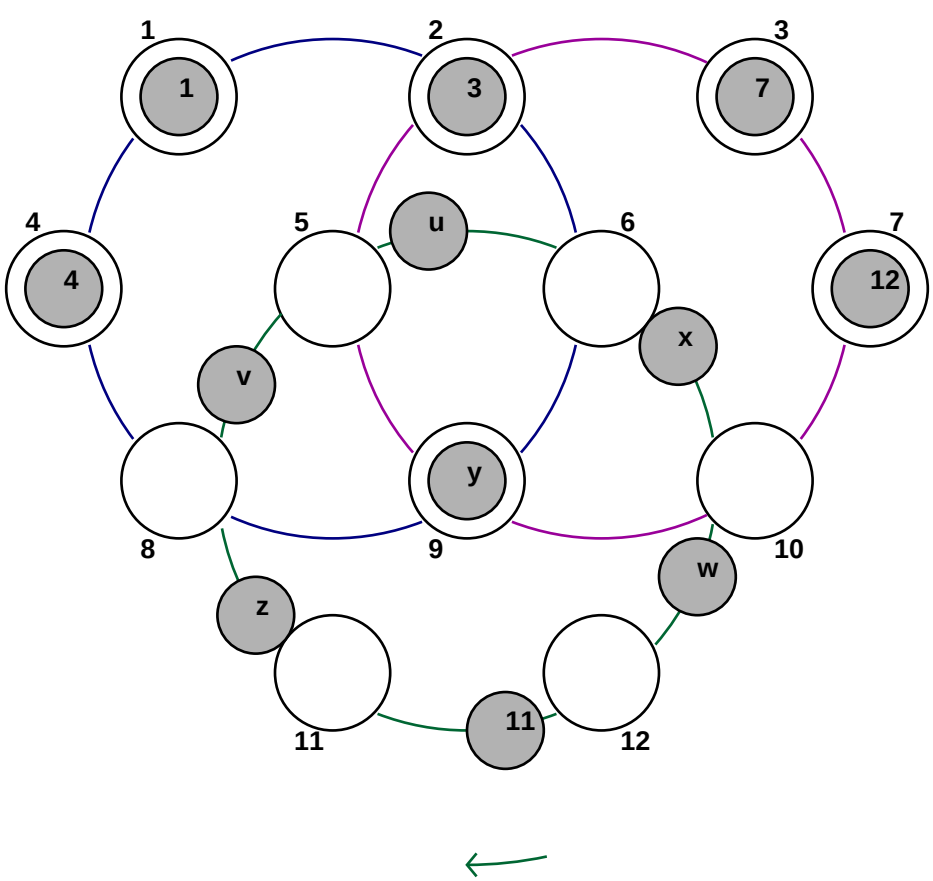

1
2
3
1
u
3
4
5
6
7
4
y
x
7
v
w
12
8
9
10
z
11
11
12

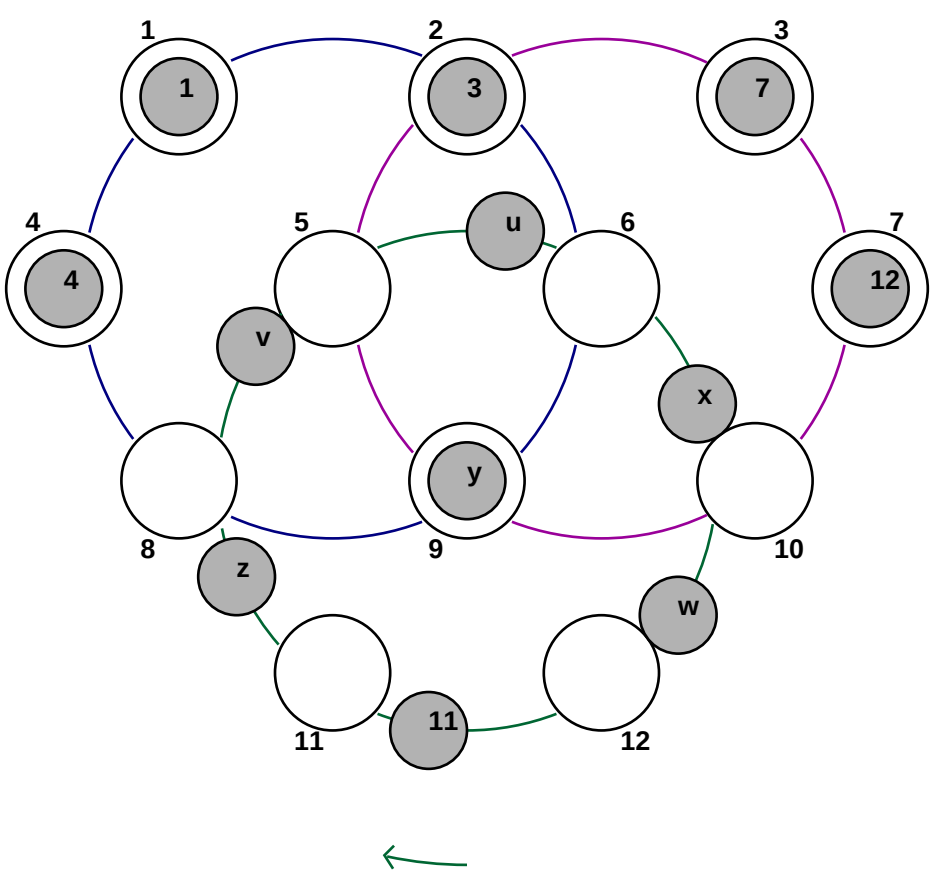

1
2
3
3
1
u
7
4
5
6
7
4
x
y
12
v
8
9
w
10
z
11
11
12

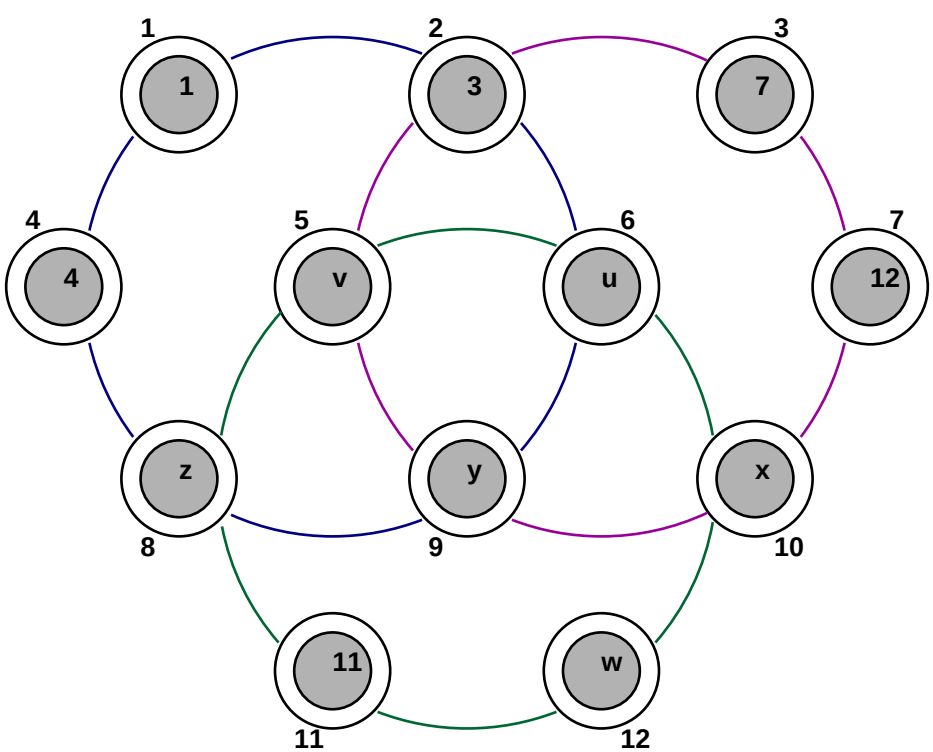

1
1
2
3
3
7
u
4
4
5
6
x
7
12
y
v
8
9
w
10
z
11
11
12

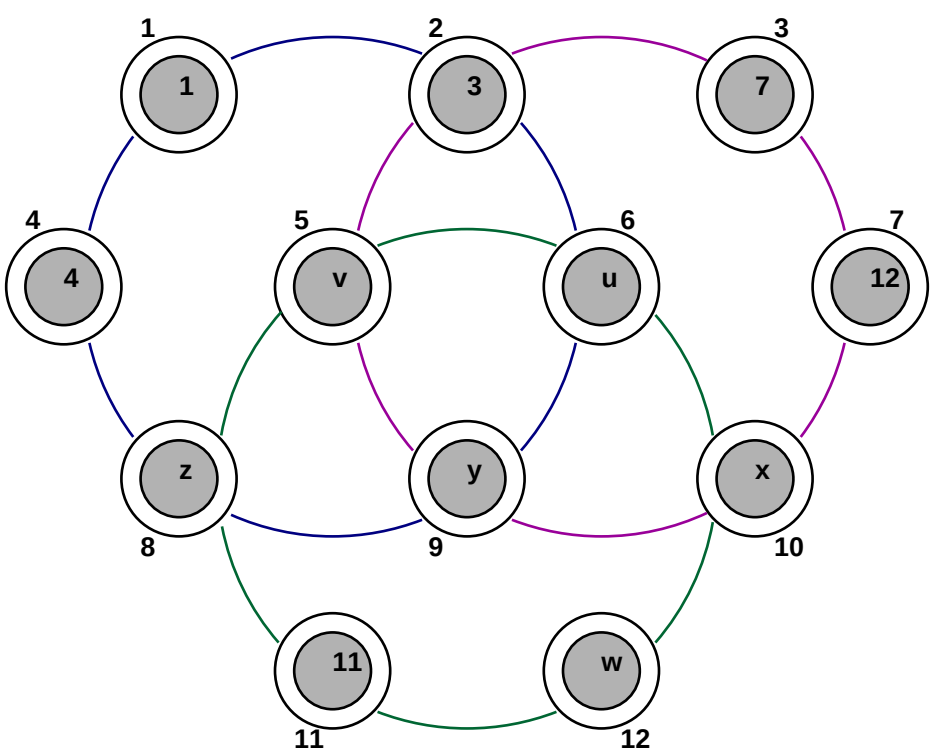

1
2
3
1
3
7
4
5
6
7
4
u
x
12
v
y
w
8
9
10
z
11
11
12

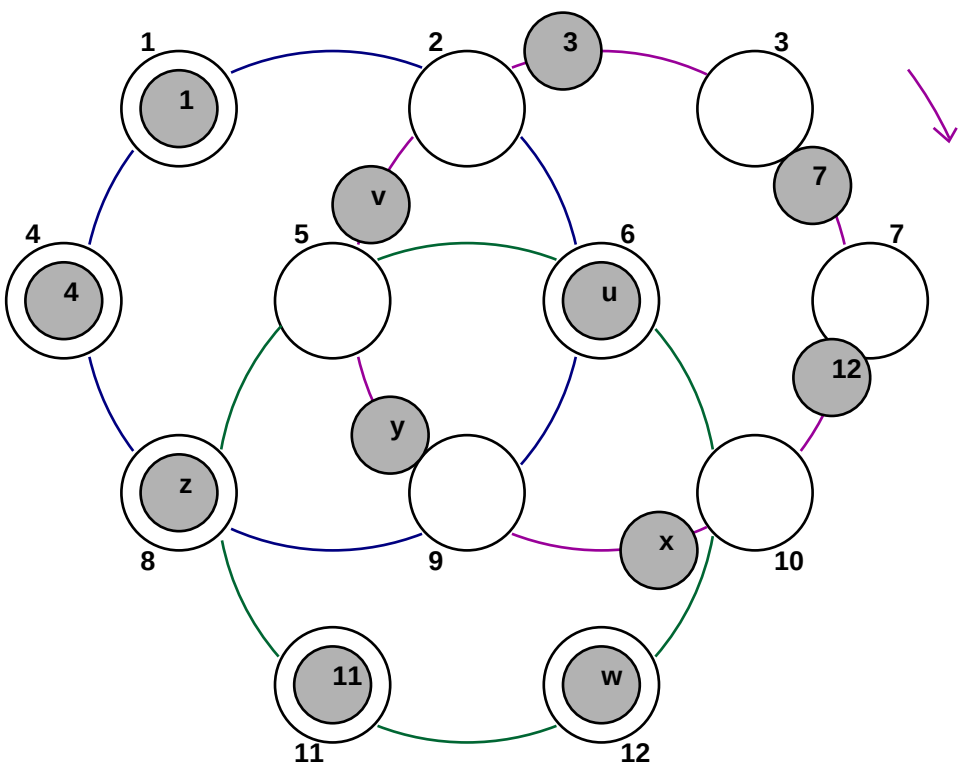

1
2
3
1
3
7
4
5
6
7
4
u
x
12
v
y
w
8
9
10
z
11
11
12

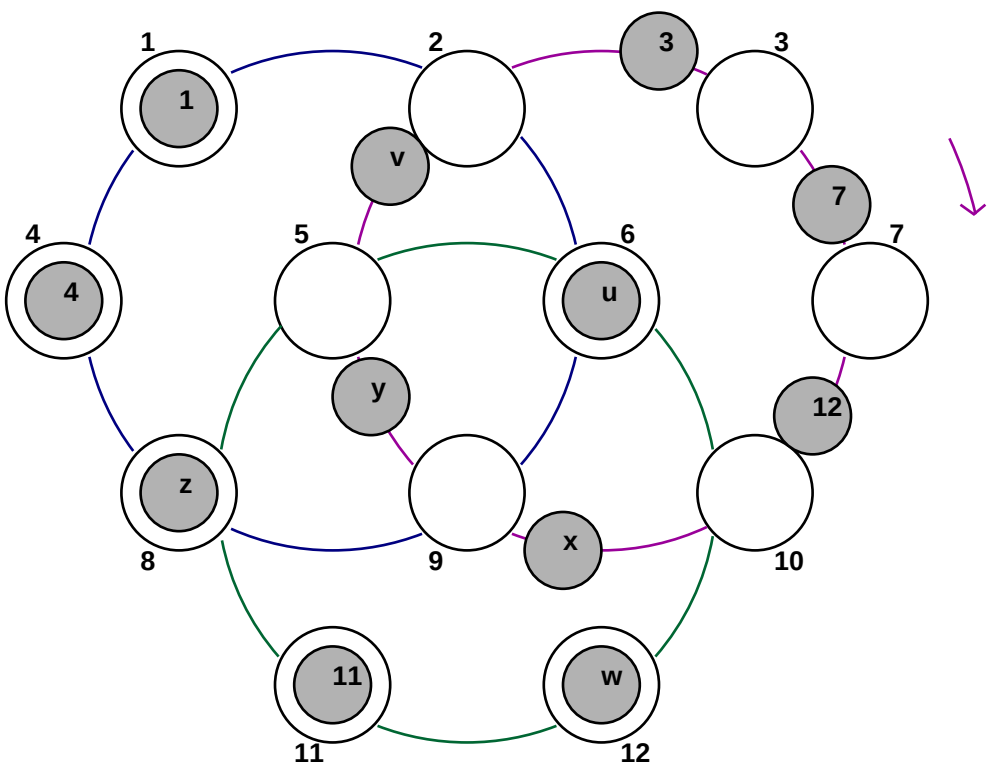

1
2
3
1
3
7
4
5
u
6
7
4
12
x
v
y
8
9
10
w
z
11
11
12

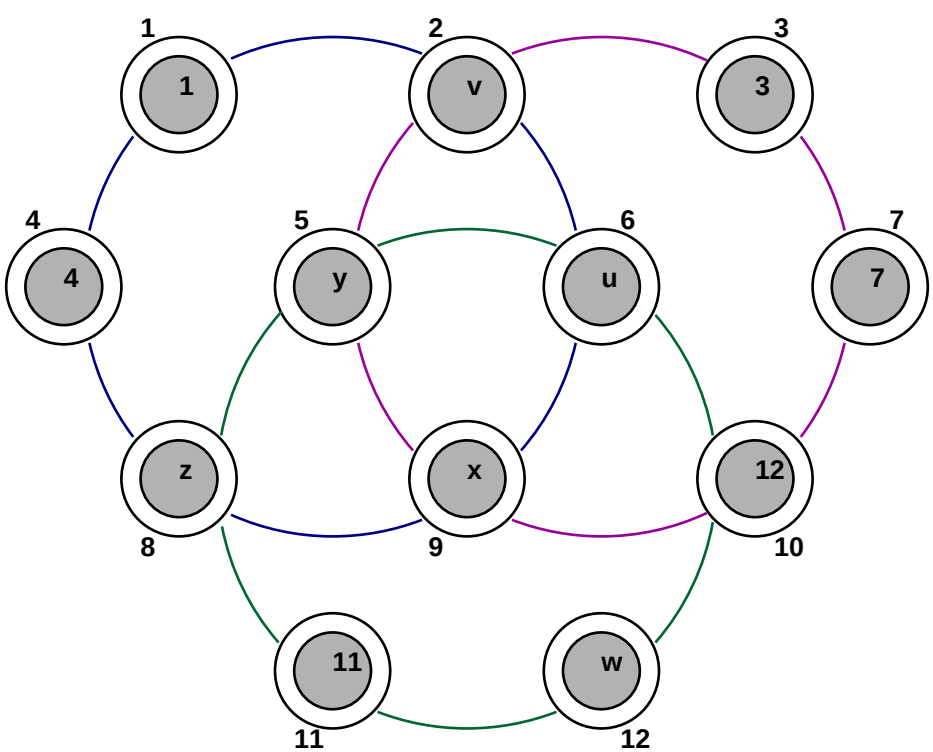

1
2
3
1
3
7
4
5
6
7
u
4
12
v
x
y
8
9
10
z
w
11
11
12


1
2
3
1
3
7
4
5
6
7
4
v
u
12
z
y
x
8
9
10
11
w
11
12

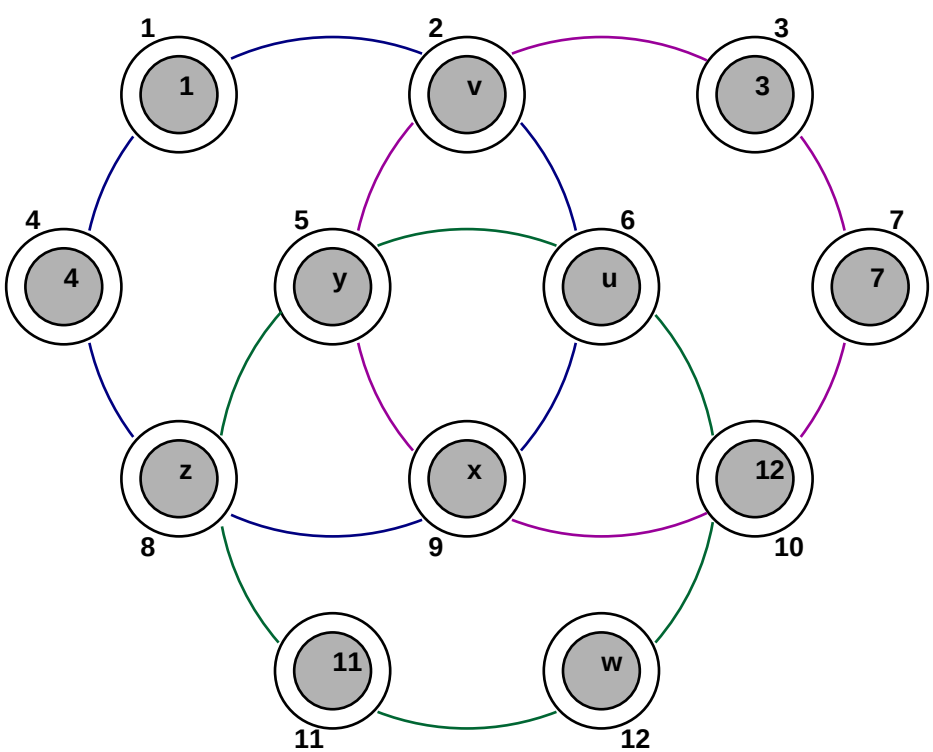

1
2
3
1
3
7
4
5
6
7
4
v
u
12
z
y
x
8
9
10
11
w
11
12

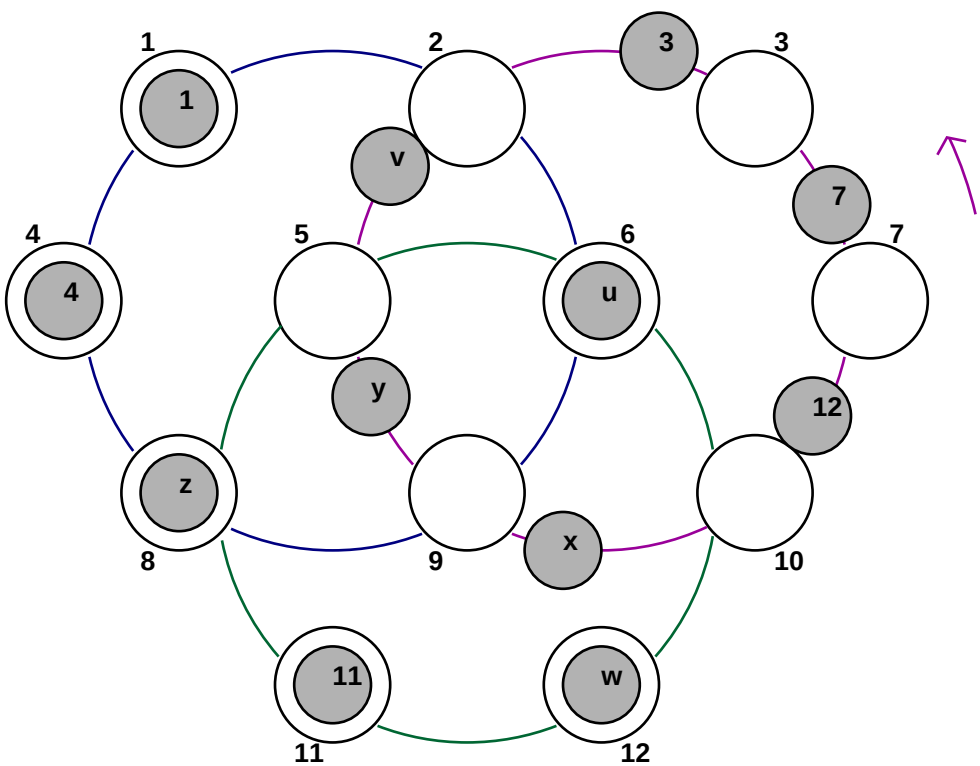

1
1
2
3
3
7
v
4
4
5
6
u
7
12
y
z
8
9
x
10
11
11
w
12

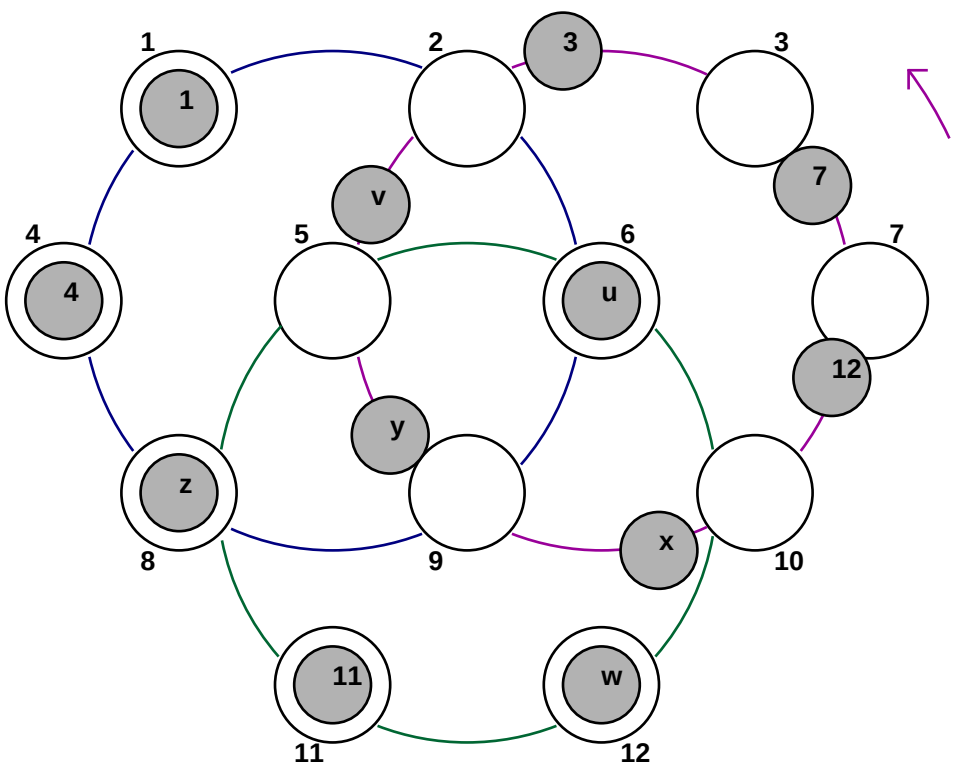

1
1
2
3
3
v
7
4
4
5
6
7
u
y
12
z
8
9
x
10
11
11
w
12

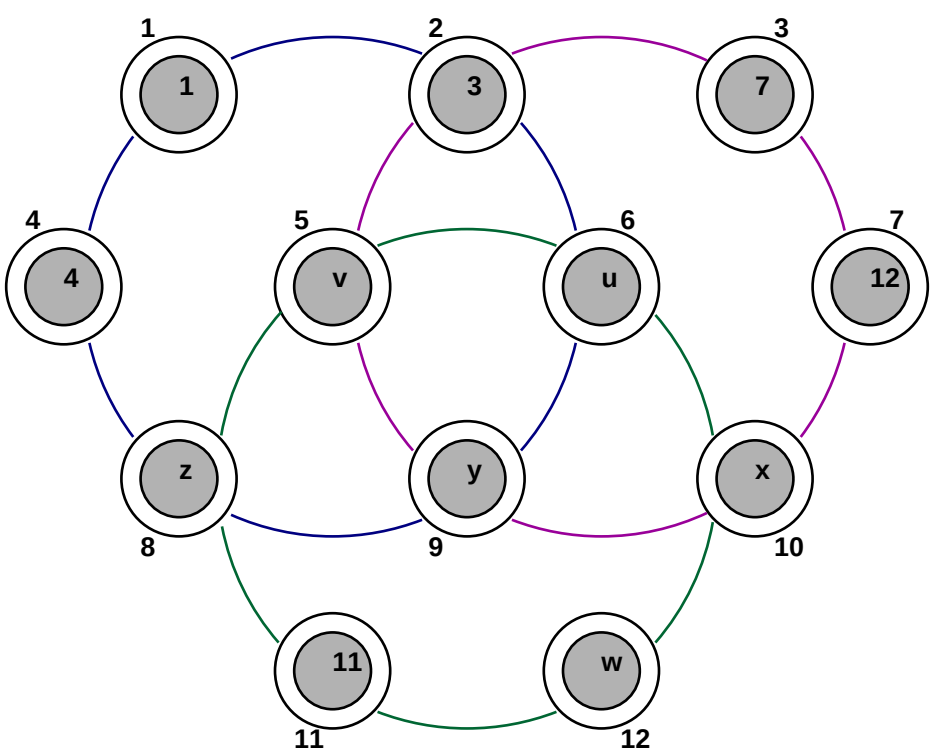

1
2
3
1
v
3
4
5
6
7
4
y
u
7
z
x
12
8
9
10
11
w
11
12

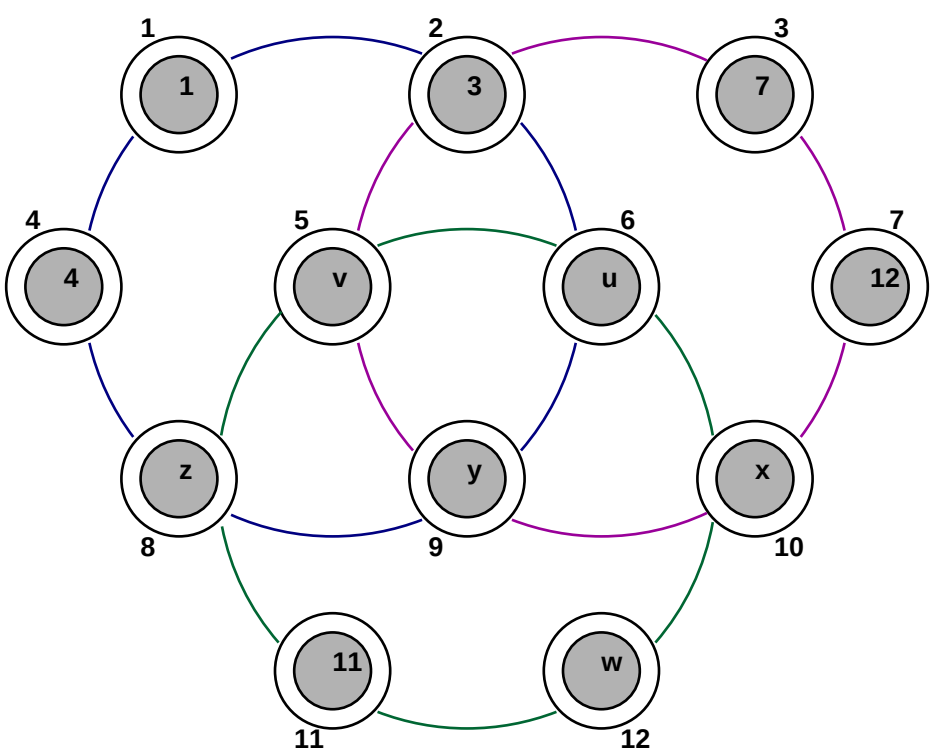
Number 12 can be moved into position 12 while keeping numbers 1, 3, 4, 7, and 11 in position by the following moves.

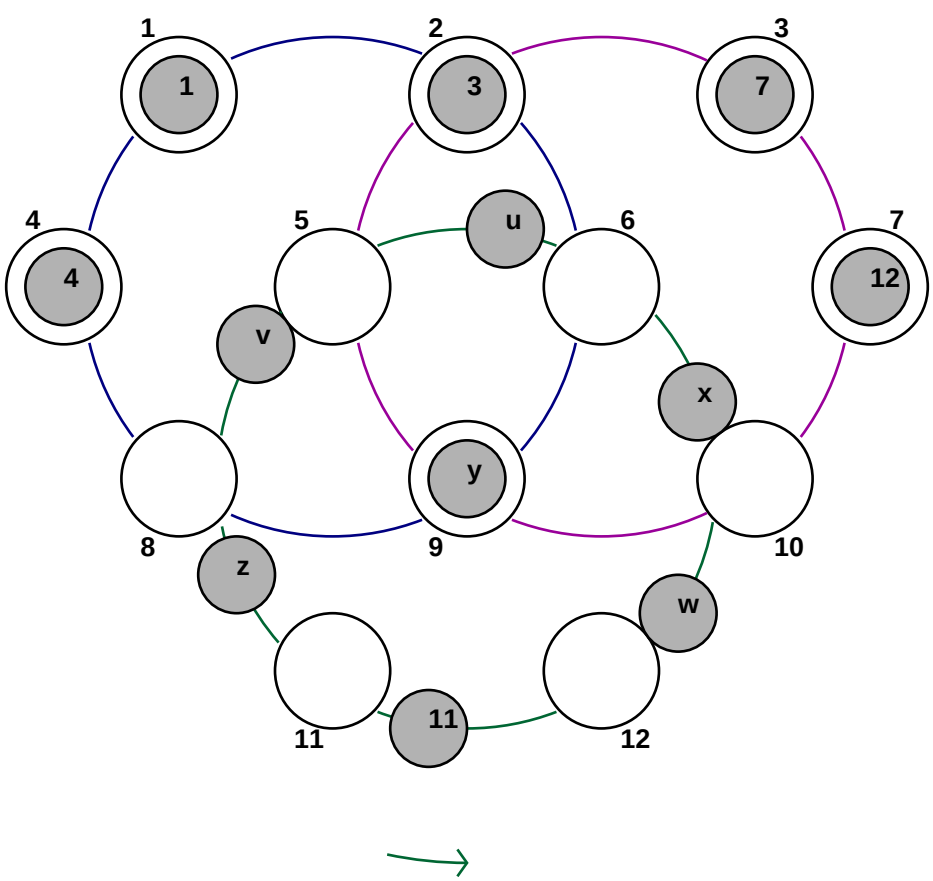

1
2
3
1
v
3
4
5
6
7
4
y
u
7
z
x
12
8
9
10
11
w
11
12

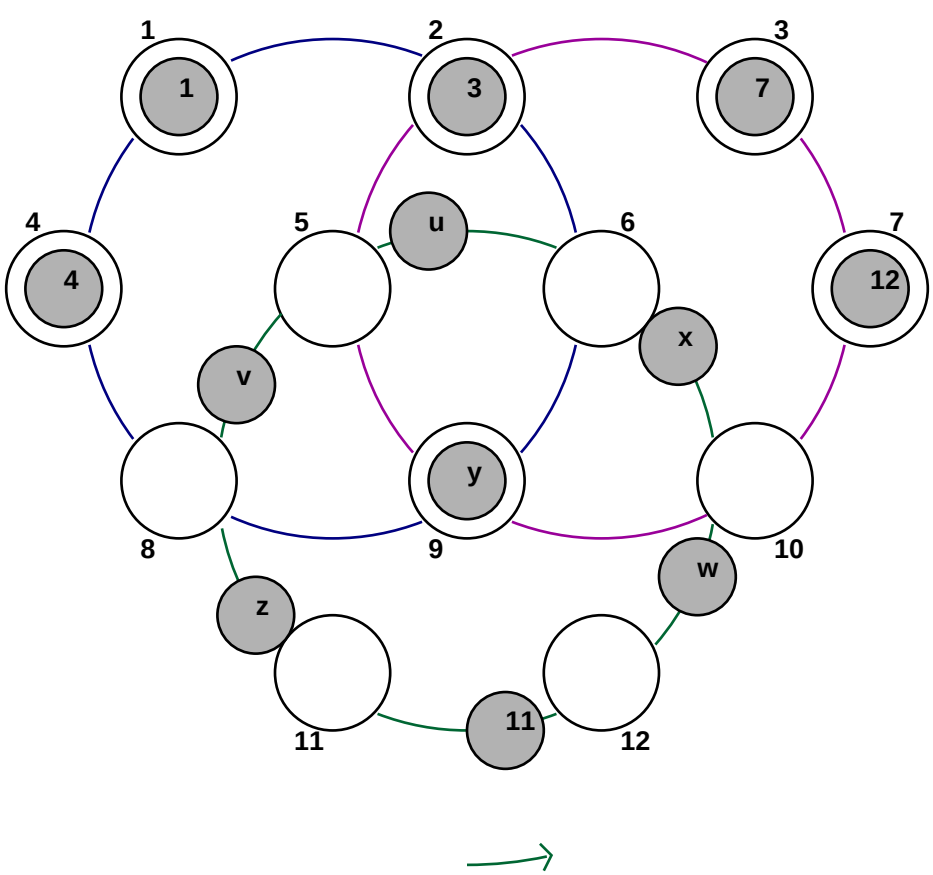

1
1
2
3
3
v
7
4
4
5
6
7
u
y
12
z
8
9
x
10
11
11
w
12

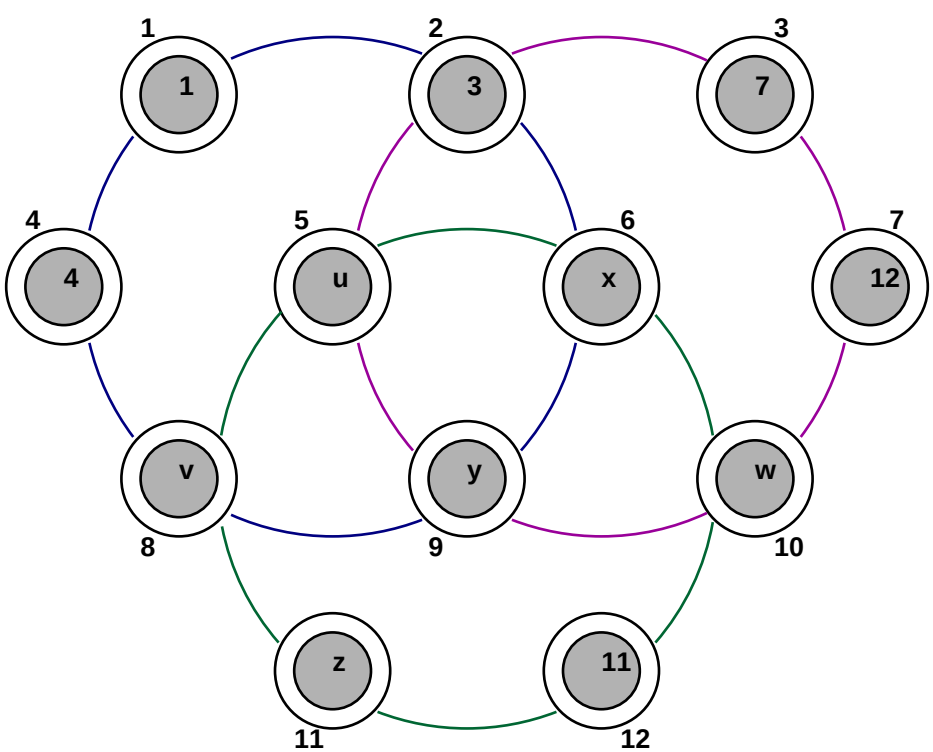

1
1
2
3
3
7
v
4
4
5
6
u
7
12
y
z
8
9
x
10
11
11
w
12

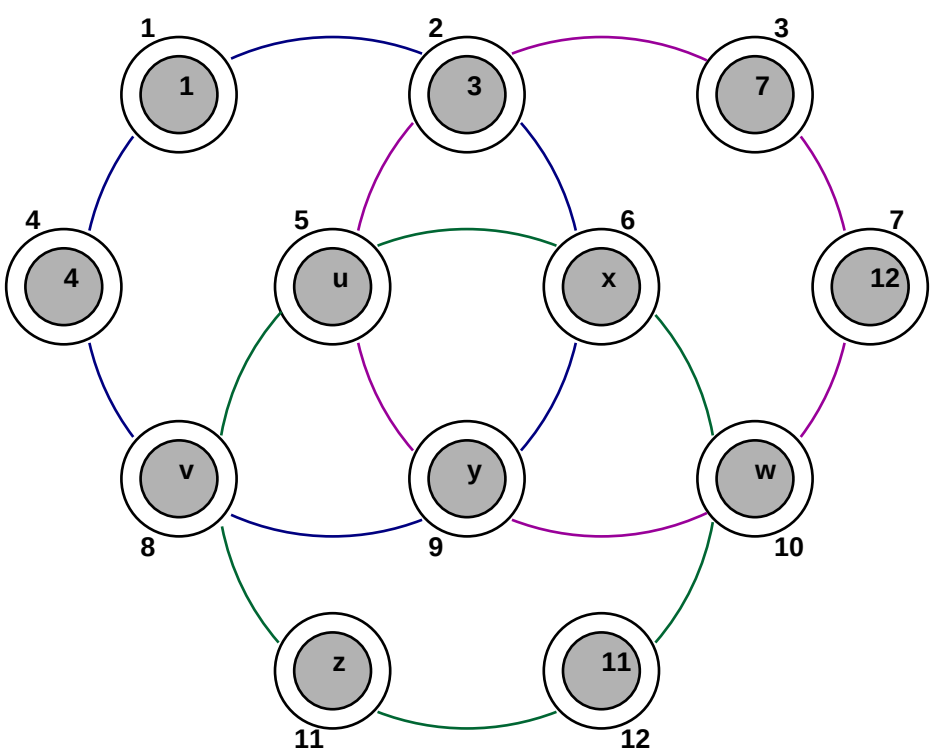

1
2
3
1
3
7
4
5
6
7
4
v
u
12
z
y
x
8
9
10
11
w
11
12

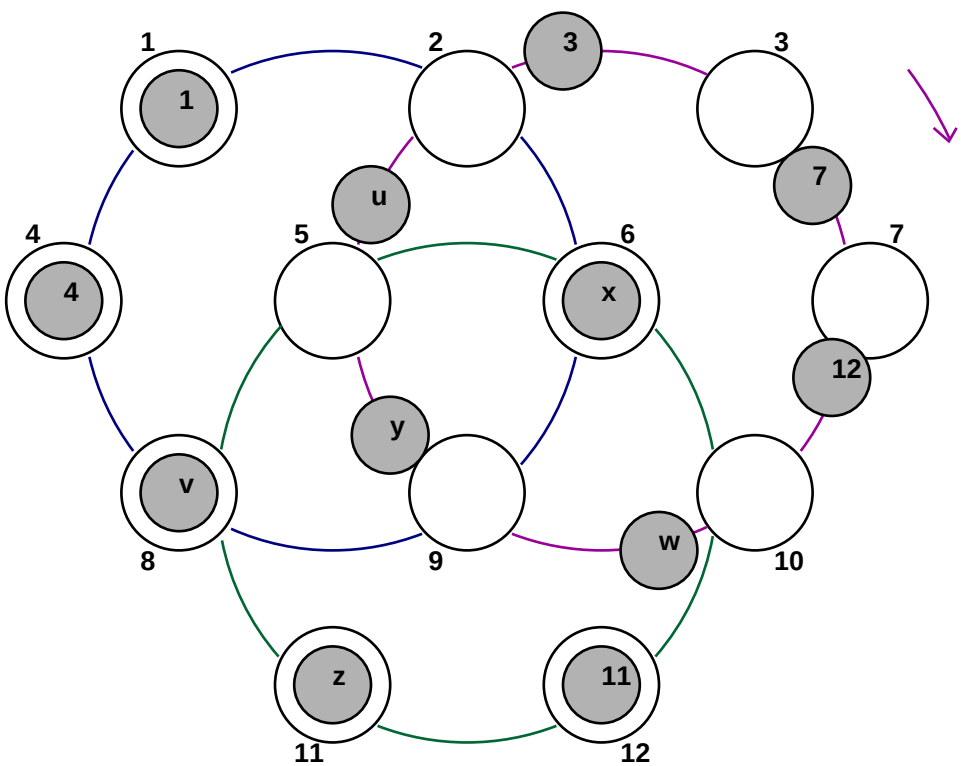

1
2
3
1
3
7
4
5
6
7
4
v
u
12
z
y
x
8
9
10
11
w
11
12

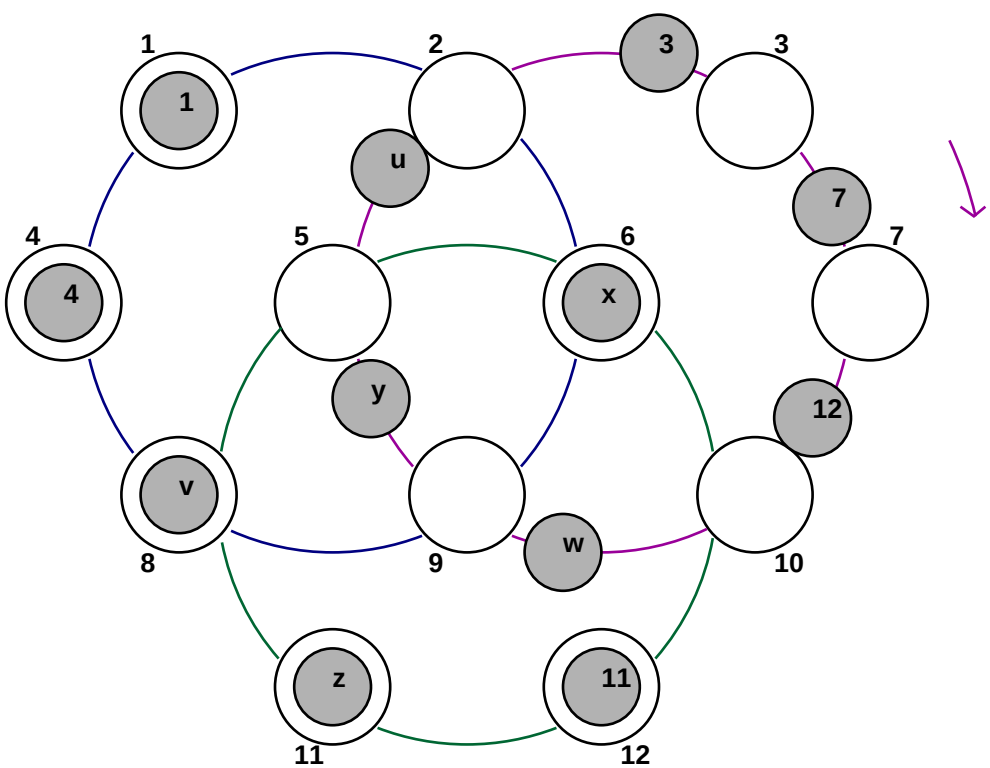

1
2
3
1
3
7
4
5
6
7
u
4
12
v
x
y
8
9
10
z
w
11
11
12

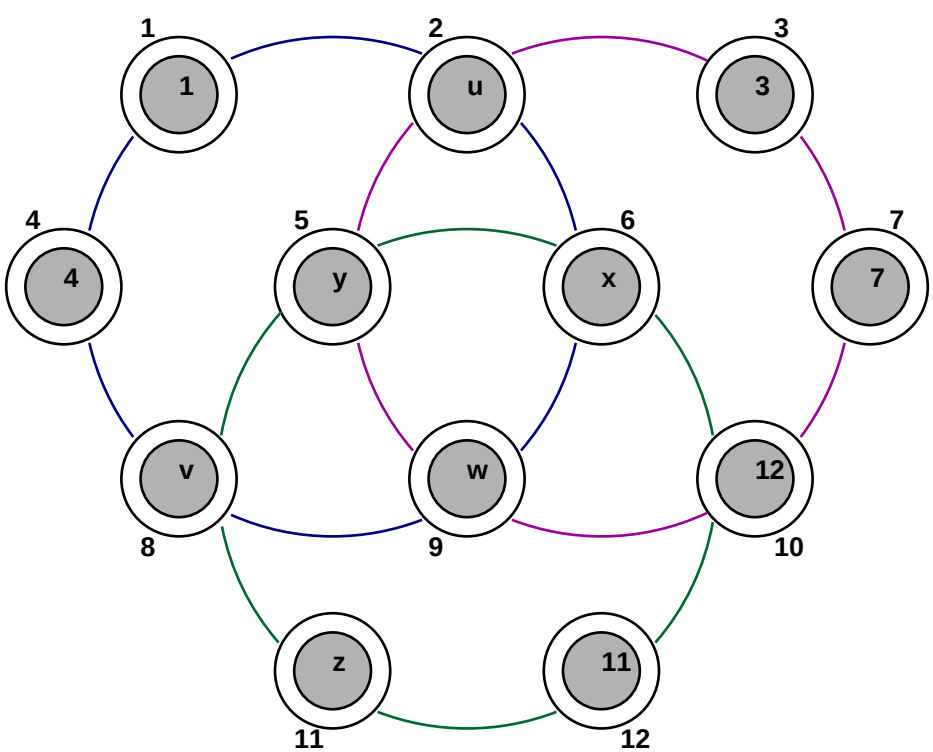

1
2
3
1
3
7
4
5
6
7
u
4
12
x
v
y
8
9
10
w
z
11
12
11

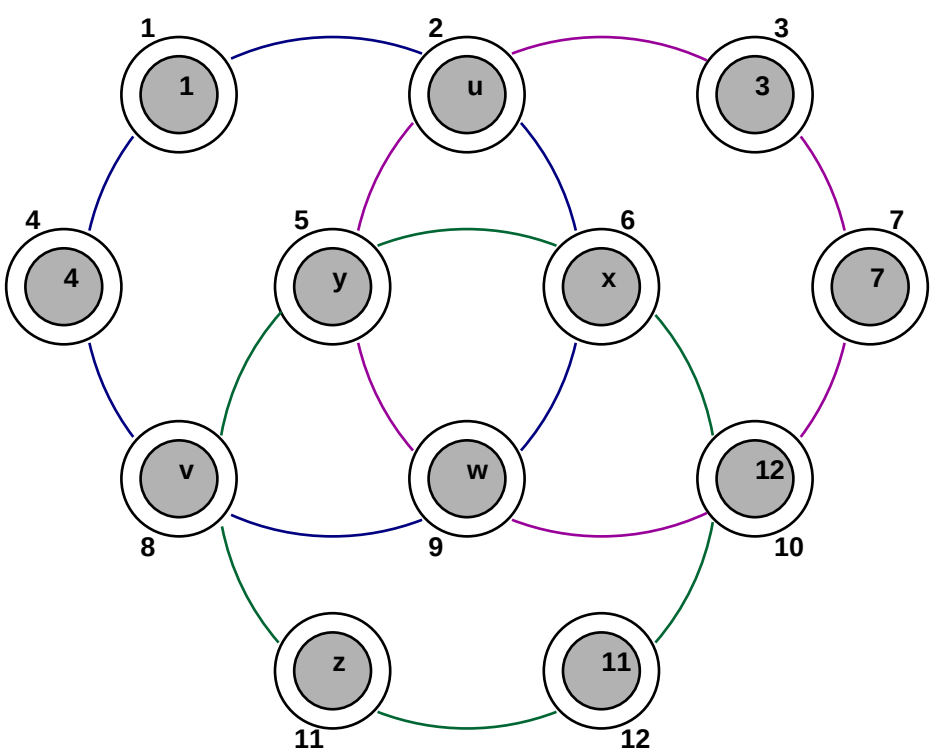

1
2
3
1
3
7
4
5
6
7
4
u
x
12
v
y
w
8
9
10
z
11
11
12

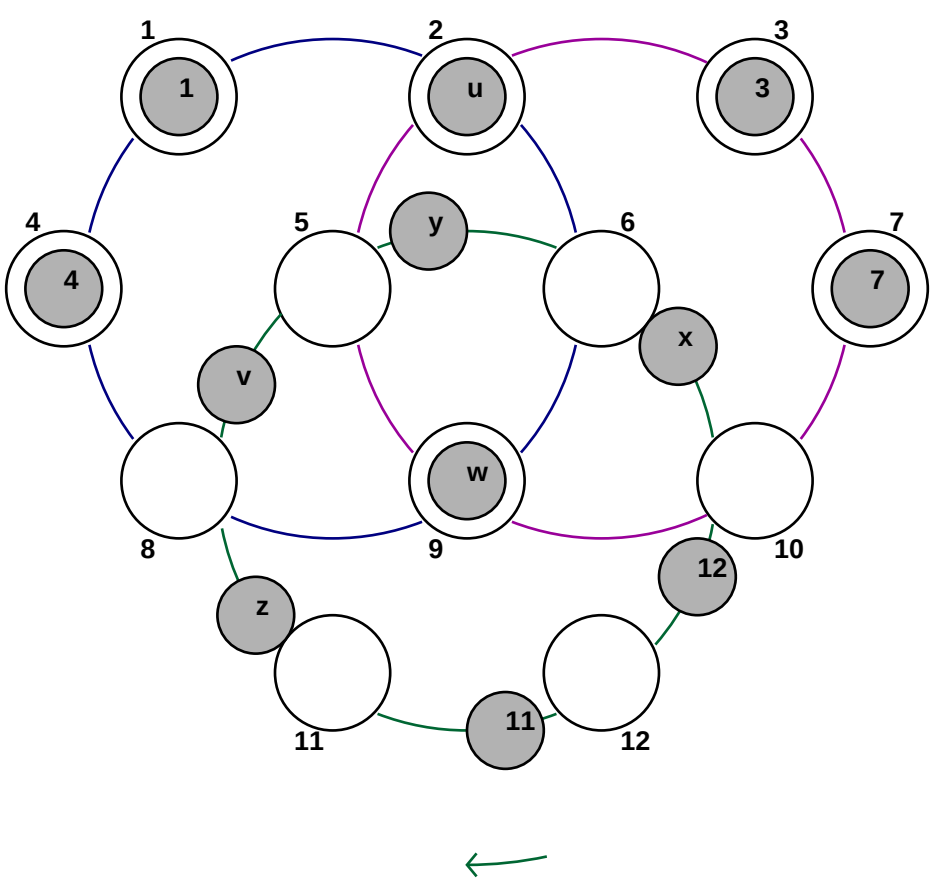

1
2
3
1
3
7
4
5
6
7
4
u
x
12
v
y
w
8
9
10
z
11
11
12

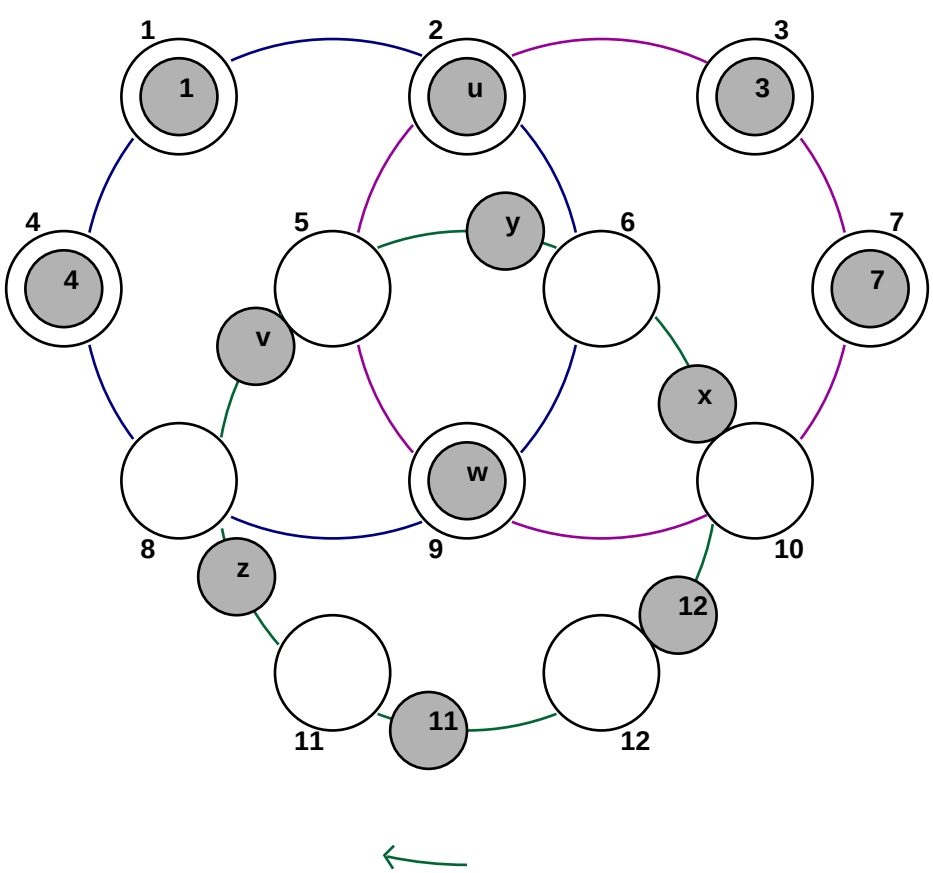

1
1
2
3
3
7
u
4
4
5
6
x
7
12
y
v
8
9
w
10
z
11
11
12

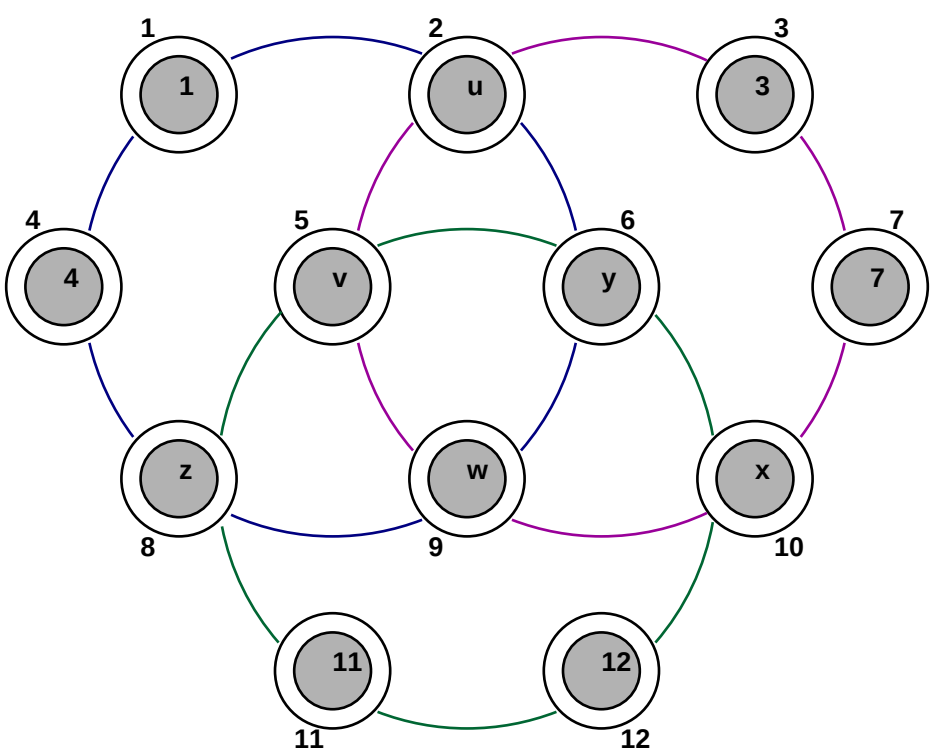

1
1
2
3
3
u
7
4
4
5
6
7
x
y
12
v
8
9
w
10
z
11
11
12


1
2
3
1
u
3
4
5
6
7
4
y
x
7
v
w
12
8
9
10
z
11
11
12


1
2
3
1
u
3
4
5
6
7
4
y
x
7
v
w
12
8
9
10
z
11
11
12


1
2
3
1
u
3
4
5
y
6
7
4
7
x
v
w
8
9
10
12
z
11
11
12


1
2
3
1
u
3
4
5
6
7
y
4
7
v
x
w
8
9
10
z
12
11
11
12

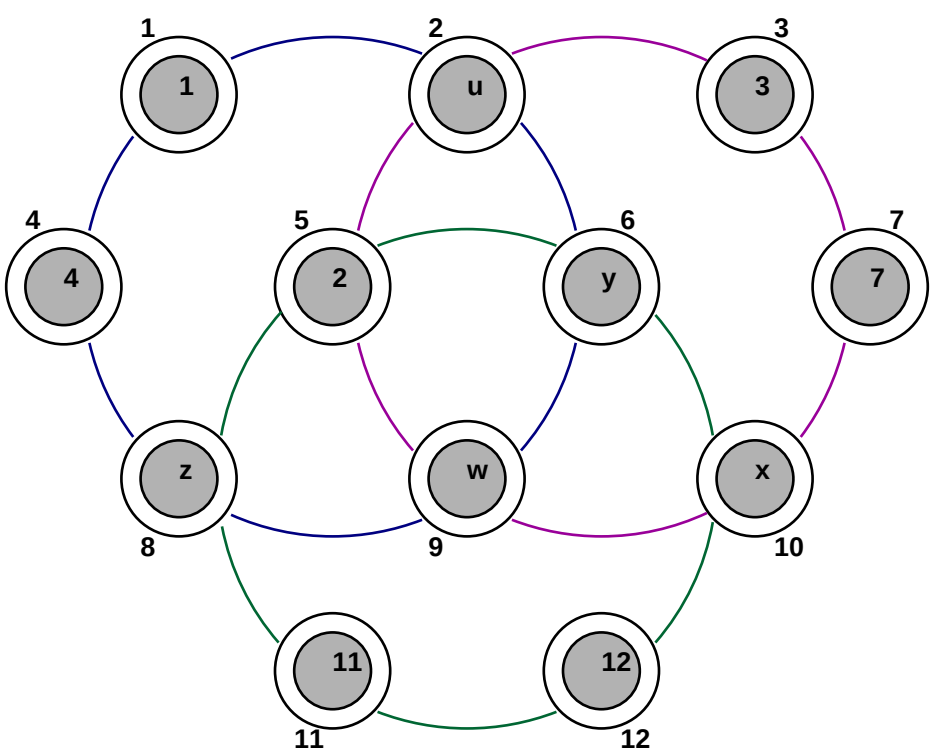

1
2
3
1
u
3
4
5
6
7
4
v
y
7
z
w
x
8
9
10
11
12
11
12

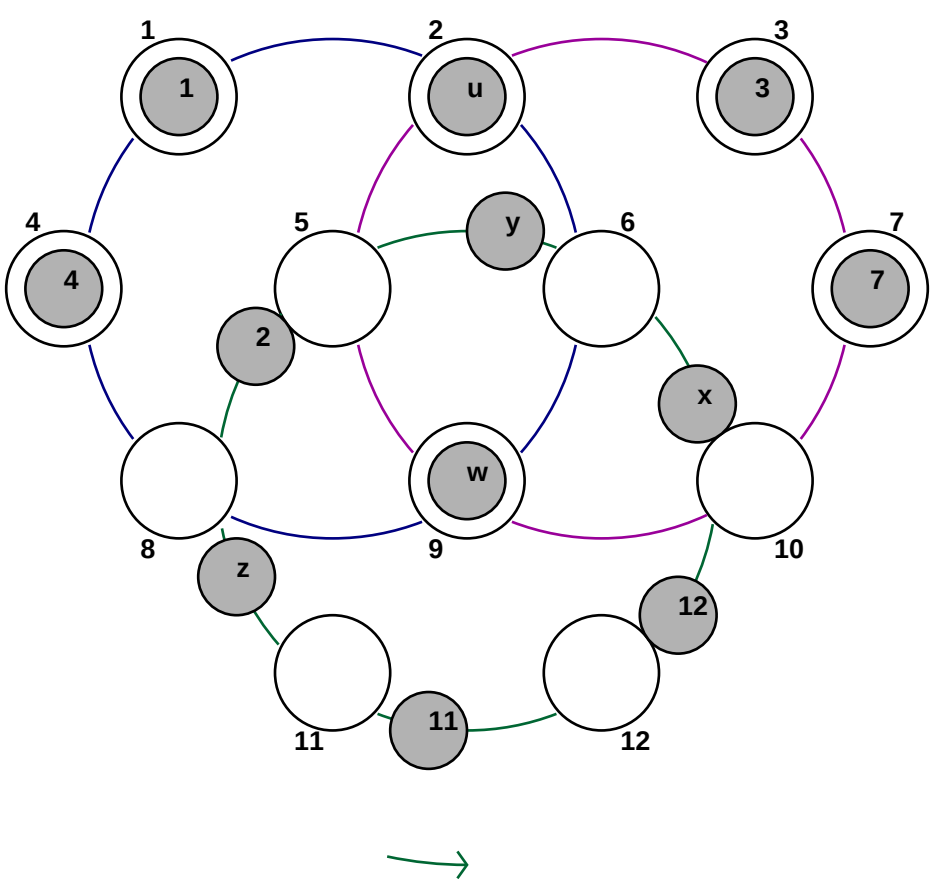
It has been shown that 12 can be moved to position 12 from any position while keeping numbers 1, 3, 4, 7, and 11 in their respective positions.

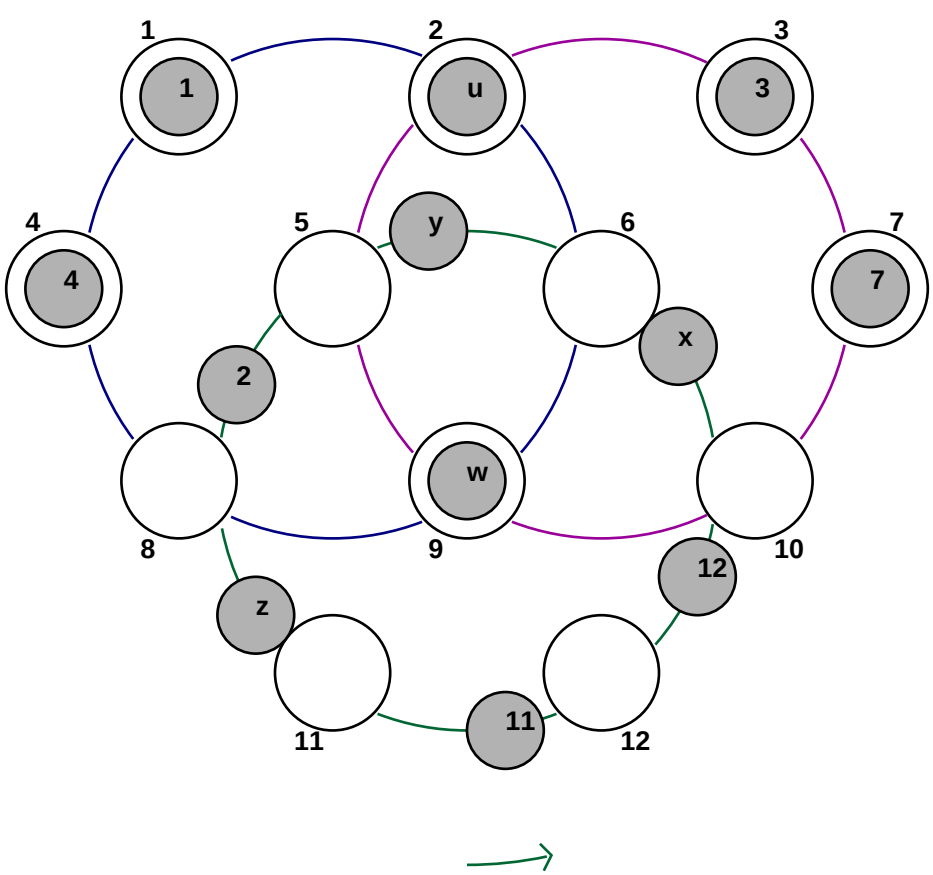
Now let v = 2.

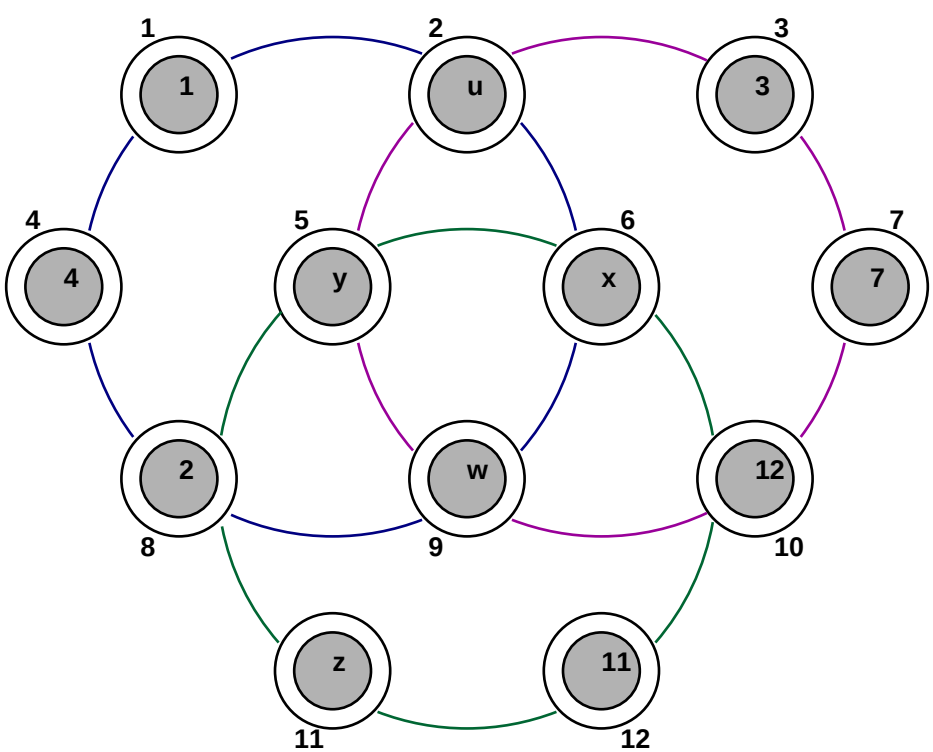
Number 2 can be moved into position 8
by moving in the following pattern.

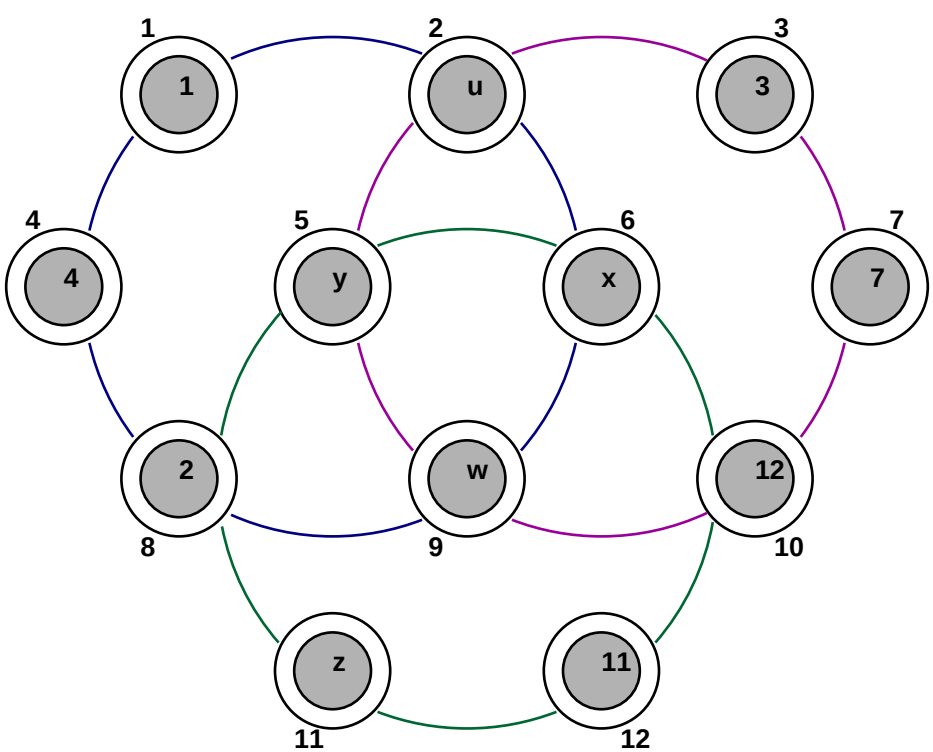
Numbers 1, 3, 4, 7, 11, and 12 will remain in their correct positions.

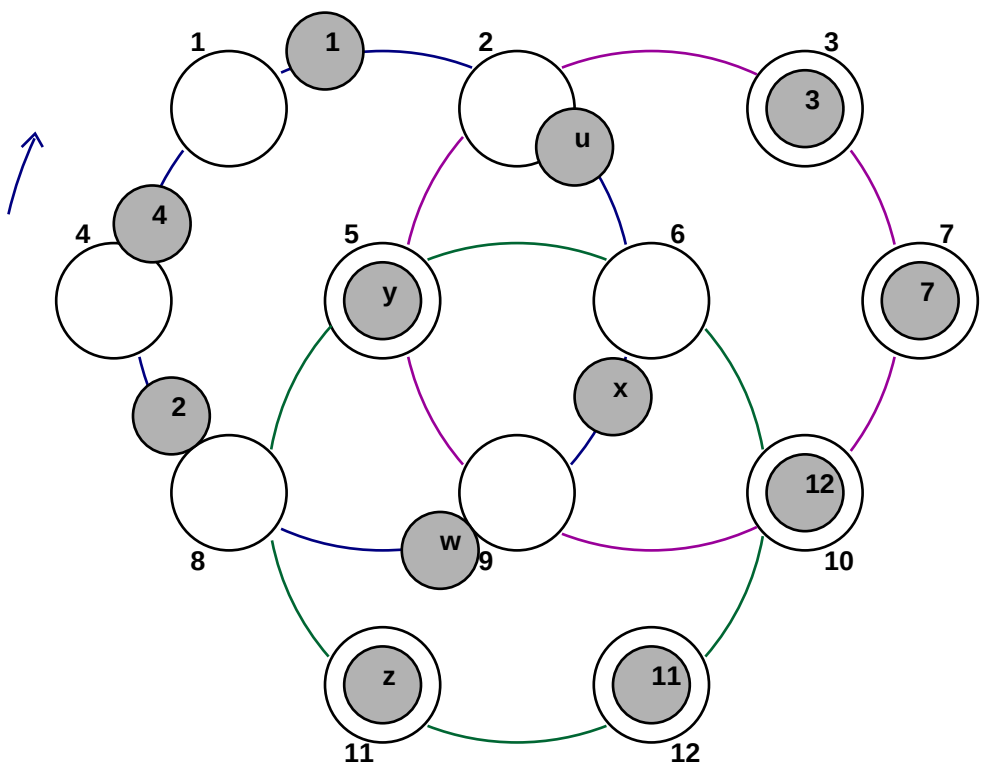

1
2
3
1
u
3
4
5
6
7
4
2
y
7
z
w
x
8
9
10
11
12
11
12

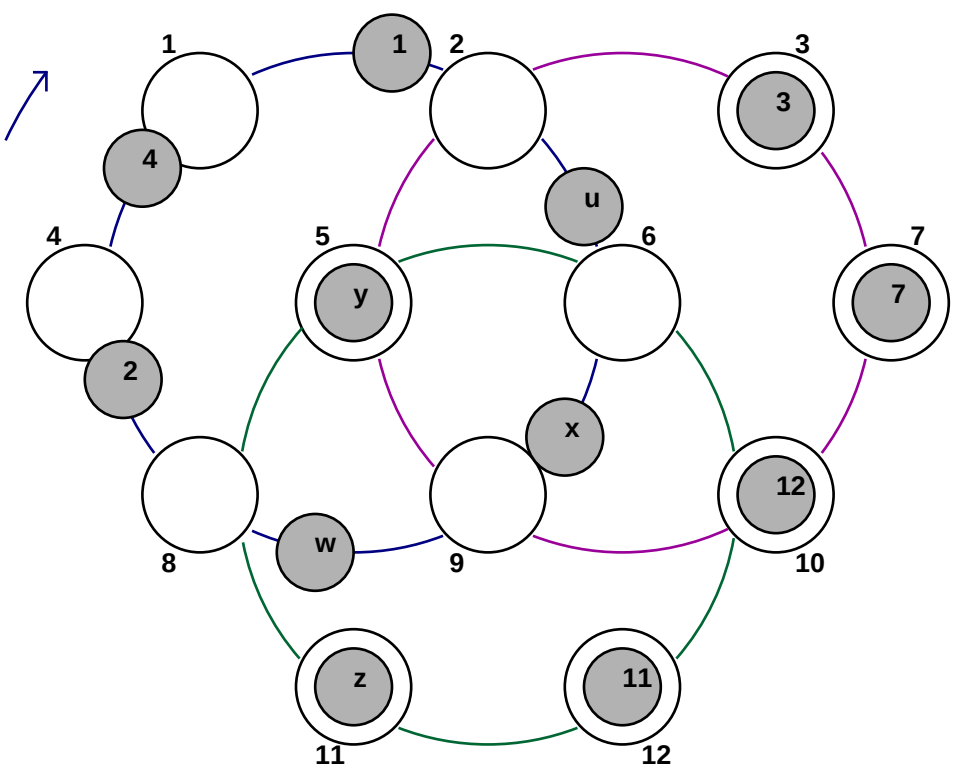

1
2
3
1
u
3
4
5
6
7
y
4
7
2
x
w
8
9
10
z
12
11
11
12

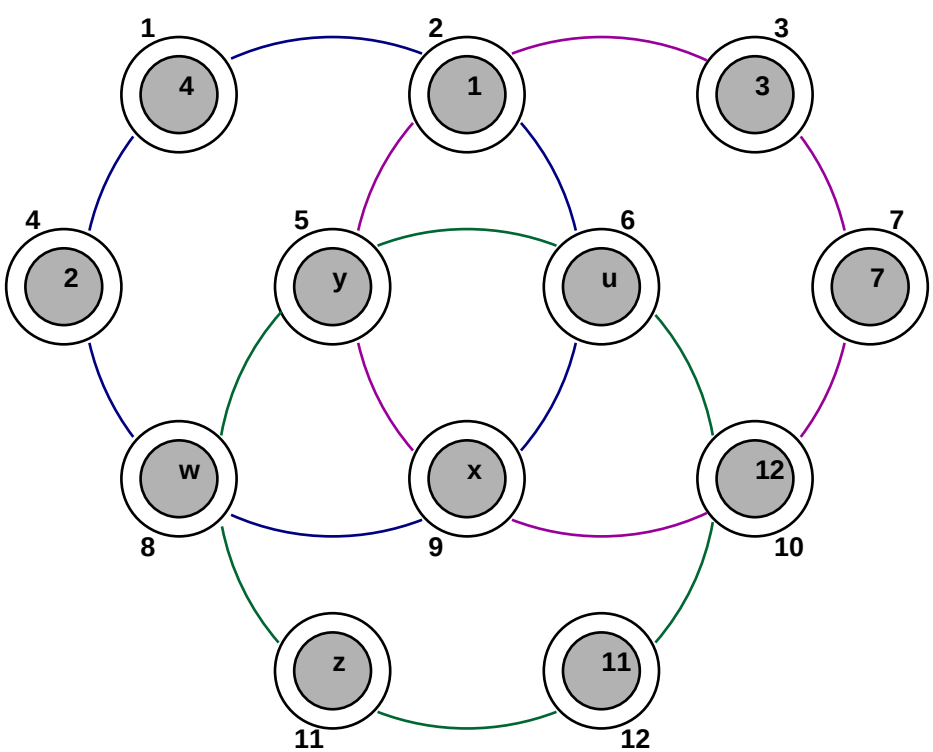

1
2
3
1
u
3
4
5
6
7
y
4
7
x
2
w
8
9
10
12
z
11
12
11

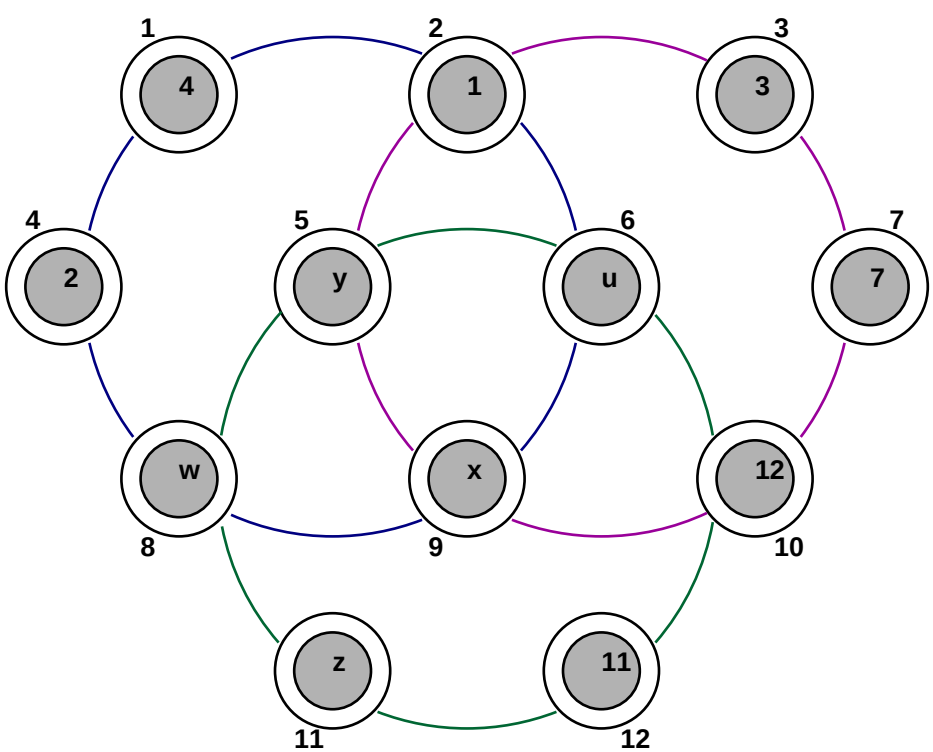

1
2
3
1
u
3
4
5
6
7
4
y
x
7
2
w
12
8
9
10
z
11
11
12

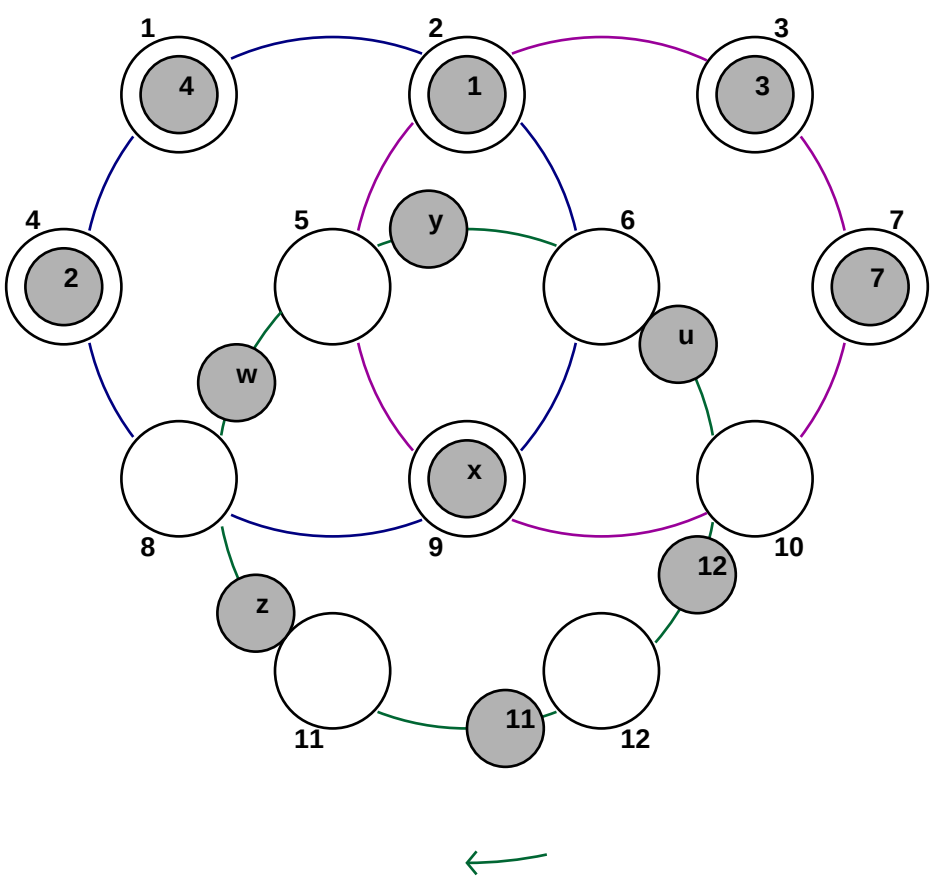

1
2
3
1
u
3
4
5
6
7
4
y
x
7
2
w
12
8
9
10
z
11
11
12

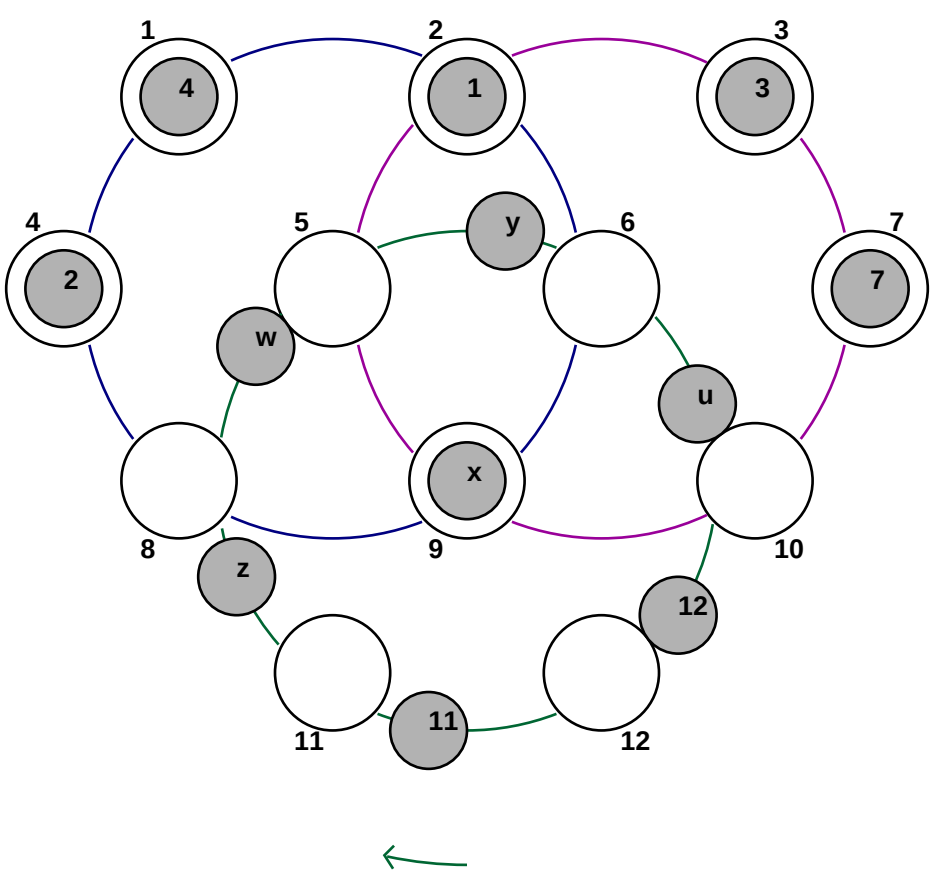

1
1
2
3
3
u
4
4
4
5
6
7
y
7
x
2
2
12
w
8
9
10
z
11
11
12

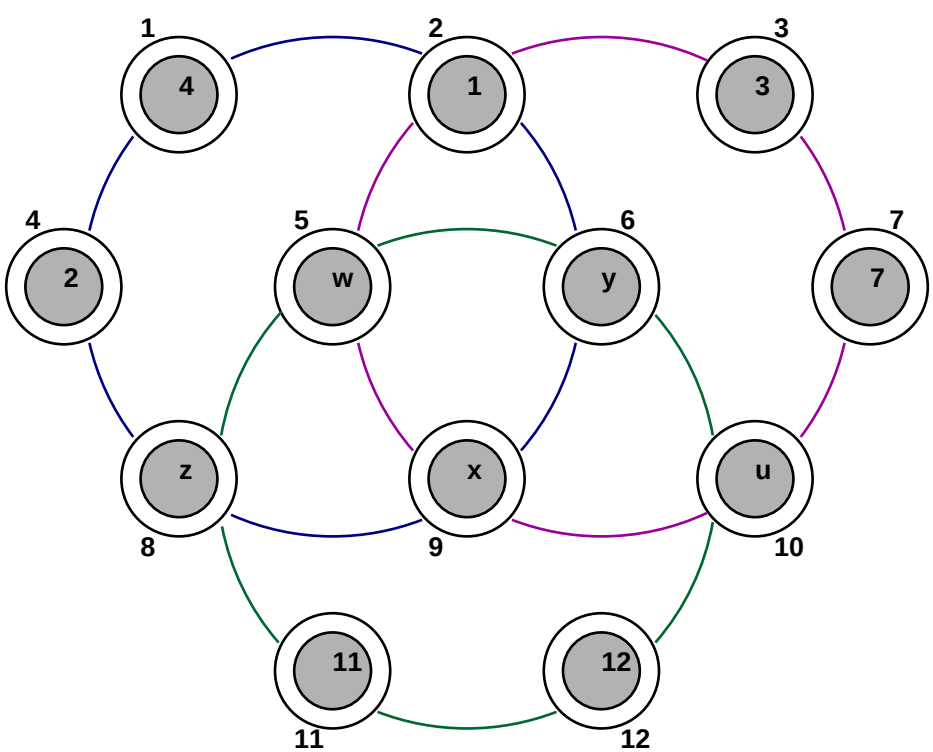

1
1
2
3
3
4
4
u
4
5
6
7
y
7
2
x
12
w
8
9
10
z
11
11
12

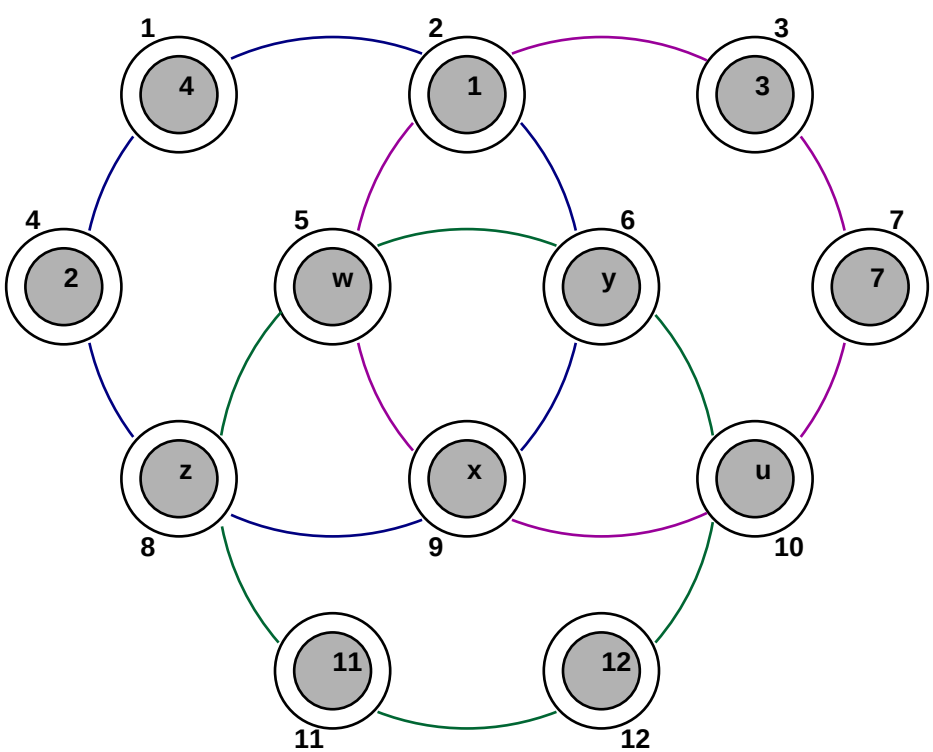

1
4
2
1
3
3
4
2
5
y
6
u
7
7
w
8
x
9
12
10
z
11
11
12

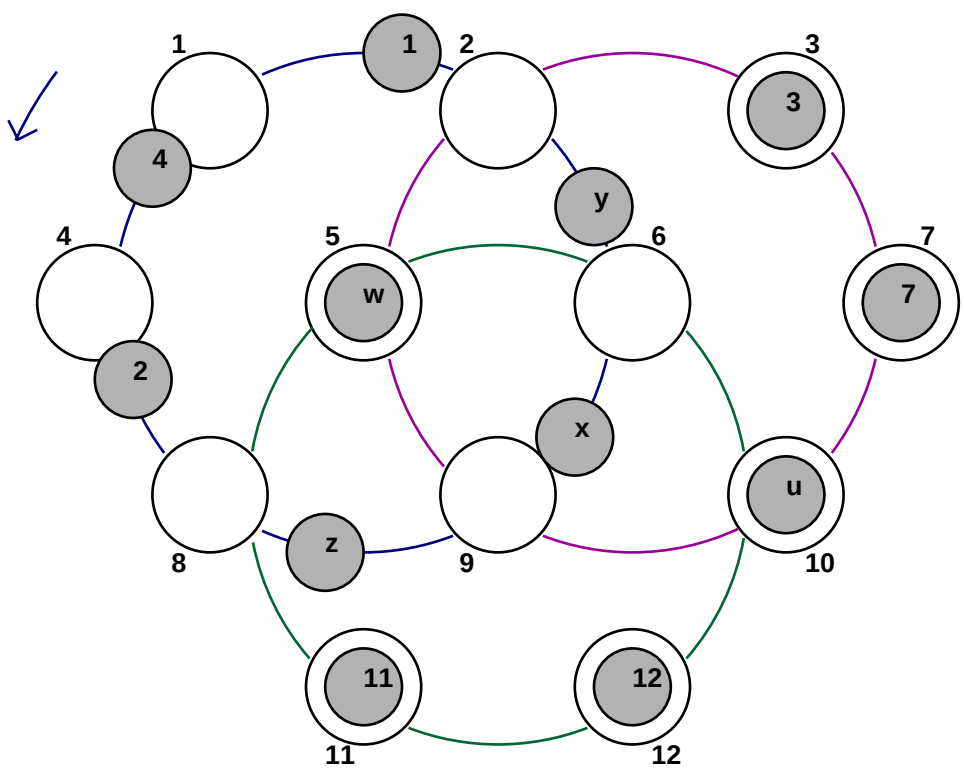

1
4
2
1
3
3
4
2
5
y
6
u
7
7
w
8
x
9
12
10
z
11
11
12

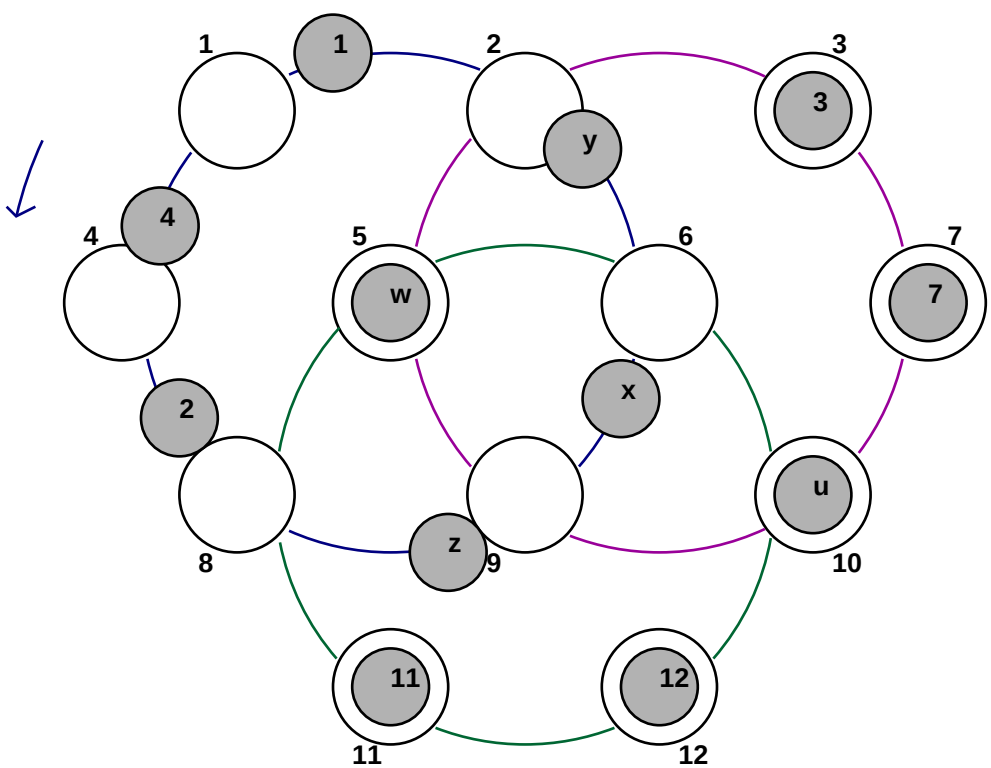

1
2
3
4
1
3
4
5
6
7
y
2
7
u
w
x
8
9
10
12
z
11
11
12

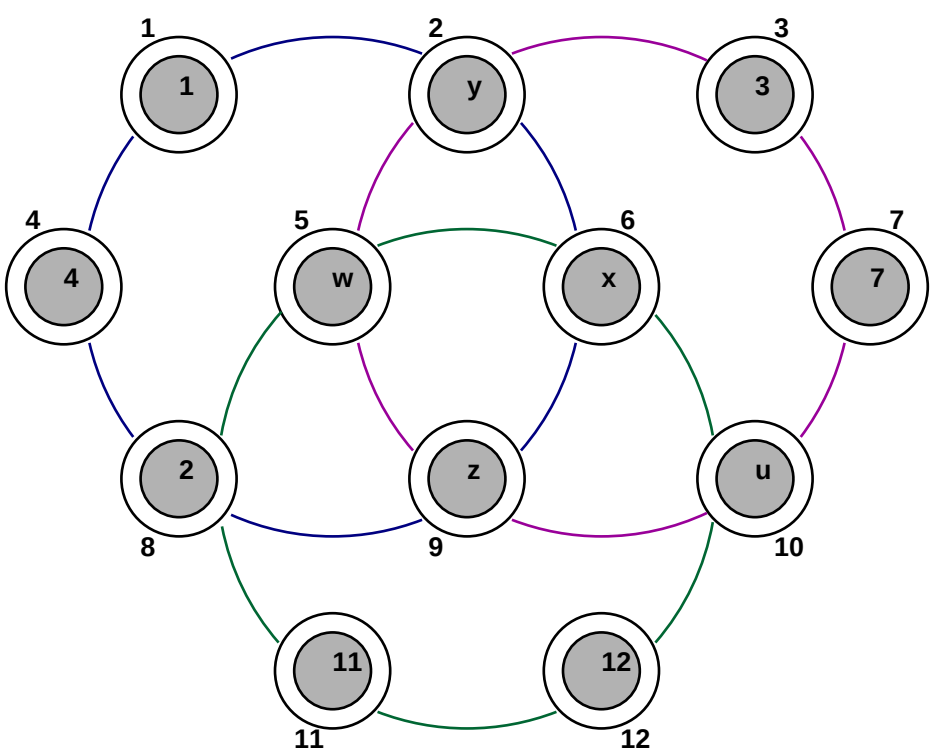

1
2
3
4
1
3
4
5
6
7
y
2
7
w
u
x
8
9
10
z
12
11
11
12


1
4
2
1
3
3
4
2
5
w
6
y
7
7
z
8
x
9
u
10
11
11
12
12

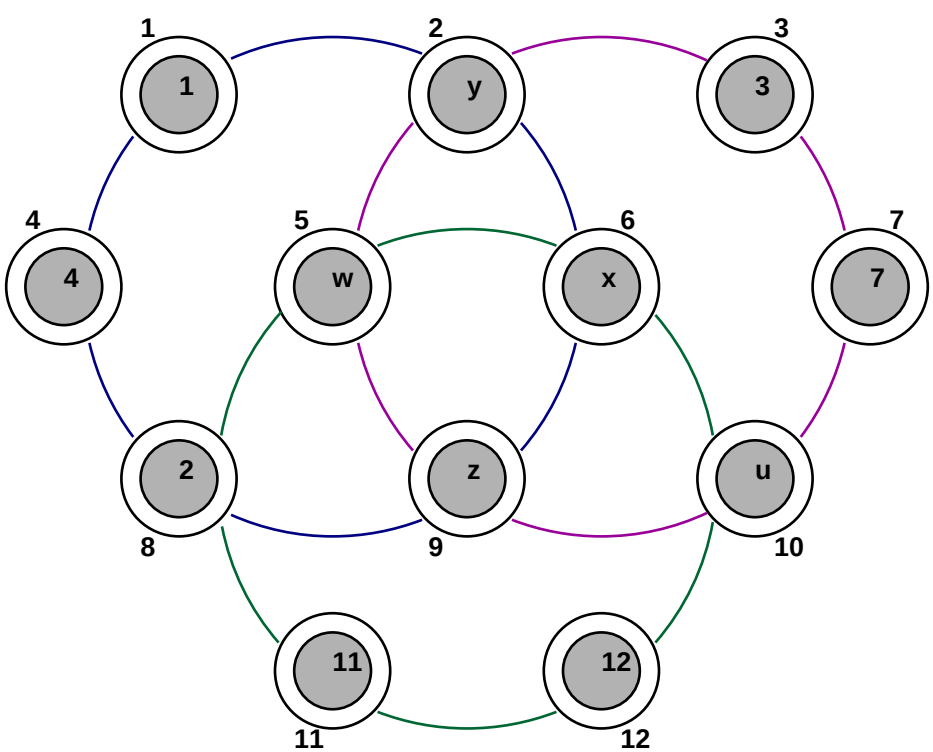

1
4
2
1
3
3
4
2
5
w
6
y
7
7
z
8
x
9
u
10
11
11
12
12

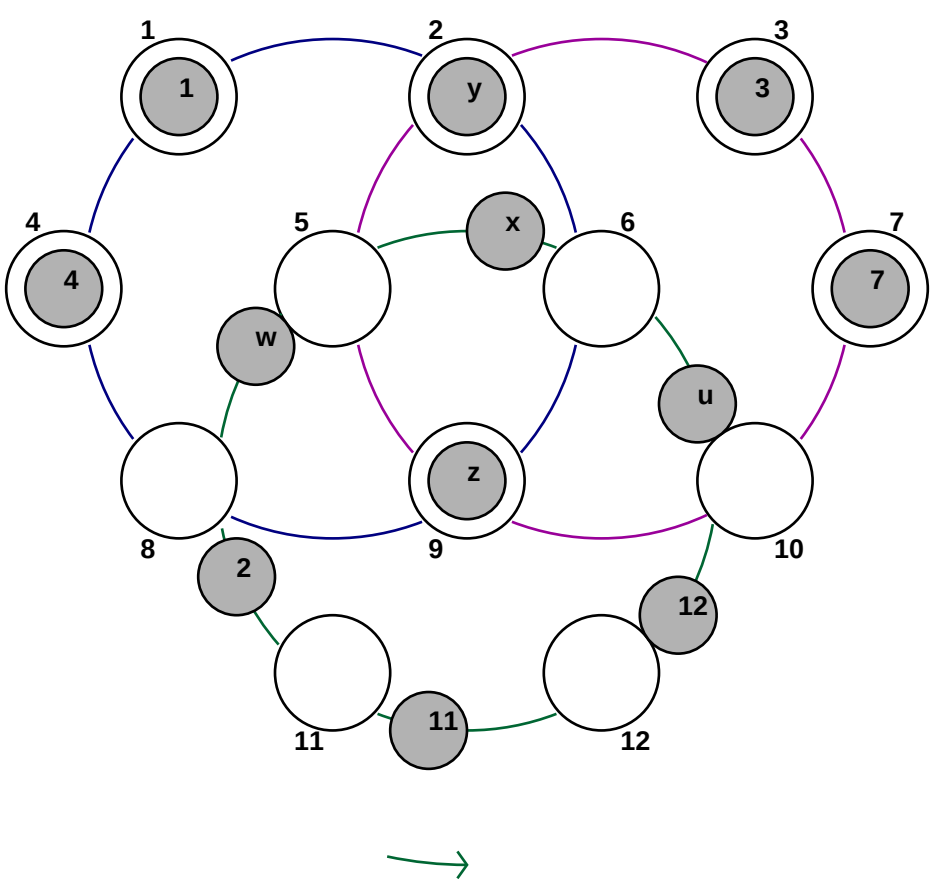

1
1
2
3
3
4
y
4
5
6
7
w
7
2
x
u
z
8
9
10
11
12
11
12

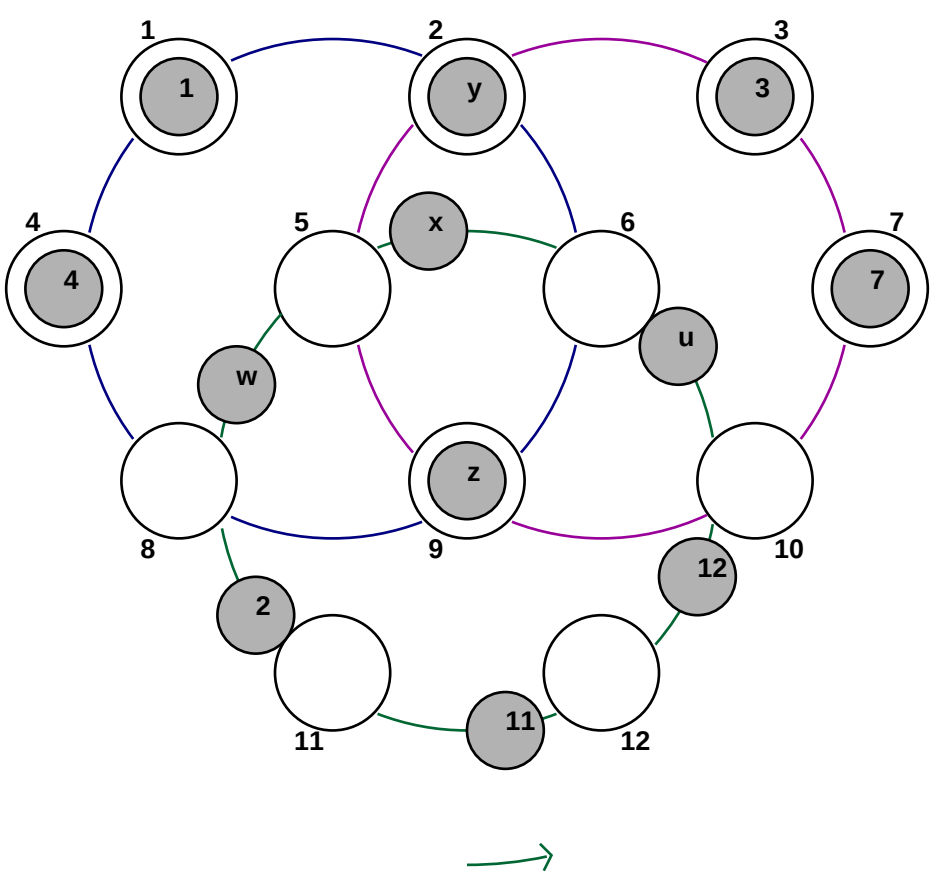

1
1
2
3
3
y
4
4
5
6
7
w
7
x
2
u
z
8
9
10
11
12
11
12

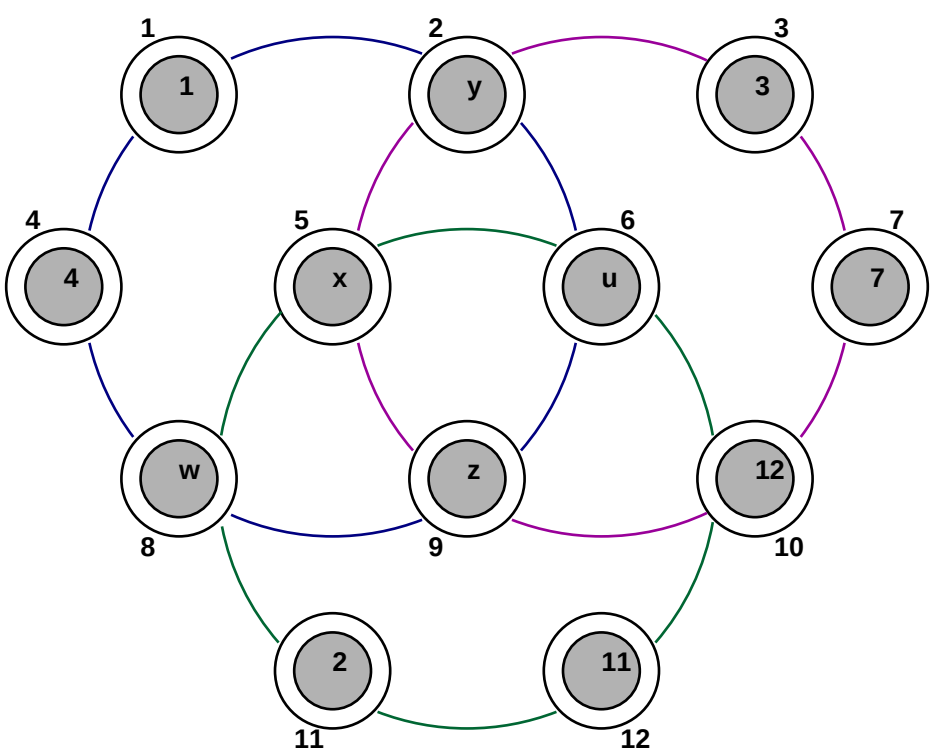

1
2
3
1
y
3
4
5
6
7
4
w
x
7
2
z
u
8
9
10
11
12
11
12

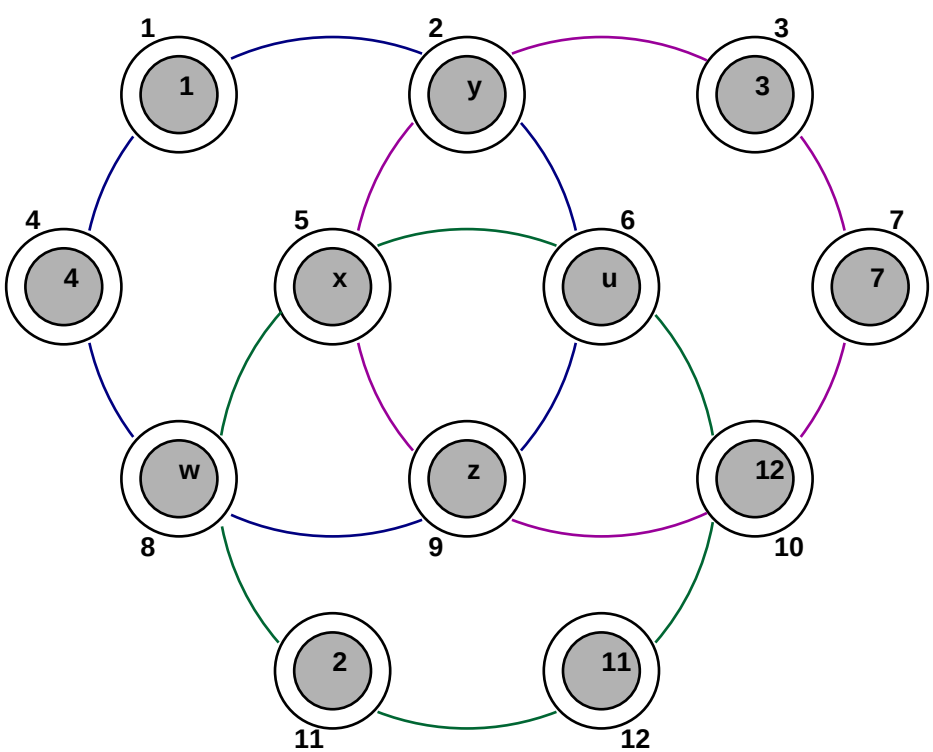
Number 2 can be moved into position 9 while keeping numbers 1, 3, 4, 7, 11, and 12 in position by the following moves.

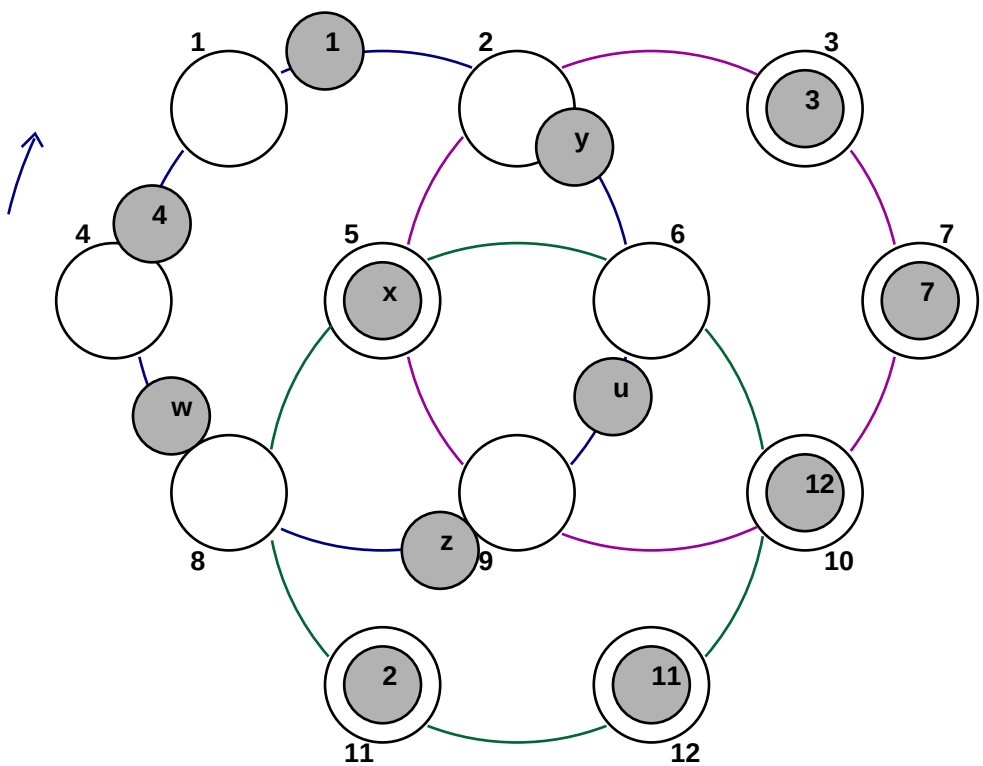

1
2
3
1
y
3
4
5
6
7
4
w
x
7
2
z
u
8
9
10
11
12
11
12

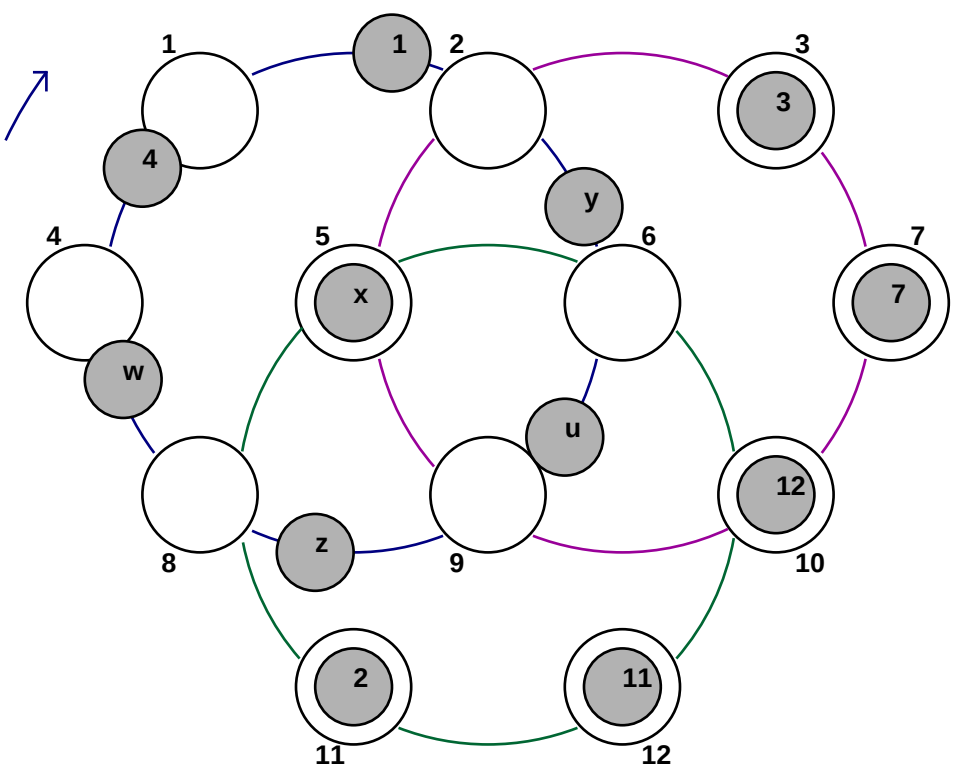

1
2
3
1
y
3
4
5
x
6
7
4
7
w
u
z
8
9
10
2
12
11
11
12

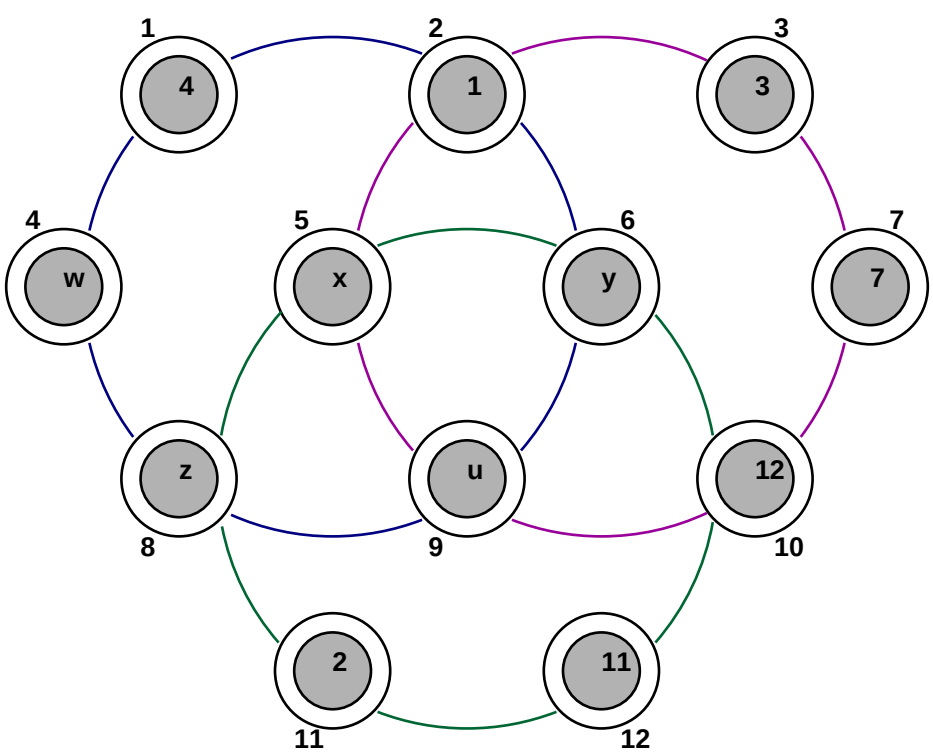

1
2
3
1
y
3
4
5
x
6
7
4
7
u
w
z
8
9
10
12
2
11
11
12

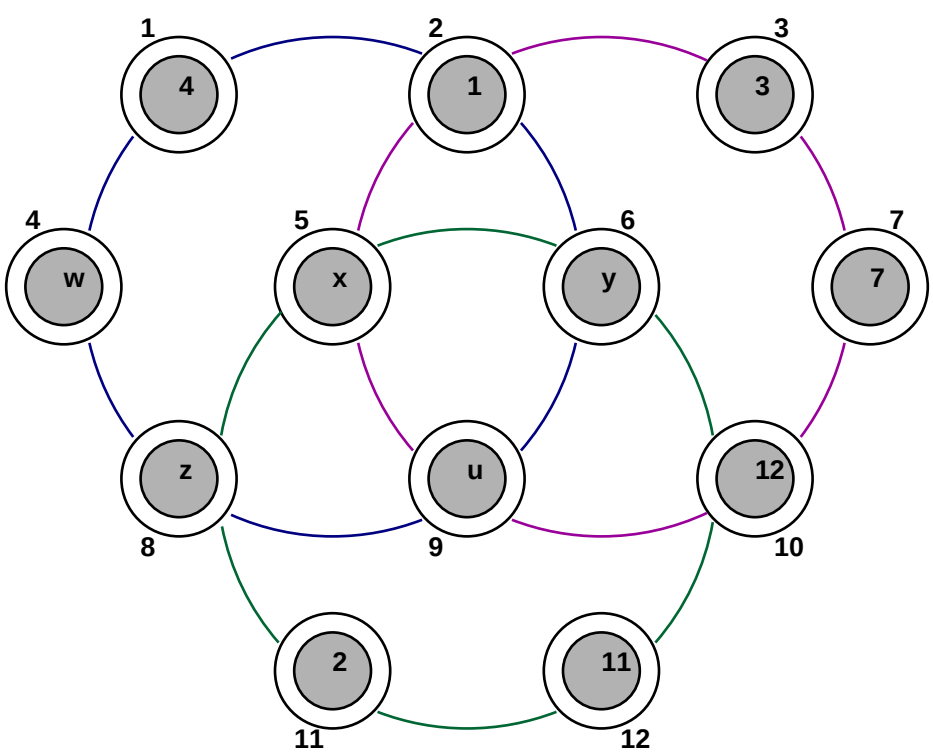

1
2
3
1
y
3
4
5
6
7
4
x
u
7
w
z
12
8
9
10
2
11
11
12

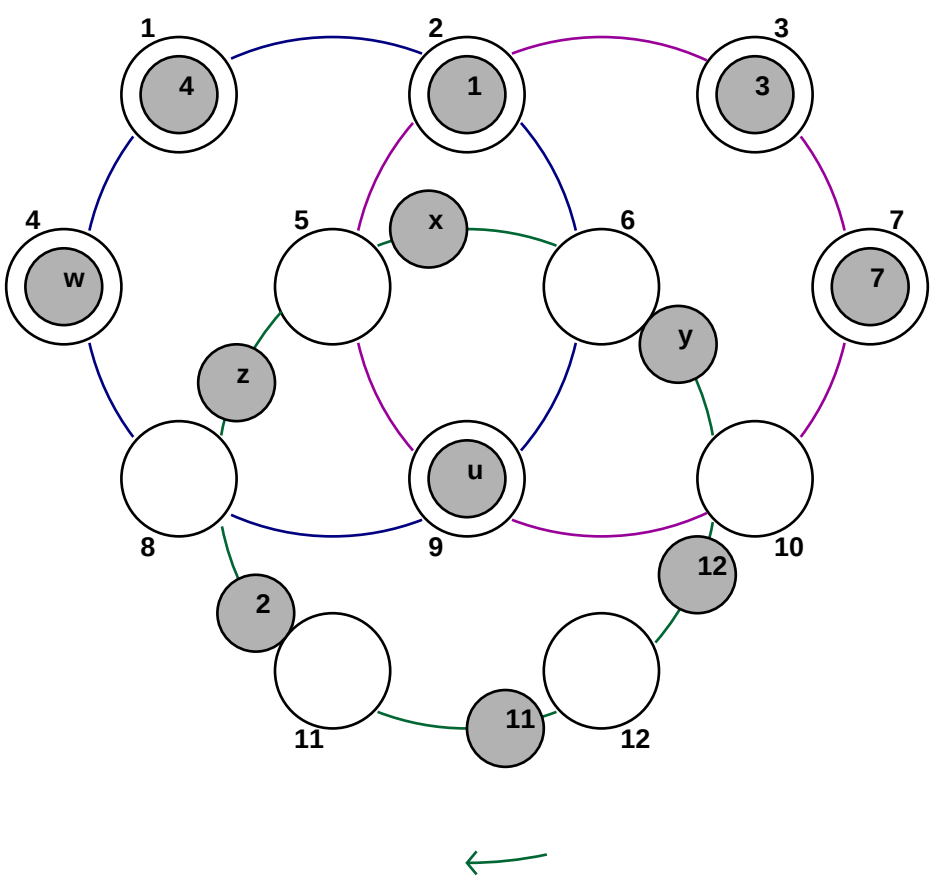

1
2
3
1
y
3
4
5
6
7
4
x
u
7
w
z
12
8
9
10
2
11
11
12

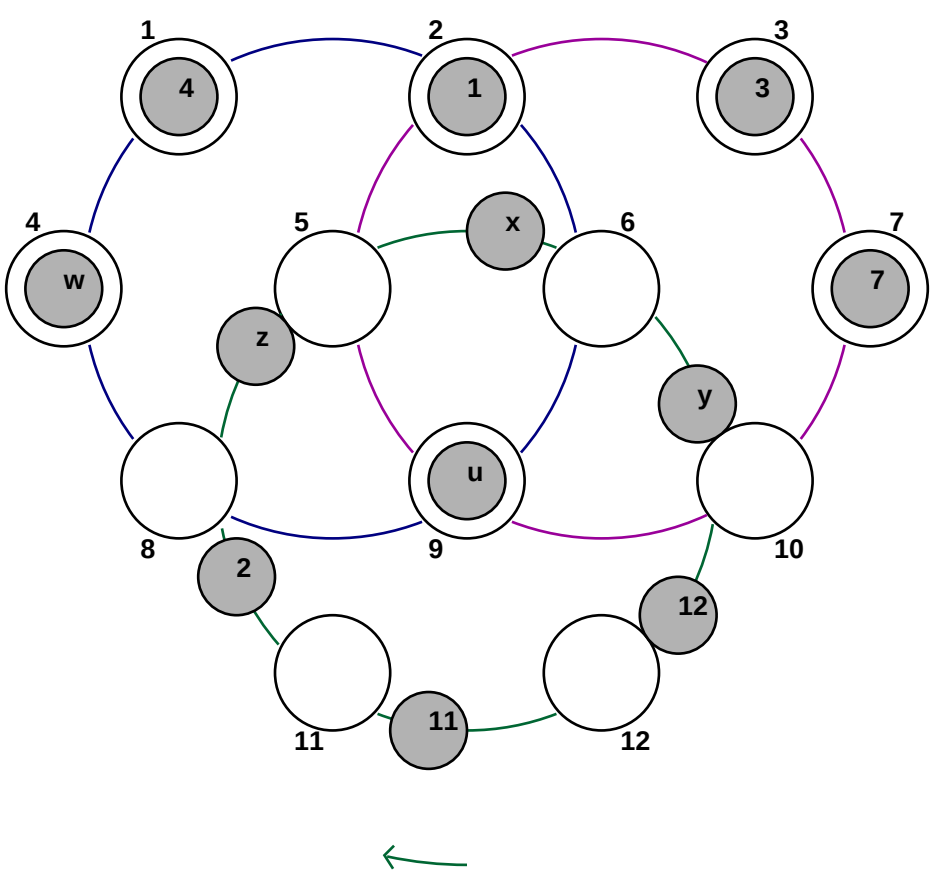

1
1
2
3
3
y
4
4
5
6
7
x
7
u
w
12
z
8
9
10
2
11
11
12

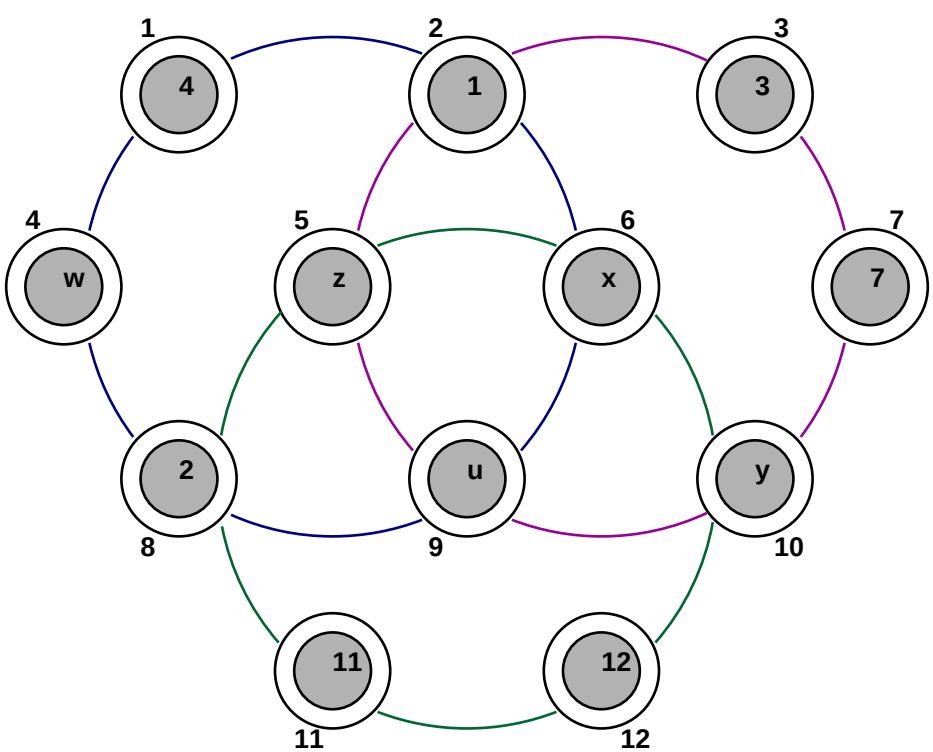

1
1
2
3
3
4
y
4
5
6
7
x
7
w
u
12
z
8
9
10
2
11
11
12

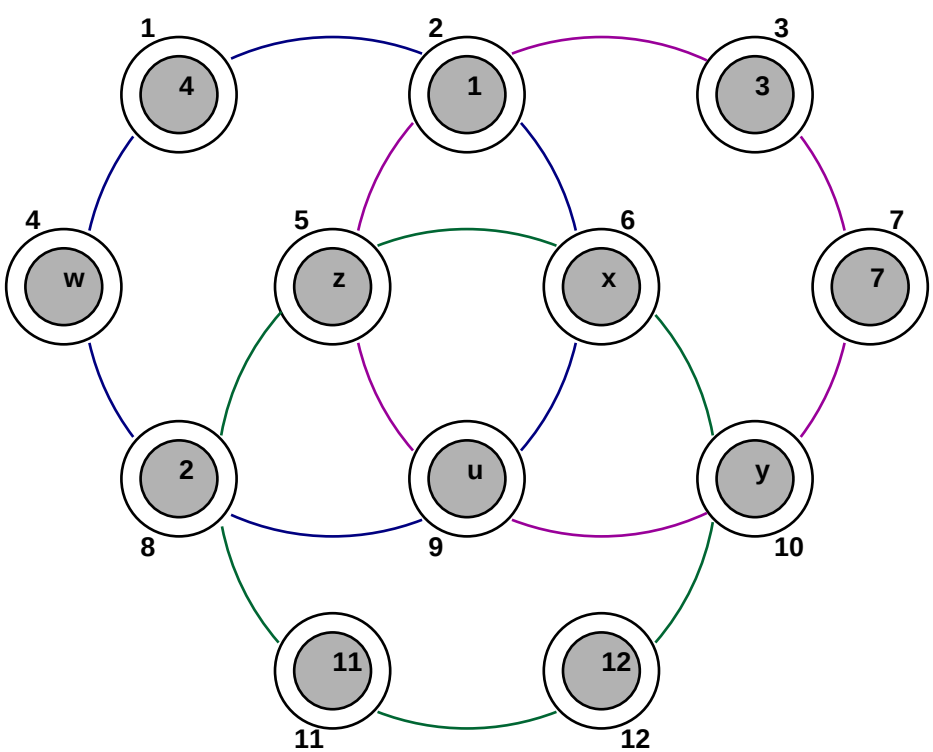

1
4
2
1
3
3
4
w
5
x
6
y
7
7
z
8
u
9
12
10
2
11
11
12

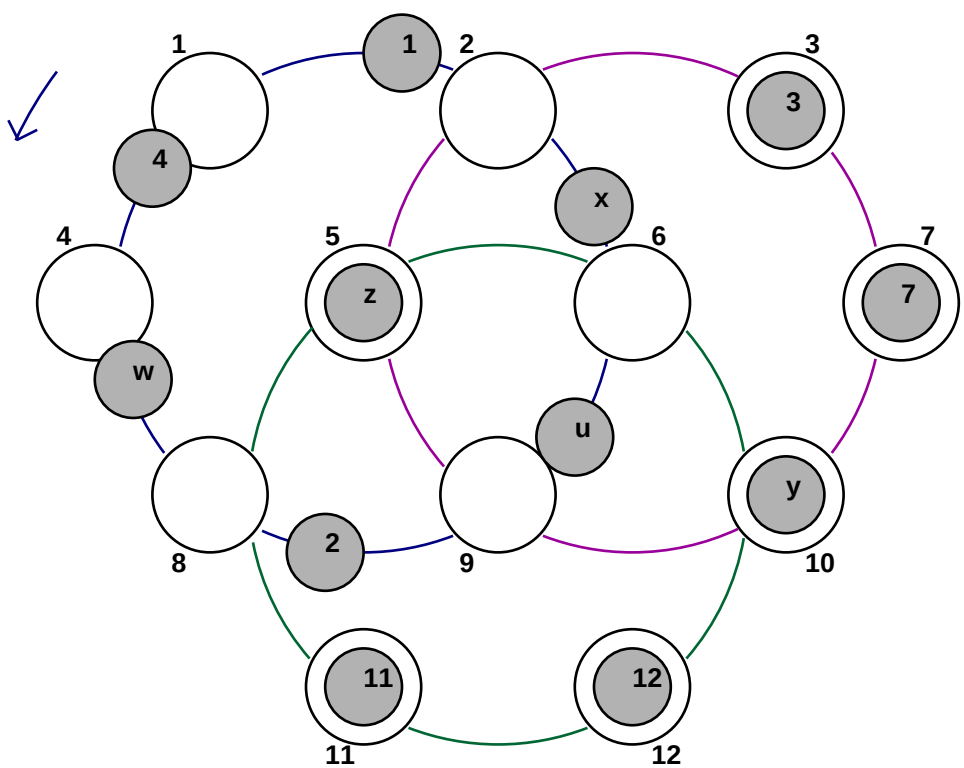

1
4
2
1
3
3
4
w
5
x
6
y
7
7
z
8
u
9
12
10
2
11
11
12

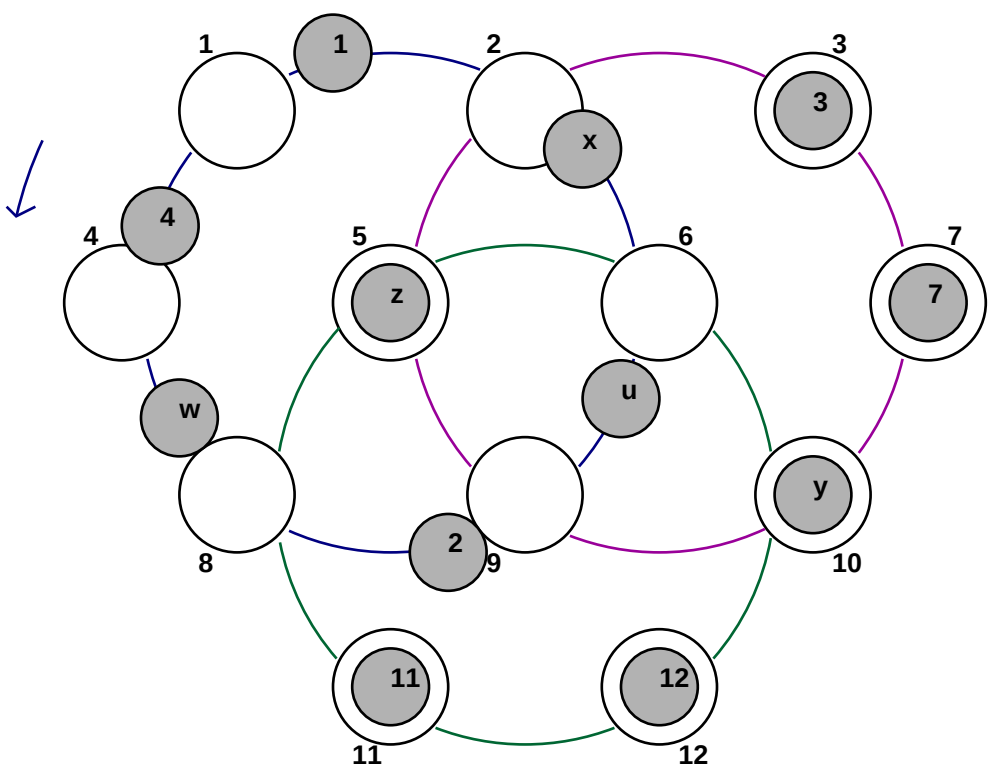

1
2
3
4
1
3
4
5
x
6
7
w
7
y
z
u
8
9
10
12
2
11
12
11

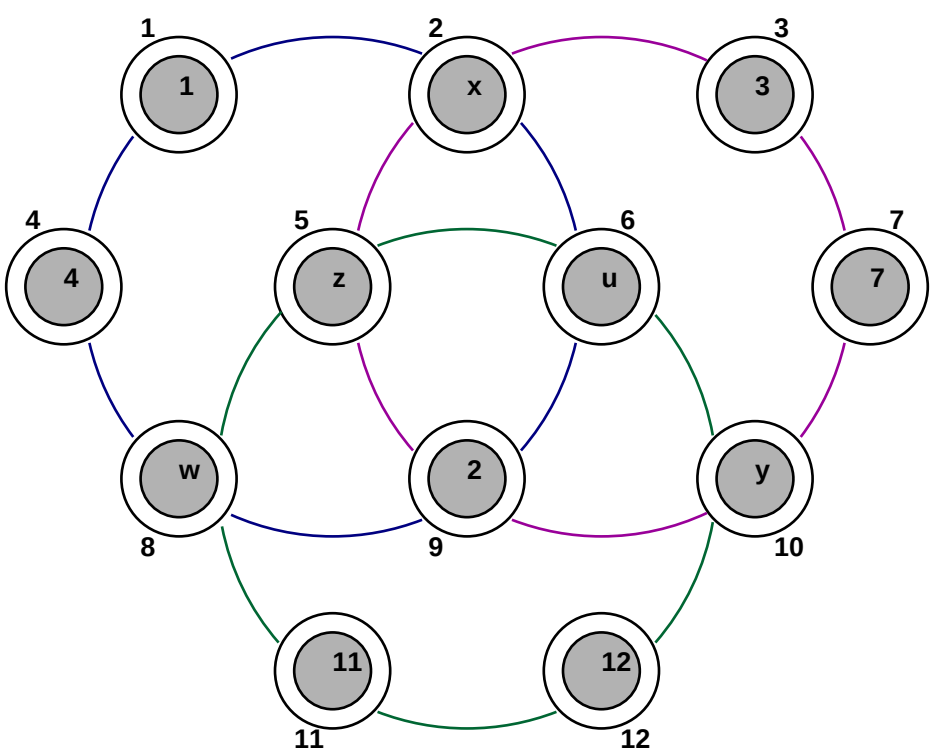

1
2
3
4
1
3
4
5
x
6
7
w
7
z
y
u
8
9
10
2
12
11
11
12


1
4
2
1
3
3
4
w
5
z
6
x
7
7
2
8
u
9
y
10
11
11
12
12

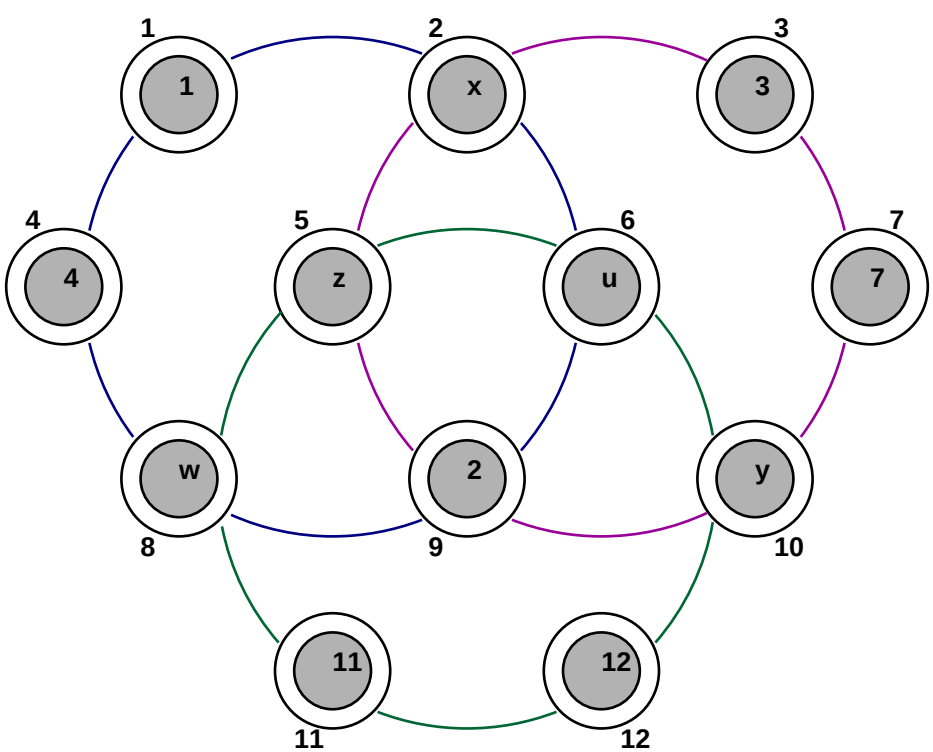

1
4
2
1
3
3
4
w
5
z
6
x
7
7
2
8
u
9
y
10
11
11
12
12

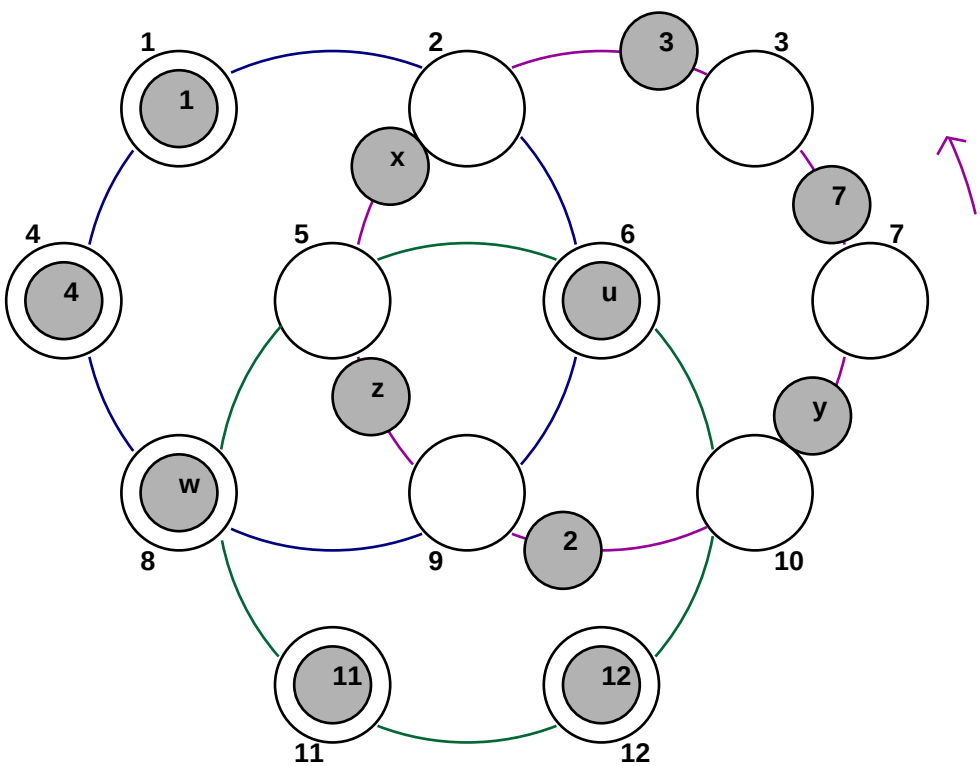

1
1
2
3
3
4
4
x
4
5
6
7
z
7
w
u
y
2
8
9
10
11
12
11
12

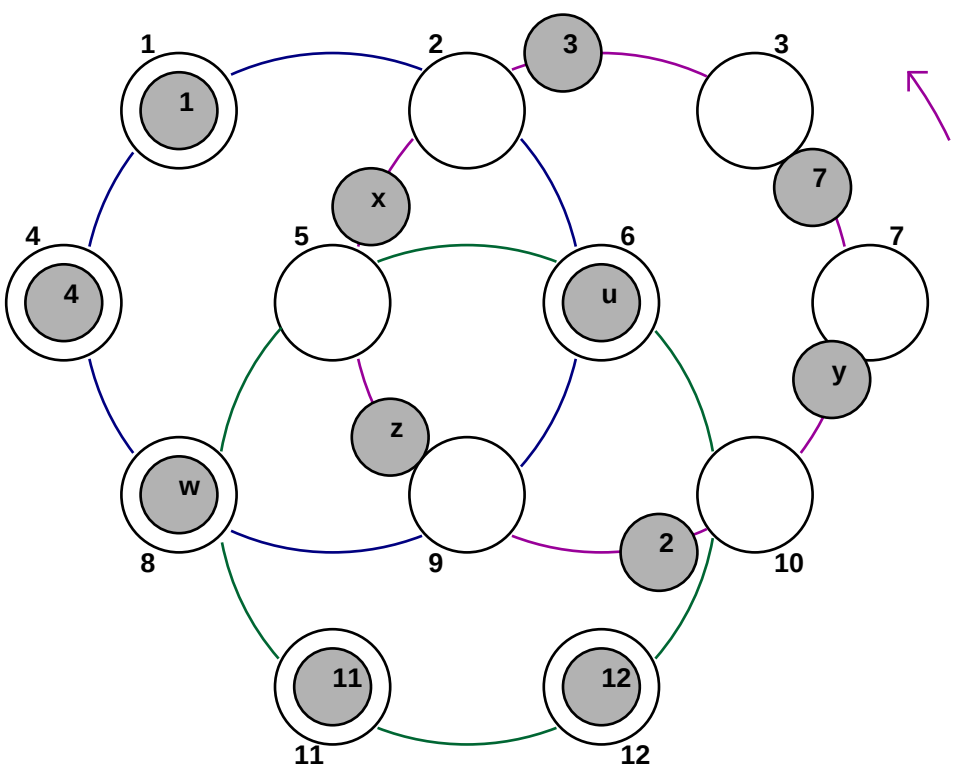

1
1
2
3
3
x
4
4
4
5
6
7
z
7
u
w
y
2
8
9
10
11
12
11
12

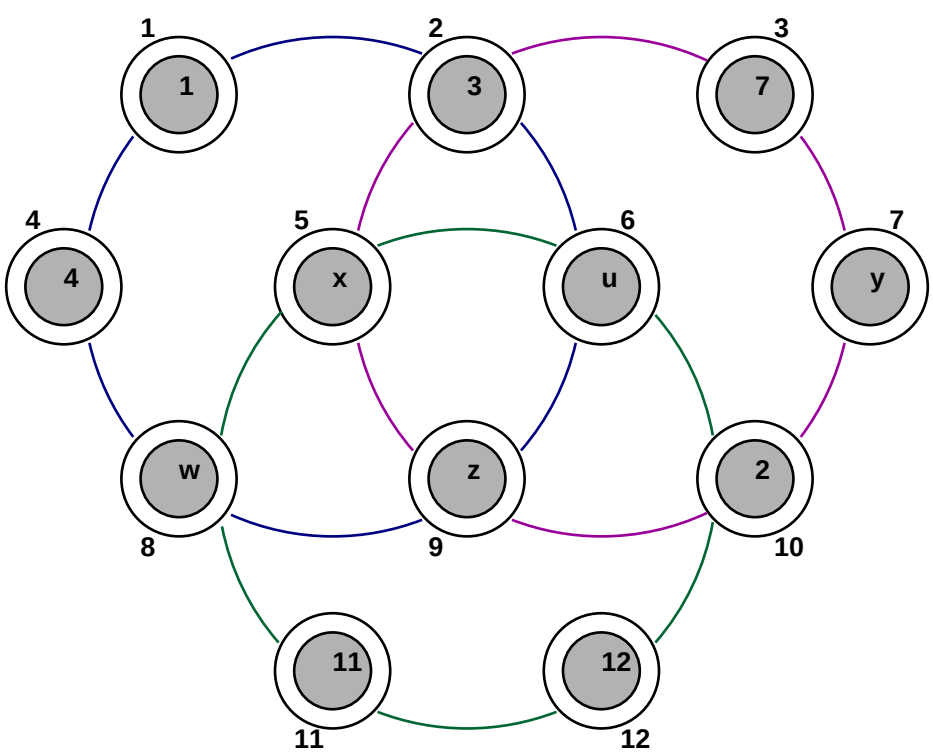

1
2
3
1
x
3
4
5
6
7
4
z
u
7
w
2
y
8
9
10
11
12
11
12

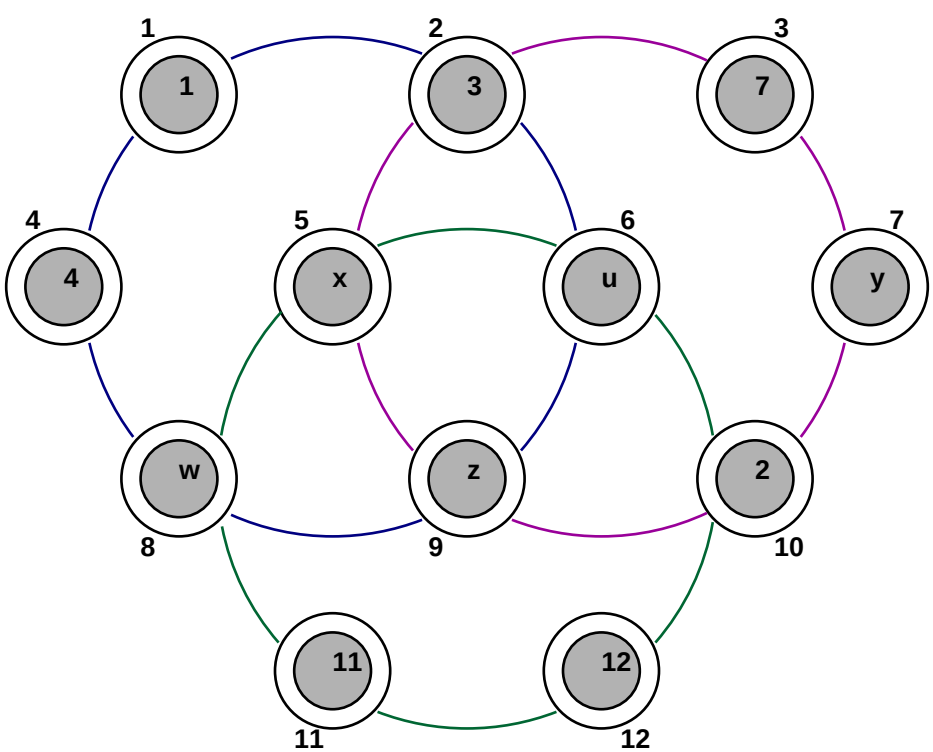
Number 2 can be moved into position 10 while keeping numbers 1, 3, 4, 7, 11, and 12 in position by the following moves.

