Started on	Thursday, 22 May 2025, 9:18 AM
State	Finished
Completed on	Saturday, 24 May 2025, 1:56 PM
Time taken	2 days 4 hours
Overdue	2 days 2 hours
Grade	**100.00** out of 100.00

Question **1**

Correct

Mark 20.00 out of 20.00

Create a python program to for the following problem statement.

You are given an `n x n grid` representing a field of cherries, each cell is one of three possible integers.

- `0` means the cell is empty, so you can pass through,
- `1` means the cell contains a cherry that you can pick up and pass through, or
- `-1` means the cell contains a thorn that blocks your way.

Return *the maximum number of cherries you can collect by following the rules below*:

- Starting at the position `(0, 0)` and reaching `(n - 1, n - 1)` by moving right or down through valid path cells (cells with value `0` or `1`).
- After reaching `(n - 1, n - 1)`, returning to `(0, 0)` by moving left or up through valid path cells.
- When passing through a path cell containing a cherry, you pick it up, and the cell becomes an empty cell `0`.
- If there is no valid path between `(0, 0)` and `(n - 1, n - 1)`, then no cherries can be collected.

For example:

Test	Result
obj.cherryPickup(grid)	5

Answer: (penalty regime: 0 %)

Reset answer

```
class Solution:
    def cherryPickup(self, grid):
        n = len(grid)
        #############    Add your code here  ###############
        dp = [[0]*n for _ in range(n)]
        for i in range(n-1,-1,-1):
            for j in range(n-1, -1, -1):
                if i==n-1 and j==n-1:
                    dp[i][j] = grid[i][j]
                elif i==n-1:
                    dp[i][j] = grid[i][j]+dp[i][j+1]
                elif j==n-1:
                    dp[i][j] = grid[i][j]+dp[i+1][j]
                else:
                    dp[i][j] = grid[i][j]+max(dp[i][j+1], dp[i+1][j])

        return max(0,dp[0][0])+1
obj=Solution()
grid=[[0,1,-1],[1,0,-1],[1,1,1]]
print(obj.cherryPickup(grid))
```

	Test	Expected	Got	
✔	obj.cherryPickup(grid)	5	5	✔

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 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))

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

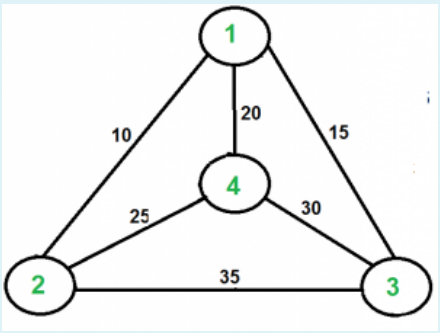
Marks for this submission: 20.00/20.00.

Question **3**

Correct

Mark 20.00 out of 20.00

Solve Travelling Sales man Problem for the following graph



Answer: (penalty regime: 0 %)

Reset answer

```
from sys import maxsize
from itertools import permutations
V = 4
def travellingSalesmanProblem(graph, s):
    vertex =[]
    for i in range(V):
        if i !=s:
            vertex.append(i)
    min_path = maxsize
    next_permutation = permutations(vertex)
    for i in next_permutation:
        current_pathweight = 0
        k = s
        for j in i:
            current_pathweight += graph[k][j]
            k = j
        current_pathweight += graph[k][s]
        min_path = min(min_path, current_pathweight)

    return min_path


```

	Expected	Got	
✔	80	80	✔

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.

Question **4**

Correct

Mark 20.00 out of 20.00

Write a python program to implement merge sort without using recursive function on the given list of float values.

For example:

Input	Result
5 6.2 4.1 3.2 5.6 7.4	left: [6.2] Right: [4.1] left: [3.2] Right: [5.6] left: [7.4] Right: [] left: [4.1, 6.2] Right: [3.2, 5.6] left: [7.4] Right: [] left: [3.2, 4.1, 5.6, 6.2] Right: [7.4] [3.2, 4.1, 5.6, 6.2, 7.4]
6 3.2 8.9 4.5 6.2 1.5 8.0	left: [3.2] Right: [8.9] left: [4.5] Right: [6.2] left: [1.5] Right: [8.0] left: [3.2, 8.9] Right: [4.5, 6.2] left: [1.5, 8.0] Right: [] left: [3.2, 4.5, 6.2, 8.9] Right: [1.5, 8.0] [1.5, 3.2, 4.5, 6.2, 8.0, 8.9]

Answer: (penalty regime: 0 %)

```
def merge_sort_iterative(arr):
    stack = [[val] for val in arr]

    while len(stack) > 1:
        temp_stack = []
        for i in range(0, len(stack), 2):
            left = stack[i]
            right = stack[i + 1] if i + 1 < len(stack) else []
            merged = merge(left, right)
            temp_stack.append(merged)
            print(f"left:  {left}")
            print(f"Right:  {right}")
        stack = temp_stack

    return stack[0]

def merge(left, right):
    i = j = 0
    li = []

    while i < len(left) and j < len(right):
        if left[i] < right[j]:
```

	Input	Expected	Got	
✔	5 6.2 4.1 3.2 5.6 7.4	left: [6.2] Right: [4.1] left: [3.2] Right: [5.6] left: [7.4] Right: [] left: [4.1, 6.2] Right: [3.2, 5.6] left: [7.4] Right: [] left: [3.2, 4.1, 5.6, 6.2] Right: [7.4] [3.2, 4.1, 5.6, 6.2, 7.4]	left: [6.2] Right: [4.1] left: [3.2] Right: [5.6] left: [7.4] Right: [] left: [4.1, 6.2] Right: [3.2, 5.6] left: [7.4] Right: [] left: [3.2, 4.1, 5.6, 6.2] Right: [7.4] [3.2, 4.1, 5.6, 6.2, 7.4]	✔
✔	6 3.2 8.9 4.5 6.2 1.5 8.0	left: [3.2] Right: [8.9] left: [4.5] Right: [6.2] left: [1.5] Right: [8.0] left: [3.2, 8.9] Right: [4.5, 6.2] left: [1.5, 8.0] Right: [] left: [3.2, 4.5, 6.2, 8.9] Right: [1.5, 8.0] [1.5, 3.2, 4.5, 6.2, 8.0, 8.9]	left: [3.2] Right: [8.9] left: [4.5] Right: [6.2] left: [1.5] Right: [8.0] left: [3.2, 8.9] Right: [4.5, 6.2] left: [1.5, 8.0] Right: [] left: [3.2, 4.5, 6.2, 8.9] Right: [1.5, 8.0] [1.5, 3.2, 4.5, 6.2, 8.0, 8.9]	✔

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.

Question **5**

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.