### **Question 1 [15 Points]**

You are given a stack of integers. Write a function named **filter\_and\_sort\_stack()** that takes a stack st and an integer k as input parameters. The function modifies and returns the input stack such that:

1. All elements greater than k are removed from the stack.
2. The remaining elements are sorted in ascending order in the stack.

Assume the Stack class is already given and provides standard methods: push, pop, peek, and isEmpty.

#### Constraints:

* You can only use instances of the provided Stack class and its methods.
* No other data structures can be used apart from additional Stack instances.

| **Sample Input** | **Sample Output** | **Explanation** |
| --- | --- | --- |
| Stack: 50 40 70 20 10 80 30  k = 40 | Stack: 10 20 30 40 | Remove elements greater than 40 (i.e., 50, 70, and 80). The remaining elements 40, 20, 10, 30 are sorted into 10, 20, 30, 40. |