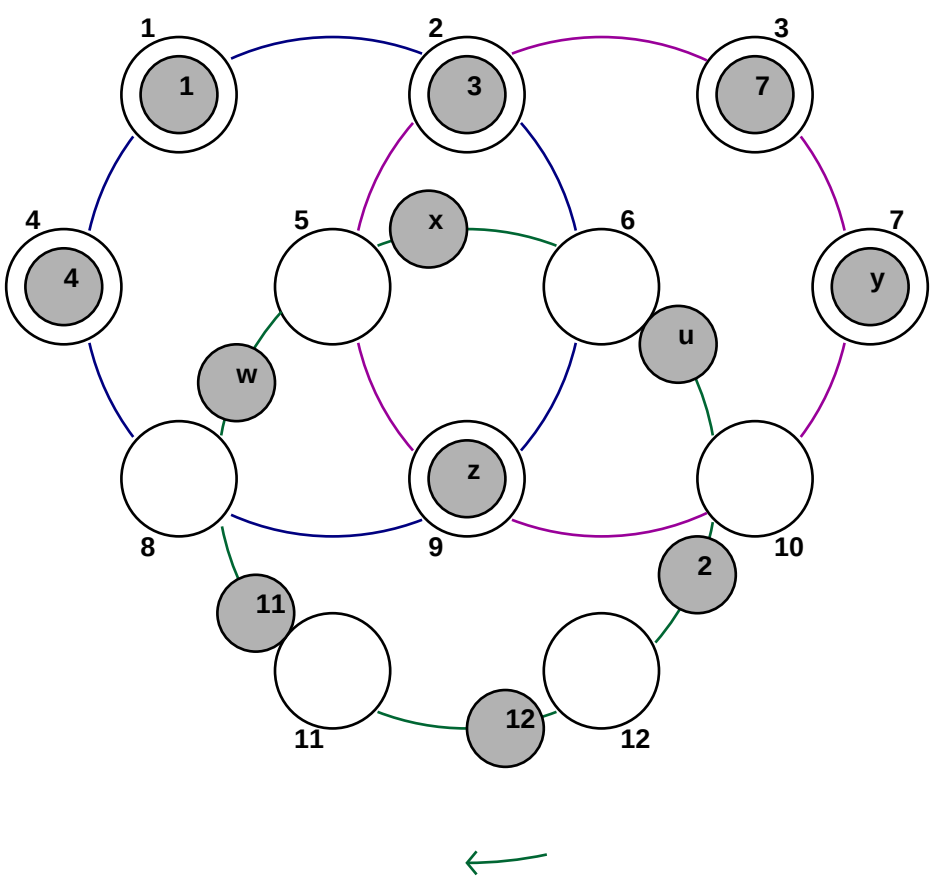

1
2
3
1
x
3
4
5
6
7
4
z
u
7
w
2
y
8
9
10
11
12
11
12

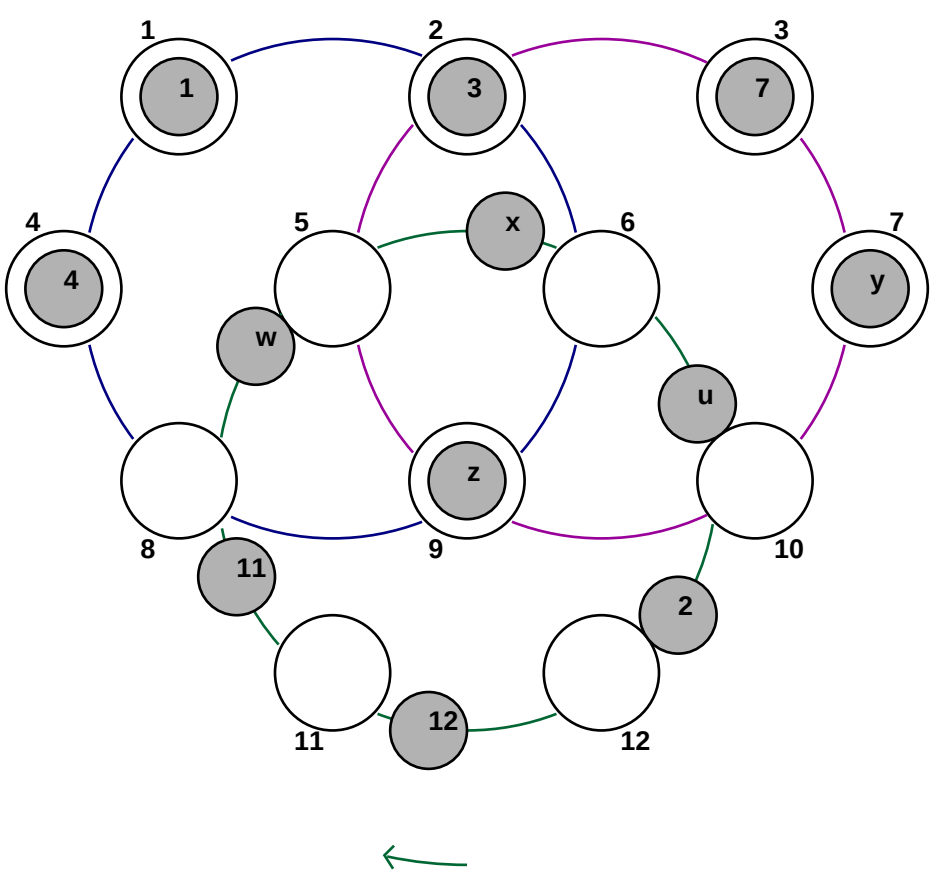

1
1
2
3
3
x
7
4
4
5
6
7
u
z
y
w
8
9
2
10
11
11
12
12

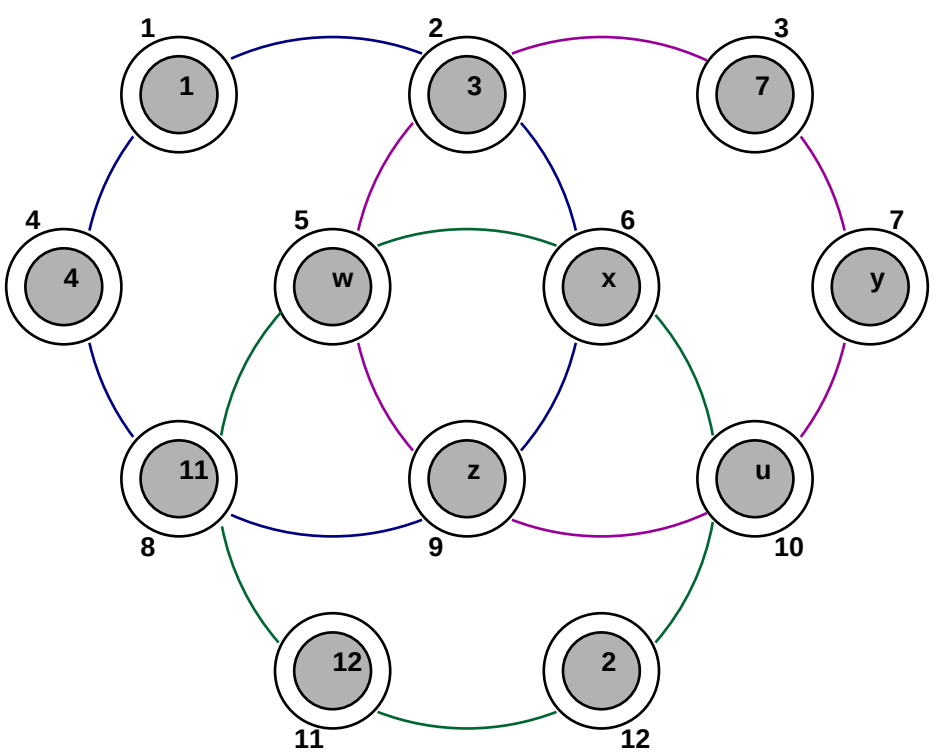

1
1
2
3
3
7
x
4
4
5
6
u
7
y
z
w
8
9
2
10
11
11
12
12

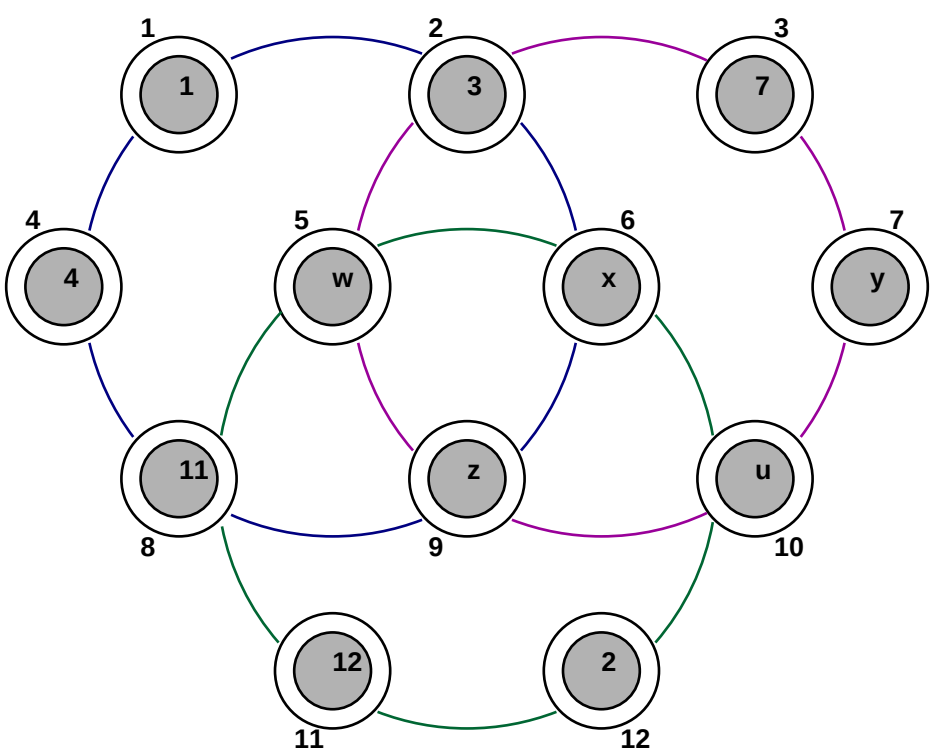

1
2
3
1
3
7
4
5
6
7
4
x
u
y
w
z
2
8
9
10
11
12
11
12

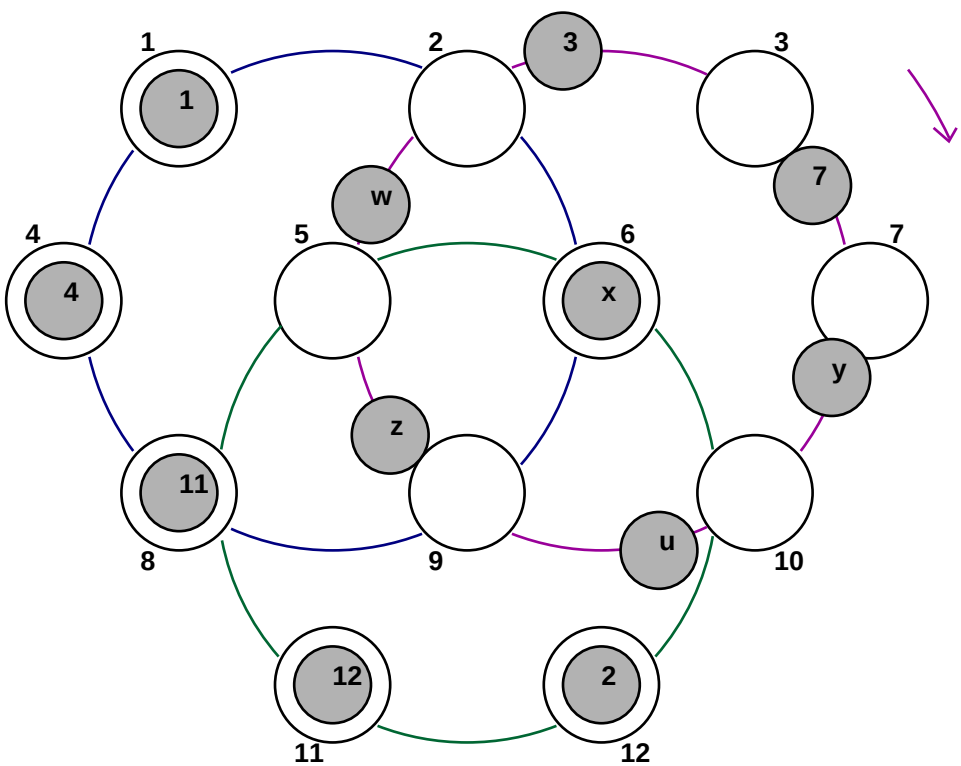

1
2
3
1
3
7
4
5
6
7
4
x
u
y
w
z
2
8
9
10
11
12
11
12

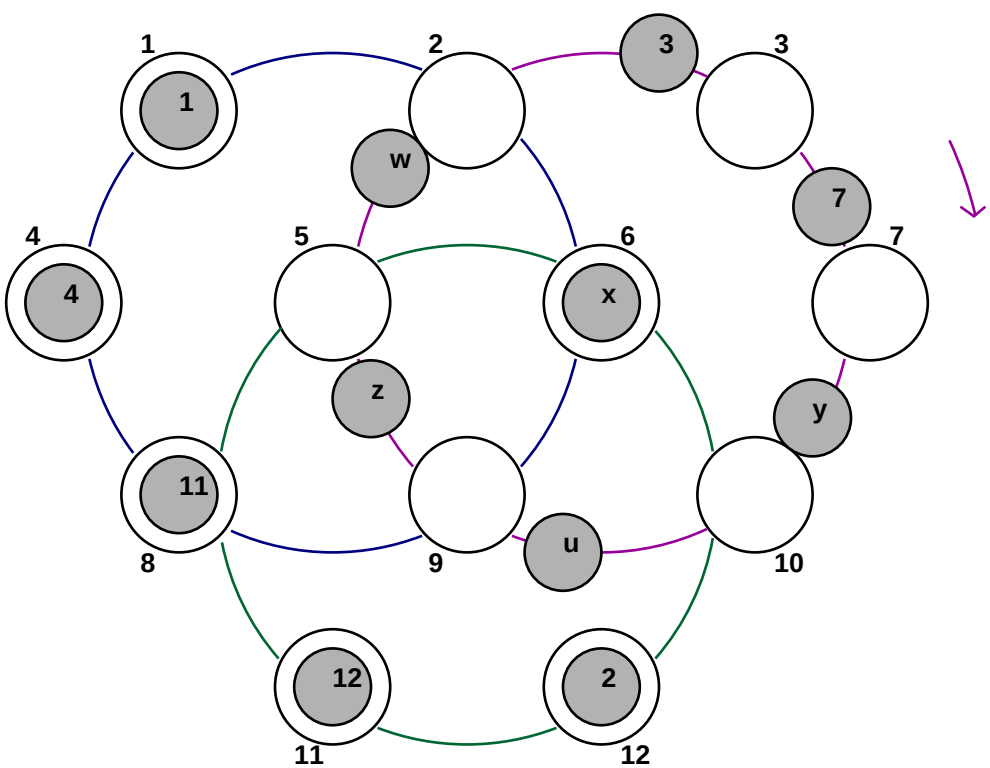

1
2
3
1
3
7
4
5
6
7
x
4
y
u
w
z
8
9
10
2
11
11
12
12

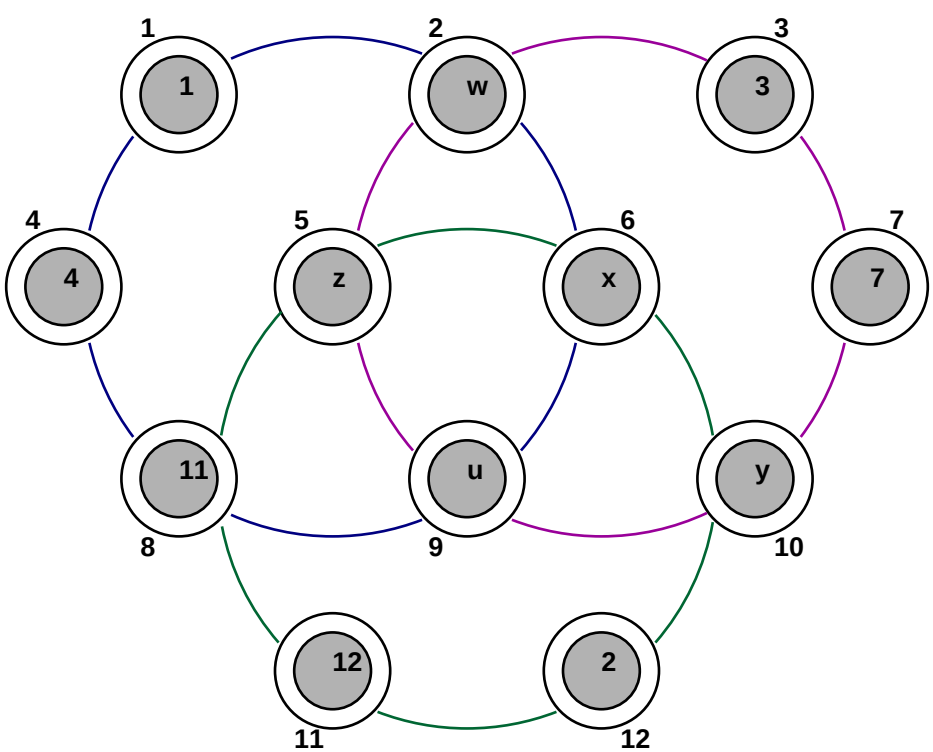

1
2
3
1
3
7
4
5
6
7
x
4
y
w
u
z
8
9
10
11
2
11
12
12

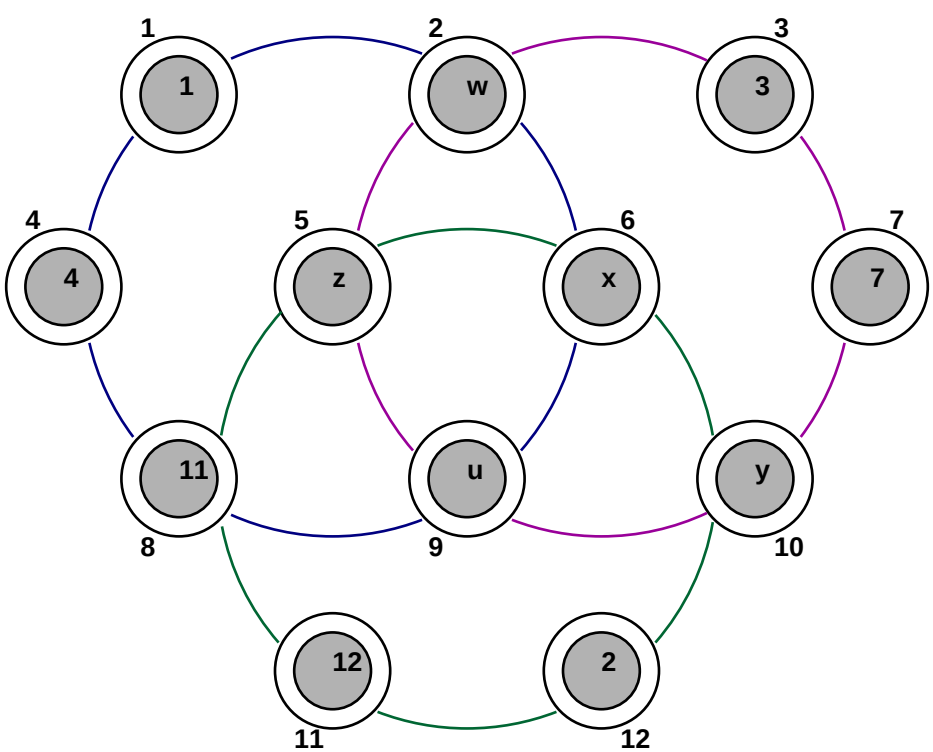

1
2
3
1
3
7
4
5
6
7
4
w
x
y
11
z
u
8
9
10
12
2
11
12

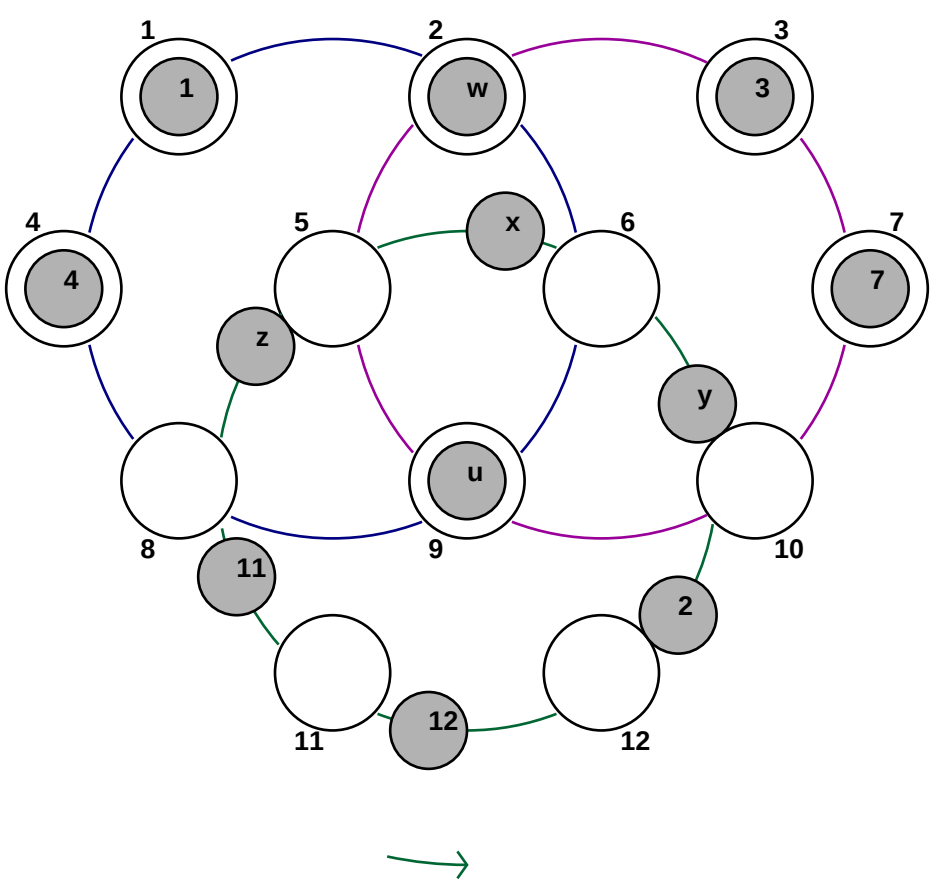

1
2
3
1
3
7
4
5
6
7
4
w
x
y
11
z
u
8
9
10
12
2
11
12

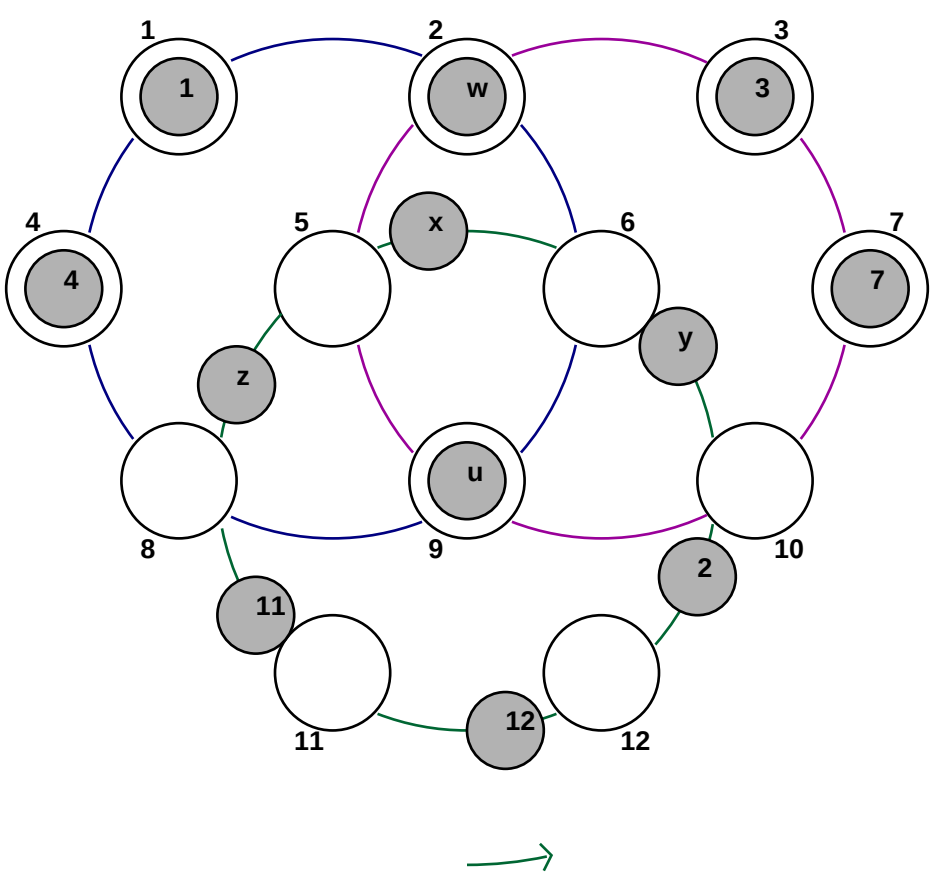

1
1
2
3
3
7
w
4
4
5
6
x
7
y
z
11
8
9
u
10
12
11
2
12

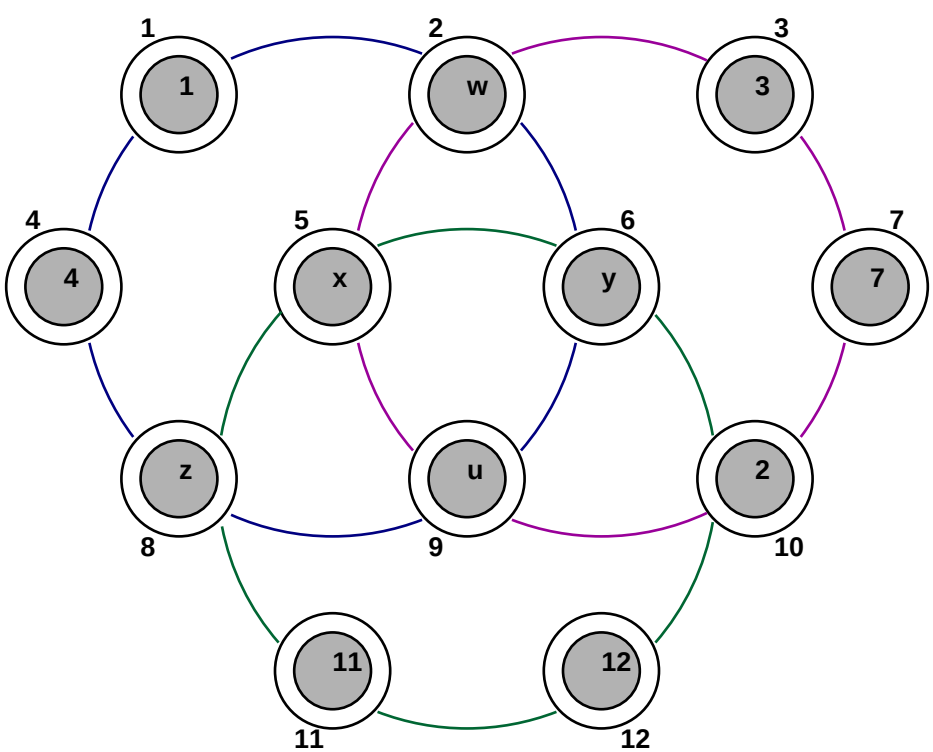

1
1
2
3
3
w
7
4
4
5
6
7
x
z
y
11
8
9
u
10
12
11
2
12


1
2
3
1
w
3
4
5
6
7
4
z
x
7
11
u
y
8
9
10
12
2
11
12

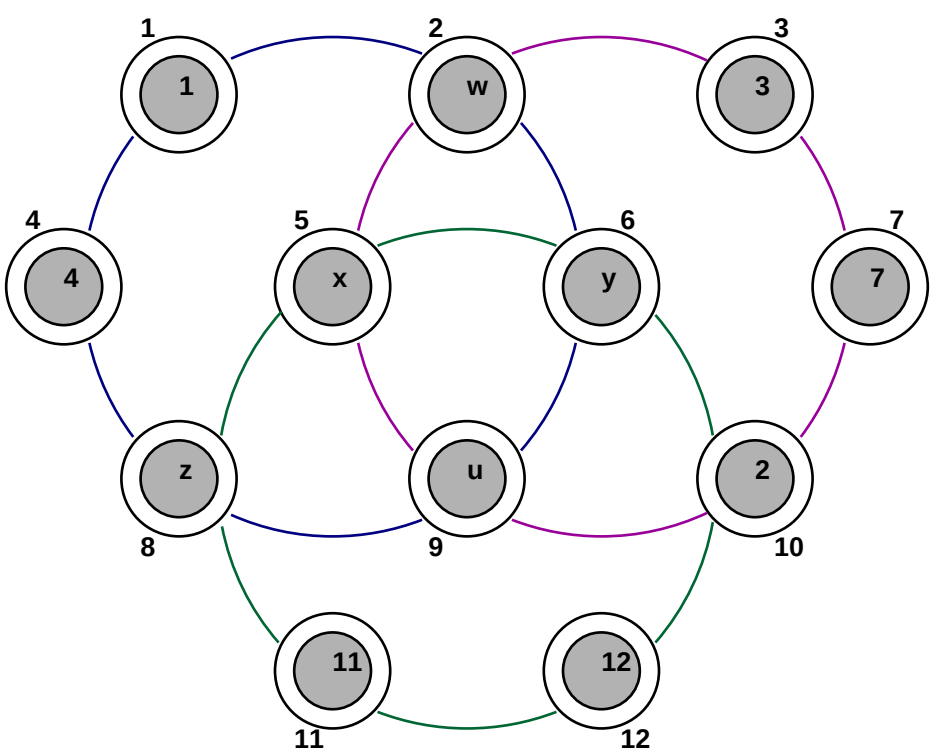

1
2
3
1
w
3
4
5
6
7
4
z
x
7
11
u
y
8
9
10
12
2
11
12

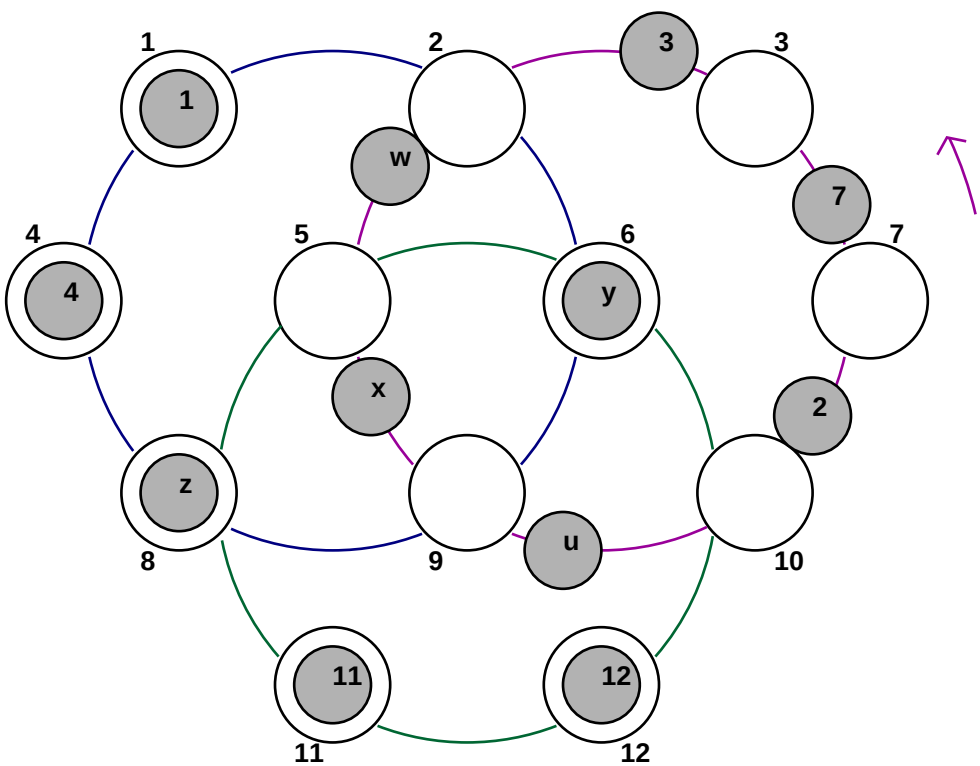

1
2
3
1
w
3
4
5
6
7
x
4
7
z
y
u
8
9
10
11
2
12
11
12

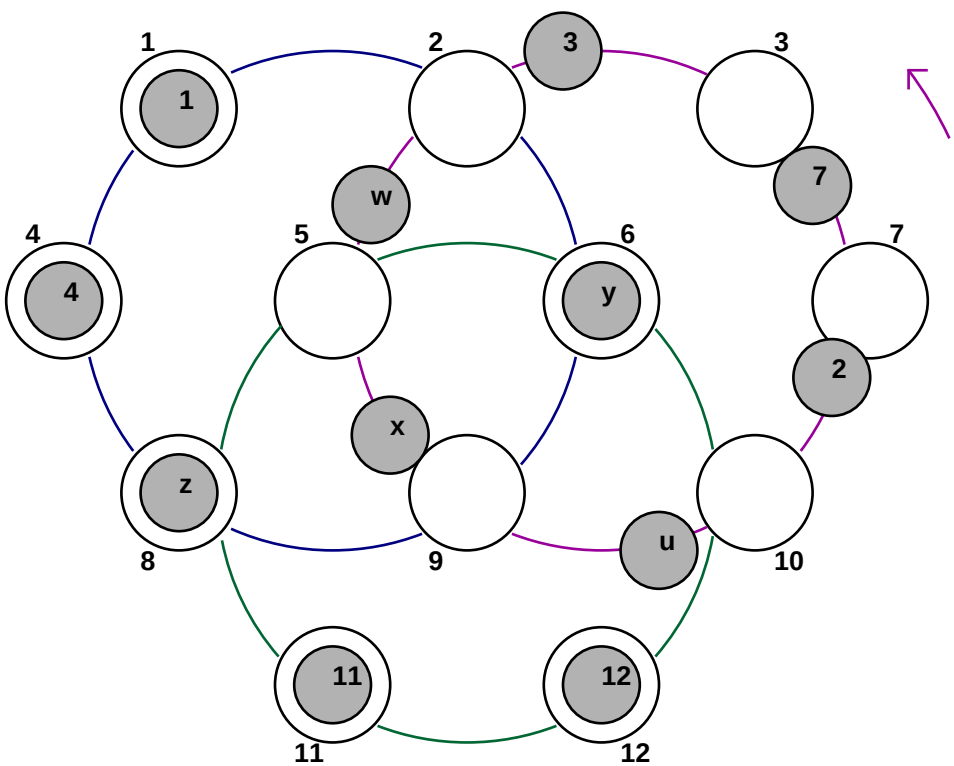

1
2
3
1
w
3
4
5
6
7
x
4
7
y
z
u
8
9
10
2
11
11
12
12

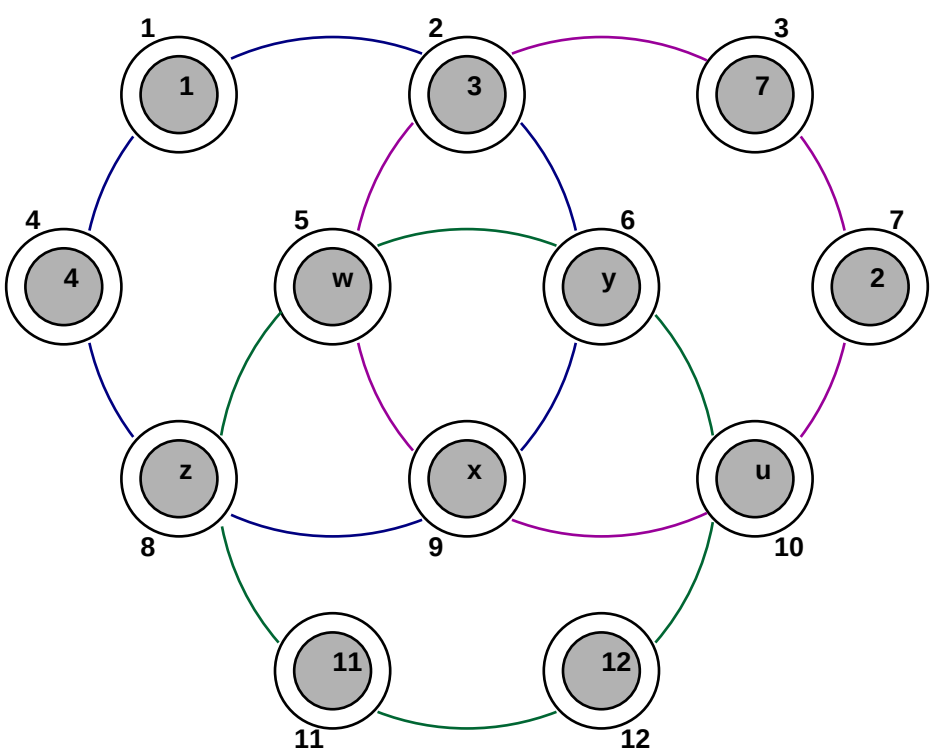

1
2
3
1
w
3
4
5
6
7
4
x
y
7
z
u
2
8
9
10
11
12
11
12

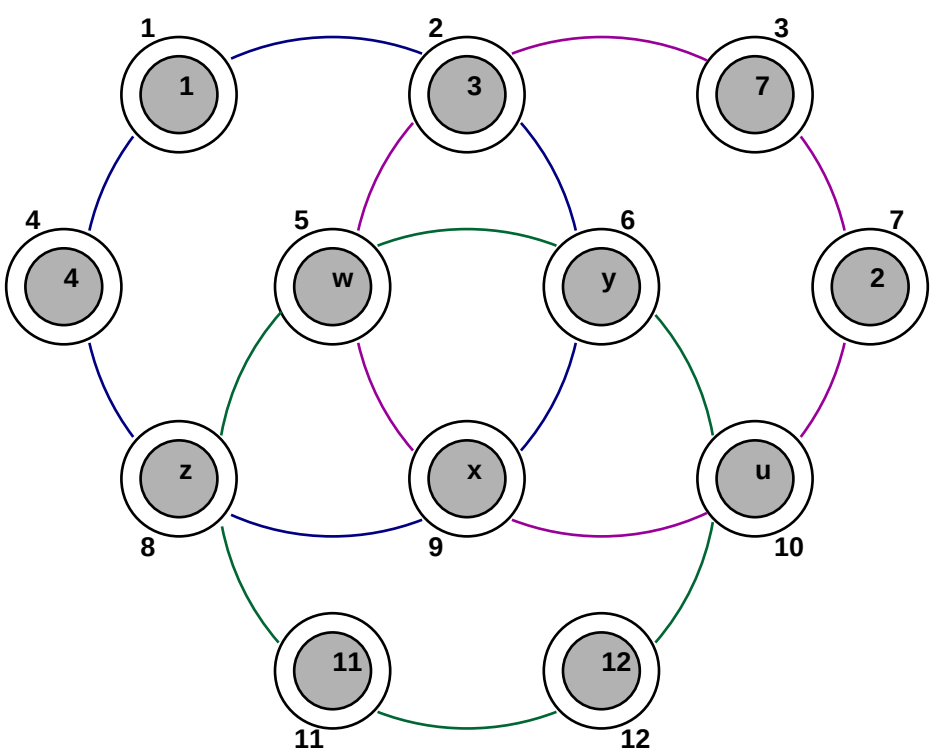
Number 2 can be moved into position 6 while keeping numbers 1, 3, 4, 7, 11, and 12 in position by the following moves.

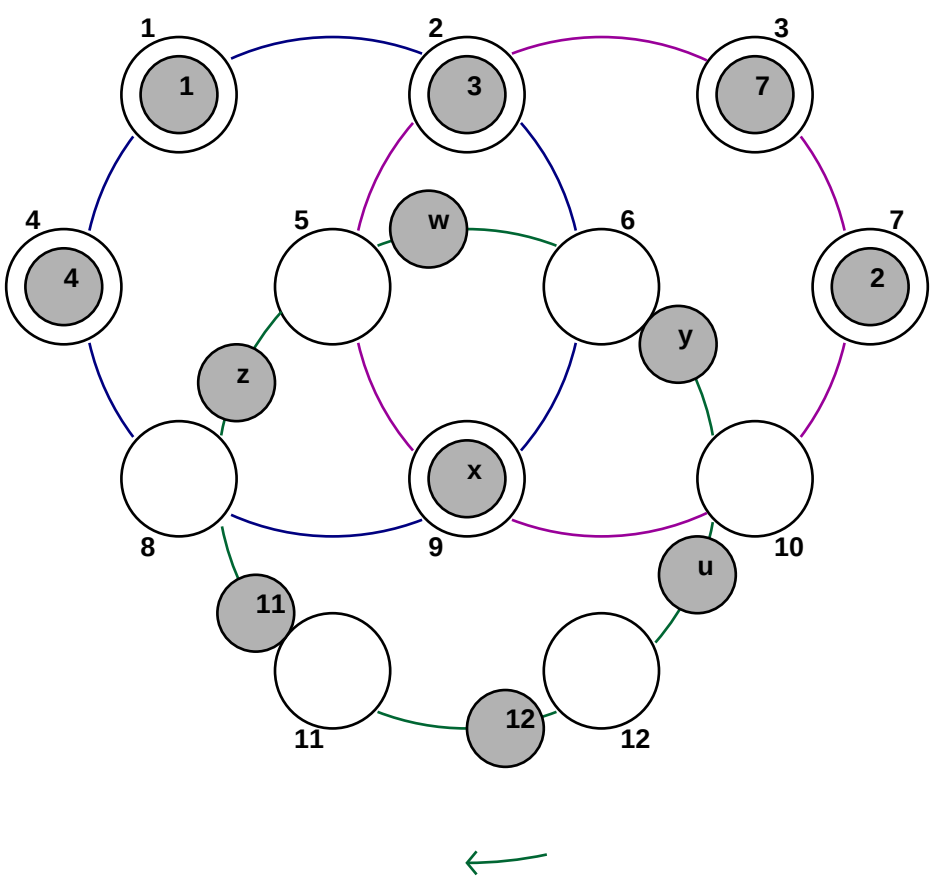

1
2
3
1
w
3
4
5
6
7
4
x
y
7
z
u
2
8
9
10
11
12
11
12

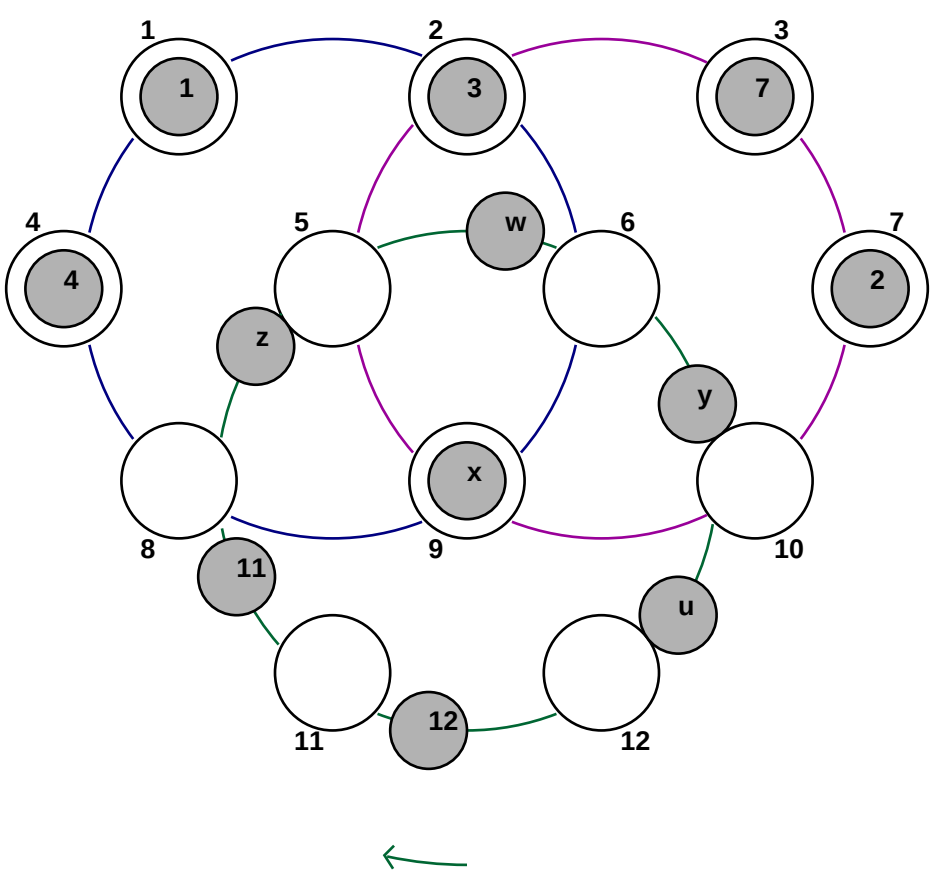

1
2
3
3
1
w
7
4
5
6
7
4
y
x
2
z
8
9
u
10
11
12
11
12

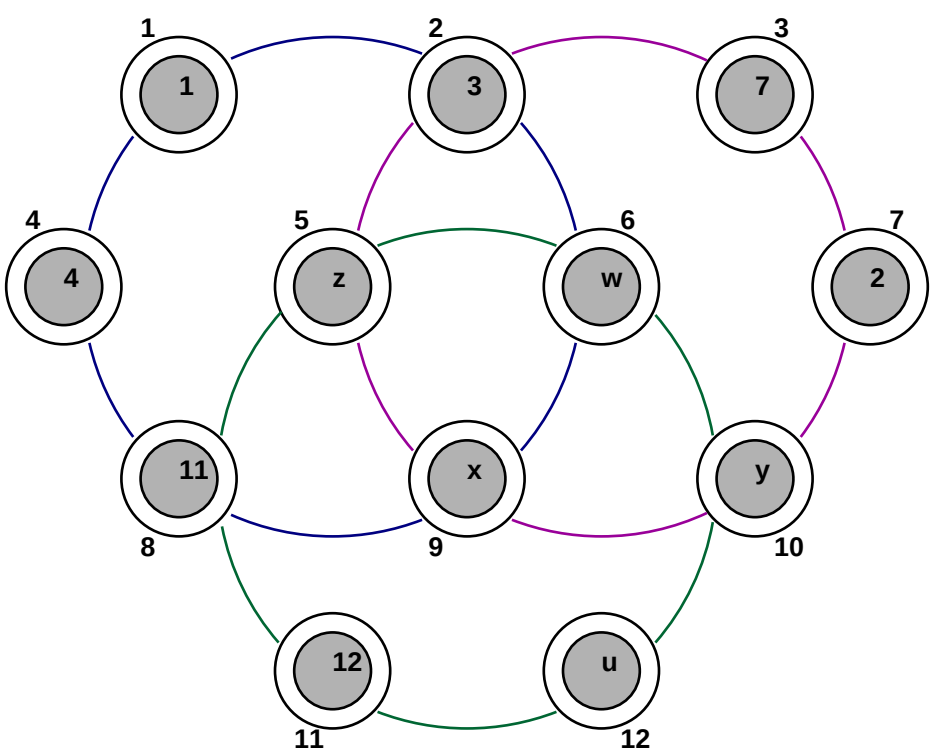

1
2
3
3
1
7
w
4
5
6
7
4
y
2
x
z
u
8
9
10
11
12
11
12

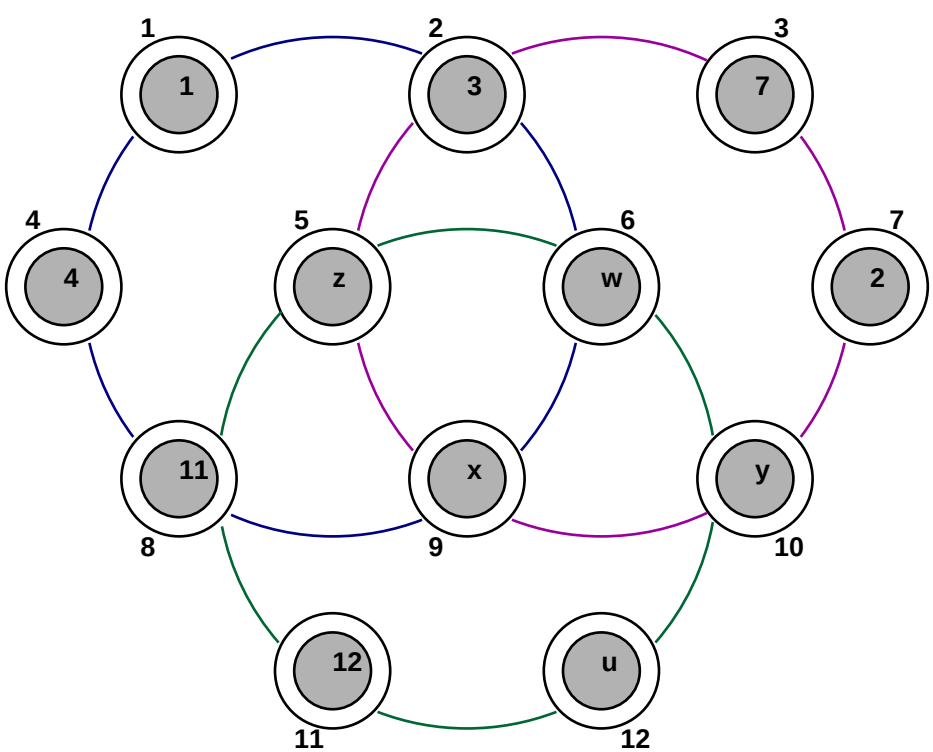

1
2
3
1
3
7
4
5
6
7
4
w
y
2
z
x
u
8
9
10
11
12
11
12

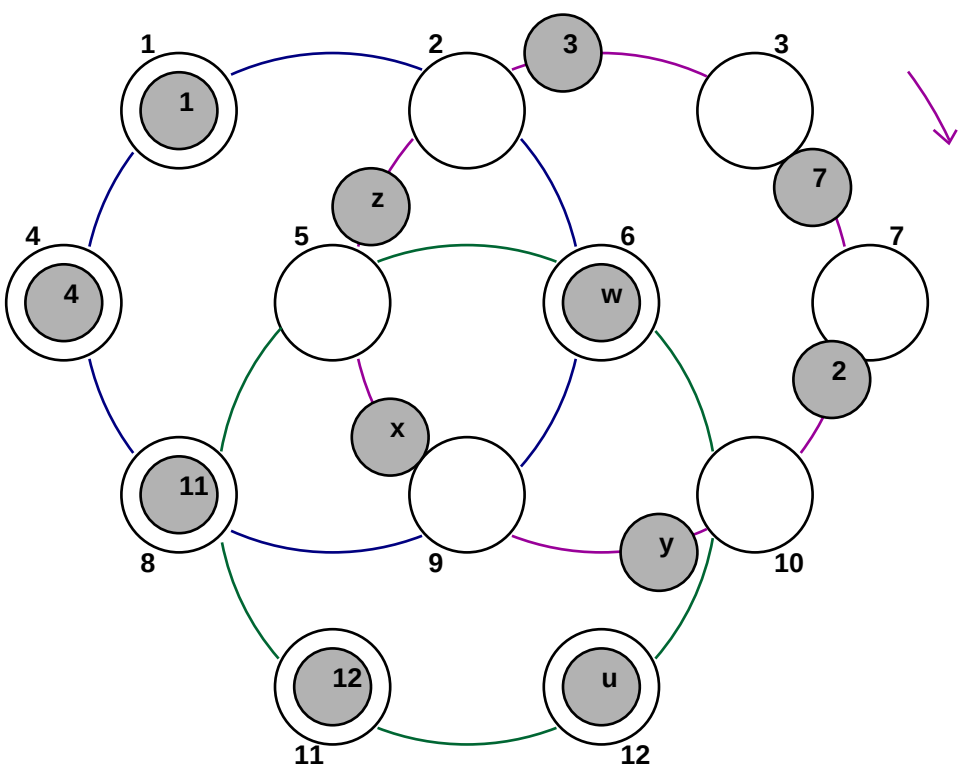

1
2
3
1
3
7
4
5
6
7
4
w
y
2
z
x
u
8
9
10
11
12
11
12

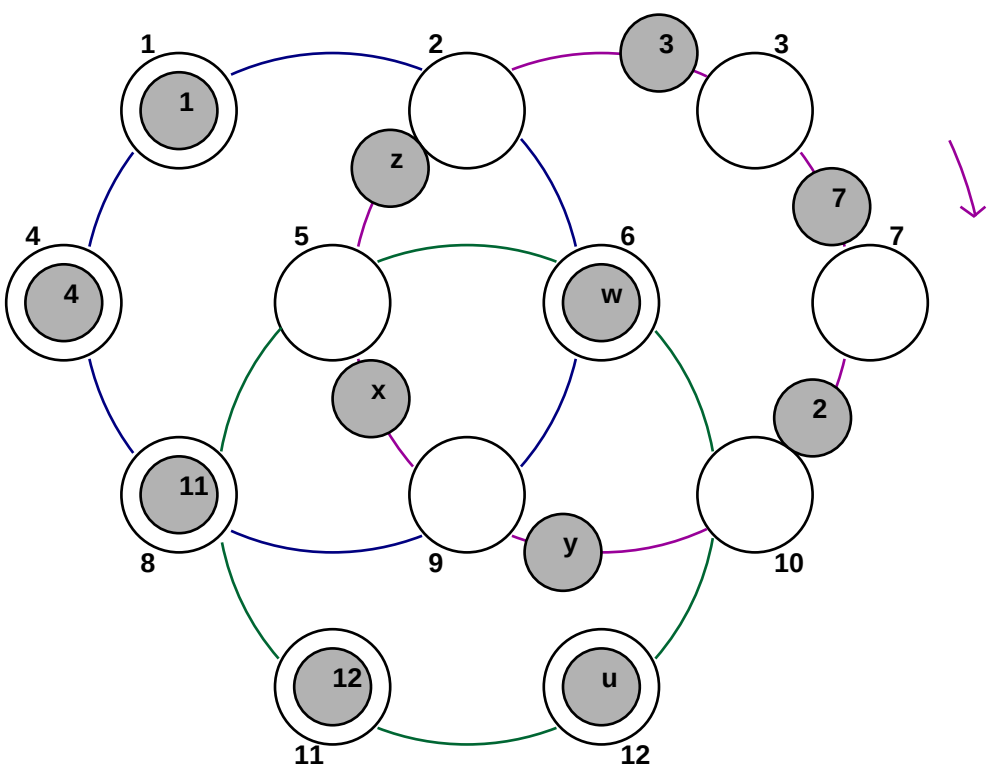

1
2
3
1
3
7
4
5
w
6
7
4
2
y
z
x
8
9
10
u
11
11
12
12

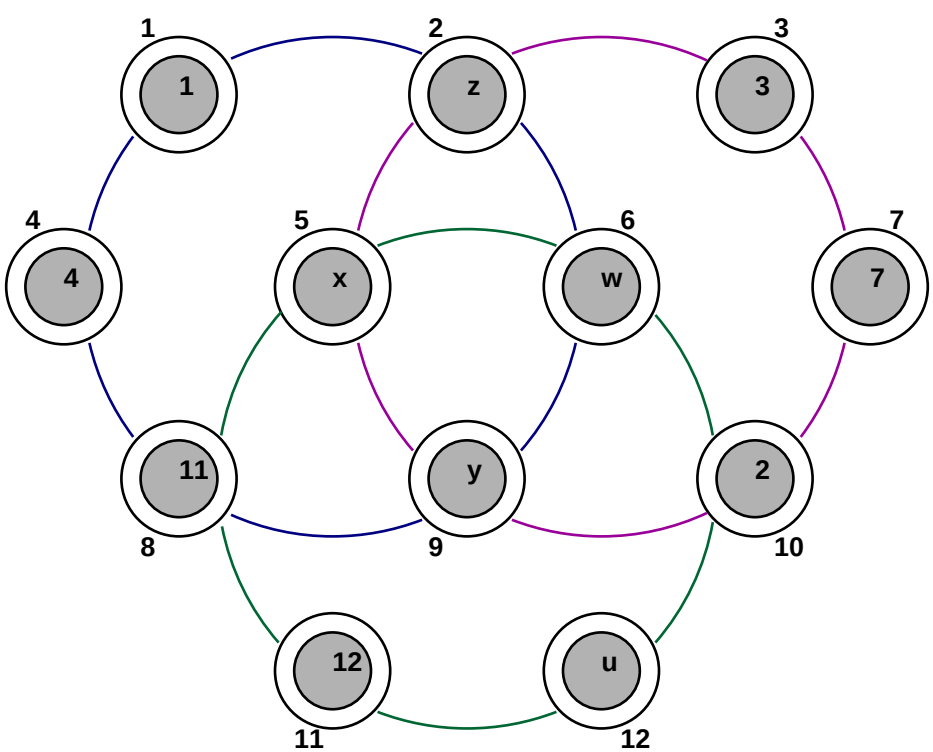

1
2
3
1
3
7
4
5
w
6
7
4
2
z
y
x
8
9
10
11
u
12
11
12

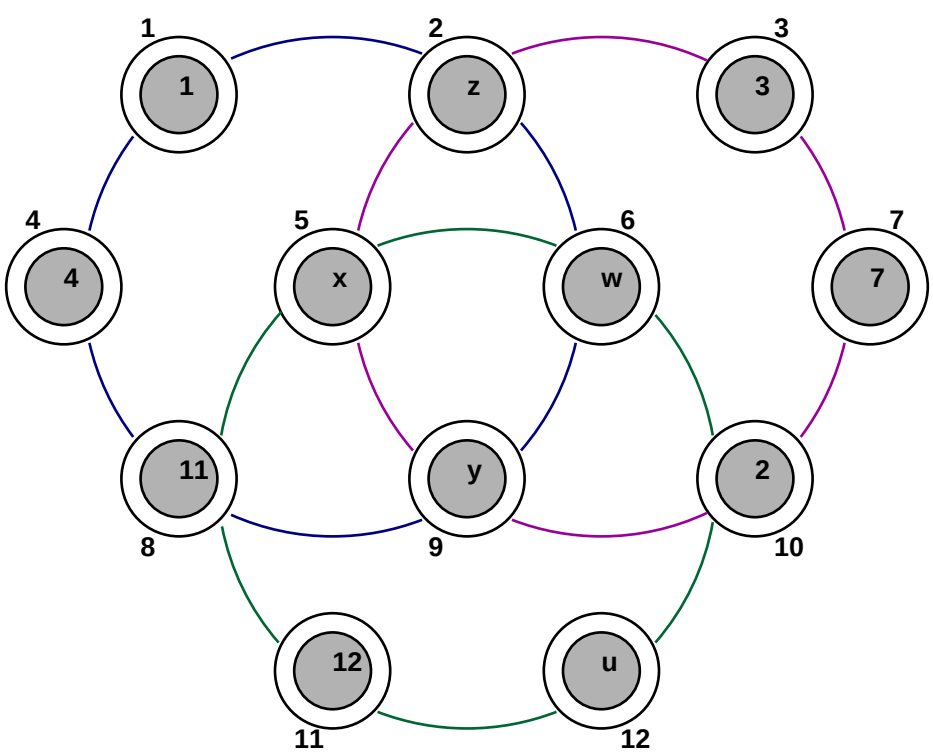

1
2
3
1
3
7
4
5
6
7
4
z
w
2
11
x
y
8
9
10
12
u
11
12

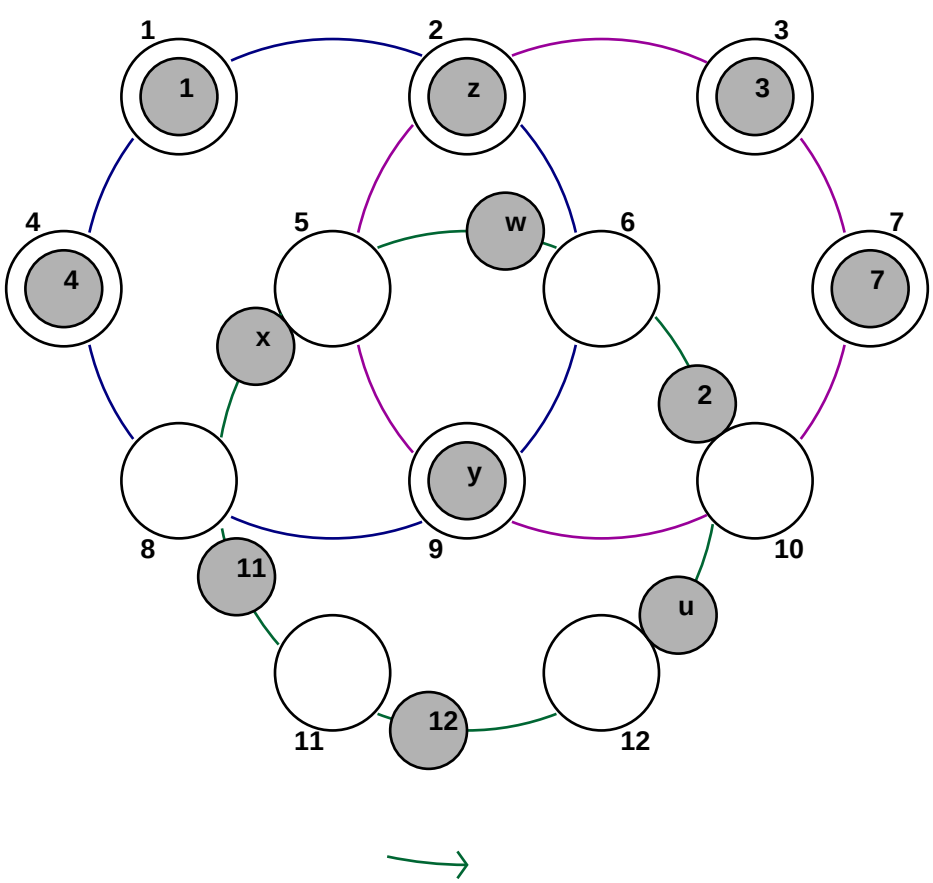

1
2
3
1
3
7
4
5
6
7
4
z
w
2
11
x
y
8
9
10
12
u
11
12

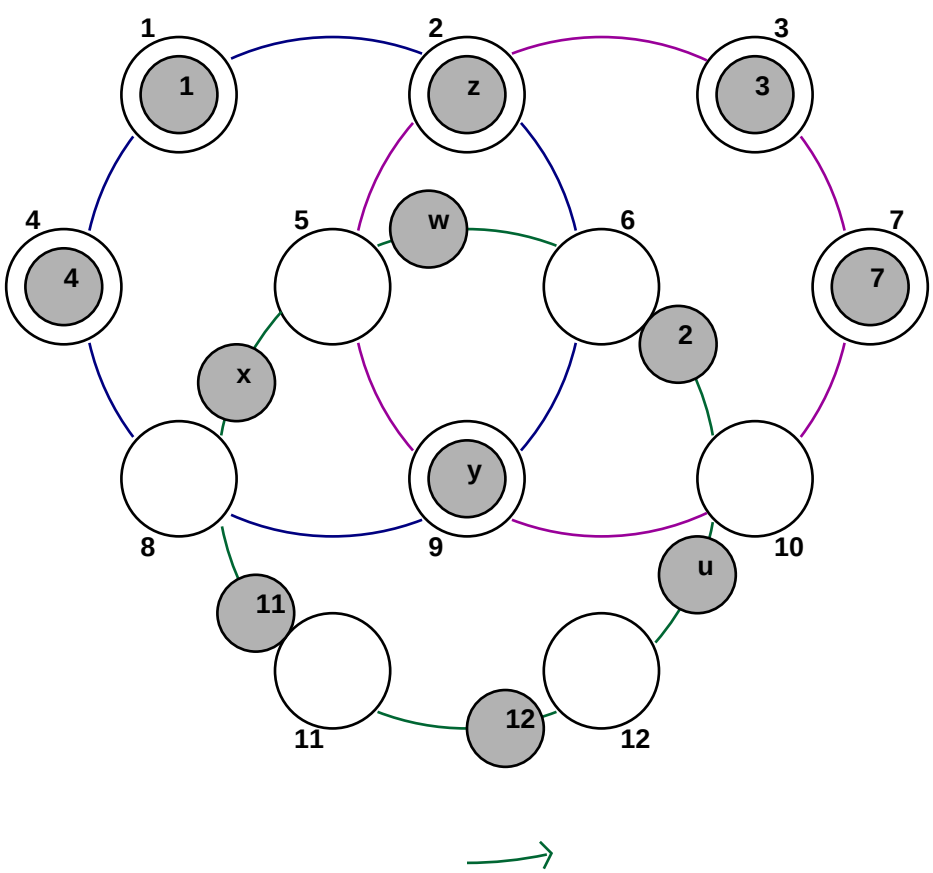

1
1
2
3
3
7
z
4
4
5
6
w
7
2
x
11
8
9
y
10
12
11
u
12

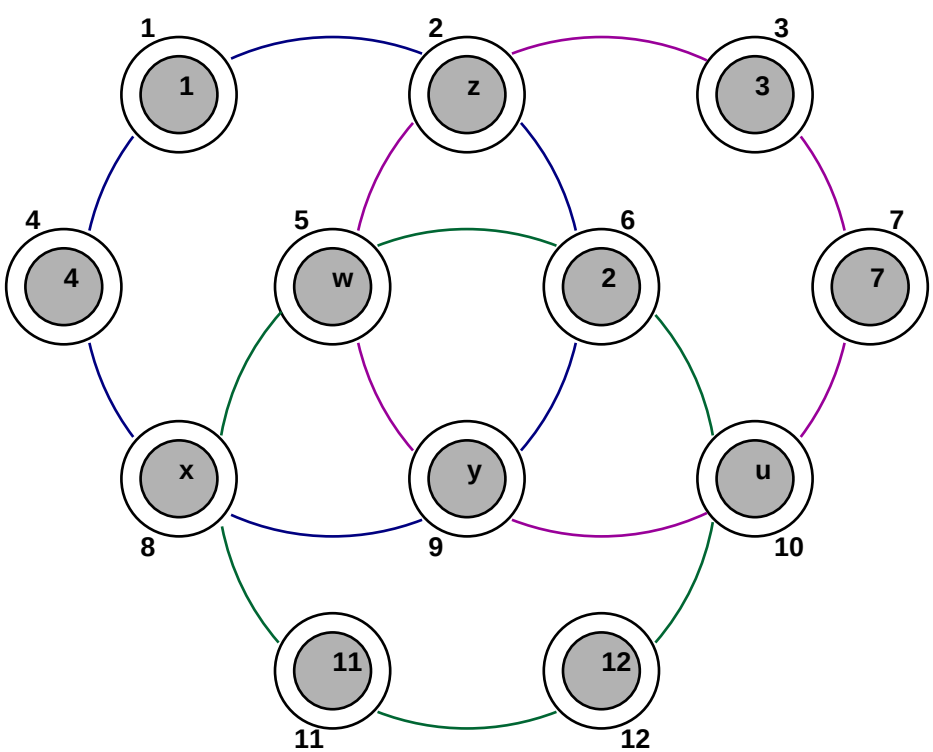

1
1
2
3
3
z
7
4
4
5
6
7
w
x
2
11
8
9
y
10
12
11
u
12


1
2
3
1
z
3
4
5
6
7
4
x
w
7
11
y
2
8
9
10
12
u
11
12

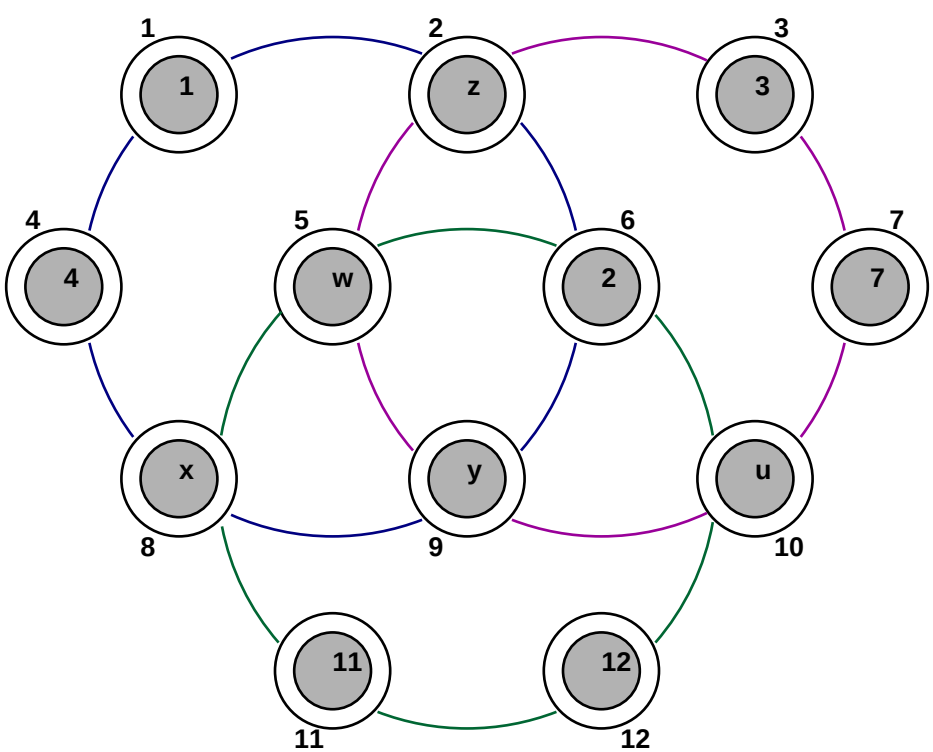

1
2
3
1
z
3
4
5
6
7
4
x
w
7
11
y
2
8
9
10
12
u
11
12

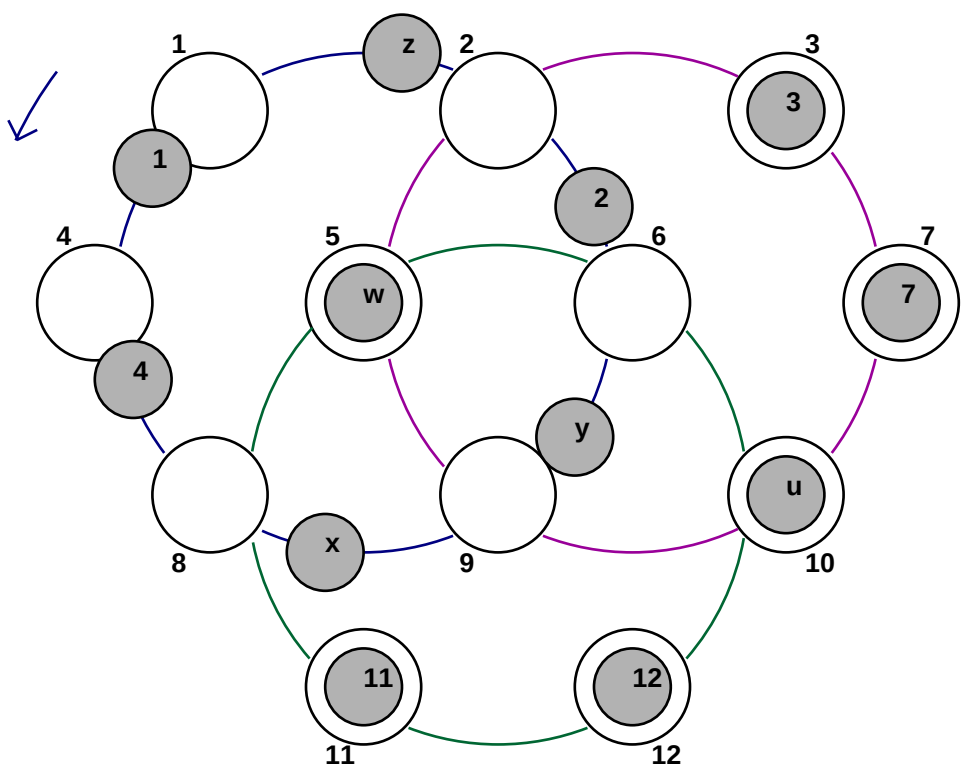

1
2
3
1
z
3
4
5
w
6
7
4
7
x
2
y
8
9
10
11
u
11
12
12

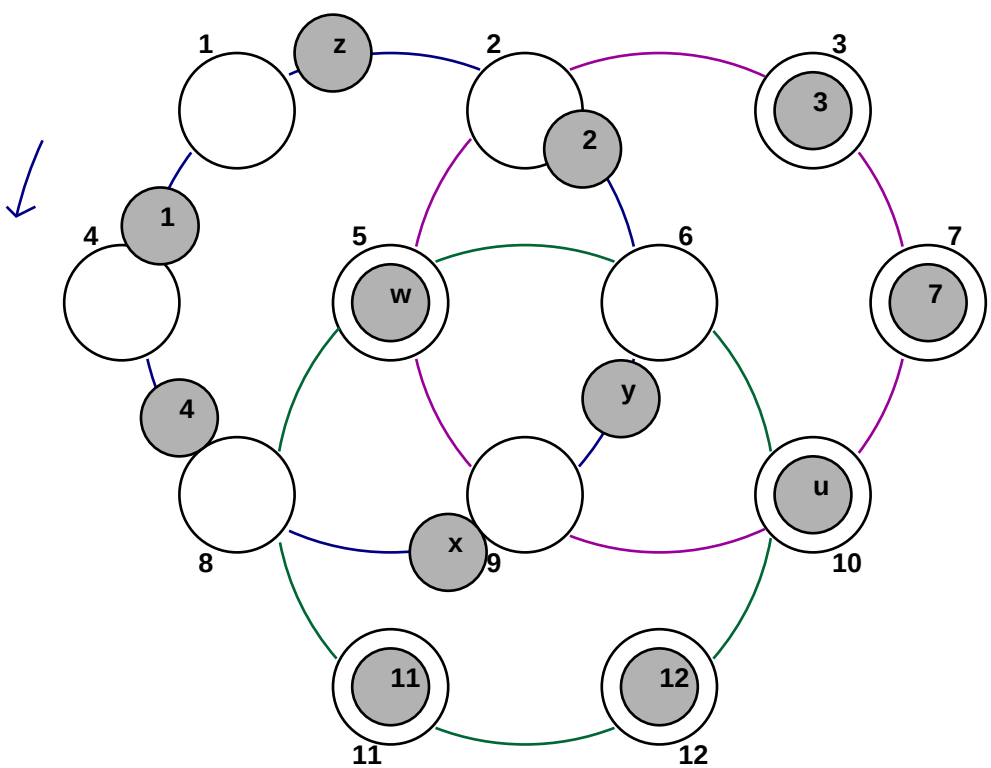

1
2
3
1
z
3
4
5
w
6
7
4
7
2
x
y
8
9
10
u
11
11
12
12

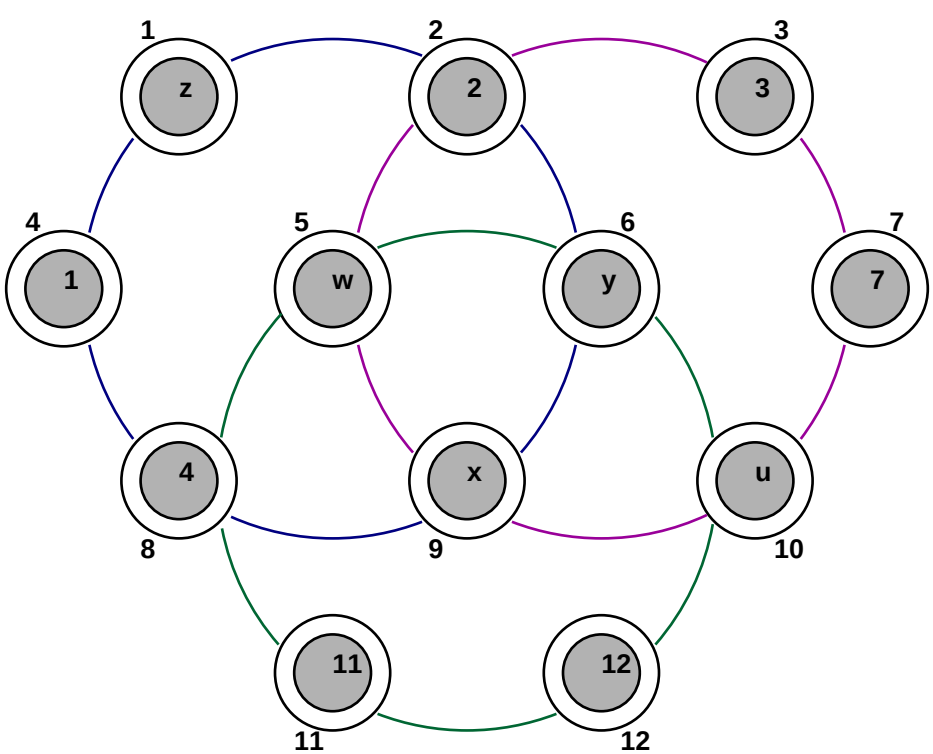

1
2
3
1
z
3
4
5
6
7
4
w
2
7
x
y
u
8
9
10
11
12
11
12

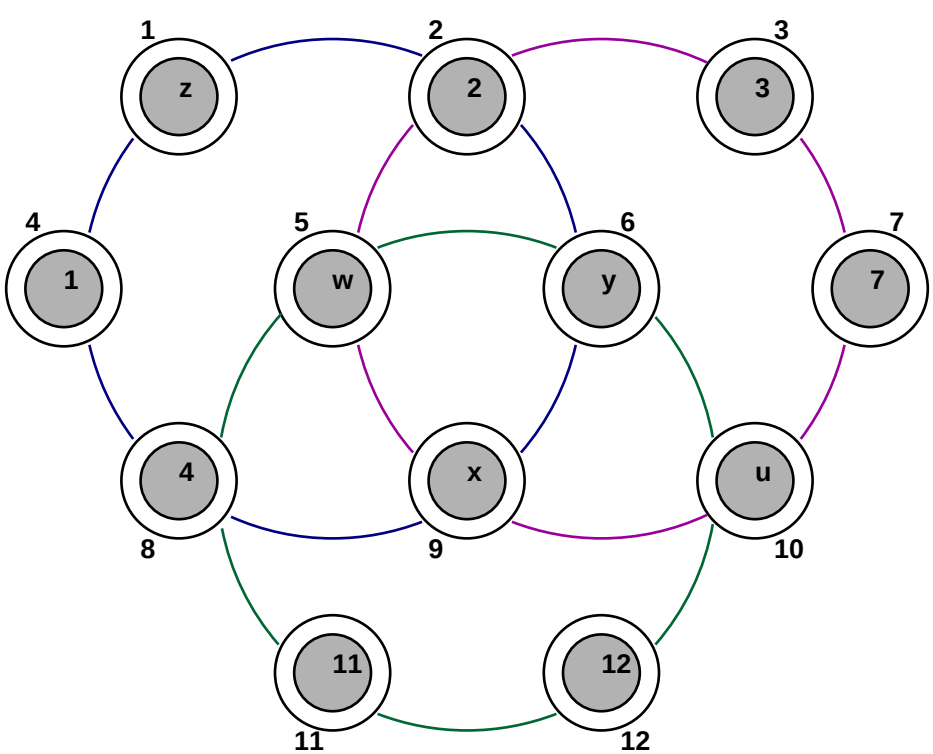
Number 2 can be moved into position 2 while keeping numbers 1, 3, 4, 7, 11, and 12 in position by the following moves.

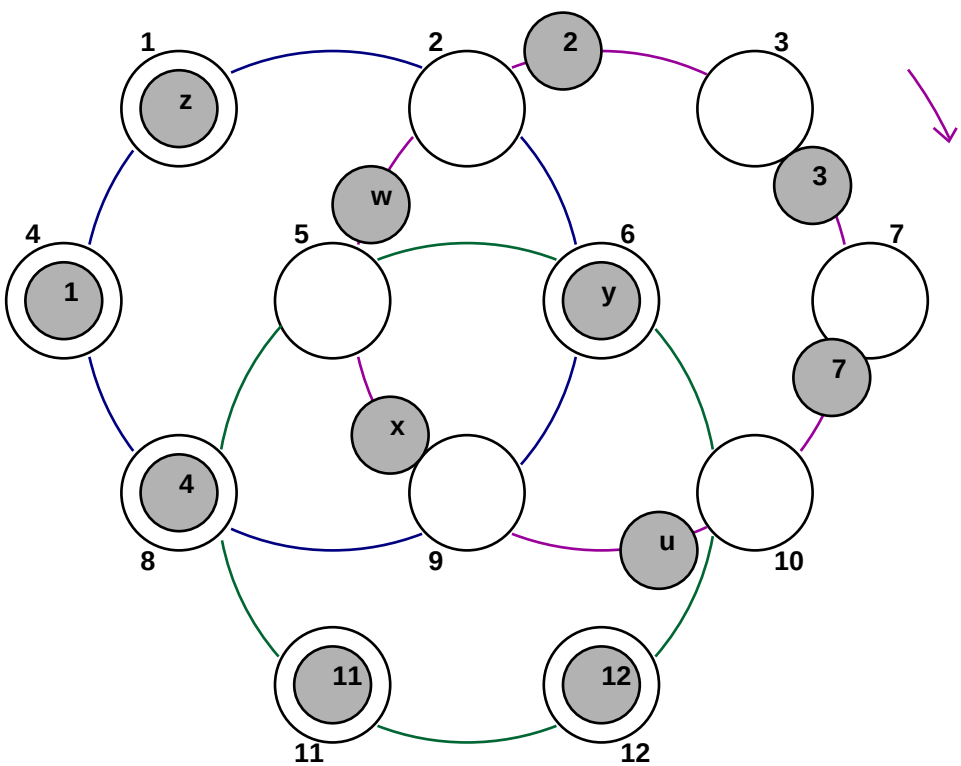

1
2
3
1
z
3
4
5
6
7
4
w
2
7
x
y
u
8
9
10
11
12
11
12

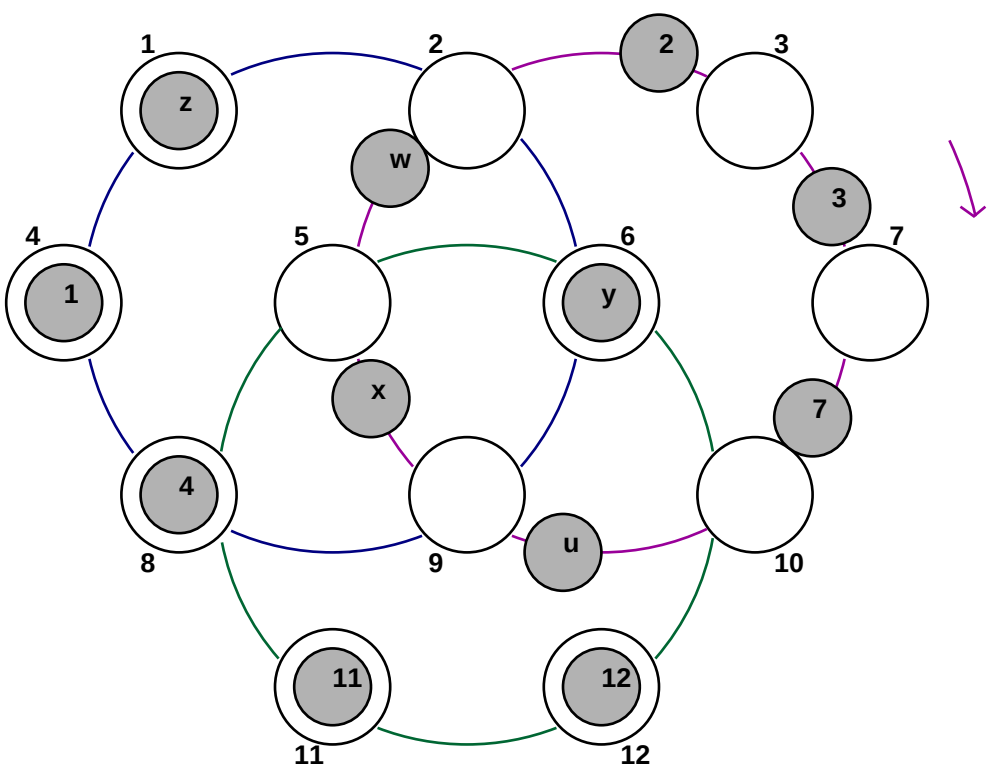

1
z
2
3
3
1
2
4
5
6
7
w
7
4
y
u
x
8
9
10
11
12
11
12

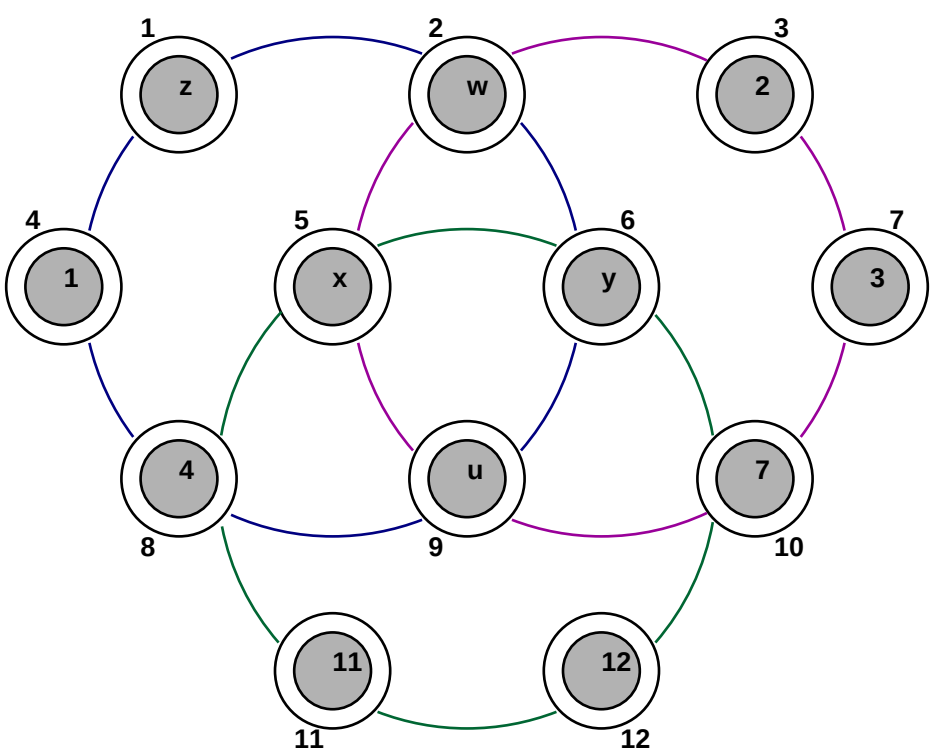

1
z
2
3
3
2
1
4
5
6
7
w
7
y
4
u
x
8
9
10
11
12
11
12

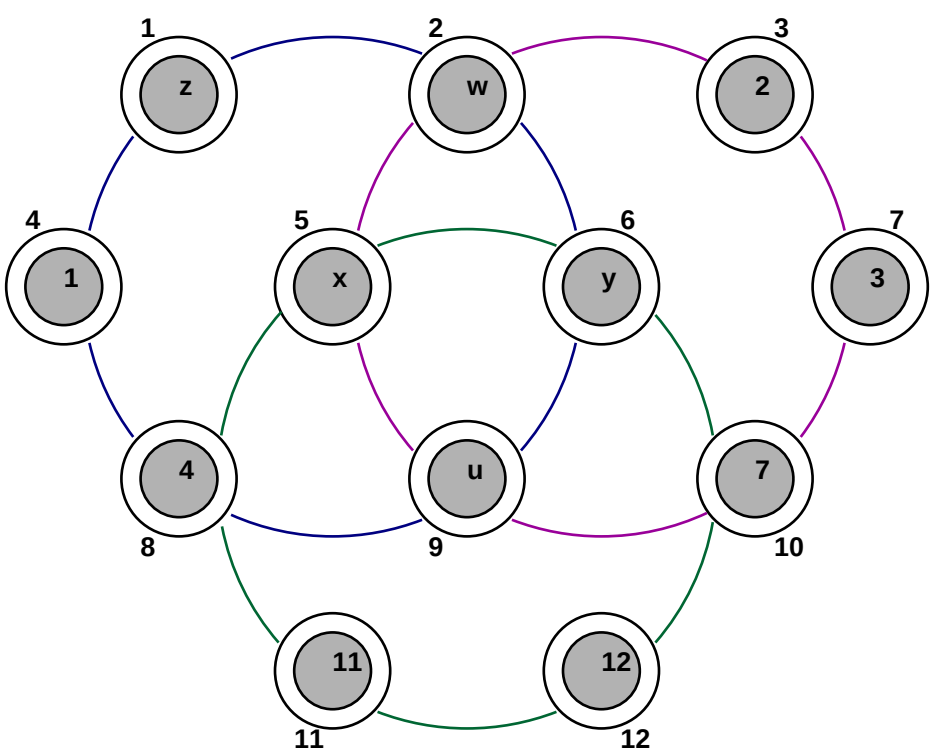

1
z
2
2
3
3
4
1
5
w
6
y
7
7
4
4
x
u
8
9
10
11
11
12
12

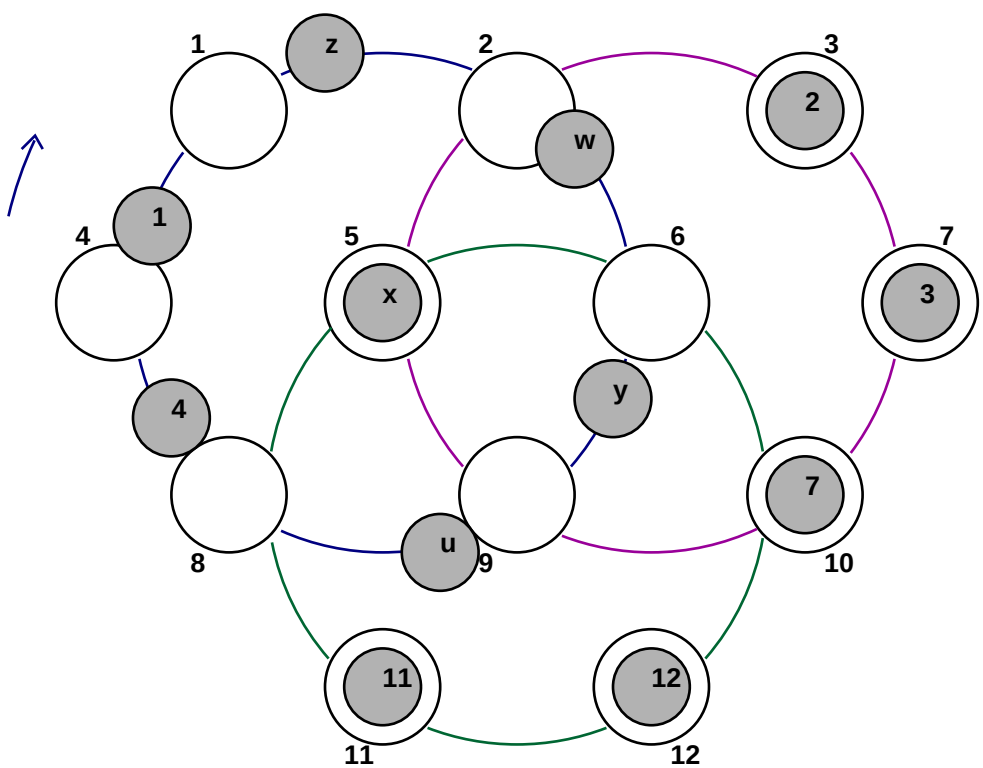

1
z
2
2
3
3
4
1
5
w
6
y
7
7
4
4
x
u
8
9
10
11
11
12
12

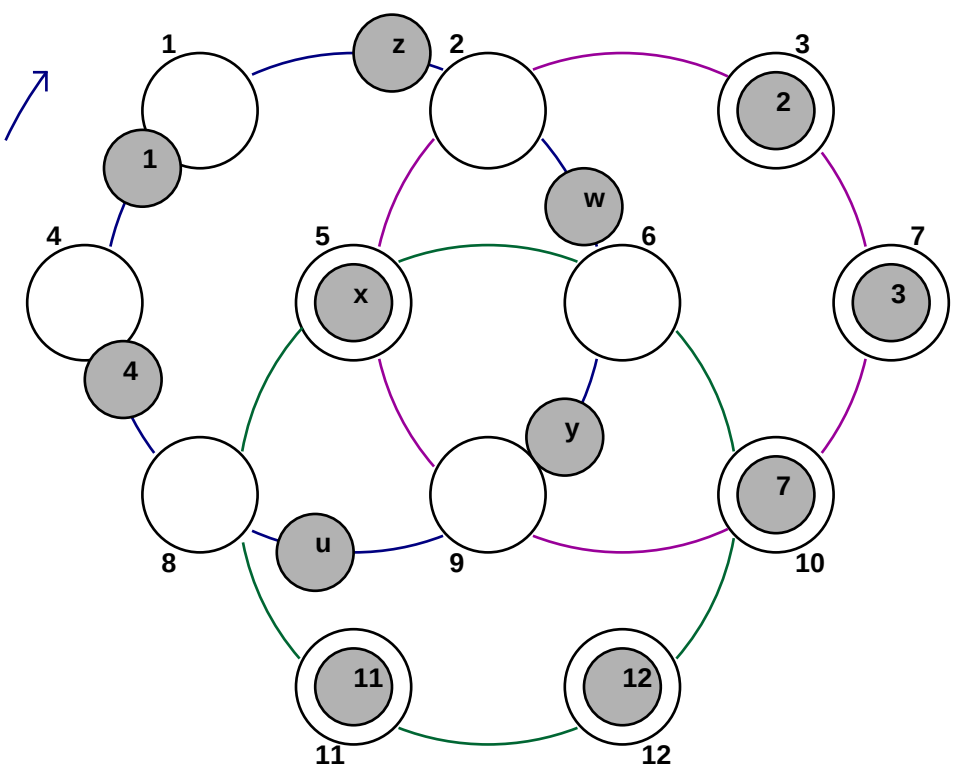

1
z
2
2
3
3
w
4
1
5
6
y
7
7
x
4
8
9
u
10
11
11
12
12

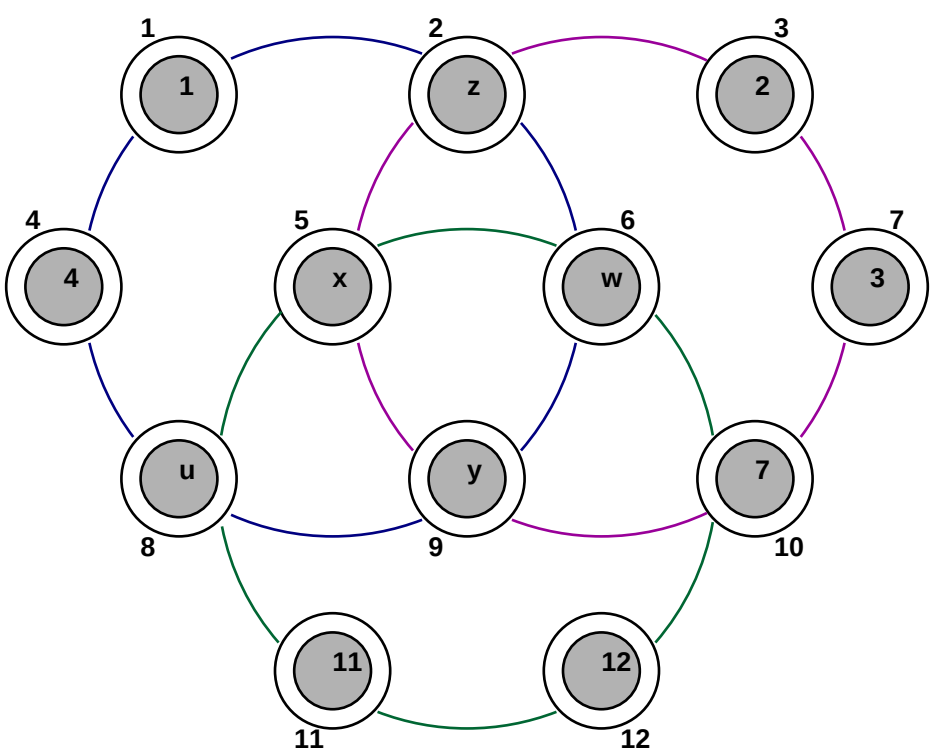

1
z
2
w
2
3
3
4
1
5
6
y
7
x
7
4
8
9
u
10
11
11
12
12

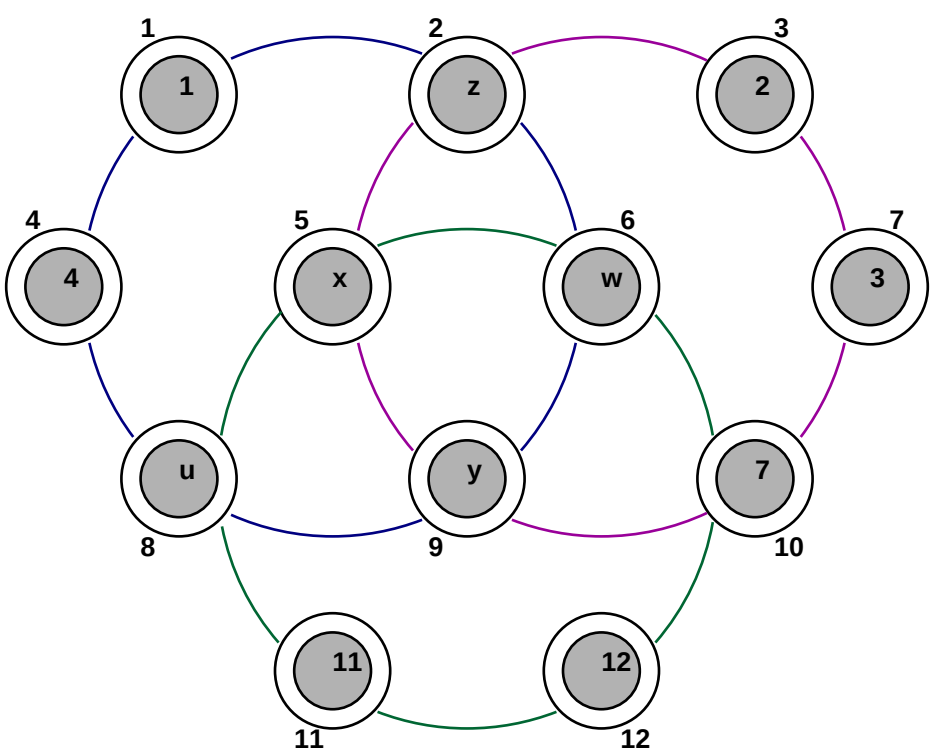

1
z
2
w
3
2
4
1
5
x
6
y
7
3
4
4
u
7
8
9
10
11
11
12
12

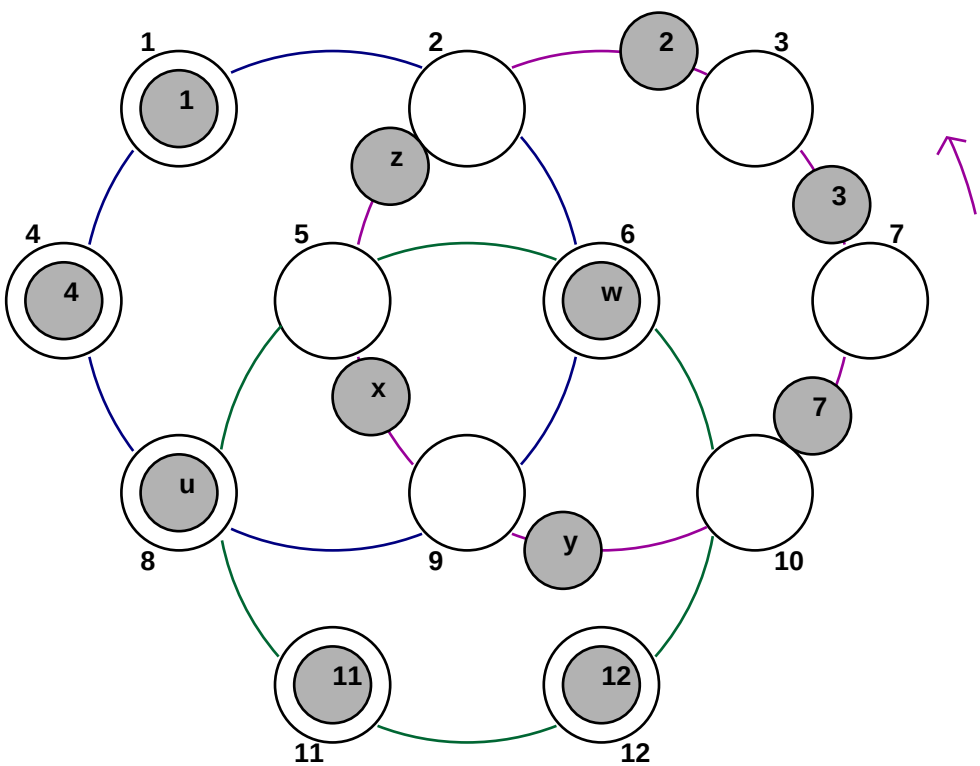

1
z
2
w
3
2
4
1
5
x
6
y
7
3
4
4
u
7
8
9
10
11
11
12
12

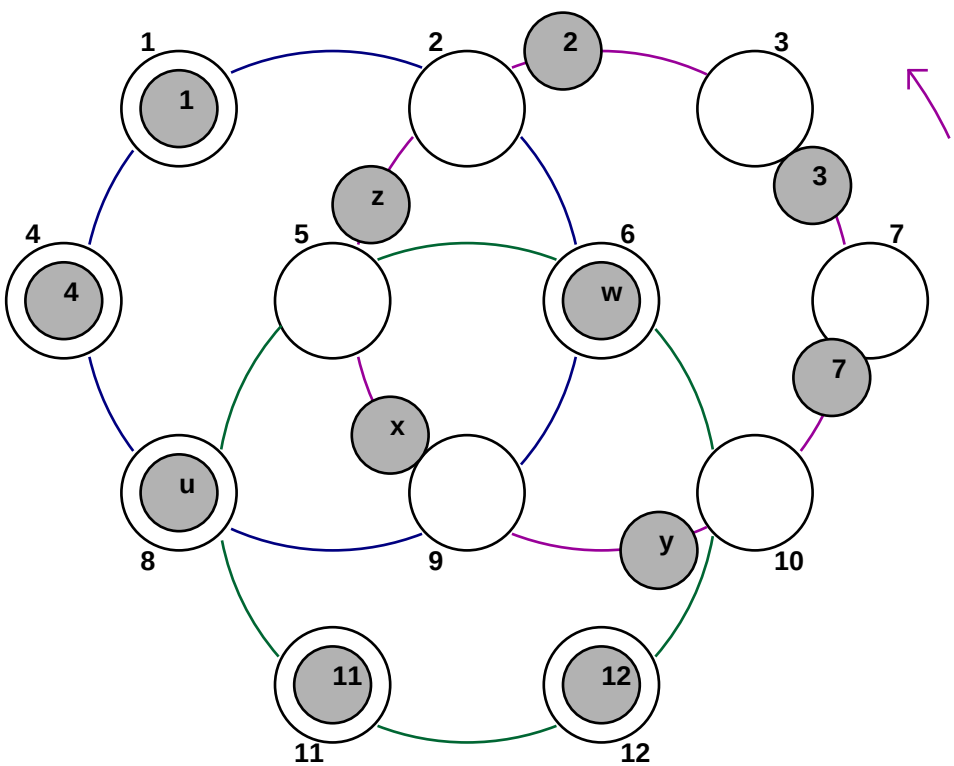

1
z
2
3
2
w
1
4
5
6
7
x
3
y
4
7
u
8
9
10
11
12
11
12

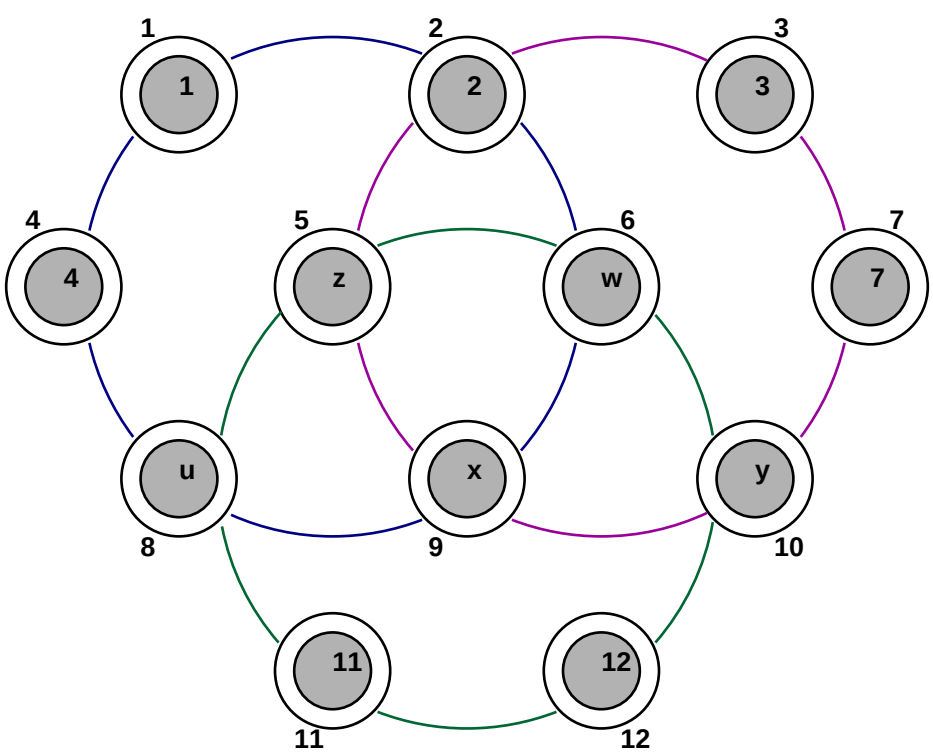

1
z
2
3
2
1
w
4
5
6
7
x
3
4
y
7
u
8
9
10
11
12
11
12


1
2
3
1
z
2
4
5
6
7
4
x
w
3
u
y
7
8
9
10
11
12
11
12


1
2
3
1
z
2
4
5
6
7
4
x
w
3
u
y
7
8
9
10
11
12
11
12


1
2
2
3
1
z
3
4
5
6
7
4
w
x
7
u
8
9
y
10
11
12
11
12


1
2
2
3
1
z
3
4
5
6
7
4
w
7
x
u
y
8
9
10
11
12
11
12

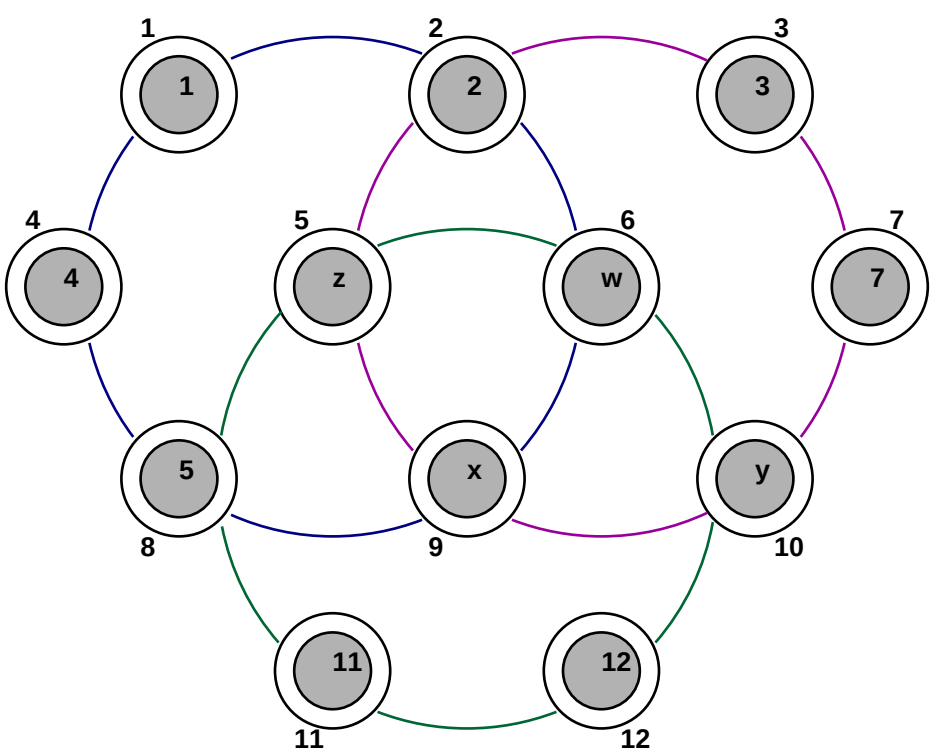

1
2
3
4
5
6
7
1
2
3
4
z
w
7
u
x
y
8
9
10
11
12
11
12

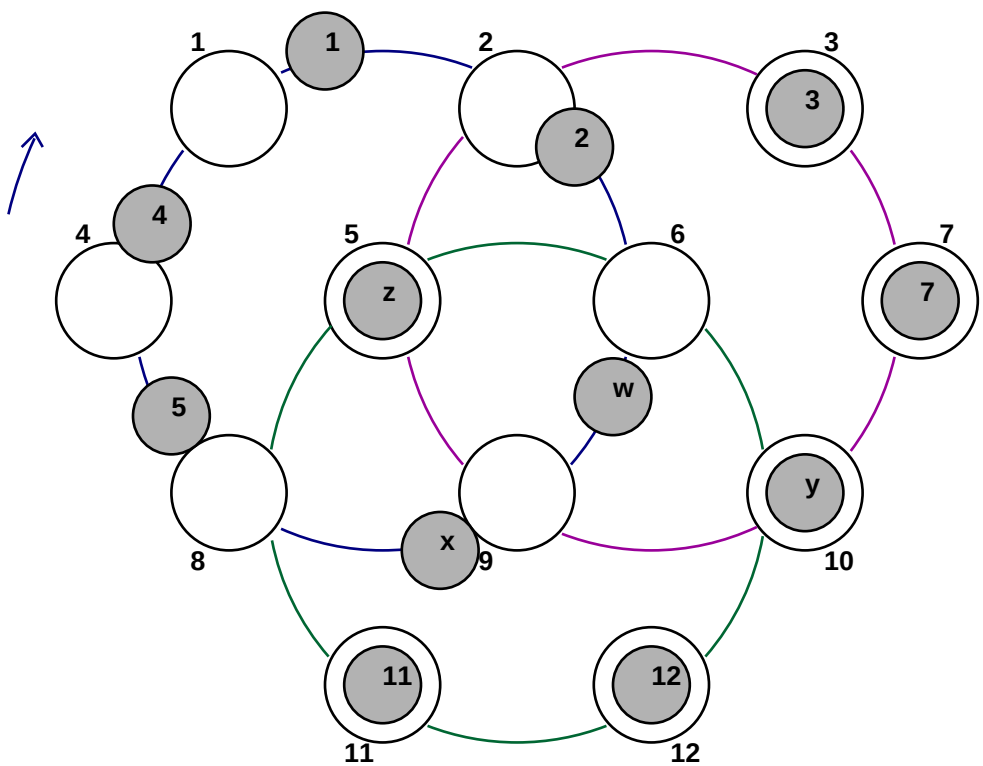
It has been shown that 2 can be moved to position 2 from any position while keeping numbers 1, 3, 4, 7, 11, and 12 in their respective positions.

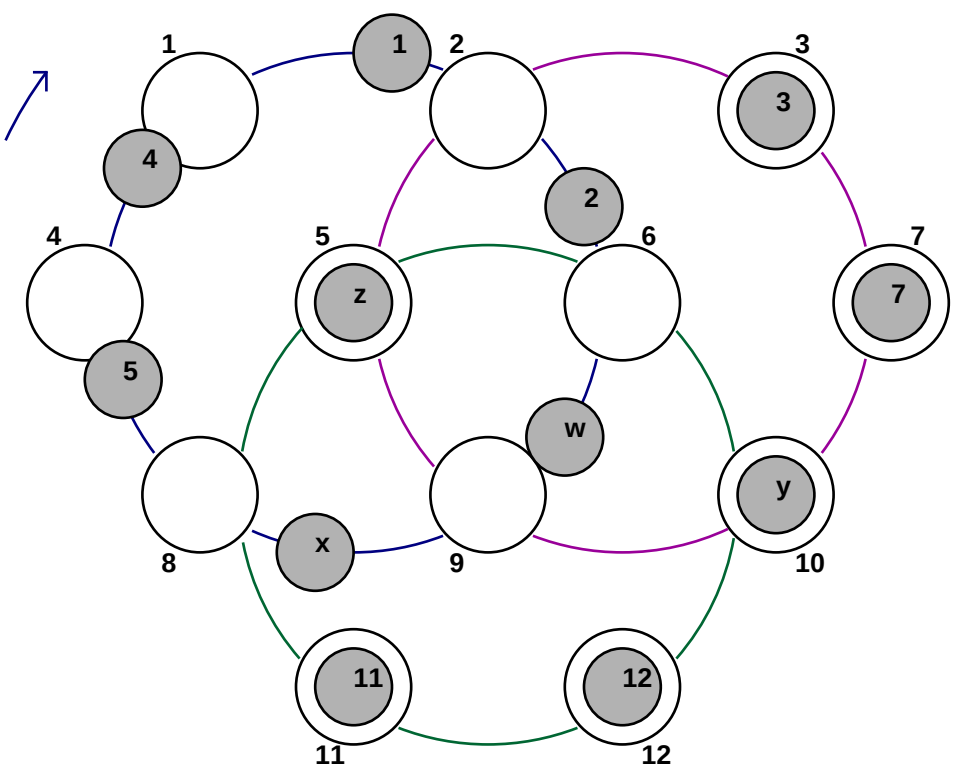
Now let v = 5.

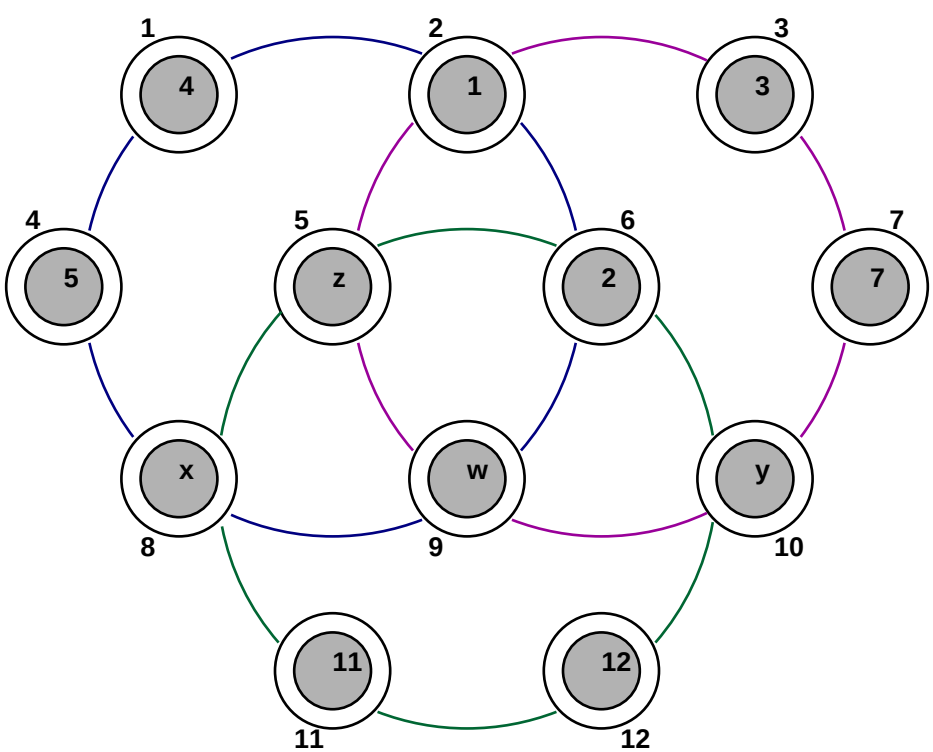
Number 5 can be moved into position 6
by moving in the following pattern.

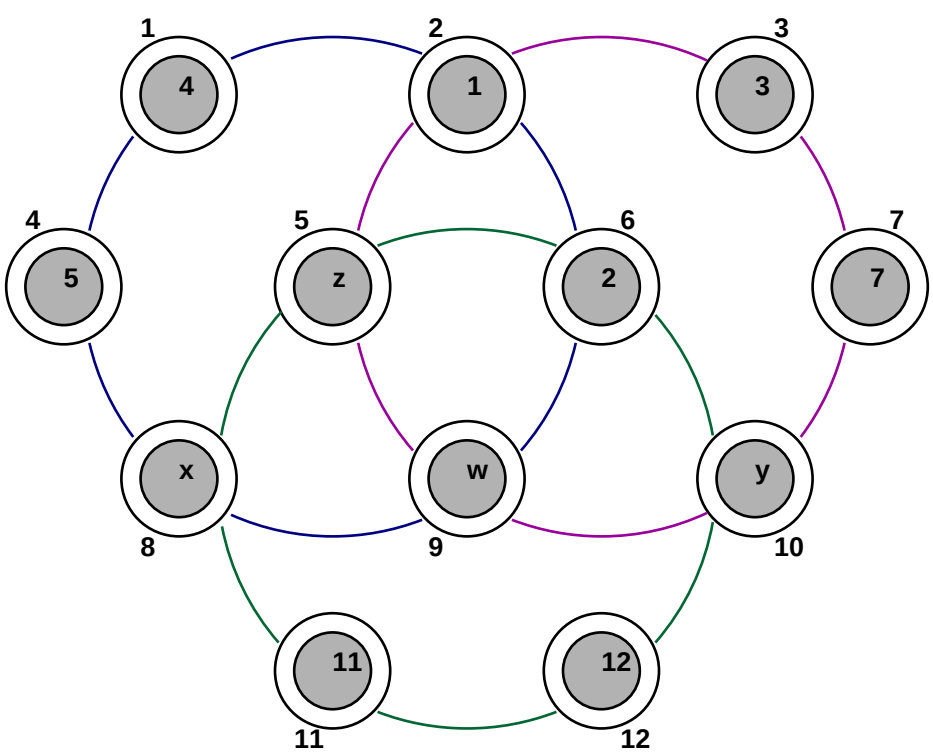
Numbers 1, 2, 3, 4, 7, 11, and 12 will remain in their correct positions.

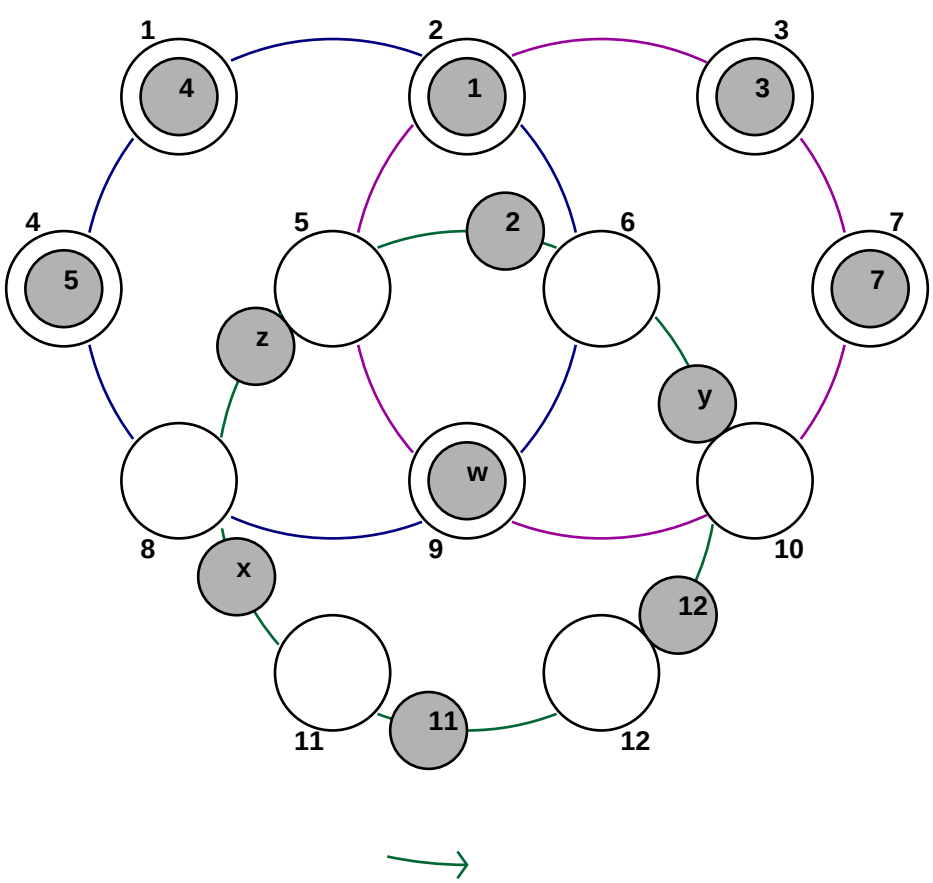

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
z
w
7
5
x
y
11
12

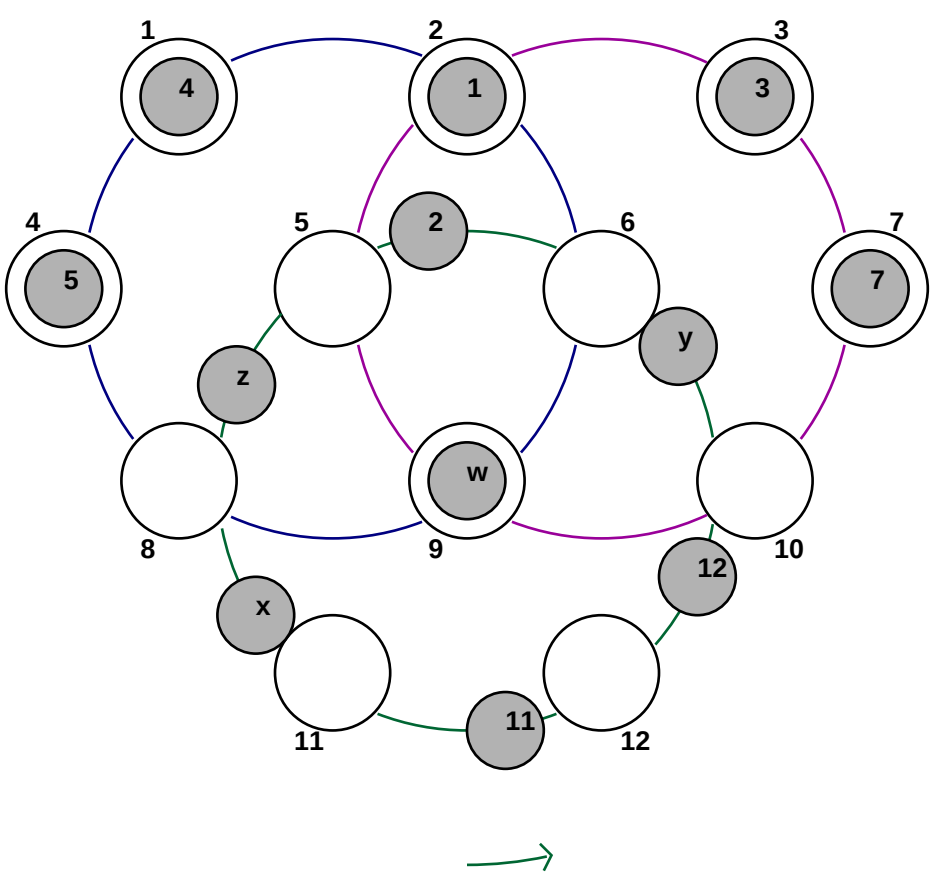

1
1
2
3
3
2
4
4
5
6
7
z
7
w
5
y
x
8
9
10
11
12
11
12

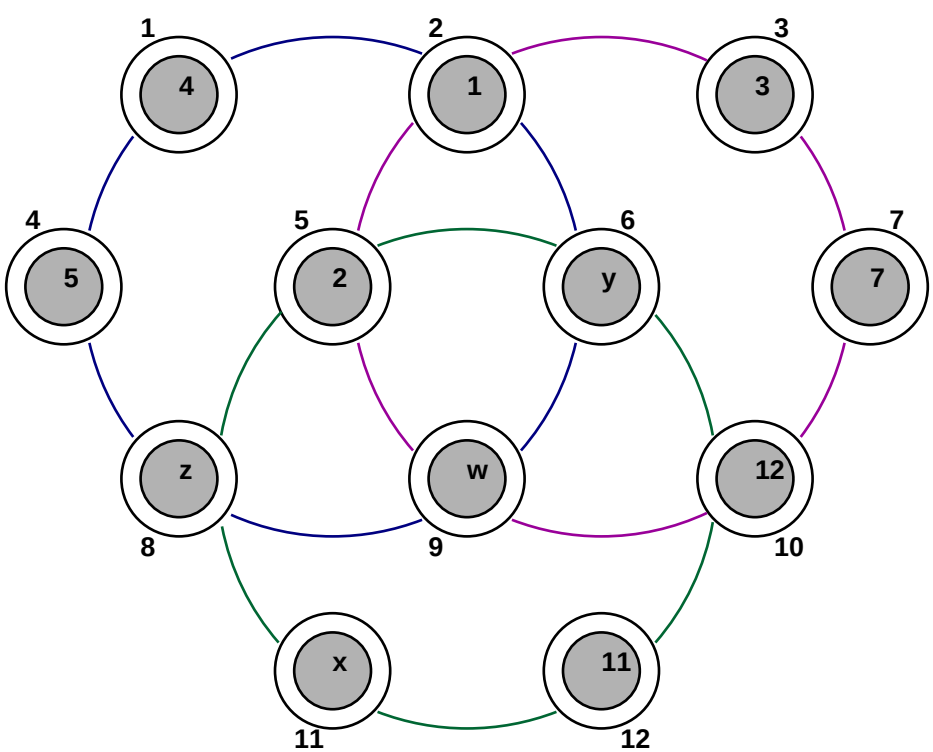

1
1
2
3
3
4
2
4
5
6
7
z
7
5
w
y
x
8
9
10
11
12
11
12

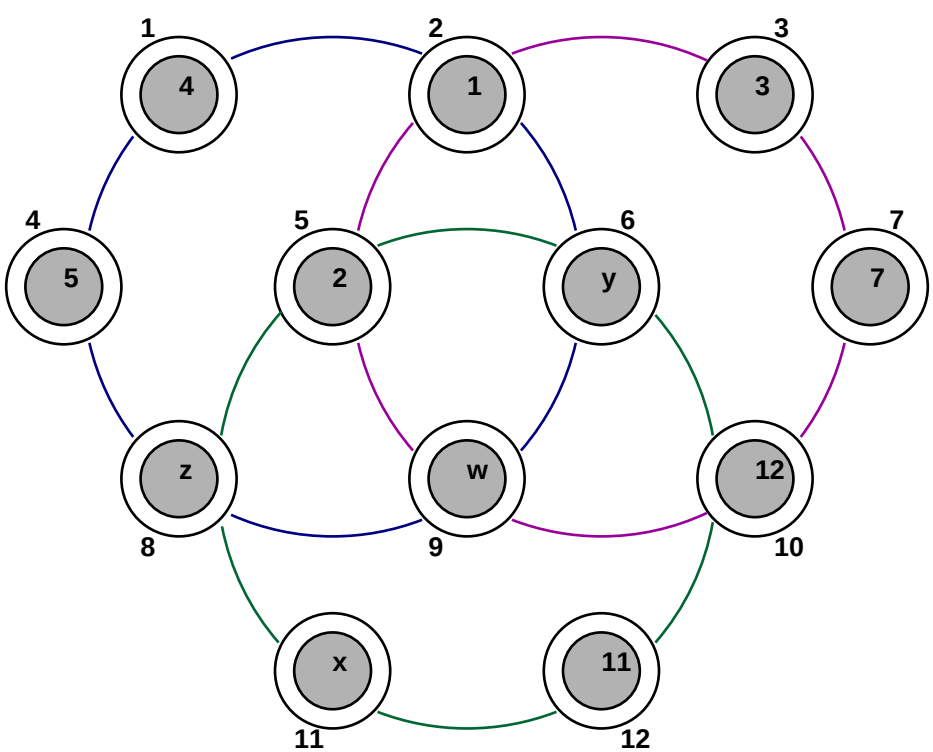

1
2
3
4
1
3
4
5
6
7
5
z
2
7
x
w
y
8
9
10
11
12
11
12

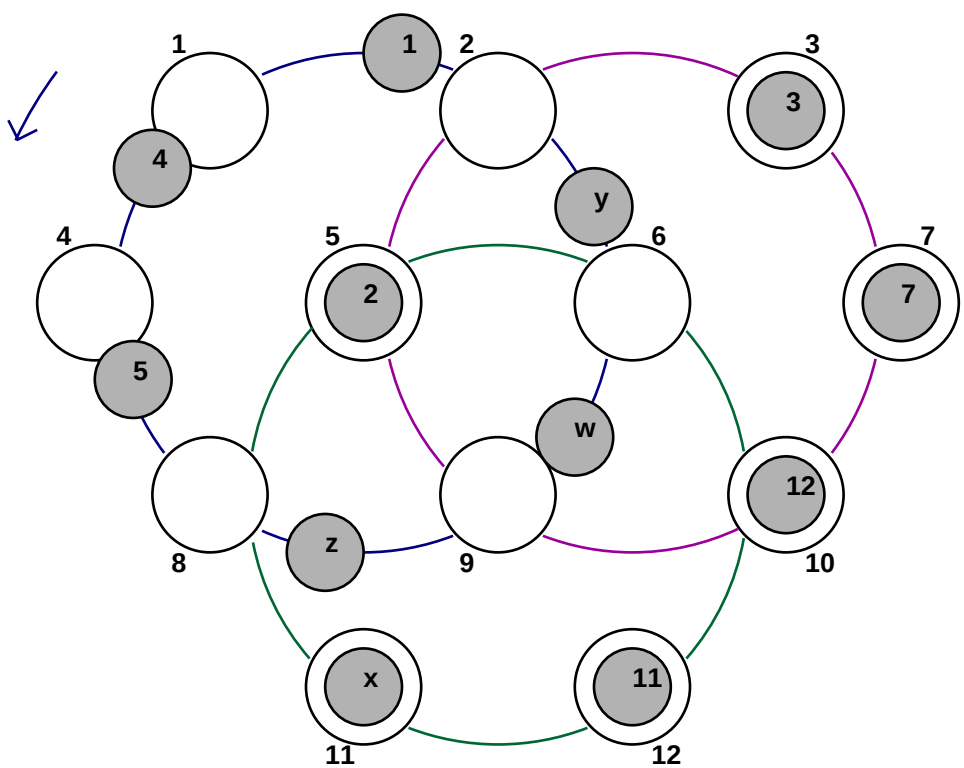

1
2
3
4
1
3
4
5
6
7
5
z
2
7
x
w
y
8
9
10
11
12
11
12

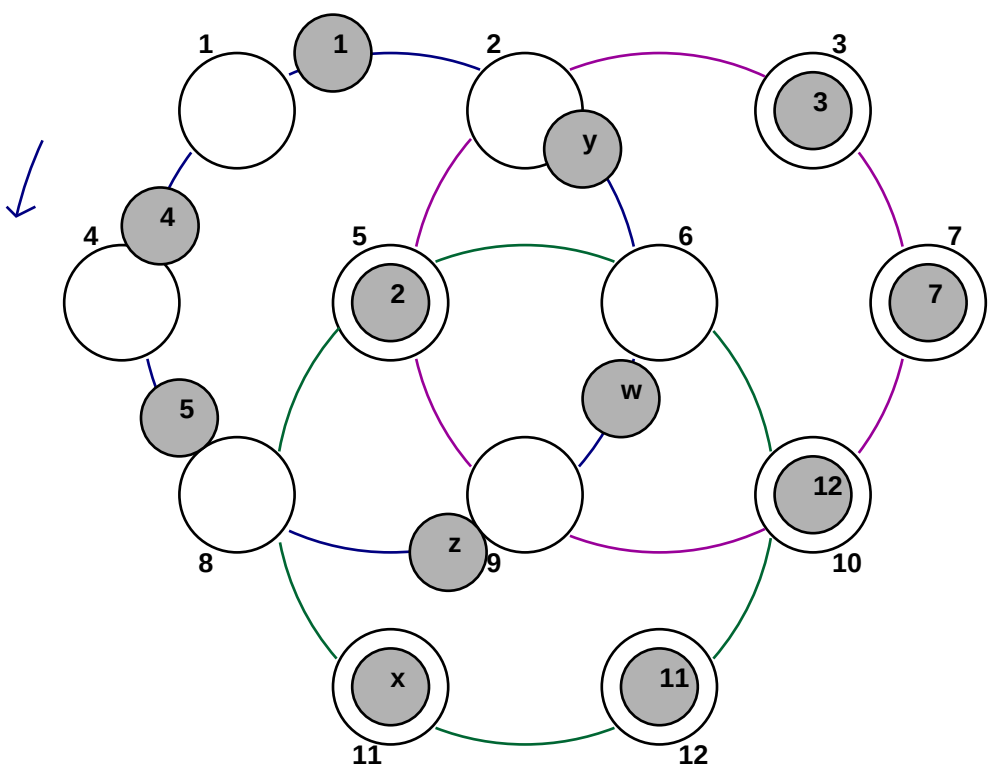

1
2
3
4
1
3
4
5
5
2
6
7
7
z
y
w
8
9
10
x
12
11
11
12

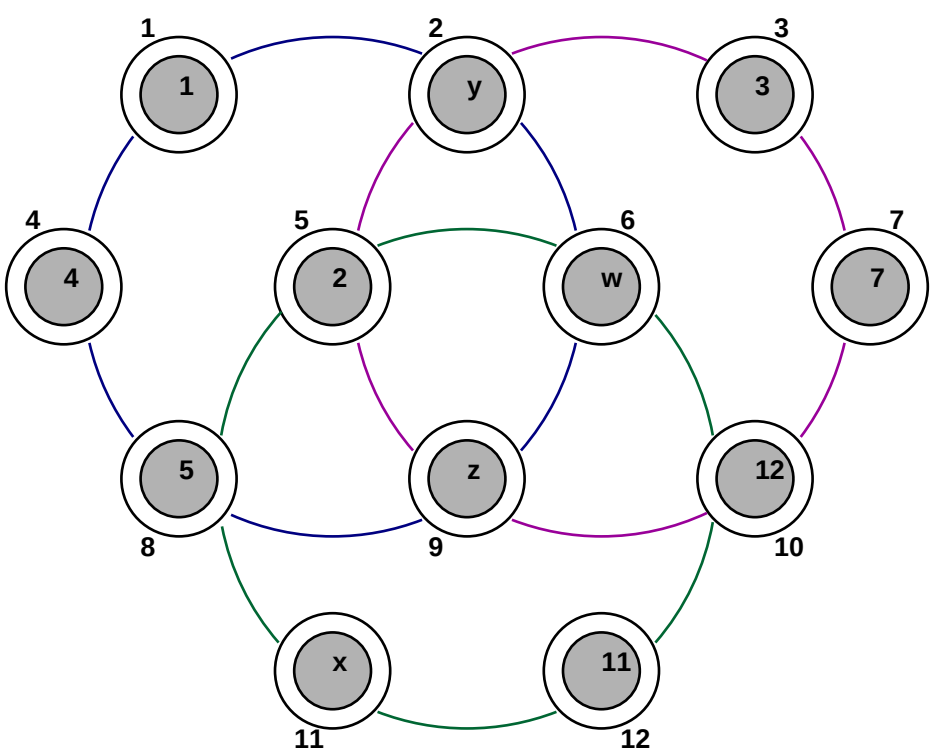

1
2
3
4
1
3
4
5
5
2
6
7
7
y
z
w
8
9
10
12
x
11
11
12

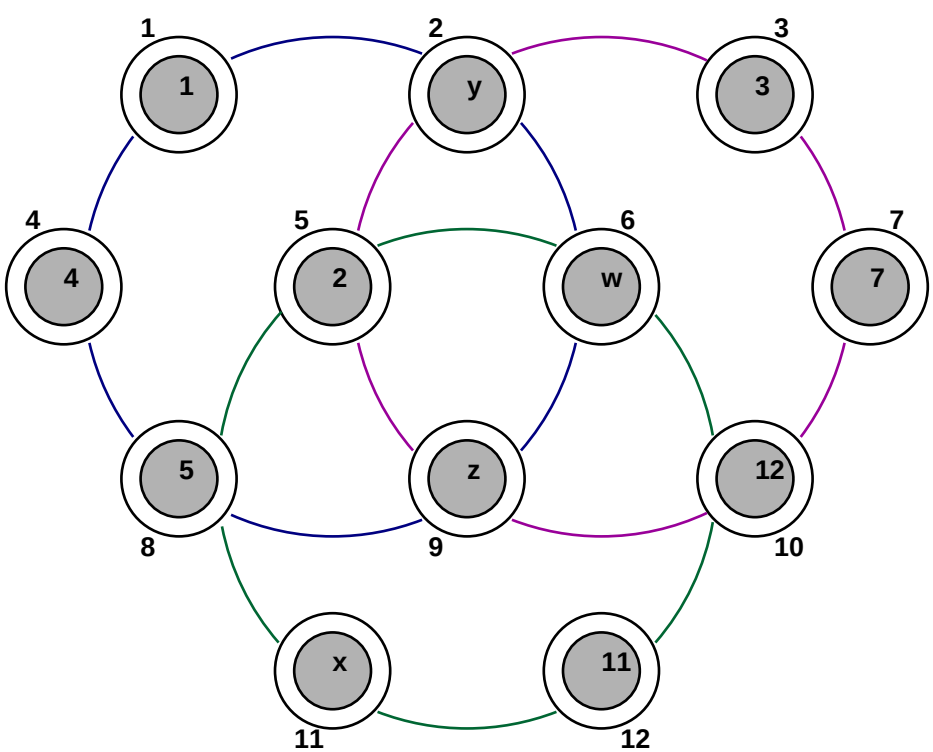

1
4
2
1
3
3
4
5
5
2
6
y
7
7
z
8
w
9
12
10
x
11
11
12

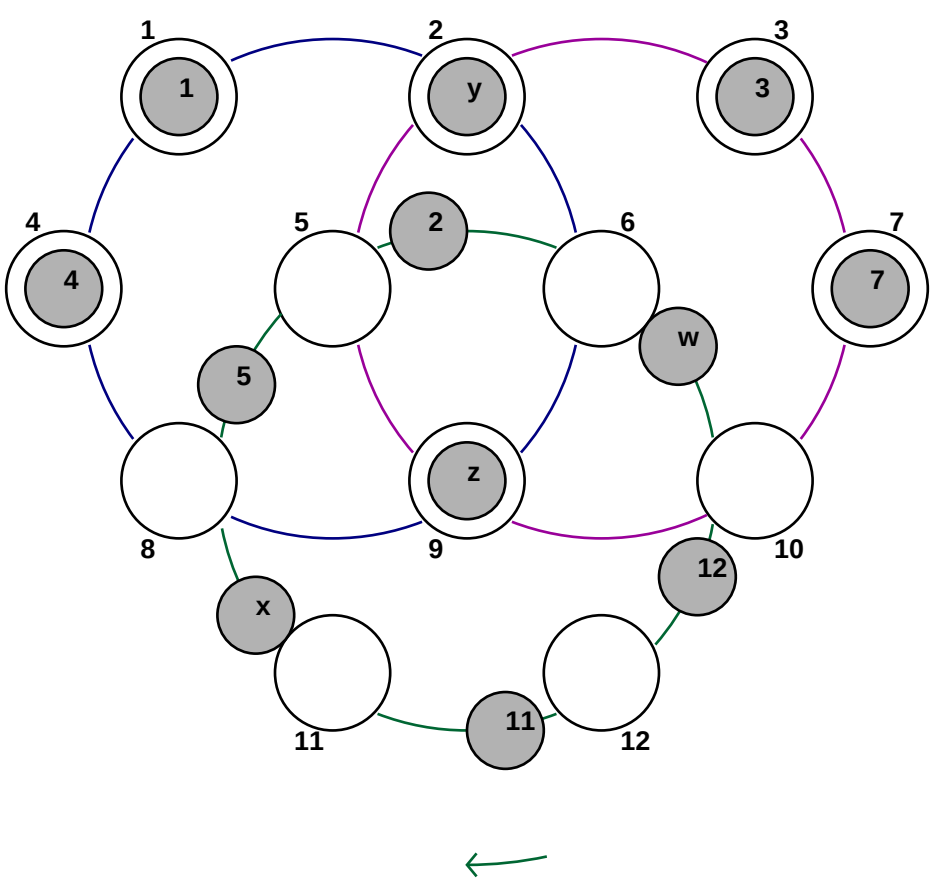

1
4
2
1
3
3
4
5
5
2
6
y
7
7
z
8
w
9
12
10
x
11
11
12

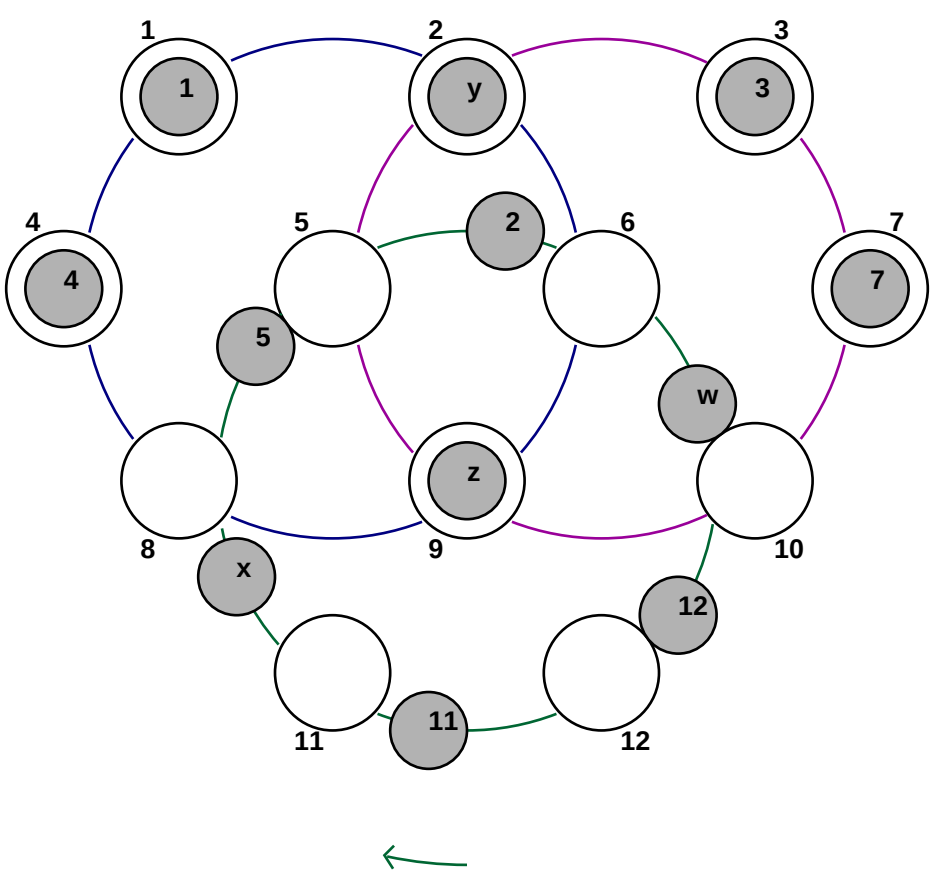

1
1
2
3
3
4
4
y
4
5
6
7
2
7
5
w
12
z
8
9
10
x
11
11
12

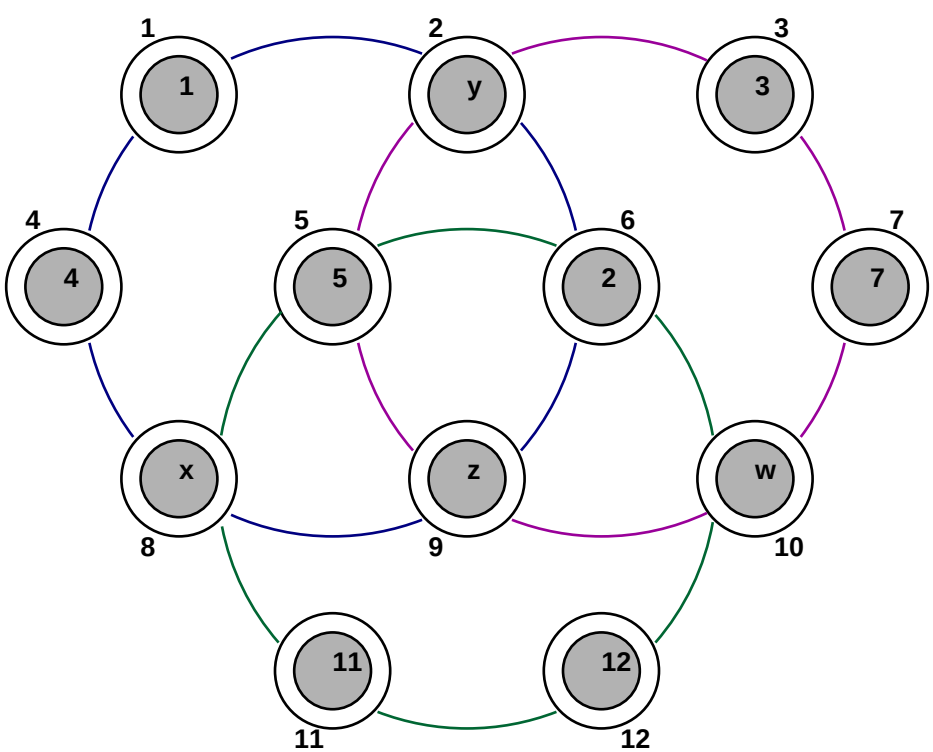

1
1
2
3
3
y
4
4
5
6
7
2
7
w
5
12
z
8
9
10
x
11
11
12

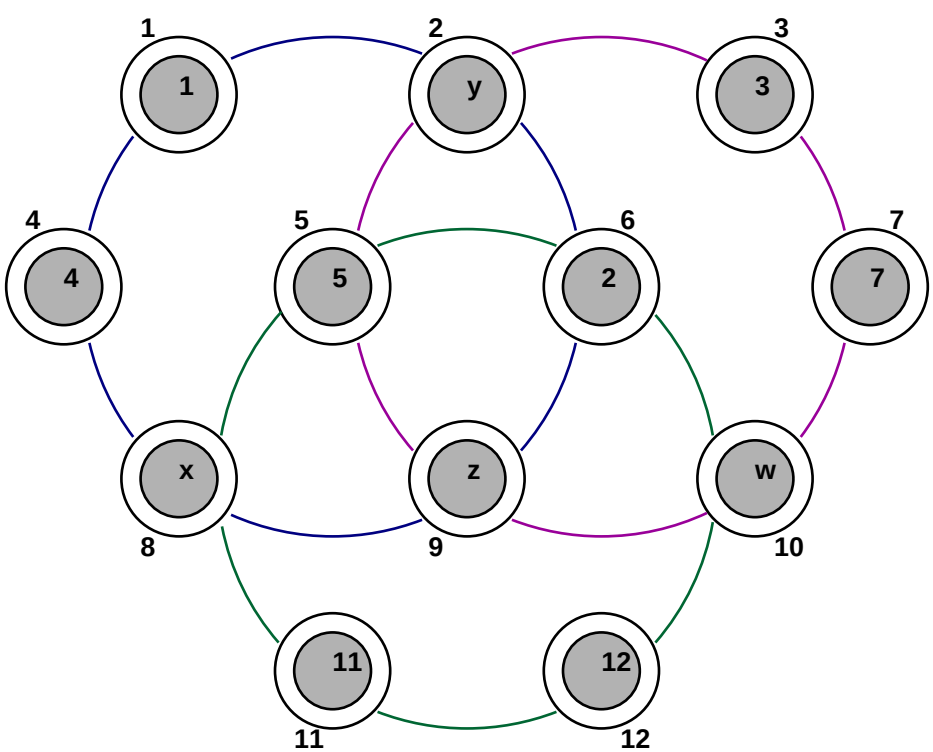

1
2
3
1
y
3
4
5
6
7
4
2
w
7
5
z
12
8
9
10
x
11
11
12

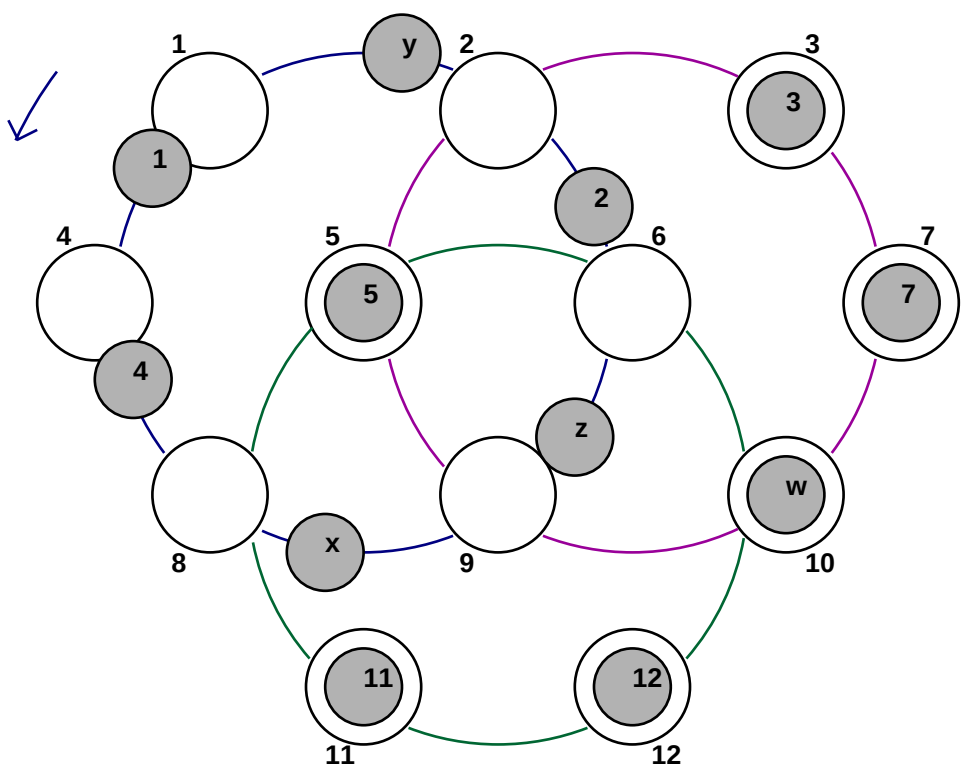

1
2
3
1
y
3
4
5
6
7
4
2
w
7
5
z
12
8
9
10
x
11
11
12

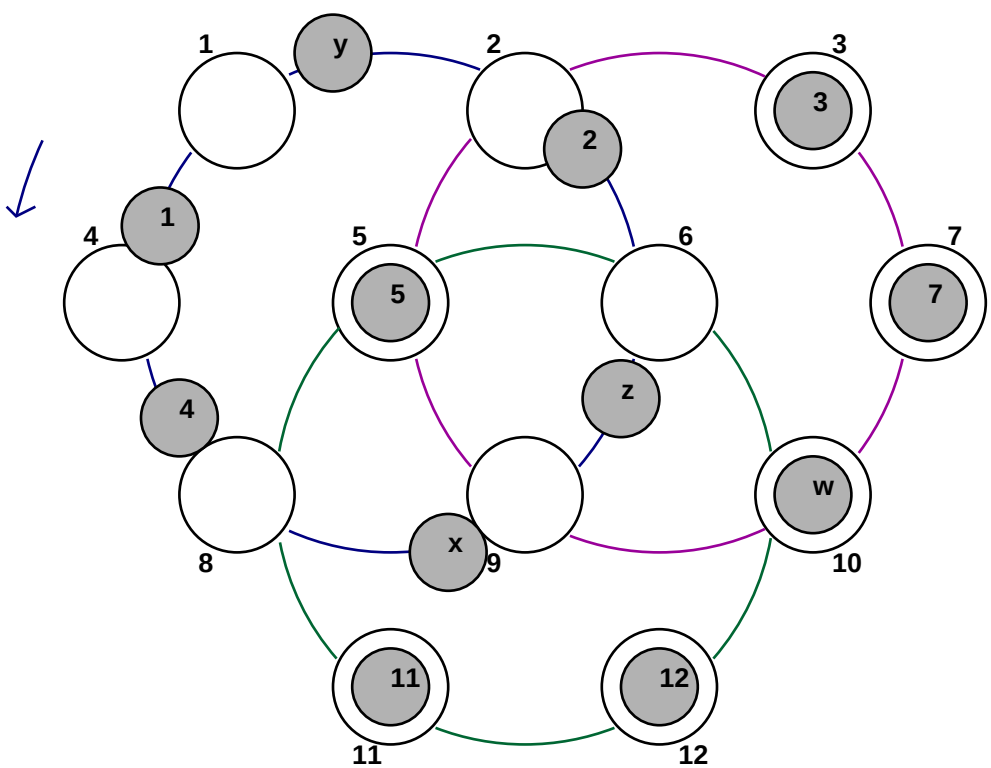

1
2
3
1
y
3
4
5
2
6
7
4
7
w
5
z
8
9
10
12
x
11
11
12

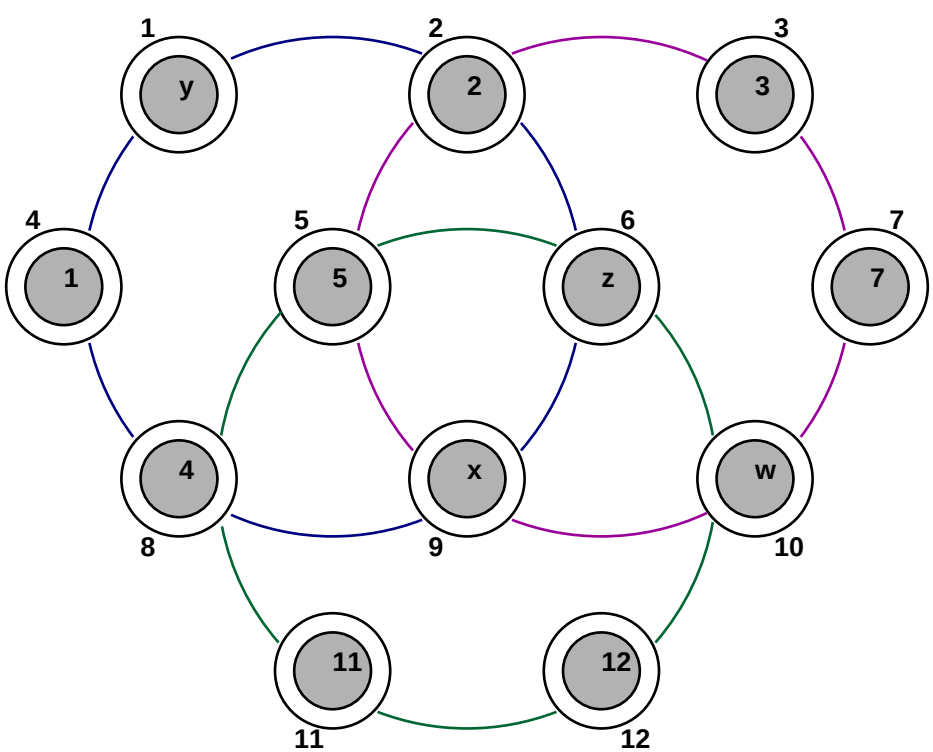

1
2
3
1
y
3
4
5
6
7
2
4
7
5
w
z
8
9
10
x
12
11
11
12

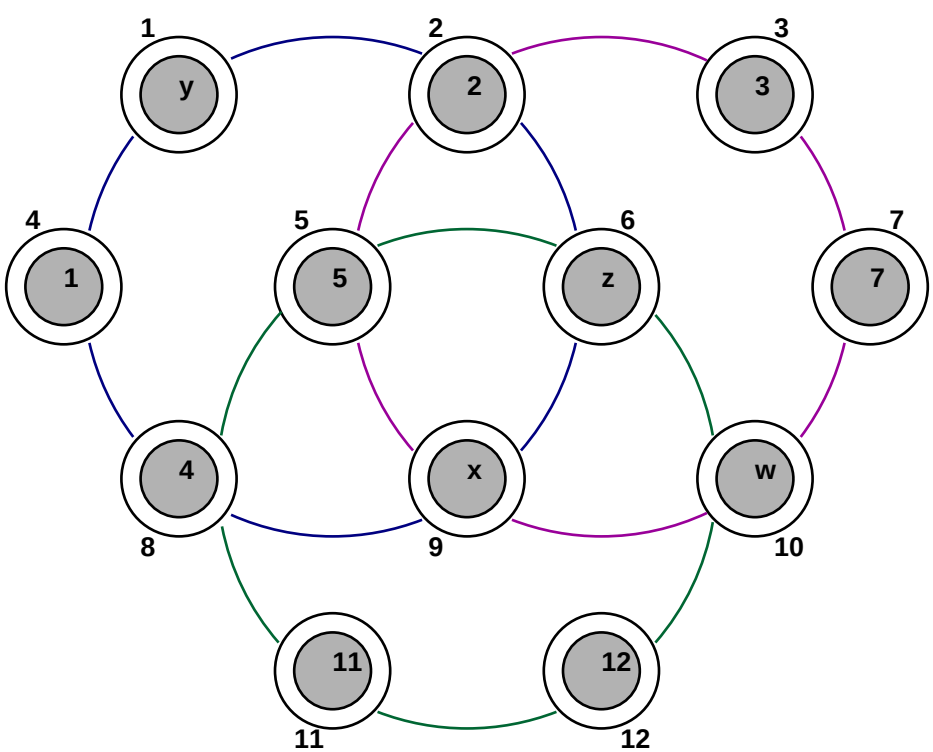

1
2
3
1
y
3
4
5
6
7
4
5
2
7
x
z
w
8
9
10
11
12
11
12

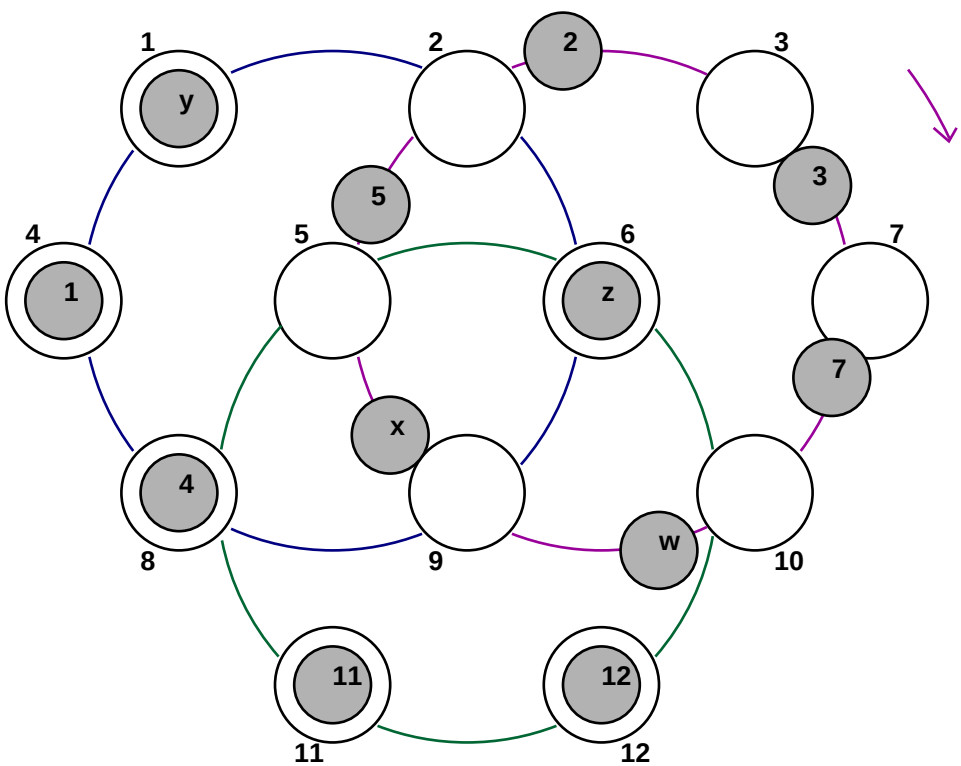

1
2
3
1
y
3
4
5
6
7
4
5
2
7
x
z
w
8
9
10
11
12
11
12

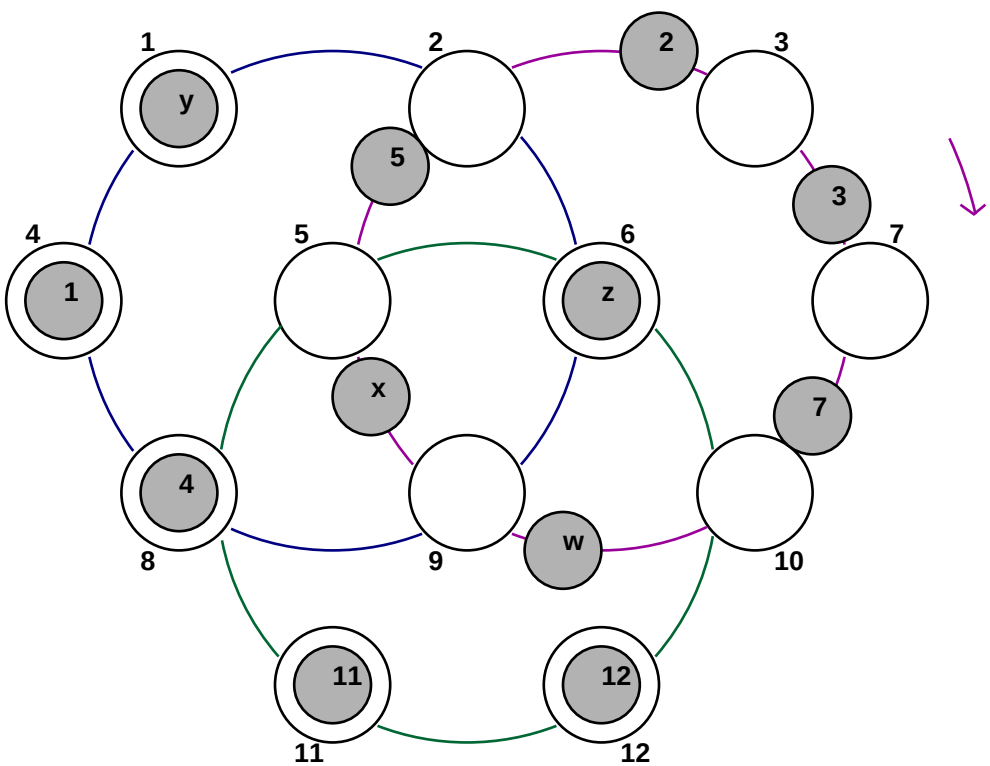

1
y
2
3
3
1
2
4
5
6
7
5
7
4
z
w
x
8
9
10
11
12
11
12

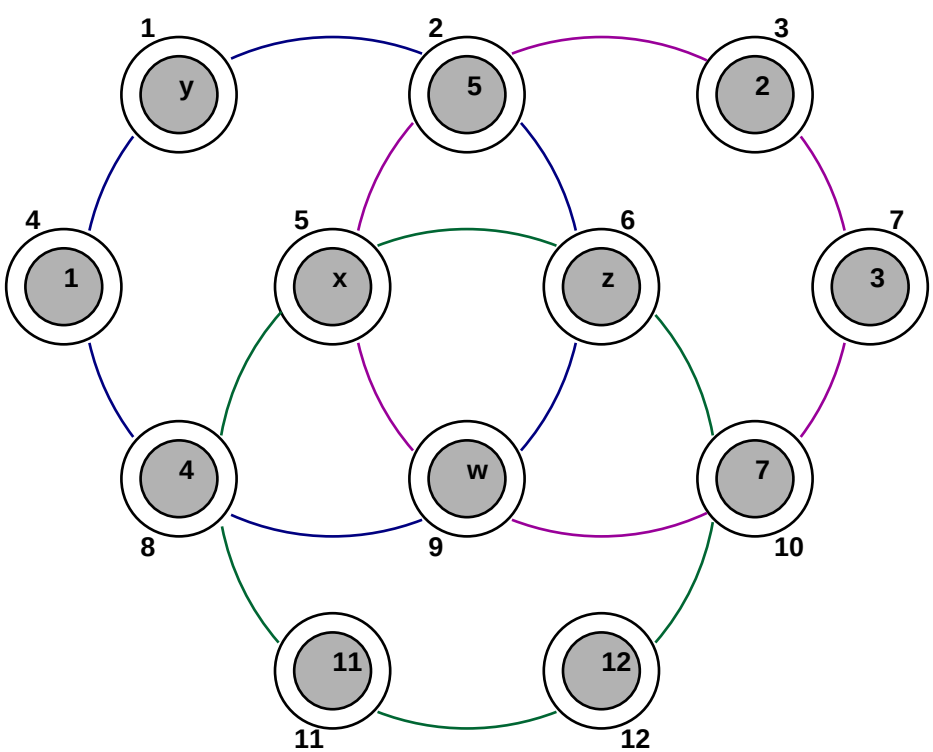

1
y
2
3
3
2
1
4
5
6
7
5
7
z
4
w
x
8
9
10
11
12
11
12

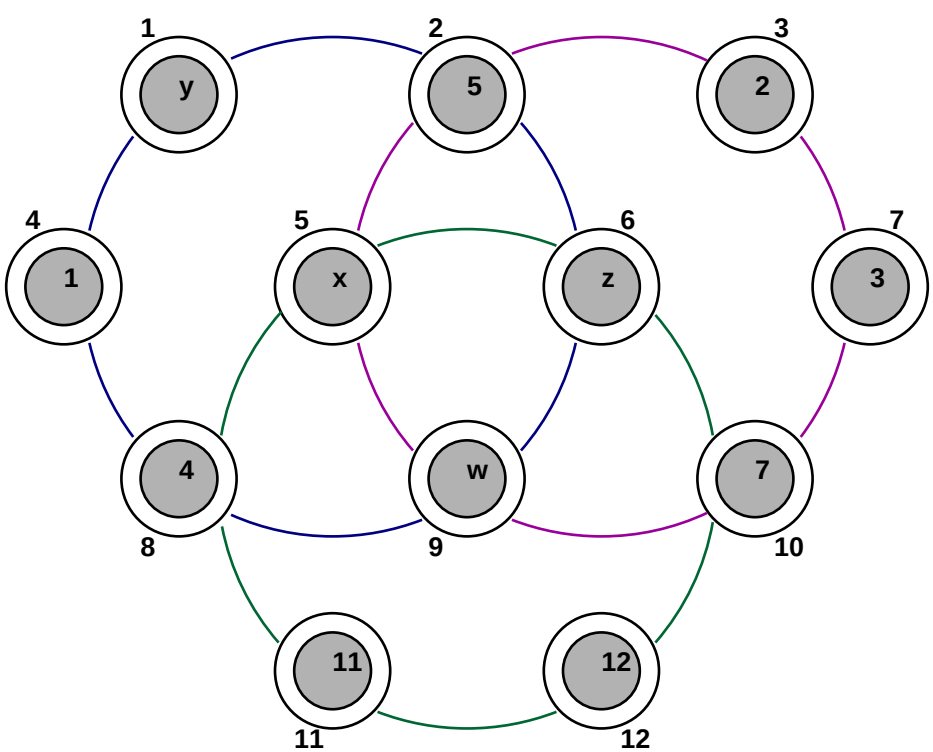

1
y
2
2
3
3
4
1
5
5
6
z
7
7
4
4
x
w
8
9
10
11
11
12
12

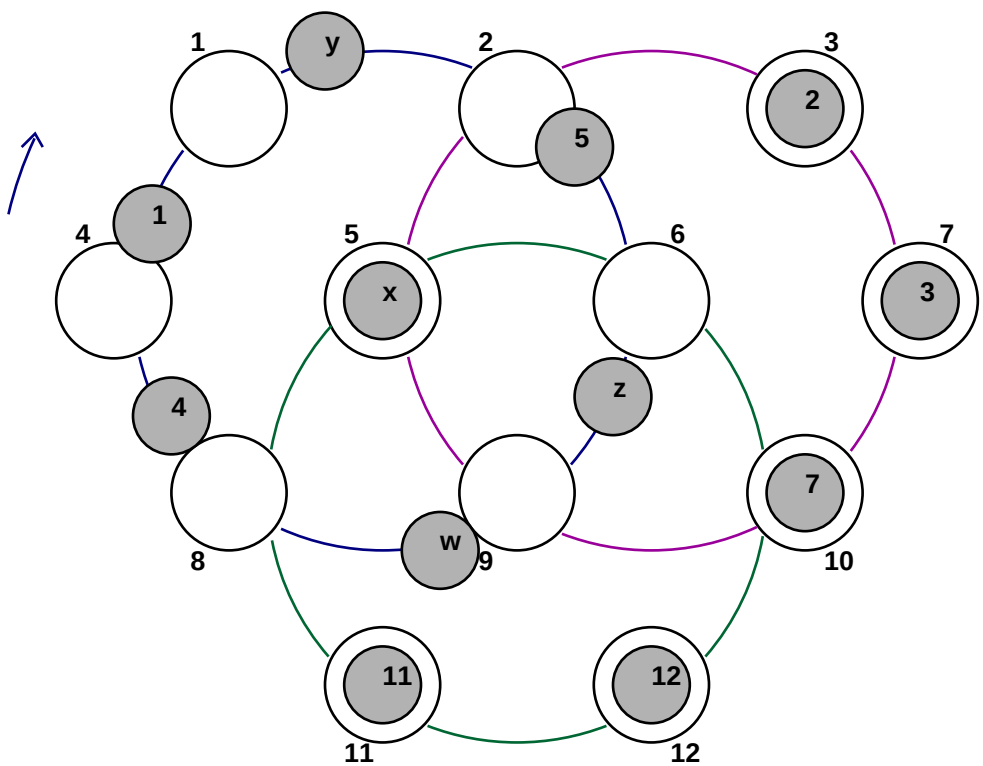

1
y
2
2
3
3
4
1
5
5
6
z
7
7
4
4
x
w
8
9
10
11
11
12
12

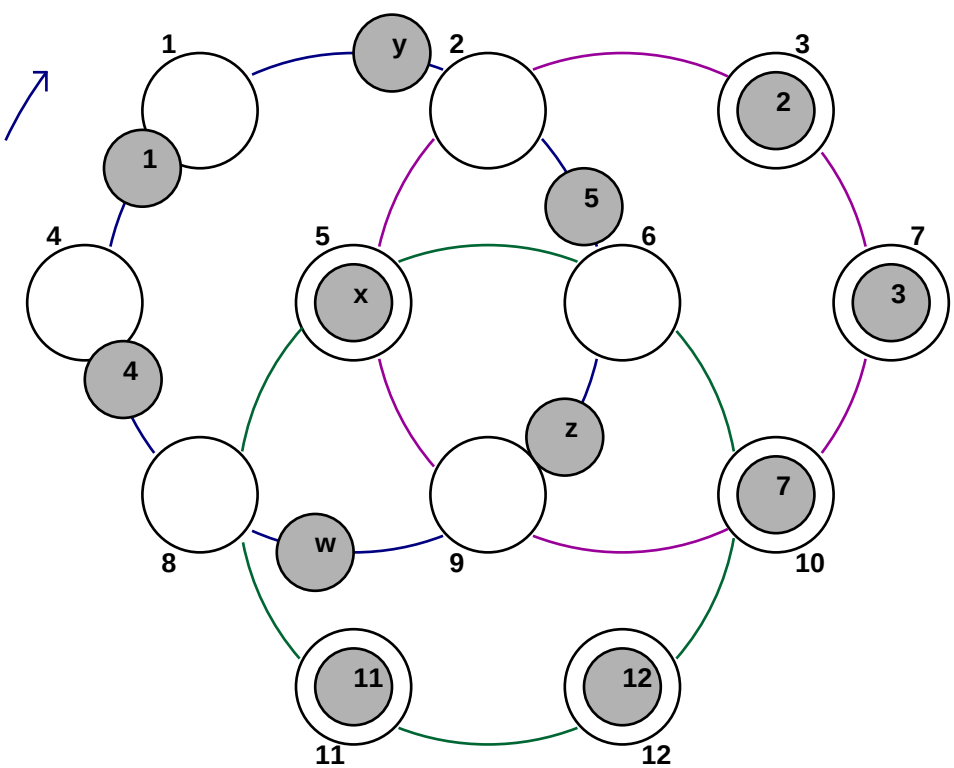

1
y
2
2
3
3
5
4
1
5
5
6
z
7
7
x
4
8
9
w
10
11
11
12
12

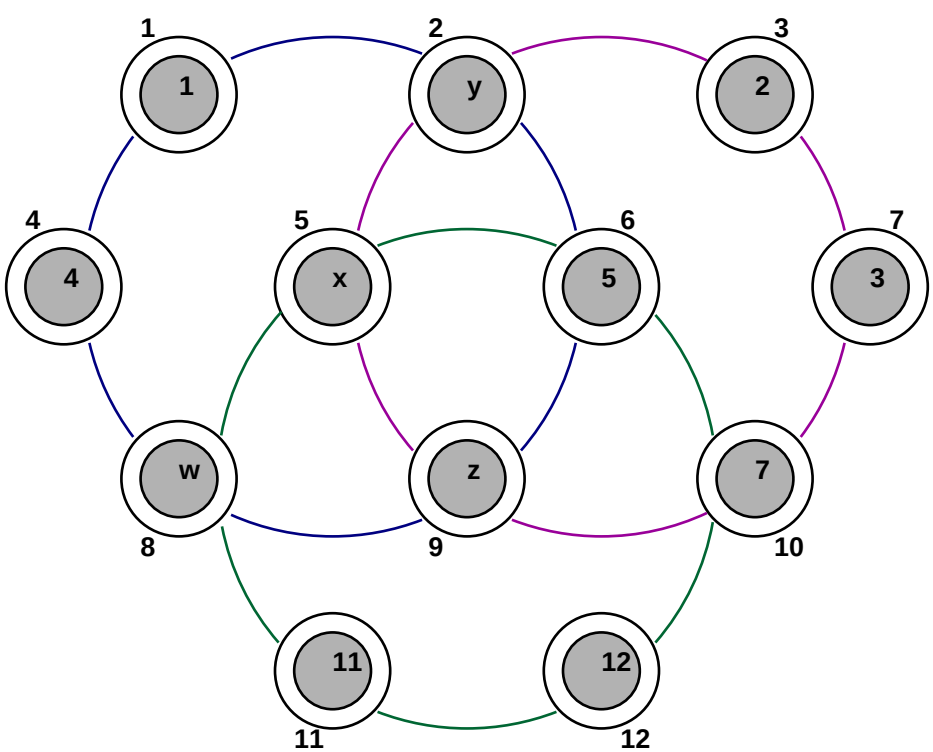

1
y
2
2
3
5
3
4
1
5
6
z
7
x
7
4
8
9
w
10
11
11
12
12

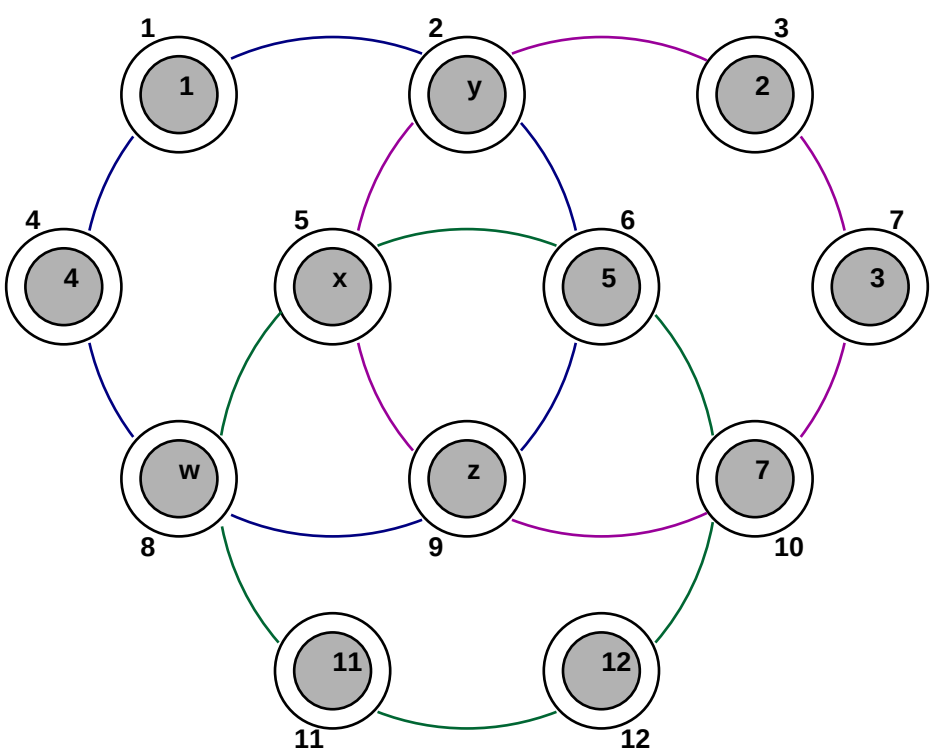

1
y
2
5
3
2
4
1
5
x
6
z
7
3
4
4
w
7
8
9
10
11
11
12
12

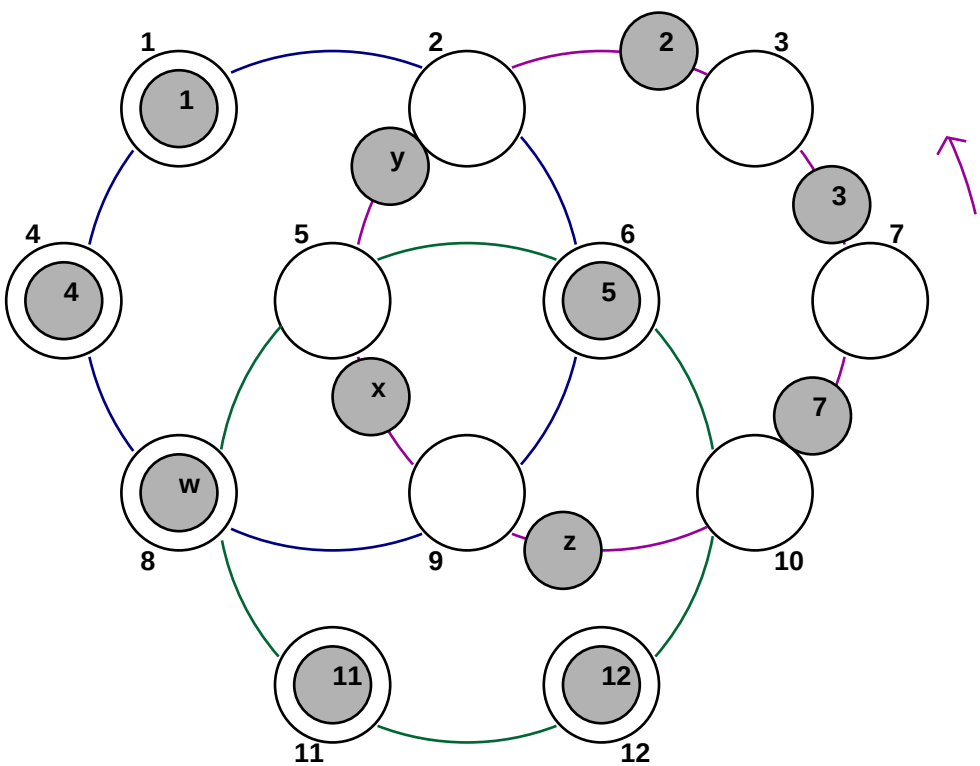

1
y
2
5
3
2
4
1
5
x
6
z
7
3
4
4
w
7
8
9
10
11
11
12
12

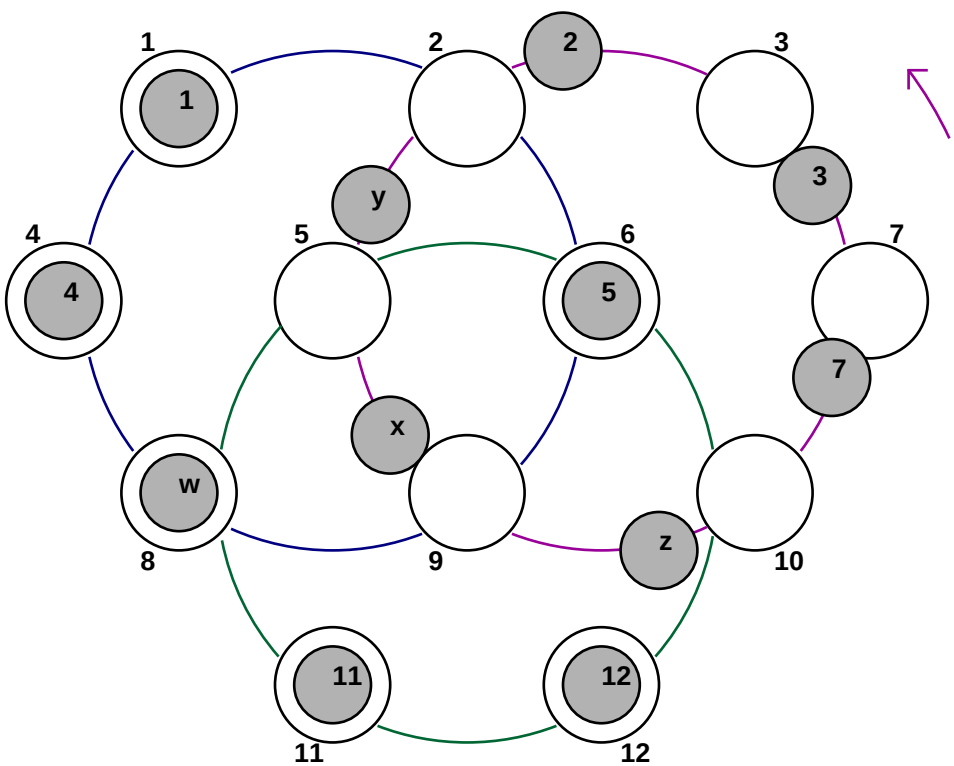

1
y
2
3
2
5
1
4
5
6
7
x
3
z
4
7
w
8
9
10
11
12
11
12

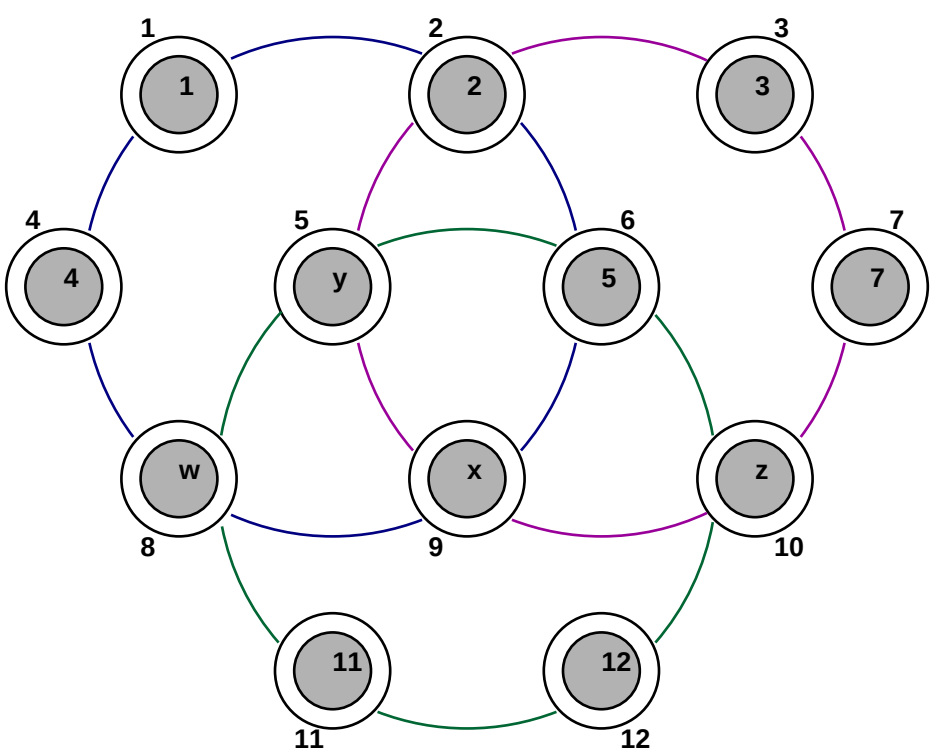

1
y
2
3
2
1
5
4
5
6
7
x
3
4
z
7
w
8
9
10
11
12
11
12


1
2
3
1
y
2
4
5
6
7
4
x
5
3
w
z
7
8
9
10
11
12
11
12

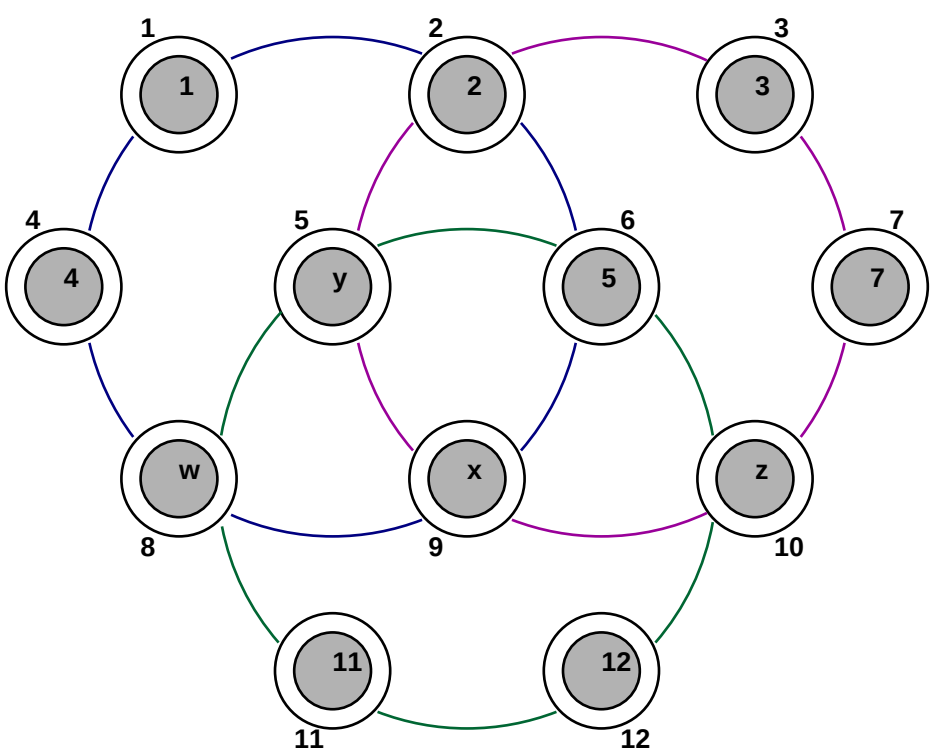

1
2
3
1
y
2
4
5
6
7
4
x
5
3
w
z
7
8
9
10
11
12
11
12

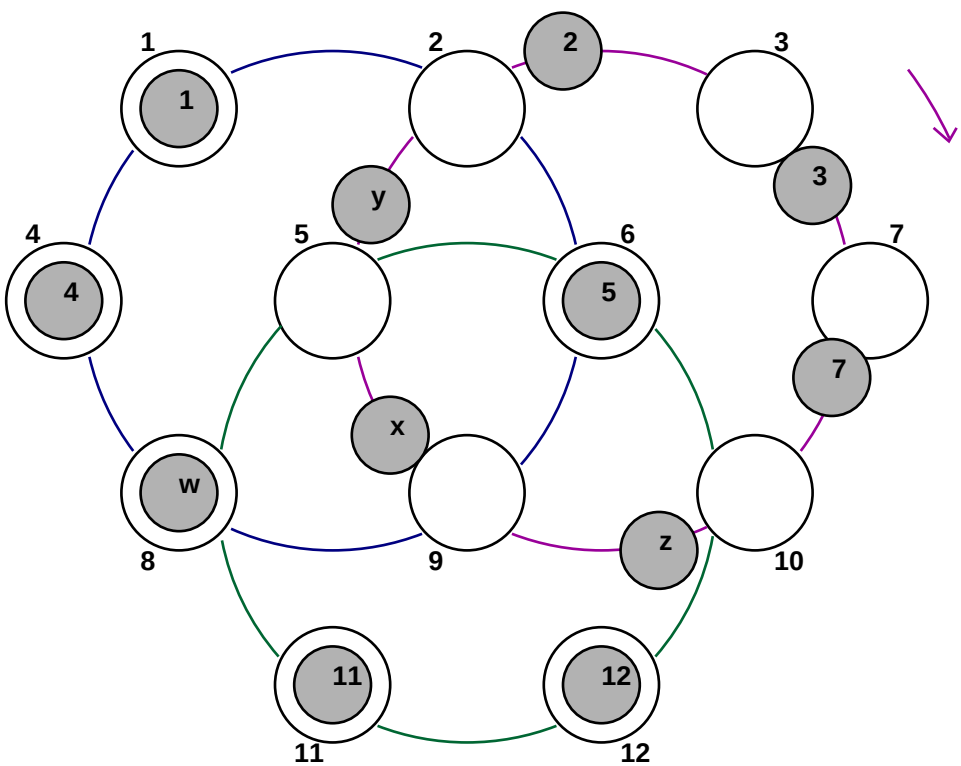

1
2
2
3
1
y
3
4
5
6
7
4
5
x
7
w
8
9
z
10
11
12
11
12

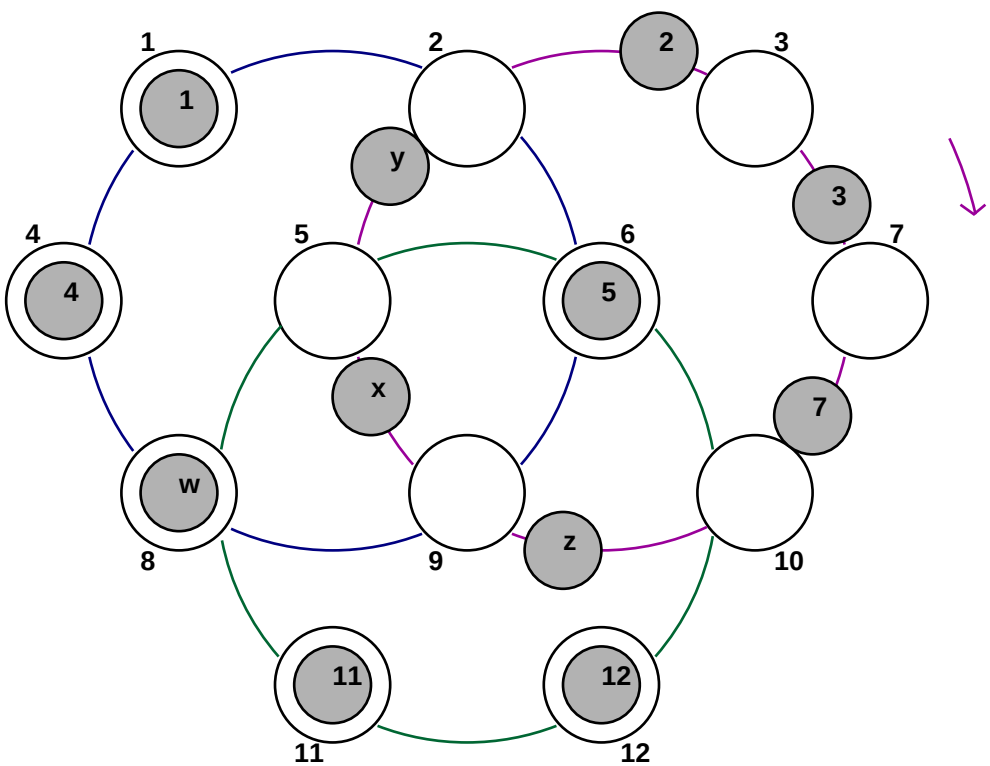

1
2
2
3
1
y
3
4
5
6
7
4
5
7
x
w
z
8
9
10
11
12
11
12

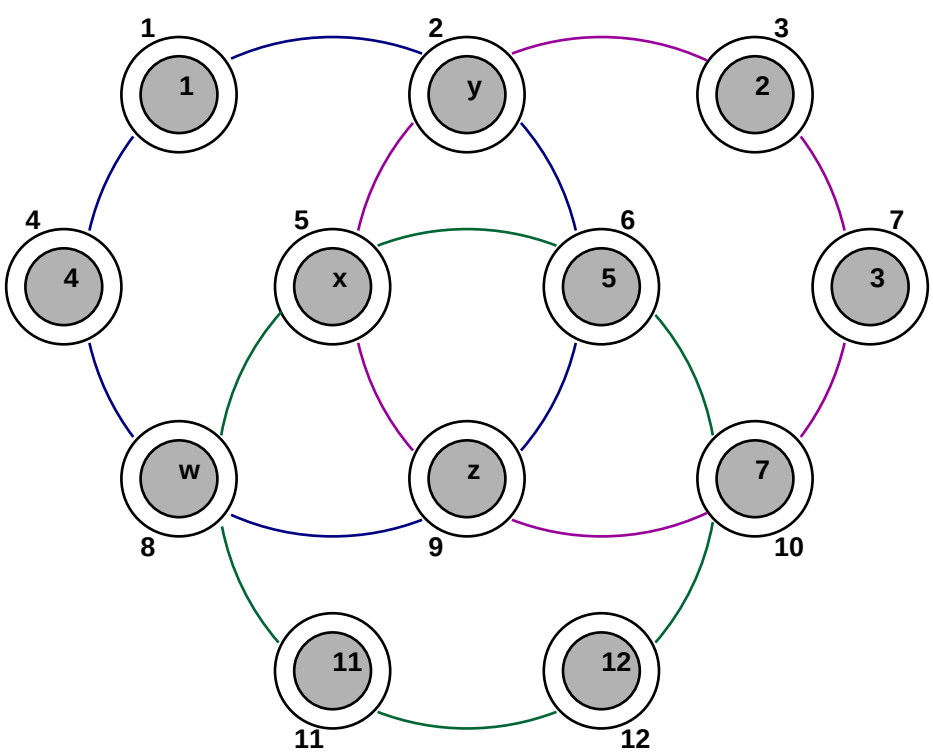

1
2
3
4
5
6
7
1
2
3
4
y
5
7
w
x
z
8
9
10
11
12
11
12

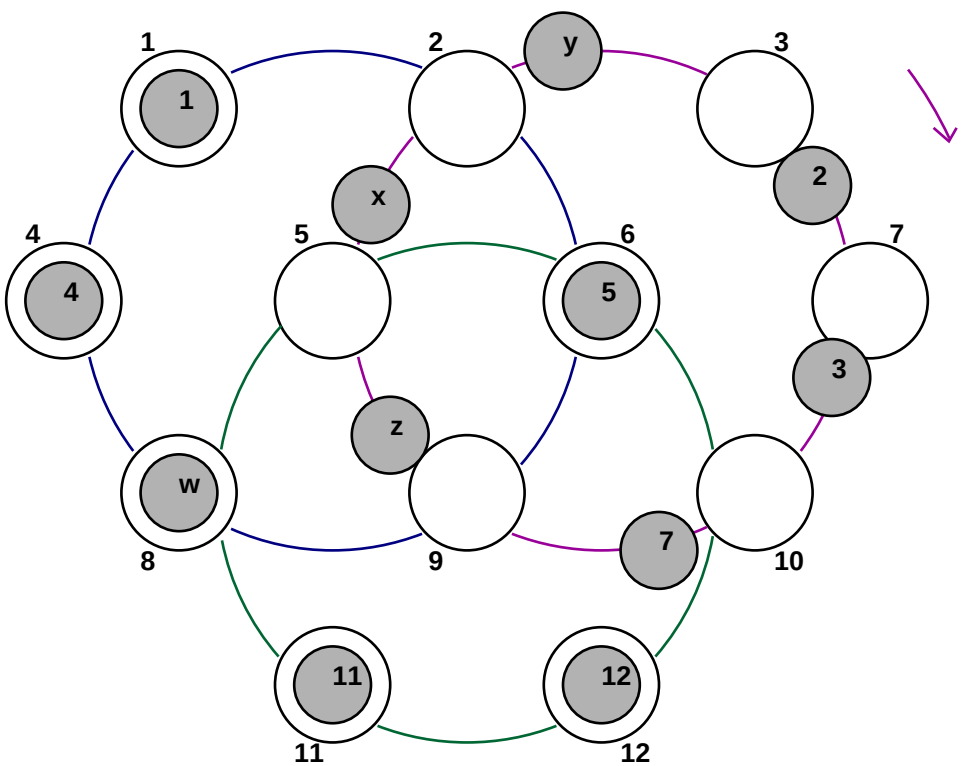
Number 5 can be moved into position 9 while keeping numbers 1, 2, 3, 4, 7, 11, and 12 in position by the following moves.

