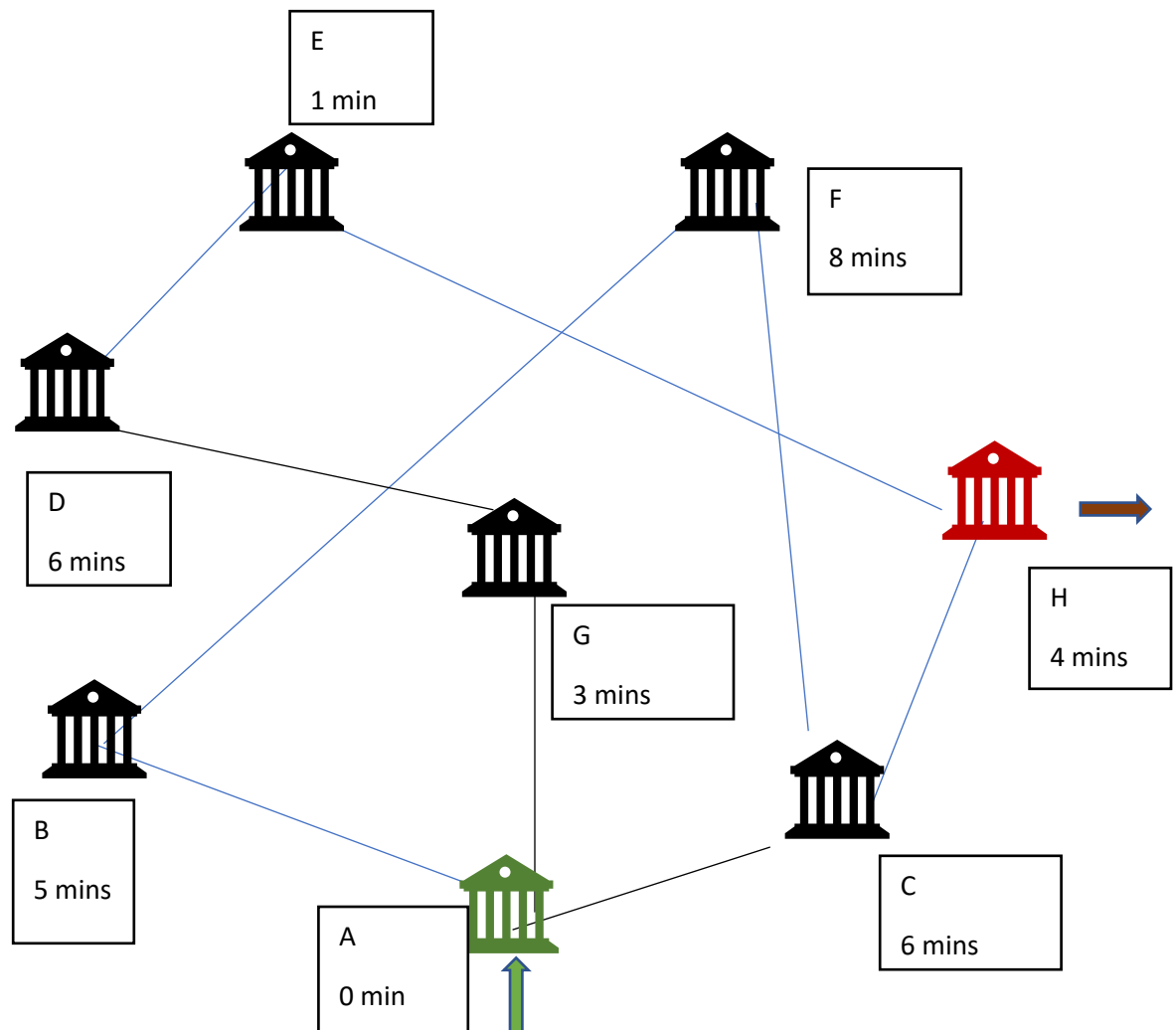




# Scenarios for Assignment

## Uniform Cost Search



Suppose a man went for a walk in a park. The park's entrance is represented by gate A, which is green, while its exit is represented by red colored gate G. There are various gates inside the park that you can open by pressing the button on the gate. Except for the entry gate, each gate needs a certain amount of time to open after being pressed. The man uses the entrance gate to enter the park. His workplace is close to the park's exit gate. He must pass through several gates in order to reach the exit gate. The man, however, just has 20 minutes left to go to work on time. Now write a program to assess the man's ability to get to the office on time and also show the path across the gates which requires minimum amount of time to reach the exit gate.

### Simulated annealing

Assume Nowkshi has a variety of boxes on her shelf that are categorized by size, ranging from 1 to 20. Nowkshi wants to organize the boxes one inside the other to save space in her shelf. The fact that larger boxes will not fit within the smaller ones is now standard. Now create a program to assist Nowkshi with organizing her shelf by providing a series of boxes arranged in ascending order of size.

### K-means clustering

Consider receiving the coordinates for a few towns. The locations of the cities on a two-dimensional map are indicated by each coordinate. You now wish to use coordinate information to construct three huge cities made up of a few towns. Now create a program that divides these towns into three major cities based on their locations on the map using the k-means clustering algorithm.