

Practical 2: BFS

Q1) Demonstrate BFS Algorithm.

Ans:

[bfs.py](#)

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"""
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bfs.py
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Date: 17-07-2021
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Practical: 2
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Objective: Demonstrate BFS Algorithm
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"""
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```
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)

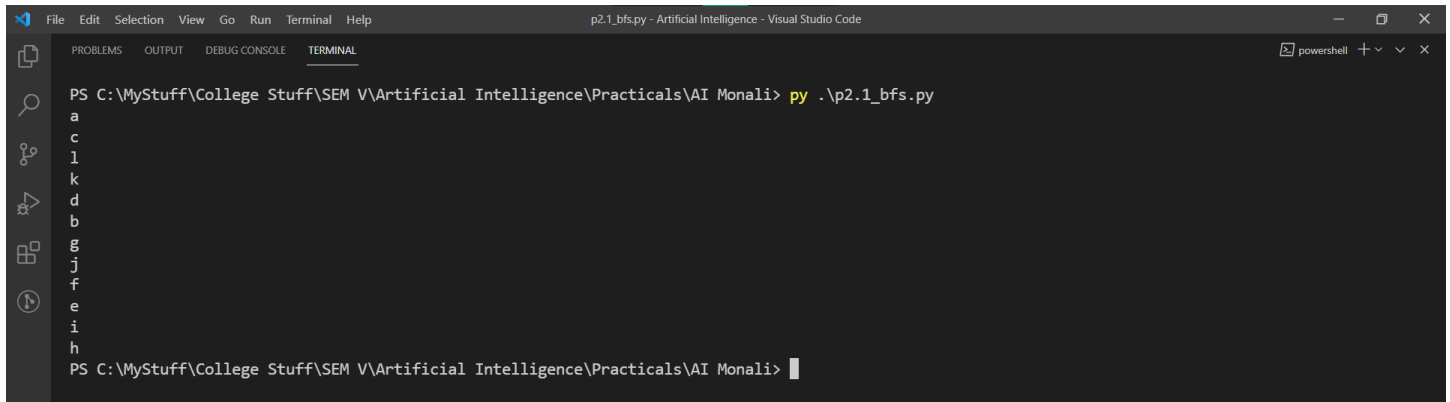
big_graph= {
    "a": set(["k", "c", "l"]),
    "b": set(["k", "j"]),
    "c": set(["a"]),
    "d": set(["k", "g"]),
    "e": set(["j"]),
    "f": set(["h", "i"]),
    "g": set(["d", "f"]),
    "h": set(["f"]),
    "i": set(["f"]),
    "j": set(["b", "e"]),
    "k": set(["a", "b", "d"]),
    "l": set(["a"]),
}

bfs([], big_graph, 'a')
```

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The image shows a screenshot of a Visual Studio Code terminal window. The title bar at the top reads "p2.1_bfs.py - Artificial Intelligence - Visual Studio Code". The terminal interface includes a menu bar with "File", "Edit", "Selection", "View", "Go", "Run", "Terminal", and "Help". Below the menu bar, there are tabs for "PROBLEMS", "OUTPUT", "DEBUG CONSOLE", and "TERMINAL", with "TERMINAL" being the active tab. On the left side of the terminal, there is a vertical toolbar with icons for search, source control, run and debug, and a clock. The terminal text shows a PowerShell prompt "PS C:\MyStuff\College Stuff\SEM V\Artificial Intelligence\Practicals\AI Monali>" followed by the command "py .\p2.1_bfs.py". The output of the script is displayed as a vertical list of characters: "a", "c", "l", "k", "d", "b", "g", "j", "f", "e", "i", "h". The prompt "PS C:\MyStuff\College Stuff\SEM V\Artificial Intelligence\Practicals\AI Monali>" appears again at the bottom of the terminal.

```
PS C:\MyStuff\College Stuff\SEM V\Artificial Intelligence\Practicals\AI Monali> py .\p2.1_bfs.py
a
c
l
k
d
b
g
j
f
e
i
h
PS C:\MyStuff\College Stuff\SEM V\Artificial Intelligence\Practicals\AI Monali>
```