

## Implement Queue using Stacks - LeetCode

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Implement a first in first out (FIFO) queue using only two stacks. The implemented queue should support all the functions of a normal queue (push, peek, pop, and empty).

Implement the MyQueue class:

- void push(int x) Pushes element x to the back of the queue.
- int pop() Removes the element from the front of the queue and returns it.
- int peek() Returns the element at the front of the queue.
- boolean empty() Returns true if the queue is empty, false otherwise.

### Notes:

- You must use **only** standard operations of a stack, which means only push to top, peek/pop from top, size, and is empty operations are valid.
- Depending on your language, the stack may not be supported natively. You may simulate a stack using a list or deque (double-ended queue) as long as you use only a stack's standard operations.

### Example 1:

#### Input

```
["MyQueue", "push", "push", "peek", "pop", "empty"]  
[[], [1], [2], [], [], []]
```

#### Output

```
[null, null, null, 1, 1, false]
```

#### Explanation

```
MyQueue myQueue = new MyQueue();  
myQueue.push(1); // queue is: [1]  
myQueue.push(2); // queue is: [1, 2] (leftmost is front of the queue)
```

```
myQueue.peek(); // return 1  
myQueue.pop(); // return 1, queue is [2]  
myQueue.empty(); // return false
```

**Constraints:**

- $1 \leq x \leq 9$
- At most 100 calls will be made to push, pop, peek, and empty.
- All the calls to pop and peek are valid.

**Follow-up:** Can you implement the queue such that each operation is **amortized**  $O(1)$  time complexity? In other words, performing  $n$  operations will take overall  $O(n)$  time even if one of those operations may take longer.