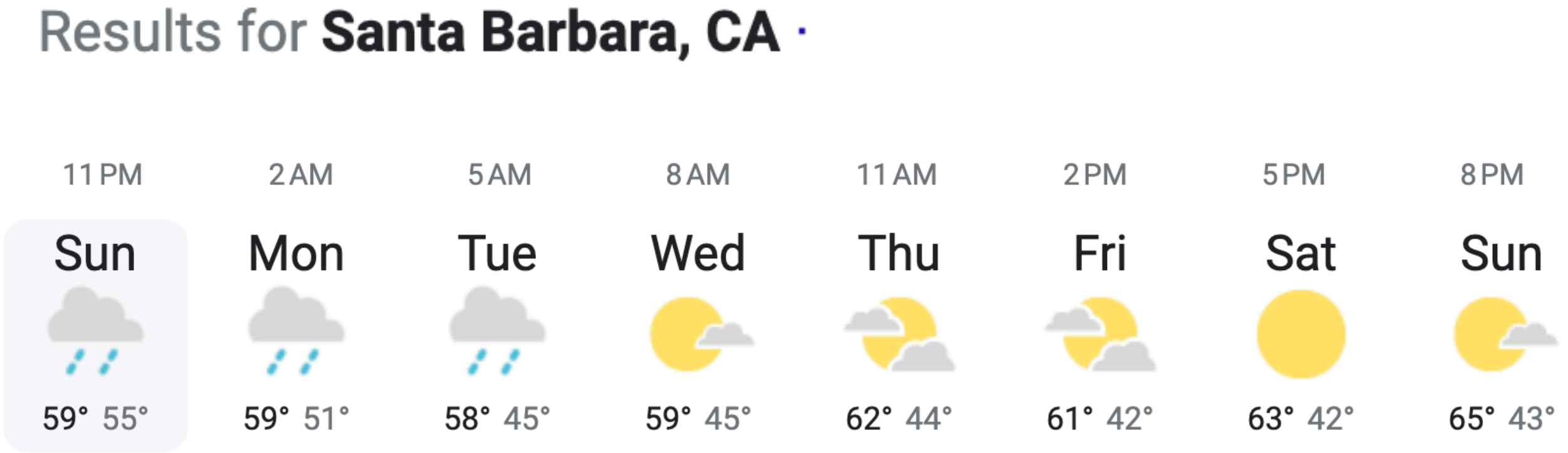
STACKS

Problem Solving with Computers-II



https://leetcode.com/problems/daily-temperatures/

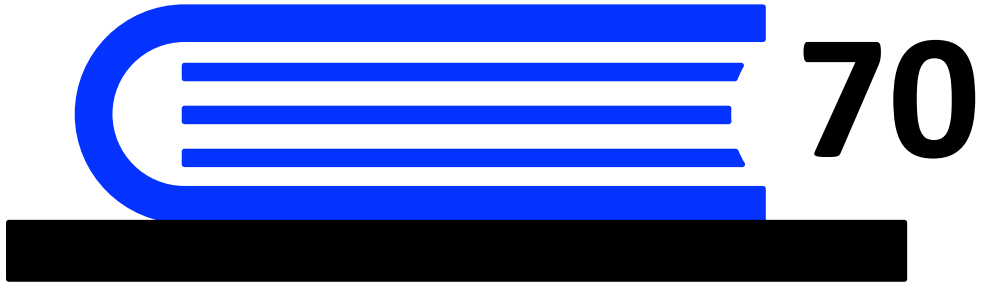
stack<int> s

Empty stack

Operations: **push()** **pop()** **top()**

stack<int> s

s.push(70)



