

Sushi Bar

Statement

Fluffy has recently opened a new sushi bar. This sushi bar has a row of N seats numbered 1 to N , where seat 1 is closest to the entrance. Due to the coronavirus restrictions, Fluffy has adopted various safe management measures for his bar. Fluffy needs your help to design a new system to help him ensure that his customers practice social distancing. Initially, there are no customers in the bar. The system will then process Q events of the following two types:

- **ARRIVE**: A new customer arrives at the bar, and Fluffy must assign a seat to this customer. If there are no other customers in the bar, then the new customer is assigned seat 1. Otherwise, this customer is assigned the seat that *maximises the minimum distance* from other customers. If there are multiple such seats, then the seat with the lowest ID is chosen (as it is closest to the entrance).
- **LEAVE x** : The x th customer to arrive at the bar has left the bar, vacating his/her seat.

Help Fluffy implement this system to keep his customers safe!

Constraints

- $1 \leq N \leq 10^9$
- $1 \leq Q \leq 2 \cdot 10^5$
- No **ARRIVE** events will occur if there are already N customers in the bar.

Input

The first line of input will contain two integers N and Q .

The next Q lines of input will each contain one event as defined above.

Output

For each **ARRIVE** event, output the seat assigned to the customer on a single line.

Examples

Sample Input	Expected Output
8 10 ARRIVE ARRIVE ARRIVE LEAVE 2 ARRIVE ARRIVE LEAVE 3 LEAVE 1 ARRIVE ARRIVE	1 8 4 8 6 1 3

Notes

1. A skeleton file has been given to help you. You should not create a new file or rename the file provided. You should develop your program using this skeleton file.
2. You are free to define your own helper methods and classes (or remove existing ones) if it is suitable but you must put all the new classes, if any, in the same skeleton file provided.

Skeleton File

You are given the skeleton file `Sushi.java`. You should see the following contents when you open the file:

```
/**
 * Name      :
 * Matric. No :
 */

import java.util.*;

public class Sushi {
    private void run() {

    }

    public static void main(String args[]) {
        Sushi runner = new Sushi();
        runner.run();
    }
}
```

```
}  
}
```