

Python assignment-1:

1. Consider an electric bill calculation system. Take input of entire customer details i.e. the customer name, customer id, and account name and print the final calculated bill.

The tariff for the units consumed are:

Units Consumed	Price per unit
Up to 100 units	Rs 10
Up to 150 units	Rs 15
Up to 200 units	Rs 22
More than 200 units	Rs 30

Calculate the amount chargeable and display the Customer details and bill amount in tabulated form.

The program takes input in the pattern:

Name: Binay Biswas

Customer ID: 1574269101

Account Name: B.Binay

Units Consumed: 175

Output

Name	Customer ID	Account Name	Units Consumed	Amount Chargeable
Binay Biswas	1574269101	B.Binay	175	Rs 2300

(10)

2. Write a function sumprimes(L) that takes as input a list of integers L and returns the sum of all the prime numbers in L. Each element, e of the list is checked for being prime or not by a function isprime(e). N is the number of elements in the array and its value should had been 5.

The program takes input in the pattern:

N = 5, L = (56, 17, 59, 64, 83)

Output: sum = 159 (10)

3. Calculate the total cost for a pay-as-you-go service availed based on the number of days and additional hours. The timestamp is taken in 'dd-mm-yyyyhh:mm:ss' format. There is a starting timestamp and an ending timestamp. Calculate the number of days and hours elapsed between the two timestamps. The chargeable amount for the service needs to be calculated. The following is the tariff details:

Duration	Amount Payable
1 Day (i.e. 24 hours)	Rs 23
1 hour	Rs 1

the amount chargeable sums to Rs 719

The program takes the input in the pattern:

Input

Start timestamp: 20-03-2022 20:15:36

End timestamp: 21-04-2022 02:14:37

Output

Chargeable amount: Rs 696

(15)

4. Find basin/ plateau in 1D array is present. A plateau is defined as a region of increasing values, followed by at least 2 constant value and a region of decreasing values. A basin is defined as a region of decreasing values, followed by at least 2 constant value and a region of increasing values. A list may have a plateau or basin or none.

The program takes input in the pattern:

Set 1

Input

L = 28, 35, 46, 59, 63, 63, 63, 55, 5

Output

Plateau

Set 2

Input

L = 68 64 60 45 45 45 45 71 89

Output

Basin

Set 3

Input

L = 28, 35, 46, 59, 63, 63, 63, 75, 95

Output

Not Defined

(10)

5. Find a position in a 2D array where there is a valley. A valley is a point in a 2D matrix from where the values increases continuously towards the edge of the matrix in all the four directions.

Sample input:

[[1,7,9,10],

[13,12,7,15],

[10,19,24,18],

[14,22,35,21]]

Output: (1,2)

(20)

6. Create a nested dictionary containing marks obtained in five courses taken across two semesters. Calculate the grade point obtained in each of the two semesters.

(15)

7. Accept a 1D array as an input from the user. Arrange the elements such that all the positive integers must be present in the beginning of the array.

(10)

8. Swap a 2D array about its principal diagonal.

Sample Input:

[[1,2,3],

[4,5,6],

[7,8,9]]

Output:

[[1,4,7],

[2,5,8],

[3,6,9]]

(10)