Lab 01: Search Strategies

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I. My program should be programmed in **python**

II. Libraries I use in my program:

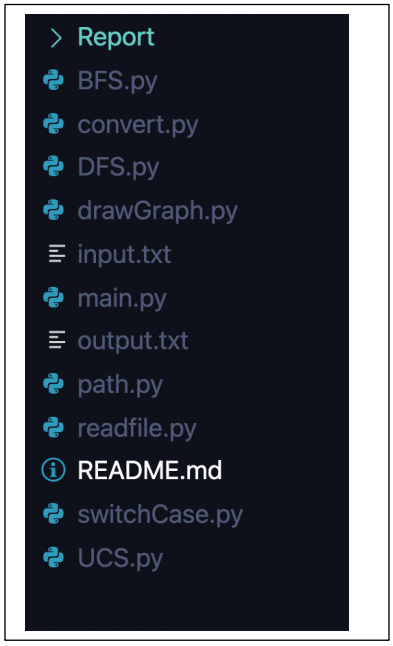
a. Networkx : help me to draw graph from adjacency matrix
(link : https://networkx.org)

b. matplotlib.pyplot : is a state-based interface to matplotlib. It provides a MATLAB-like way of plotting.
(link : https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.html)

c. NumPy: is a Python library used for working with arrays.
(link: https://www.w3schools.com/python/numpy/numpy_intro.asp)

d. Re: to use regex

III. Source code in my program:



1. Report: my report on a PDF file
2. BFS.py :
   - function Breath-first search (BFS)
   - To import this funtion to another file: “import BFS as bfs”
3. Convert.py:
   - To create function to :
     - Convert to adjacency matrix to dict (def: convert_AdjMatrix_toDict(m))
     - Convert to adjacency matrix to list of edge (def: convert_AdjMatrix_EdgeLisT(m))

```
chukhanhhh@chukhanhhh lab1 % python3 main.py
{(0, 1): 2, (0, 2): 3, (0, 4): 5, (1, 0): 2, (1, 3): 4, (2, 0): 3, (2, 4): 4, (3
, 1): 4, (3, 4): 1, (3, 5): 2, (4, 0): 5, (4, 2): 4, (4, 3): 1, (4, 5): 5, (5, 3
): 2, (5, 4): 5}
chukhanhhh@chukhanhhh lab1 %
```

- Function regexString(m) : to process the newly printed string from funtion convert_AdjMatrix_EdgeLisT(m))
- Function convert_print_edge to count edge from adjacency maxtri

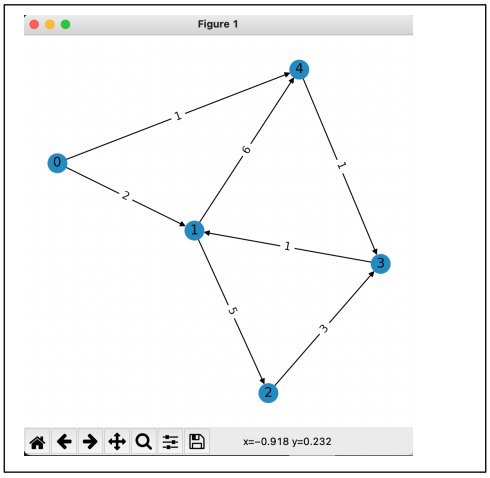
```
chukhanhhh@chukhanhhh lab1 % python3 main.py
{0, 1, 2, 3, 4, 5}
chukhanhhh@chukhanhhh lab1 %
```

- Function convert_print_edgeWeight(m): to count weight from nodeA to nodeB

```
chukhanhhh@chukhanhhh lab1 % python3 main.py
[0, 1, 2]
[0, 2, 3]
[0, 4, 5]
[1, 0, 2]
[1, 3, 4]
[2, 0, 3]
[2, 4, 4]
[3, 1, 4]
[3, 4, 1]
[3, 5, 2]
[4, 0, 5]
[4, 2, 4]
[4, 3, 1]
[4, 5, 5]
[5, 3, 2]
[5, 4, 5]
chukhanhhh@chukhanhhh lab1 %
```

4. DFS.py
   - function Tree-search depth-first search (DFS):
   - To import this funtion to another file: “import DFS as dfs”
5. Drawgraph.py: to draw graph from adjacency matrix

```
5
0 3 0
0 2 0 0 1
0 0 5 0 6
0 0 0 3 0
0 1 0 0 0
0 0 0 1 0
0 0 0 0 0
```



6. Path.py:
   - To create input.txt from function pathInput()
   - To create output.txt from function pathOutput()
   - To import this function to anthoer file:
     - import path as p
     - to call function pathInput(): p.pathInput()
     - to call function pathOutput(): p.pathOutput()
7. Readfile.py:

- Function read_graph(filename) to get the matrix from the file by deleting the first 2 lines and the last 1 line.
    - To delete first 2 line by matrix[2:]
    - To delete the last line by matrix[:-1]
    - So to delete the first 2 line and the last line by matrix[2:-1]
- Function read_number_of_node(filename) to get the total of node from the file
- Function read_node(filename) to get the second line from the file

8. Switchcase.py to check the number of the search strategy. Each number will have a different search method
9.