‘’’ Title : Best first search

Roll no: 3946

‘’’

# -\*- coding: utf-8 -\*-

"""

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"""

Prior={}

vertices = int(input("Enter number of Vertices:"))

for i in range(1,vertices+1):

    k = int(input("Enter the heurestic value:"))

    Prior[i]=k

print(Prior)

goal = int(input('Enter the goal value:'))

mat=[]

ls=[]

for i in range(0,vertices):

    for j in range(0,vertices):

        if(i==j):

            ls.insert(j,0)

        else:

            print("Enter 1 if there is an edge between",i+1," and ",j+1," else enter 0:")

        #print(i," ",j)

            a=int(input())

            ls.insert(j,a)

    mat.insert(i, ls)

    ls=[]

print(mat)

visited = []

for i in range (0,vertices):

    visited.insert(i,0)

open1={}  #priority queue

close=[]   #normal queue

open2={}

start = int(input("Enter the start vertex:"))

for i in range(0,vertices):

    if(mat[start][i]==1):

        open1.update({i+1:Prior[i+1]})  #inserts into open priority queue

        open2.update({i+1:Prior[i+1]})  #to check min of all children nodes

close.append(start)

visited[start]=1

while open1:

    temp = min(open2.values())

    res  = [key for key in open2 if open2[key] == temp]

    open1.pop(res[0])

    if((res[0]-1)==goal):

        close.append(res[0]-1)

        break

    close.append(res[0]-1)

    visited[res[0]-1]=1

    open2={}

    for i in range(0,vertices):

        if(mat[res[0]-1][i]==1 and visited[i]==0):

            open1.update({i+1:Prior[i+1]})  #inserts into open priority queue

            open2.update({i+1:Prior[i+1]})

            #visited.insert(res[0]-1,1)

for i in close:

    i=i+1

print('The path is:',close)

'''

Output

Enter number of Vertices:8

Enter the heurestic value:40

Enter the heurestic value:32

Enter the heurestic value:25

Enter the heurestic value:35

Enter the heurestic value:19

Enter the heurestic value:17

Enter the heurestic value:0

Enter the heurestic value:10

{1: 40, 2: 32, 3: 25, 4: 35, 5: 19, 6: 17, 7: 0, 8: 10}

Enter the goal value:6

('Enter 1 if there is an edge between', 1, ' and ', 2, ' else enter 0:')

1

('Enter 1 if there is an edge between', 1, ' and ', 3, ' else enter 0:')

1

('Enter 1 if there is an edge between', 1, ' and ', 4, ' else enter 0:')

1

('Enter 1 if there is an edge between', 1, ' and ', 5, ' else enter 0:')

0

('Enter 1 if there is an edge between', 1, ' and ', 6, ' else enter 0:')

0

('Enter 1 if there is an edge between', 1, ' and ', 7, ' else enter 0:')

0

('Enter 1 if there is an edge between', 1, ' and ', 8, ' else enter 0:')

0

('Enter 1 if there is an edge between', 2, ' and ', 1, ' else enter 0:')

1

('Enter 1 if there is an edge between', 2, ' and ', 3, ' else enter 0:')

0

('Enter 1 if there is an edge between', 2, ' and ', 4, ' else enter 0:')

0

('Enter 1 if there is an edge between', 2, ' and ', 5, ' else enter 0:')

1

('Enter 1 if there is an edge between', 2, ' and ', 6, ' else enter 0:')

0

('Enter 1 if there is an edge between', 2, ' and ', 7, ' else enter 0:')

0

('Enter 1 if there is an edge between', 2, ' and ', 8, ' else enter 0:')

0

('Enter 1 if there is an edge between', 3, ' and ', 1, ' else enter 0:')

1

('Enter 1 if there is an edge between', 3, ' and ', 2, ' else enter 0:')

0

('Enter 1 if there is an edge between', 3, ' and ', 4, ' else enter 0:')

0

('Enter 1 if there is an edge between', 3, ' and ', 5, ' else enter 0:')

1

('Enter 1 if there is an edge between', 3, ' and ', 6, ' else enter 0:')

