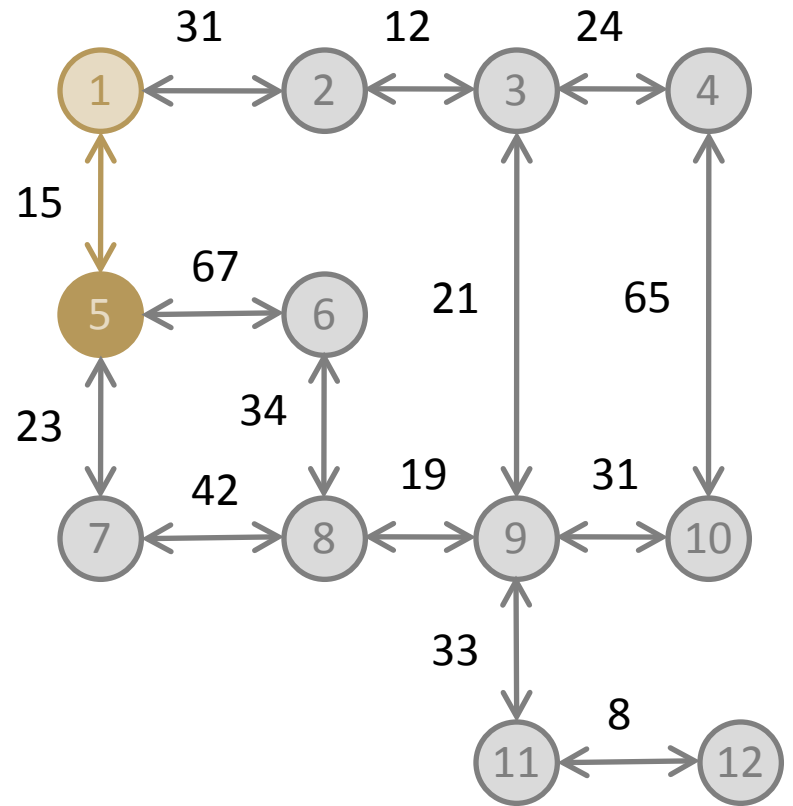
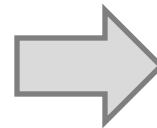
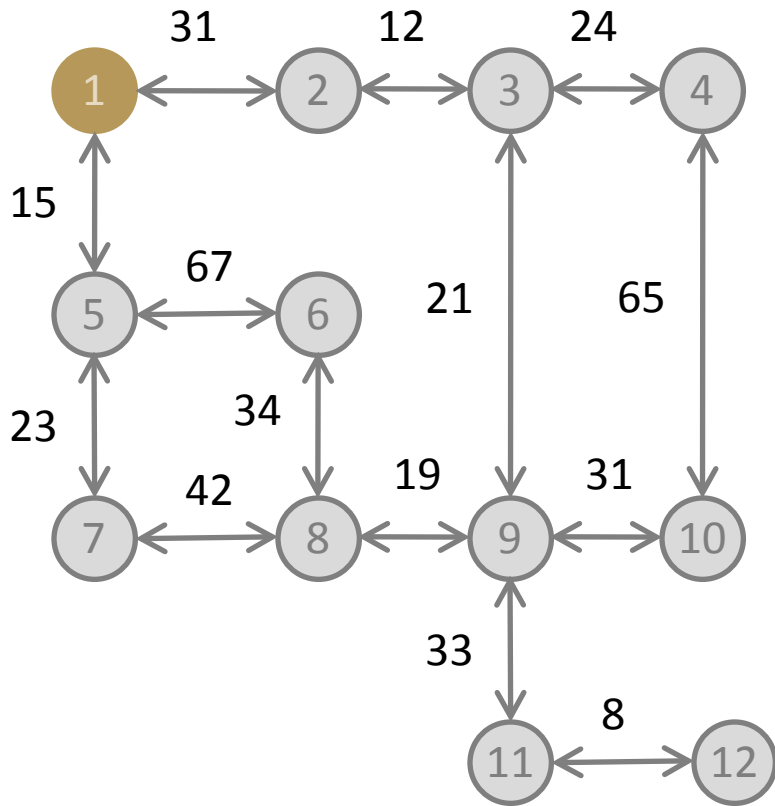


# Basic Graph Algorithms

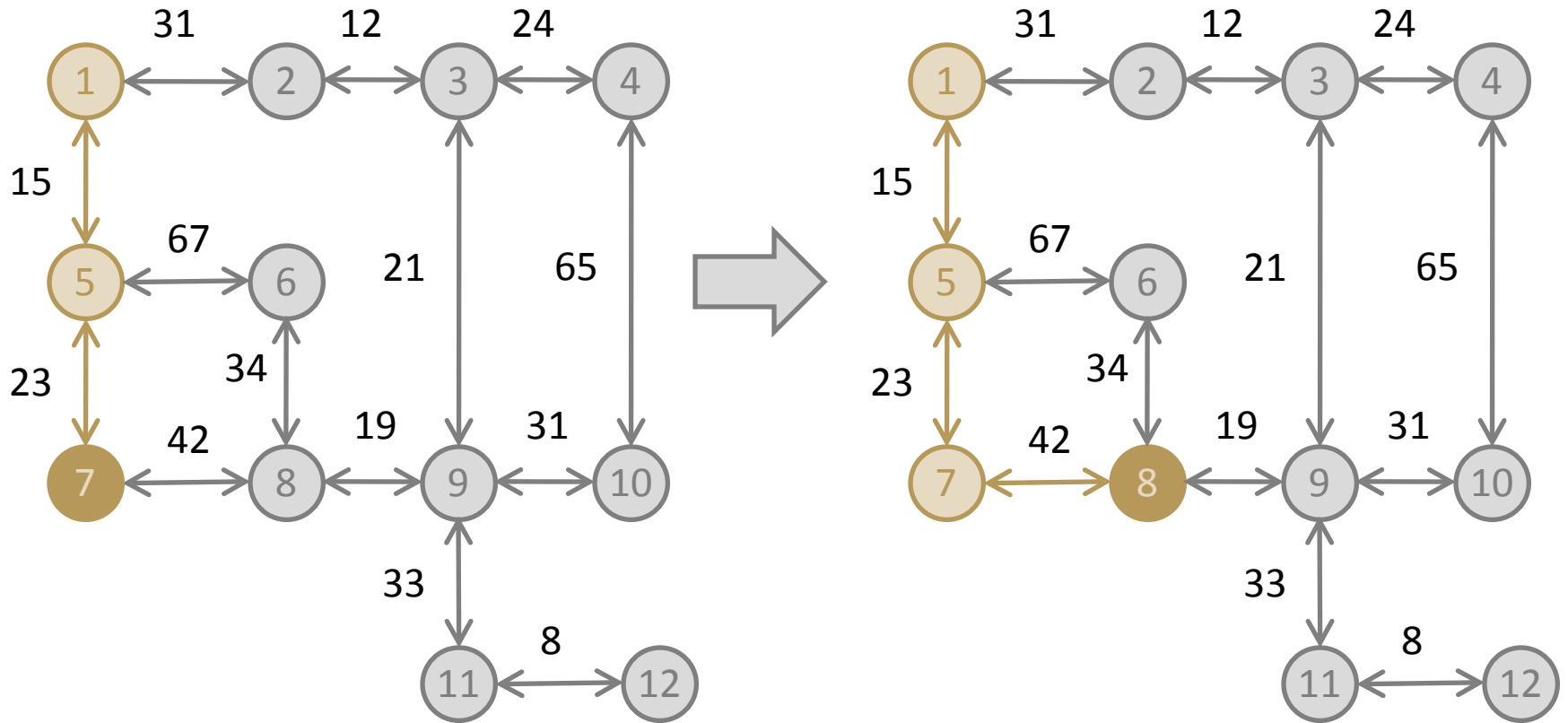
# Depth First Search

- Stack-based approach to building a spanning tree
- Imagine if a single person wanted to visit each room in the building

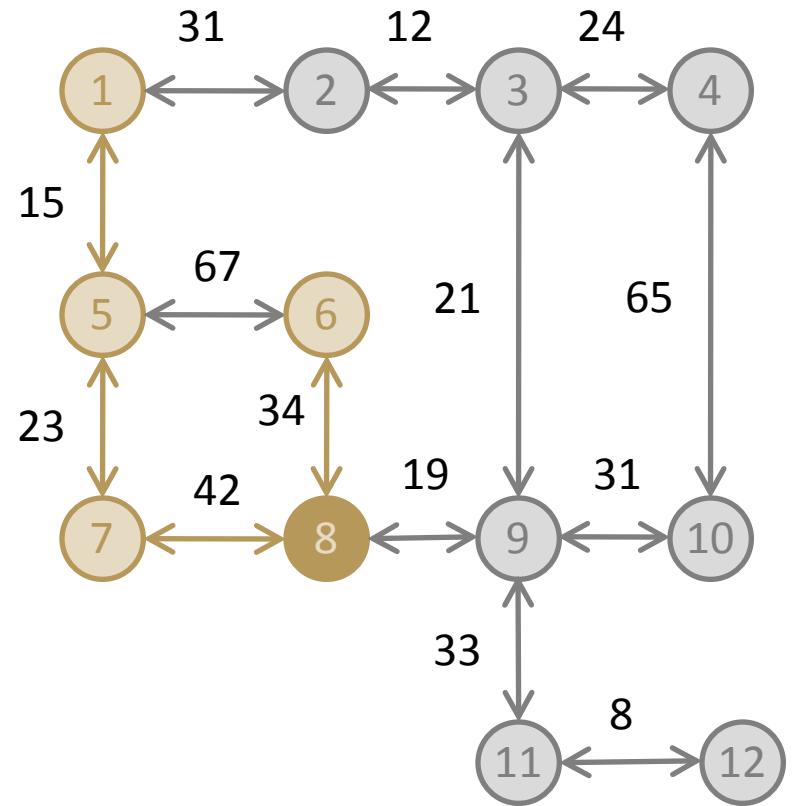
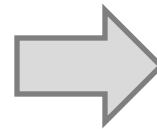
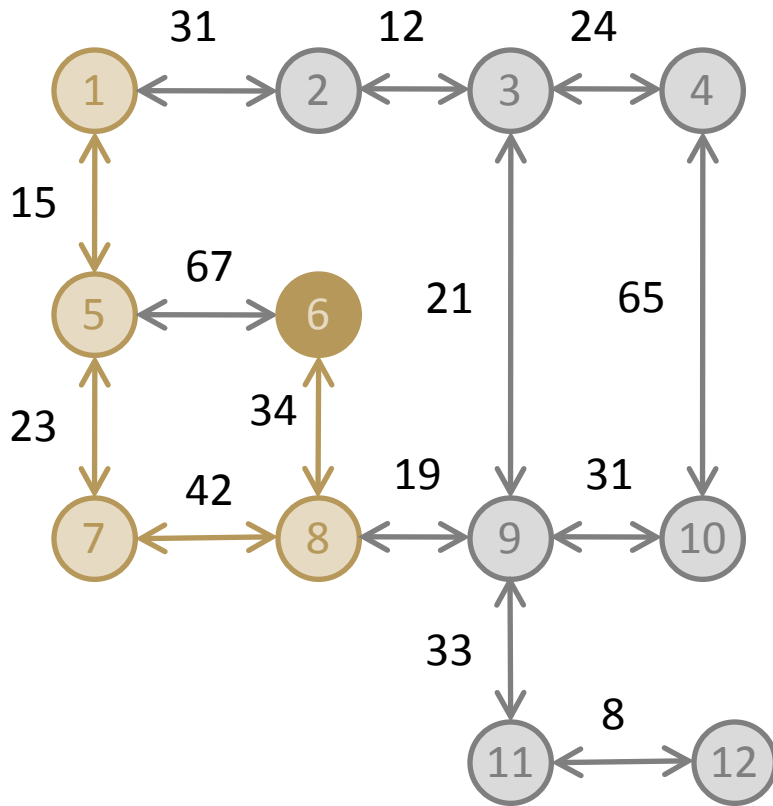
# DFS 1