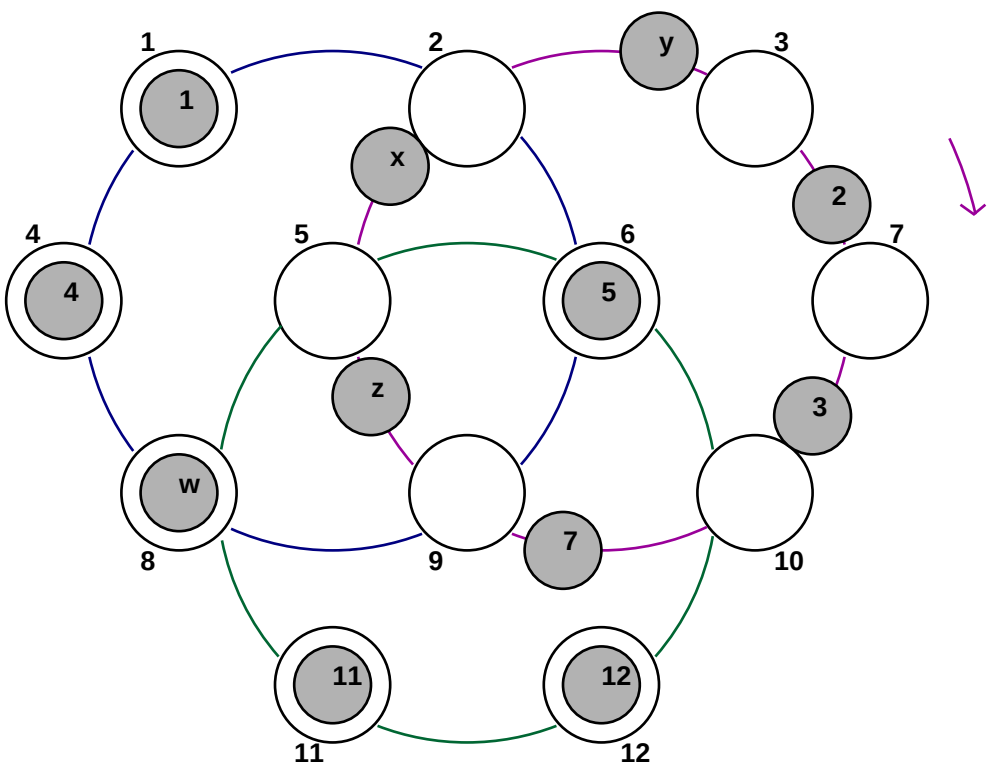

1
2
3
4
5
6
7
1
2
3
4
y
5
7
w
x
z
8
9
10
11
12
11
12

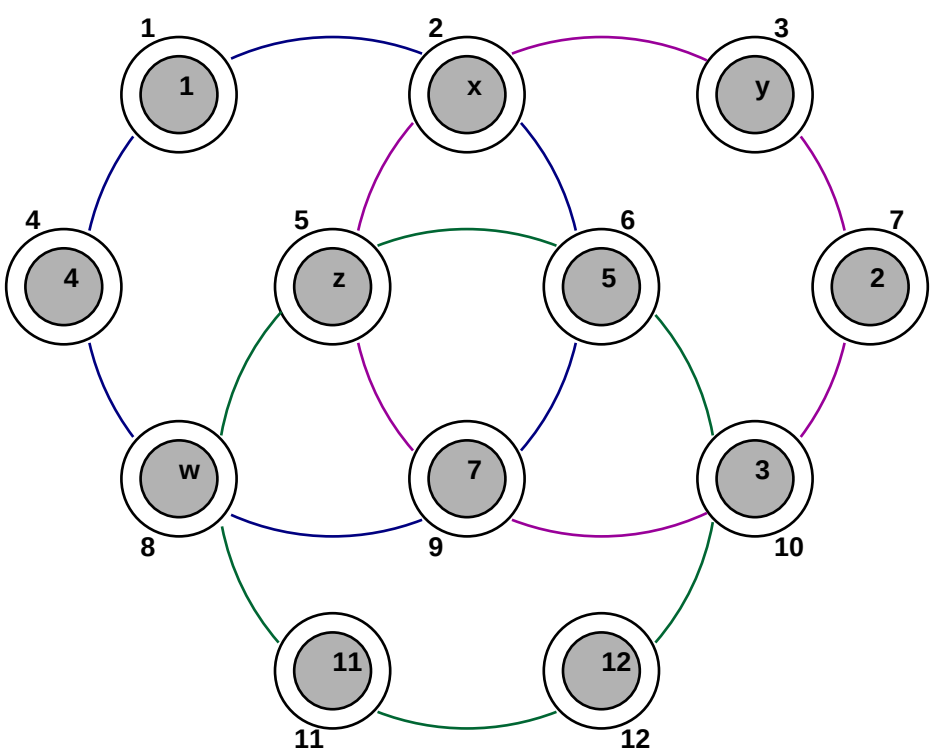

1
2
3
4
5
6
7
8
9
10
11
12
x
y
z
w

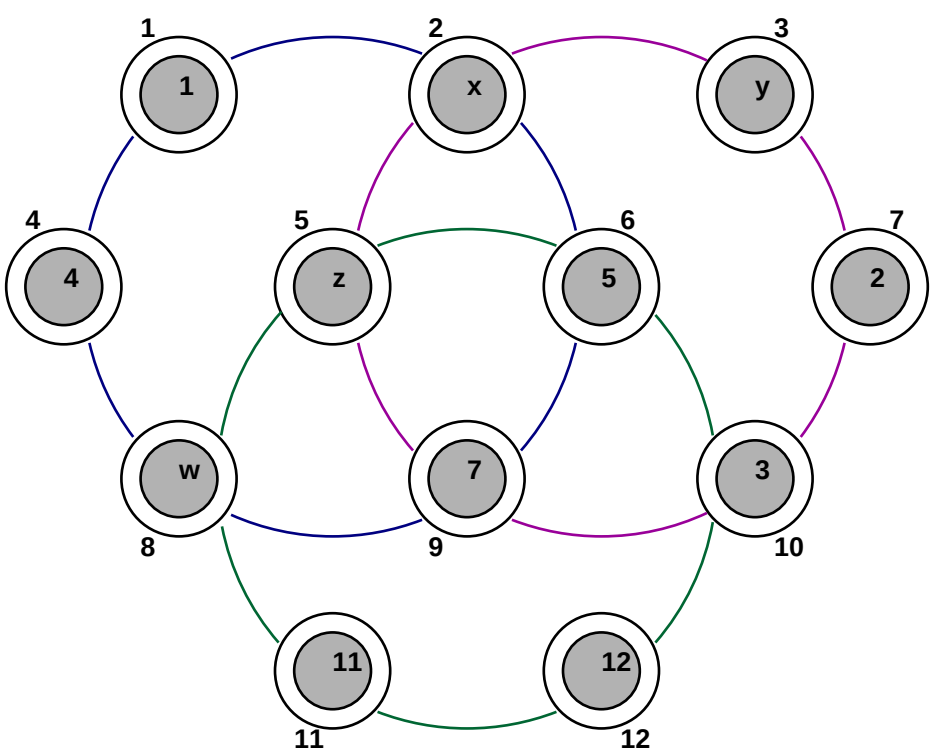

1
2
2
3
1
y
3
4
5
6
7
4
5
x
7
w
8
9
z
10
11
12
11
12

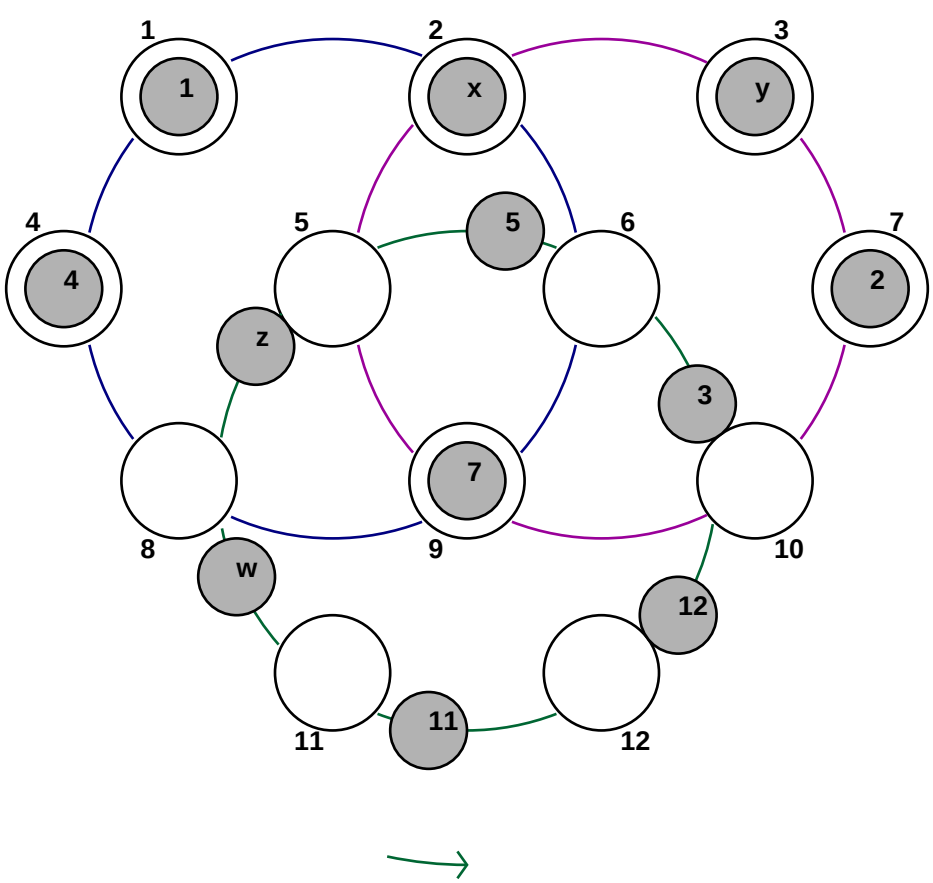

1
2
3
1
y
2
4
5
6
7
4
x
5
3
w
z
7
8
9
10
11
12
11
12

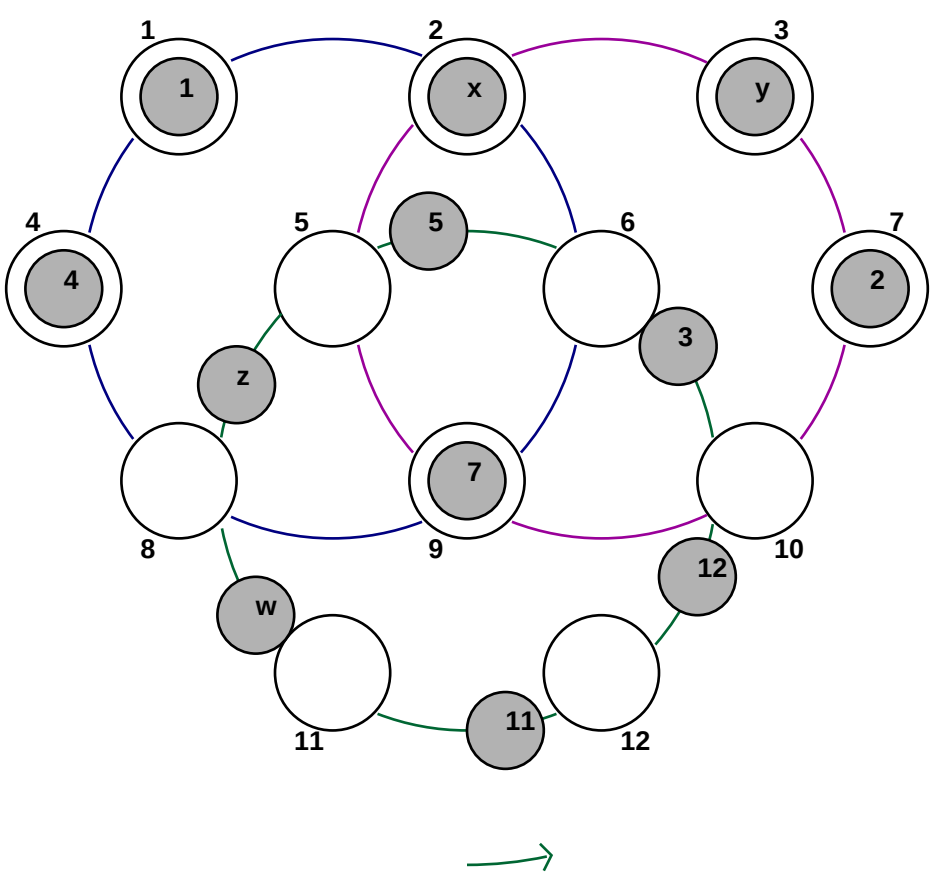

1
2
y
3
1
2
x
4
5
6
7
4
5
3
z
w
7
8
9
10
11
12
11
12

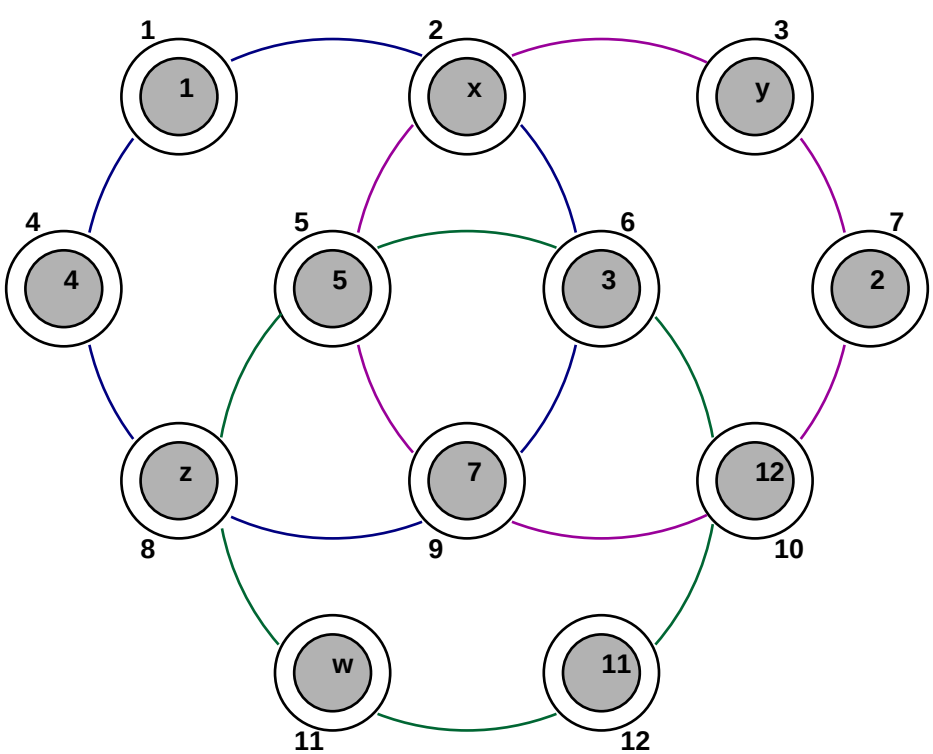

1
2
y
3
1
x
2
4
5
6
7
4
5
z
3
w
8
9
7
10
11
12
11
12

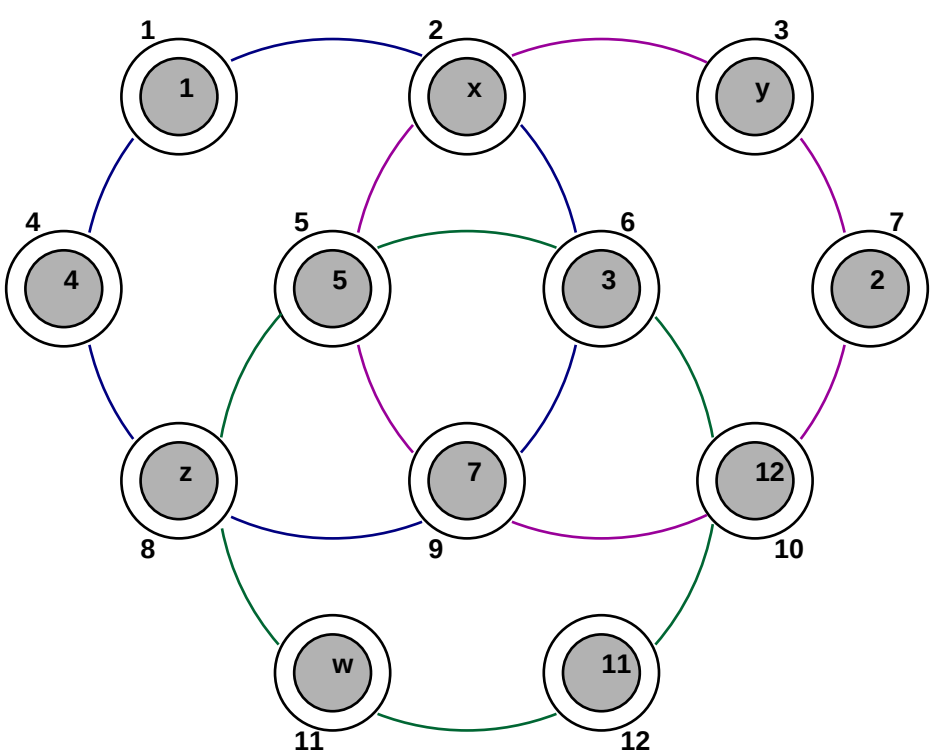

1
2
3
1
x
y
4
5
6
7
4
z
5
2
w
7
3
8
9
10
11
12
11
12

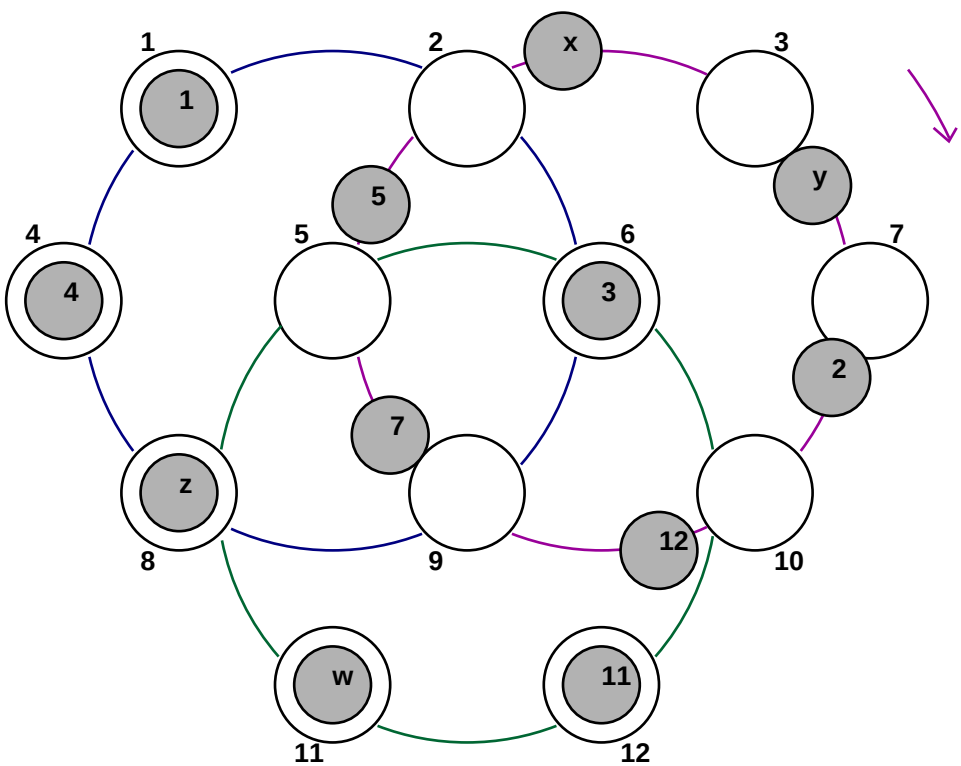

1
2
3
1
x
y
4
5
6
7
4
z
5
2
w
7
3
8
9
10
11
12
11
12

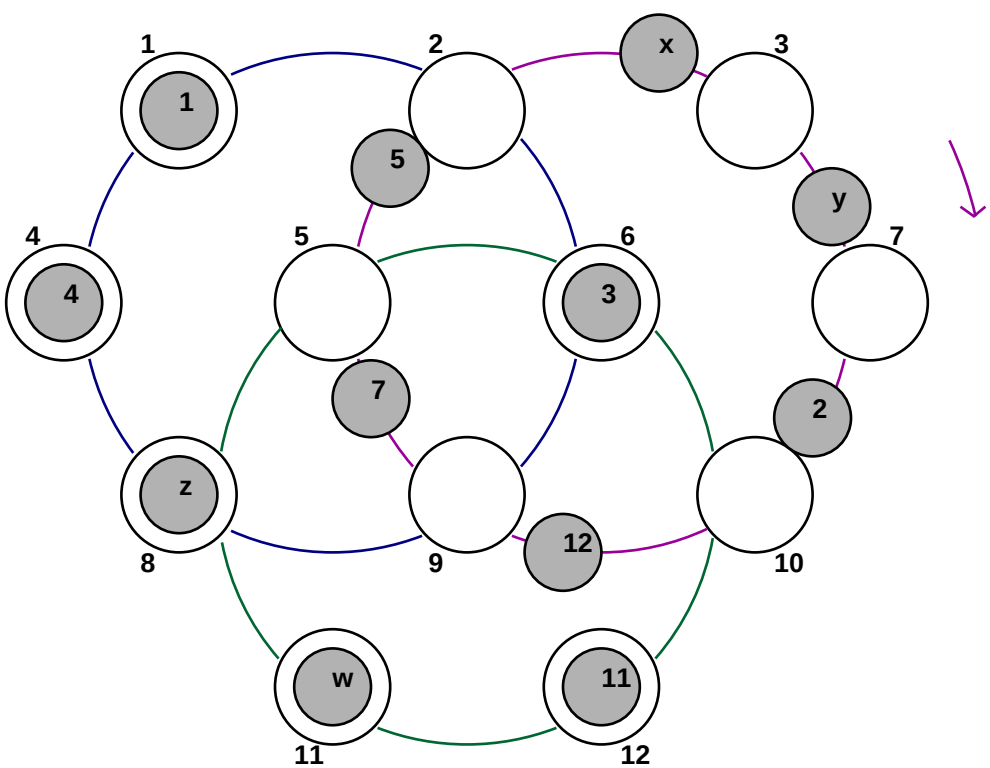

1
2
3
1
x
y
4
5
5
6
7
4
2
z
3
7
8
9
10
w
12
11
11
12

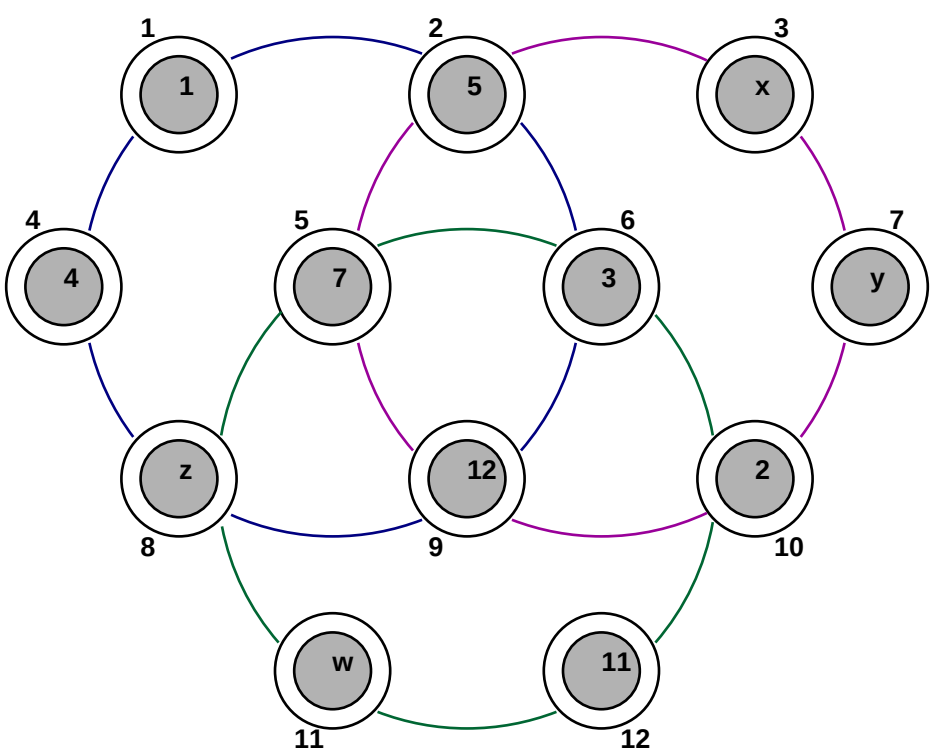

1
2
3
1
x
y
4
5
6
7
5
4
2
3
z
7
8
9
10
12
w
11
11
12

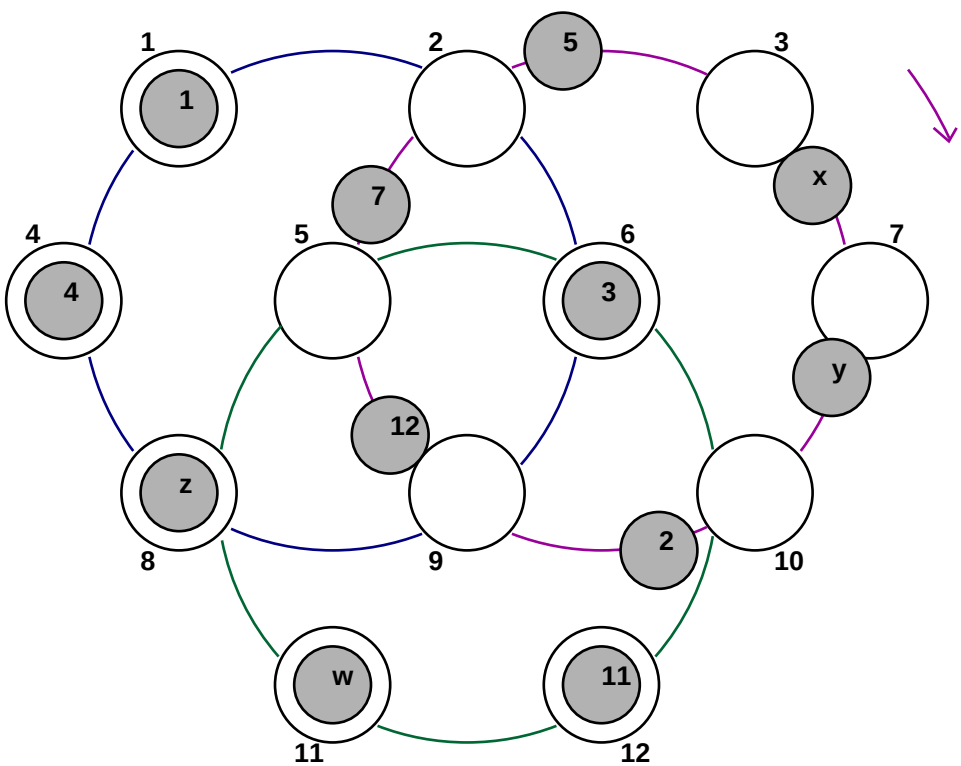

1
2
3
1
x
y
4
5
6
7
4
5
3
2
z
7
12
8
9
10
w
11
11
12

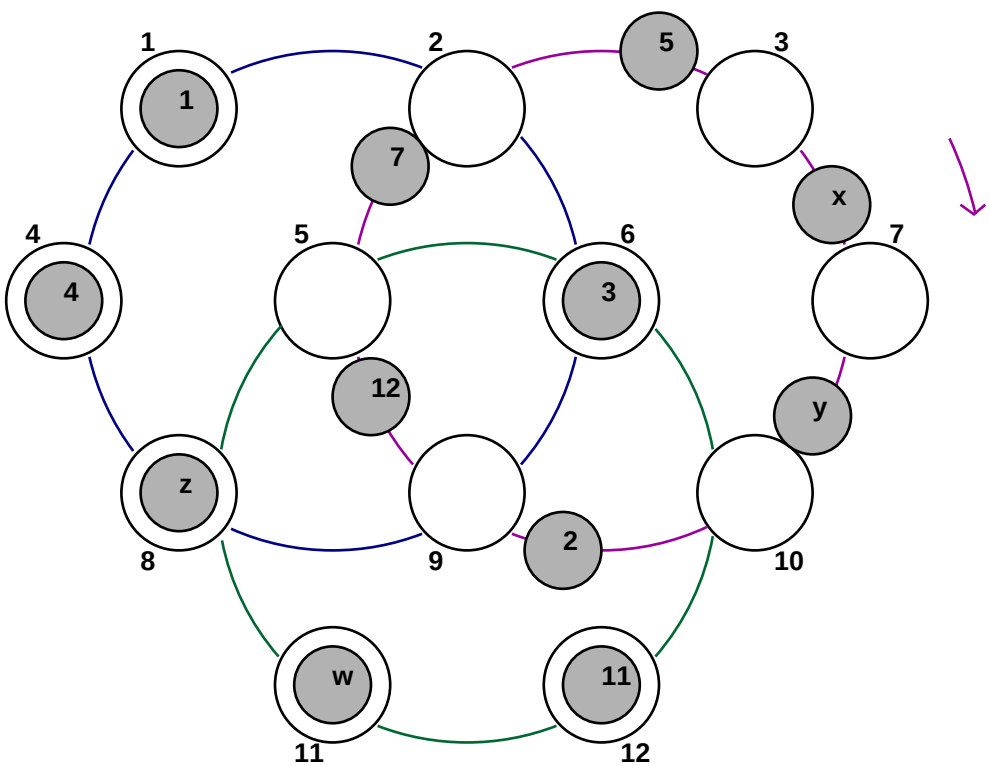

1
2
3
1
x
y
4
5
6
7
4
5
3
2
z
7
12
8
9
10
w
11
11
12

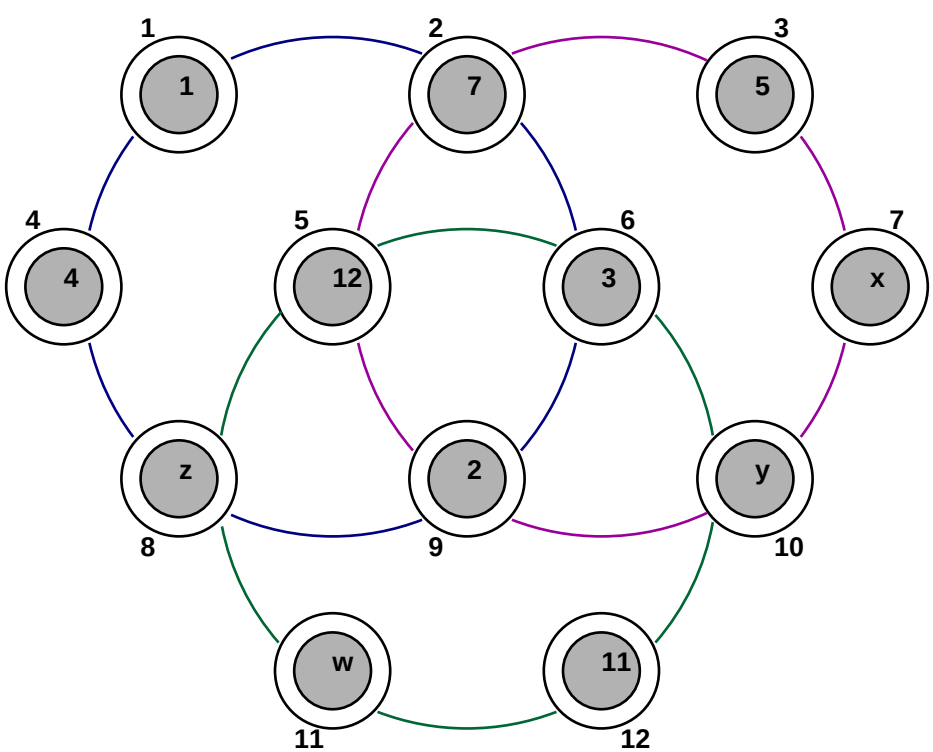

1
2
x
3
1
y
5
4
5
6
7
4
3
2
7
z
8
9
12
10
w
11
11
12

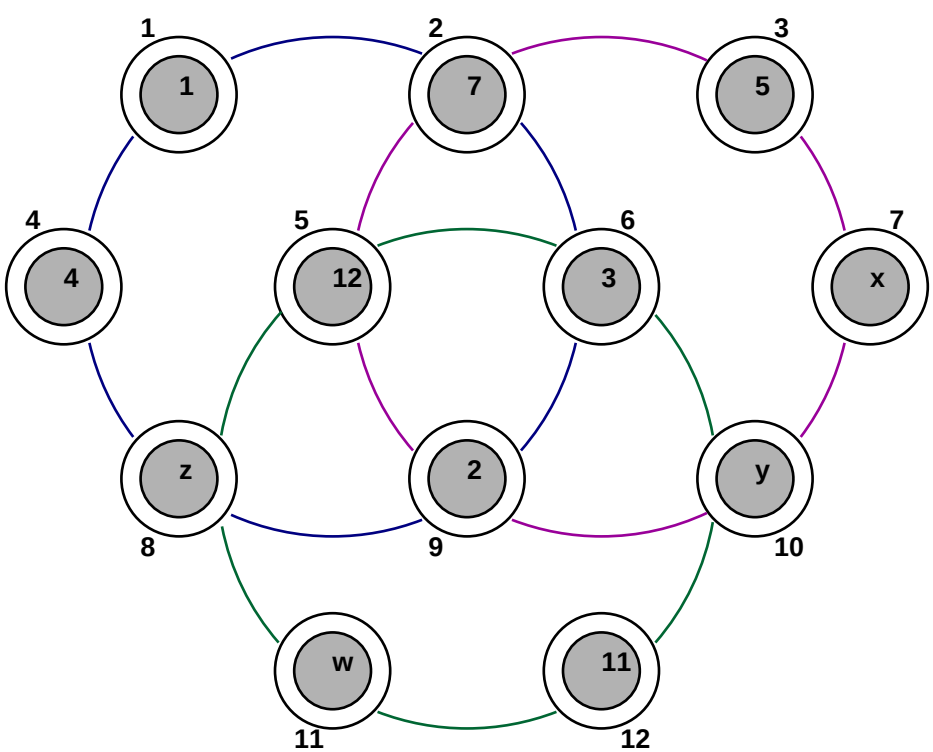

1
1
2
x
3
5
y
4
4
5
6
3
7
7
2
z
8
9
12
10
w
11
11
12

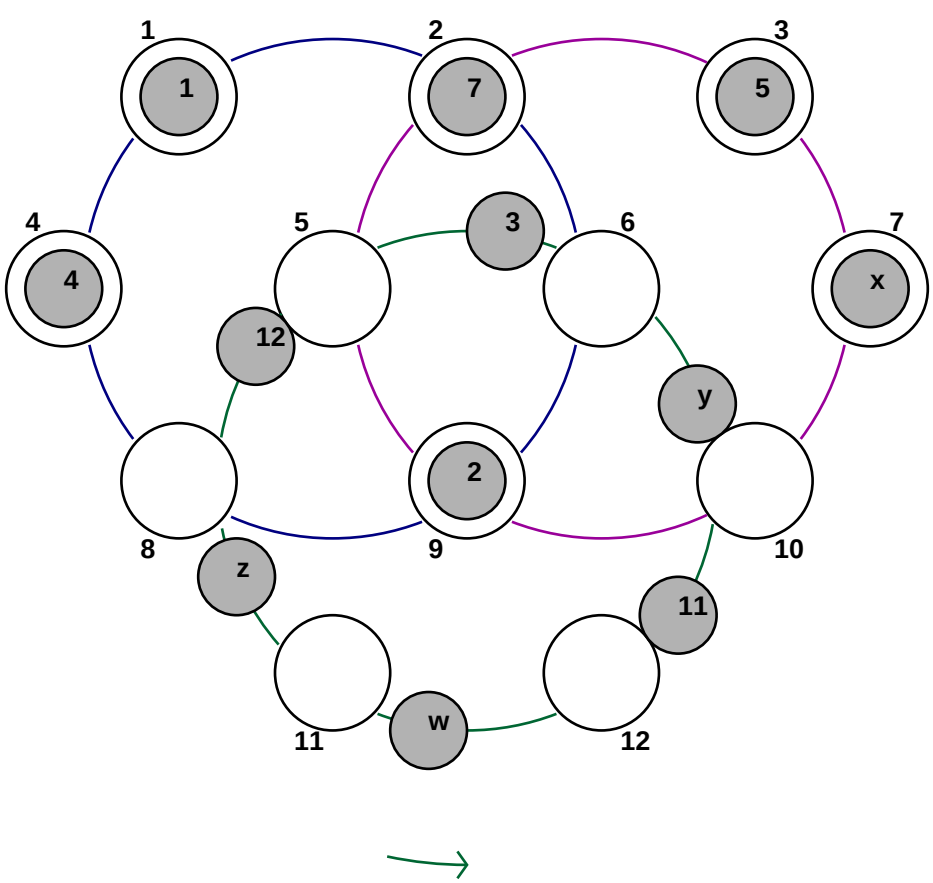

1
1
2
5
3
x
4
4
5
7
6
3
7
y
z
8
12
9
2
10
w
11
11
12

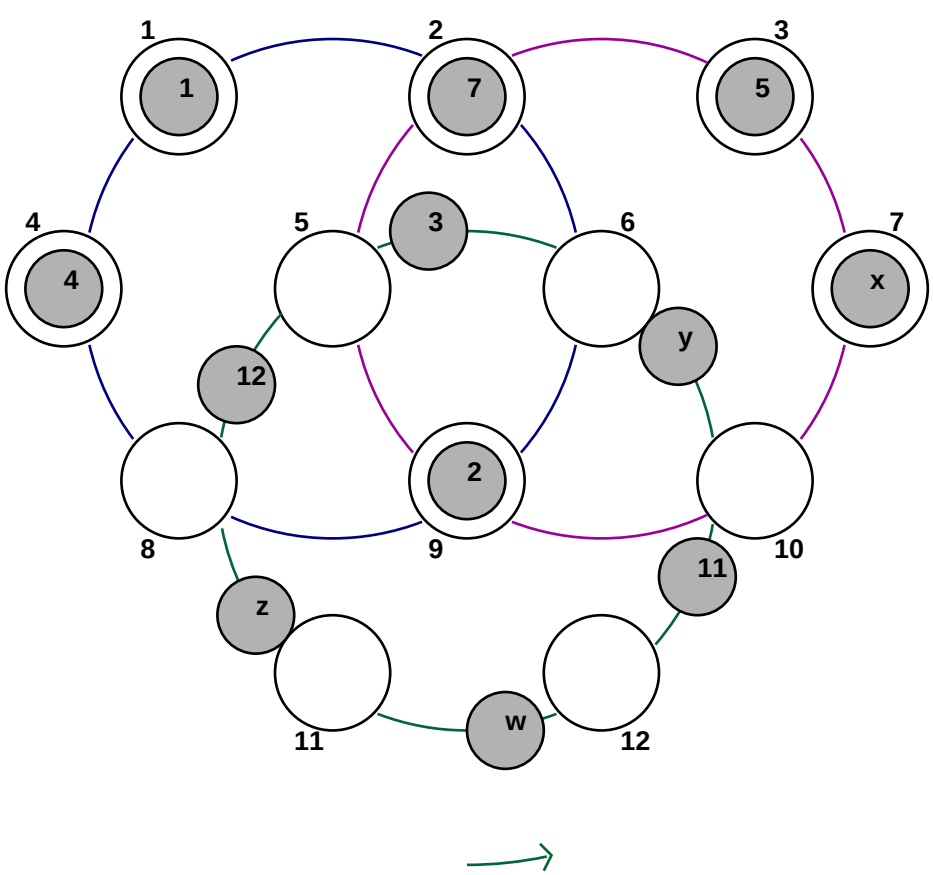

1
1
2
5
3
x
7
4
4
5
6
3
7
y
12
z
8
9
2
10
w
11
11
12

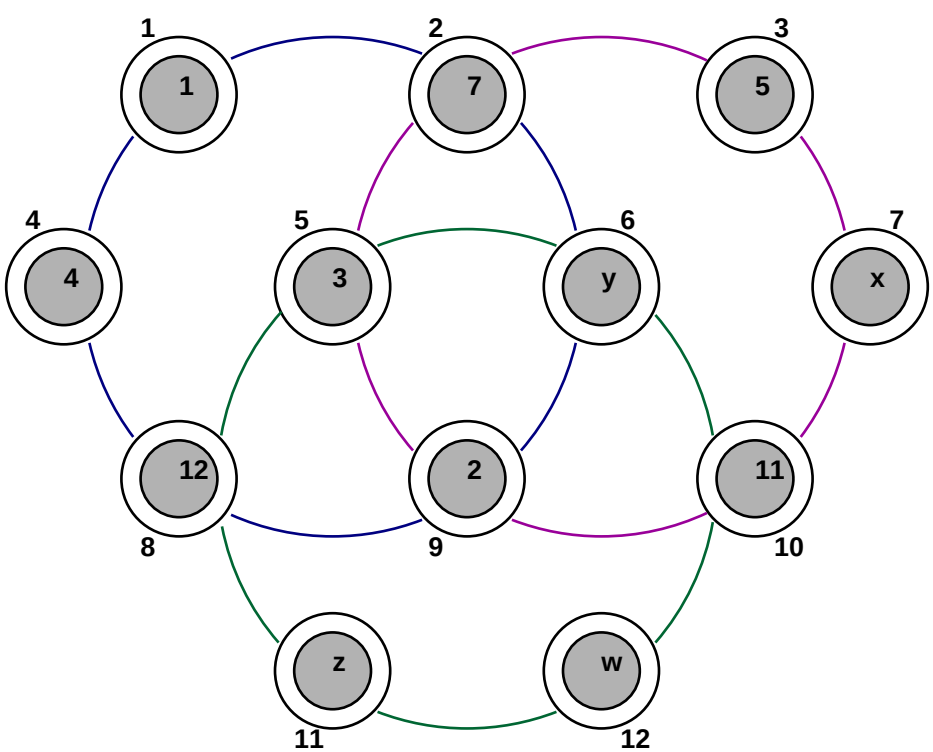

1
2
5
3
1
7
x
4
5
6
7
4
3
12
y
z
2
8
9
10
w
11
11
12

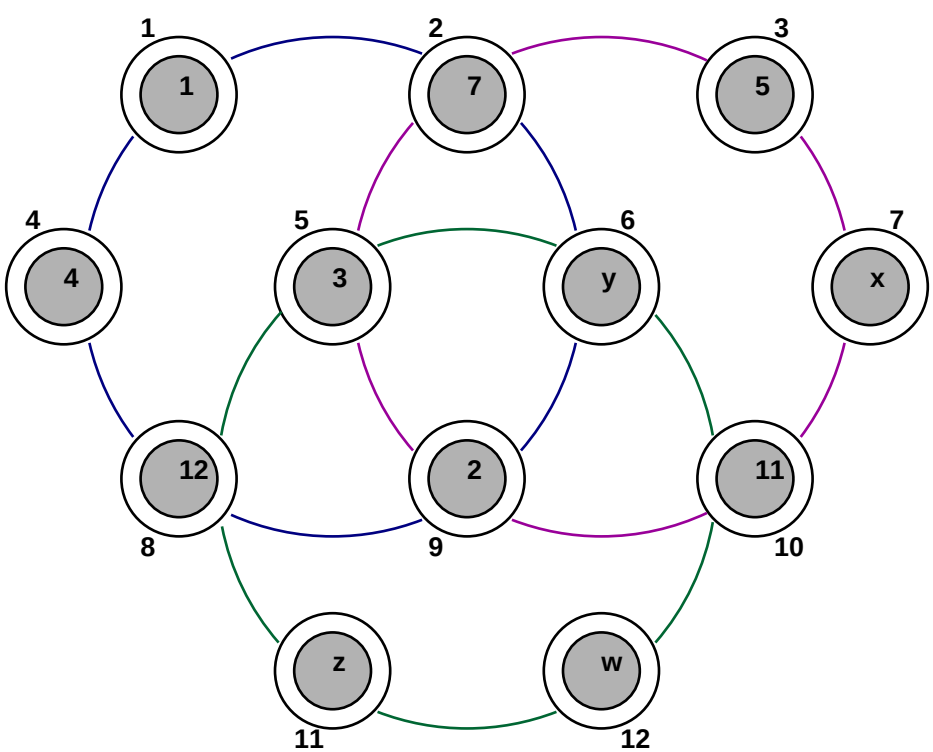

1
1
2
7
3
5
4
4
5
12
6
3
7
x
z
8
2
9
y
10
w
11
11
12

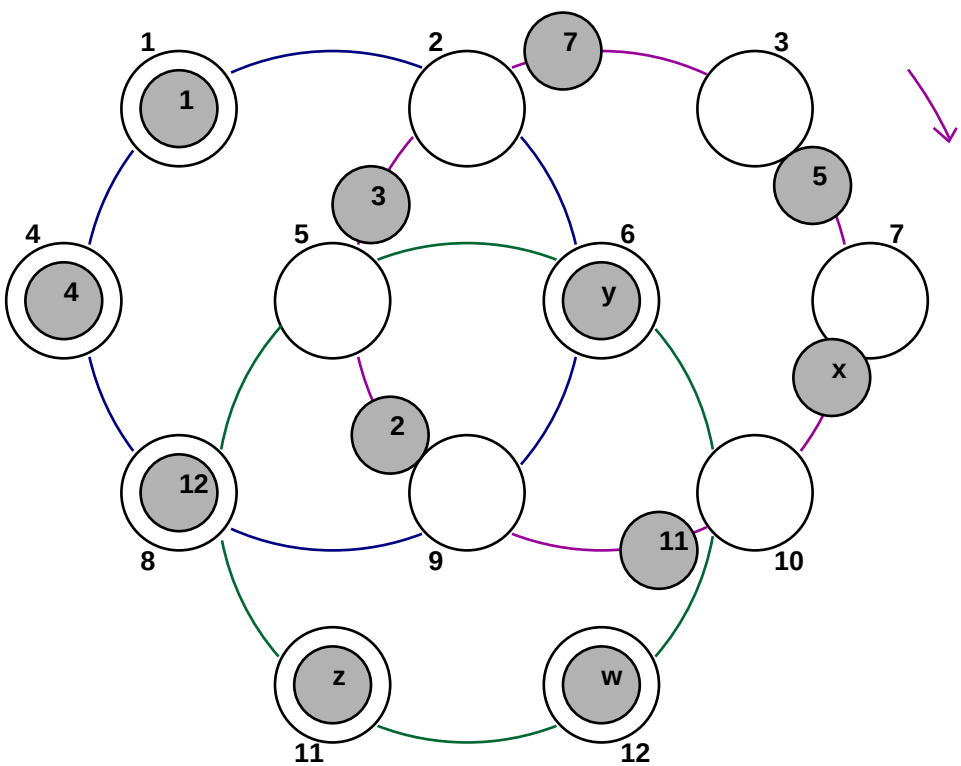

1
1
2
7
3
5
4
4
5
12
6
3
7
x
z
8
2
9
y
10
w
11
11
12

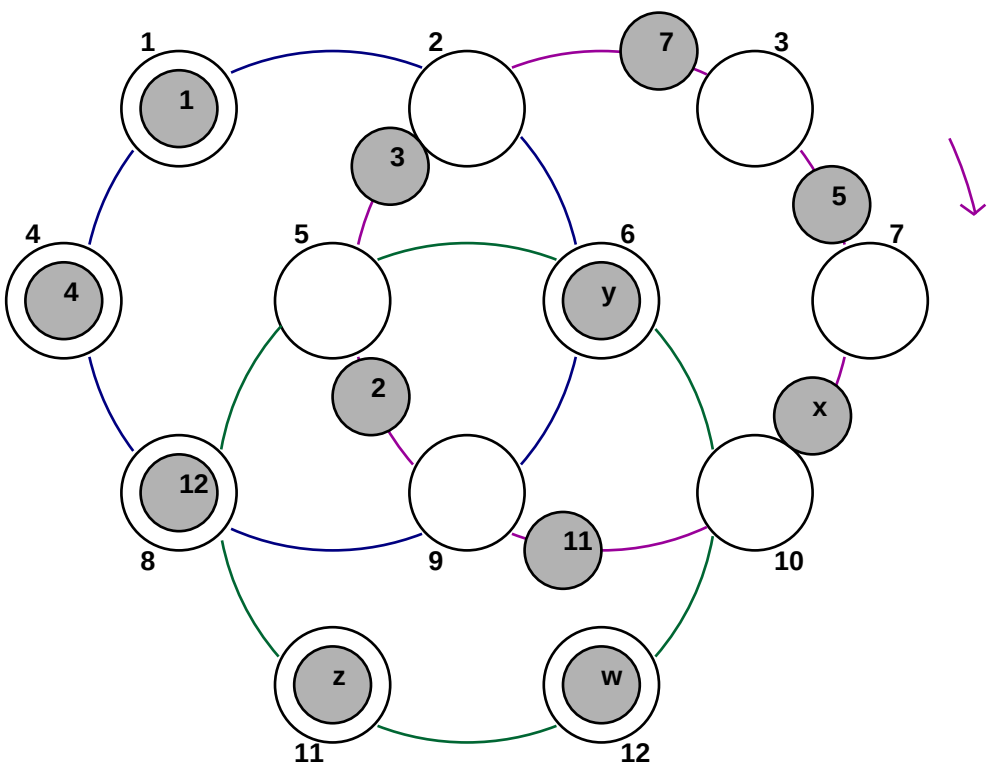

1
2
3
1
7
5
4
5
3
6
7
4
x
12
y
2
8
9
10
z
11
11
w
12

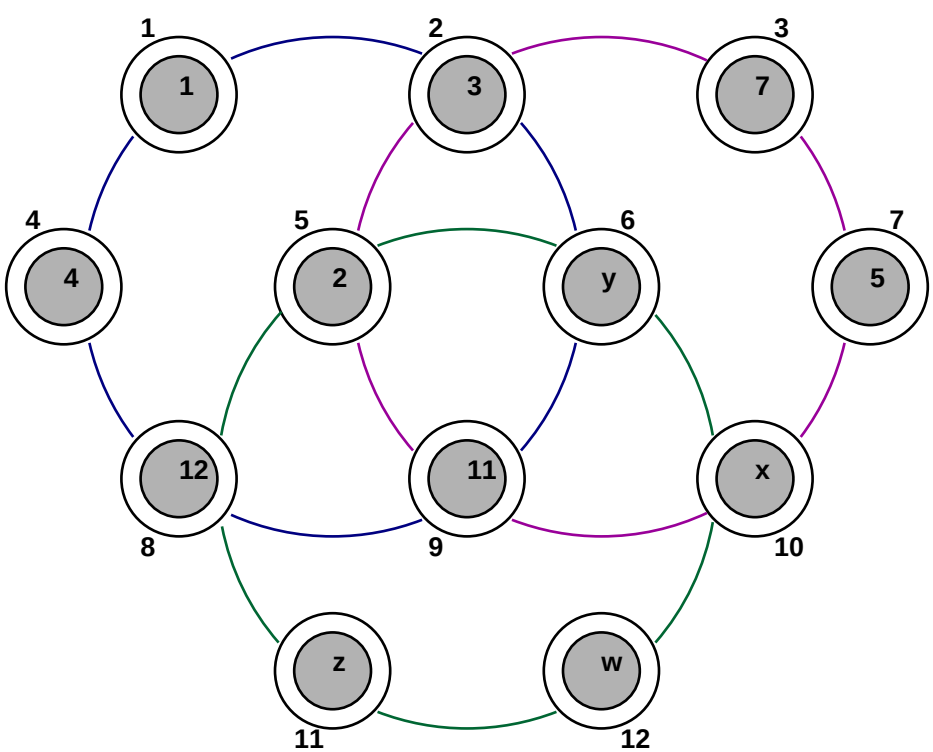

1
2
3
1
7
5
4
5
6
7
4
3
x
y
12
2
8
9
10
11
z
11
w
12

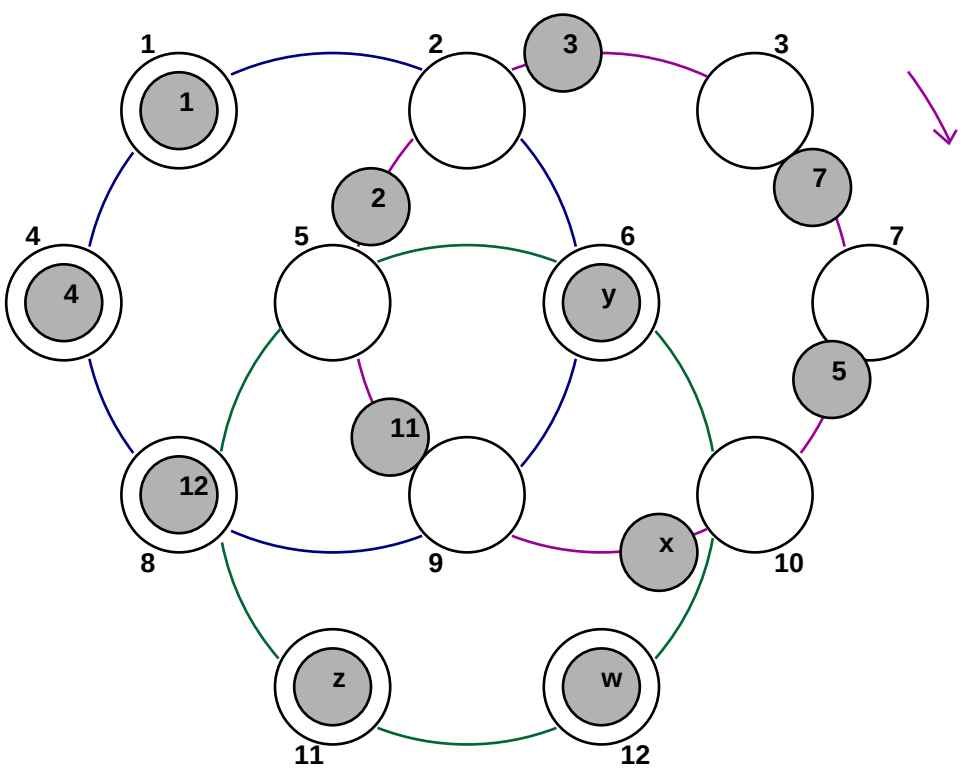

1
2
3
1
7
5
4
5
6
7
4
3
y
x
12
2
11
8
9
10
z
w
11
12

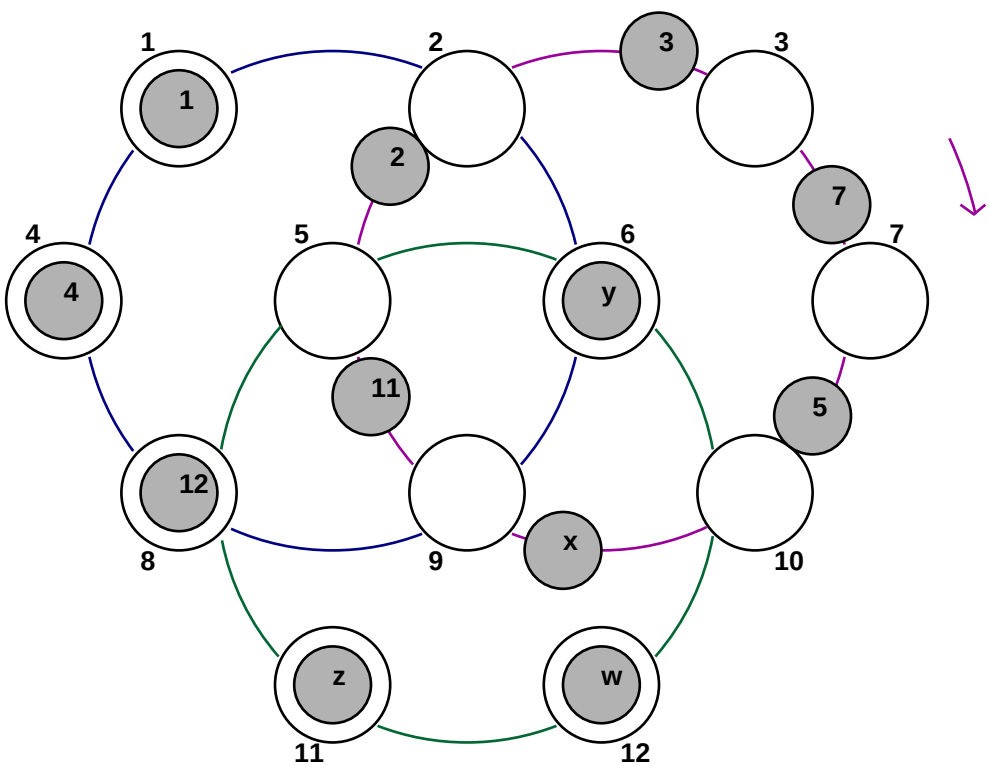

1
2
3
1
7
5
4
5
6
7
4
3
y
x
12
2
11
8
9
10
z
w
11
12

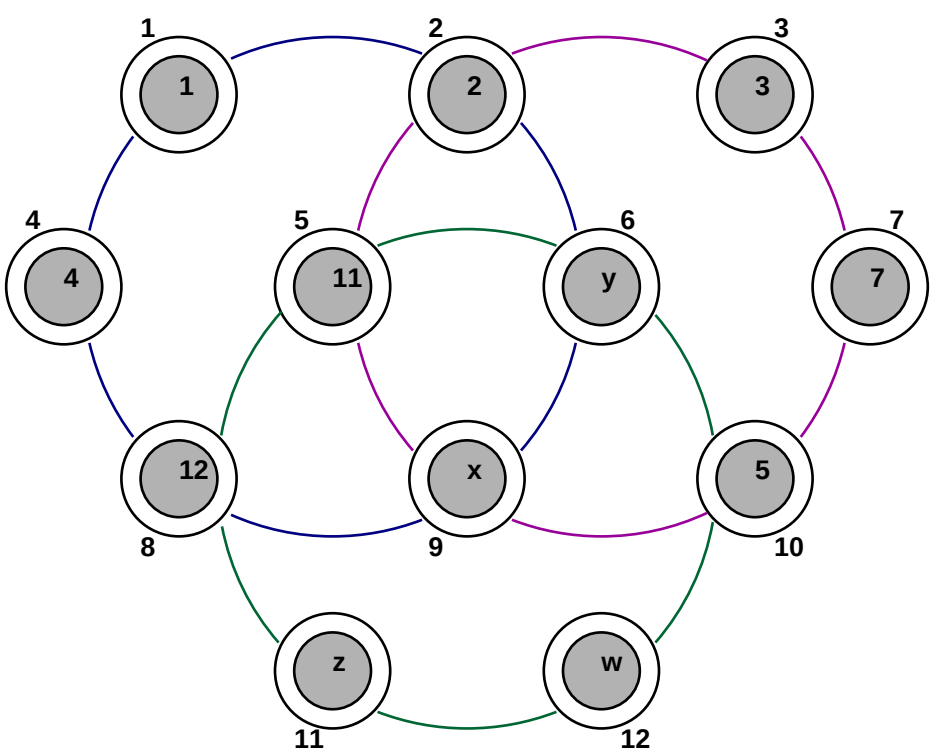

1
1
2
7
3
5
3
4
4
5
6
y
7
x
2
12
8
9
11
10
z
w
11
12

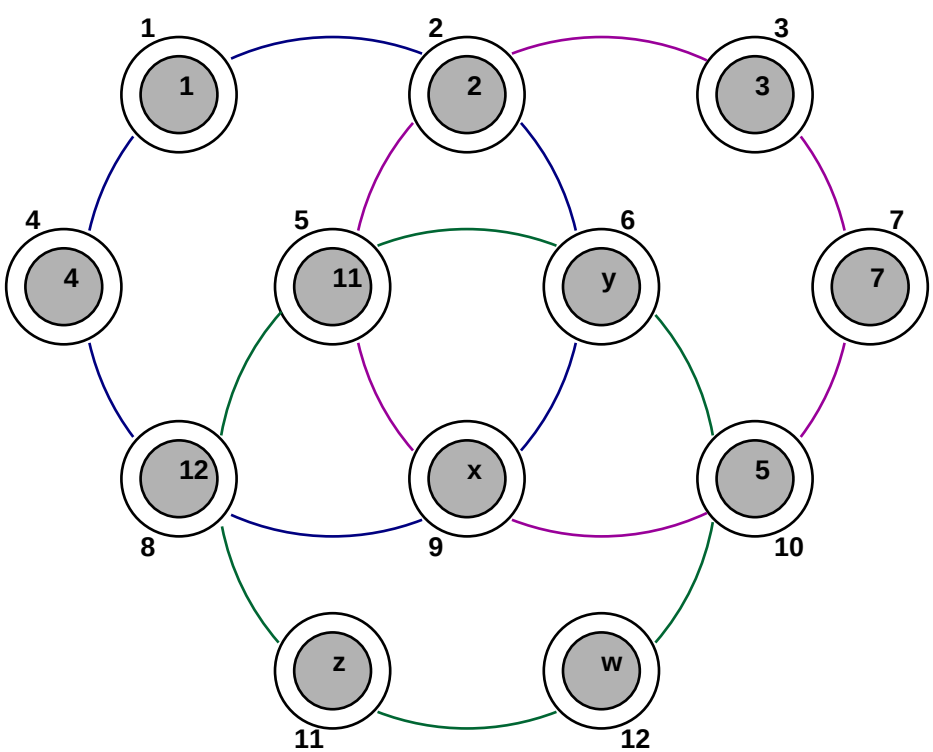

1
2
7
3
1
3
5
4
5
6
7
4
y
2
x
12
11
8
9
10
z
w
11
12

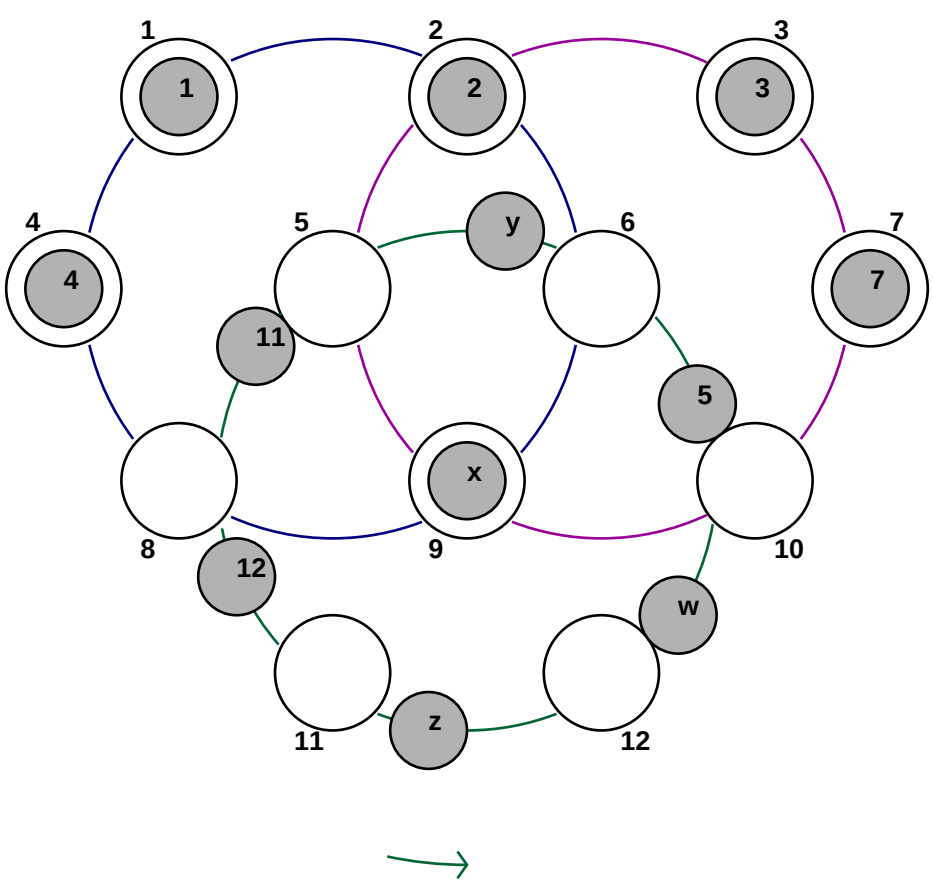

1
2
3
1
3
7
4
5
6
7
4
2
y
5
12
11
x
8
9
10
z
w
11
12

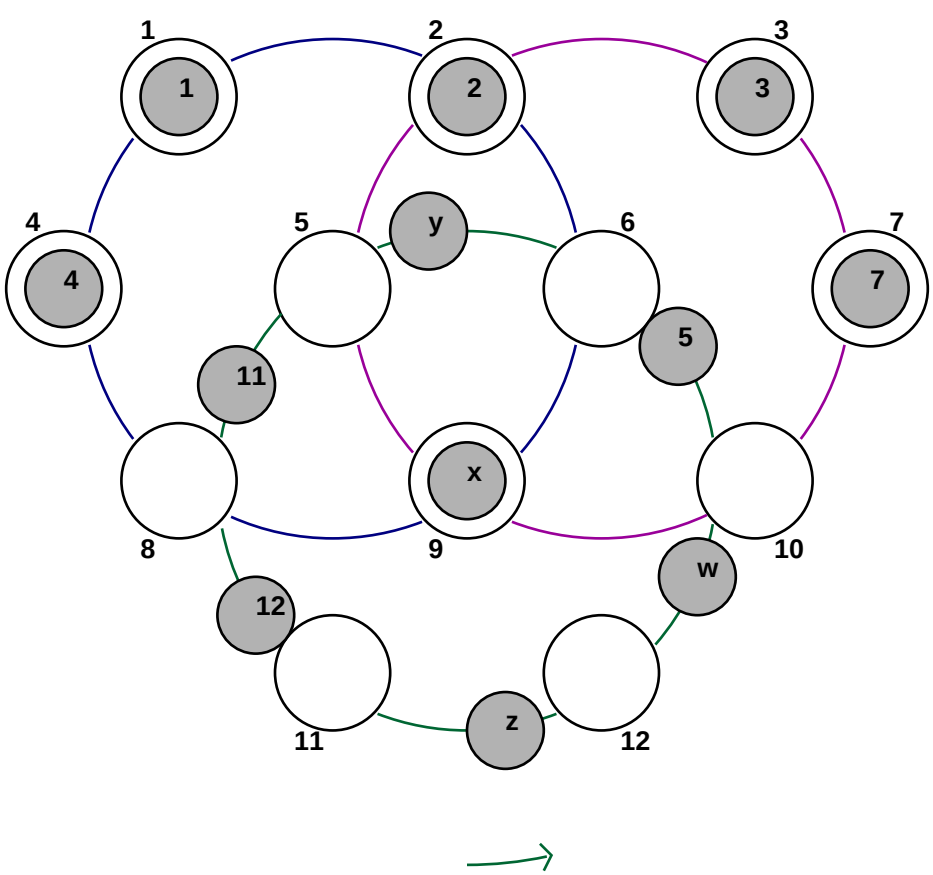

1
1
2
3
3
7
2
4
5
6
7
4
y
5
11
12
x
8
9
10
z
w
11
12

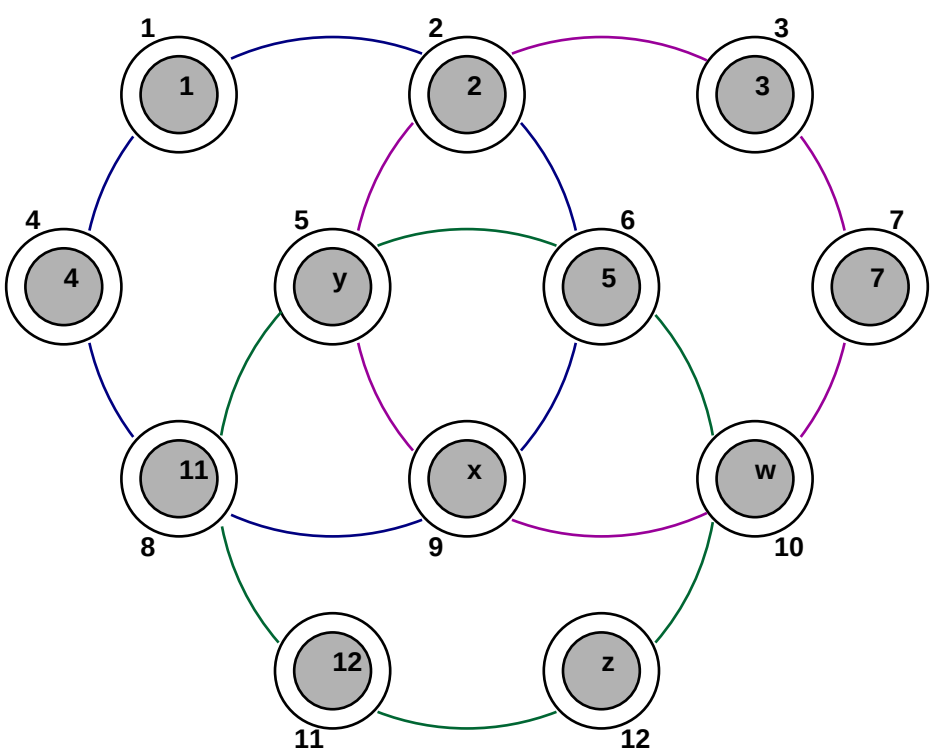

1
2
3
3
1
2
7
4
5
6
7
4
y
11
5
12
x
8
9
10
z
w
11
12

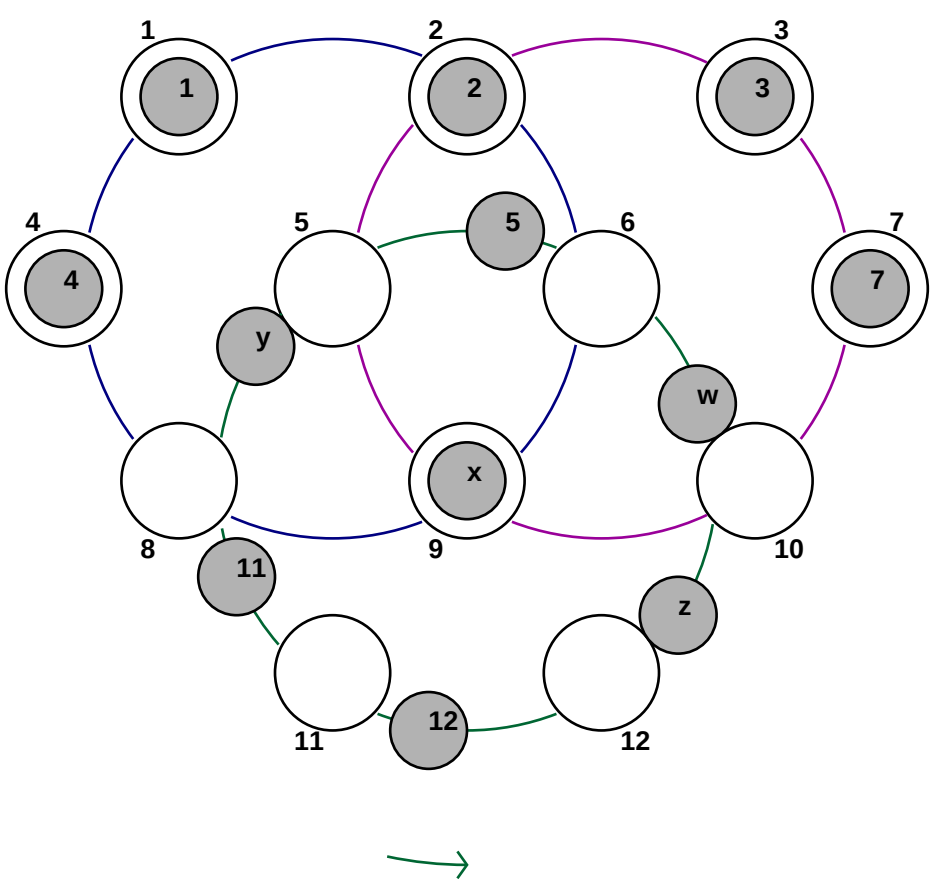

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
y
7
12
x
5
z
w

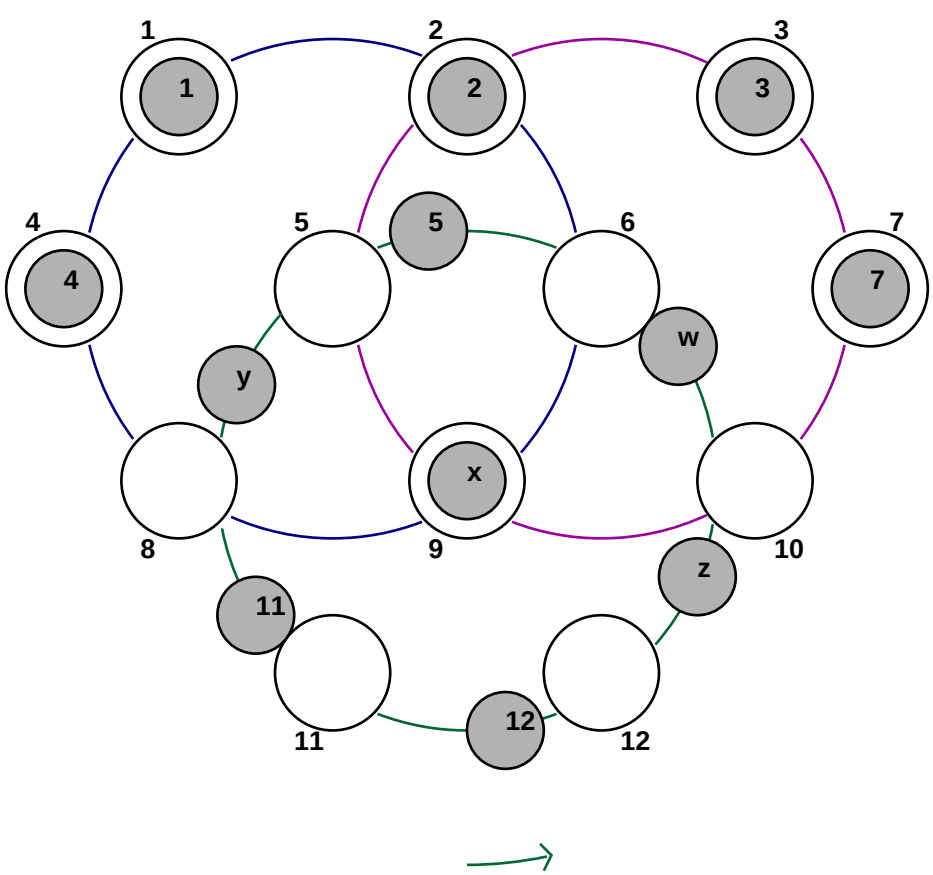

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
11
y
7
12
x
5
z
w

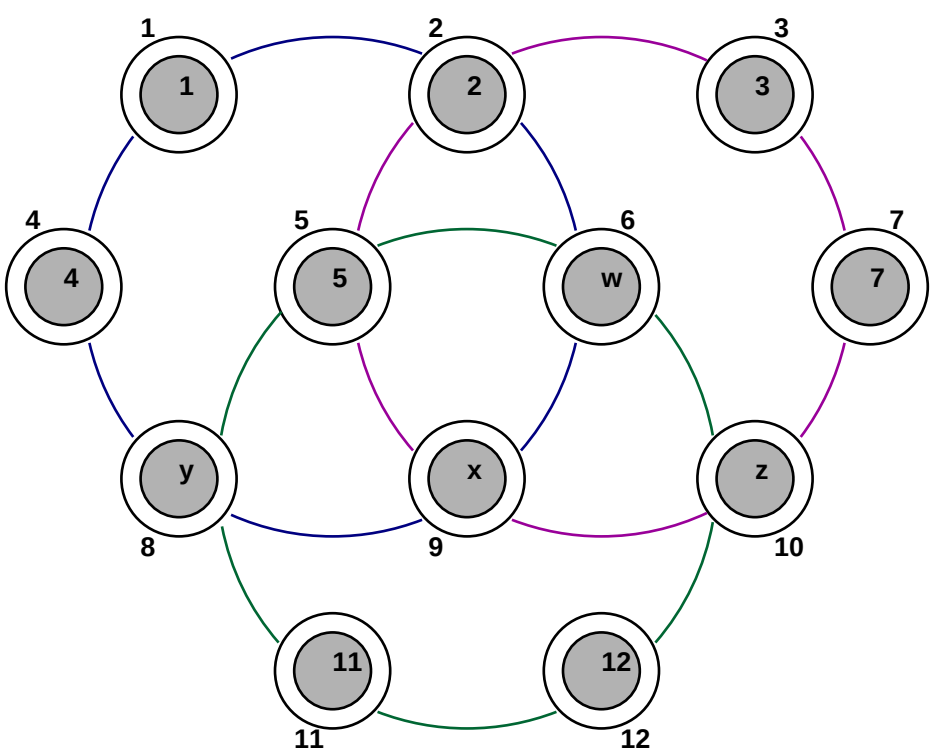

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
y
7
11
5
x
12
w
z
11
12

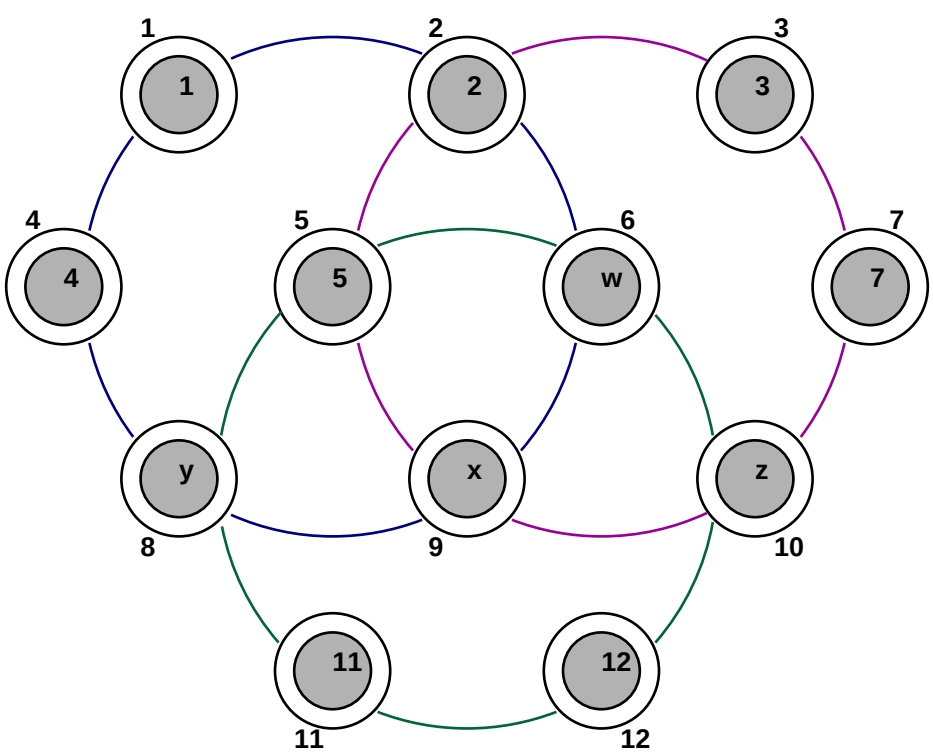

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
y
7
5
11
x
w
12
z
11
12

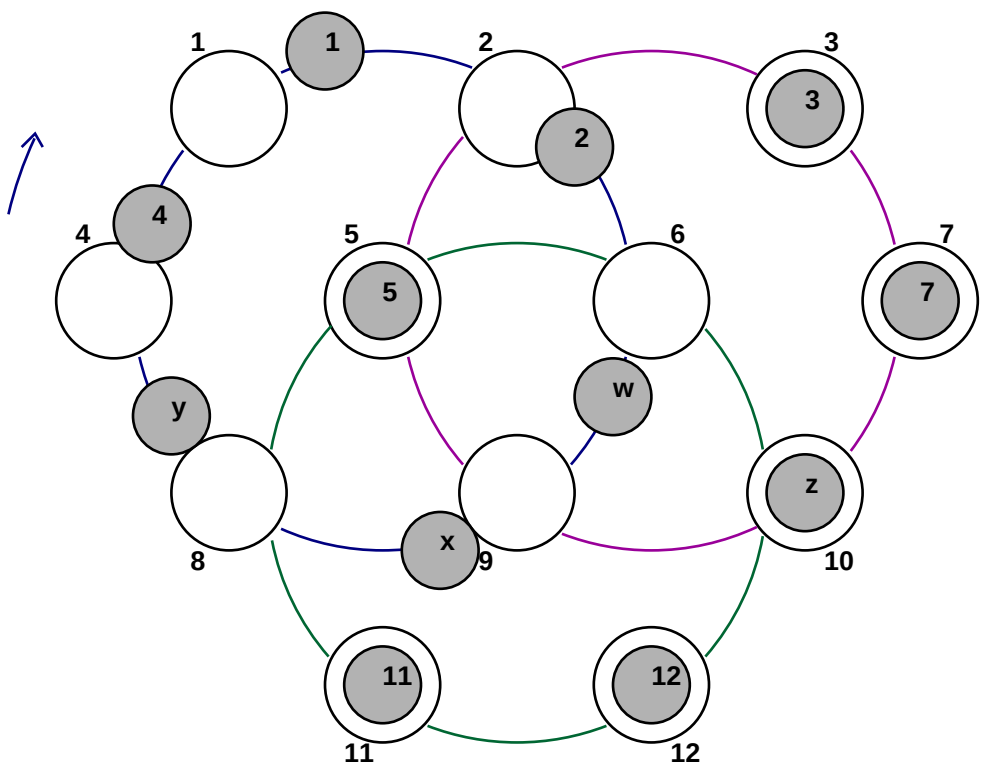

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
y
5
7
11
x
w
12
z

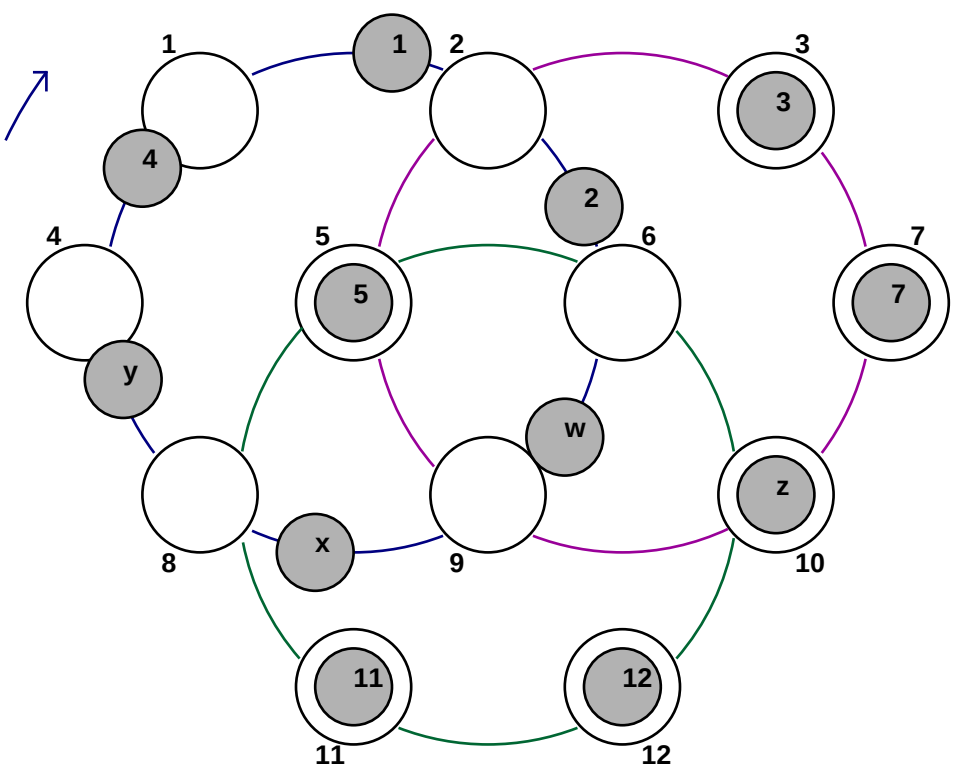

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
6
7
y
w
x
11
z
12
11
12

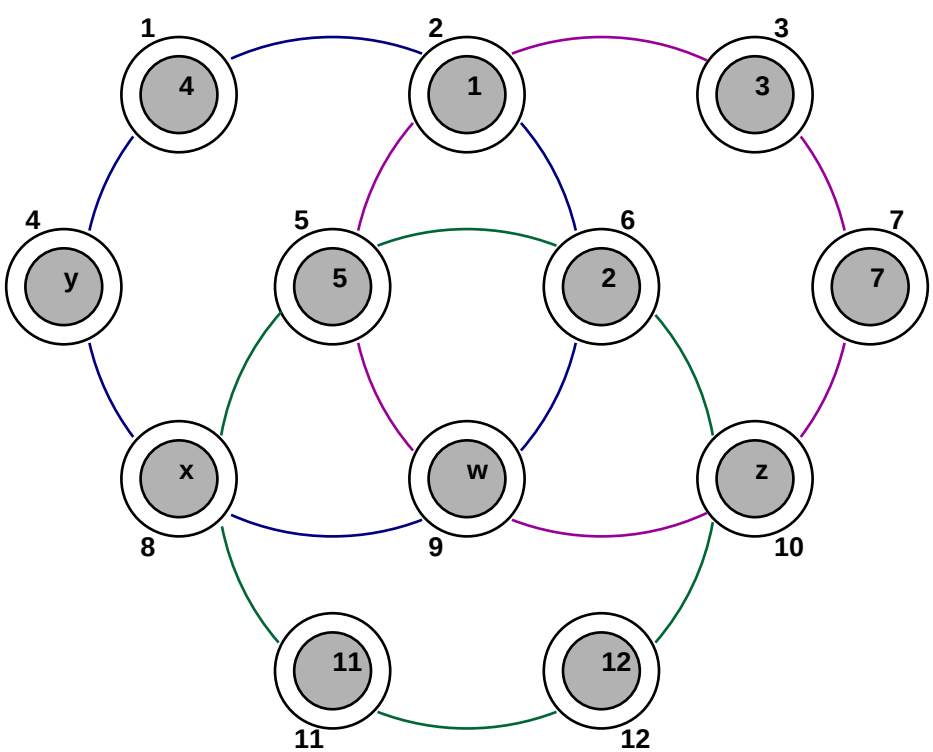

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
7
y
w
x
z
11
12

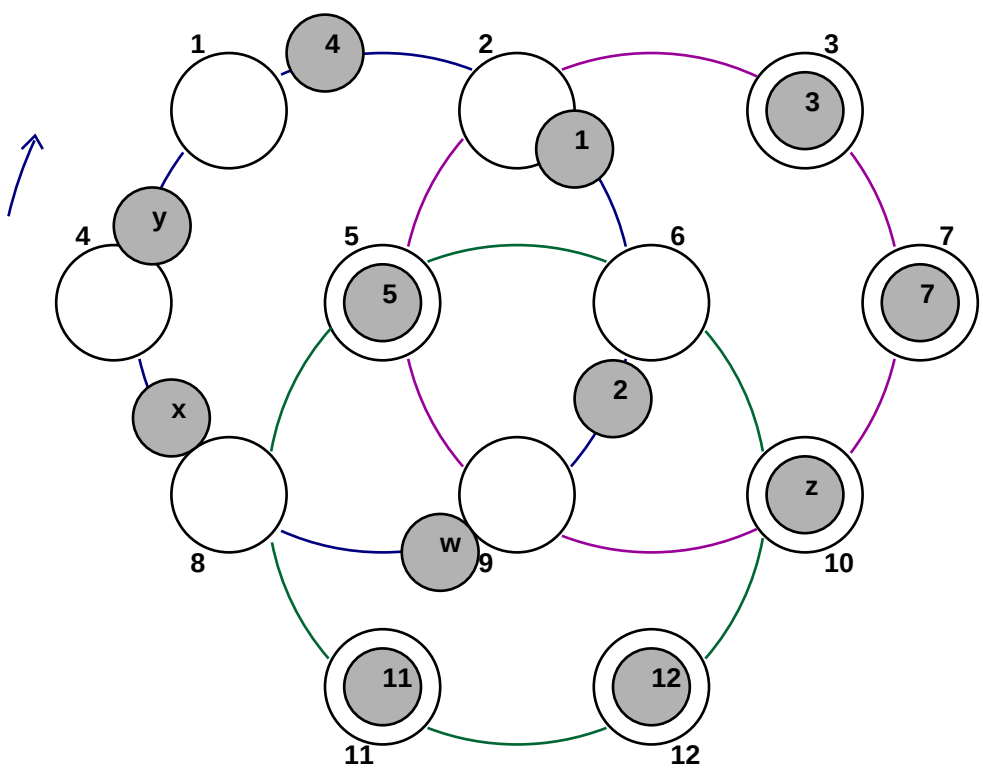

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
w
7
y
x
z
11
12

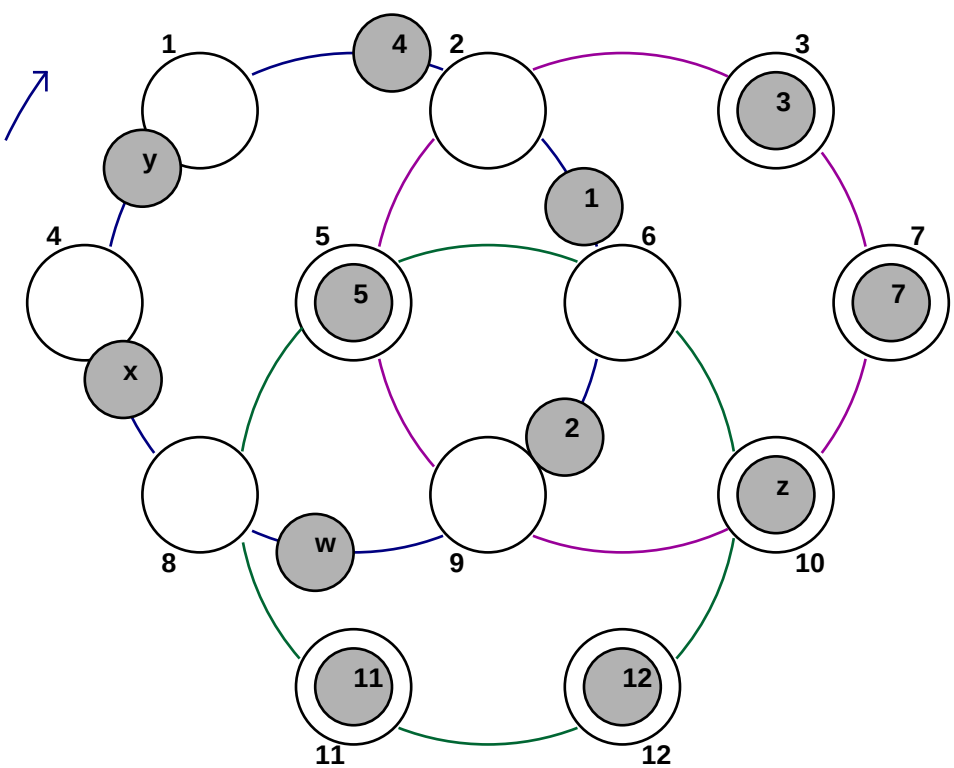

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
w
7
y
x
z
11
12

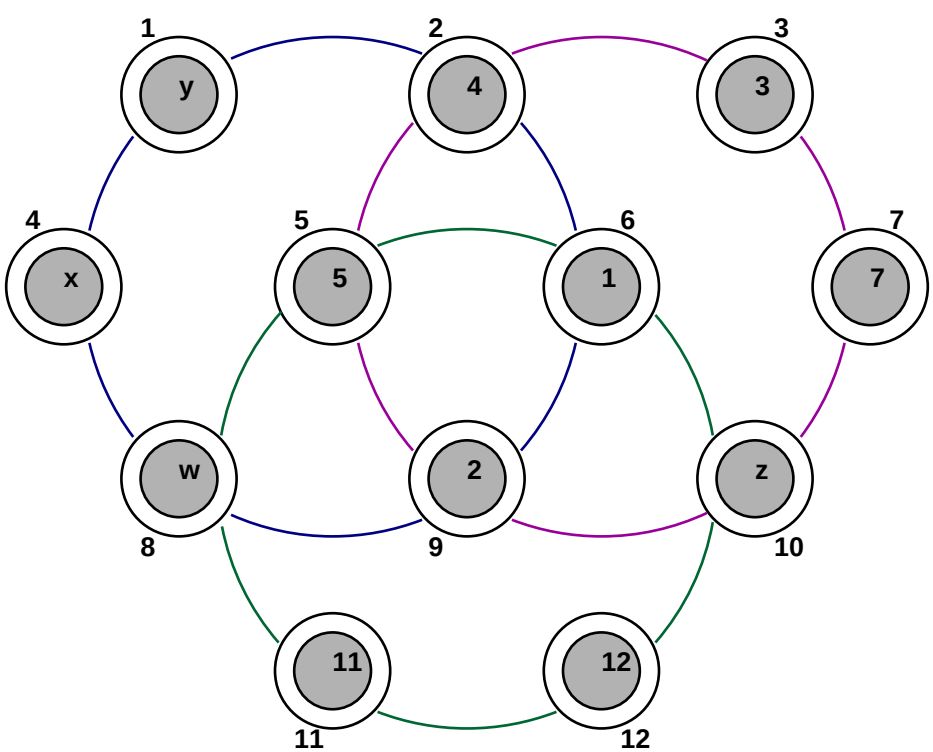

1
1
2
3
3
2
4
4
5
5
6
7
7
w
y
z
x
8
9
10
11
11
12
12

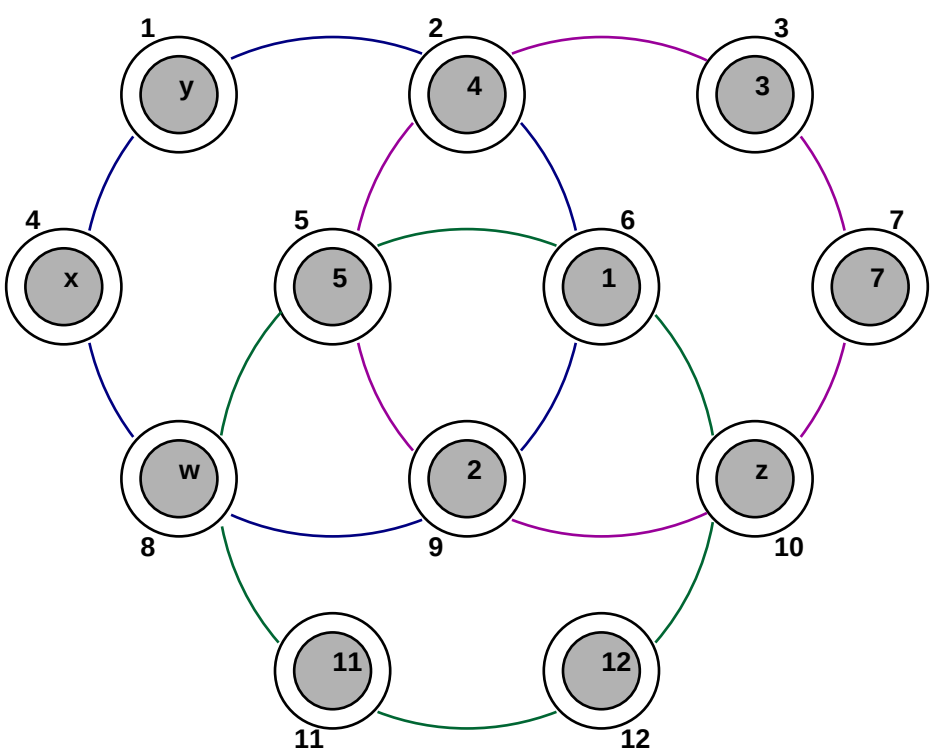

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
6
7
y
w
z
x
11
12

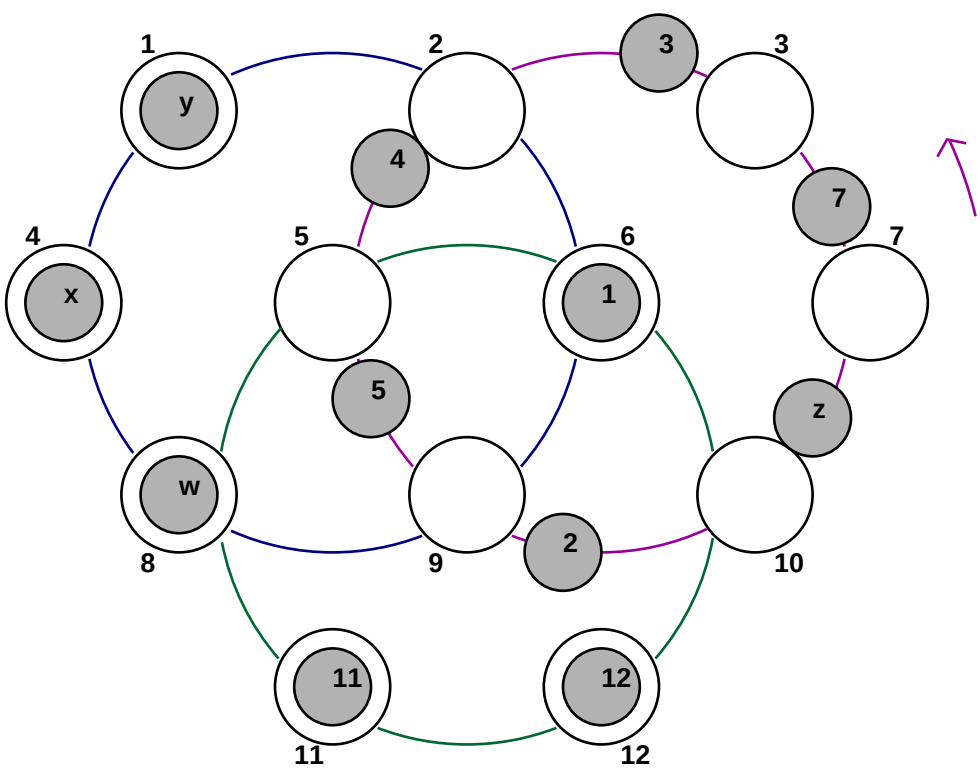

1
2
3
4
1
3
4
5
6
7
y
5
2
7
x
w
z
8
9
10
11
12
11
12

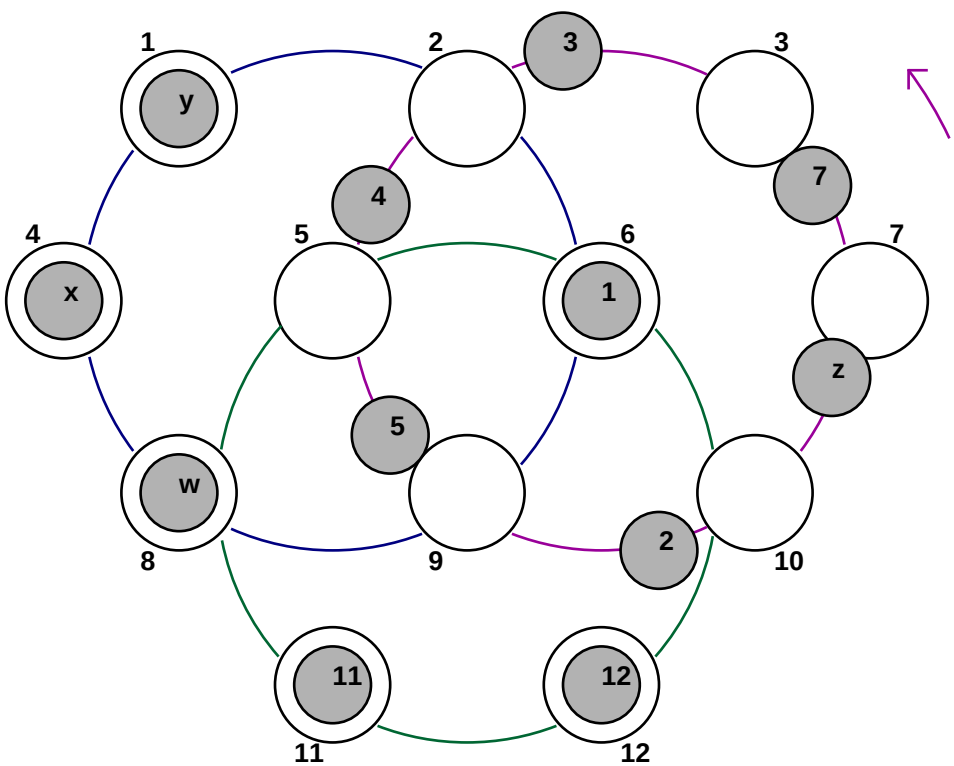

1
4
2
3
3
1
y
4
5
6
7
5
7
2
x
z
w
8
9
10
11
12
11
12

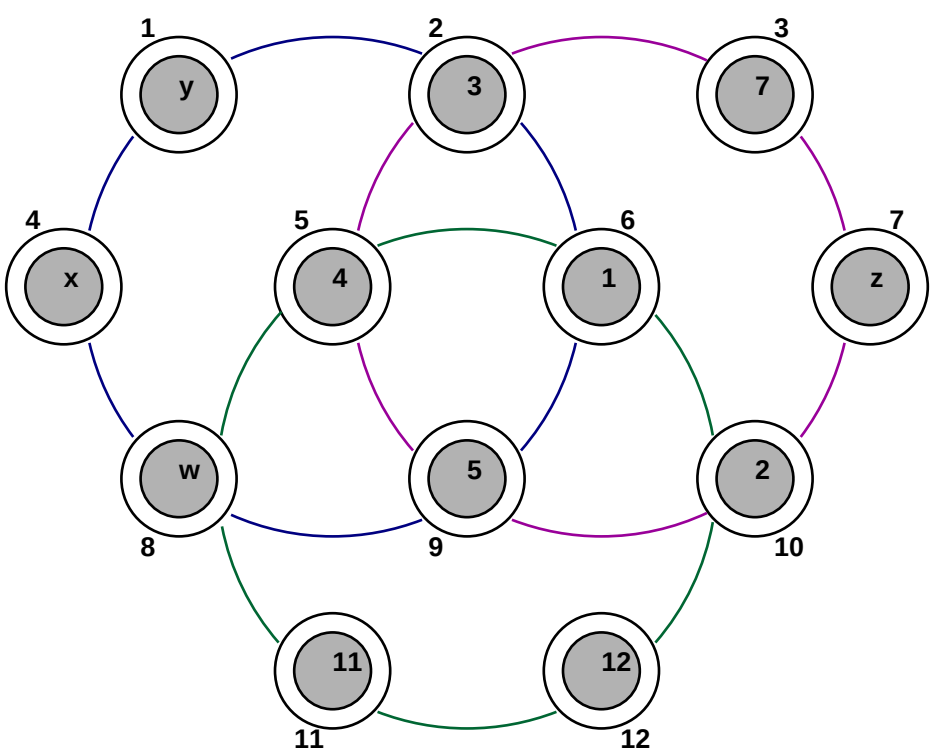

1
4
2
3
3
y
1
4
5
6
7
5
7
x
2
z
w
8
9
10
11
12
11
12

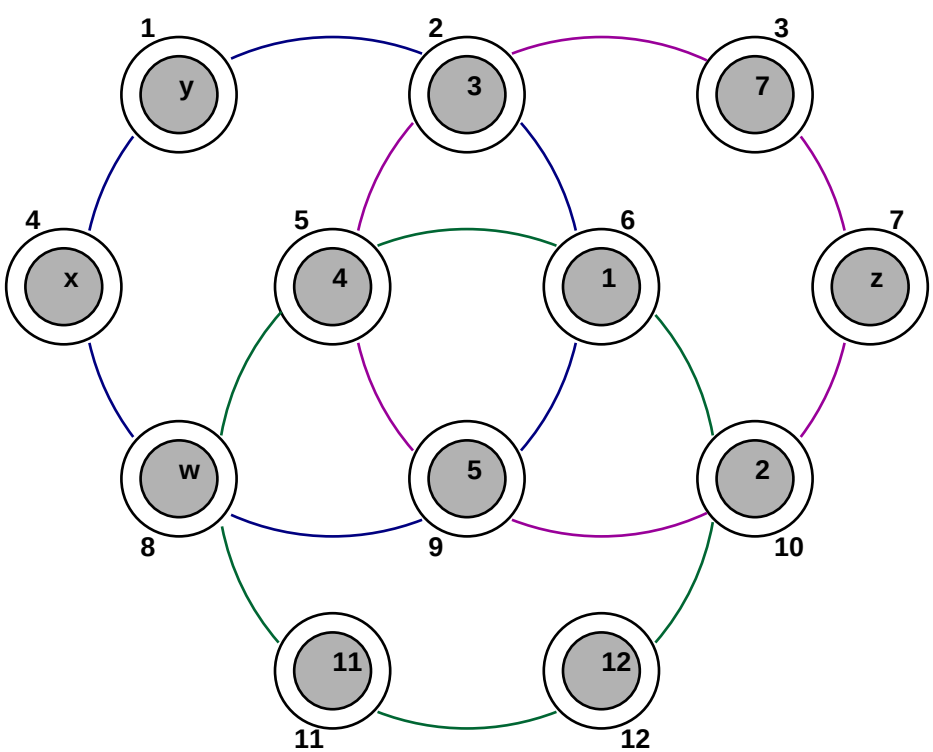

1
y
2
4
3
3
4
x
5
5
6
1
7
7
w
2
z
8
9
10
11
11
12
12

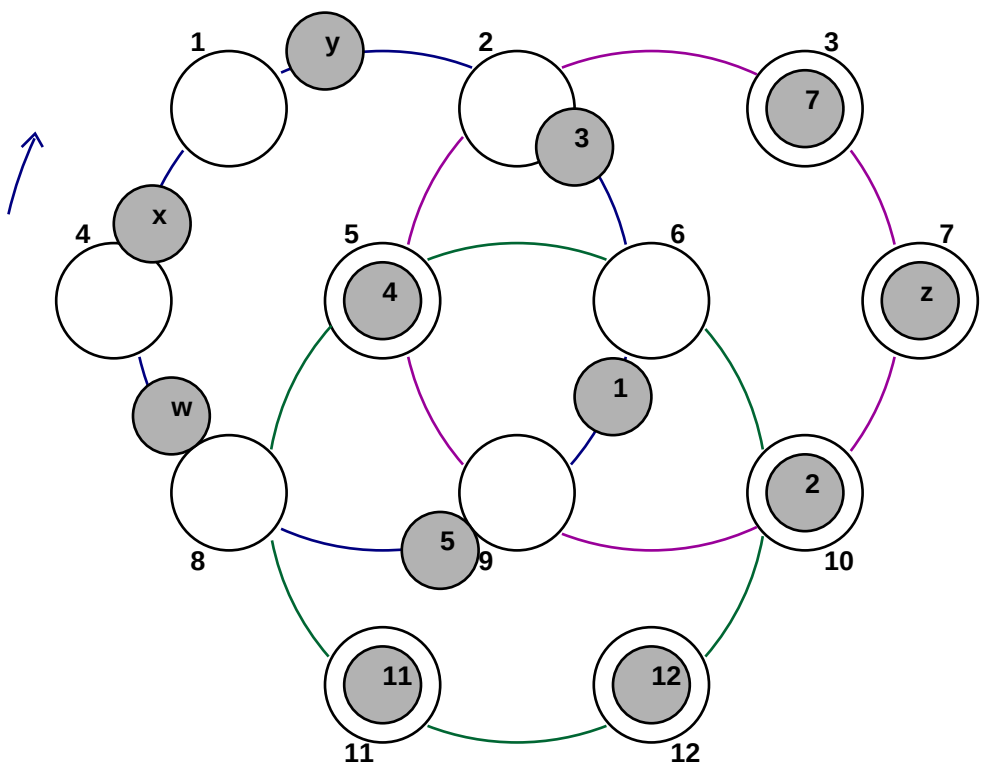

1
y
2
4
3
3
4
x
5
5
6
1
7
7
w
2
z
8
9
10
11
11
12
12

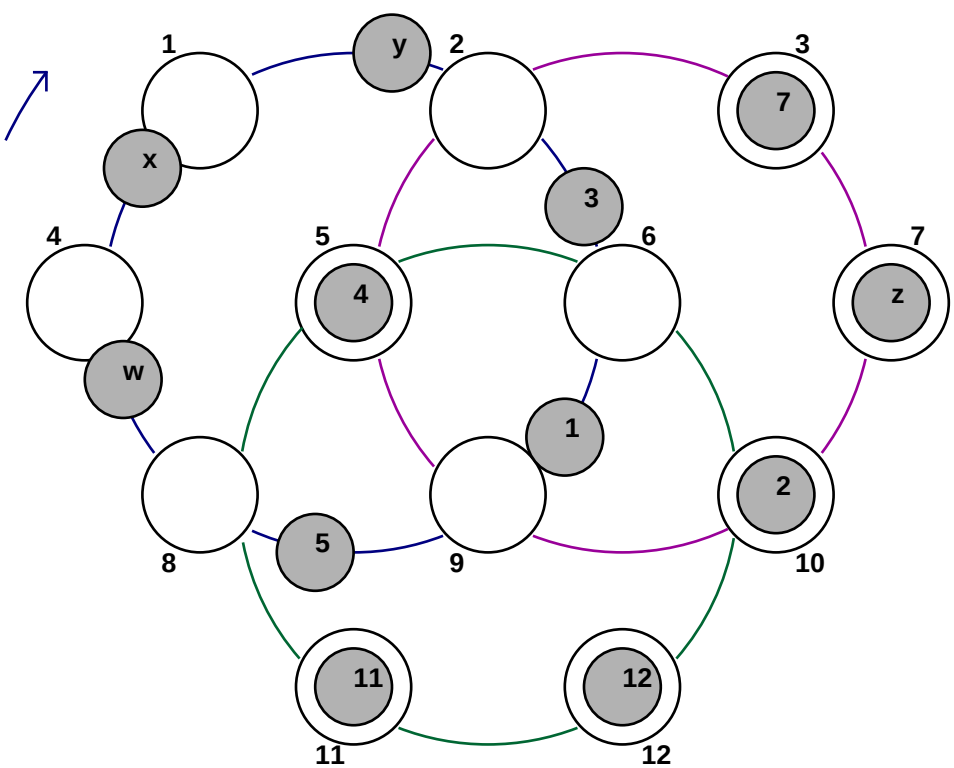

1
y
2
3
3
4
7
4
x
5
6
1
7
5
z
w
8
9
2
10
11
11
12
12

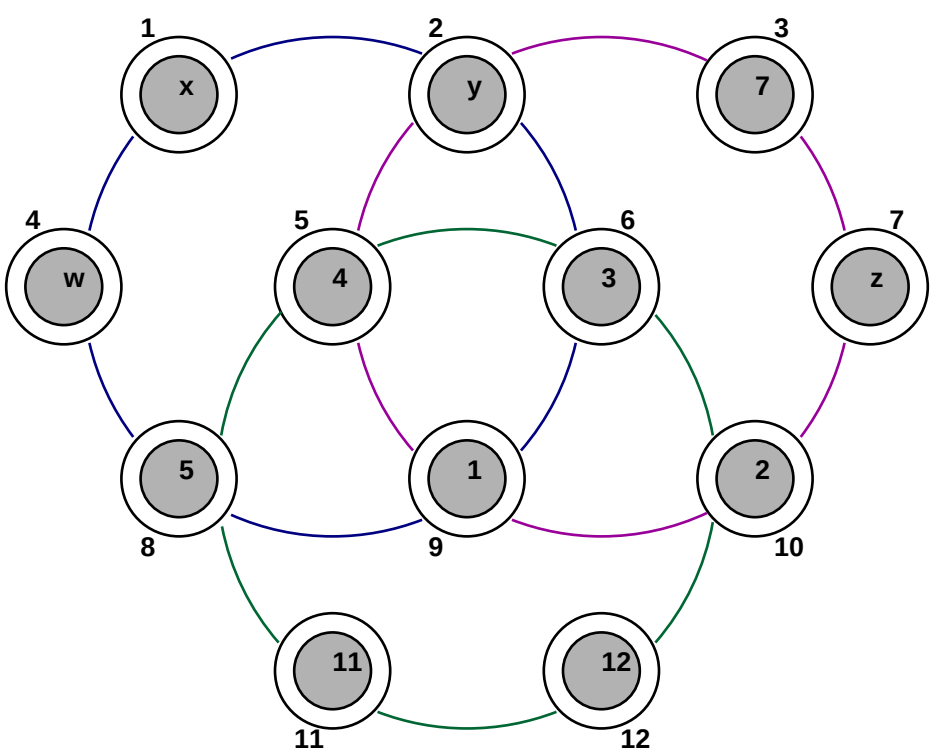

1
y
2
3
3
7
4
4
5
6
x
1
7
z
5
w
8
9
2
10
11
11
12
12

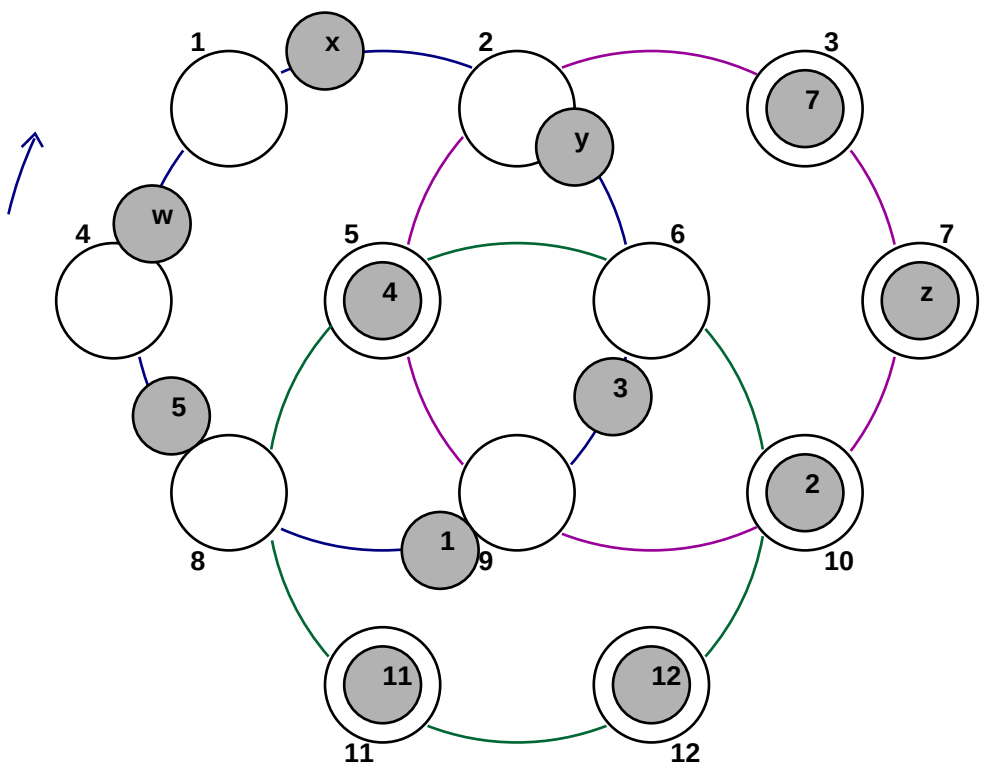

1
y
2
3
3
7
4
x
5
4
6
1
7
z
w
8
5
9
2
10
11
11
12
12

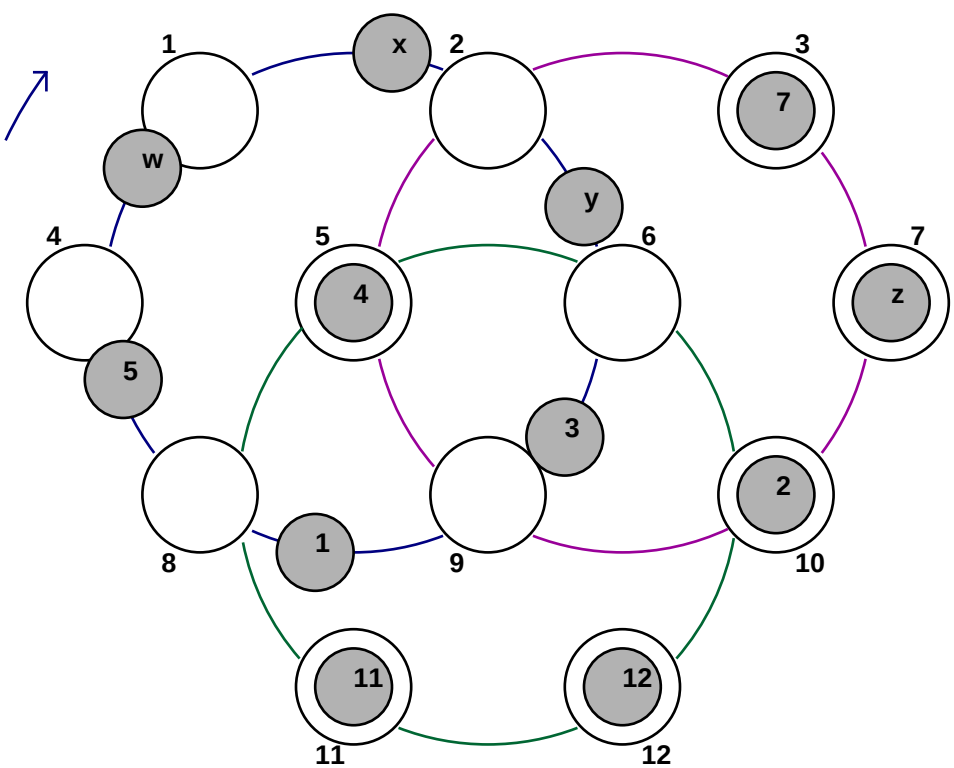

1
y
2
3
3
7
4
x
5
4
6
1
7
z
w
8
5
9
2
10
11
11
12
12

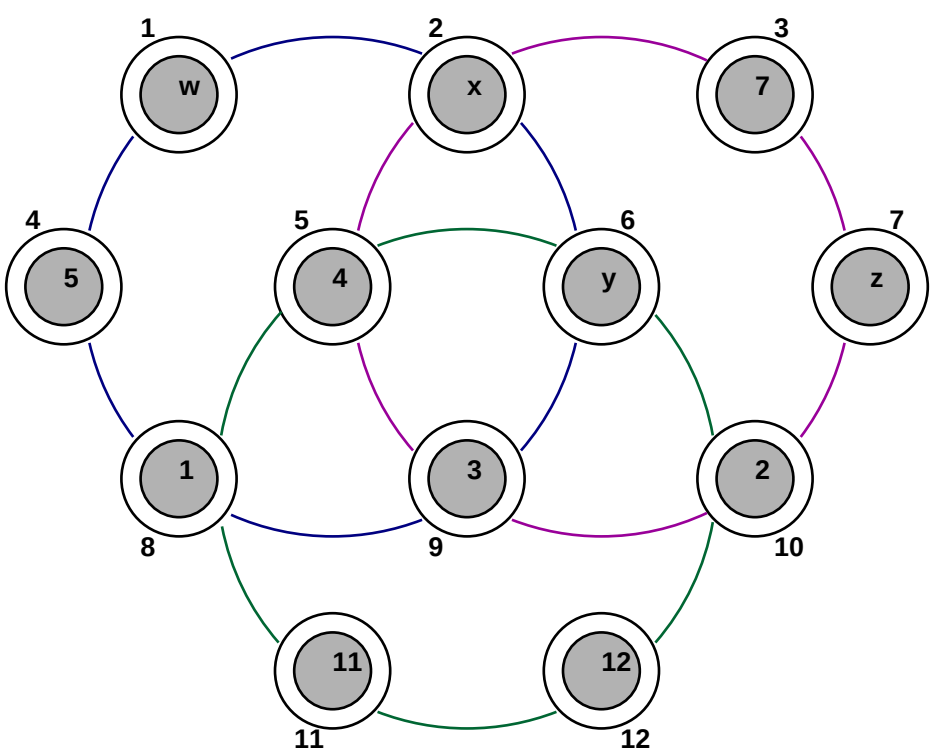

1
y
2
3
7
3
x
4
4
5
6
7
z
1
w
2
5
8
9
10
11
12
11
12

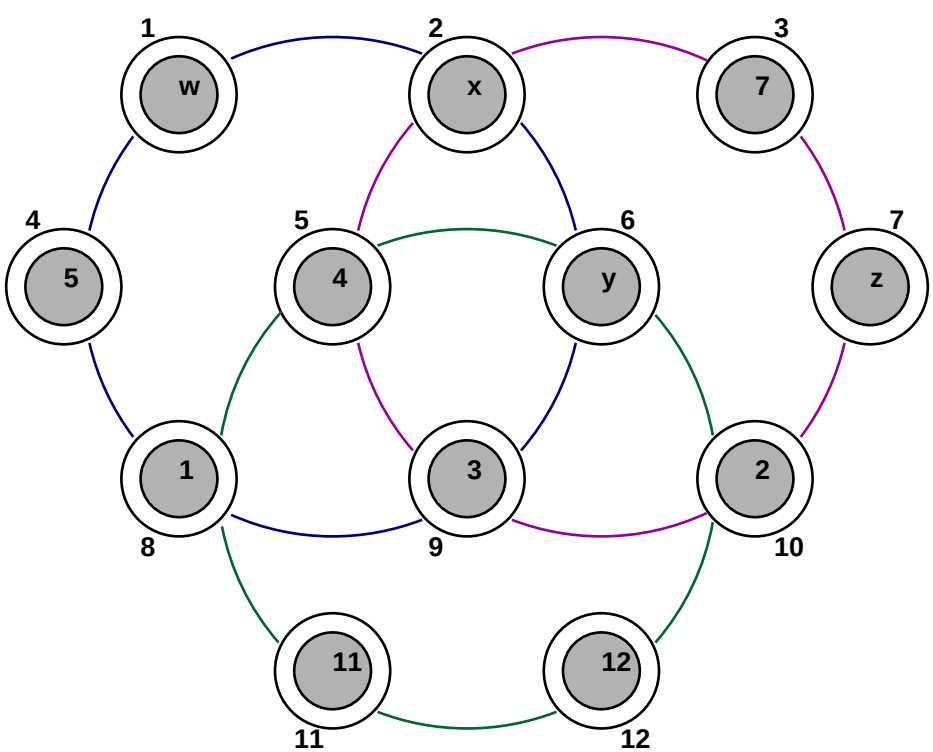

1
y
2
3
7
x
3
4
5
6
7
4
z
w
1
2
5
8
9
10
11
12
11
12

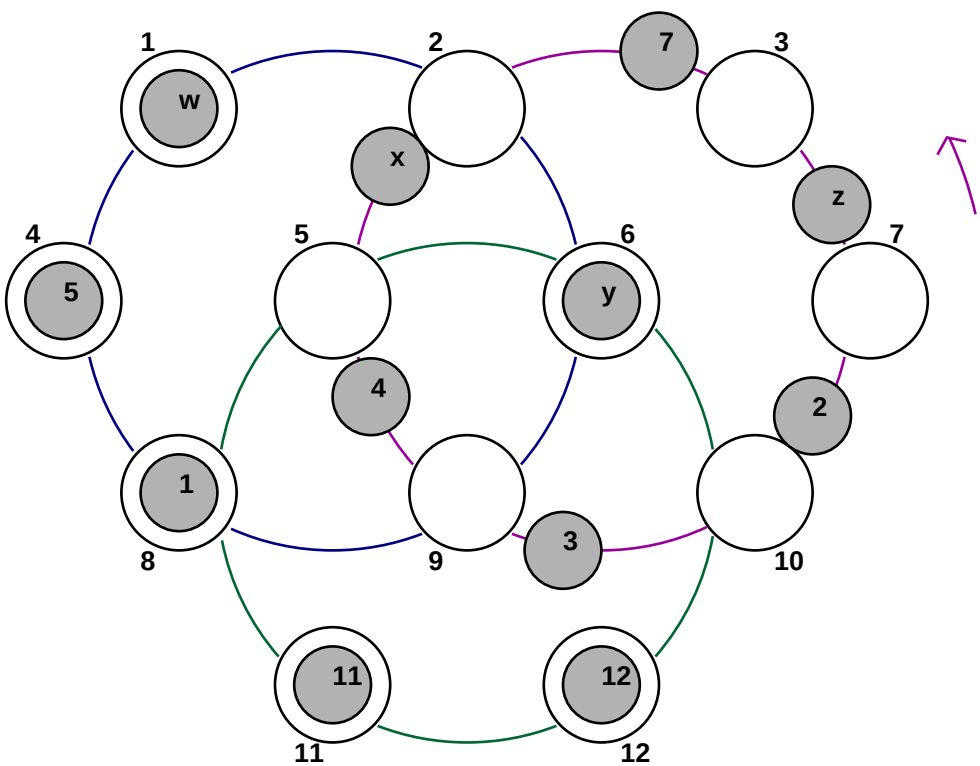

1
x
2
y
3
7
4
w
5
4
6
3
7
z
5
8
1
9
2
10
11
11
12
12

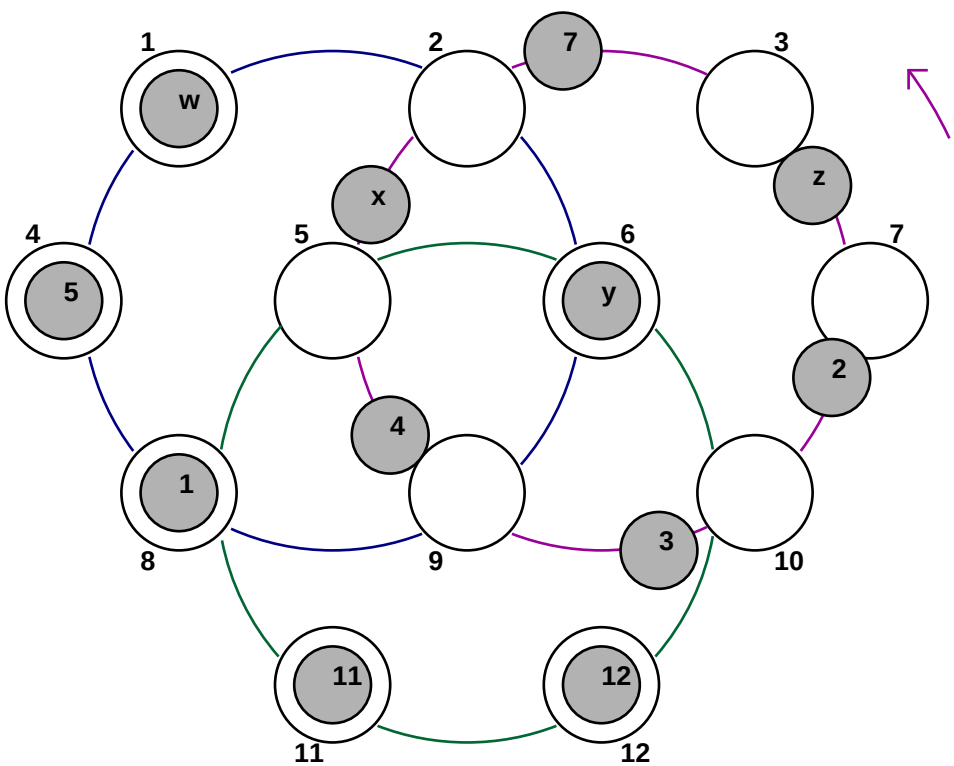

1
x
2
3
7
y
w
4
5
6
7
4
z
3
5
2
1
8
9
10
11
12
11
12

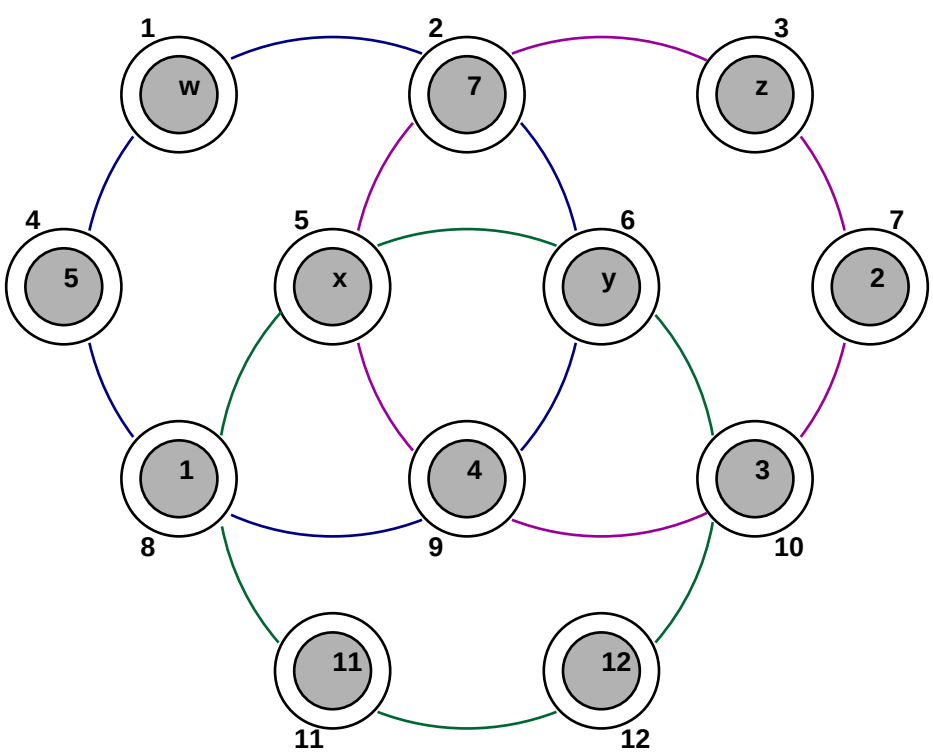

1
x
2
3
7
w
y
4
5
6
7
4
z
5
3
2
1
8
9
10
11
12
11
12

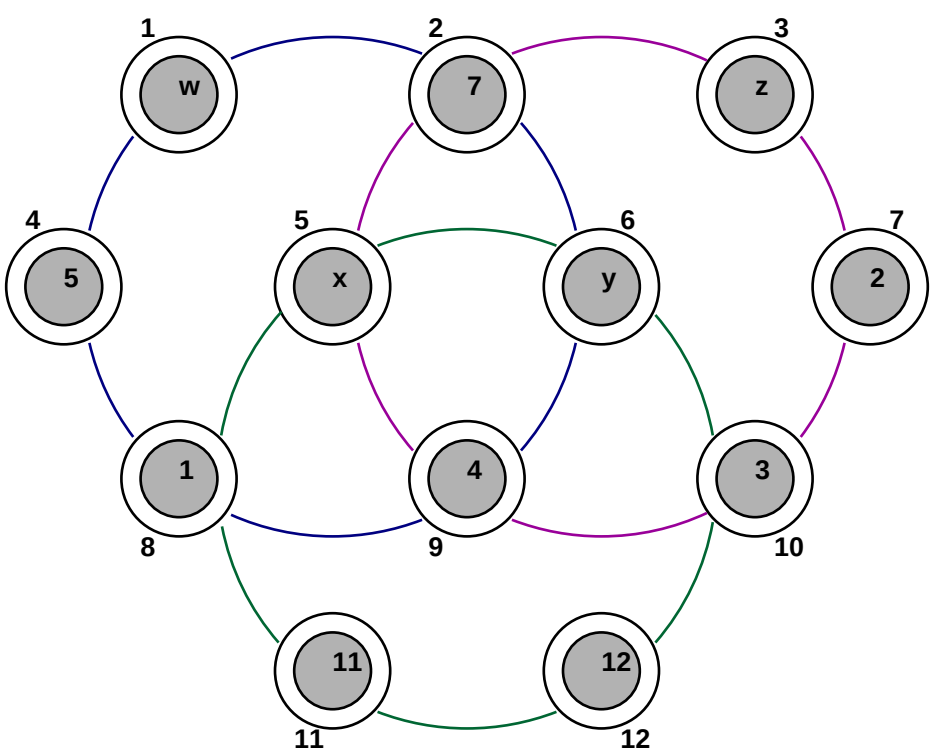

1
w
2
x
3
7
4
5
5
4
6
y
7
z
1
1
3
3
2
2
8
9
10
11
11
12
12

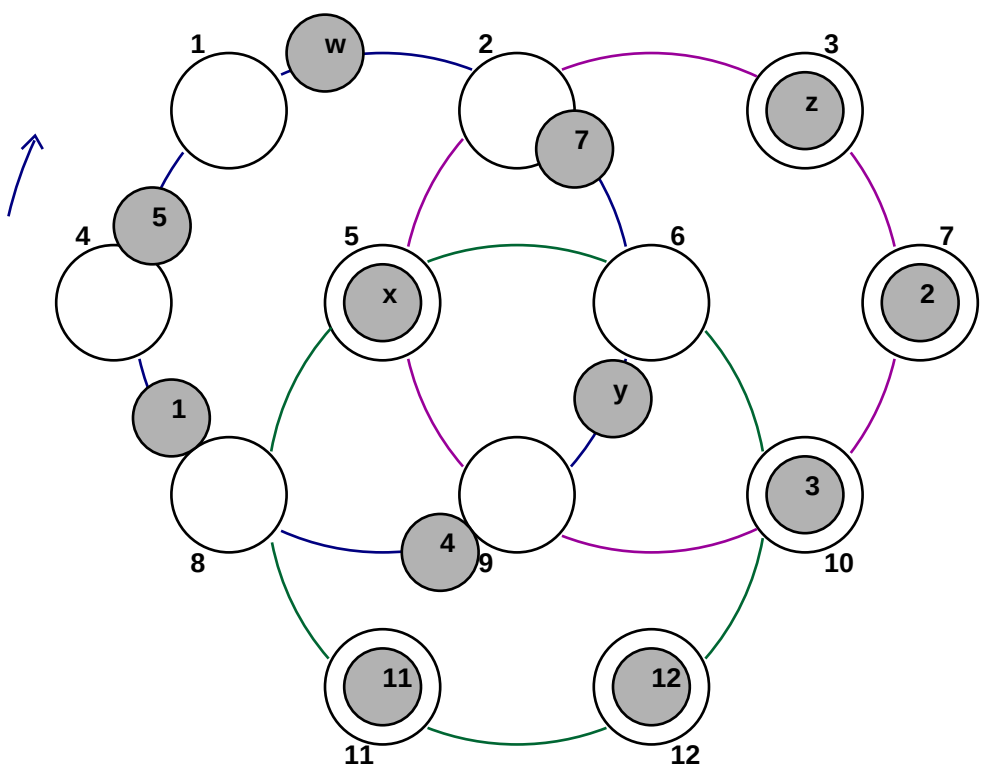

1
w
2
x
3
7
4
5
5
4
6
y
7
z
1
1
3
3
2
2
8
9
10
11
11
12
12

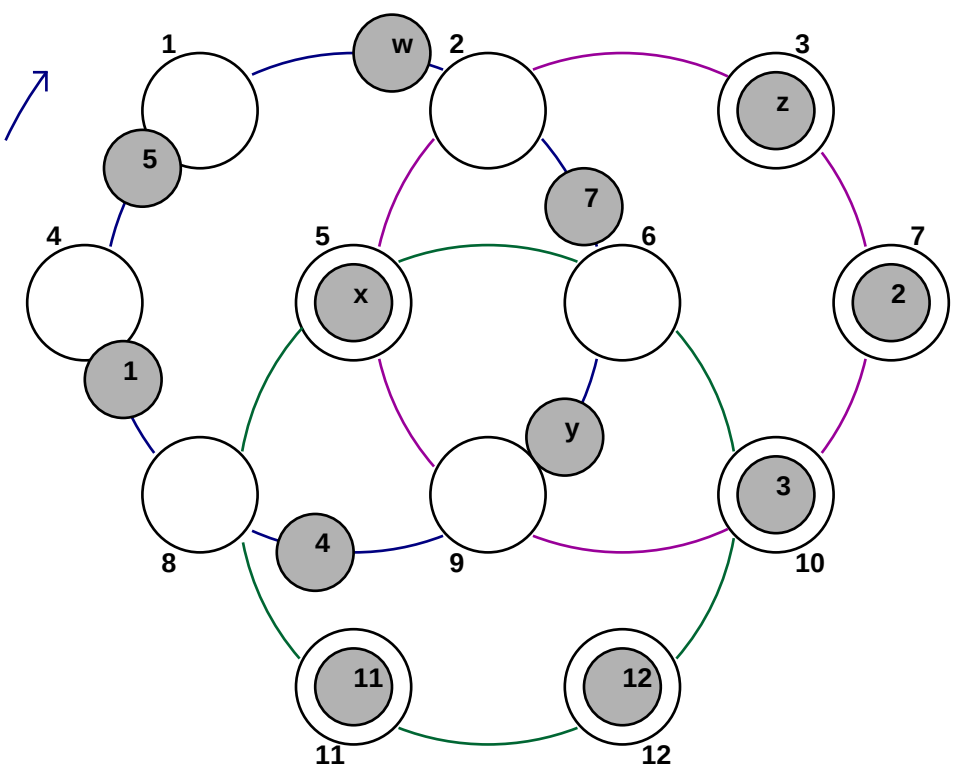

1
w
2
7
3
x
z
4
5
5
6
y
7
4
2
1
8
9
3
10
11
11
12
12

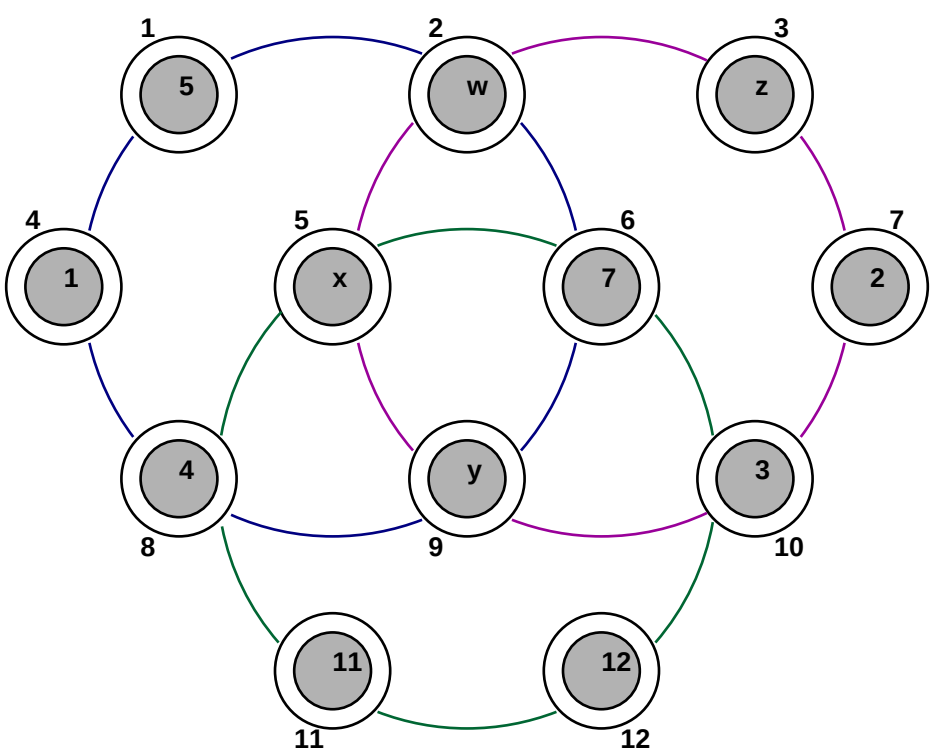

1
w
2
7
3
z
x
4
5
5
6
y
7
2
4
1
8
9
3
10
11
11
12
12

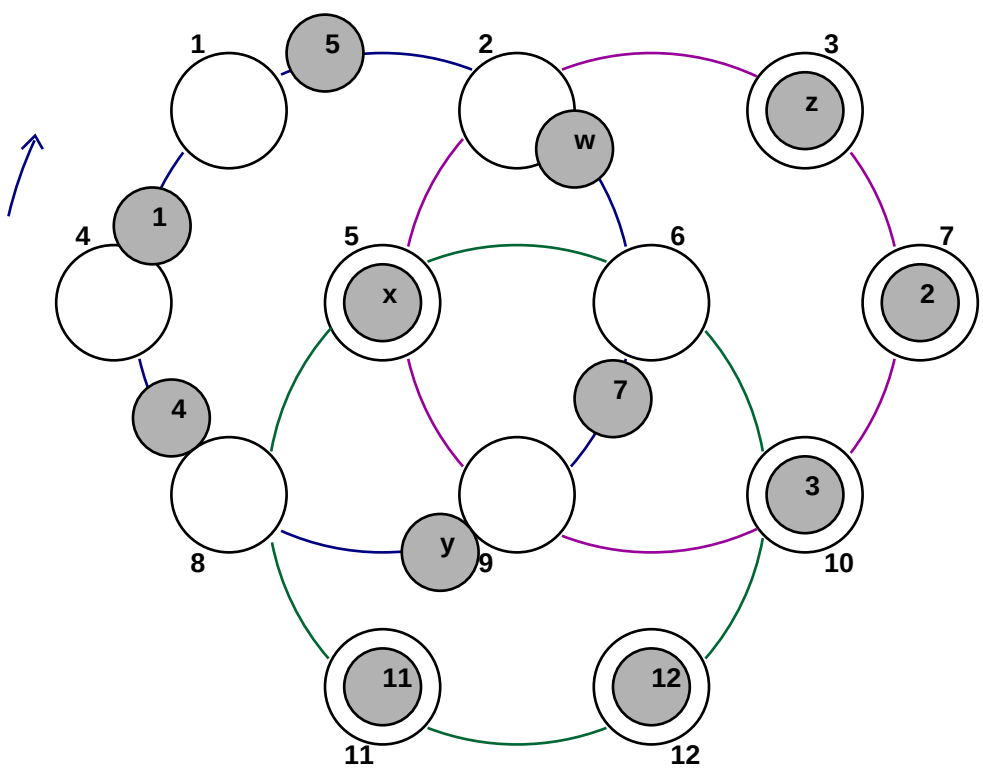

1
w
2
7
3
z
4
5
5
x
6
y
7
2
1
1
4
4
3
3
8
9
10
11
11
12
12

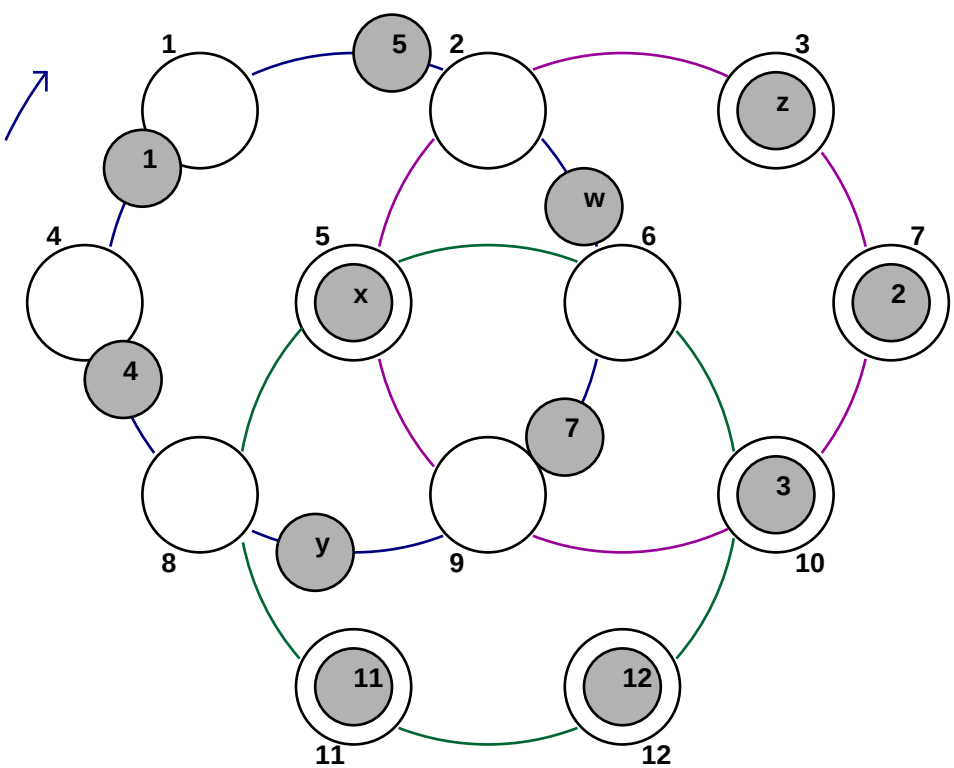

1
w
2
7
3
z
4
5
5
x
6
y
7
2
1
1
4
4
3
3
8
9
10
11
11
12
12

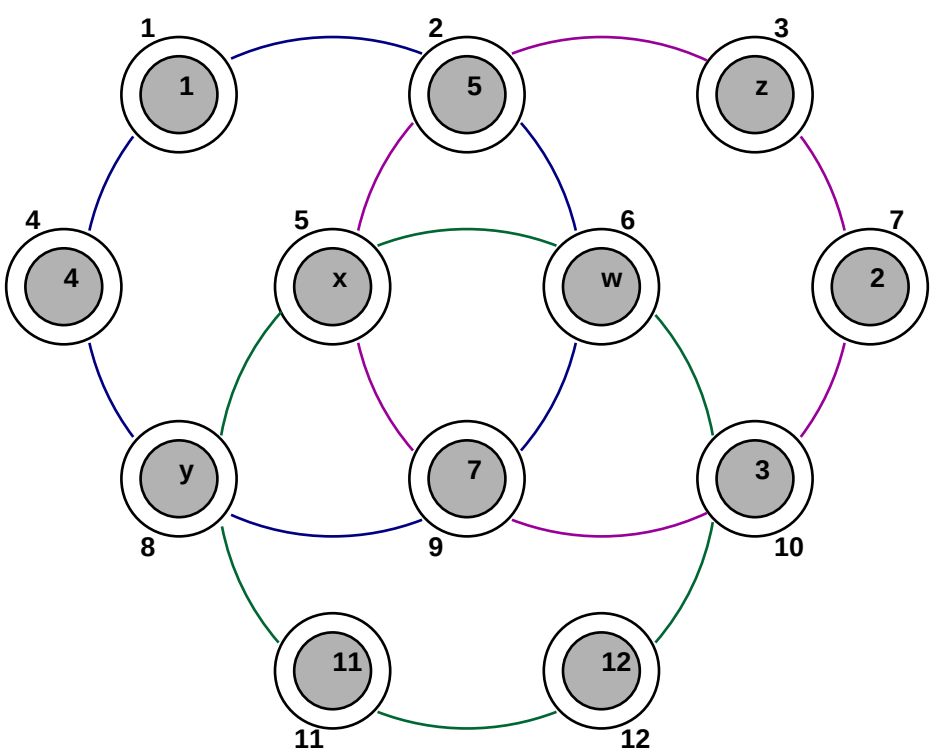

1
w
2
3
z
7
5
4
5
x
6
7
2
y
1
3
4
8
9
10
11
12
11
12

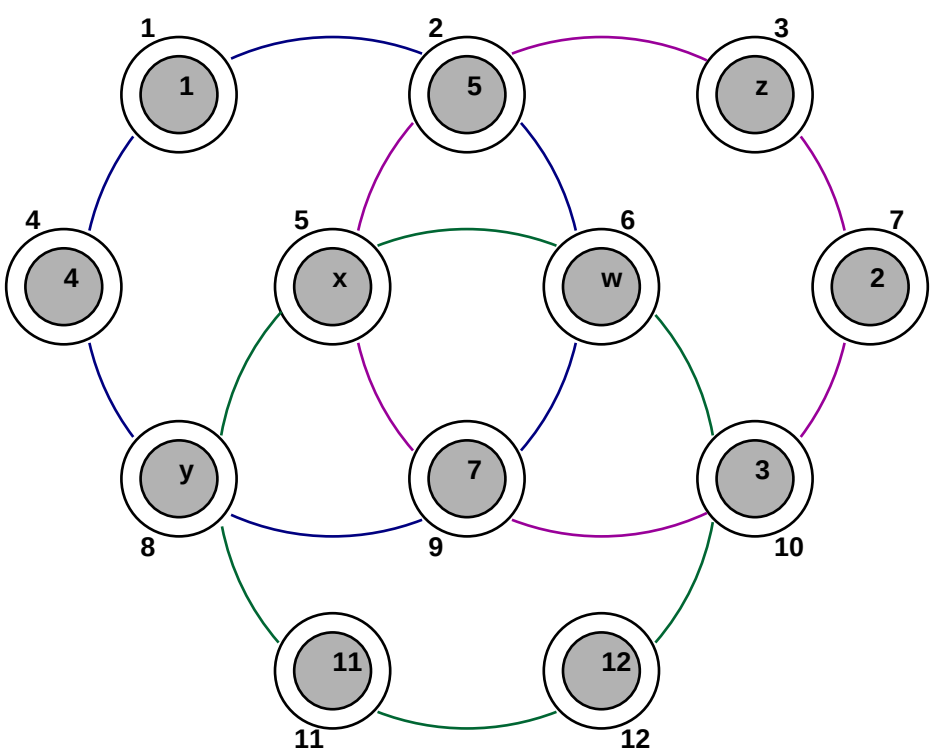

1
w
2
3
z
5
7
4
5
6
7
x
2
1
y
3
4
8
9
10
11
12
11
12

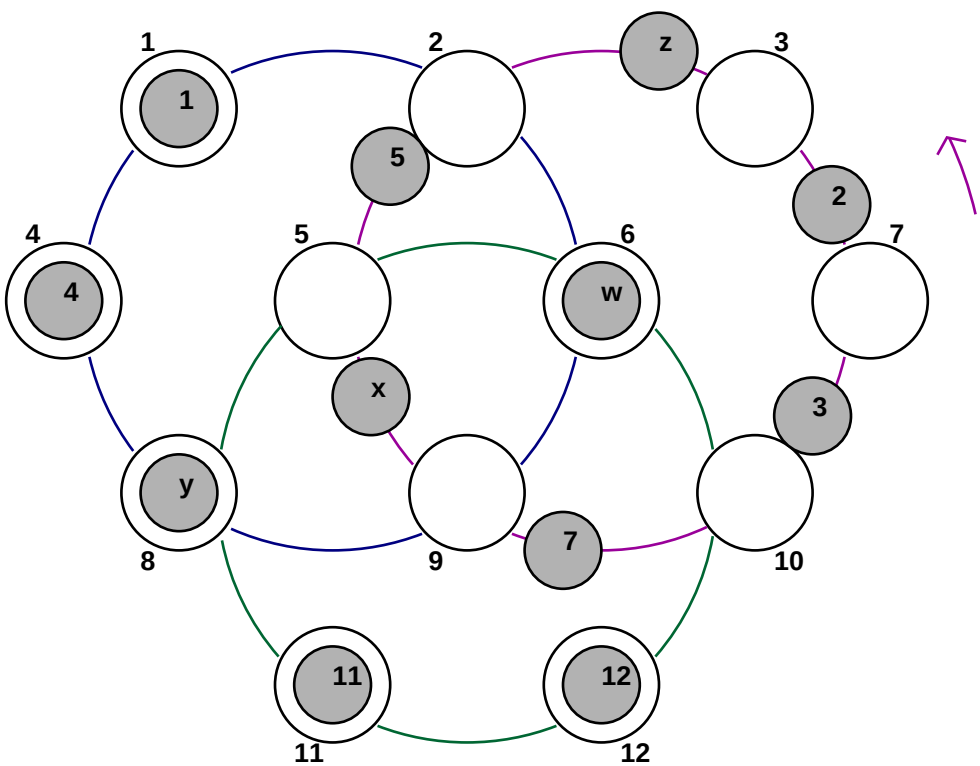

1
5
2
w
3
z
4
1
5
x
6
7
7
2
4
8
y
9
3
10
11
11
12
12

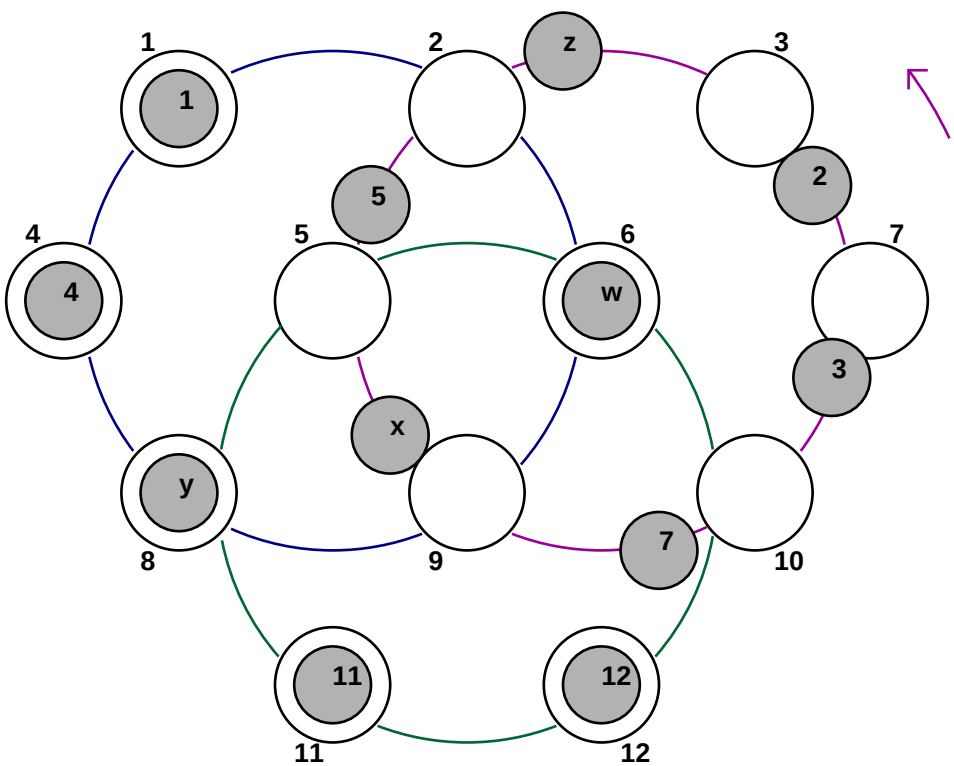

1
5
2
3
z
w
1
4
5
6
7
x
2
7
4
3
y
8
9
10
11
12
11
12

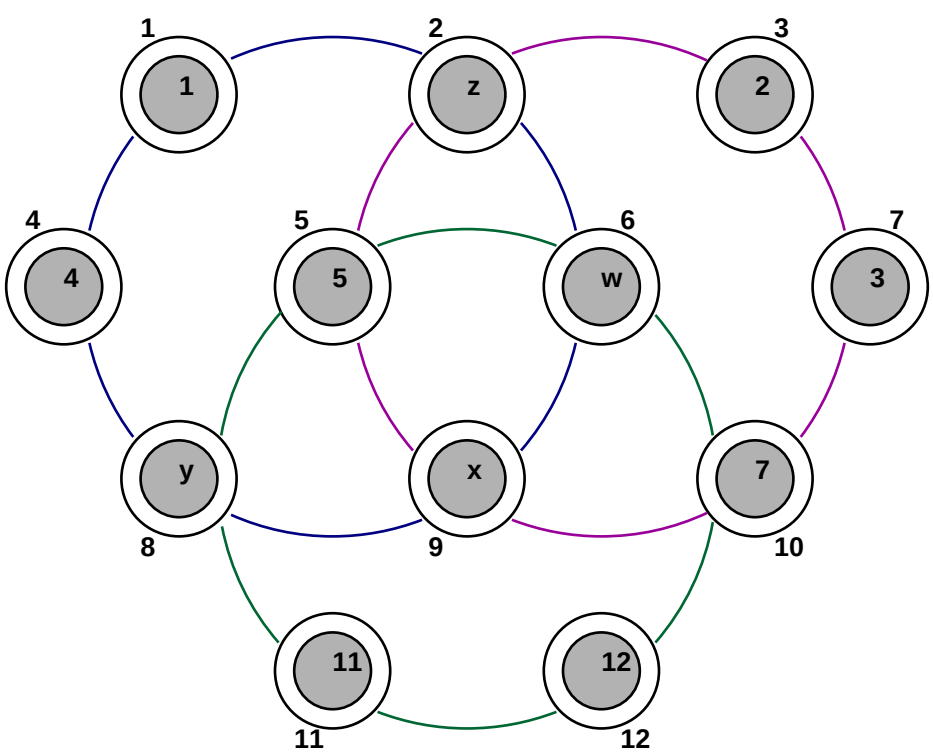

1
5
2
3
z
1
w
4
5
6
7
x
2
4
7
3
y
8
9
10
11
12
11
12

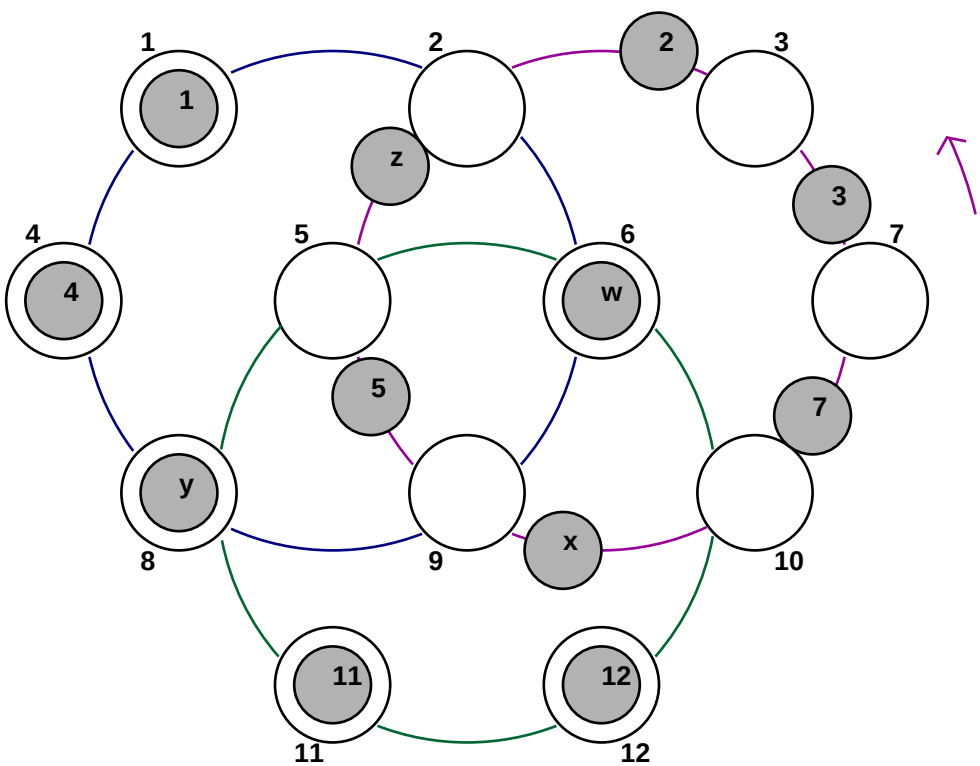

1
2
3
1
5
z
4
5
6
7
4
x
w
2
y
7
3
8
9
10
11
12
11
12

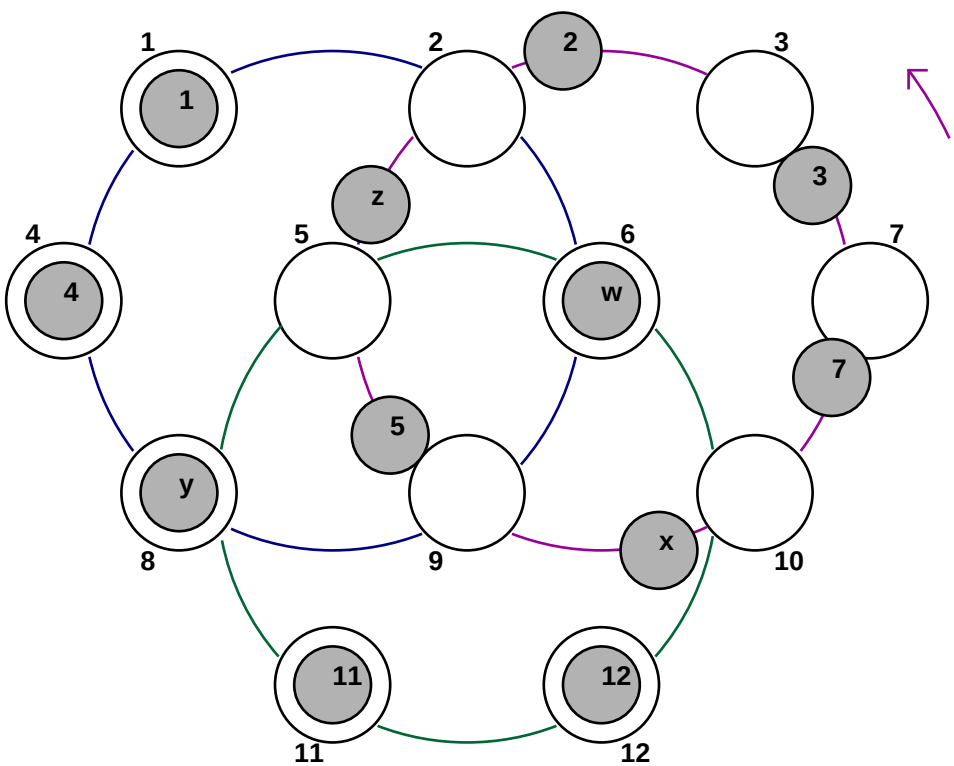

1
2
3
1
5
z
4
5
6
7
4
x
w
2
y
7
3
8
9
10
11
12
11
12

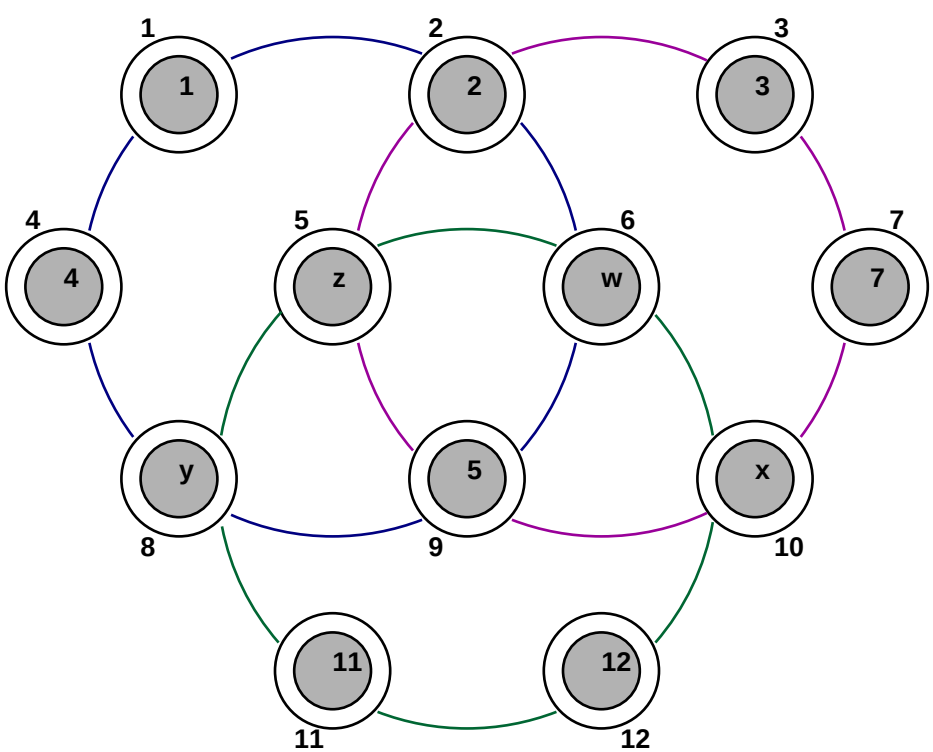

1
2
z
3
1
5
2
4
5
6
7
4
w
x
3
y
7
8
9
10
11
12
11
12


1
2
z
3
1
2
5
4
5
6
7
4
w
3
x
y
7
8
9
10
11
12
11
12

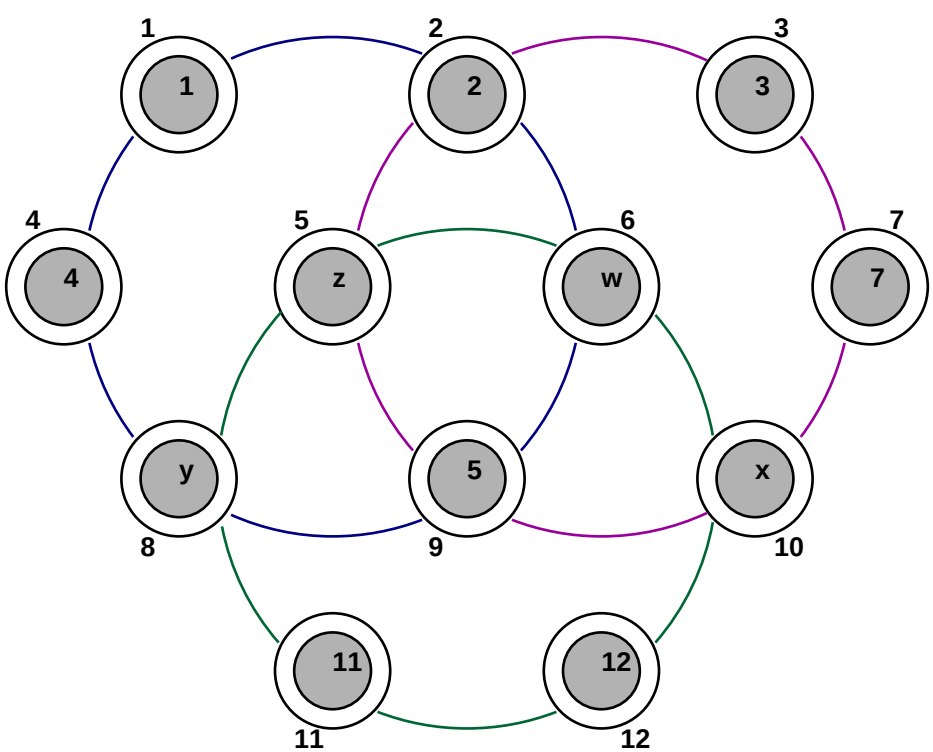

1
2
3
1
z
2
4
5
6
7
4
5
w
3
y
x
7
8
9
10
11
12
11
12

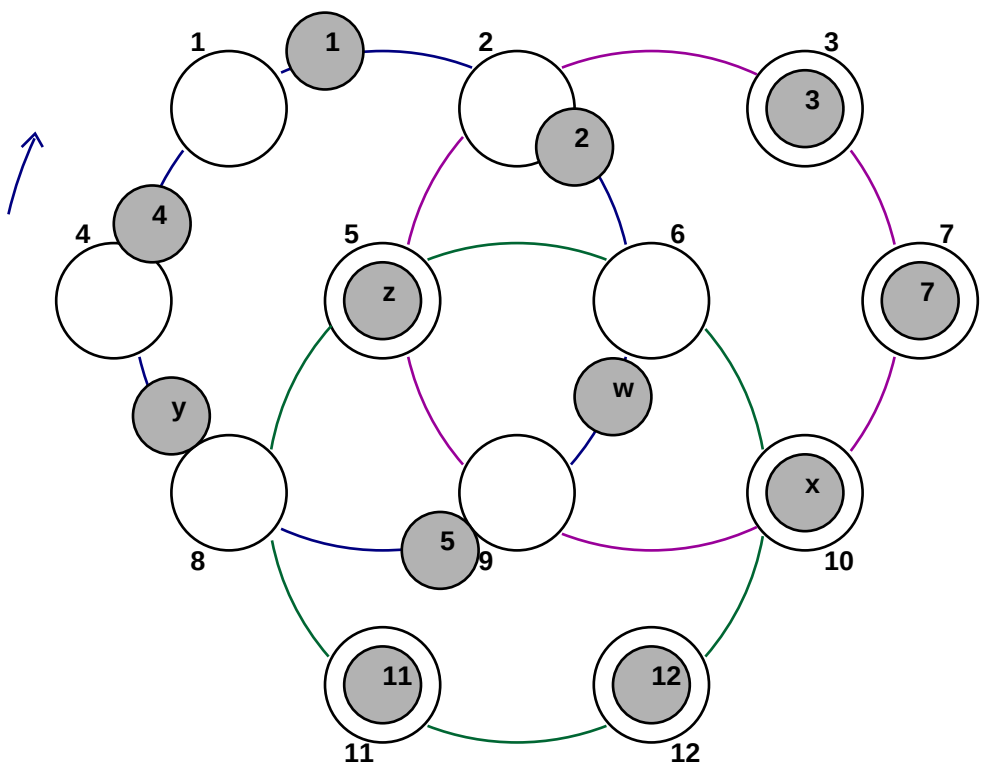

1
2
2
3
1
z
3
4
5
6
7
4
w
5
7
y
x
8
9
10
11
12
11
12

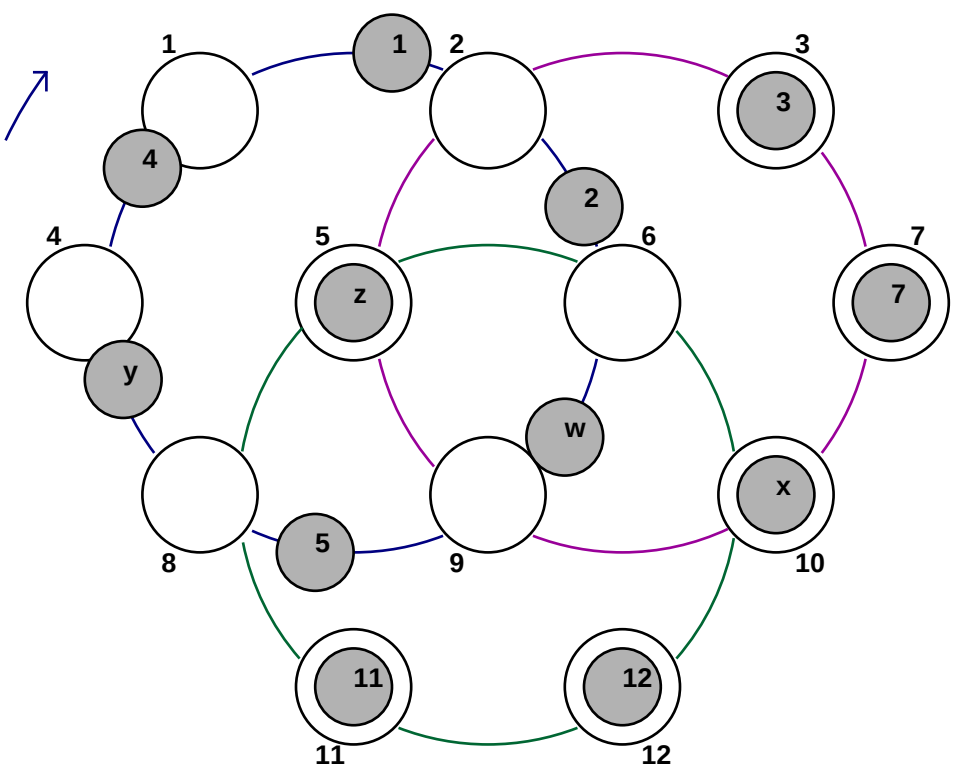

1
2
2
3
1
3
z
4
5
6
7
4
w
7
5
y
x
8
9
10
11
12
11
12

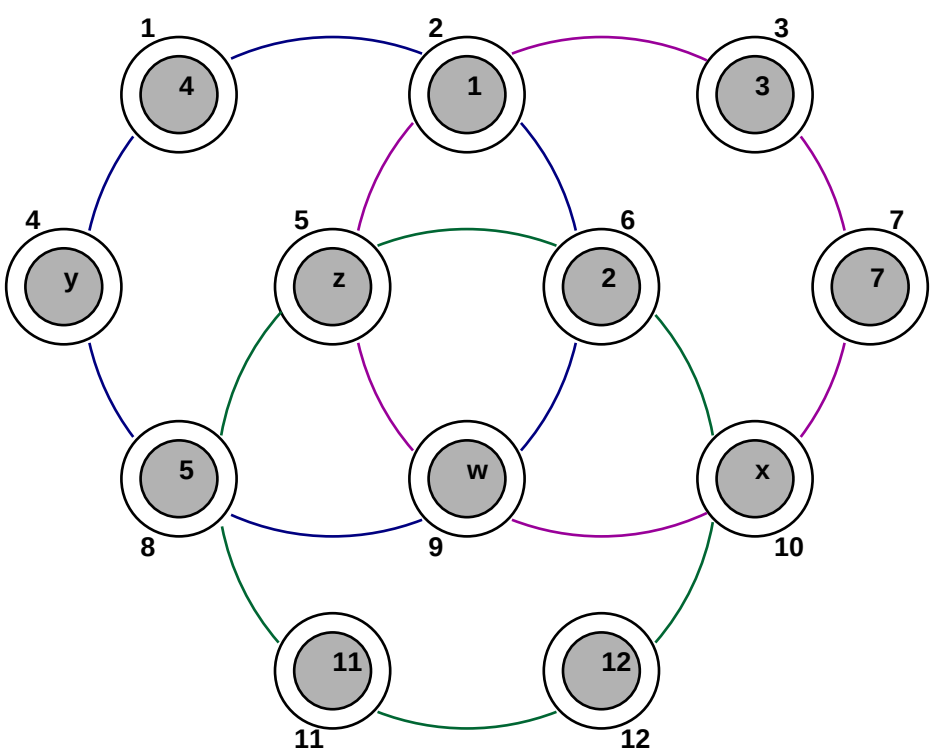

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
z
w
7
y
5
x
11
12

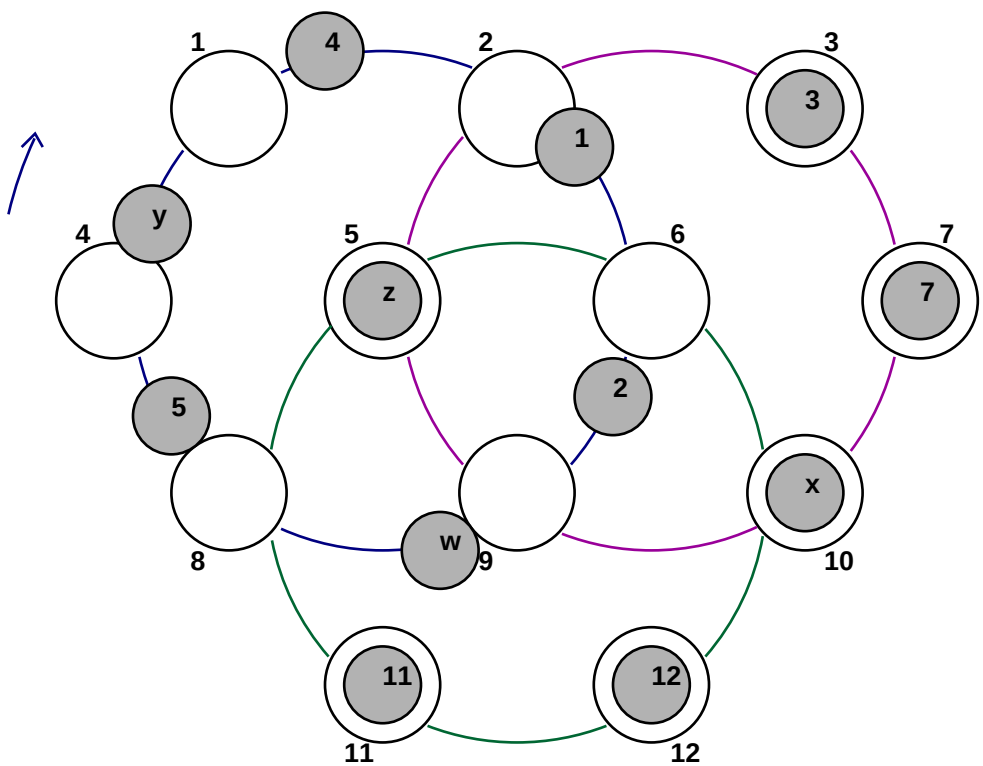
Number 5 can be moved into position 10 while keeping numbers 1, 2, 3, 4, 7, 11, and 12 in position by the following moves.

