

# Dynamic Array

- Declare a 2-dimensional array, *arr*, of *n* empty arrays. All arrays are zero indexed.
- Declare an integer, *lastAnswer*, and initialize it to 0.
- There are 2 types of queries, given as an array of strings for you to parse:

1. Query: 1 x y

1. Let  $idx = (x \oplus lastAnswer) \% n$ .

2. Append the integer *y* to *arr[idx]*.

2. Query: 2 x y

1. Let  $idx = (x \oplus lastAnswer) \% n$ .

2. Assign the value *arr[idx][y % size(arr[idx])]* to *lastAnswer*.

3. Store the new value of *lastAnswer* to an answers array.

**Note:**  $\oplus$  is the *bitwise XOR* operation, which corresponds to the  $\wedge$  operator in most languages. Learn more about it on [Wikipedia](#).  $\%$  is the modulo operator.

Finally, `size(arr[idx])` is the number of elements in `arr[idx]`

## Function Description

Complete the *dynamicArray* function below.

*dynamicArray* has the following parameters:

- *int n*: the number of empty arrays to initialize in *arr*
- *string queries[q]*: query strings that contain 3 space-separated integers

## Returns

- *int[]*: the results of each type 2 query in the order they are presented

## Input Format

The first line contains two space-separated integers, *n*, the size of *arr* to create, and *q*, the number of queries, respectively.

Each of the *q* subsequent lines contains a query string, *queries[i]*.

## Constraints

- $1 \leq n, q \leq 10^5$
- $0 \leq x, y \leq 10^9$
- It is guaranteed that query type 2 will never query an empty array or index.

## Sample Input

```
2 5
1 0 5
1 1 7
1 0 3
2 1 0
2 1 1
```

Sample Output

```
7
3
```

Explanation

Initial Values:

$n = 2$   
 $lastAnswer = 0$   
 $arr[0] = []$   
 $arr[1] = []$

Query 0: Append 5 to  $arr[(0 \oplus 0) \% 2] = arr[0]$ .  
 $lastAnswer = 0$   
 $arr[0] = [5]$   
 $arr[1] = []$

Query 1: Append 7 to  $arr[(1 \oplus 0) \% 2] = arr[1]$ .  
 $arr[0] = [5]$   
 $arr[1] = [7]$

Query 2: Append 3 to  $arr[(0 \oplus 0) \% 2] = arr[0]$ .  
 $lastAnswer = 0$   
 $arr[0] = [5, 3]$   
 $arr[1] = [7]$

Query 3: Assign the value at index 0 of  $arr[(1 \oplus 0) \% 2] = arr[1]$  to  $lastAnswer$ , print  $lastAnswer$ .  
 $lastAnswer = 7$   
 $arr[0] = [5, 3]$   
 $arr[1] = [7]$

```
7
```

Query 4: Assign the value at index 1 of  $arr[(1 \oplus 7) \% 2] = arr[0]$  to  $lastAnswer$ , print  $lastAnswer$ .  
 $lastAnswer = 3$   
 $arr[0] = [5, 3]$   
 $arr[1] = [7]$

```
3
```