

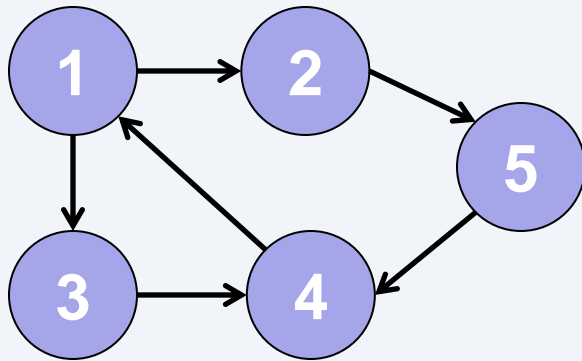
Graphs – Searching for Relationships

COMP 200 & COMP 130

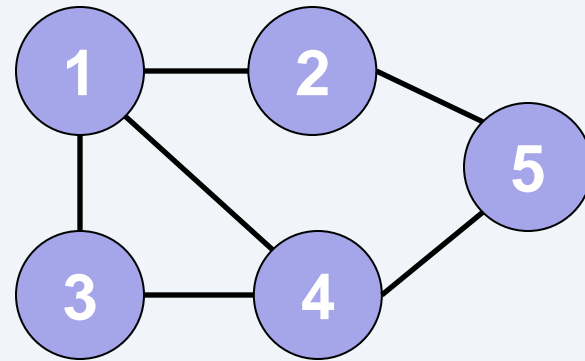
John Greiner & Stephen Wong

Graphs – A Reminder

Vertices/nodes + edges connecting vertices



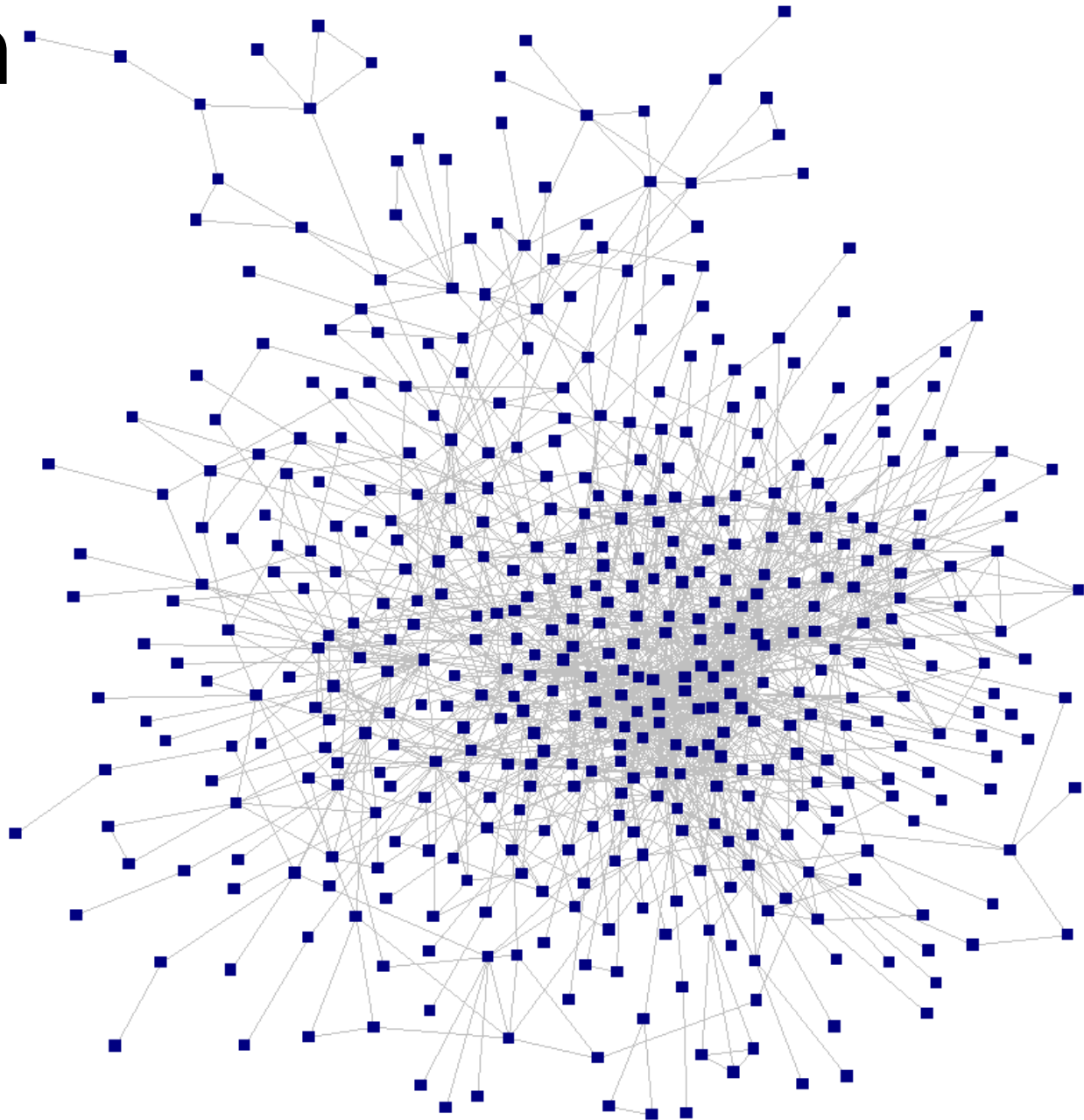
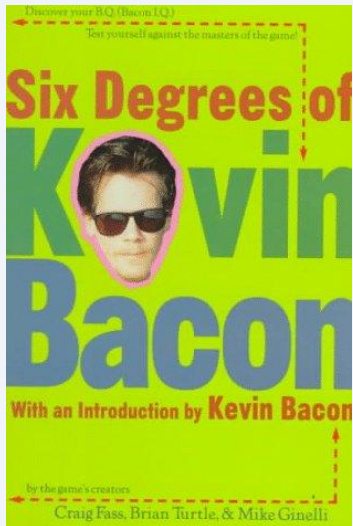
Directed



Undirected

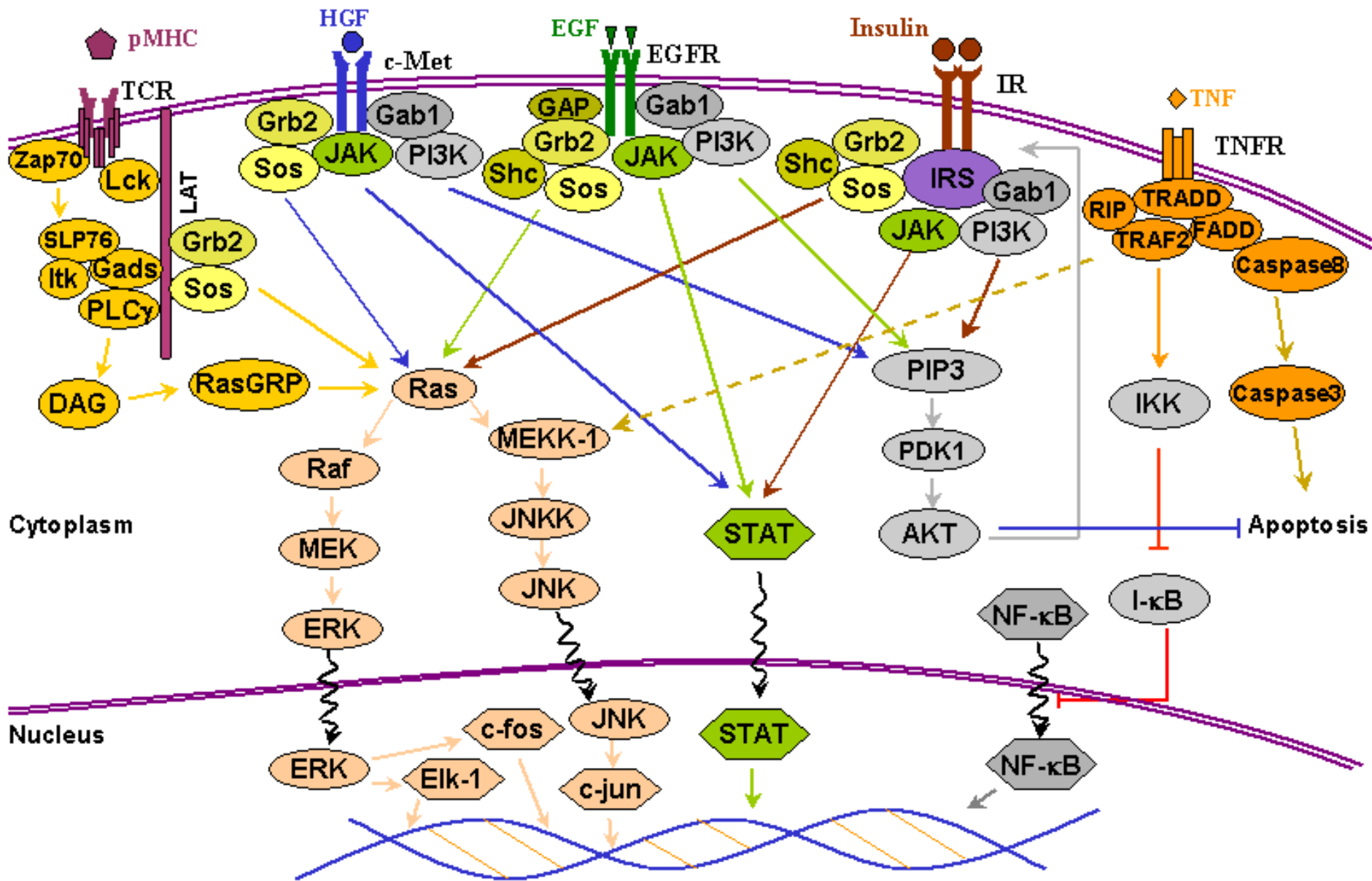
Social graph

How are you connected to someone else?

