TT DS PYTHON MODULE-24

Started on	Saturday, 5 October 2024, 9:35 AM
State	Finished
Completed on	Saturday, 5 October 2024, 9:40 AM
Time taken	4 mins 35 secs
Grade	**80.00** out of 100.00

Question **1**

Incorrect

Mark 0.00 out of 20.00

Flag question

Write a python program to check whether Hamiltonian path exits in the given graph.

For example:

Test	Result
`Hamiltonian_path(adj, N)`	`YES`

Answer: (penalty regime: 0 %)

Reset answer

```
def Hamiltonian_path(adj, N):
    ########################## Add your Code here ###########################
adj = [ [ 0, 1, 1, 1, 0 ] ,
        [ 1, 0, 1, 0, 1 ],
        [ 1, 1, 0, 1, 1 ],
        [ 1, 0, 1, 0, 0 ] ]

N = len(adj)

if (Hamiltonian_path(adj, N)):
    print("YES")
else:
    print("NO")
```

Syntax Error(s)

```
Sorry: IndentationError: expected an indented block (__tester__.python3, line 3)
```

Incorrect

Marks for this submission: 0.00/20.00.

Question **2**

Correct

Mark 20.00 out of 20.00

Flag question

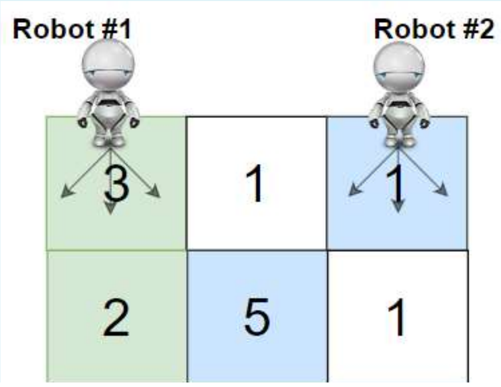
You are given a `rows x cols` matrix `grid` representing a field of cherries where `grid[i][j]` represents the number of cherries that you can collect from the `(i, j)` cell.

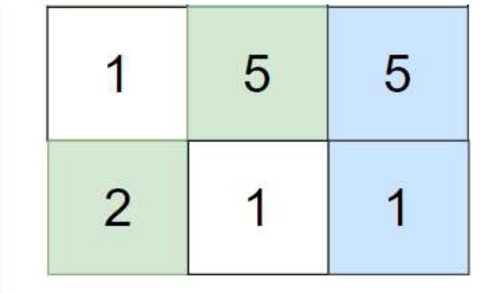
You have two robots that can collect cherries for you:

- **Robot #1** is located at the **top-left corner** `(0, 0)`, and
- **Robot #2** is located at the **top-right corner** `(0, cols - 1)`.

Return *the maximum number of cherries collection using both robots by following the rules below*:

- From a cell `(i, j)`, robots can move to cell `(i + 1, j - 1)`, `(i + 1, j)`, or `(i + 1, j + 1)`.
- When any robot passes through a cell, It picks up all cherries, and the cell becomes an empty cell.
- When both robots stay in the same cell, only one takes the cherries.
- Both robots cannot move outside of the grid at any moment.
- Both robots should reach the bottom row in `grid`.





1	5	5
2	1	1

For example:

Test	Result
`ob.cherryPickup(grid)`	24

Answer: (penalty regime: 0 %)

Reset answer

```python
class Solution(object):
    def cherryPickup(self, grid):
        def dp(i, j, k):
            if (i, j, k) in memo:
                return memo[(i, j, k)]

            if i == ROW_NUM - 1:
                return grid[i][j] + (grid[i][k] if j != k else 0)

            cherries = grid[i][j] + (grid[i][k] if j != k else 0)

            max_cherries = 0
            for dj in [-1, 0, 1]:
                for dk in [-1, 0, 1]:
                    next_j, next_k = j + dj, k + dk
                    if 0 <= next_j < COL_NUM and 0 <= next_k < COL_NUM:
                        max_cherries = max(max_cherries, dp(i + 1, next_j, next_k))

            memo[(i, j, k)] = cherries + max_cherries
            return memo[(i, j, k)]

        ROW_NUM = len(grid)
```

	Test	Expected	Got	
	`ob.cherryPickup(grid)`	24	24	

Passed all tests!

