

難度 1.2 / 5

題目敘述

Design a system that manages the reservation state of n seats that are numbered from 1 to n .

Implement the `SeatManager` class:

- `SeatManager(int n)` Initializes a `SeatManager` object that will manage n seats numbered from 1 to n . All seats are initially available.
- `int reserve()` Fetches the **smallest-numbered** unreserved seat, reserves it, and returns its number.
- `void unreserve(int seatNumber)` Unreserves the seat with the given `seatNumber`.

Example 1:

Input

```
["SeatManager", "reserve", "reserve", "unreserve", "reserve", "reserve", "reserve", "reserve", "unreserve"]
```

```
[[5], [], [], [2], [], [], [], [], [5]]
```

Output

```
[null, 1, 2, null, 2, 3, 4, 5, null]
```

Explanation

```
SeatManager seatManager = new SeatManager(5); // Initializes a SeatManager with 5 seats.
seatManager.reserve();    // All seats are available, so return the lowest numbered seat,
                           // which is 1.
seatManager.reserve();    // The available seats are [2,3,4,5], so return the lowest of them,
                           // which is 2.
seatManager.unreserve(2); // Unreserve seat 2, so now the available seats are [2,3,4,5].
seatManager.reserve();    // The available seats are [2,3,4,5], so return the lowest of them,
                           // which is 2.
seatManager.reserve();    // The available seats are [3,4,5], so return the lowest of them,
                           // which is 3.
seatManager.reserve();    // The available seats are [4,5], so return the lowest of them,
                           // which is 4.
seatManager.reserve();    // The only available seat is seat 5, so return 5.
seatManager.unreserve(5); // Unreserve seat 5, so now the available seats are [5].
```

參考答案

```
class SeatManager {
private:
    priority_queue<int, vector<int>, greater<int>> pq; // Min_Heap
public:
    SeatManager(int n) {
        for (int i = 1; i <= n; ++i) {
            pq.push(i);
        }
    }

    int reserve() {
        if (!pq.empty()) {
            int now = pq.top(); pq.pop();
            return now;
        }
    }
}
```

```
    }  
    return -1;  
}  
  
void unreserve(int seatNumber) {  
    pq.push(seatNumber);  
}  
};
```