Stock Span Problem

```
{100, 80, 60, 70, 60, 75, 85},
```

span { 1 , 1 , 1 , 2 , 1 , 4 , 6 } → Solution

0 1 2 3 4 5 6

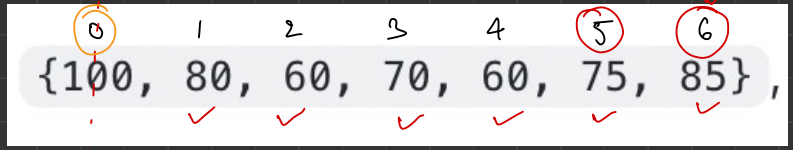
Brute force

→ go to each day

→ calc. span by traversing back

TC : O(N²)

SC : O(1)



{-1, 0, 1, 1, 3, 1, 0} ngeli

{1 1 1 2 1 4 6}

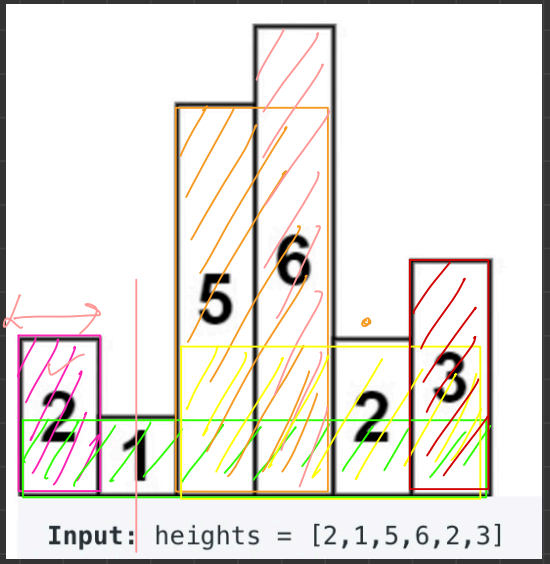
Span

span = curr idx − ngeli

TC : O(N)
SC : O(N)

Largest Area Histogram

2×1=2 6×1=6 5×2=10



Input: heights = [2,1,5,6,2,3]

	0	1	2	3	4	5
heights[] = {	2	1	5	6	2	3 }
nseli[] = {	-1	-1	1	2	1	4 }
nseri[] = {	1	6	4	4	6	6 }

