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DIV-B

BFS

Problem Statement:

Implement Breadth First Algorithm, use an undirected graph and develop a recursive algorithm for searching all the vertices of a graph or tree data structure.

Code:

```
graph = {  
    'A': ['B', 'C', "D"],  
    'B': ['E', "F"],  
    'C': ['G', "I"],  
    'D': ["I"],  
    'E': [],  
    "F": [],  
    'G': [],  
    "I": []  
}  
  
def bfs(visit_complete, graph, current_node):  
    visit_complete.append(current_node)
```

```
queue = []
```

```
queue.append(current_node)
```

```
while queue:
```

```
    s = queue.pop(0)
```

```
    print(s)
```

```
    for neighbour in graph[s]:
```

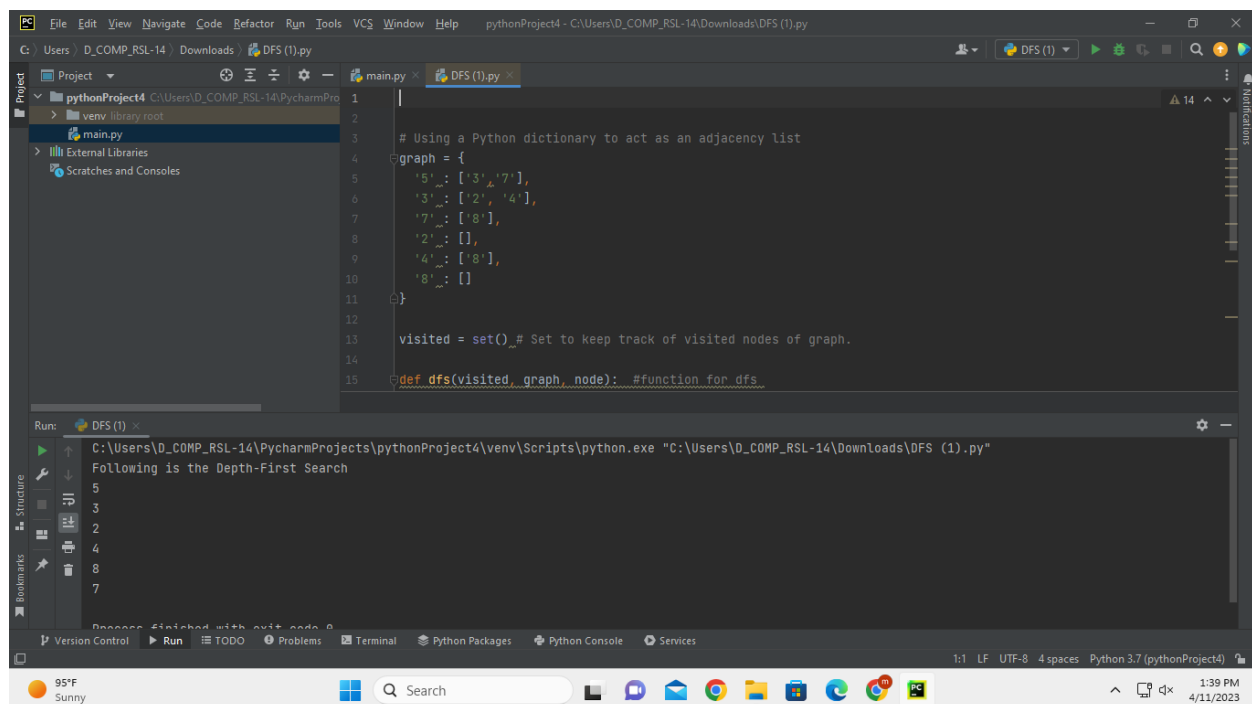
```
        if neighbour not in visit_complete:
```

```
            visit_complete.append(neighbour)
```

```
            queue.append(neighbour)
```

```
bfs([], graph, 'A')
```

Output:



The screenshot displays the PyCharm IDE interface. The main editor window shows a Python script named `DFS (1).py` with the following code:

```
1 # Using a Python dictionary to act as an adjacency list
2
3 graph = {
4     '5': ['3', '7'],
5     '3': ['2', '4'],
6     '7': ['8'],
7     '2': [],
8     '4': ['8'],
9     '8': []
10 }
11
12 visited = set() # Set to keep track of visited nodes of graph.
13
14 def dfs(visited, graph, node): #function for dfs
```

The Run console at the bottom shows the execution output:

```
Run: DFS (1)
C:\Users\D_COMP_RSL-14\PycharmProjects\pythonProject4\venv\Scripts\python.exe "C:\Users\D_COMP_RSL-14\Downloads\DFS (1).py"
Following is the Depth-First Search
5
3
2
4
8
7
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, 4 spaces, and the Python version is 3.7 (pythonProject4).

