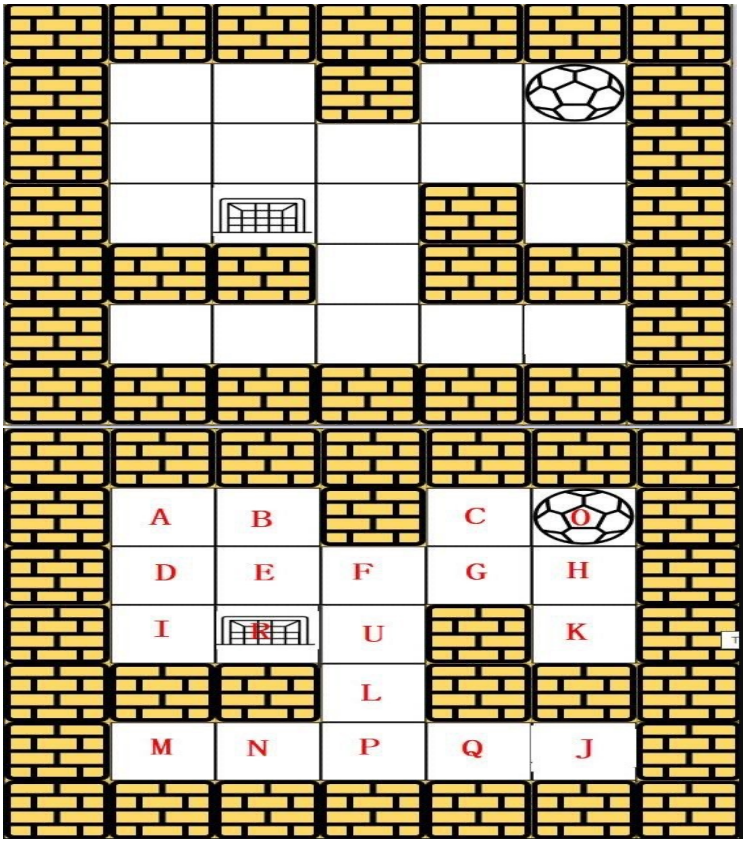
Week 12-Q1



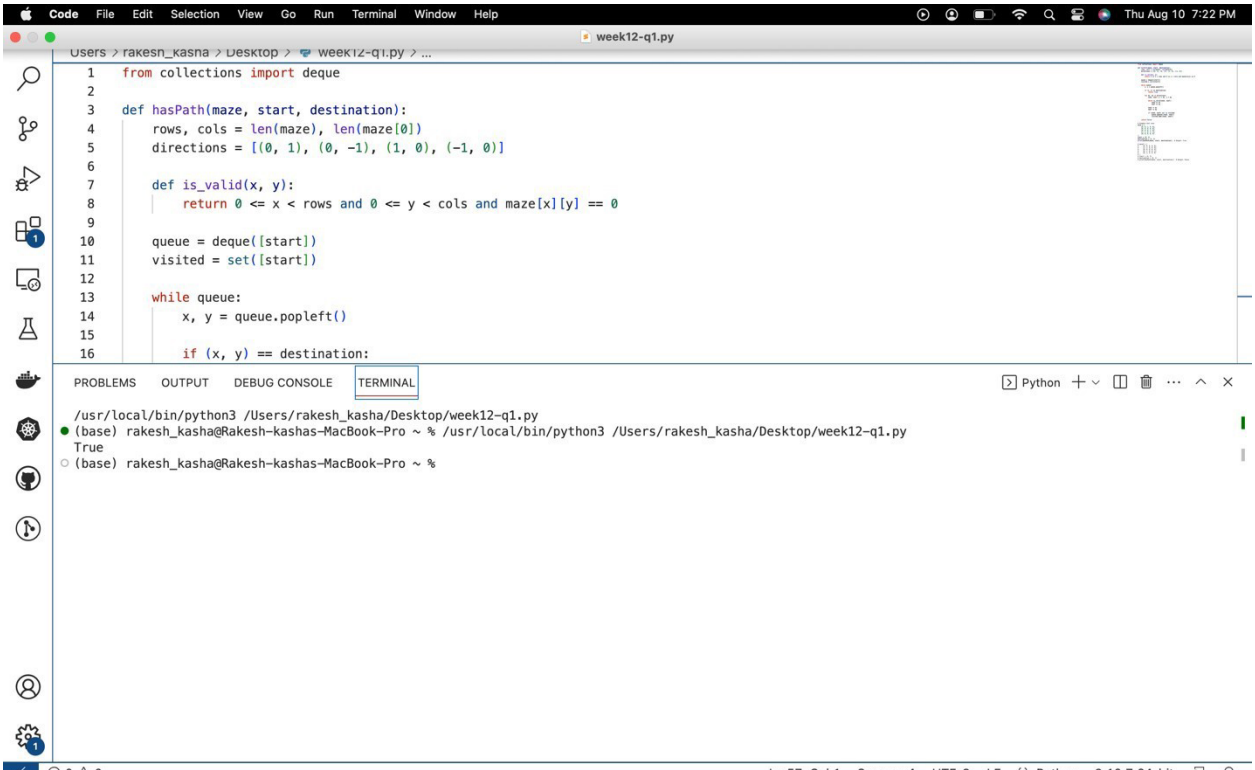
Visited: 0 Queue: 0	Visited: 0 Queue: 0 1) Add 0 to the queue 2) Mark 0 as visited	Visited: 0 1 Queue: 1) Remove 0 from the queue 2) Print: 0.	Visited: 0 C K 1 1 1 Queue: C K 1) Add C and K to the queue 2) Mark C and K as visited.
Visited: 0 C K 1 1 1 Queue: K 1) Remove C from the queue 2) Print 0 C.	Visited: 0 C K G 1 1 1 1 Queue: K G 1) Add G to the queue 2) Mark G as visited.	Visited: 0 C K G 1 1 1 1 Queue: G 1) Remove K from the queue. 2) Print: 0 C K	Visited: 0 C K G 1 1 1 1 Queue: 1) Remove G from the queue. 2) Print: 0 C K G
Visited: 0 C K G D 1 1 1 1 1 Queue: D 1) Add D to the queue 2) Mark D as visited.	Visited: 0 C K G D 1 1 1 1 1 Queue: 1) Add D to the queue 2) Print: 0 C K G D	Visited: 0 C K G D A I 1 1 1 1 1 1 1 Queue: A I 1) Add A, I to the queue 2) Mark A, I as visited Visited: 0 C K G D A I 1 1 1 1 1 1 1 Queue: I 1) Remove A from the queue 2) Print: 0 C K G D A	Visited: 0 C K G D A I B 1 1 1 1 1 1 1 1 Queue: I B 1) Add B to the queue 2) Mark B as visited