Operations: **push()** **pop()** **top()**

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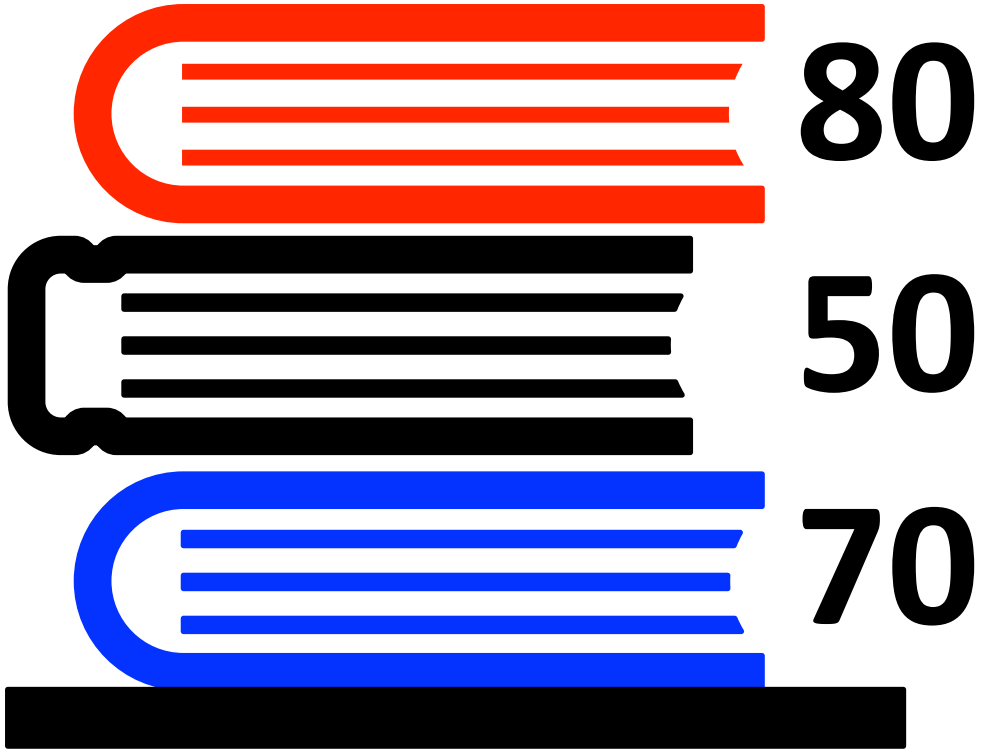
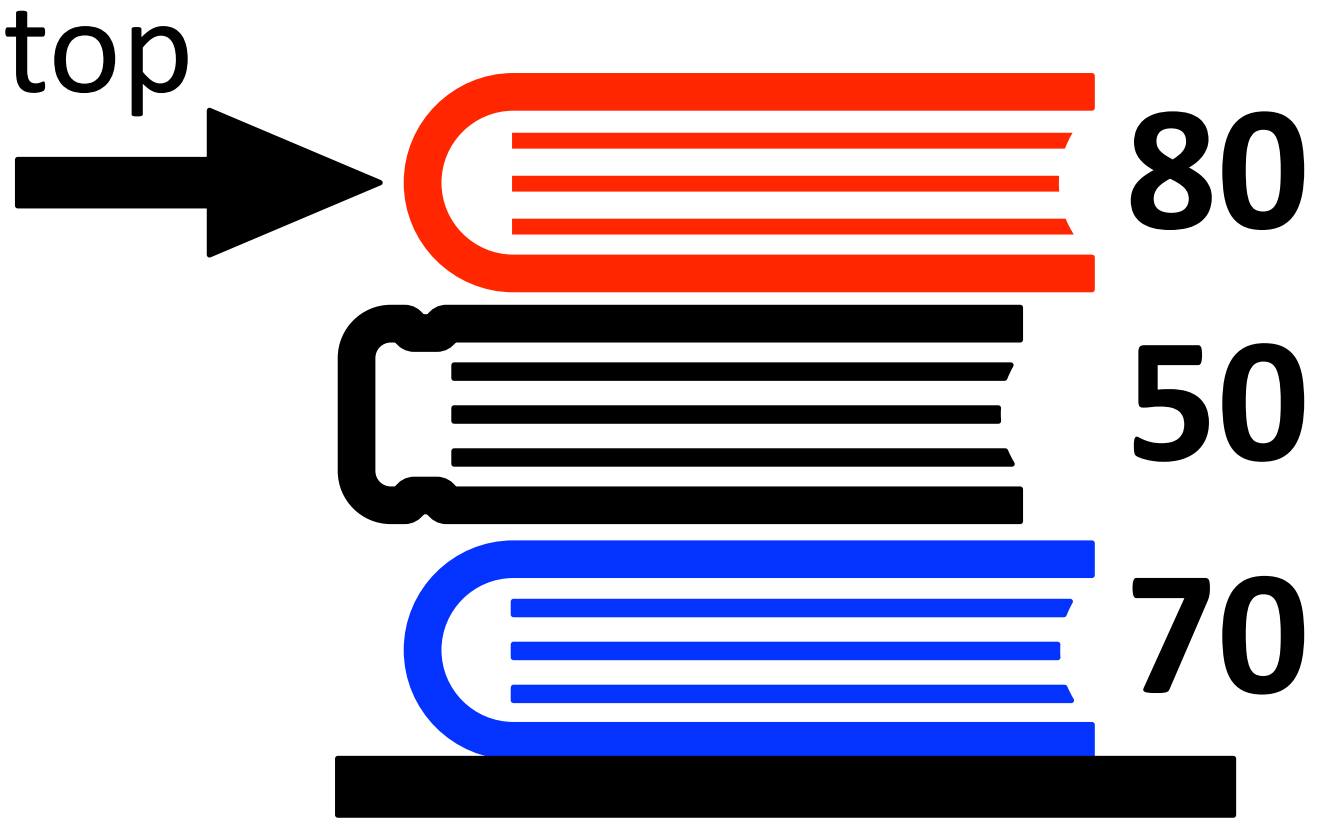


