AI LAB 5.1- Best First Search

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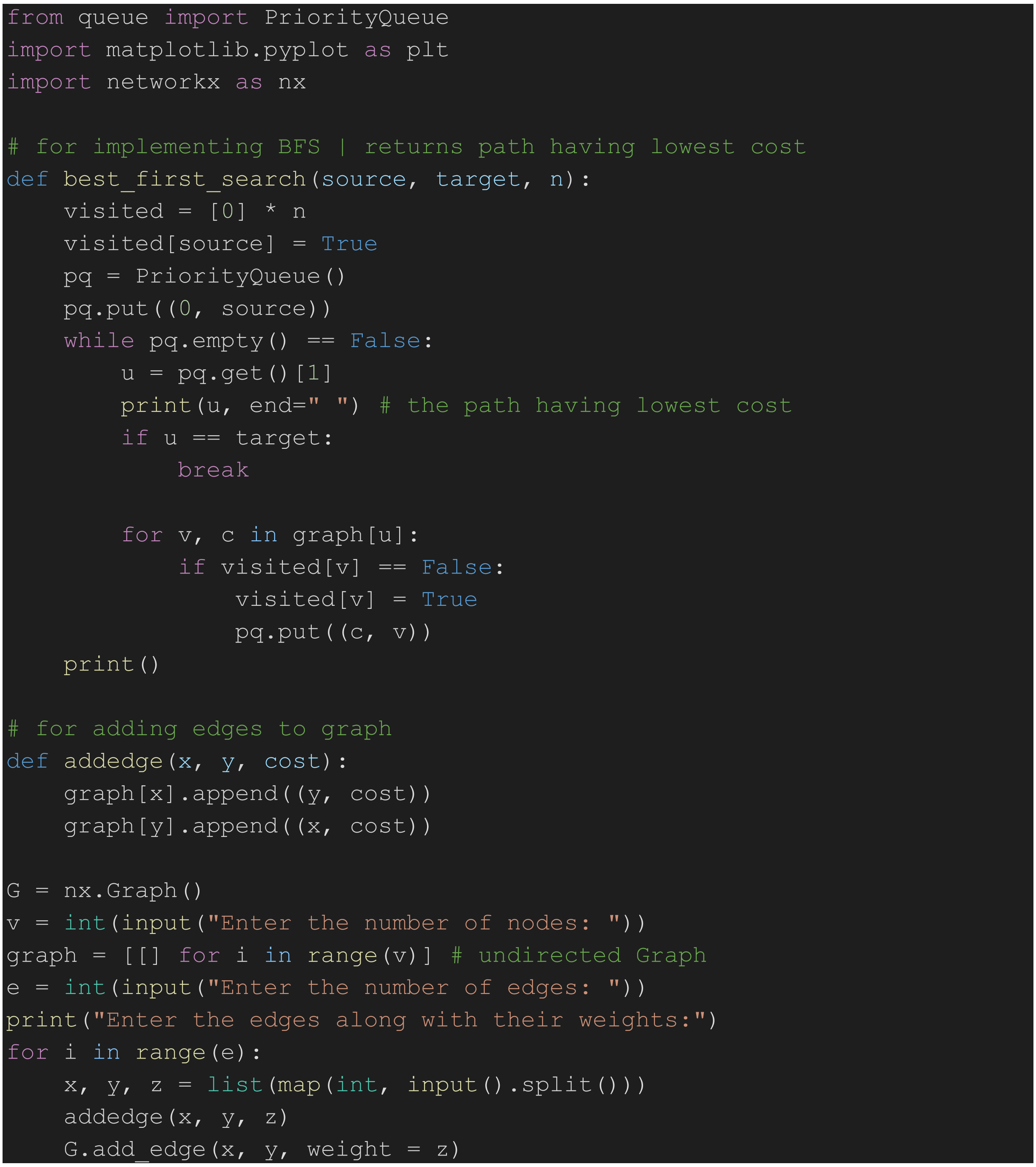
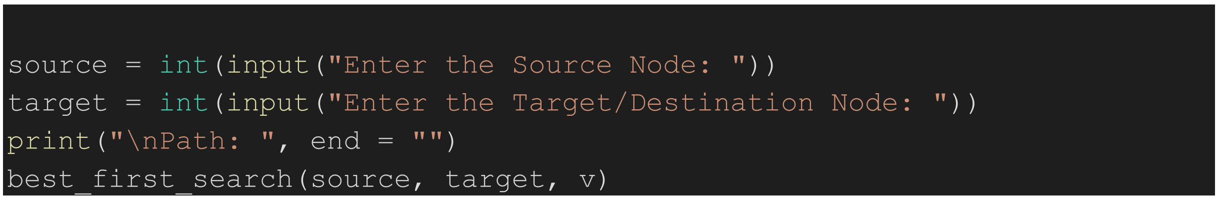
Code-

