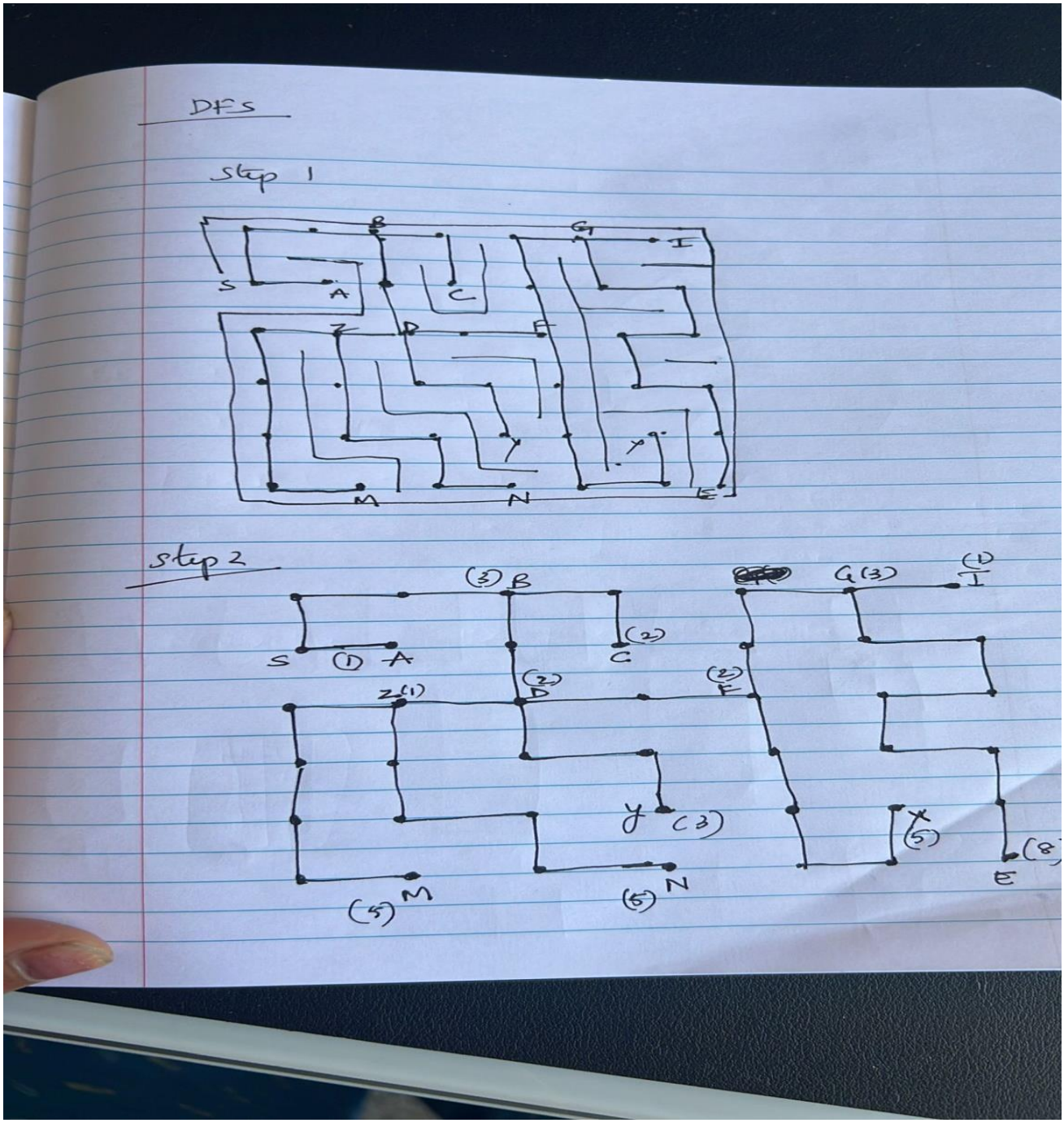
Week 11: Homework 1: Depth-First Traversal: The Maze

