

Alice the Baker

Objective

The objective of this problem is to test the students' understanding on **Stack and Queue**.

Problem Description

Alice the baker is good in flipping pancakes. One day, she is challenged to show her skills in front of many people. She will be challenged to **FLIP** the pancakes, **ADD** a pancake, and **COUNT** how many pancakes are sweet. A pancake will be sweet if it has been in touch with some maple syrup. Initially, Alice will be given **N** plain pancakes and **Q** operations. The valid operations are:

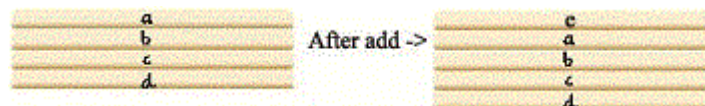
1. **FLIP [IDX]**: to flip the top **[IDX]** pancakes.

For every flip operation, Alice will pour maple syrup on top of the top pancake after the flip.

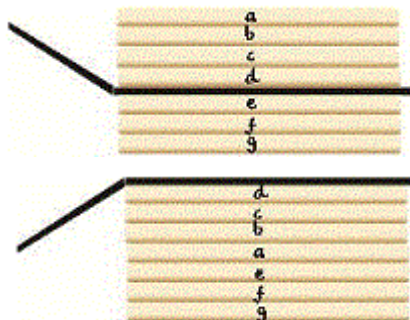
If one side of a pancake, say pancake **X** is in contact with one side of another pancake **Y** with syrup, then that particular side of pancake **Y** will have syrup too. Hence, pancake **Y** will be a sweet pancake.

2. **ADD**: to add a new pancake on the top of the pancakes.

For example: given 4 pancakes and **ADD** operation, let the new pancake be pancake **e**.



3. **COUNT**: to count the number of sweet pancakes.



For example: given 7 pancakes and **FLIP 4** operation. Initial pancake: (top) a b c d e f g (bottom).

After doing **FLIP 4**, i.e. flip the top 4 pancakes, the result will be (top) d c b a e f g (bottom).

Since this is a flip operation, Alice will pour maple syrup on top of pancake **d**. Now, one side of pancake **d** will have syrup.



Suppose the next operation is **FLIP 3**, then the result will be (top) b c d a e f g (bottom):





Notice that now the syrup of pancake **d** faces the other side and one side of pancake **a** is in contact with the side of pancake **d** with syrup, thus that particular side of pancake **a** will also have syrup.

Now, we have 2 sweet pancakes, i.e. pancake **a** and pancake **d**. Note that if a pancake **X** is adjacent with a sweet pancake, it does not mean that pancake **X** will be sweet. In the latest picture, pancake **c** is adjacent to a sweet pancake **d**, but the side of pancake **c** that is in contact with pancake **d** is not in contact with the syrup side of pancake **d**. Hence, pancake **c** is not a sweet pancake.

Input

The first line of the input contains 2 integers **N** ($1 \leq N \leq 100$) and **Q** ($1 \leq Q \leq 100$), where **N** denotes the number of pancakes and **Q** denotes the number of operations. The next **Q** lines will be the operations.

Output

For each **COUNT** operation, output the number of sweet pancakes.

Sample Input

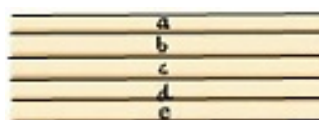
```
5 6
FLIP 3
ADD
COUNT
FLIP 3
FLIP 4
COUNT
```

Sample Output

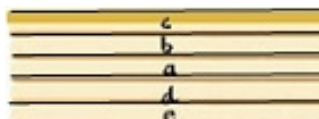
```
2
5
```

Explanation

1. Initial Pancakes:



2. FLIP 3



3. ADD



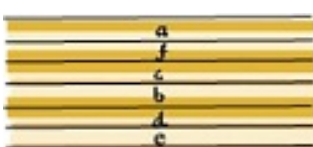
4. COUNT

There are **2** sweet pancakes, i.e. pancakes **c** and **f**.

5. FLIP 3



6. FLIP 4



7. COUNT

There are **5** sweet pancakes, i.e. pancakes **a**, **f**, **c**, **b** and **d**.

Notes

1. The problem should be solved using Stack and/or Queue.