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):
    return max(lst)

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

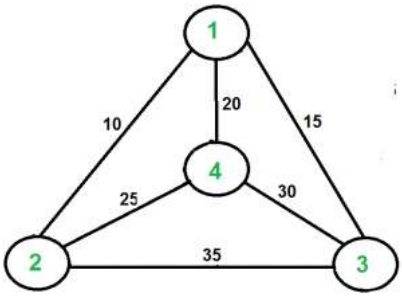
Marks for this submission: 20.00/20.00.

Question **2**

Correct

Mark 20.00 out of 20.00

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
    #End here
```

	Expected	Got	
✔	80	80	✔

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 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 code here
        dp=[[[-1]*n for _ in range(n)] for _ in range(n)]
        def f(x1,y1,x2):
            y2=x1+y1-x2
            if x1<0 or y1<0 or x2<0 or y2<0 or grid[x1][y1]==-1 or grid[x2][y2]==-1:
                return float('-inf')
            if x1==0 and y1==0 and x2==0 and y2==0:
                return grid[0][0]
            if dp[x1][y1][x2]!=-1:
                return dp[x1][y1][x2]
            cherries=grid[x1][y1]
            if x1!=x2 or y1!=y2:
                cherries+=grid[x2][y2]
            cherries+=max(
                          f(x1-1,y1,x2-1),
                           f(x1,y1-1,x2-1),
                           f(x1-1,y1,x2),
                           f(x1,y1-1,x2))
            dp[x1][y1][x2]=cherries
```

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

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 for the implementation of merge sort on the given list of values.

For example:

Input	Result
5 12 10 61 2 3	Given array is 12 10 61 2 3 Sorted array is 2 3 10 12 61
6 20 10 31 49 87 6	Given array is 20 10 31 49 87 6 Sorted array is 6 10 20 31 49 87

Answer: (penalty regime: 0 %)

```
def merge(arr, l, m, r):
    #Add Your Code here#########################
    n1 = m - l + 1
    n2 = r - m
    L = [0] * (n1)
    R = [0] * (n2)
    for i in range(0, n1):
        L[i] = arr[l + i]

    for j in range(0, n2):
        R[j] = arr[m + 1 + j]

    i = 0
    j = 0
    k = l

    while i < n1 and j < n2:
        if L[i] <= R[j]:
            arr[k] = L[i]
            i += 1
        else:
            arr[k] = R[j]
```

	Input	Expected	Got	
✔	5 12 10 61 2 3	Given array is 12 10 61 2 3 Sorted array is 2 3 10 12 61	Given array is 12 10 61 2 3 Sorted array is 2 3 10 12 61	✔
✔	6 20 10 31 49 87 6	Given array is 20 10 31 49 87 6 Sorted array is 6 10 20 31 49 87	Given array is 20 10 31 49 87 6 Sorted array is 6 10 20 31 49 87	✔
✔	5 21 3 14 5 69	Given array is 21 3 14 5 69 Sorted array is 3 5 14 21 69	Given array is 21 3 14 5 69 Sorted array is 3 5 14 21 69	✔

	Input	Expected	Got	
✔	7 2 3 45 61 20 1 9	Given array is 2 3 45 61 20 1 9 Sorted array is 1 2 3 9 20 45 61	Given array is 2 3 45 61 20 1 9 Sorted array is 1 2 3 9 20 45 61	✔

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 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

```
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 55 65 115 125 15 25 35	The maximum value that can be put in a knapsack of capacity W is: 190	The maximum value that can be put in a knapsack of capacity W is: 190	✔

Passed all tests! ✔

Correct

Marks for this submission: 20.00/20.00.