Q3 => Conduct Depth First Traversal (DFT) on a maze



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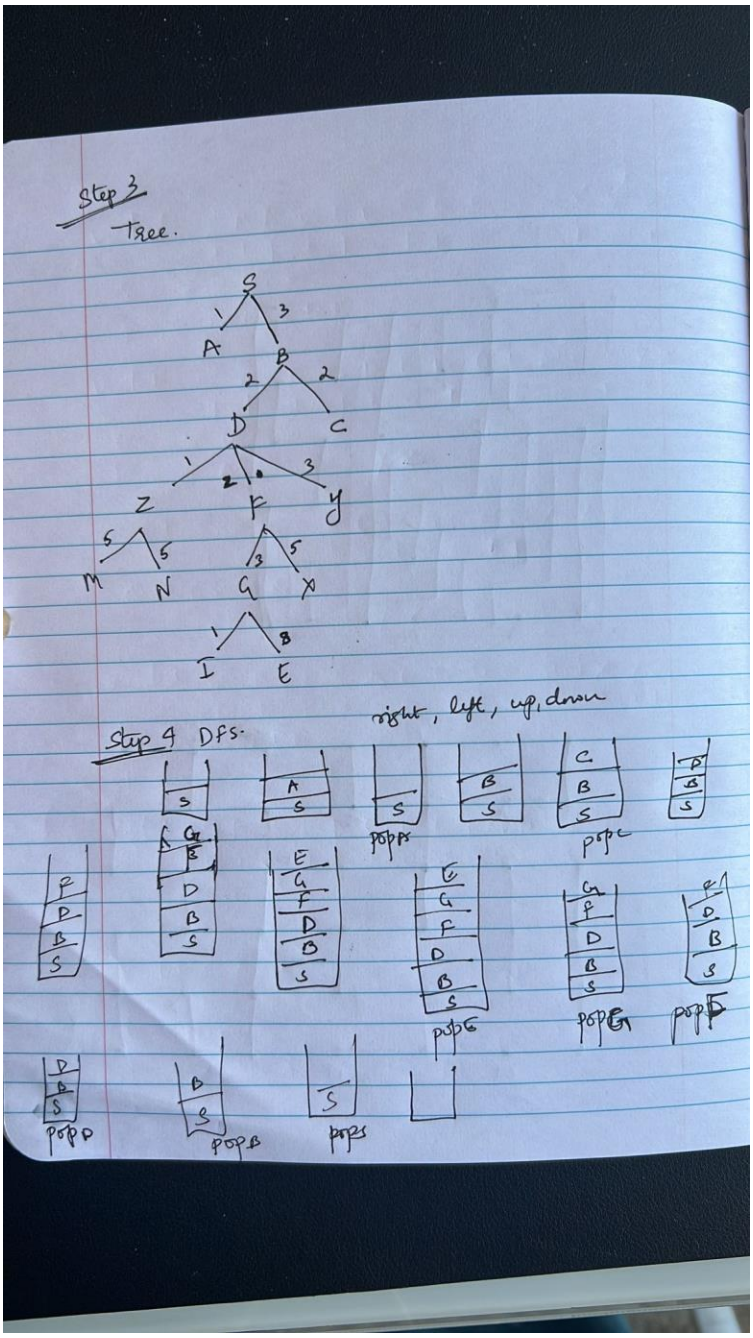

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Code

```
from  typing import List

class Solution:
  def hasPath(self, maze: List[List[int]], start: List[int], destination:
List[int]) -> bool:
    m = len(maze)
    n = len(maze[0])
    dirs = [0, 1, 0, -1, 0]

    seen = set()

    def isValid(x: int, y: int) -> bool:
      return 0 <= x < m and 0 <= y < n and maze[x][y] == 0

    def dfs(i: int, j: int) -> bool:
      if [i, j] == destination:
        return True
      if (i, j) in seen:
        return False

      seen.add((i, j))

      for k in range(4):
        x = i
        y = j
        while isValid(x + dirs[k], y + dirs[k + 1]):
          x += dirs[k]
          y += dirs[k + 1]
        if dfs(x, y):
          return True

      return False

    return dfs(start[0], start[1])
```

Result with different test scenarios :

