PROBLEM SET 5

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CSE N

import numpy as np

print(&quot;Enter the matrix that actions are to be performed: &quot;,end=&quot;\n&quot;)

matrix = [[int(input()) for c in range (3)] for r in range(3)]

print(&quot;Enter the matrix the final matrix: &quot;,end=&quot;\n&quot;)

matrix2= [[int(input()) for c in range (3)] for r in range(3)]

def create(matrix,c,d,r,p):

def huristic(matrix,c,d):

count=0

for i in range(3):

for j in range(3):

if(matrix[i][j]!=matrix2[i][j]):

count+=1

print(&quot;huristic value :&quot;,count,end=&quot; \n&quot;)

def find():

for i in range(3):

for j in range(3):

if(matrix[i][j]==0):

c=i

d=j

return c,d

def left(matrix,c,d):

if d &gt; 0:

print(&quot;depth level&quot;,r)

print(&quot;Action performed: &quot;,&quot;left&quot;)

matrix1=np.copy(matrix)

temp1=matrix1[c][d-1]

matrix1[c][d-1]=matrix1[c][d]

matrix1[c][d]=temp1

c,d=find()

print(matrix1,end=&quot;\n&quot;)

huristic(matrix1,c,d)

create(matrix1,c,d,r+1,p)

def right(matrix,c,d):

if d &lt; 2 :

print(&quot;depth level&quot;,r)

print(&quot;Action performed: &quot;,&quot;right&quot;)

matrix1=np.copy(matrix)

temp1=matrix1[c][d+1]

matrix1[c][d+1]=matrix1[c][d]

matrix1[c][d]=temp1

c,d=find()

print(matrix1,end=&quot;\n&quot;)

huristic(matrix1,c,d)

create(matrix1,c,d,r+1,p)

def up(matrix,c,d):

if c &gt; 0:

print(&quot;depth level&quot;,r)

print(&quot;Action performed: &quot;,&#39;up&#39;)

matrix1=np.copy(matrix)

temp1=matrix[c-1][d]

matrix1[c-1][d]=matrix[c][d]

matrix1[c][d]=temp1

c,d=find()

print(matrix1,end=&quot;\n&quot;)

huristic(matrix1,c,d)

create(matrix1,c,d,r+1,p)

def down(matrix,c,d):

if c &lt; 2:

print(&quot;depth level&quot;,r)

print(&quot;Action performed: &quot;,&#39;down&#39;)

matrix1=np.copy(matrix)

temp1=matrix1[c+1][d]

matrix1[c+1][d]=matrix1[c][d]

matrix1[c][d]=temp1

c,d=find()

print(matrix1,end=&quot;\n&quot;)

huristic(matrix1,c,d)

create(matrix1,c,d,r+1,p)

if r&gt;p:

return 0

c,d=find()

left(matrix,c,d)

right(matrix,c,d)

up(matrix,c,d)

down(matrix,c,d)

print(matrix,end=&quot;\n&quot;)

c=0

d=0

r=0

print(&quot;Enter the maximum depth for the tree: &quot;,end=&quot;\n&quot;)

p=int(input())

create(np.array(matrix),c,d,r+1,p)