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AI Lab 5 - Documentation

This document explains the code written in AI Lab 5. The task was to implement Depth First Search (DFS) using a stack in Python for graph traversal.

The code file was created in Jupyter Notebook. A graph was defined using a Python dictionary, and then a function **dfs_stack()** was implemented to perform depth first traversal.

Main Working of Code:
1. The graph is stored in a dictionary where each node has a list of its neighbours.
2. The function **dfs_stack(graph, start)** starts from a given node.
3. A stack is used to keep track of nodes to be visited.
4. A visited list is maintained to avoid visiting the same node again.
5. Nodes are popped from the stack, marked as visited, and their neighbours are added.
6. Finally, the visited order is returned and printed.

Code Snippet:
```
graph = {
'A':['B','C'],
'B':['A','D','E'],
'C':['A','F'],
'D':['B'],
'E':['B','F'],
'F':['C','E']
}

def dfs_stack(graph, start):
    visited = []
    stack = [start]
    while stack:
        neighbour = stack.pop()
        if neighbour not in visited:
            visited.append(neighbour)
            stack.extend(graph[neighbour])
    return visited

print(dfs_stack(graph,'A'))
```

How to Run the Code:
1. Open the Jupyter Notebook file 'AI lab5.ipynb'.
2. Run the code cell.
3. The program will print the DFS traversal starting from node 'A'.