Operations: **push()** pop() top()

```
stack<int> s
s.push(70)
s.push(50)
s.push(80)
```

s.top() returns 80



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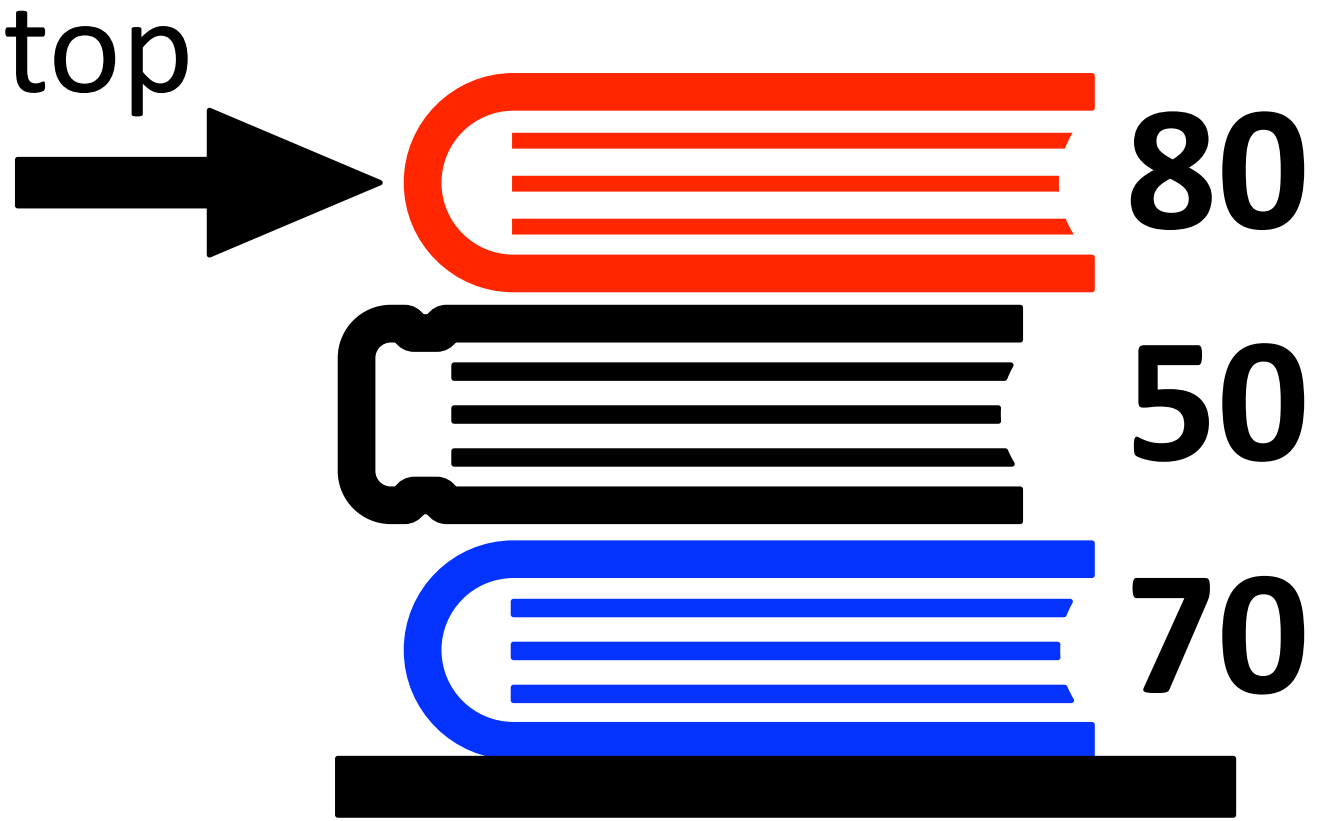

