The International Collegiate Programming Contest
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ECPC
EGYPTIAN COLLEGIATE
PROGRAMMING CONTEST

The 2020 Egyptian Collegiate Programming Qualification Contest

(Practice Problems)

AAST
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Problem A. Moustafa And The Mex

Input file: mex.in
Balloon Color: Black

Mex value of array is the minimum positive value doesn't exist in the array

Moustafa has a permutation A of all numbers form 1 to n and q queries each query with li and ri, for each query find the Mex value of the subarray $A[li], A[li+1], ..., A[ri]$

Input

The first line will contain only one integer T – the number of test cases.

Each test case will start with one line contain two integers n and q, $(1 \leq n, q \leq 10^5)$.

Follows n numbers separated by a space representing the permutation A. Then q lines follow each line contains li and ri for the $i-th$ query.

Output

For each query output the mex value of the subarray

Example

mex.in	standard output
2 6 6 2 6 1 5 3 4 1 6 1 5 1 3 4 6 5 5 3 3 4 10 4 2 1 3 1 1 1 2 2 2 1 3 2 3 3 3 1 4 2 4 3 4 4 4	7 4 3 1 1 2 1 1 1 3 3 2 5 4 2 1

Problem B. Extremely Basic

Input file: hello.in
Balloon Color: Pink

Given two integer values. print the sum of these 2 integers.

Input

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

each test case contains two integers x, y ($-10^5 \leq x, y \leq 10^5$) in one line.

Output

for each test case print "sum = x−y".

Example

hello.in	standard output
2 1 10 5 25	sum = 11 sum = 30

Note

look at the output format.

Problem C. Stone Piles

Input file: piles.in
Balloon Color: Purple

Given n piles numbered from 1 to n in a row, each pile have x_i stones, from each pile i you can remove at most a_i stones, can you make these piles sorted in a "strictly"increasing order ?

Input

The first line will contain only one integer T – the number of test cases.

Each test case will start with one line contain only one integer n $(1 \leq n \leq 10^5)$ – the number of piles.

The second line will contain n integers $x_1, x_2, ..., x_n$ $(1 \leq x_i \leq 10^7)$ – the initial number of stones each pile have.

The last line of each test case will contain n integers $a_1, a_2, ..., a_n$ $(1 \leq a_i \leq 10^7)$ – the maximum number of stones you can remove from each pile.

Output

For each test case, output one line contains "YES"if you can make these piles sorted in a "strictly"increasing order, otherwise output "NO".

Example

piles.in	standard output
2 5 1 2 3 4 5 1 2 3 4 5 5 5 4 3 2 1 1 2 3 4 5	YES NO

Problem D. Why Omani Sings

Input file: mult.in
Balloon Color: Cyan

The way back from ACPC was a long, hard bus ride.

Omani thought it would be a good idea to grab the mic and start singing, but it only made things worse for everyone.

Some people thought he was in pain and he was screaming in agony, while some thought he just broke up with his loved one, but everyone agreed he should shut up.

Later when asking Omani why he was singing, he said he was sad and mad at himself because he had reached ACPC, but still, he couldn't solve this easy problem.

Omani had an array of length N, and a number K, all he wanted was to find the multiplication of the largest K numbers in the array.

Help Omani solve this problem, and maybe he will stop singing, please...

Input

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

The first line of each test case contains two integers N, and k, ($K \leq N \leq 10^5$), ($1 \leq K \leq 5$) the array length, and the number of array elements he wants multiplied respectively.

The second line contains N space separated integers, $a_1 ... a_n$, where ($1 \leq a_i \leq 1000$)

Output

For each test case, print one line containing one number, the multiplication of the largest K elements in the array N.

Examples

mult.in	standard output
1 5 2 3 4 5 1 2	20
2 5 1 1 2 3 4 5 6 3 5 5 2 3 1 2	5 75

Note

Large input/output. Consider using fast IO.

Problem E. Stars

Input file: stars.in
Balloon Color: Violet

Negm likes watching stars. He even found a star that is called "Negm"like his own name. He found out that this star appears only in a leap year.

Negm wants to know from year A to year B, How many times the star "Negm"will appear?.

Note that leap years has 366 days. The year is leap if it is divisible by 400 or it is divisible by 4, but not by 100.

Input

The first line will contain T $(1 \leq T \leq 10^5)$ the number of test cases.

Each test case will contain two positive numbers A, B. $(A \leq B)$ $(1 \leq A \leq B \leq 10^{18})$

Output

For each test case, output one line containing one number the number of appearance of the star "Negm".

Example

stars.in	standard output
3 1 10 350 450 1000 10000	2 25 2183

Problem F. A String

Input file: `string.in`
Balloon Color: `Gold`

We have a string X, find another string Y that contains exactly the same characters of X in any order. (note that the strings are case sensitive).

Input

The first line will contain the number of test cases T.

Then T lines follow, each consists of a single alphabetic string X $(1 \leq |X| \leq 100)$.

Output

For each test case, output, in a single line, a string Y that contains exactly the same characters of the input string in any order (case sensitive).

If there are multiple answers, print any one of them.

Examples

string.in	standard output
1 uBiPhTqY	uBiPhTqY
3 SuoUM XcxtWIeoE afmEuh	SuoUM XcxtWIeoE afmEuh