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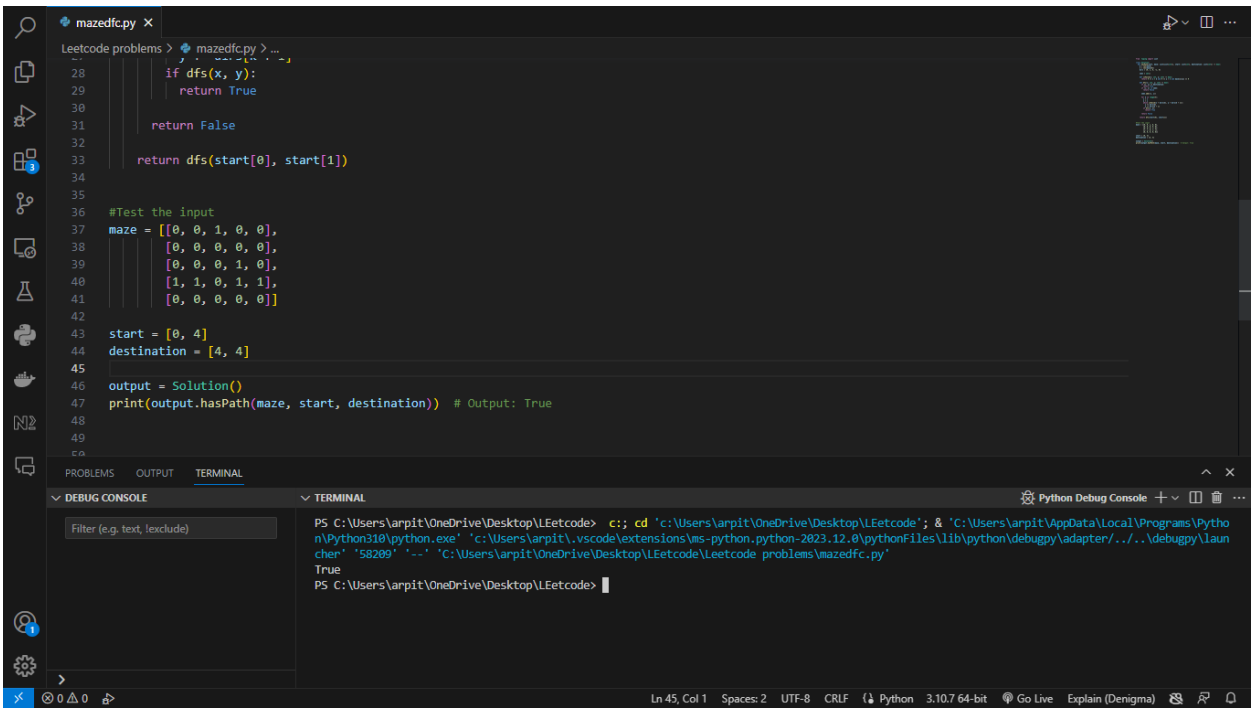
```
maze = [[0, 0, 1, 0, 0],
        [0, 0, 0, 0, 0],
        [0, 0, 0, 1, 0],
        [1, 1, 0, 1, 1],
        [0, 0, 0, 0, 0]]

start = [0, 4]
destination = [4, 4]
```




```
maze = [[0,0,1,0,0],[0,0,0,0,0],[0,0,0,1,0],[1,1,0,1,1],[0,0,0,0,0]]
start = [0,4]
destination = [3,2]
```

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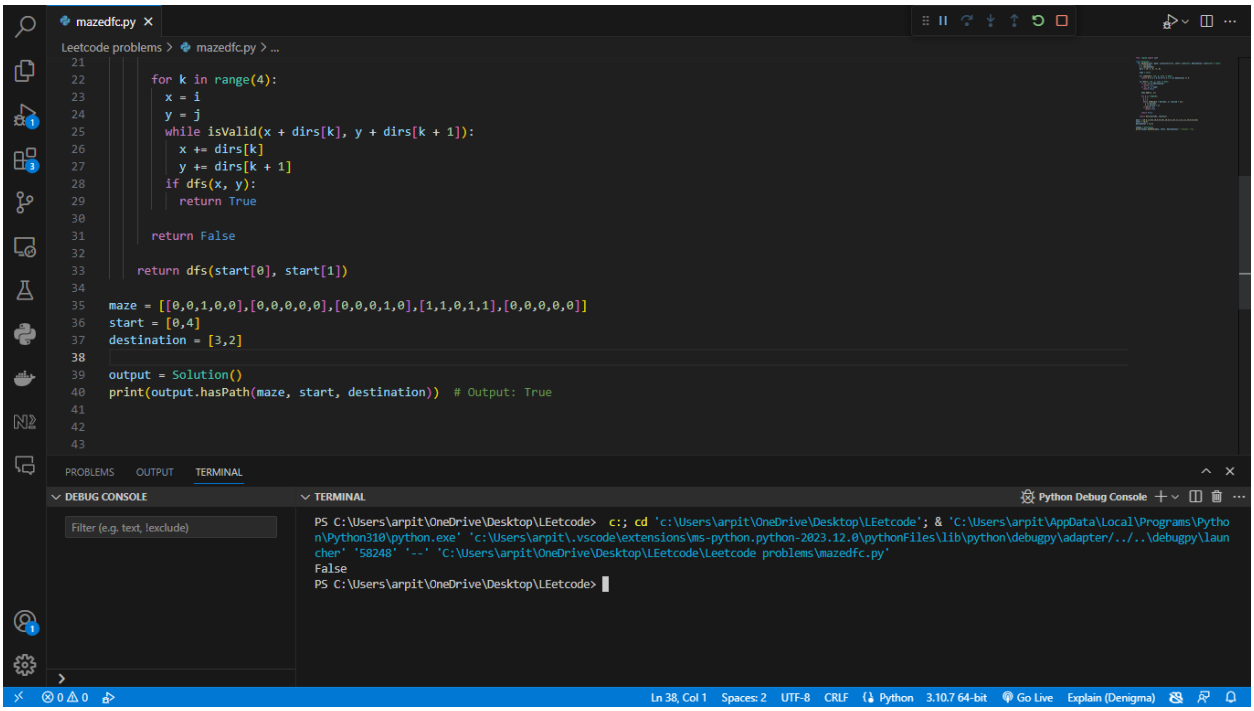


```
maze = [[0,0,0,0,0],[1,1,0,0,1],[0,0,0,0,0],[0,1,0,0,1],[0,1,0,0,0]]
start = [4,3]
destination = [0,1]
```