s.pop() removes value that was pushed in *last*

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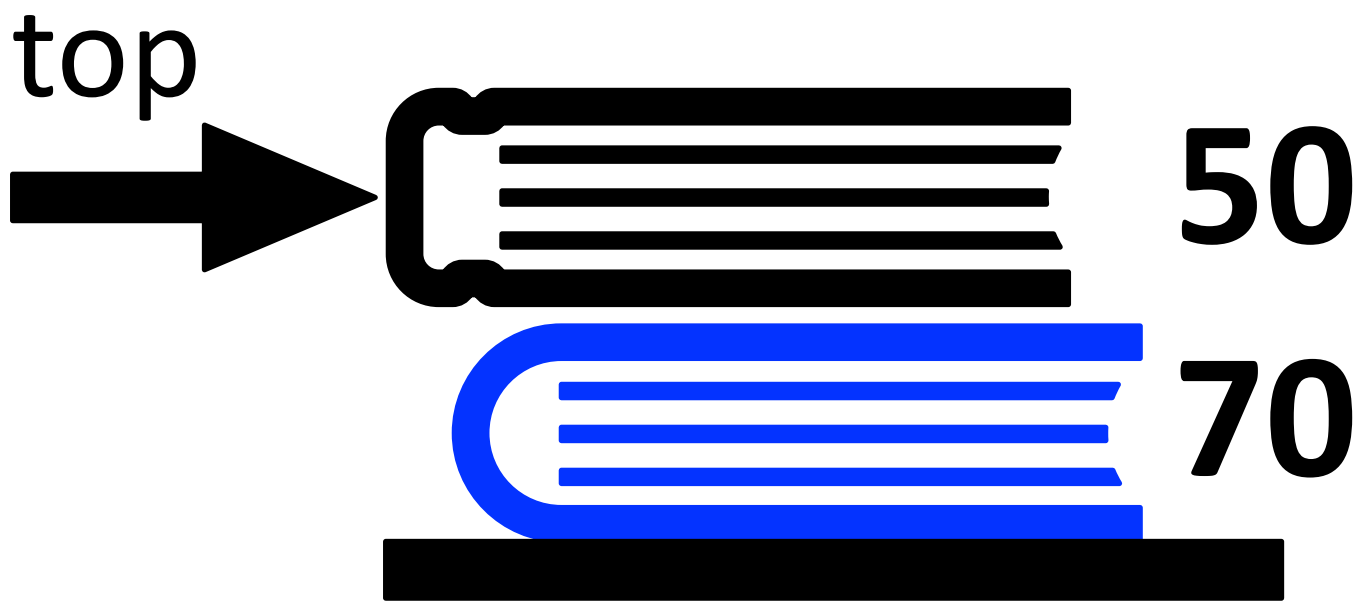

