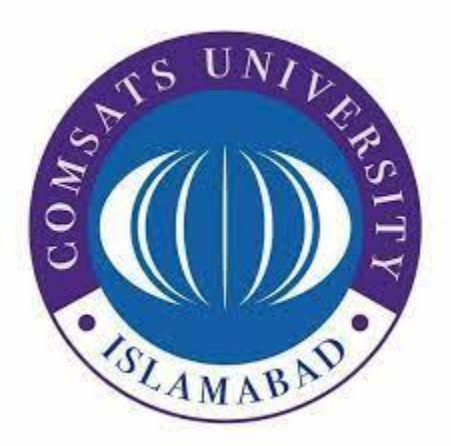

COMSATS University Islamabad, Vehari Campus

Lab Mid

Submitted to:

Mam Yasmeen Jana

Subject:

AI

Submitted By:

Muhammad Bilal

Registration:

(FA20-BSE-044)

Section:

(B)

Question:

Maze Solution in python using BFS

Solution:

I designed a game using Python interface. I will import Pyamaze library and its two modules COLOR and agent. COLOR module will choose colors for game interface and agent module will save the paths covered.

```
from pyamaze import maze,agent,COLOR,textLabel
def BFS(m):
    start=(m.rows,m.cols)
    frontier=[start]
    explored=[start]
    bfsPath={}
    while len(frontier)>0:
        currCell=frontier.pop(0)
        if currCell==(1,1):
            break
        for d in 'ESNW':
            if m.maze_map[currCell][d]==True:
                if d=='E':
                    childCell=(currCell[0],currCell[1]+1)
                elif d=='W':
                    childCell=(currCell[0],currCell[1]-1)
                elif d=='N':
```

```
                childCell=(currCell[0]-1,currCell[1])
            elif d=='S':
                childCell=(currCell[0]+1,currCell[1])
            if childCell in explored:
                continue
            frontier.append(childCell)
            explored.append(childCell)
            bfsPath[childCell]=currCell
    fwdPath={}
    cell=(1,1)
    while cell!=start:
        fwdPath[bfsPath[cell]]=cell
        cell=bfsPath[cell]
    return fwdPath

if __name__=='__main__':
    m=maze(5,7)
    m.CreateMaze(loopPercent=40)
    path=BFS(m)

    a=agent(m,footprints=True,filled=True)
    m.tracePath({a:path})
    l=textLabel(m,'Length of Shortest Path',len(path)+1)
```

```
m.run()
```

Screenshot of the game: