

Beautiful Cuts

Assignment 2

Computer Programming

Due date: TBA

Problem Statement: You are given an array of integers. You can perform several cuts on the array. In **one cut**, you can cut/partition your array into **two non-empty continuous parts**, keep one part and discard the rest. For example the array 1 4 5 6 7 can be cut into two parts: 1 4 5 and 6 7. Note that the parts must be non-empty. Let's discard the part 6 7. The new array will now become 1 4 5 and any further operations will be carried on this array.

The beauty value of a part is defined as the sum of all integers in it. You are required to find the maximum beauty value you can obtain after making **at MOST K** cuts in the array.

Input

First line: Number of testcases T.

For every testcase, N K - the number of elements of the array and the maximum number of cuts.

Second line: N elements of the array A.

Output

For every testcase output maximum beauty value of array using at most K cuts.

Constraints

$$1 \leq T \leq 1000$$

$$1 \leq N \leq 10^4$$

$$0 \leq K \leq N - 1$$

$$-10^9 \leq A[i] \leq 10^9$$

Time Limit: 1 sec

Memory Limit: 256 MB

Sample Test Case

Input	Output
1 5 1 -1 2 -2 3 4	7

Explanation

For the first test case: We make a cut after -2, getting two arrays (-1, 2, -2) and (3, 4). Discard the first one. And the value of 3+4 = 7 gives maximum beauty.