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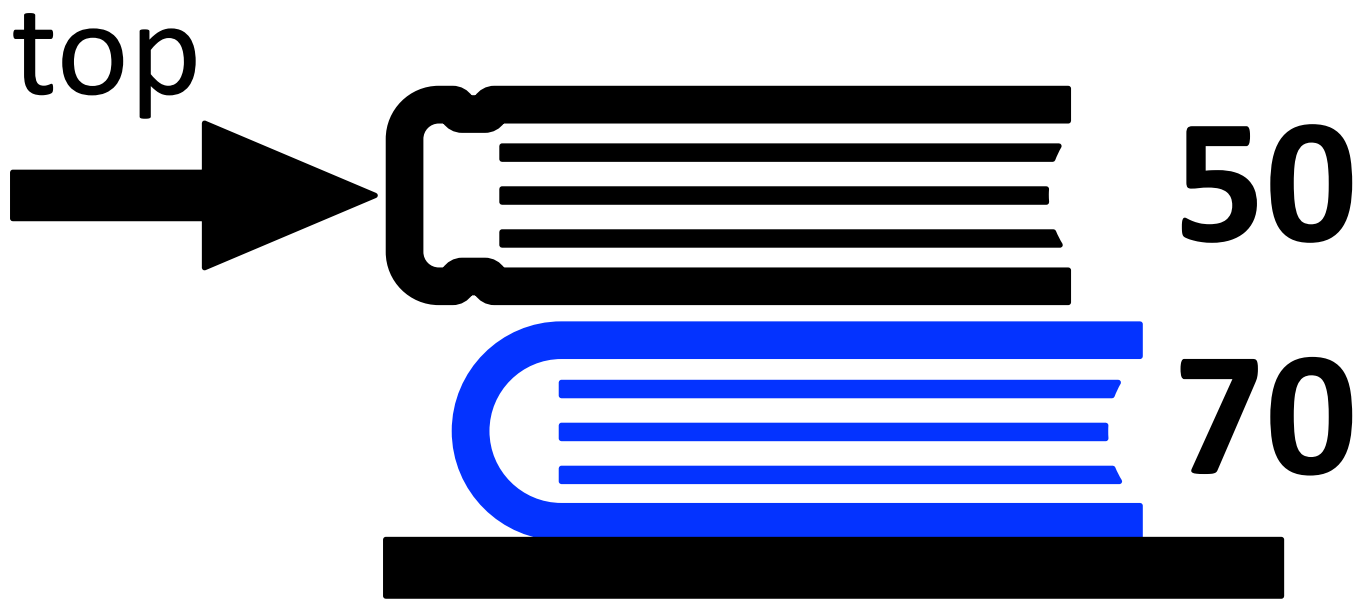
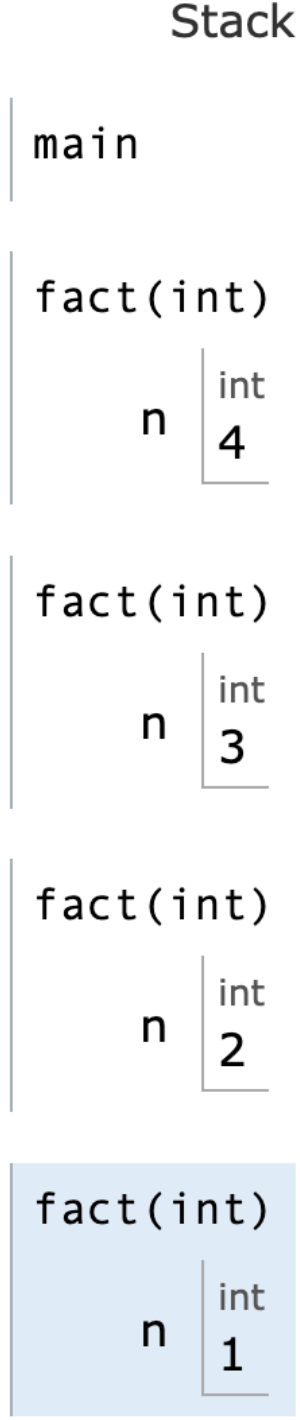


The Last value In is the First value Out (LIFO)

```
1  #include <iostream>
2  using namespace std;
3
4  int fact(int n){
5    if(n <= 1) return 1;
6    return n * fact(n - 1);
7  }
8
9  int main() {
10   cout<< fact(4) << endl;
11   return 0;
12 }
```

The call stack:

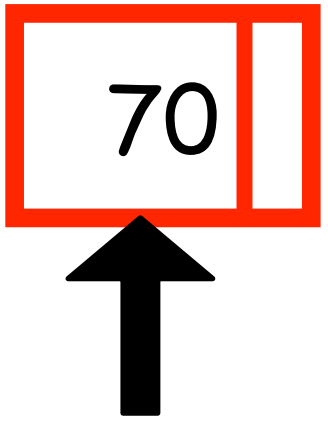


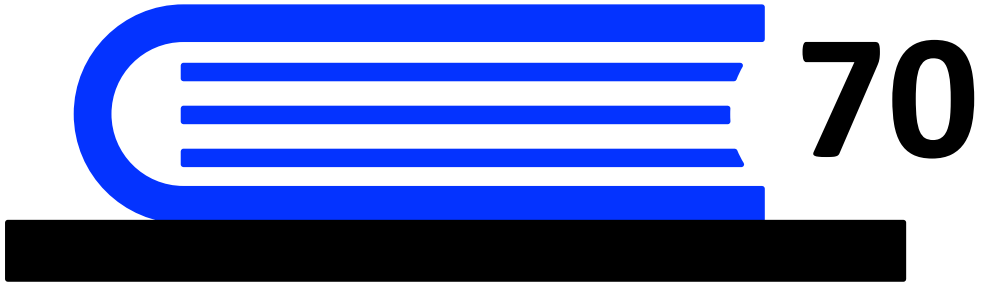
The Last value In is the First value Out (LIFO)