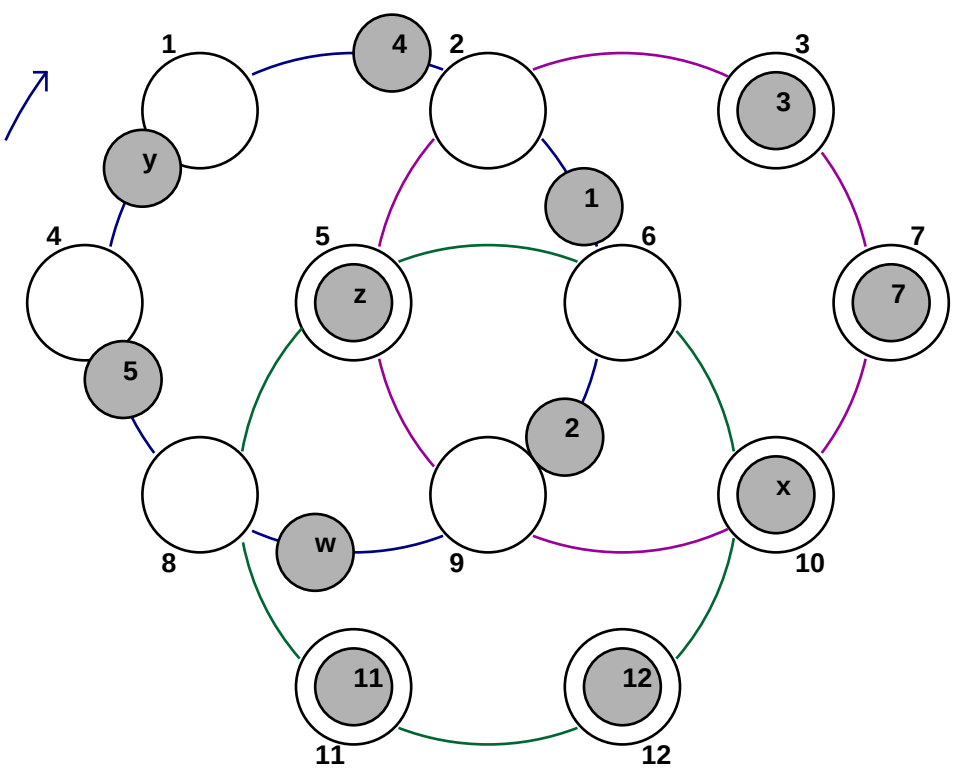

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
z
w
7
y
5
x
11
12

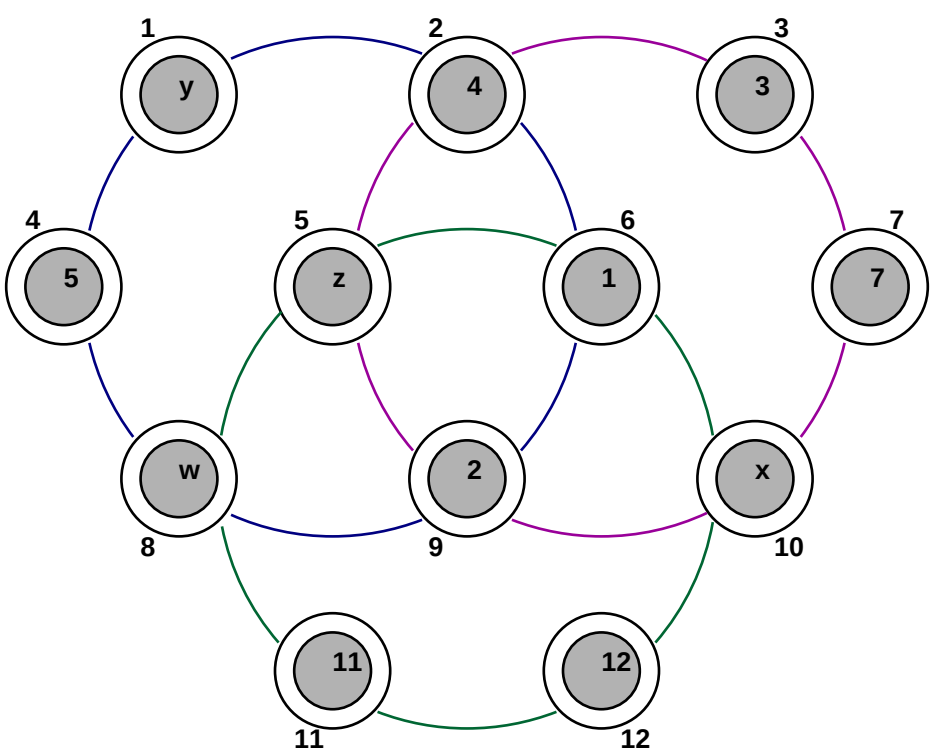

1
1
2
3
3
2
4
4
5
6
7
z
7
w
y
x
5
8
9
10
11
12
11
12

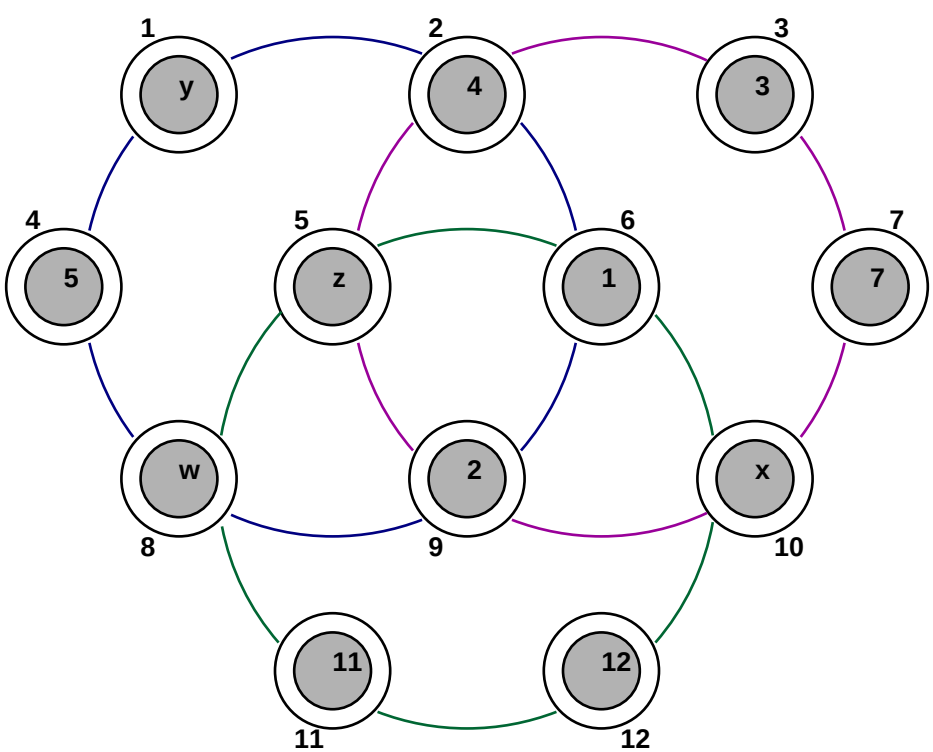

1
1
2
3
3
4
4
2
4
5
6
7
z
7
y
w
x
5
8
9
10
11
12
11
12

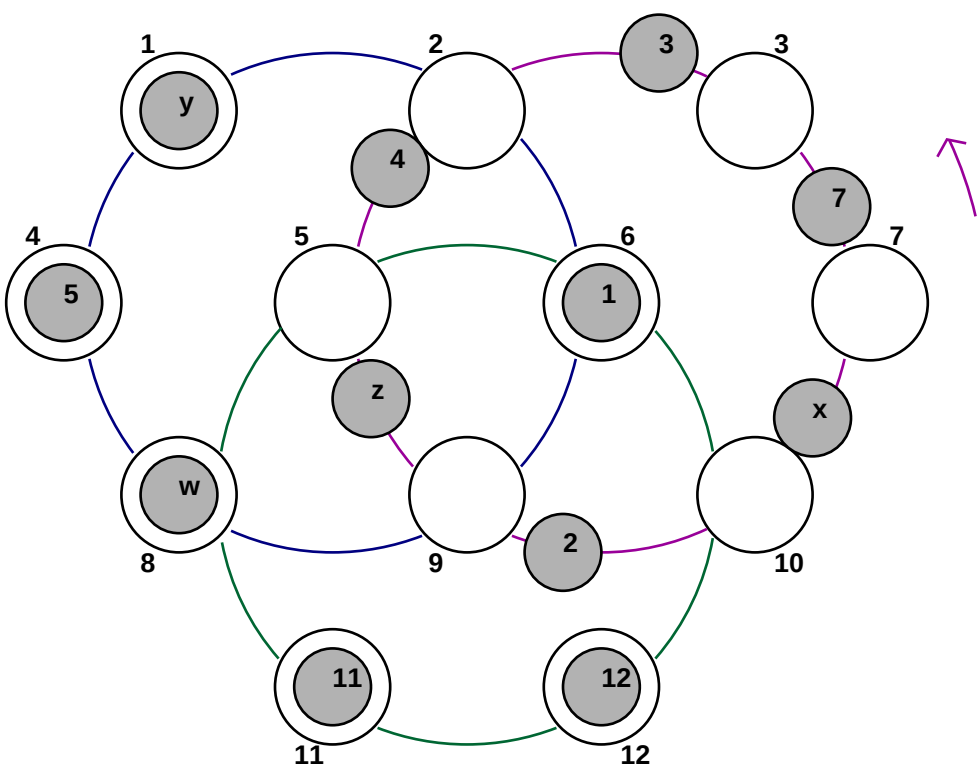

1
2
3
4
1
3
4
5
6
7
y
z
2
7
5
w
x
8
9
10
11
12
11
12

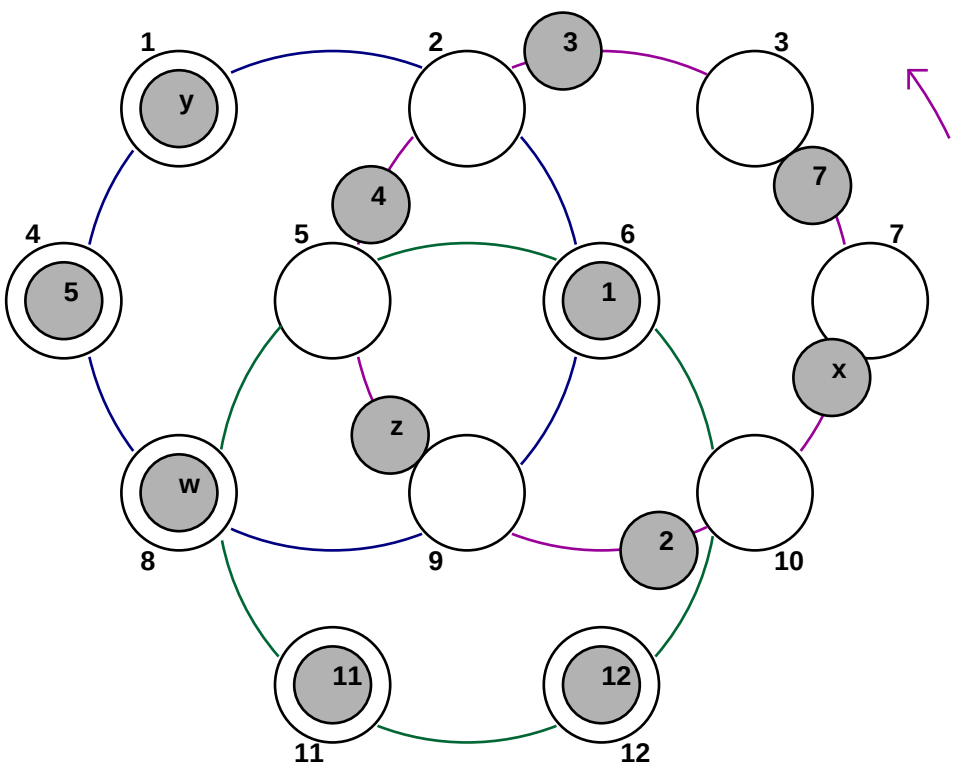

1
4
2
3
3
1
y
4
5
6
7
z
7
2
5
x
w
8
9
10
11
12
11
12

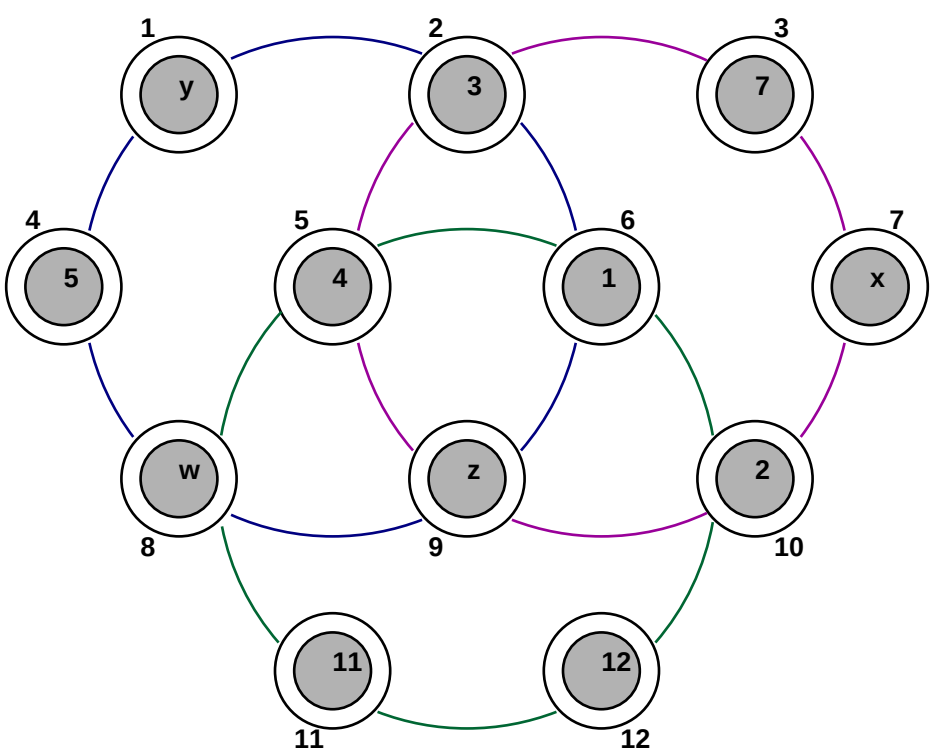

1
4
2
3
3
y
1
4
5
6
7
z
7
5
2
x
w
8
9
10
11
12
11
12

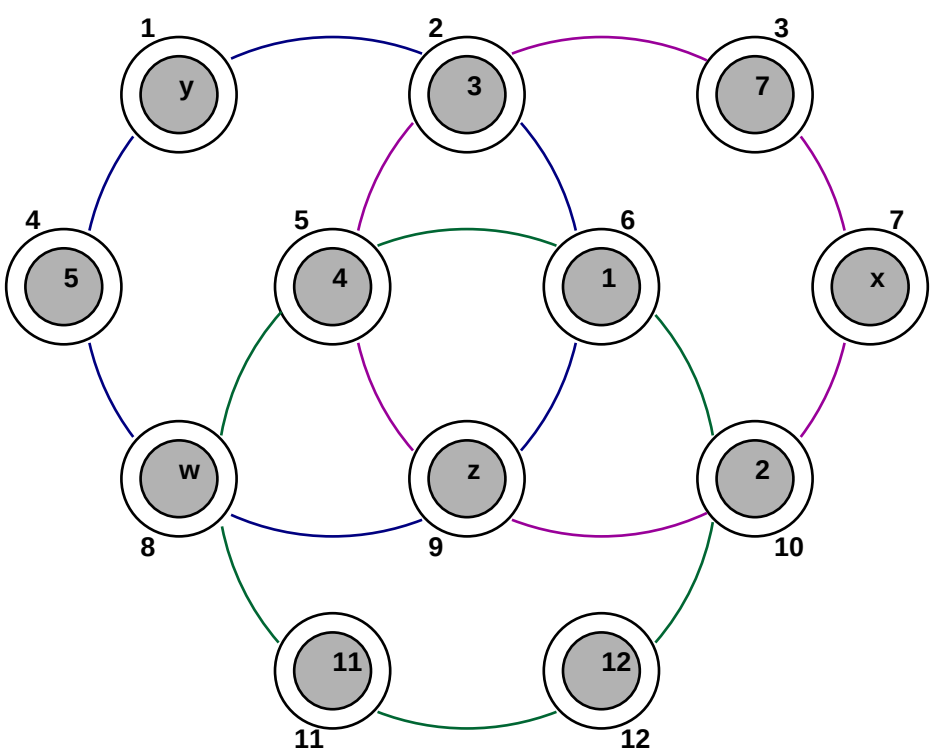

1
y
2
4
3
3
4
5
5
z
6
1
7
7
w
2
x
8
9
10
11
11
12
12

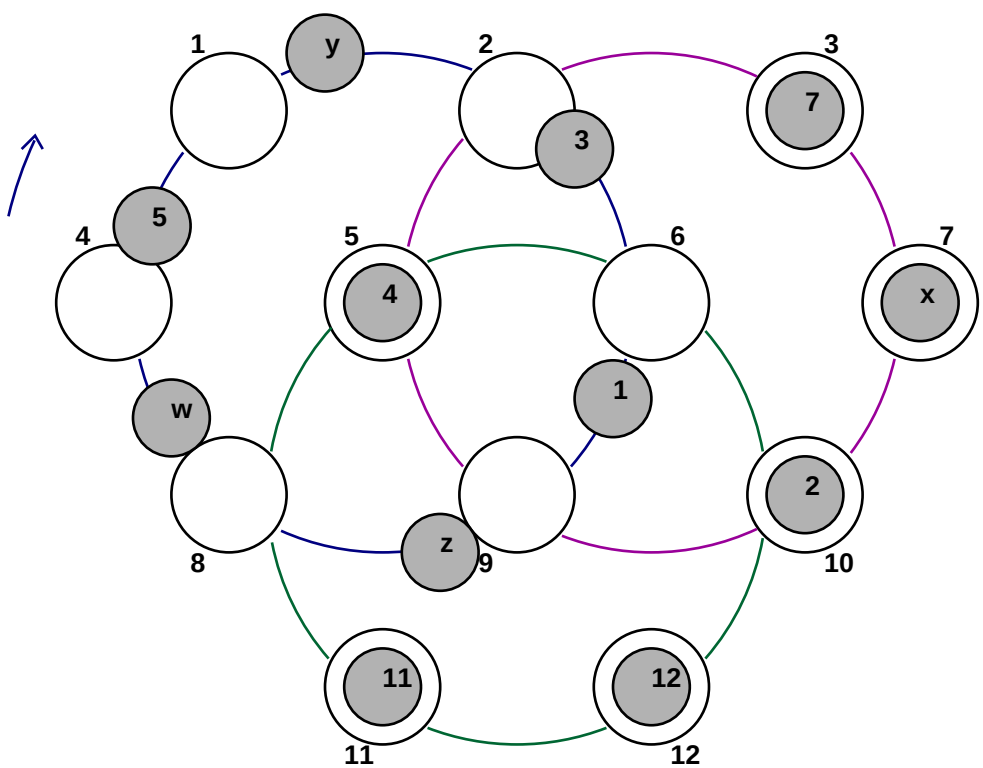

1
y
2
4
3
3
4
5
5
z
6
1
7
7
w
2
x
8
9
10
11
11
12
12

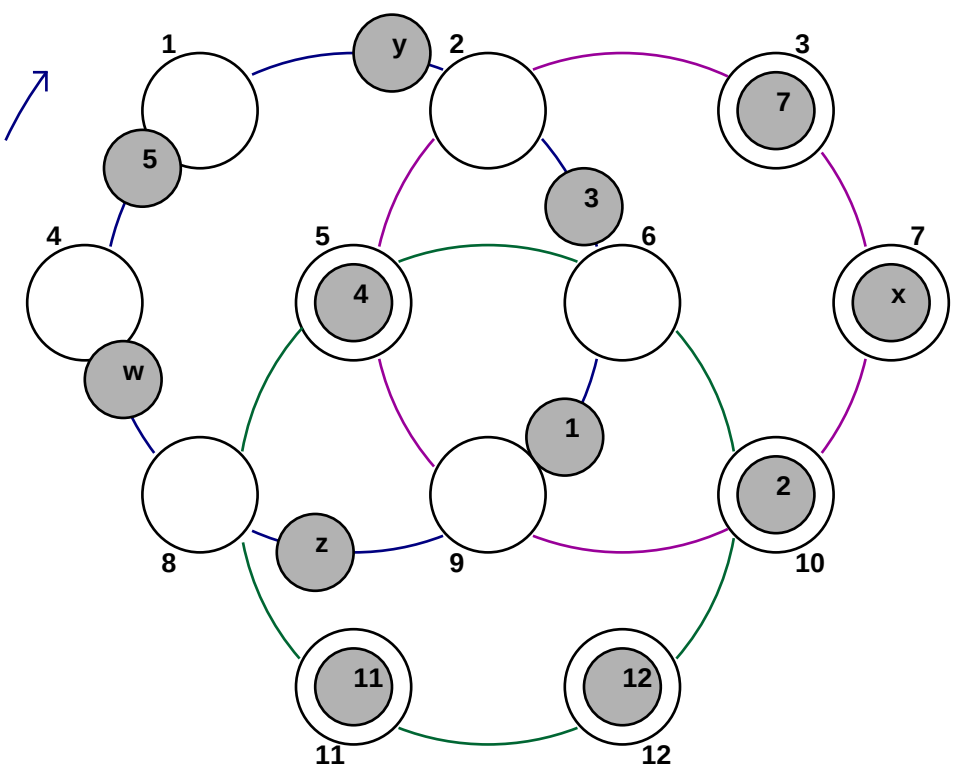

1
y
2
3
3
4
7
4
5
5
6
1
7
z
x
w
2
8
9
10
11
12
11
12

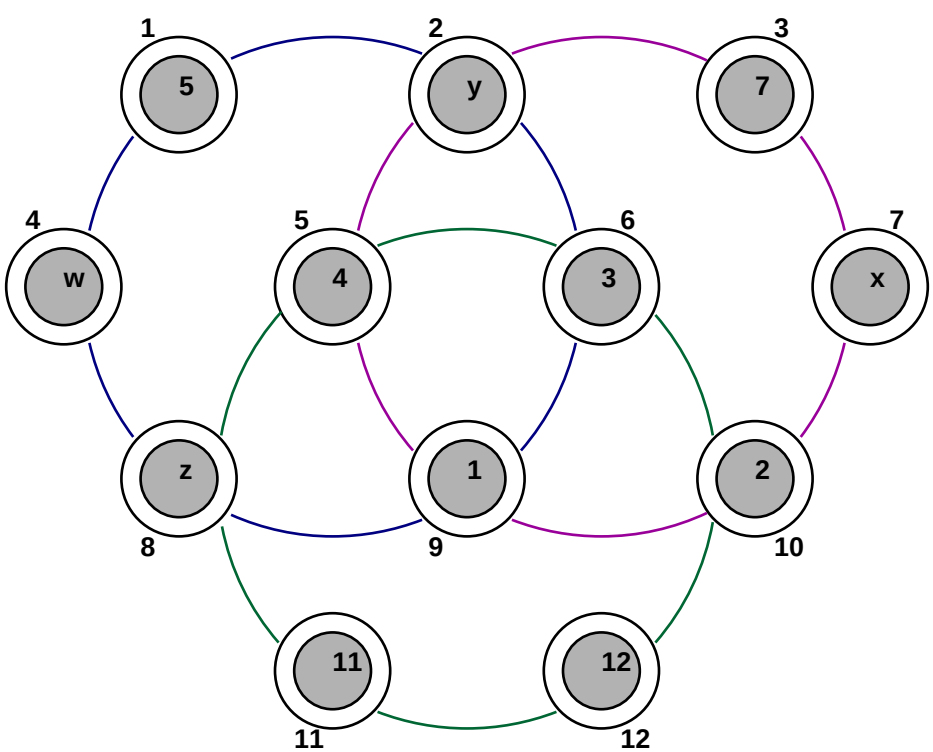

1
y
2
3
3
7
4
4
5
5
6
1
7
x
z
w
8
9
2
10
11
11
12
12

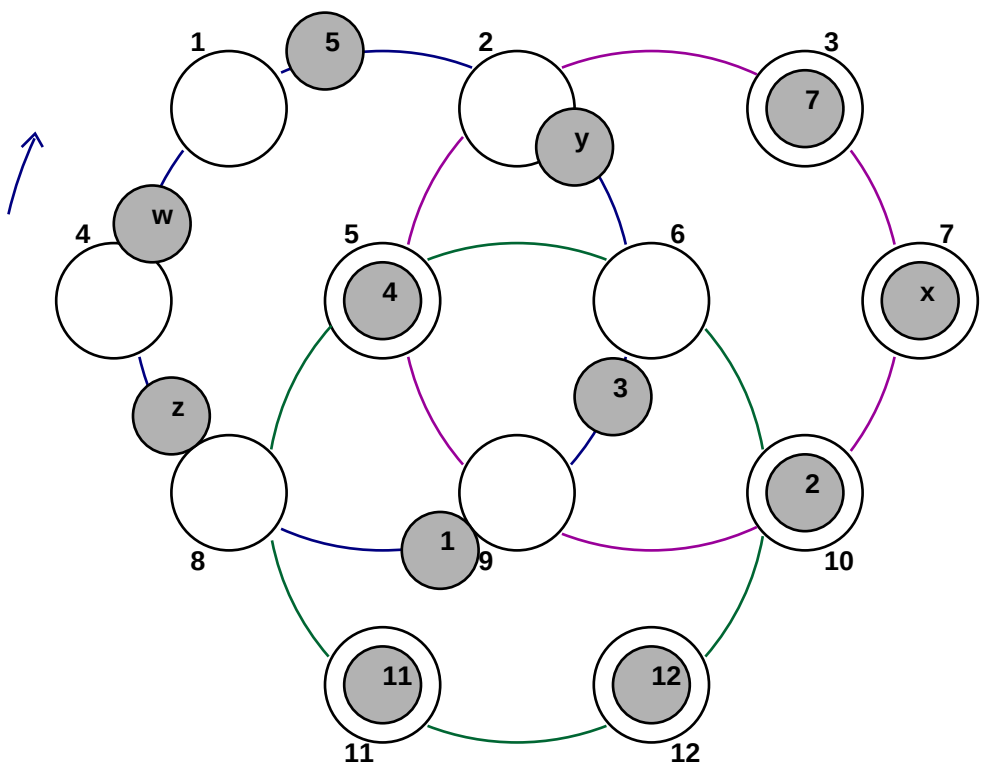

1
y
2
3
3
7
4
5
5
4
6
1
7
x
w
8
z
9
2
10
11
11
12
12

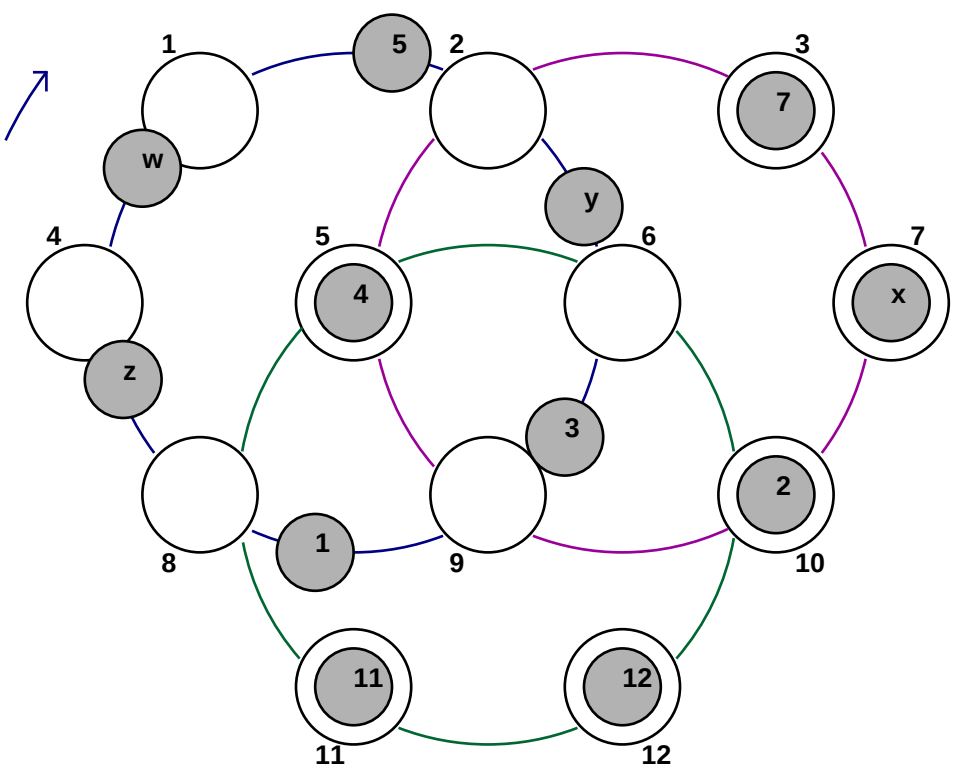

1
y
2
3
3
7
4
5
5
4
6
1
7
x
w
8
z
9
2
10
11
11
12
12

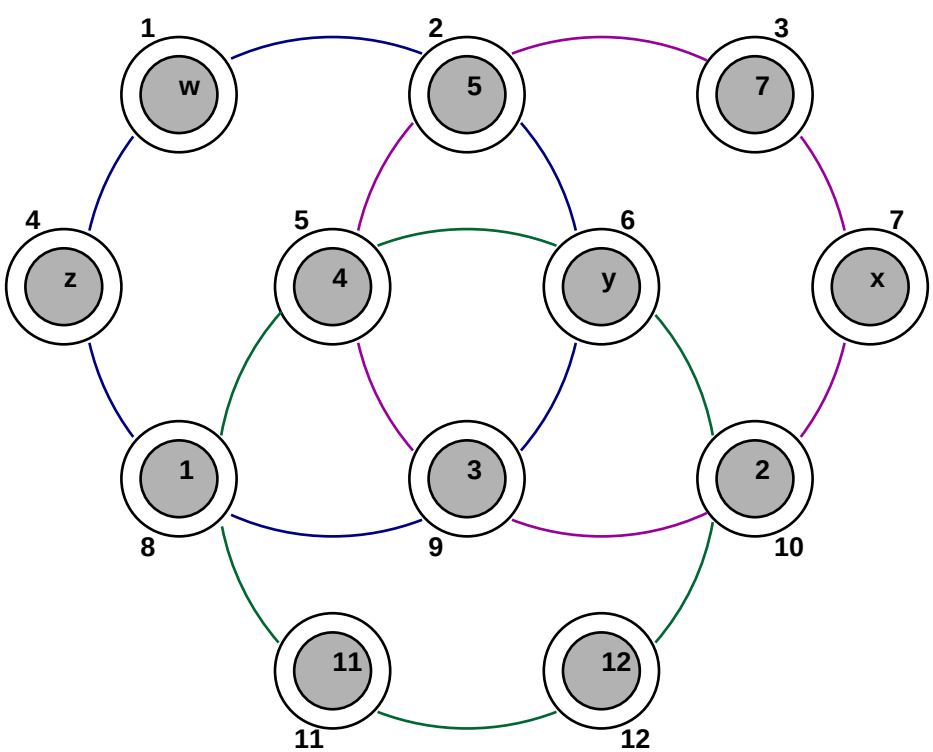

1
y
2
3
7
3
5
4
5
6
7
4
x
1
w
2
z
8
9
10
11
12
11
12

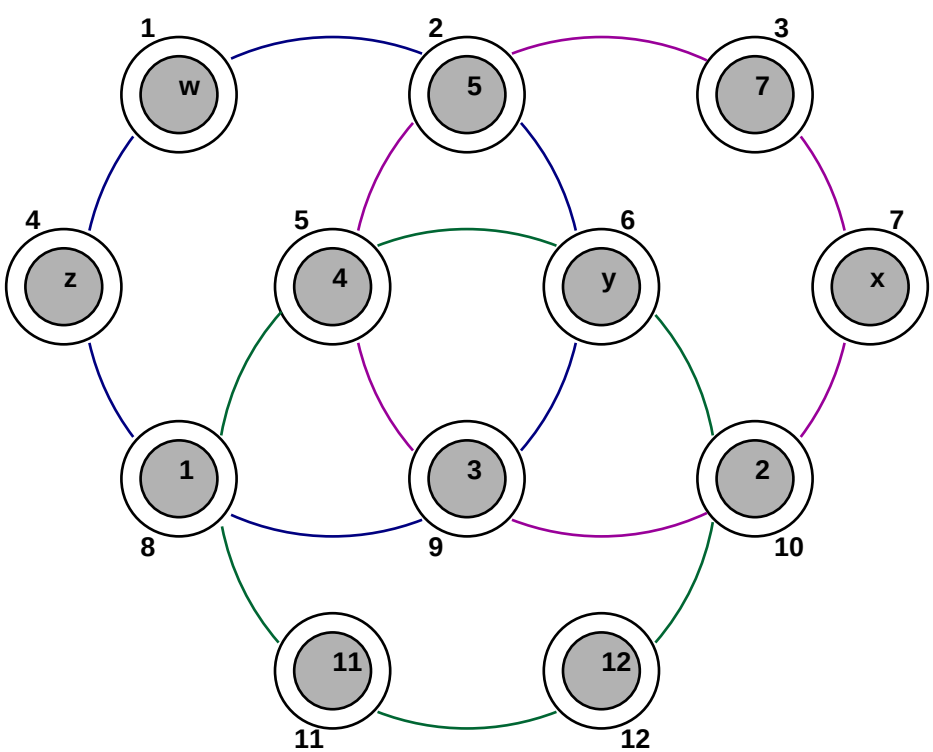

1
y
2
3
7
5
3
4
5
6
7
4
x
w
1
2
z
8
9
10
11
12
11
12

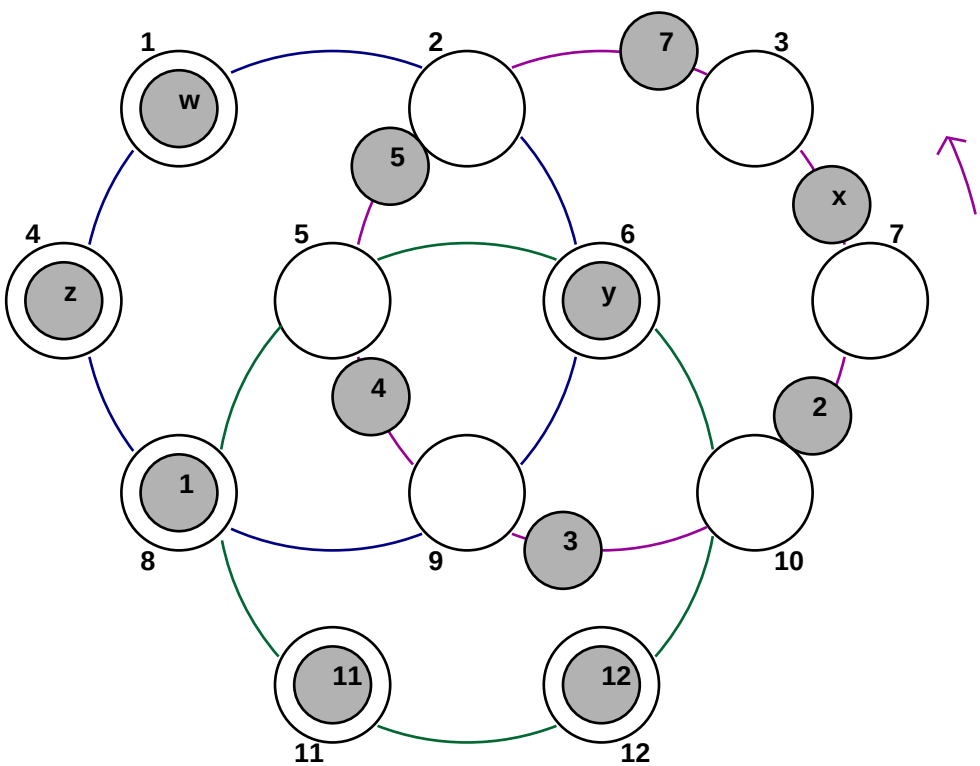

1
5
2
y
3
7
4
w
5
4
6
3
7
x
z
1
2
8
9
10
11
11
12
12

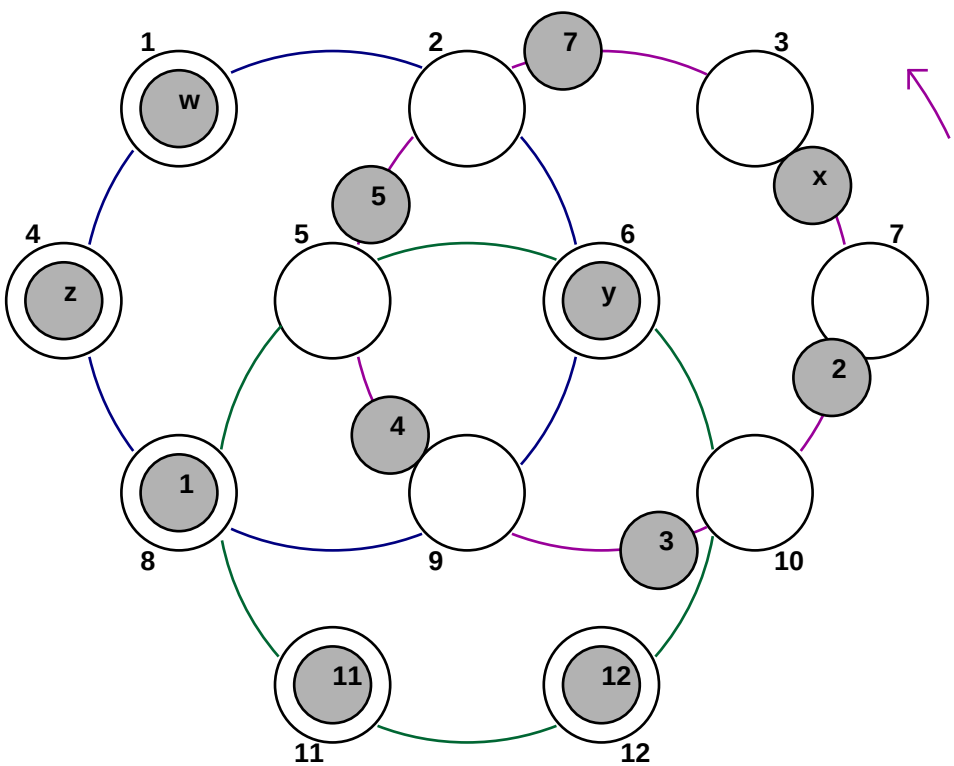

1
5
2
3
7
y
w
4
5
6
7
4
x
3
z
2
1
8
9
10
11
12
11
12

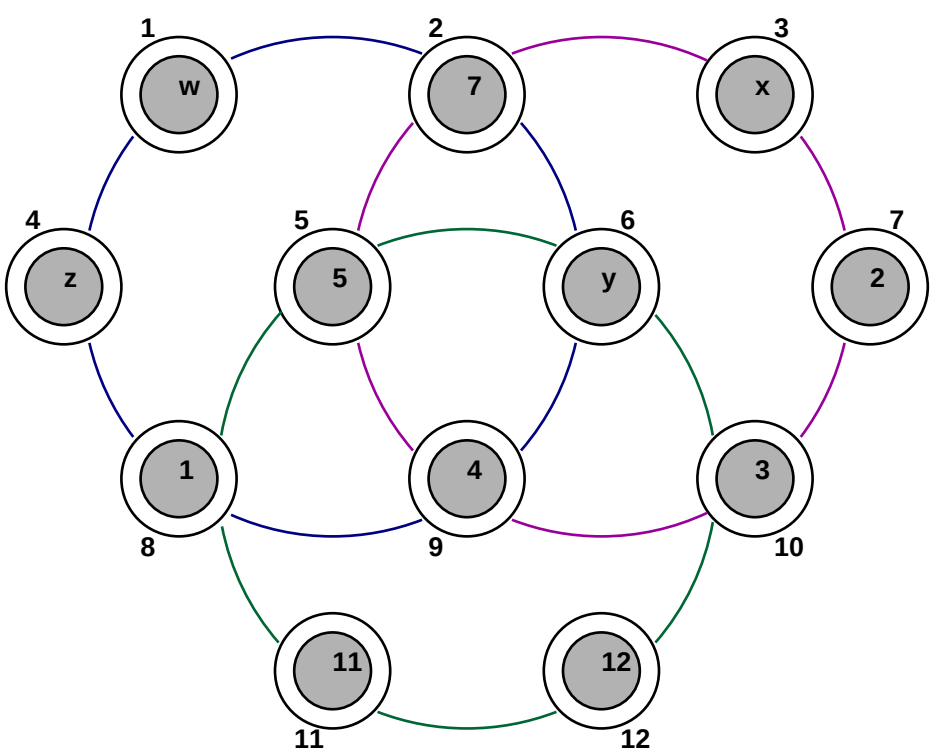

1
5
2
3
7
w
y
4
5
6
7
4
x
z
3
2
1
8
9
10
11
12
11
12

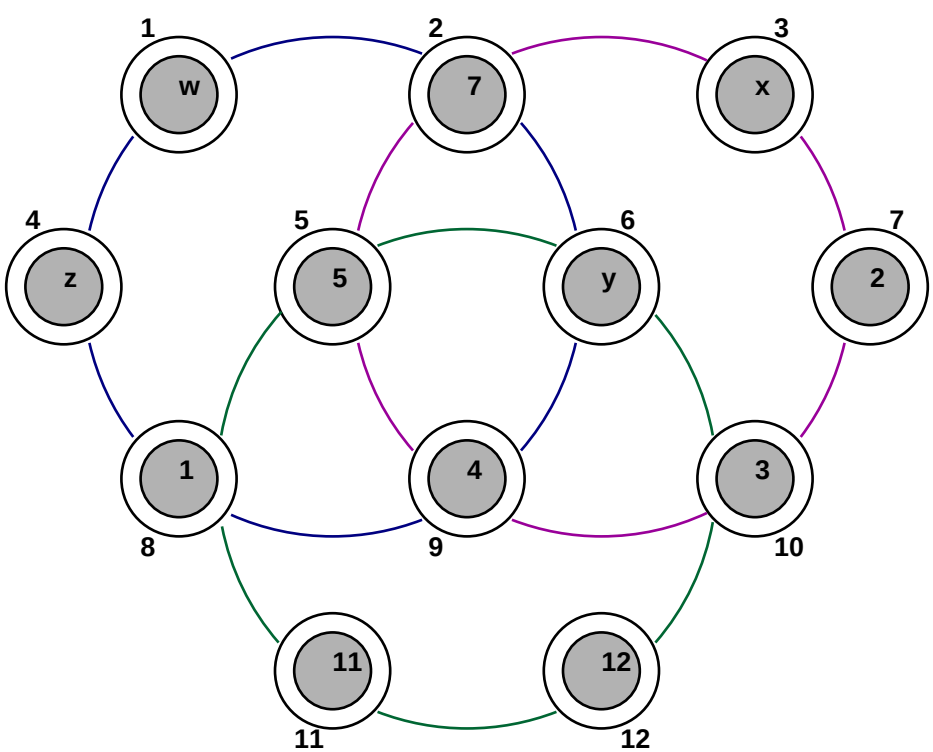

1
w
2
5
3
7
4
z
5
4
6
y
7
x
1
1
3
3
2
2
8
9
10
11
11
12
12

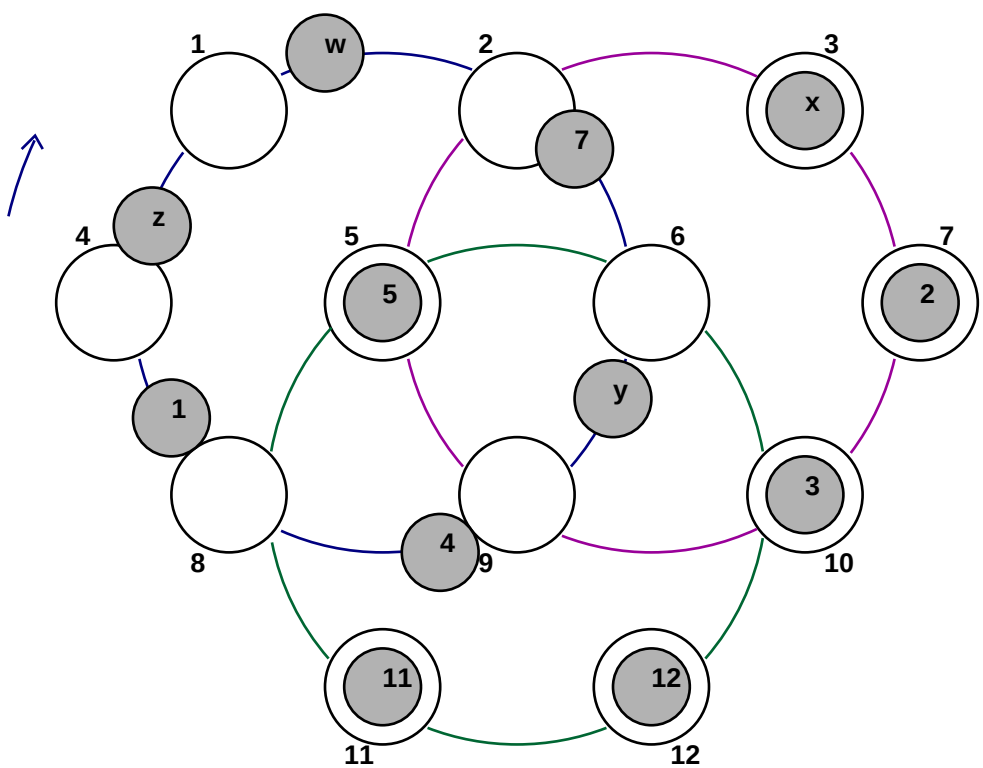

1
w
2
5
3
7
4
z
5
4
6
y
7
x
1
1
3
3
2
2
8
9
10
11
11
12
12

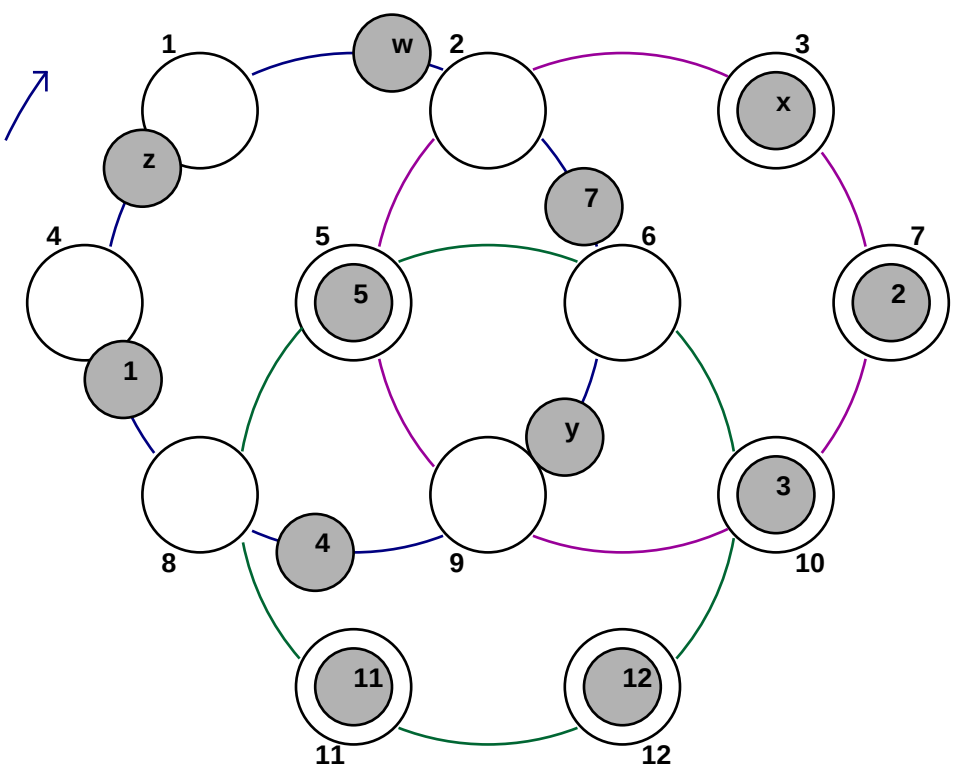

1
w
2
7
3
5
x
4
z
5
6
y
7
4
2
1
3
8
9
10
11
12
11
12

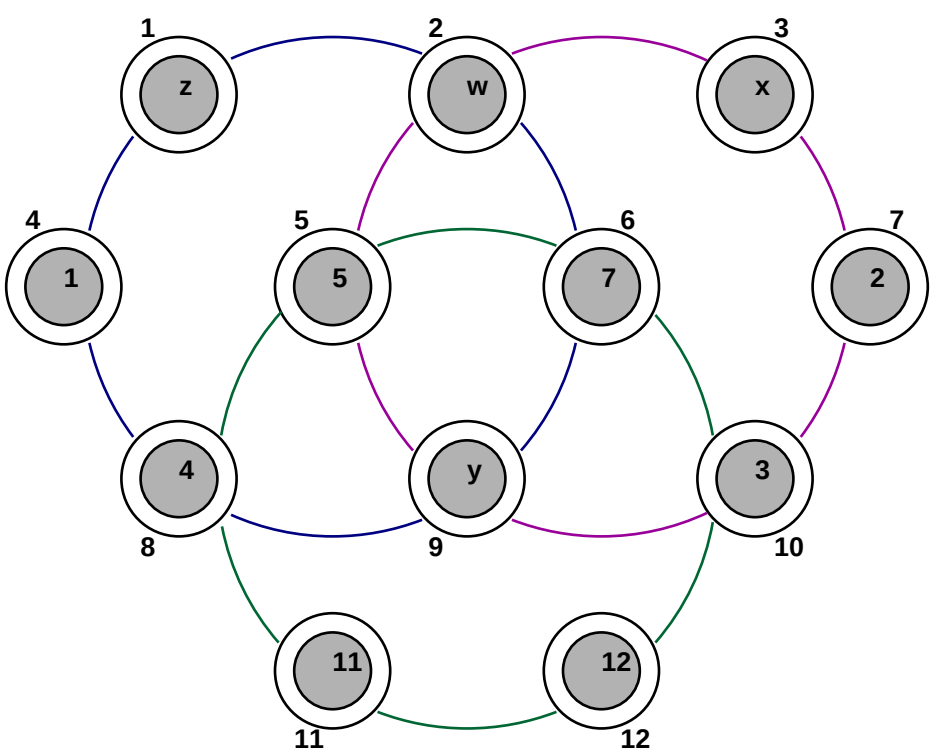

1
w
2
7
3
x
5
4
z
5
6
y
7
2
4
1
8
9
3
10
11
11
12
12

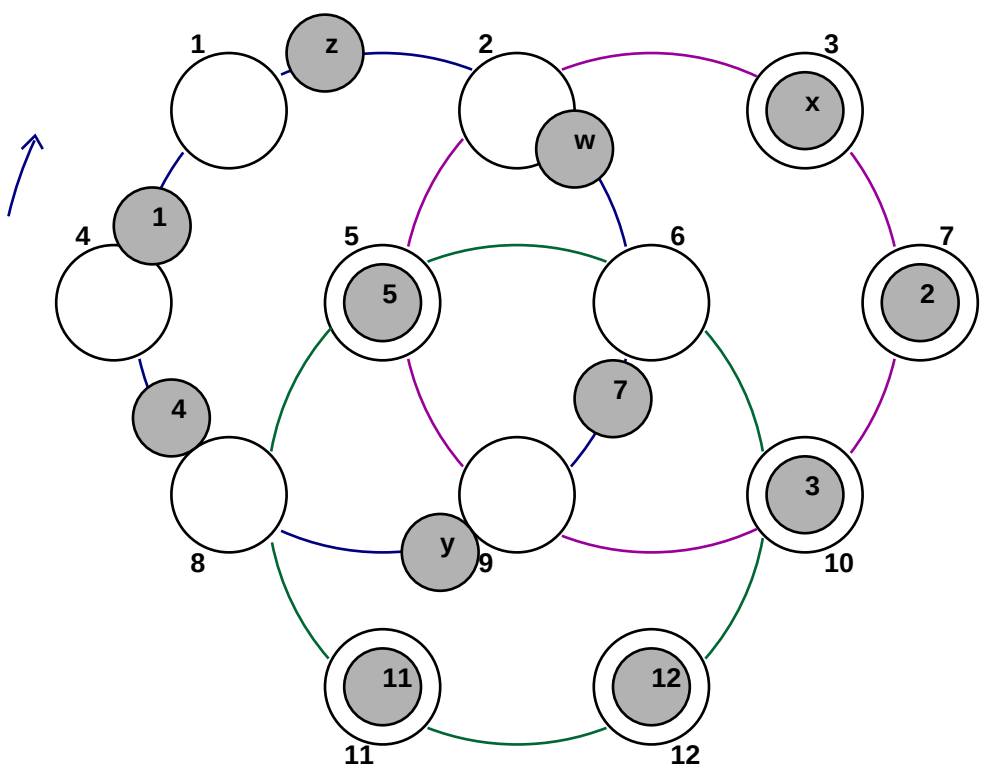

1
w
2
7
3
x
4
z
5
5
6
y
7
2
1
1
4
4
3
3
8
9
10
11
11
12
12

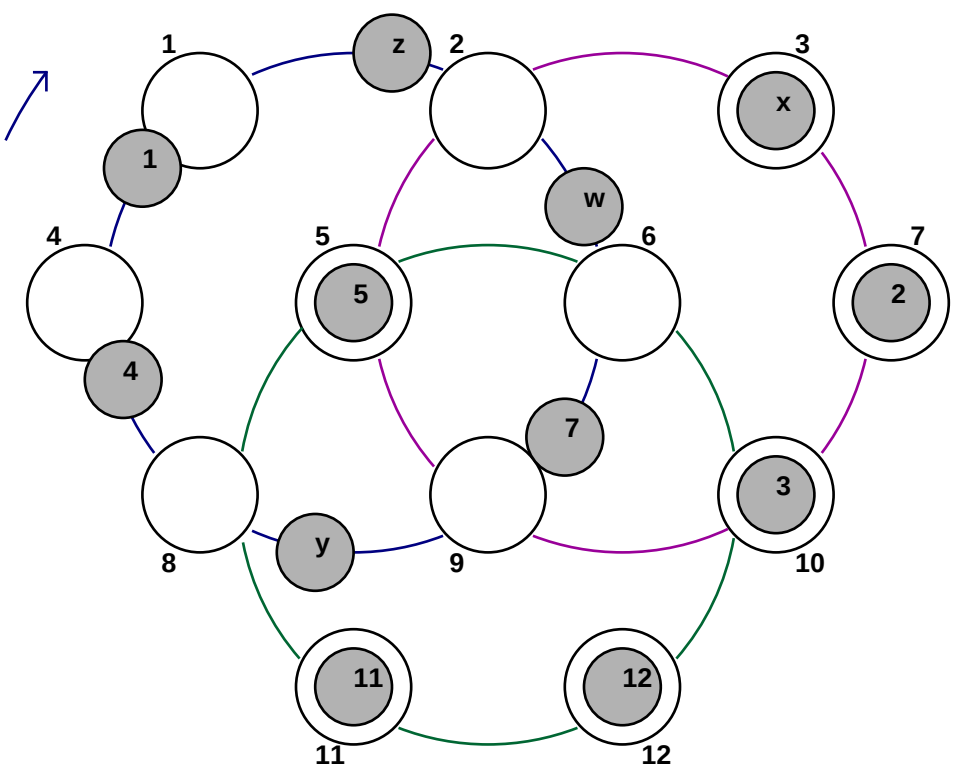

1
w
2
7
3
x
4
z
5
5
6
y
7
2
1
1
4
4
3
3
8
9
10
11
11
12
12

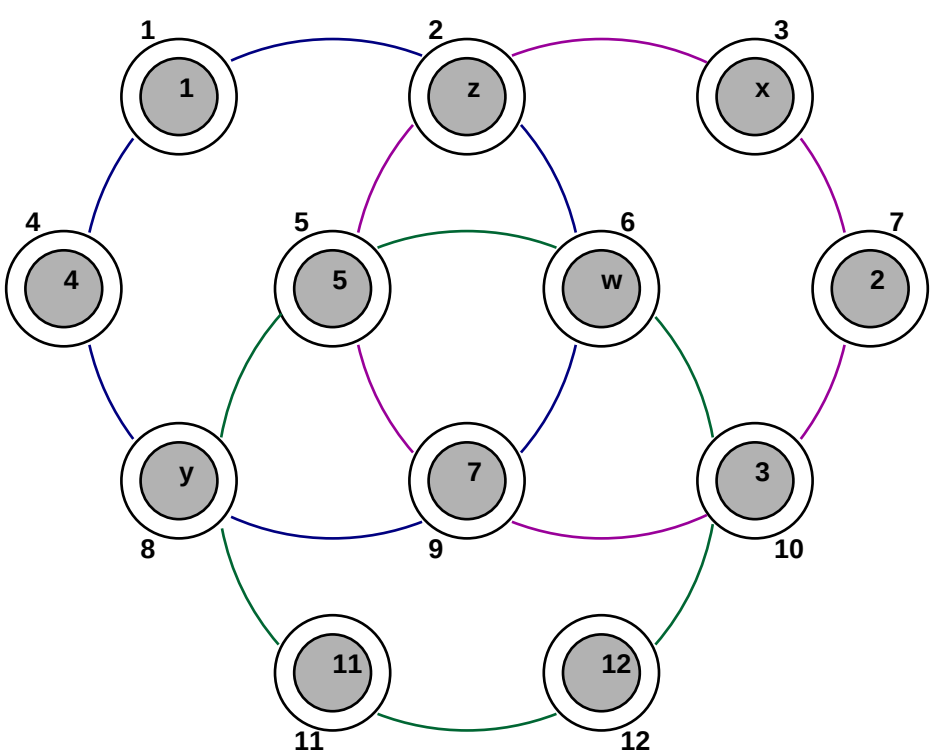

1
w
2
3
x
7
z
4
5
5
6
7
2
y
1
3
4
8
9
10
11
12
11
12

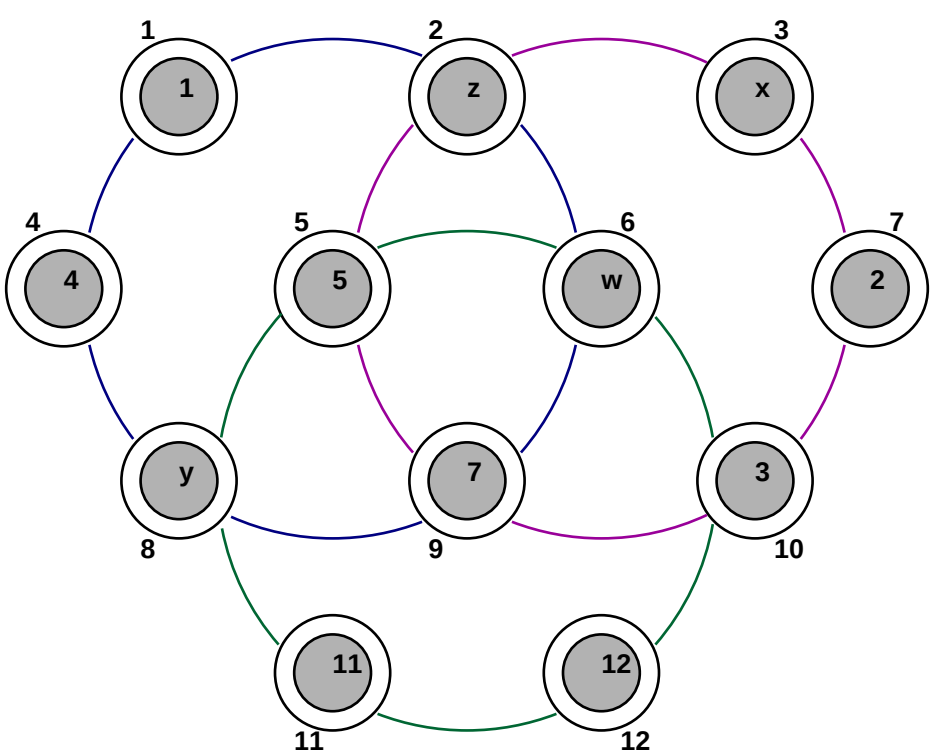

1
w
2
3
x
z
7
4
5
6
7
5
2
1
y
3
4
8
9
10
11
12
11
12

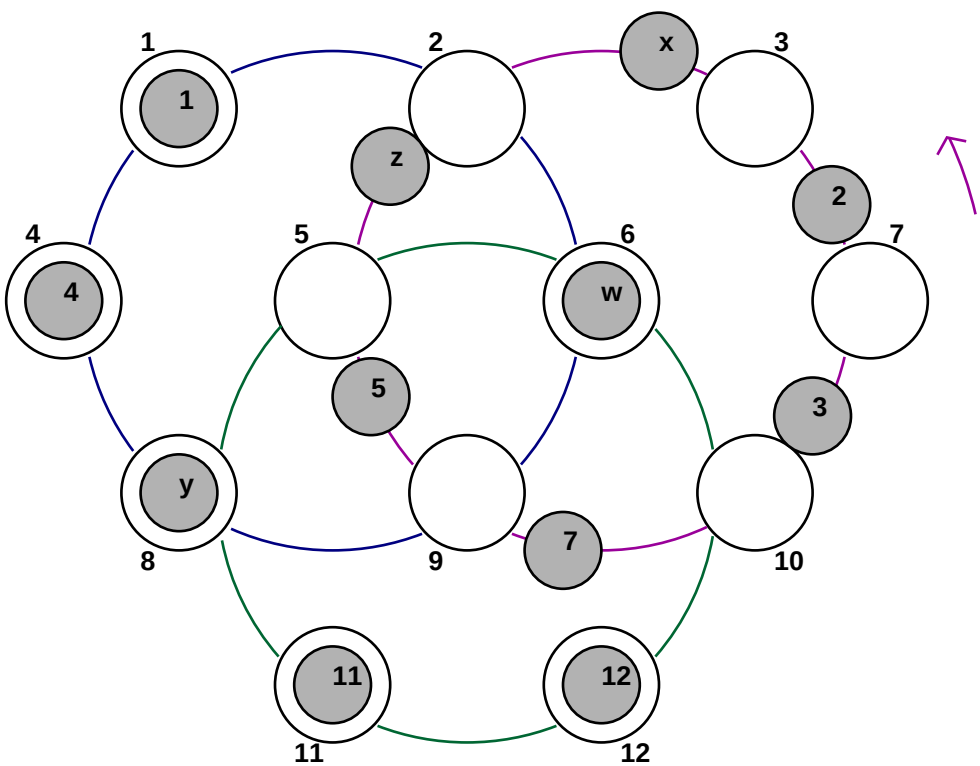

1
z
2
w
3
x
4
1
5
5
6
7
7
2
4
4
y
3
8
9
10
11
11
12
12

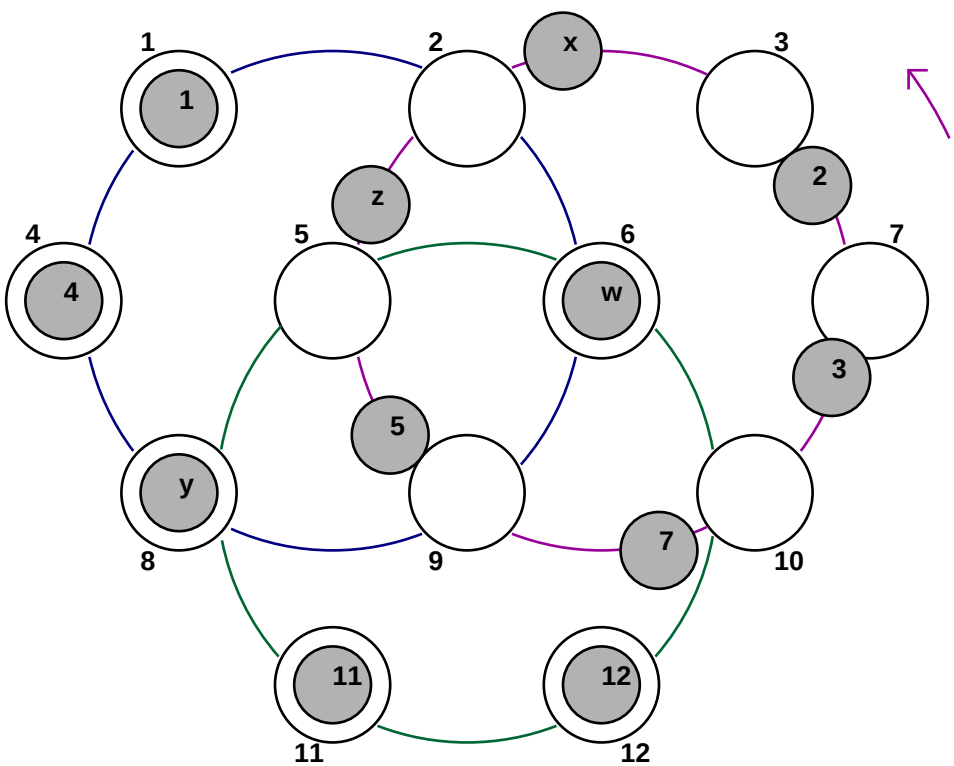

1
z
2
3
x
w
1
4
5
6
7
5
2
7
4
3
y
8
9
10
11
12
11
12

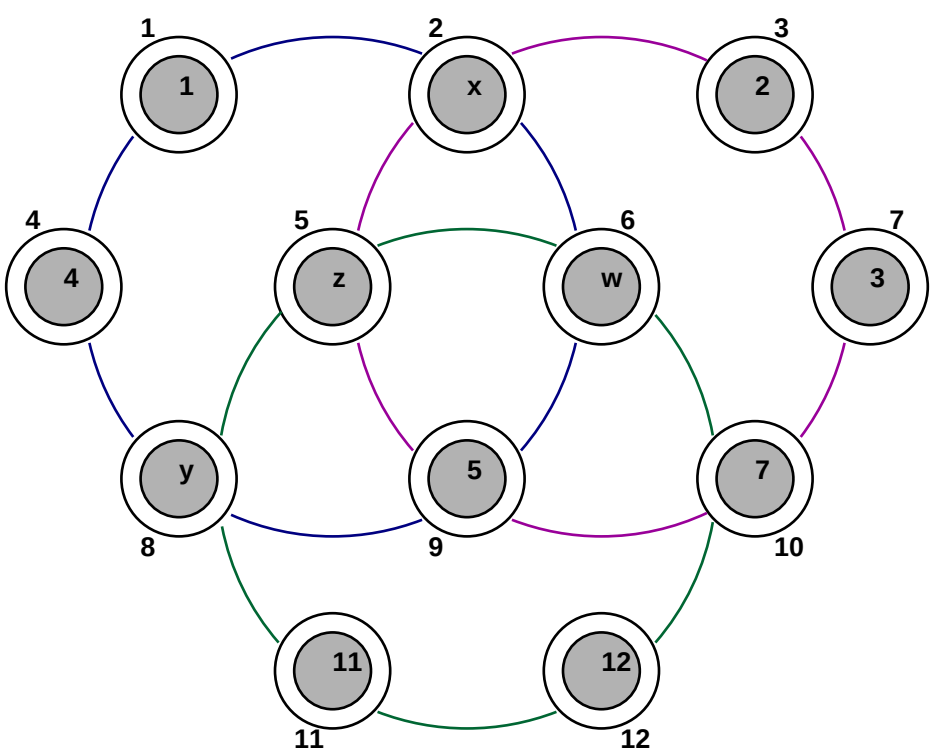

1
z
2
3
x
1
w
4
5
6
7
5
2
4
7
3
y
8
9
10
11
12
11
12

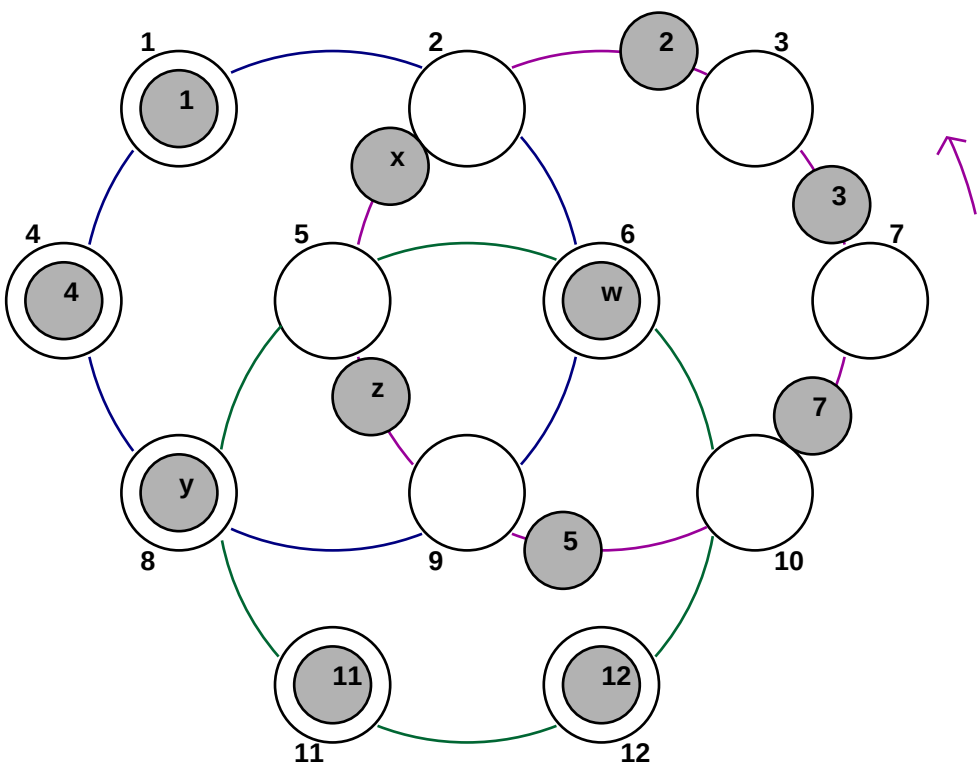

1
2
3
1
z
x
4
5
6
7
4
5
w
2
y
7
3
8
9
10
11
12
11
12

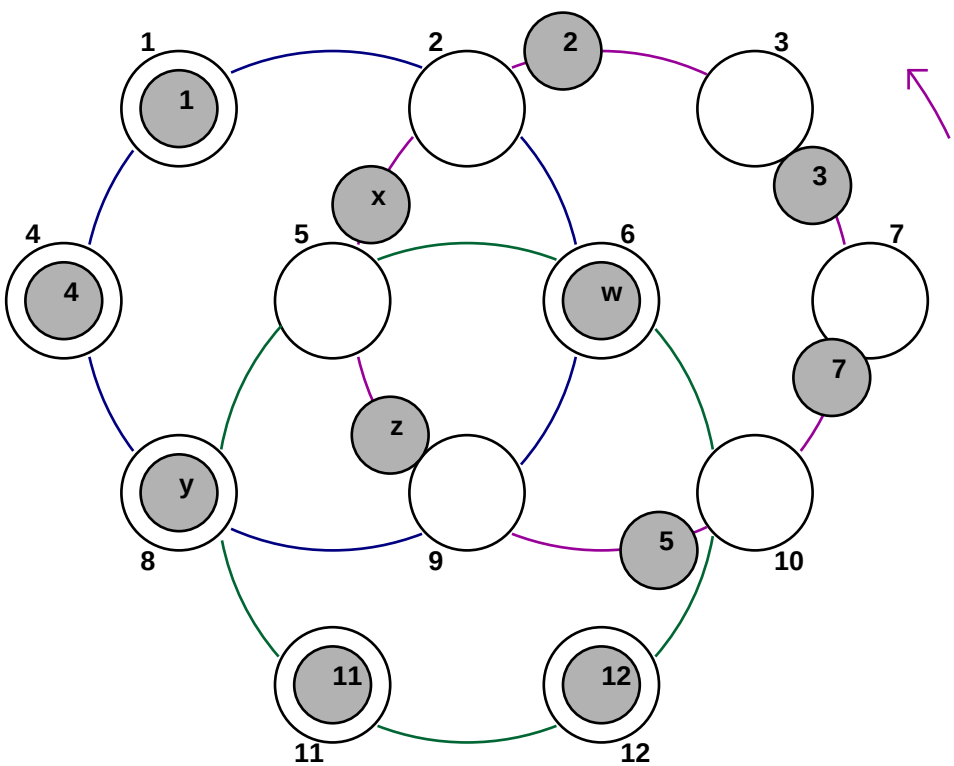

1
2
3
1
z
x
4
5
6
7
4
5
w
2
y
7
3
8
9
10
11
12
11
12

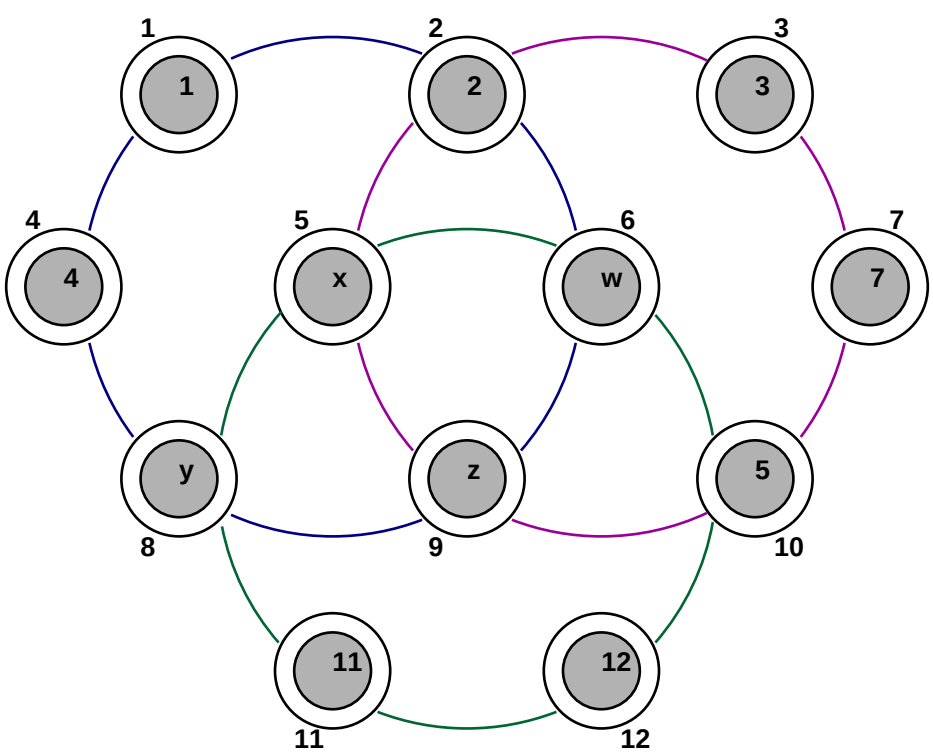

1
2
x
3
1
z
2
4
5
6
7
4
w
5
3
y
7
8
9
10
11
12
11
12


1
2
x
3
1
2
z
4
5
6
7
4
w
3
5
y
7
8
9
10
11
12
11
12

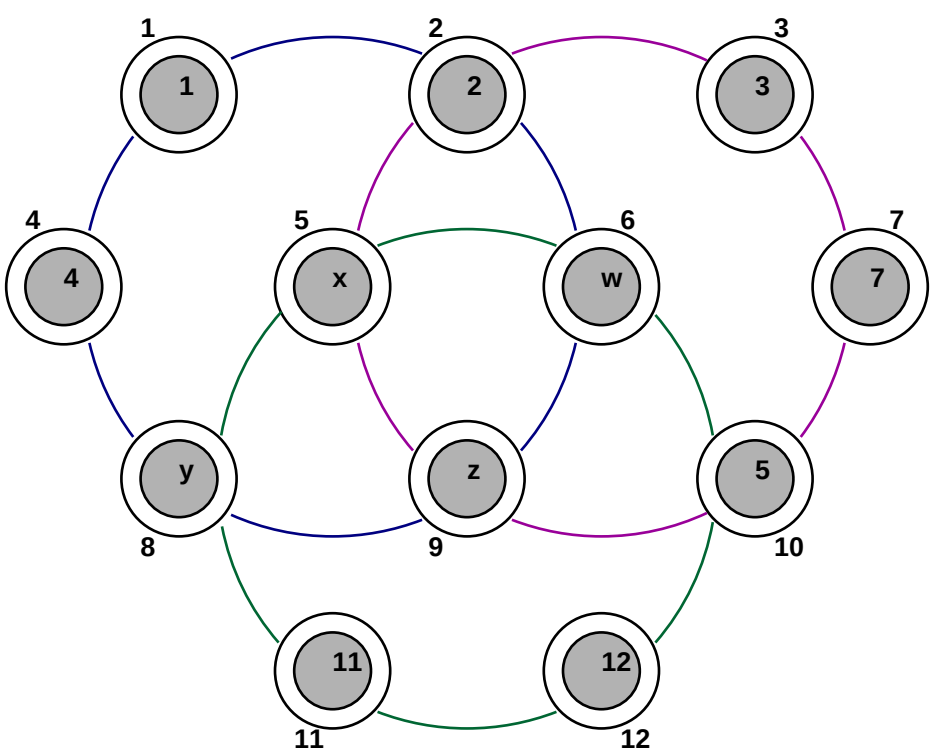

1
2
3
1
x
2
4
5
6
7
4
z
w
3
y
5
7
8
9
10
11
12
11
12

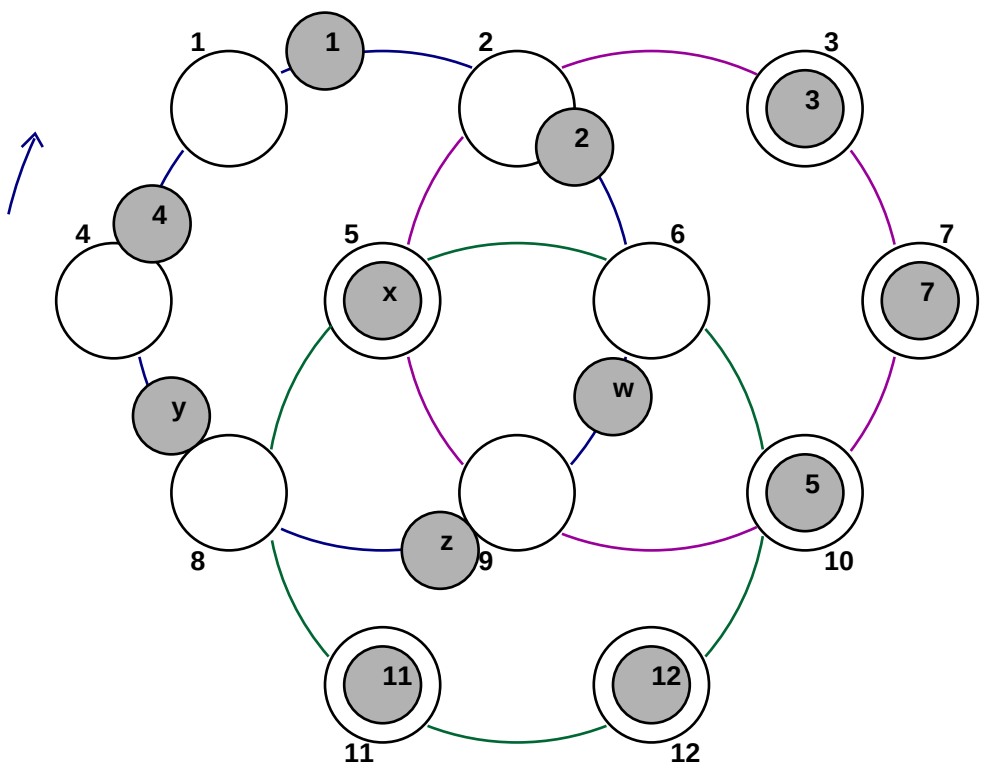

1
2
2
3
1
x
3
4
5
6
7
4
w
z
7
y
5
8
9
10
11
12
11
12

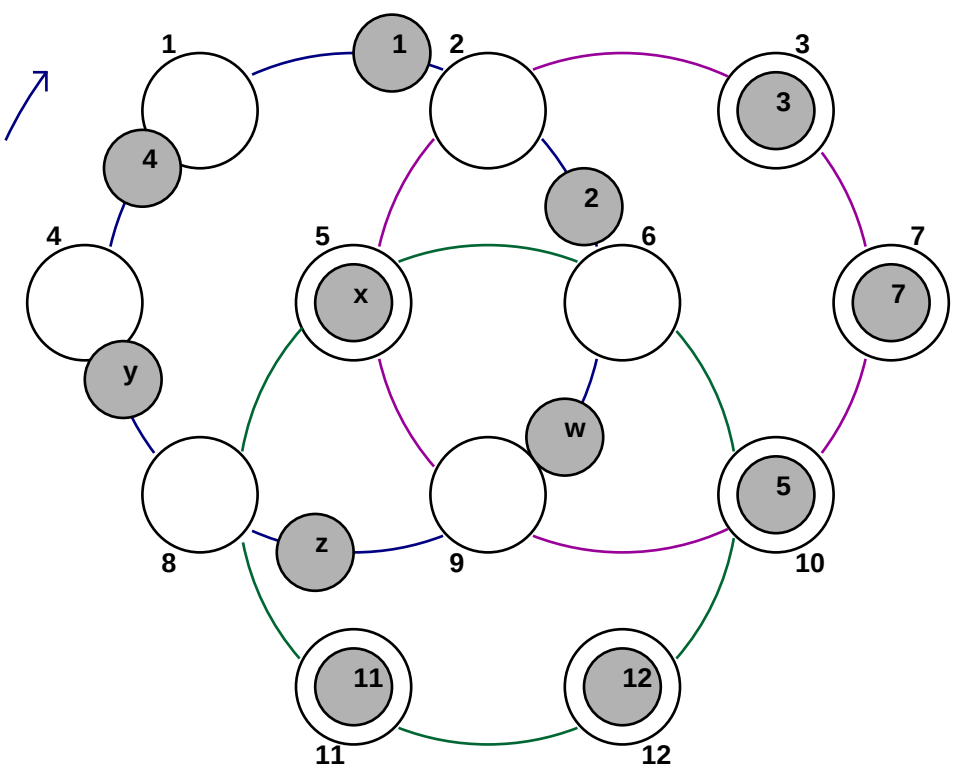

1
2
2
3
1
x
3
4
5
6
7
4
w
7
z
y
5
8
9
10
11
12
11
12

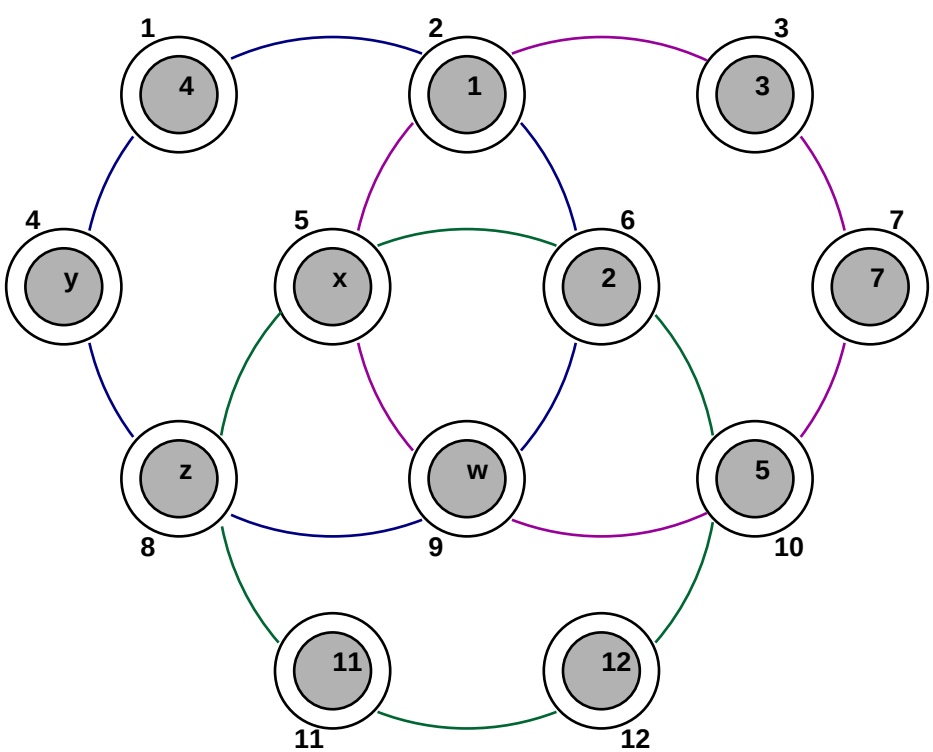

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
x
w
7
y
z
5
11
12

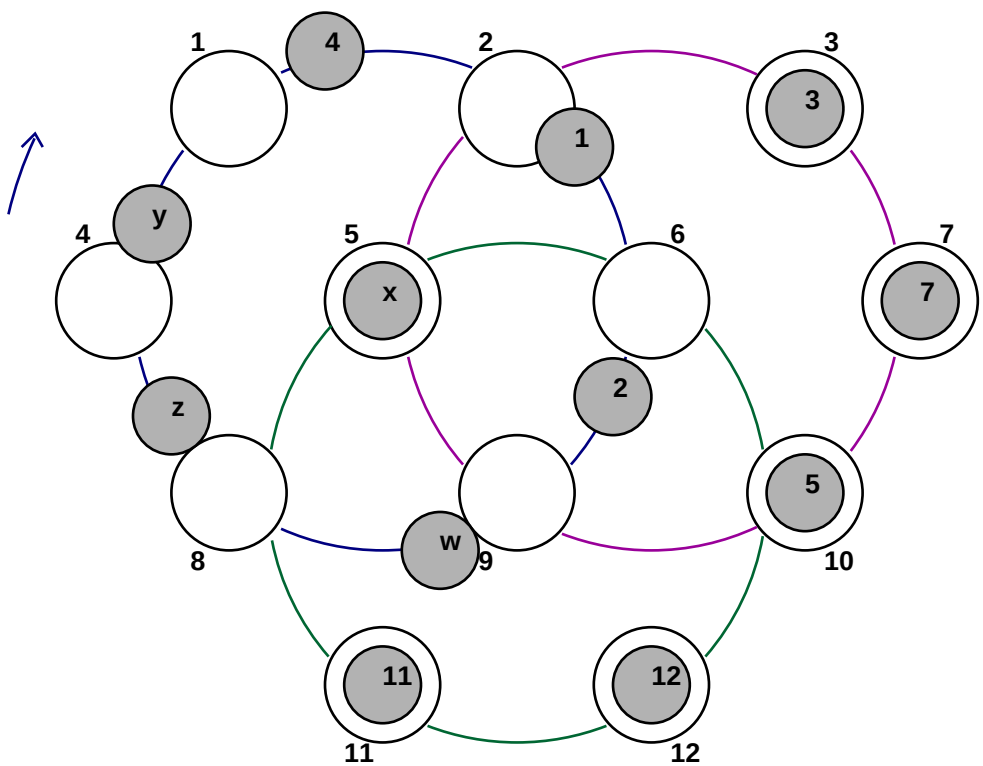
Number 5 can be moved into position 5 while keeping numbers 1, 2, 3, 4, 7, 11, and 12 in position by the following moves.

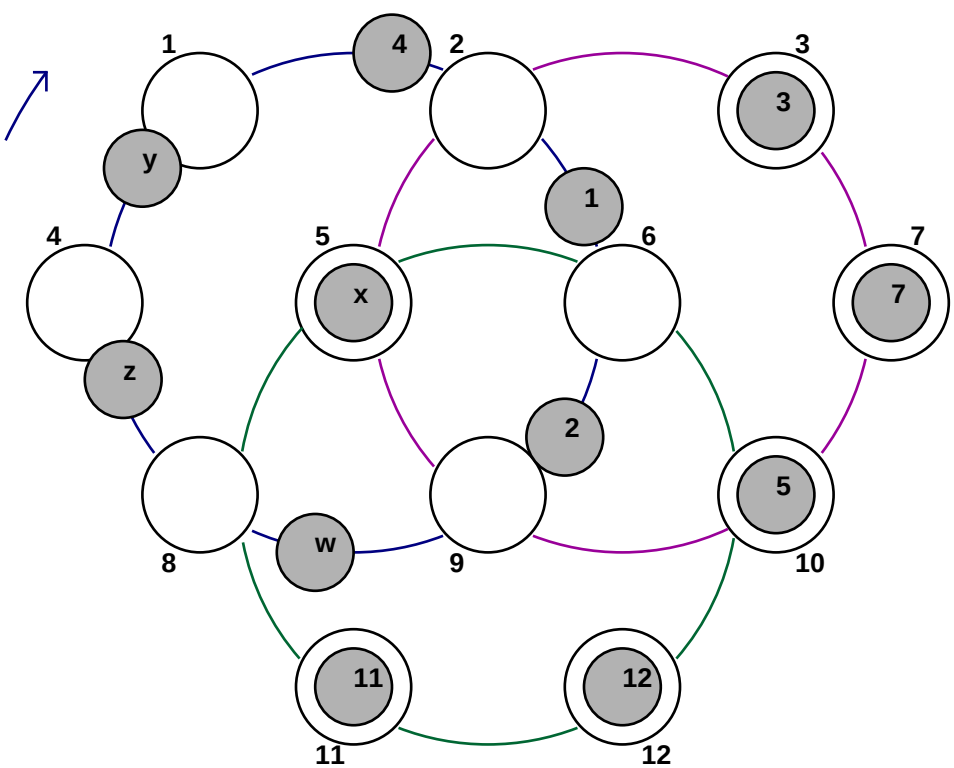

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
x
w
7
y
z
5
11
12

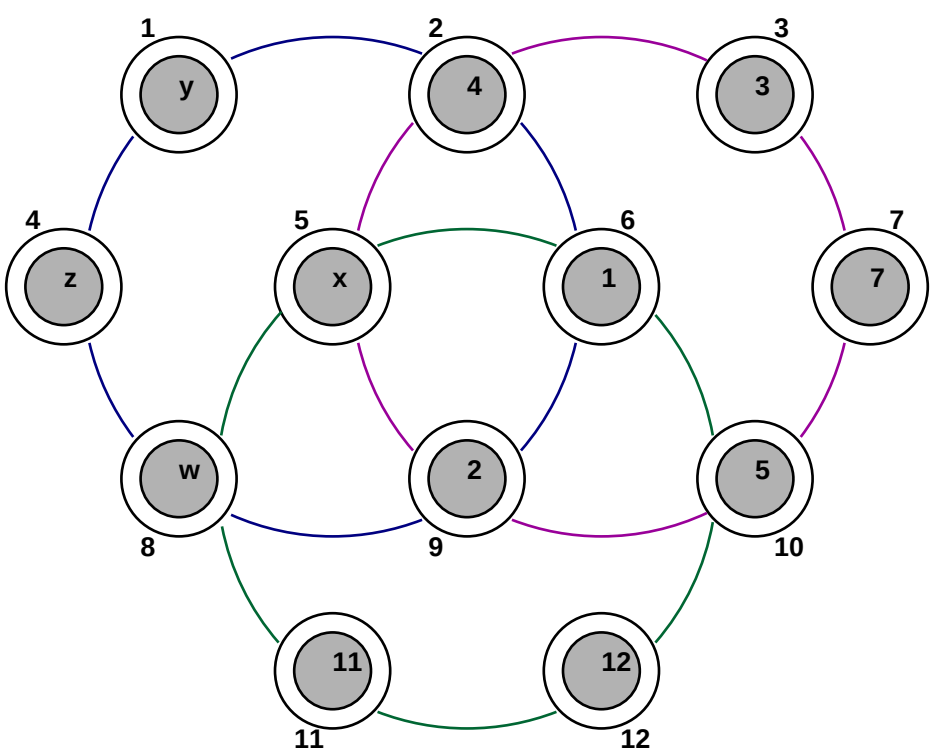

1
1
2
3
3
2
4
4
5
6
7
x
7
w
y
5
z
8
9
10
11
12
11
12

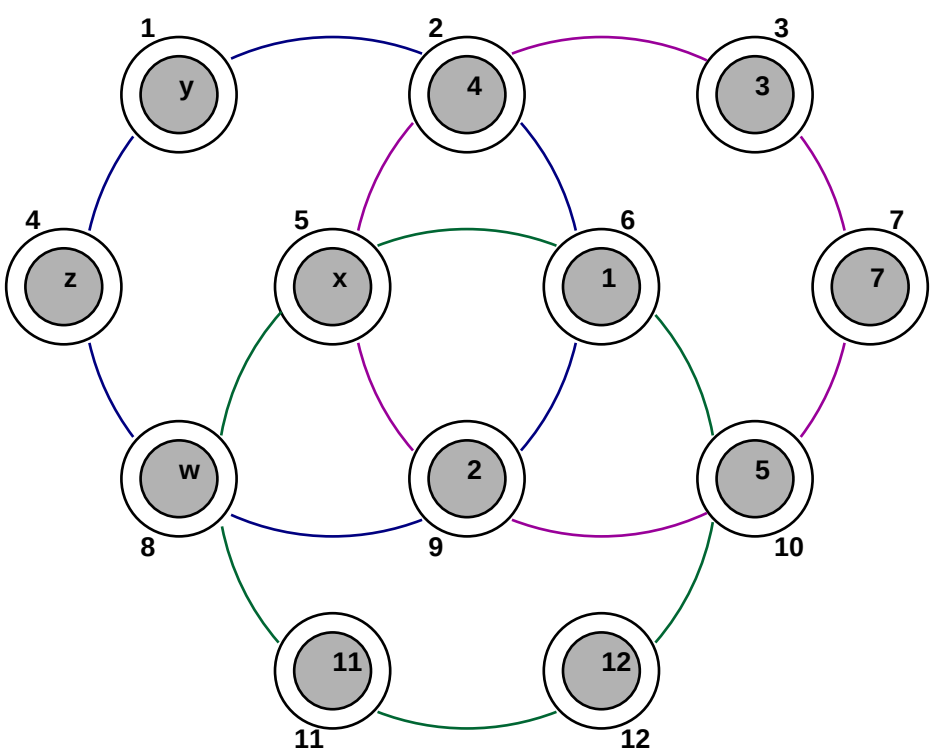

1
1
2
3
3
4
2
4
5
6
7
x
7
y
w
5
z
8
9
10
11
12
11
12

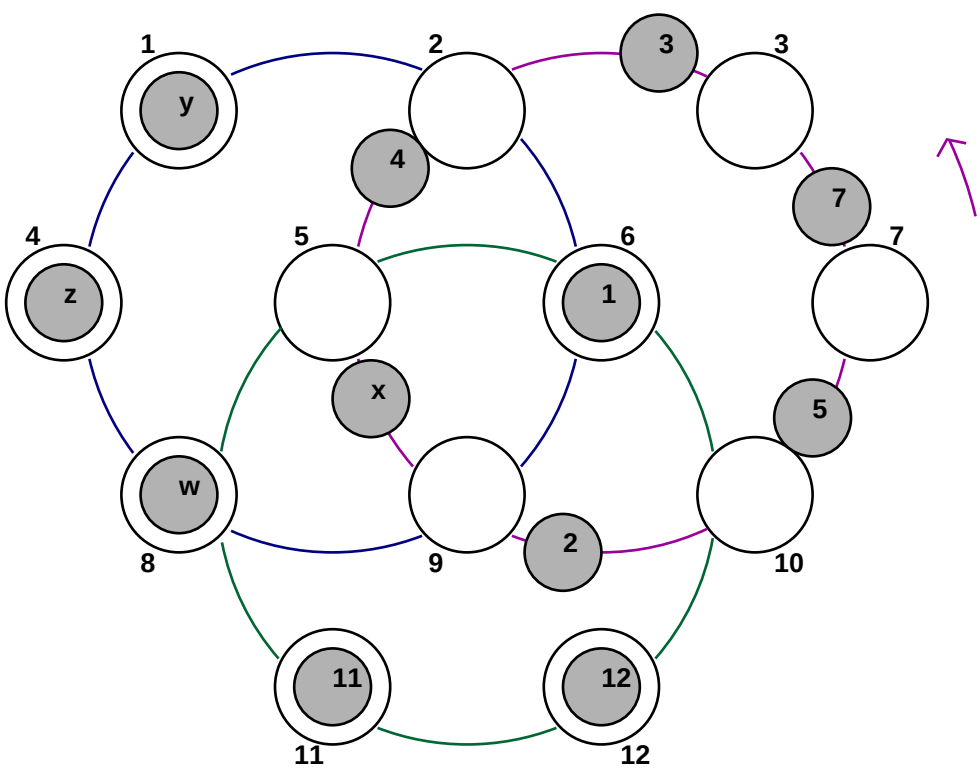

1
2
3
4
1
3
4
5
6
7
y
x
2
7
z
w
5
8
9
10
11
12
11
12

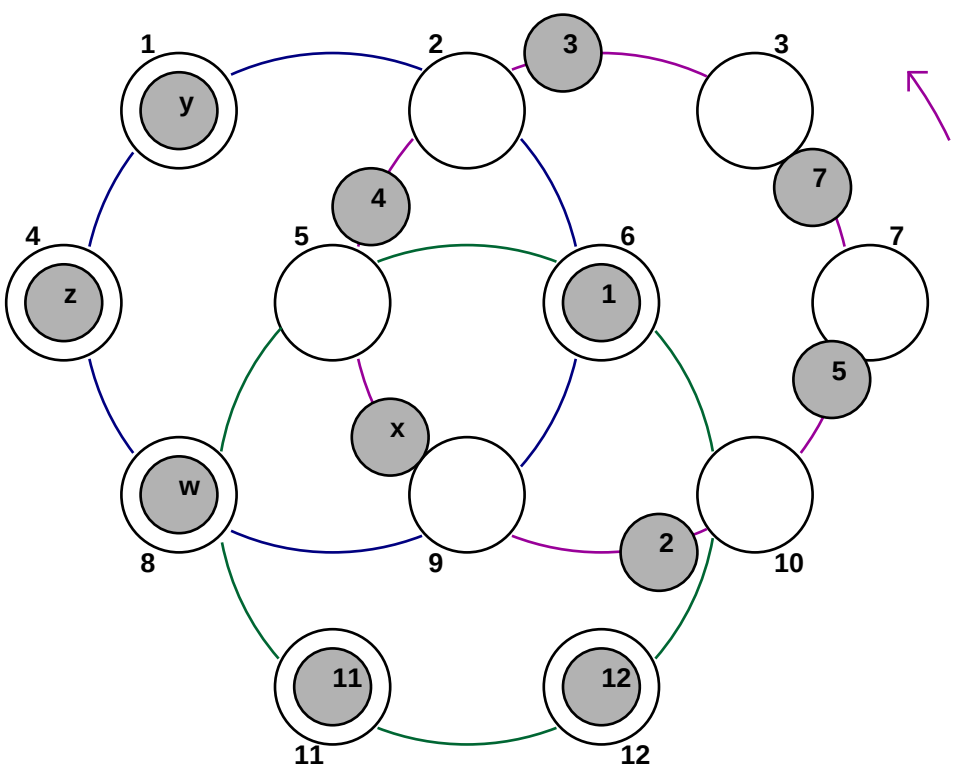

1
4
2
3
3
1
y
4
5
6
7
x
7
2
z
5
w
8
9
10
11
12
11
12

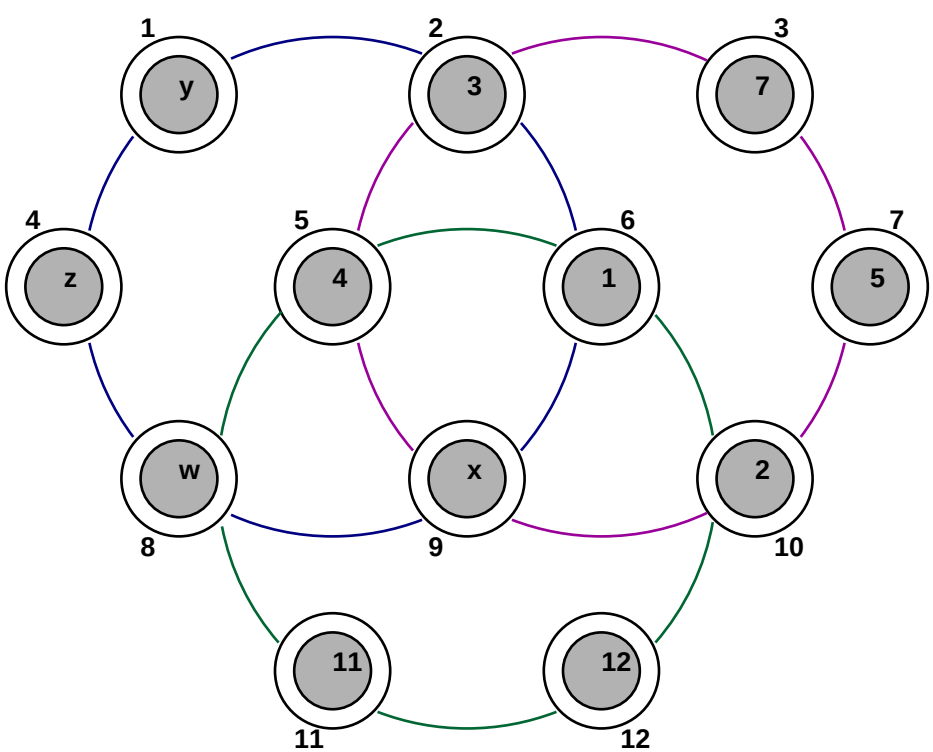

1
4
2
3
3
y
1
4
5
6
7
x
7
z
2
5
w
8
9
10
11
12
11
12

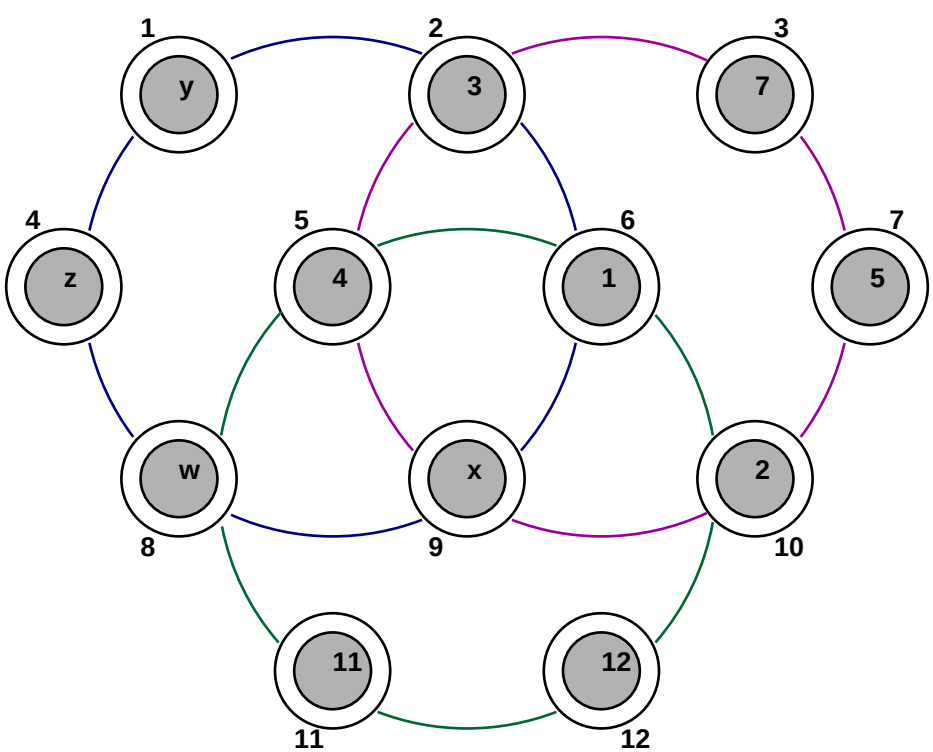

1
y
2
4
3
3
4
z
5
x
6
1
7
7
w
8
2
9
5
10
11
11
12
12

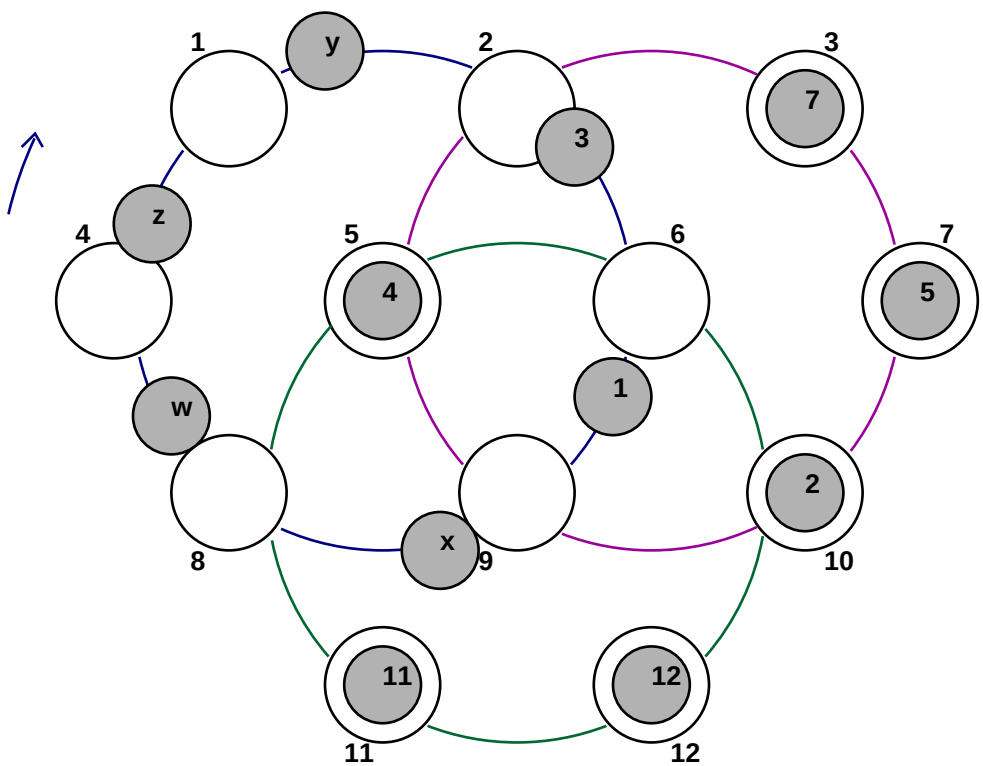

1
y
2
4
3
3
4
z
5
x
6
1
7
7
w
8
2
9
5
10
11
11
12
12

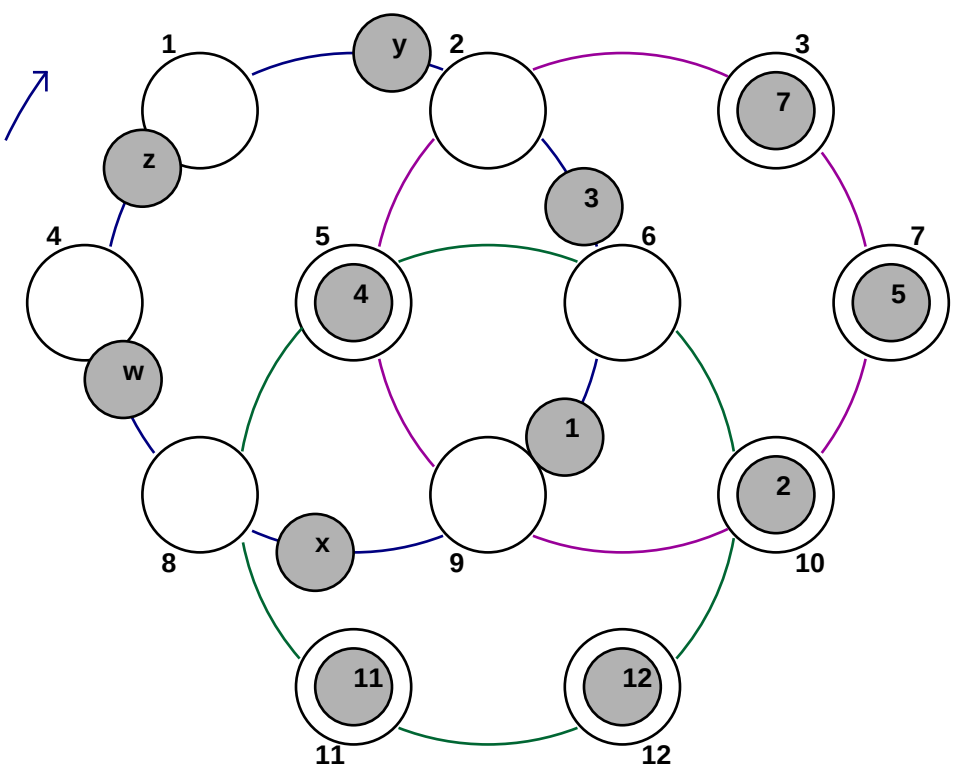

1
y
2
3
3
4
7
4
z
5
6
1
7
x
5
w
8
9
2
10
11
11
12
12

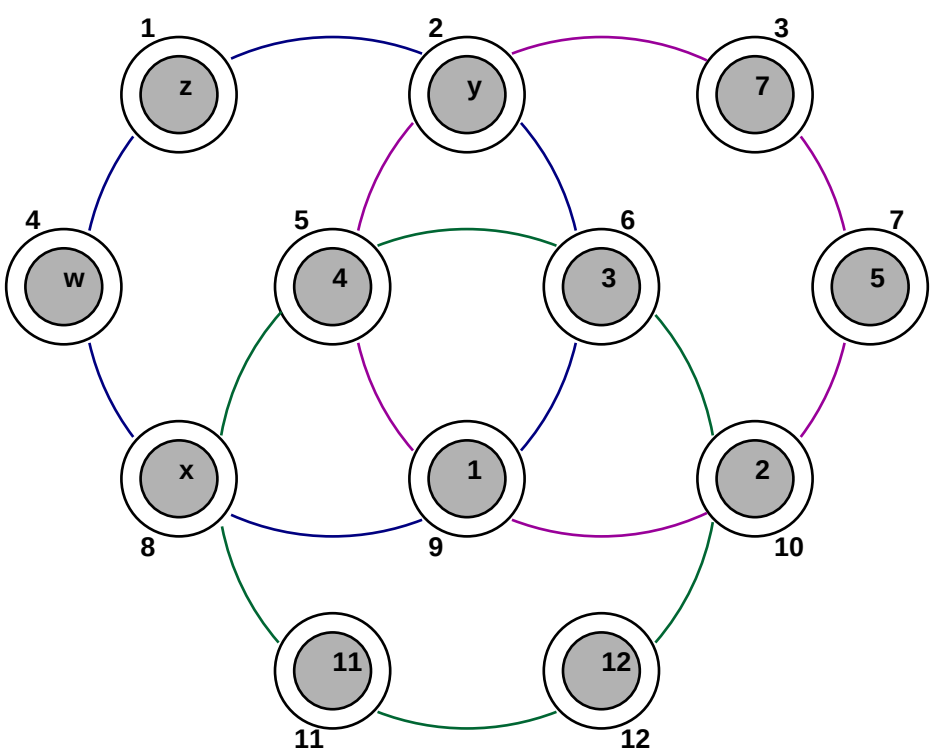

1
y
2
3
3
7
4
4
5
6
7
z
1
5
x
w
2
8
9
10
11
12
11
12

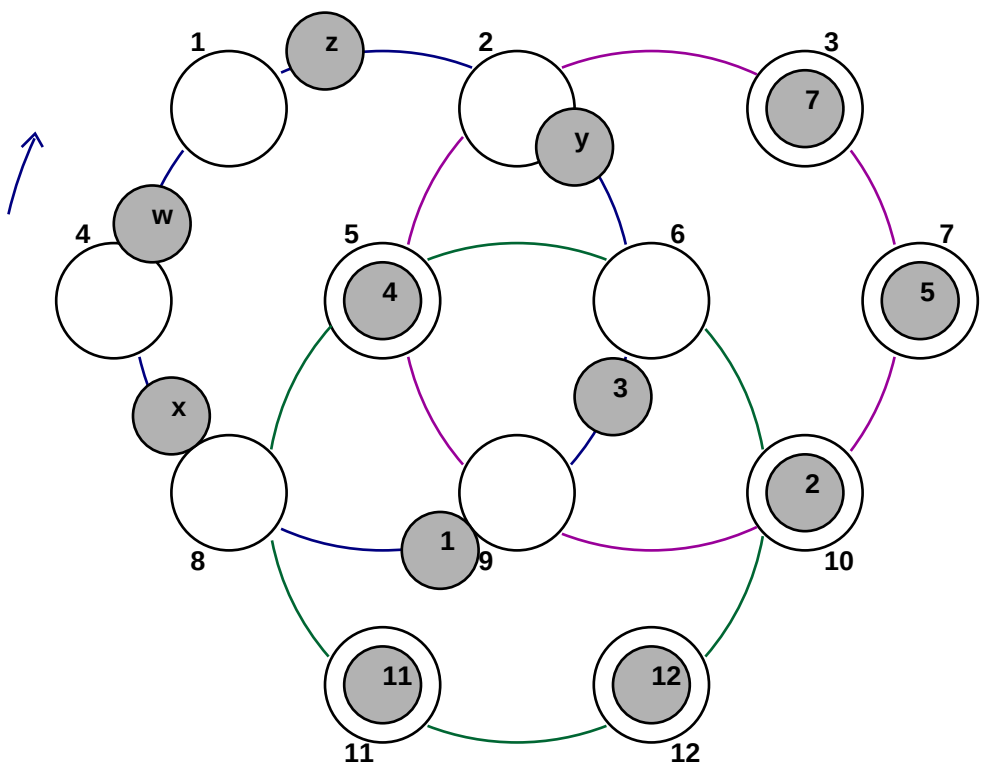

1
y
2
3
3
7
4
z
5
4
6
1
7
5
w
8
x
9
2
10
11
11
12
12

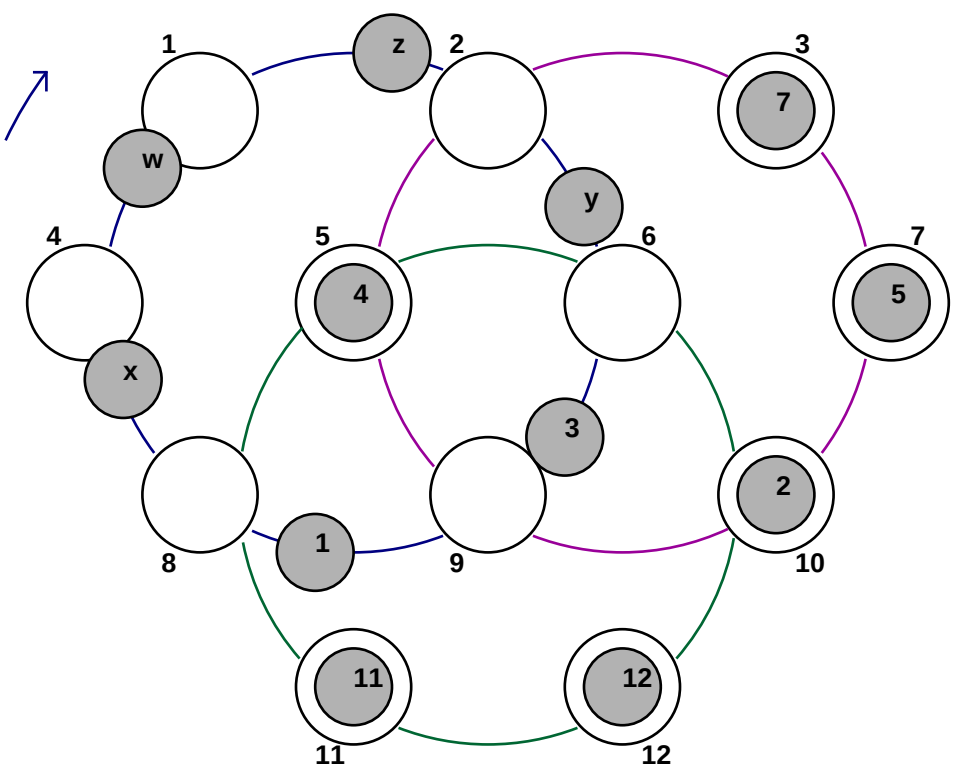

1
y
2
3
3
7
4
z
5
4
6
1
7
5
w
8
x
9
2
10
11
11
12
12

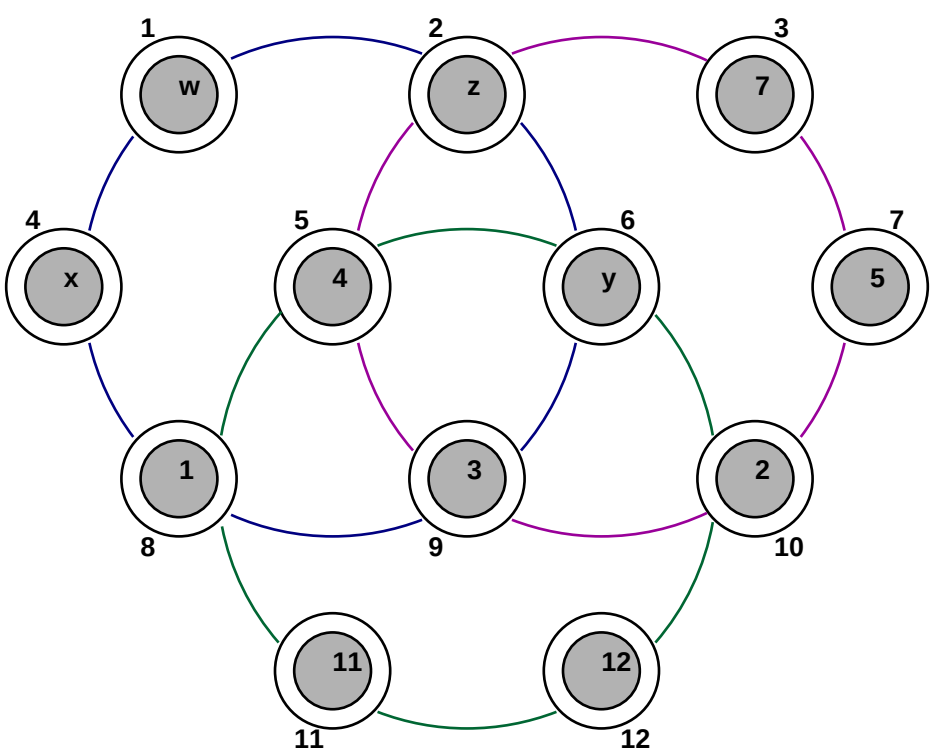

1
y
2
3
7
3
z
4
5
6
7
4
5
1
w
2
x
8
9
10
11
12
11
12

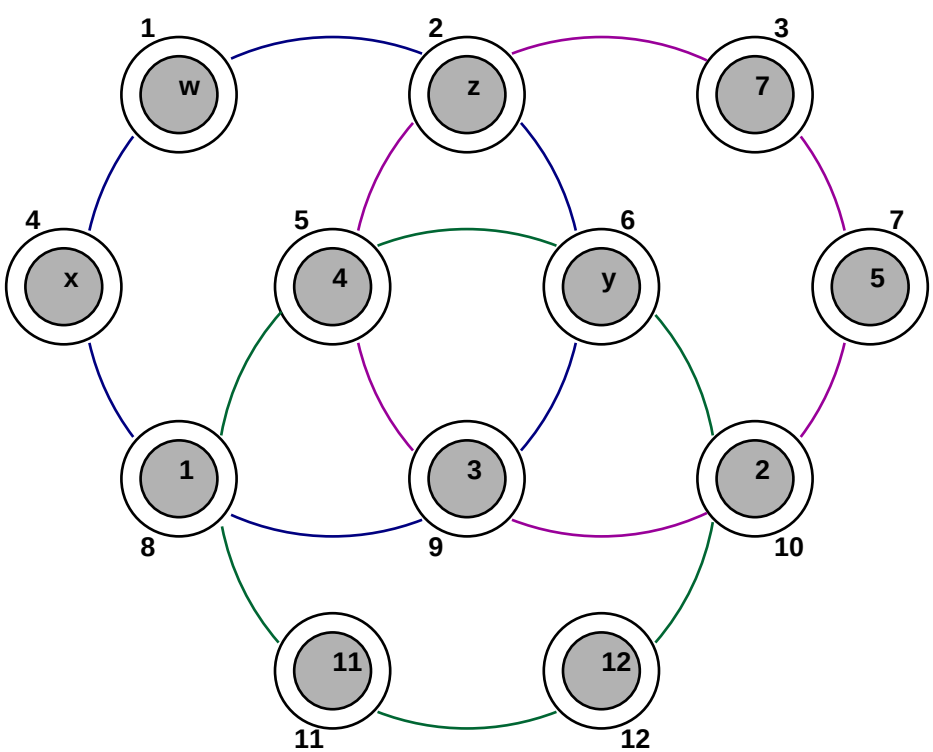

1
y
2
3
7
z
3
4
5
6
7
4
5
w
1
2
x
8
9
10
11
12
11
12

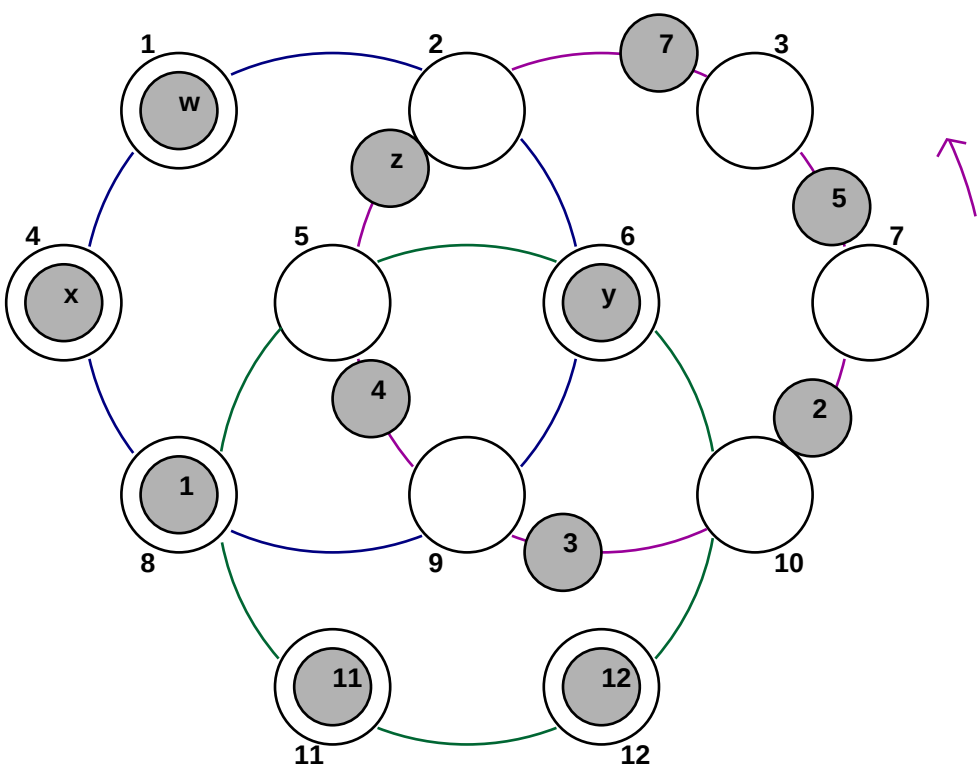

1
z
2
y
3
7
4
w
5
4
6
3
7
5
x
1
2
8
9
10
11
11
12
12

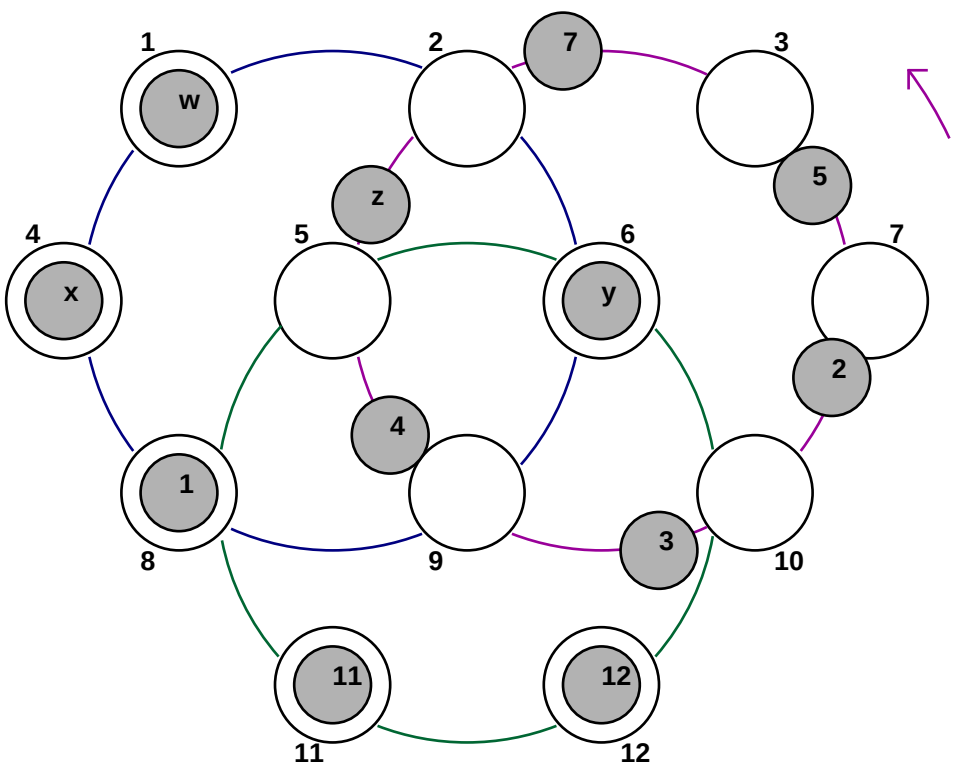

1
z
2
3
7
y
w
4
5
6
7
4
5
3
x
2
1
8
9
10
11
12
11
12

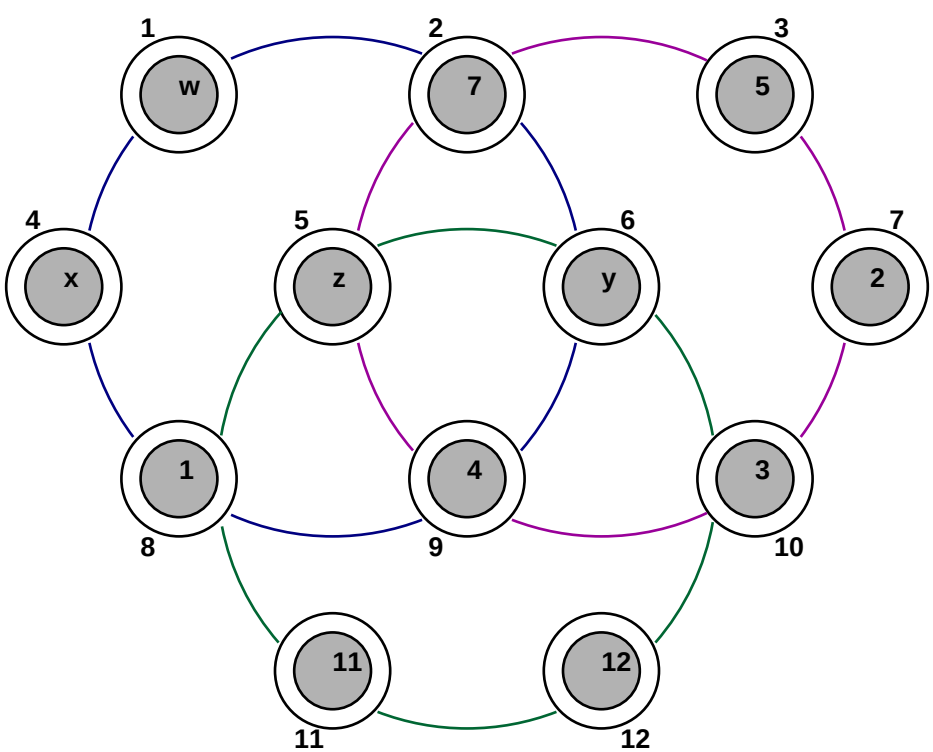

1
z
2
3
7
w
y
4
5
6
7
4
5
x
3
2
1
8
9
10
11
12
11
12

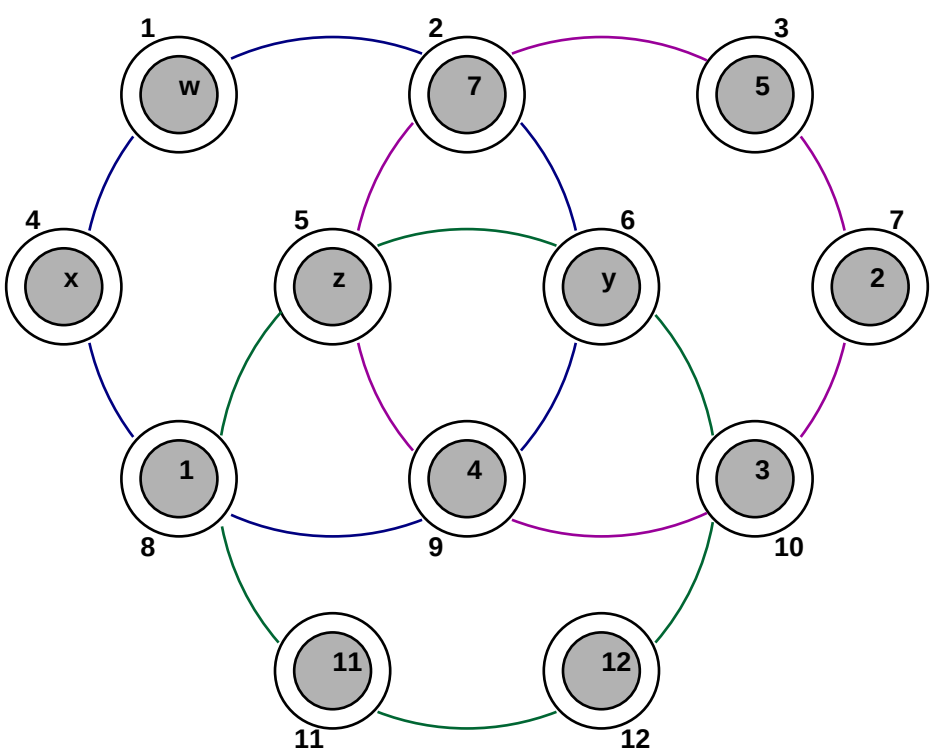

1
w
2
z
3
7
4
x
5
4
6
y
7
5
1
8
3
9
2
10
11
11
12
12

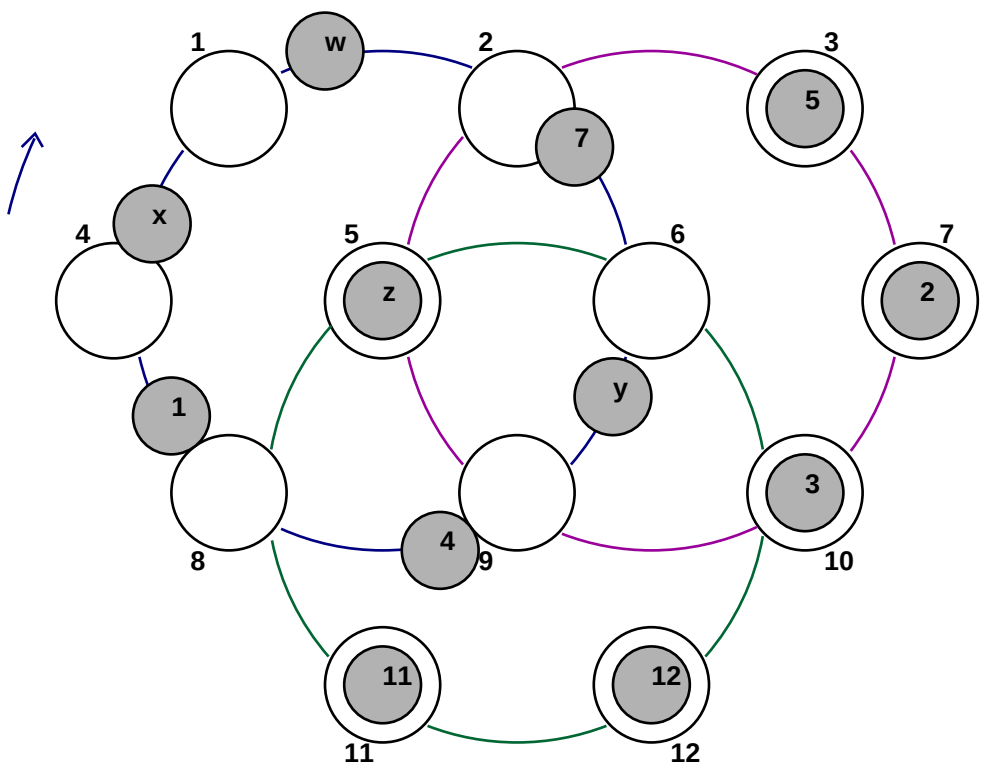

1
w
2
z
3
7
4
x
5
4
6
y
7
5
1
8
3
9
2
10
11
11
12
12

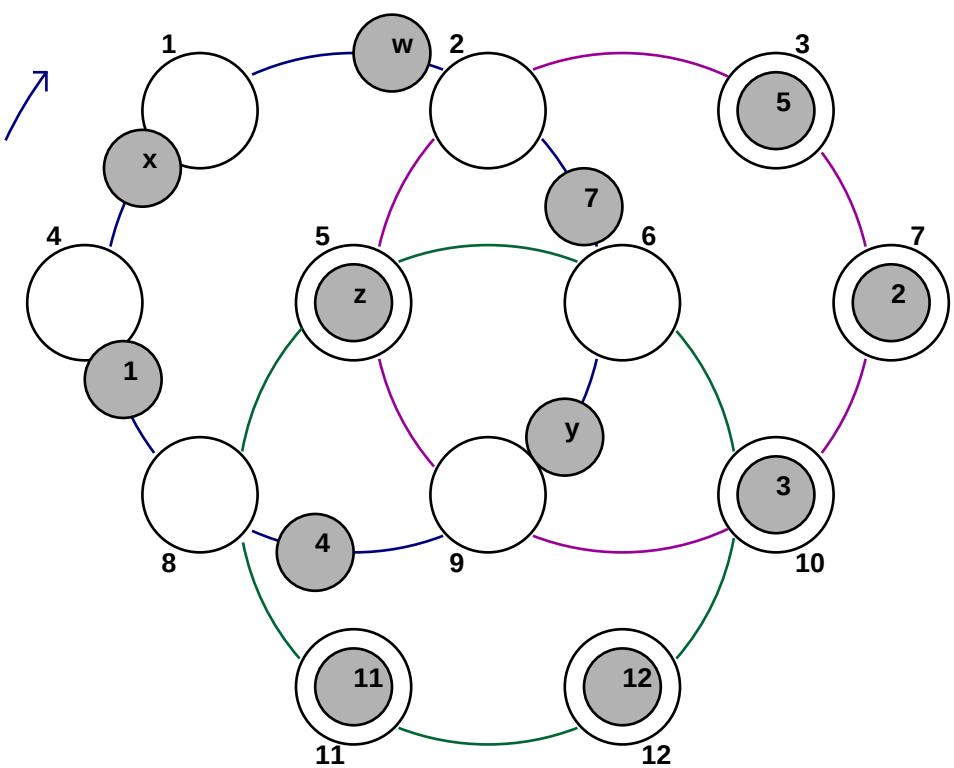

1
w
2
7
3
z
5
4
x
5
6
y
7
4
2
1
3
8
9
10
11
12
11
12

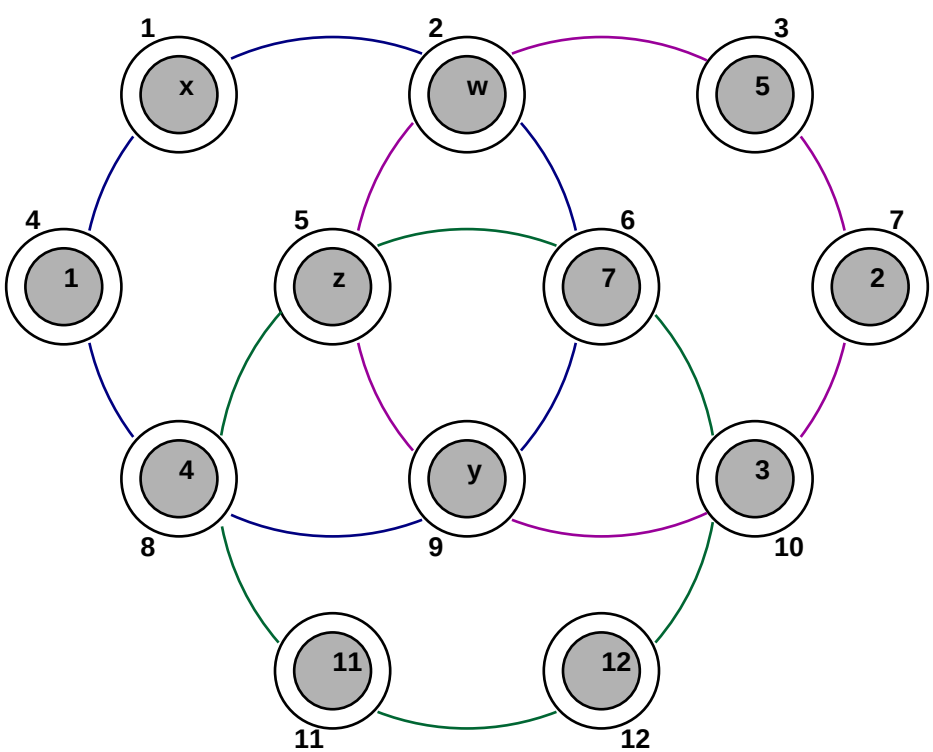

1
w
2
7
3
5
z
4
x
5
6
y
7
2
4
1
8
9
3
10
11
11
12
12

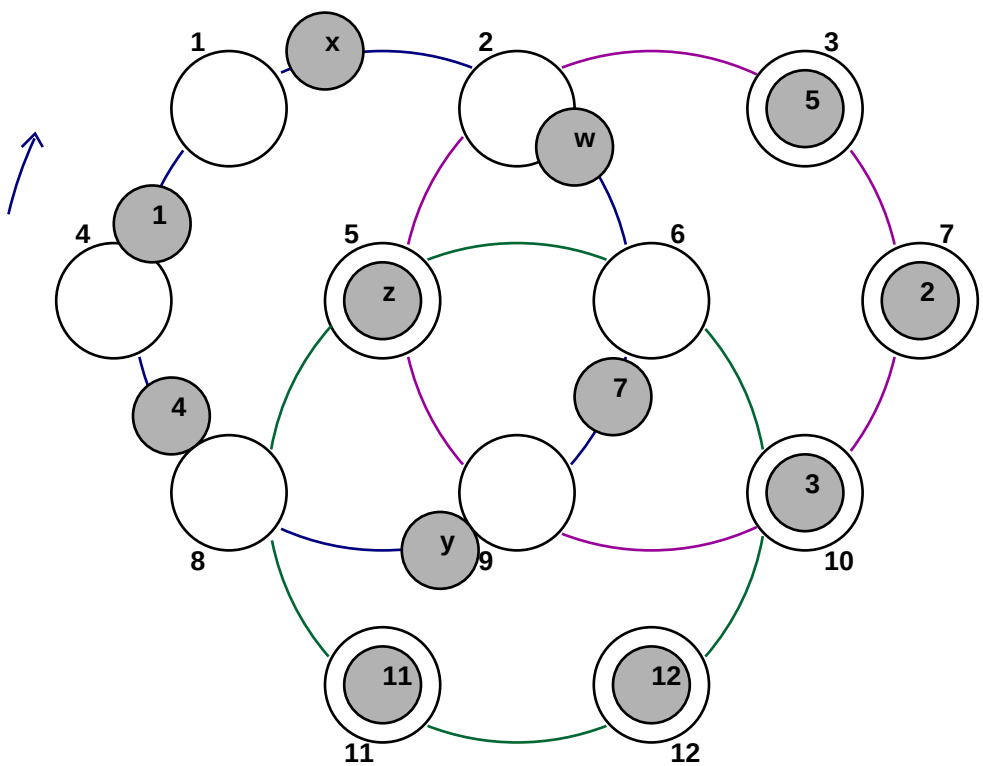

1
w
2
7
3
5
4
x
5
z
6
y
7
2
1
1
4
4
3
3
8
9
10
11
11
12
12

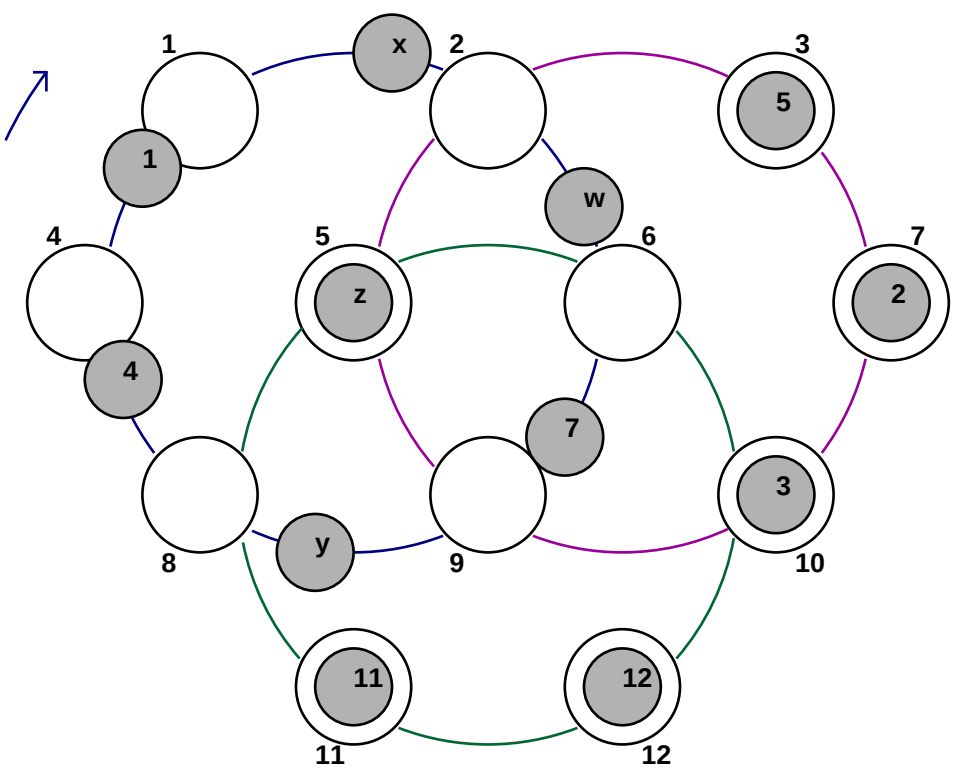

1
w
2
7
3
5
4
x
5
z
6
y
7
2
1
1
4
4
3
3
8
9
10
11
11
12
12

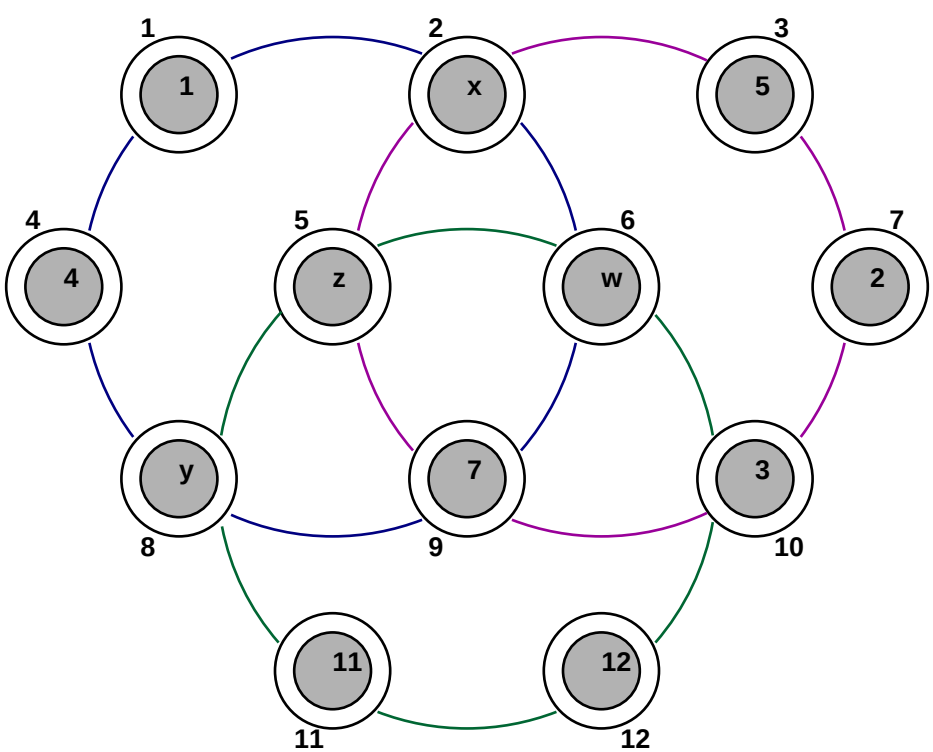

1
w
2
3
5
7
x
4
5
6
7
z
2
y
1
3
4
8
9
10
11
12
11
12

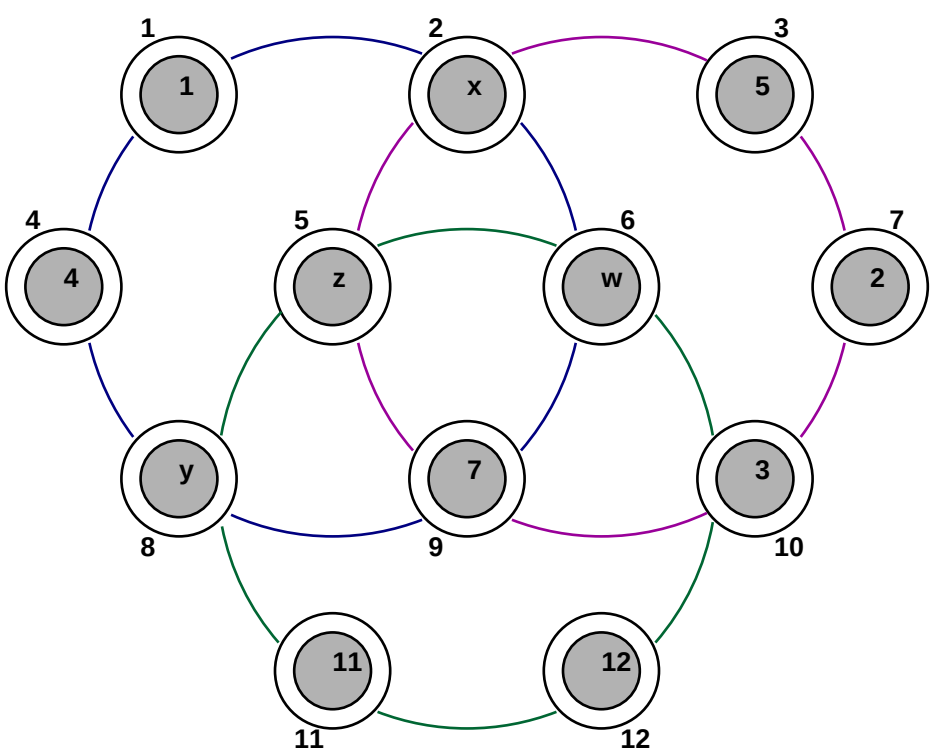

1
w
2
3
5
x
7
4
5
6
7
z
2
1
y
3
4
8
9
10
11
12
11
12

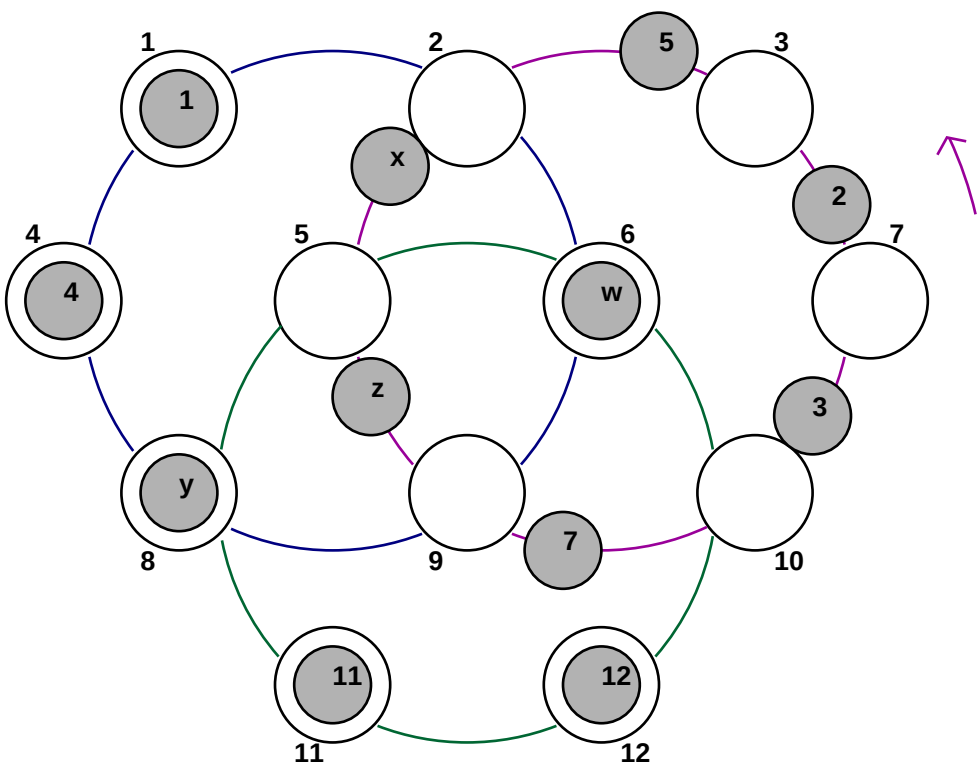

1
x
2
w
3
5
4
1
5
z
6
7
7
2
4
y
3
8
9
10
11
11
12
12

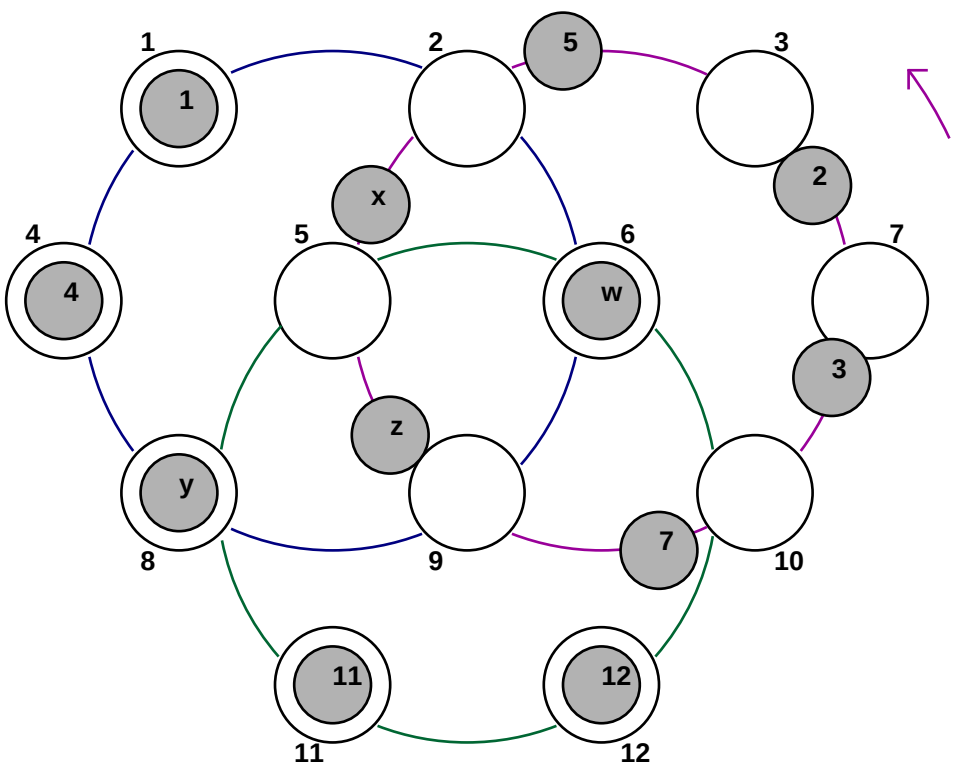

1
x
2
3
5
w
1
4
5
6
7
z
2
7
4
3
y
8
9
10
11
12
11
12

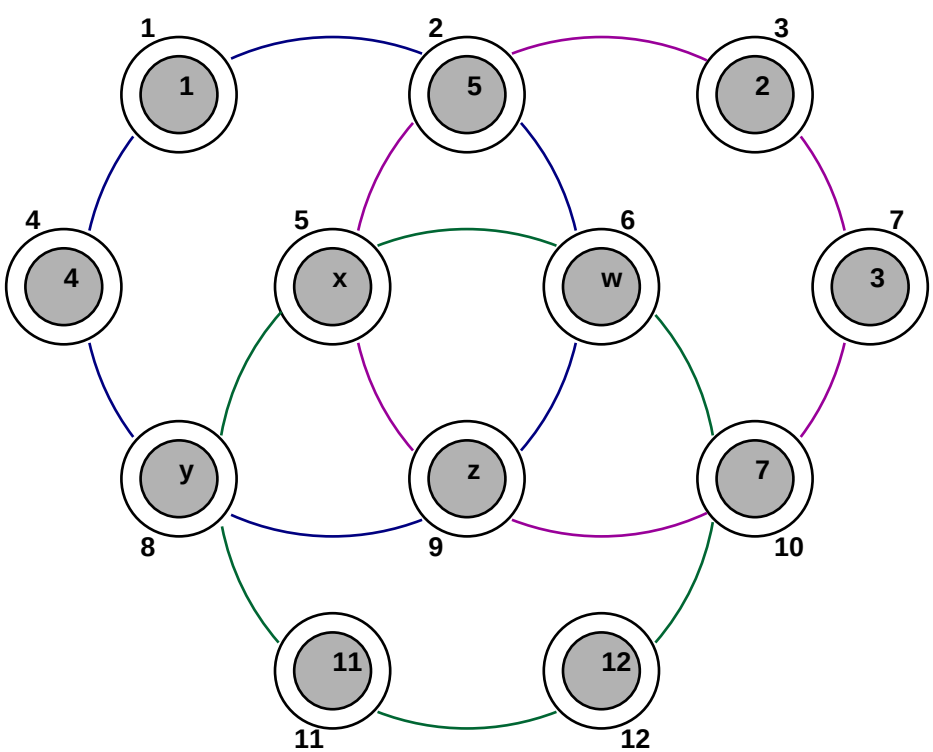

1
x
2
3
5
1
w
4
5
6
7
z
2
4
7
3
y
8
9
10
11
12
11
12

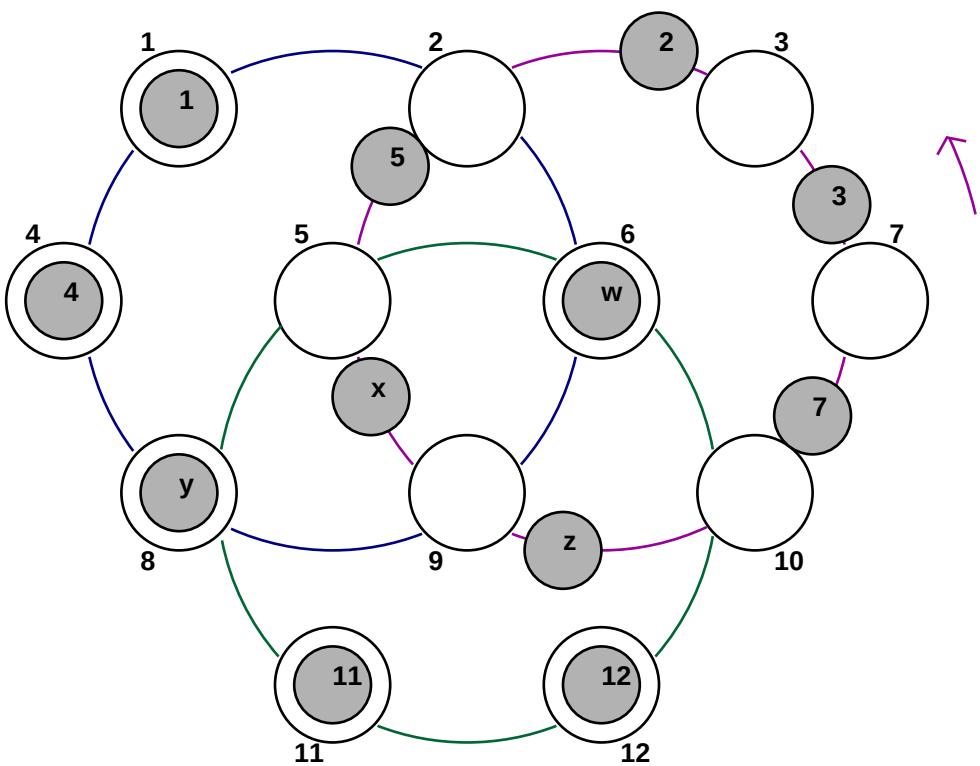

1
2
3
1
x
5
4
5
6
7
4
z
w
2
y
7
3
8
9
10
11
12
11
12

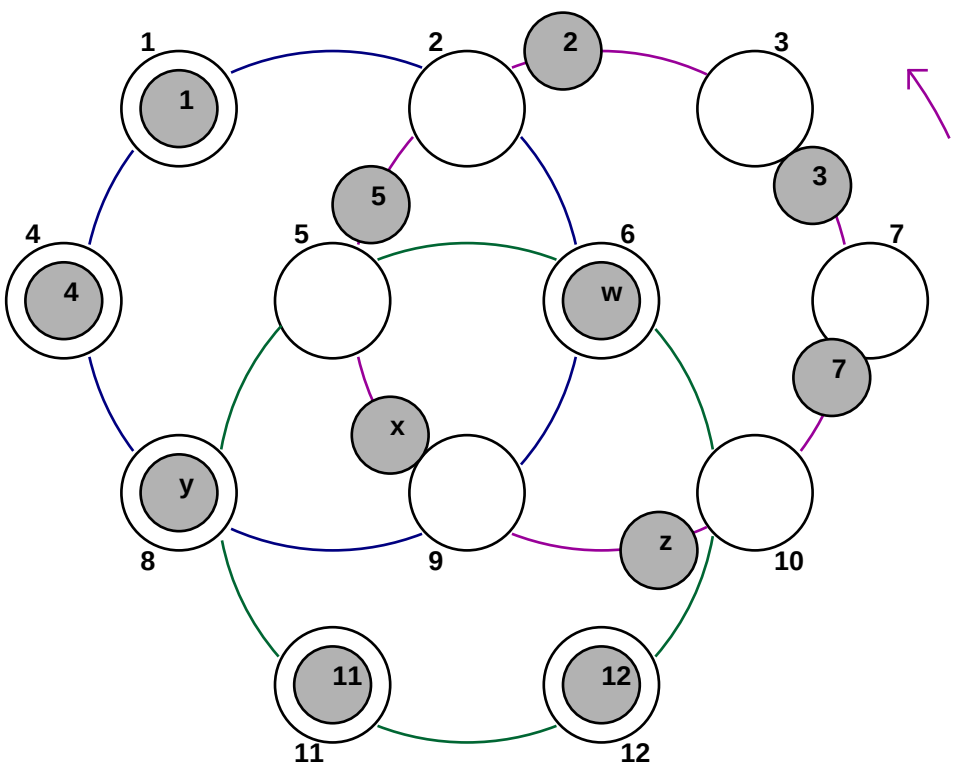

1
2
3
1
x
5
4
5
6
7
4
z
w
2
y
7
3
8
9
10
11
12
11
12

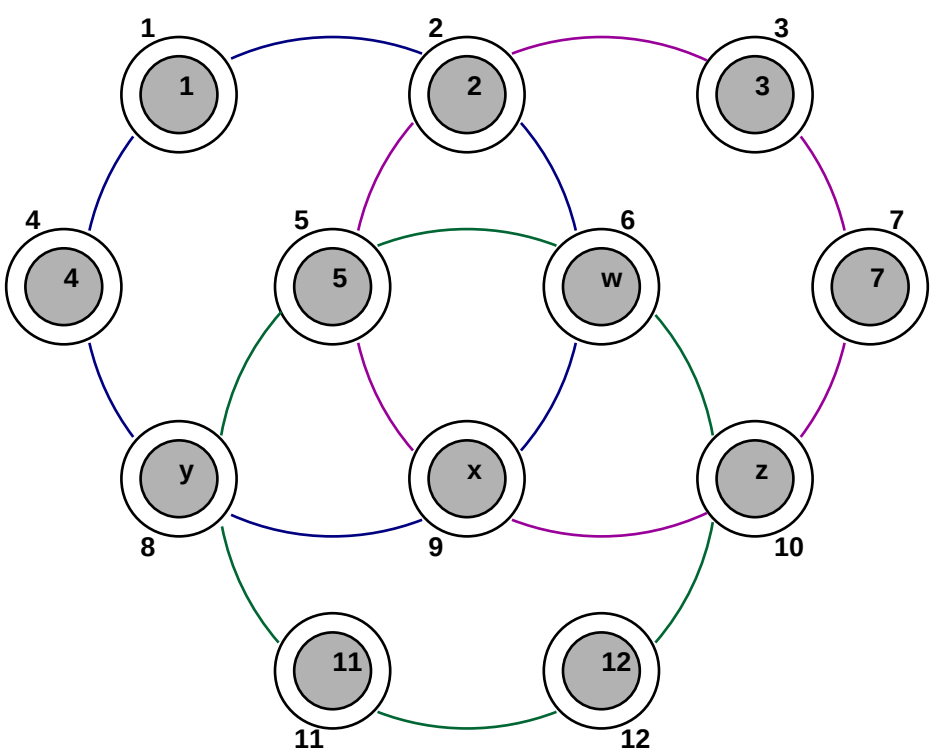

1
2
5
3
1
x
2
4
5
6
7
4
w
z
3
y
7
8
9
10
11
12
11
12


1
2
5
3
1
x
2
4
5
6
7
4
w
3
z
y
8
9
7
10
11
12
11
12


1
2
3
1
5
2
4
5
6
7
4
x
w
3
y
z
7
8
9
10
11
12
11
12


1
2
2
3
1
5
3
4
5
6
7
4
w
x
7
y
z
8
9
10
11
12
11
12


1
2
2
3
1
3
5
4
5
6
7
4
w
7
x
y
z
8
9
10
11
12
11
12

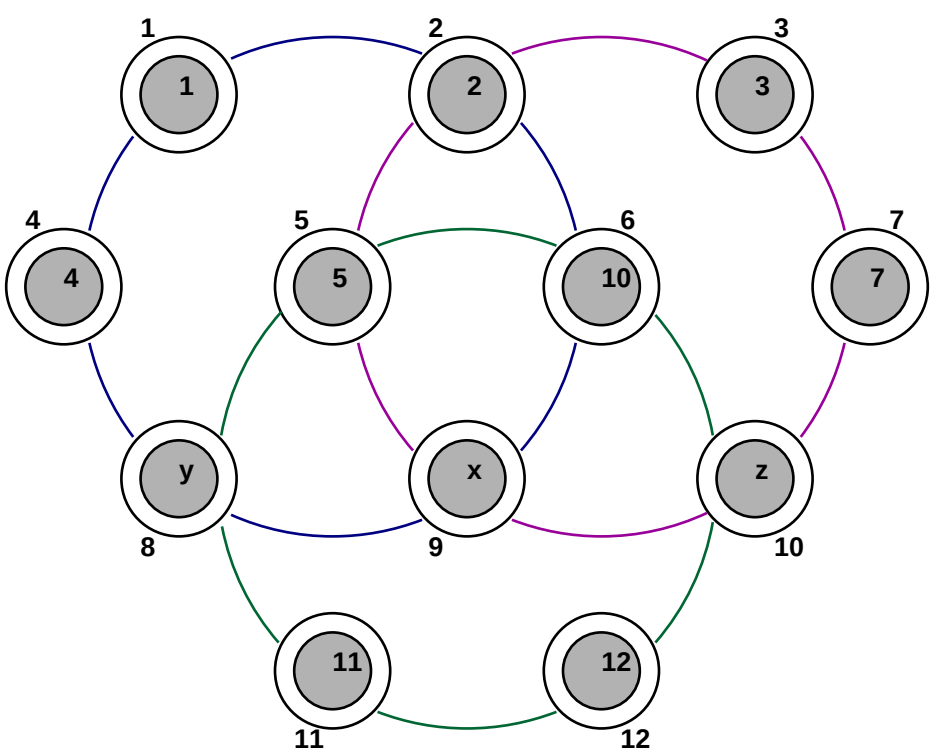

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
w
7
y
x
z
11
12

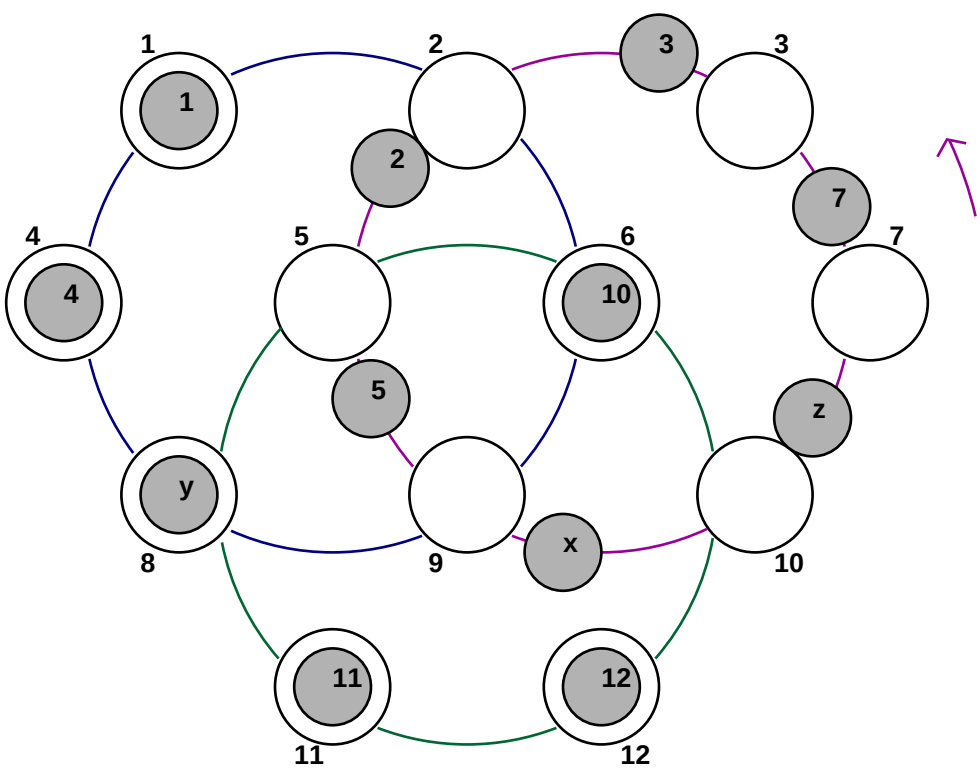
It has been shown that 5 can be moved to position 5 from any position while keeping numbers 1, 2, 3, 4, 7, 11, and 12 in their respective positions.

