Problem 2336: Smallest Number in Infinite Set

Problem Information

Difficulty: Medium
Acceptance Rate: 70.59%
Paid Only: No
Tags: Hash Table, Design, Heap (Priority Queue), Ordered Set

Problem Description

You have a set which contains all positive integers `[1, 2, 3, 4, 5, ...]`.

Implement the `SmallestInfiniteSet` class:

* `SmallestInfiniteSet()` Initializes the **SmallestInfiniteSet** object to contain **all** positive integers. * `int popSmallest()` **Removes** and returns the smallest integer contained in the infinite set. * `void addBack(int num)` **Adds** a positive integer `num` back into the infinite set, if it is **not** already in the infinite set.

Example 1:

Input ["SmallestInfiniteSet", "addBack", "popSmallest", "popSmallest", "popSmallest", "addBack", "popSmallest", "popSmallest", "popSmallest"] [[], [2], [], [], [], [1], [], [], []] **Output** [null, null, 1, 2, 3, null, 1, 4, 5] **Explanation** SmallestInfiniteSet smallestInfiniteSet = new SmallestInfiniteSet(); smallestInfiniteSet.addBack(2); // 2 is already in the set, so no change is made. smallestInfiniteSet.popSmallest(); // return 1, since 1 is the smallest number, and remove it from the set. smallestInfiniteSet.popSmallest(); // return 2, and remove it from the set. smallestInfiniteSet.popSmallest(); // return 3, and remove it from the set. smallestInfiniteSet.addBack(1); // 1 is added back to the set. smallestInfiniteSet.popSmallest(); // return 1, since 1 was added back to the set and // is the smallest number, and remove it from the set. smallestInfiniteSet.popSmallest(); // return 4, and remove it from the set. smallestInfiniteSet.popSmallest(); // return 5, and remove it from the set.

Constraints:

* `1 <= num <= 1000` * At most `1000` calls will be made **in total** to `popSmallest` and `addBack`.

Code Snippets

C++:

```
class SmallestInfiniteSet {
public:
SmallestInfiniteSet() {

}

int popSmallest() {

}

void addBack(int num) {

}
};

/**
* Your SmallestInfiniteSet object will be instantiated and called as such:
* SmallestInfiniteSet* obj = new SmallestInfiniteSet();
* int param_1 = obj->popSmallest();
* obj->addBack(num);
*/
```

Java:

```
class SmallestInfiniteSet {

public SmallestInfiniteSet() {

}

public int popSmallest() {

}
```

```
public void addBack(int num) {

}
}

/**
* Your SmallestInfiniteSet object will be instantiated and called as such:
* SmallestInfiniteSet obj = new SmallestInfiniteSet();
* int param_1 = obj.popSmallest();
* obj.addBack(num);
*/
```

Python3:

```
class SmallestInfiniteSet:

def __init__(self):


def popSmallest(self) -> int:


def addBack(self, num: int) -> None:



# Your SmallestInfiniteSet object will be instantiated and called as such:
# obj = SmallestInfiniteSet()
# param_1 = obj.popSmallest()
# obj.addBack(num)
```