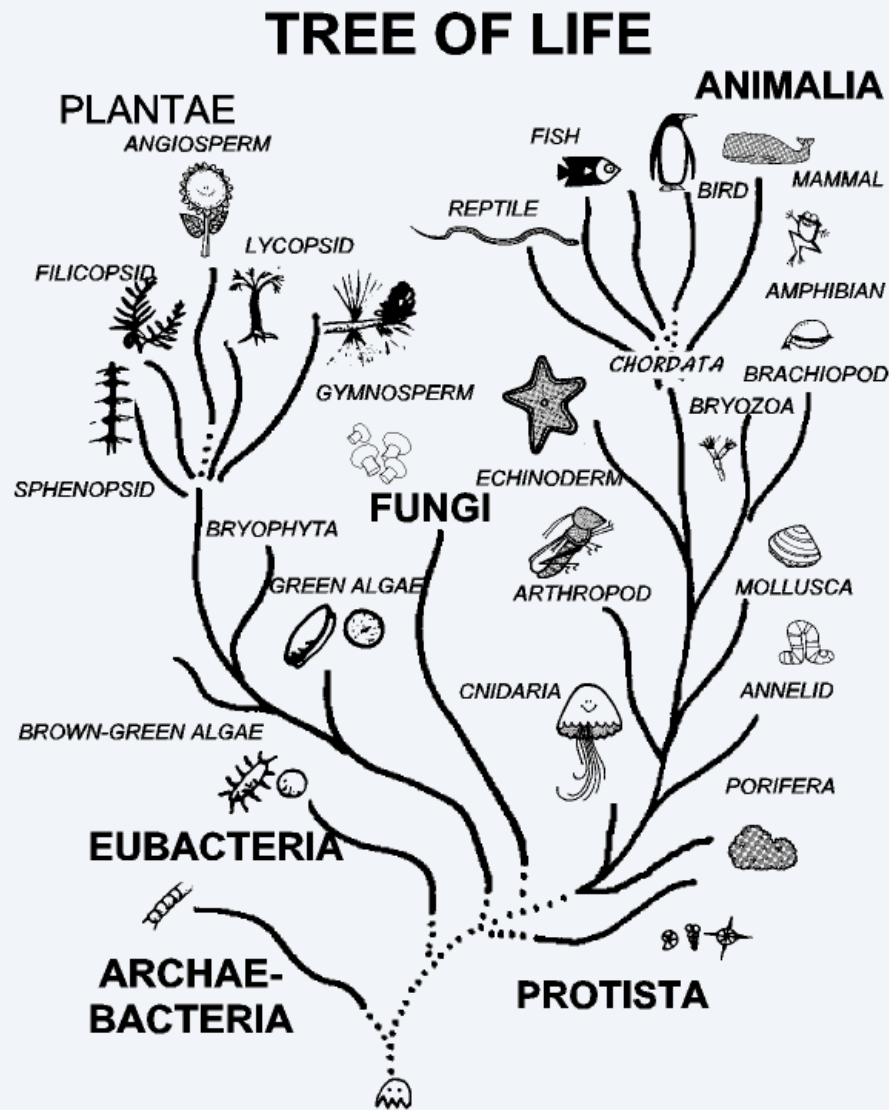
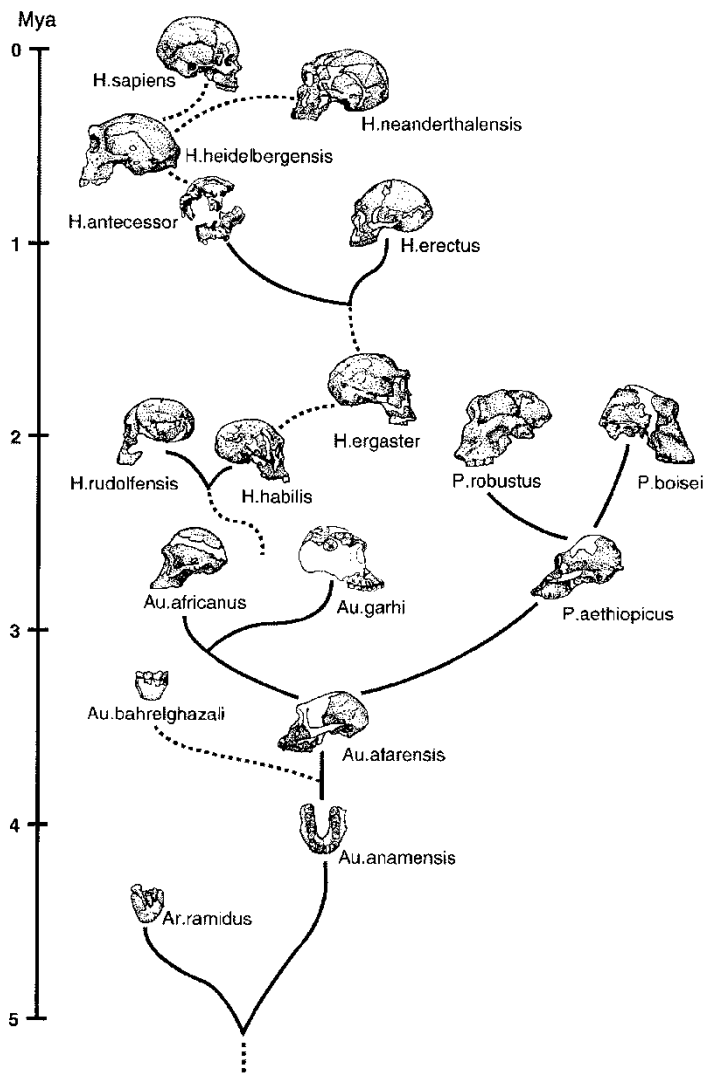


Math co-authors, centered on Paul Erdős.

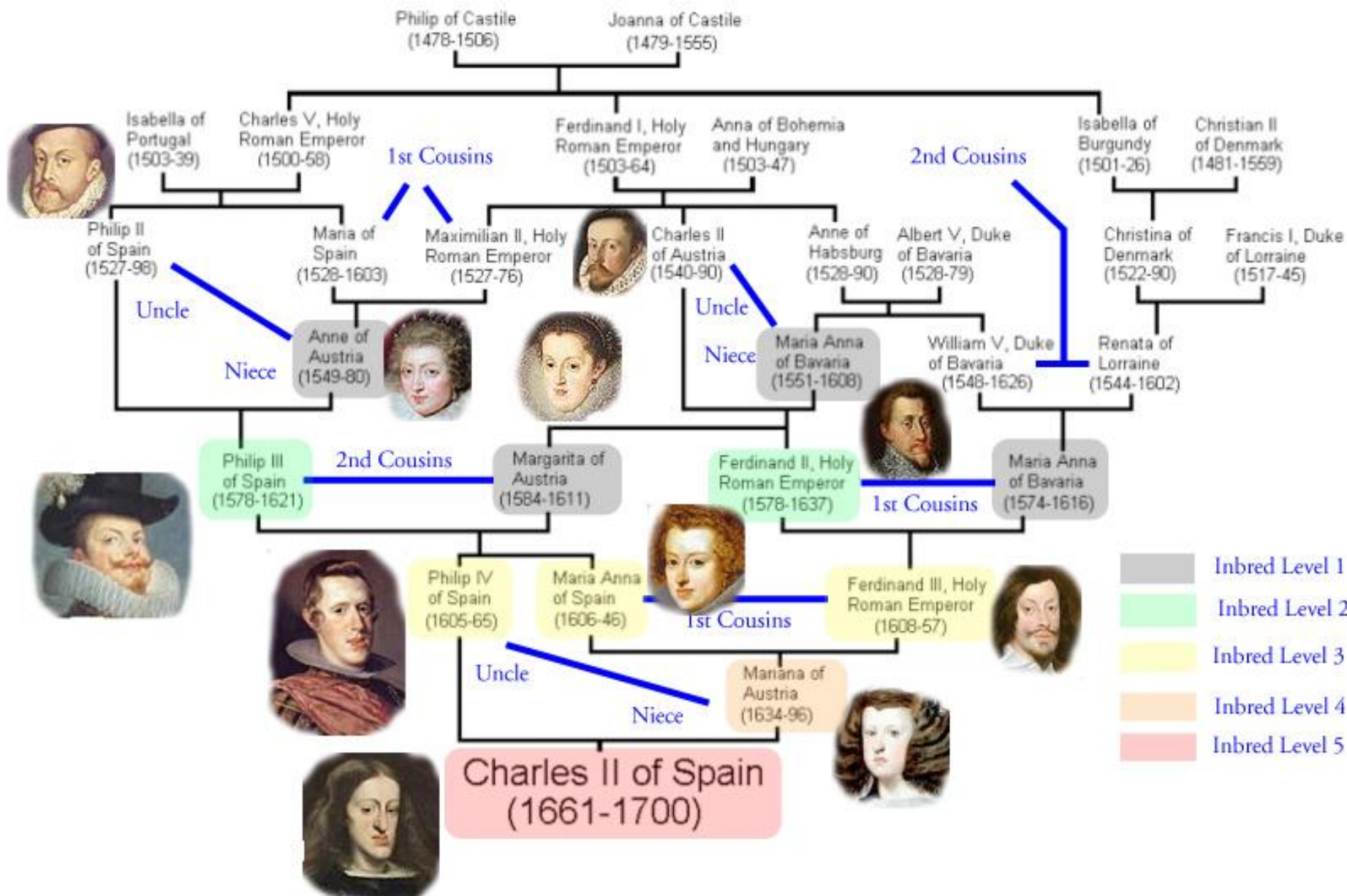
Can Introducing Hepocyte Growth Factor Lead to Apoptosis?



