Designing a Data Structure

Limits: 1s, 128 MB

Data structure is one of your favourite topics, isn't it? Let's design a new data structure!

In this new data structure, there will be a list and some operations. The operations are :

- **Insert Front X** — Insert **X** into the front of the list.
- **Insert Back X** — Insert **X** into the back of the list.
- **Erase Front** — Erase the first element of the list.
- **Erase Back** — Erase the last element of the list.
- **Get Front** — Print the first element of the list.
- **Get Back** — Print the last element of the list.
- **Get Max** — Print the maximum element of the list.
- **Get Min** — Print the minimum element of the list.

You need to design a data structure as described above and perform **Q**operations.

Input

The first line of the input will contain a single integer **Q**, denoting the number of operation.

The next **Q** lines will contain any of those operations described above.

Constraints

1 ≤ Q ≤ 10^5
1 ≤ X ≤ 10^6

Output

Perform each operation as described in the problem statement.

Samples

Input	Output
8 Insert Back 8 Get Front Insert Front 9 Get Max Erase Back Insert Back 3 Get Back Get Min	8 9 3 3

Assume that, every operation will be valid.