# Hotel

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 2 seconds |
| Memory limit: | 1024 megabytes |

You have an integer sequence $A = (1)$ of length 1. You will receive $Q$ queries, which you need to process in order.

There are three types of queries:

Let $n$ be the length of the sequence $A$ before each query, and let $A = (a_1, a_2, \ldots, a_n)$.

- 1 $x$: Replace $A$ with the sequence of length $n + 1$ as $(x, a_1, a_2, \ldots, a_n)$.

- 2 $x$: Replace $A$ with the sequence of length $2n$ as $(x, a_1, x, a_2, \ldots, x, a_n)$.

- 3 $x$: If $x > n$, output $-1$. If $x \leq n$, output $a_x$.

## Input

The input is given from Standard Input in the following format:

$Q$
$t_1 \ x_1$
$t_2 \ x_2$
$\vdots$
$t_Q \ x_Q$

Here, $t_i \ (1 \leq i \leq Q)$ is an integer representing the type of query and is either $t_i = 1, 2$, or 3.

- $1 \leq Q \leq 2 \times 10^5$

- $1 \leq x \leq 10^9$

- There is at least one output query.

- All input values are integers.

## Output

Print $q$ lines, where $q$ is the number of queries that satisfy $t_i = 3$. On the $j$-th line $(1 \leq j \leq q)$, output the result of the $j$-th query of type 3.

## Examples

| standard input | standard output |
|---|---|
| 6<br>1 4<br>3 3<br>1 3<br>3 2<br>2 3<br>3 2 | -1<br>4<br>3 |
| 8<br>1 8<br>2 5<br>2 5<br>3 7<br>3 8<br>3 9<br>2 3<br>3 1 | 5<br>1<br>-1<br>3 |

## Note

In the first example, $A$ changes as follows:

- Before Query 1: $A = (1)$

- After Query 1: $A = (4, 1)$

- After Query 2: $A = (4, 1)$

- After Query 3: $A = (3, 4, 1)$

- After Query 4: $A = (3, 4, 1)$

- After Query 5: $A = (3, 3, 3, 4, 3, 1)$

- After Query 6: $A = (3, 3, 3, 4, 3, 1)$