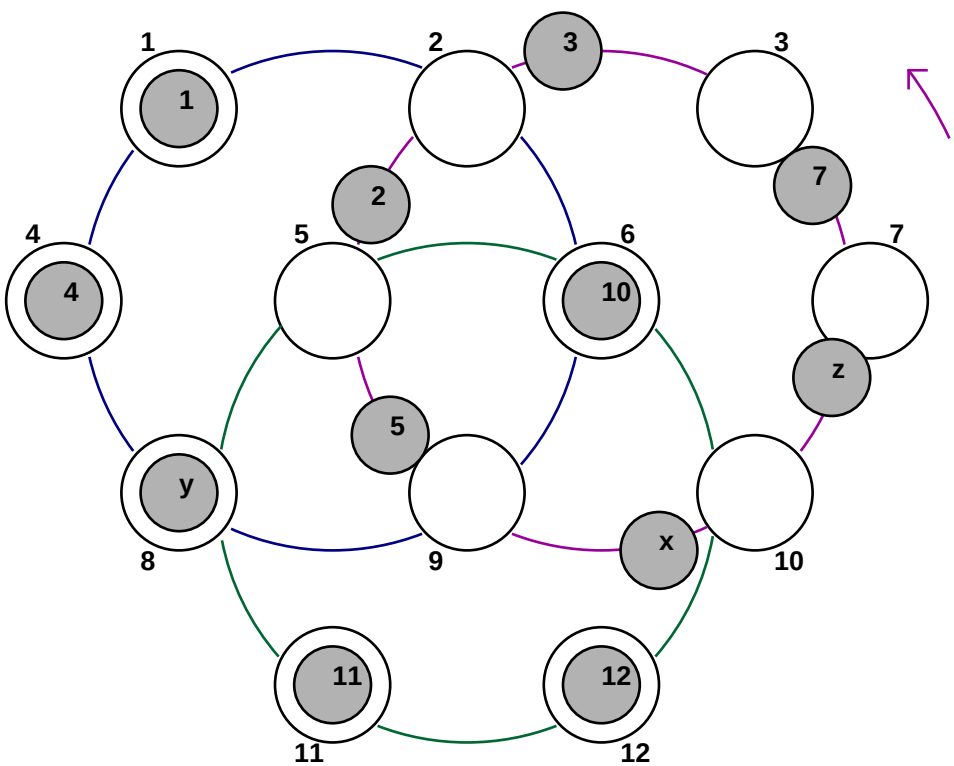
Now let w = 10.

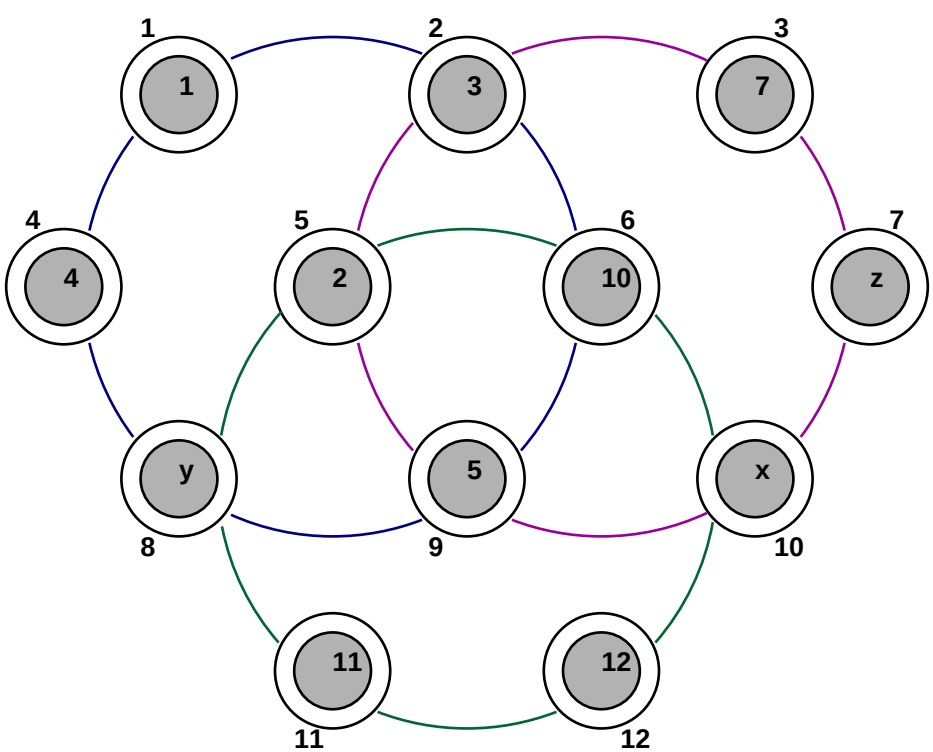
Number 10 can be moved into position 9
by moving in the following pattern.

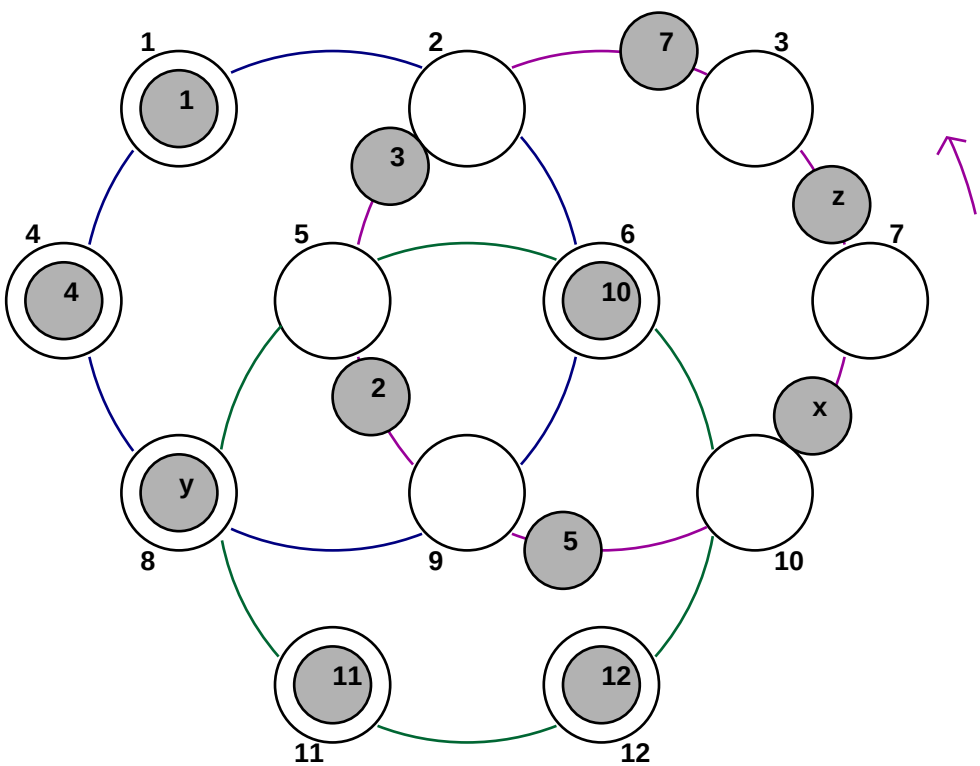
Numbers 1, 2, 3, 4, 5, 7, 11, and 12 will remain in their correct positions.

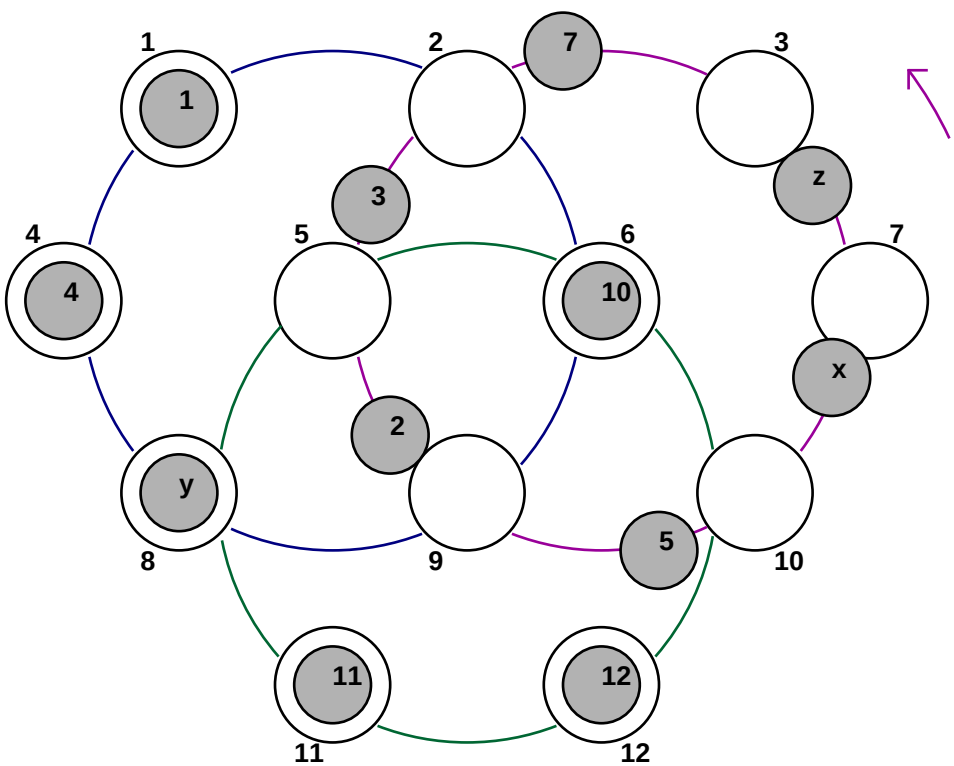

1
2
3
4
5
6
7
y
x
z
8
9
10
11
12

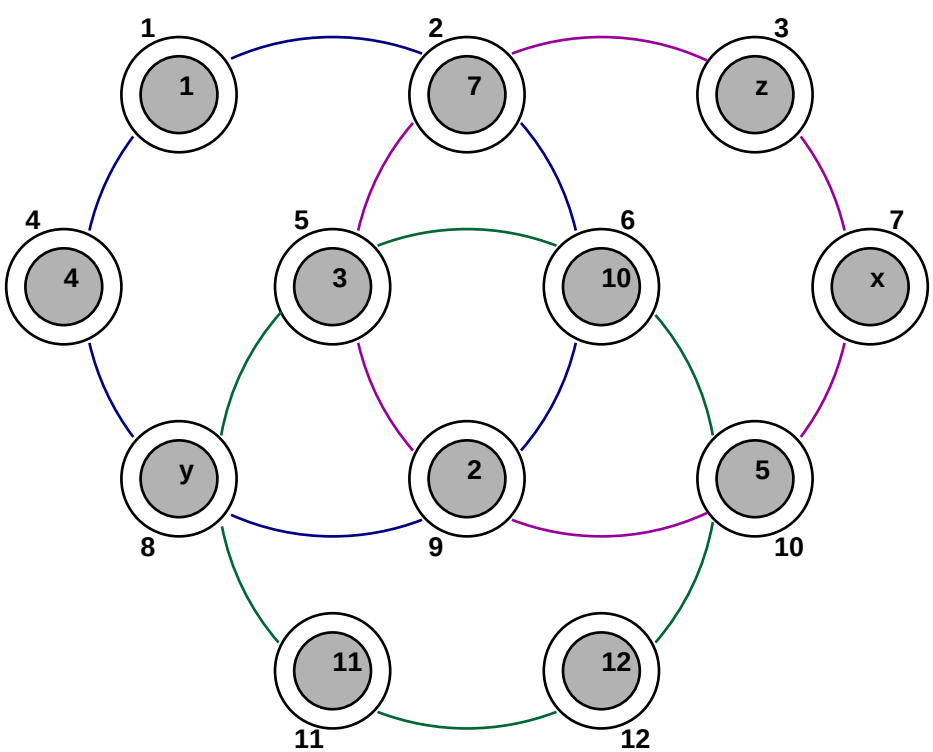

1
2
3
3
1
2
7
4
5
6
7
4
10
5
z
y
x
8
9
10
11
12
11
12

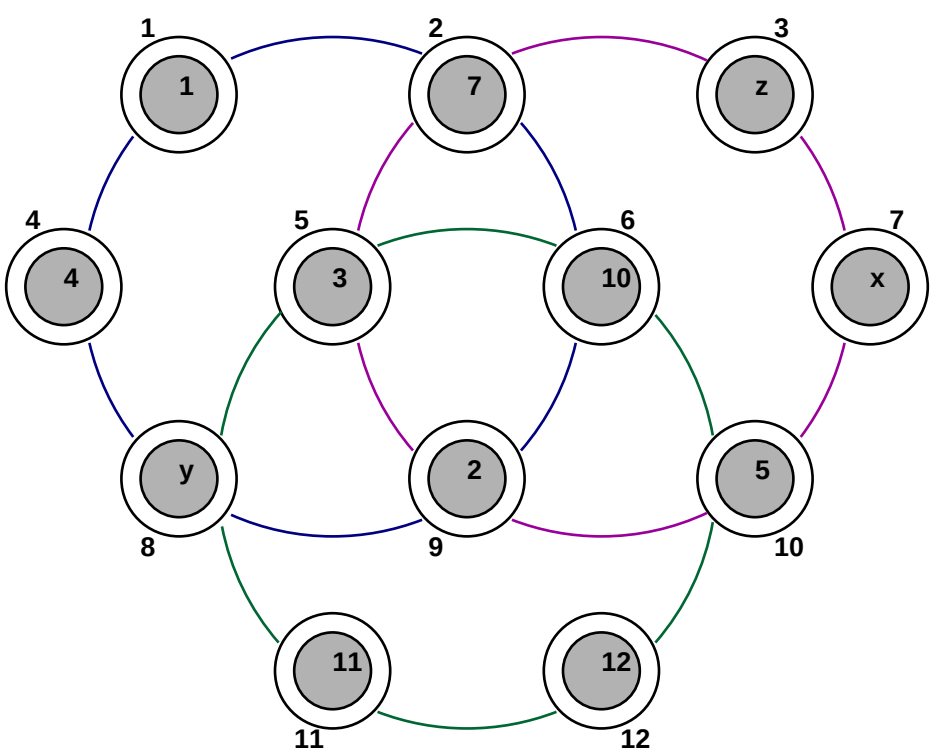

1
2
3
3
1
2
7
4
5
6
7
4
10
z
5
y
x
8
9
10
11
12
11
12

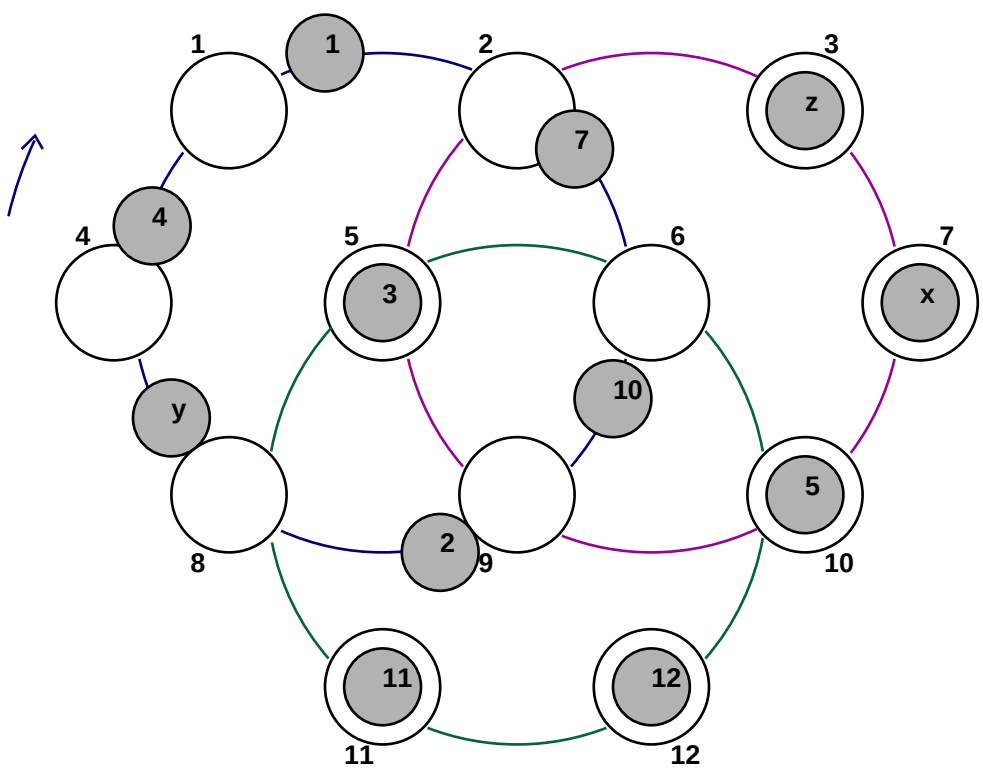

1
2
3
1
3
7
4
5
6
7
4
2
10
z
y
5
x
8
9
10
11
12
11
12

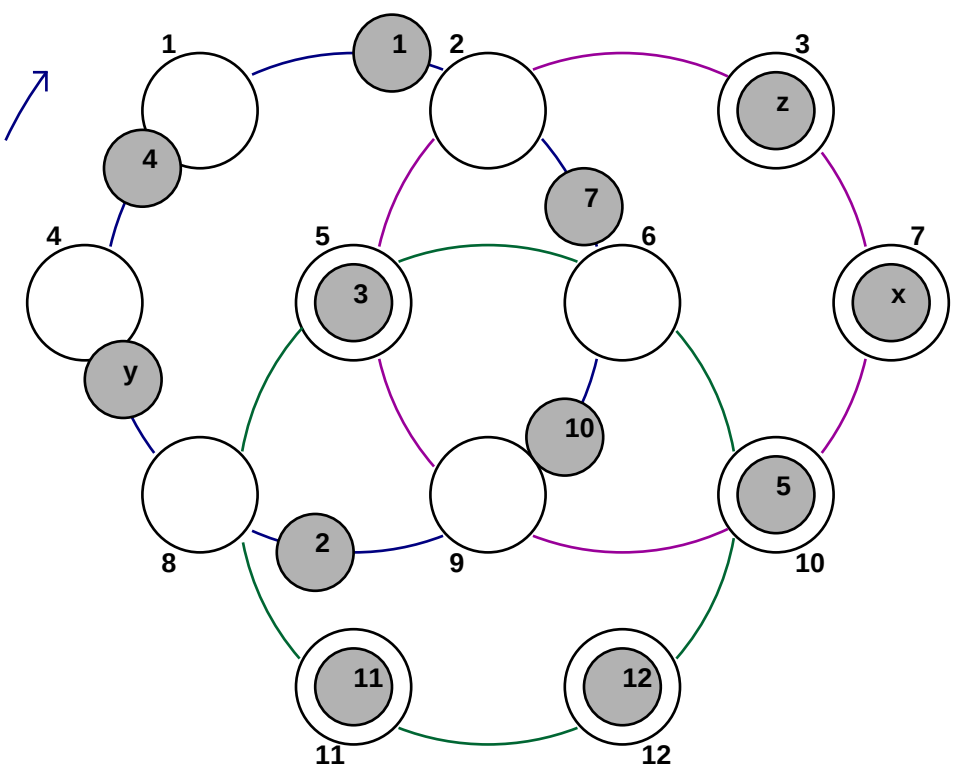

1
2
7
3
1
3
z
4
5
6
7
4
10
2
x
y
5
8
9
10
11
12
11
12

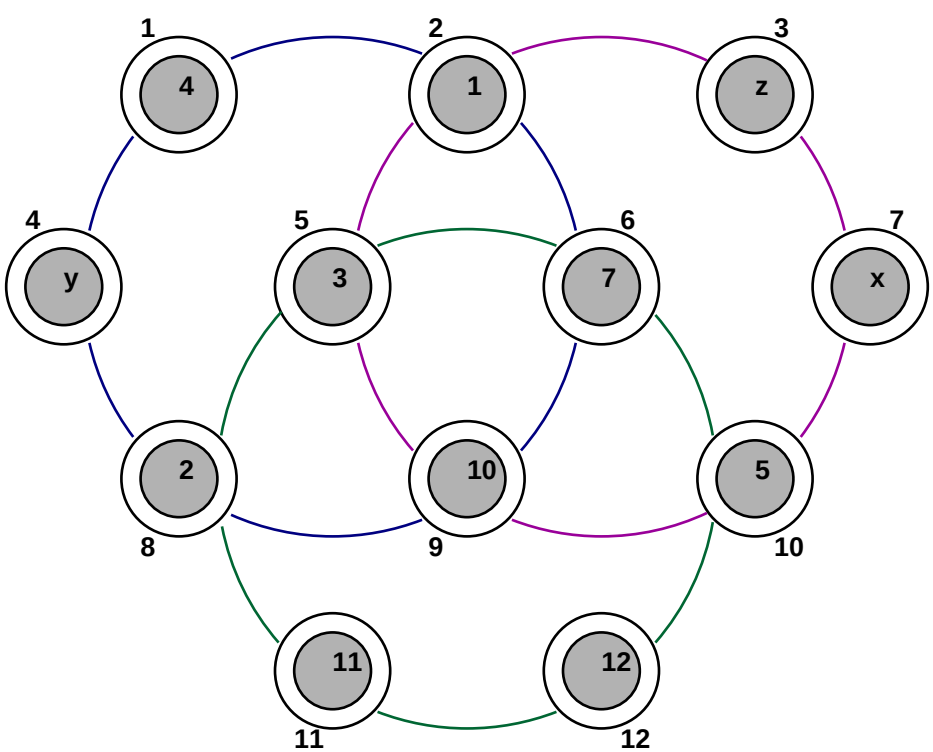

1
2
7
3
1
z
3
4
5
6
7
4
10
x
2
y
5
8
9
10
11
12
11
12

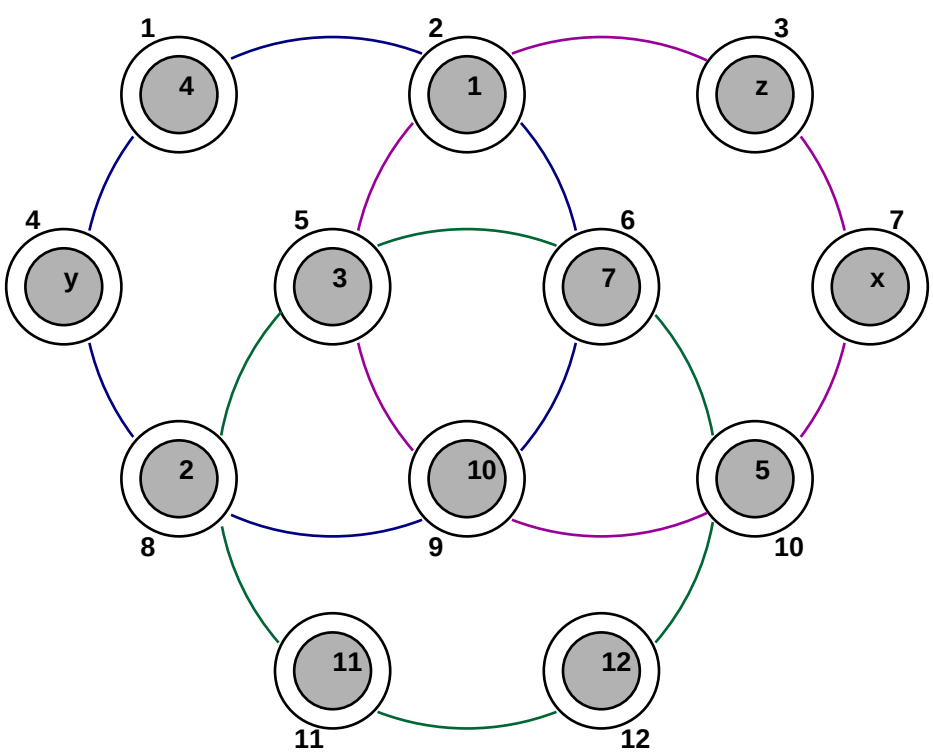

1
2
3
1
7
z
4
5
6
7
4
3
10
x
y
2
5
8
9
10
11
12
11
12

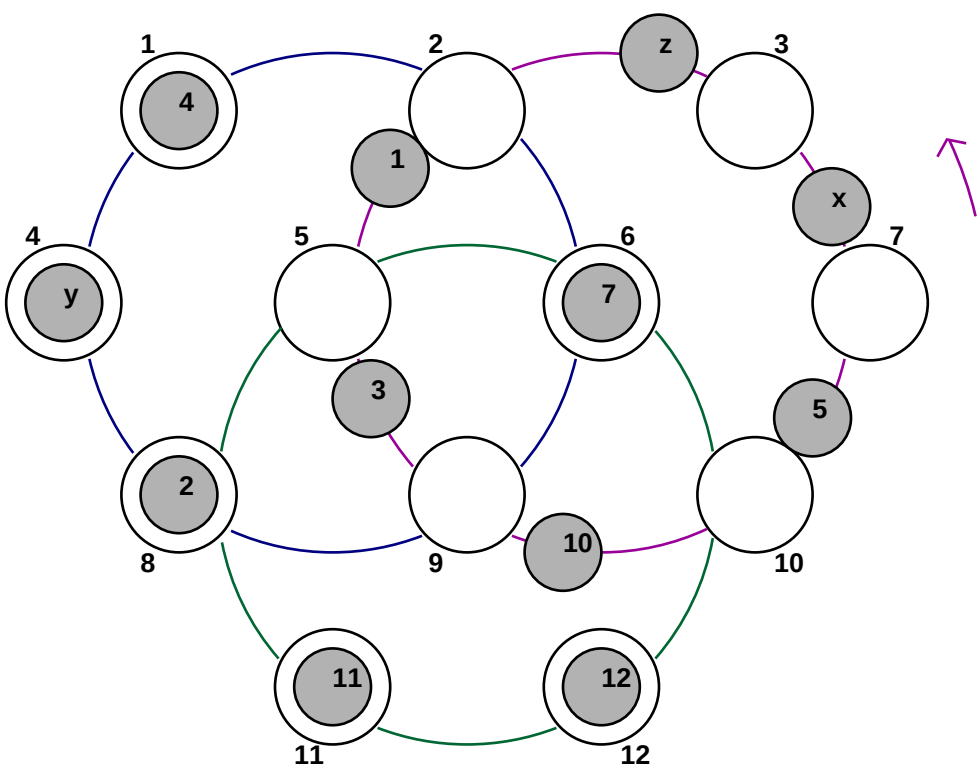

1
2
3
1
7
z
4
5
6
7
4
3
10
x
y
2
5
8
9
10
11
12
11
12

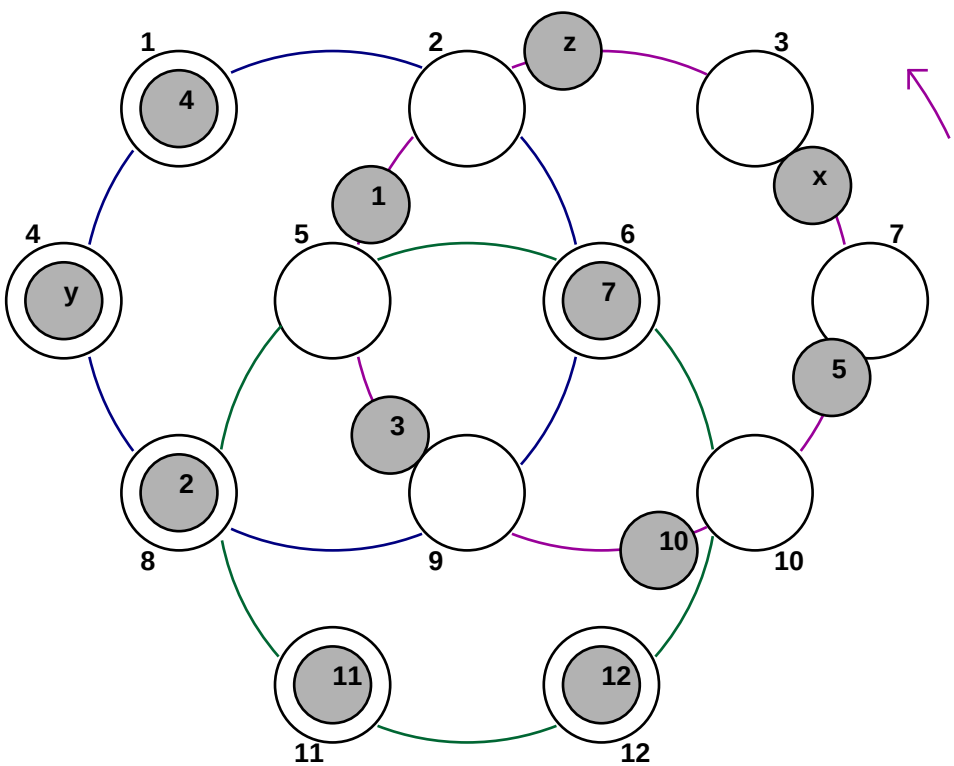

1
1
2
3
z
7
4
4
5
6
7
3
x
10
y
5
2
8
9
10
11
12
11
12

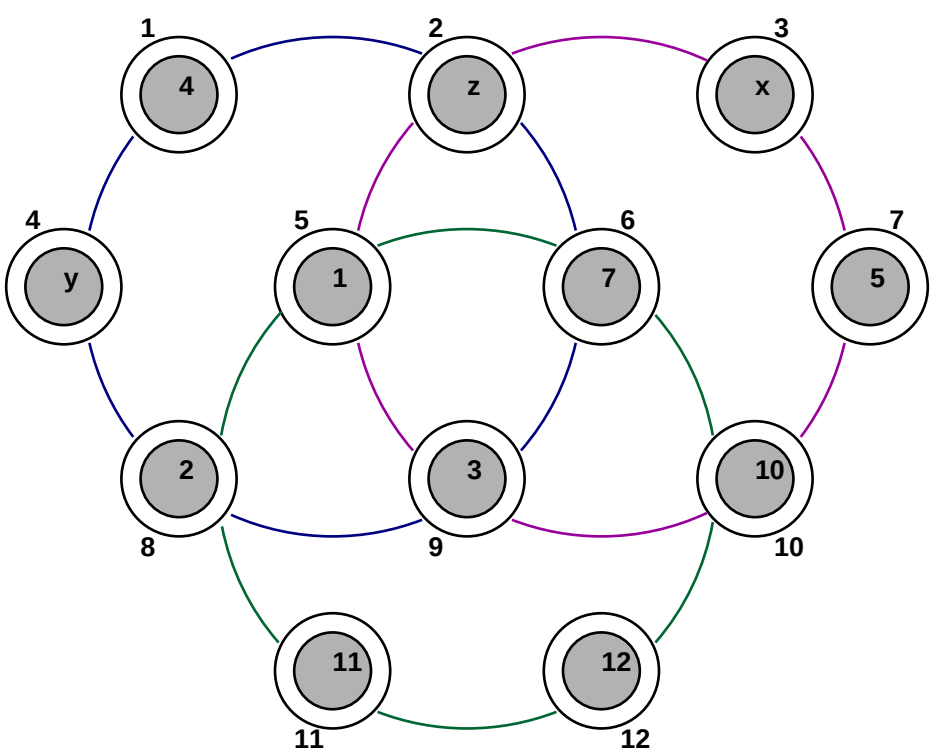

1
1
2
3
z
4
7
4
5
6
7
3
x
y
10
5
2
8
9
10
11
12
11
12

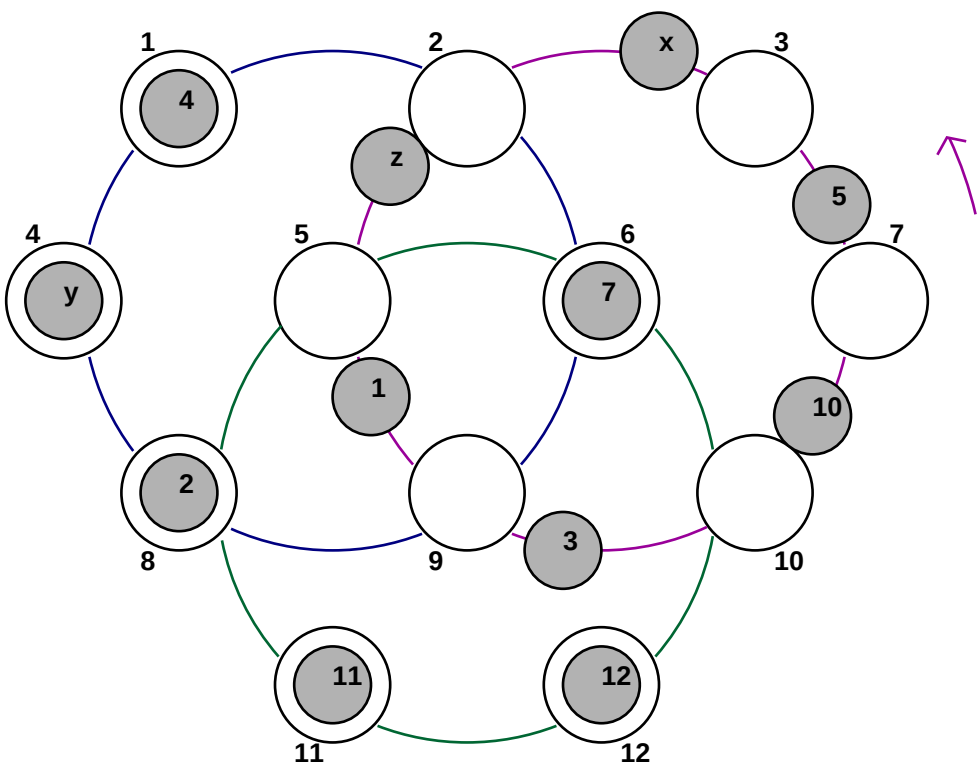

1
4
2
1
3
z
4
y
5
3
6
7
7
x
2
8
10
9
5
10
11
11
12
12

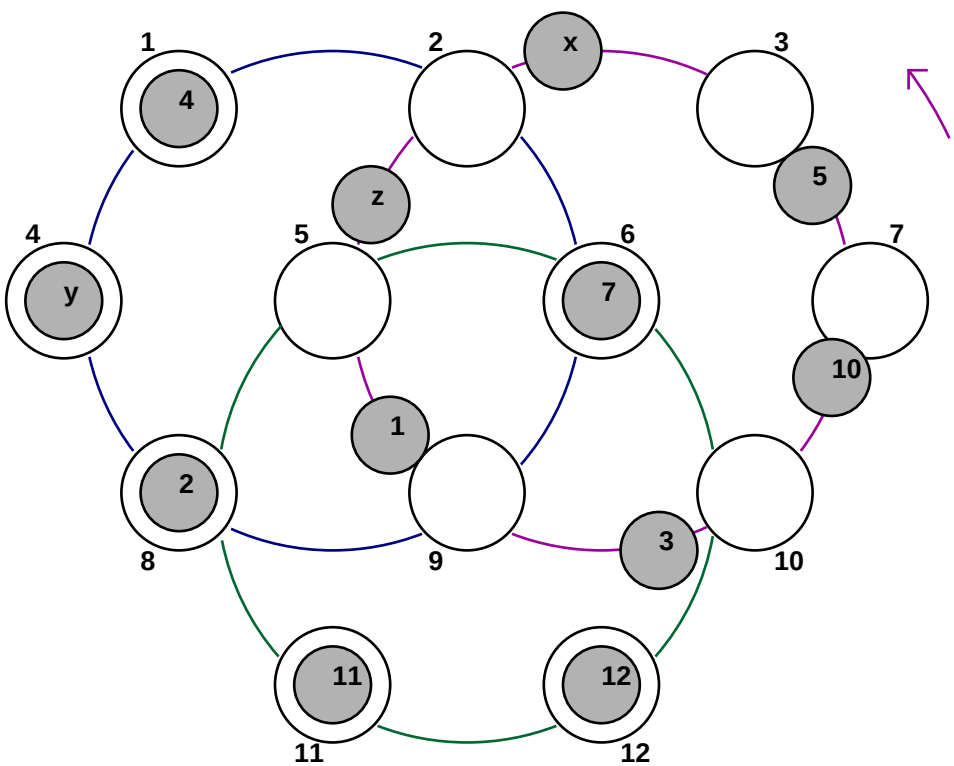

1
4
2
1
3
z
4
y
5
3
6
7
7
x
2
8
10
9
5
10
11
11
12
12

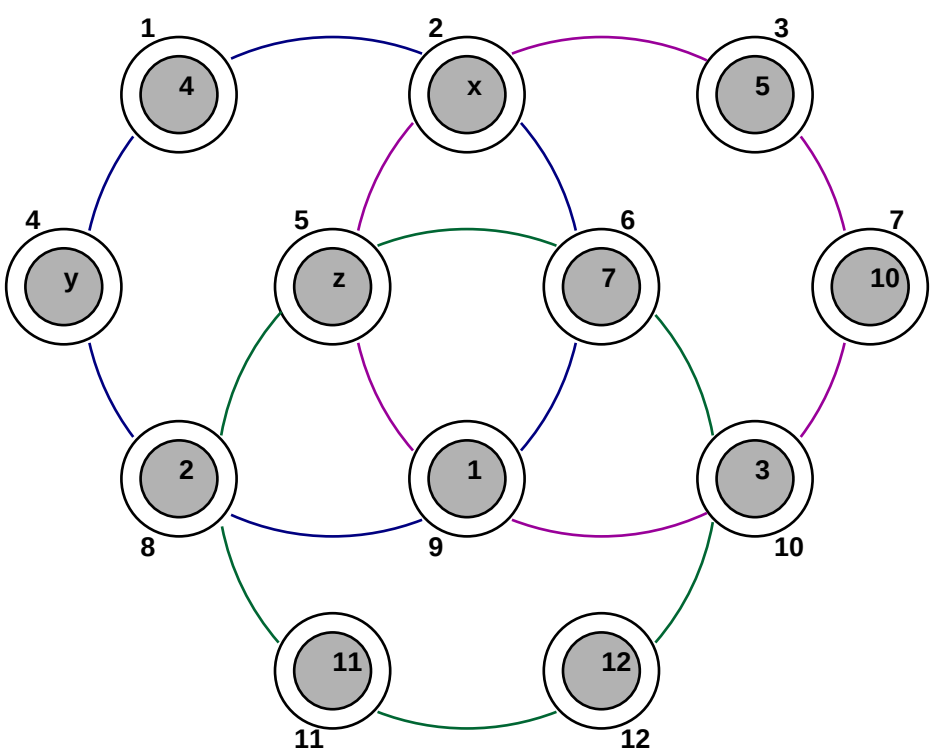

1
2
z
3
4
1
x
4
5
6
7
y
7
3
5
2
2
8
9
10
10
11
12
11
12

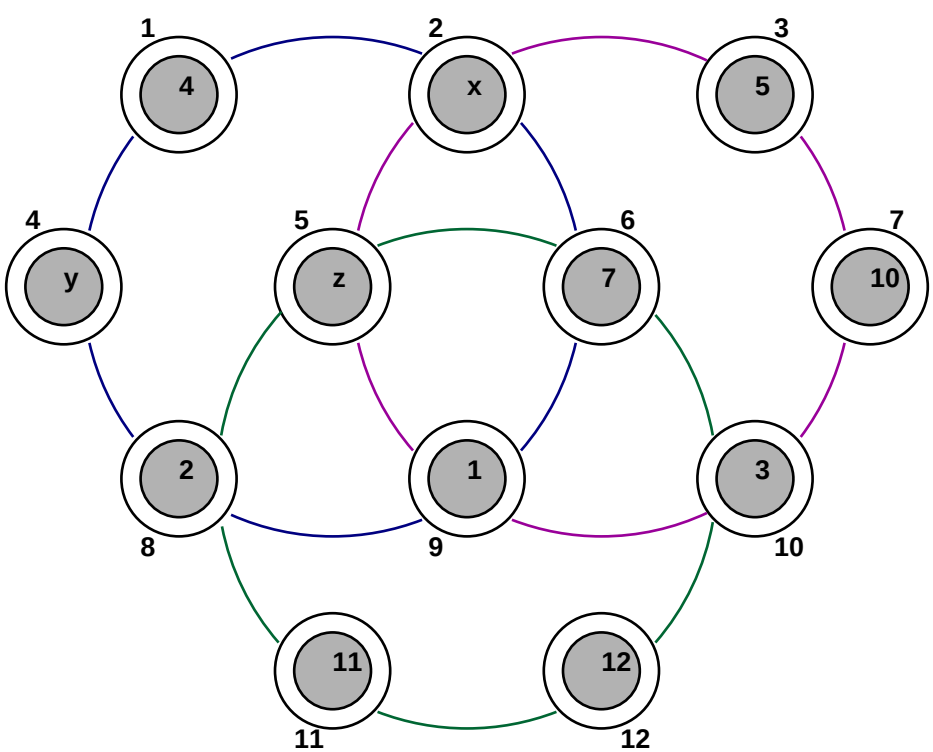

1
2
z
3
4
x
1
4
5
6
7
y
7
5
3
2
2
8
9
10
10
11
12
11
12

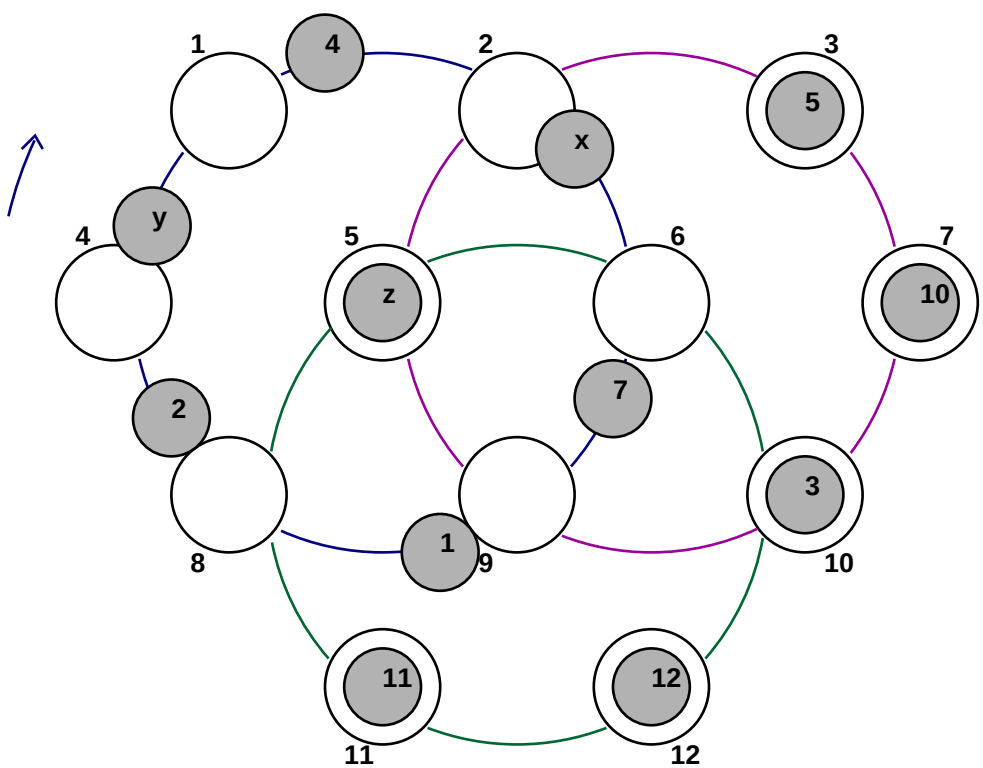

1
4
2
z
3
x
4
y
5
1
6
7
7
5
2
8
3
9
10
10
11
11
12
12

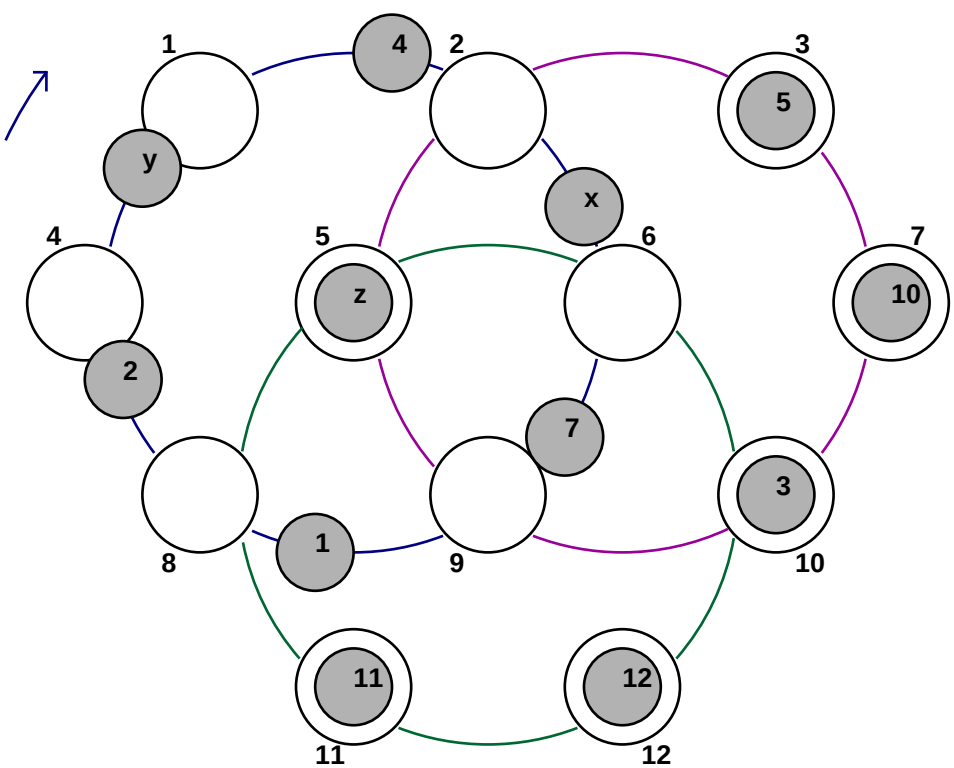

1
2
x
3
4
z
5
4
5
6
7
y
7
1
10
2
8
9
3
10
11
12
11
12

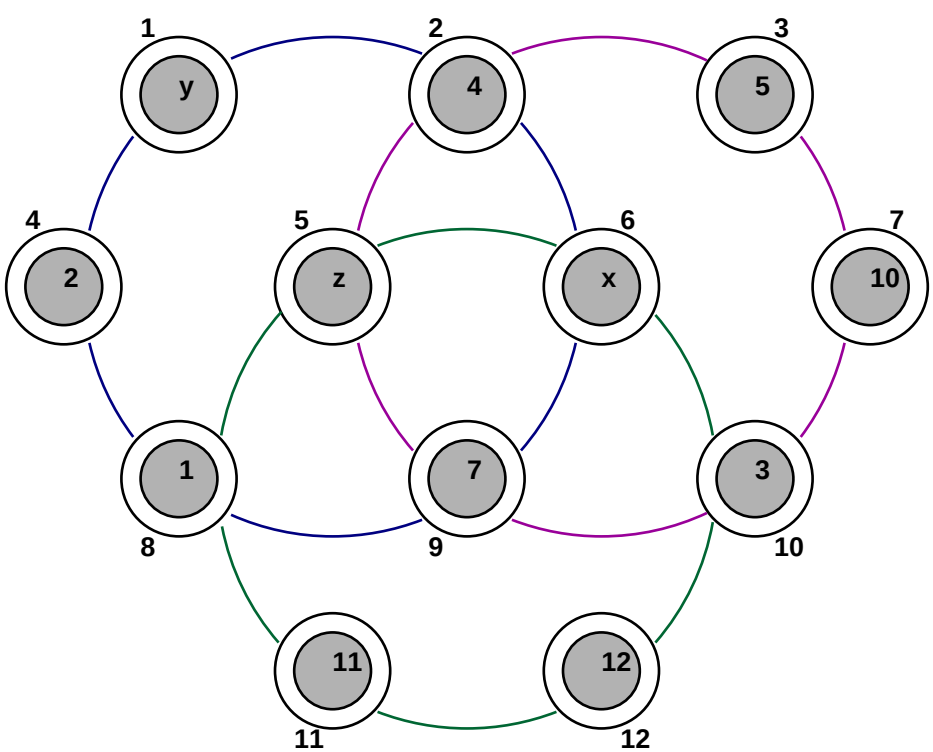

1
2
x
3
4
z
5
4
5
6
7
y
7
10
1
2
2
8
9
3
10
11
12
11
12

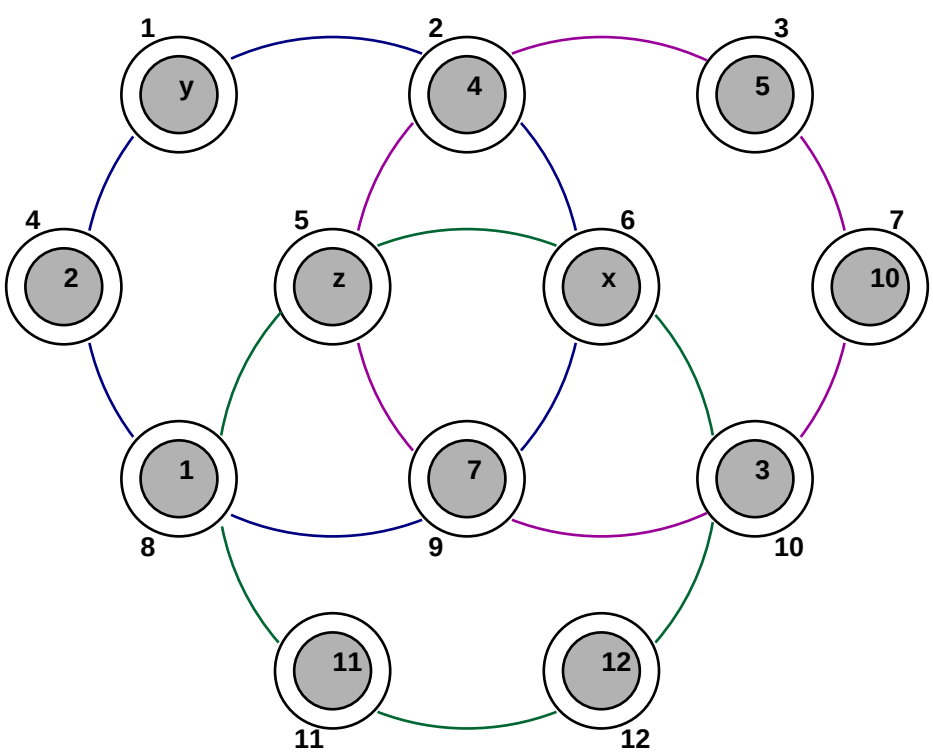

1
2
3
4
x
5
4
5
6
7
y
z
7
10
2
1
3
8
9
10
11
12
11
12

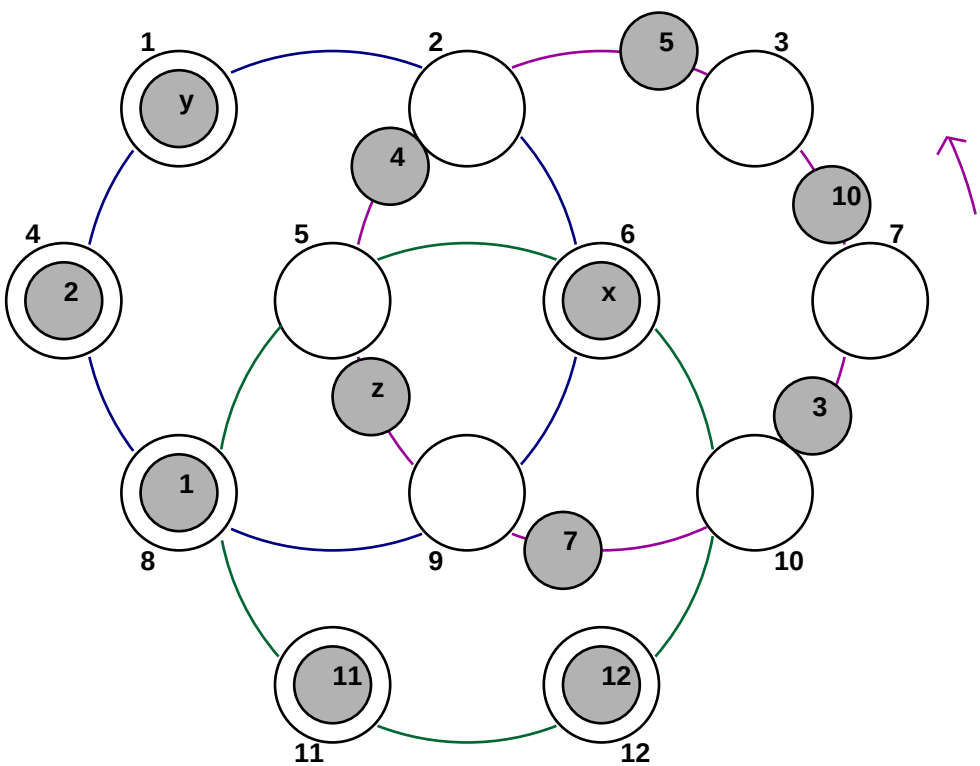

1
2
3
4
x
5
4
5
6
7
y
z
7
10
2
1
3
8
9
10
11
12
11
12

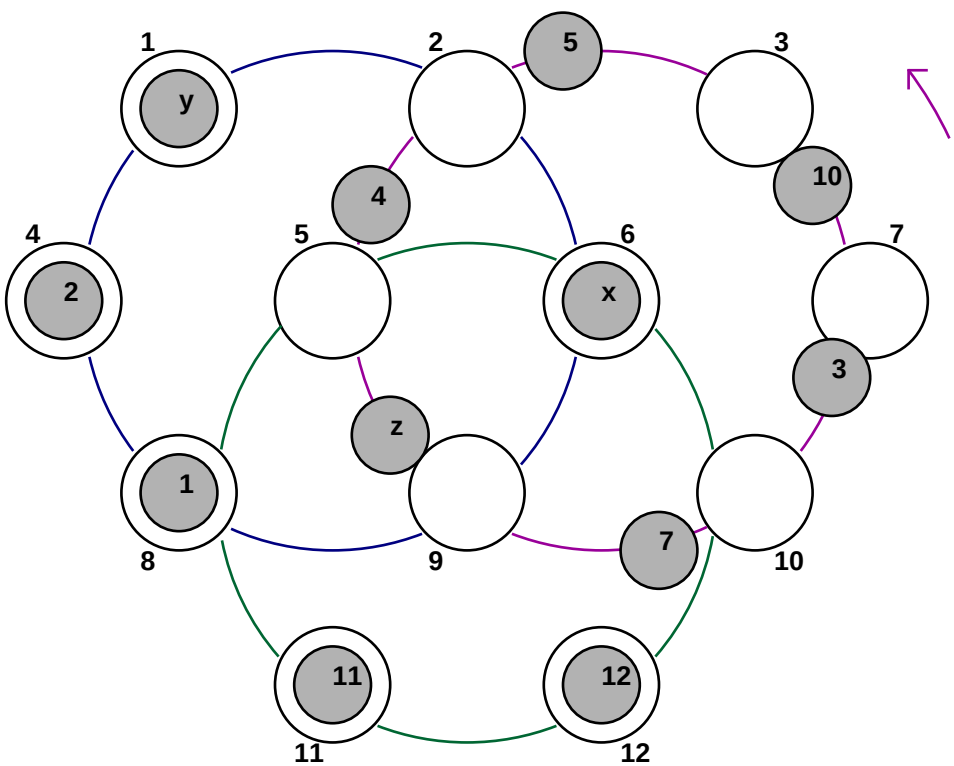

1
4
2
3
5
x
y
4
5
6
7
z
10
7
2
3
1
8
9
10
11
12
11
12

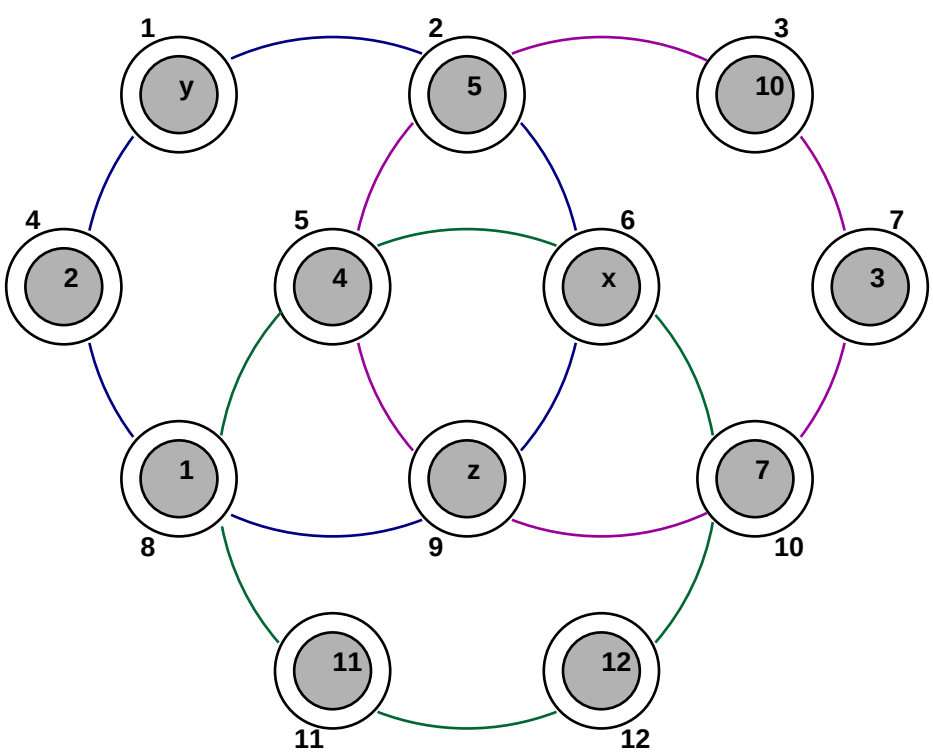

1
4
2
3
5
y
x
4
5
6
7
z
10
2
7
3
1
8
9
10
11
12
11
12

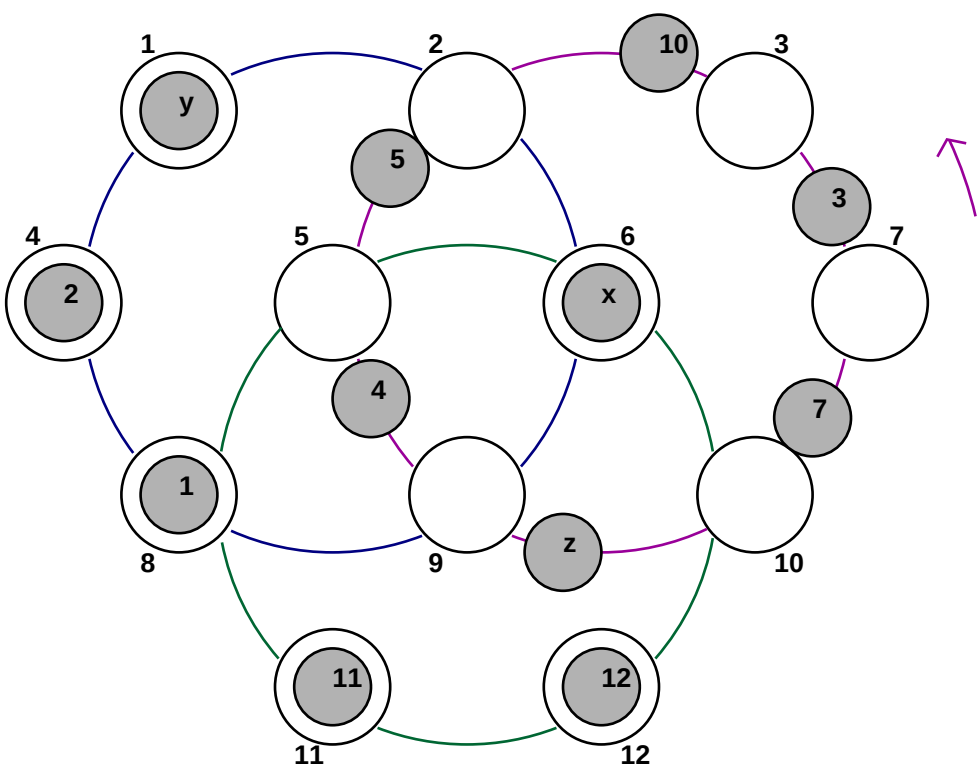

1
y
2
4
3
5
4
2
5
z
6
x
7
10
1
8
7
9
3
10
11
11
12
12

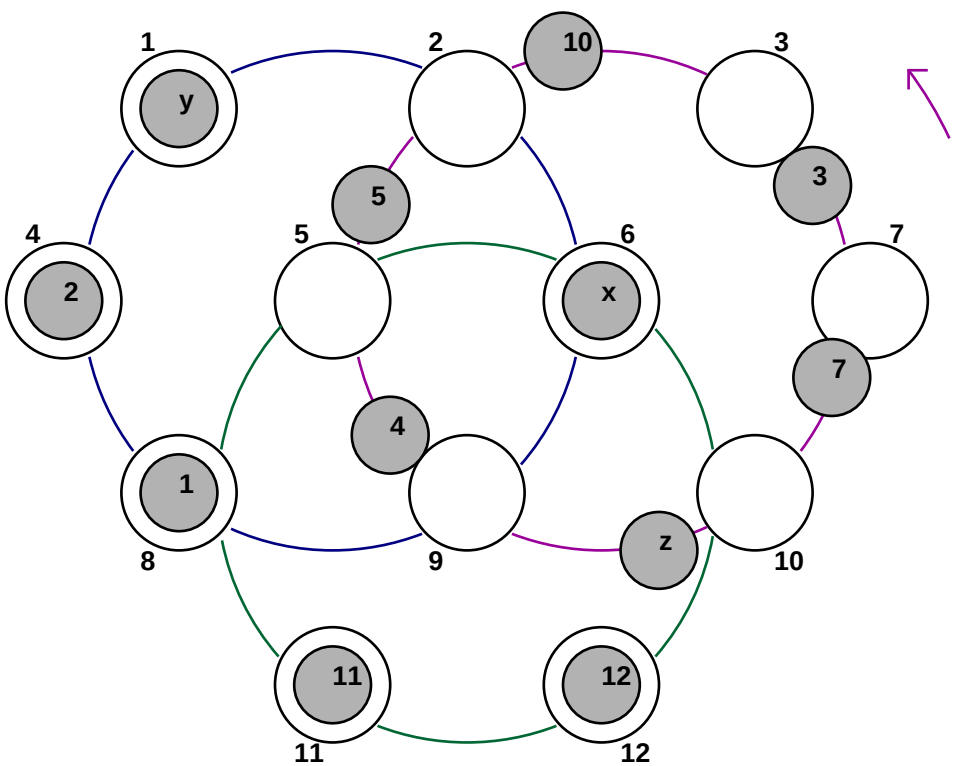

1
y
2
4
3
5
4
2
5
z
6
x
7
10
1
8
7
9
3
10
11
11
12
12

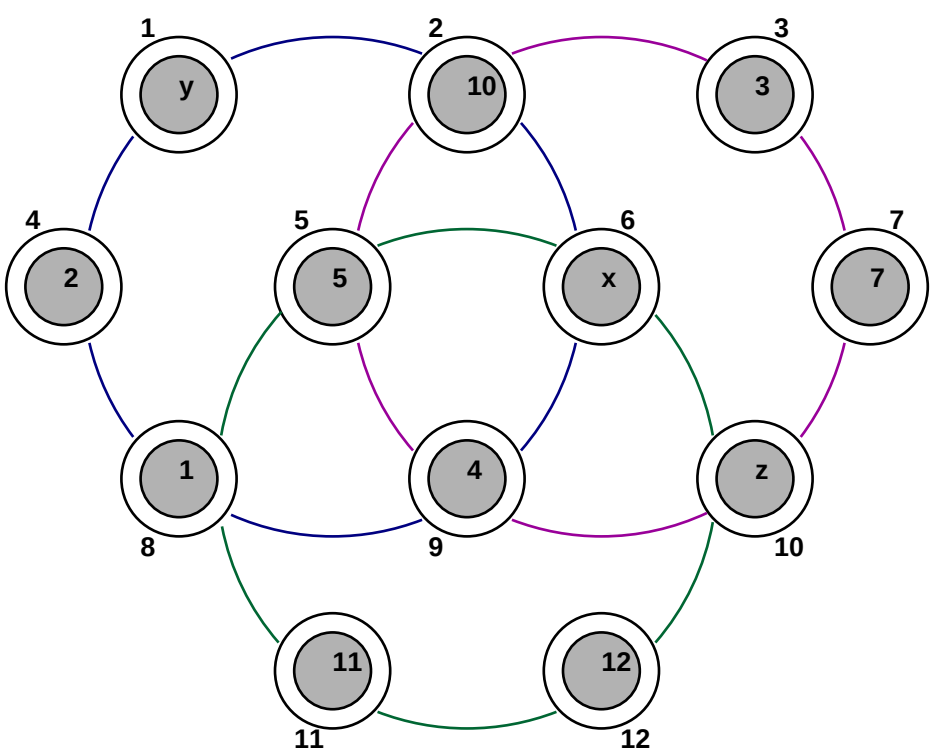

1
y
2
5
3
4
10
4
2
5
6
x
7
z
3
1
8
9
7
10
11
11
12
12

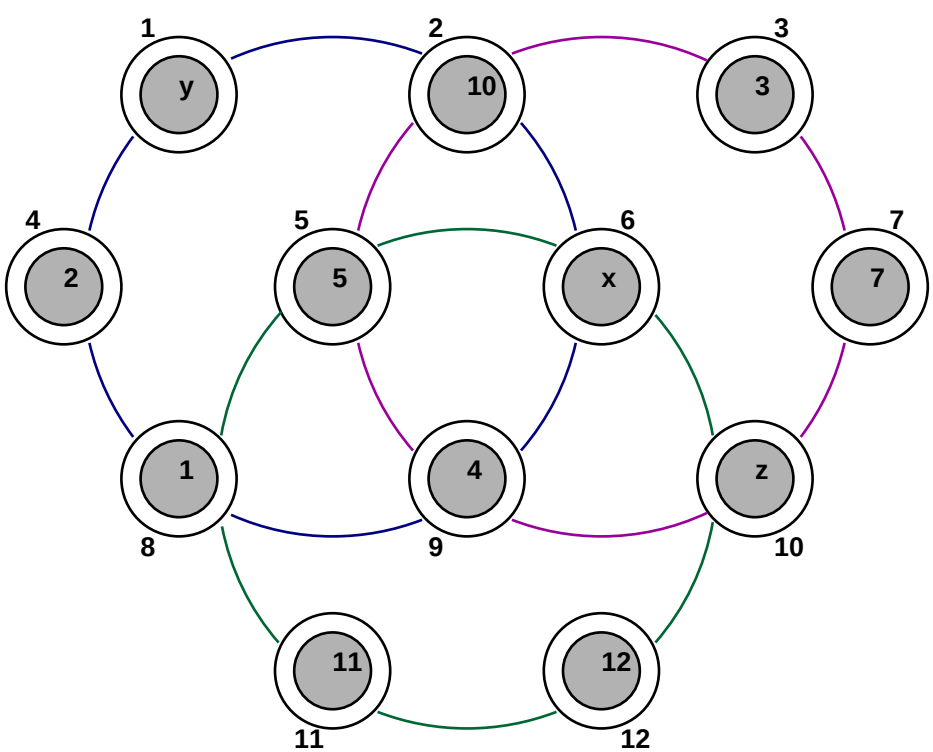

1
y
2
5
3
10
4
4
2
5
6
x
7
3
z
1
8
9
7
10
11
11
12
12

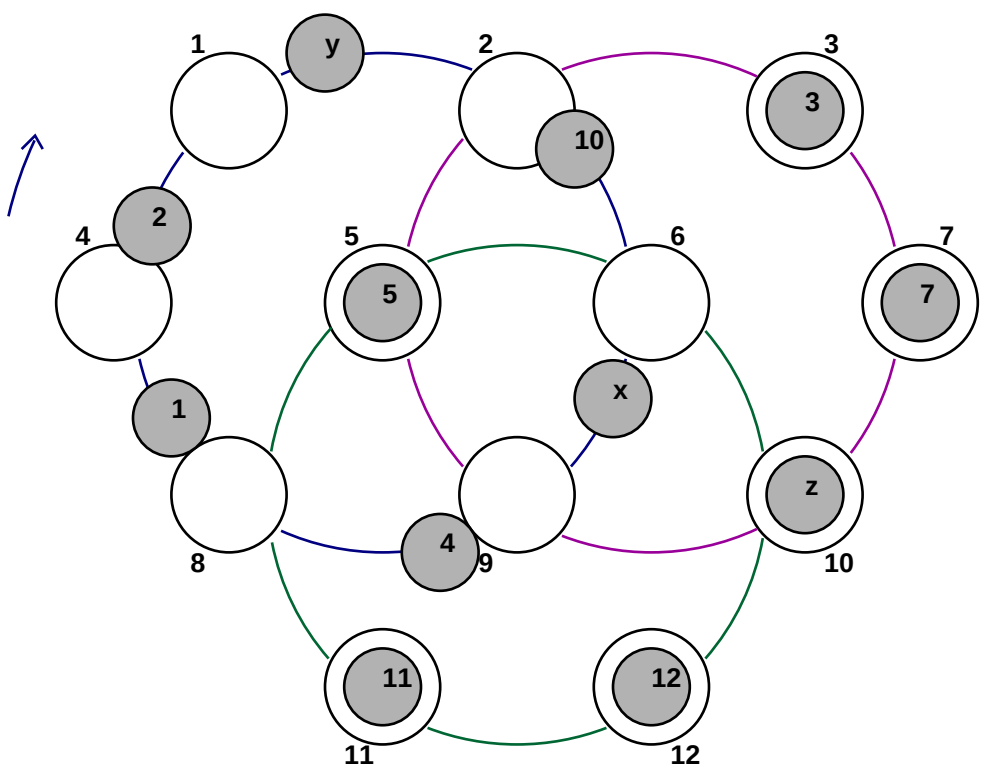

1
y
2
5
3
10
4
2
5
4
6
x
7
3
1
1
z
7
8
9
10
11
11
12
12

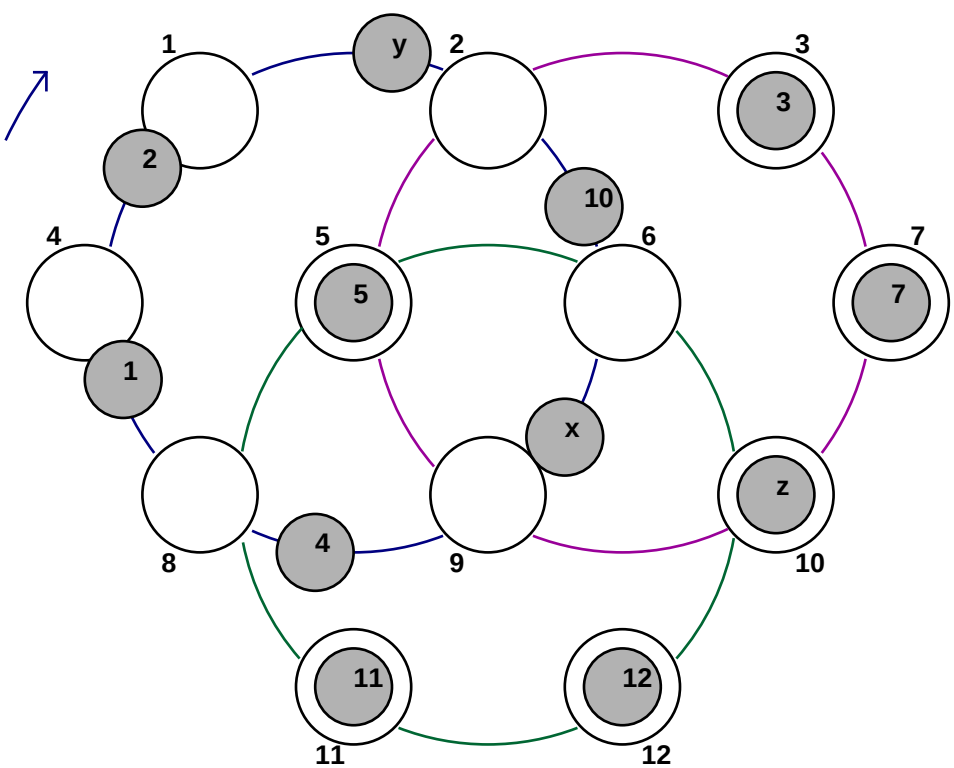

1
y
2
10
3
5
3
4
2
5
6
x
7
4
7
1
8
9
z
10
11
11
12
12

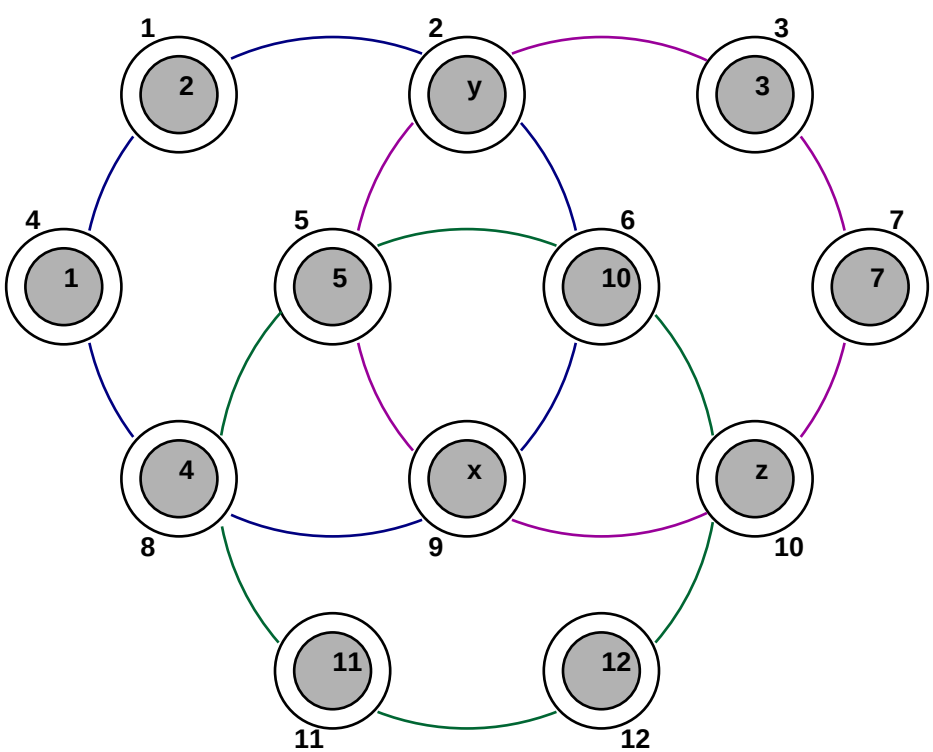

1
y
2
10
3
3
5
5
4
2
6
x
7
7
4
1
8
9
z
10
11
11
12
12

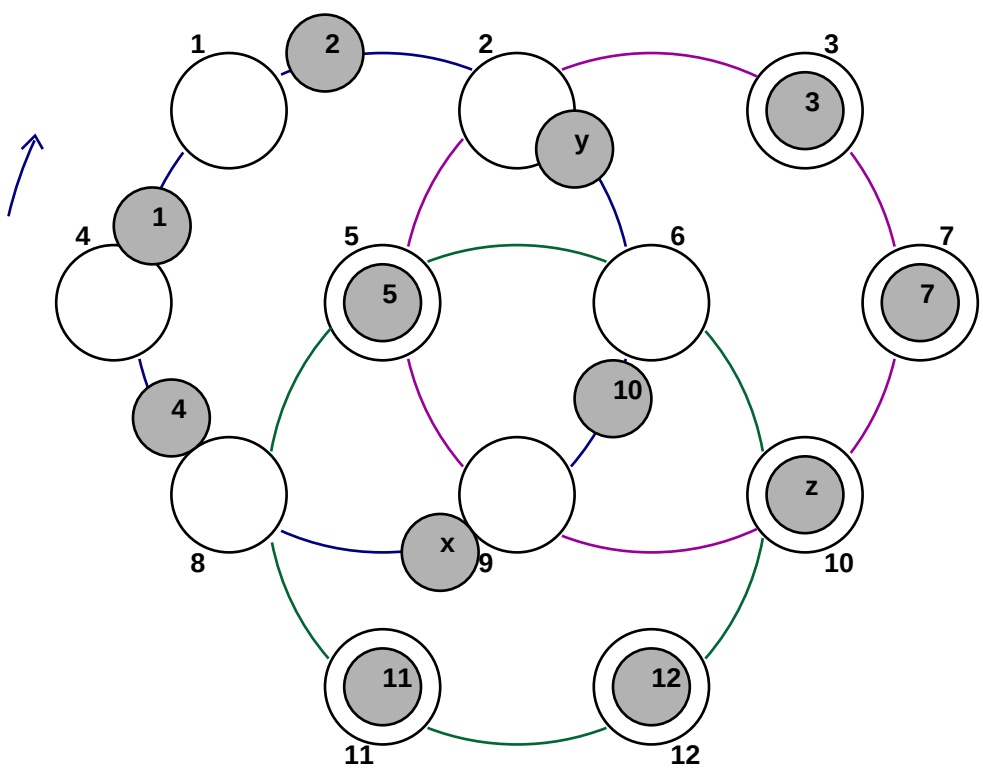

1
y
2
10
3
3
4
2
5
5
6
x
7
7
1
1
4
4
z
z
8
9
10
11
11
12
12

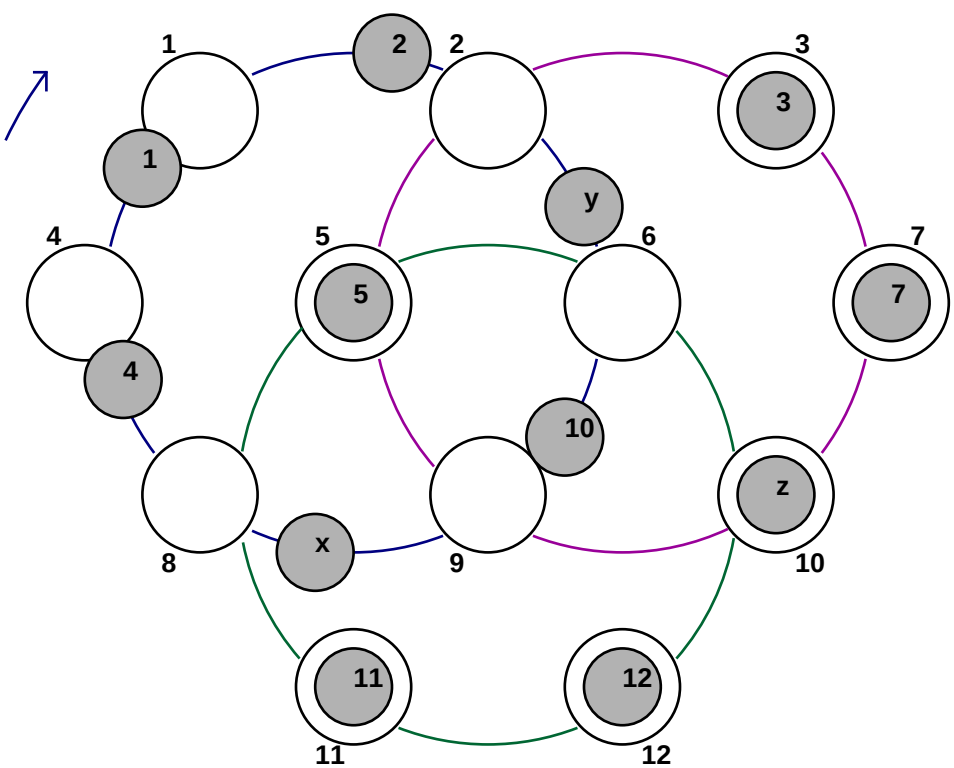

1
y
2
10
3
3
4
2
5
5
6
x
7
7
1
1
4
4
z
z
8
9
10
11
11
12
12

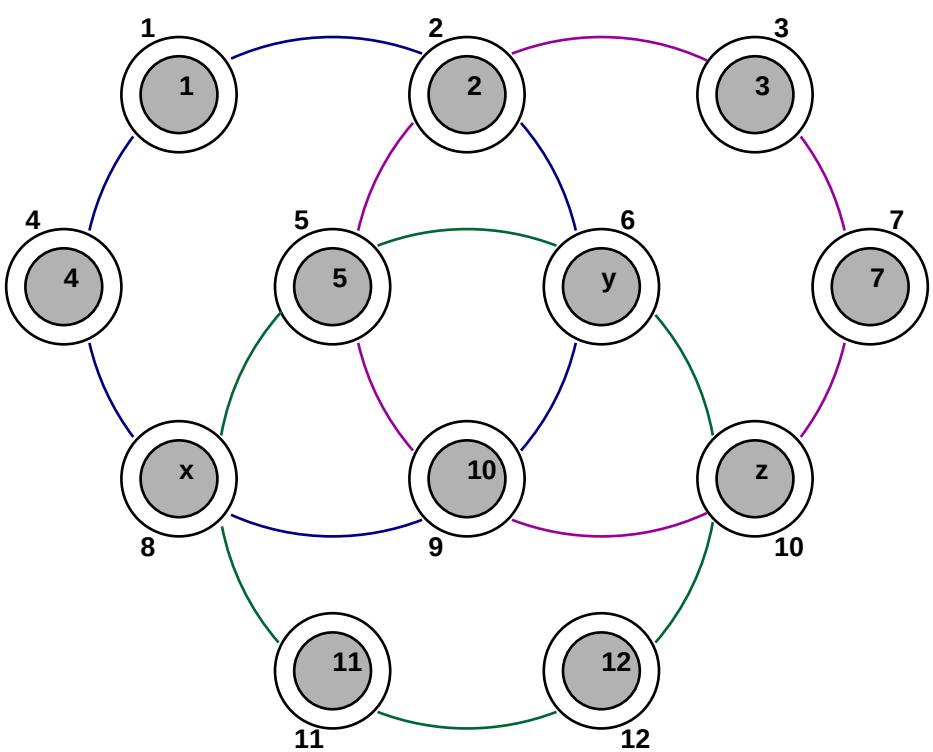

1
y
2
3
3
10
2
4
5
6
7
5
7
x
1
z
4
8
9
10
11
12
11
12


1
y
2
3
3
2
10
4
5
6
7
5
7
1
x
z
4
8
9
10
11
12
11
12

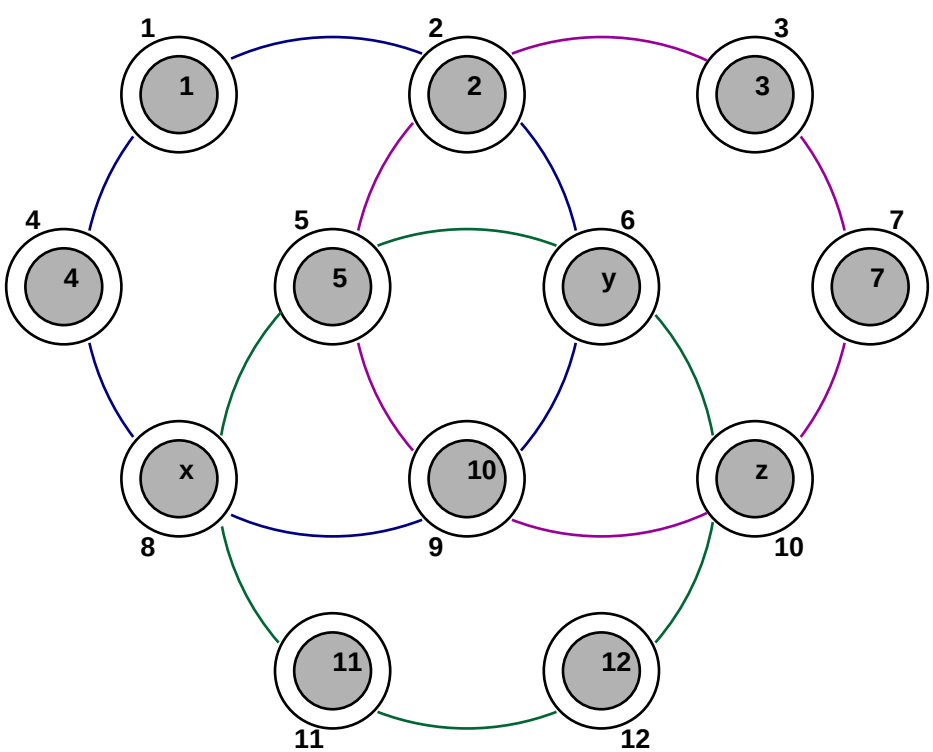

1
2
2
y
3
3
4
1
5
5
6
10
7
7
4
4
x
z
8
9
10
11
11
12
12

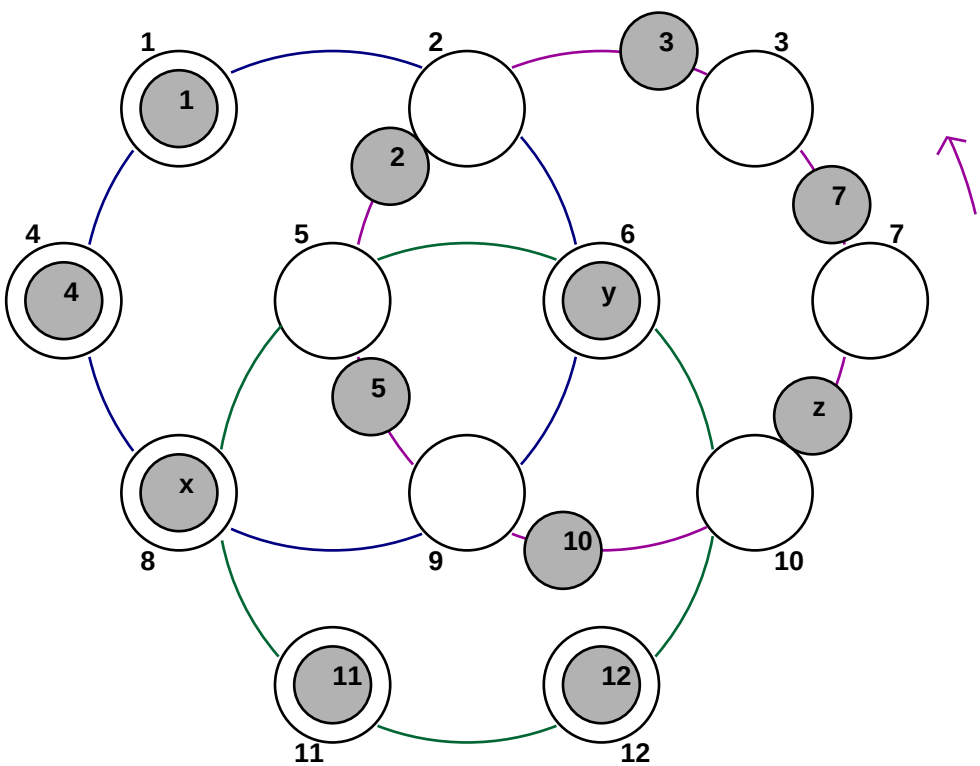

1
2
2
3
3
y
1
4
5
5
6
7
7
10
4
z
x
8
9
10
11
12
11
12

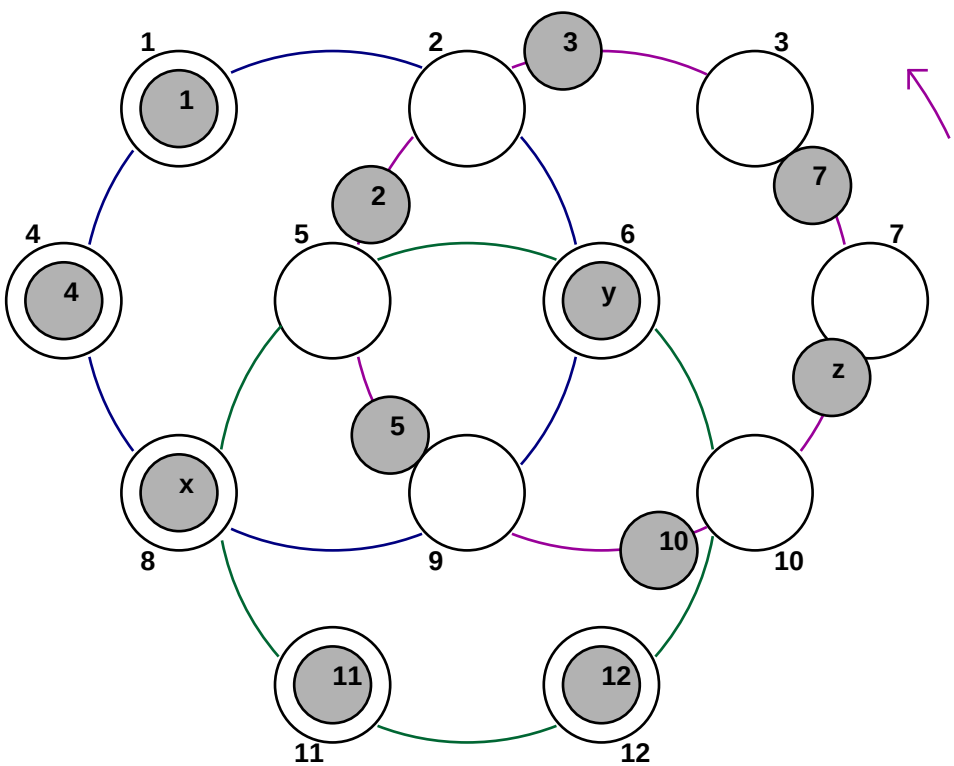

1
2
2
3
3
1
y
4
5
6
7
5
7
4
10
z
x
8
9
10
11
12
11
12

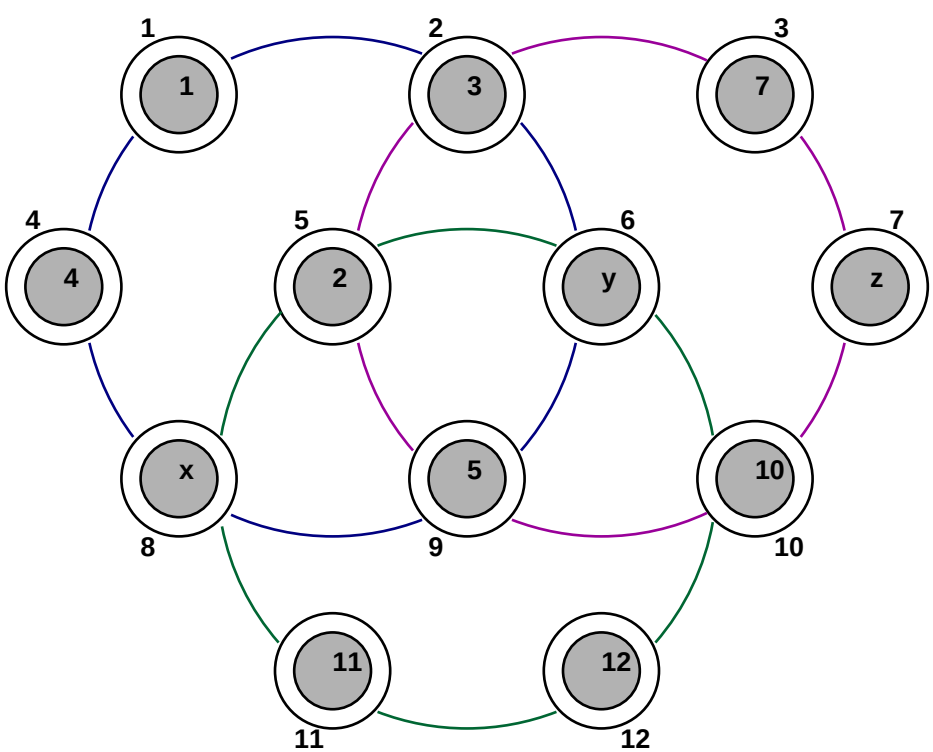

1
2
3
4
5
6
7
x
10
z
8
9
10
11
12
11
12

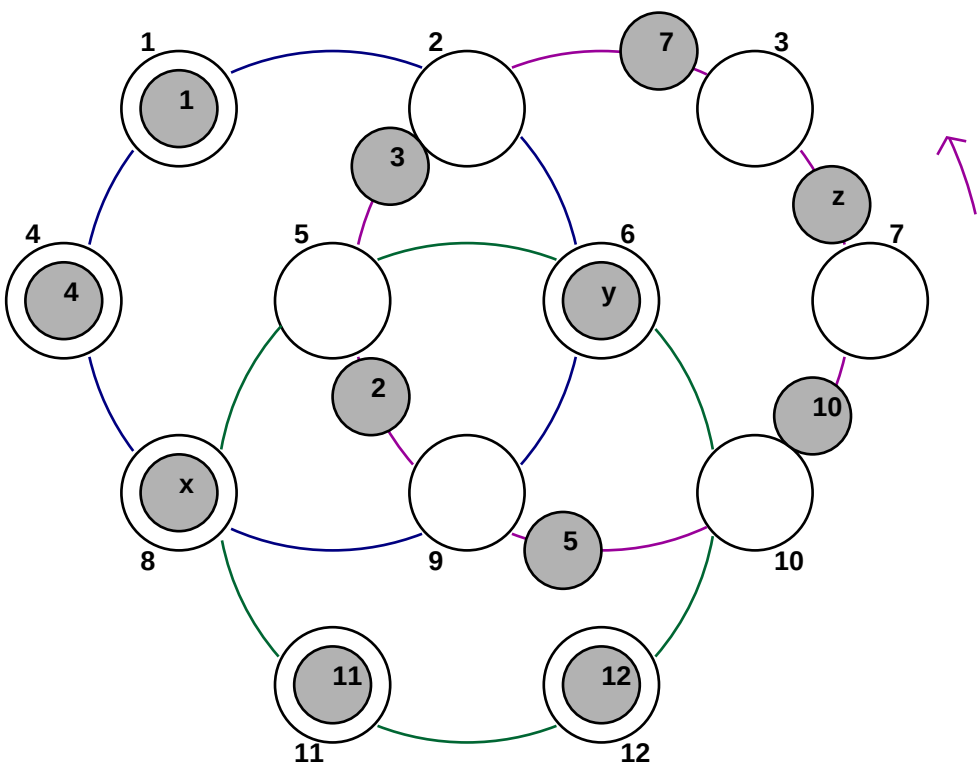
Number 10 can be moved into position 8 while keeping numbers 1, 2, 3, 4, 5, 7, 11, and 12 in position by the following moves.

