## 716. Max Stack

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Design a max stack data structure that supports the stack operations and supports finding the stack's maximum element.

Implement the `MaxStack` class:

- `MaxStack()` Initializes the stack object.
- `void push(int x)` Pushes element `x` onto the stack.
- `int pop()` Removes the element on top of the stack and returns it.
- `int top()` Gets the element on the top of the stack without removing it.
- `int peekMax()` Retrieves the maximum element in the stack without removing it.
- `int popMax()` Retrieves the maximum element in the stack and removes it. If there is more than one maximum element, only remove the **top-most** one.

**Example 1:**

```
Input
["MaxStack", "push", "push", "push", "top", "popMax",
"top", "peekMax", "pop", "top"]
[[], [5], [1], [5], [], [], [], [], [], []]
Output
[null, null, null, null, 5, 5, 1, 5, 1, 5]

Explanation
MaxStack stk = new MaxStack();
stk.push(5);   // [5] the top of the stack and the
maximum number is 5.
stk.push(1);   // [5, 1] the top of the stack is 1, but
the maximum is 5.
stk.push(5);   // [5, 1, 5] the top of the stack is 5,
which is also the maximum, because it is the top most
one.
stk.top();     // return 5, [5, 1, 5] the stack did not
change.
stk.popMax();  // return 5, [5, 1] the stack is changed
now, and the top is different from the max.
stk.top();     // return 1, [5, 1] the stack did not
change.
stk.peekMax(); // return 5, [5, 1] the stack did not
change.
stk.pop();     // return 1, [5] the top of the stack
and the max element is now 5.
stk.top();     // return 5, [5] the stack did not
change.
```

**Constraints:**

- $-10^7$ <= x <= $10^7$
- At most $10^4$ calls will be made to `push`, `pop`, `top`, `peekMax`, and `popMax`.
- There will be **at least one element** in the stack when `pop`, `top`, `peekMax`, or `popMax` is called.

**Follow up:** Could you come up with a solution that supports `O(1)` for each `top` call and `O(logn)` for each other call?

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```java
class MaxStack {

    public MaxStack() {

    }

    public void push(int x) {

    }

    public int pop() {

    }

    public int top() {

    }

    public int peekMax() {

    }

    public int popMax() {

    }
}

/**
 * Your MaxStack object will be instantiated and called as such:
 * MaxStack obj = new MaxStack();
 * obj.push(x);
 * int param_2 = obj.pop();
 * int param_3 = obj.top();
 * int param_4 = obj.peekMax();
 * int param_5 = obj.popMax();
 */
```