Implement using vector or linked list

Empty stack

Stack Abstract Data Type





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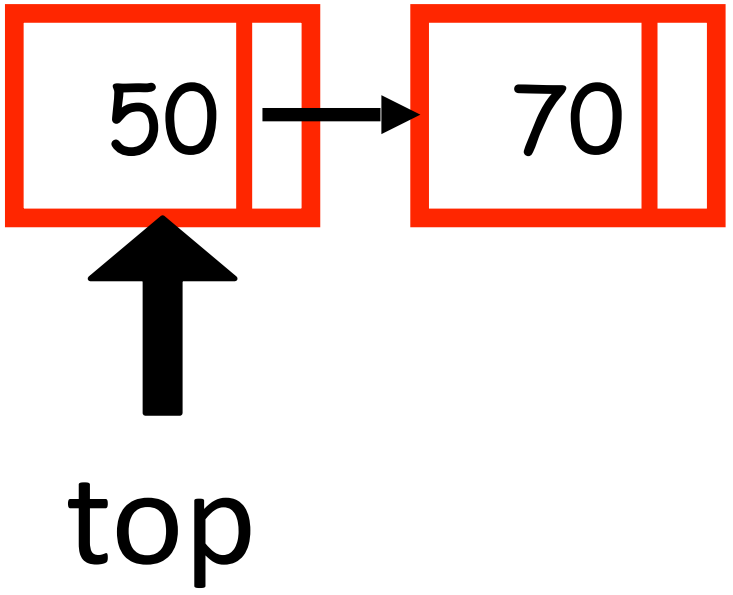

s.push(50)

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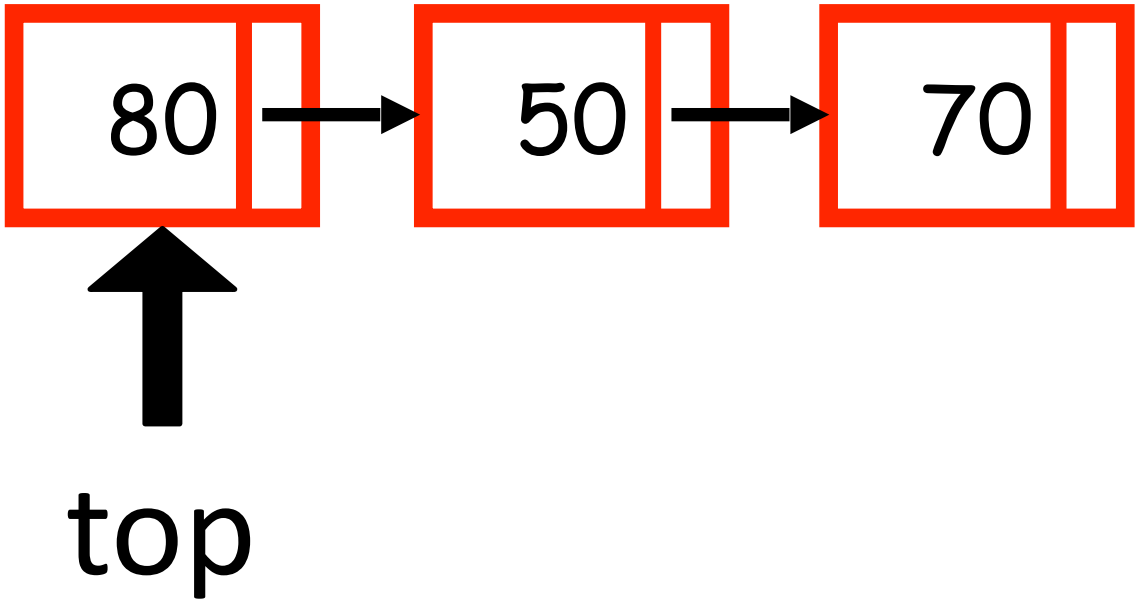