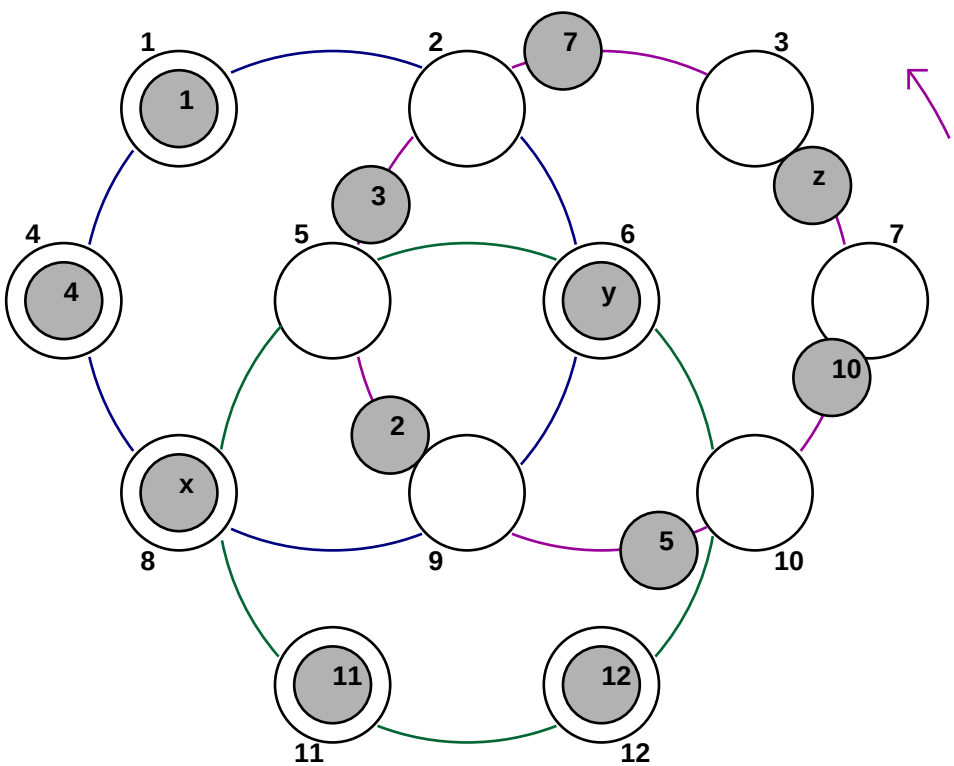

1
2
3
4
5
6
7
x
10
z
8
9
10
11
12
11
12

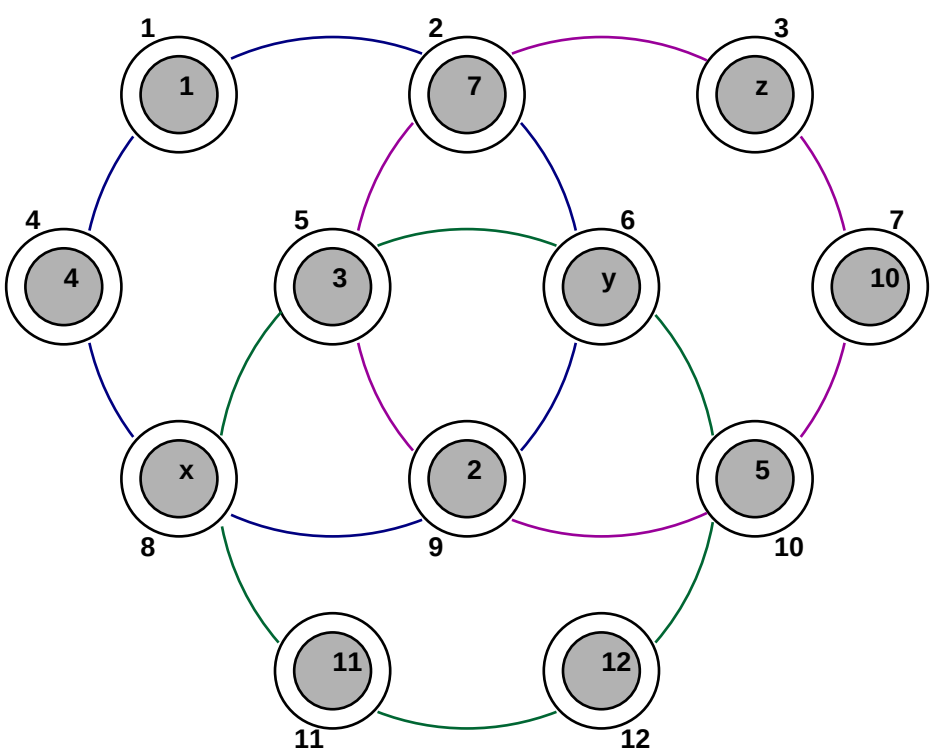

1
2
3
3
1
2
7
4
5
6
7
4
y
5
z
x
8
9
10
10
11
12
11
12

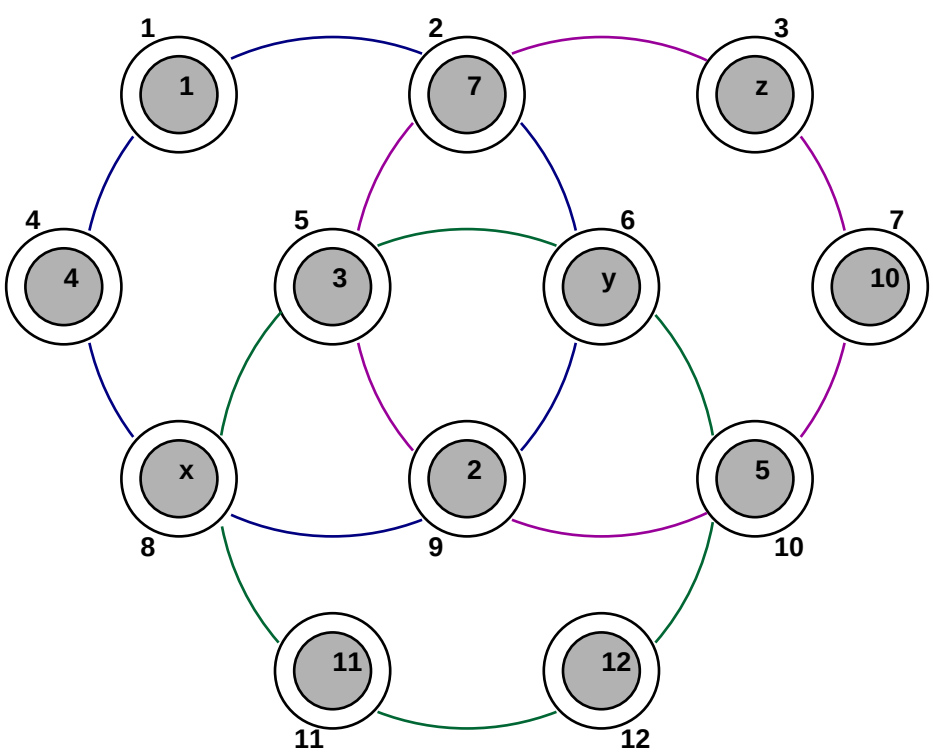

1
2
3
3
1
2
7
4
5
6
7
4
y
z
5
x
8
9
10
10
11
12
11
12

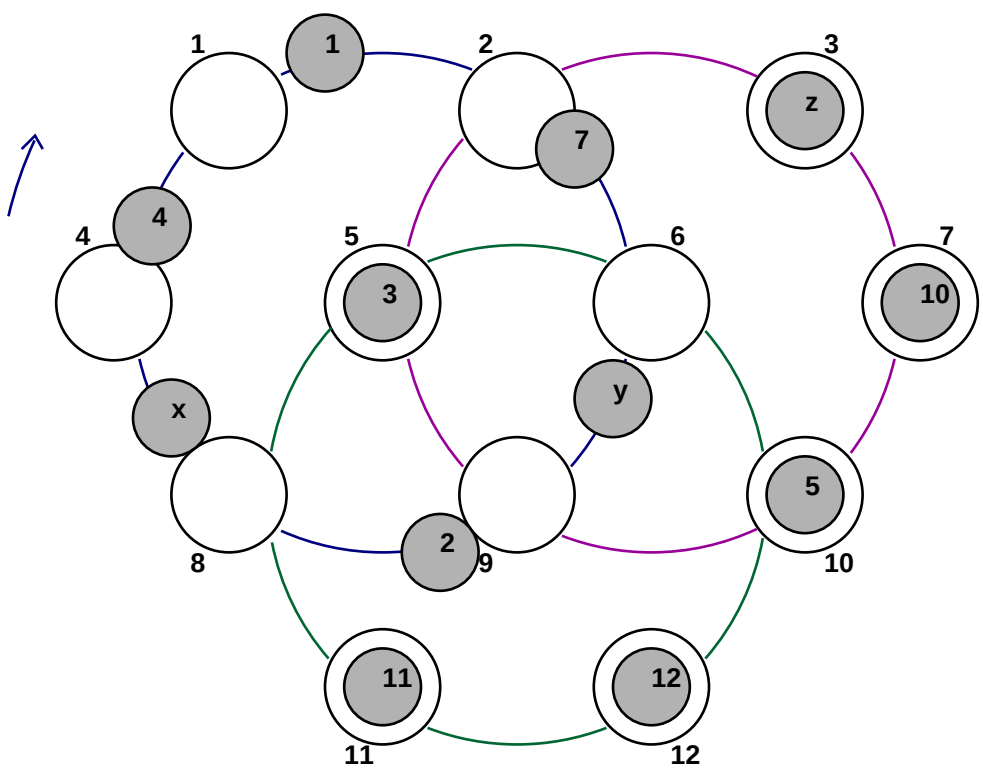

1
2
3
1
3
7
4
5
6
7
4
2
y
z
x
5
10
8
9
10
11
12
11
12

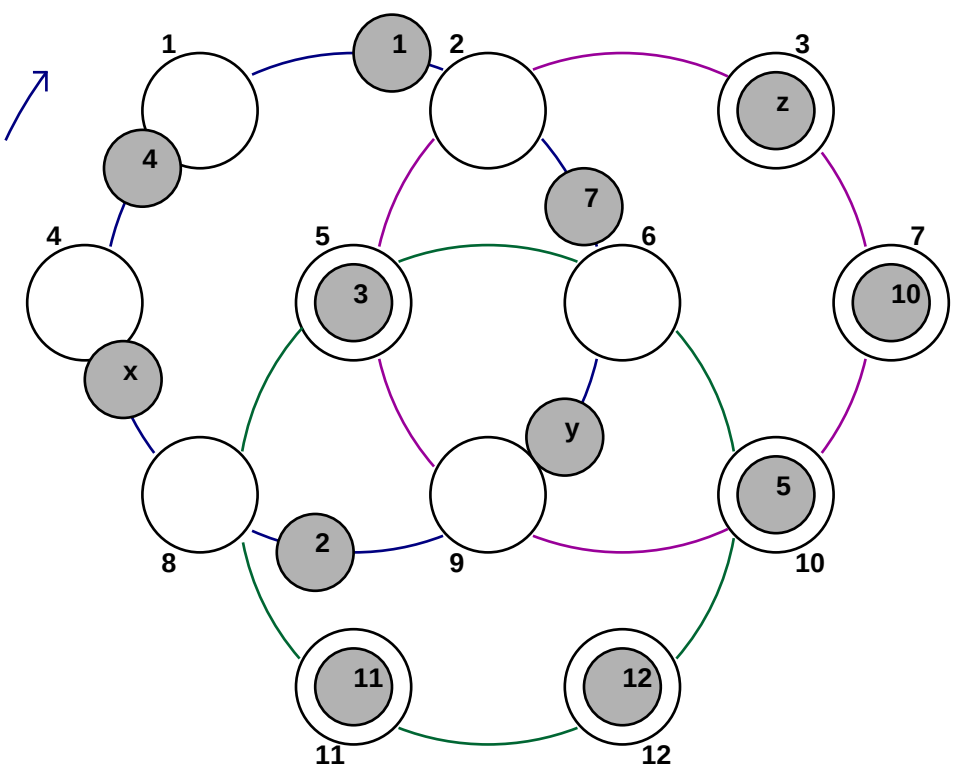

1
2
7
3
1
3
z
4
5
6
7
4
y
2
10
x
8
9
5
10
11
12
11
12

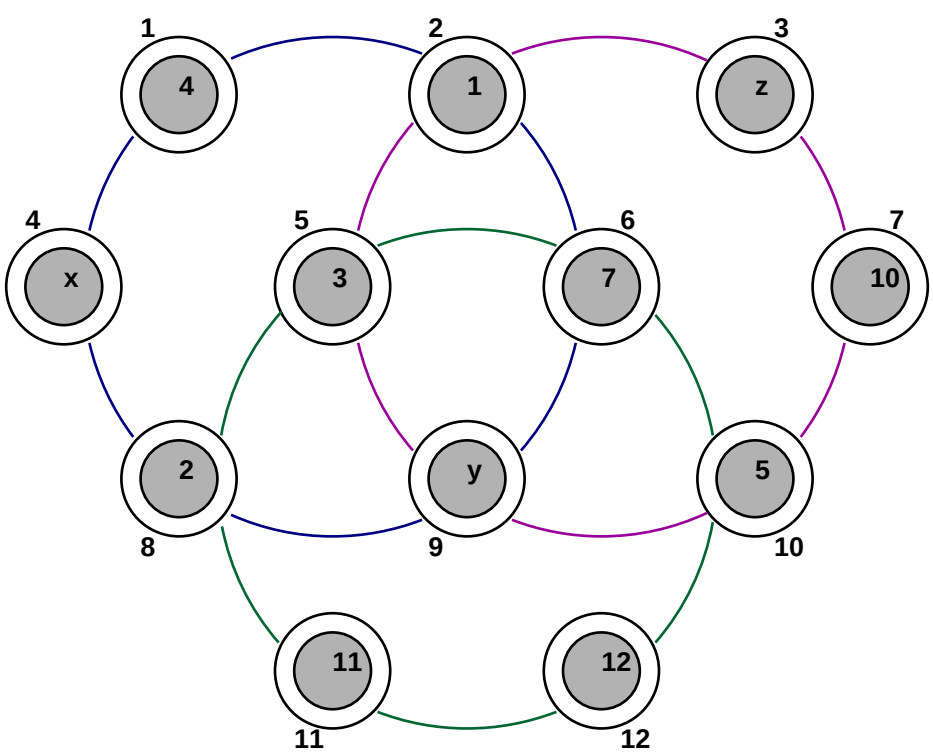

1
2
3
4
5
6
7
8
9
10
11
12
x
y
z

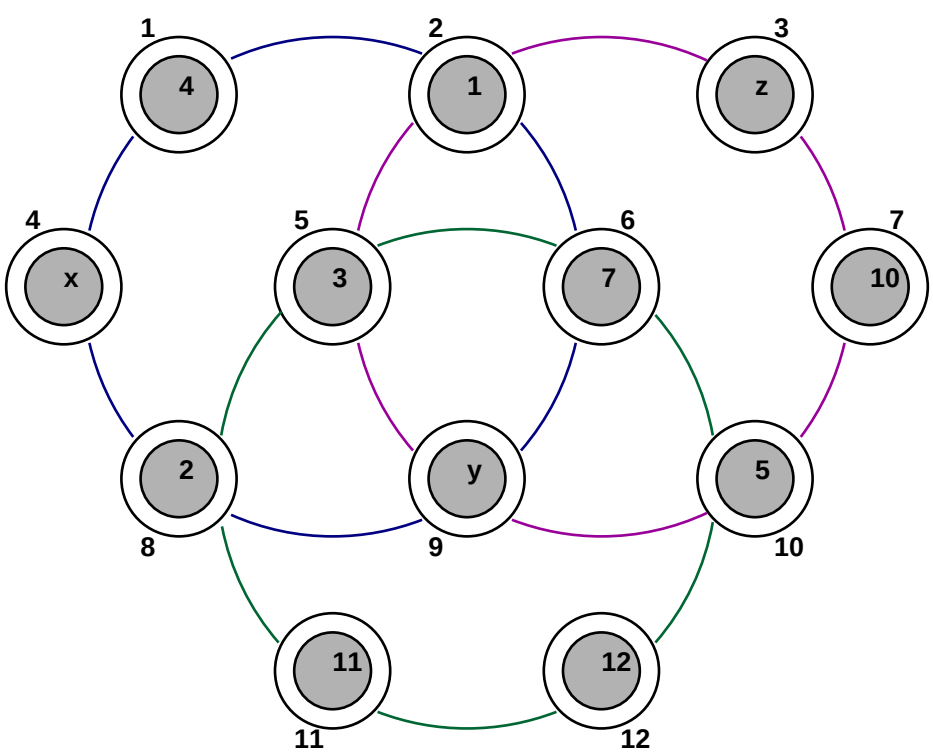

1
2
3
1
7
z
4
5
6
7
4
3
y
10
x
2
5
8
9
10
11
12
11
12

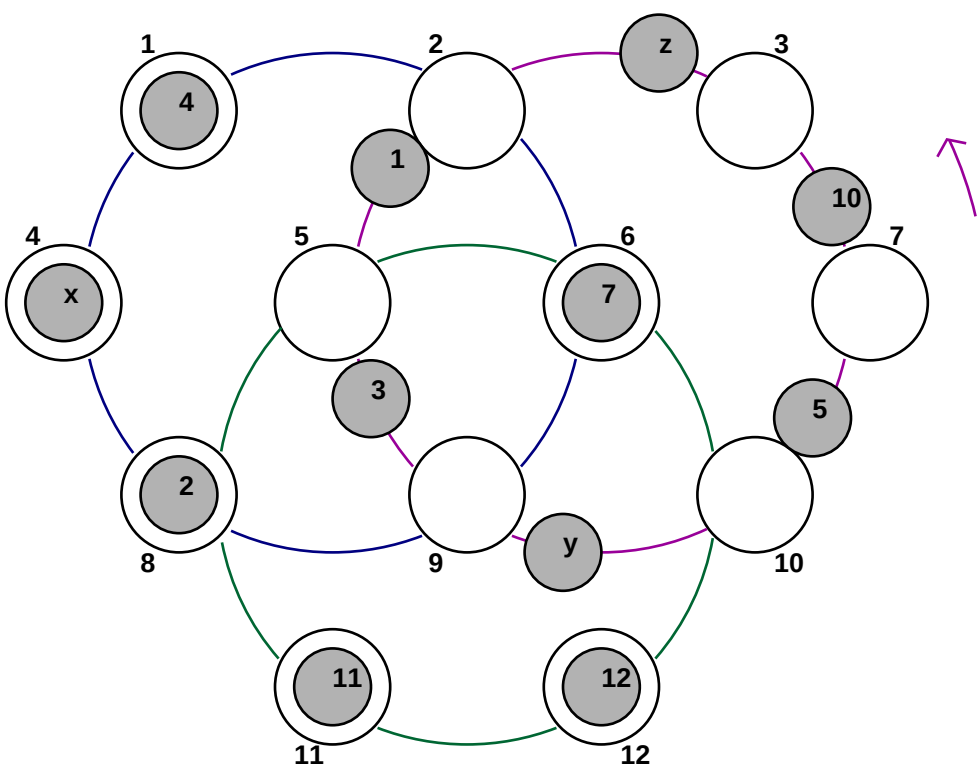

1
2
3
1
7
z
4
5
6
7
4
3
y
10
x
2
5
8
9
10
11
12
11
12

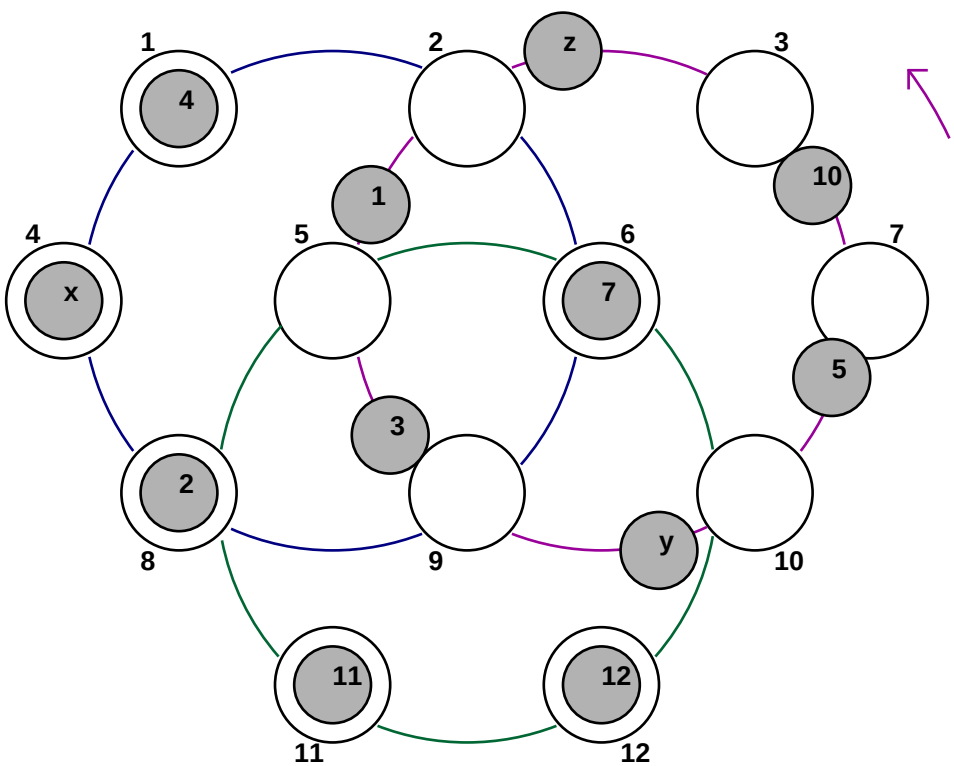

1
1
2
3
z
7
4
4
5
6
7
3
10
y
x
5
2
8
9
10
11
12
11
12

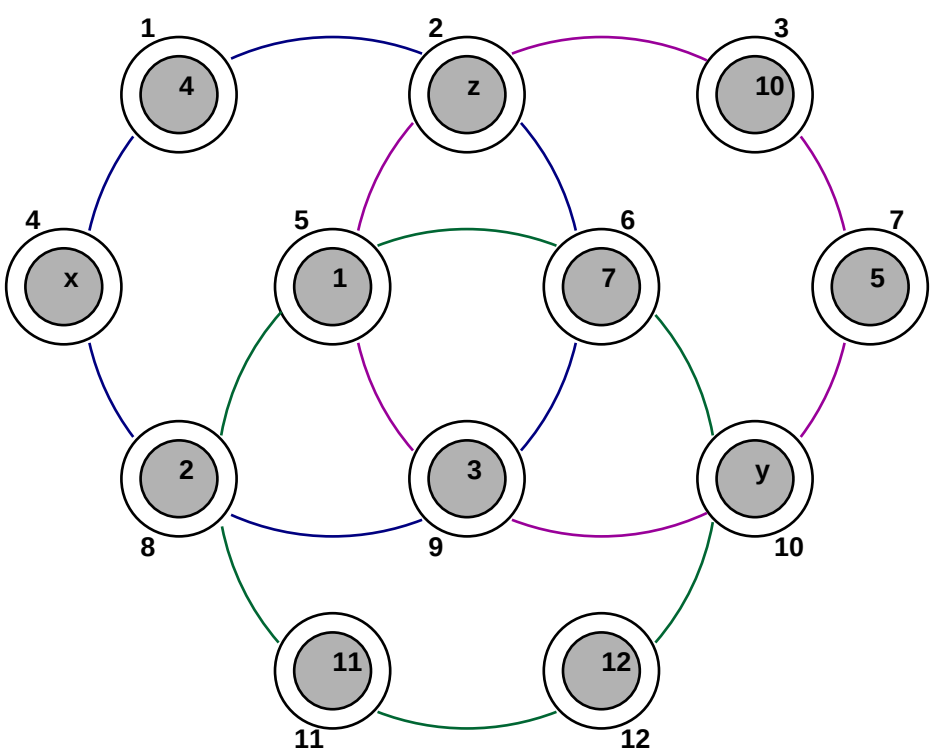

1
1
2
3
z
4
7
4
5
6
7
3
10
x
y
5
2
8
9
10
11
12
11
12

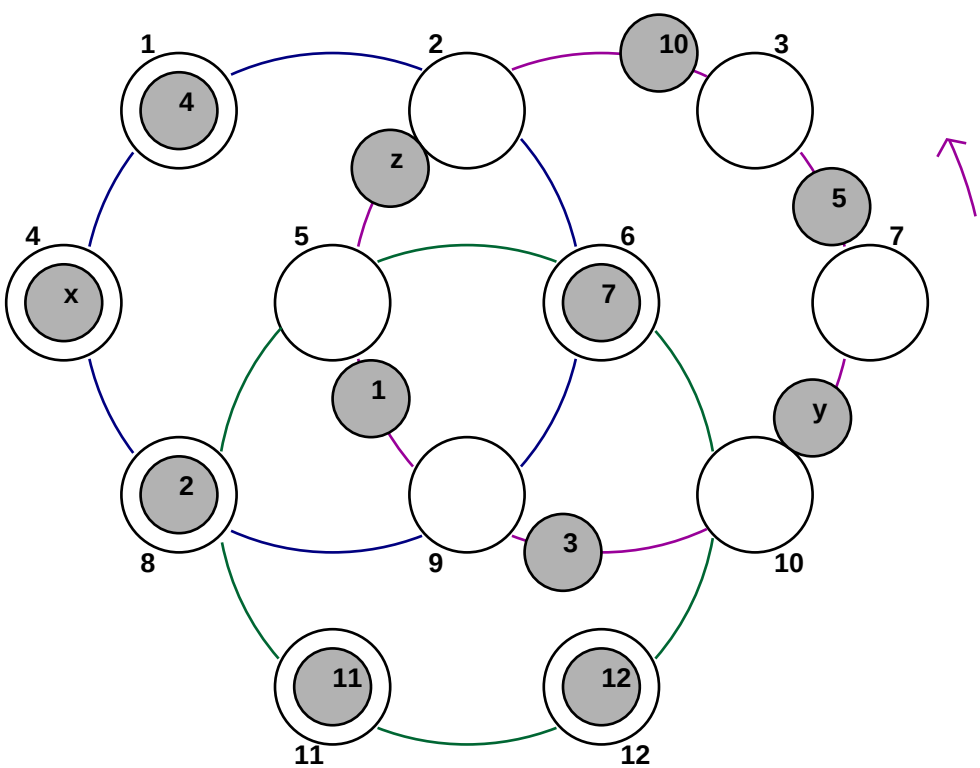

1
4
2
1
3
z
4
x
5
3
6
7
7
10
2
8
y
9
5
10
11
11
12
12

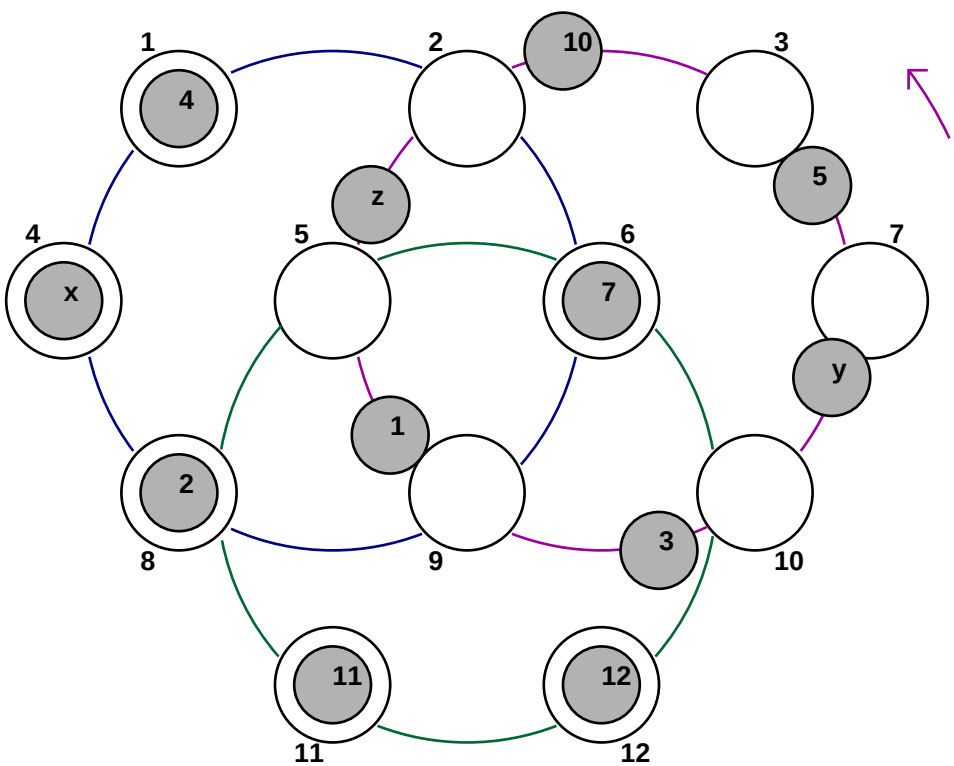

1
4
2
1
3
z
4
x
5
3
6
7
7
10
2
8
y
9
5
10
11
11
12
12

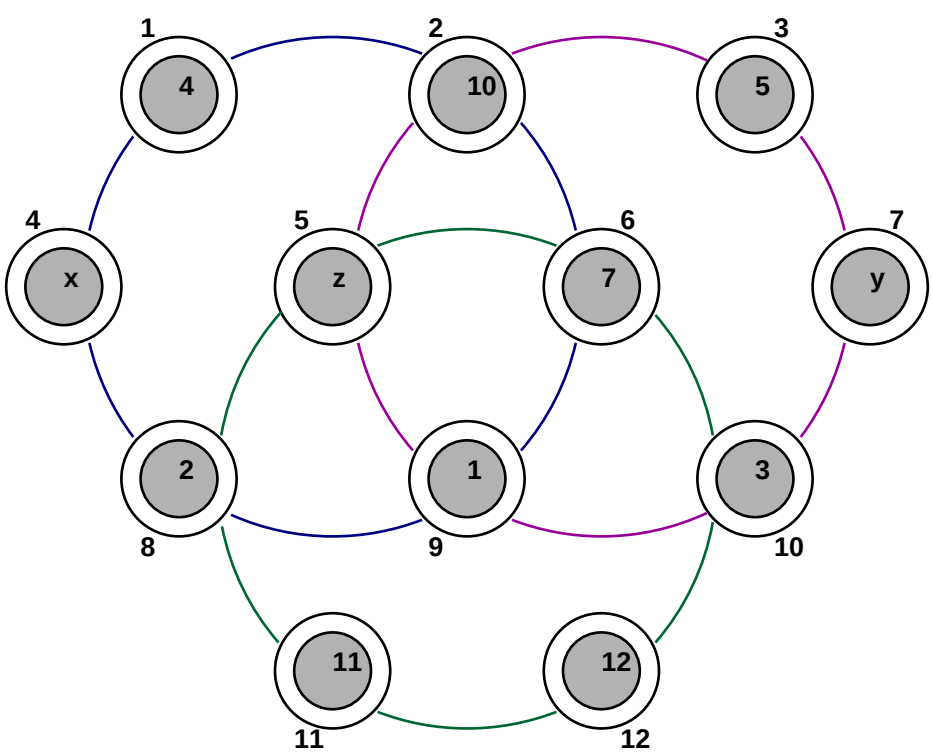

1
2
z
3
4
1
10
4
5
6
7
x
7
3
5
2
2
8
9
y
10
11
12
11
12

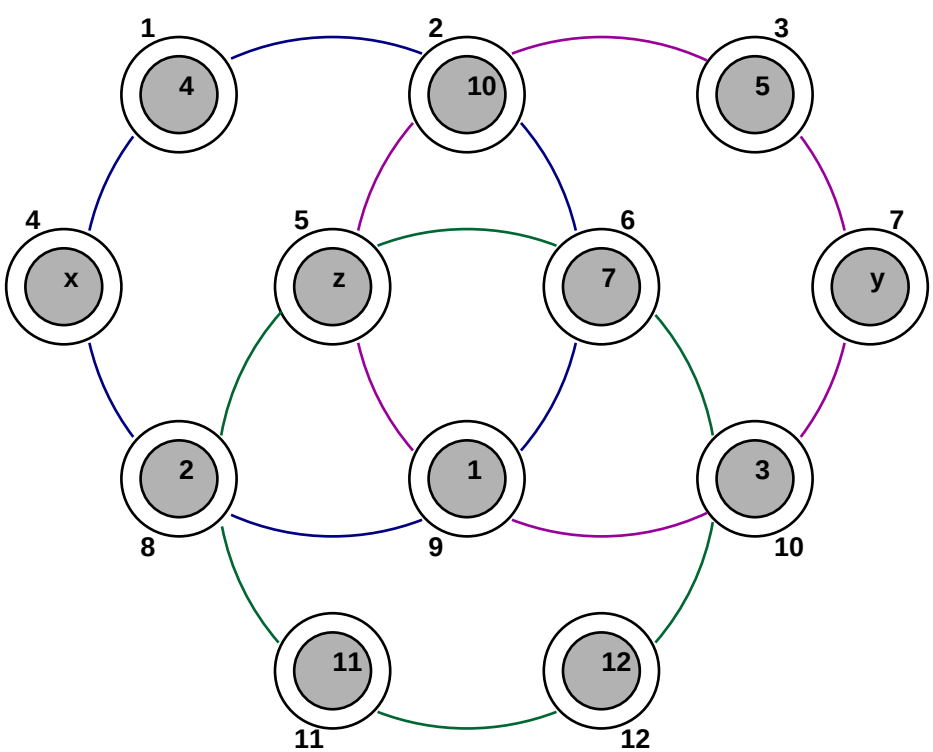

1
2
z
3
4
1
10
4
5
6
7
x
7
5
3
2
2
8
9
y
10
11
12
11
12

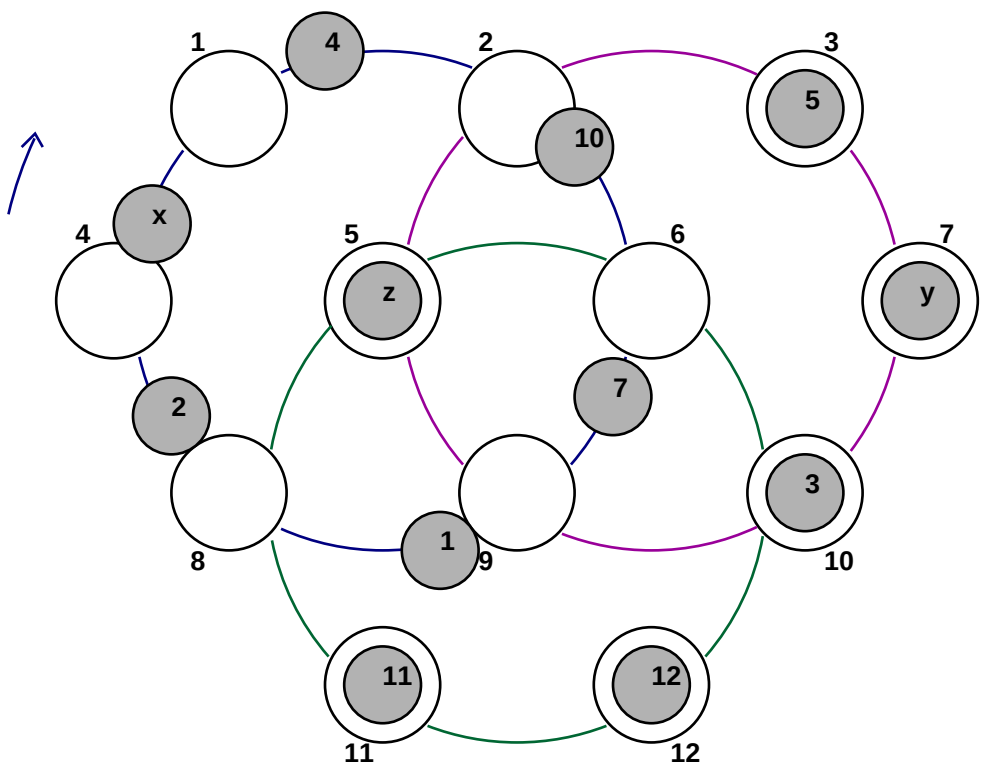

1
4
2
z
3
10
4
x
5
1
6
7
7
5
2
8
3
9
y
10
11
11
12
12

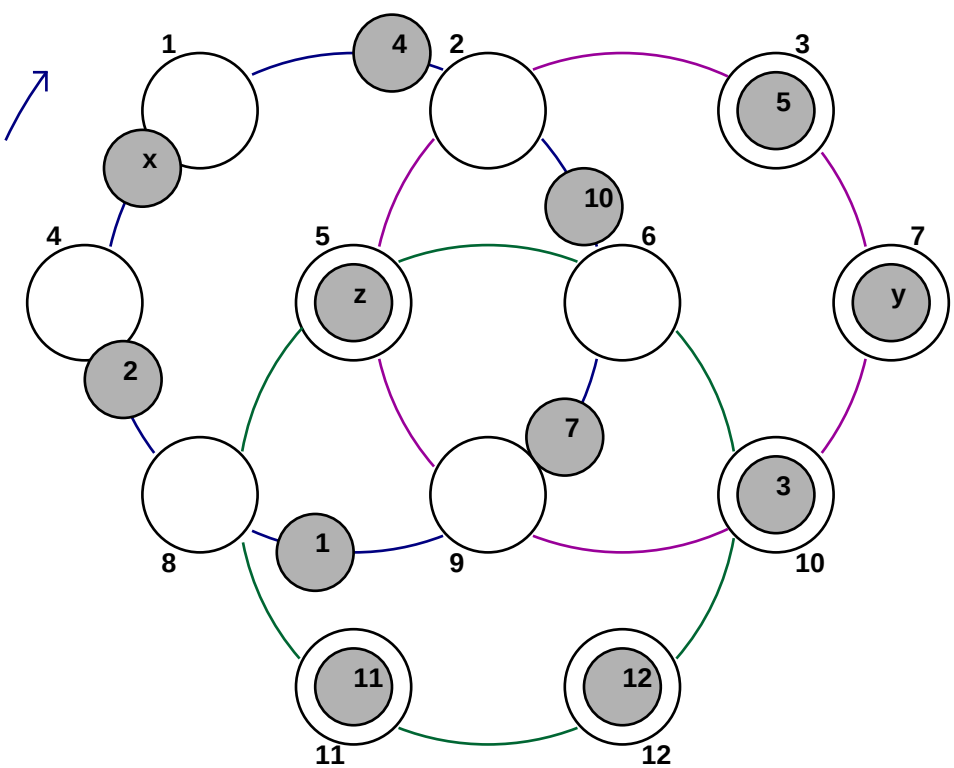

1
2
10
3
4
z
5
4
5
6
7
x
7
1
y
2
8
9
3
10
11
12
11
12

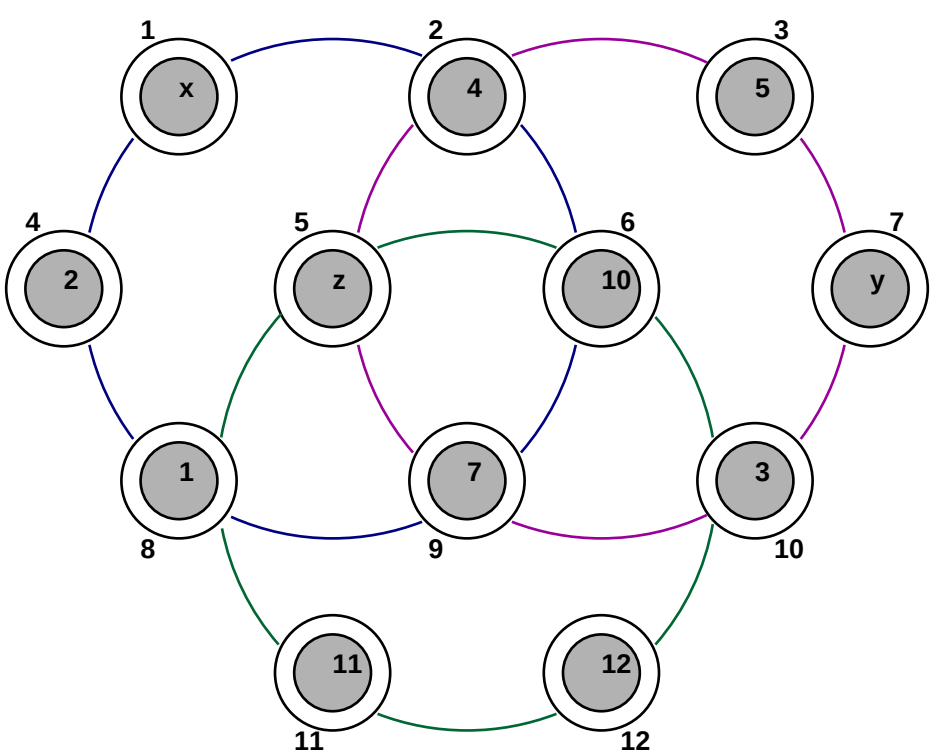

1
2
10
3
4
z
5
4
5
6
7
x
7
y
1
2
2
8
9
3
10
11
12
11
12

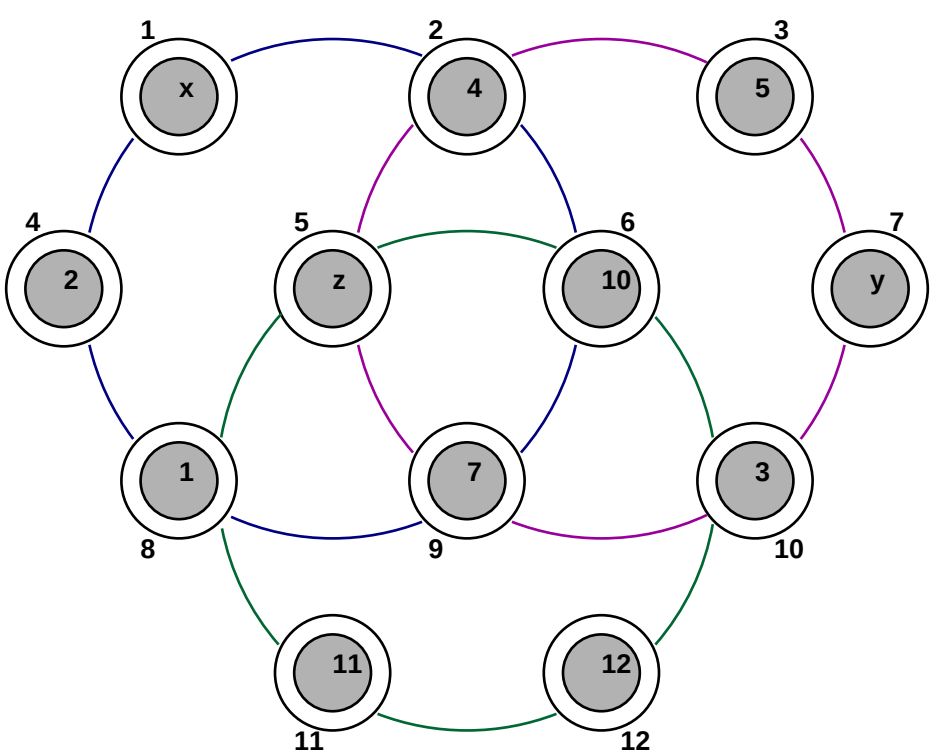

1
4
2
10
3
5
4
x
5
z
6
7
7
y
2
8
1
9
3
10
11
11
12
12

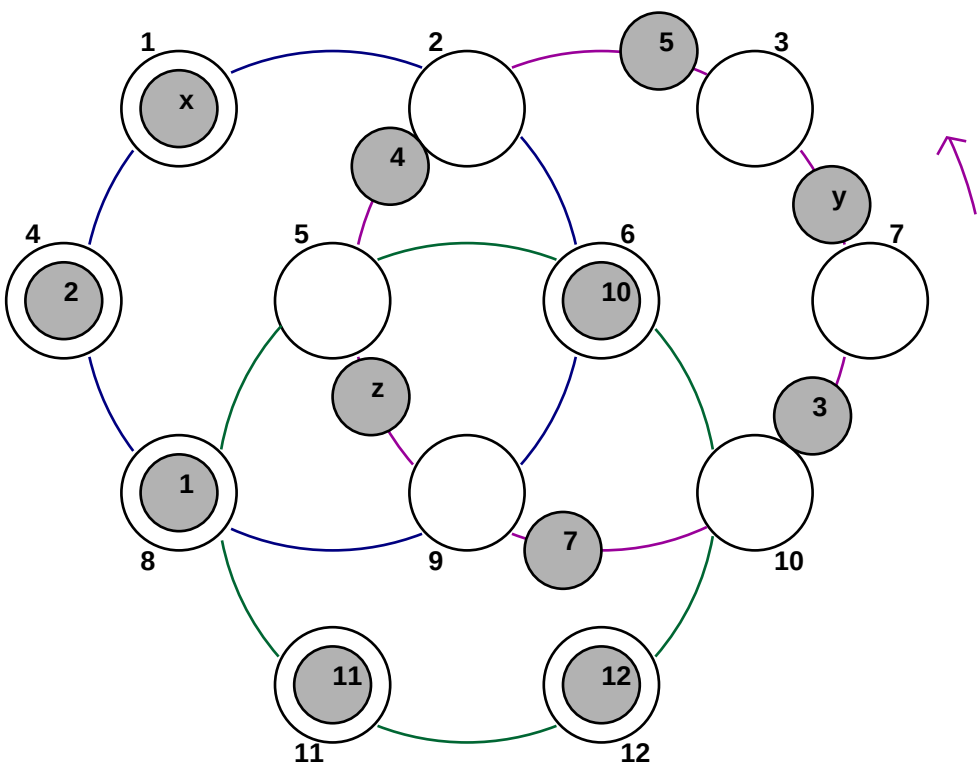

1
4
2
10
3
5
4
x
5
z
6
7
7
y
2
8
1
9
3
10
11
11
12
12

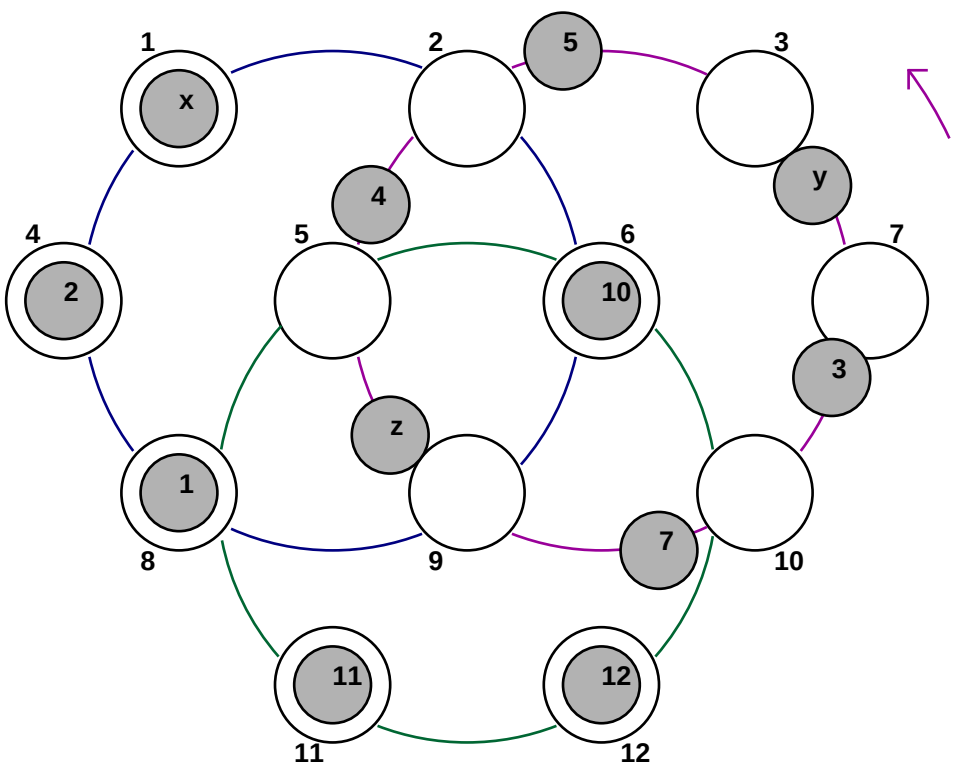

1
4
2
3
5
10
x
4
5
6
7
z
y
7
2
3
1
8
9
10
11
12
11
12

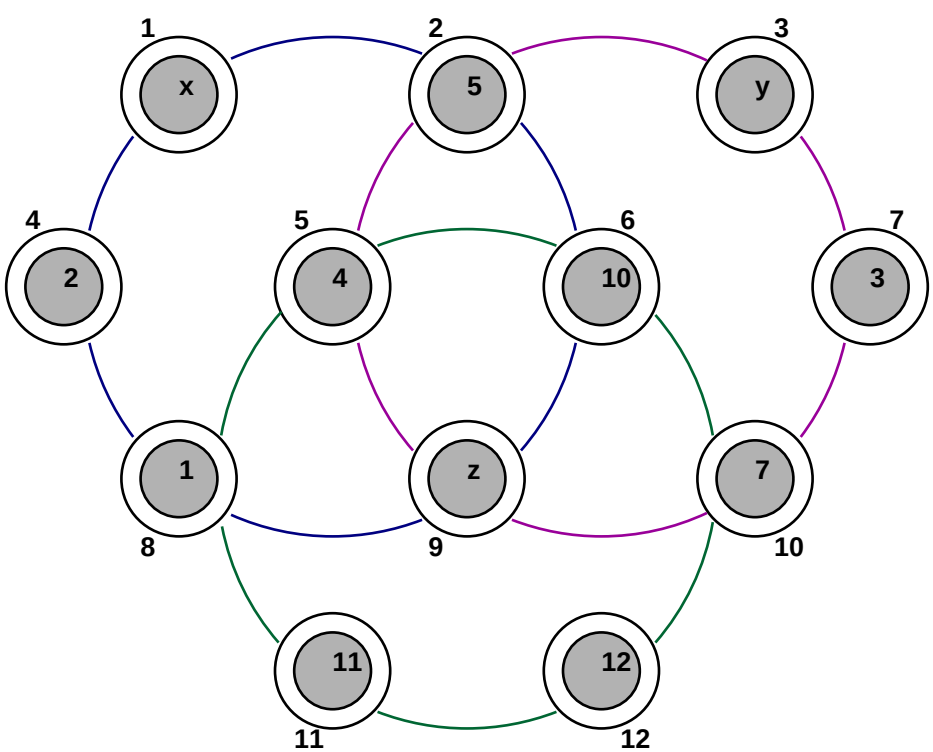

1
4
2
3
5
x
10
4
5
6
7
z
y
2
7
3
1
8
9
10
11
12
11
12

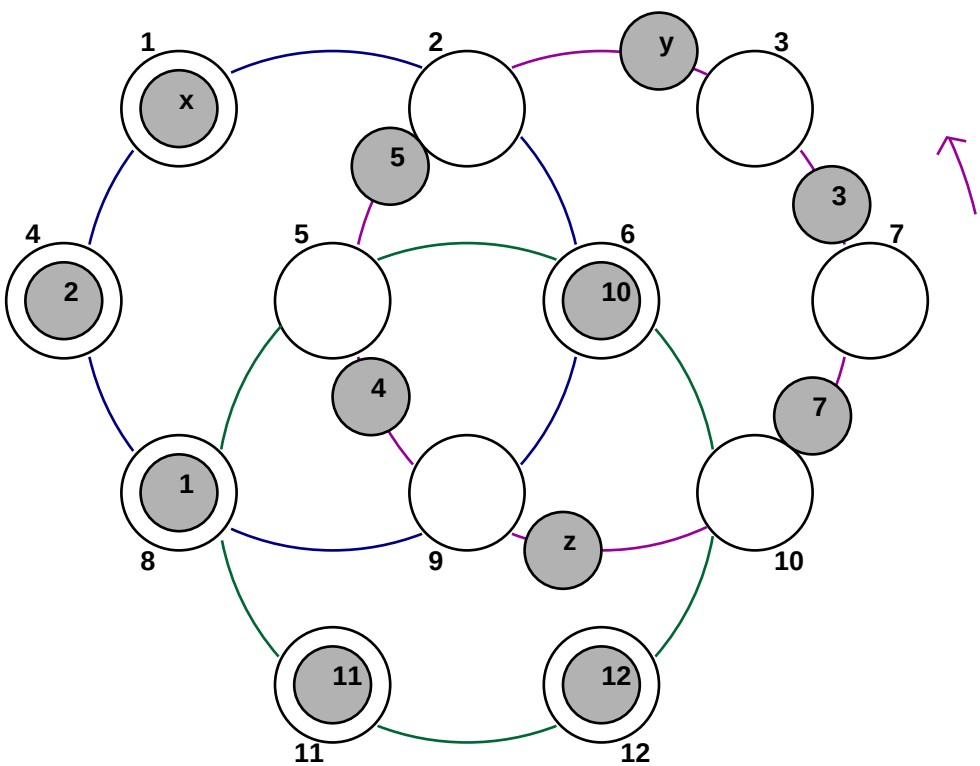

1
x
2
4
3
5
4
2
5
z
6
10
7
y
1
8
7
9
3
10
11
11
12
12

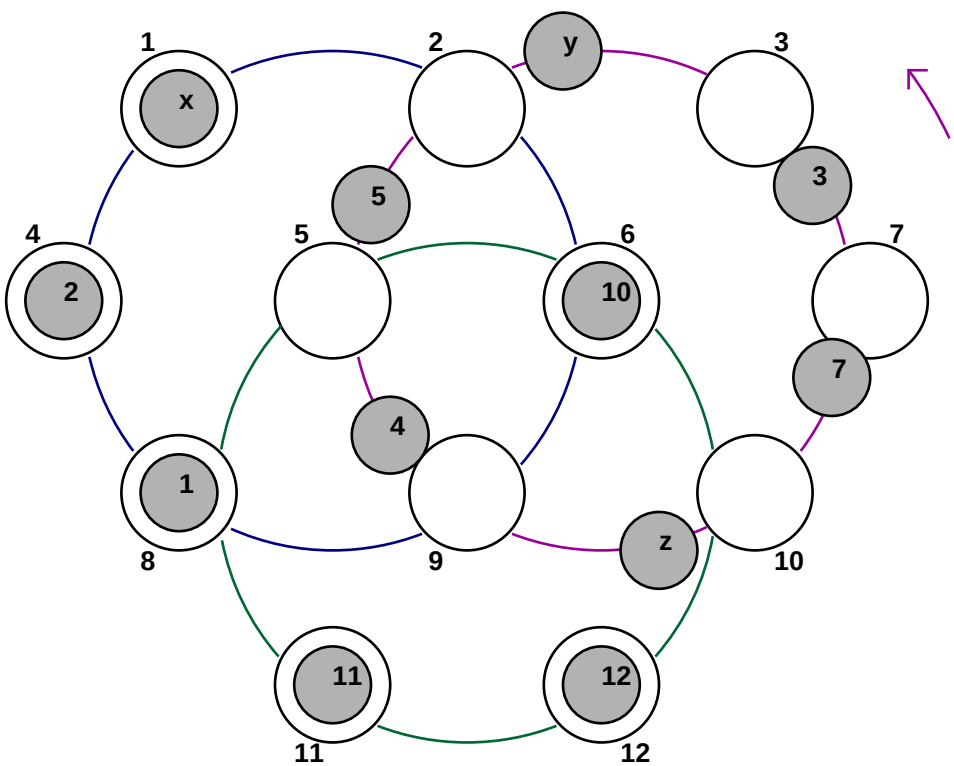

1
x
2
4
3
5
4
2
5
z
6
10
7
y
1
8
7
9
3
10
11
11
12
12

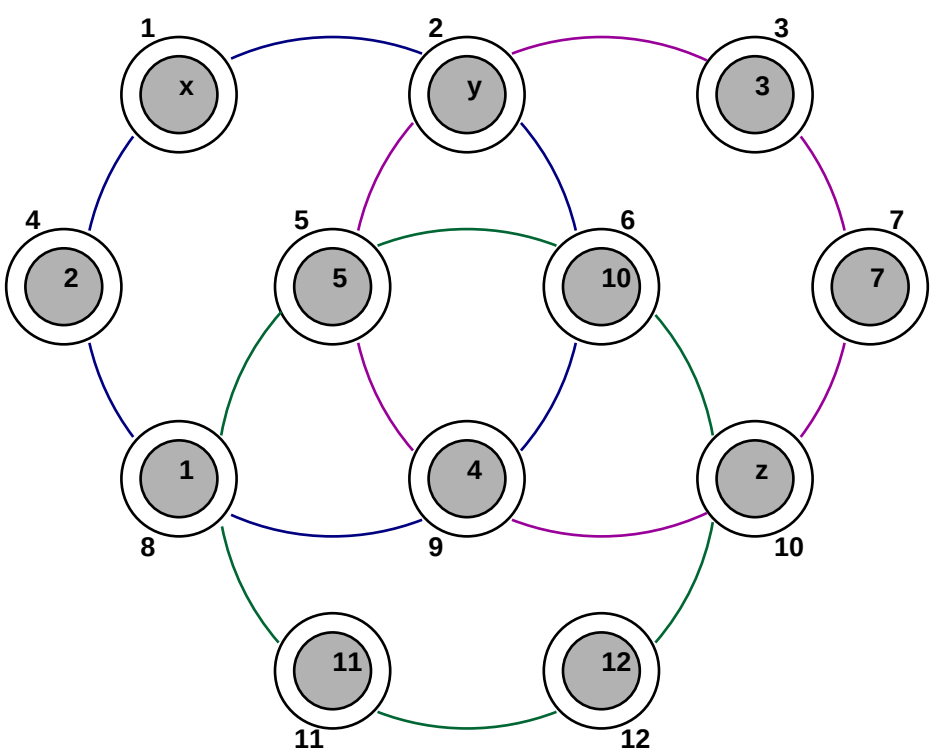

1
x
2
5
3
4
y
4
2
5
6
10
7
z
3
1
8
9
7
10
11
11
12
12

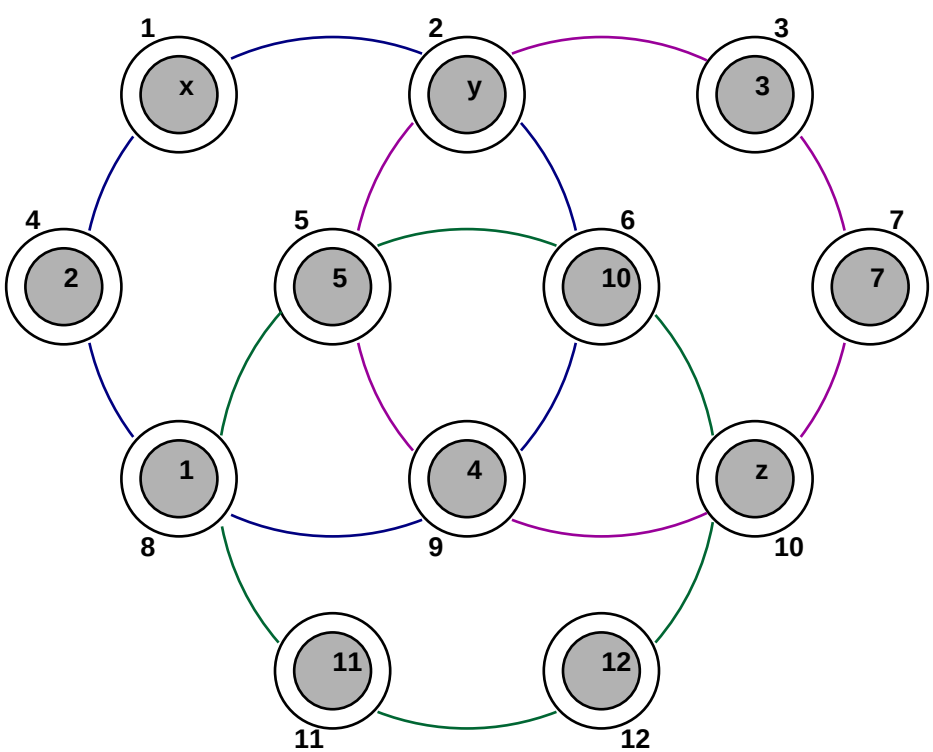

1
x
2
5
3
y
4
4
2
5
6
10
7
3
z
1
8
9
7
10
11
11
12
12

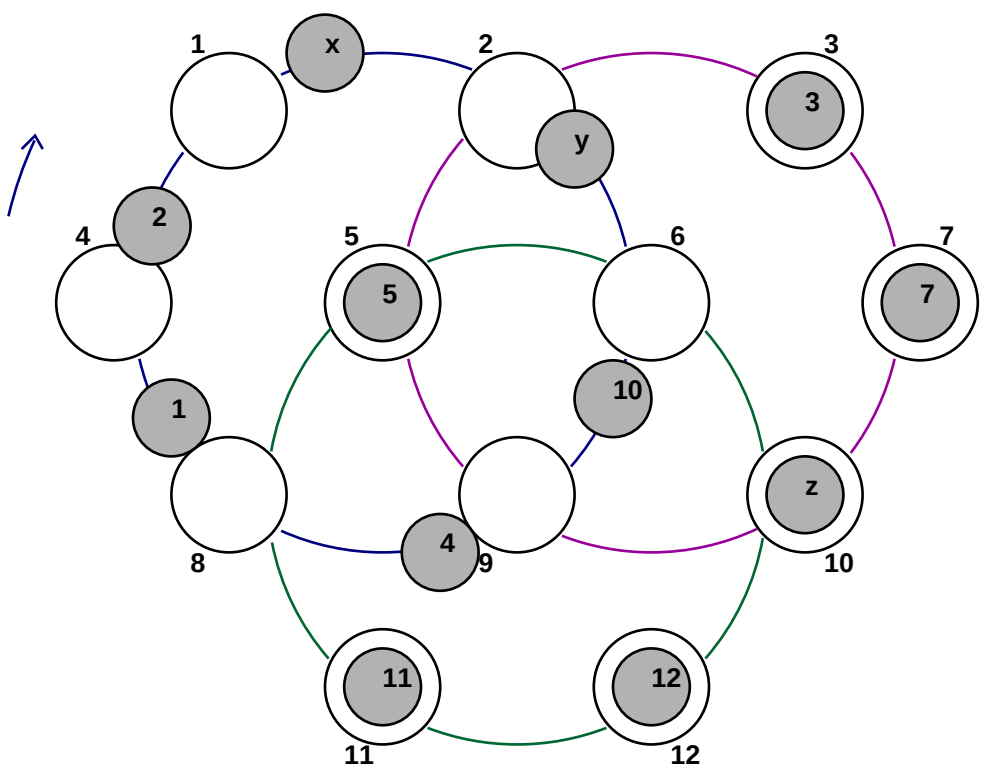

1
x
2
5
3
y
4
2
5
4
6
10
7
3
1
1
z
7
8
9
10
11
11
12
12

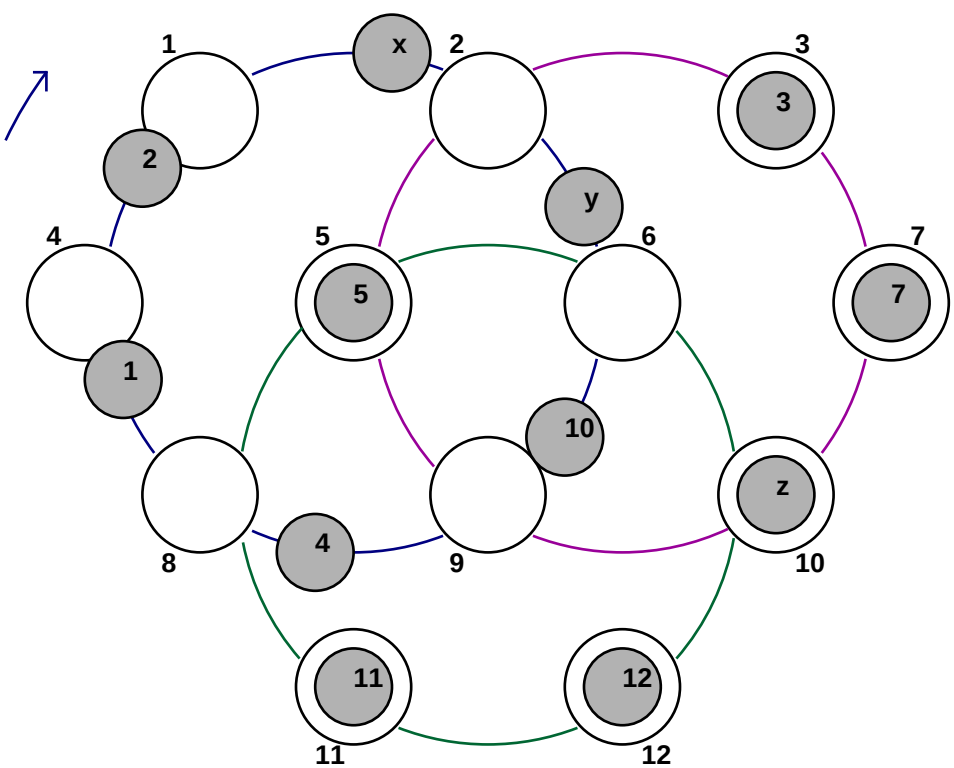

1
x
2
y
3
5
3
4
2
5
6
10
7
4
7
1
8
9
z
10
11
11
12
12

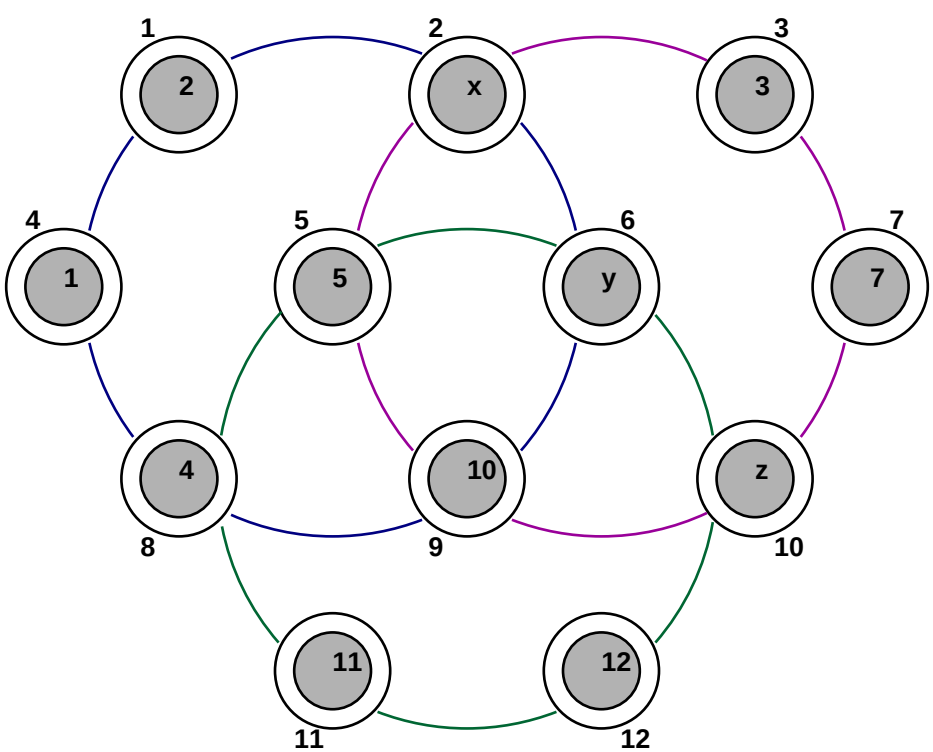

1
x
2
y
3
3
5
4
2
5
6
10
7
7
4
1
8
9
z
10
11
11
12
12

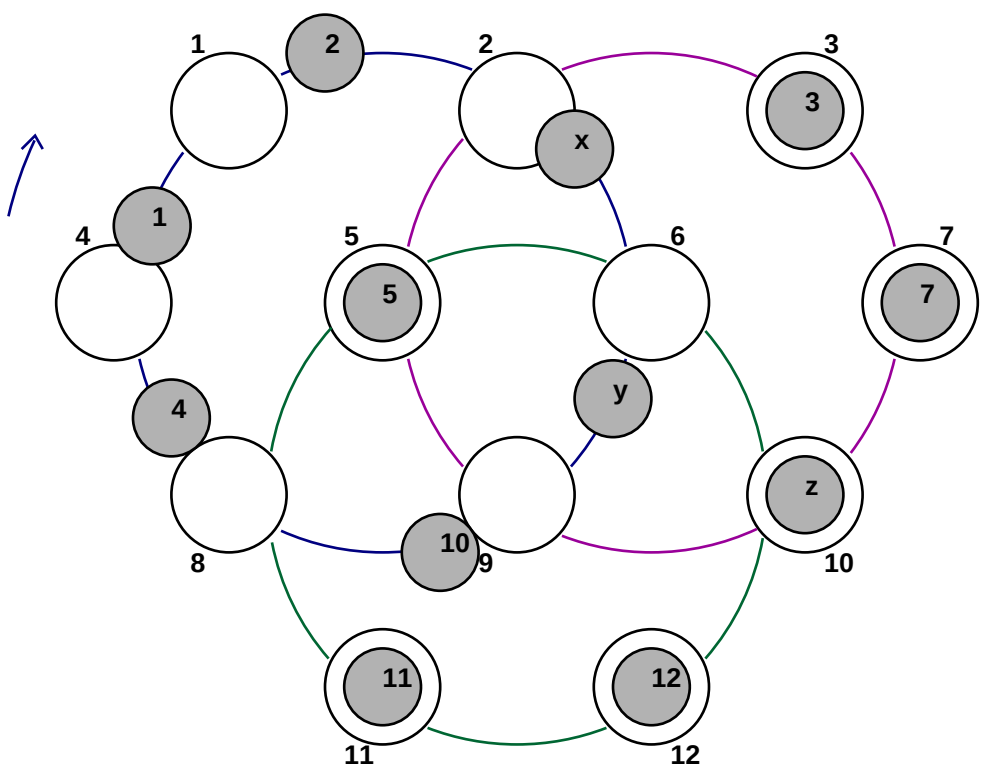

1
x
2
y
3
3
4
2
5
5
6
10
7
7
1
1
4
4
z
z
8
9
10
11
11
12
12

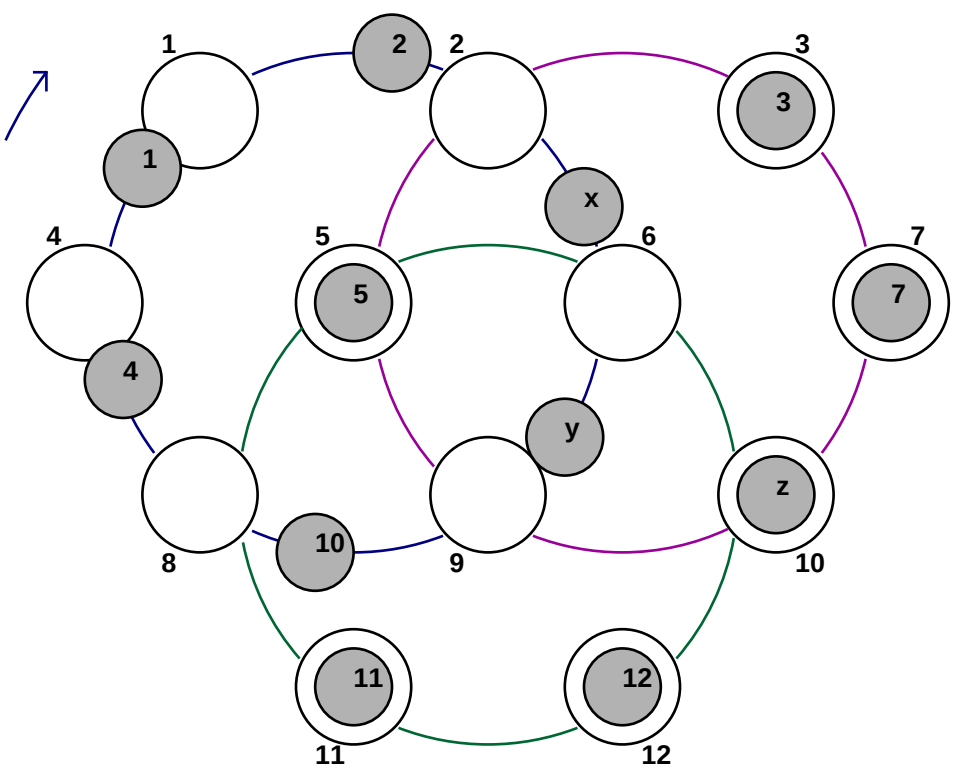

1
x
2
y
3
3
4
2
5
5
6
10
7
7
1
1
4
4
z
z
8
9
10
11
11
12
12

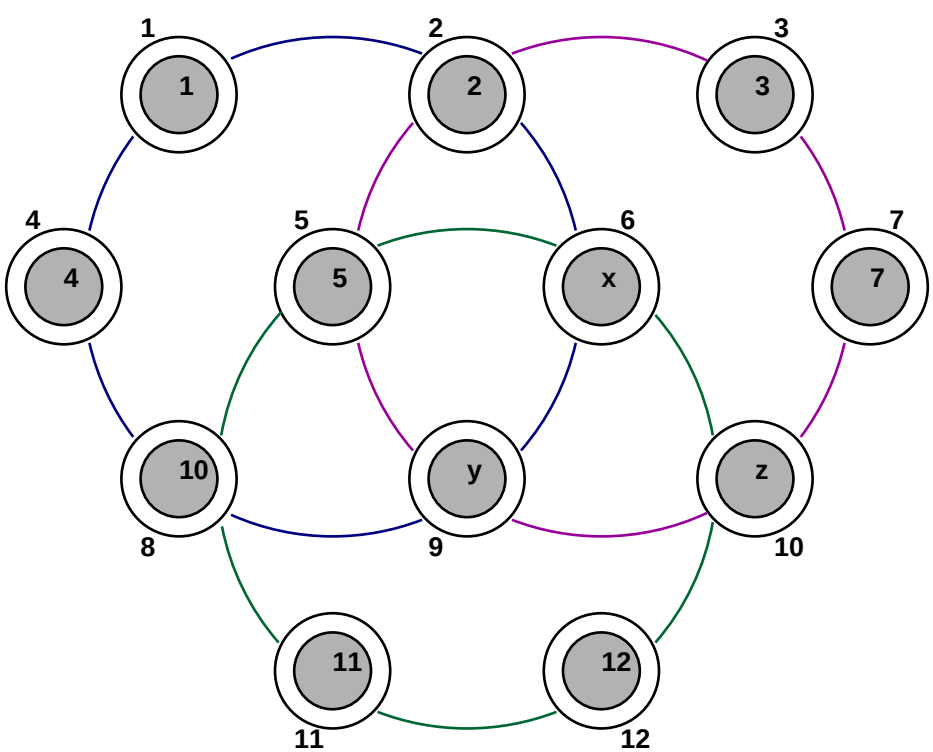

1
x
2
3
3
y
2
4
5
6
7
5
7
10
1
z
4
8
9
10
11
12
11
12


1
x
2
3
3
2
y
4
5
6
7
5
7
1
10
z
4
8
9
10
11
12
11
12

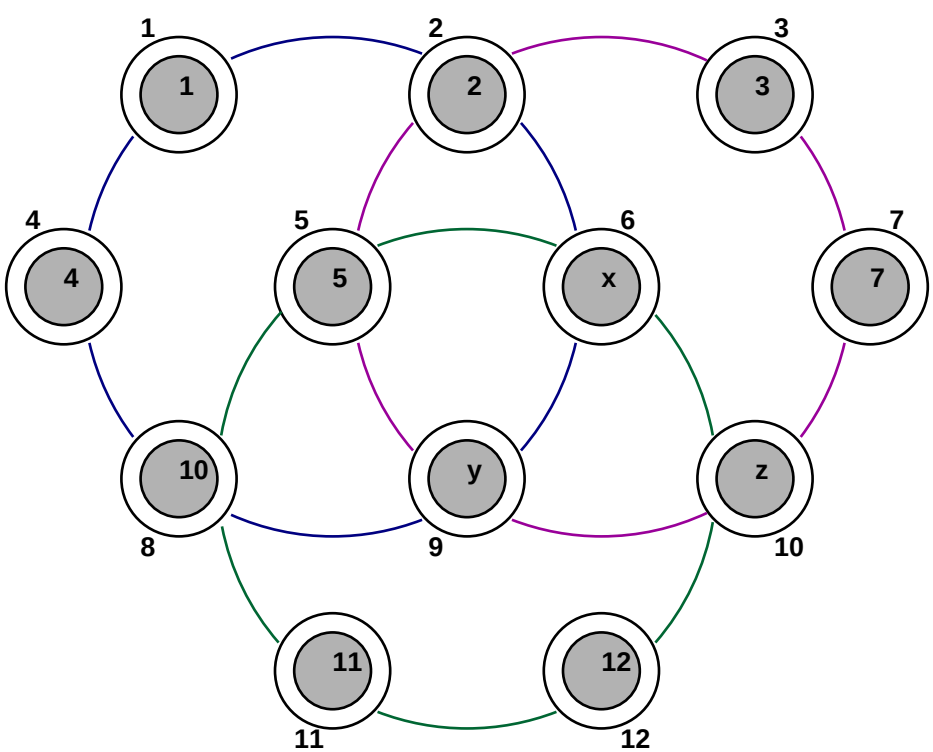

1
2
2
x
3
3
4
1
5
5
6
y
7
7
4
4
10
10
z
8
9
10
11
11
12
12

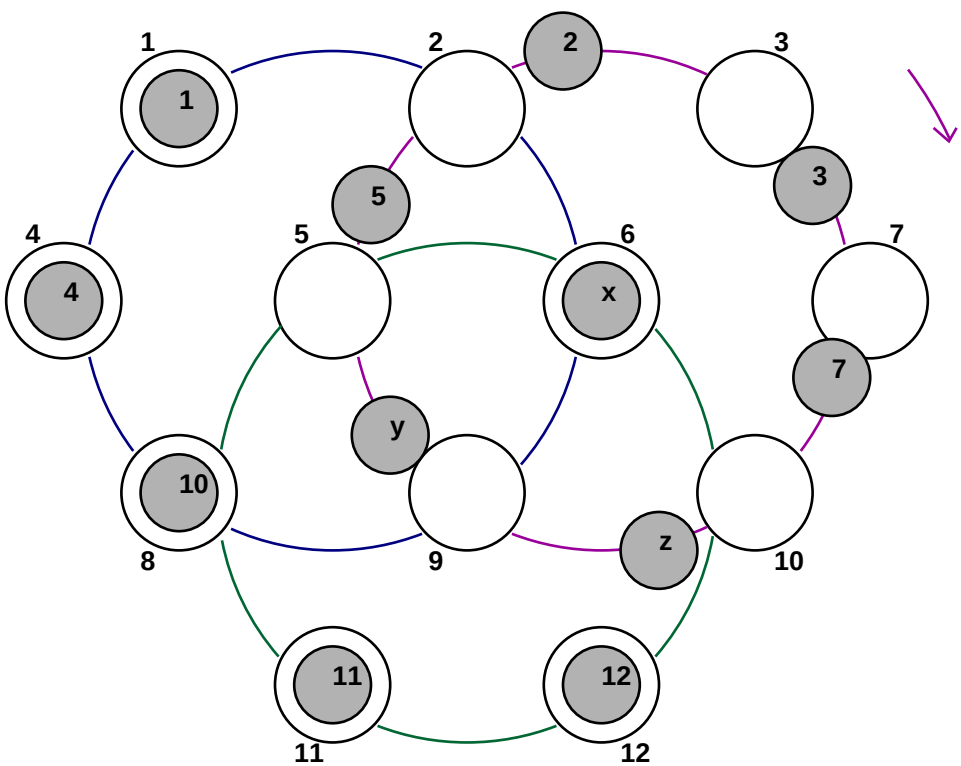

1
2
2
3
3
x
1
4
5
5
6
7
7
y
4
z
10
8
9
10
11
12
11
12

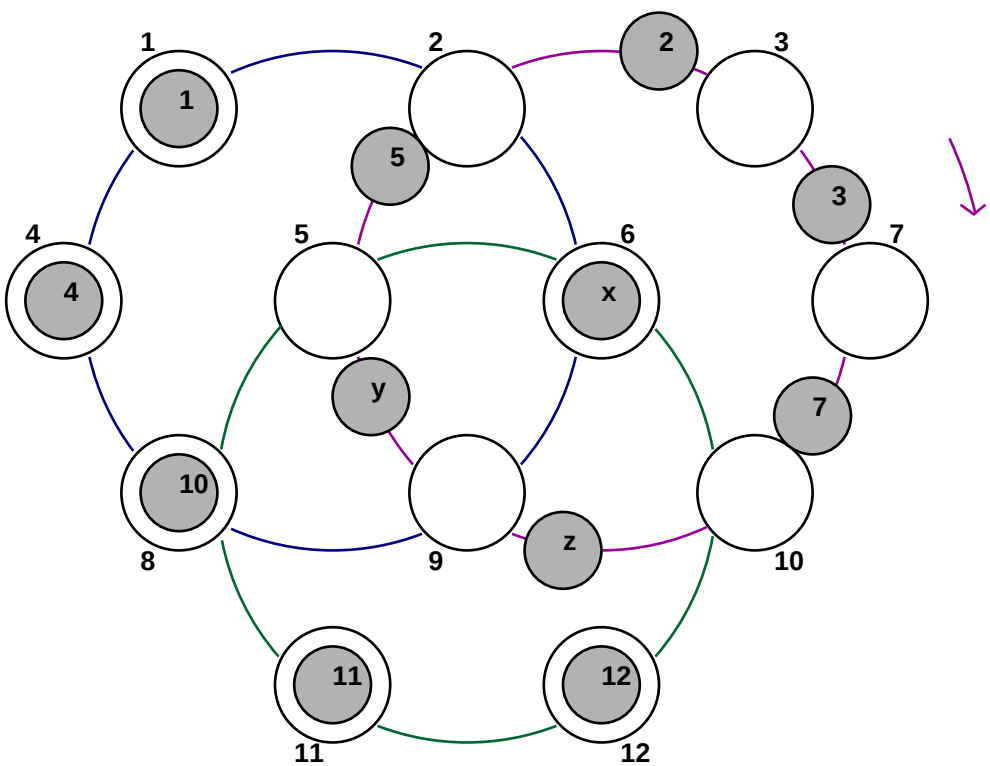

1
2
2
3
3
1
x
4
5
6
7
5
7
4
y
z
8
9
10
10
11
12
11
12

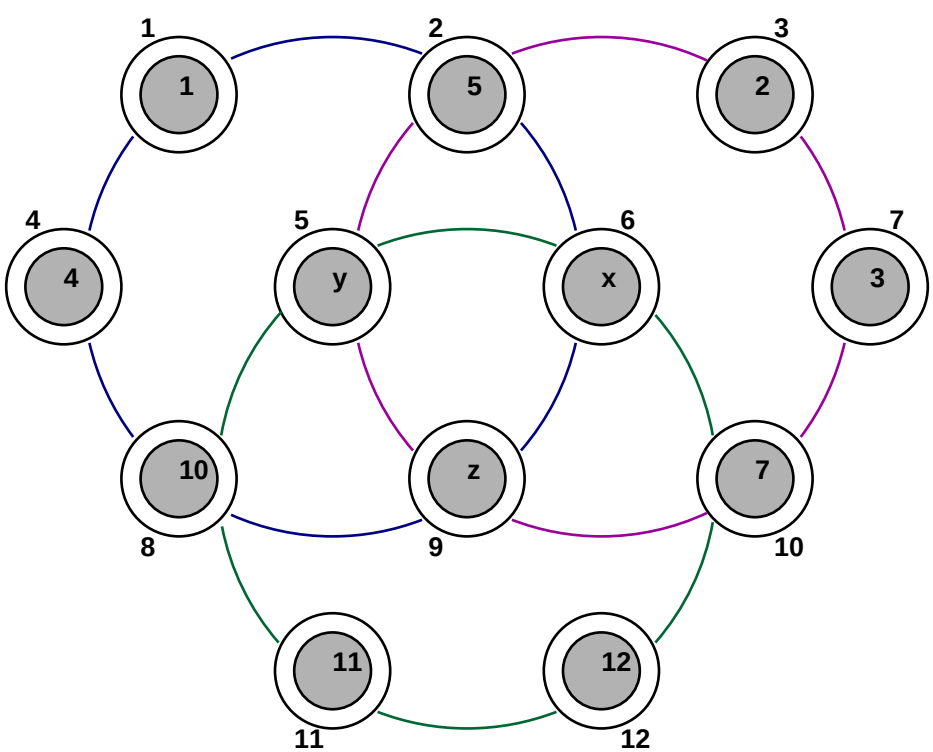

1
2
3
4
5
6
7
1
2
3
4
5
x
7
10
y
z
8
9
10
11
12
11
12

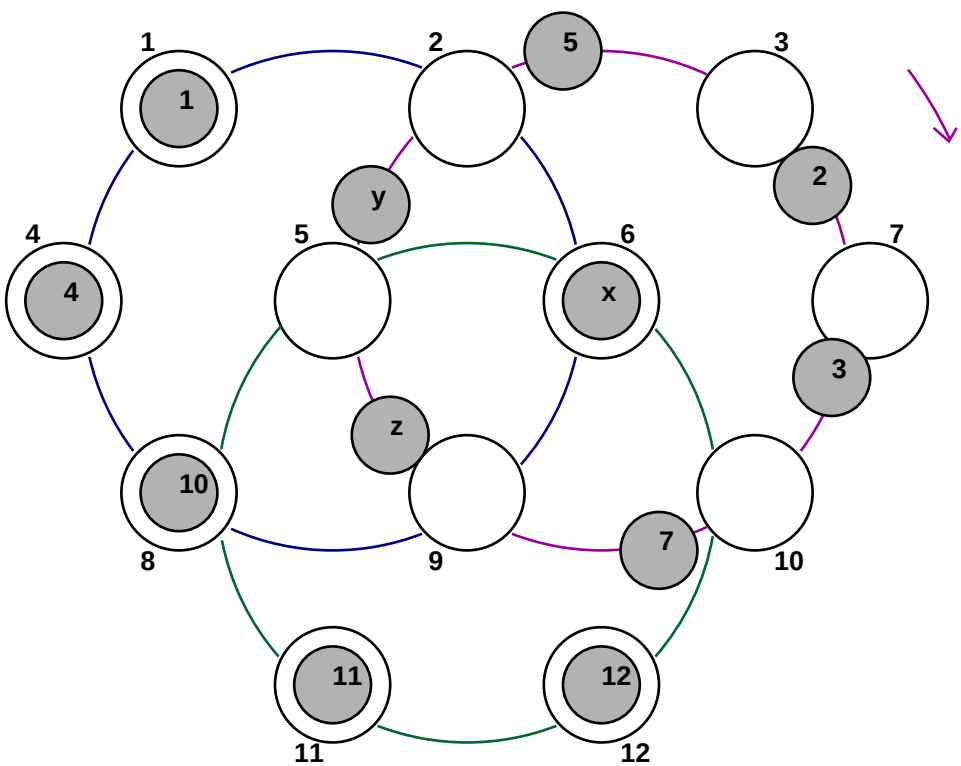
Number 10 can be moved into position 10 while keeping numbers 1, 2, 3, 4, 5, 7, 11, and 12 in position by the following moves.

