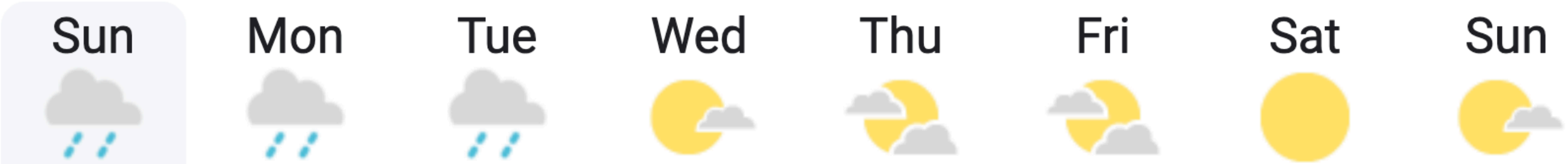
MORE PRACTICE WITH STACKS QUEUES

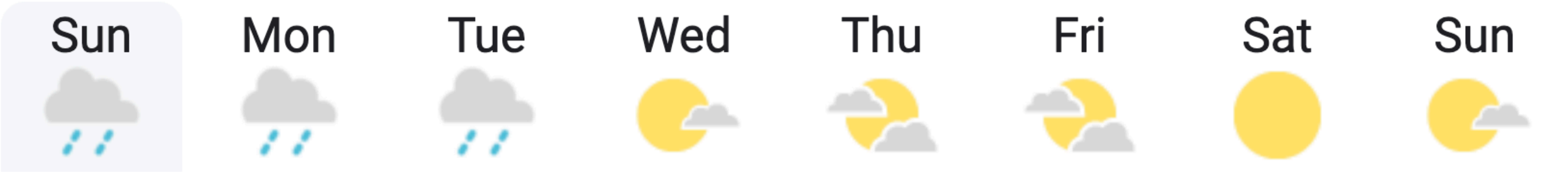
Problem Solving with Computers-II



Your task: solve the daily temperatures problem (using an approach that was different from mine) in under 30 minutes. How did that exercise go?

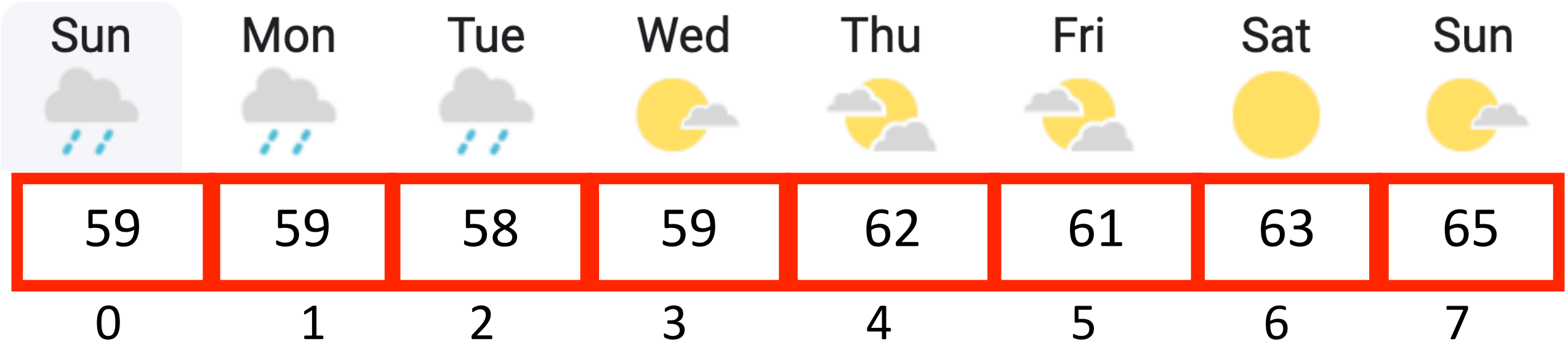
A. Solved it in the given time frame
B. Partially solved it (code didn't pass all test cases)
C. Came up with some ideas but had trouble writing code
D. Didn't know how to approach the problem
E. Didn't attempt

