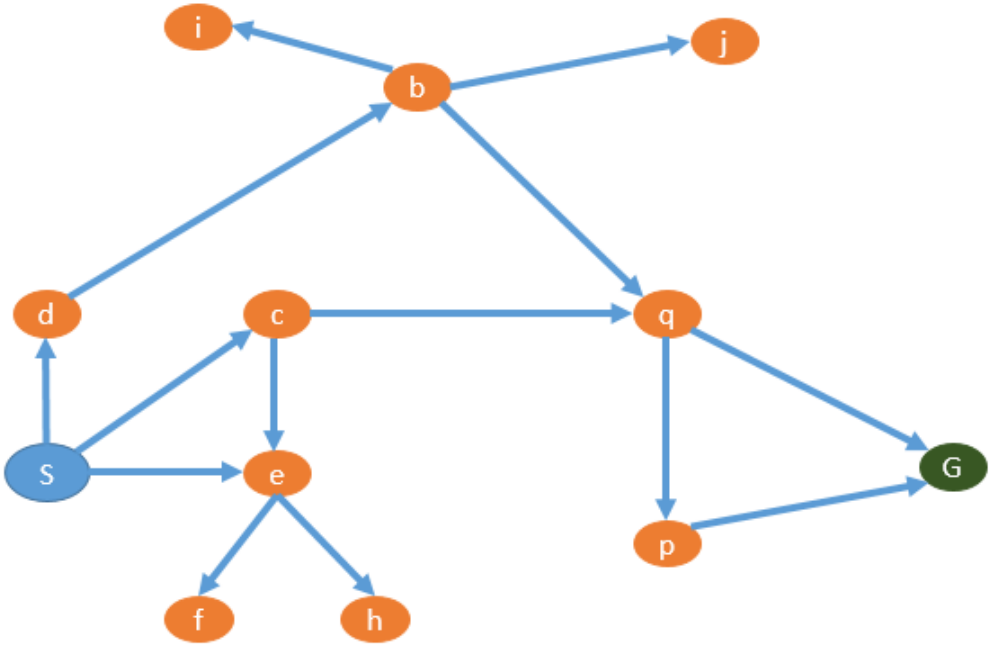
19th October 2020

BIUST
Faculty of Engineering
Electrical, Computer and Telecommunications Department

EEEN 519
Assignment 01

Due end of academic calendar week 06

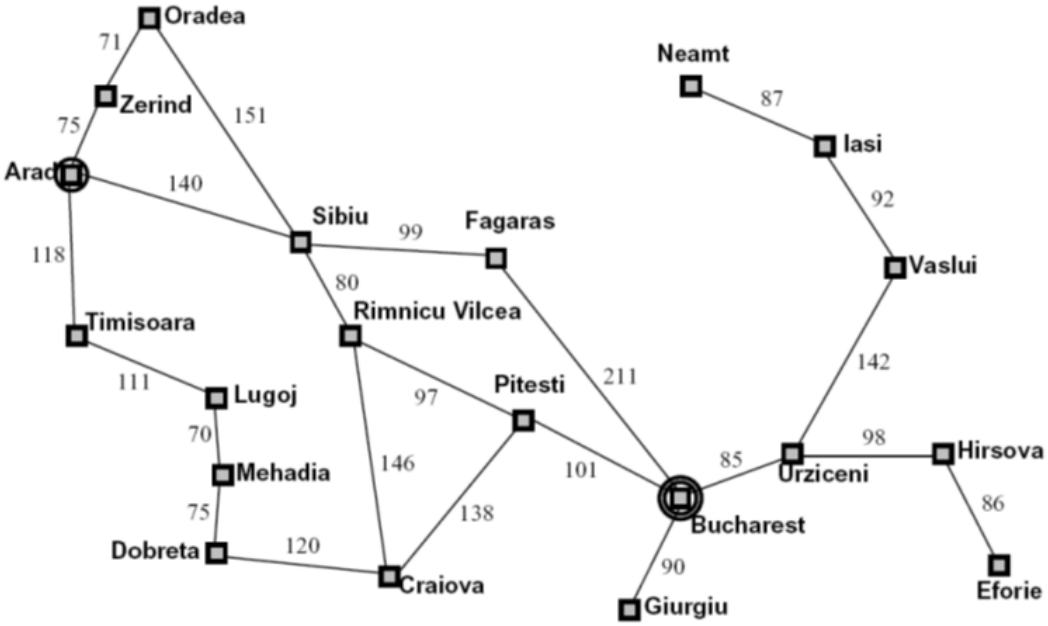
1. What is a search problem? **[2 marks]**
2. What is a search solution? **[2 marks]**
3. Given the state space graph below:



   a. Draw the search tree given that 'S' is the start state (node) and 'G' is the goal state (node)? **[10 marks]**
   b. Write the Fringe from 'start to goal' using:
      i. DFS
      ii. BFS **[10 marks]**
   c. Write the pseudo code for searching the tree. **[5 marks]**
   d. After deriving the search tree, solve the search problem using depth-first search (DFS) method. (You must use python together with eclipse) **[10 marks]**

e. After deriving the search tree, solve the search problem using breadth-first search (BFS) method. (You must use python together with eclipse) **[10 marks]**

4. Given the state space graph below:



a. Draw the search tree given that 'S' is the start state (node) and 'G' is the goal state (node)? **Arad is starting point and Bucharest is goal**. **[10 marks]**

b. Write the Fringe from 'start to goal' using:

   i. **DFS**

   ii. **BFS** **[10 marks]**

c. Write the pseudo code for searching the tree. **[5 marks]**

d. After deriving the search tree, solve the search problem using depth-first search (DFS) method. (You must use python together with PyCharm) **[10 marks]**

e. After deriving the search tree, solve the search problem using breadth-first search (BFS) method. (You must use python together with PyCharm) **[10 marks]**

f. What are the main differences between DFS and BFS? **[2 marks]**

g. When is it advantageous to use DFS over BFS? **[2 marks]**

h. When is it advantageous to use BFS over DFS? **[2 marks]**

TOTAL MARKS = 100