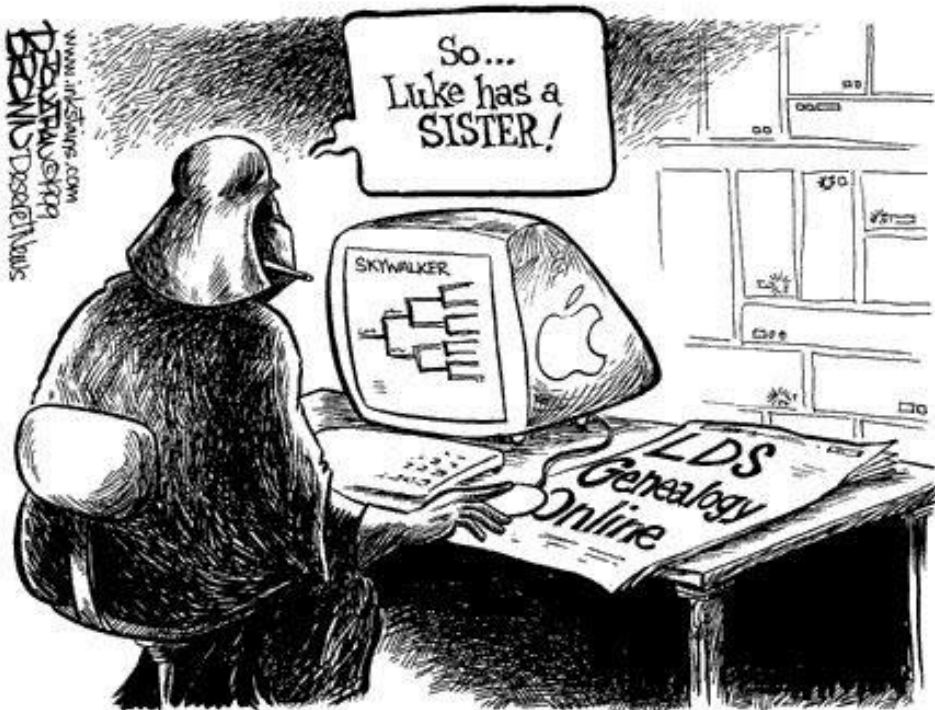
How are Two Species Related?



The Inbreeding of Charles II of Spain (1661-1700)



Discovering Your Own Relations



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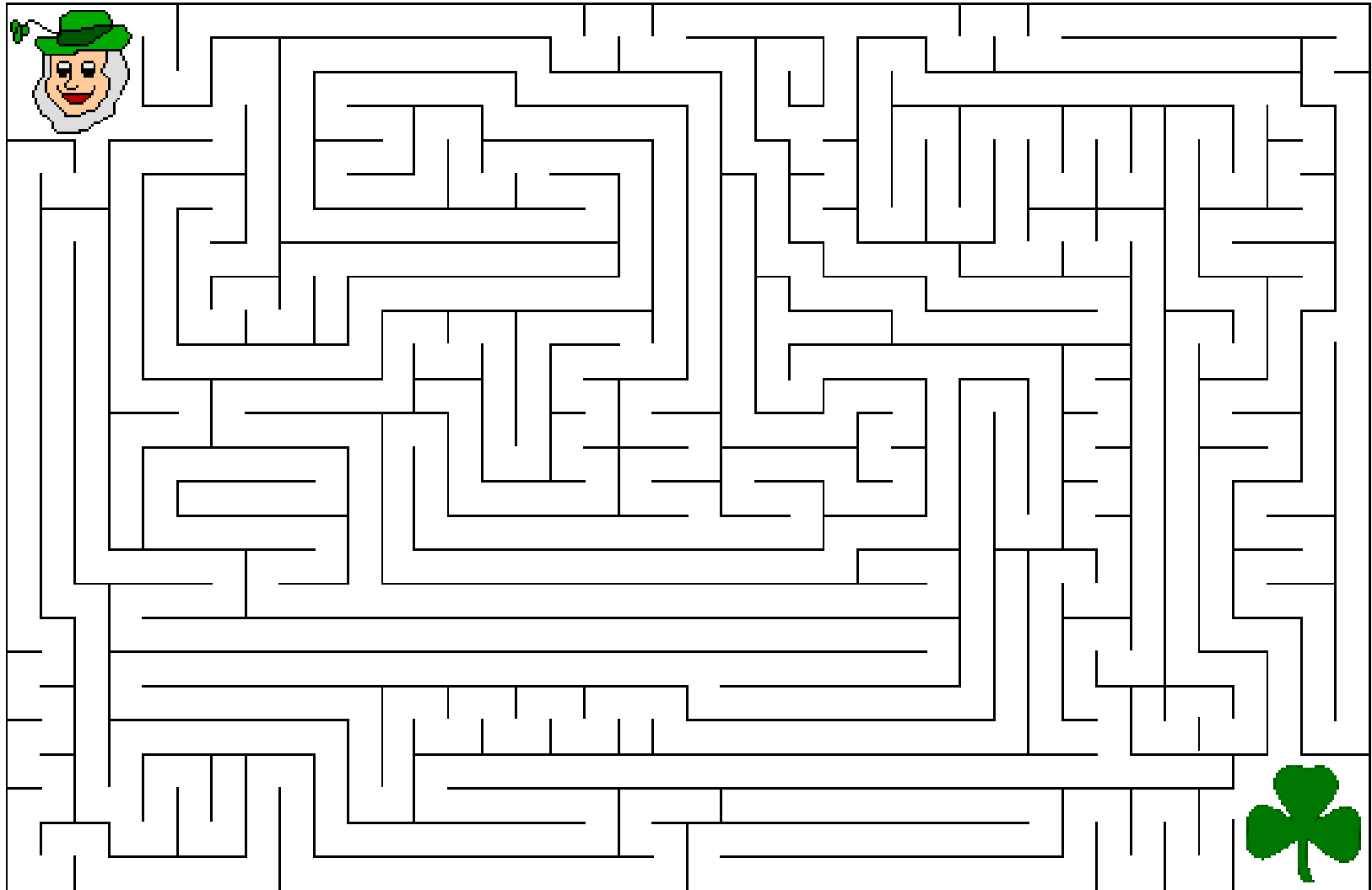
GENEALOGY
FAMILY TREE RESEARCH



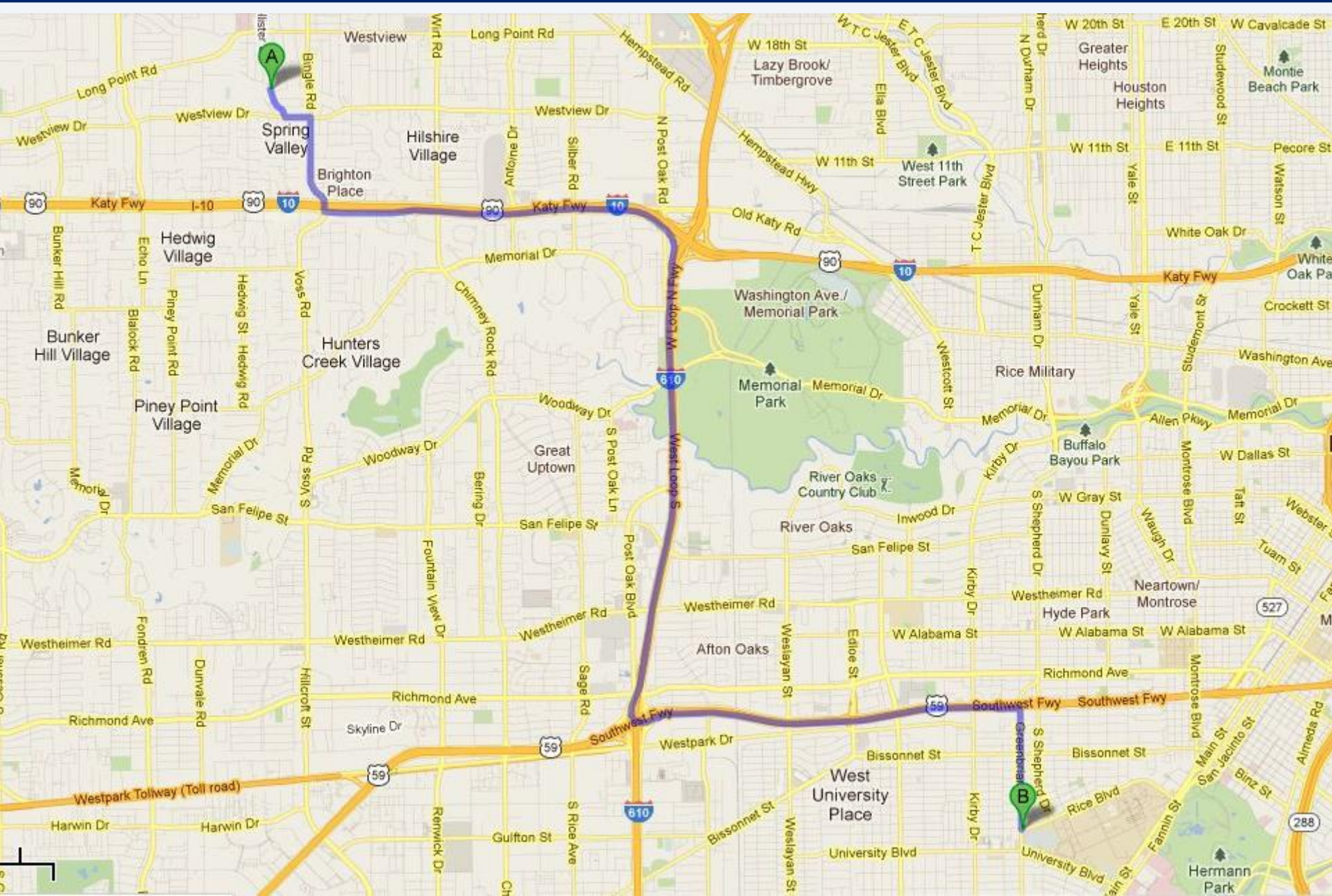
"Whoa! — John Wilkes Booth
and Benedict Arnold?"