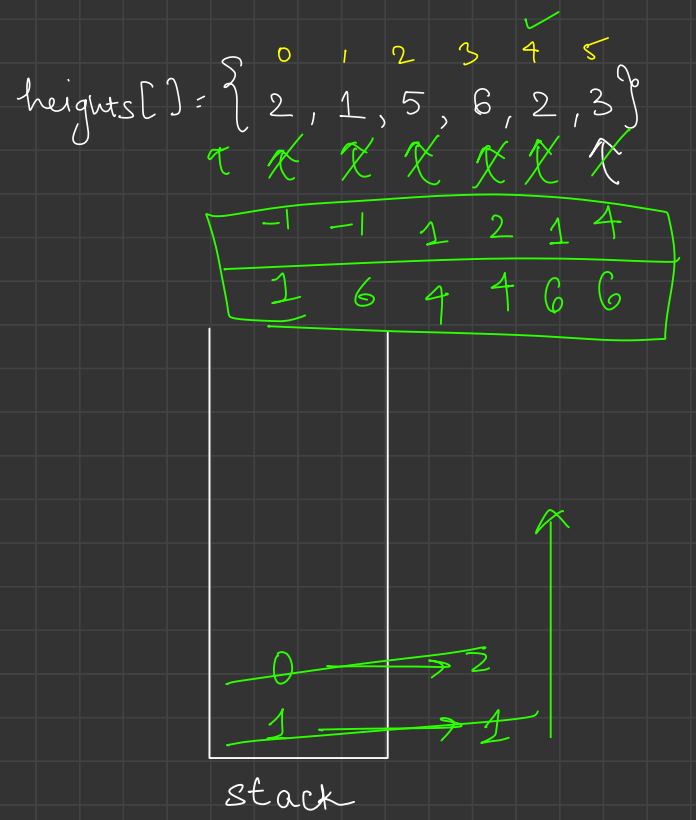
width = right − left − 1

1 − (−1) − 1 = 1

4 − 1 − 1 = 2

6 − (−1) − 1 = 6

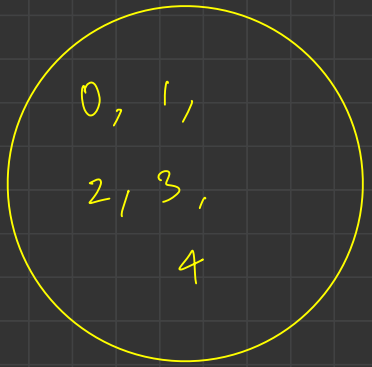
```
// right to left
for (int i = (int) n - 1; i >= 0; i--) {
    long ele = hist[i];

    while (st.size() > 0 && ele < hist[st.peek()]) {
        int idx = st.pop();
        nseli[idx] = i;

        // person on top of stack is nseri
        if (st.size() > 0) {
            nseri[idx] = st.peek();
        } else {
            nseri[idx] = (int) n;
        }
    }

    st.push(i);
}

while (st.size() > 0) {
    int idx = st.pop();
    nseli[idx] = -1;

    // person on top of stack is nseri
    if (st.size() > 0) {
        nseri[idx] = st.peek();
    } else {
        nseri[idx] = (int) n;
    }
}
```

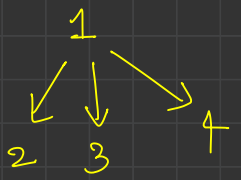


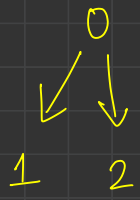
Celebrity Problem.

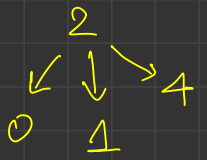
arr[][]:

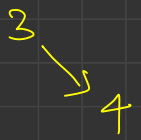
	0	1	2	3	4
0		✓	✓	X	X
1	X		✓	✓	✓
2	✓	✓		X	✓
3	X	X	X		✓
4	X	X	X	X	











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Celebrity

↳ who is known by everyone

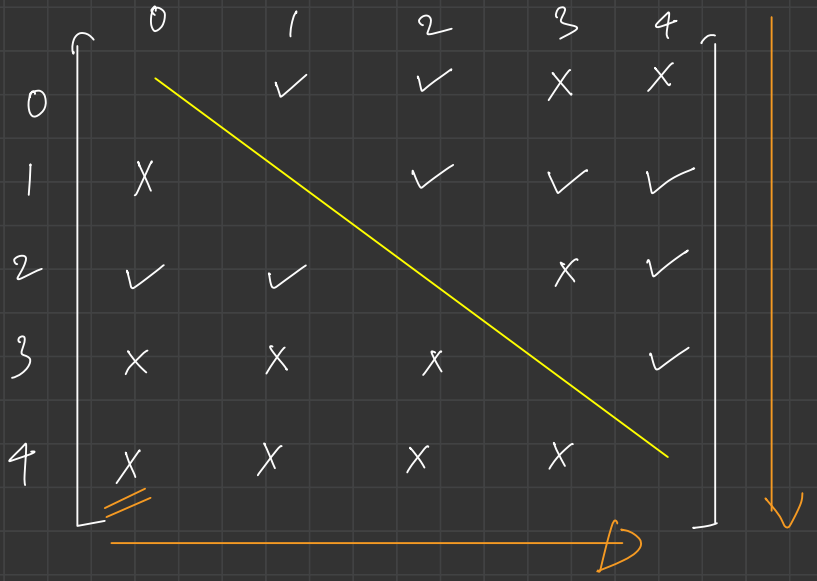
↳ who doesn't know anyone

Bruteforce

TC: $O(N^2)$

SC: $O(1)$

arr[][] :



potential Celebrity