10-11-20

Artificial Intelligence
Lab Test - 1

GURU NAVMA
1BM18CS031
SA, Batch-2

```
import math
maze = []
path = []
closedPath = []
neighbours = [[1,1],[0,1],[1,0],[1,-1],[0,-1],[-1,1],[-1,0],[-1,-1]]

def findShortestPath(nextPath, n, m):
    minDist = 9999
    next = []
    for x in nextPath:
        if (euclidianDistance(x,n,m)<
                minDist):
            minDist = eulidianDistance(x, n, m)
            next = x
    return next

def euclidianDistance(x, n, m):
    dist = math.sqrt((n-1-x[0])*2+(m-1-x[1])*2)
    return dist

def findPath(n, m):
    path.append([0,0])
    curr = [0,0]
    while(curr != [n-1, m-1]):
        nextPath = []
        for x in neighbours:
            a = []
            a.append(curr[0]+x[0])
            a.append(curr[1]+x[1])
```

```
        if a[0]>-1 and a[0]<n and a[1]>-1 and a[1]<m:
            if (maze[a[0]][a[1]]):
                if a not in path and a not in closedPath:
                    nextPath.append(a)

    if (nextPath):
        curr = findShortestPath(nextPath, n, m)
        path.append(curr)
    else:
        if path:
            closedPath.append(curr)
            path.pop()
            if path:
                curr = path[len(path)-1]
            else:
                print("No Path available")
                exit(0)
        else:
            print("No Path available")
            exit(0)

def main():
    n = int(input("\nEnter number of rows: "))
    m = int(input("\nEnter number of cols: "))
    print("\nEnter the maze : 0-blocked, 1-free:")

    for i in range(n):
        a = list(map(int, input().split(" ")))
        maze.append(a)
    print("\n\nMaze")
    for i in range(n):
        for j in range(m):
            print(maze[i][j], end=" ")
        print()
    findPath(n, m)
```

```
print("Enter
co-ordinates for
destination")
x = int(input())
y = int(input())
dest = []
dest.append(x)
dest.append(y)
```

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```
    print("\n Path")
    for i in range(n):
        for j in range(m):
            if [i,j] in path:
                print("-", end=" ")
            else:
                print(maze[i][j], end="  ")
        print()
    print()
    print(path)

main()
```

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