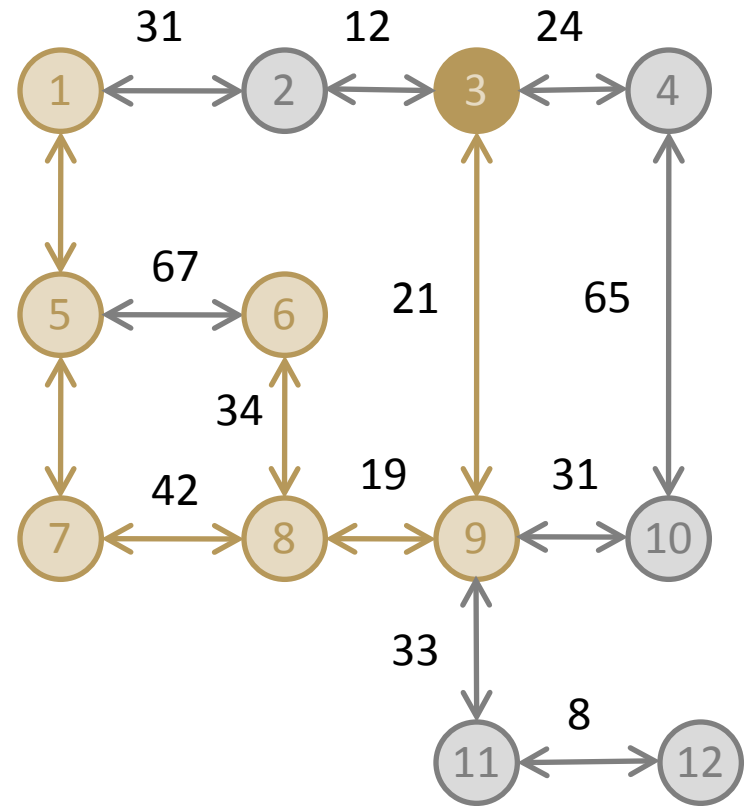
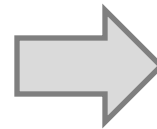
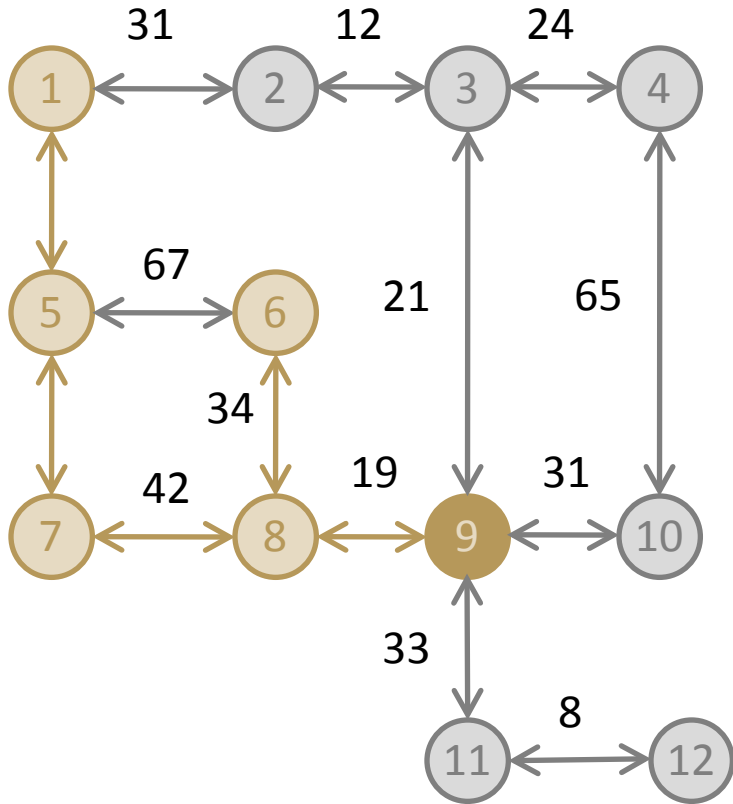
# DFS 2



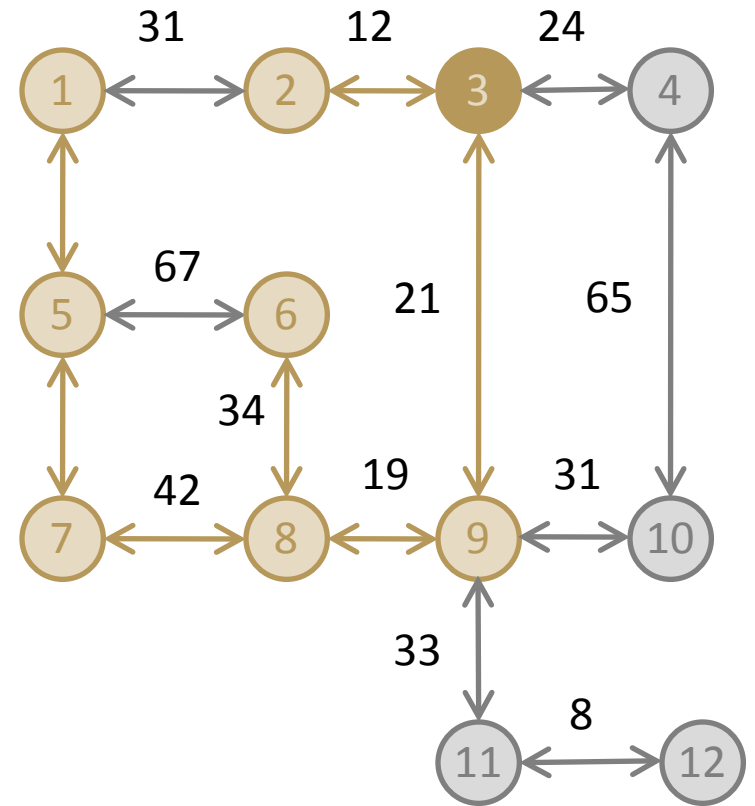
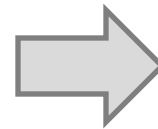
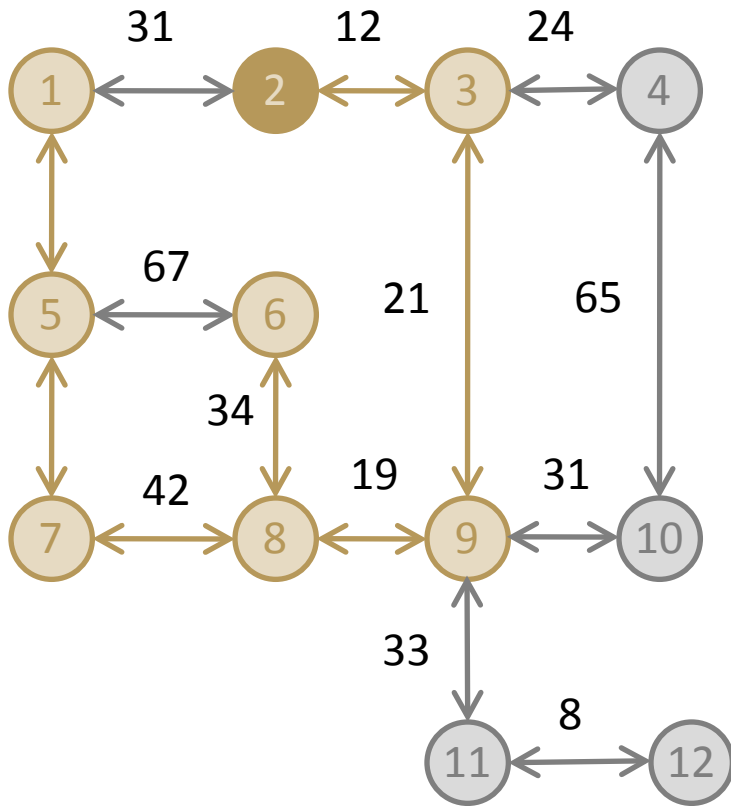
# DFS 3



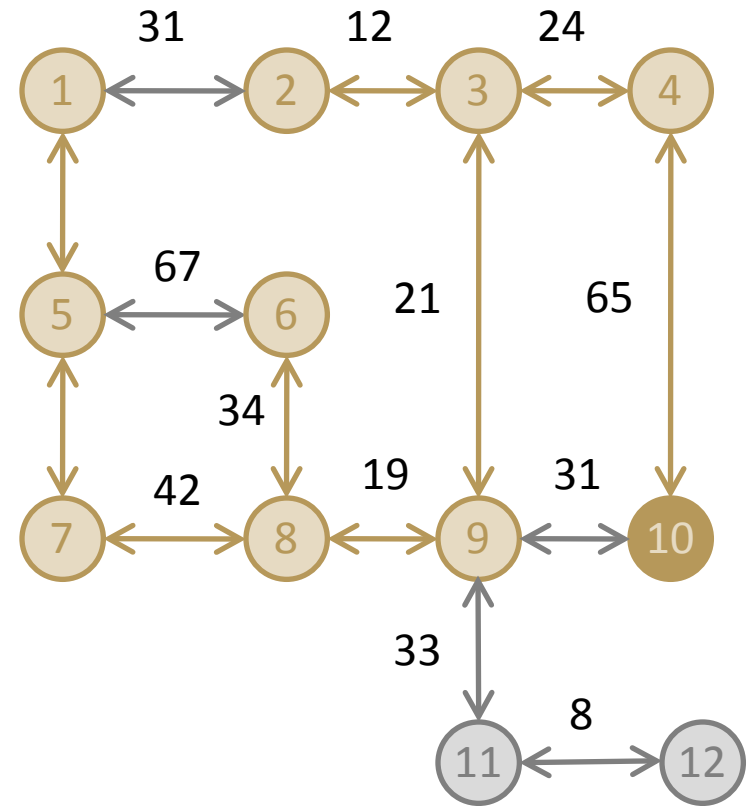
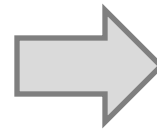
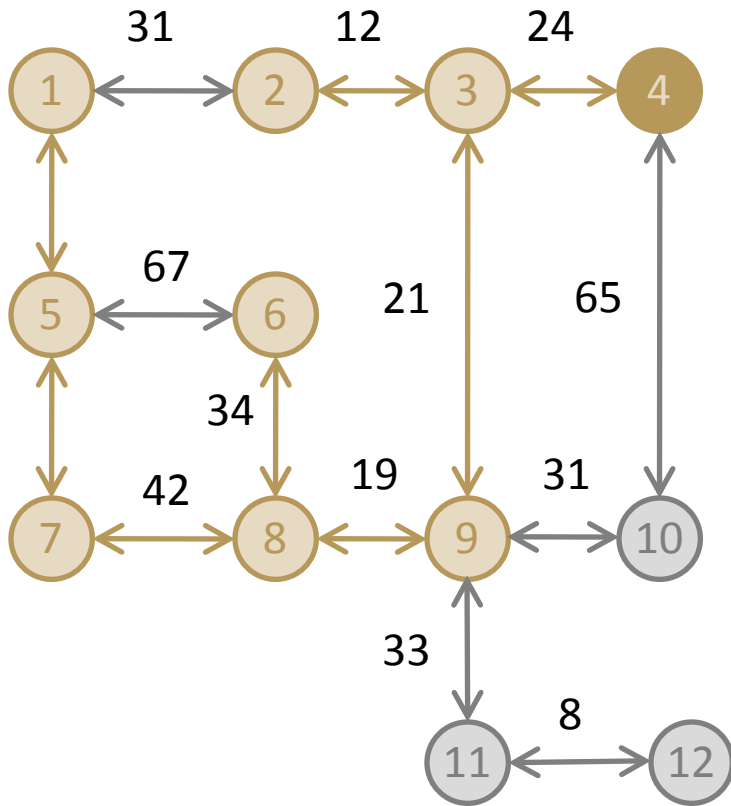
# DFS 4



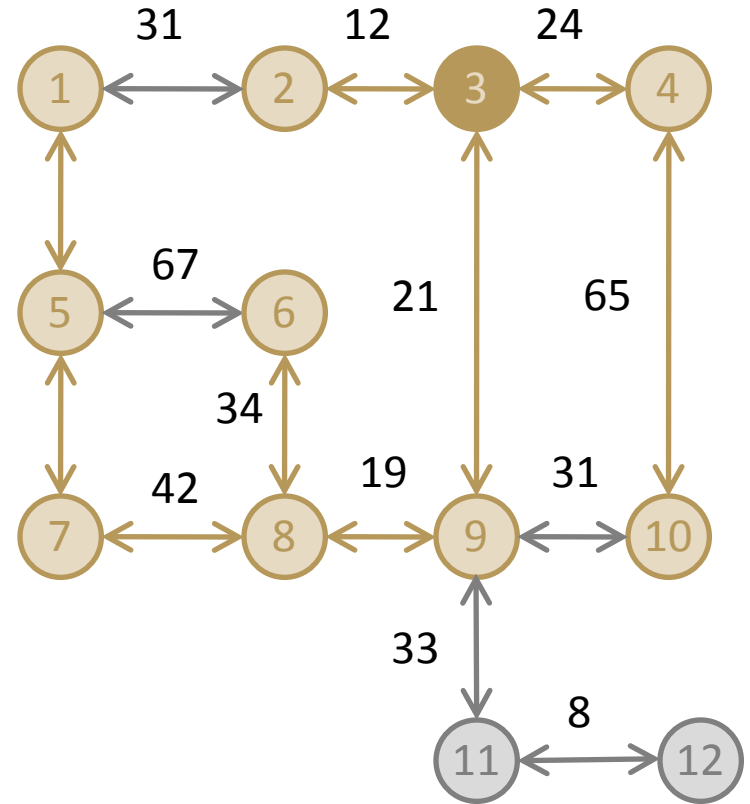
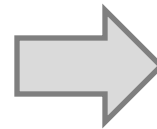
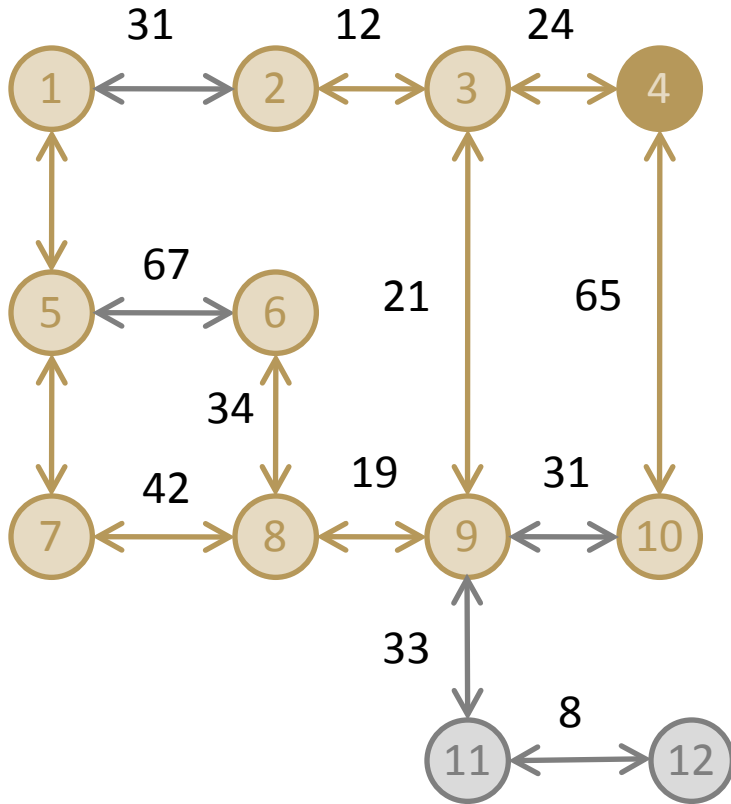
# DFS 5



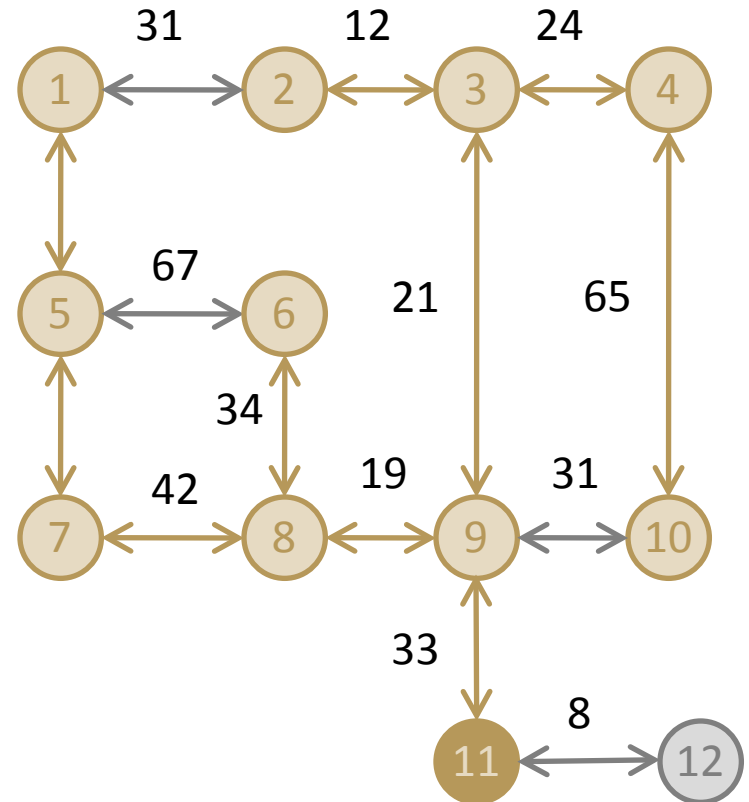
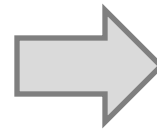
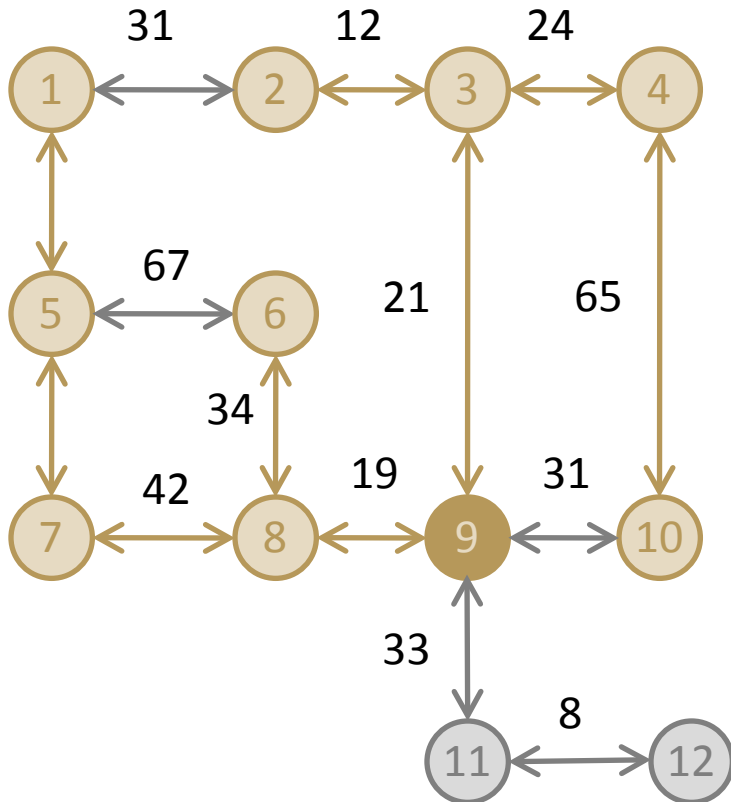
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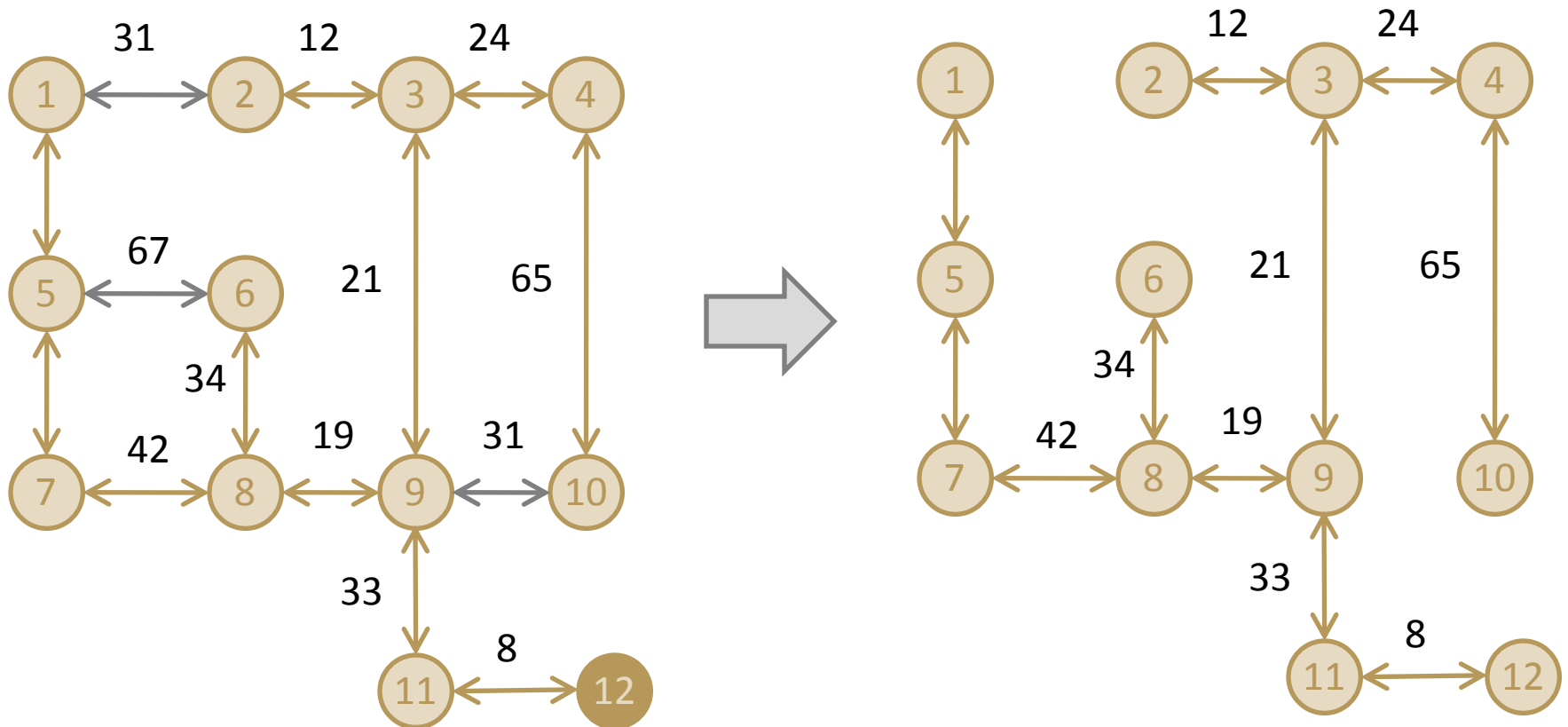
# DFS 7



