queries will be given. There are two classes of queries:

- `H i` : Move head. Move the specified integer i ($1 \leq i \leq n$) to the head of the sequence, leaving the order of the rest untouched.
- `T i` : Move tail. Move the specified integer i ($1 \leq i \leq n$) to the tail of the sequence, leaving the order of the rest untouched.

Note that, the integers designate the integers themselves to move, not their positions in the sequence.

Find the order of the elements in the sequence after following all the queries successively.

Input

The first line of the input contains an integer t — the number of testcases.

The first line of each testcase contains two integers n and q — the length of the sequence and the number of queries.

Then q lines follow, each line contains one query described above.

Restrictions

For test ID 1 (each 20 points):

- $1 \leq t \leq 10$
- $1 \leq n \leq 2000$
- $1 \leq q \leq 1000$

For test ID 2-5 (each 20 points):

- $1 \leq t \leq 10$
- $1 \leq n \leq 200000$
- $1 \leq q \leq 100000$

Output

For each testcase, output one line. Each line contains the sequence after processing all the queries of the testcase.

Sample Input 1

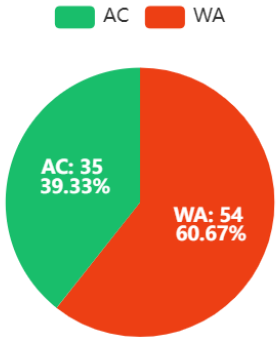
```
2
5 3
H 4
T 2
H 5
10 8
H 1
T 4
T 7
```

Sample Output 1

```
5 4 1 3 2
3 4 2 5 6 8 9 7 10 1
```

ID	arrayarrangement
Time Limit	1000MS
Memory Limit	256MB
IO Mode	Standard IO
Created By	ta_david
Level	Hidden
Score	100
Tags	Show

Statistic Details



Language: C++ Theme: Solarized Light

```
1
```

You have solved the problem

Submit for Sample Test Submit

Sample Test Input

```
2
5 3
H 4
T 2
H 5
10 8
H 1
T 4
T 7
H 3
H 4
T 10
T 1
H 3
```

Sample Test Output