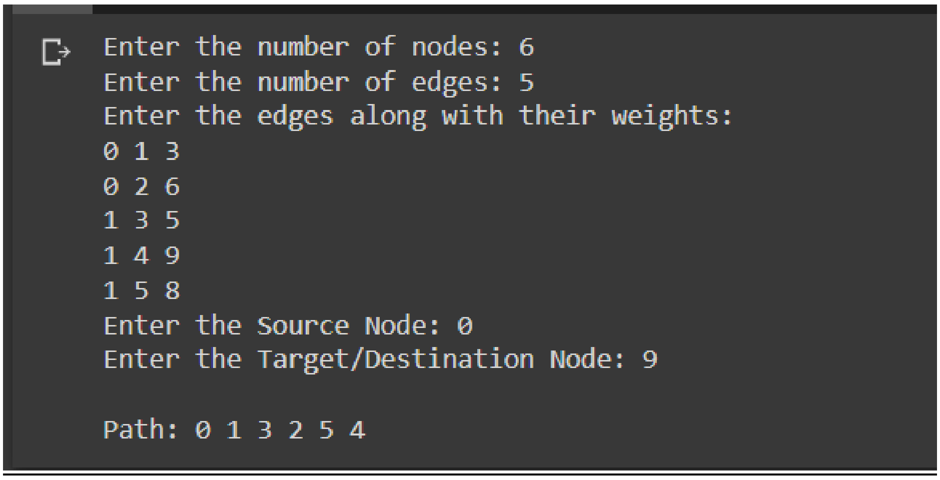


```python
from queue import PriorityQueue
import matplotlib.pyplot as plt
import networkx as nx

# for implementing BFS | returns path having lowest cost
def best_first_search(source, target, n):
    visited = [0] * n
    visited[source] = True
    pq = PriorityQueue()
    pq.put((0, source))
    while pq.empty() == False:
        u = pq.get()[1]
        print(u, end=" ") # the path having lowest cost
        if u == target:
            break

        for v, c in graph[u]:
            if visited[v] == False:
                visited[v] = True
                pq.put((c, v))
    print()

# for adding edges to graph
def addedge(x, y, cost):
    graph[x].append((y, cost))
    graph[y].append((x, cost))

G = nx.Graph()
v = int(input("Enter the number of nodes: "))
graph = [[] for i in range(v)] # undirected Graph
e = int(input("Enter the number of edges: "))
print("Enter the edges along with their weights:")
for i in range(e):
    x, y, z = list(map(int, input().split()))
    addedge(x, y, z)
    G.add_edge(x, y, weight = z)
```



```
source = int(input("Enter the Source Node: "))
target = int(input("Enter the Target/Destination Node: "))
print("\nPath: ", end = "")
best_first_search(source, target, v)
```

Output-



```
Enter the number of nodes: 6
Enter the number of edges: 5
Enter the edges along with their weights:
0 1 3
0 2 6
1 3 5
1 4 9
1 5 8
Enter the Source Node: 0
Enter the Target/Destination Node: 9

Path: 0 1 3 2 5 4
```