Experiment No. 4

Program Code –

```
n = int(input("Enter the number of vertices: "))
m = int(input("Enter the number of edges: "))
graph = [None] * n
visited = [False] * n
for i in range(n):
    graph[i] = []
for i in range(m):
    u, v = [int(x) for x in input("Enter the edge (u v): ").split()]
    graph[u].append(v)
start = int(input("Enter the starting vertex: "))
print("Depth First Traversal:")
def DFS(graph, visited, vertex):
    visited[vertex] = True
    print(vertex, end=' ')
    for i in graph[vertex]:
        if not visited[i]:
            DFS(graph, visited, i)
DFS(graph, visited, start)
```

Output –

```
PS N:\Academics\Study Material\Degree (B.E.) in Computer Engineering\6th Sem\Artificial Intelligence (AI)\Practicals> & "C:/Program Files/Python311/python.exe" "n:/Academics/Study Material/Degree (B.E.) in Computer Engineering/6th Sem/Artificial Intelligence (AI)/Practicals/Expt4/DFS.py"
Enter the number of vertices: 8
Enter the number of edges: 10
Enter the edge (u v): 0 1
Enter the edge (u v): 0 2
Enter the edge (u v): 0 3
Enter the edge (u v): 1 3
Enter the edge (u v): 2 4
Enter the edge (u v): 3 5
Enter the edge (u v): 3 6
Enter the edge (u v): 4 7
Enter the edge (u v): 4 5
Enter the edge (u v): 5 2
Enter the starting vertex: 0
Depth First Traversal:
0 1 3 5 2 4 7 6
PS N:\Academics\Study Material\Degree (B.E.) in Computer Engineering\6th Sem\Artificial Intelligence (AI)\Practicals>
```