# DFS 8



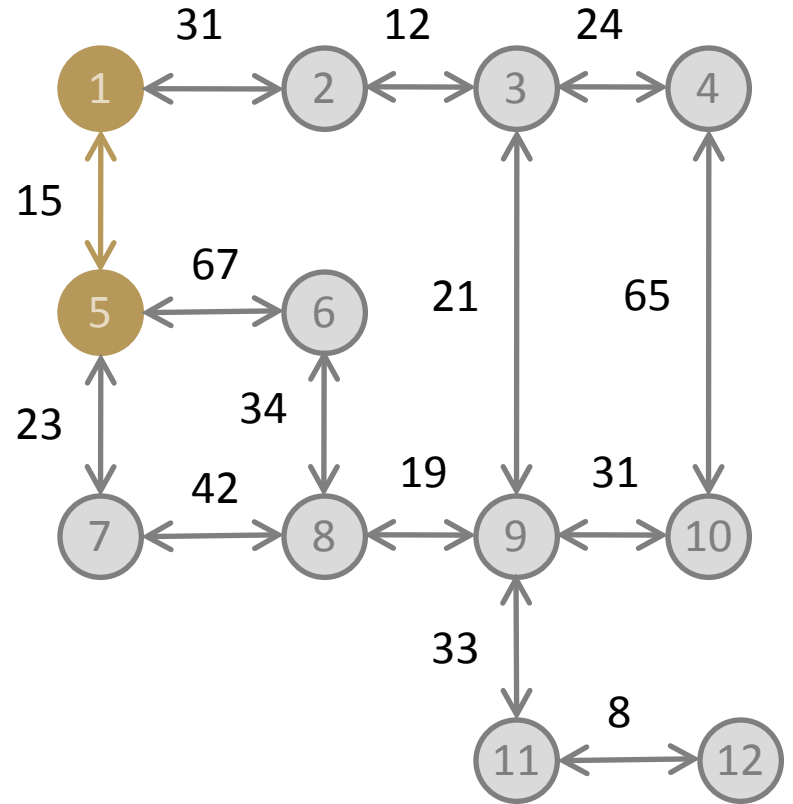
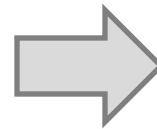
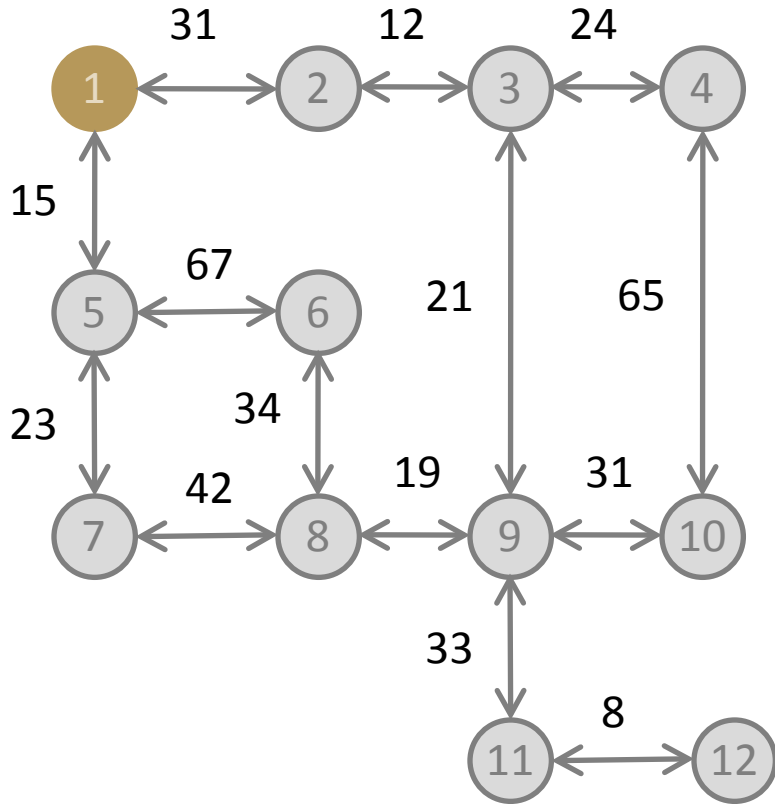
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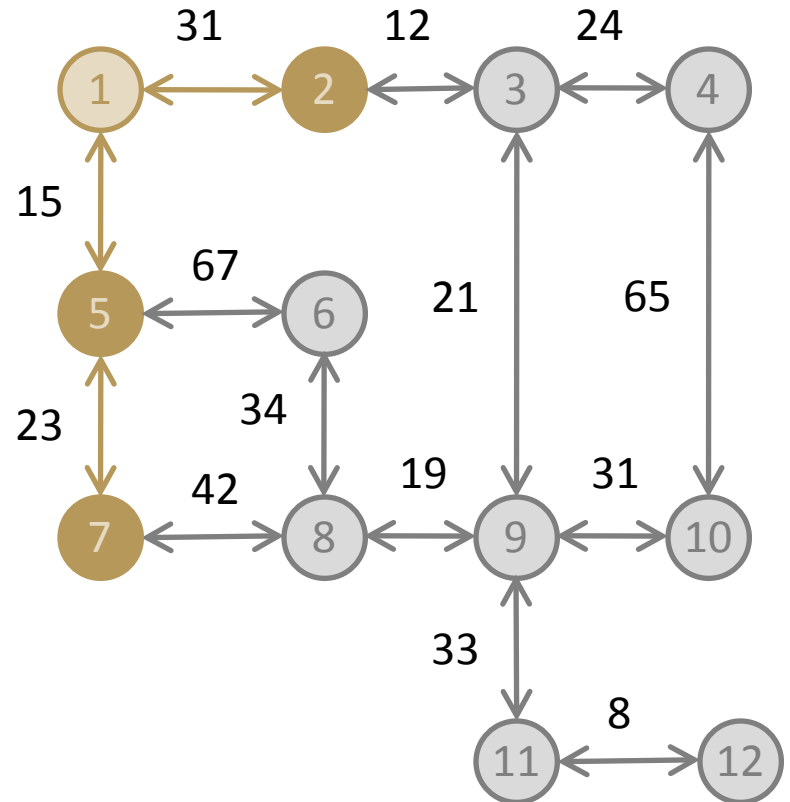
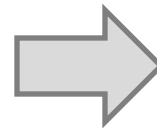
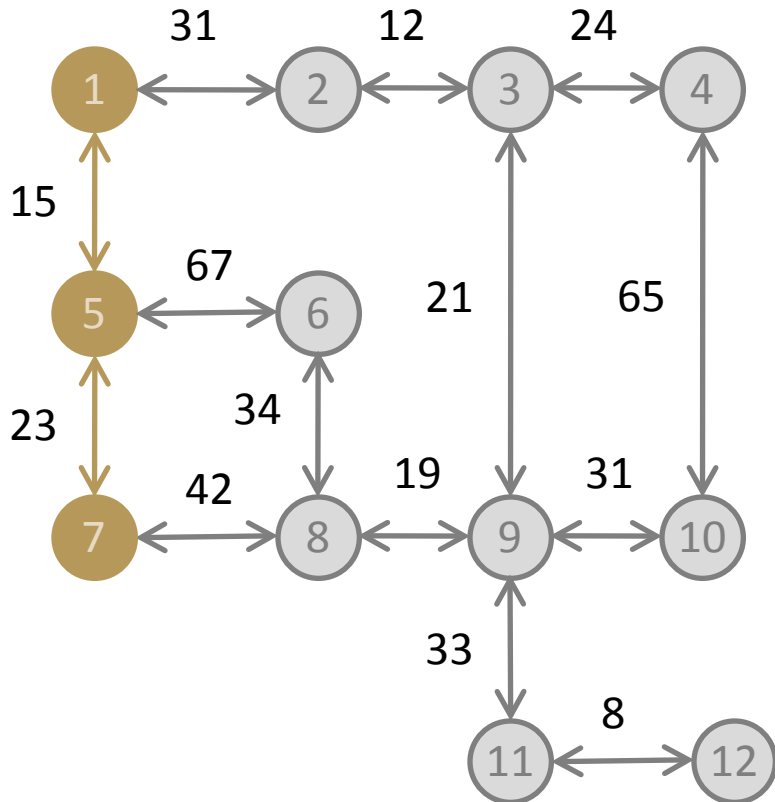
# Breadth First Search

- Queue-based approach to building a spanning tree
- Imagine if a team of people wanted to visit each room in the building

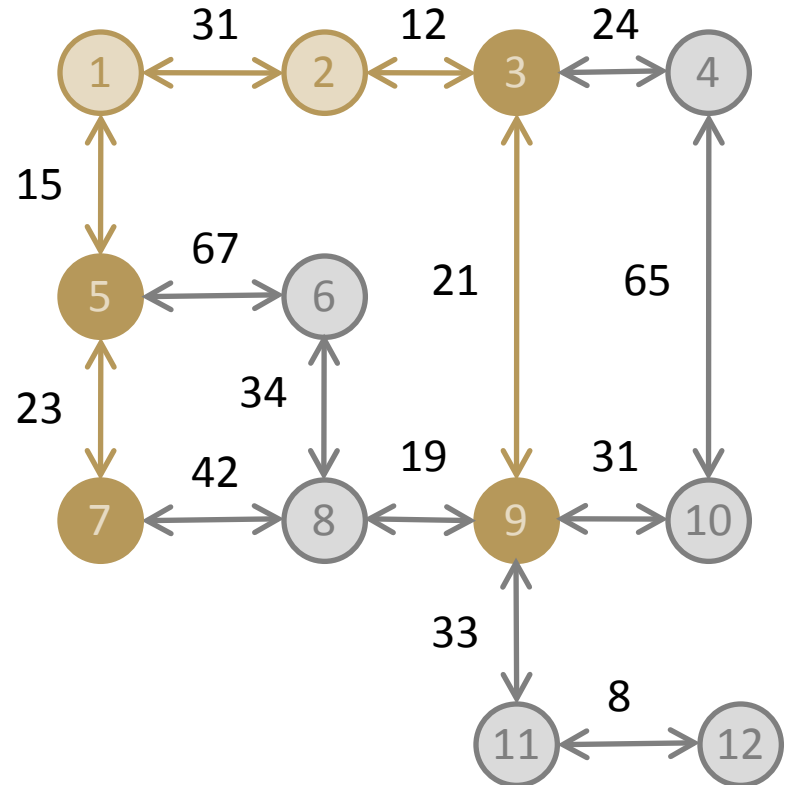
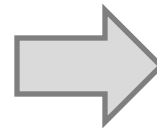
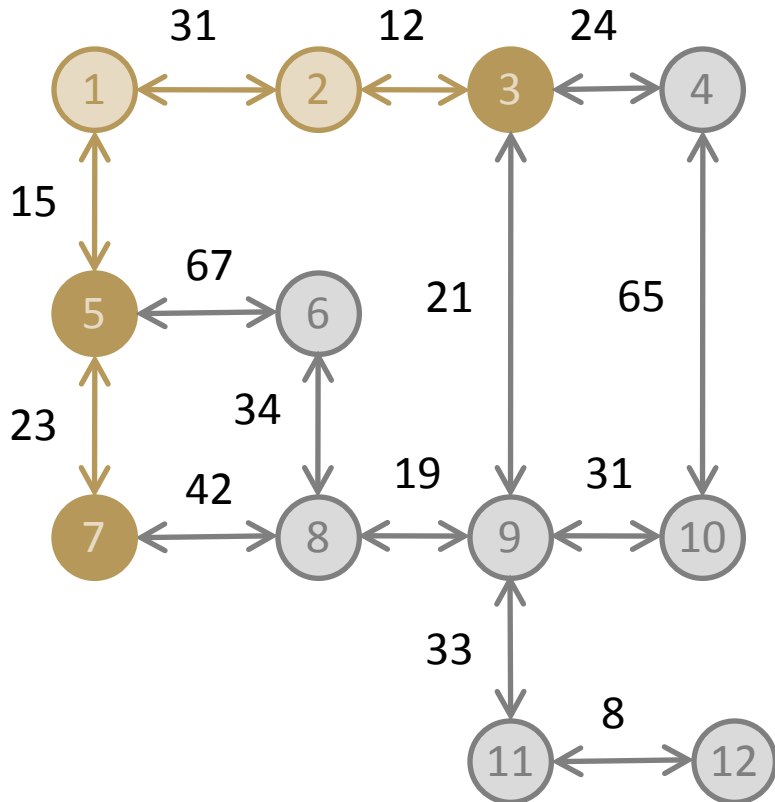
# BFS 1



