

Problem 1

We define subsequence as any subset of an array. We define a subarray as a contiguous subsequence in an array.

Given an array, find the maximum possible sum among:

1. all nonempty subarrays.
2. all nonempty subsequences.

Print the two values as space-separated integers on one line.

Note that empty subarrays/subsequences should not be considered.

Example

`arr = [-1,2,3,-4,5,10]`

The maximum subarray sum is comprised of elements at indices **[1 - 5]** . Their sum is **2 + 3 - 4 + 5 + 10 = 16**. The maximum subsequence sum is comprised of elements at indices **[1, 2, 4, 5]** and their sum is **2 + 3 + 5 = 10 = 20**.

Function Description

Complete the `maxSubarray` function in the editor below.

`maxSubarray` has the following parameter(s):

`int arr[n]`: an array of integers

Returns

`int[2]`: the maximum subarray and subsequence sums

Input Format

The first line of input contains a single integer , the number of test cases.

The first line of each test case contains a single integer .

The second line contains space-separated integers where .

Sample Input 0

2

4

1 2 3 4

6

2 -1 2 3 4 -5

Sample Output 0

10 10

10 11

Explanation 0

In the first case: The maximum sum for both types of subsequences is just the sum of all the elements since they are all positive.

In the second case: The subarray **[2, -1, 2, 3, 4, -5]** is the subarray with the maximum sum, and **[2, 2, 3, 4]** is the subsequence with the maximum sum.

Sample Input 1

1

5

-2 -3 -1 -4 -6

Sample Output 1

-1 -1

Explanation 1

Since all of the numbers are negative, both the maximum subarray and maximum subsequence sums are made up of one element, **-1**.

Problem 2

Given a string containing digits from 2-9 inclusive, return all possible letter combinations that the number could represent. Return the answer in any order.

A mapping of digits to letters (just like on the telephone buttons) is given below.

Note that 1 does not map to any letters.



Example 1:

Input: digits = "23"

Output: ["ad","ae","af","bd","be","bf","cd","ce","cf"]

Example 2:

Input: digits = ""

Output: []

Example 3:

Input: digits = "2"

Output: ["a","b","c"]

Constraints:

0 <= digits.length <= 4

digits[i] is a digit in the range ['2', '9'].

Problem 3

Given an array of size $N-1$ such that it only contains distinct integers in the range of 1 to N .

Find the missing element.

Example:

Input: $N = 5$

$A[4] = \{1, 2, 4, 5\}$

Output: 3

Expected Time Complexity: $O(N)$

Expected Auxiliary Space: $O(1)$

Constraints: $1 \leq N \leq 10^6$ $1 \leq A[i] \leq 10^6$