Linked List Help!

Submit solution

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Points: 100 (partial)
Time limit: 1.0s
Memory limit: 128M

Allowed languages
C

Gaurav is building a tutorial to help the students to understand linked lists. He is designing a command line interface in order to help students build a linked list from scratch and perform basic operations on it. Can you help Gaurav?

Formal Statement

You have to implement the linked list ADT with q queries. Each query is represented by two numbers p and k where p denotes the operation number and k is the number to be inserted or deleted. Note that k will only be provided if it is needed in the operation and it is always **non-negative**.

- If p is 1, insert the number k at the beginning of the linked list and print it's value.
- if p is 2, insert the number k at the end of the linked list and print it's value.
- If p is 3, delete the first node from the linked list and print its value. If the linked list is empty, ignore the operation and print -1.
- If p is 4, delete the last node from the linked list and print its value. If the linked list is empty, ignore the operation and print -1.
- If p is 5, print the size of the linked list.

Assume that the initial length of the linked list is 0.

Please note that you have to implement the Singly Linked List ADT and use that for the question. Any implementations using an array will be given a straight 0.

Input Format

Each test case consists of q queries. The description of the test cases is as follows.

- The first line of each test case will contain one integer q representing the number of queries.

The output should be the returned values.

Sample Test Case

Input

Copy

```
11
1 2
1 3
2 5
2 10
5
4
3
4
3
4
5
```

Output

Copy

```
2
3
5
10
4
10
3
5
2
-1
0
```

Explanation

The linked list and its length at each test case are as follows, assuming it is empty initially i.e. `{}`

Copy

```
3 is added in the front ---> {3,2}
5 is added in the last  ---> {3,2,5}
10 is added in the last ---> {3,2,5,10}
Size of the array is 4
Delete from the last, hence 10 is removed ---> {3,2,5}
Delete from the front, hence 3 is removed ---> {2,5}
Delete from the last, hence 5 is removed  ---> {2}
Delete from the front, hence 2 is removed -->  {}
Delete from the last but the list is empty, hence -1
Size of the linked list is 0
```

Constraints

- $1 \leq q \leq 100$
- The value in the linked list is always non-negative.

Clarifications

Request clarification

No clarifications have been made at this time.