1

('Enter 1 if there is an edge between', 3, ' and ', 7, ' else enter 0:')

0

('Enter 1 if there is an edge between', 3, ' and ', 8, ' else enter 0:')

0

('Enter 1 if there is an edge between', 4, ' and ', 1, ' else enter 0:')

1

('Enter 1 if there is an edge between', 4, ' and ', 2, ' else enter 0:')

0

('Enter 1 if there is an edge between', 4, ' and ', 3, ' else enter 0:')

0

('Enter 1 if there is an edge between', 4, ' and ', 5, ' else enter 0:')

0

('Enter 1 if there is an edge between', 4, ' and ', 6, ' else enter 0:')

1

('Enter 1 if there is an edge between', 4, ' and ', 7, ' else enter 0:')

0

('Enter 1 if there is an edge between', 4, ' and ', 8, ' else enter 0:')

0

('Enter 1 if there is an edge between', 5, ' and ', 1, ' else enter 0:')

0

('Enter 1 if there is an edge between', 5, ' and ', 2, ' else enter 0:')

1

('Enter 1 if there is an edge between', 5, ' and ', 3, ' else enter 0:')

0

('Enter 1 if there is an edge between', 5, ' and ', 4, ' else enter 0:')

0

('Enter 1 if there is an edge between', 5, ' and ', 6, ' else enter 0:')

0

('Enter 1 if there is an edge between', 5, ' and ', 7, ' else enter 0:')

0

('Enter 1 if there is an edge between', 5, ' and ', 8, ' else enter 0:')

1

('Enter 1 if there is an edge between', 6, ' and ', 1, ' else enter 0:')

0

('Enter 1 if there is an edge between', 6, ' and ', 2, ' else enter 0:')

0

('Enter 1 if there is an edge between', 6, ' and ', 3, ' else enter 0:')

1

('Enter 1 if there is an edge between', 6, ' and ', 4, ' else enter 0:')

1

('Enter 1 if there is an edge between', 6, ' and ', 5, ' else enter 0:')

0

('Enter 1 if there is an edge between', 6, ' and ', 7, ' else enter 0:')

1

('Enter 1 if there is an edge between', 6, ' and ', 8, ' else enter 0:')

0

('Enter 1 if there is an edge between', 7, ' and ', 1, ' else enter 0:')

0

('Enter 1 if there is an edge between', 7, ' and ', 2, ' else enter 0:')

0

('Enter 1 if there is an edge between', 7, ' and ', 3, ' else enter 0:')

0

('Enter 1 if there is an edge between', 7, ' and ', 4, ' else enter 0:')

0

('Enter 1 if there is an edge between', 7, ' and ', 5, ' else enter 0:')

0

('Enter 1 if there is an edge between', 7, ' and ', 6, ' else enter 0:')

1

('Enter 1 if there is an edge between', 7, ' and ', 8, ' else enter 0:')

1

('Enter 1 if there is an edge between', 8, ' and ', 1, ' else enter 0:')

0

('Enter 1 if there is an edge between', 8, ' and ', 2, ' else enter 0:')

0

('Enter 1 if there is an edge between', 8, ' and ', 3, ' else enter 0:')

0

('Enter 1 if there is an edge between', 8, ' and ', 4, ' else enter 0:')

0

('Enter 1 if there is an edge between', 8, ' and ', 5, ' else enter 0:')

1

('Enter 1 if there is an edge between', 8, ' and ', 6, ' else enter 0:')

0

('Enter 1 if there is an edge between', 8, ' and ', 7, ' else enter 0:')

1

[[0, 1, 1, 1, 0, 0, 0, 0], [1, 0, 0, 0, 1, 0, 0, 0], [1, 0, 0, 0, 1, 1, 0, 0], [1, 0, 0, 0, 0, 1, 0, 0], [0, 1, 0, 0, 0, 0, 0, 1], [0, 0, 1, 1, 0, 0, 1, 0], [0, 0, 0, 0, 0, 1, 0, 1], [0, 0, 0, 0, 1, 0, 1, 0]]

Enter the start vertex:0

('The path is:', [0, 2, 5, 6])

'''