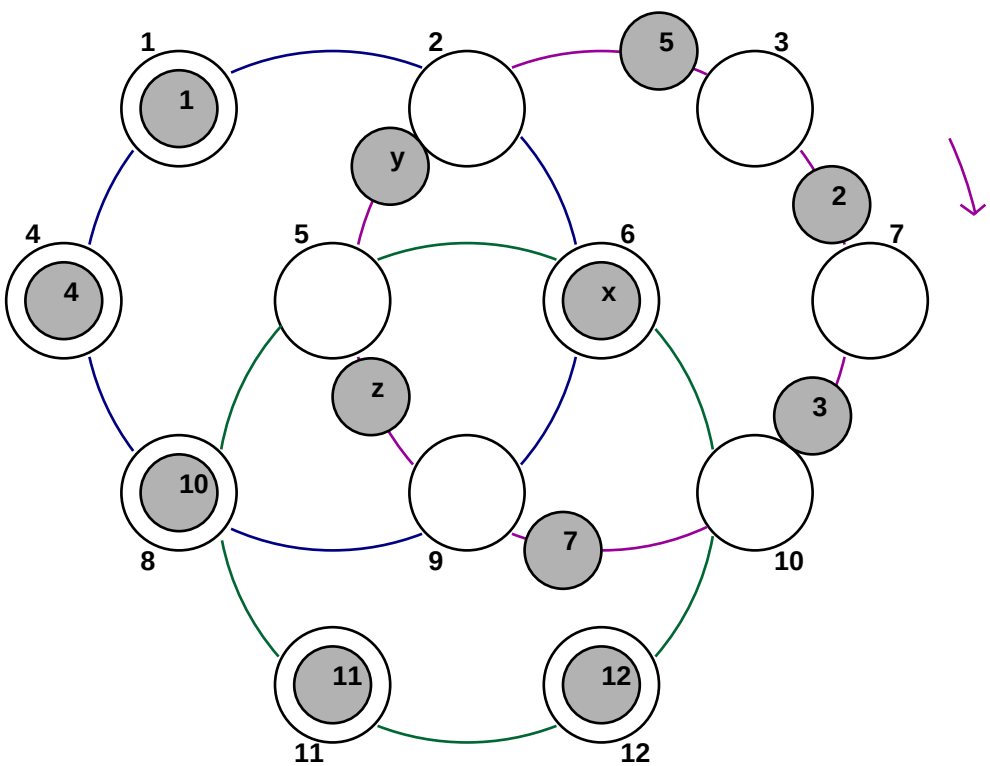

1
2
3
4
5
6
7
1
2
3
4
5
x
7
10
y
z
8
9
10
11
12
11
12

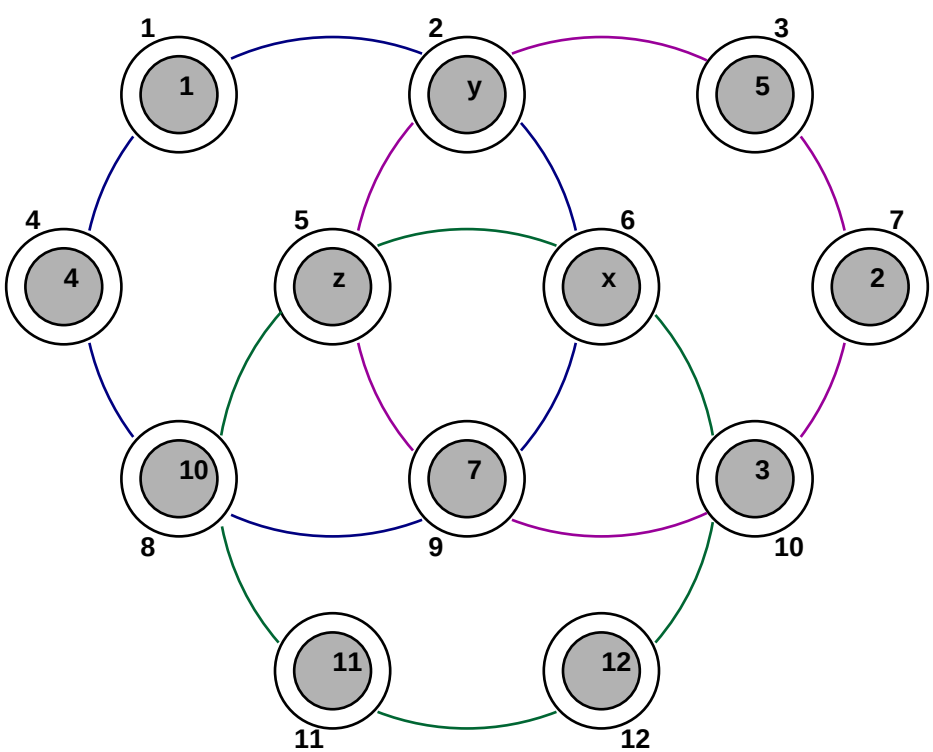

1
2
2
3
1
3
5
4
5
6
7
4
x
7
y
10
10
z
8
9
11
12
11
12

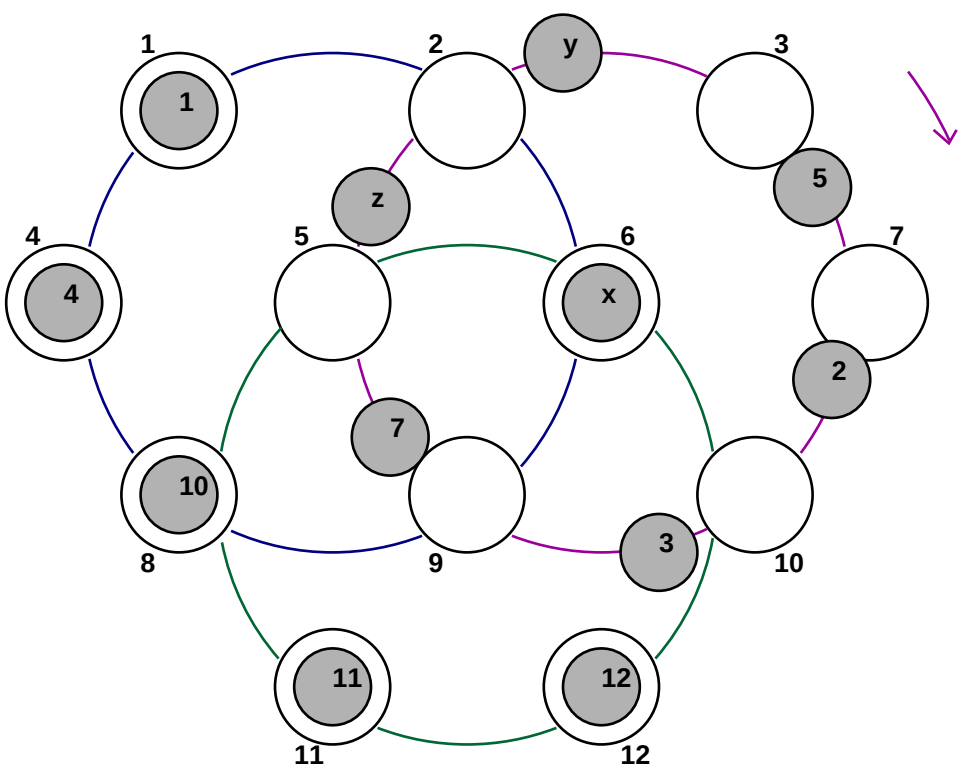

1
2
2
3
1
5
3
4
5
6
7
4
x
y
7
10
z
8
9
10
11
12
11
12

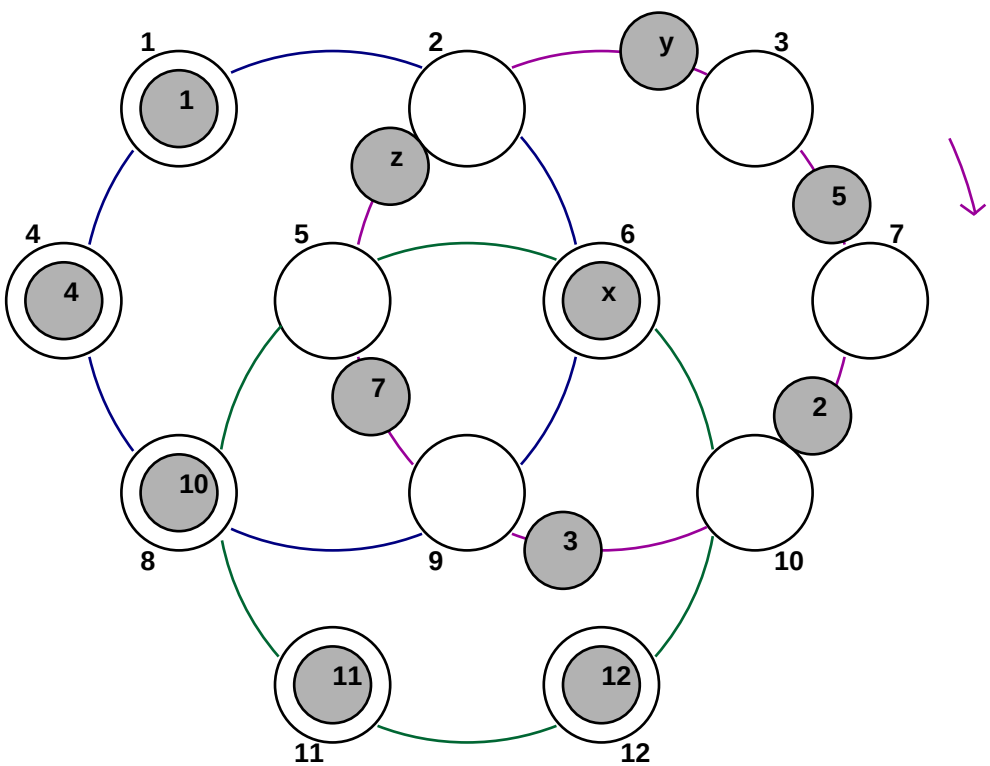

1
2
3
1
5
2
4
5
6
7
4
y
x
3
10
z
7
8
9
10
11
12
11
12

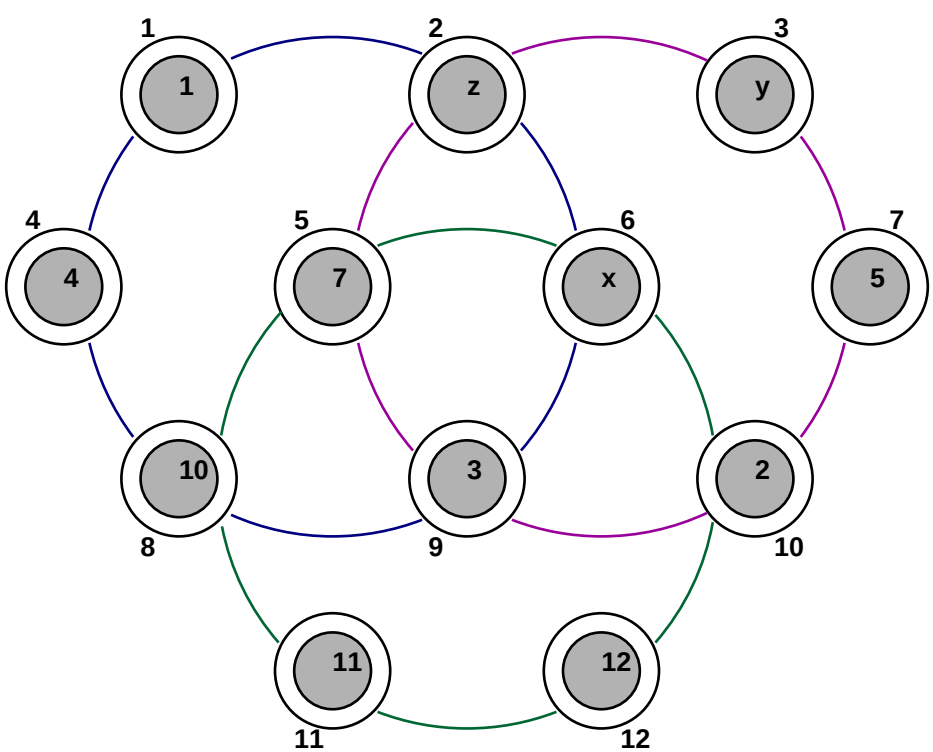

1
2
3
4
5
6
7
8
9
10
11
12
x
y
z

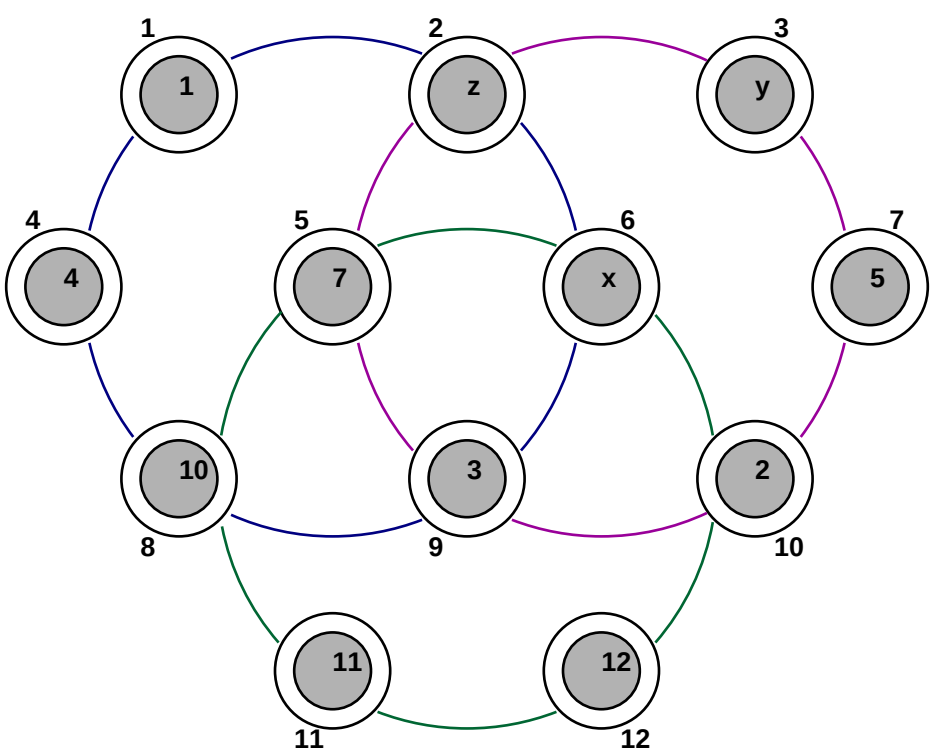

1
2
5
3
1
y
2
4
5
6
7
4
x
z
3
10
7
8
9
10
11
12
11
12

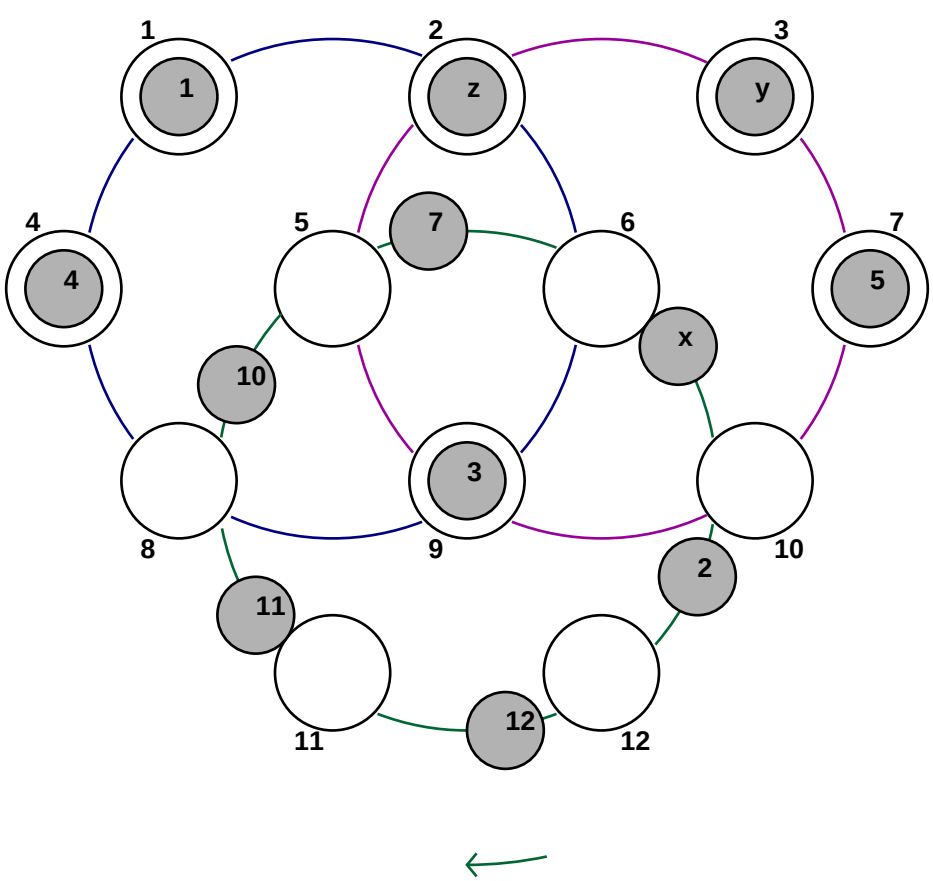

1
1
2
y
3
5
4
4
5
z
6
x
7
2
10
8
7
9
3
10
11
11
12
12

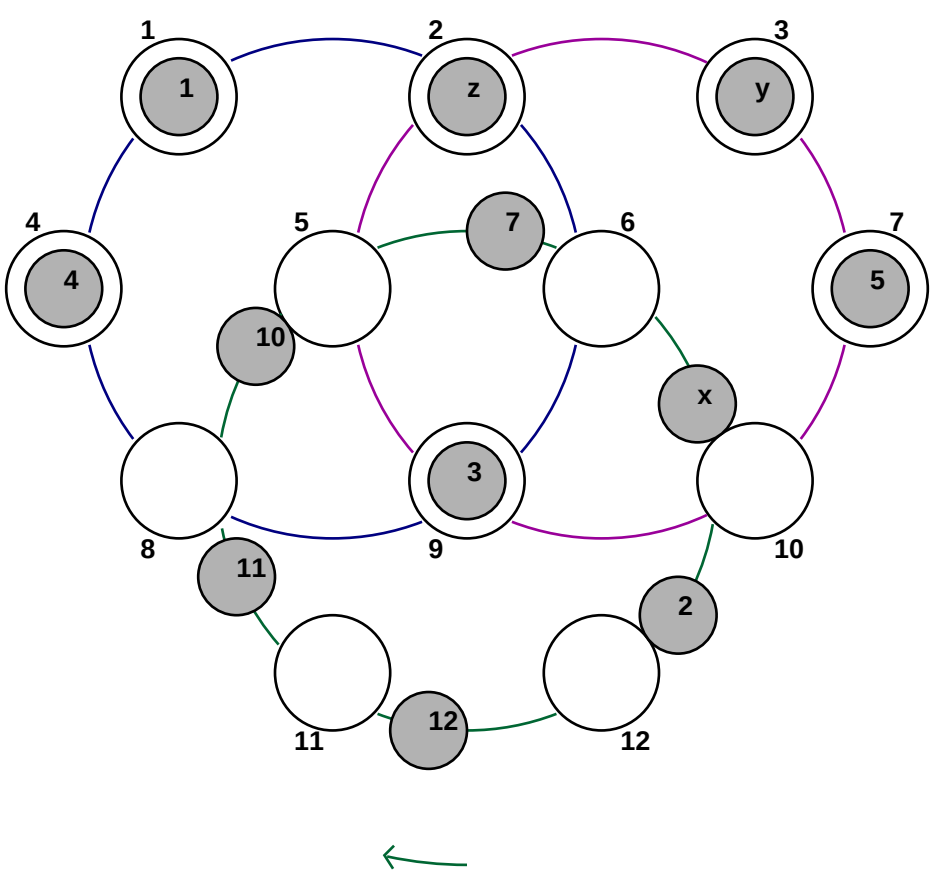

1
2
y
3
1
5
z
4
5
6
7
4
x
2
7
10
3
8
9
10
11
12
11
12

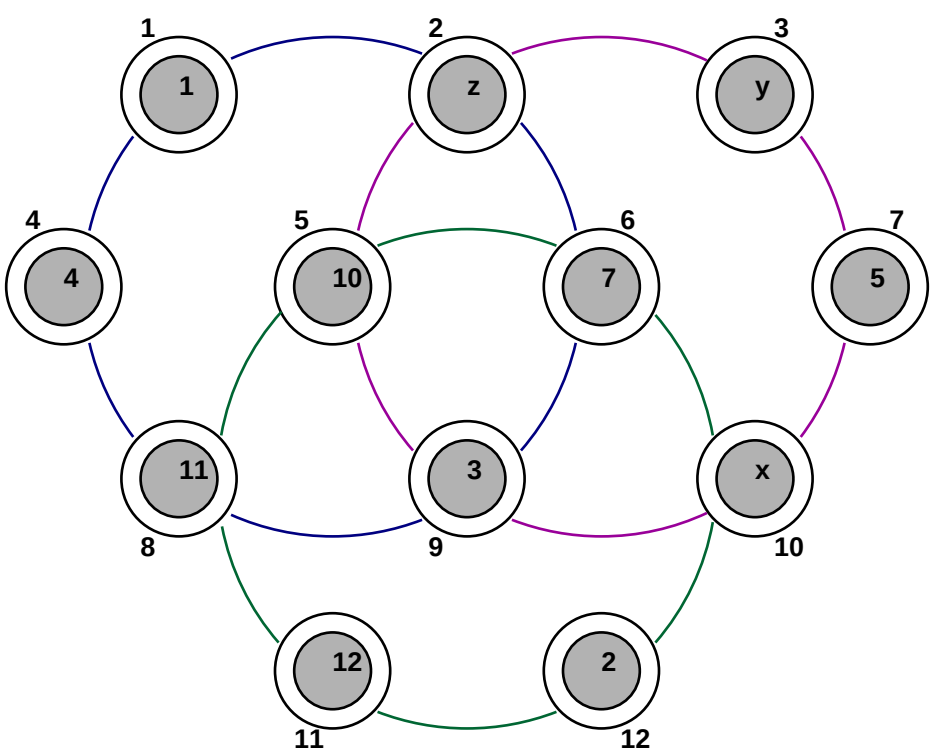

1
2
y
3
1
z
5
4
5
6
7
4
x
7
2
10
3
8
9
10
11
12
11
12

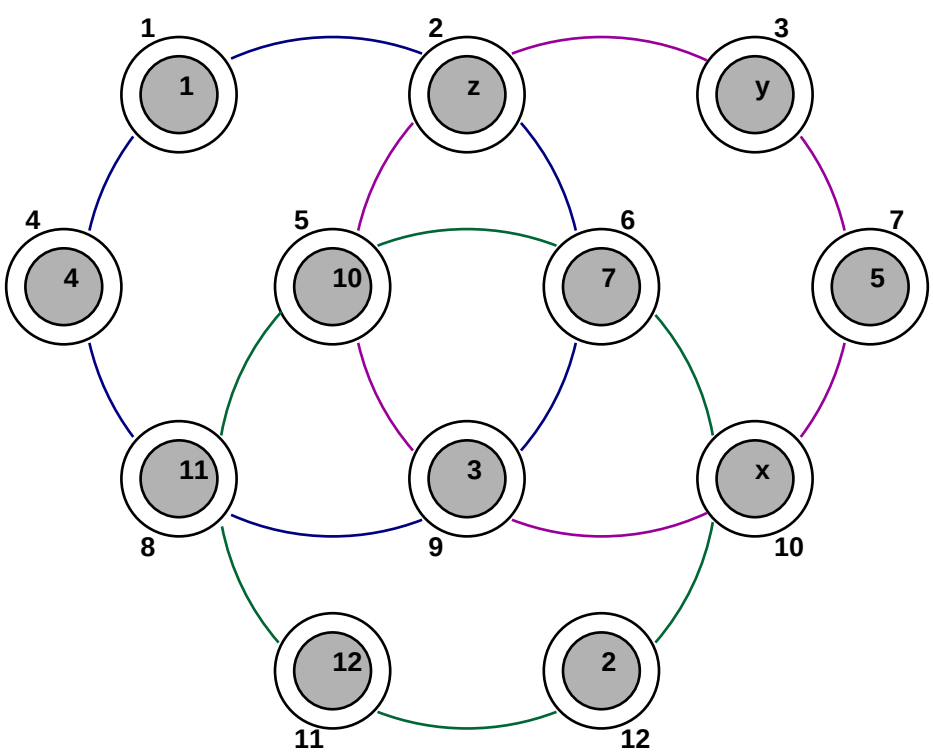

1
2
3
1
z
y
4
5
6
7
4
7
x
5
10
3
2
8
9
10
11
12
11
12

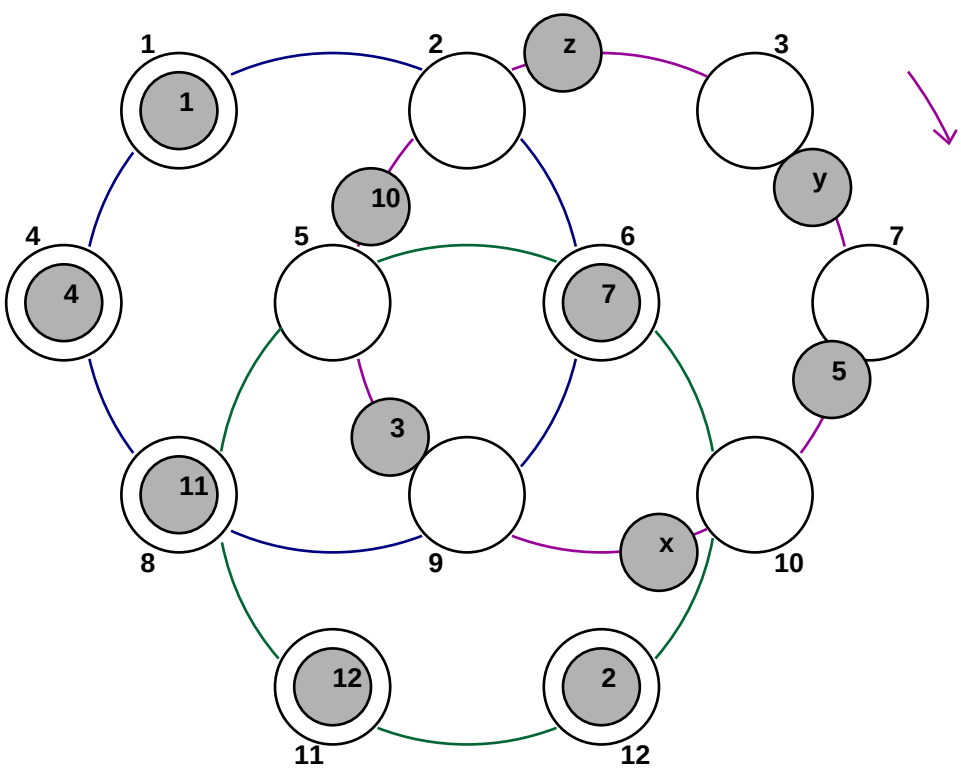

1
2
3
1
z
y
4
5
6
7
4
7
x
5
10
3
2
8
9
10
11
12
11
12

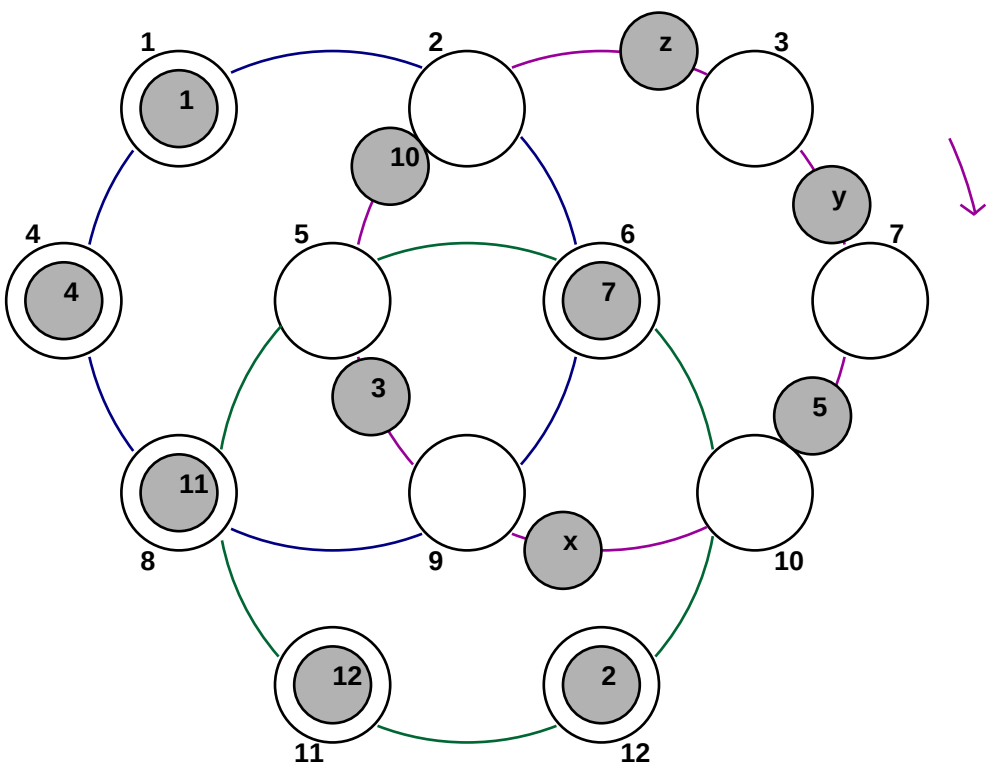

1
2
3
1
z
y
4
5
6
7
4
7
5
x
10
3
8
9
10
2
11
11
12
12

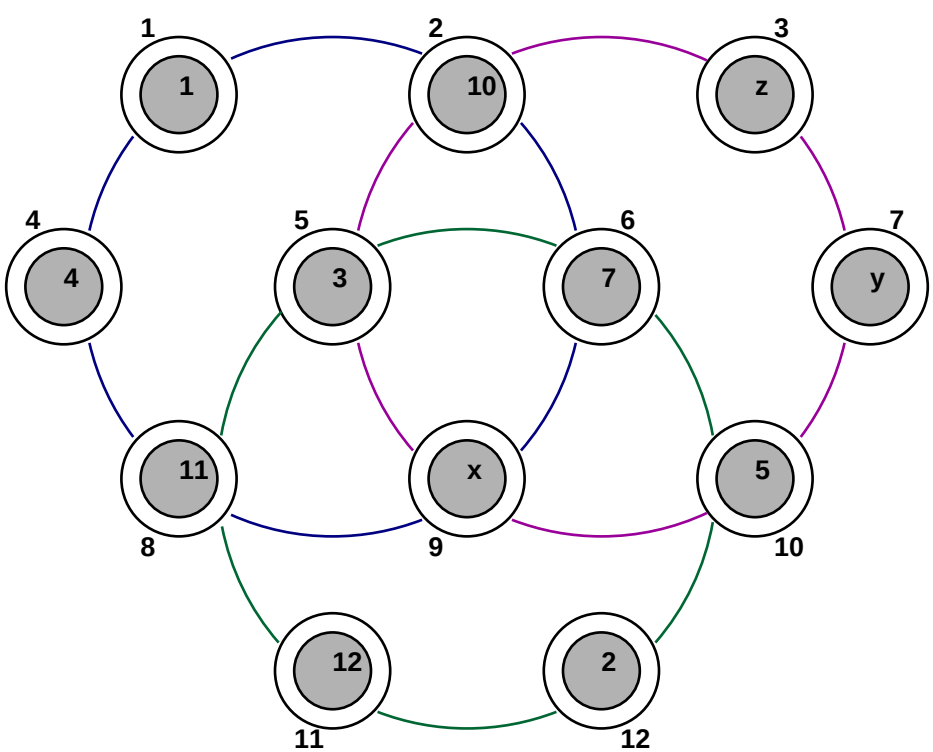

1
2
3
1
z
y
4
5
6
7
4
7
5
10
x
3
8
9
10
11
2
11
12
12

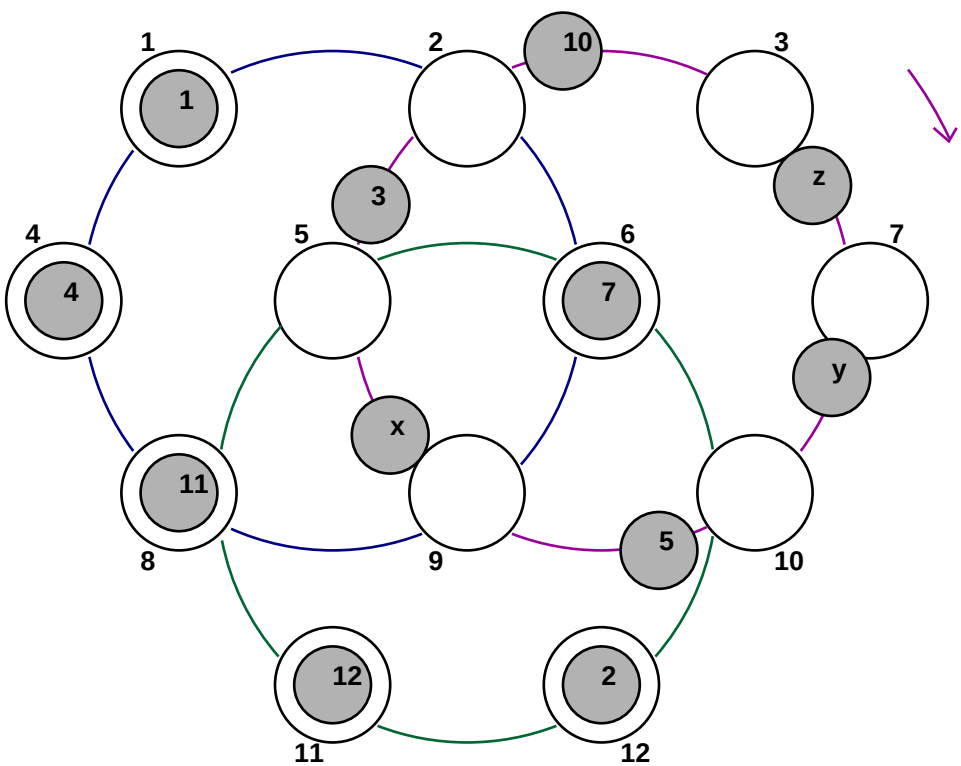

1
2
3
1
z
y
4
5
6
7
4
10
7
5
11
3
x
8
9
10
12
2
11
12

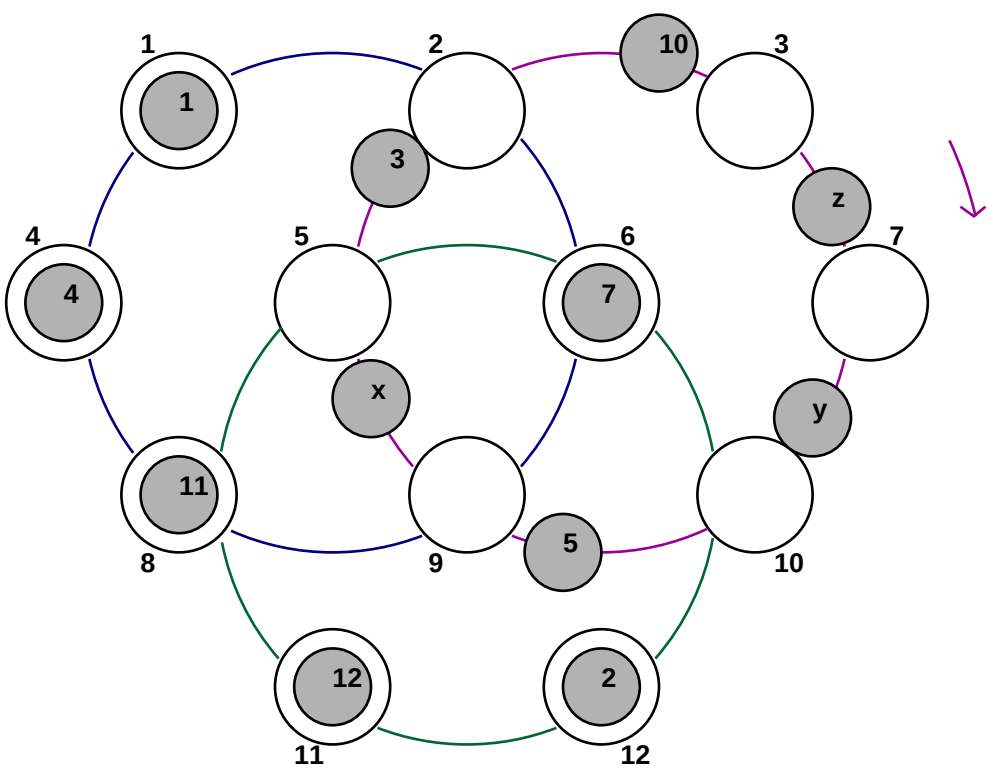

1
2
3
1
z
y
4
5
6
7
4
10
7
5
11
3
x
8
9
10
12
2
11
12

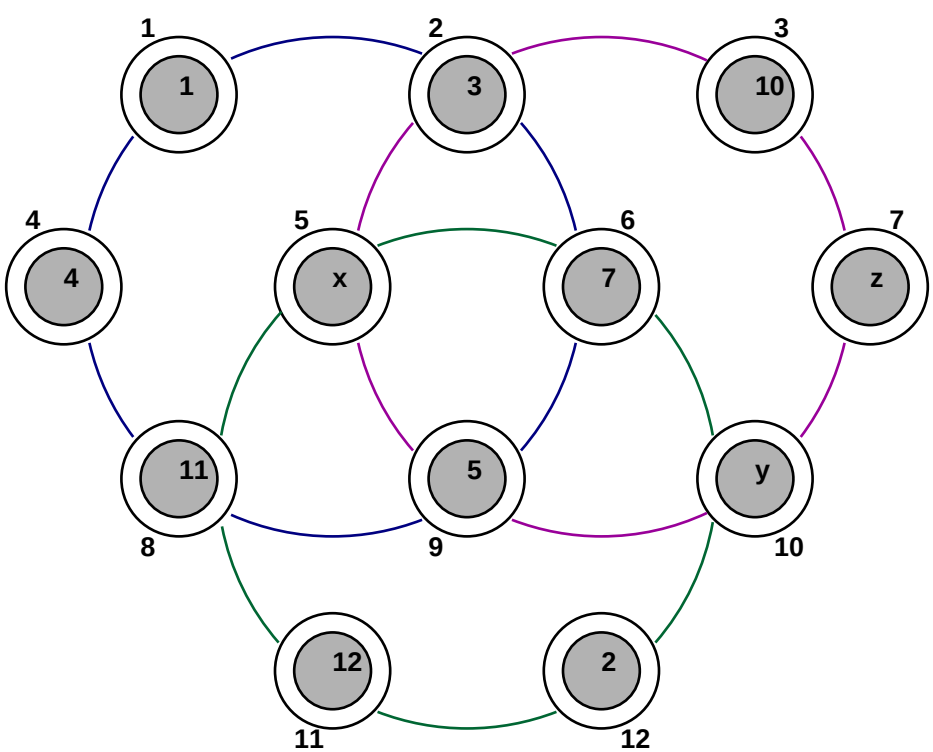

1
2
z
3
1
y
10
4
5
6
7
4
7
5
3
11
x
8
9
10
12
2
11
12

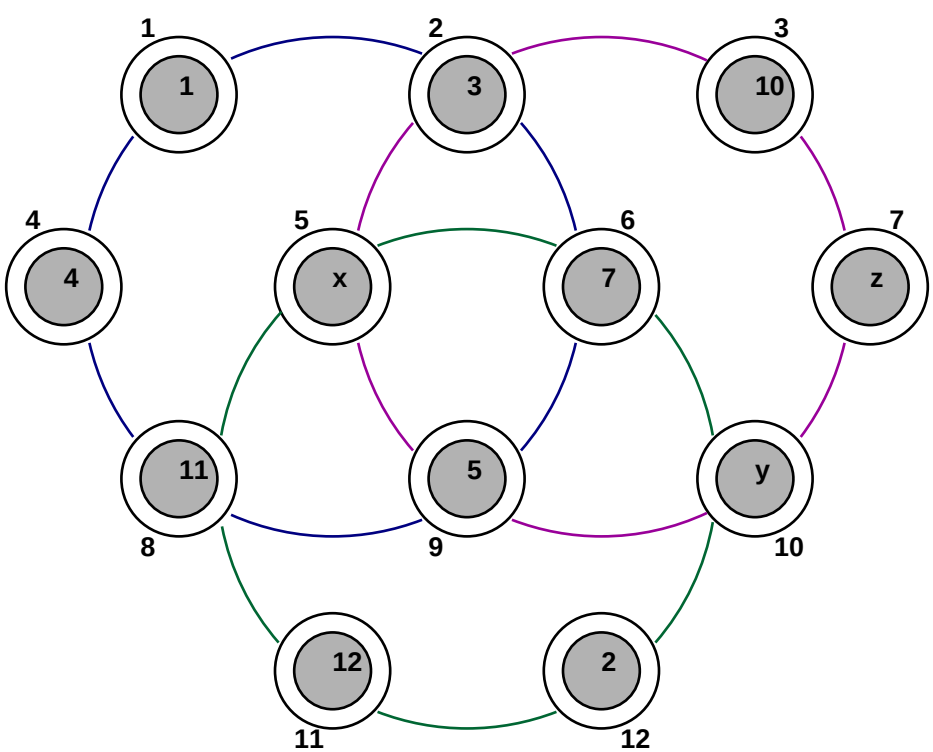

1
2
z
3
1
10
y
4
5
6
7
4
7
3
5
11
x
8
9
10
12
2
11
12

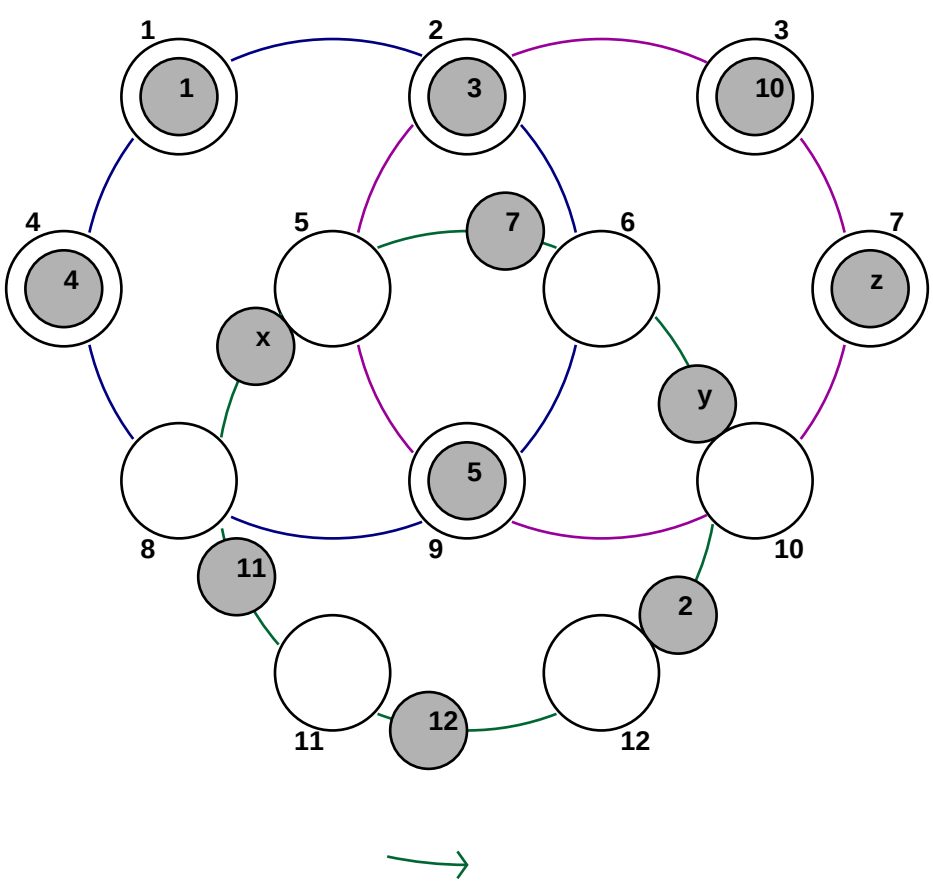

1
1
2
10
3
z
4
4
5
3
6
7
7
y
11
8
x
9
5
10
12
11
2
12

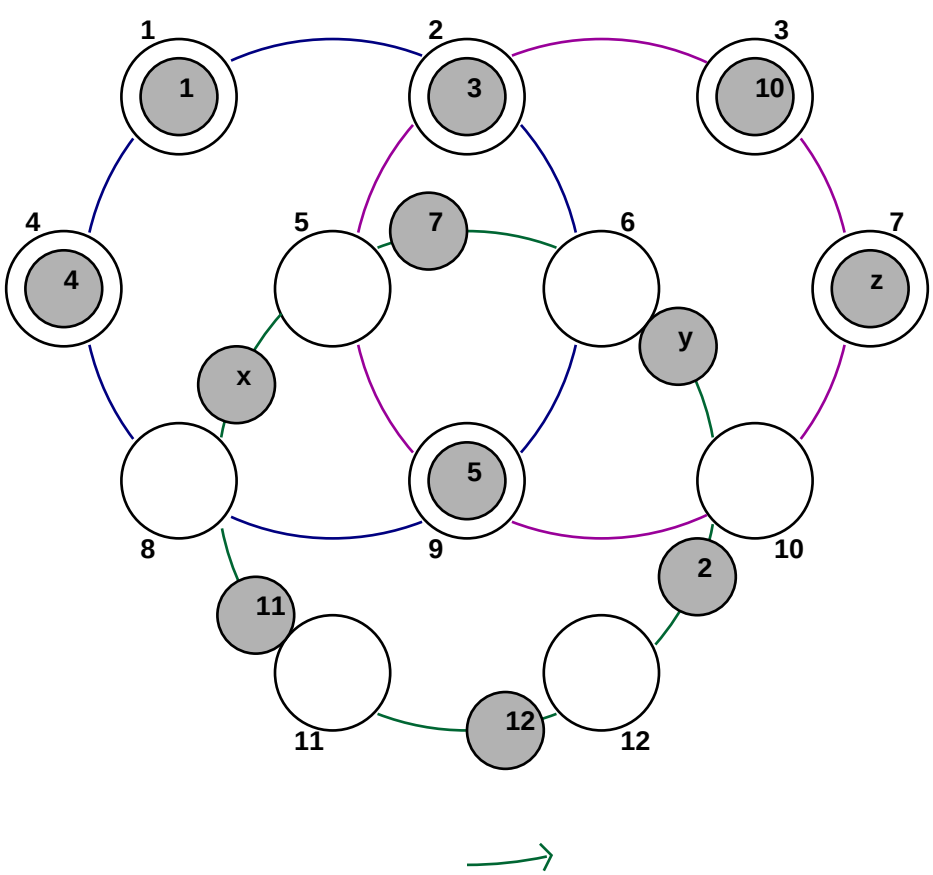

1
2
10
3
1
z
3
4
5
6
7
4
7
y
x
11
5
8
9
10
12
2
11
12

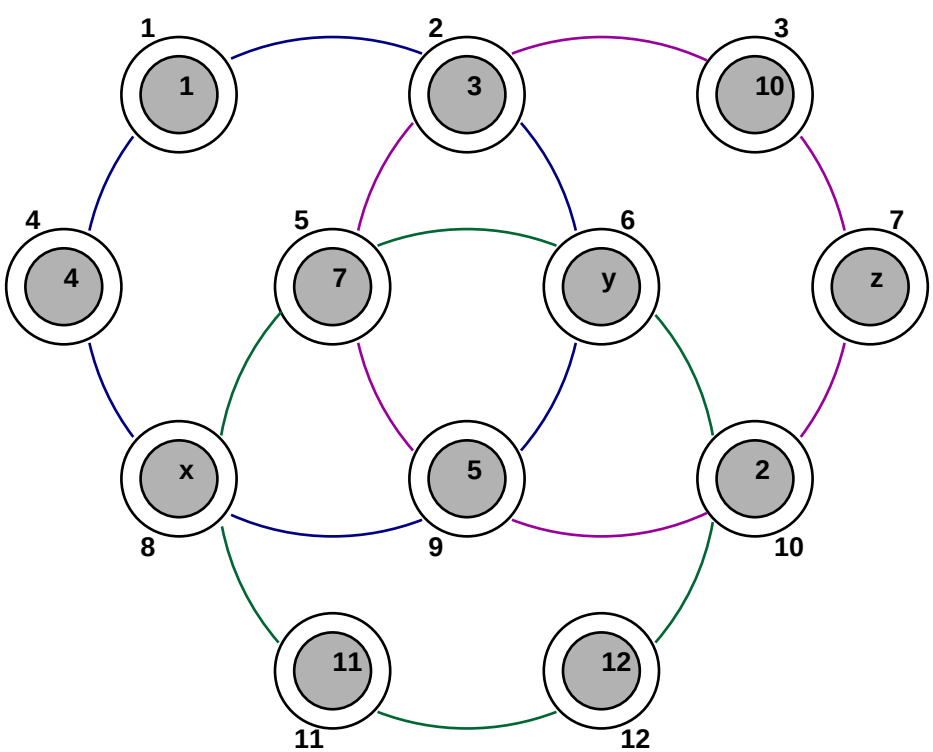

1
2
10
3
1
3
z
4
5
6
7
4
7
x
y
11
5
8
9
10
12
2
11
12

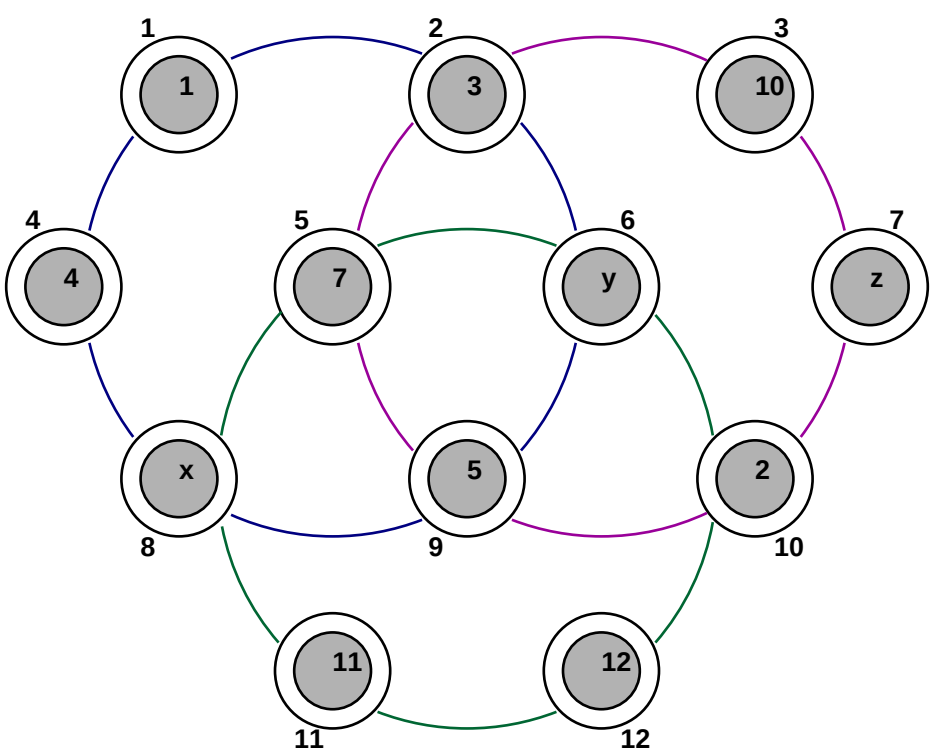

1
2
3
1
3
10
4
5
6
7
4
x
7
z
11
5
y
8
9
10
12
2
11
12

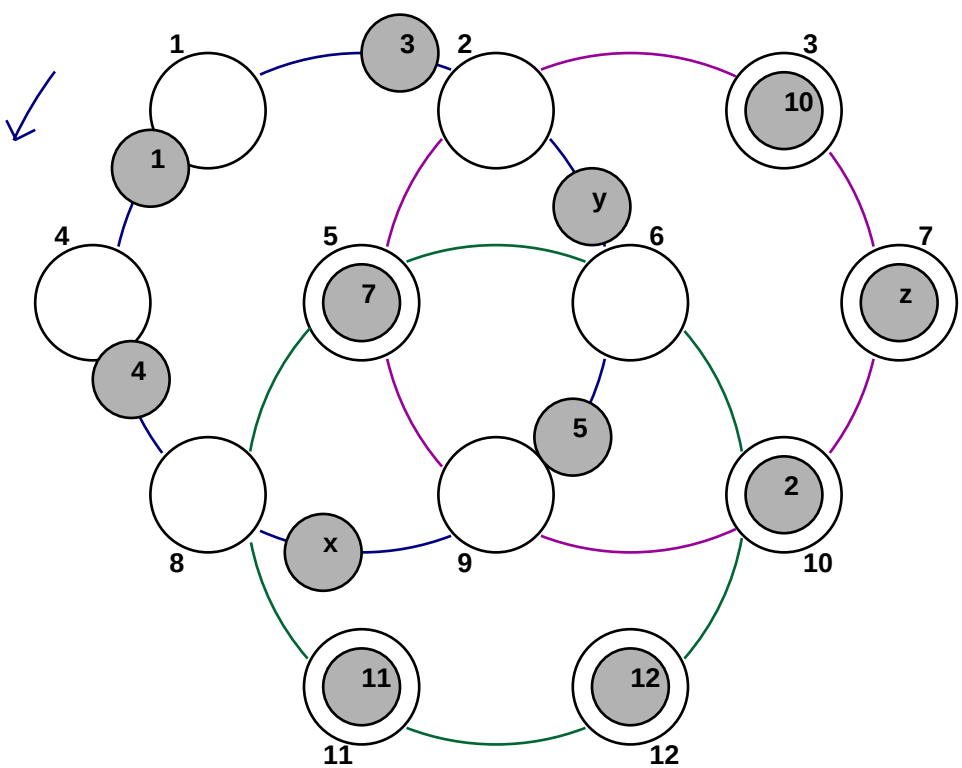

1
2
3
1
3
10
4
5
6
7
4
x
7
z
11
5
y
8
9
10
12
2
11
12

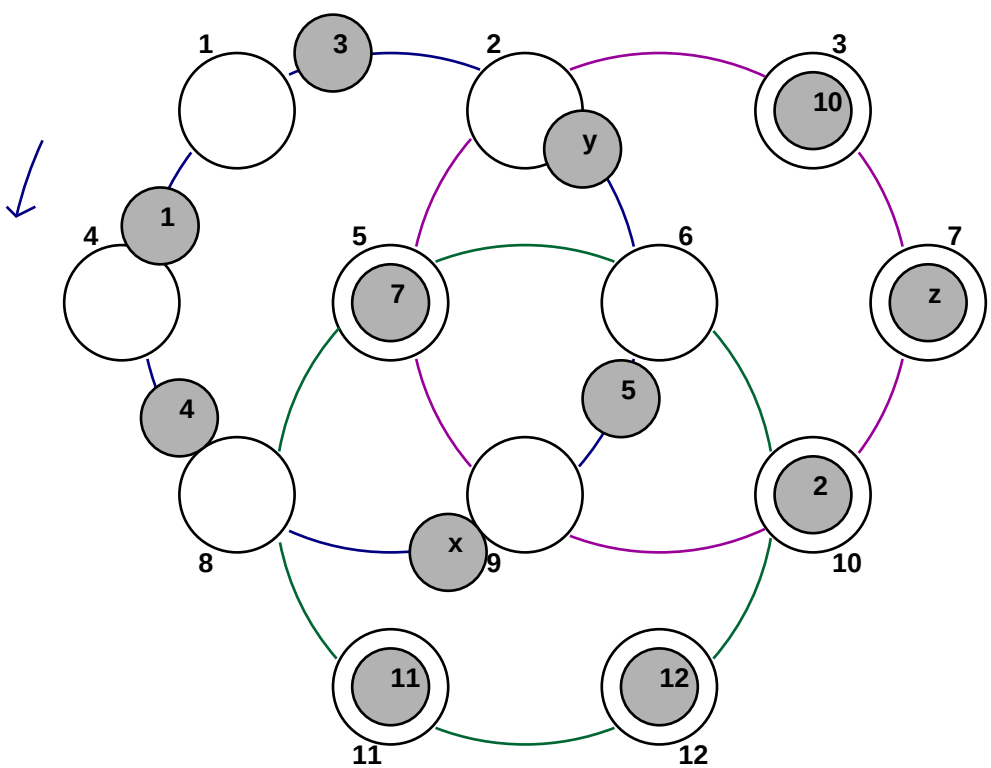

1
2
3
1
3
10
4
5
7
6
7
4
z
x
y
5
8
9
10
11
2
11
12
12

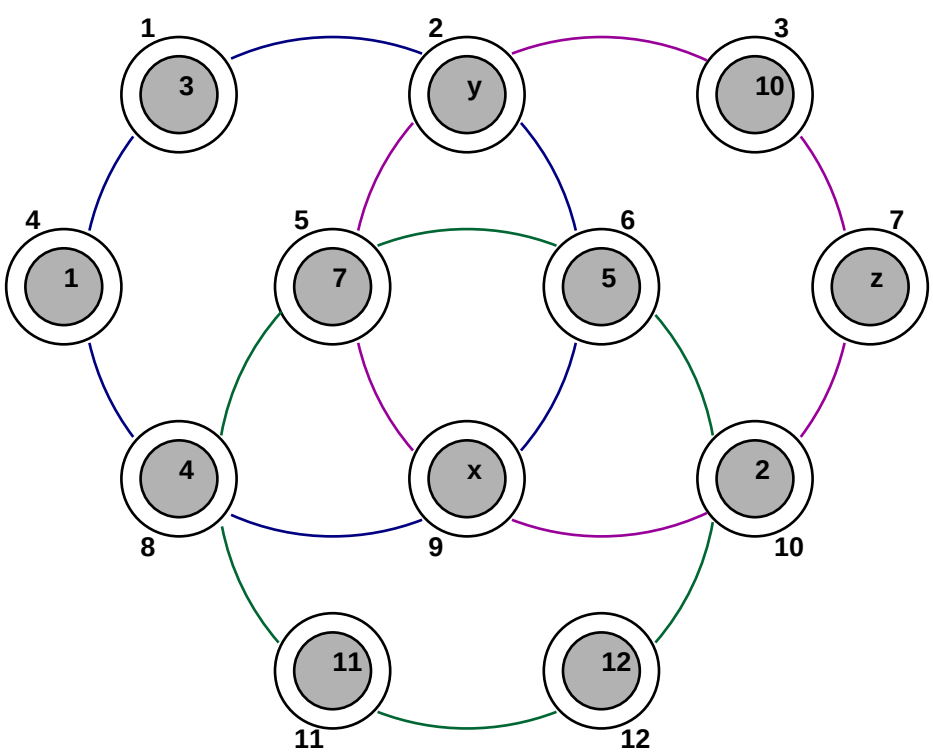

1
2
3
1
3
10
4
5
7
6
7
4
z
y
x
5
8
9
10
2
11
11
12
12

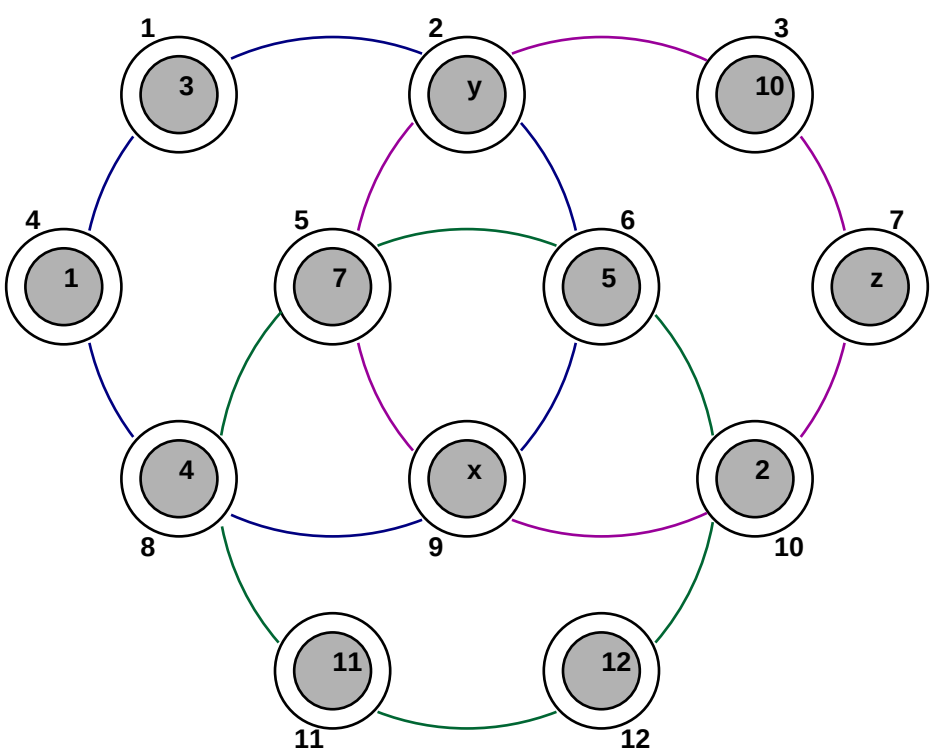

1
2
3
1
3
10
4
5
6
7
4
7
y
z
x
5
2
8
9
10
11
12
11
12

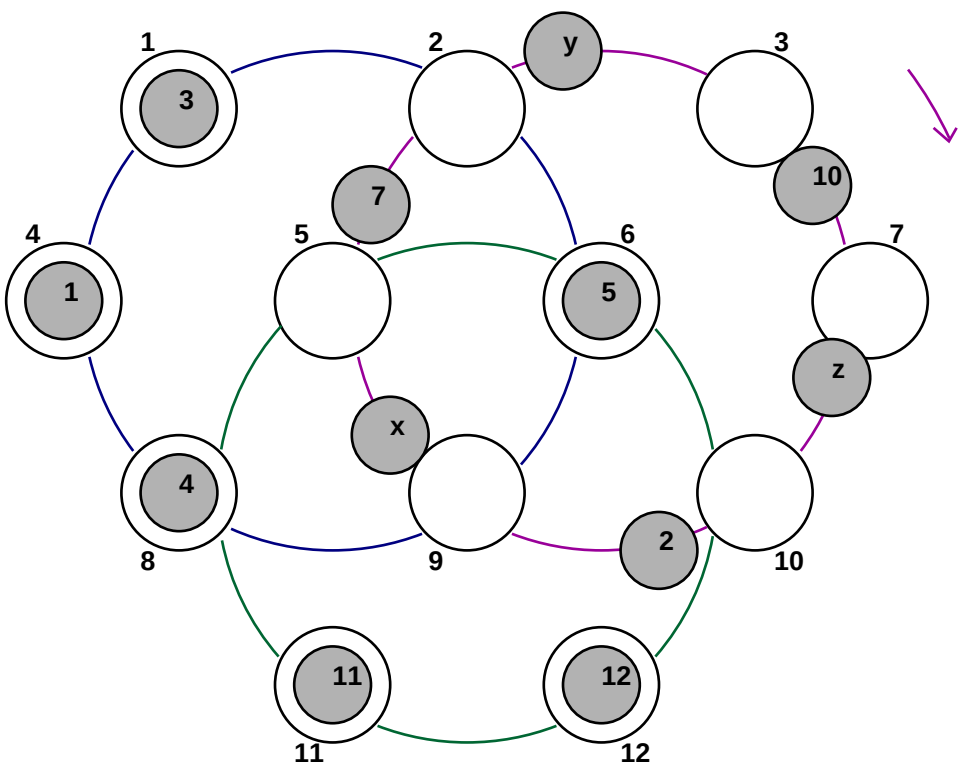

1
2
3
1
3
10
4
5
6
7
4
7
y
z
x
5
2
8
9
10
11
12
11
12

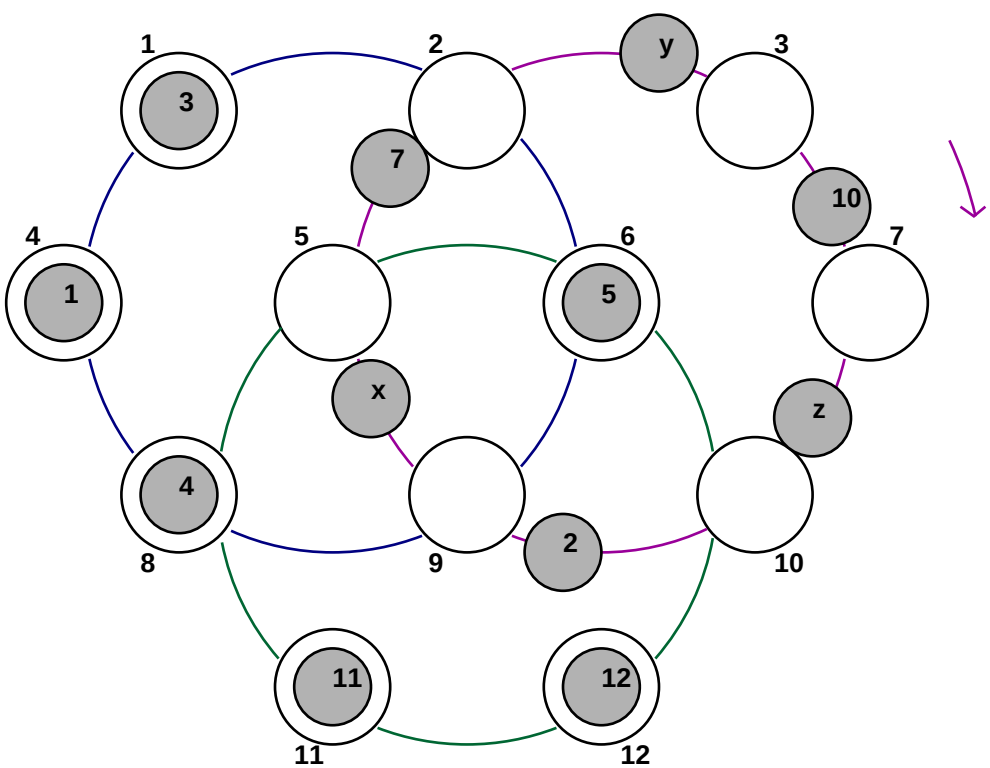

1
3
2
3
10
1
y
4
5
6
7
7
z
4
5
2
8
x
9
10
11
12
11
12

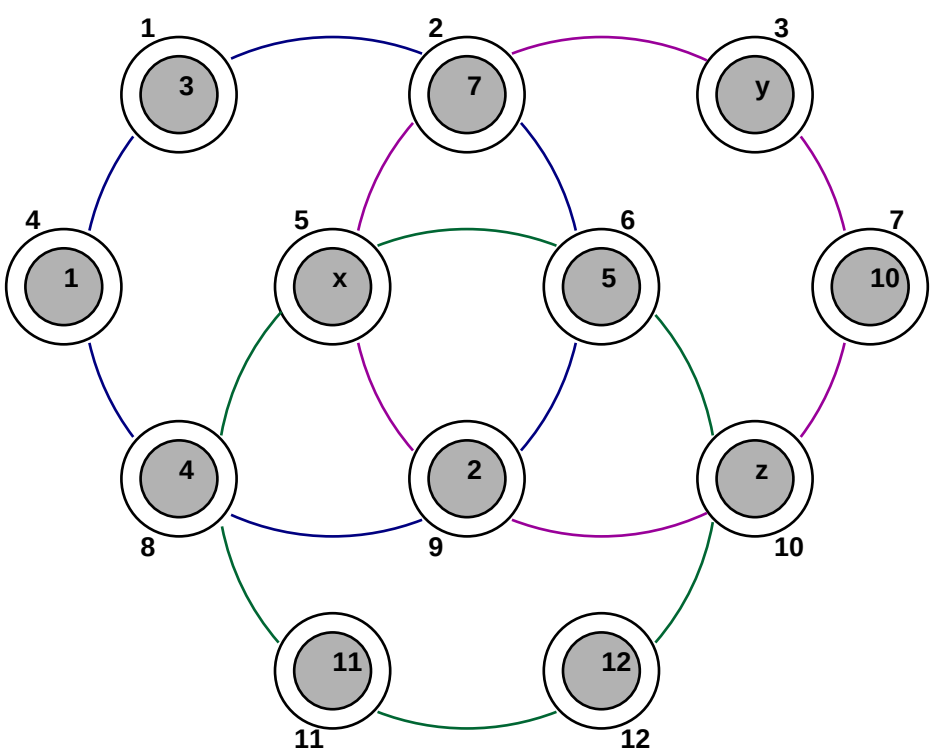

1
3
2
3
10
y
1
4
5
6
7
7
z
5
4
2
x
8
9
10
11
12
11
12

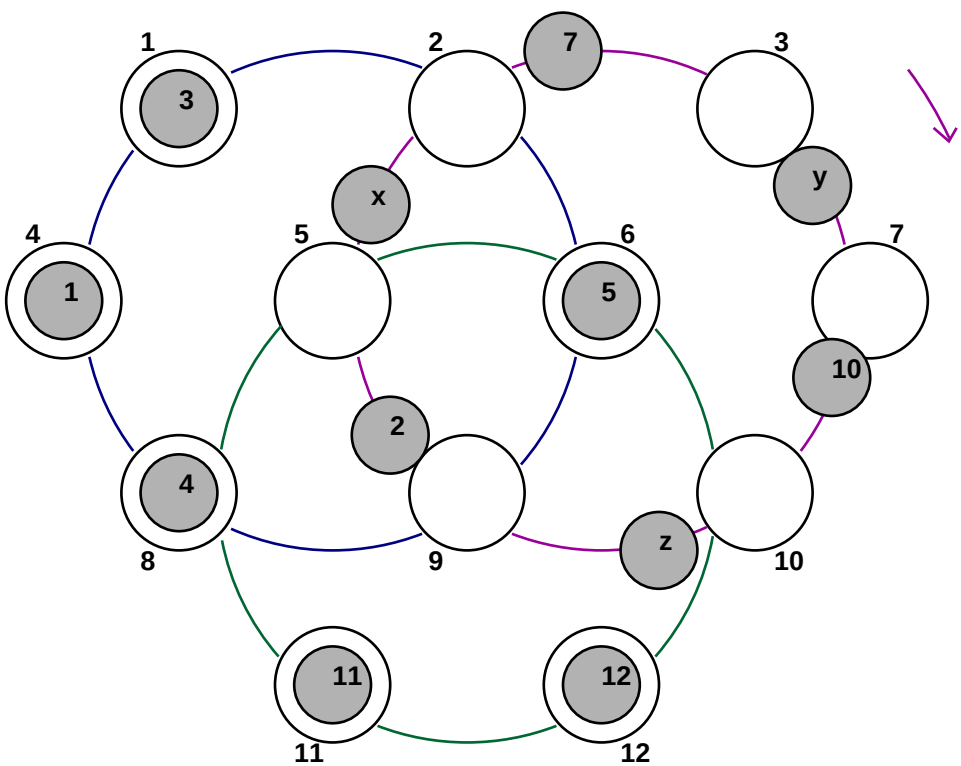

1
3
2
y
3
10
4
1
5
7
6
5
7
z
4
4
x
2
8
9
10
11
11
12
12

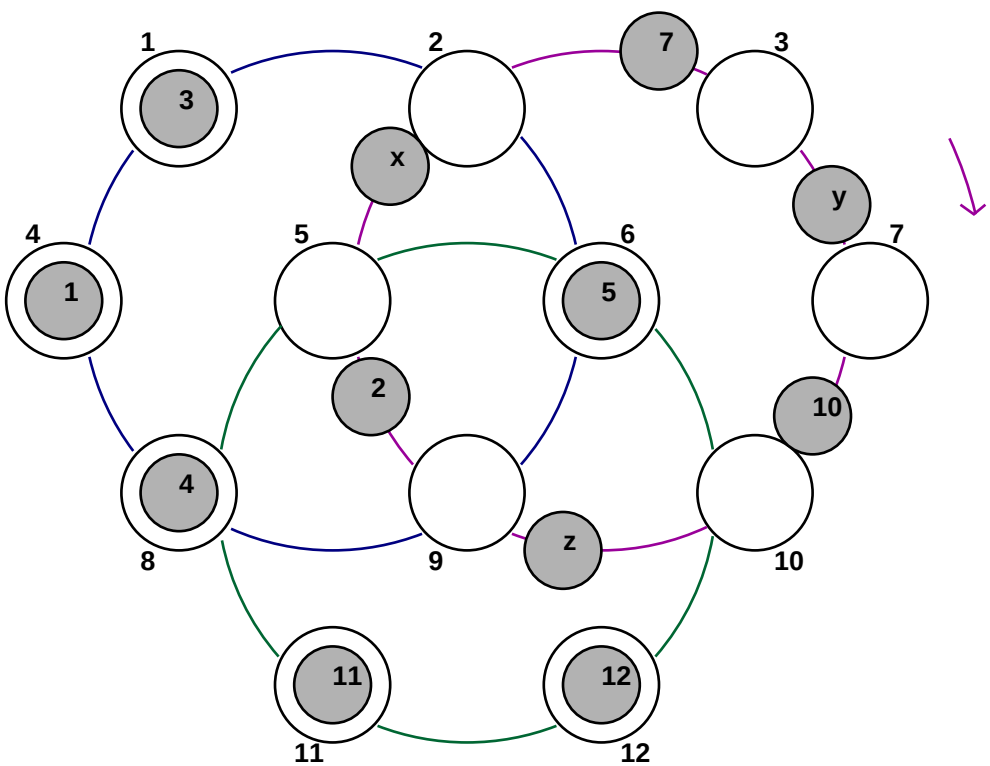

1
3
2
y
3
10
4
1
5
7
6
5
7
z
4
4
x
2
8
9
10
11
11
12
12

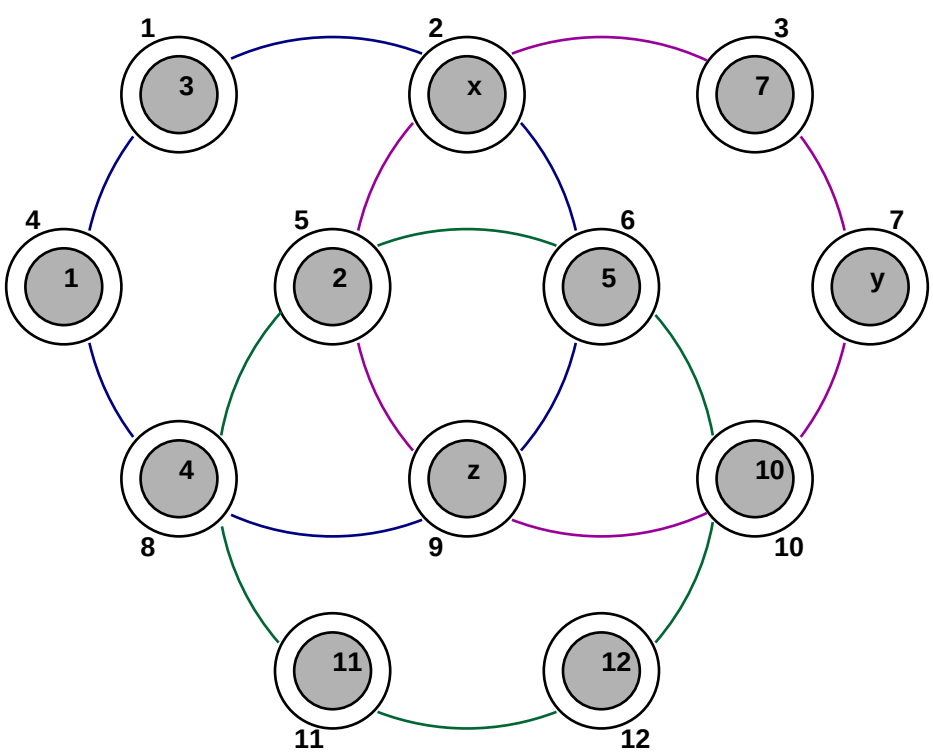

1
3
2
y
3
10
7
4
1
5
7
6
5
z
x
4
8
9
2
10
11
11
12
12

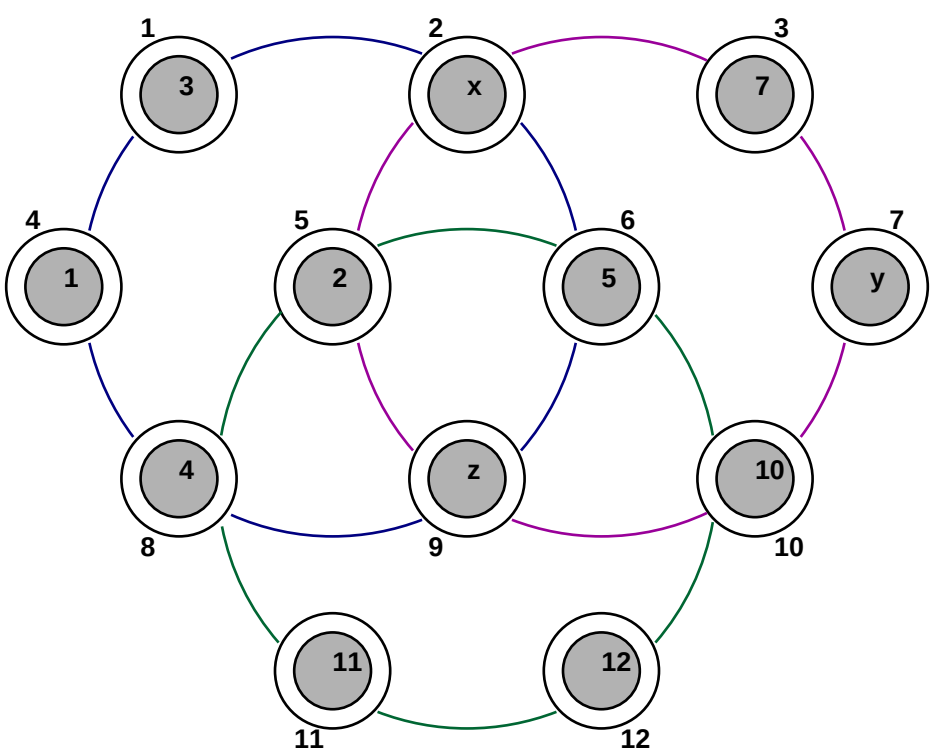

1
3
2
y
3
7
10
4
1
5
6
5
7
x
z
4
8
9
2
10
11
11
12
12

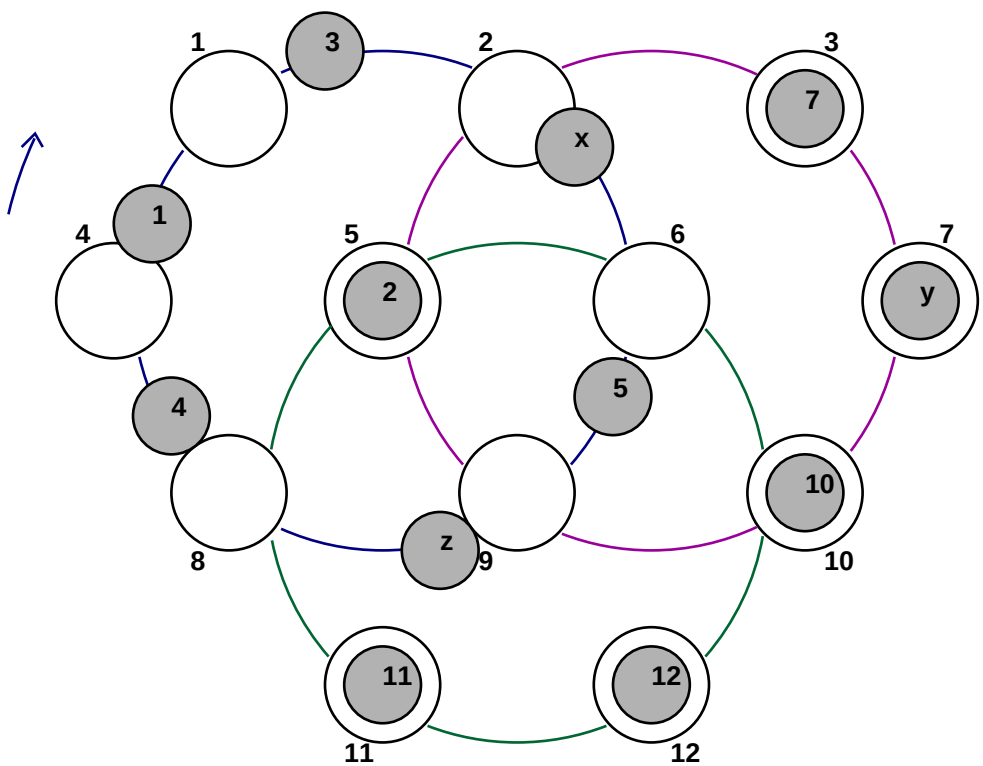

1
3
2
7
3
y
4
1
5
x
6
5
7
10
4
4
2
z
8
9
10
11
11
12
12

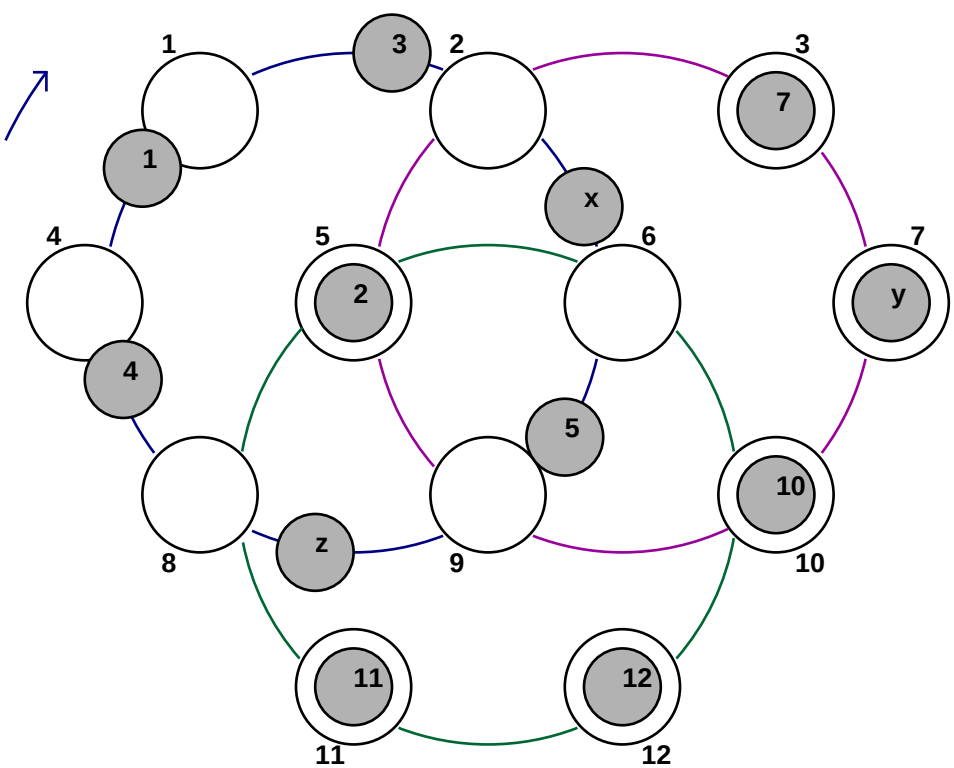

1
3
2
7
3
x
y
4
1
5
5
6
5
7
10
2
4
4
8
9
z
10
11
11
12
12

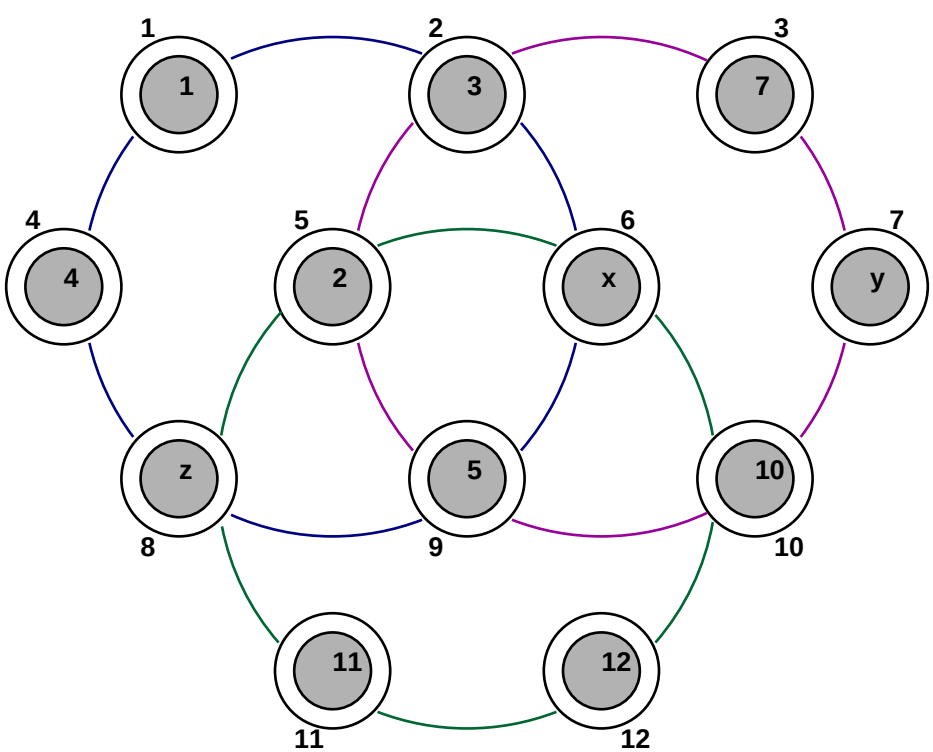

1
2
7
3
3
x
y
4
5
6
7
1
5
2
10
4
z
8
9
10
11
12
11
12

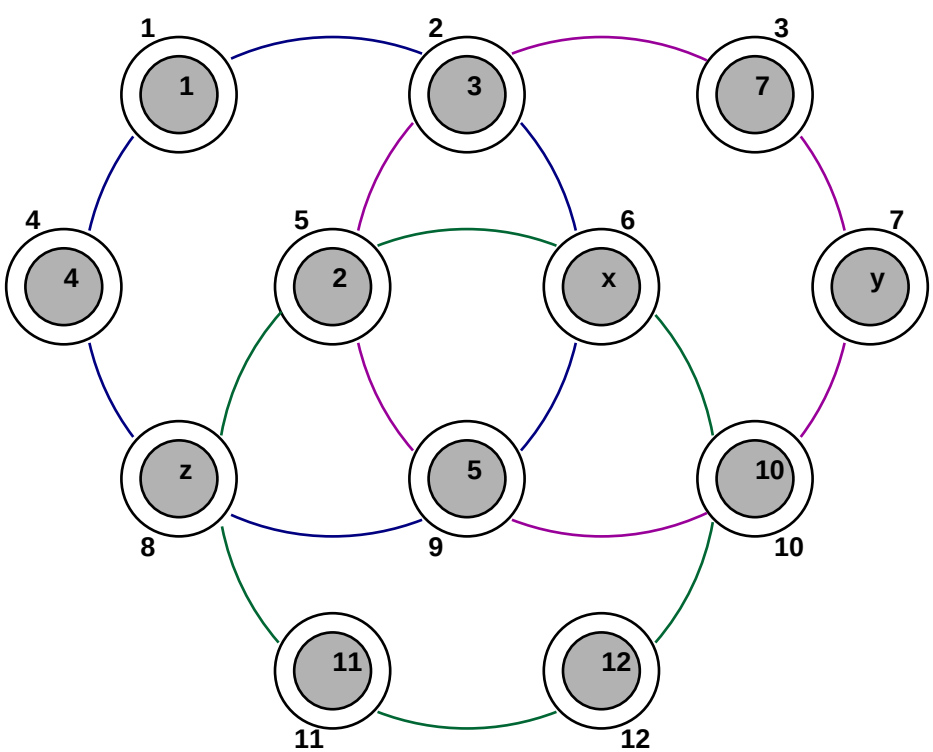

1
3
2
x
3
7
4
1
5
2
6
5
7
y
4
4
z
10
8
9
10
11
11
12
12

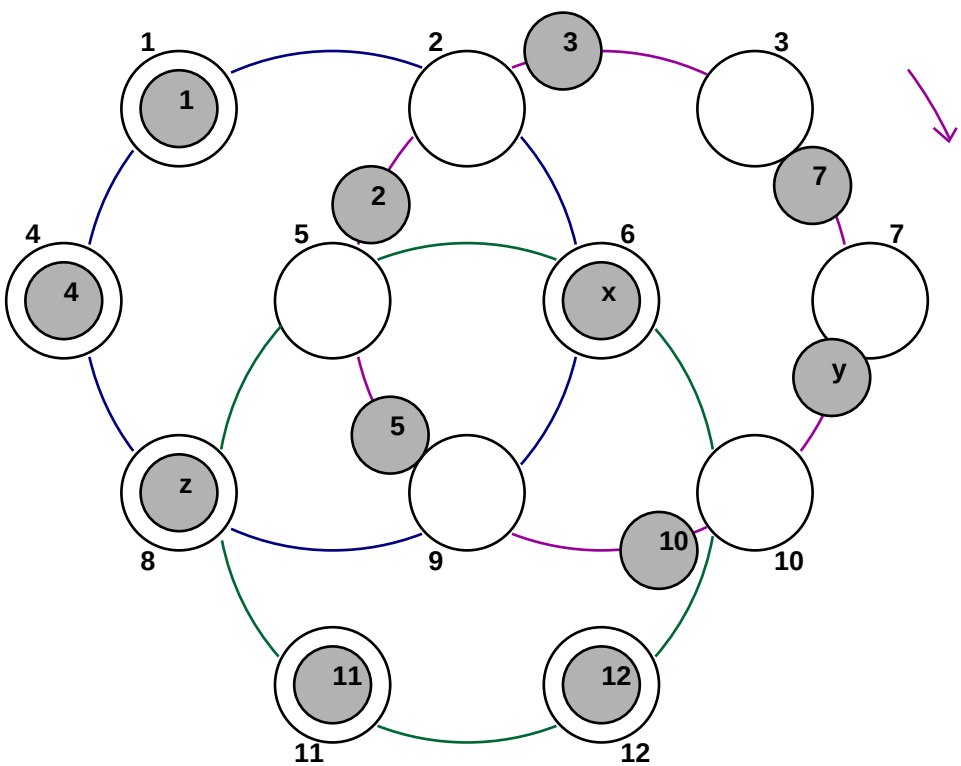

1
3
2
x
3
7
4
1
5
2
6
5
7
y
4
4
z
10
8
9
10
11
11
12
12

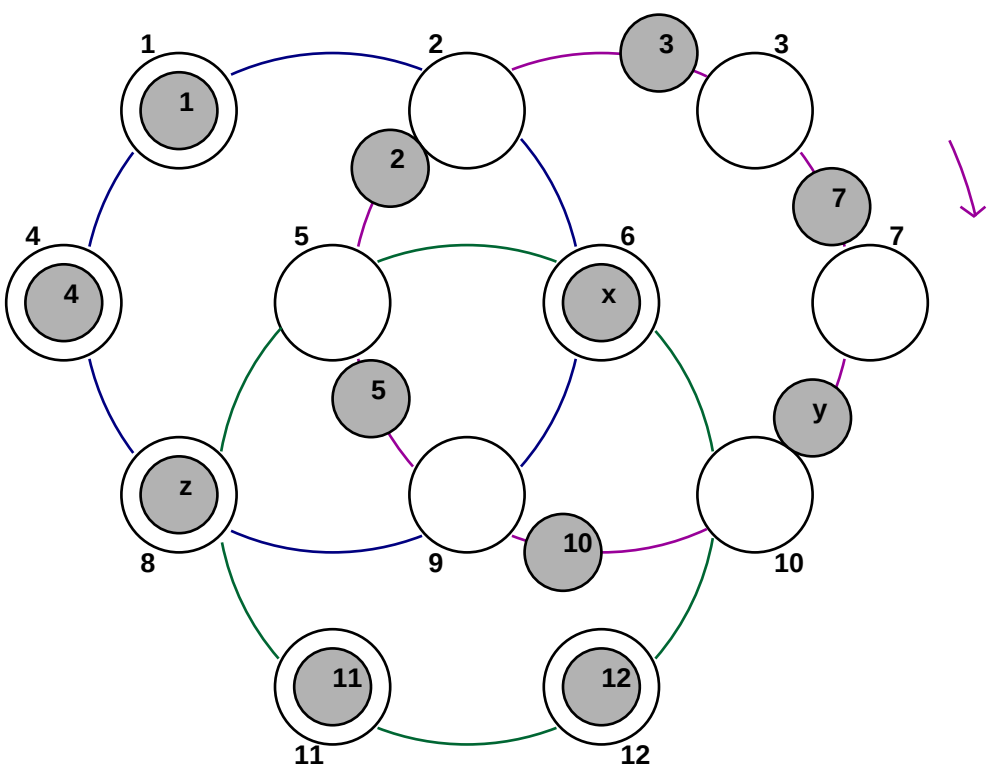

1
3
2
3
7
x
1
4
5
6
7
2
y
5
4
10
z
8
9
10
11
12
11
12

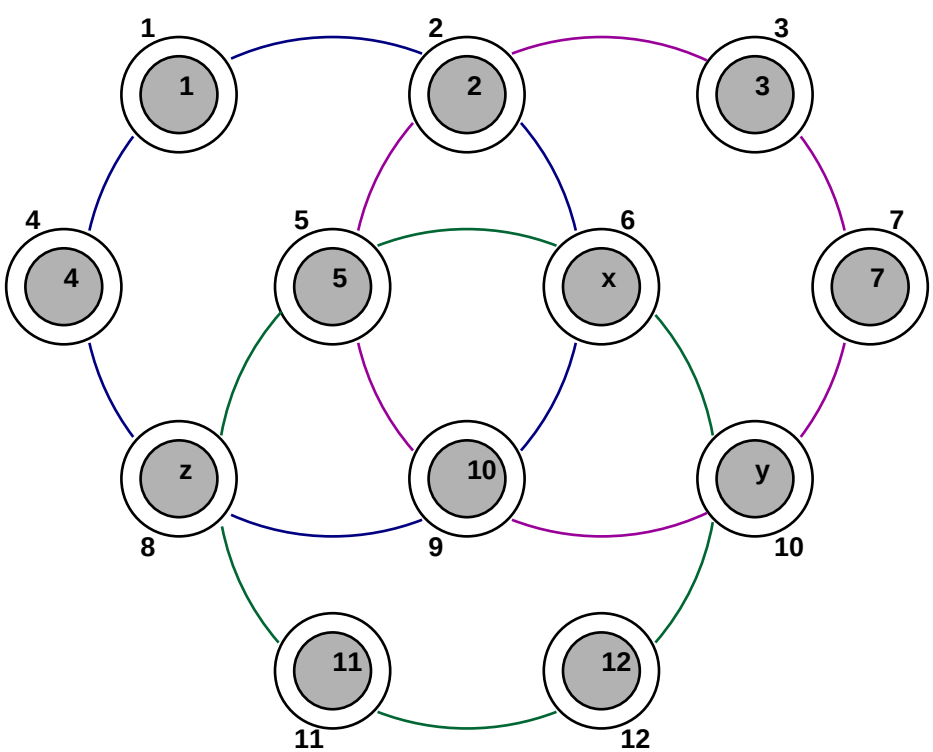

1
3
2
3
7
1
x
4
5
6
7
2
y
4
5
10
z
8
9
10
11
12
11
12

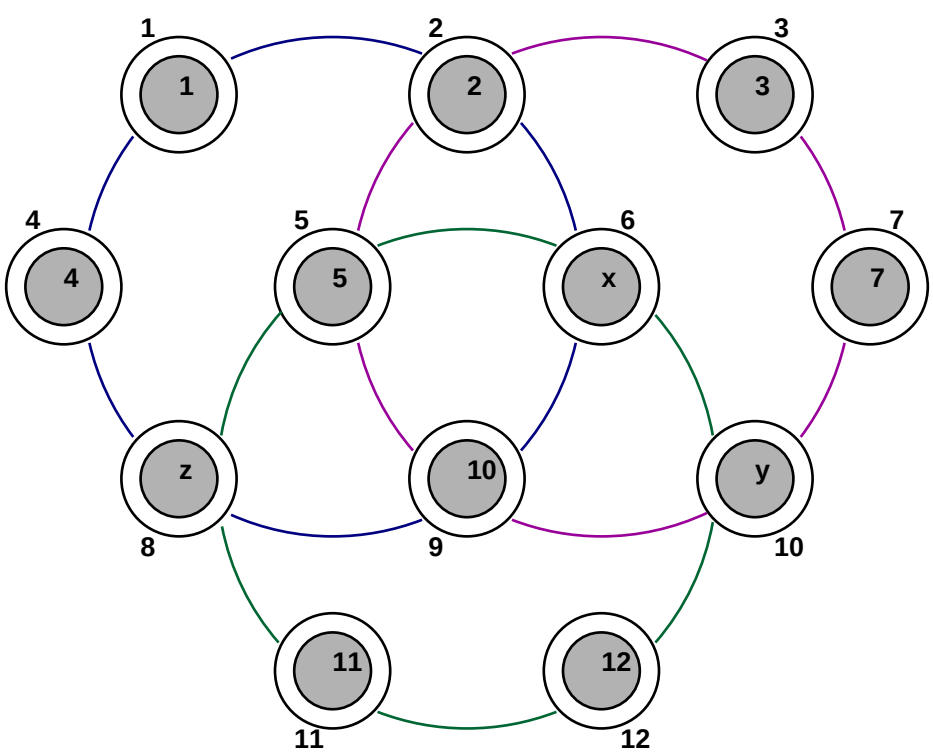

1
2
3
1
3
7
4
5
6
7
4
2
x
y
z
5
10
8
9
10
11
12
11
12

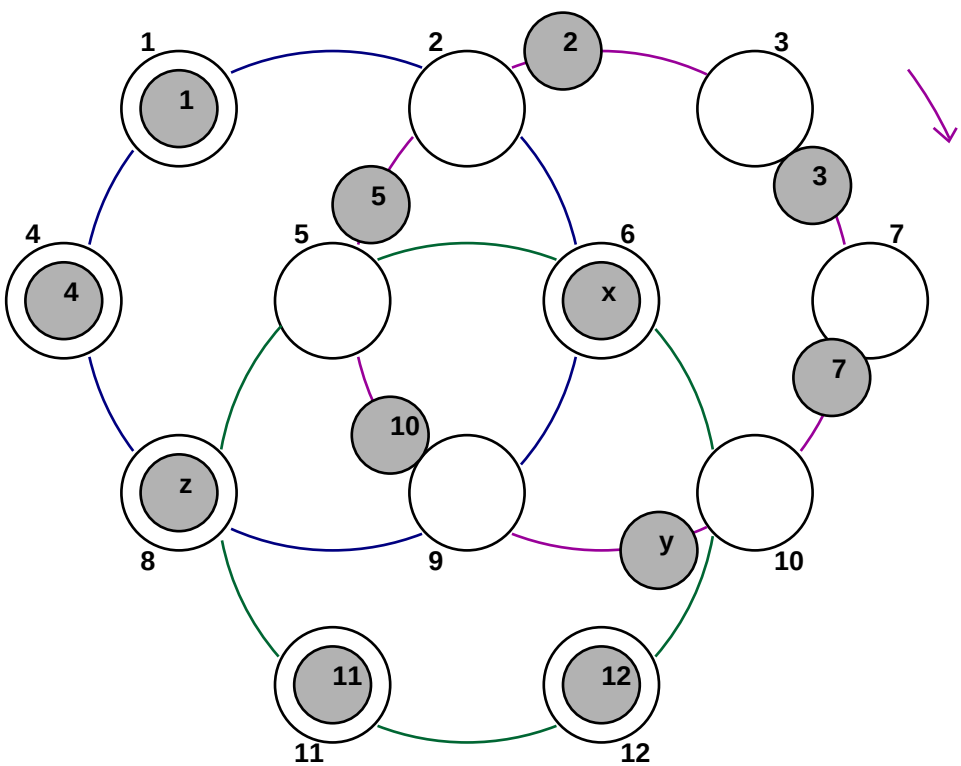

1
2
3
1
3
7
4
5
6
7
4
2
x
y
z
5
10
8
9
10
11
12
11
12

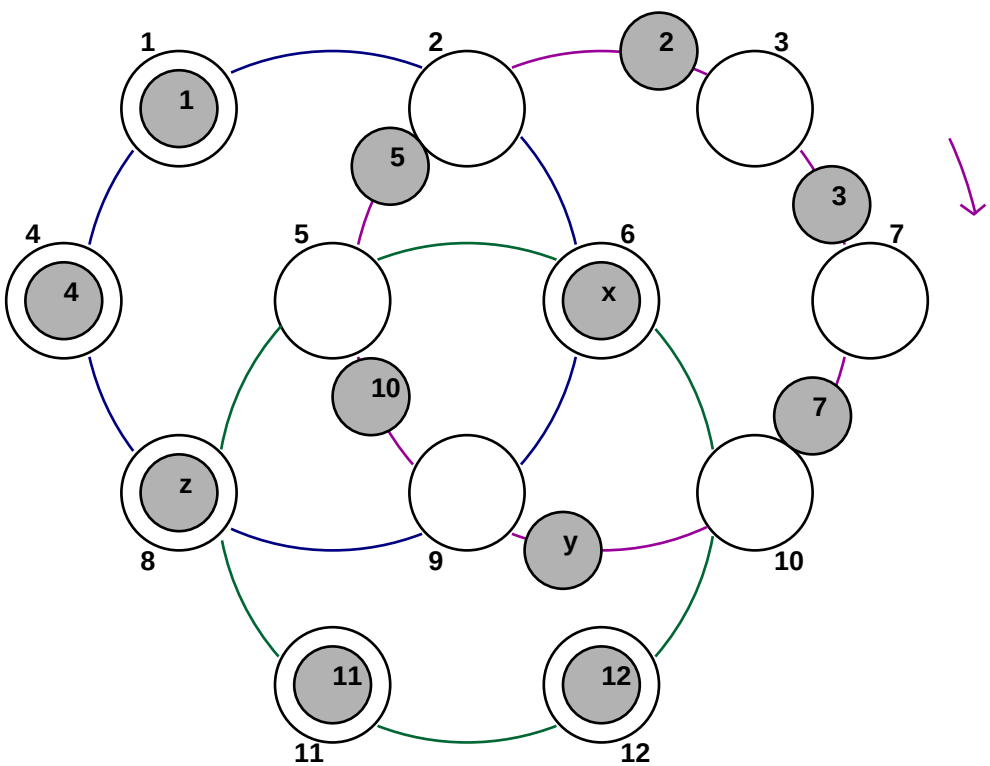

1
2
3
3
1
2
7
4
5
6
7
4
x
y
5
z
8
9
10
10
11
12
11
12

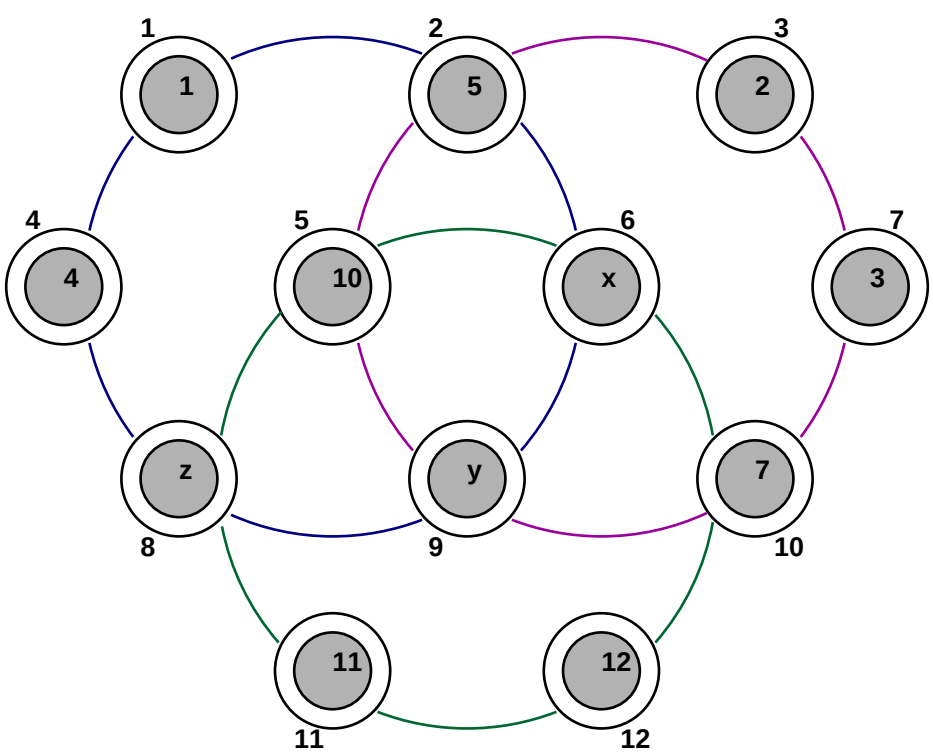

1
2
3
3
1
2
7
4
5
6
7
4
x
5
y
z
8
9
10
10
11
12
11
12

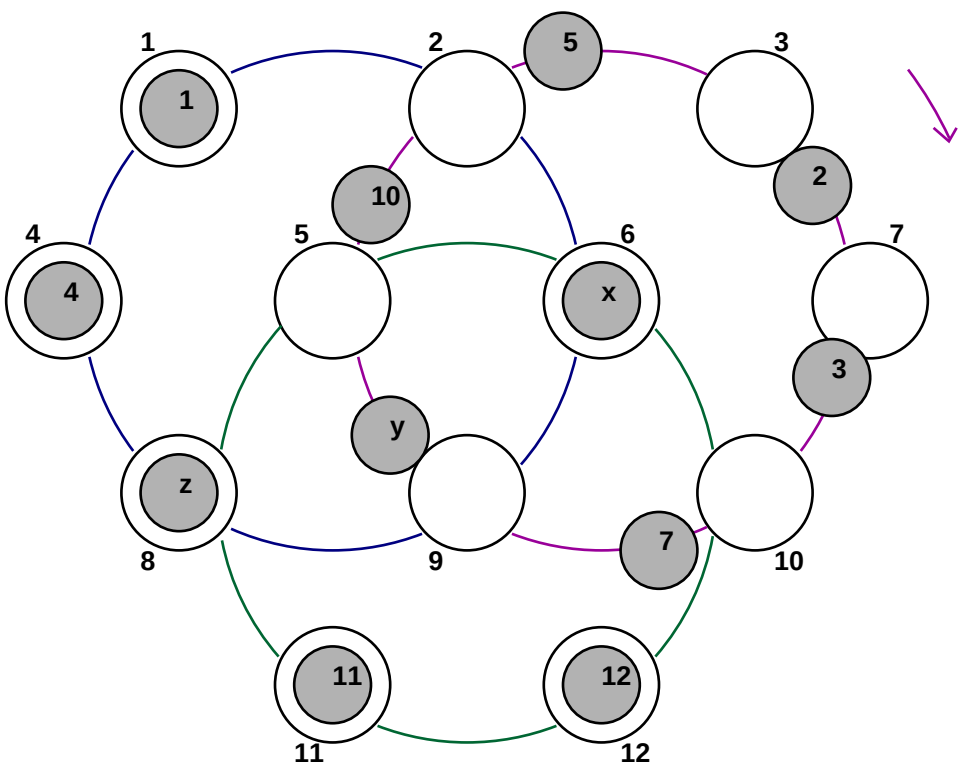

1
2
3
4
5
6
7
z
10
y
8
9
10
11
12
11
12

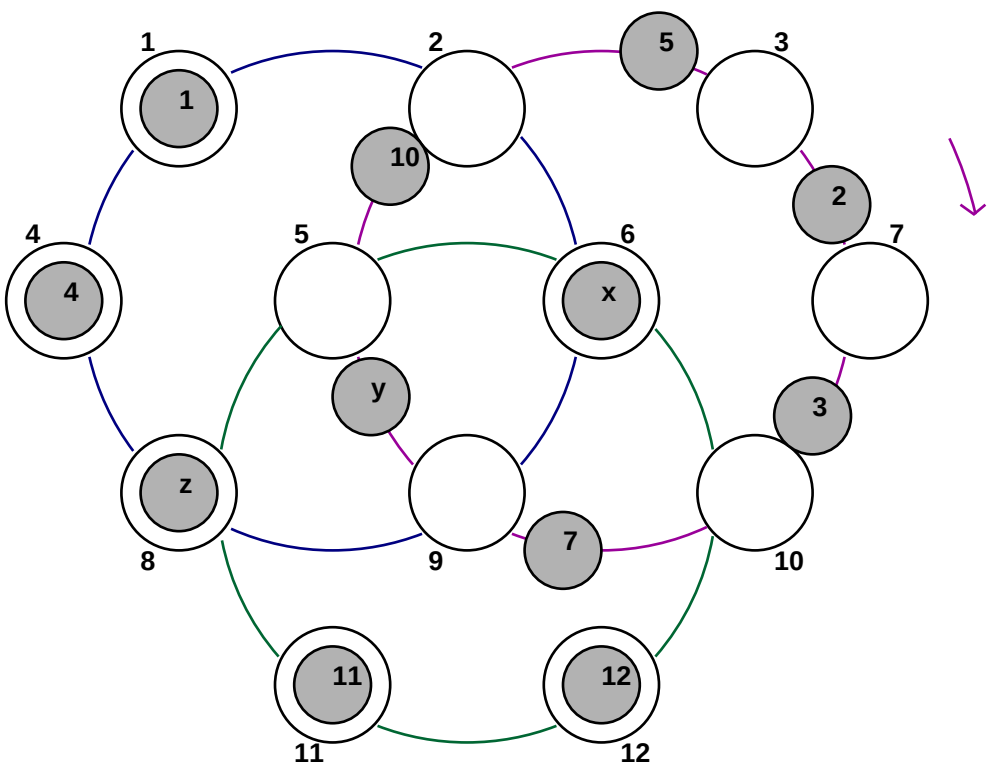

1
2
3
4
5
6
7
z
10
y
8
9
10
11
12
11
12

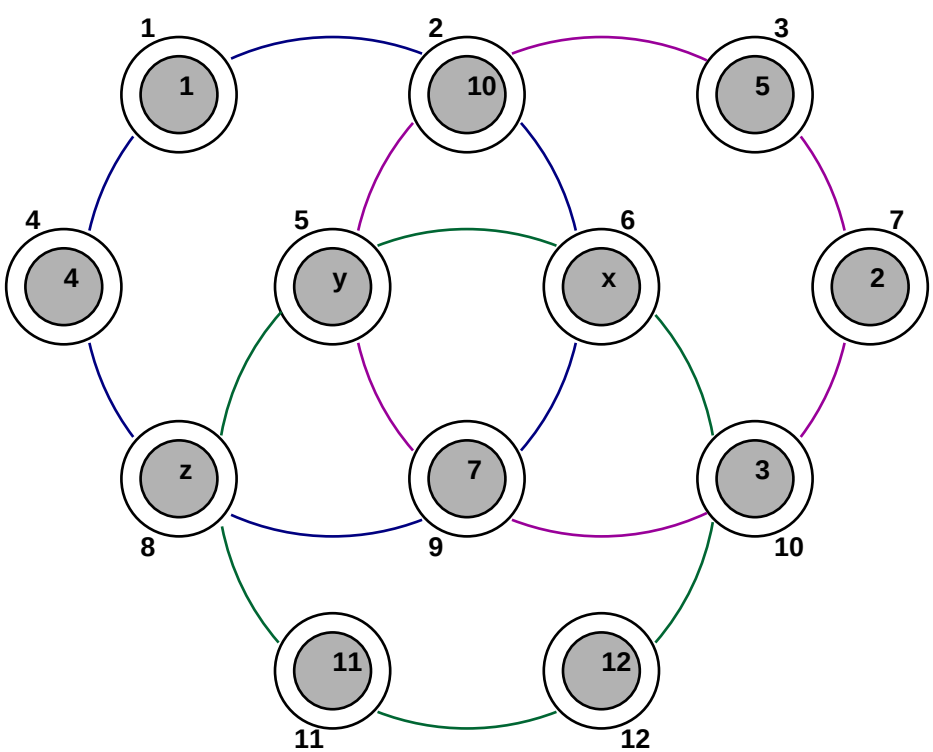

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
x
7
10
z
y
11
12

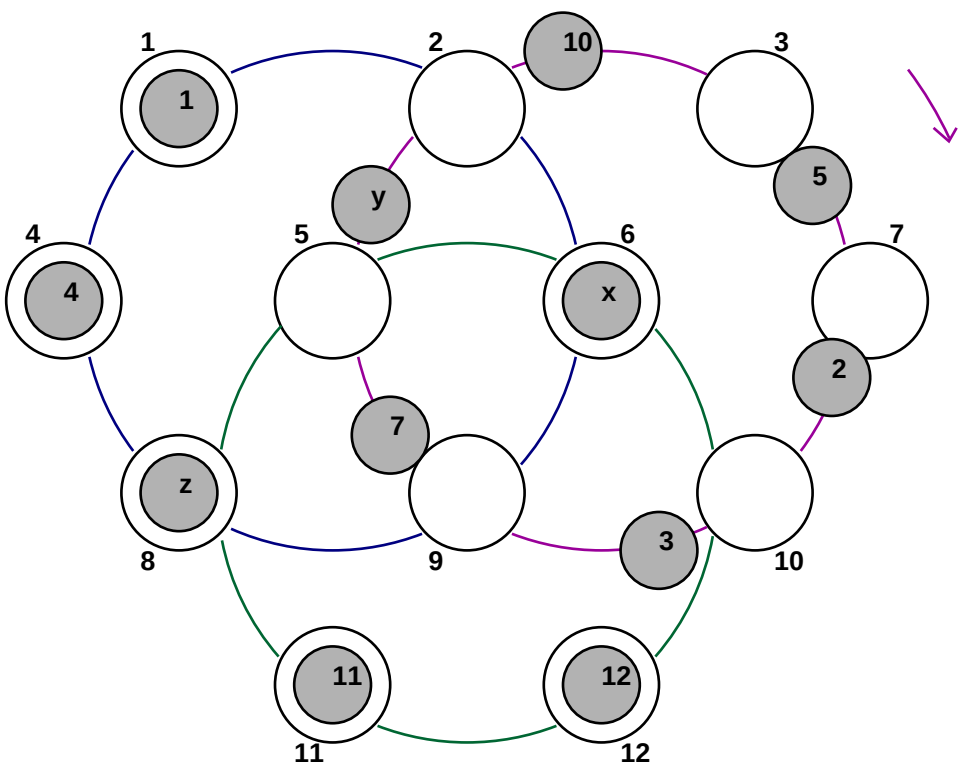

1
2
2
3
1
5
3
4
5
6
7
4
x
10
7
z
9
y
10
8
11
12
11
12

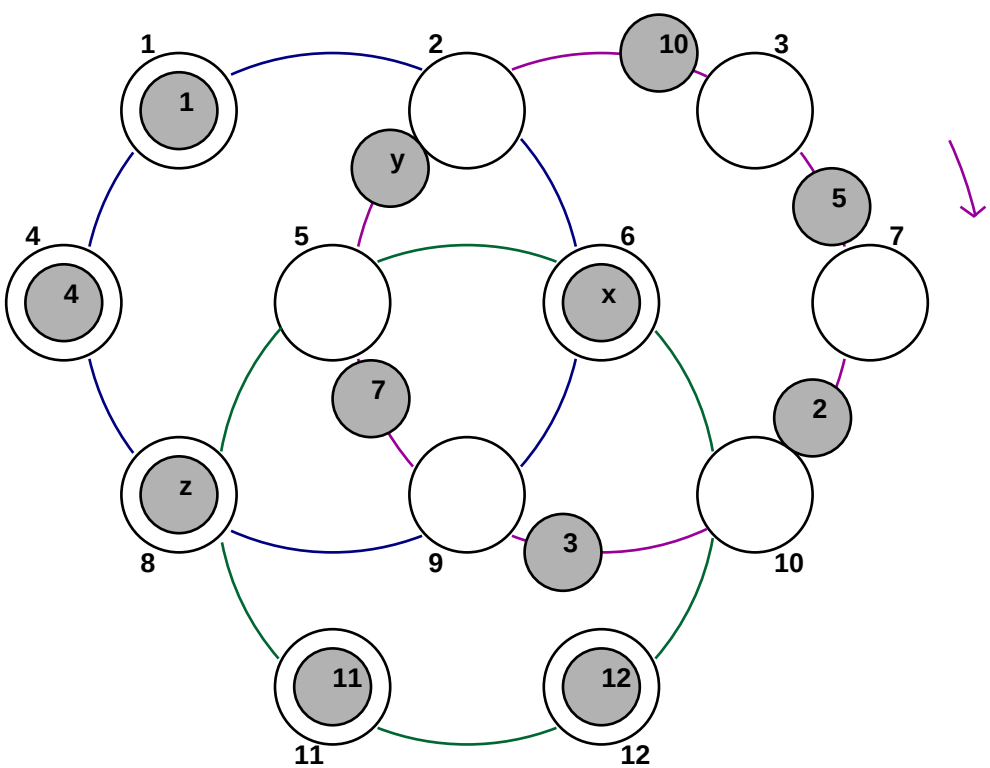

1
2
3
1
5
2
4
5
6
7
4
10
x
3
z
y
7
8
9
10
11
12
11
12

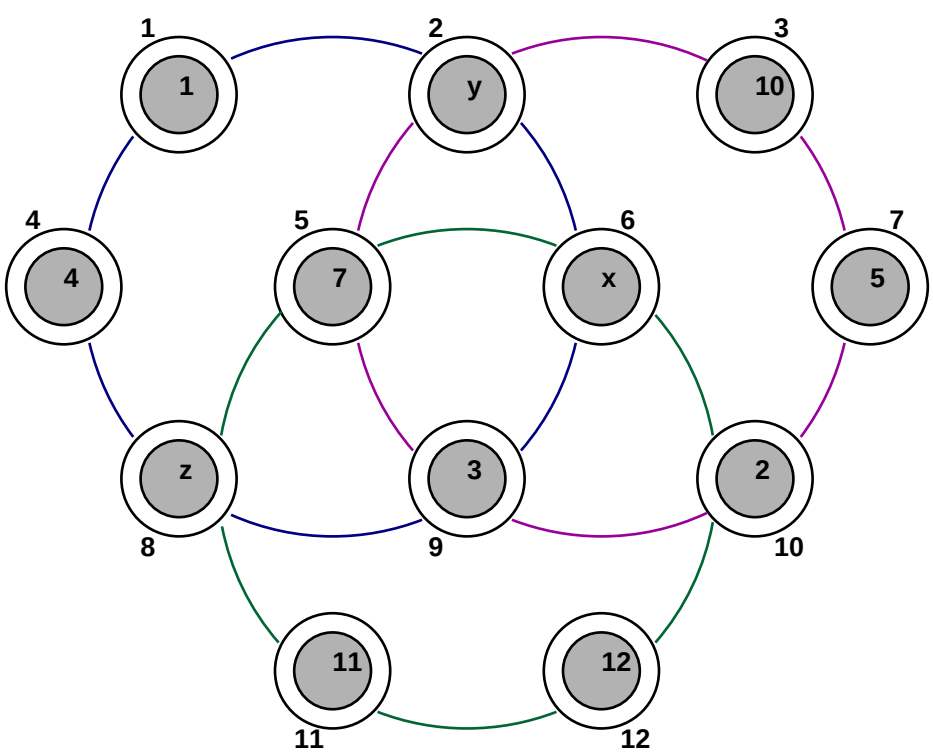

1
2
5
3
1
2
10
4
5
6
7
4
x
3
y
z
7
8
9
10
11
12
11
12

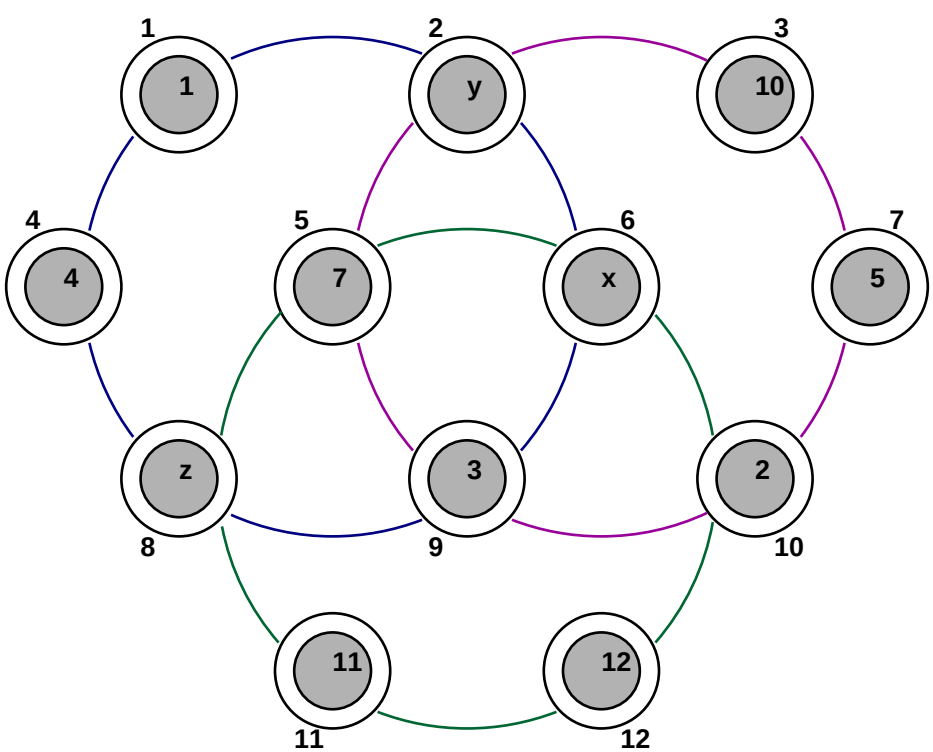

1
2
5
3
1
10
2
4
5
6
7
4
x
y
3
z
8
9
7
10
11
12
11
12

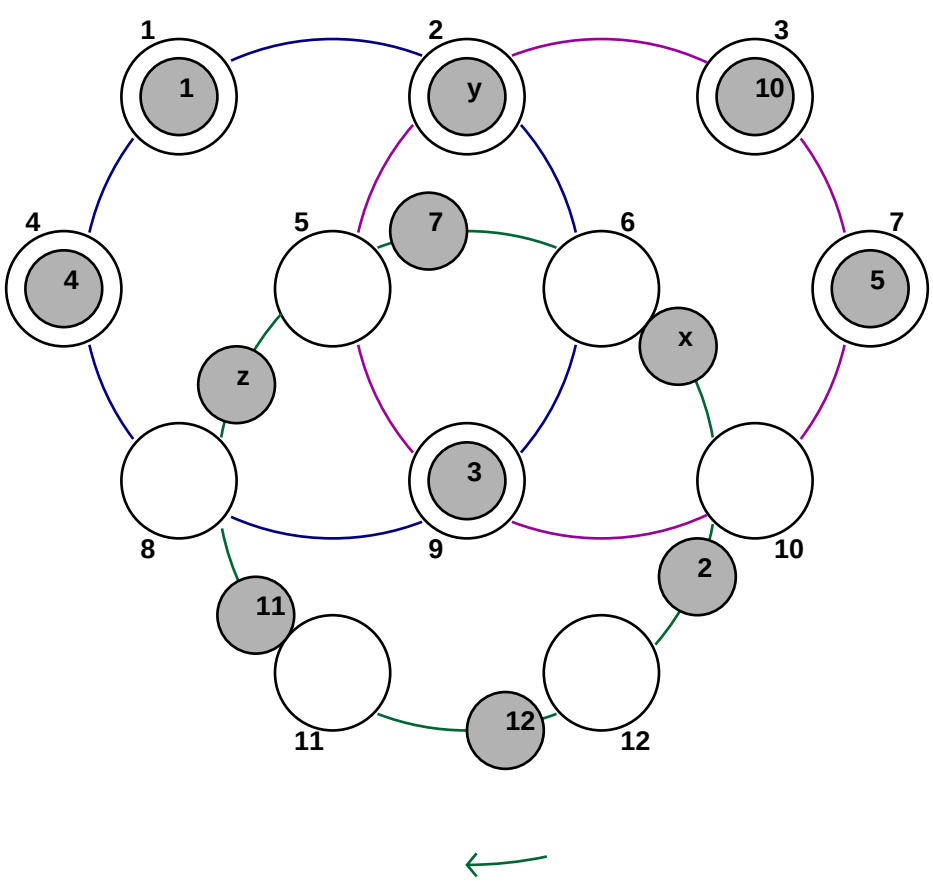

1
2
3
1
10
5
4
5
6
7
4
y
x
2
z
7
3
8
9
10
11
12
11
12

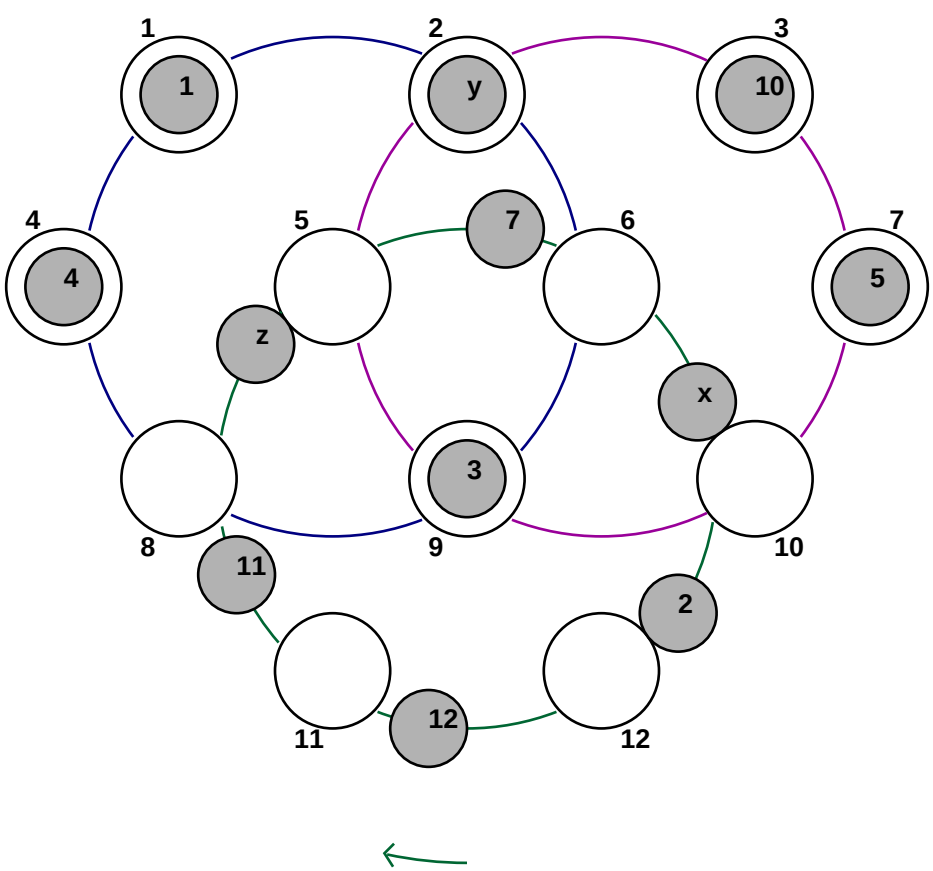

1
2
10
3
1
y
5
4
5
6
7
4
x
2
7
z
3
8
9
10
11
12
11
12

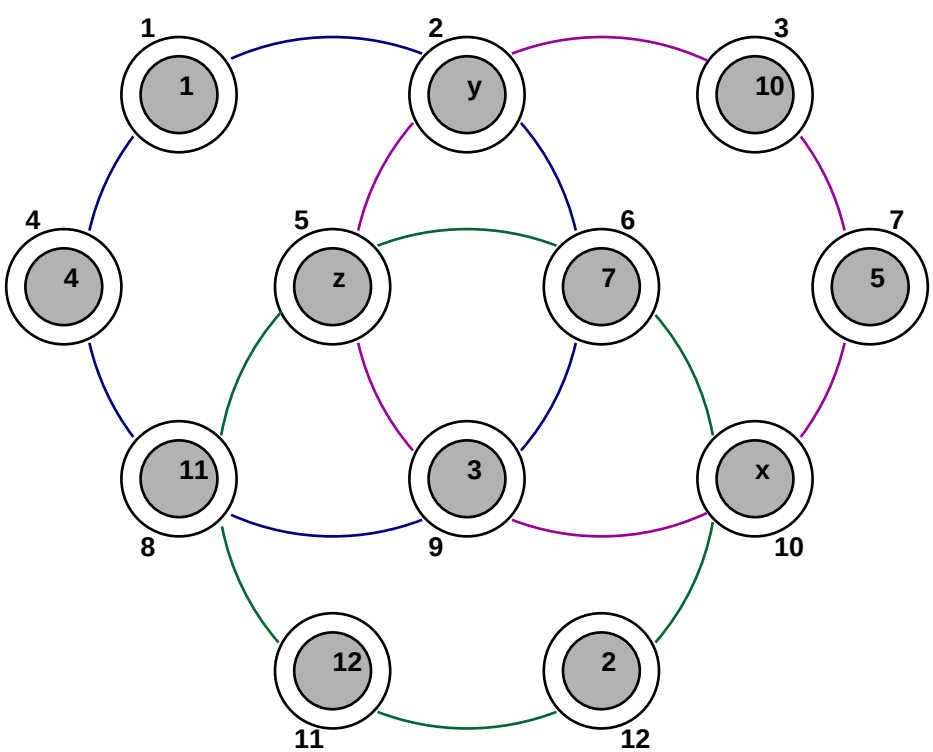

1
2
10
3
1
y
5
4
5
6
7
4
x
7
2
z
3
8
9
10
11
12
11
12

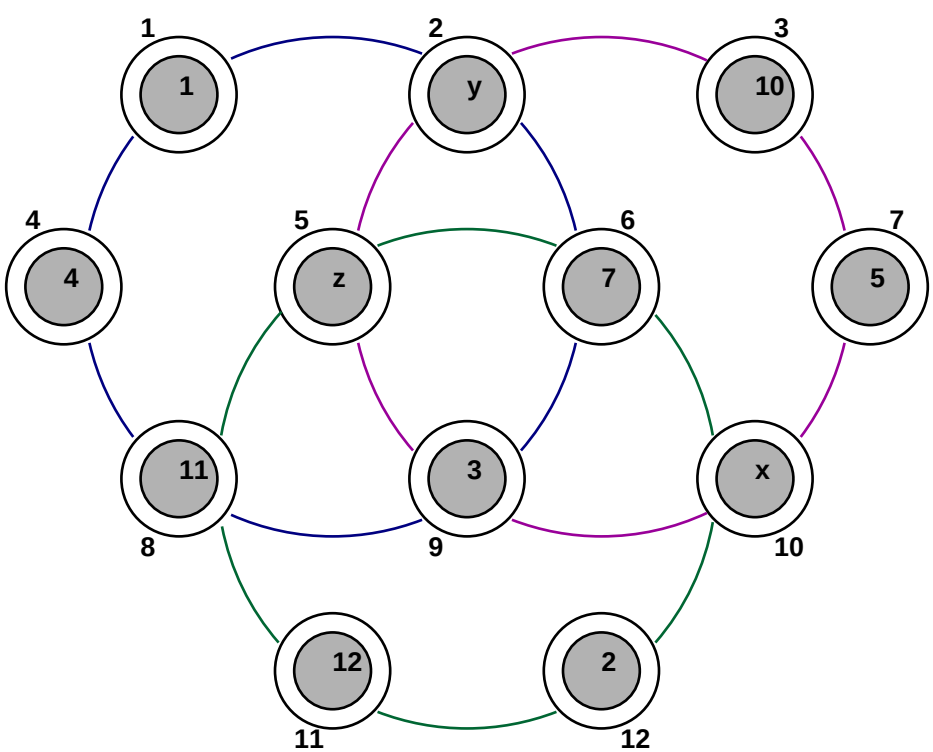

1
2
3
1
y
10
4
5
6
7
4
7
x
5
z
3
2
8
9
10
11
12
11
12

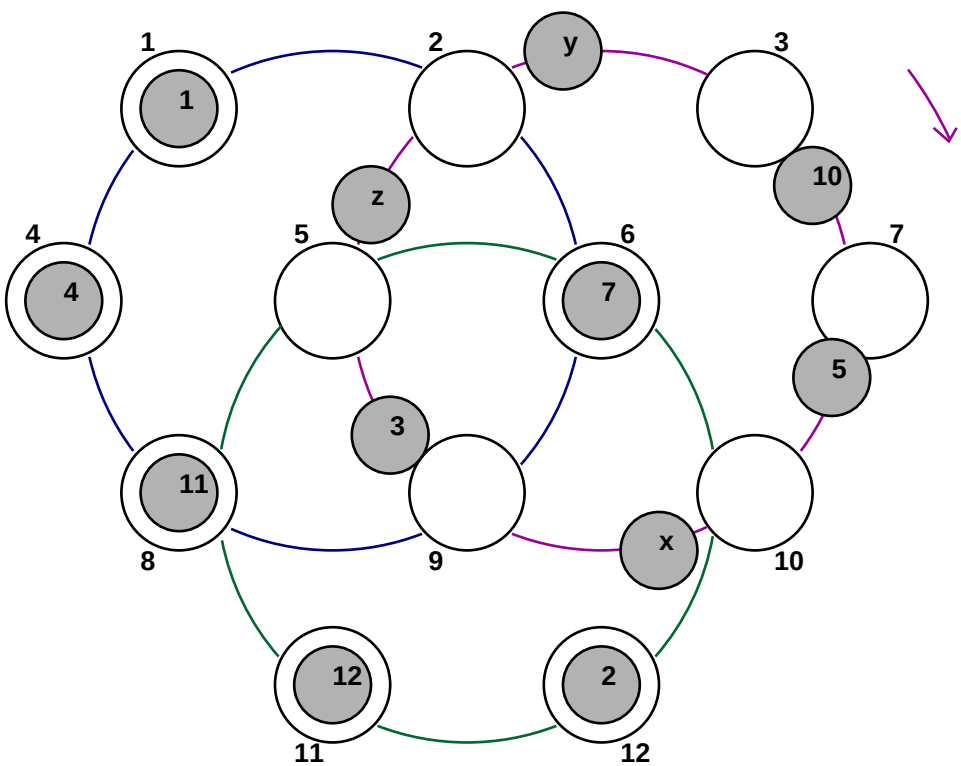

1
2
3
1
y
10
4
5
6
7
4
7
x
5
z
3
2
8
9
10
11
12
11
12

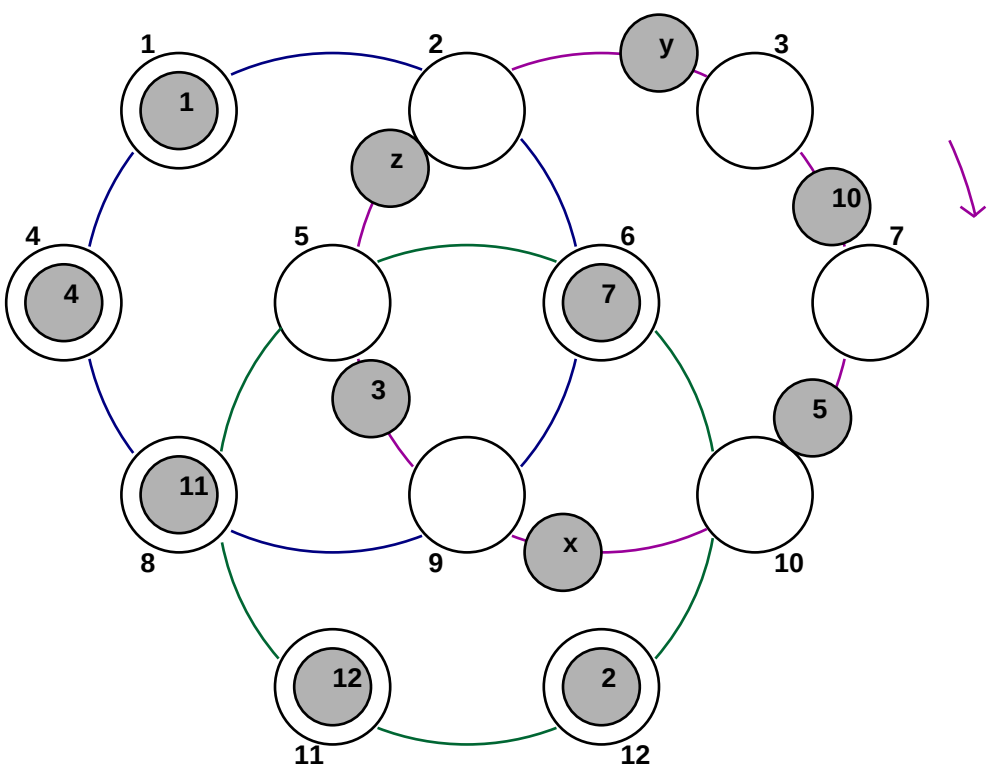

1
2
3
1
y
10
4
5
6
7
4
7
5
x
z
3
8
9
10
2
11
11
12
12

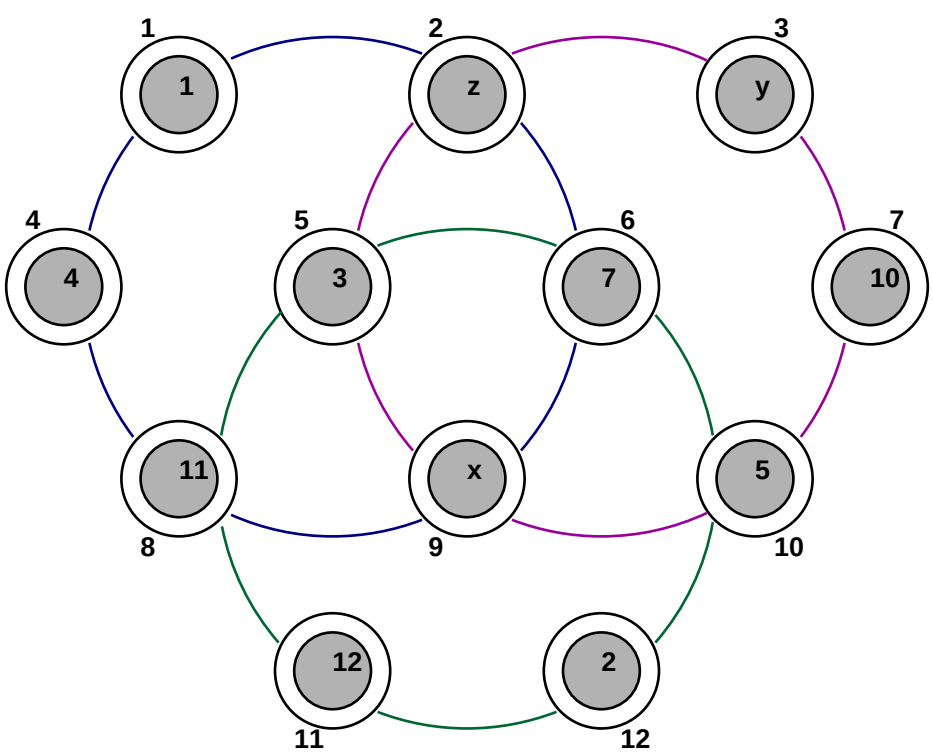

1
2
3
1
y
10
4
5
7
6
7
4
5
z
x
3
8
9
10
11
2
11
12
12

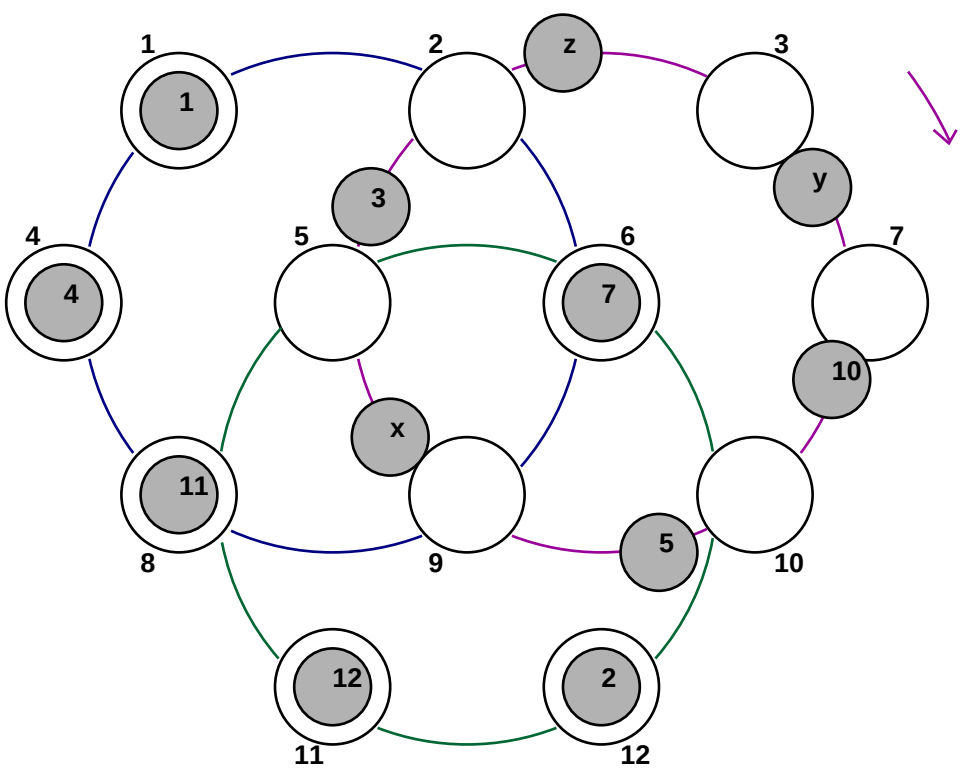

1
1
2
y
3
10
4
4
5
z
6
7
7
5
11
8
3
9
x
10
12
11
2
12

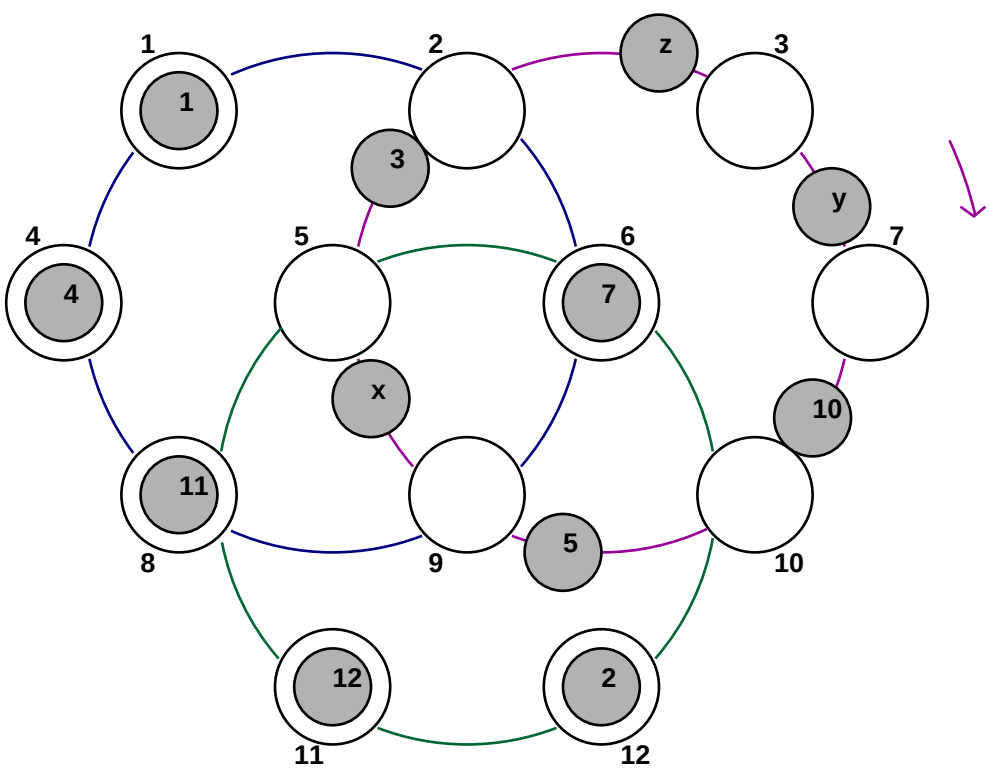

1
1
2
y
3
10
4
4
5
z
6
7
7
5
11
8
3
9
x
10
12
11
2
12

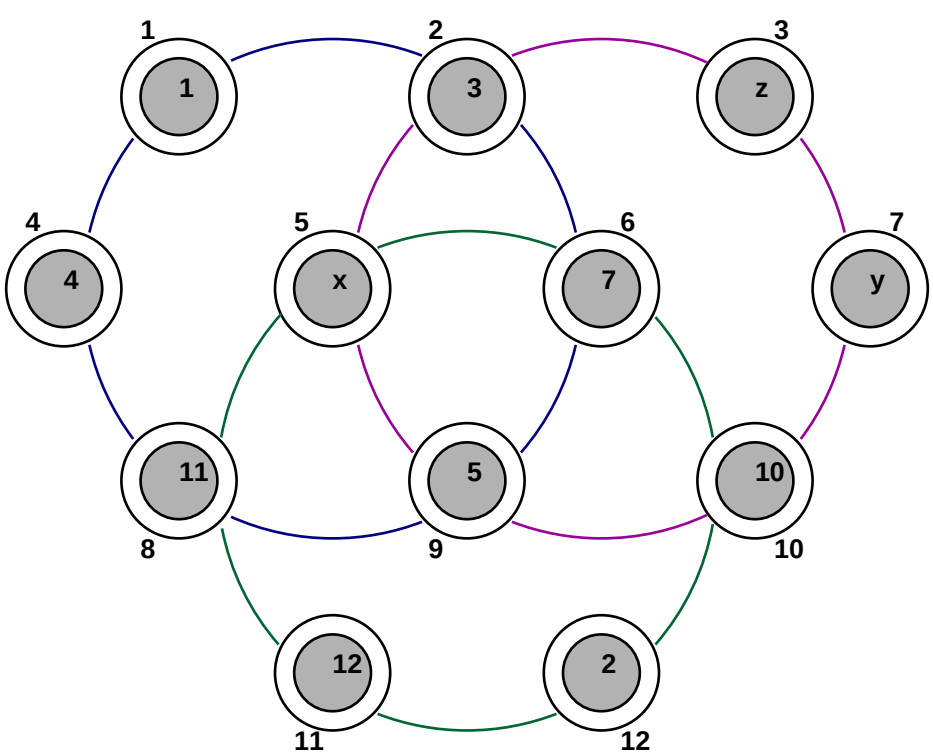

1
2
y
3
1
10
z
4
5
6
7
4
7
5
3
11
x
8
9
10
12
2
11
12

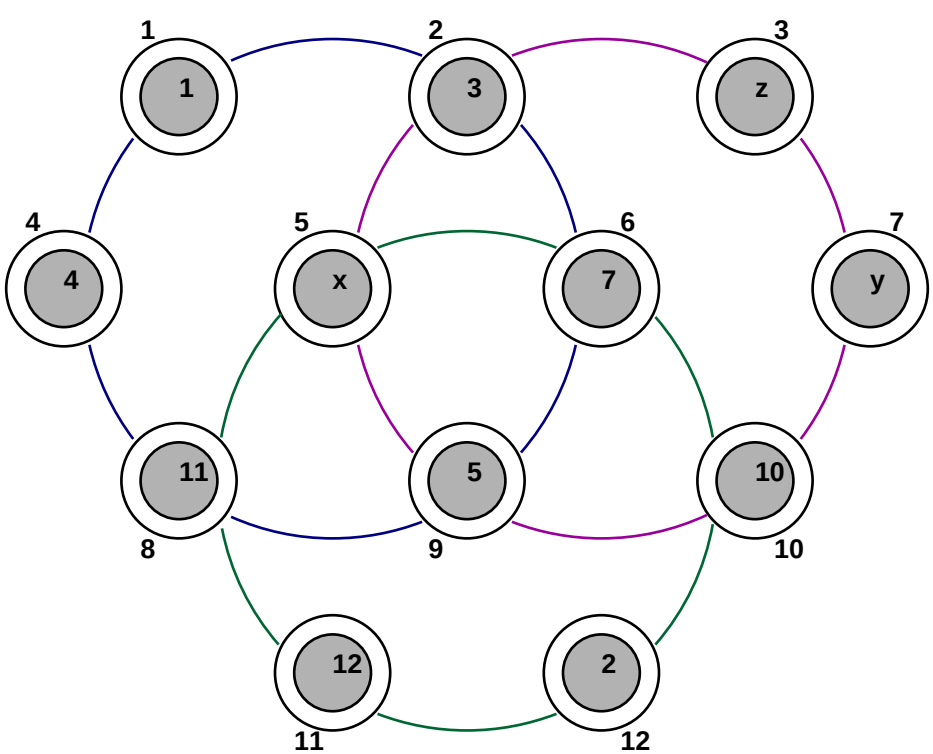

1
1
2
z
y
3
10
4
4
5
6
7
7
3
5
11
11
8
9
x
10
12
12
2
11
12

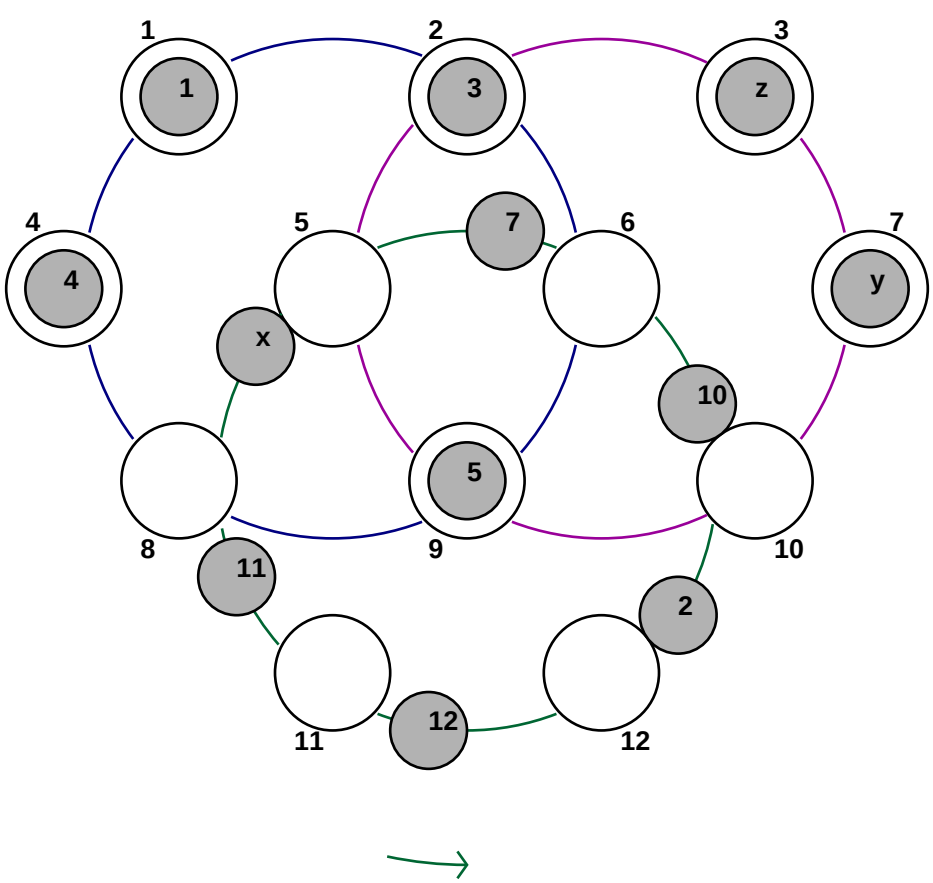

1
2
3
1
z
y
4
5
6
7
4
3
7
10
11
x
5
8
9
10
12
2
11
12

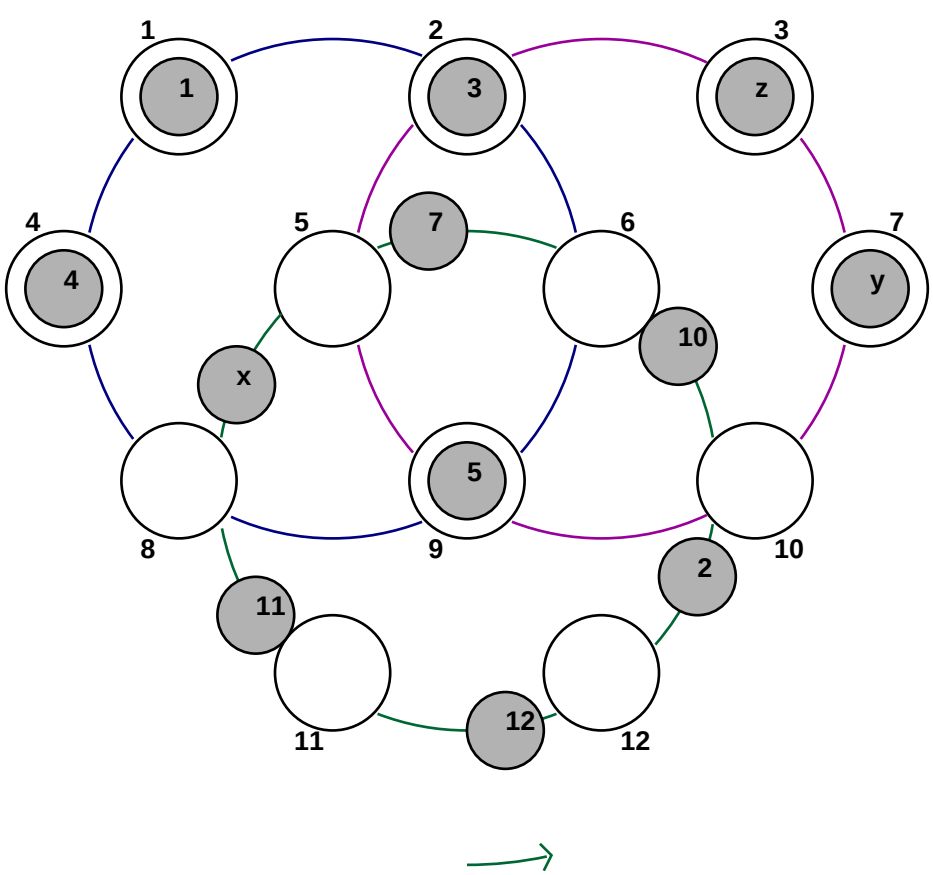

1
2
z
3
1
y
3
4
5
6
7
4
7
10
x
11
5
8
9
10
12
2
11
12

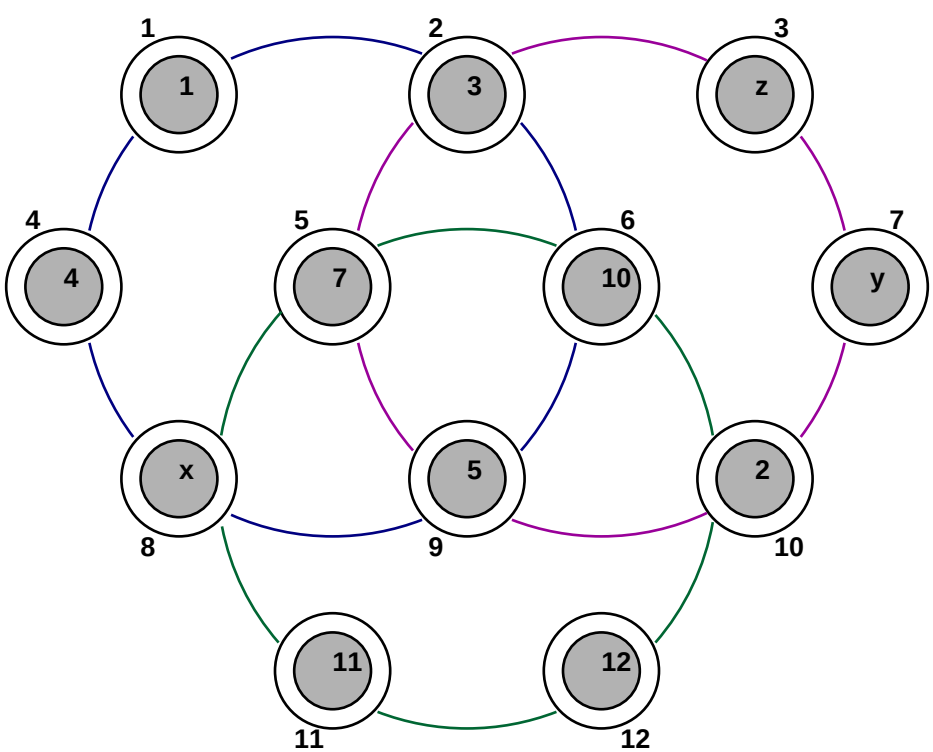

1
1
2
z
3
3
y
4
4
5
6
7
7
x
10
11
8
9
5
10
12
2
11
12

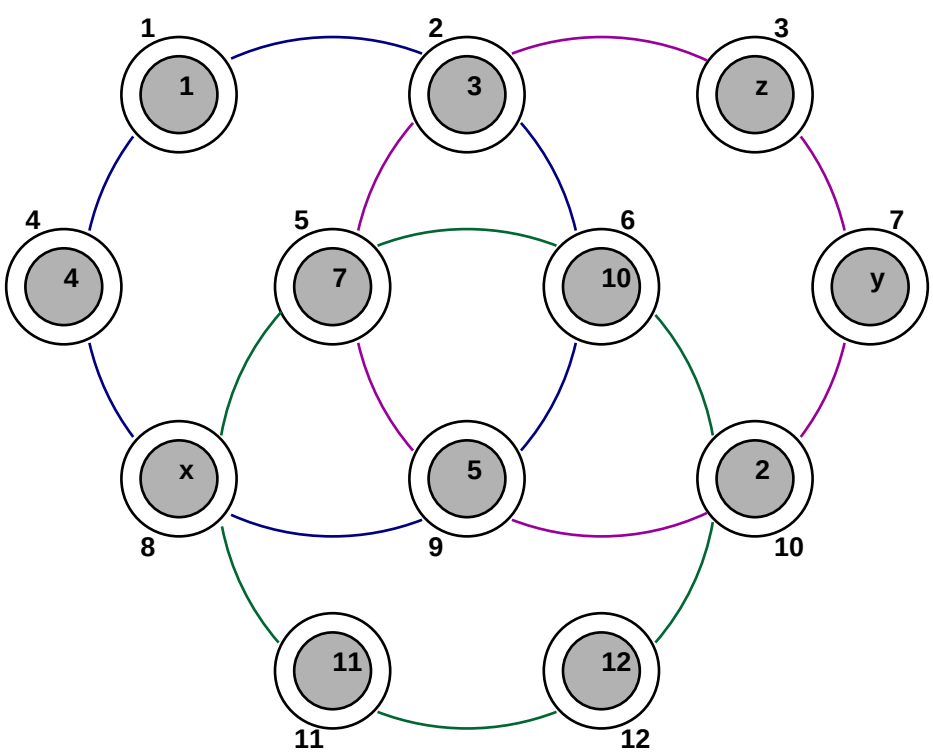

1
2
3
1
3
z
4
5
6
7
4
x
7
y
11
5
10
8
9
10
12
2
11
12

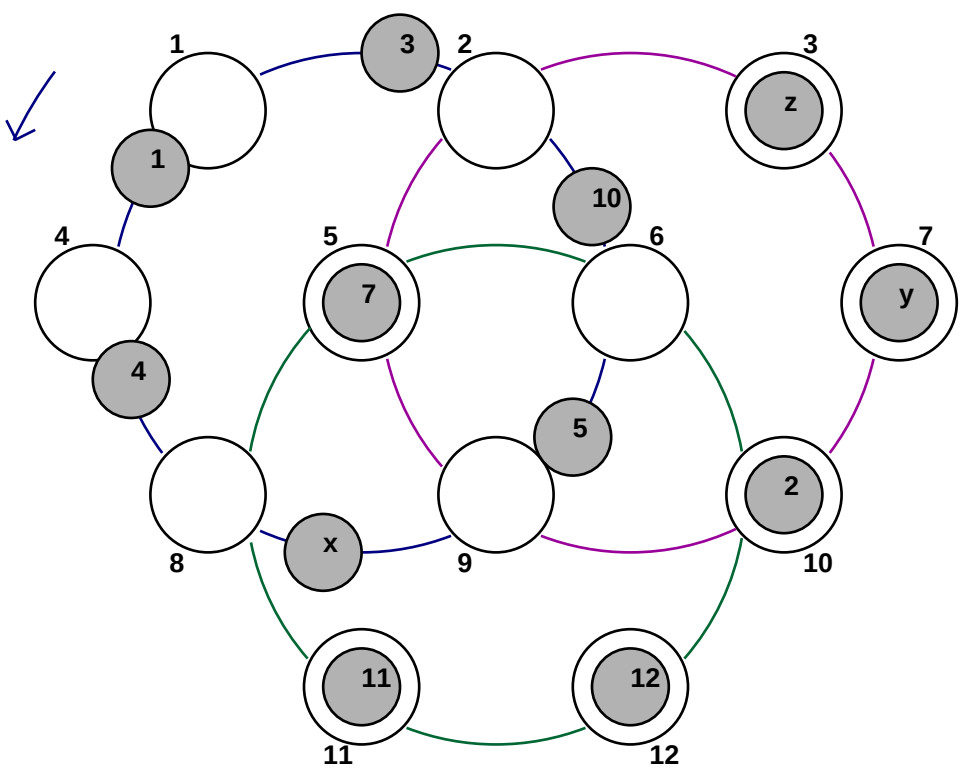

1
2
3
1
3
z
4
5
6
7
4
x
7
y
11
5
10
8
9
10
12
2
11
12

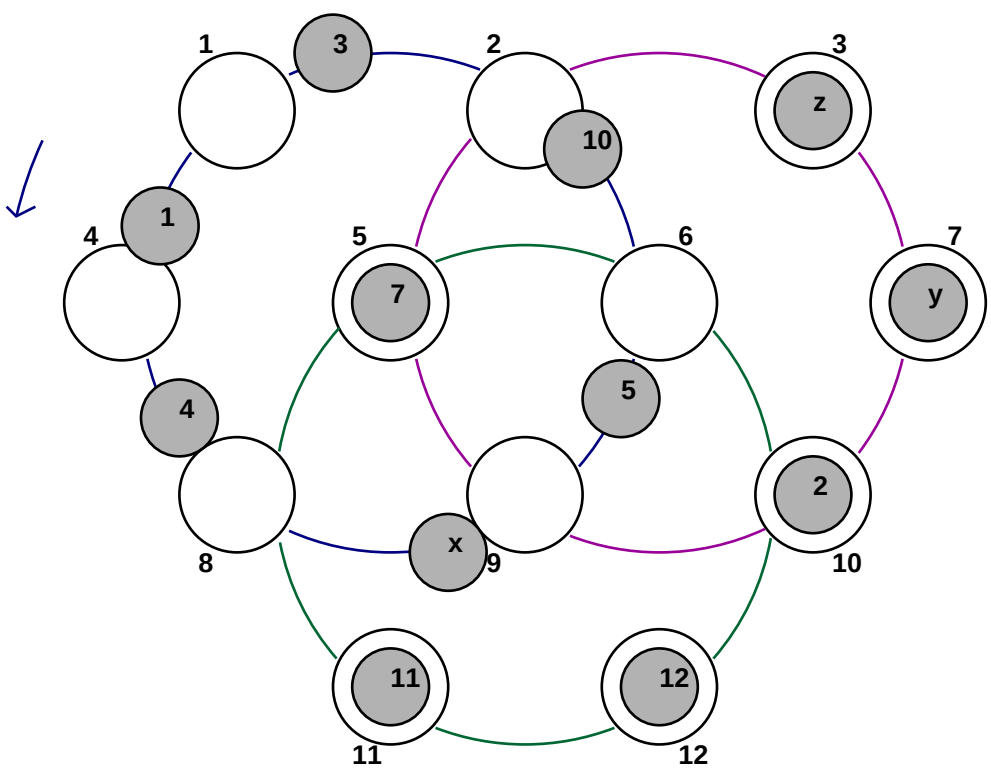

1
2
3
1
3
z
4
5
7
6
7
4
y
x
10
5
8
9
10
11
2
11
12
12

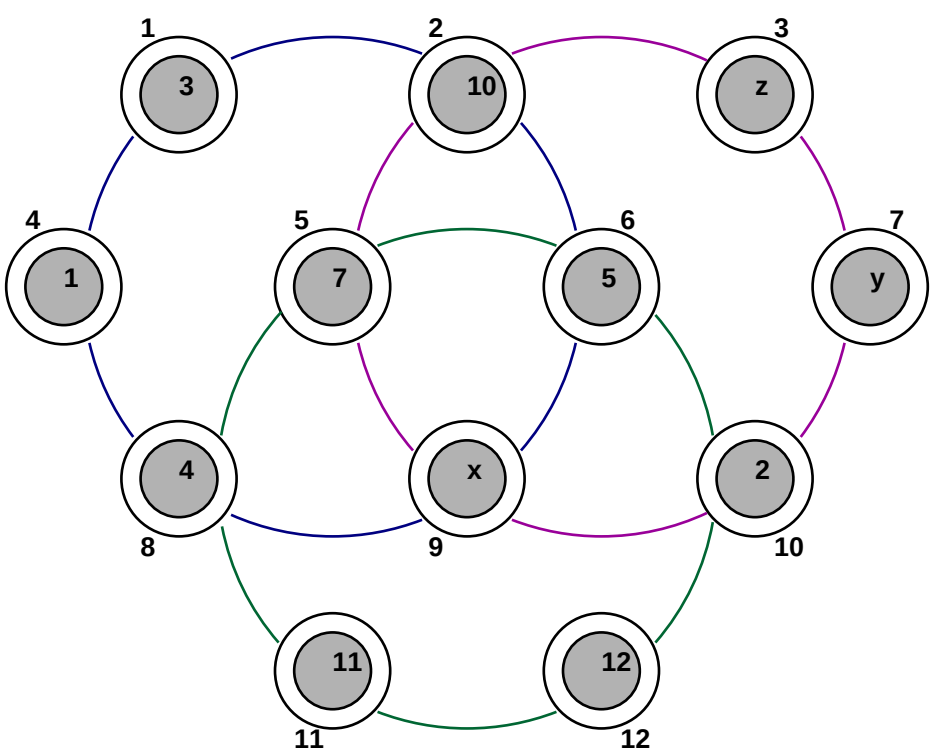

1
2
3
1
3
z
4
5
7
6
7
4
y
10
x
5
8
9
10
2
11
11
12
12

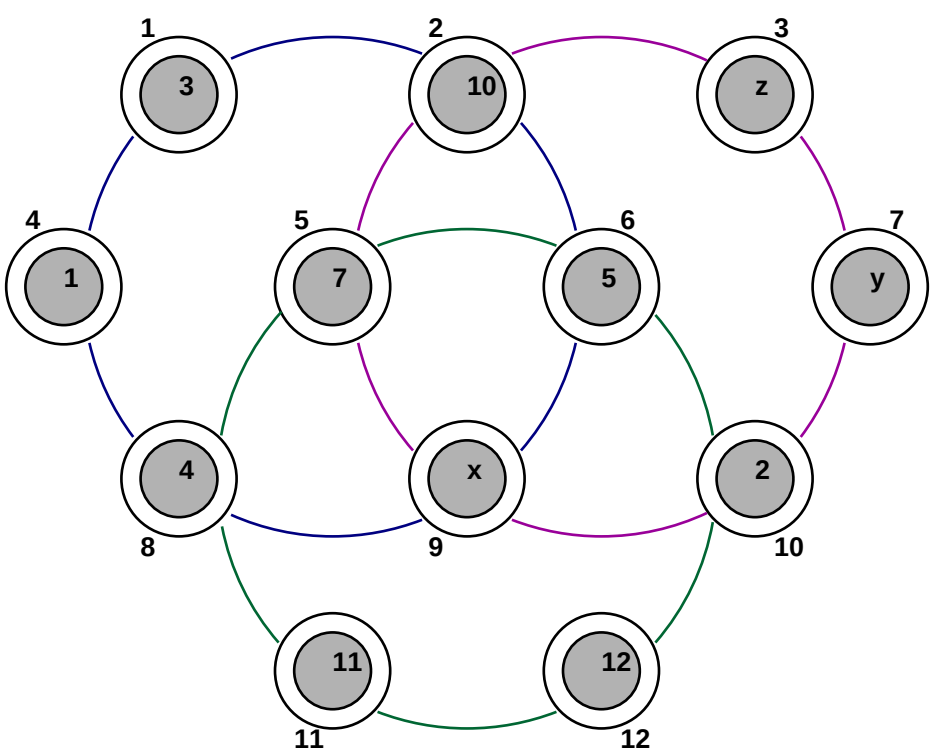

1
2
3
1
3
z
4
5
6
7
4
7
10
y
x
5
2
8
9
10
11
12
11
12

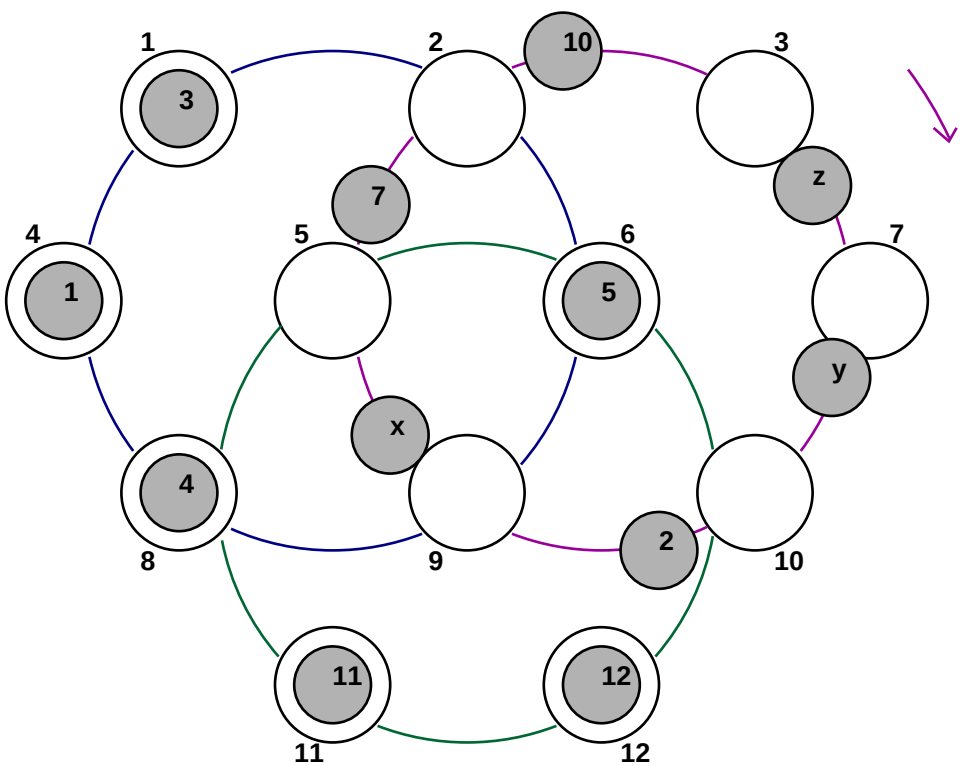

1
2
3
1
3
z
4
5
6
7
4
7
10
y
x
5
2
8
9
10
11
12
11
12

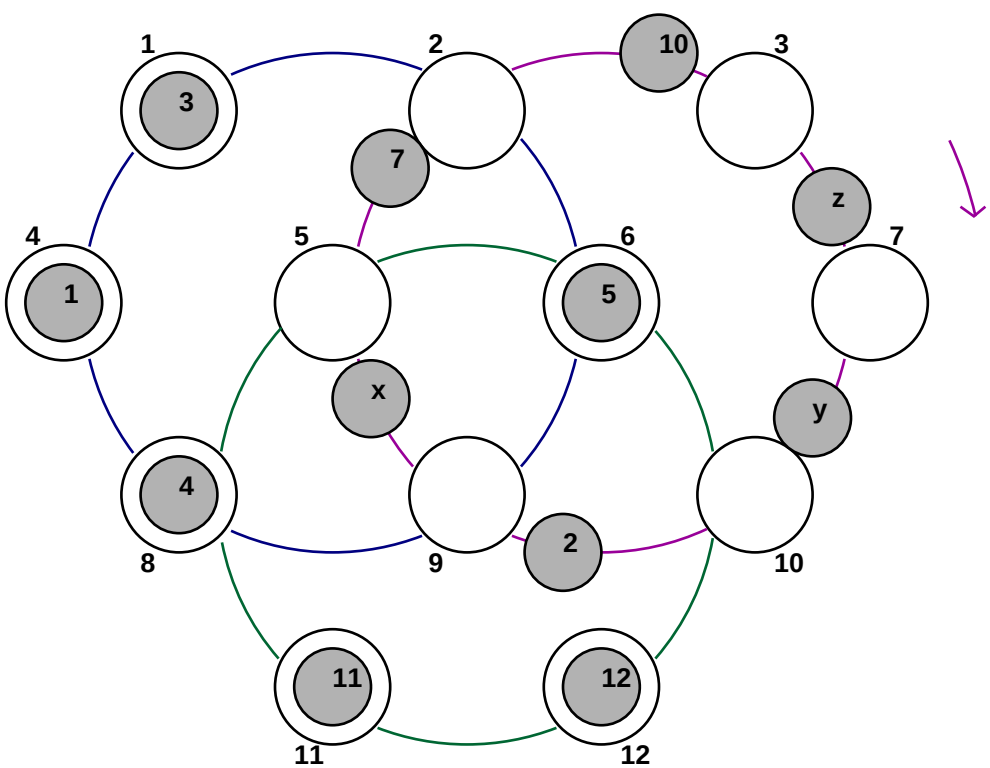

1
3
2
3
z
1
10
4
5
6
7
7
y
4
5
2
x
8
9
10
11
12
11
12

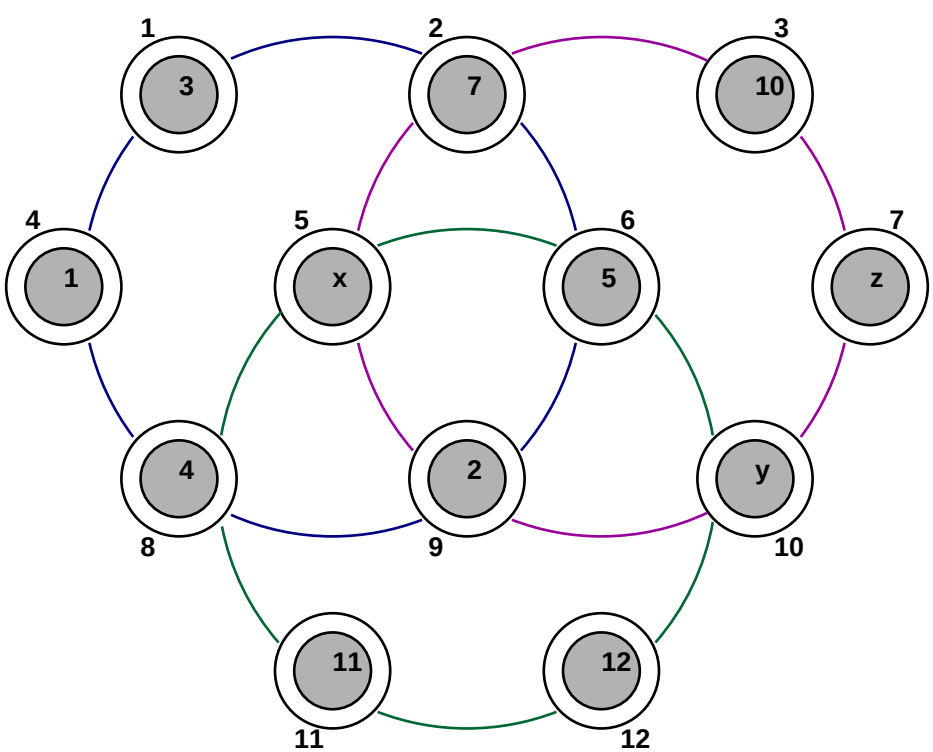

1
3
2
3
z
10
1
4
5
6
7
y
7
5
4
2
x
8
9
10
11
12
11
12

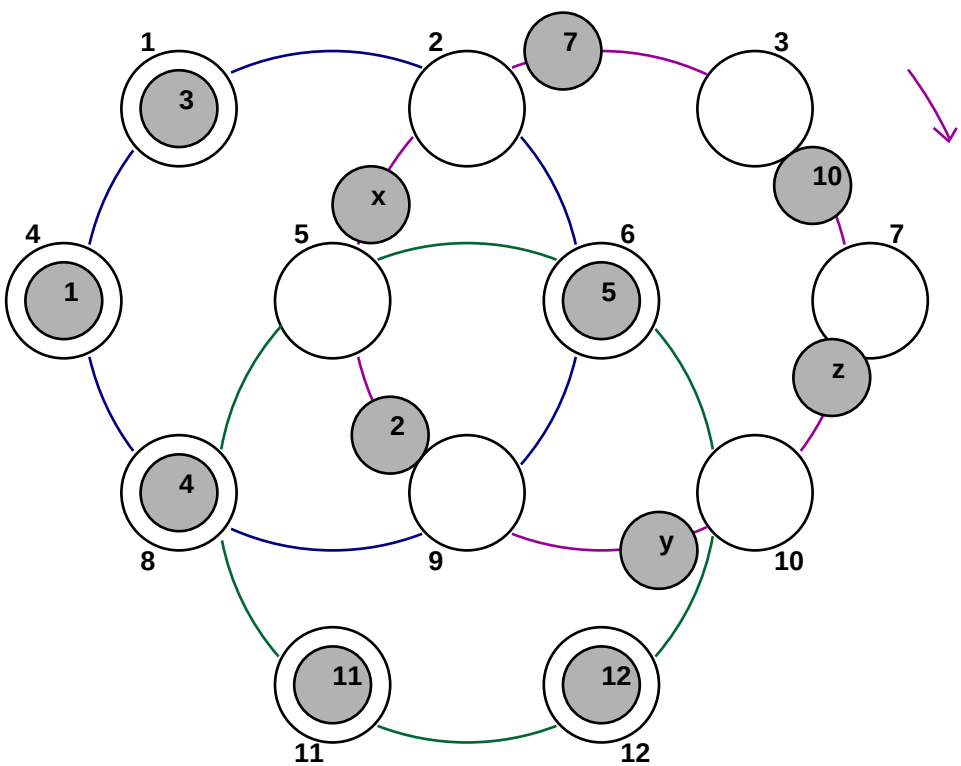

1
3
2
10
3
z
4
1
5
7
6
5
7
y
4
4
x
2
8
9
10
11
11
12
12

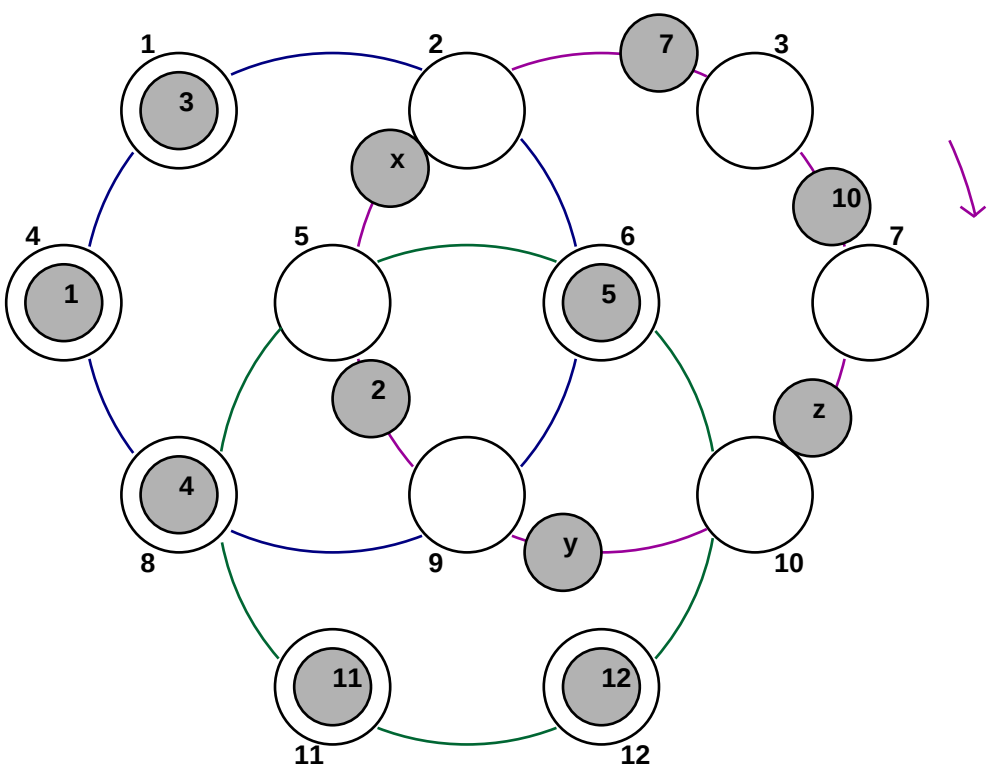

1
3
2
10
3
z
4
1
5
7
6
5
7
y
4
4
x
2
8
9
10
11
11
12
12

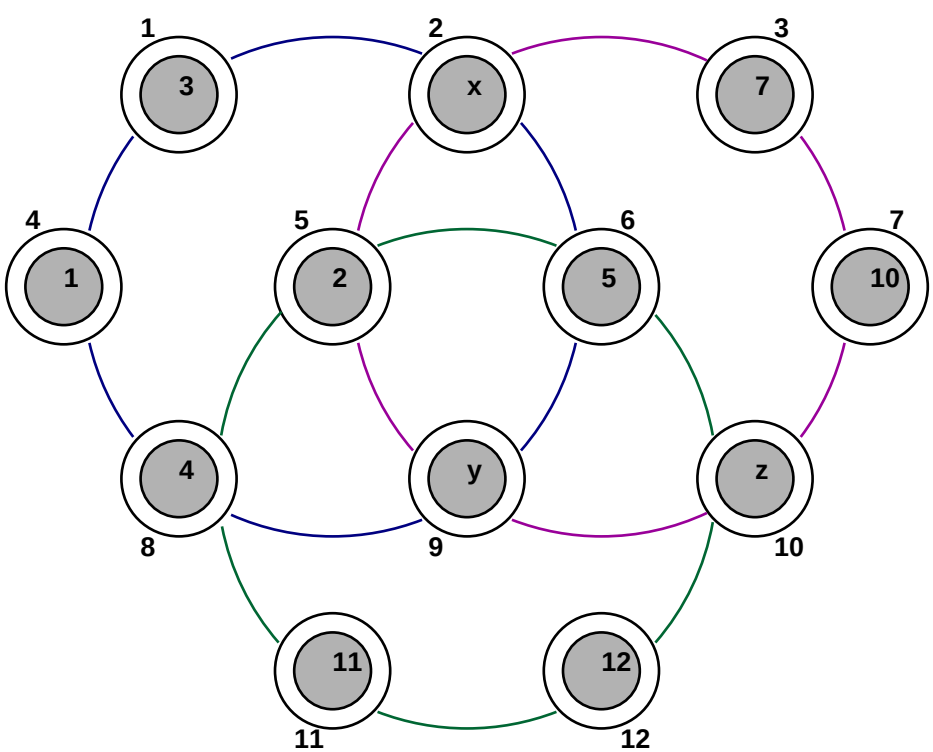

1
3
2
10
3
z
7
4
1
5
6
5
7
y
x
4
8
9
2
10
11
11
12
12

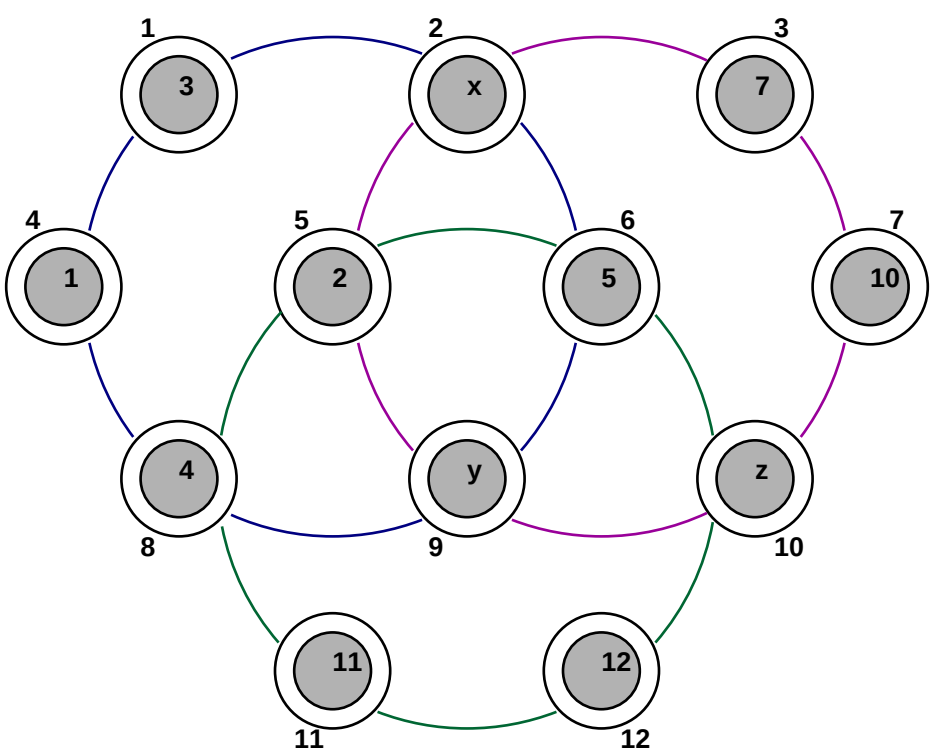

1
2
10
3
3
7
z
4
5
6
7
1
5
x
y
4
2
8
9
10
11
12
11
12

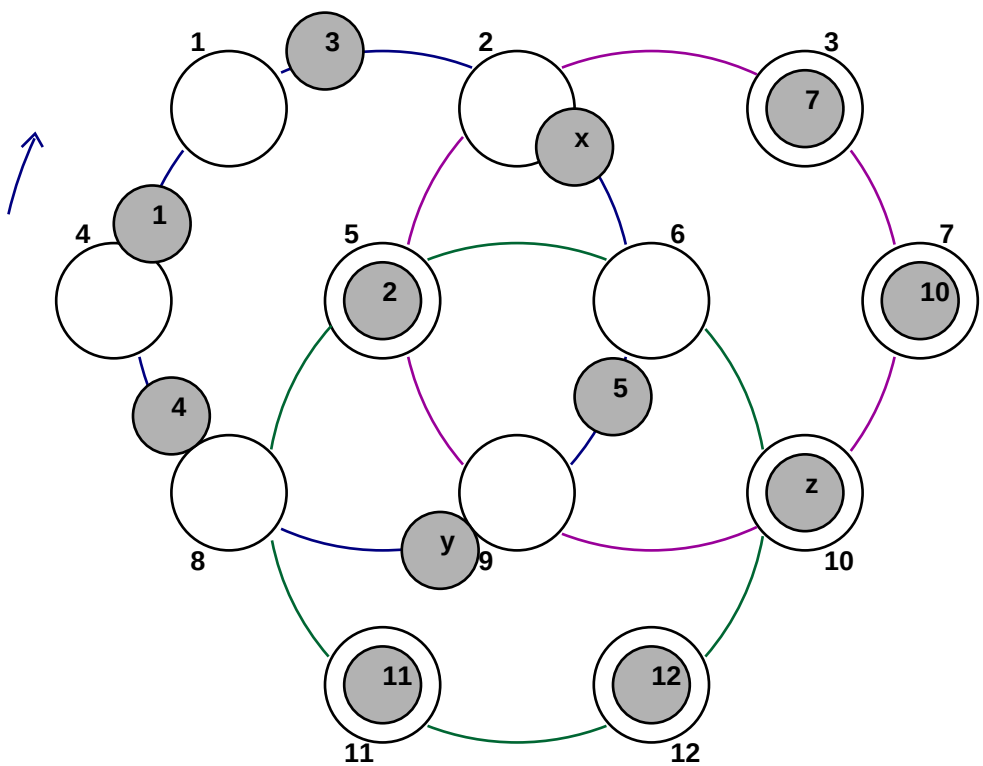

1
3
2
7
3
10
4
1
5
x
6
5
7
z
4
4
2
y
8
9
10
11
11
12
12

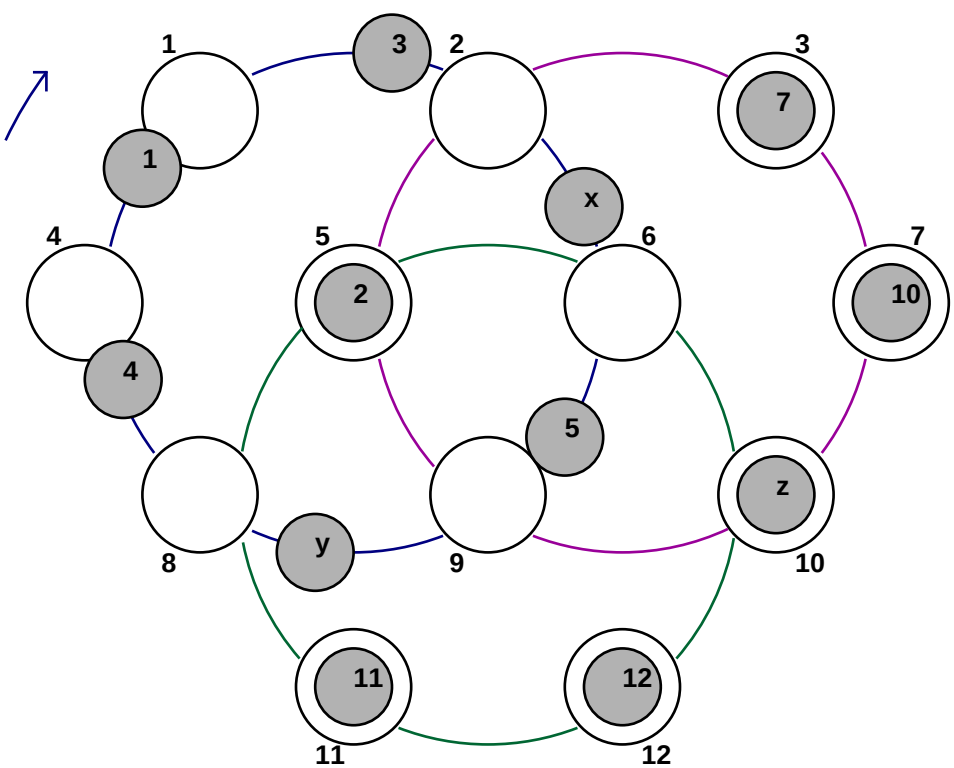

1
3
2
7
3
x
10
4
1
5
6
5
7
z
2
4
8
9
y
10
11
11
12
12

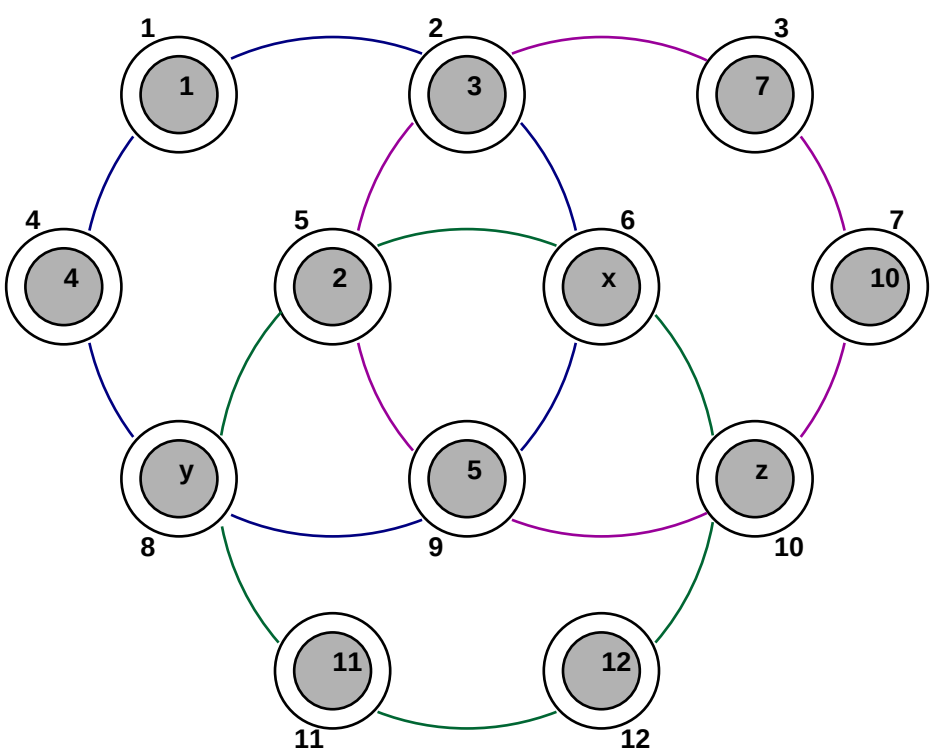

1
2
7
3
3
x
10
4
5
6
7
1
5
2
z
4
4
y
8
9
10
11
12
11
12

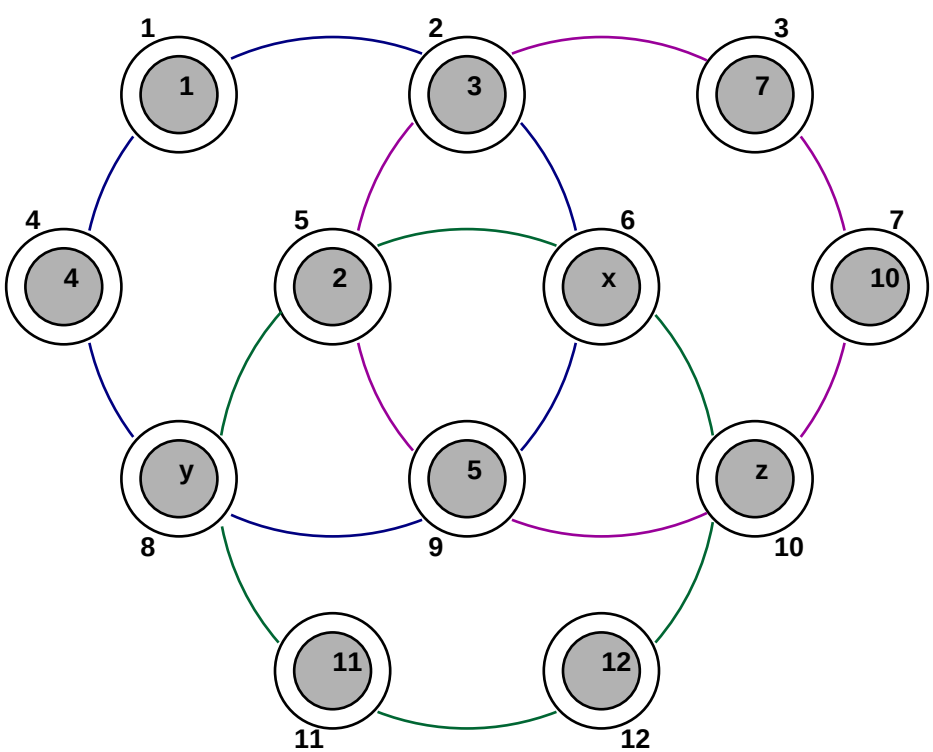

1
3
2
x
3
7
4
1
5
2
6
5
7
10
4
4
y
z
8
9
10
11
11
12
12

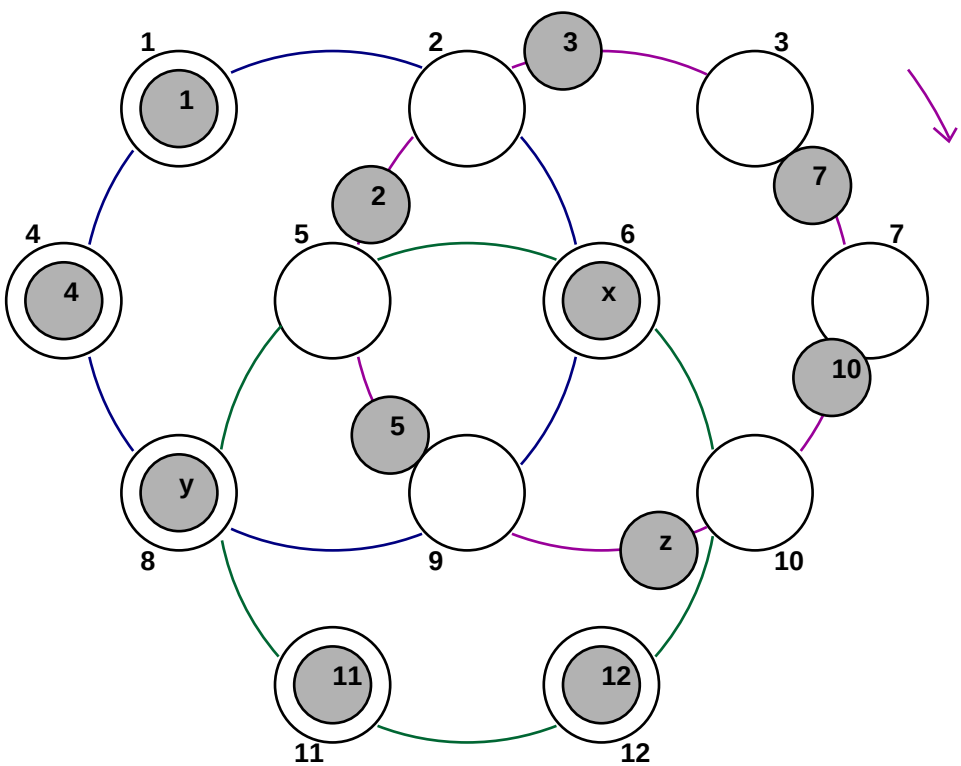

1
3
2
x
3
7
4
1
5
2
6
5
7
10
4
4
y
z
8
9
10
11
11
12
12

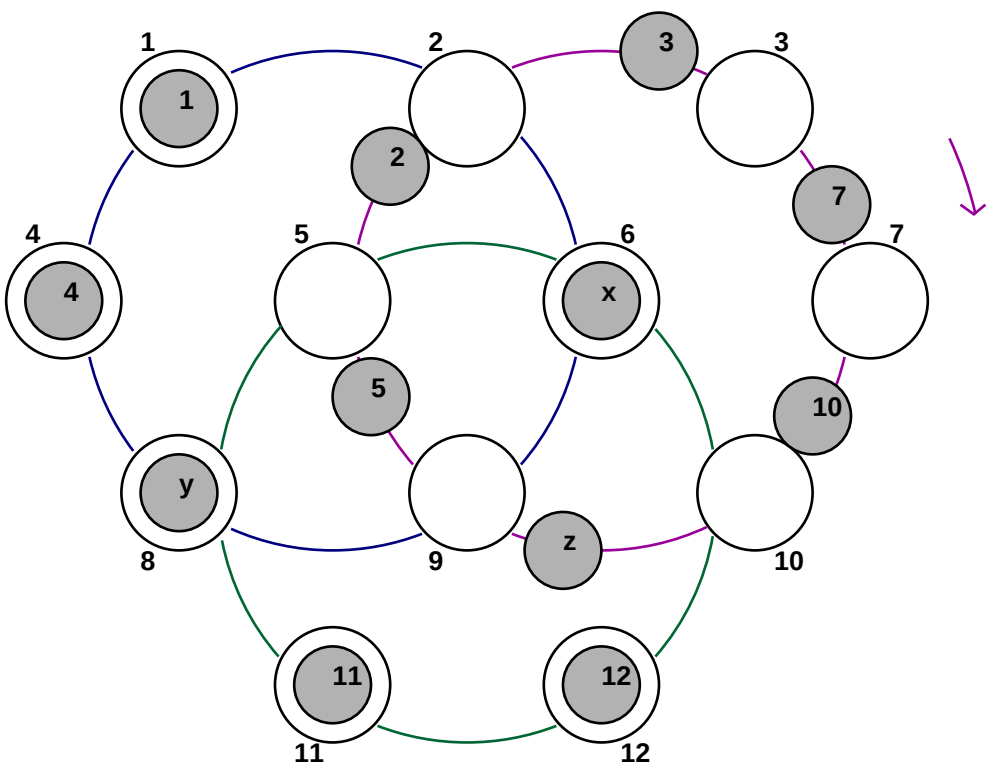

1
3
2
3
7
x
1
4
5
6
7
2
10
5
4
z
y
8
9
10
11
12
11
12

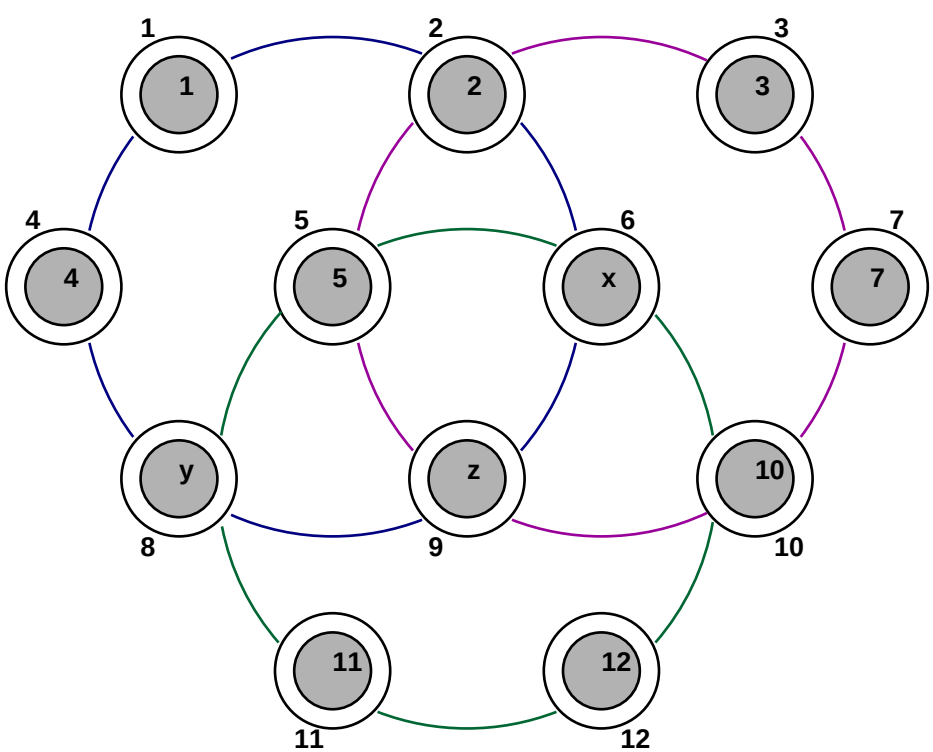

1
3
2
3
7
1
x
4
5
6
7
2
10
4
5
z
y
8
9
10
11
12
11
12


1
2
3
1
3
7
4
5
6
7
4
2
x
10
y
5
z
8
9
10
11
12
11
12


1
2
3
1
3
7
4
5
6
7
4
2
x
10
y
5
z
8
9
10
11
12
11
12


1
2
3
3
1
2
7
4
5
6
7
4
x
10
5
y
z
8
9
10
11
12
11
12


1
2
3
3
1
2
7
4
5
6
7
4
x
5
10
y
z
8
9
10
11
12
11
12

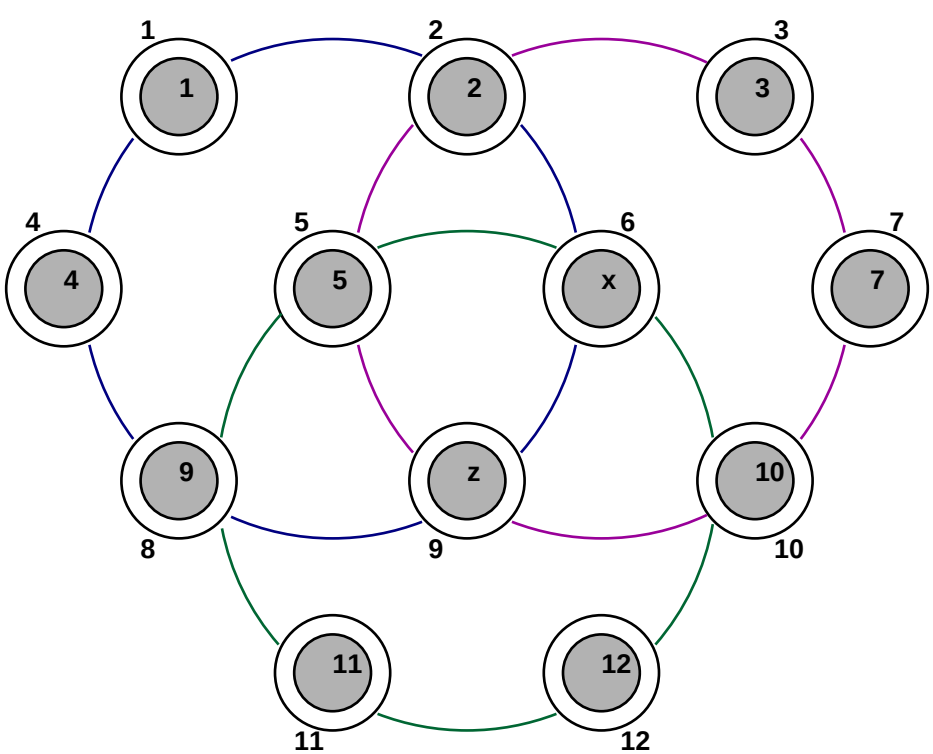

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
x
7
y
z
10
11
12

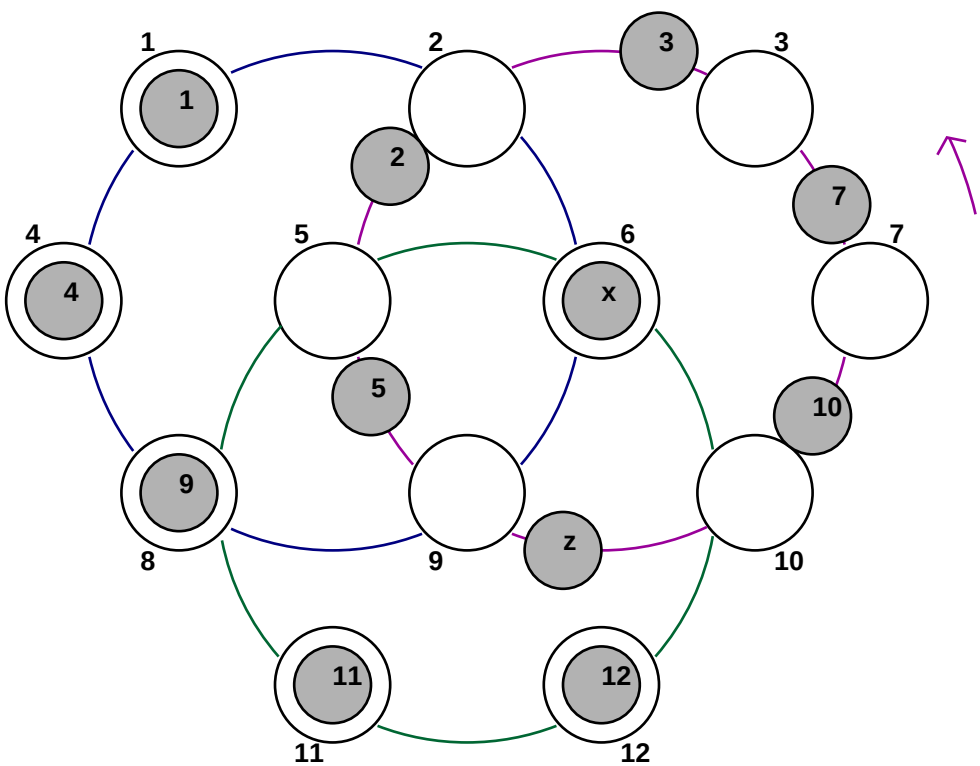
It has been shown that 10 can be moved to position 10 from any position while keeping numbers 1, 2, 3, 4, 5, 7, 11, and 12 in their respective positions.

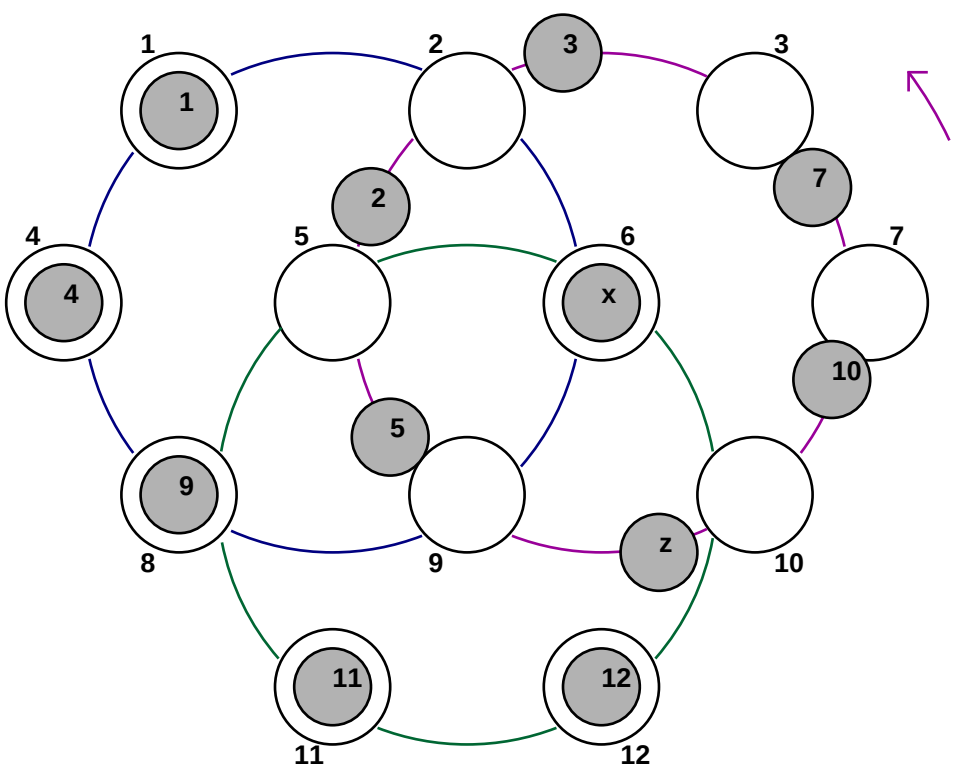
Now let y = 9.

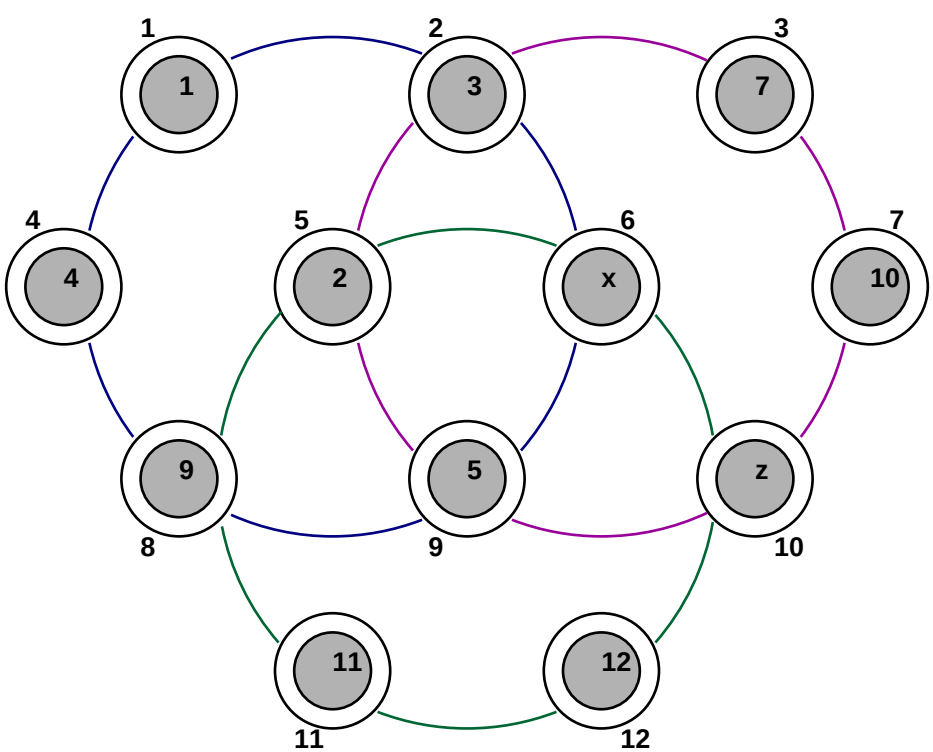
Number 9 can be moved into position 6
by moving in the following pattern.

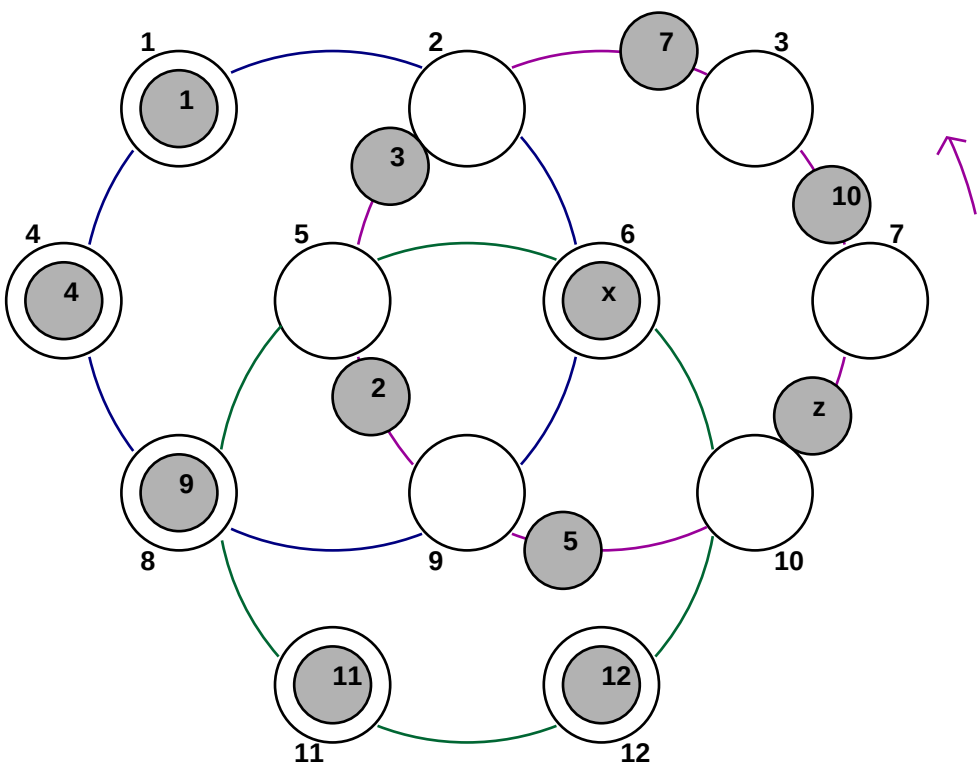
Numbers 1, 2, 3, 4, 5, 7, 10, 11, and 12 will remain in their correct positions.

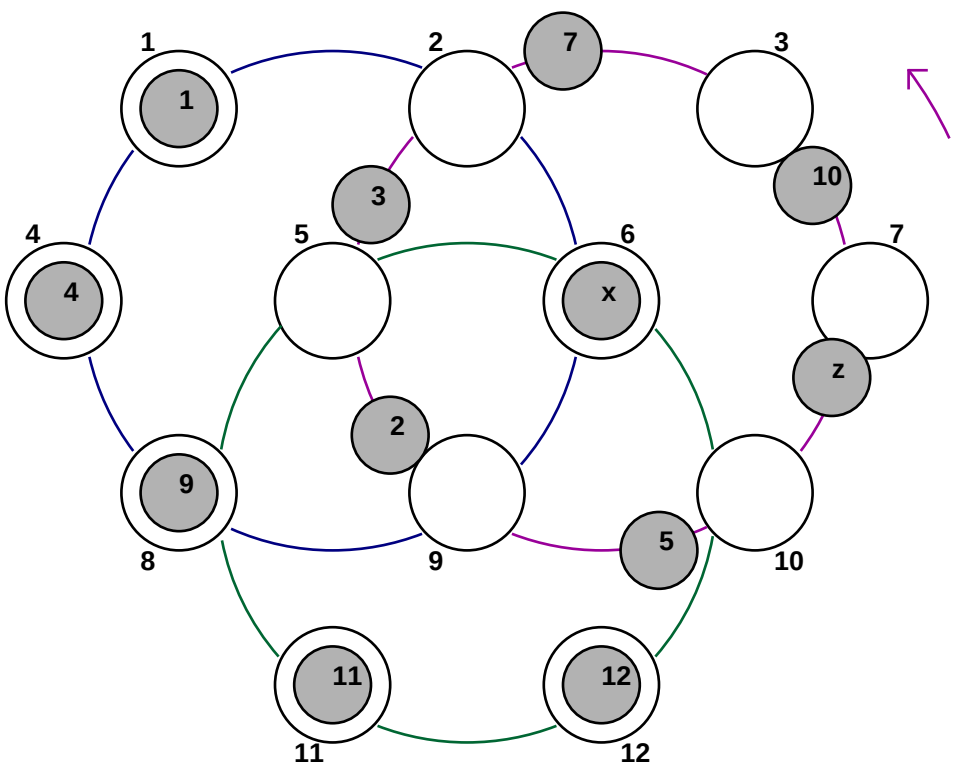

1
2
3
4
5
6
7
8
9
10
11
12
1
2
3
4
5
x
7
9
z
10
11
12

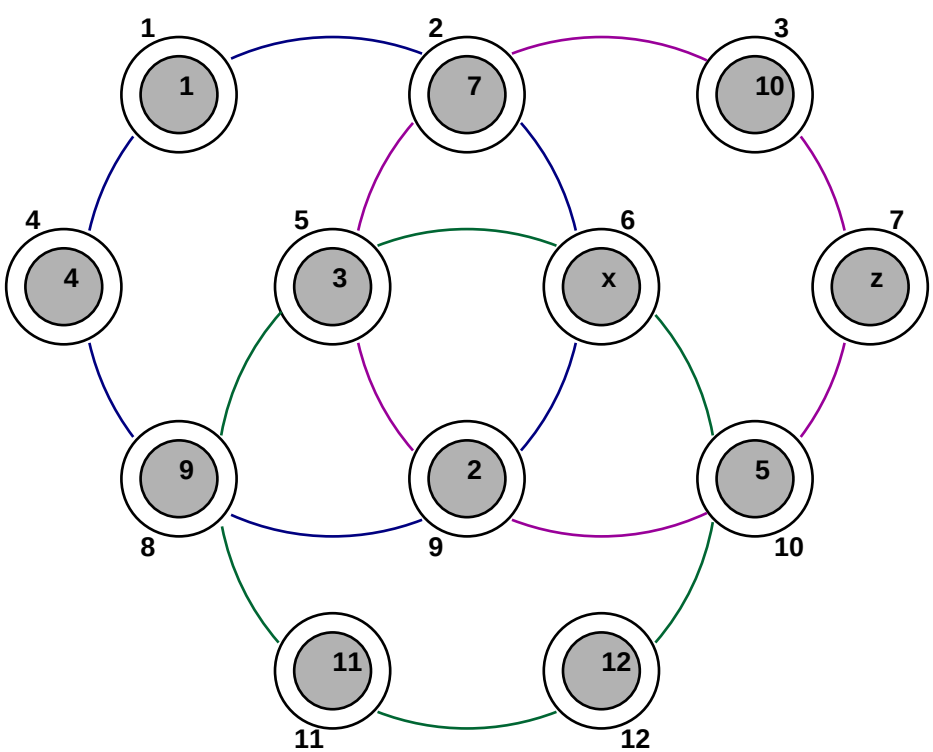

1
2
3
3
1
2
7
4
5
6
7
4
x
5
10
9
z
8
9
10
11
12
11
12

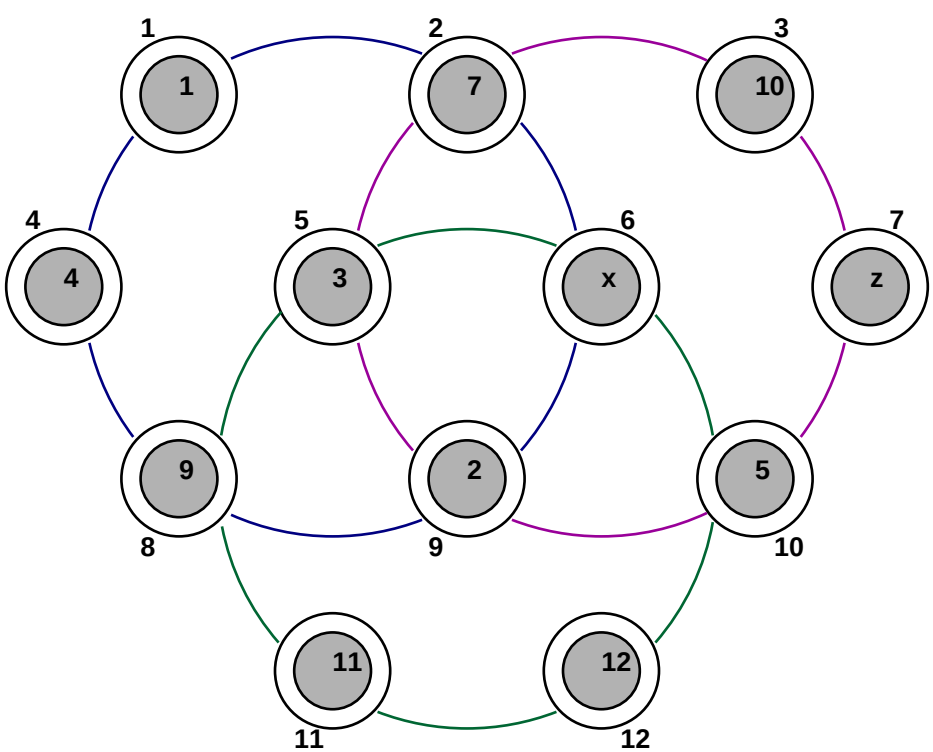

1
2
3
3
1
7
2
4
5
6
7
4
x
10
5
9
z
8
9
10
11
12
11
12

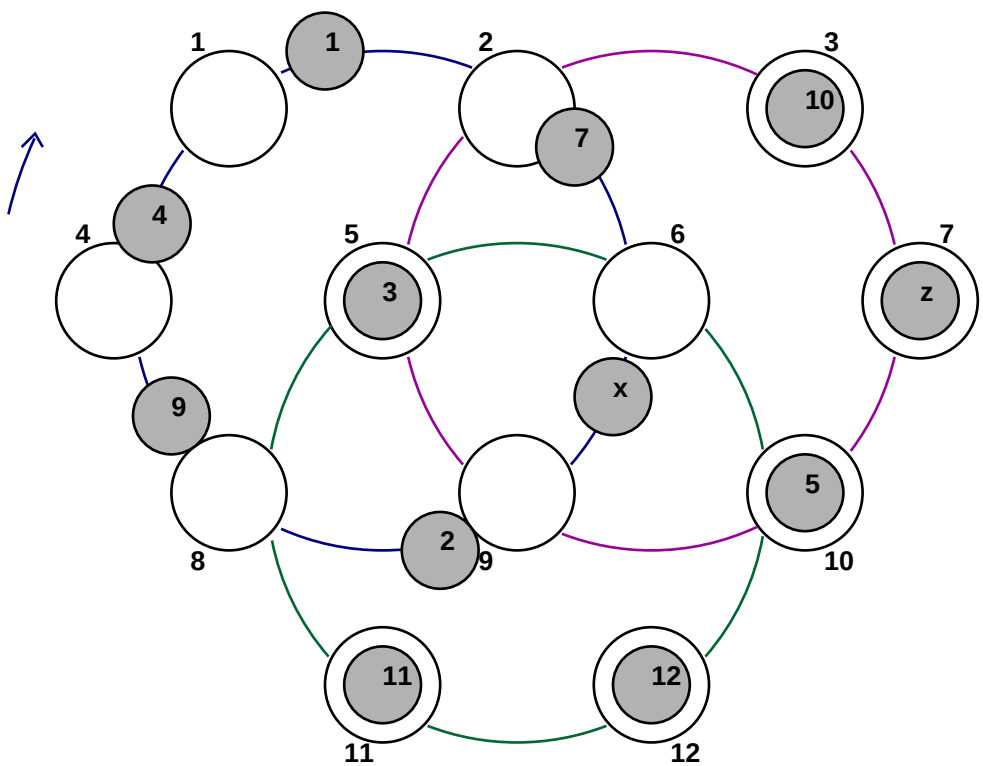

1
2
3
1
3
7
4
5
6
7
4
2
x
10
9
5
z
8
9
10
11
12
11
12

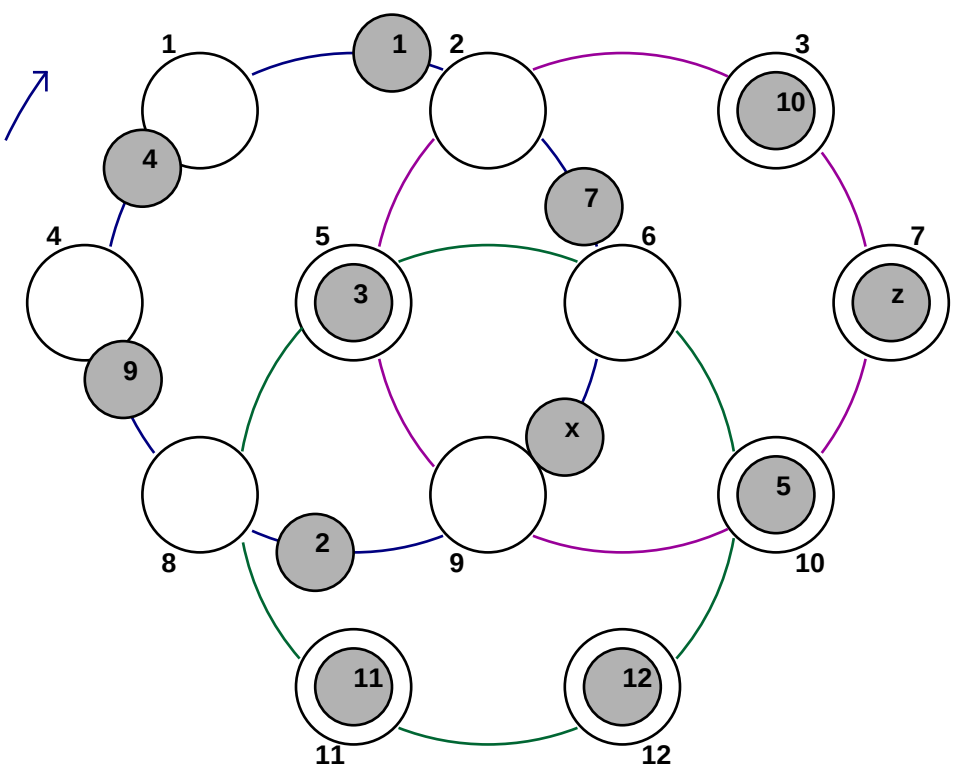

1
2
7
3
1
3
10
4
5
6
7
4
x
2
z
9
9
5
8
9
10
11
12
11
12

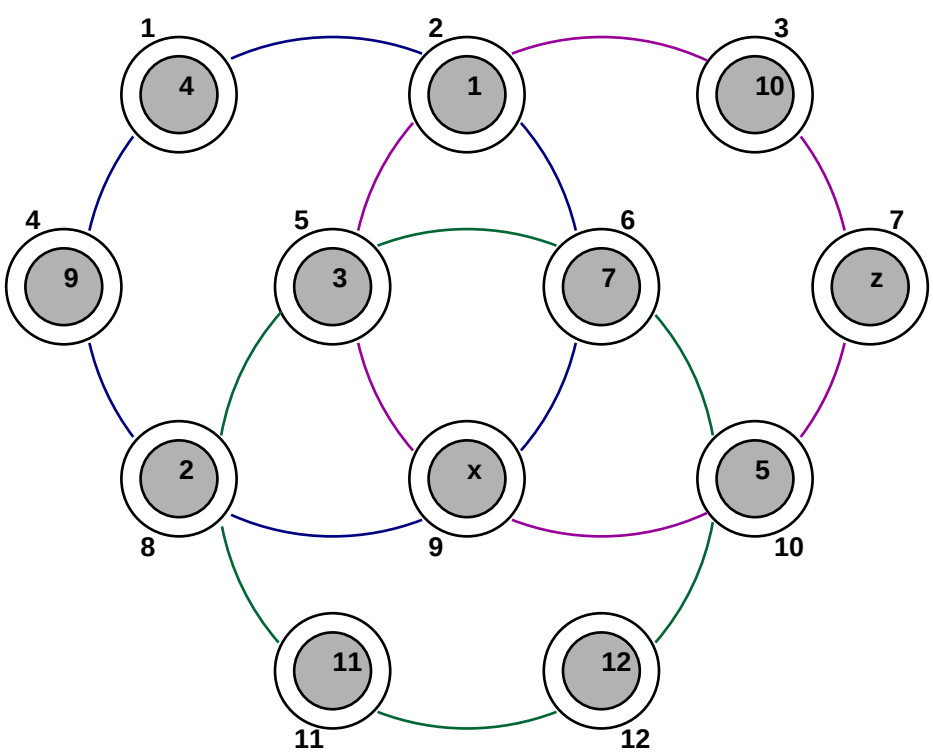

1
2
7
3
1
10
3
4
5
6
7
4
x
z
2
9
5
8
9
10
11
12
11
12

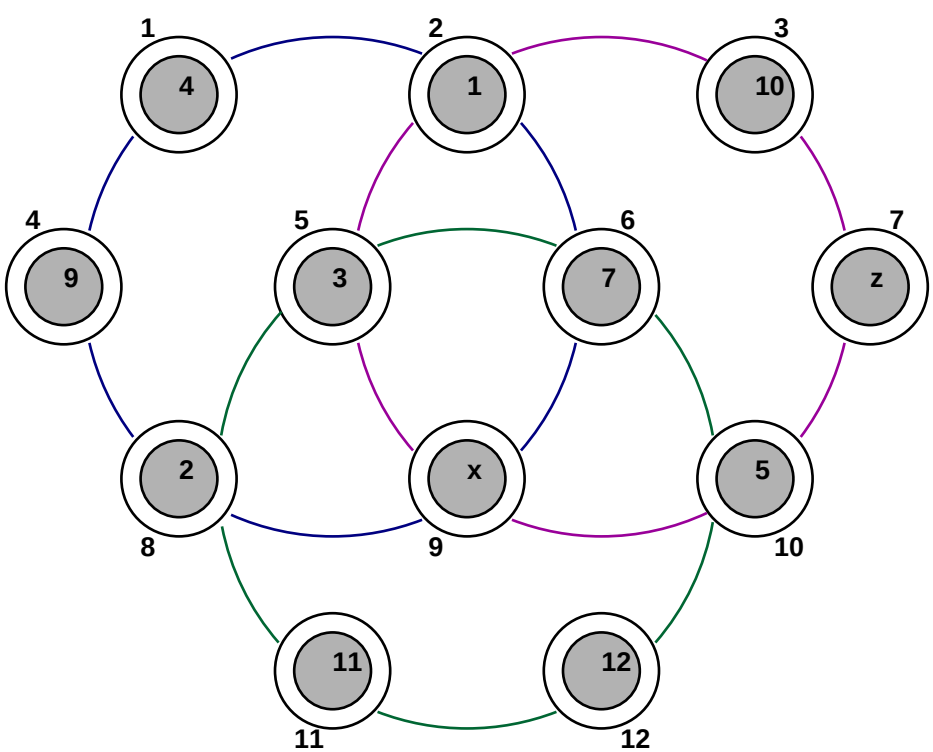

1
2
3
1
7
10
4
5
6
7
4
3
x
z
9
2
5
8
9
10
11
12
11
12

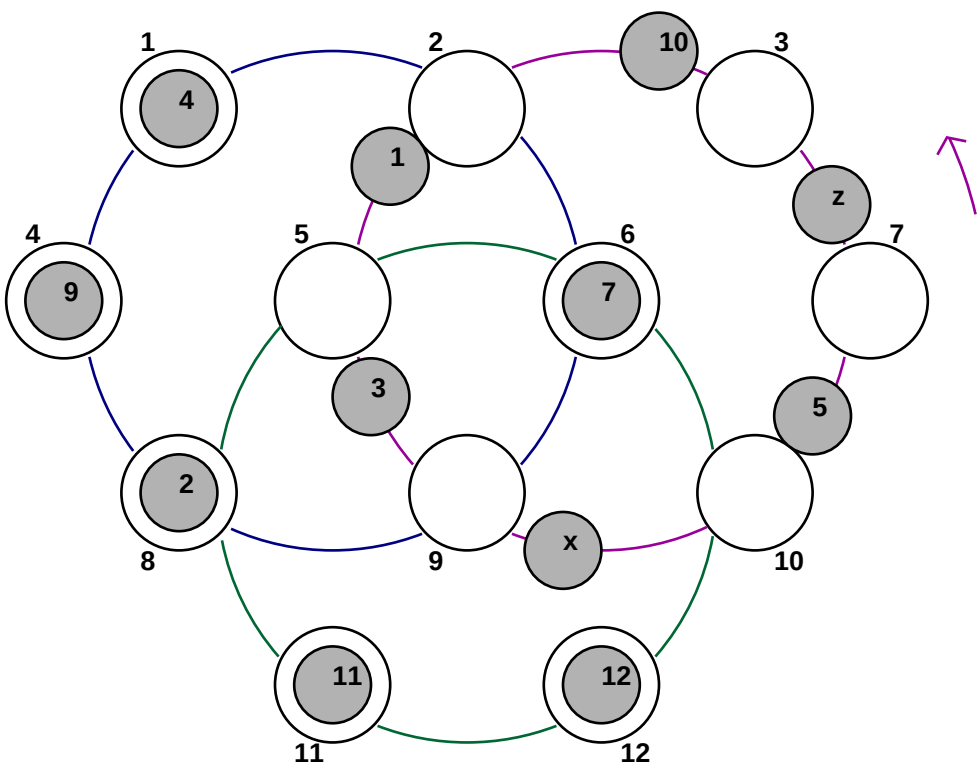

1
2
3
1
7
10
4
5
6
7
4
3
x
z
9
2
5
8
9
10
11
12
11
12

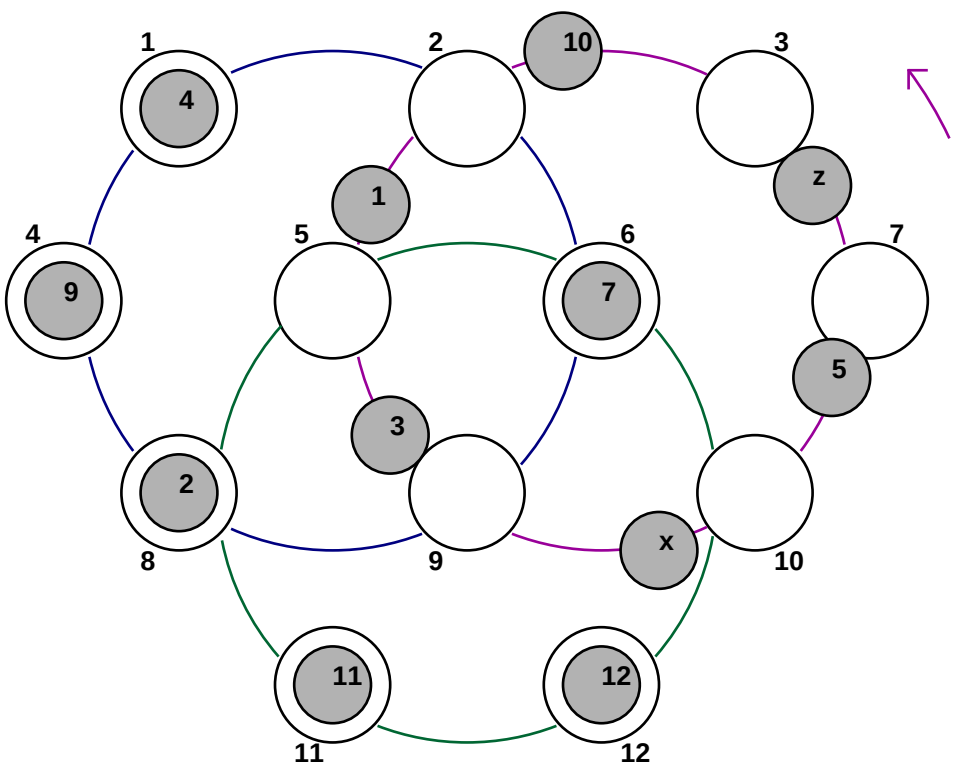

1
1
2
3
10
7
4
4
5
6
7
3
z
x
9
5
2
8
9
10
11
12
11
12

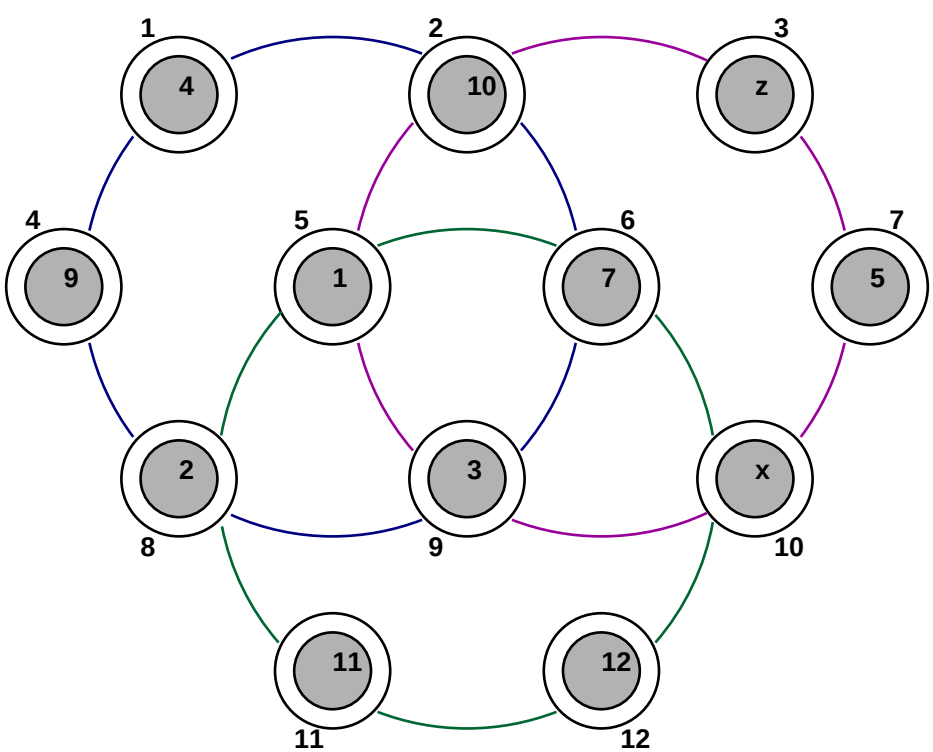

1
1
2
3
10
4
7
4
5
6
7
3
z
9
x
5
2
8
9
10
11
12
11
12

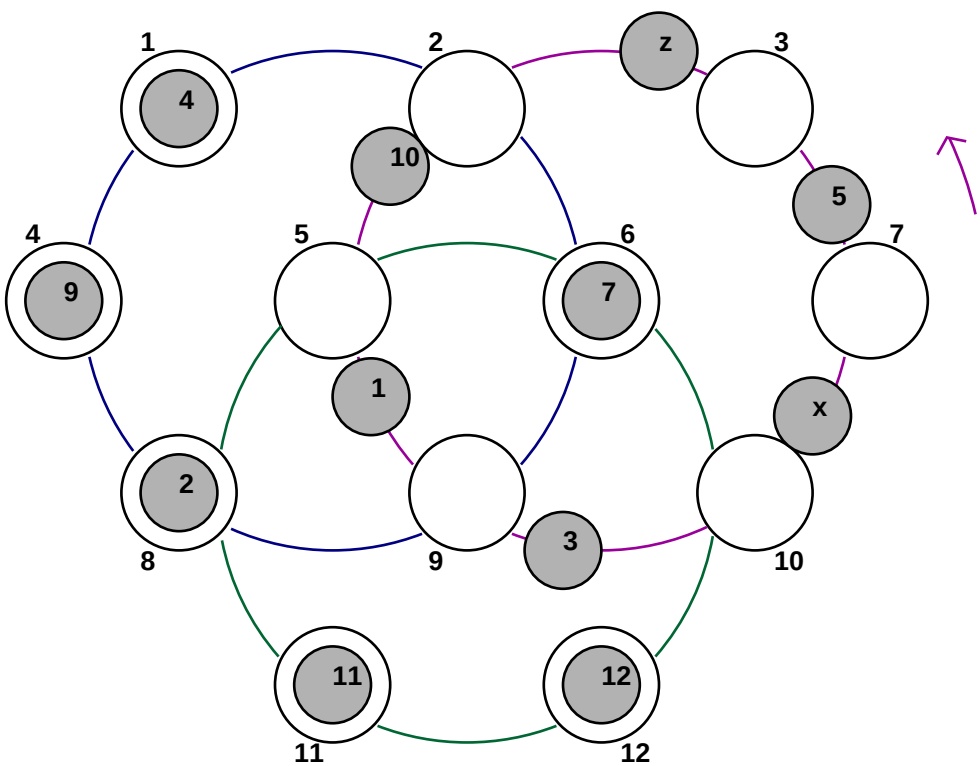

1
4
2
1
3
10
4
9
5
3
6
7
7
z
2
8
x
9
5
10
11
11
12
12

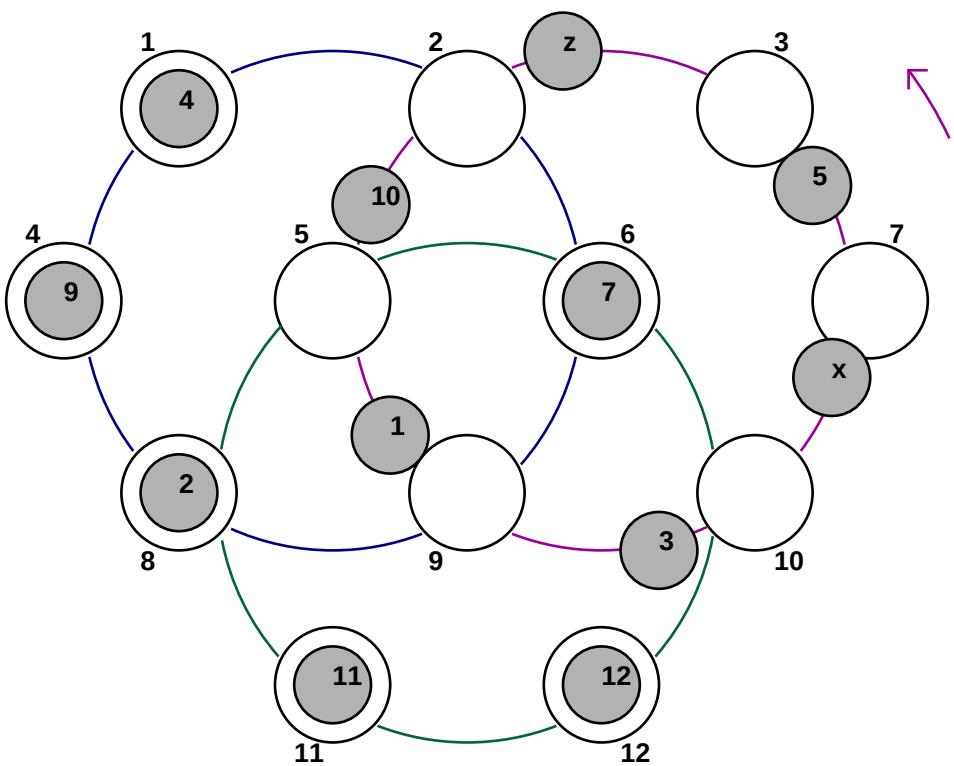

1
4
2
1
3
10
4
9
5
3
6
7
7
z
2
8
x
9
5
10
11
11
12
12

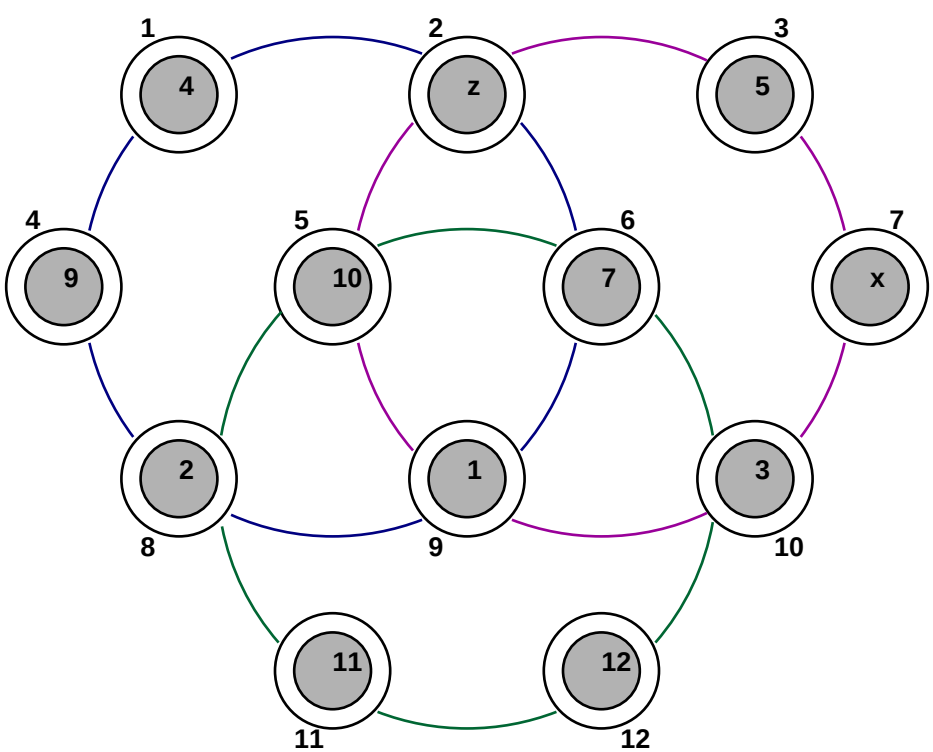

1
2
10
3
4
1
z
4
5
6
7
9
7
3
5
2
2
8
9
x
10
11
12
11
12

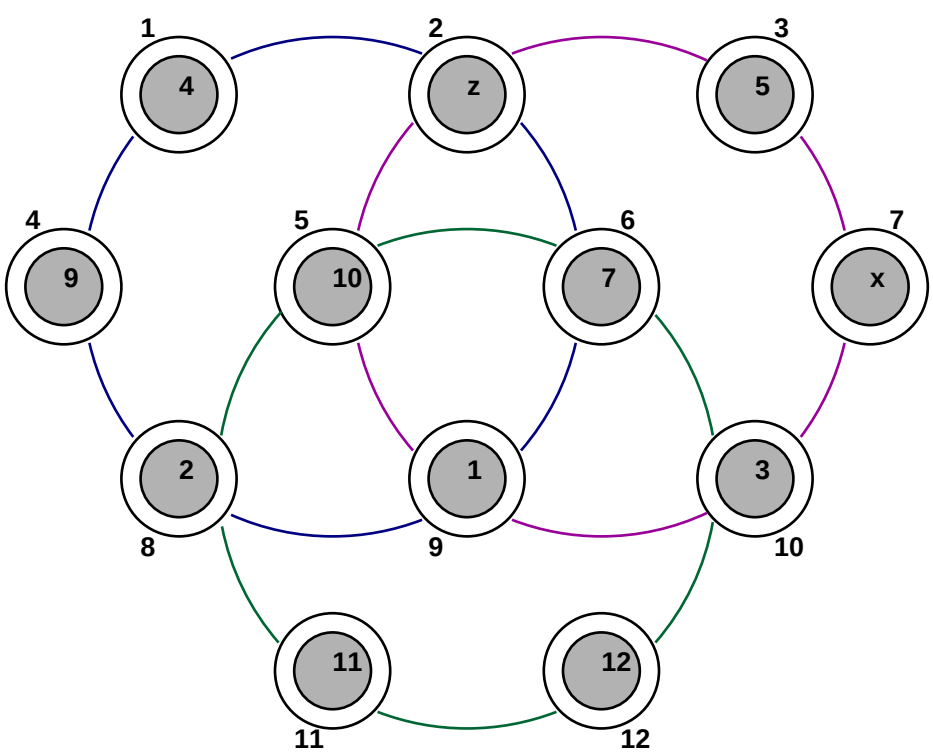

1
2
10
3
4
z
1
4
5
6
7
9
7
5
3
2
8
9
x
10
11
12
11
12

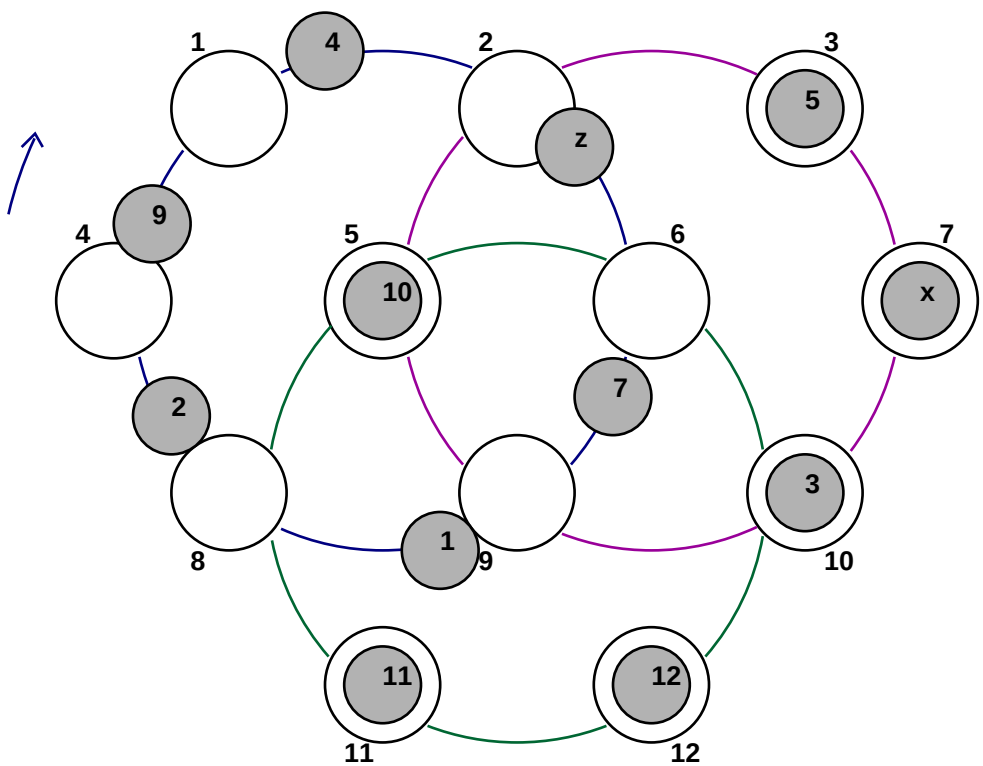

1
4
2
10
3
z
4
9
5
1
6
7
7
5
2
8
3
9
x
10
11
11
12
12

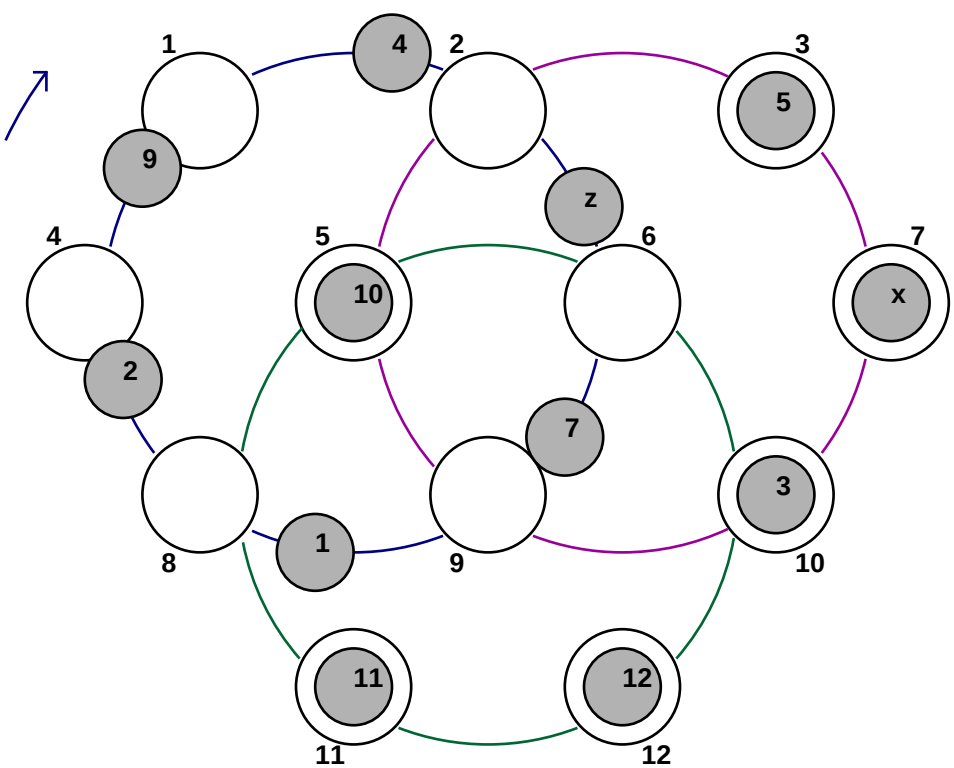

1
2
z
3
4
10
5
4
5
6
7
9
7
1
x
2
8
9
3
10
11
12
11
12

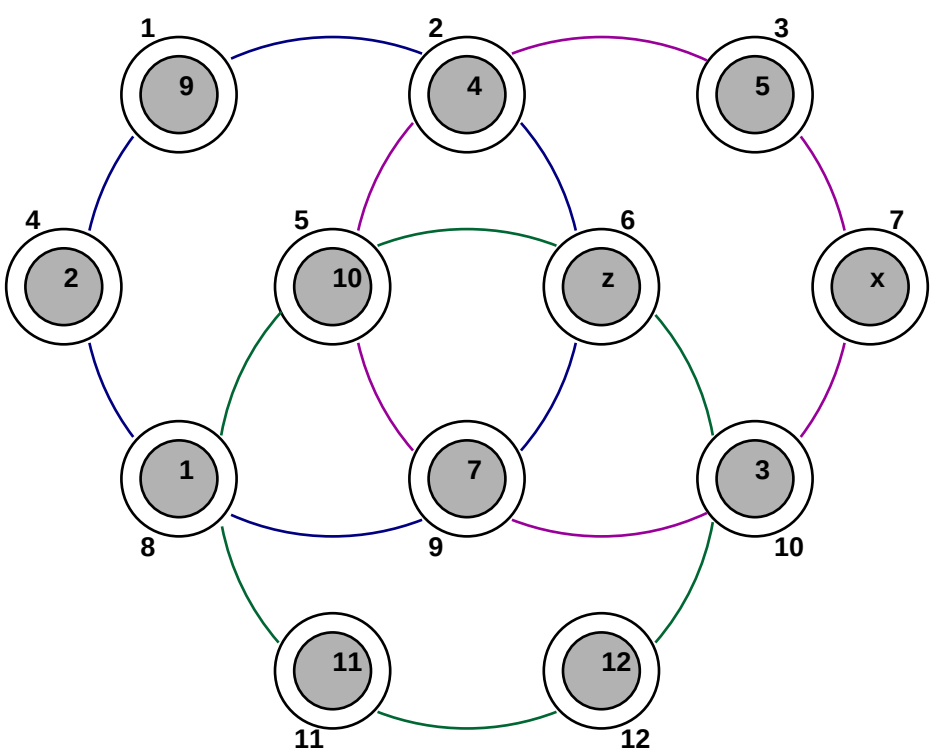

1
4
2
z
3
10
5
4
9
5
6
7
7
x
1
2
8
9
3
10
11
11
12
12

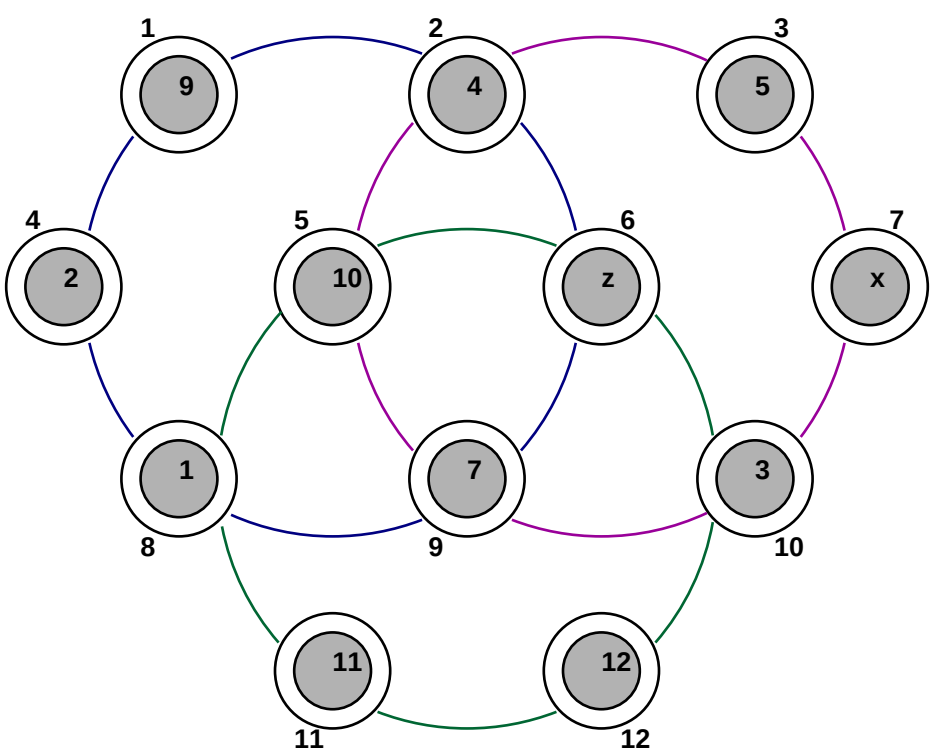

1
4
2
z
3
5
4
9
5
10
6
7
7
x
2
8
1
9
3
10
11
11
12
12

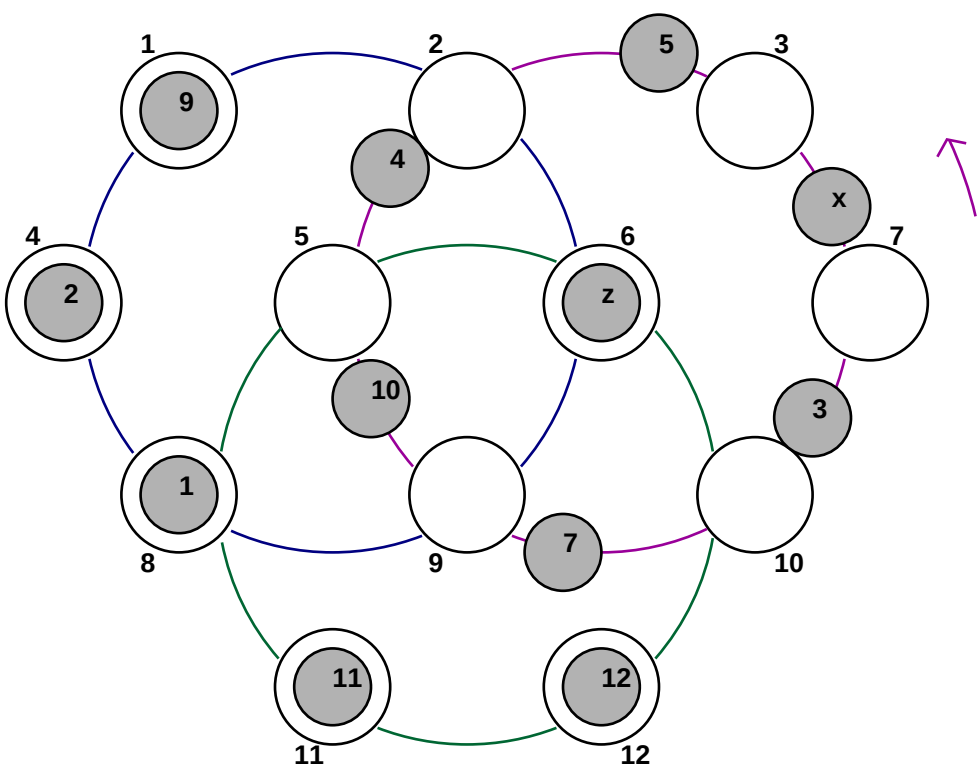

1
4
2
z
3
5
4
9
5
10
6
7
7
x
2
8
1
9
3
10
11
11
12
12

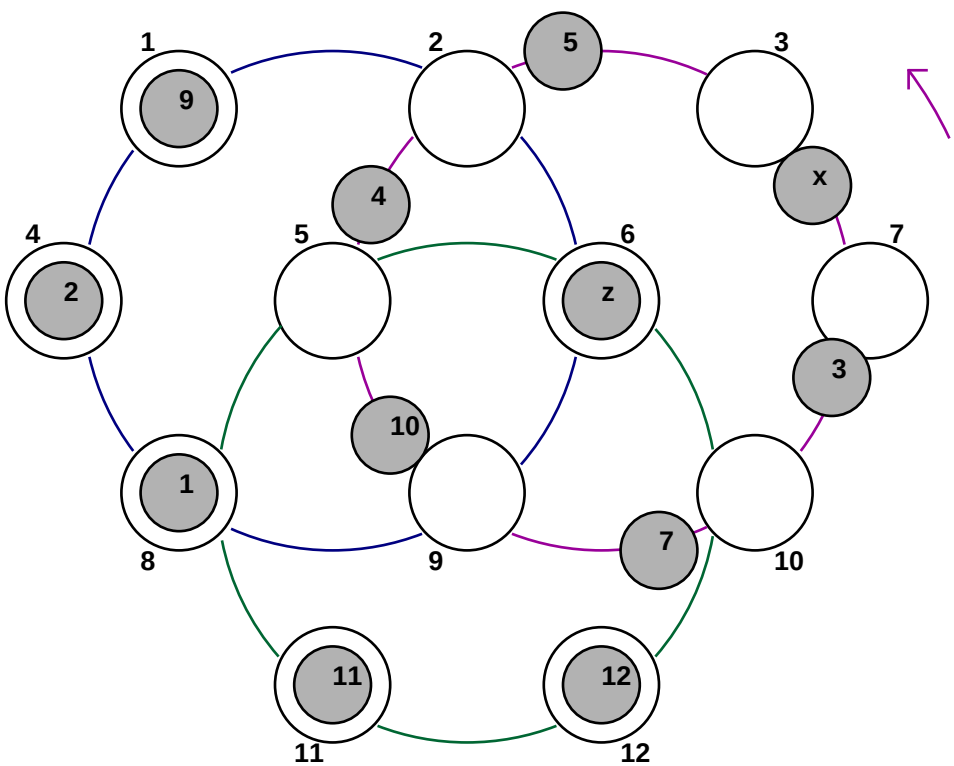

1
4
2
3
5
z
9
4
5
6
7
10
x
2
7
3
1
8
9
10
11
12
11
12

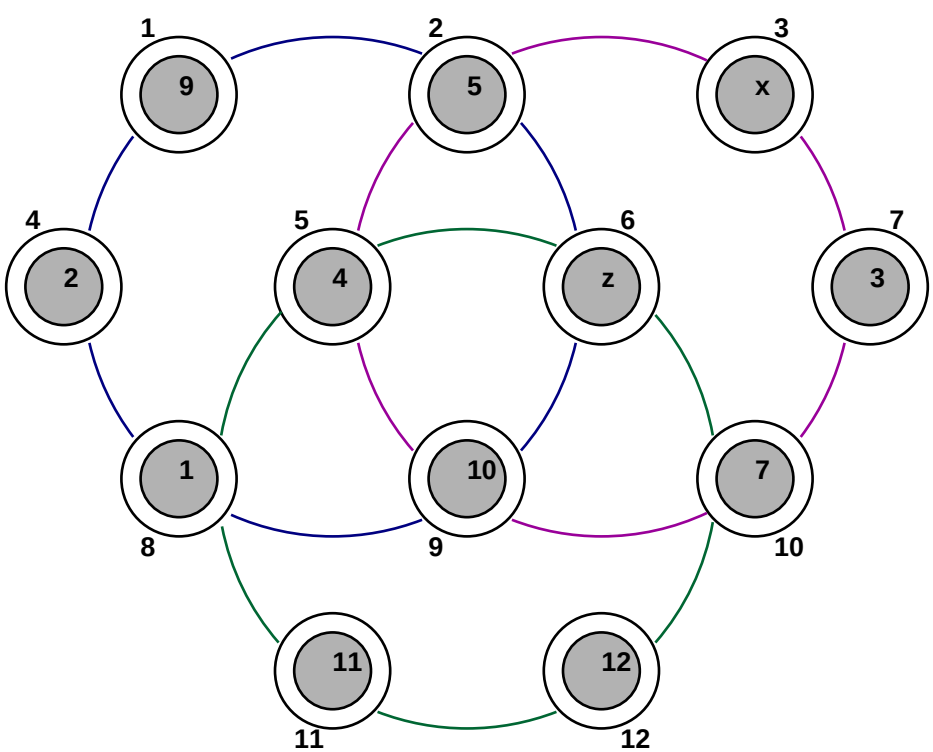

1
4
2
3
5
9
z
4
5
6
7
10
x
2
7
3
1
8
9
10
11
12
11
12

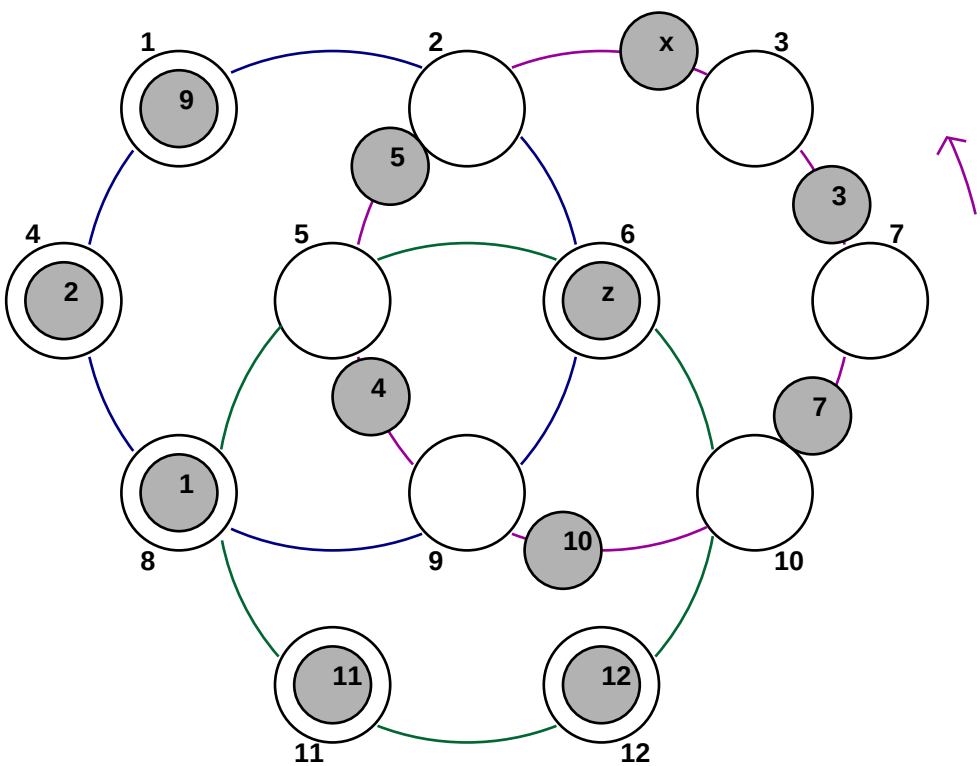

1
9
2
4
3
5
4
2
5
10
6
z
7
x
1
1
7
9
3
10
11
11
12
12

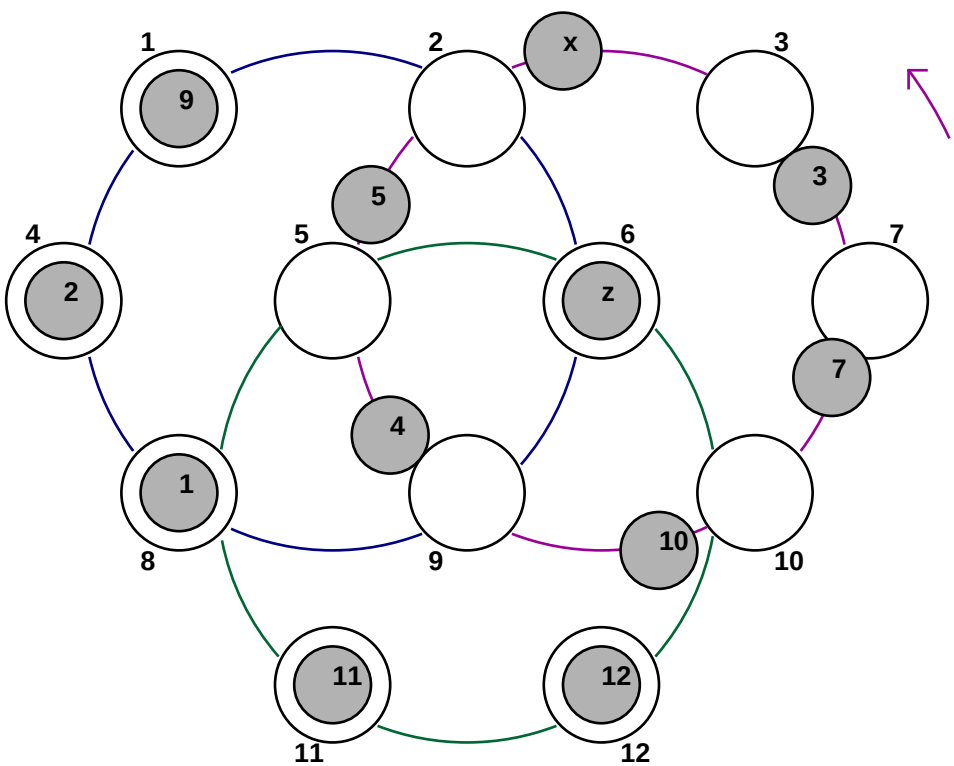

1
9
2
4
3
5
4
2
5
10
6
z
7
x
1
1
7
9
3
10
11
11
12
12

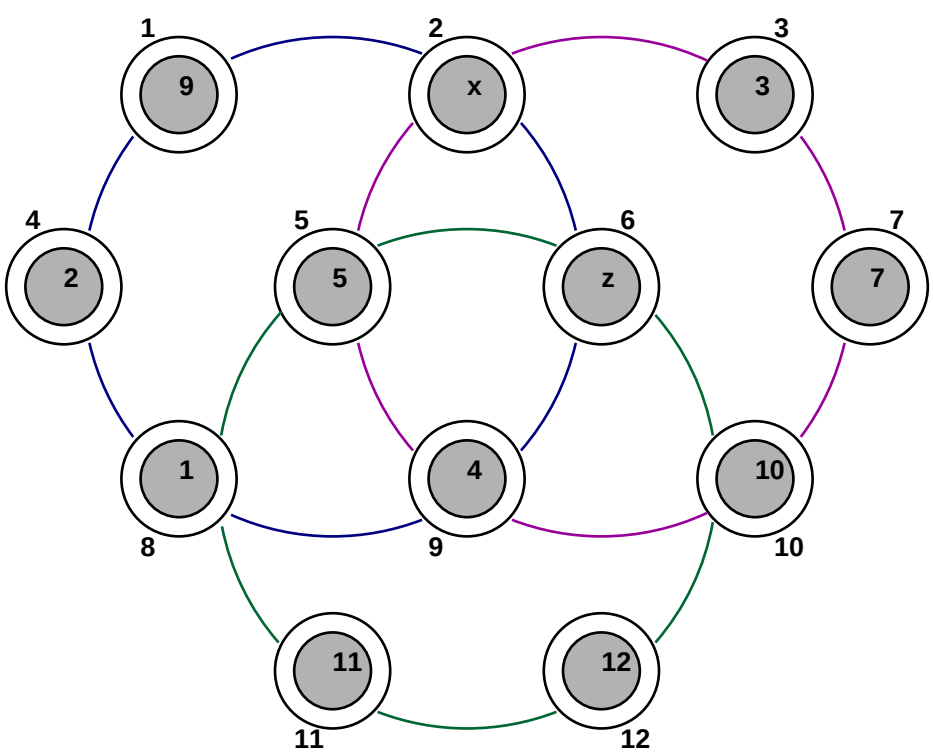

1
9
2
5
3
4
x
4
2
5
6
z
7
10
3
1
8
9
7
10
11
11
12
12

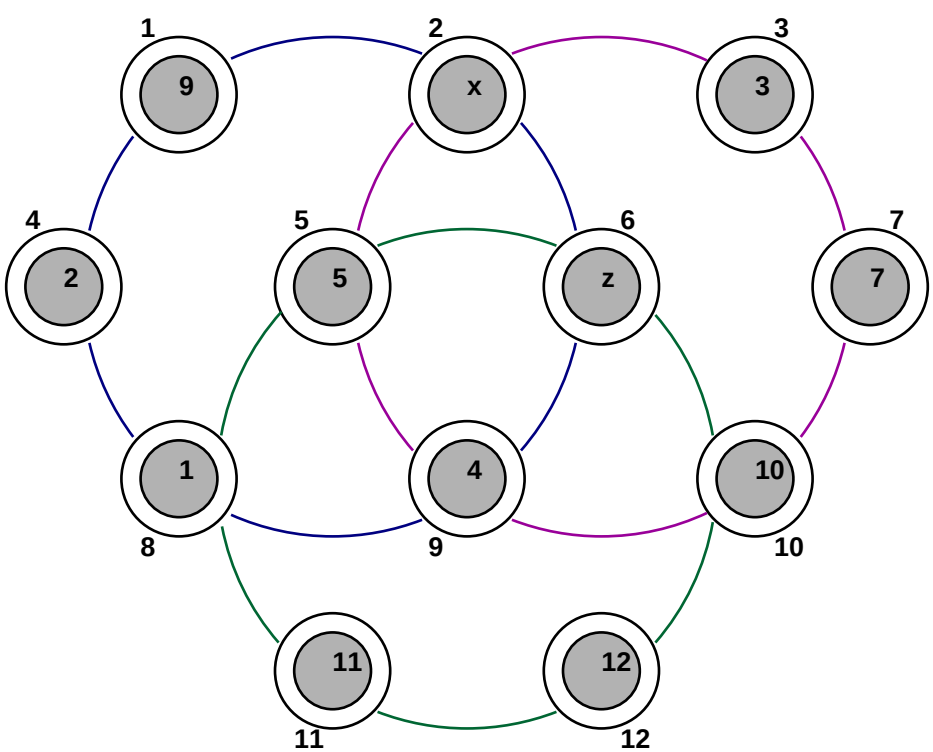

1
9
2
5
3
x
4
4
2
5
6
z
7
3
10
1
8
9
7
10
11
11
12
12

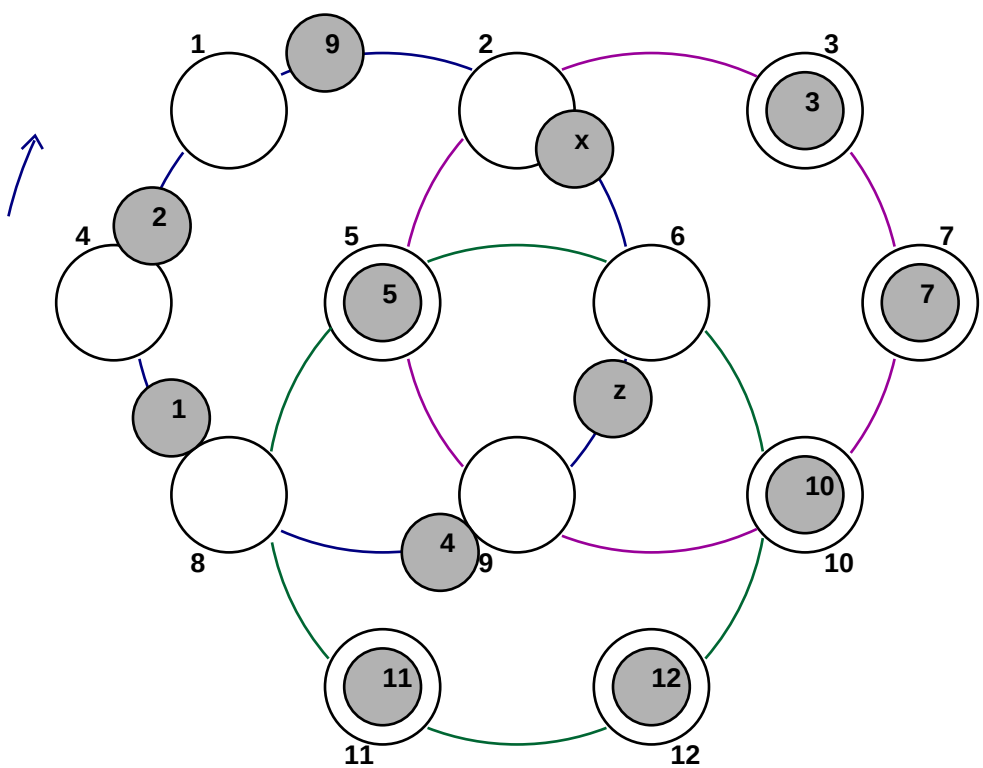

1
9
2
5
3
x
4
2
5
4
6
z
7
3
1
8
10
9
7
10
11
11
12
12

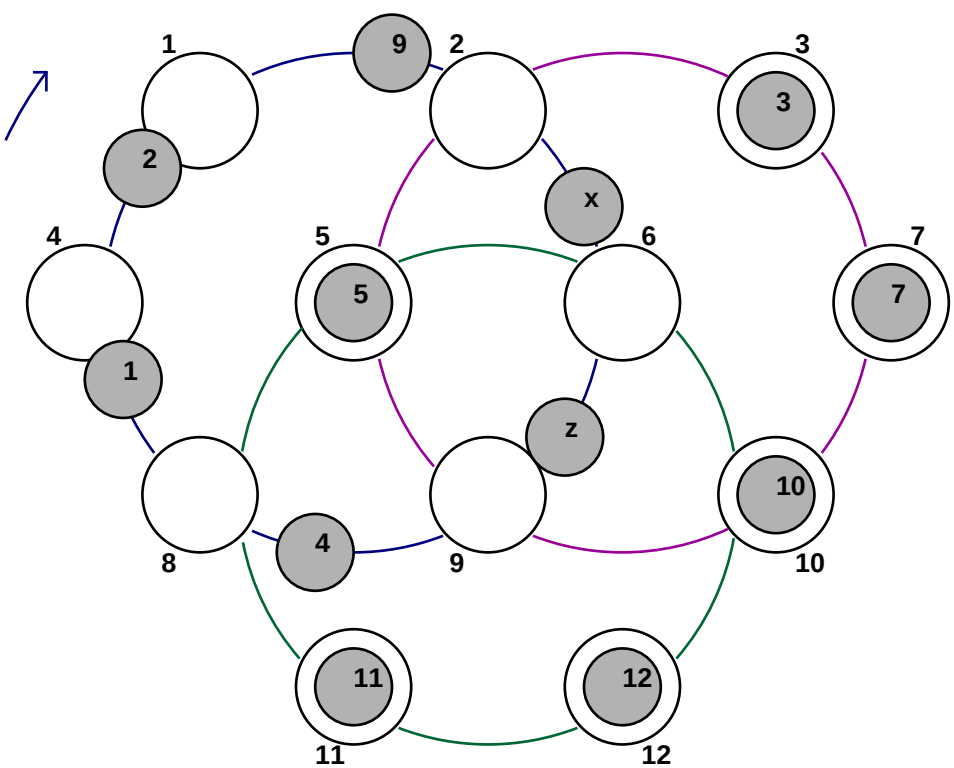

1
9
2
x
3
5
3
4
2
5
6
z
7
4
7
1
8
9
10
10
11
11
12
12

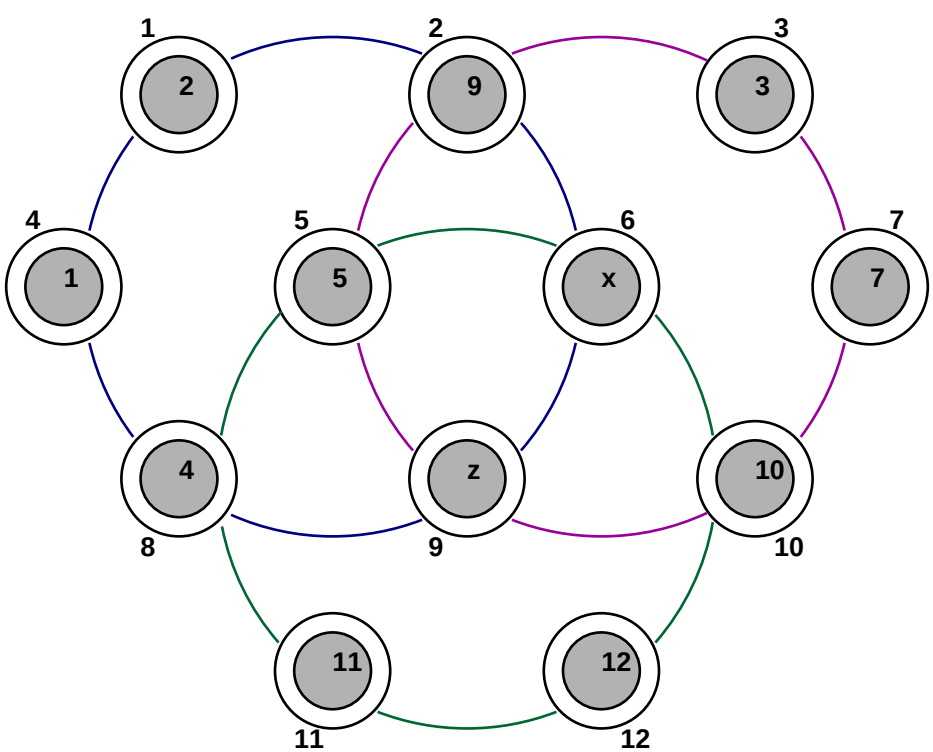

1
9
2
x
3
3
5
4
2
5
6
z
7
7
4
1
8
9
10
10
11
11
12
12

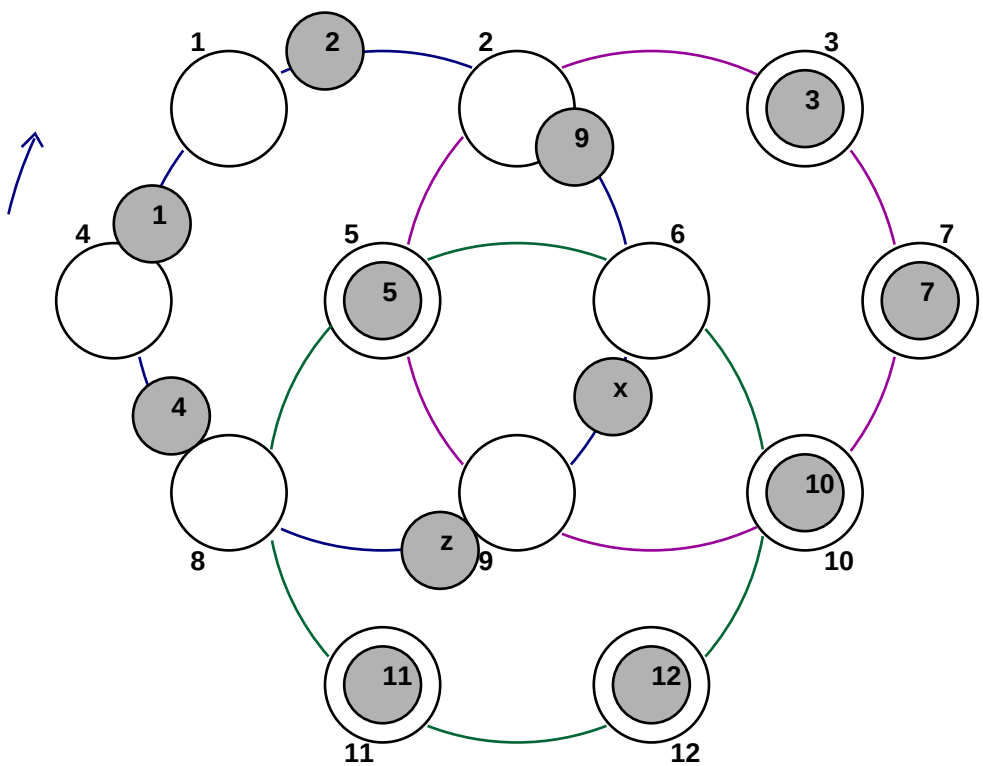

1
9
2
x
3
3
4
2
5
5
6
z
7
7
1
8
4
9
10
10
11
11
12
12

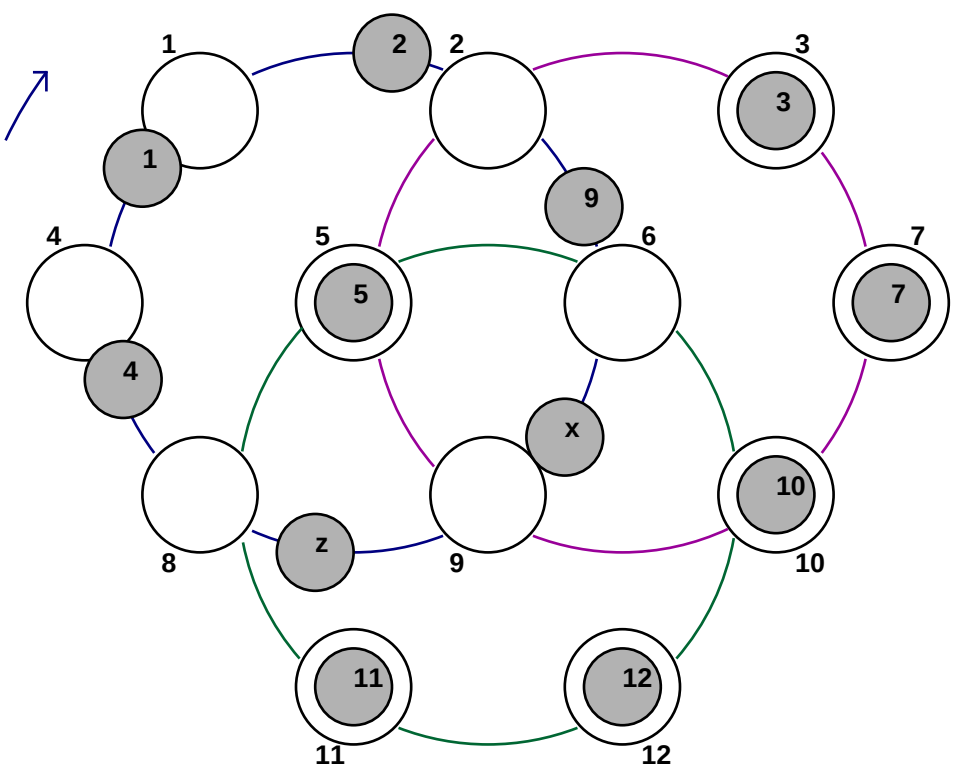

1
9
2
x
3
3
4
2
5
5
6
z
7
7
1
8
4
9
10
10
11
11
12
12

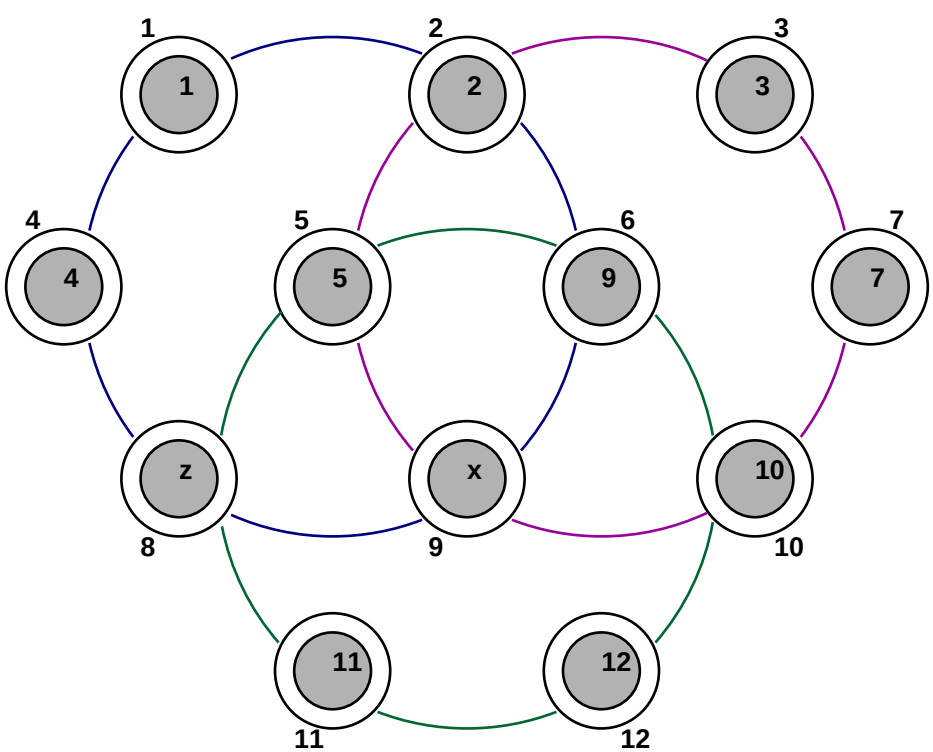

1
9
2
3
3
x
2
4
5
5
6
7
7
z
1
10
4
8
9
10
11
12
11
12


1
9
2
3
3
2
x
4
5
6
7
5
7
1
z
10
4
8
9
10
11
12
11
12

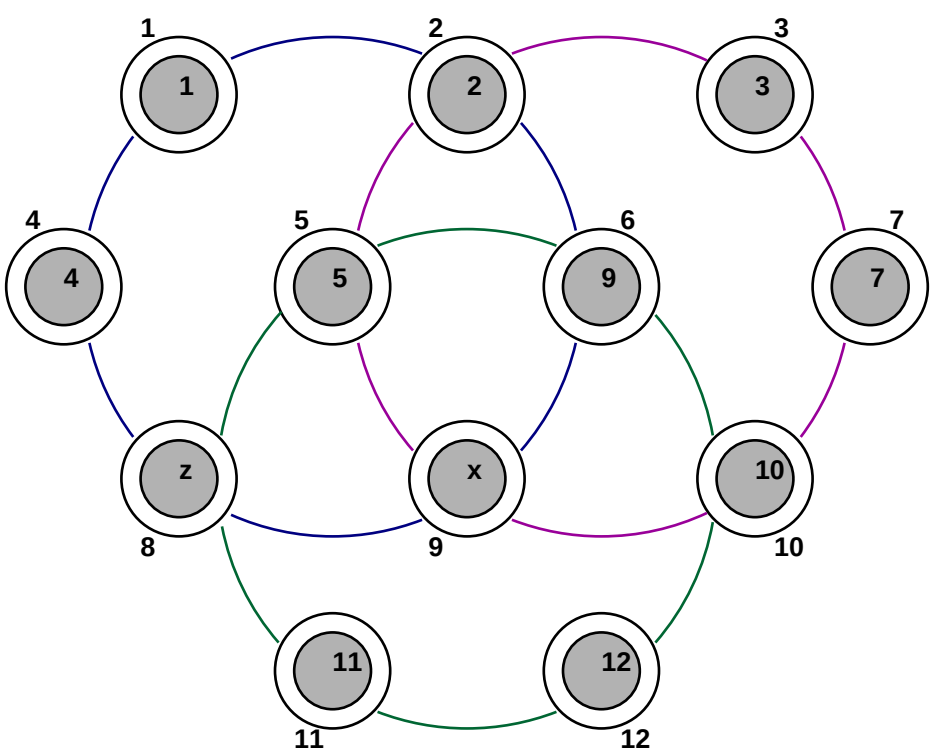

1
2
2
9
3
3
4
1
5
5
6
x
7
7
4
4
z
10
10
8
9
11
11
12
12

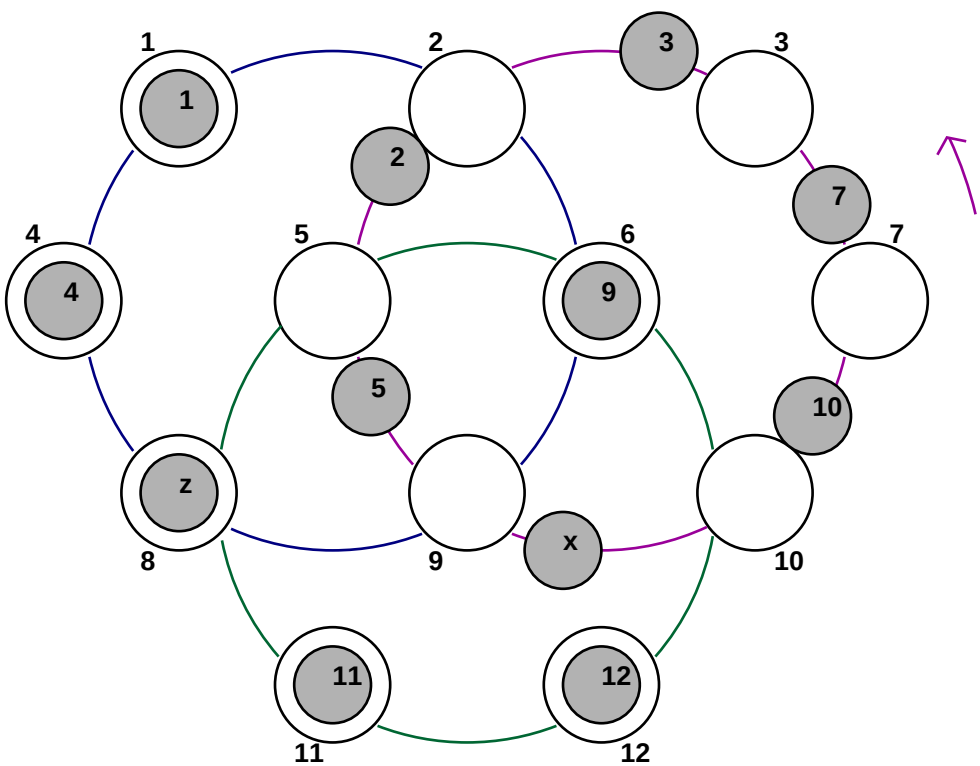

1
2
2
3
3
9
1
4
5
5
6
7
7
x
4
10
10
z
9
8
11
12
11
12

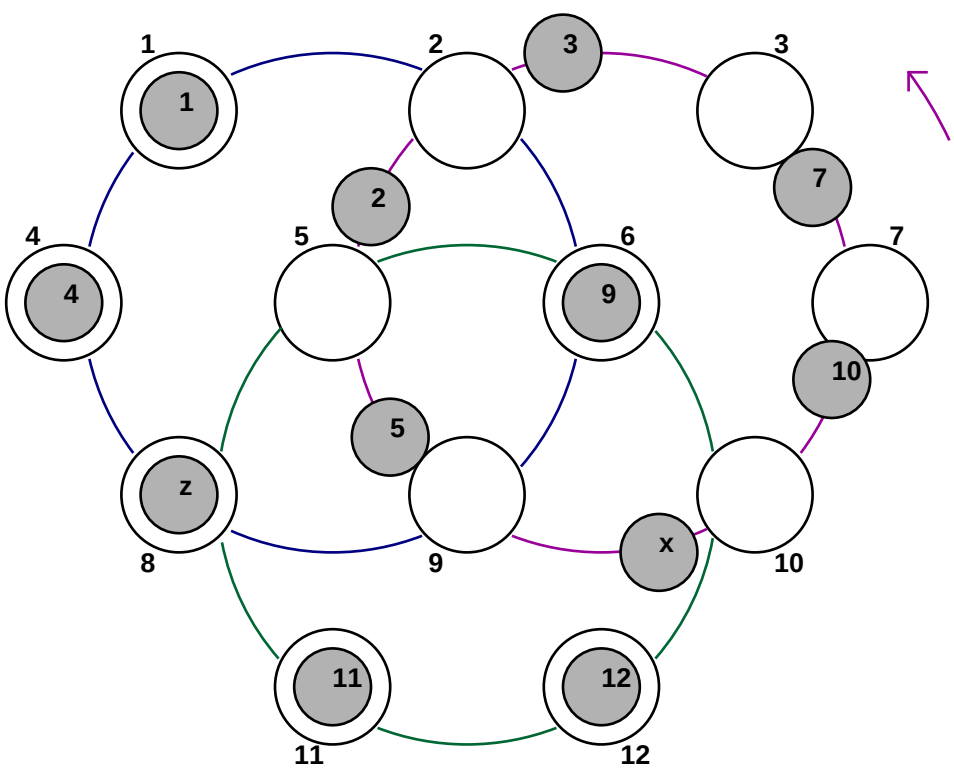

1
2
2
3
3
1
9
4
5
6
7
5
7
4
x
10
z
8
9
10
11
12
11
12

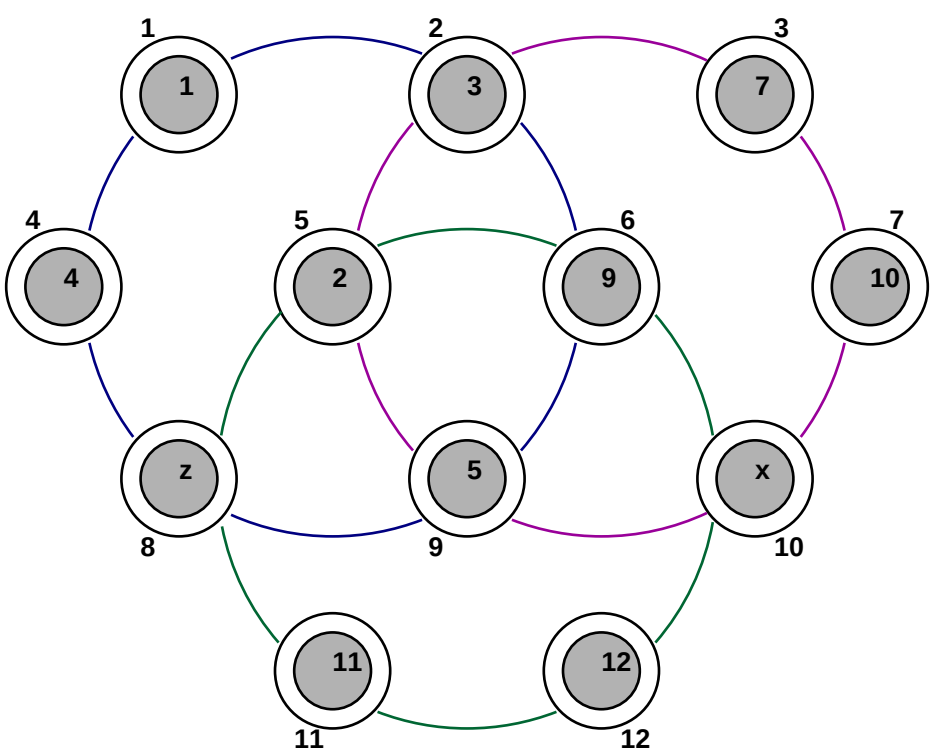

1
2
3
4
5
6
7
z
x
10
8
9
10
11
12
11
12

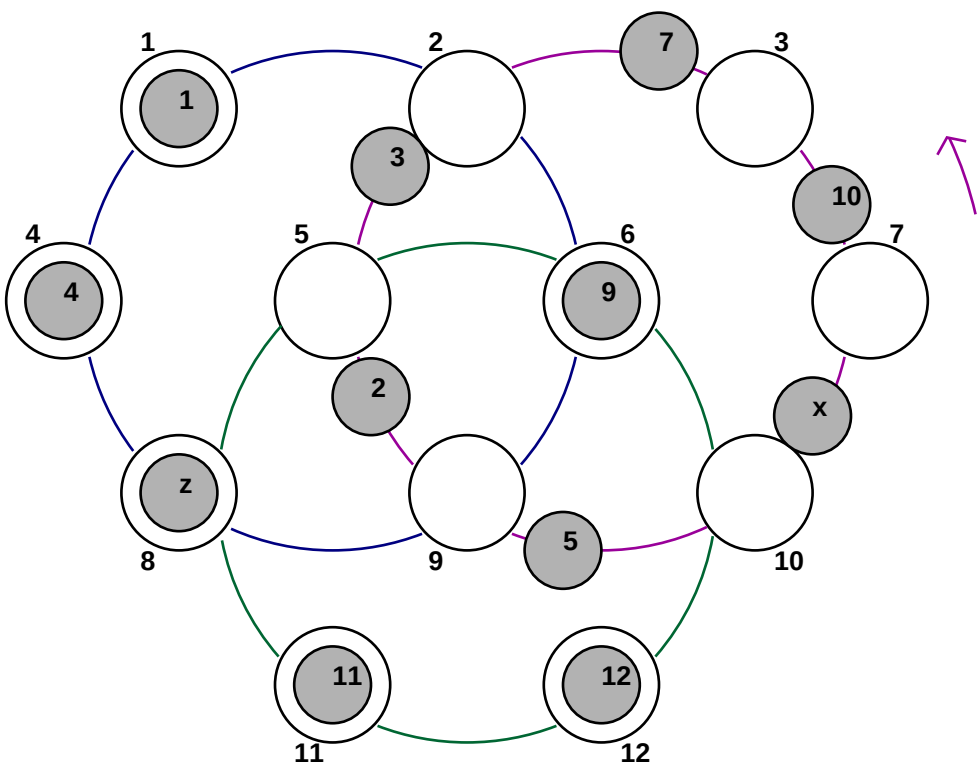
Number 9 can be moved into position 9 while keeping numbers 1, 2, 3, 4, 5, 7, 10, 11, and 12 in position by the following moves.