Visited: 0 C K G D A I B 1 1 1 1 1 1 1 1 Queue: B 1) Remove I from the queue 2) Print:0 C K G D A I	Visited: 0 C K G D A I B R 1 1 1 1 1 1 1 1 1 Queue: B R 1) Add R to the queue 2) Mark R as visited.	Visited: 0 C K G D A I B R 1 1 1 1 1 1 1 1 1 Queue: R 1) Remove B from the queue. 2) Print 0 C K G D A I B	Visited: 0 C K G D A I B R 1 1 1 1 1 1 1 1 1 Queue: 1) Remove R from the queue. 2) Print: 0 C K G D A I B R

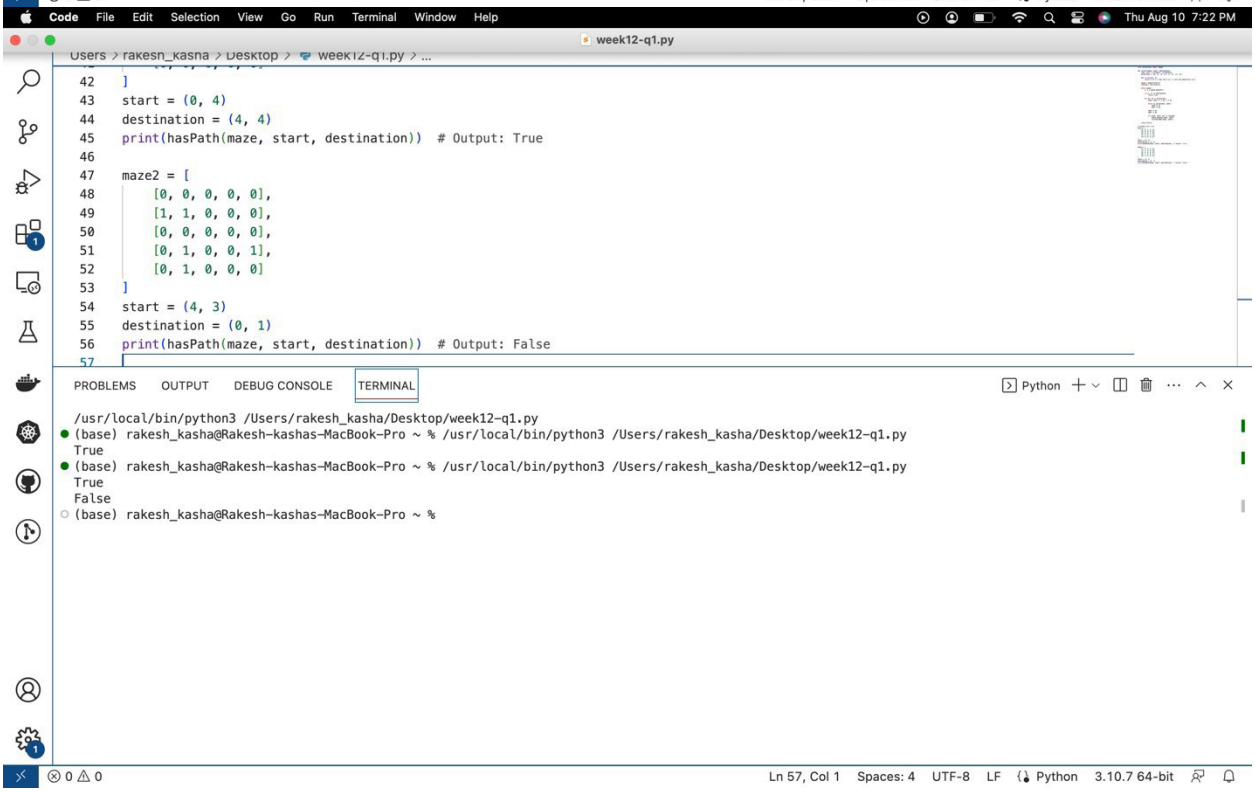
Code (Chatgpt):

```
   from collections import deque
def
hasPath(maze, start, destination):      rows, cols
= len(maze), len(maze[0])       directions = [(0,
1), (0, -1), (1, 0), (-1, 0)]
def is_valid(x, y):
        return 0 <= x < rows and 0 <= y < cols and maze[x][y] == 0
```

```
     queue    =
deque([start])     visited
= set([start])       while
queue:
        x, y = queue.popleft()           if
(x, y) == destination:
            return True           for
dx, dy in directions:
            newX, newY = x + dx, y + dy
while is_valid(newX, newY):
newX += dx                 newY += dy
newX -= dx              newY -= dy
if (newX, newY) not in visited:
queue.append((newX, newY))
visited.add((newX, newY))
return
False

# Example test case 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)
print(hasPath(maze, start, destination))  # Output: True
```