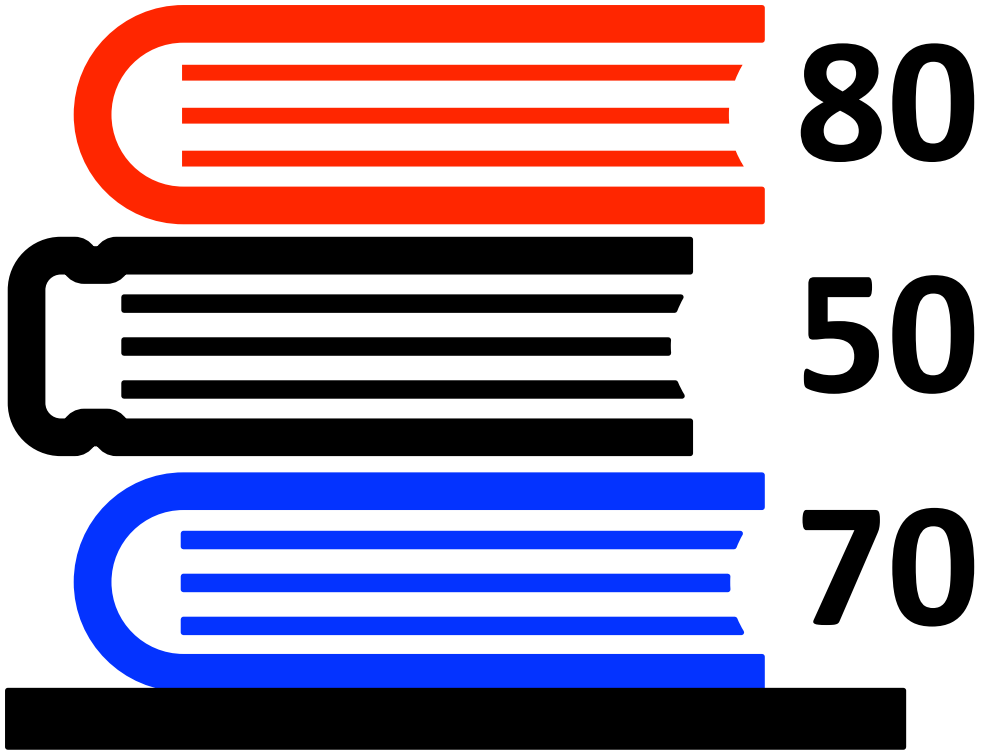

s.push(80)

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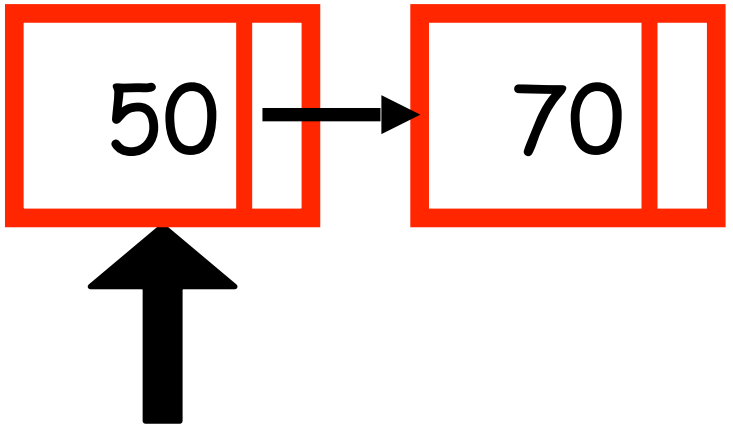
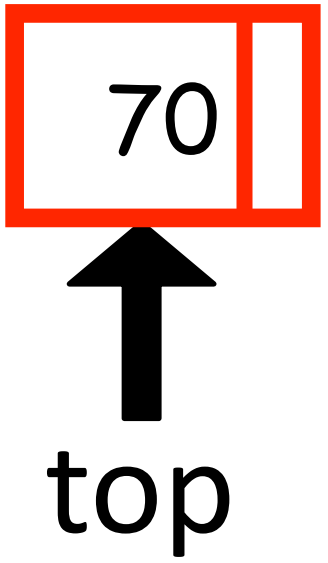
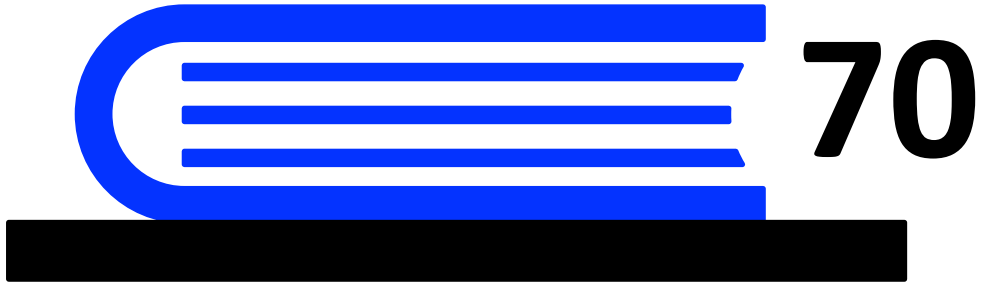


