LAB # 6:

GREEDY BEST FIRST SEARCH FOR GRAPHS

Objectives:
- To implement Greedy Best First Search (GBFS or GFS) algorithm for graphs using python

Hardware/Software Required:

Hardware: Desktop/ Notebook Computer
Software Tool: Python 2.7/ 3.6.2

Introduction:

Greedy Best First Search (GBFS) is based on greedy algorithm in which each node with the locally optimal cost is expanded regardless of globally optimal substructures. Since at any level, GBFS expands a node with the lowest cost so we need to implement a priority queue to hold the nodes with their costs as priority. The pseudocode for the GBFS is given below:

GBFS(Graph g, sNode, goal, priority = 0, path = [])

Initialize a Priority Queue 'PQ' and insert sNode in it.

while PQ is not empty

    u = PQ.get()

    if u.value is the goal

        return path

    else

        foreach neighbor v of u

            foreach key in v

                if key not in path

                    Insert v in PQ

    Append u.value in path
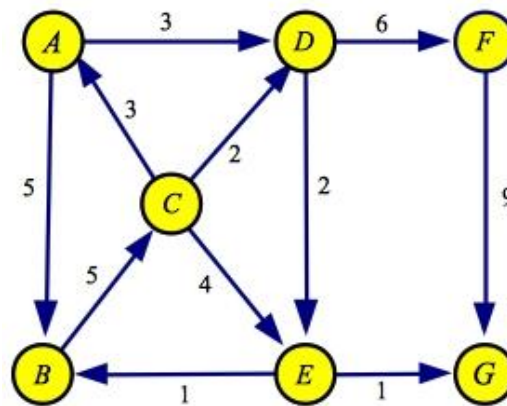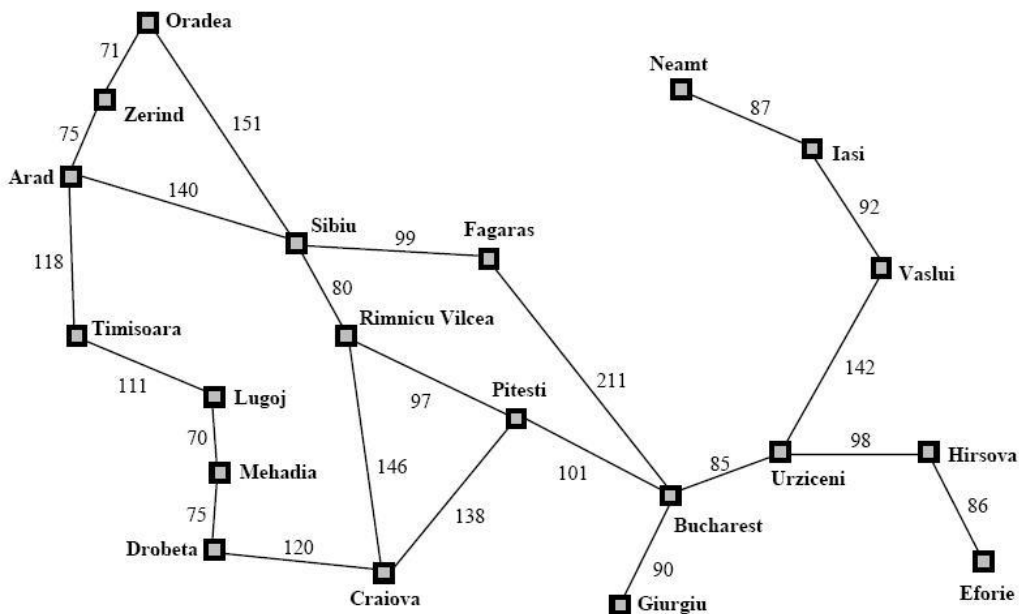
return path

Lab Tasks:

1. Study 'queue' and use it to develop priority queues in python and check if it's working properly.

2. Implement GBFS algorithm in python for following graphs:

Graph 1: Start Node: A, **Goal:** G

Graph2: Start Node: Arad, **Goal:** Bucharest

Graph 1

Graph 2

3. Write a script to decompose the given image into an undirected graph where the pixel represents the vertices and adjacent vertices are connected to each other via 4-connectivity and the cost on edges between adjacent nodes is their intensity differences. Use GBFS algorithm to traversal decomposed image starting from pixel 150 to pixel 165.

150	2	5
80	145	45
74	102	165

Conclusion:
Write the conclusion about this lab

NOTE: A lab journal is expected to be submitted for this lab.