Problem Set - 2

1. Farmer John has built a new long barn, with N (2 <= N <= 100,000) stalls. The stalls are located along a straight line at positions x1,...,xN (0 <= xi <= 1,000,000,000).

His C (2 <= C <= N) cows don't like this barn layout and become aggressive towards each other once put into a stall. To prevent the cows from hurting each other, FJ want to assign the cows to the stalls, such that the minimum distance between any two of them is as large as possible. What is the largest minimum distance?

Input

t – the number of test cases, then *t* test cases follows.
* Line 1: Two space-separated integers: N and C
* Lines 2..N+1: Line i+1 contains an integer stall location, xi

Output

For each test case output one integer: the largest minimum distance.

Example

Input:
1
5 3
1
2
8
4
9

Output:
3

2. WAP in C/C++ to product any 2 numbers n and m where n and m is between 1 to 10^100.

OR

WAP to find the factorial of a number where n is between 0 to 1000.

3. WAP in C/C++ to duplicate the power function where n and m varies from 1 to 1000.

4. Given an array that contains both positive and negative integers, find the product of the maximum product subarray.

Assumption: There is always a positive product possible, i.e., no array of this form: {0,-20,0,0} or {-20}.
Input:
First line of input contain number of test cases T. First line of test case contain the size of array and second line of test case contain the array elements.
Output:
Maximum product of subarray is displayed to the user.

Constraints:

1 <=T<= 50
1 <=N<= 9
-10 <=arr[i]<= 10

Example:

Input:

3
5
6 -3 -10 0 2
6
2 3 4 5 -1 0
10
8 -2 -2 0 8 0 -6 -8 -6 -1

Output:

180
120