
Array Merge

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Given two arrays A, B of length n and m separately, you have to merge them into only one array C (of length $n + m$) obeying the rule that the relative order of numbers in the same original array does not change in the new array.

After merging, please calculate the $cost = \sum_{i=1}^{n+m} i \times C[i]$ and output it.

If there are multiple $costs$, please output the minimum of them.

Input

The first line of input file contains an integer T ($1 \leq T \leq 50$), describing the number of test cases.

Then there are $3 \times T$ lines, with every three lines representing a test case.

The first line of the test case contains two integers n and m ($1 \leq n, m \leq 10^5$) as described above.

The second line of that contains n integers, i^{th} of which represents the $A[i]$.

The third line of that contains m integers, i^{th} of which represents the $B[i]$.

The numbers in both array have range in $[0, 10^8]$.

It is guaranteed that the sum of $n + m$ in all cases does not exceed 10^6 .

Output

You should output exactly T lines. For each case, print **Case d :** (d represents the order of test case) first and then print a number representing the minimum $cost$ on the same line.

Example

standard input	standard output
2	Case 1: 40
2 2	Case 2: 75
5 3	
4 5	
3 3	
1 3 5	
2 6 4	

Note

Sample 1: Considering merging (5) (3) and [4] [5], we have following valid methods:

- (5) (3) [4] [5], $1 \times 5 + 2 \times 3 + 3 \times 4 + 4 \times 5 = 43$
- (5) [4] (3) [5], $1 \times 5 + 2 \times 4 + 3 \times 3 + 4 \times 5 = 43$
- (5) [4] [5] (3), $1 \times 5 + 2 \times 4 + 3 \times 5 + 4 \times 3 = 40$
- [4] (5) (3) [5], $1 \times 4 + 2 \times 5 + 3 \times 3 + 4 \times 5 = 43$
- [4] (5) [5] (3), $1 \times 4 + 2 \times 5 + 3 \times 5 + 4 \times 3 = 41$
- [4] [5] (5) (3), $1 \times 4 + 2 \times 5 + 3 \times 5 + 4 \times 3 = 41$

So the answer is the minimum of the numbers above, 40.