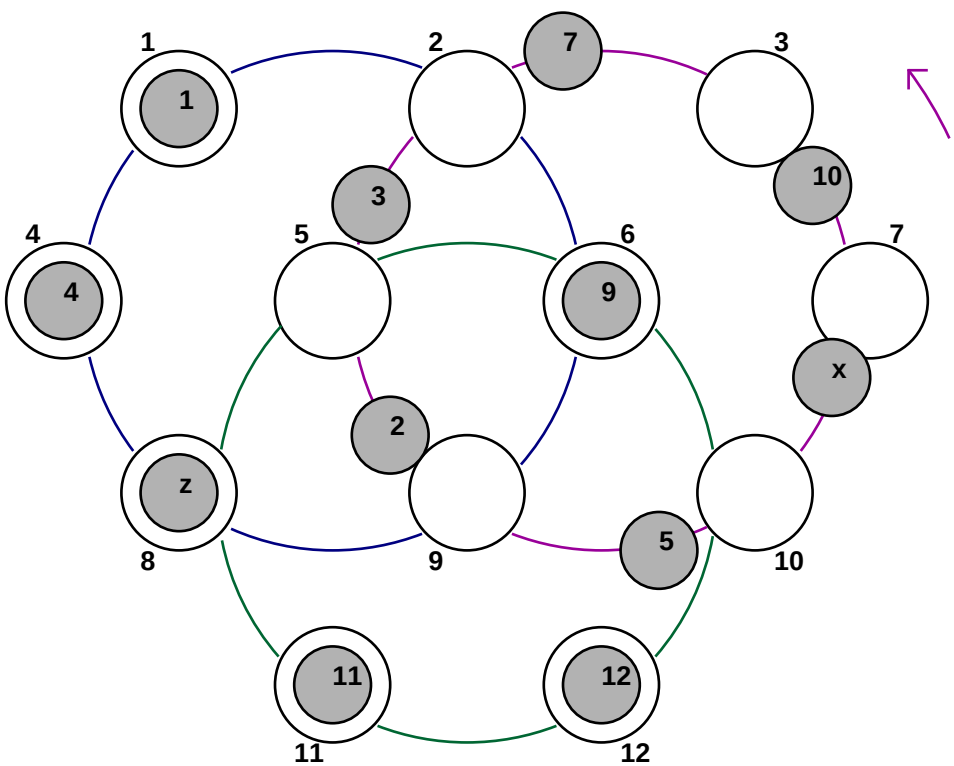

1
2
3
4
5
6
7
z
x
10
8
9
10
11
12
11
12

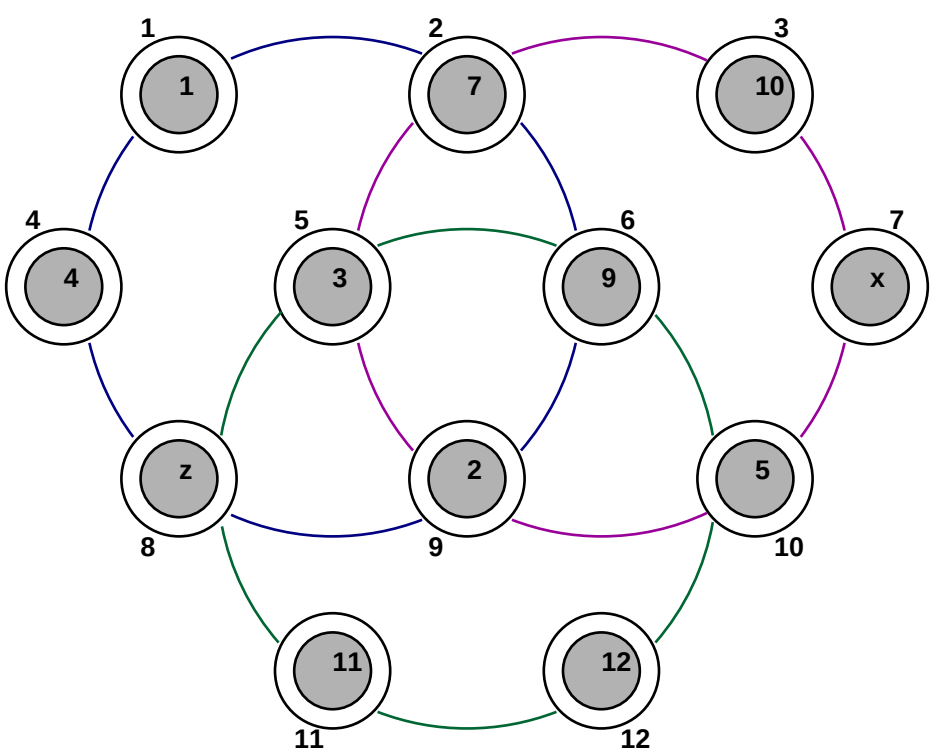

1
2
3
3
1
2
7
4
5
6
7
4
9
5
10
z
x
8
9
10
11
12
11
12

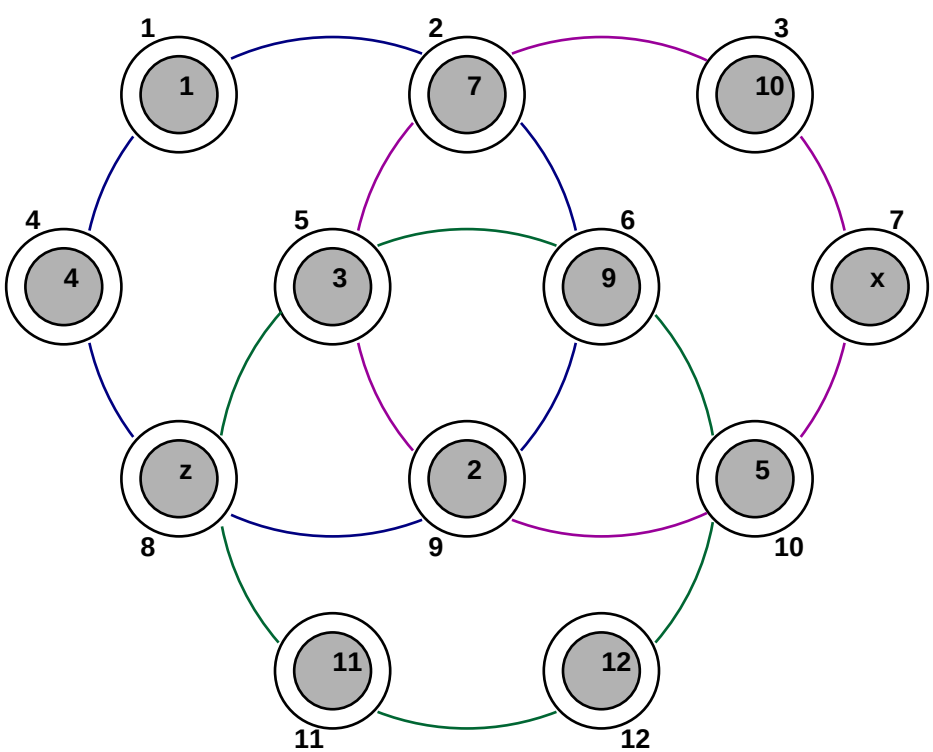

1
2
3
3
1
2
7
4
5
6
7
4
9
10
5
z
x
8
9
10
11
12
11
12

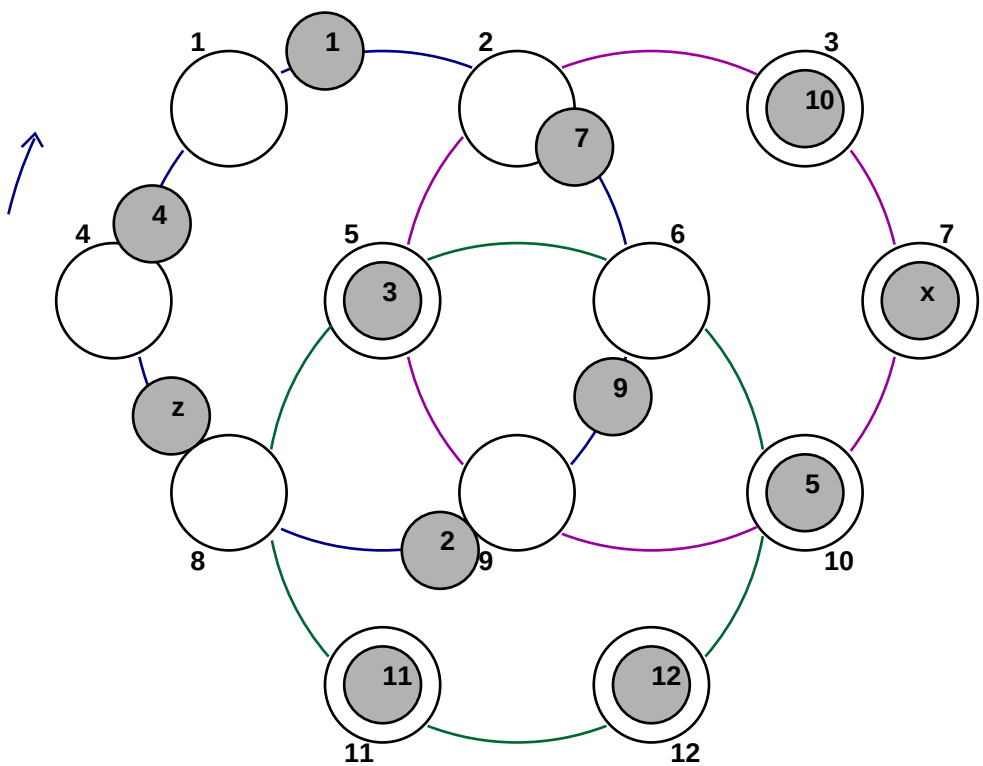

1
2
3
1
3
7
4
5
6
7
4
2
9
10
z
5
x
8
9
10
11
12
11
12

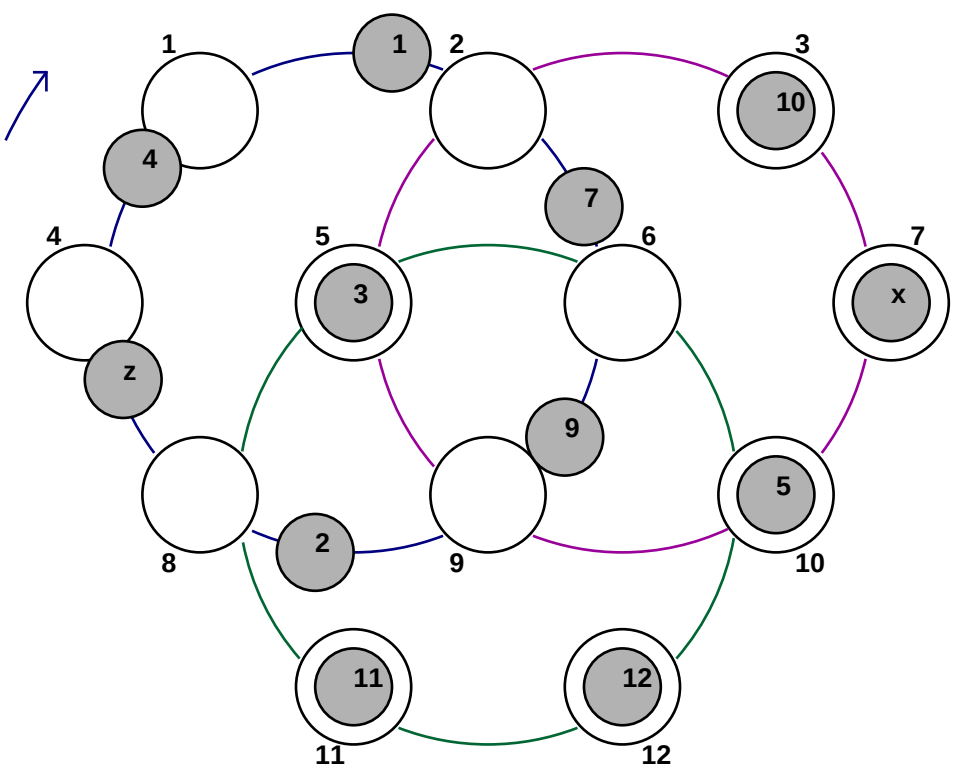

1
2
7
3
1
3
10
4
5
6
7
4
9
2
x
z
8
9
5
10
11
12
11
12

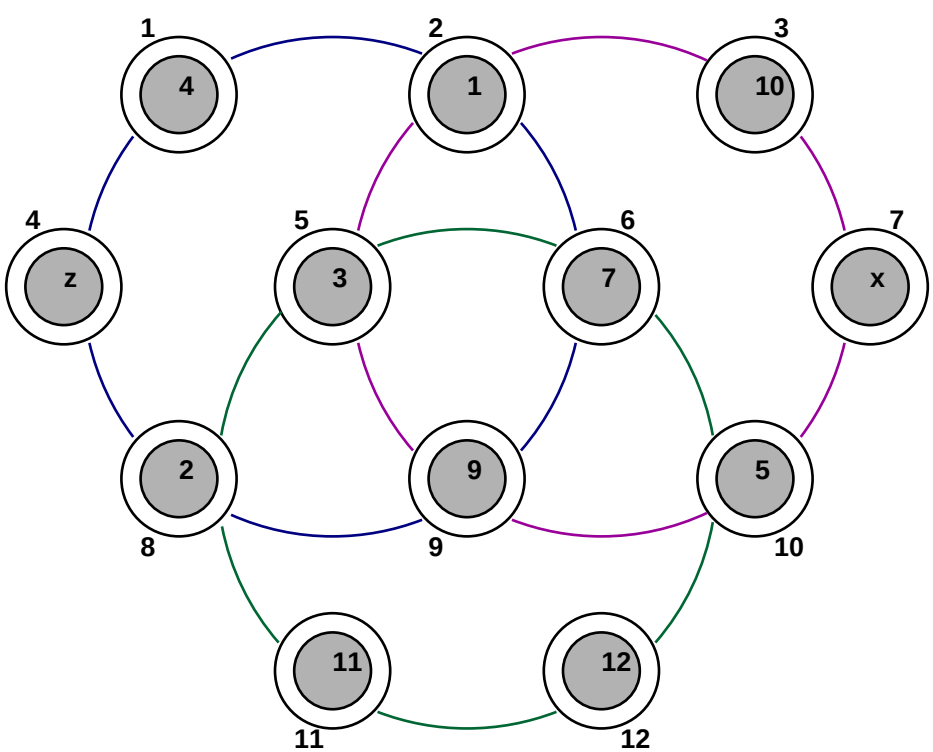

1
2
7
3
1
10
3
4
5
6
7
4
9
x
2
z
5
8
9
10
11
12
11
12

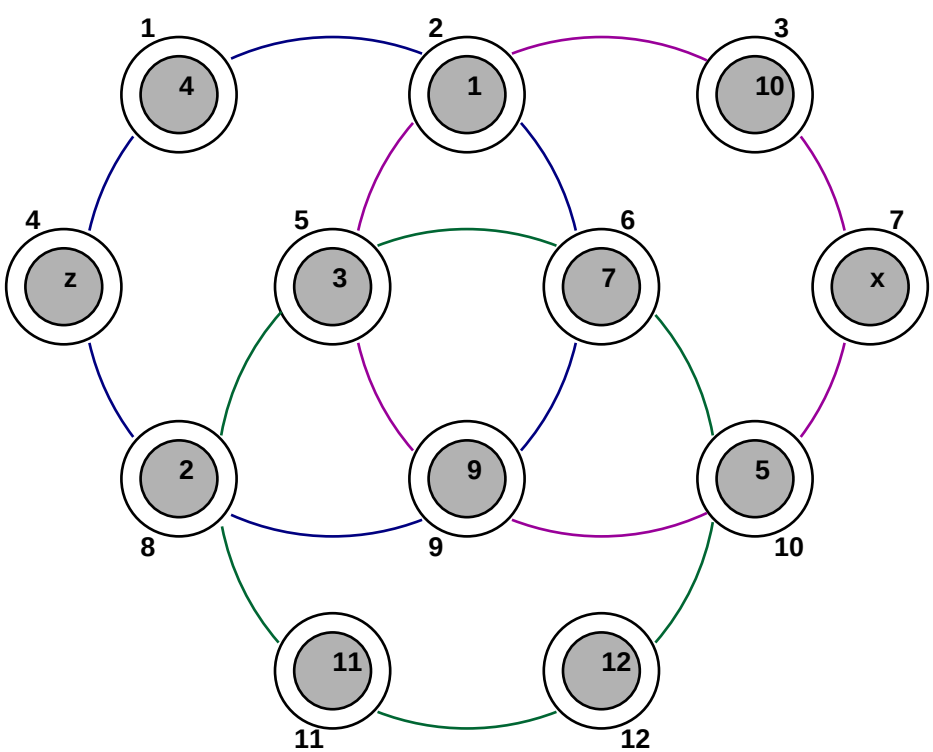

1
2
3
1
7
10
4
5
6
7
4
3
9
x
z
2
5
8
9
10
11
12
11
12

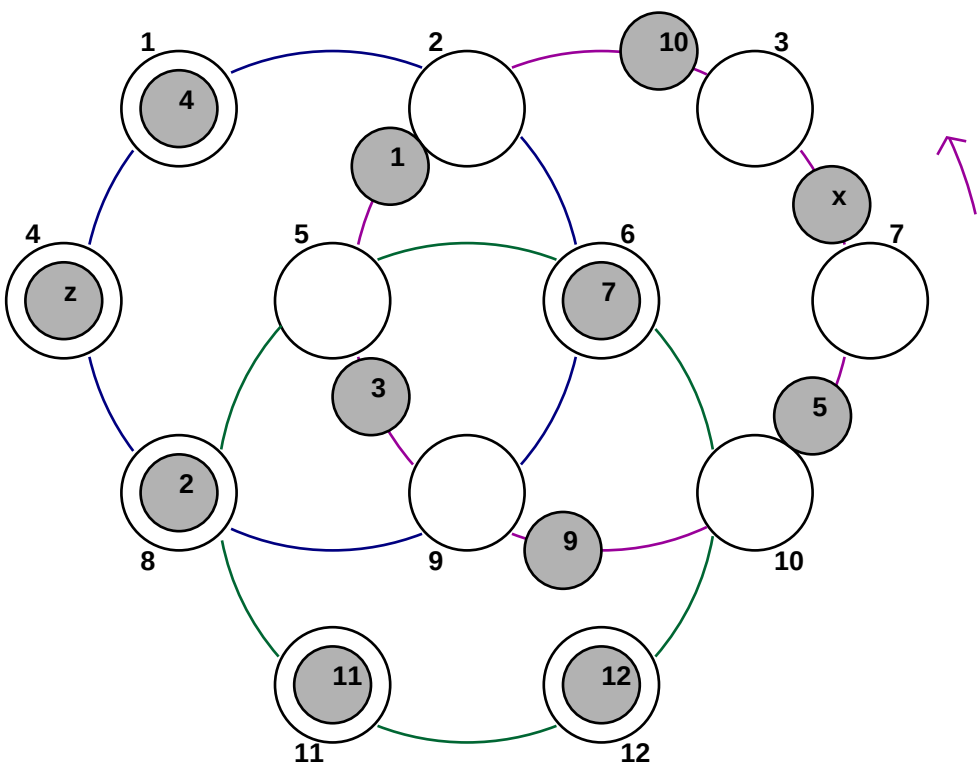

1
2
3
1
7
10
4
5
6
7
4
3
9
x
z
2
5
8
9
10
11
12
11
12

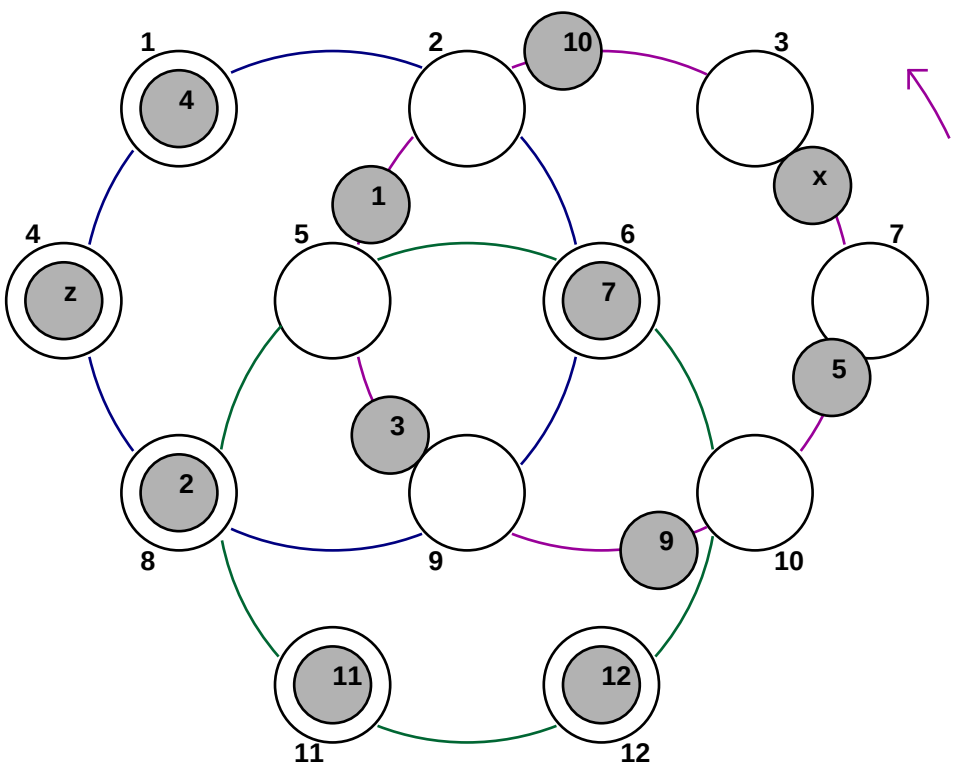

1
1
2
3
10
7
4
4
5
6
7
3
x
9
z
5
2
8
9
10
11
12
11
12

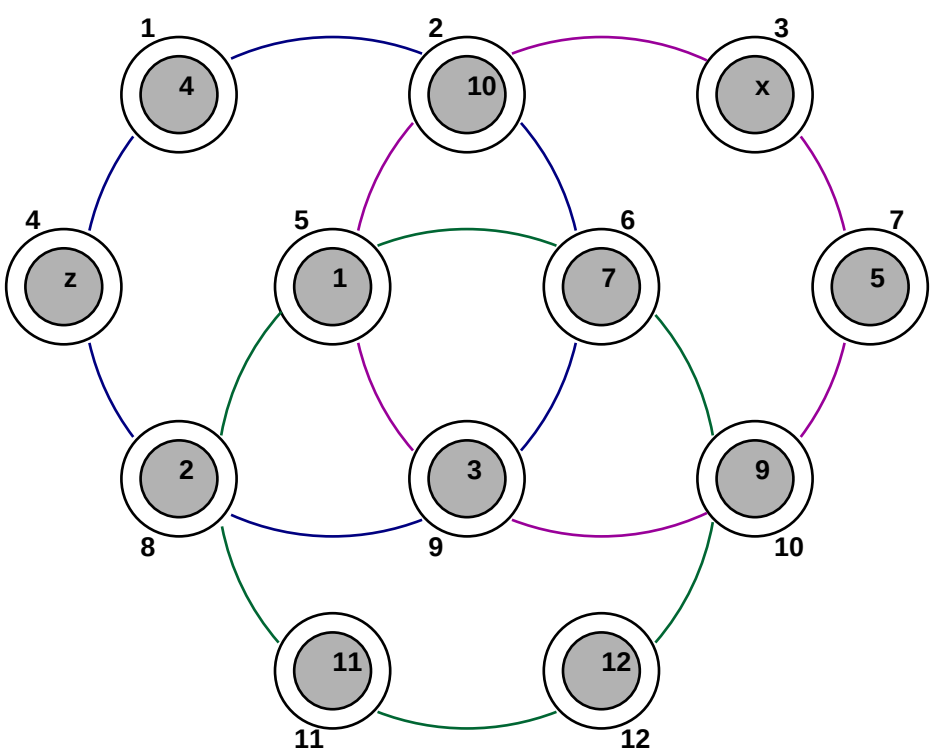

1
1
2
3
10
4
7
4
5
6
7
3
x
z
9
5
2
8
9
10
11
12
11
12

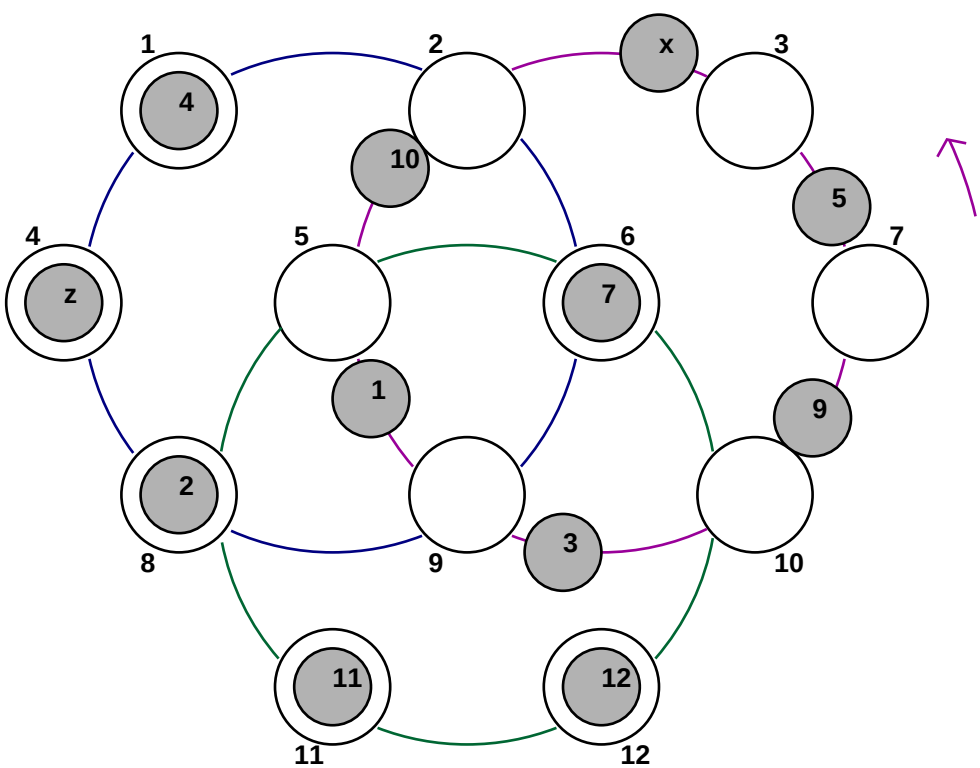

1
4
2
1
3
10
4
z
5
3
6
7
7
x
2
8
9
9
5
10
11
11
12
12

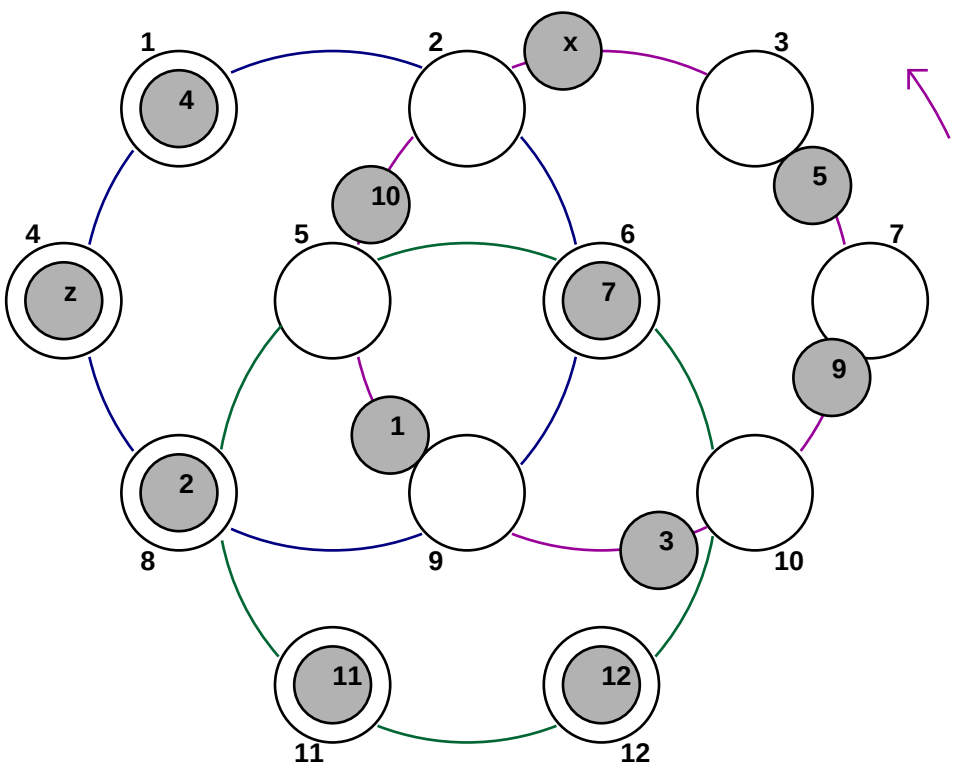

1
4
2
1
3
10
4
z
5
3
6
7
7
x
2
8
9
9
5
10
11
11
12
12

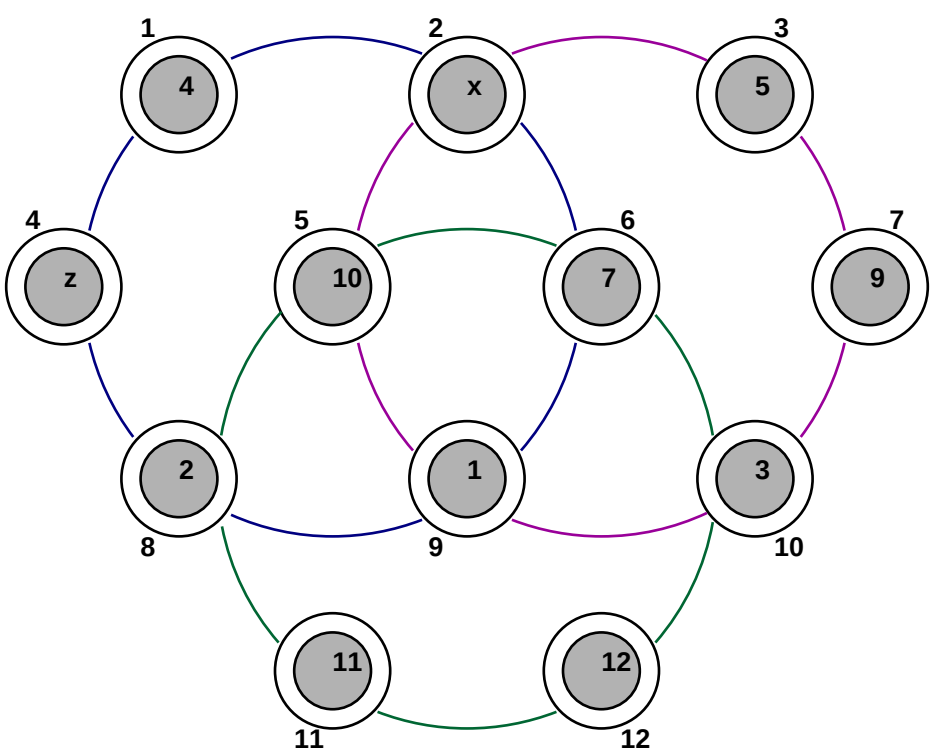

1
2
10
3
4
1
x
4
5
6
7
z
7
3
5
2
2
8
9
9
10
11
12
11
12

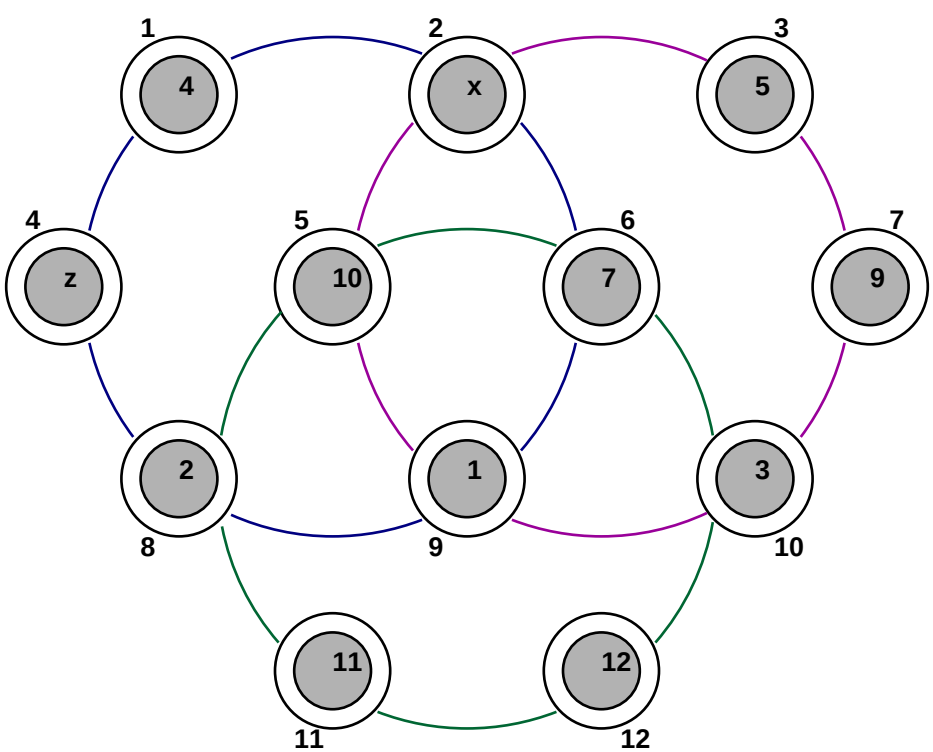

1
2
10
3
4
x
1
4
5
6
7
z
7
5
3
2
2
8
9
9
10
11
12
11
12

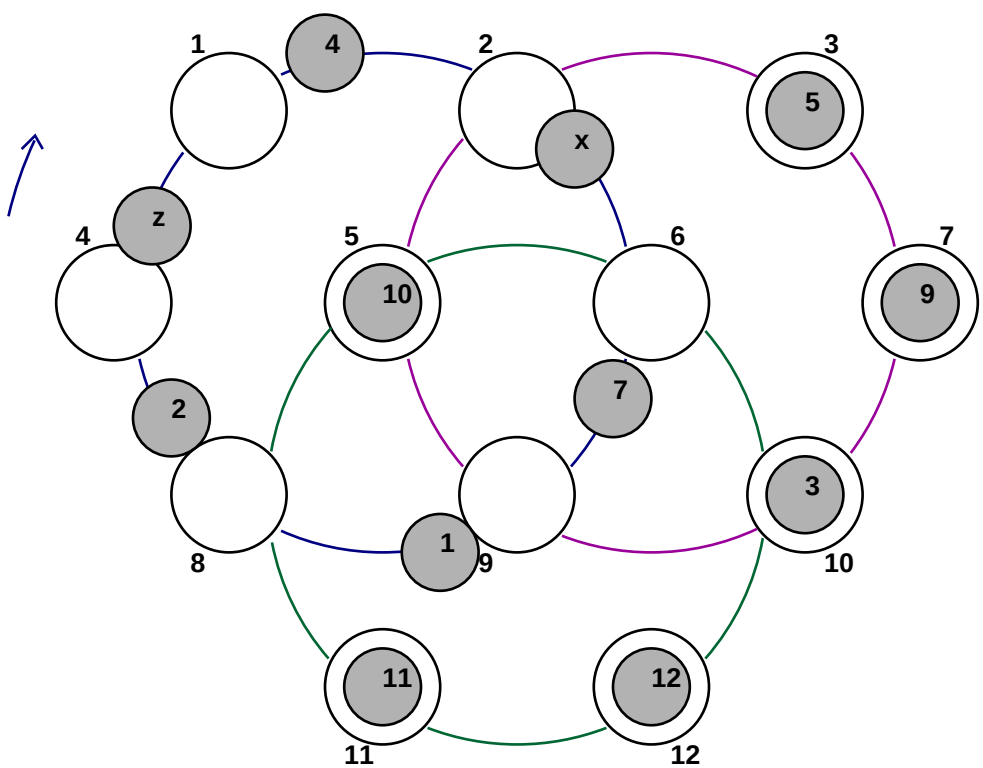

1
4
2
10
3
x
4
z
5
1
6
7
7
5
2
8
3
9
9
10
11
11
12
12

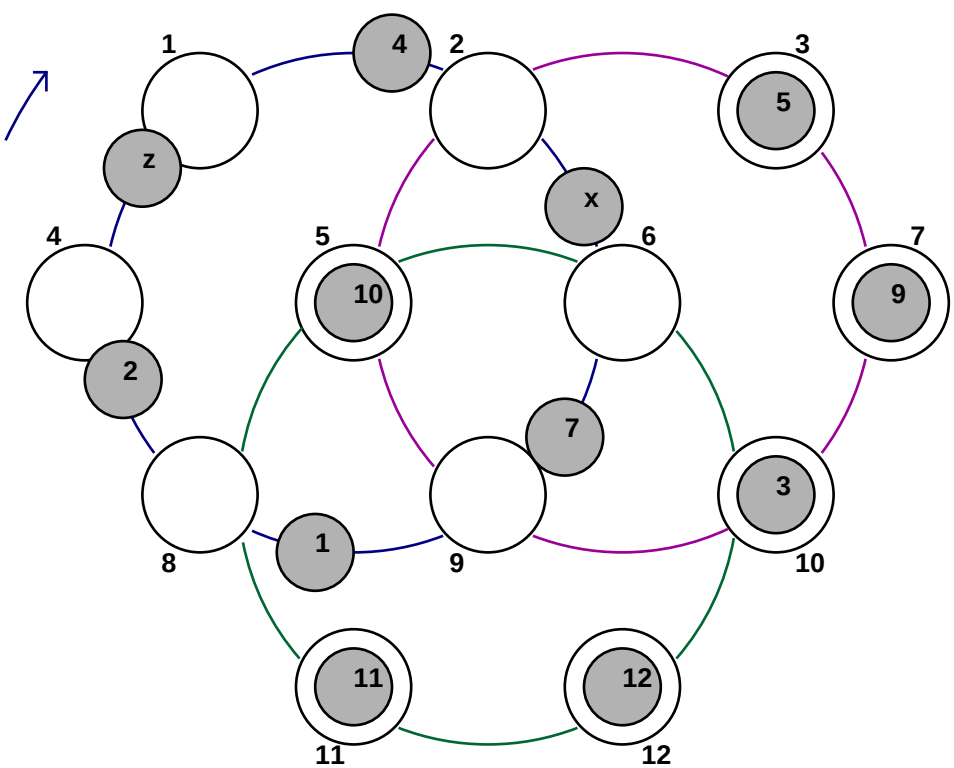

1
4
2
10
x
3
5
4
z
5
6
7
7
1
9
2
8
9
3
10
11
11
12
12

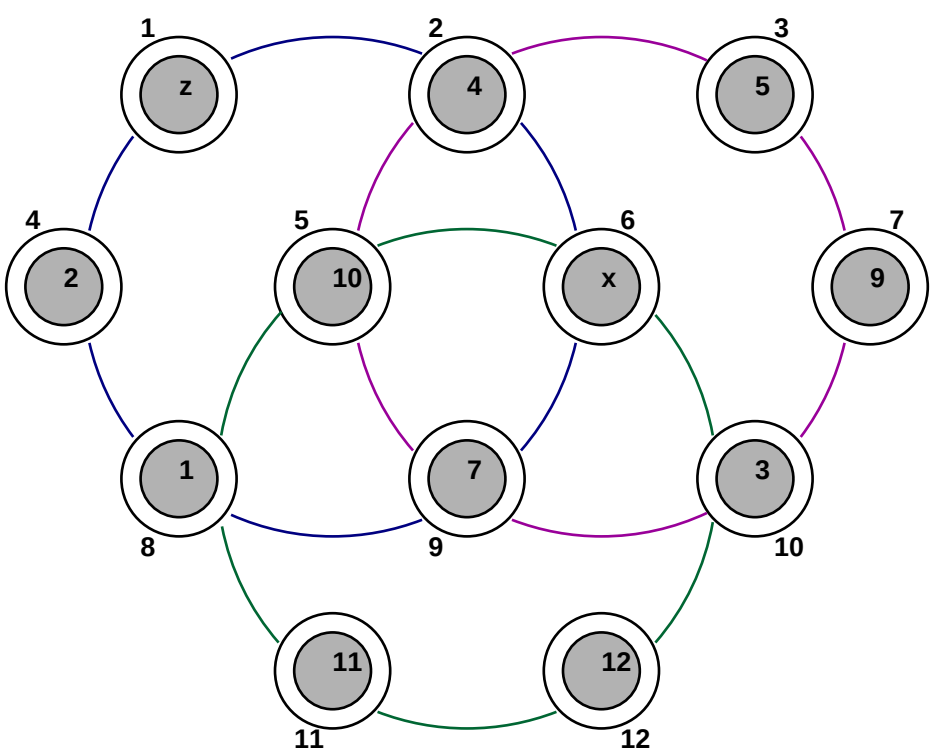

1
4
2
x
3
10
5
4
z
5
6
7
7
9
1
2
8
9
3
10
11
11
12
12

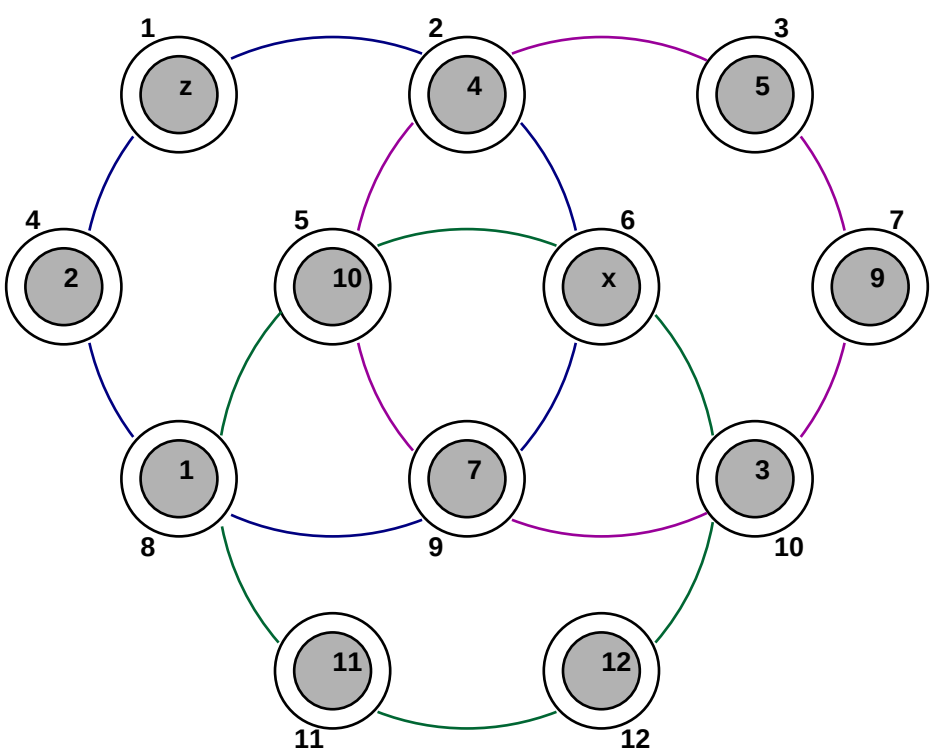

1
4
2
x
3
5
4
z
5
10
6
7
7
9
2
8
1
9
3
10
11
11
12
12

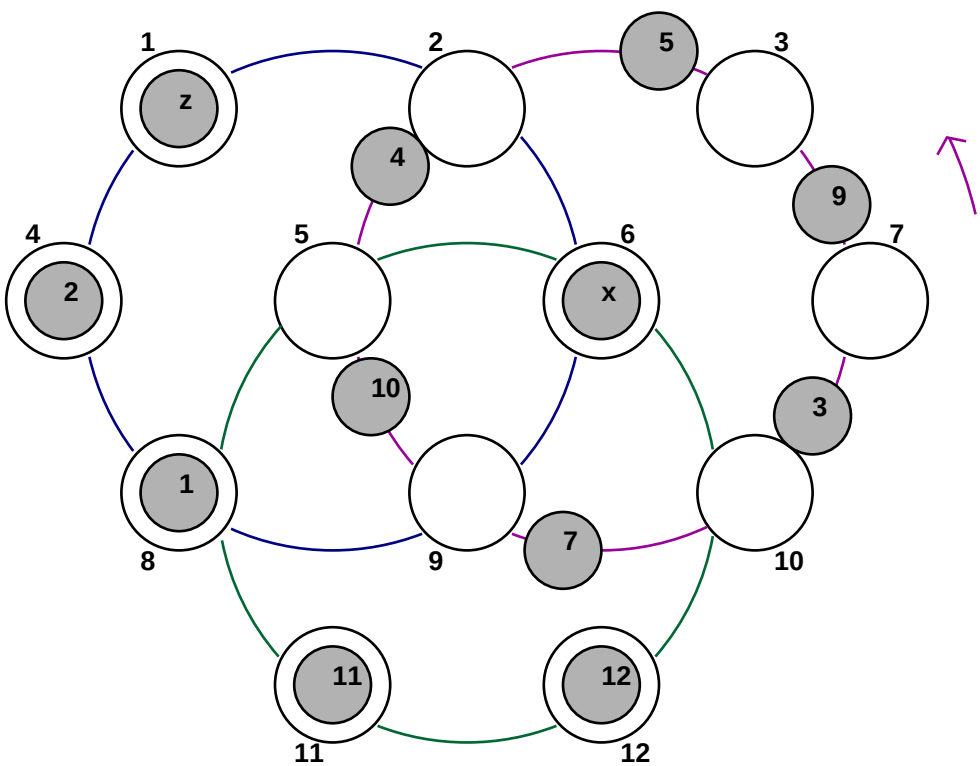

1
4
2
x
3
5
4
z
5
10
6
7
7
9
2
8
1
9
3
10
11
11
12
12

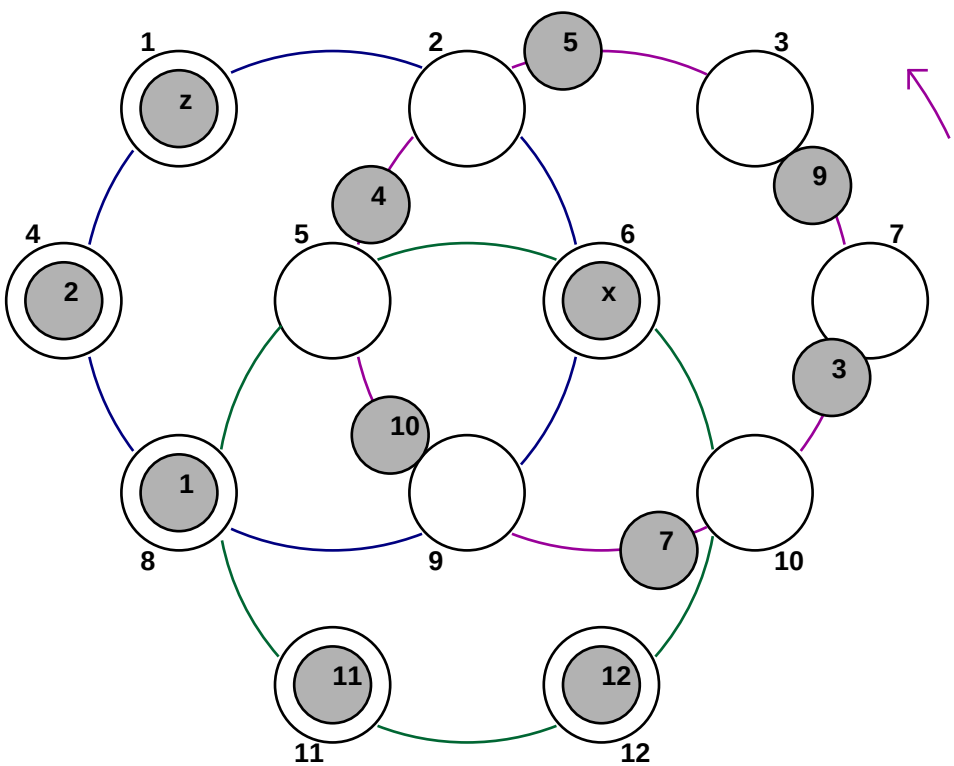

1
4
2
3
5
x
z
4
5
6
7
10
9
7
2
3
1
8
9
10
11
12
11
12

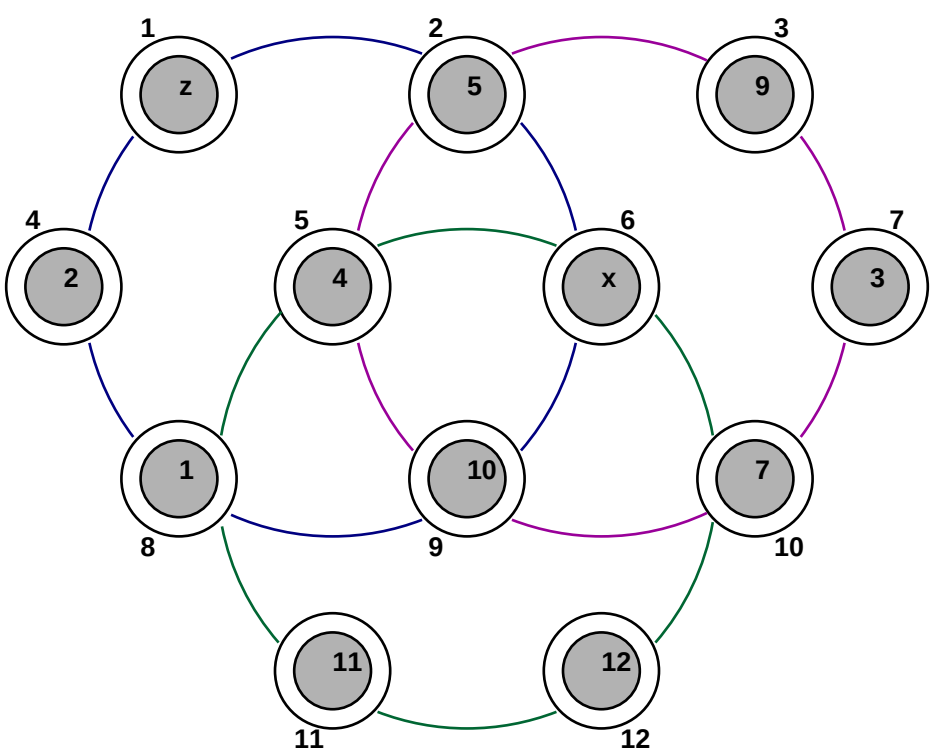

1
4
2
3
5
z
x
4
5
6
7
10
9
2
7
3
1
8
9
10
11
12
11
12

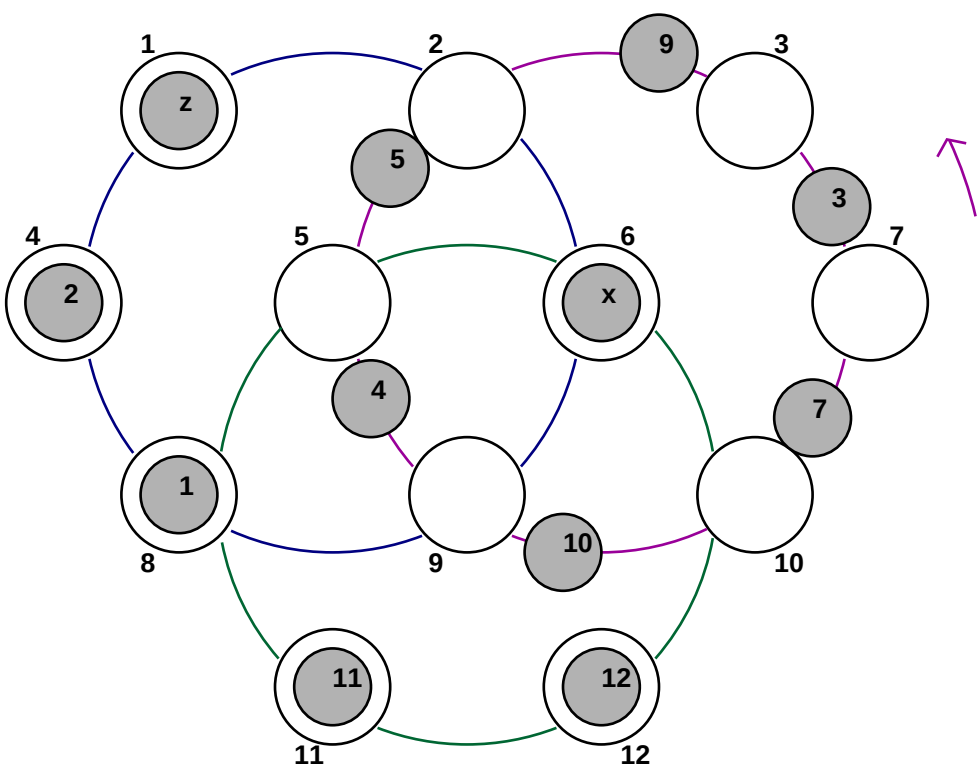

1
z
2
4
3
5
4
2
5
10
6
x
7
9
1
8
7
9
3
10
11
11
12
12

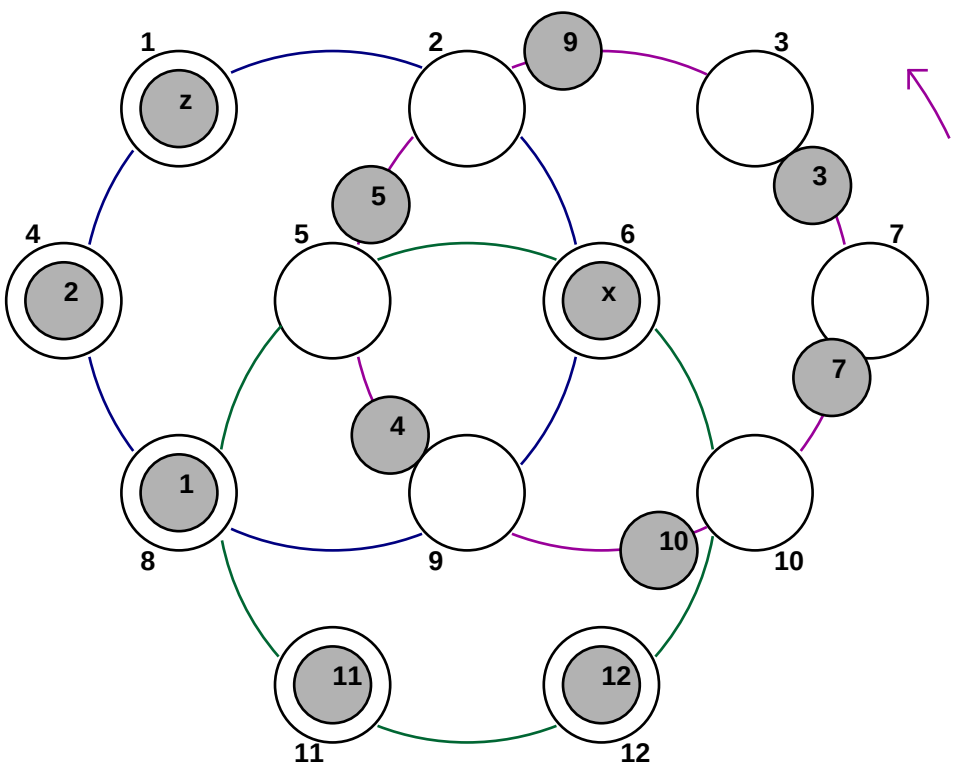

1
z
2
4
3
5
4
2
5
10
6
x
7
9
1
8
7
9
3
10
11
11
12
12

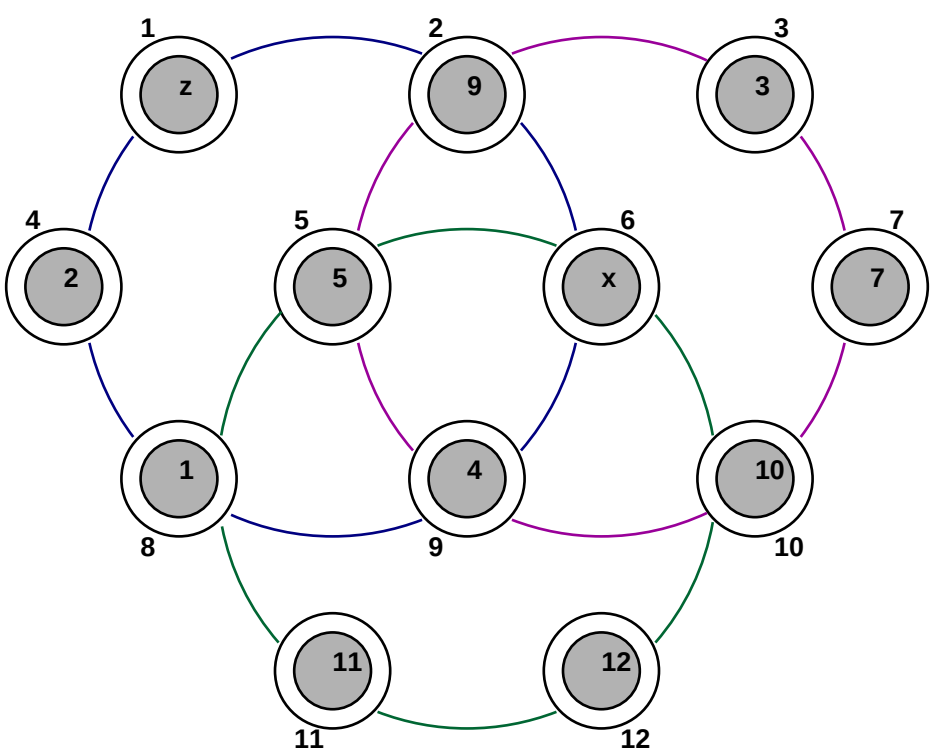

1
z
2
4
5
3
9
4
2
5
6
x
7
10
3
1
8
9
7
10
11
11
12
12

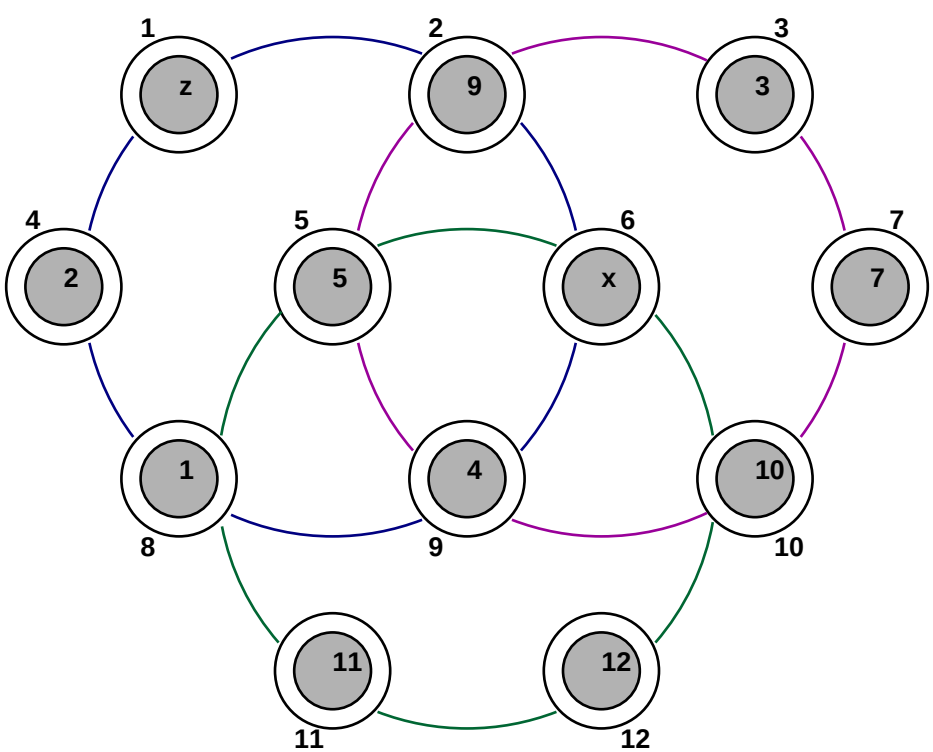

1
z
2
5
3
9
4
4
2
5
6
x
7
3
10
1
8
9
7
10
11
11
12
12

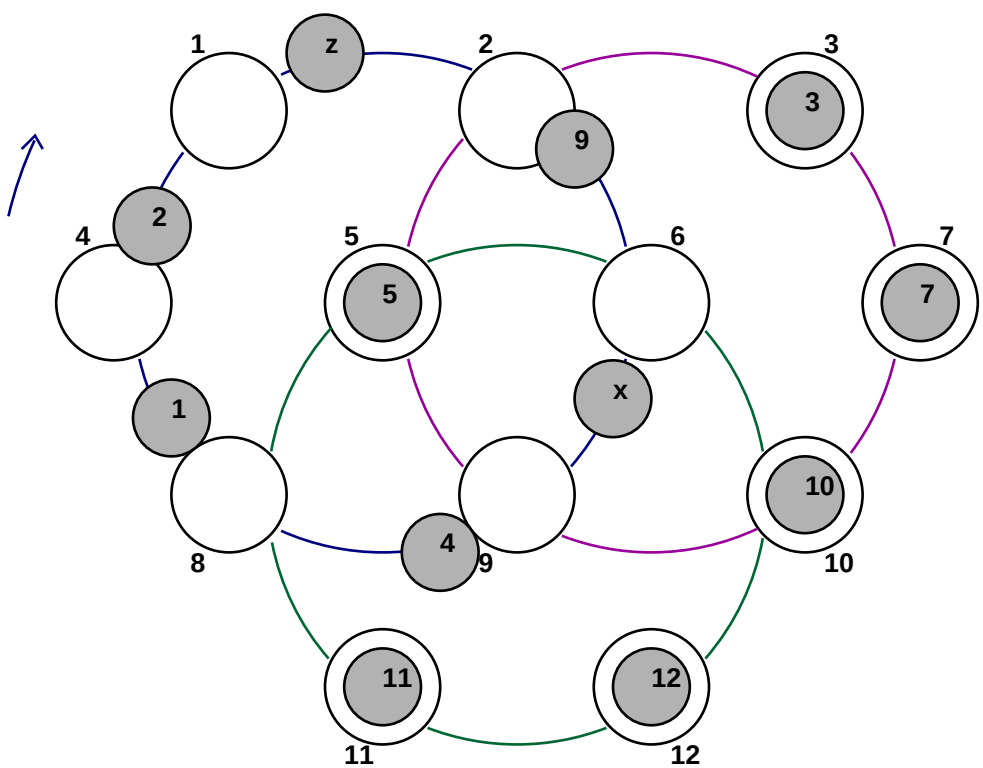

1
z
2
5
3
9
4
2
5
4
6
x
7
3
1
1
10
7
8
9
10
11
11
12
12

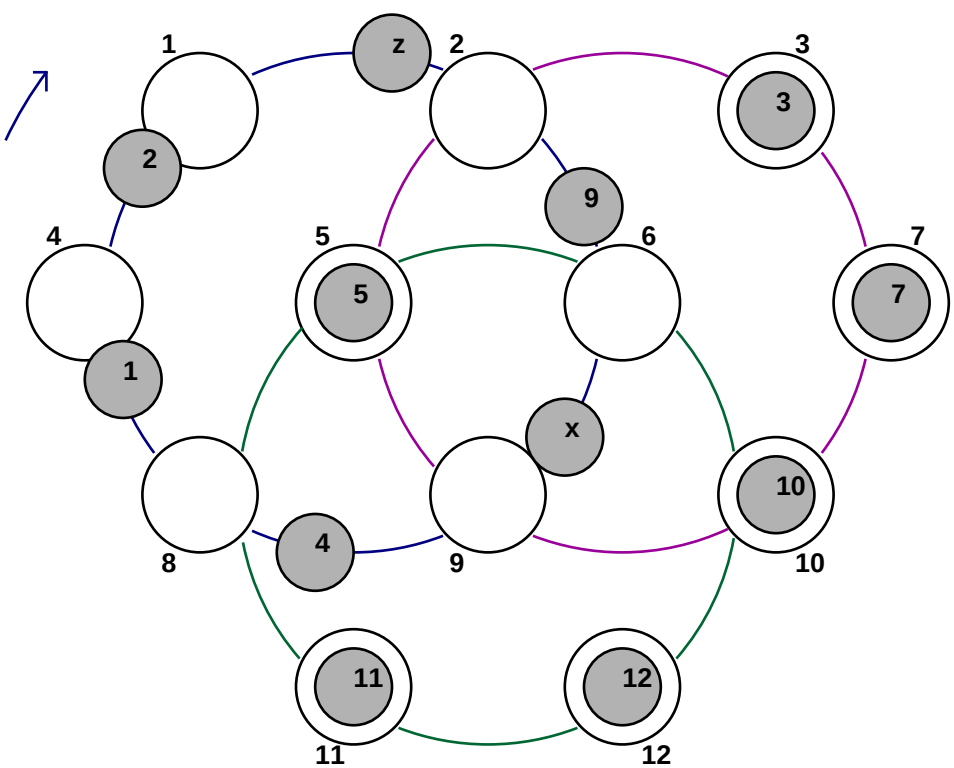

1
z
2
9
3
5
3
4
2
5
6
x
7
4
7
1
8
9
10
10
11
11
12
12

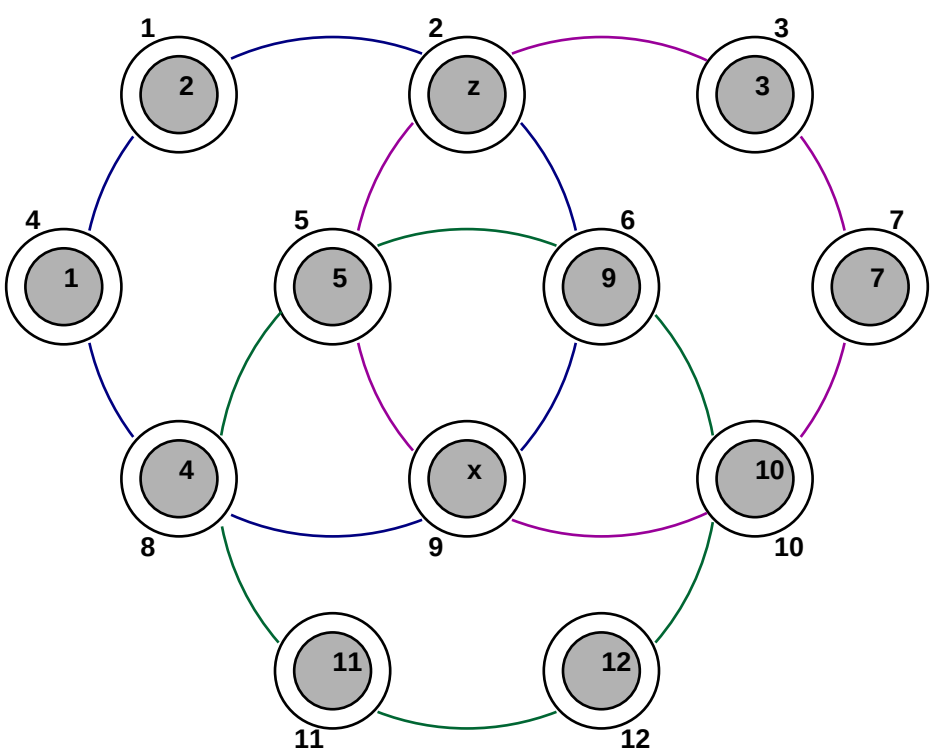

1
z
2
9
3
3
5
4
2
5
5
6
x
7
7
4
1
8
9
10
10
11
11
12
12

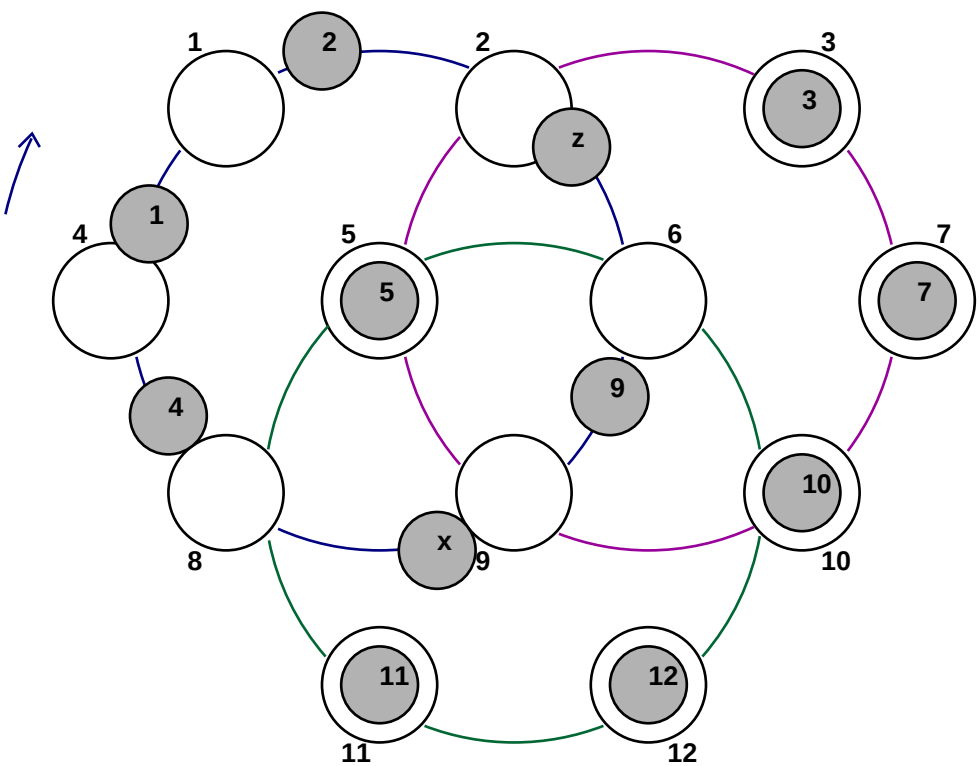

1
z
2
9
3
3
4
2
5
5
6
x
7
7
1
8
4
9
10
10
11
11
12
12

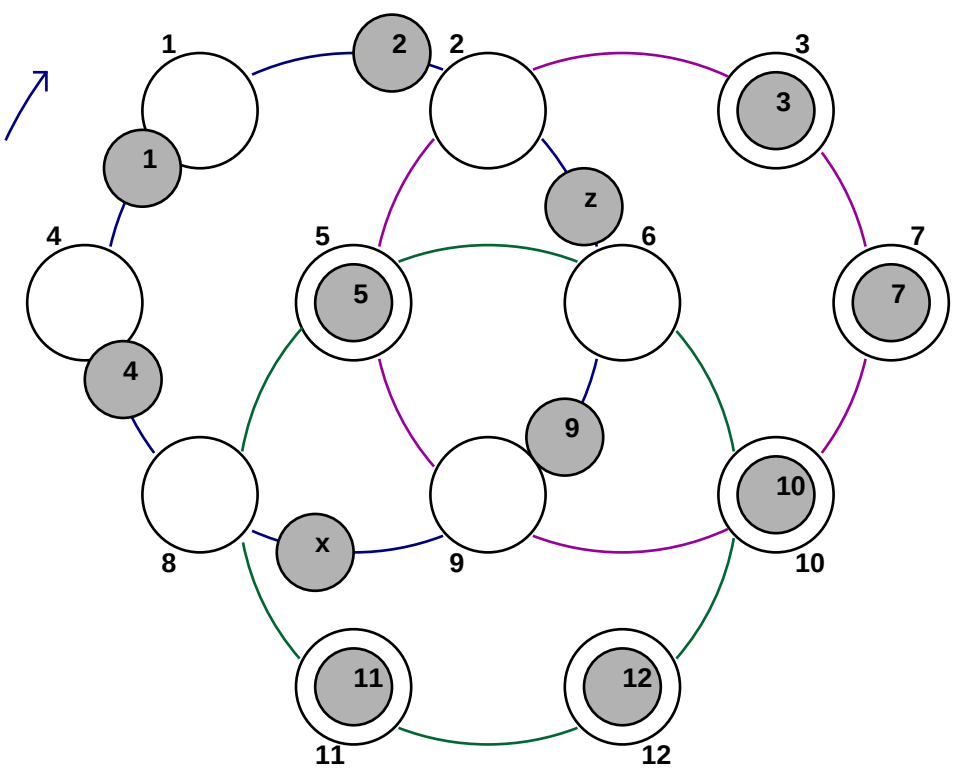

1
z
2
9
3
3
4
2
5
5
6
x
7
7
1
8
4
9
10
10
11
11
12
12

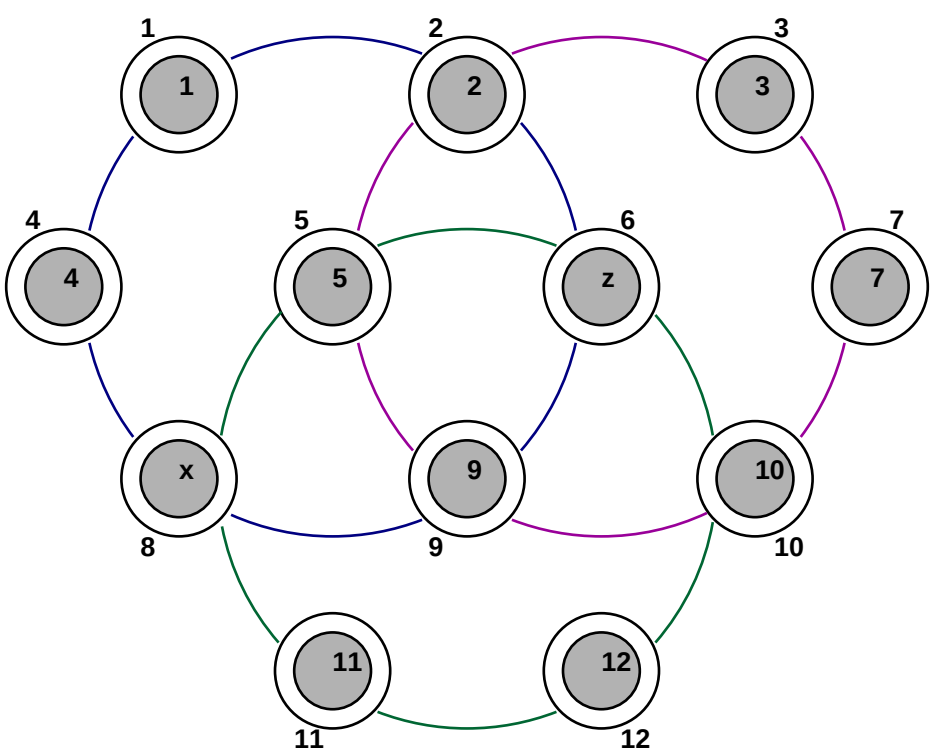

1
z
2
3
3
9
2
4
5
6
7
5
7
x
1
10
4
8
9
10
11
12
11
12


1
z
2
3
3
2
9
4
5
6
7
5
7
1
x
10
4
8
9
10
11
12
11
12


1
2
2
z
3
3
4
1
5
5
6
9
7
7
4
8
x
9
10
10
11
11
12
12


1
2
2
3
3
z
1
4
5
5
6
7
7
9
4
10
10
x
8
9
11
12
11
12


1
2
2
3
3
1
z
4
5
6
7
5
7
4
9
10
x
8
9
10
11
12
11
12


1
2
3
4
5
6
7
x
9
10
8
9
10
11
12
11
12

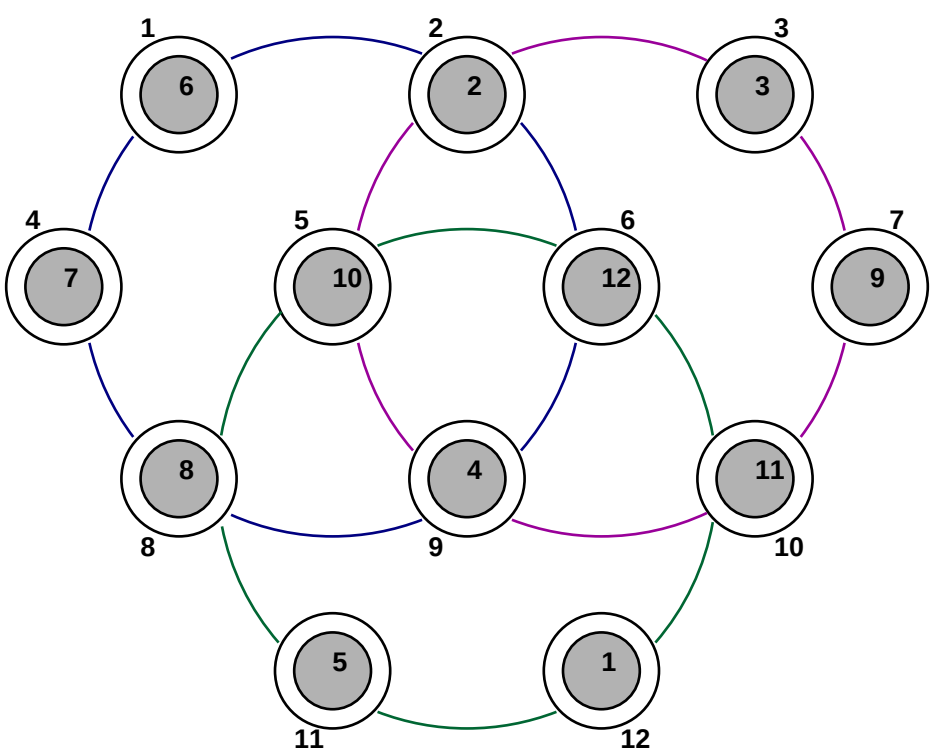
It has been shown that 9 can be moved to position 9 from any position while keeping numbers 1, 2, 3, 4, 5, 7, 10, 11, and 12 in their respective positions.

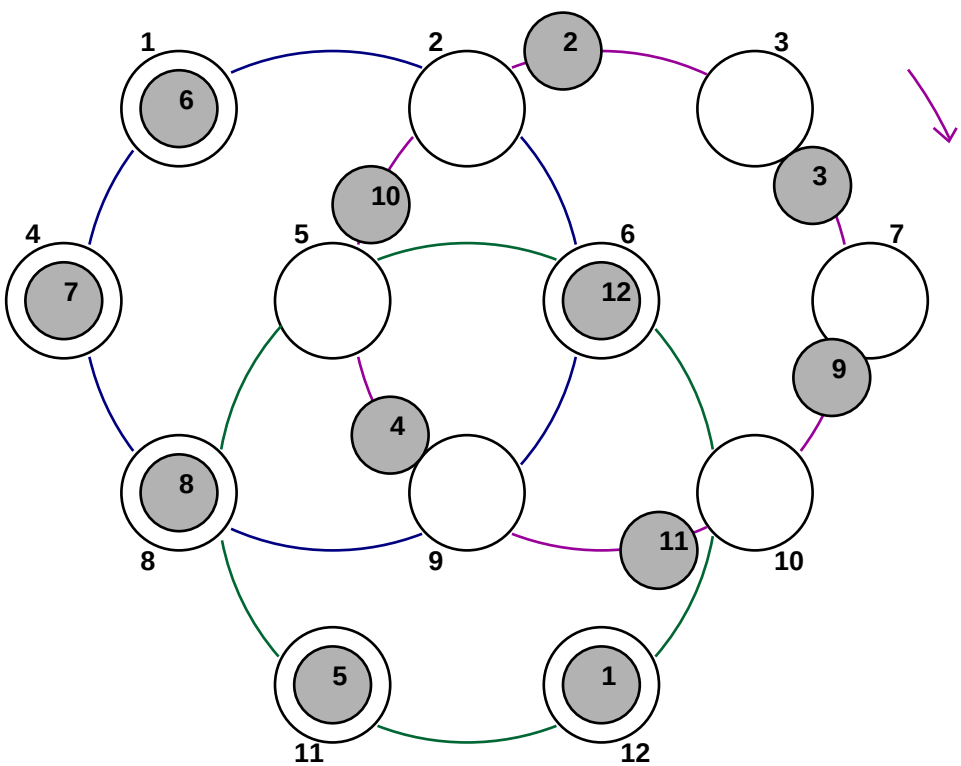
Now let x = 6 and y = 8.

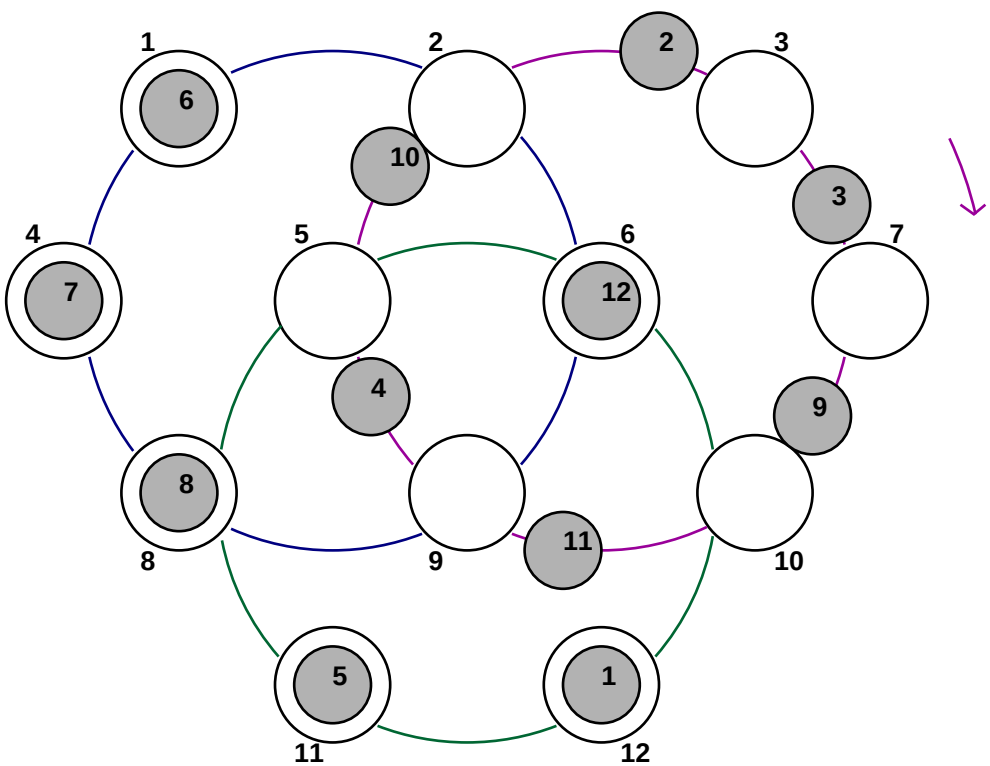
These numbers need to have their positions exchanged in order to complete the proof. Numbers 1, 2, 3, 4, 5, 7, 9, 10, 11, and 12 will remain in their correct positions.

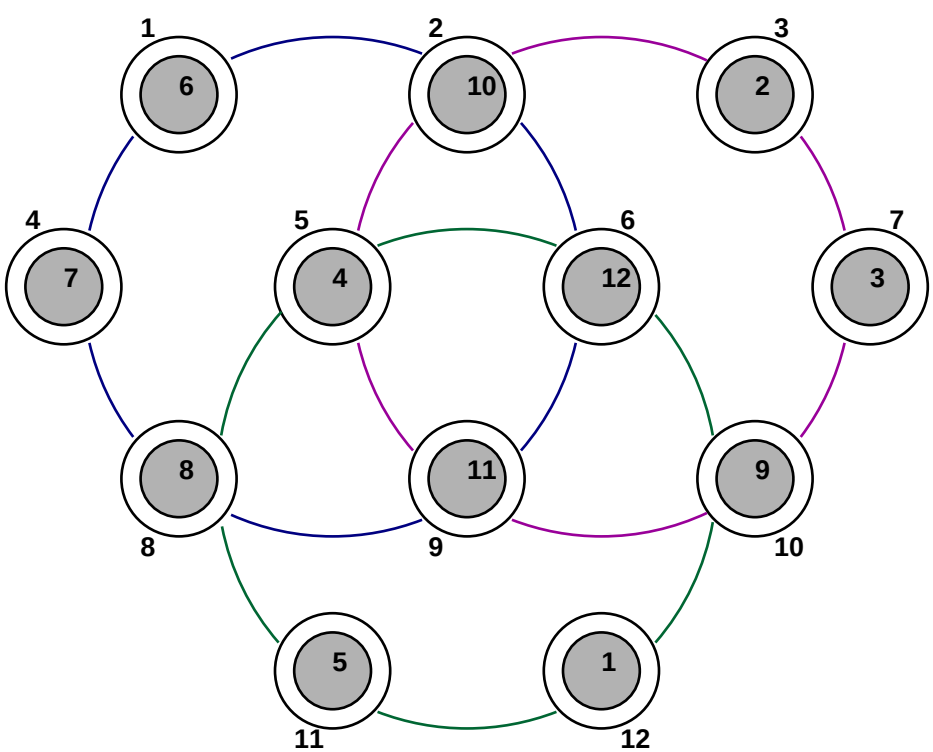
THIS IS THE ONLY PART OF THE PROOF THAT I COULDN'T GET!!!

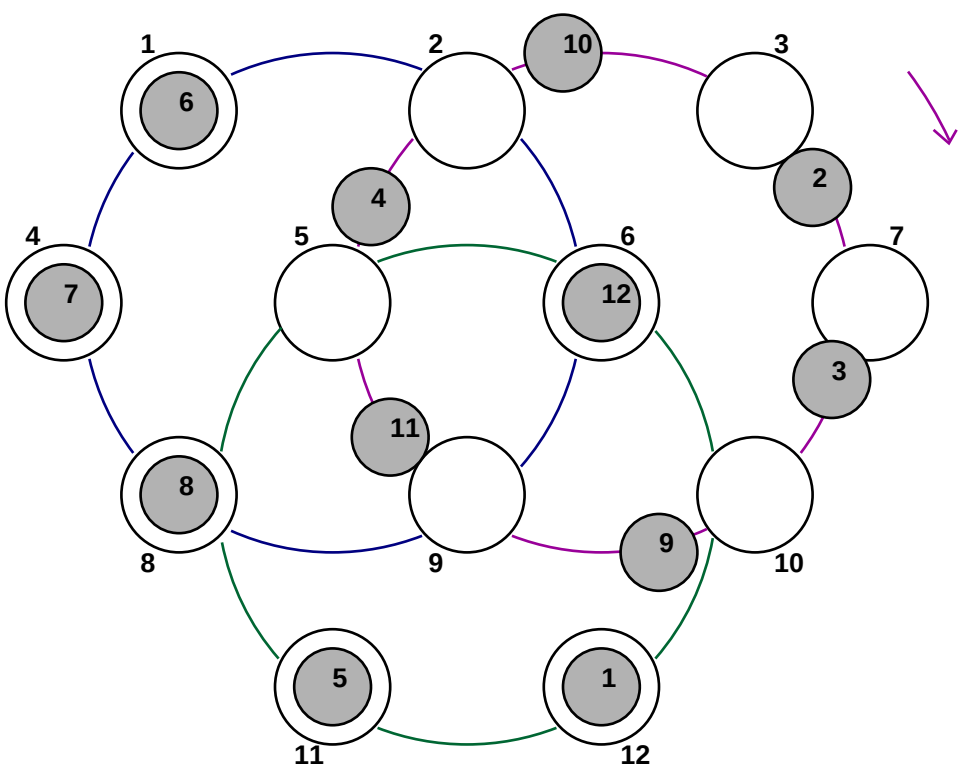
This completes the proof.
Now for an example.

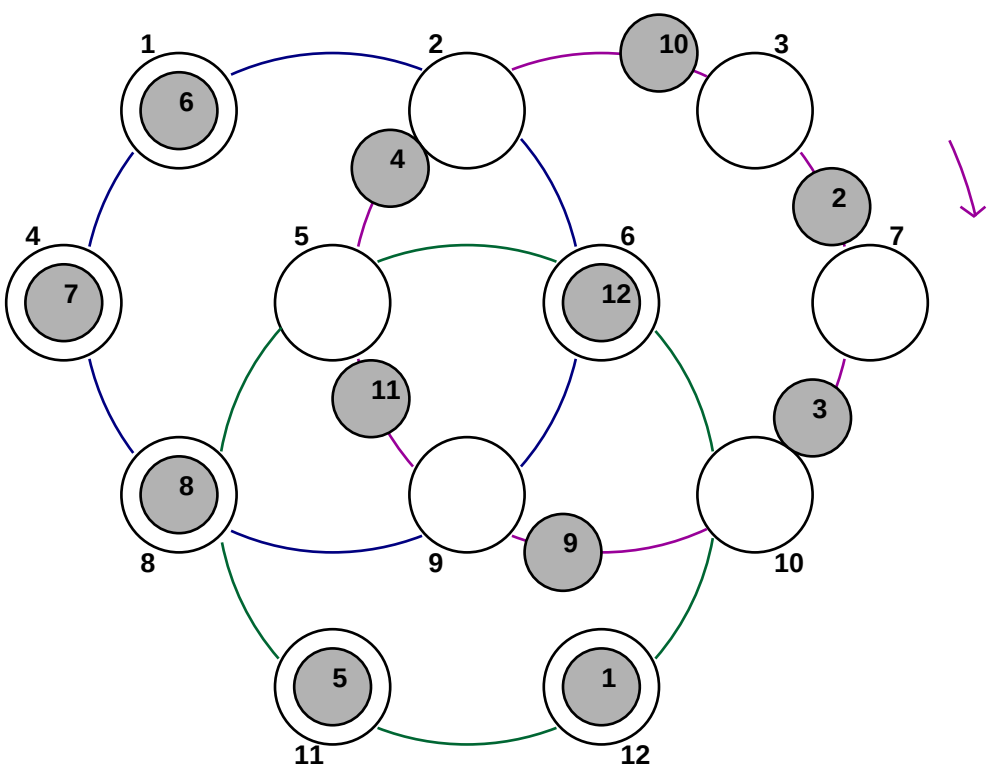

1
6
2
2
3
3
4
7
5
10
6
12
7
9
8
8
4
9
11
10
5
11
1
12

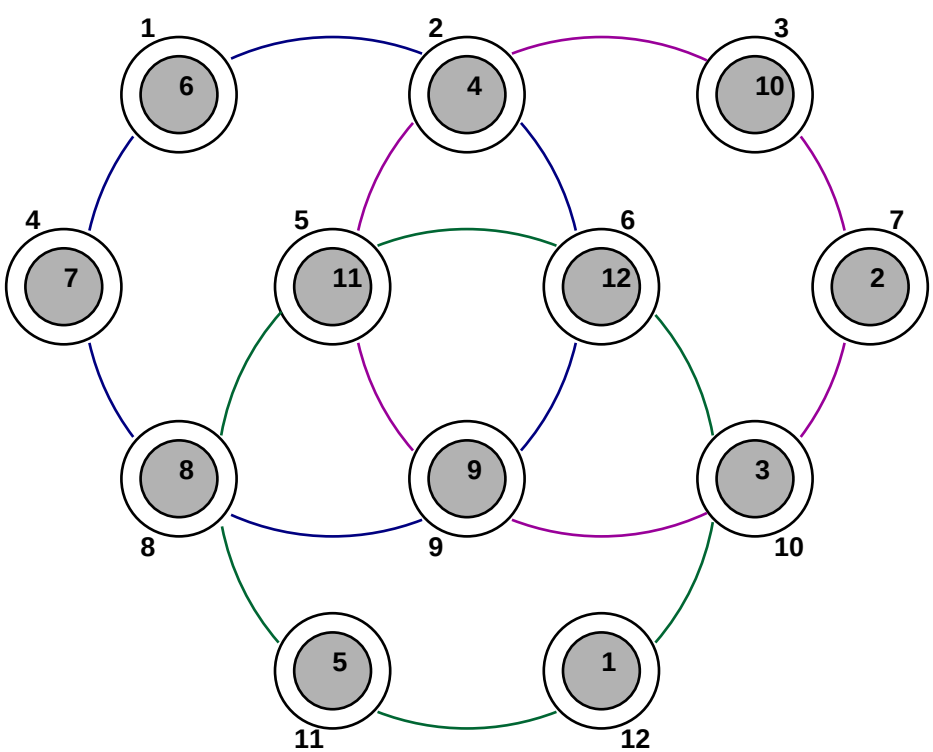

1
6
2
2
3
3
10
4
7
5
6
12
7
9
4
8
8
9
11
10
5
11
1
12

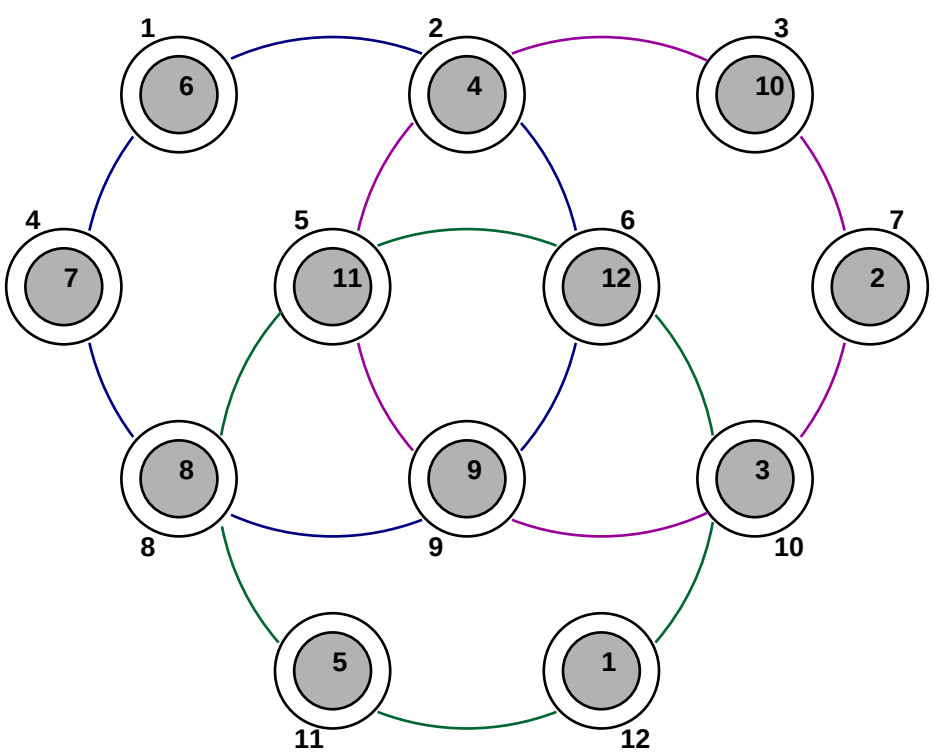

1
6
2
10
2
3
3
4
7
5
5
6
12
7
4
9
8
8
9
11
10
5
11
1
12

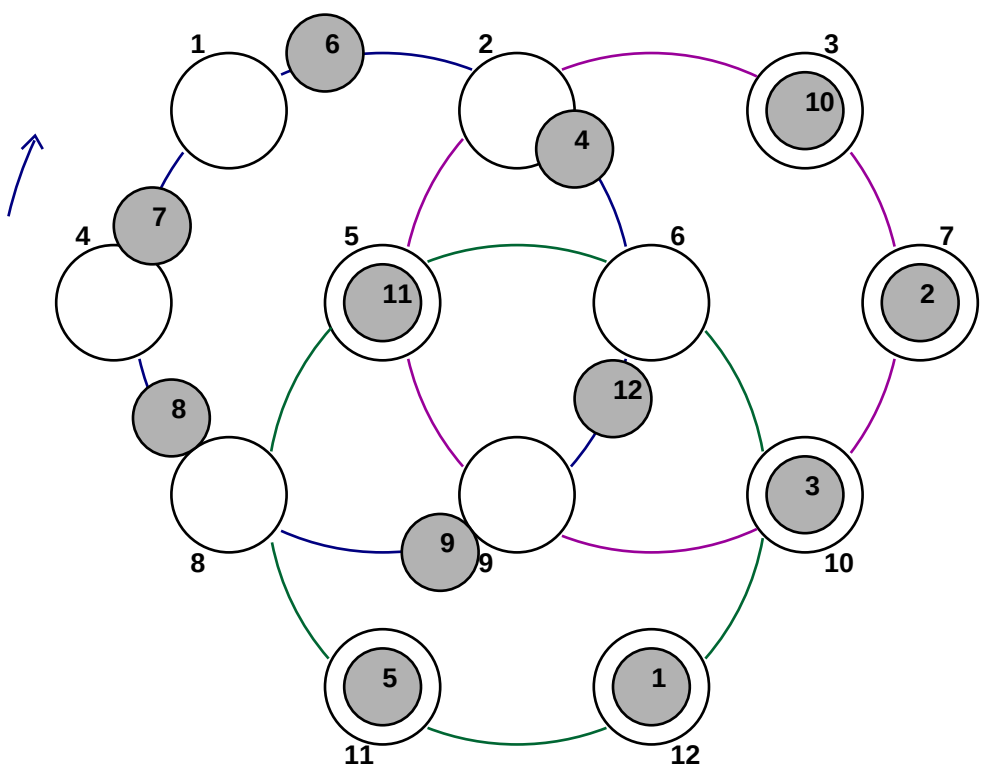

1
6
2
10
3
2
4
7
5
4
6
12
7
3
8
8
11
9
9
10
5
11
1
12

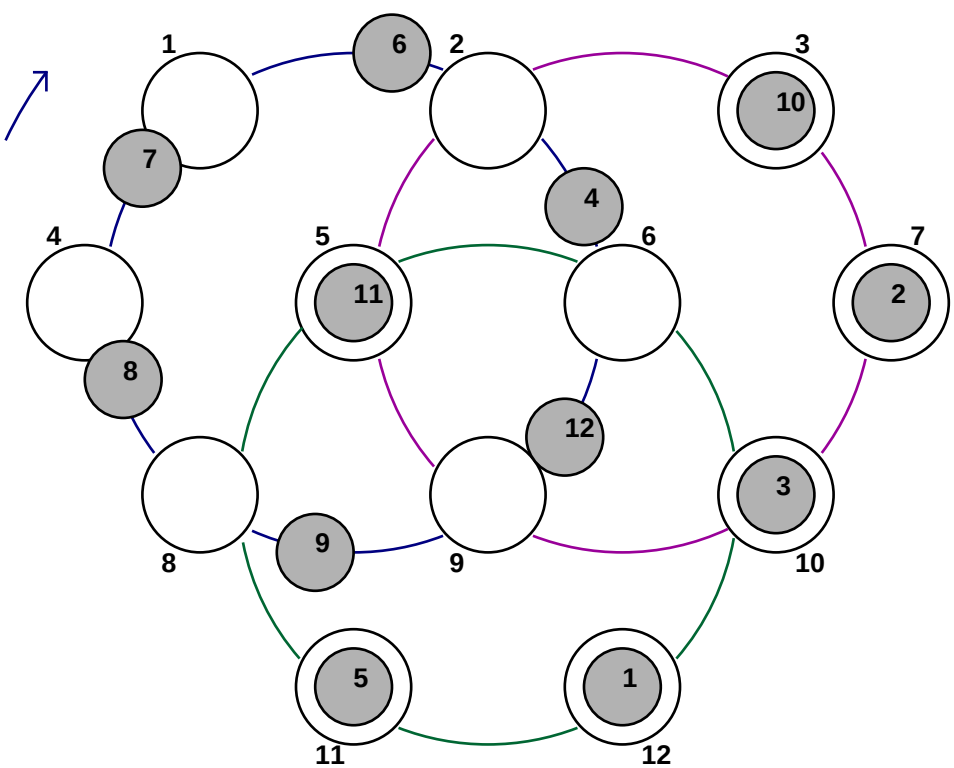

1
6
2
10
3
2
4
4
5
6
7
7
12
3
11
8
8
9
9
10
5
11
1
12

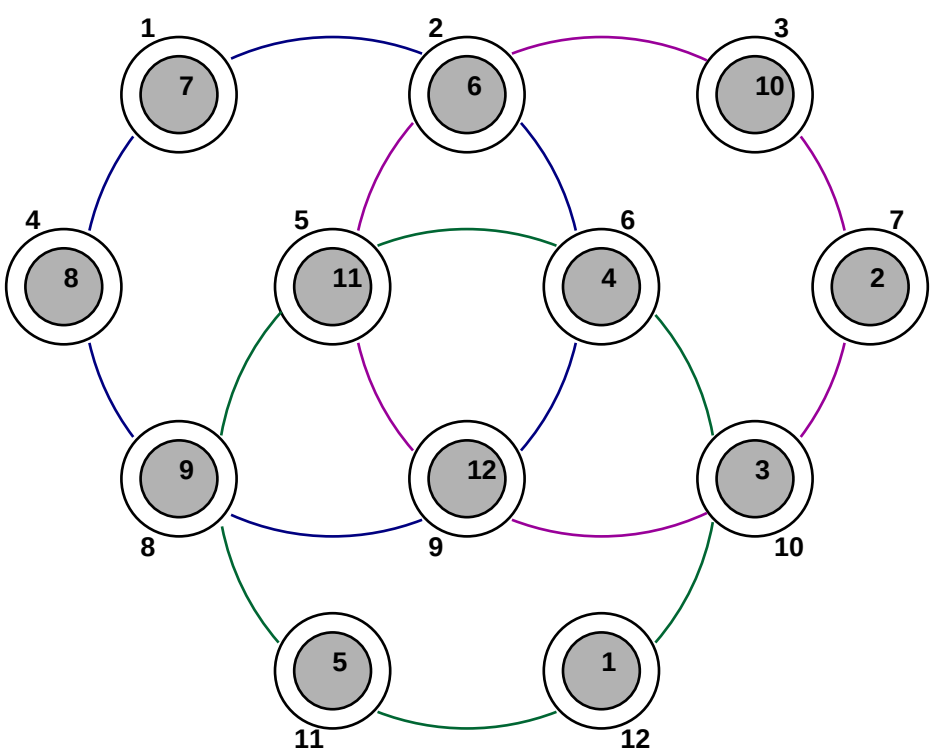

1
6
2
10
3
4
2
4
5
6
7
7
12
11
3
8
8
9
9
10
5
1
11
12

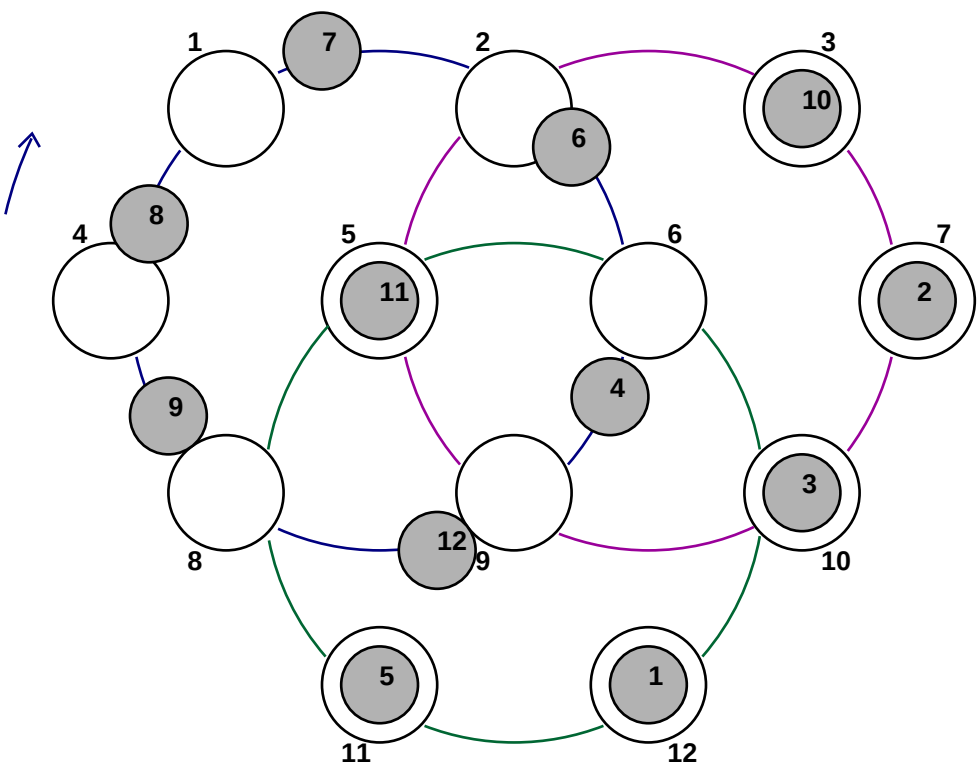

1
6
2
4
3
10
4
7
5
11
6
12
7
2
8
8
9
9
3
10
5
11
1
12

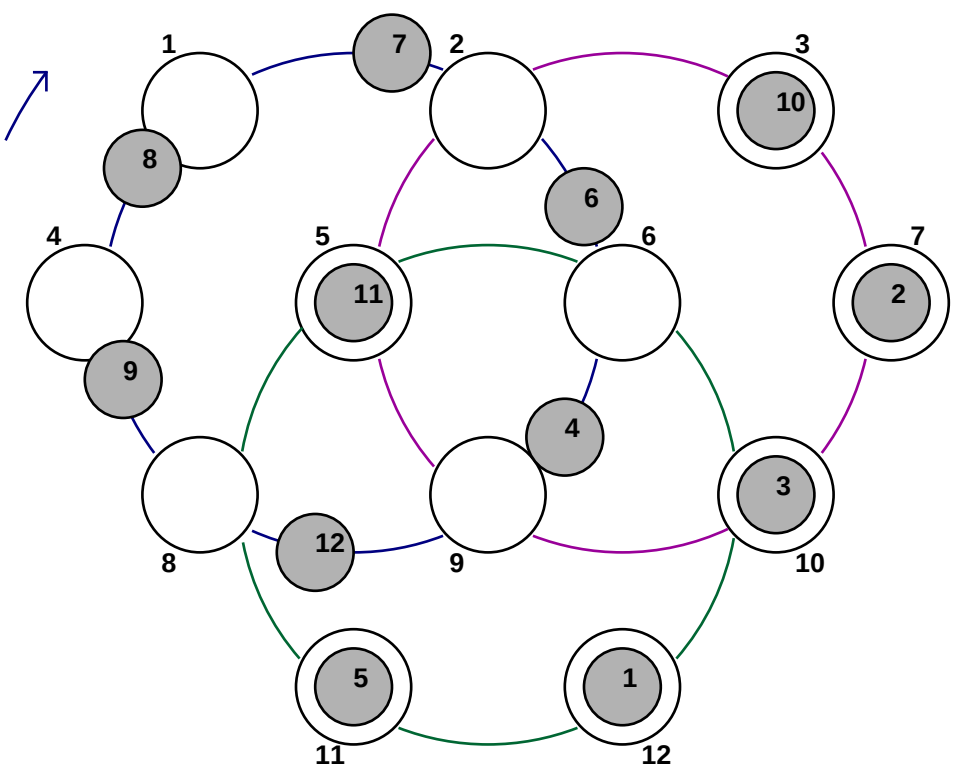

1
6
2
4
3
10
4
7
5
11
6
12
7
2
8
8
9
9
3
10
5
11
1
12

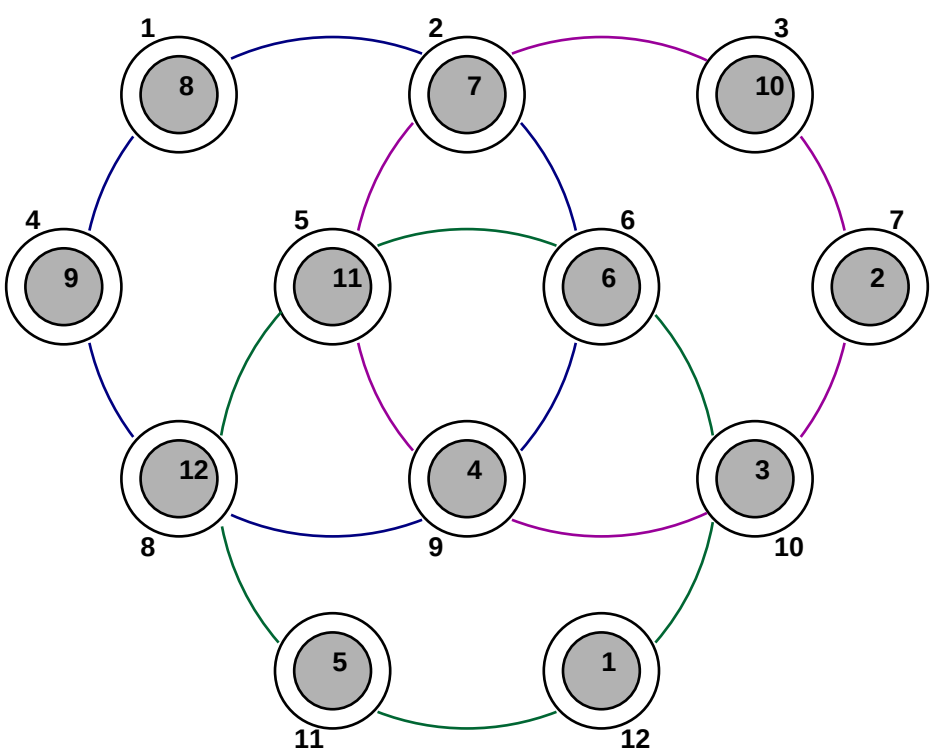

1
6
2
3
10
4
7
4
5
6
7
11
2
12
8
3
8
9
9
10
5
1
11
12

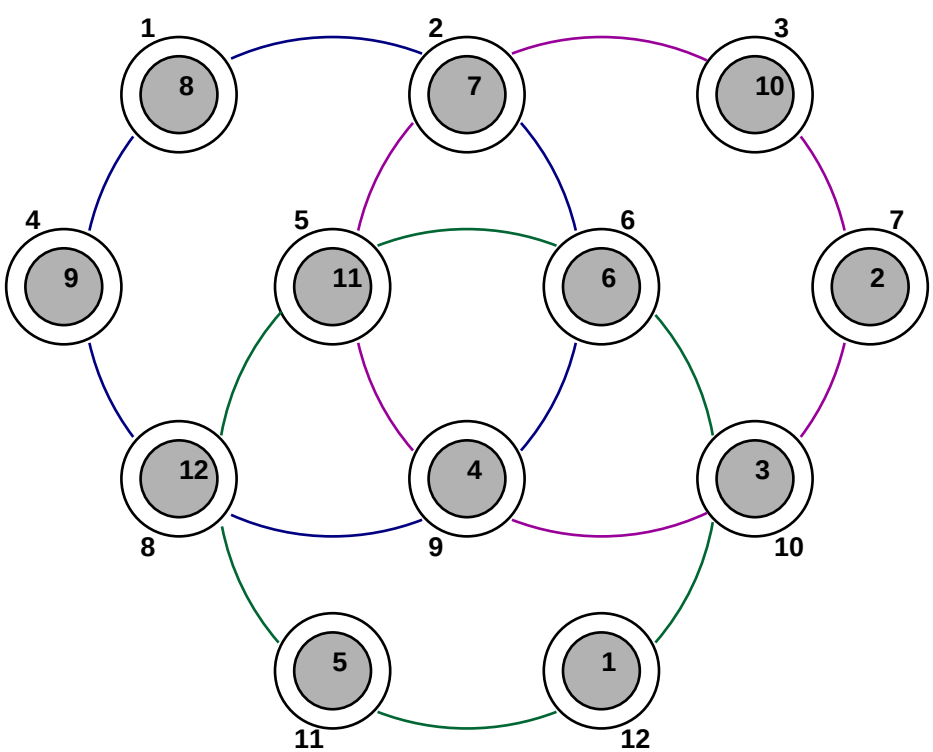

1
6
2
3
10
7
4
4
5
6
7
11
2
8
12
3
8
9
9
10
5
1
11
12

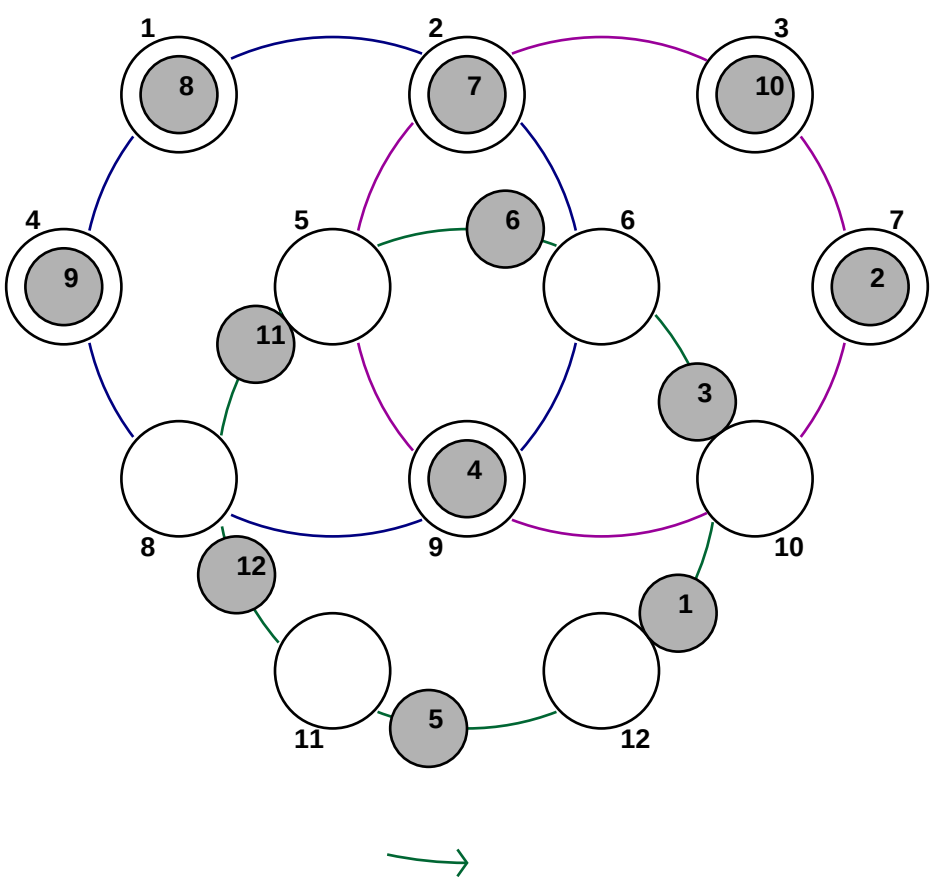

1
7
2
6
3
10
4
8
5
11
6
4
7
2
9
8
12
9
3
10
5
11
1
12

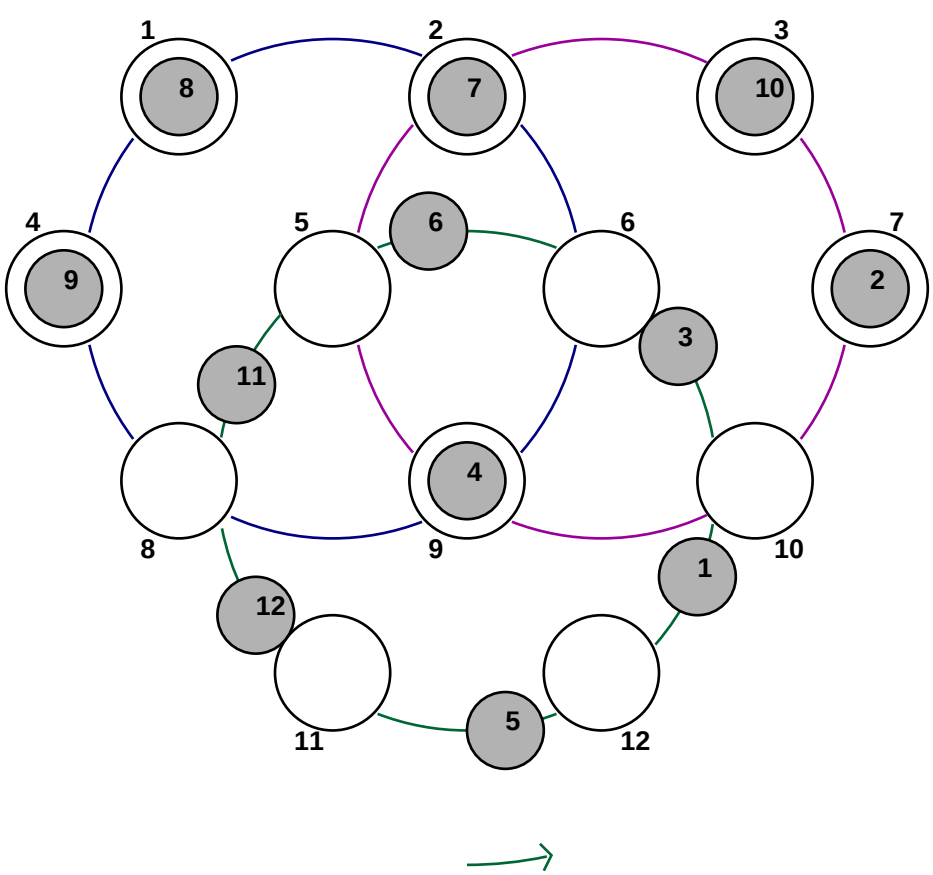

1
7
2
3
10
6
8
4
5
6
7
11
2
4
9
3
12
9
8
10
5
1
11
12

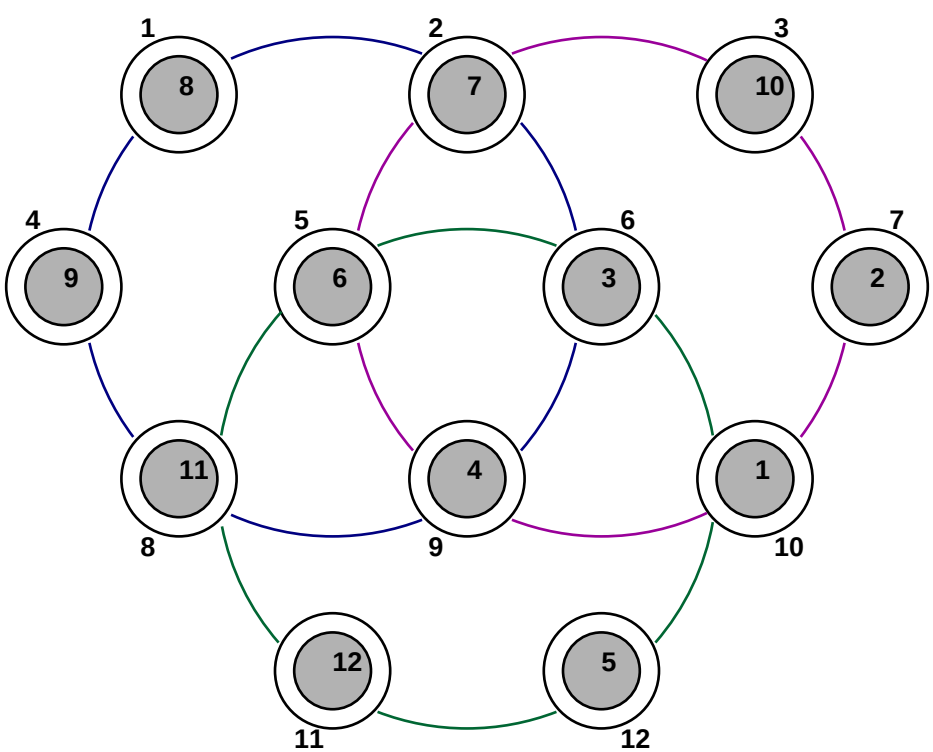

1
7
2
3
10
8
6
4
5
6
7
11
2
9
4
3
8
12
9
10
5
1
11
12

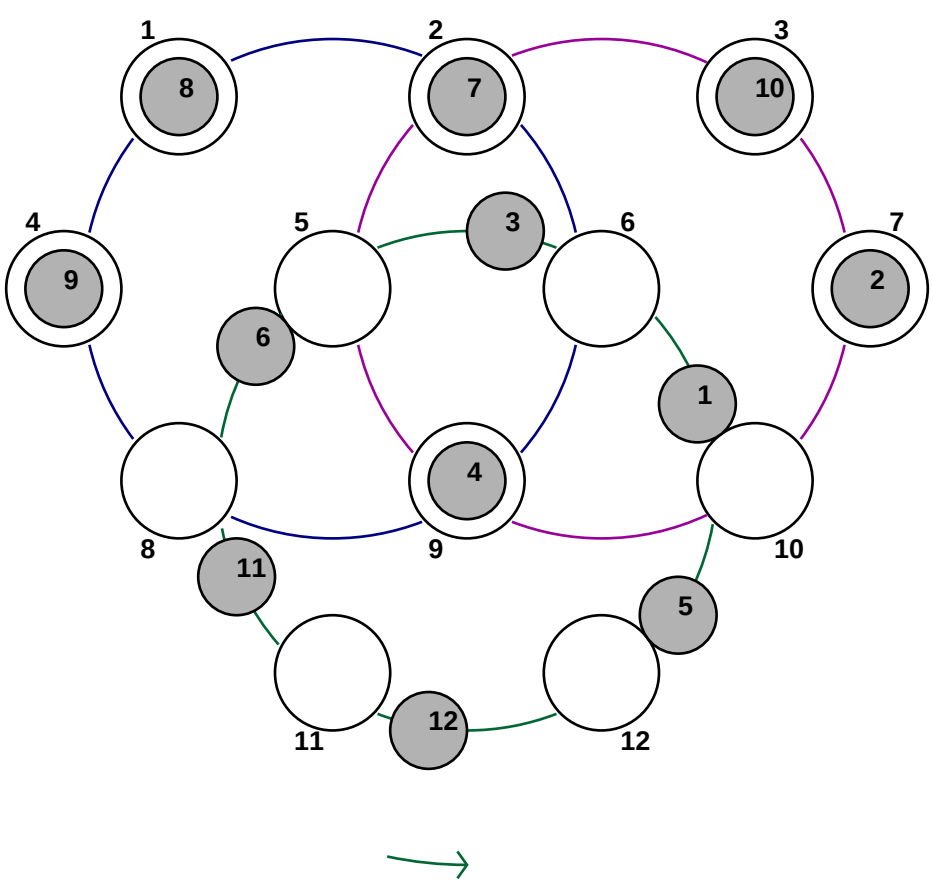

1
8
2
7
3
10
4
9
5
11
6
6
7
2
12
8
4
9
3
10
5
11
1
12

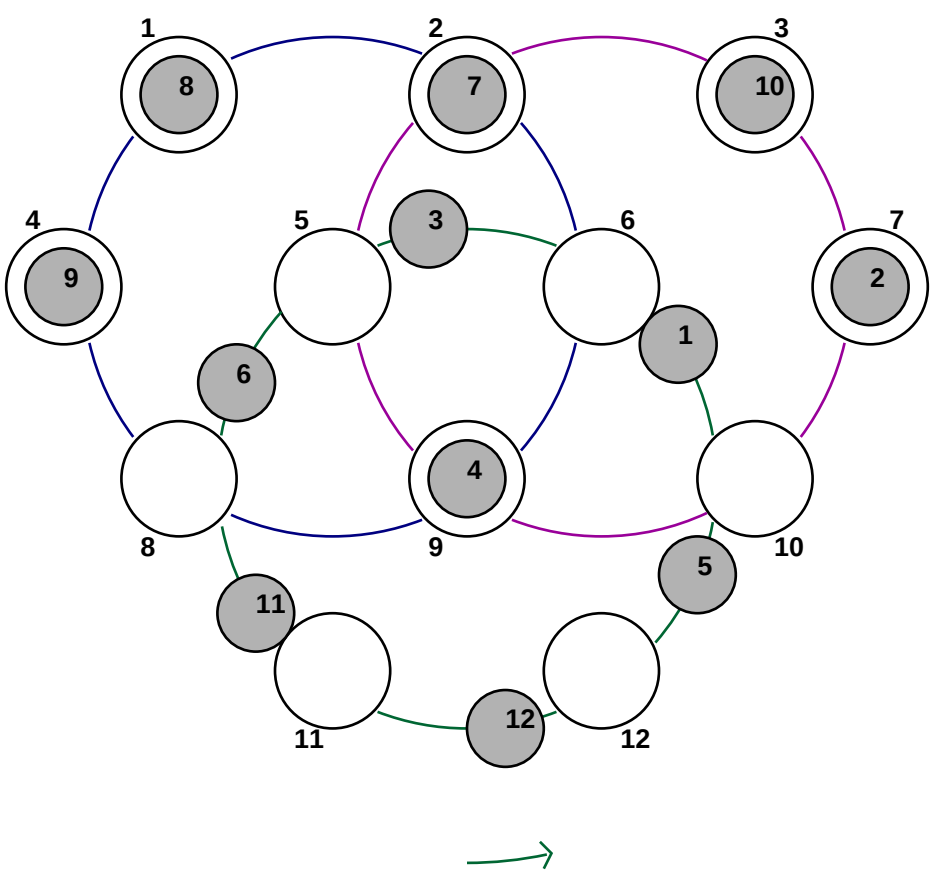

1
8
2
7
3
10
4
9
5
11
6
6
7
2
12
8
4
9
3
10
5
11
1
12

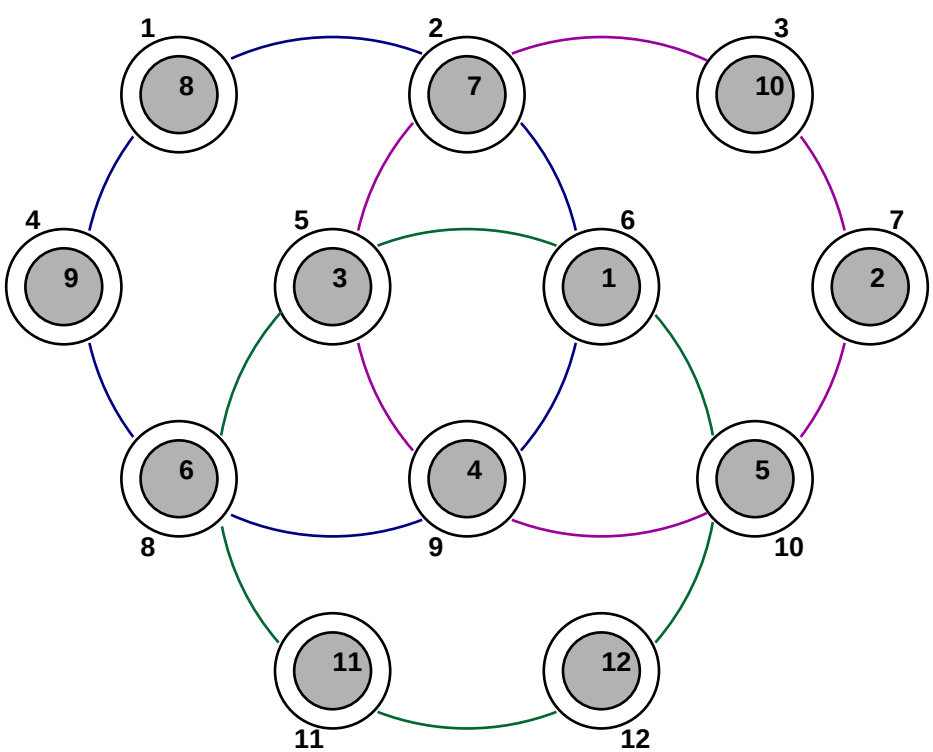

1
2
3
8
7
10
4
5
6
6
7
9
2
11
3
4
8
9
10
12
1
5
11
12

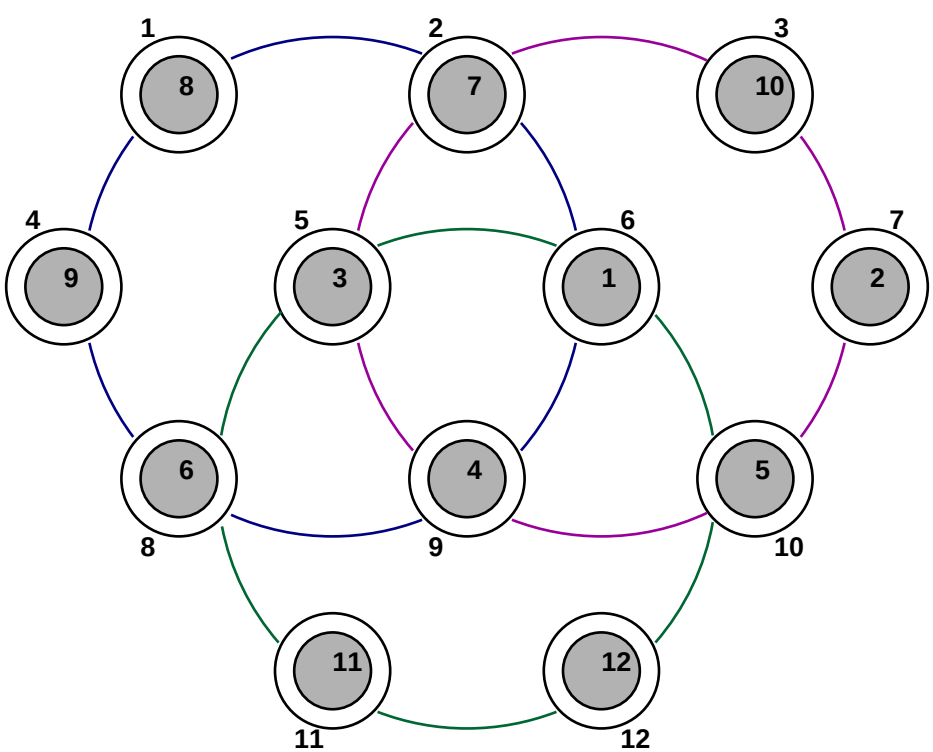

1
2
3
8
7
10
4
5
6
6
7
9
2
3
11
4
8
9
10
1
12
11
5
12

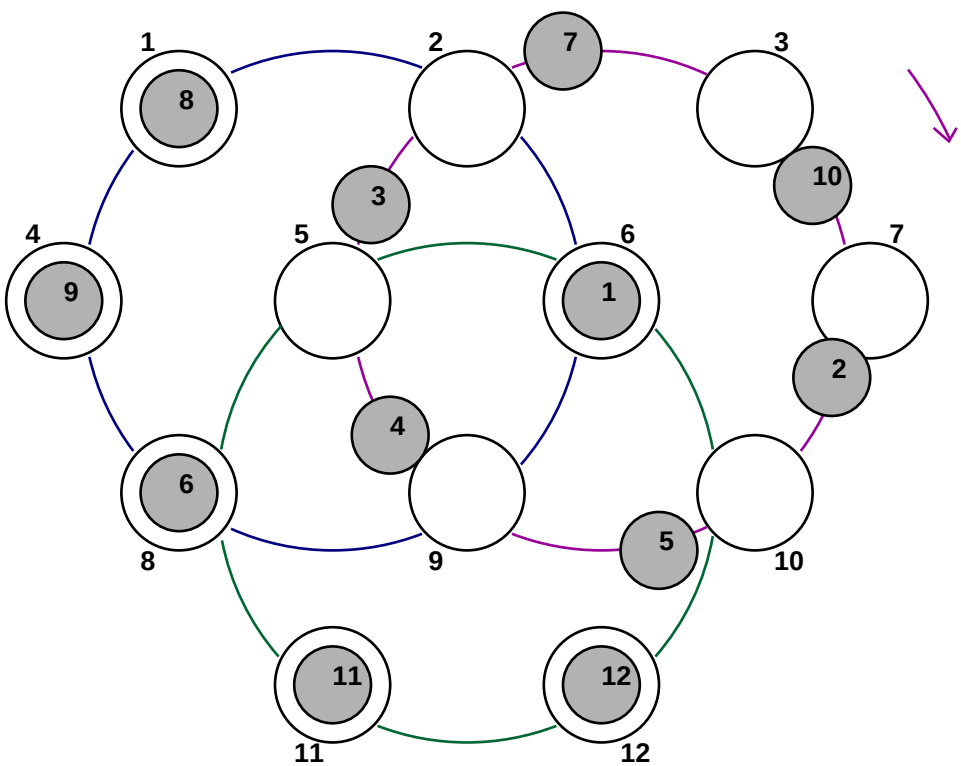

1
8
2
7
3
10
4
9
5
6
6
3
7
2
11
8
4
9
1
10
12
11
5
12

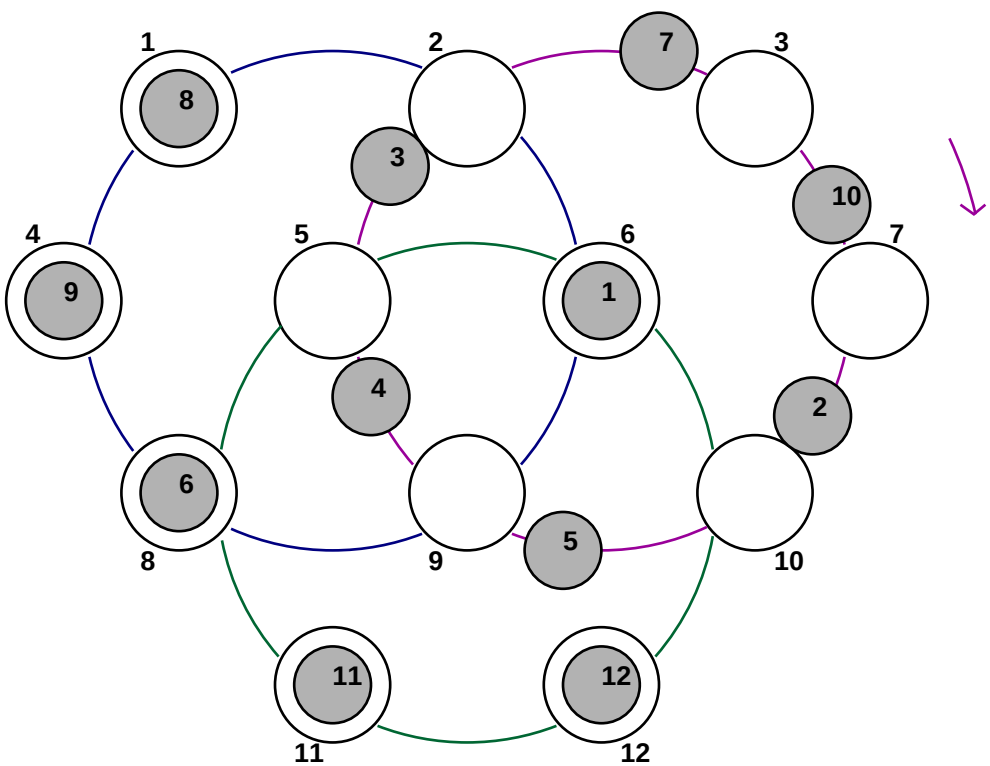

1
2
3
8
7
10
4
5
3
6
7
9
2
6
1
4
8
9
10
11
5
11
12
12

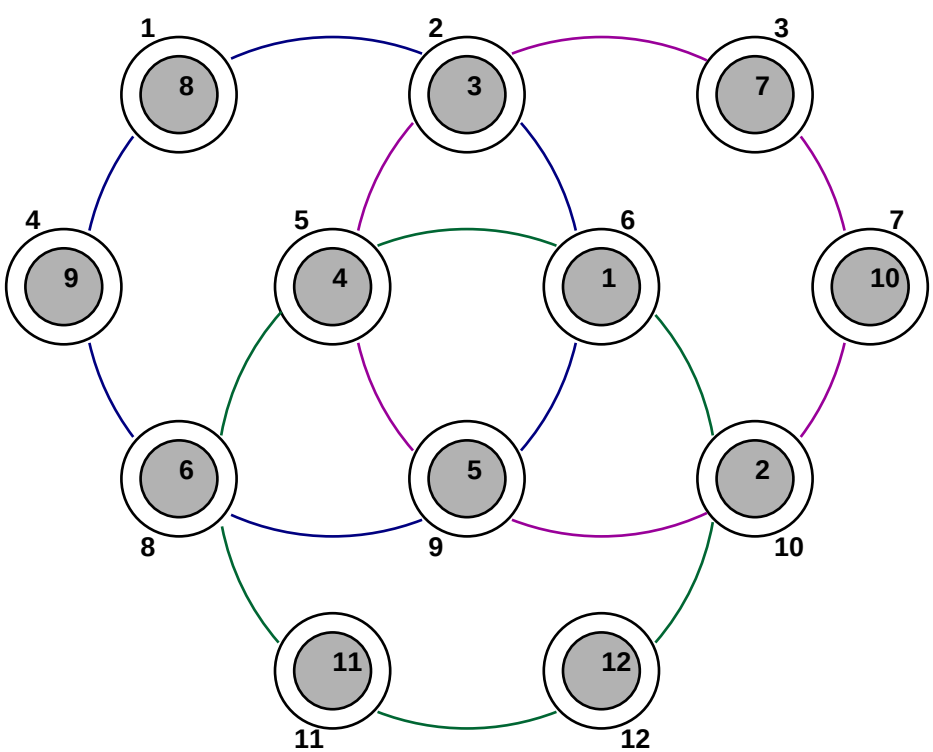

1
2
3
8
7
10
4
5
3
6
7
9
2
1
6
4
8
9
10
5
11
11
12
12

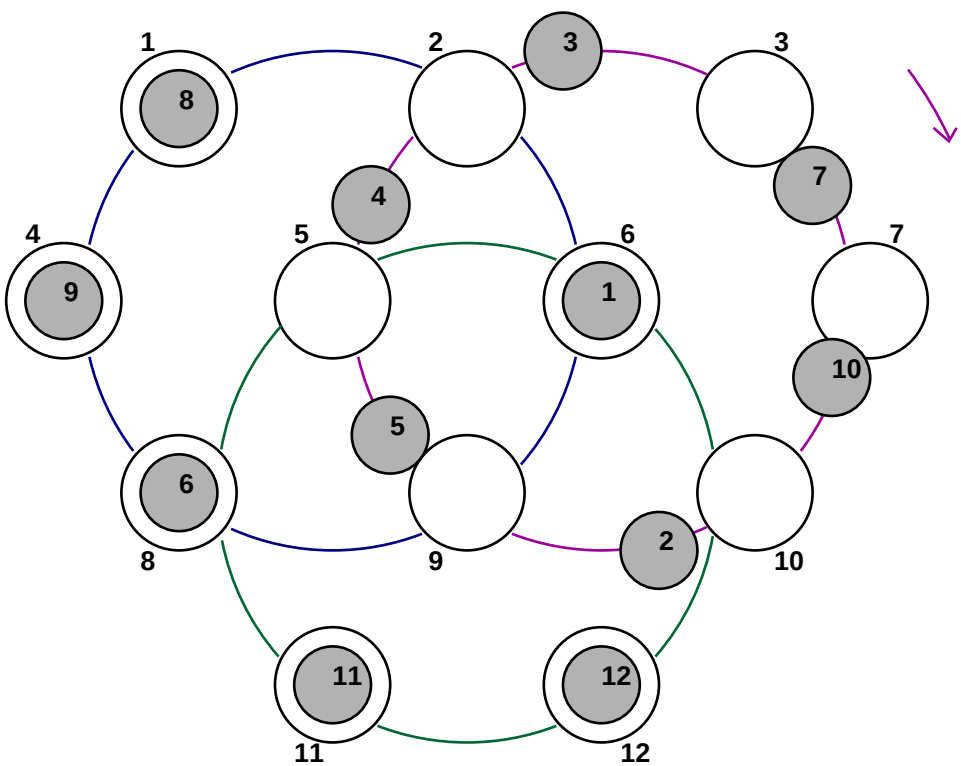

1
8
2
7
3
10
4
9
5
3
6
1
7
2
6
8
4
9
5
10
11
11
12
12

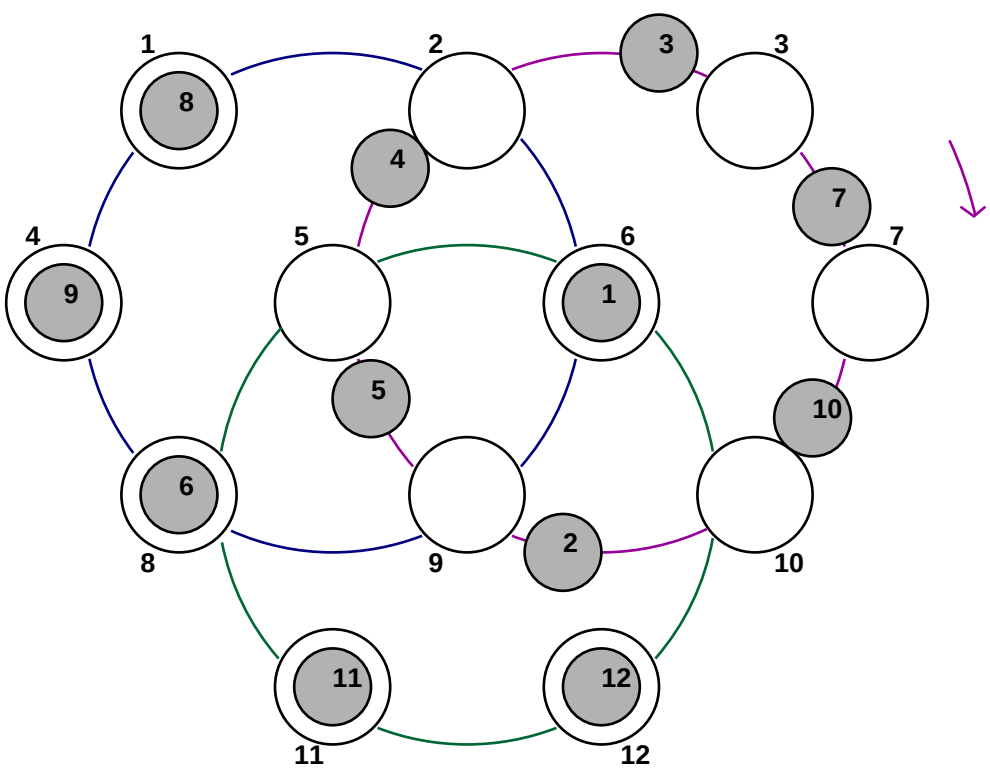

1
8
2
7
3
10
4
9
5
3
6
1
7
2
6
8
4
9
5
10
11
11
12
12

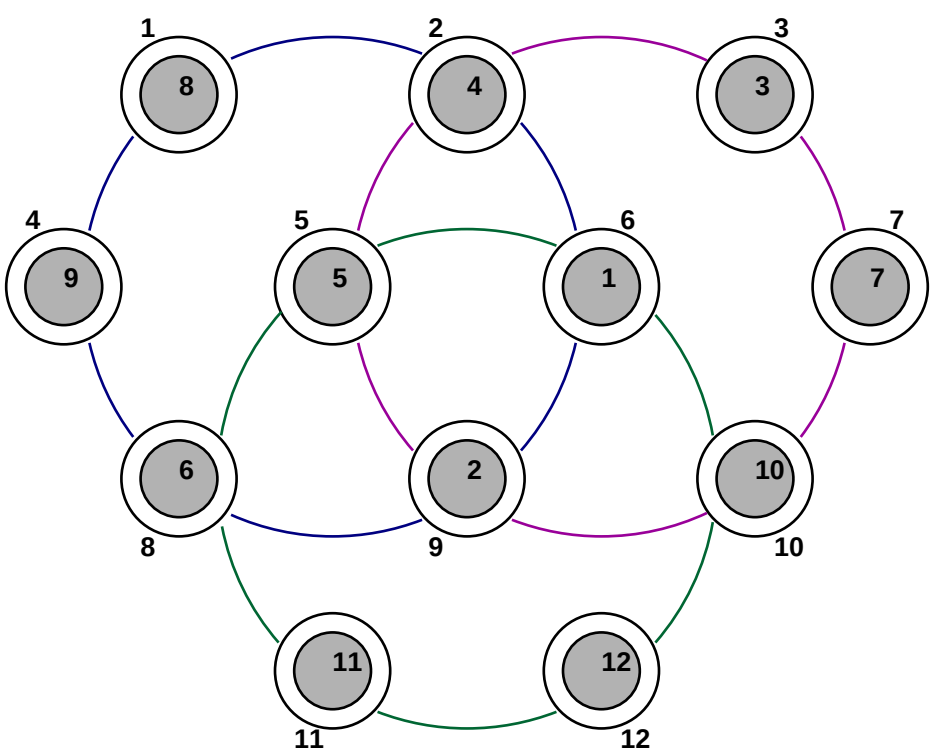

1
2
7
3
8
10
3
4
5
6
7
9
1
2
4
6
5
8
9
10
11
12
11
12

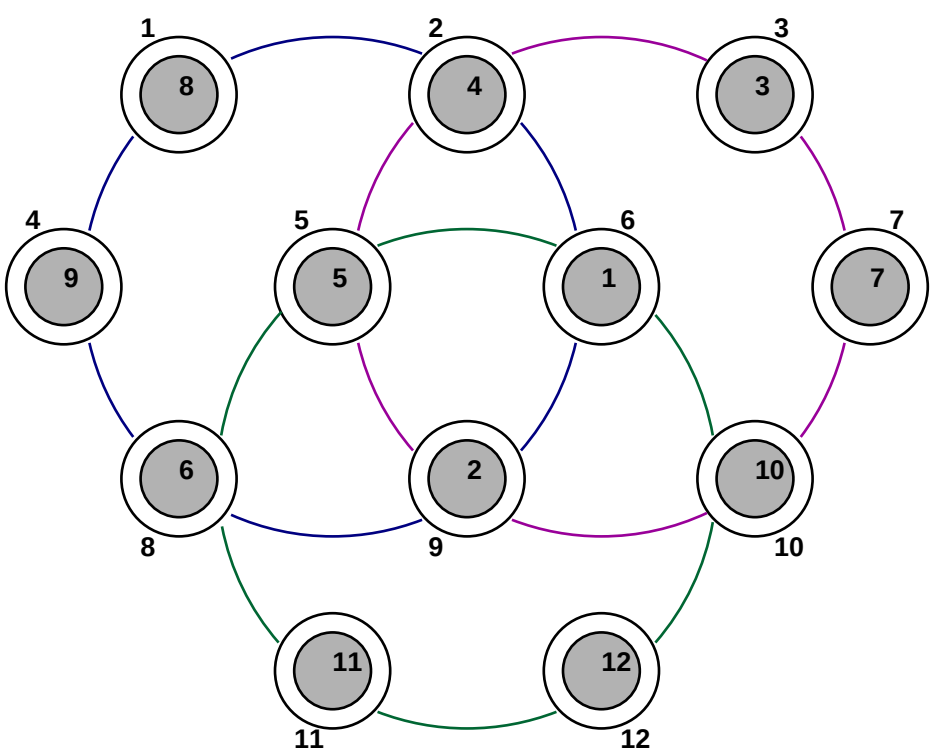

1
8
2
3
7
3
10
4
9
5
6
1
7
4
2
6
8
9
5
10
11
11
12
12

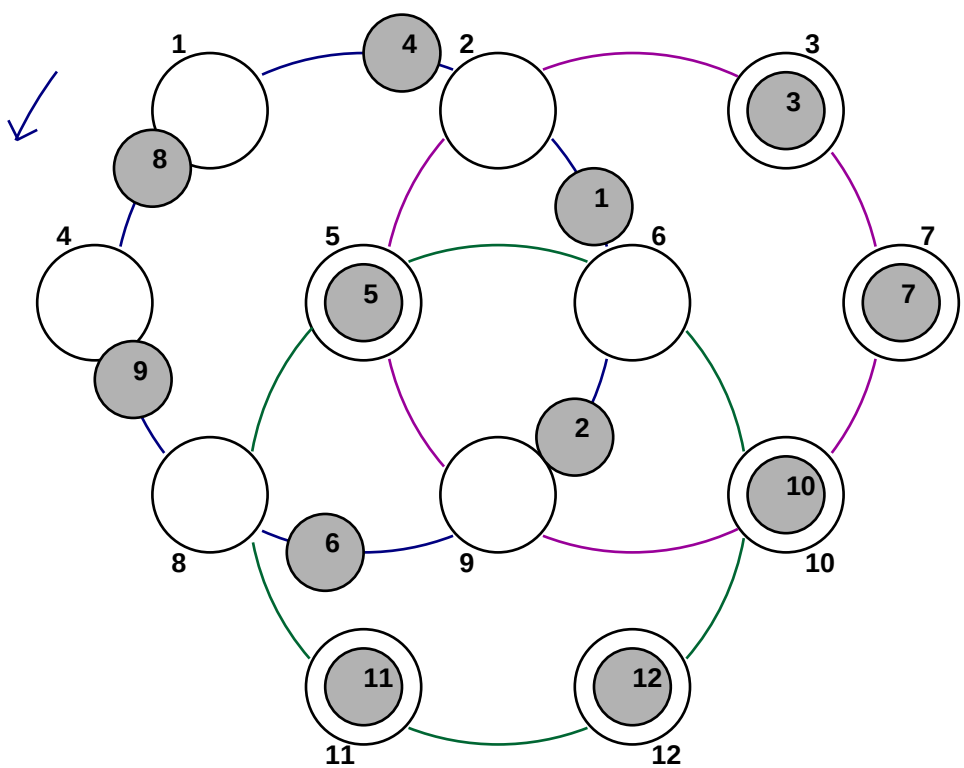

1
8
2
3
3
7
4
9
5
4
6
1
7
10
6
8
5
9
2
10
11
11
12
12

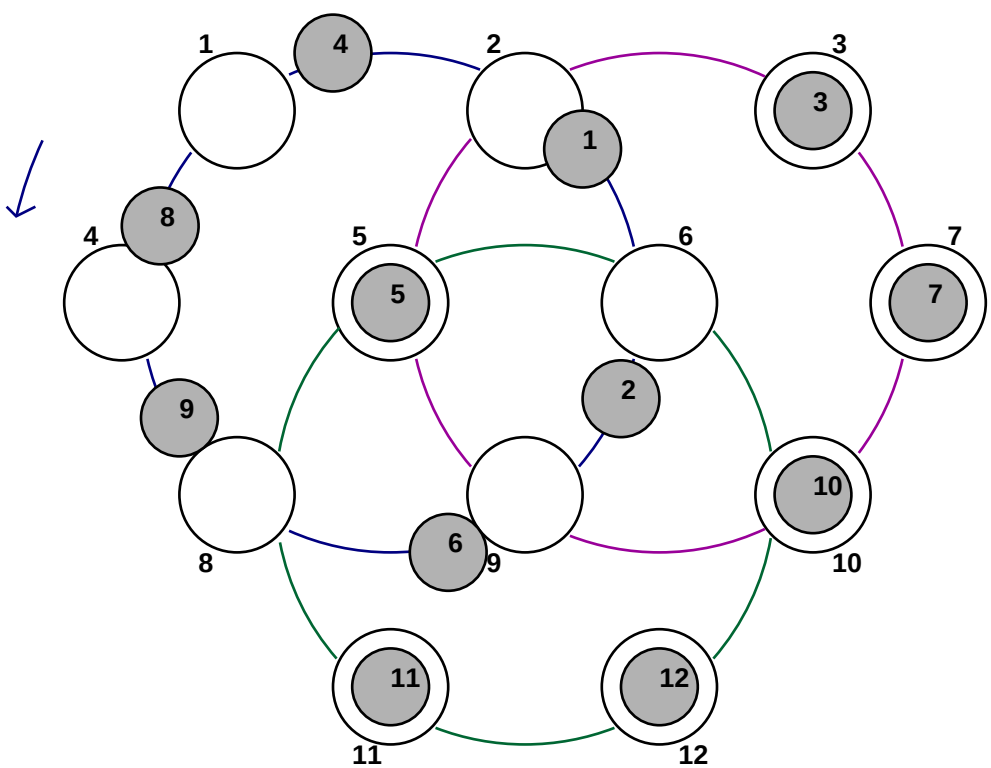

1
8
2
3
3
7
4
4
5
6
7
9
1
10
5
6
8
9
2
10
11
12
11
12

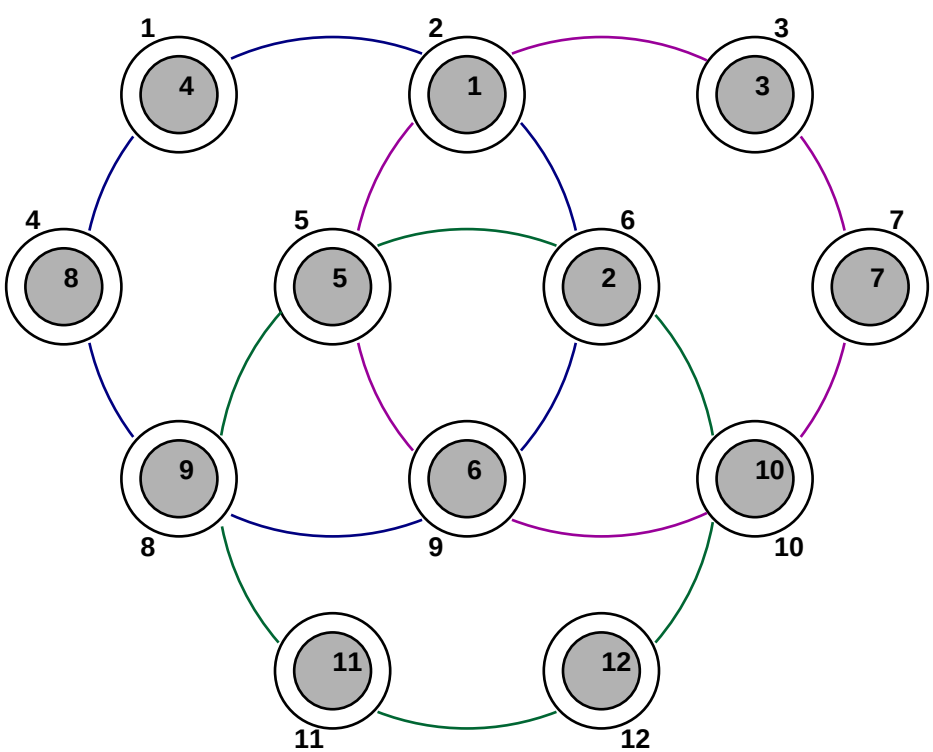

1
8
2
3
3
4
7
4
9
5
6
1
7
5
10
6
8
9
2
10
11
11
12
12

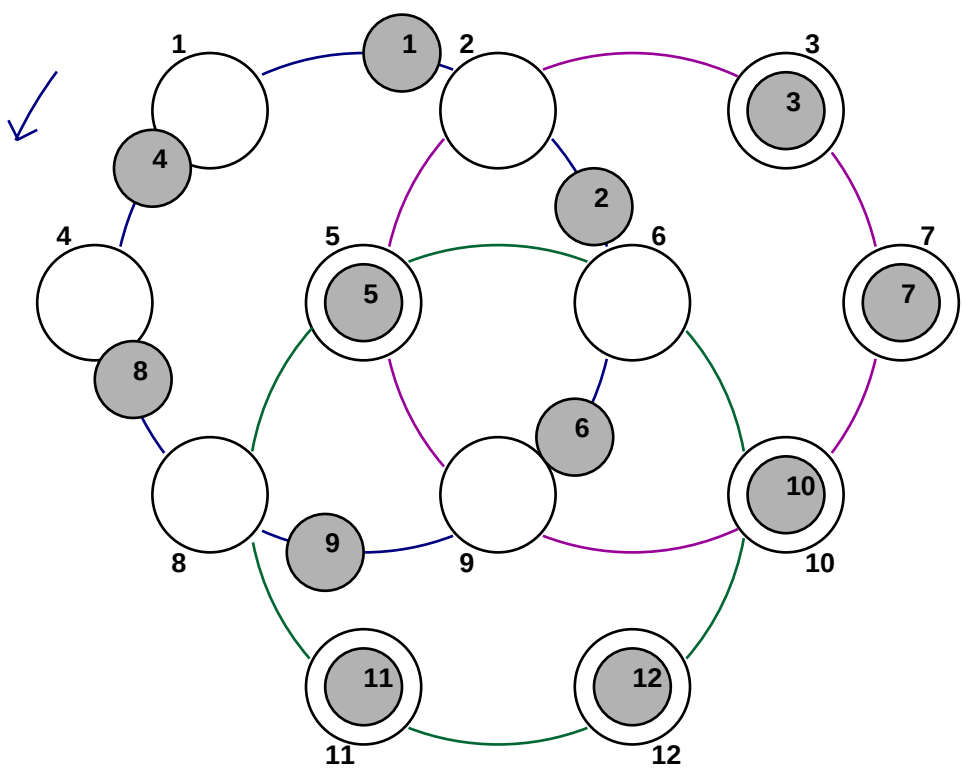

1
8
2
4
3
3
4
9
5
5
6
1
7
7
6
6
8
2
9
10
10
11
11
12
12

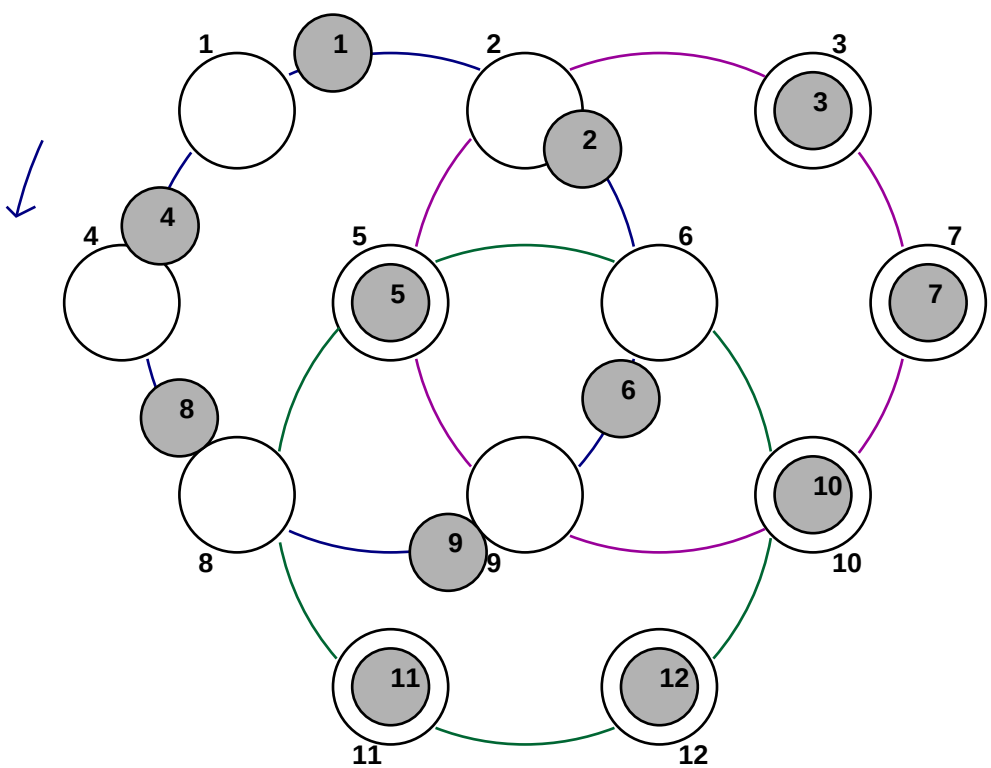

1
8
2
4
3
3
4
9
5
5
6
1
7
7
6
6
8
2
9
10
10
11
11
12
12

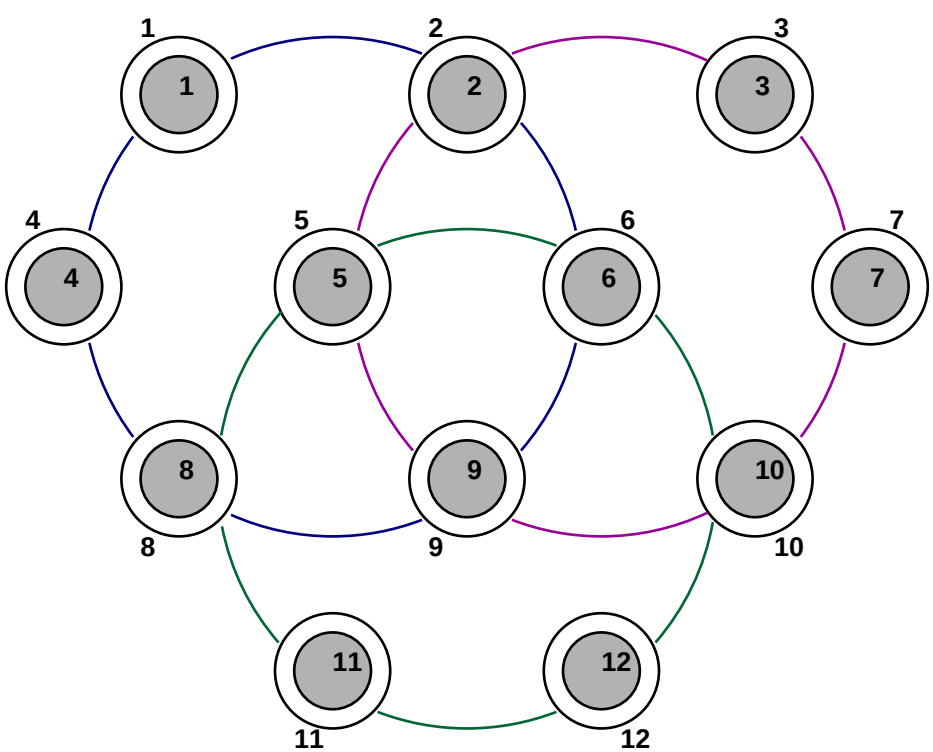

1
4
2
3
3
8
1
4
5
6
7
5
7
9
2
10
8
6
9
10
11
12
11
12


1
4
2
3
3
1
8
4
5
6
7
5
7
2
9
10
6
8
9
10
11
12
11
12


1
4
2
1
3
3
4
8
5
5
6
2
7
7
9
8
6
9
10
10
11
11
12
12


1
1
2
3
3
4
2
4
5
5
6
7
7
8
6
10
8
9
9
10
11
12
11
12


1
1
2
3
2
3
4
4
5
5
6
7
7
6
8
8
10
9
9
10
11
12
11
12


1
2
3
4
5
6
7
8
9
10
11
12

This completes a project on the Blithe 12 by Anne Drysdale