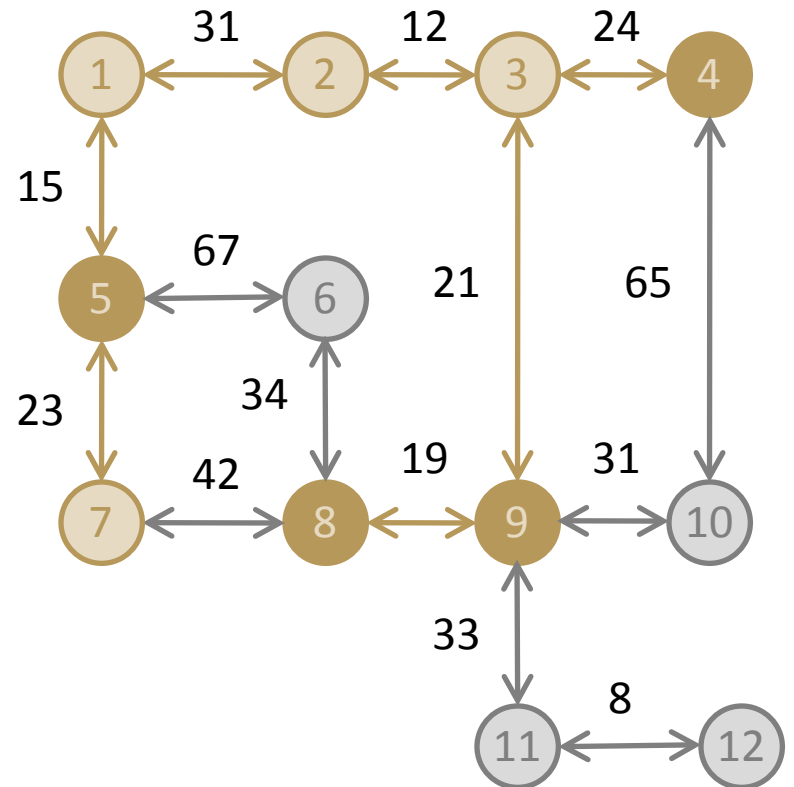
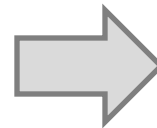
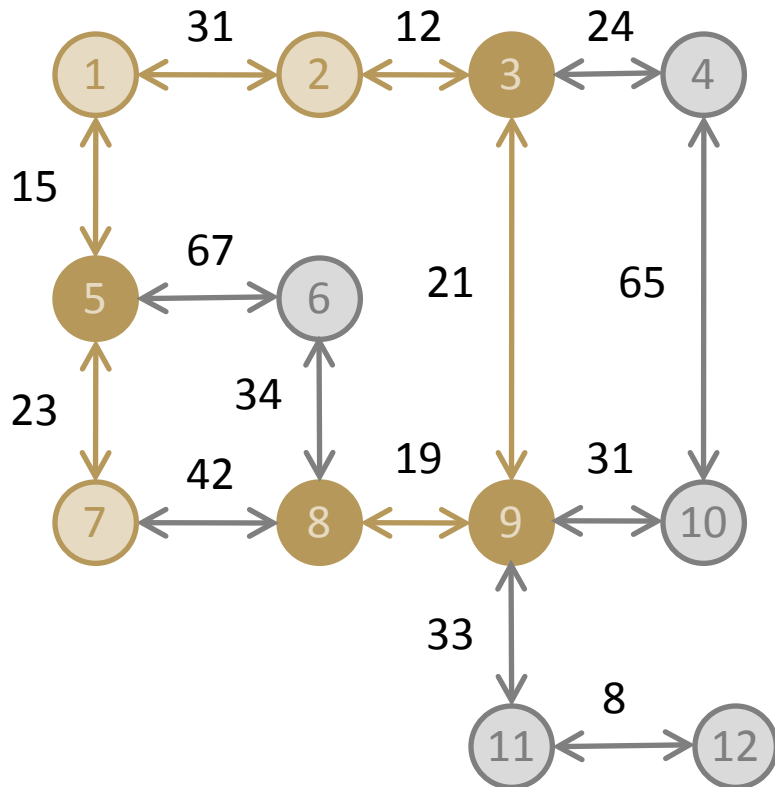
# BFS 2



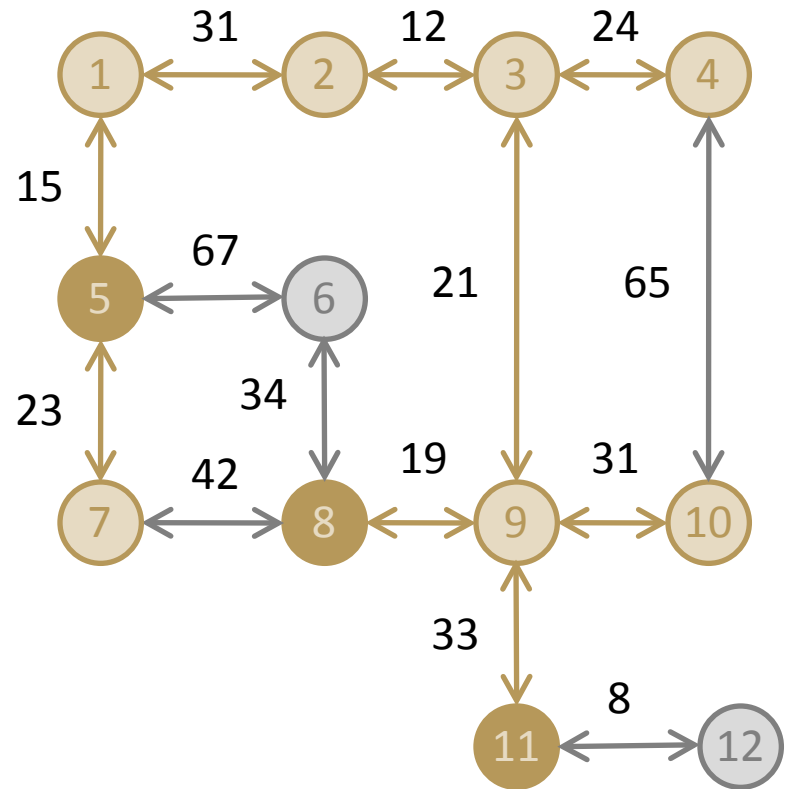
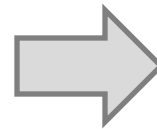
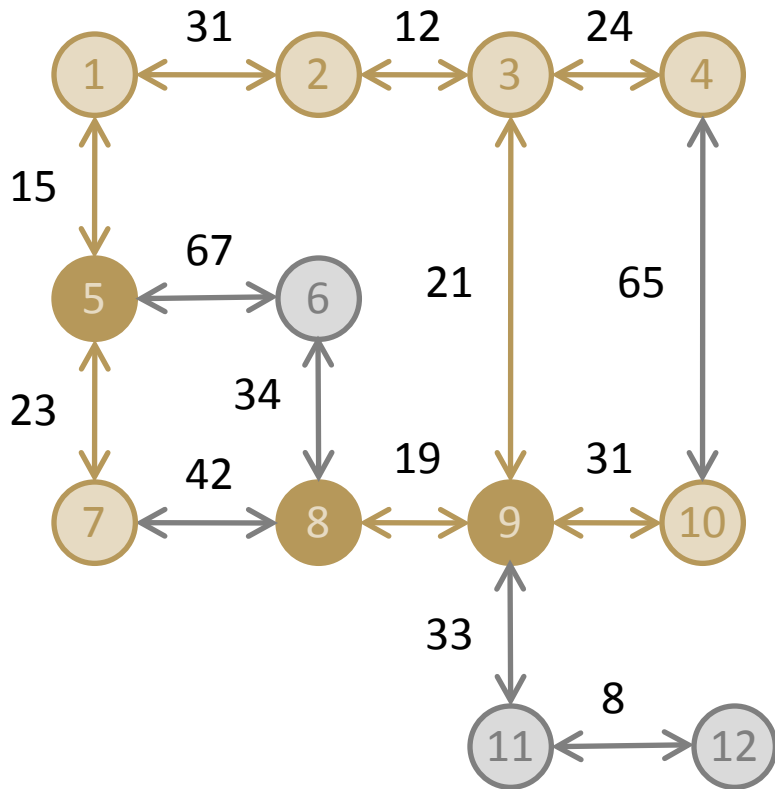
# BFS 3



