

UST Questions

1. Product of Array Plus Length

■ Description

Given an array of integers, find the product of all elements and add it to the total number of elements in the array.

■ Input Format

- An integer array `arr` of size `n`.

■ Output Format

- An integer representing the sum of the product of the array elements and the number of elements.

■ Examples

Input: arr = [1, 2, 3, 4]

Output: 28

Explanation: Product = $1 \times 2 \times 3 \times 4 = 24$; Add length (4) $\rightarrow 24 + 4 = 28$.

Input: arr = [5, 5, 2]

Output: 53

Explanation: Product = $5 \times 5 \times 2 = 50$; Add length (3) $\rightarrow 50 + 3 = 53$.

2. Sum of Prime Numbers Within a Range

■ Description

Given two integers `L` and `R`, find the sum of all prime numbers between `L` and `R` (inclusive).

■ Input Format

- Two integers `L` and `R` representing the range.

■ Output Format

- An integer representing the sum of all prime numbers within the range.

■ Examples

Input: L = 10, R = 20

Output: 60

Explanation: Prime numbers = [11, 13, 17, 19]; Sum = 60.

Input: L = 1, R = 10

Output: 17

Explanation: Prime numbers = [2, 3, 5, 7]; Sum = 17.

3. Longest Power Subarray

■ Description

A 'power subarray' is defined as a contiguous subarray that contains an equal number of positive and negative integers. Find the length of the longest such subarray.

■ Input Format

- An integer array `arr` of size `n`.

■ Output Format

- An integer representing the length of the longest power subarray.

■ Examples

Input: arr = [1, -1, 1, -1, -1, 1]

Output: 6

Explanation: Entire array has equal positive and negative elements.

Input: arr = [1, 2, -3, -1, 4, -4]

Output: 6

Explanation: The whole array balances positives and negatives equally.

Input: arr = [1, -1, 1, 1]

Output: 2

Explanation: The subarray [1, -1] is the longest balanced subarray.