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



59	59	58	59	62	61	63	65
0	1	2	3	4	5	6	7

If we parse the temperatures from right to left, every day we encounter could be a potential answer (for some preceding day) — **remember potential answers in a stack!**

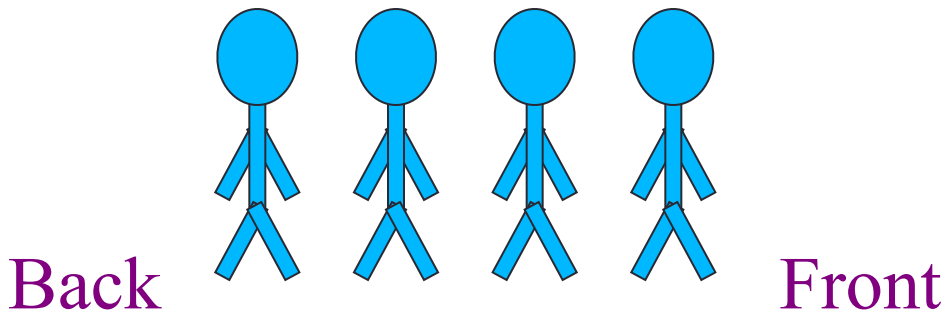


However, some values become stale (i.e. they are no longer a potential answer)

How can we detect stale values in the stack and permanently remove them?

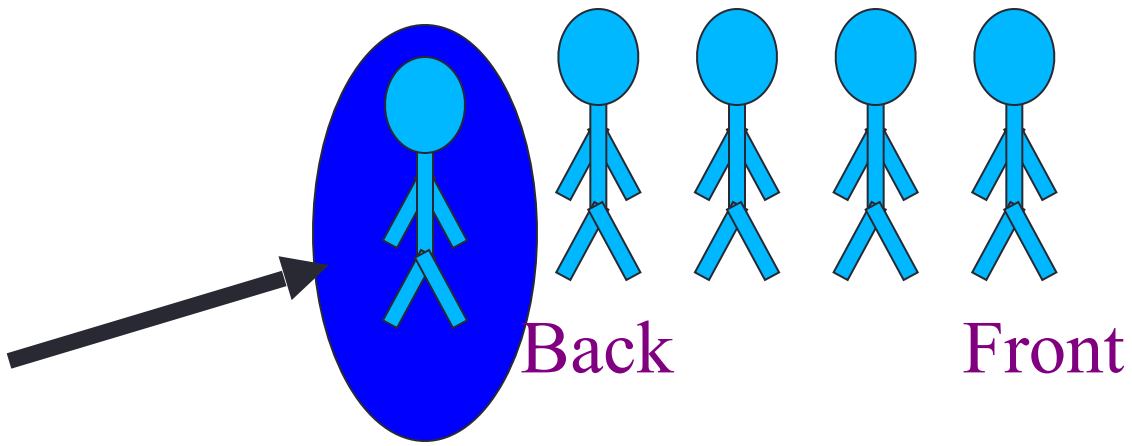
Queue

- A queue is like a queue of people waiting to be serviced
- The queue has a **front** and a **back**.