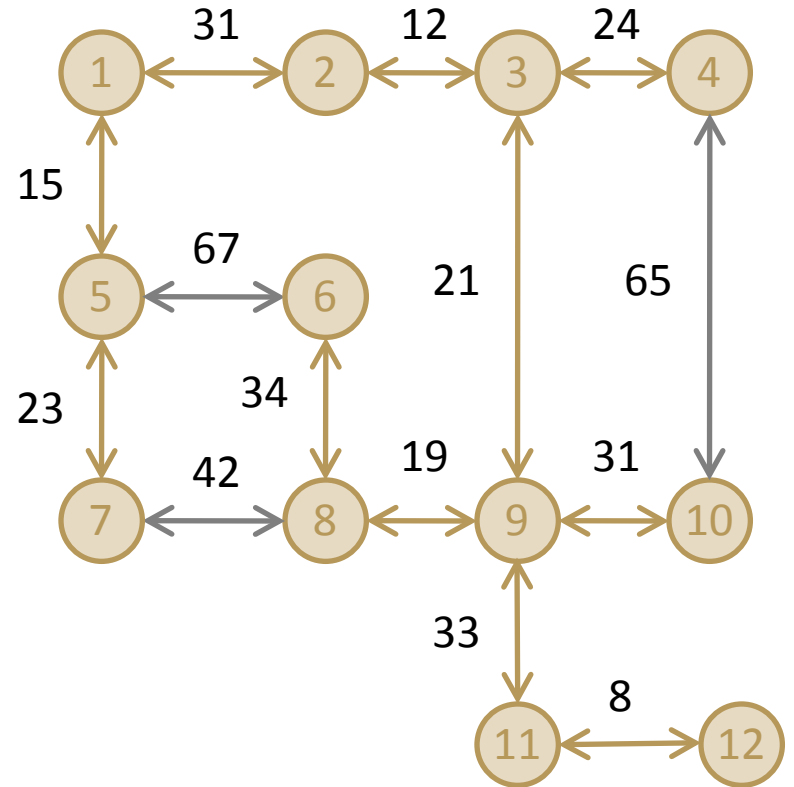
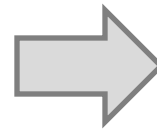
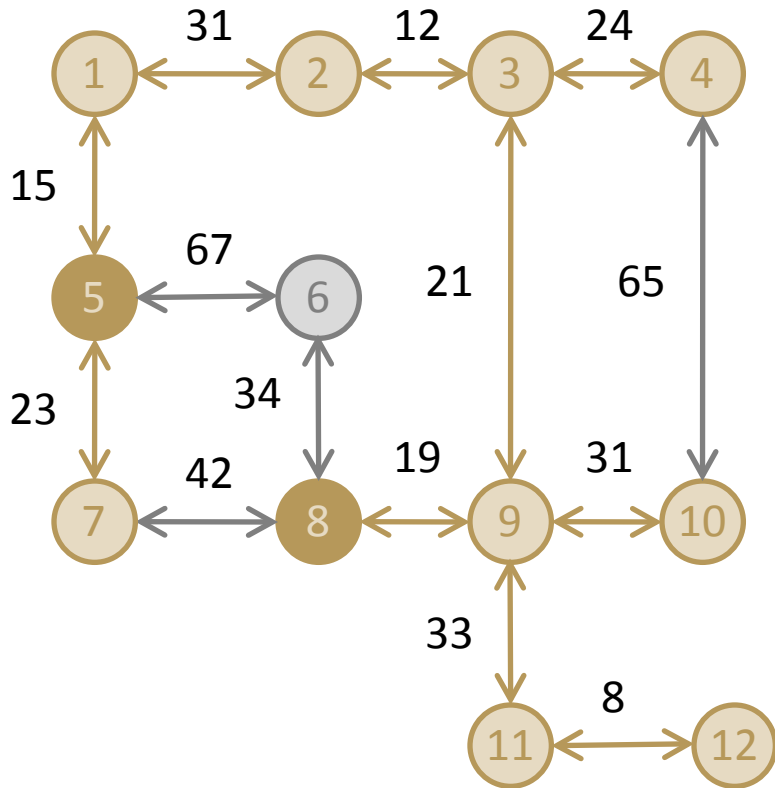
# BFS 4



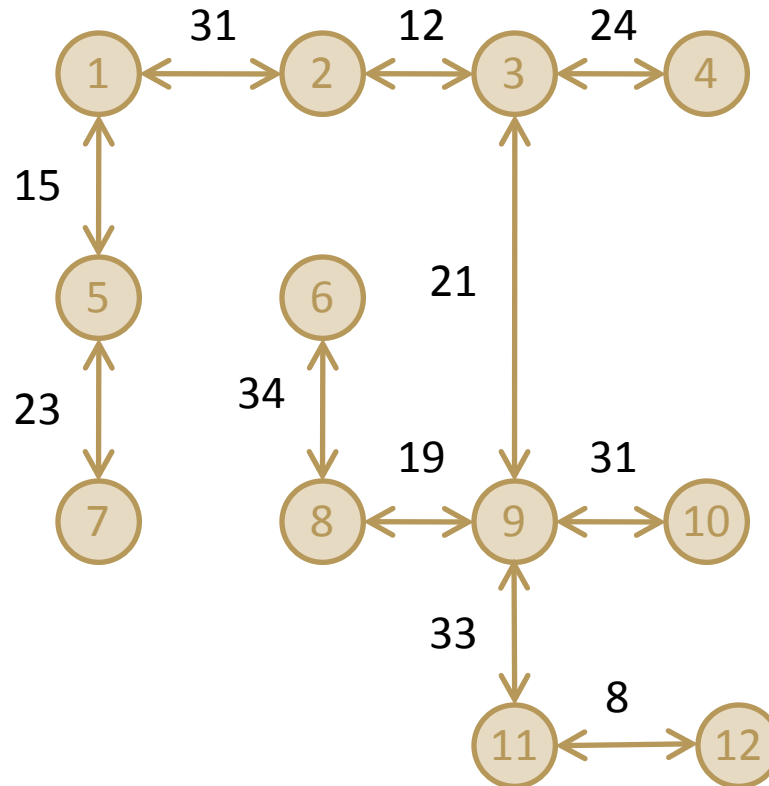
# BFS 5



# BFS 6



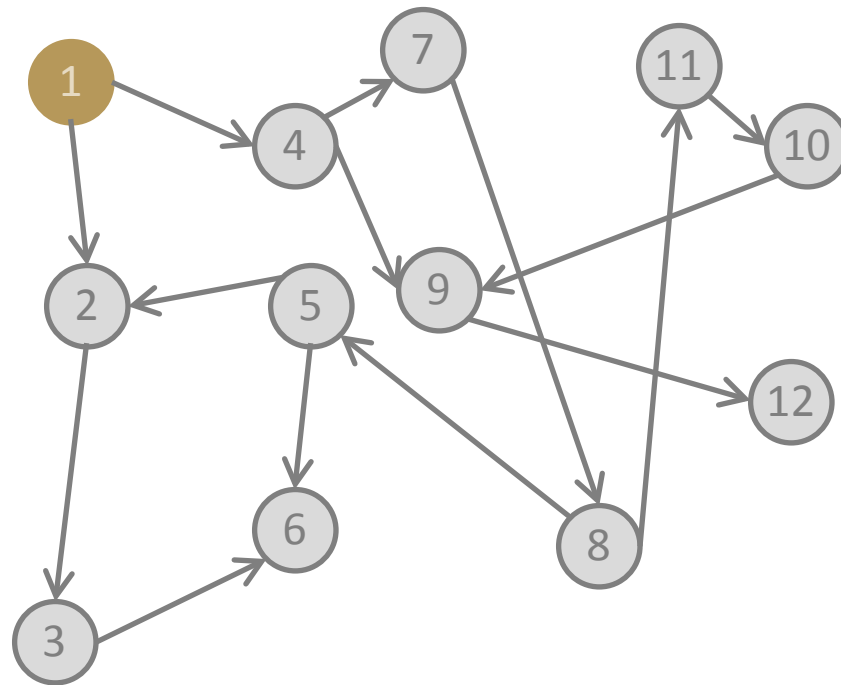
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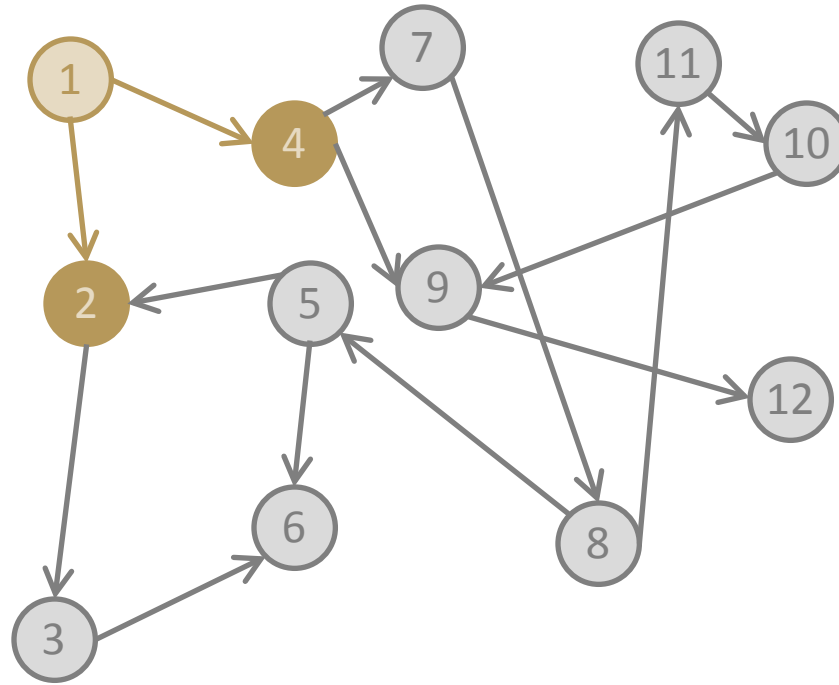


# Topological Sort

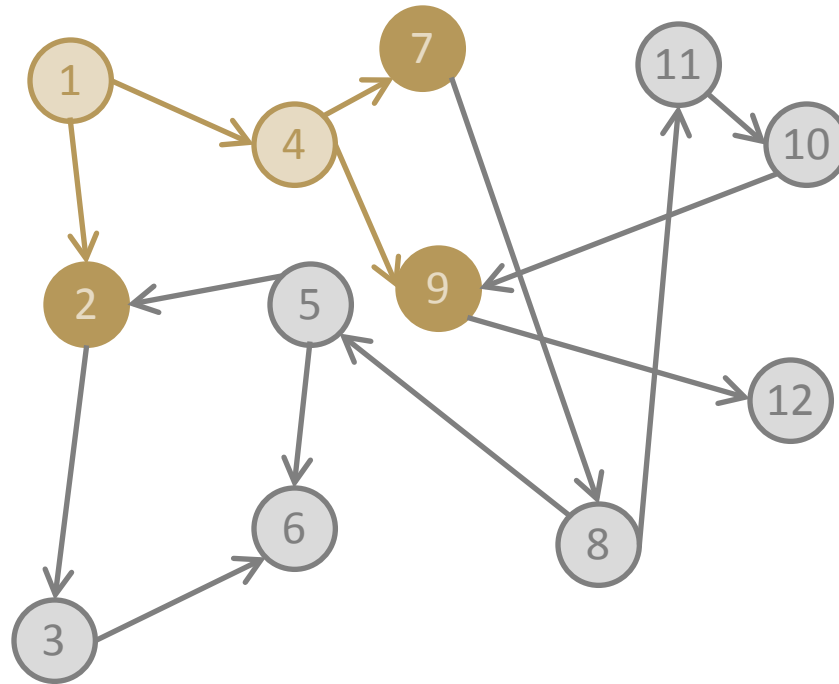
- A topological sort rearranges a graph so the general direction of the edges all flow in the same direction.
- There are many techniques, we are only covering one.

