

8. Write the python program to implement DFS.

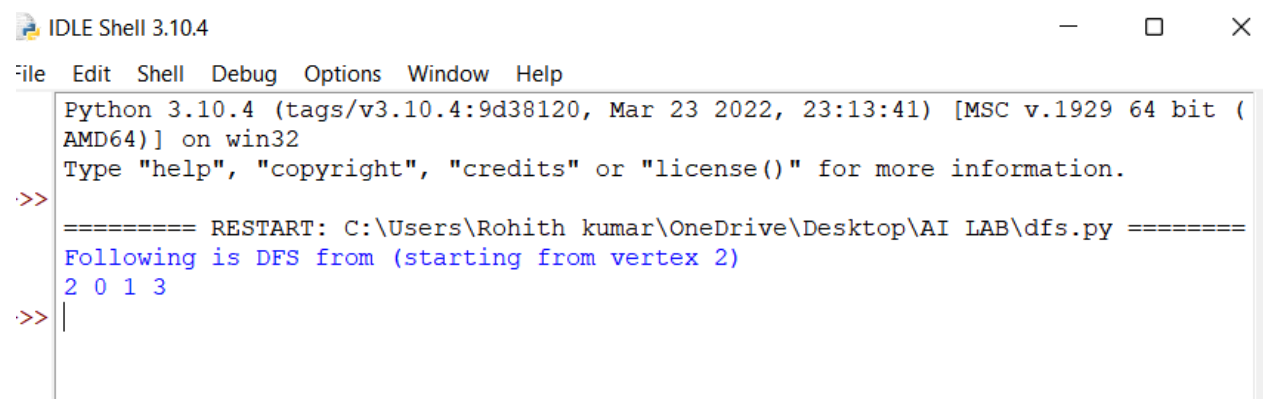
Program:

```
from collections import defaultdict
class Graph:
    def __init__(self):
        self.graph = defaultdict(list)
    def addEdge(self, u, v):
        self.graph[u].append(v)
    def DFSUtil(self, v, visited):
        visited.add(v)
        print(v, end=' ')
        for neighbour in self.graph[v]:
            if neighbour not in visited:
                self.DFSUtil(neighbour, visited)
    def DFS(self, v):
        visited = set()
        self.DFSUtil(v, visited)
if __name__ == "__main__":
    g = Graph()
    g.addEdge(0, 1)
    g.addEdge(0, 2)
    g.addEdge(1, 2)
    g.addEdge(2, 0)
    g.addEdge(2, 3)
    g.addEdge(3, 3)

    print("Following is DFS from (starting from vertex 2)")

    g.DFS(2)
```

OUTPUT:



```
IDLE Shell 3.10.4
File Edit Shell Debug Options Window Help
Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> ===== RESTART: C:\Users\Rohith kumar\OneDrive\Desktop\AI LAB\dfs.py =====
Following is DFS from (starting from vertex 2)
2 0 1 3
>>> |
```