NSU Contest

Junior Mode

5 problems | 2 hours

Prepared By
Ahmad Faiyaz
Arman Kamal

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A | Nth Largest Value

For this problem, you will write a program that prints the N^{th} largest value in a fixed sized array ofintegers. To make things simple, ***N*** will be 3 and the array will always be have 10 decimal integer values.

Input

The first line of input contains a single integer ***P***, ($1 \le P \le 1000$), which is the number of data sets that follow. Each data set consists of a single line containing the data set number, followed by a space, followed by 10 space separated decimal integers whose values are between 1 and 1000 inclusive.

Output

For each data set, generate one line of output with the following values: The data set number as a decimal integer, a space, and the 3^{rd} largest value of the corresponding 10 integers.

Sample Input	Sample Output
4 1 1 2 3 4 5 6 7 8 9 1000 2 338 304 619 95 343 496 489 116 98 127 3 931 240 986 894 826 640 965 833 136 138 4 940 955 364 188 133 254 501 122 768 408	1 8 2 489 3 931 4 768

B & C |The Google Challenge

Google, the Billion Dollar multinational software company is hiring employees for the position of Software Engineer and they are visiting your university for on-campus recruitment. But getting hired at Google is not easy. It requires that you have knowledge of powerful Algorithms, efficient Data Structures and very good analytical skills.

As a candidate you appeared for the interview. For a thorough assessment of your competency, they asked you to do a simple task. They will give you a sequence of numbers one-by-one. For each number you have to say how many numbers are given to you that are less than or equal to that number except the last one.

Input

The first input will be an integer T , the number of test cases.
Each test case will have a number N, the number of inputs to be given to you. Then there will be N integers in the next line.
For Easy Set: 1 <= T <= 100 , 1 <= N <= 1000 , each of the N numbers will be between -1000 and 1000.
For Hard Set: 1 <= T <= 100 , 1 <= N <= 10^4 , each of the N numbers will be between -10^5 and 10^5.

Output

For each case print the case no and followed by, an integer for each of the N input of output each containing the count of numbers that precedes it in the given sequence that are less than or equal to it.

Sample Input	Sample Output
2 5 1 2 3 10 -1 9 9 1 7 -10 -100 -1000 1000 1000 1000	Case 1: 0 1 2 3 0 Case 2: 0 0 1 0 0 0 6 7 8

Notes:

Explanation of Case 1:

N = 5.
For the first number 1 there were no numbers before it that was less than or equal to it. So the result should be 0.
For the second number 2 there was only one number (1) that was less than or equal to it. So result should be 1.
For the third number 3 there were two numbers (1 , 2) that was less than or equal to it. So result should be 2.
For the fourth number 10 there were three numbers (1 , 2 , 3) that was less than or equal to it. So result should be 3.
For the fifth number -1 there were no numbers before it that was less than or equal to it. So the result should be 0.

D|Forgot the equation

You will be given a number **X,Y**, and you need to find

$$X^2 + (X+1)^2 + (X+2)^2 + \ldots\ldots\ldots\ldots + Y^2$$

Input:

Input starts with an integer **T (≤ 10000)**, denoting the number of test cases.

Each case starts with a line containing two integers

X,Y (1 ≤ X ≤ Y≤ 200000)

Output:

For each case, print the case number and the result you need to find.

Sample Input	Output for Sample Input
3 8 8 3 7 2 4	Case 1: 64 Case 2: 135 Case 3: 29

E|Dual Palindromes

A number that reads the same from right to left as when read from left to right is called a palindrome. The number 12321 is a palindrome; the number 77778 is not. Of course, palindromes have neither leading nor trailing zeroes, so 0220 is not a palindrome.

The number 21 (base 10) is not palindrome in base 10, but the number 21 (base 10) is, in fact, a palindrome in base 2 (10101).

Write a program that reads two numbers (expressed in base 10):

- N (1 <= N <= 15)
- S (0 < S < 10000)

and then finds and prints (in base 10) the first N numbers strictly greater than S that are palindromic when written in two or more number bases (2 <= base <= 10).

Solutions to this problem do not require manipulating integers larger than the standard 32 bits.

INPUT FORMAT

At first a number T (<=10) will be given denoting as number of test-cases. On each case there will be a single line with space separated integers N and S.

OUTPUT FORMAT

For each test case there will be N+1 lines of output. Print the case number first, then print N lines, each with a base 10 number that is palindromic when expressed in at least two of the bases 2..10. The numbers should be listed in order from smallest to largest.

Sample Input	Output for Sample Input
1 3 25	Case 1: 26 27 28