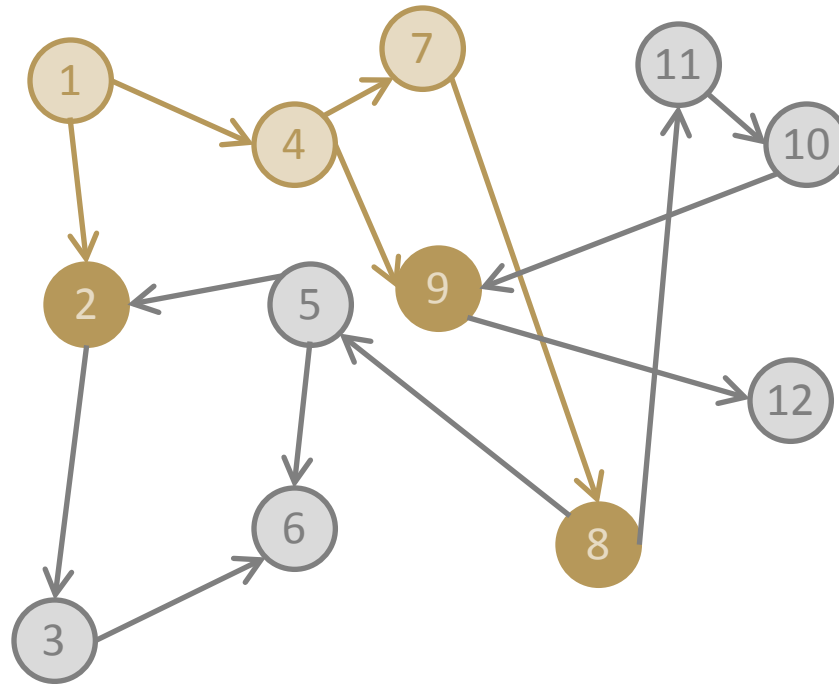
# Topological Sort of a DAG

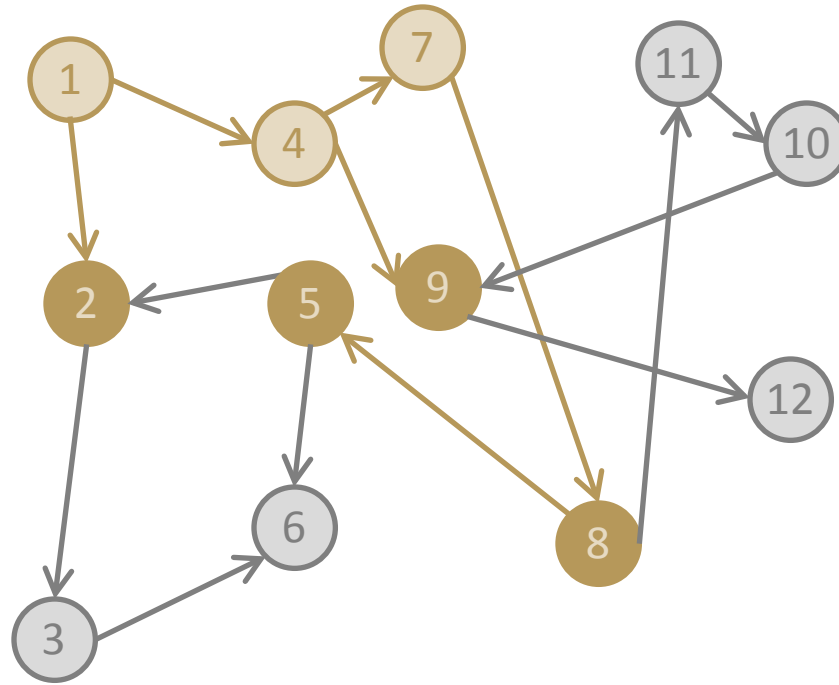


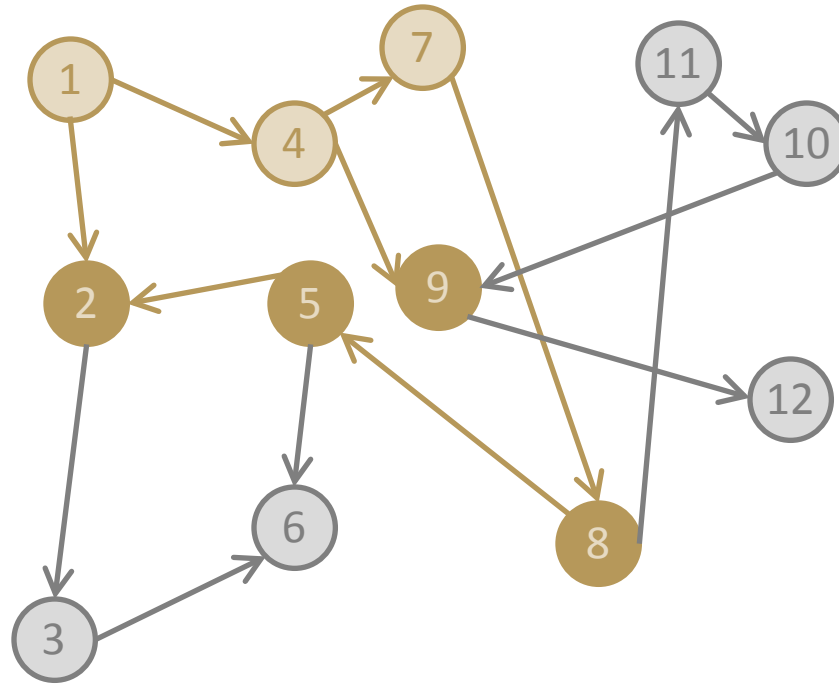


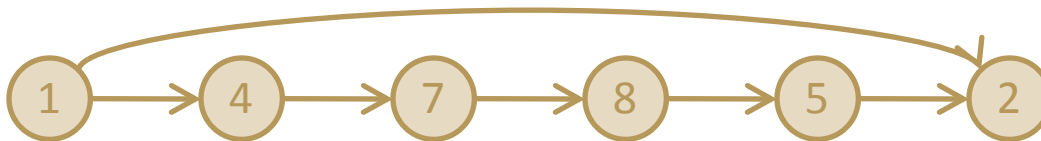
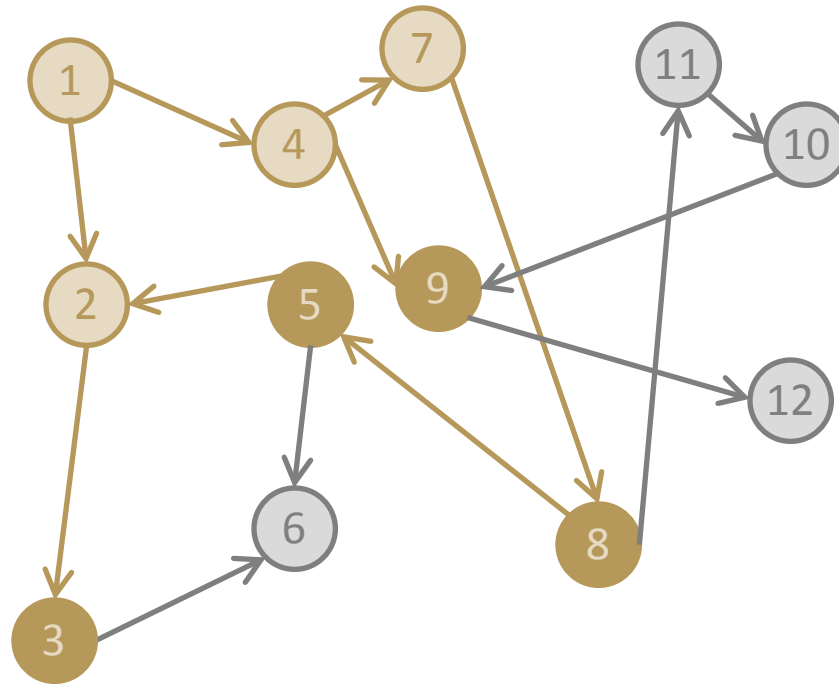
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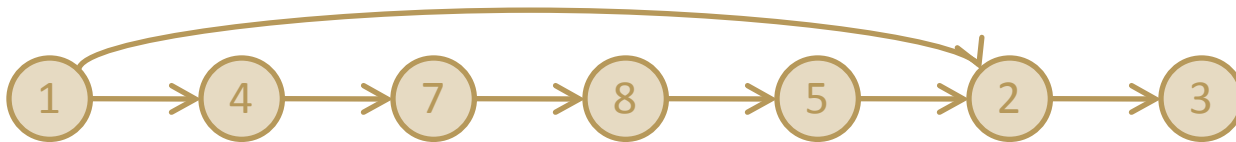
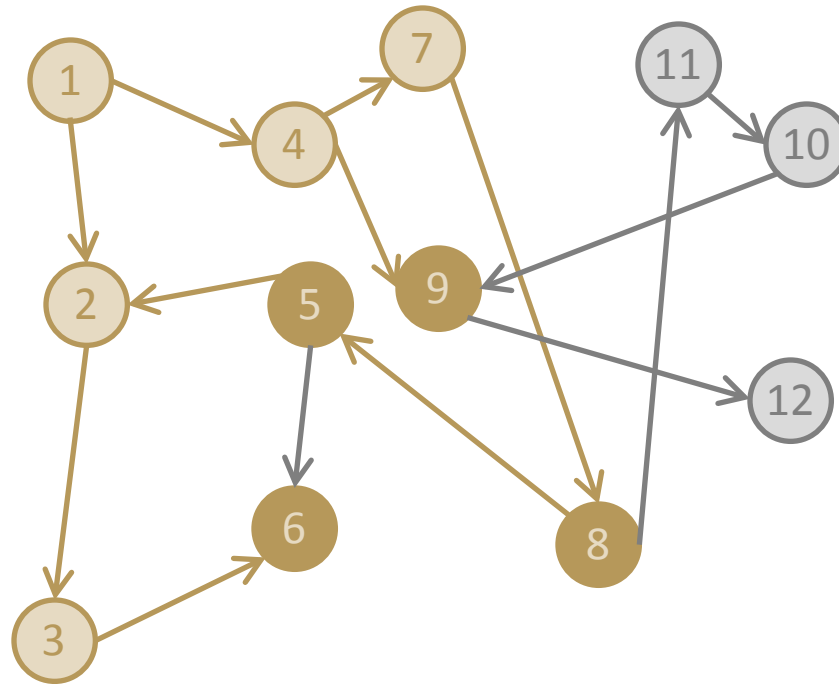


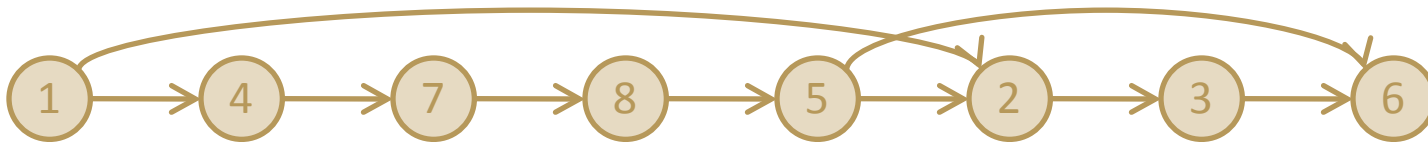
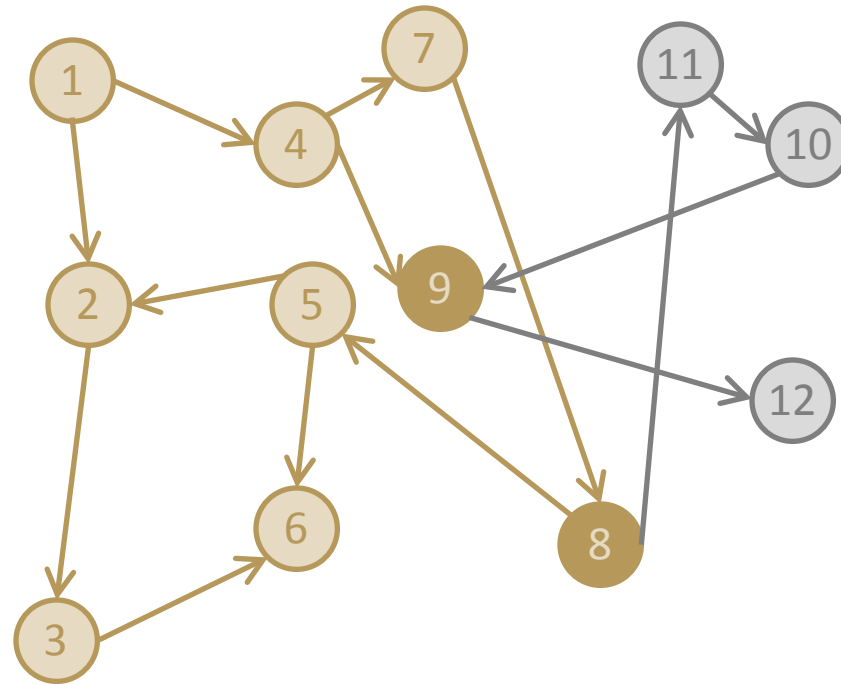


