



Greetings From Globussoft

- ❖ Given below are 5 Programming questions, you have to solve any 3 out of 5 questions.
- ❖ These 5 questions you can attempt in any technology like C/C++, java, .Net, PHP
- ❖ To solve these 3 questions you've max. 3 hours.
- ❖ While Solving these questions you are not allowed to use any Search Engine like Google, Yahoo, Bing ...

All the best for your test

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QUESTION - 1

There are N numbered boxes placed on a table, let B_i denote the i th box in the line. Write a program that finds the total number of ways to place N identical balls such that atmost k balls are present in the boxes B_1, \dots, B_k for $1 \leq k \leq N$. Since the number can be quite large you are supposed to output the answer modulo 761238923.

Input

Input will contain multiple testcases, on each line N ($1 \leq N \leq 100$) will be given. The last line contains 0 which should not be processed.

Output

For each testcase output exactly one line, the total number possible of ways modulo 761238923.

Example

Input :

1
2
0

Output :

1
2

QUESTION – 2

The tribe soon discovers that just communication is not enough and wants to meet each other to form a joint force against the terminator. But there is a deep canyon that needs to be crossed. Points have been identified on both sides on which bridge ends can be made. But before the construction could be started, a witch Chudael predicted that a bridge can only be built between corresponding end points, i.e. a bridge starting from the i^{th} end point on one side can only end on the i^{th} end point on the other side, where the position of end points is seen in the order in which the points were identified. If not, it would lead to the end of the tribe. The tribe just wants to make as many non-cutting bridges as possible, with the constraint in mind. Bridges "cut" if and only if they have exactly one common point that is not an end point.

Input

The first line of the input contains test cases t ($1 \leq t \leq 50$). It is followed by $3*t$ lines, 3 for each test case. The first line of input for each test case contains the number of end points identified on each side, n ($1 \leq n \leq 10^3$). The second line contains x -coordinates of end points identified on the first side and similarly the third line contains the x -coordinates of corresponding end points

identified on the other side. The end points are inputted in the order in which they were identified. The x-coordinates can range between -10^3 to 10^3 .

Output

You are required to output a single line for each test case. The line contains a single integer – the maximum number of bridges possible with the constraints explained above.

Example

Input:

3

4

2 5 8 10

6 4 1 2

3

5 3 10

6 4 1

6

1 2 3 4 5 6

3 4 5 6 1 2

Output:

2

2

4

QUESTION – 3

Let us consider a set of fractions x/y , such that $0 \leq x/y \leq 1$, $y \leq n$ and $\gcd(x, y) = 1$.

For example, say $n = 5$. Then we have the following set in increasing order :

$0/1, 1/5, 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 1/1$

You are given n , a and b . The task is to find the rank of a/b in a set of fractions as stated above which is in increasing order.

Input

The first line of the input contains t ($t \leq 20$), the number of testcases. Then t lines follow. In each of the t lines you are given n , a and b . ($n \leq 100000$)

Output

Print t lines. The i th line contains the rank of a fraction a/b for a given n , a and b in the $(i + 1)$ th line of input. All answers fit within a signed integer.

Example

Input:

2		
5	3	4
8 5 7		

Output:

9
17

QUESTION – 4

Let $A[0 \dots n - 1]$ be an array of n distinct positive integers. If $i < j$ and $A[i] > A[j]$ then the pair (i, j) is called an inversion of A . Given n and an array A your task is to find the number of inversions of A .

Input

The first line contains t , the number of testcases followed by a blank space. Each of the t tests start with a number n ($n \leq 200000$). Then $n + 1$ lines follow. In the i th line a number $A[i - 1]$ is given ($A[i - 1] \leq 10^7$). The $(n + 1)$ th line is a blank space.

Output

For every test output one line giving the number of inversions of A .

Example

Input:

2

3

3

1

2

5

2

3

8

6

1

Output:

2

5

QUESTION – 5

k bandits robbed a bank. They took away **n** gold coins. Being a progressive group of robbers they decided to use the following procedure to divide the coins. First the most respected bandit takes **1** coin, then the second respected takes **2** coins, ..., the least respected takes **k** coins, then again the most respected takes **k+1** coins, and so on, until one of the bandits takes the remaining coins. Calculate how much gold each of the bandits gets.

Input

The first line of the input contains number **t** – the amount of tests. Then **t** test descriptions follow. Each test consists of two integers **n** and **k** - the amount of coins and bandits respectively.

Constraints

$1 \leq t \leq 500$
 $10^6 \leq n \leq 10^{15}$
 $2 \leq k \leq 100$

Output

For each test print the amounts of coins each bandit gets separated by spaces.

Example

Input:

```
3
1000000 2
1234567 3
123456789 4
```

Output:

```
499849 500151
411602 411887 411078
30869901 30858368 30862296 30866224
```