s.pop()

Stack Abstract Data Type





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Stack Abstract Data Type

Why implement a stack at all?
After all a stack is a vector or linked list with a
reduced set of operations

Stack has only three operations: **push()** **pop()** **top()**

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After all a stack is a vector or linked list with a **reduced set of operations**

A stack is useful for keeping track of history information where computation only depends on the most recent information !!

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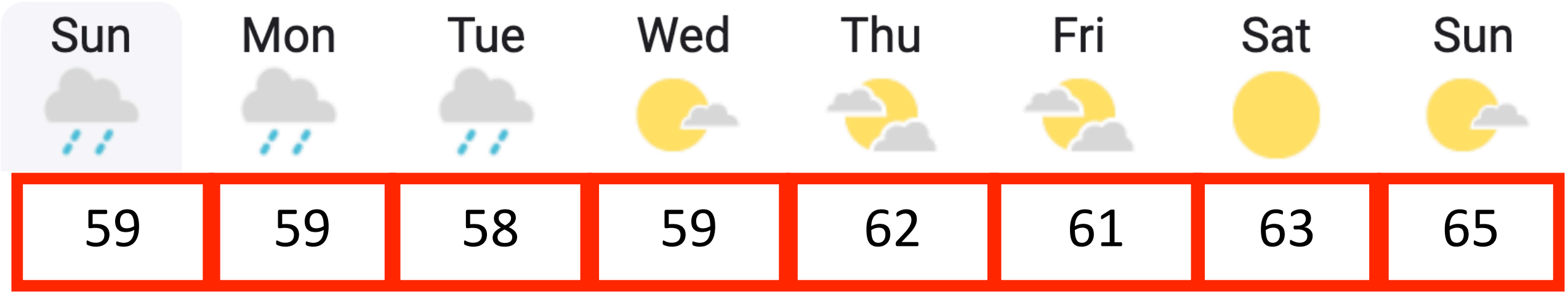
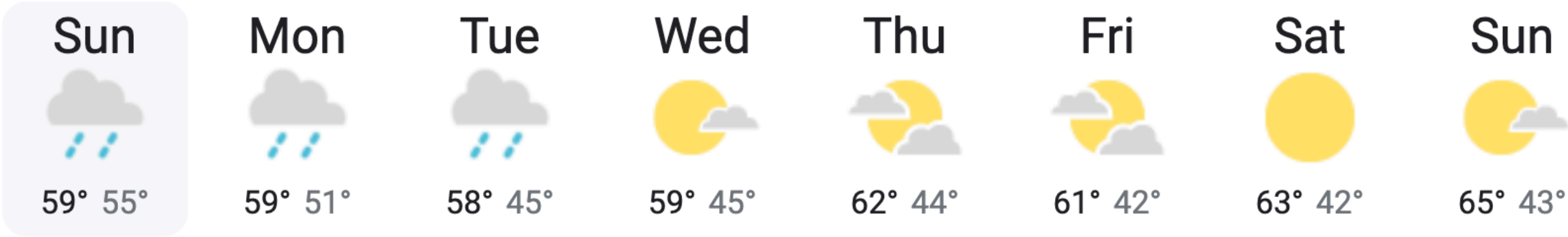


Given an array of integers temperatures represents the daily temperatures, return an array answer such that answer[i] is the number of days you have to wait after the ith day to get a warmer temperature. If there is no future day for which this is possible, keep answer[i] == 0 instead.

```
Input: temperatures = [59,59,58,59,62,61,63,65]
Output:  answer     = [4, 3, 1,  2, 2, 1, 1, 0]
```

https://leetcode.com/problems/daily-temperatures/

- **Attempt a different solution to this problem on leetcode**
- **Discuss your solutions with your peers and during OH**



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