You are given an algebraic expression of the form $(x_1 + x_2 + x_3 + \ldots + x_n) * (y_1 + y_2 + \ldots + y_m)$ and $(n + m)$ integers. You have to find the maximum and minimum value of the expression using the given integers. For example if you are given $(x_1 + x_2) * (y_1 + y_2)$ and you are given 1, 2, 3 and 4. Then maximum value is $(1 + 4) * (2 + 3) = 25$ where as minimum value is $(4 + 3) * (2 + 1) = 21$.

Input

Each input set starts with two positive integers N, M (< 51). Next line follows $(N + M)$ integers which are in the range of -50 to 50. Input is terminated by end of file. There will be atmost 110 testcases.

Output

Output is one line for each case, maximum value followed by minimum value.

Sample Input

```
2 2
1 2 3 4
3 1
1 2 3 4
2 2
2 2 2 2
```

Sample Output

```
25 21
24 9
16 16
```