How to Solve a Maze?

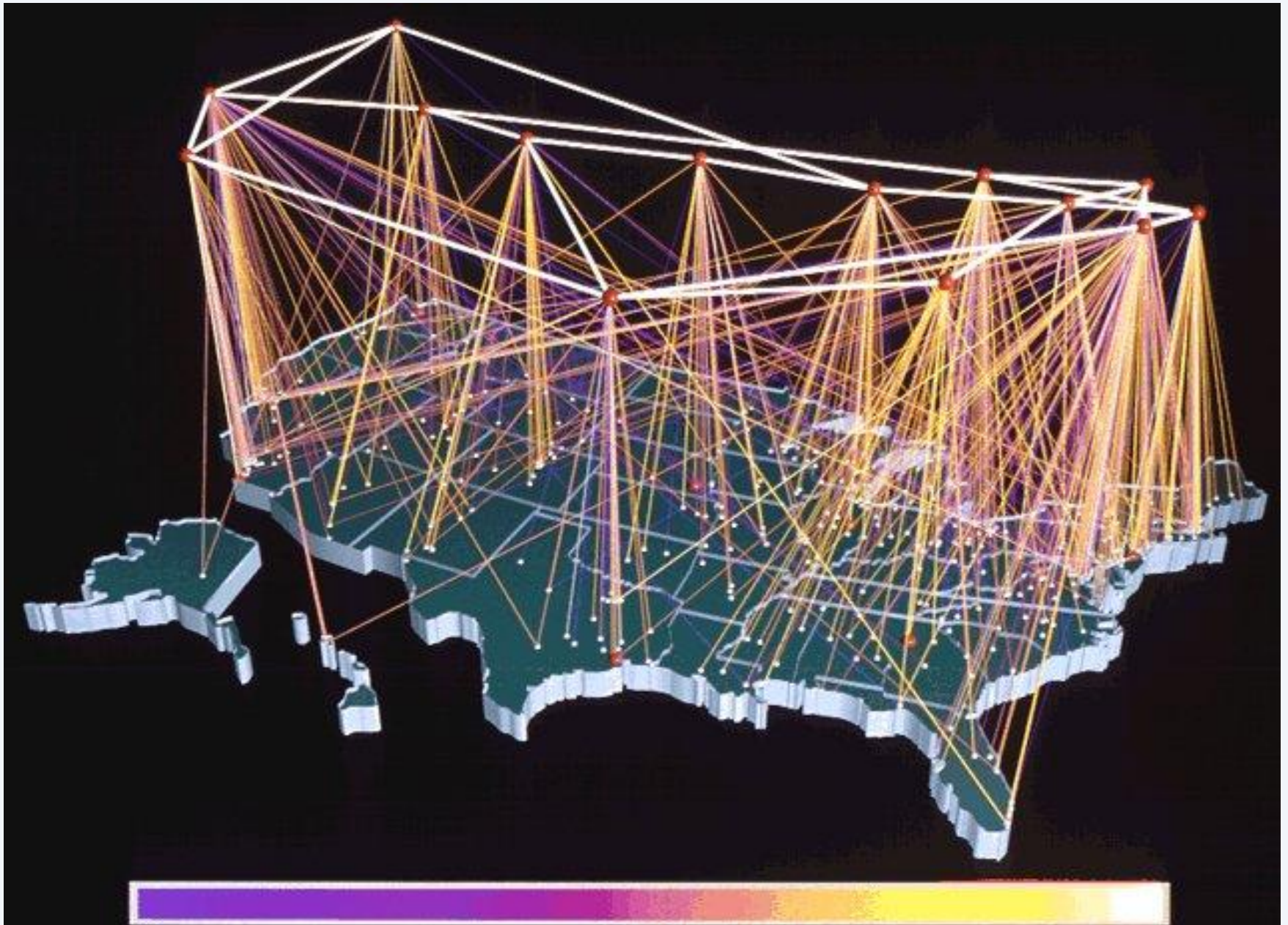
Happy Saint Patrick's Day!



How to Get to Work?



How to Route Email?



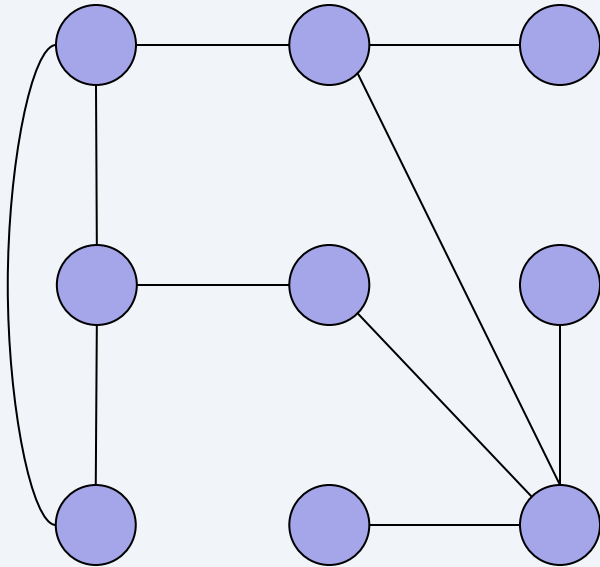
Focus on Three Algorithms

- Depth-first Search
- Breadth-first Search
- Dijkstra's Shortest Path

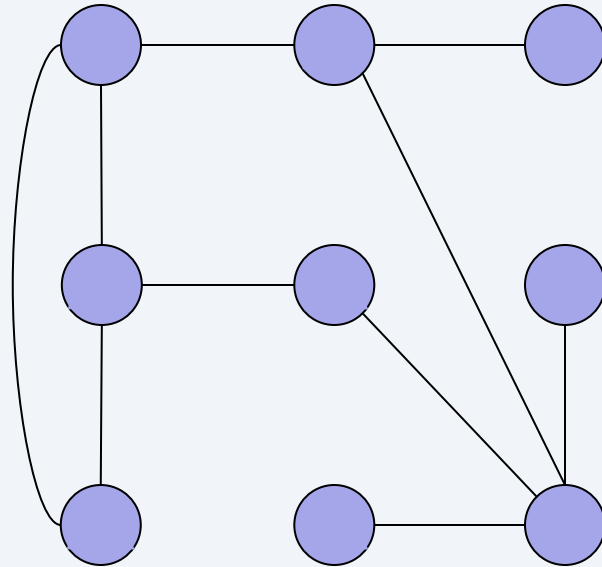
First, just quick introductions to each.

Depth- vs. Breadth-First Search

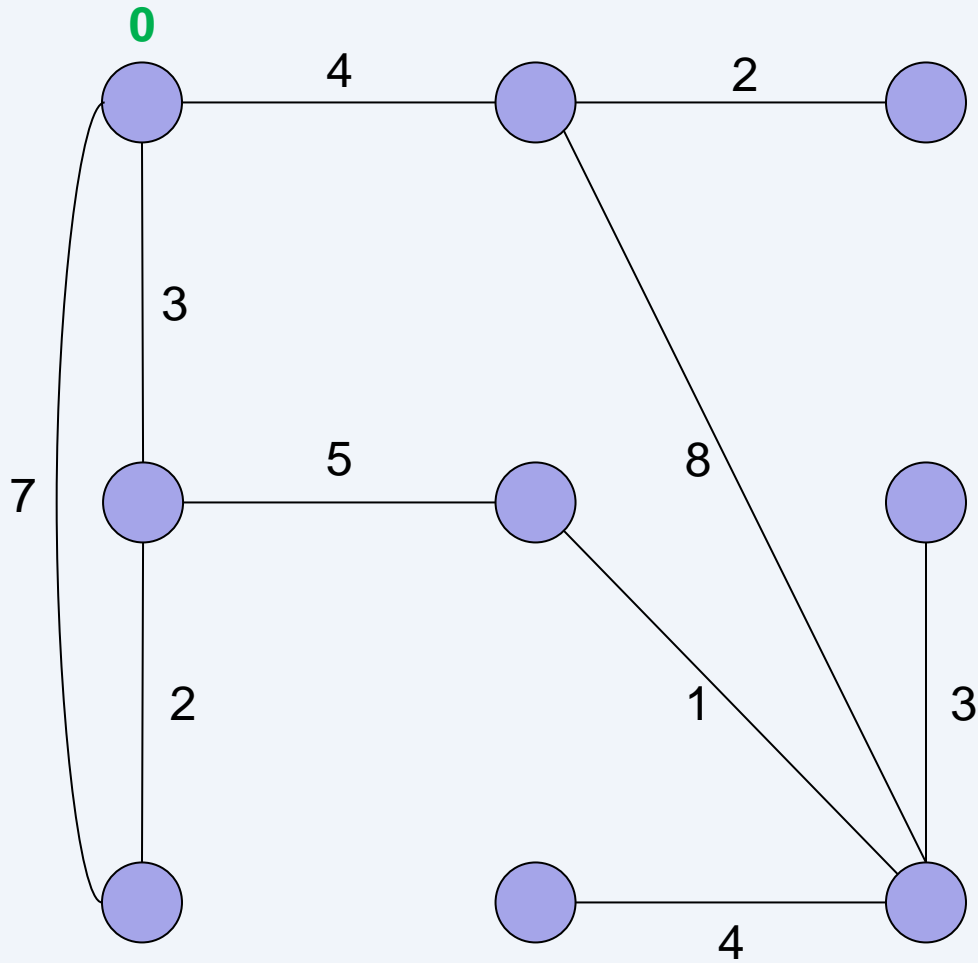
DFS



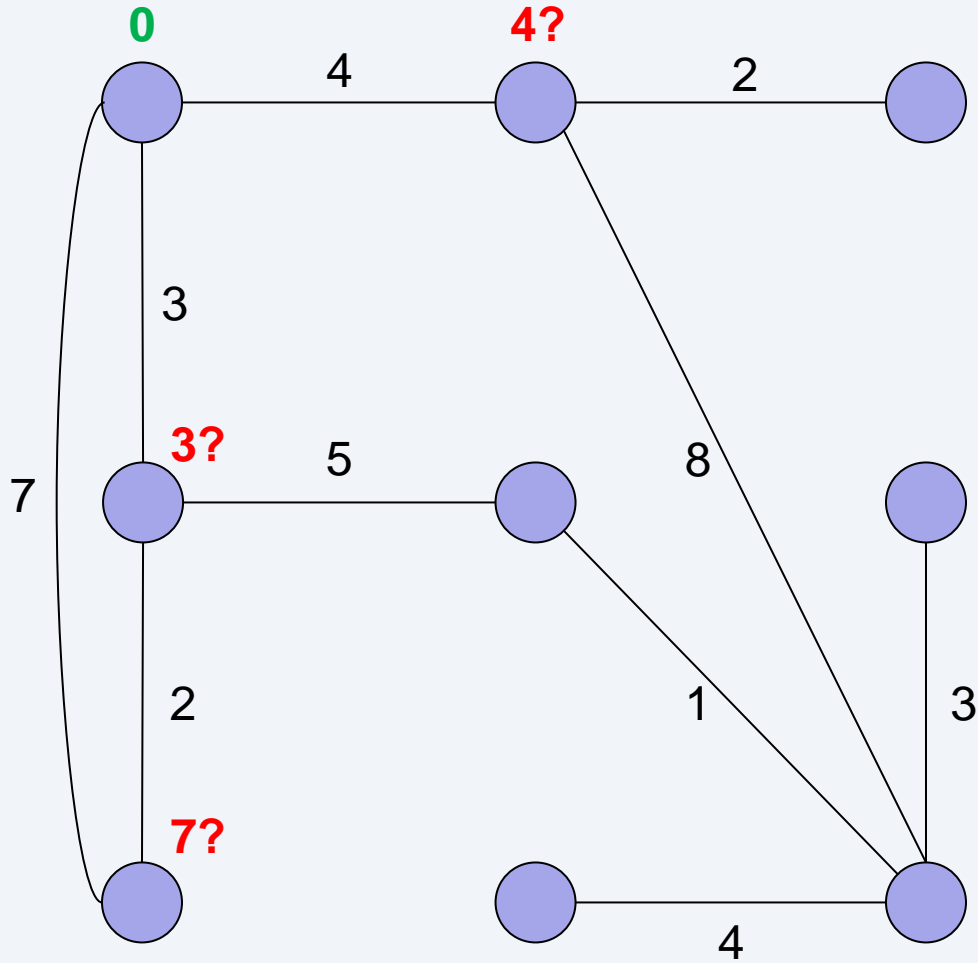
BFS



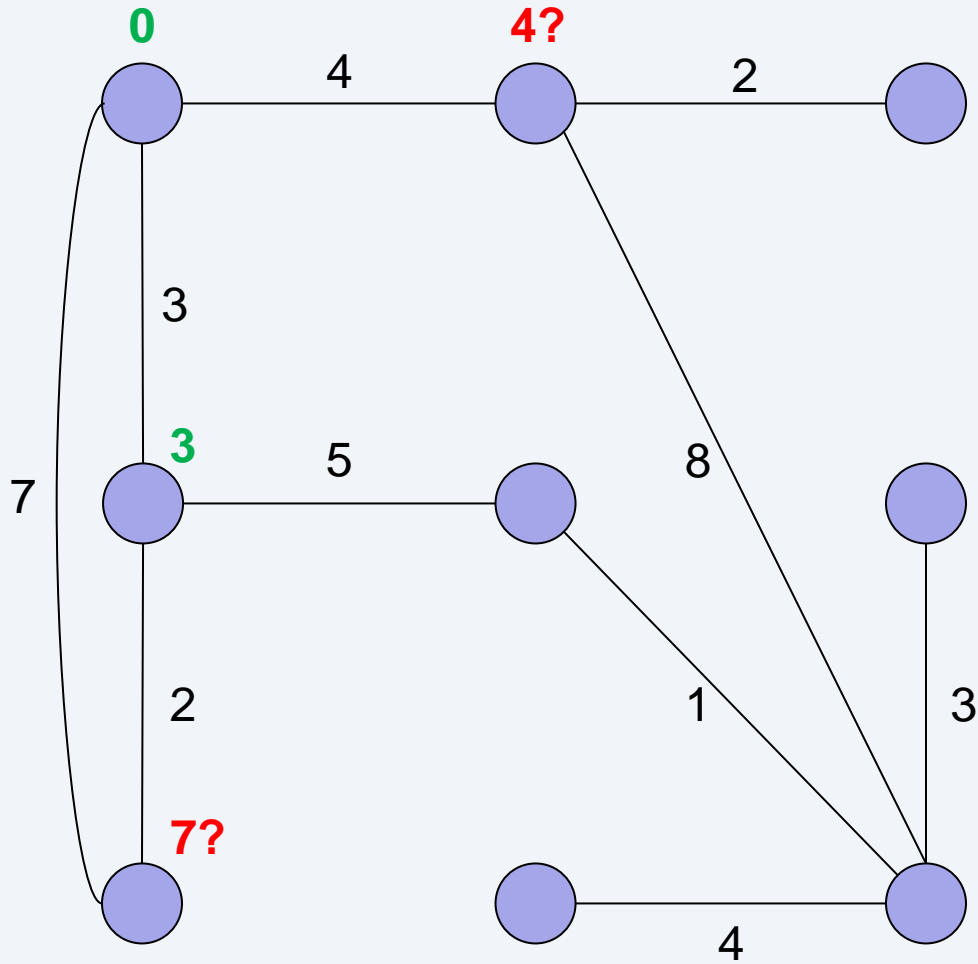
Dijkstra's Shortest Path



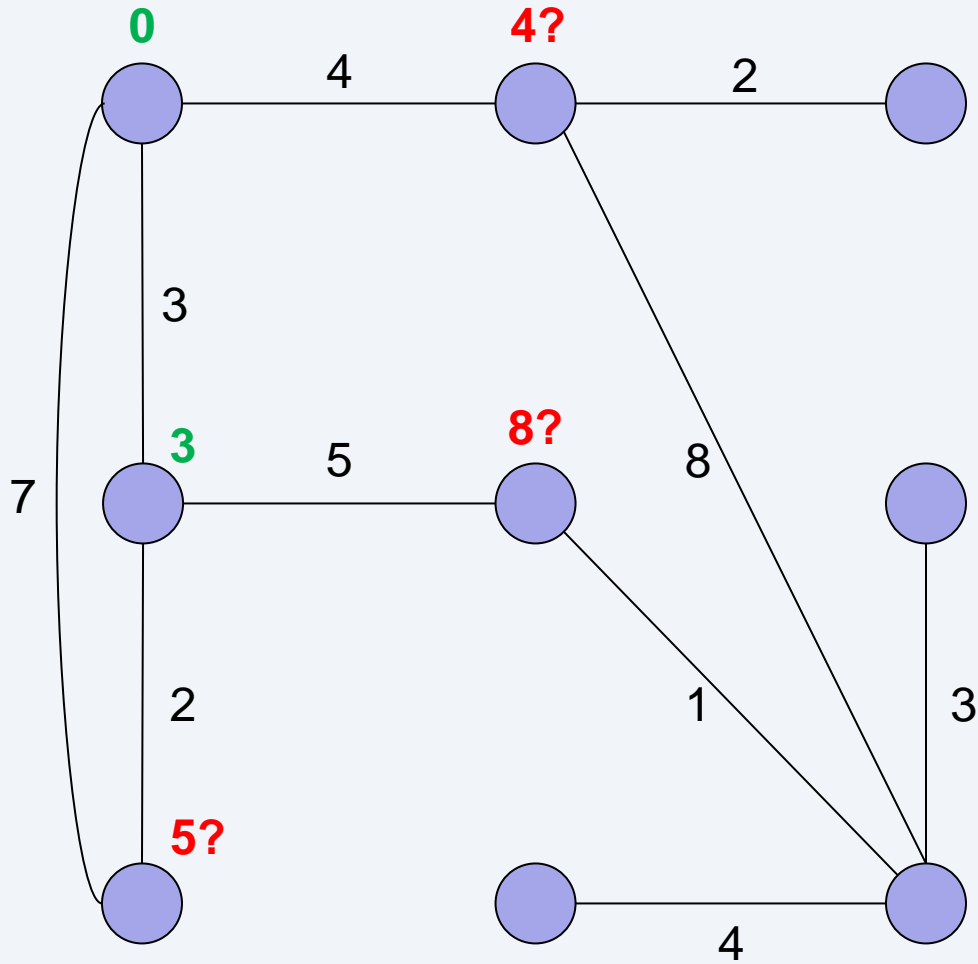
