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**Inlab Exp3**

nodes=['S','A','B','C','D','Y','X','E']

a = [0,5,6,4,15,8,5,0]

c = [17,999,999,999,999,999,999,999]

xyz = {

  'S': ['A','B'],

  'A': ['Y','X'],

  'B': ['C','D'],

  'Y': ['E'],

  'X': ['E'],

  'C': ['E'],

  'D': ['E'],

  'E': []

}

dist = []

for i in range(len(nodes)):

    dist.append([0]\*len(nodes))

for i in range(len(nodes)):

    for x in xyz[nodes[i]]:

        d = int(input("Enter distance of {} from {} : ".format(x,nodes[i])))

        y = nodes.index(x)

        dist[i][y] = d

        dist[y][i] = d

src = input("Enter the Source Node : ")

lastNode = input("Enter the last node: ")

visited = {}

distance = {}

main = {}

bfs\_output = []

queue1 = {}

queue = []

for i in xyz.keys():

    visited[i] = False

    main[i] = None

    distance[i] = 99999

    queue1[i] = 99999

source = src

visited[source] = True

distance[source]= 0

queue1[source] = 17

queue.append(source)

v = 1

while len(queue)!=0:

    pop = queue.pop(0)

    queue1.pop(pop)

    bfs\_output.append(pop)

    for i in xyz[pop]:

        tot = distance[pop] + dist[nodes.index(pop)][nodes.index(i)] + a[nodes.index(i)]

        if c[nodes.index(i)] > tot:

            visited[i] = True

            v+=1

            main[i] = pop

            distance[i] = distance[pop] + dist[nodes.index(pop)][nodes.index(i)]

            c[nodes.index(i)] = distance[i] + a[nodes.index(i)]

            queue1[i] = distance[i] + a[nodes.index(i)]

        queue.append(i)

        queue.append(i)

        sortedQueue = sorted(queue1.items(), key=lambda x: x[1])

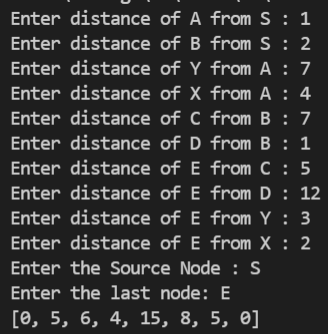
        queue = []

        for j in sortedQueue:

            queue.append(j[0])

print(a)

**Output:**

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