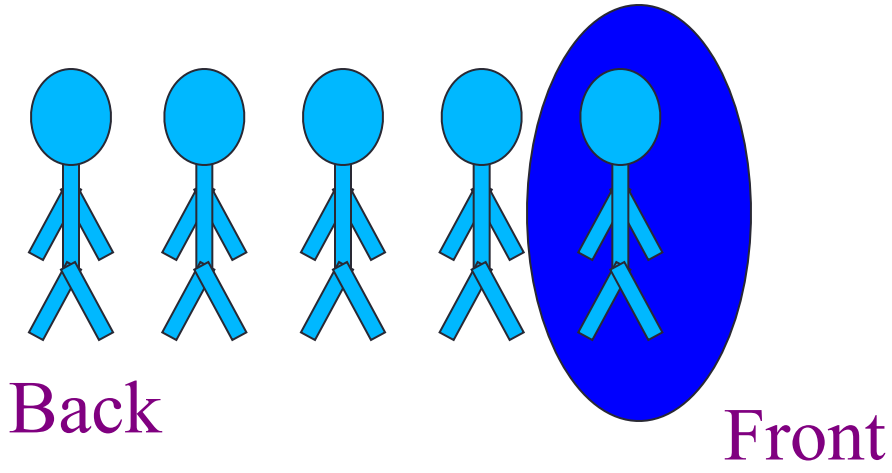
Queue Operations: push, pop, front, back

New people must enter the queue at the back. The C++ queue class calls this a **push** operation.



Queue Operations: push, pop, front, back

- When an item is taken from the queue, it always comes from the front. The C++ queue calls this a **pop**



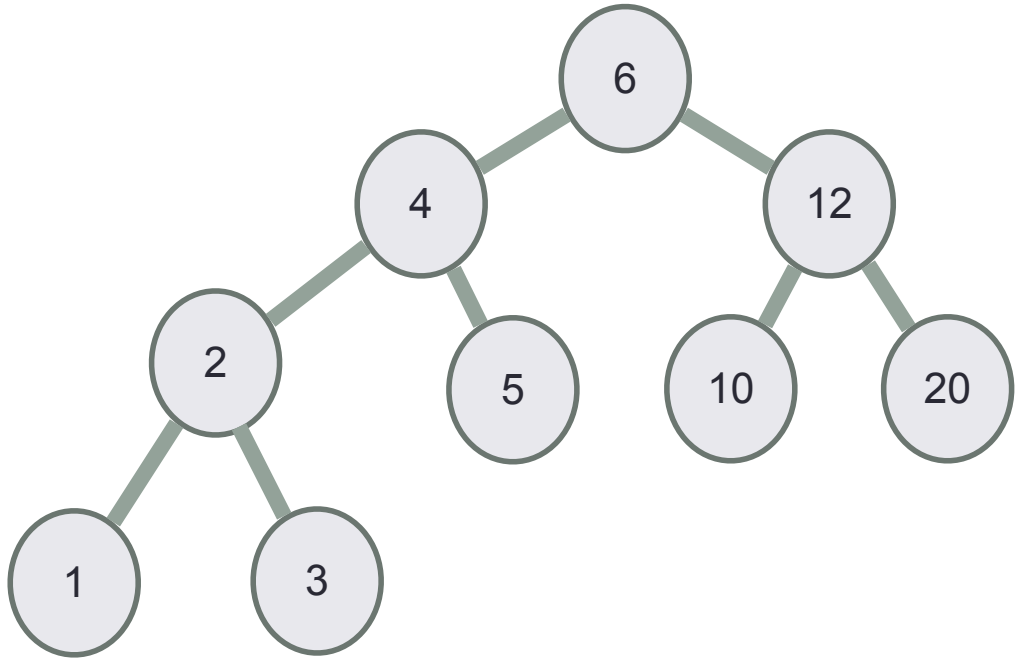
Queue class

- The C++ standard template library has a queue template class.
- The template parameter is the type of the items that can be put in the queue.

```
template <class Item>
class queue<Item>
{
public:
   queue(  );
   void push(const Item& entry);
   void pop(  );
   bool empty(  ) const;
   Item front(  ) const;
   Item back(  ) const;

};
```

Breadth first traversal



- Create an empty Queue.
- Start from the root, insert the root into the Queue.
- Now while Queue is not empty,
  - Extract the node from the Queue and insert all its children into the Queue.
  - Print the extracted node.