Count Primes

Let **num(num >= 0)** is a positive integer or zero. We can represent num in the following two forms if it is possible to do so -

1. num = n^2 + 2 * n, for non-negative integer n

2. num = m^2 - 2 * m, for non-negative integer m

Suppose there is **num** that can be represented in both the forms. Consider this type of number as a magic number. Consider the following 5 cases -

1. n is the only prime.
2. m is the only prime.
3. n and m both are primes.
4. n is prime.
5. m is prime.

Input

First line of input is t, total number of test cases. For each test case the first line is q, total number of queries. Then there will be (2 * q) lines. First line contains c (referring to case mentioned in the problem description) and second line contains two integers a and b defining the range **[a, b]** for magic number.

t < 1001
q < 5001
0 < c < 6
minimum_value_of_a = 0
maximum_value_of_b = 10^6

Output

For every test case, that has q queries, the output has (q + 1) lines. First line will be simply printing the test case number and then q lines will be printing total number of magic numbers in the given range [a, b] under the specific case mentioned in input.

Example

Input:

```
2
3
1
5 20
2
1 30
3
10 18
2
4
1 10
5
1 10
```

Output:

```
Test Case :#1:
Query :#1: 1
Query :#2: 1
Query :#3: 1
Test Case :#2:
Query :#1: 1
Query :#2: 1
```