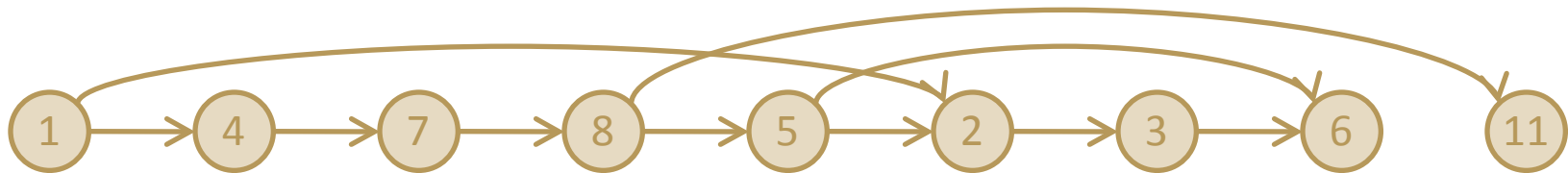
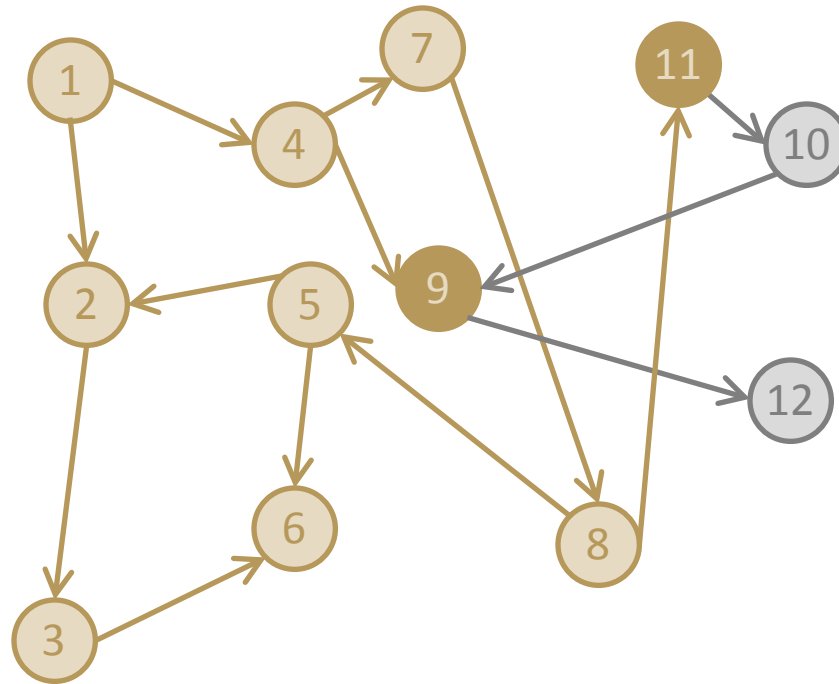


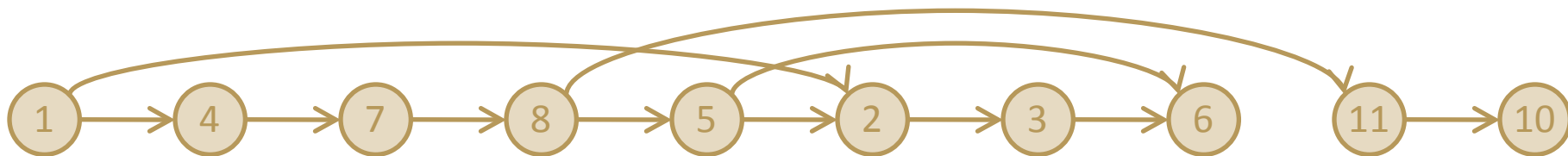
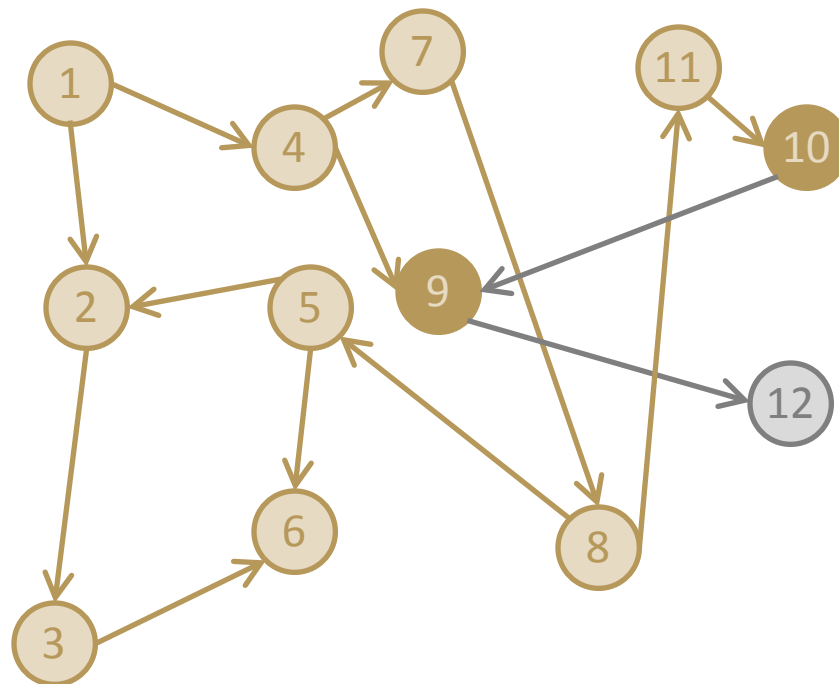


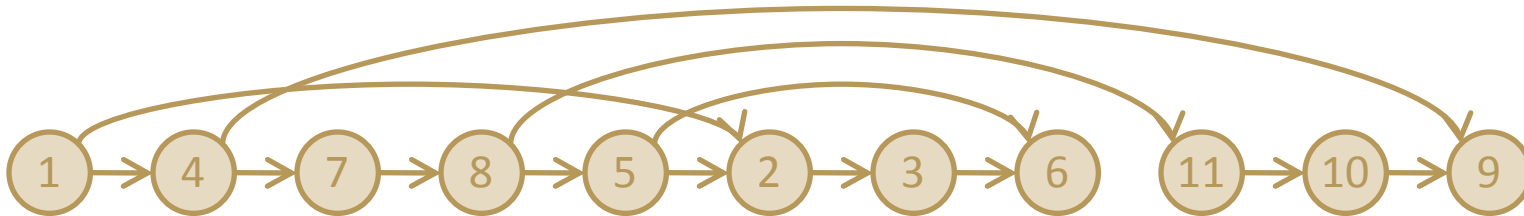
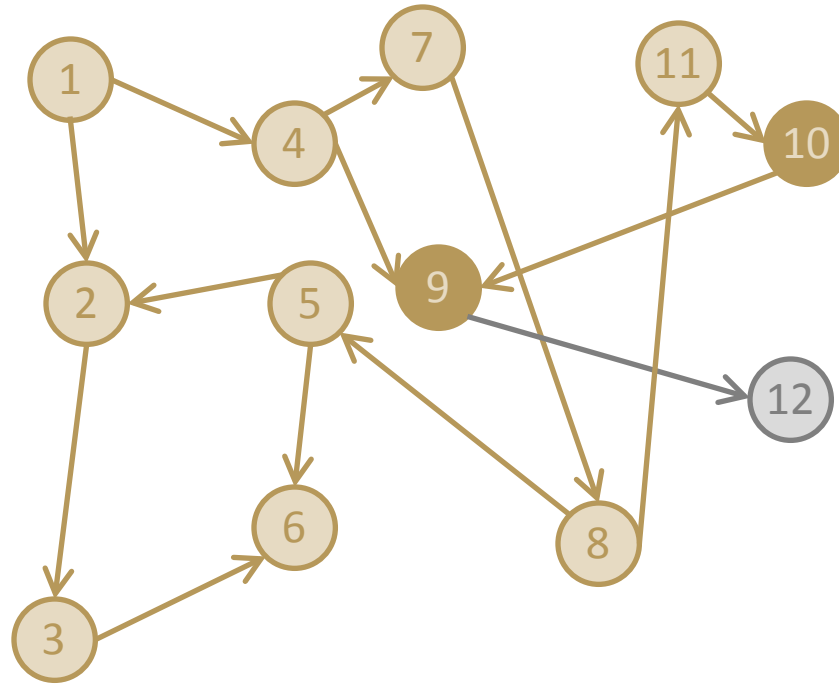


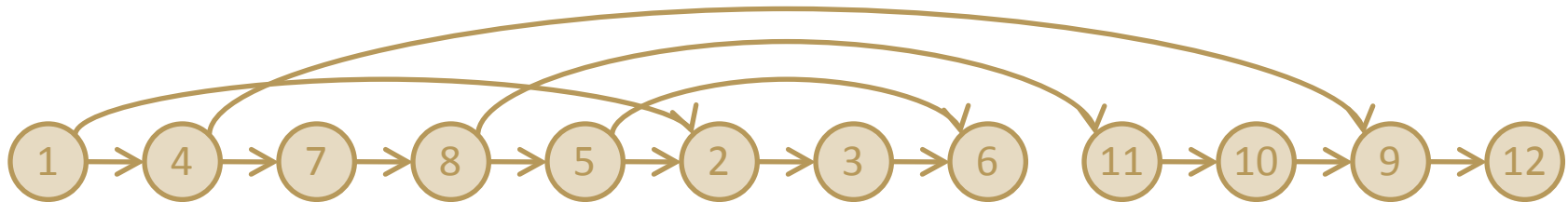
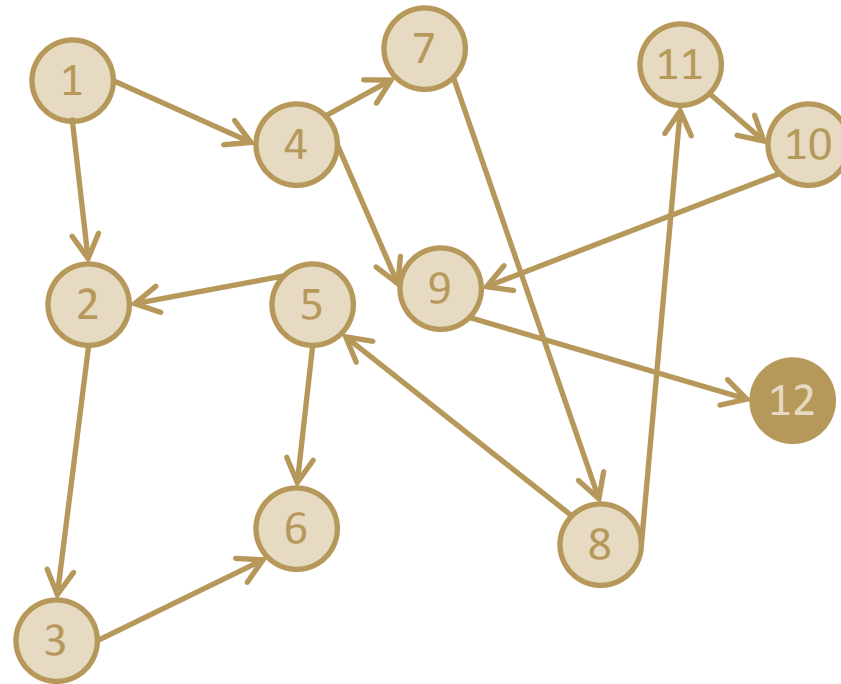












Questions?