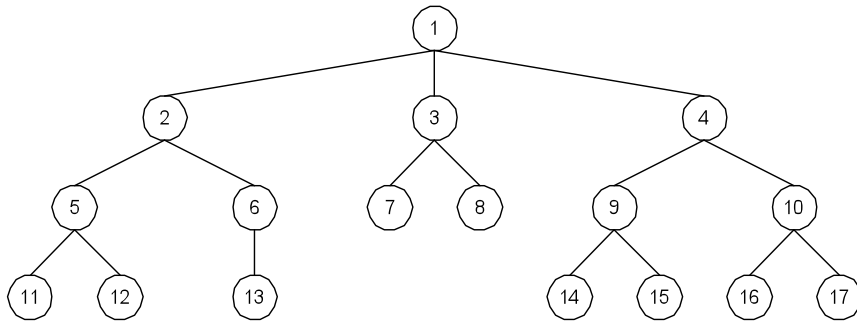
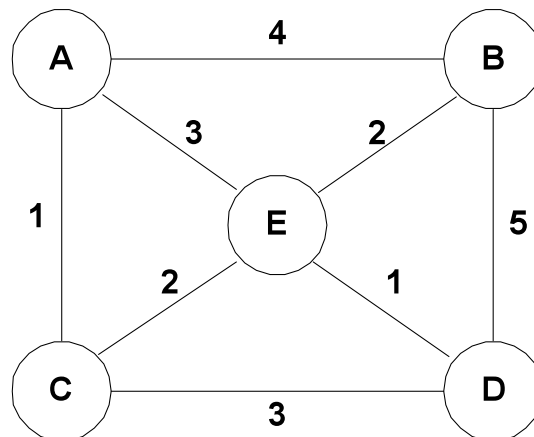


Homework Uninformed Search

- 1) Exercise 3.5 from book.
- 2) Think of a way to adapt BFS such that its time and space complexity are $O(b^d)$ instead of $O(b^{\{d+1\}})$.
- 3) For the following tree, list the order in which the nodes are visited for the following three search strategies
 - a. Depth-First Search
 - b. Depth-First Iterative-Deepening Search
 - c. Breath-First Search



- 4) Consider the following road map of cities:



Each city has a road connecting it to another city. The numbers on the road indicate how long it takes to travel between cities. Suppose you live in city A. You want to plan a trip that visits each city only once that starts and ends at home. For example, the trip ABDCEA (meaning you go from city A to B, then to D, etc) is one such path that would take you 17 hours to follow. Your goal is to choose a path that minimizes the time spent traveling. (Note: this is called the *Traveling Salesman Problem*, described on pg 68)

- a. Formulate the state space for the problem
- b. Draw a diagram of the complete state space, describing what the actions are
- c. Describe a breath first search algorithm, and find the shortest trip from A to A that visits all cities.
- d. Compare the time & space requirements for Depth-First search & Breadth-First Search on this problem.
- e. Would uniform-cost search work well with this problem?