Dijkstra's Shortest Path



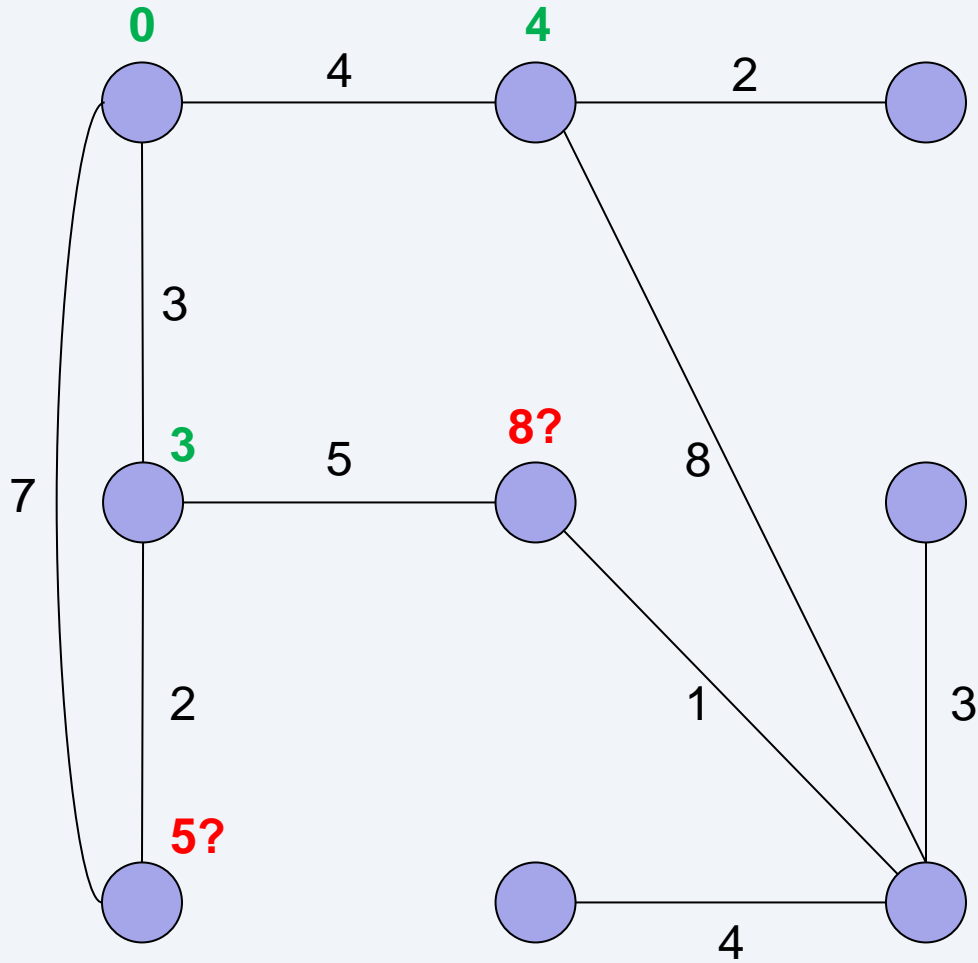
Dijkstra's Shortest Path



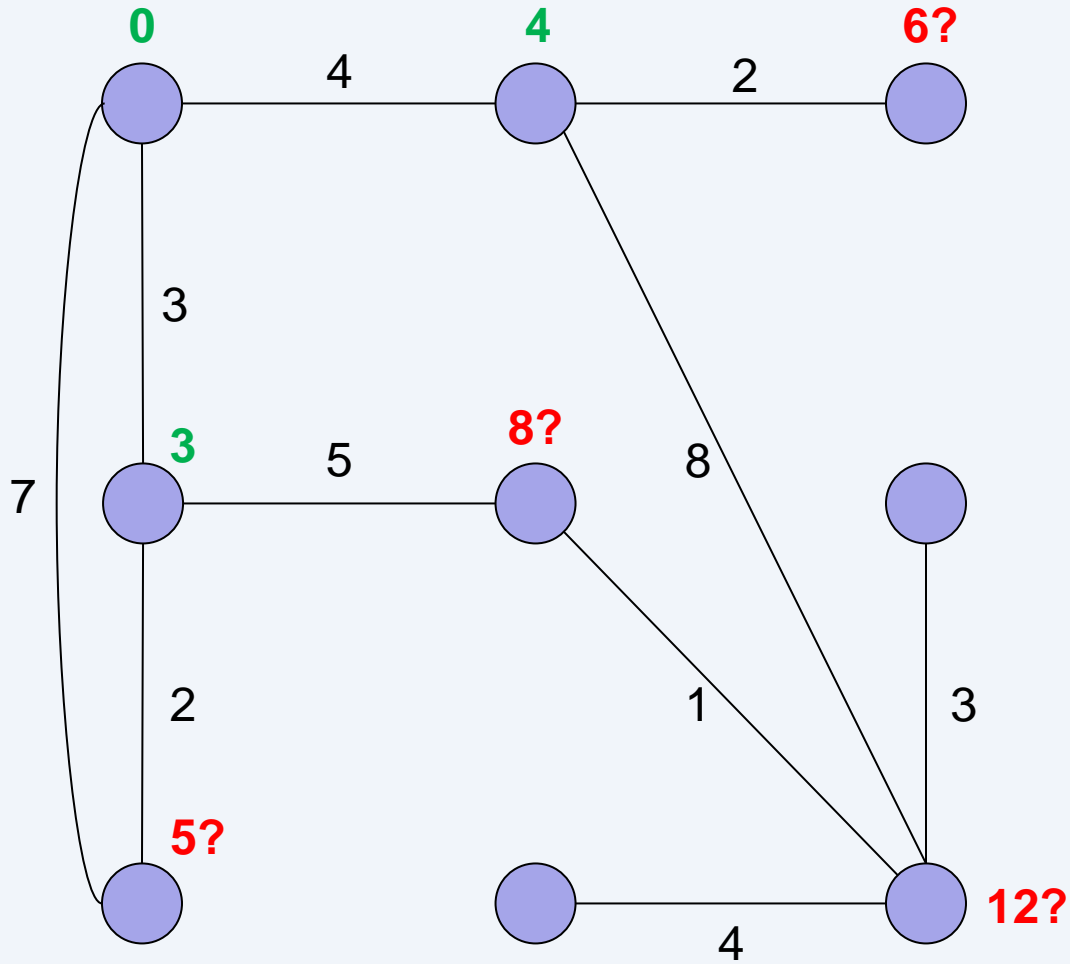
Dijkstra's Shortest Path



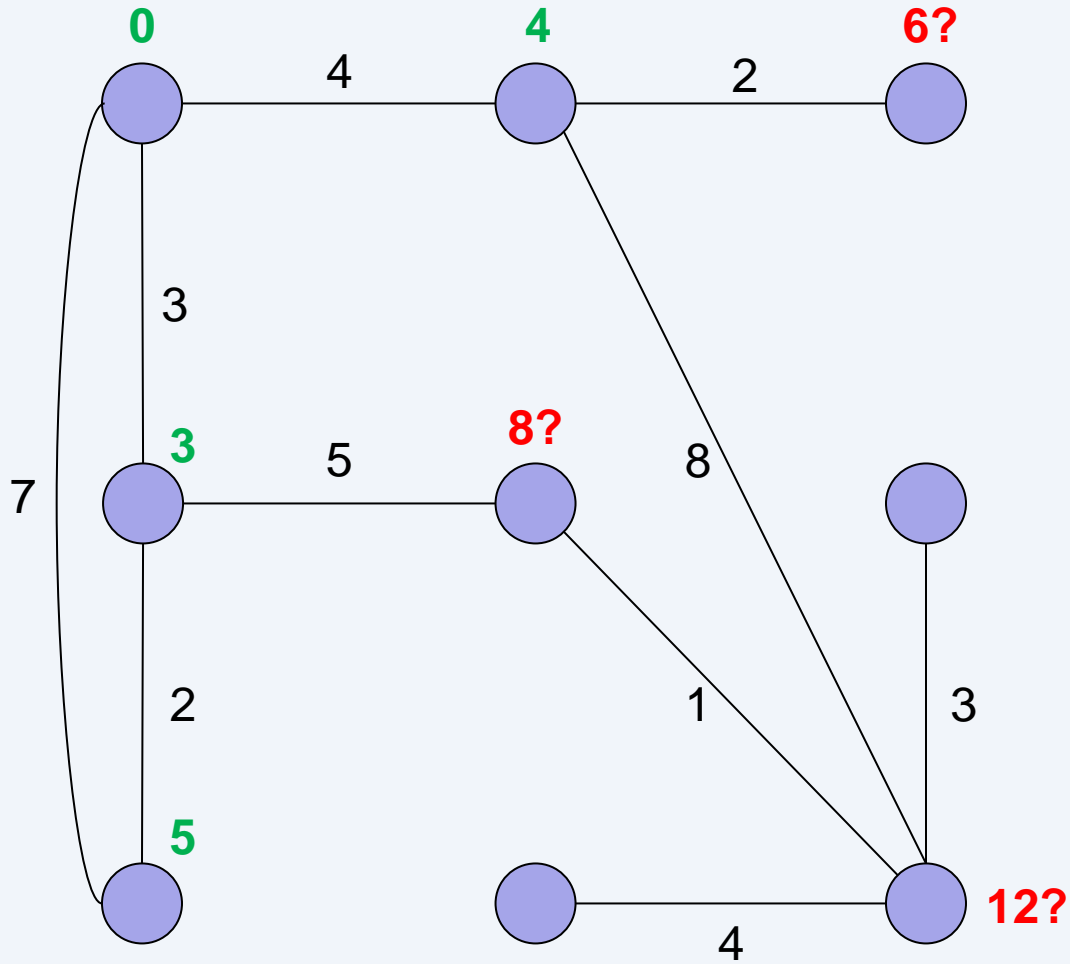
Dijkstra's Shortest Path