Correct

Marks for this submission: 20.00/20.00.

Question 3

Correct

Mark 20.00 out of 20.00

Flag question

Create a python program for 0/1 knapsack problem using naive recursion method

For example:

Test	Input	Result
`knapSack(W, wt, val, n)`	3 3 50 60 100 120 10 20 30	The maximum value that can be put in a knapsack of capacity W is: 220

Answer: (penalty regime: 0 %)

Reset answer

```python
def knapSack(W, wt, val, n):
    ########## Add your code here #########
    K = [[0 for x in range(W + 1)] for x in range(n + 1)]
    for i in range(n + 1):
        for w in range(W + 1):
            if i == 0 or w == 0:
                K[i][w] = 0
            elif wt[i-1] <= w:
                K[i][w] = max(val[i-1]+ K[i-1][w-wt[i-1]],K[i-1][w])
            else:
                K[i][w] = K[i-1][w]

    return K[n][W]

x=int(input())
y=int(input())
W=int(input())
val=[]
wt=[]
for i in range(x):
    val.append(int(input()))
for y in range(y):
```

	Test	Input	Expected	Got
	knapSack(W, wt, val, n)	3 3 50 60 100 120 10 20 30	The maximum value that can be put in a knapsack of capacity W is: 220	The maximum
	knapSack(W, wt, val, n)	3 3 55 65 115 125 15 25 35	The maximum value that can be put in a knapsack of capacity W is: 190	The maximum

Passed all tests!

Correct

Marks for this submission: 20.00/20.00.

Question 4

Correct

Mark 20.00 out of 20.00

Flag question

Create a python program using brute force method of searching for the given substring in the main string.

For example:

Test	Input	Result
match(str1,str2)	AABAACAADAABAABA AABA	Found at index 0 Found at index 9 Found at index 12

Answer: (penalty regime: 0 %)

Reset answer

```
def match(string,sub):
    l = len(string)
    ls = len(sub)
    start = sub[0]
    for i in range(l-ls+1):
        if string[i:i+ls]==sub:
            print(f"Found at index {i}")

    ########### Add your code here #######

str1=input()
str2=input()
```

	Test	Input	Expected	Got	

	match(str1,str2)	AABAACAADAABAABA AABA	Found at index 0 Found at index 9 Found at index 12	Found at index 0 Found at index 9 Found at index 12	
	match(str1,str2)	saveetha savee	Found at index 0	Found at index 0	

Passed all tests!

Correct

Marks for this submission: 20.00/20.00.

Question **5**

Correct

Mark 20.00 out of 20.00

Flag question

Given a 2D matrix **tsp[][]**, where each row has the array of distances from that indexed city to all the other cities and **-1** denotes that there doesn't exist a path between those two indexed cities. The task is to print minimum cost in TSP cycle.

tsp[][] = {{-1, 30, 25, 10},
{15, -1, 20, 40},
{10, 20, -1, 25},
{30, 10, 20, -1}};

Answer: (penalty regime: 0 %)

Reset answer

```
from typing import DefaultDict


INT_MAX = 2147483647


def findMinRoute(tsp):
    sum = 0
    counter = 0
    j = 0
    i = 0
    min = INT_MAX
    visitedRouteList = DefaultDict(int)


    visitedRouteList[0] = 1
    route = [0] * len(tsp)


    while i < len(tsp) and j < len(tsp[i]):
        ##Write your code here
        if counter >= len(tsp[i]) - 1:
```

	Expected	Got	
	Minimum Cost is : 50	Minimum Cost is : 50	

Passed all tests!

Correct

Marks for this submission: 20.00/20.00.

Finish re