

Last name _____

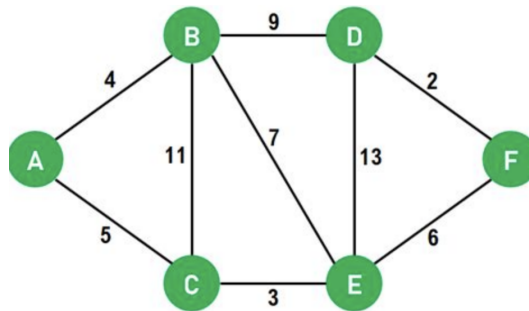
First name _____

LARSON—MATH 356—CLASSROOM WORKSHEET 04
Dijkstra's Algorithm.

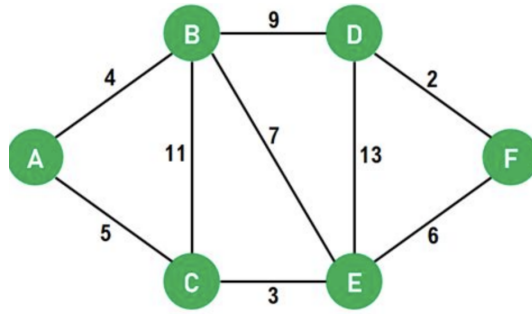
- Describe an algorithm (recipe, method) to find a maximum independent set in a graph?
- This algorithm requires checking all the subsets of vertices of a graph. How many are there? (How many subsets are there to check for a graph with n vertices?)
- Suppose you are running a computer program that requires 2^{1000} iterations. How long would that take on a computer that can do 1 trillion of these iterations per second?
- What is a *weighted graph*?

Algorithms

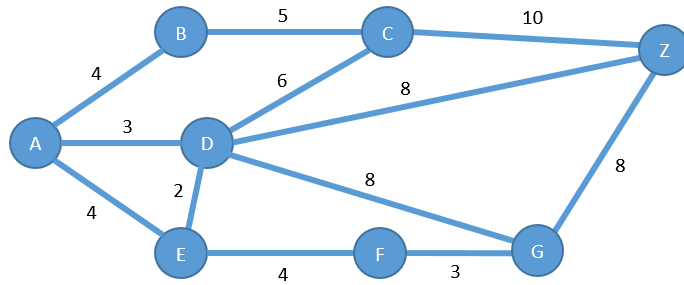
1. What is a *shortest path* between two vertices in a weighted graph?



2. Find a shortest path from vertex A to vertex F in this graph?
3. What is an algorithm (recipe, method) for finding a shortest path between two vertices in graph with positive edge weights?
4. What is *Dijkstra's algorithm* for finding a shortest path between two vertices in graph with positive edge weights?



5. Use Dijkstra's algorithm to find a shortest path from A to F .



6. Use Dijkstra's algorithm to find a shortest path from A to Z .

7. How "fast" is Dijkstra's algorithm? What can we say here?