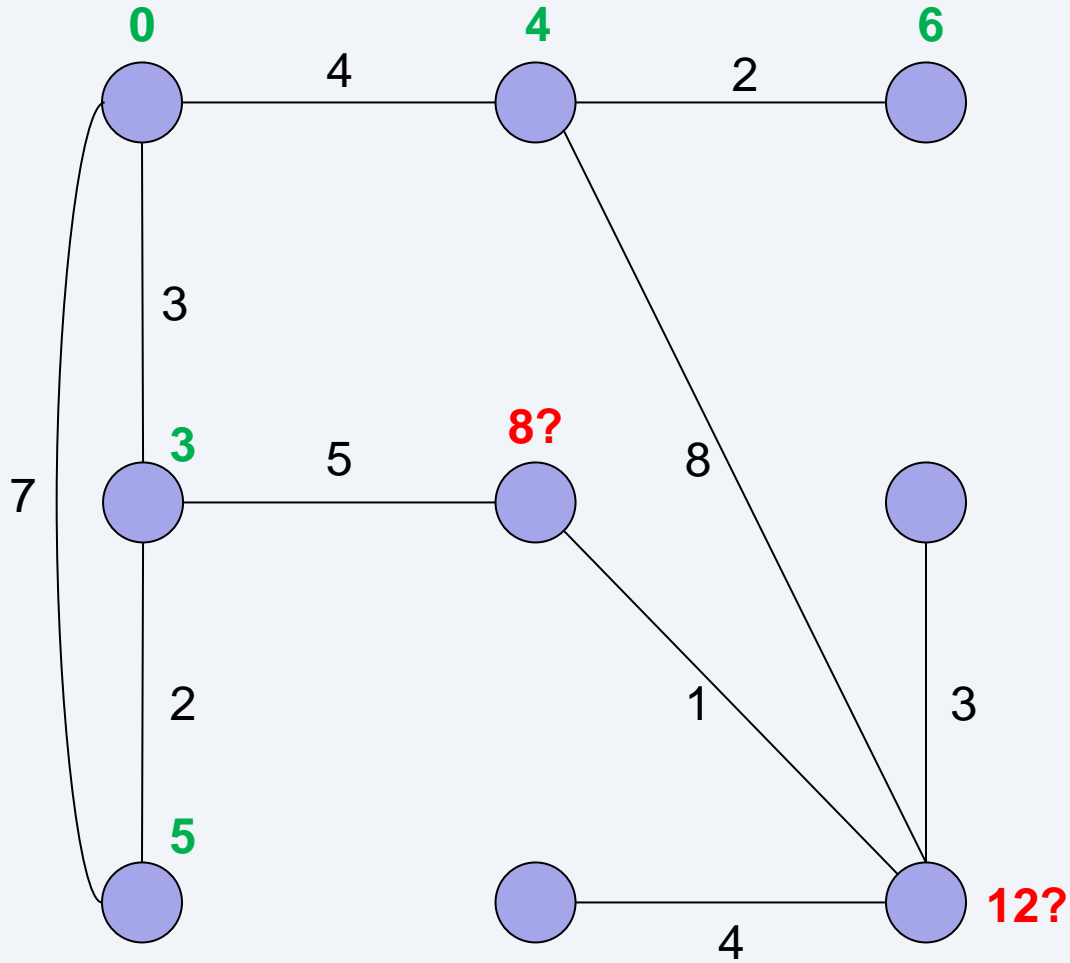
Dijkstra's Shortest Path



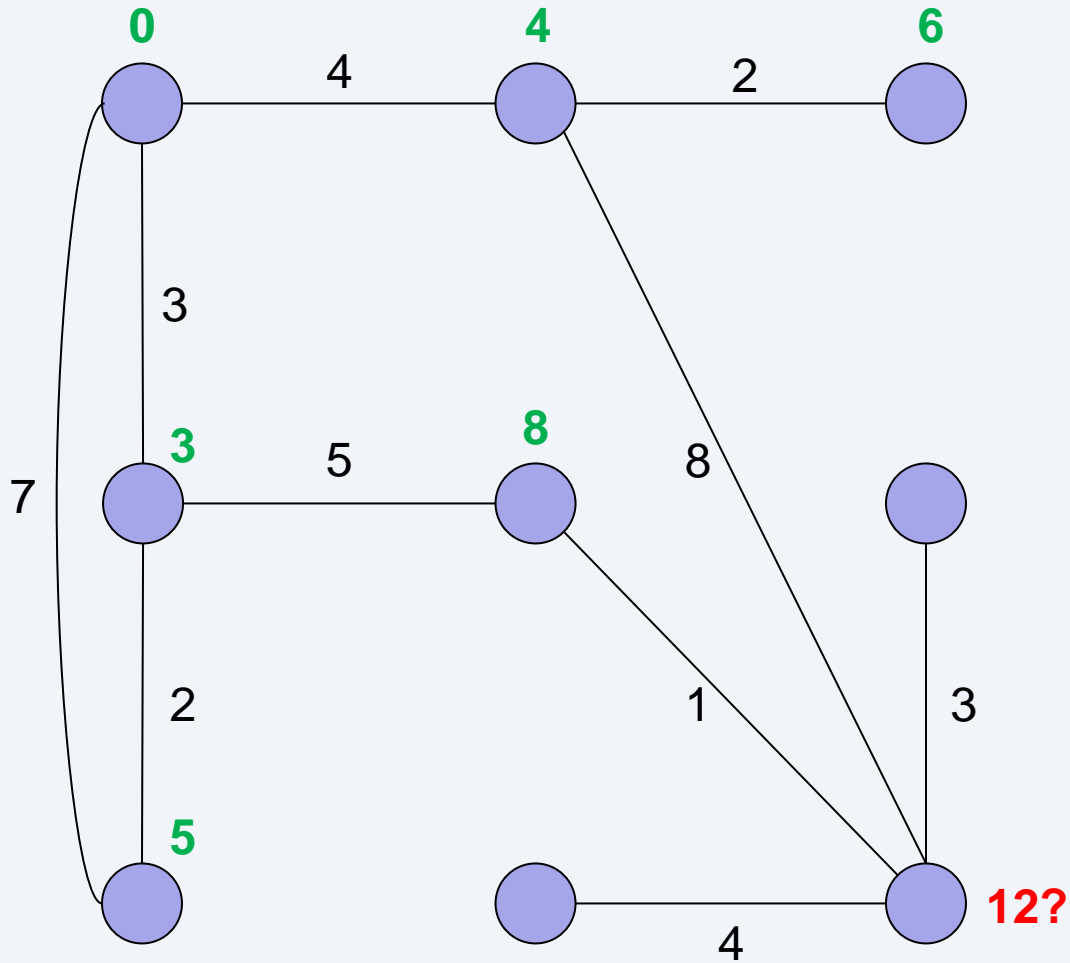
Dijkstra's Shortest Path



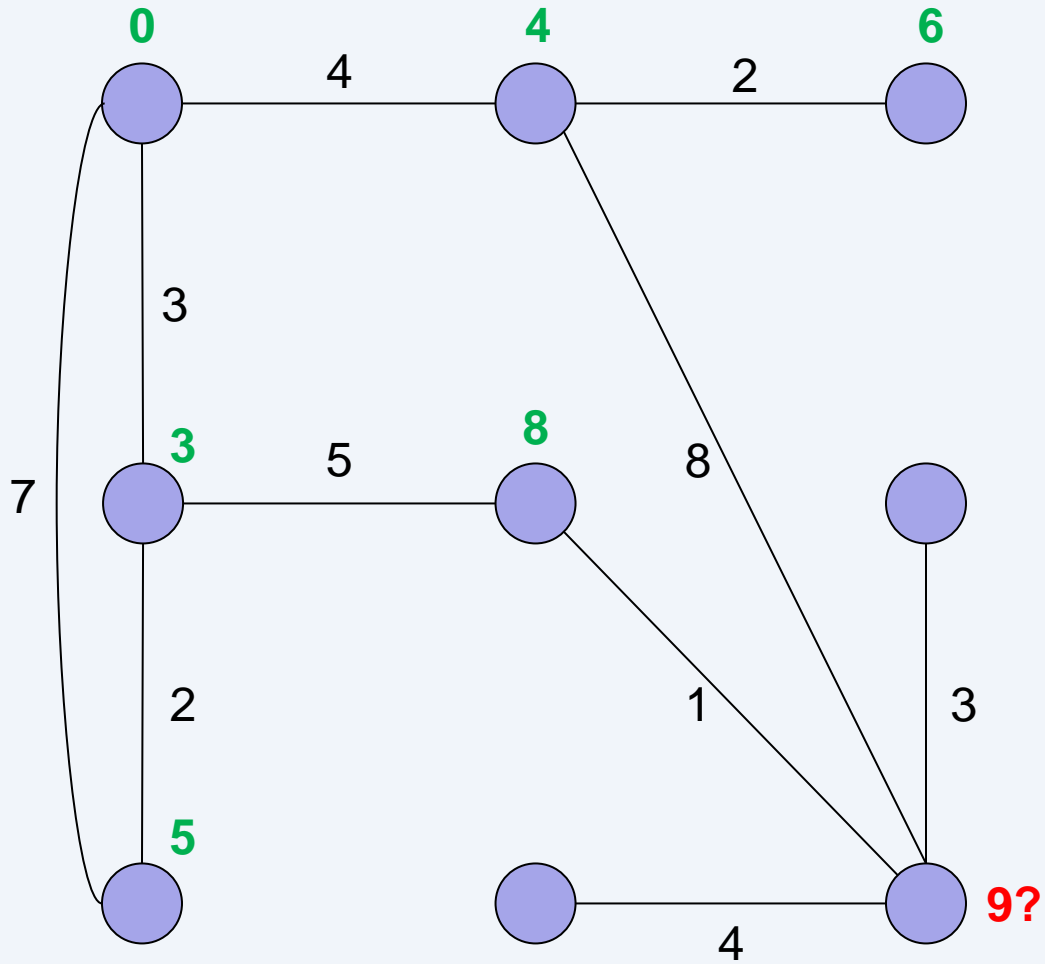
Dijkstra's Shortest Path



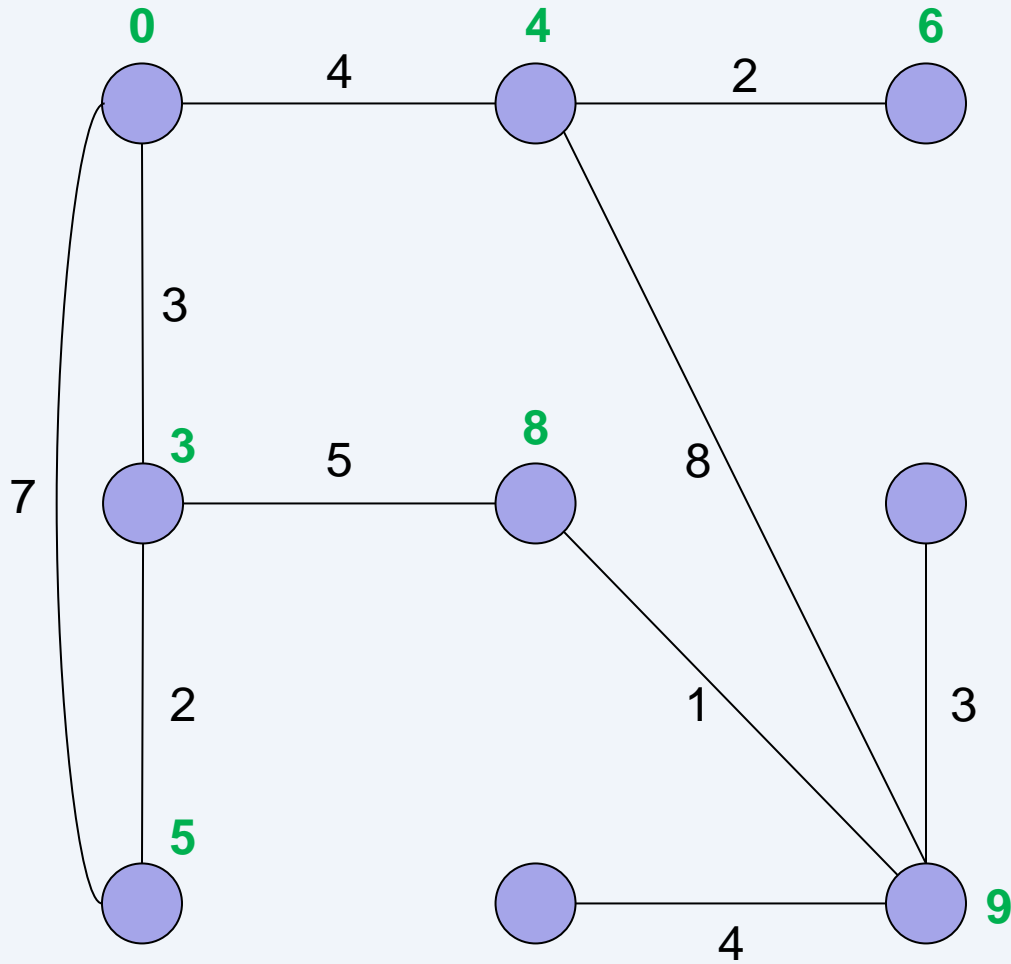