Code File Edit Selection View Go Run Terminal Window Help
Thu Aug 10 7:22 PM
week12-q1.py
Users > rakesh_kasha > Desktop > week12-q1.py > ...
1 from collections import deque
2
3 def hasPath(maze, start, destination):
4 rows, cols = len(maze), len(maze[0])
5 directions = [(0, 1), (0, -1), (1, 0), (-1, 0)]
6
7 def is_valid(x, y):
8 return 0 <= x < rows and 0 <= y < cols and maze[x][y] == 0
9
10 queue = deque([start])
11 visited = set([start])
12
13 while queue:
14 x, y = queue.popleft()
15
16 if (x, y) == destination:
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Python
/usr/local/bin/python3 /Users/rakesh_kasha/Desktop/week12-q1.py
(base) rakesh_kasha@Rakesh-kashas-MacBook-Pro ~ % /usr/local/bin/python3 /Users/rakesh_kasha/Desktop/week12-q1.py
True
(base) rakesh_kasha@Rakesh-kashas-MacBook-Pro ~ %
0 0
Ln 57, Col 1 Spaces: 4 UTF-8 LF Python 3.10.7 64-bit


Code File Edit Selection View Go Run Terminal Window Help
Thu Aug 10 7:22 PM
week12-q1.py
Users > rakesh_kasha > Desktop > week12-q1.py > ...
42]
43 start = (0, 4)
44 destination = (4, 4)
45 print(hasPath(maze, start, destination)) # Output: True
46
47 maze2 = [
48 [0, 0, 0, 0, 0],
49 [1, 1, 0, 0, 0],
50 [0, 0, 0, 0, 0],
51 [0, 1, 0, 0, 1],
52 [0, 1, 0, 0, 0]
53]
54 start = (4, 3)
55 destination = (0, 1)
56 print(hasPath(maze, start, destination)) # Output: False
57
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Python
/usr/local/bin/python3 /Users/rakesh_kasha/Desktop/week12-q1.py
(base) rakesh_kasha@Rakesh-kashas-MacBook-Pro ~ % /usr/local/bin/python3 /Users/rakesh_kasha/Desktop/week12-q1.py
True
(base) rakesh_kasha@Rakesh-kashas-MacBook-Pro ~ % /usr/local/bin/python3 /Users/rakesh_kasha/Desktop/week12-q1.py
True
False
(base) rakesh_kasha@Rakesh-kashas-MacBook-Pro ~ %
0 0
Ln 57, Col 1 Spaces: 4 UTF-8 LF Python 3.10.7 64-bit

GitHub:
https://github.com/RakeshKasha567/Algorithms/blob/main/CS455_Week%2012Q1_Rakesh_kasha_19695.pdf