CSE2216: DSA I Lab (Summer'24)
Assignment-2 part-2 Marks – 10 marks

1. Implement DFS. Use the "Graph_DFS.cpp" as template. Add necessary functions in the graph class. Rename the file as 011xxxxxxx_DFS.cpp. Replace xxxxxx using your student id.

5. **The Maze of Mysteries - Finding Paths with Treasures - Create a cpp file and rename it with 011XXXX_maze.cpp**

You find yourself in a mysterious maze filled with twists and turns, dead ends, and hidden treasures. Your task is to navigate through the maze to find paths from the starting position to the exit that contain hidden treasures. **The maze is represented as a 2D grid** where each cell can have the following values:

0: Pathway.

1: Wall.

2: Exit.

3: Treasure.

- Declare the maze as global variable.
- Write a function **find_paths_with_treasures(start_row, start_col)** that takes your starting position as input. **The function should print the path from the starting position to the exit (2) that contain treasures (3).** If no such path is possible, the function should print "No path with treasure found."

Here is a sample maze with a size of 5x5:

```
maze = [
    [0, 1, 2, 0, 0],
    [0, 0, 0, 1, 0],
    [0, 3, 1, 0, 0],
    [0, 1, 0, 1, 0],
    [0, 0, 0, 0, 0]
]
```

For the given maze and starting position (0, 0), the function shouldprint the following path:

Path with treasure: **(0,0)**->(1,0)->(2,0)->**(2,1)**->(1,1)->(1,2)->**(0,2)**

In this case, the path starts from the treasure at position (0, 0),follows the pathway, and ends at the exit (2) while collecting the treasure on the way.

Your function should implement either BFS or DFS to explore the maze,avoid walls (1), and identify paths containing treasures. If no such path is found, the function should print "No path with treasure found."

Here is another sample maze with a size of 5x5:

```
maze = [
     [0,  1,  0,  0,  2],
     [0,  0,  0,  1,  0],
     [0,  3,  1,  0,  0],
     [0,  1,  0,  1,  0],
     [0,  0,  0,  0,  0]
]
```

For this maze and starting position (1, 0), the function should print:

Path with treasure: **(1,0)**->(2,0)->**(2,1)**->(1,1)->(1,2)->(0,2)->(0,3)->**(0,4)**

or,
Path with treasure: **(1,0)**->(1,1)->**(2,1)**->(2,0)->(3,0)->(4,0)->(4,1) ->(4,2)->(4,3)->(4,4)->(3,4)->(2,4)->(1,4)->**(0,4)**

***you path may be different. But you must find treasure before exit.**

Submission guideline:
Submit the cpp files only in the eLMS.
Submission deadline: 5 Oct, 11AM(before class)