

## 1. Calculate Electricity Bills

[7]

You have been assigned the task of computing the electricity bill for a household based on the quantity of units consumed. The electricity rates are structured as follows:

- The first 50 units are billed at a rate of 0.50 taka per unit.
- The subsequent 100 units (from 51 to 150) are billed at a rate of 0.75 taka per unit.
- The next 100 units (from 151 to 250) are billed at a rate of 1.20 taka per unit.
- Any units consumed beyond 250 are billed at a rate of 1.50 taka per unit.
- Additionally, a 20% surcharge, equivalent to 20% of the calculated bill, is added to the final bill.

Write a C program that obtains the quantity of electricity units consumed as input and calculates the total electricity bill for the household, taking into account the surcharge. The program should exhibit the total bill amount rounded to two decimal places.

Sample Input	Sample Output
125	97.50
300	354.00

**Explanation:** For example 1, calculated bill =  $\{ (50 \times 0.50) + (75 \times 0.75) \} = 81.25$   
Total bill (including surcharge) =  $81.25 + 16.25 = 97.50$

2. Leaders in an Array

[6]

You are provided with an array of integers. An element in the array is considered a leader if it is greater than all the elements to its right side. The rightmost element is always considered a leader. For instance, in the array {16, 17, 4, 3, 5, 2}, the leaders are 17, 5, and 2.

Write a C program that accepts an array of integers as input and then displays the leader elements in the array. Your program should initially request the size of the array from the user. After that, you should take the elements as input. Finally, it should print the leaders as output.

Sample Input	Sample Output
Array: [16, 17, 4, 3, 5, 2]	Leaders: 17 5 2
Array: [8, 9, 12, 6, 2]	Leaders: 12, 6, 2
Array: [1, 2, 3, 4, 5]	Leaders: 5

3. Perfect Number Checker

[7]

A **perfect number** is a positive integer that is equal to the sum of its proper divisors, excluding itself. For example, 28 is a perfect number because its proper divisors are 1, 2, 4, 7, and 14, and their sum is 28.

Write a C program that checks whether a given positive integer 'n' is a perfect number or not. Your program should take 'n' as input and determine if it meets the criteria for being a perfect number.

Sample Input	Sample Output
28	Yes
56	No
6	Yes
14	No