Dijkstra's Shortest Path



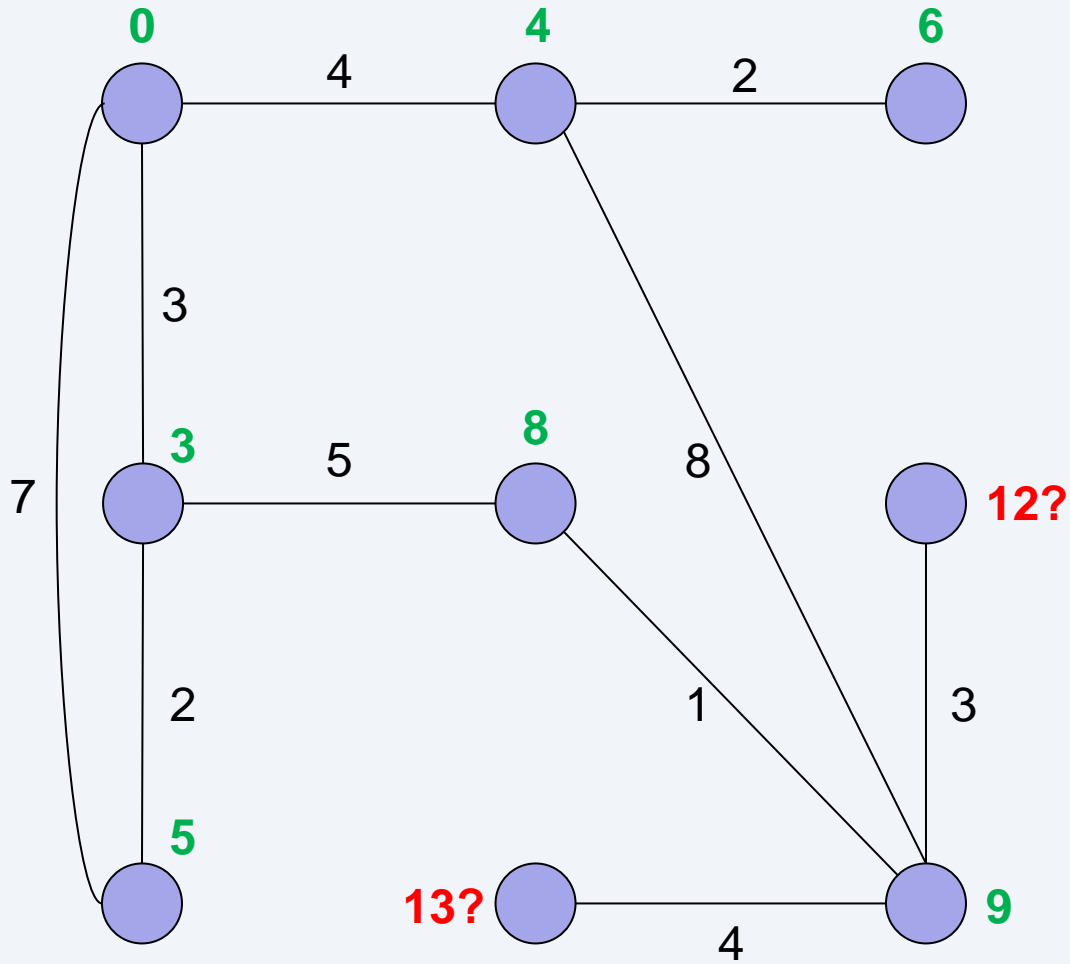
Dijkstra's Shortest Path



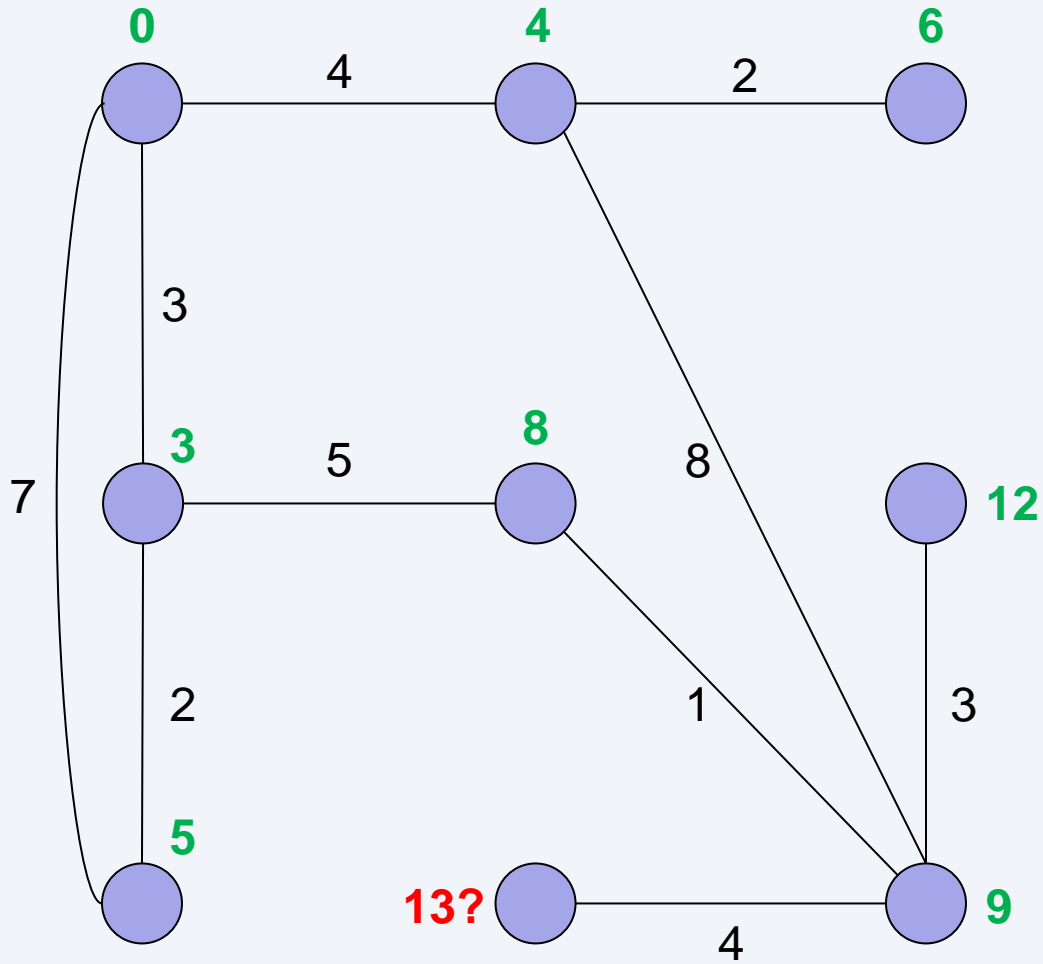
Dijkstra's Shortest Path



Dijkstra's Shortest Path



Dijkstra's Shortest Path



Dijkstra's Shortest Path

