Started on	Friday, 9 May 2025, 2:12 PM
State	Finished
Completed on	Friday, 9 May 2025, 2:42 PM
Time taken	30 mins 26 secs
Grade	**100.00** out of 100.00

Question **1**

Correct

Mark 20.00 out of 20.00

Create a python program to find the maximum value in linear search.

For example:

Test	Input	Result
find_maximum(test_scores)	10 88 93 75 100 80 67 71 92 90 83	Maximum value is 100

Answer: (penalty regime: 0 %)

Reset answer

```
def find_maximum(lst):
    max=None
    for i in lst:
        if max == None or i > max:
            max = i
    return max
test_scores = []
n=int(input())
for i in range(n):
    test_scores.append(int(input()))
print("Maximum value is ",find_maximum(test_scores))
```

	Test	Input	Expected	Got	
✔	find_maximum(test_scores)	10 88 93 75 100 80 67 71 92 90 83	Maximum value is 100	Maximum value is 100	✔
✔	find_maximum(test_scores)	5 45 86 95 76 28	Maximum value is 95	Maximum value is 95	✔

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.

Question **2**

Correct

Mark 20.00 out of 20.00

Create a python program to find the longest common subsequence using Memoization Implementation.

For example:

Input	Result
AGGTAB GXTXAYB	Length of LCS is 4

Answer: (penalty regime: 0 %)

```
def lcs(X, Y, m, n):
    if (m == 0 or n == 0):
        return 0
    if (X[m-1] == Y[n-1]):
        return 1 + lcs(X, Y, m-1, n-1)
    else:
        return max(lcs(X, Y, m, n-1),lcs(X, Y, m-1, n))
X = input()
Y = input()
print("Length of LCS is",lcs(X, Y, len(X), len(Y)))
```

	Input	Expected	Got	
✔	AGGTAB GXTXAYB	Length of LCS is 4	Length of LCS is 4	✔
✔	SAMPLE SAEMSUNG	Length of LCS is 3	Length of LCS is 3	✔
✔	saveetha sabeetha	Length of LCS is 7	Length of LCS is 7	✔

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.

Question **3**

Correct

Mark 20.00 out of 20.00

Create a python program using dynamic programming for 0/1 knapsack problem.

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

```
def knapSack(W, wt, val, n):
    if n == 0 or W == 0 :
        return 0
    if (wt[n-1] > W):
        return knapSack(W, wt, val, n-1)
    else:
        return max(val[n-1] + knapSack(W-wt[n-1], wt, val, n-1), knapSack(W, wt, val, n-1))
    #End here
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):
    wt.append(int(input()))
n = len(val)
print('The maximum value that can be put in a knapsack of capacity W is: ',knapSack(W, wt, val, n))
```

	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 value that can be put in a knapsack of capacity W is: 220	✔
✔	knapSack(W, wt, val, n)	3 3 40 50 90 110 10 20 30	The maximum value that can be put in a knapsack of capacity W is: 160	The maximum value that can be put in a knapsack of capacity W is: 160	✔

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.

Question **4**

Correct

Mark 20.00 out of 20.00

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]):
        if counter >= len(tsp[i]) - 1:
            break
        if j != i and (visitedRouteList[j] == 0):
            if tsp[i][j] < min:
                min = tsp[i][j]
                route[counter] = j + 1
        j += 1
        if j == len(tsp[i]):
            sum += min
            min = INT_MAX
```

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

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.

Question **5**

Correct

Mark 20.00 out of 20.00

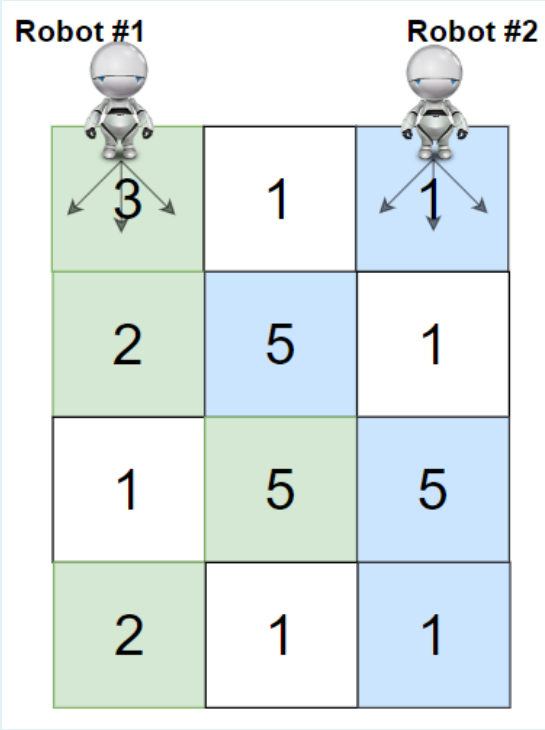
You are given a `rows x cols` matrix `grid` representing a field of cherries where `grid[i][j]` represents the number of cherries that you can collect from the `(i, j)` cell.

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`.



For example:

Test	Result
ob.cherryPickup(grid)	24

Answer: (penalty regime: 0 %)

Reset answer

```
class Solution(object):
    def cherryPickup(self, grid):
        def dp(k):
            #Start here
            if k == ROW_NUM - 1:
                return [[grid[-1][i] if i == j else grid[-1][i] + grid[-1][j] for j in range(COL_NUM)
                        for i in range(COL_NUM)]
            row = grid[k]
            ans = [[0] * COL_NUM for i in range(COL_NUM)]
            next_dp = dp(k + 1)
            for i in range(COL_NUM):
                for j in range(i, COL_NUM):
                    for di in [-1, 0, 1]:
                        for dj in [-1, 0, 1]:
                            if 0 <= i + di < COL_NUM and 0 <= j + dj < COL_NUM:
                                if i == j:
```

```
                    ans[i][j] = max(ans[i][j], next_dp[i + di][j + dj] + row[i])
                else:
                    ans[i][j] = max(ans[i][j], next_dp[i + di][j + dj] + row[i] + row
            return ans
        ROW_NUM = len(grid)
```

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

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.