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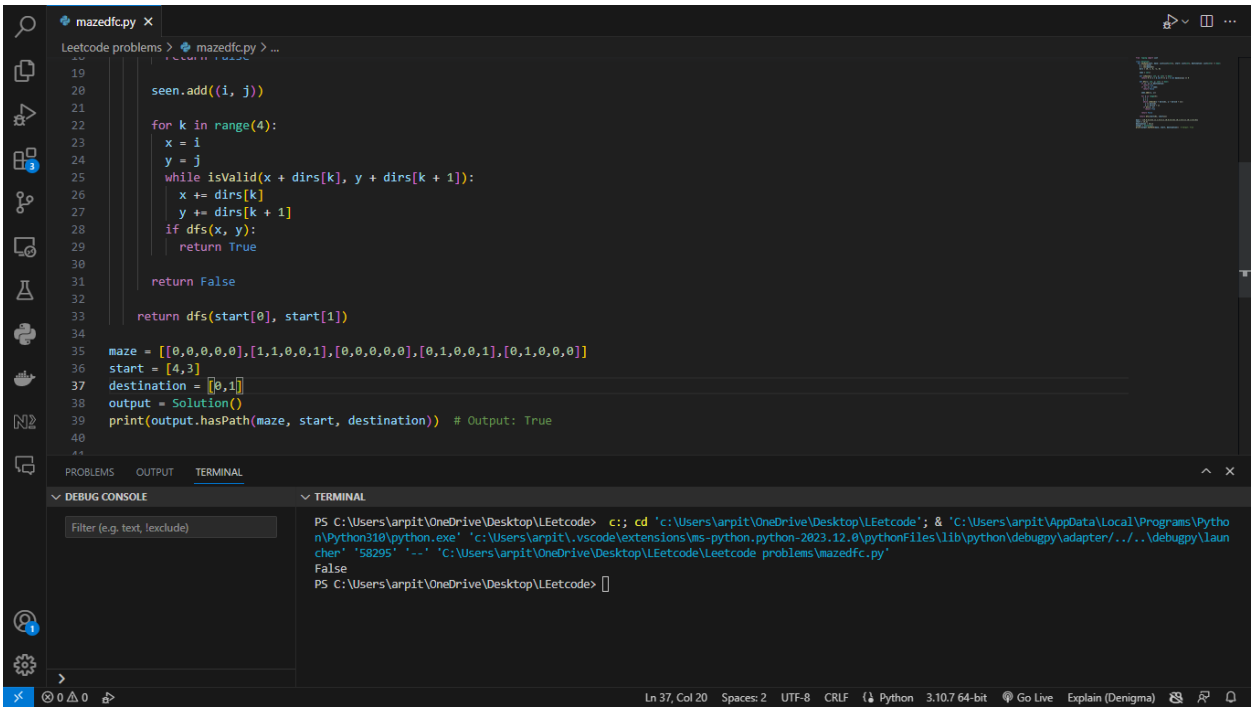

GitHub URL: https://github.com/jesalshah14/Maze_DFS_Project