PLEASE INSTALL THE LIBRARIES IN REQUIREMENTS.TXT USING:

python -m pip install -r requirements.txt

https://stackoverflow.com/questions/7225900/how-can-i-install-packages-using-pip-according-to-the-requirements-txt-file-from

https://newbedev.com/how-to-use-requirements-txt-to-install-all-dependencies-in-a-python-project

GRAPH_PROJECT_MAIN.PY

MAIN GRAPH PROJECT INTERFACE

These values located on the top of the file are values that you can modify:

```
NUMBER_OF_HOSPITALS = 10        # number of hospitals spawned
NUMBER_OF_NODES = 1000          # number of nodes generated
MAX_EDGES_PER_NODE = 3          # value to determine how many edges is generated,
                                # values 2 and 3 are recommended
```

Before running, u could modify the values above, then you can key in the choices that you would like to make.

What happens is that if the number of paths to be found is 1 then multi source single path bfs will run, But if the number of paths to be found is more than 1 then multi source multi path bfs will run instead.

CODE SAMPLE

```
GENERAL ALGORITHM FOR COMPUTING DISTANCE FROM EACH NODE TO TOP K
NEAREST HOSPITAL FOR ANY INPUT OF K
MULTI PATH MULTI SOURCE BREADTH FIRST SEARCH
GRAPH SELECTION
0 : SELECT OWN FILE
1 : ROAD NET FILES
2 : RANDOMLY GENERATED GRAPH NODES
USER : 2
GRAPH SUCCESSFULLY LOADED
TARGET/HOSPITAL NODES SELECTION
0 : SELECT OWN FILE
1 : RANDOMLY GENERATED TARGET/HOSPITAL NODES
USER : 1
NUMBER OF PATHS TO SEARCH FOR
VALID NUMBER OF PATHS YOU CAN GENERATE IS 1 TO 10
USER : 2

DATA LOADED
TARGET LIST:  [64, 36, 69, 7, 41, 16, 84, 53, 54, 89, 26]
NUMBER OF PATHS:  2

PERFORM SEARCH LOOK FOR: [64, 36, 69, 7, 41, 16, 84, 53, 54, 89, 26]
GET NUMBER OF PATHS: 2
```

Number of Nodes Pending: 154
Number of Nodes Pending: 382
Number of Nodes Pending: 403
OUTPUT TO 20211102_175828_graph_project_main.csv

['source_node', 'path', 'distance']
[0, [0, 34, 64], 3]
[0, [0, 25, 69], 3]
[1, [1, 21, 80, 64], 4]
[1, [1, 21, 87, 53], 4]
...
[98, [98, 7], 2]
[98, [98, 8, 69], 3]
[99, [99, 2, 41], 3]
[99, [99, 86, 16], 3]