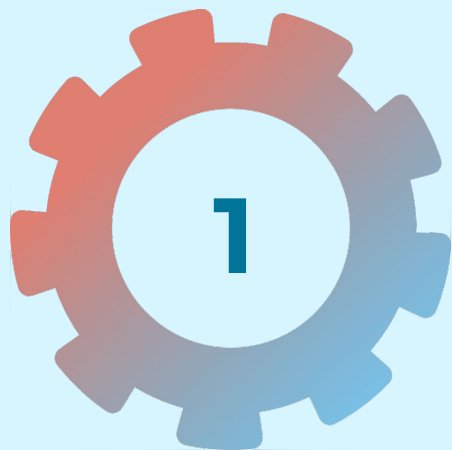


Welcome!

Bit by Bit Week 2





This Weeks Goals

What we will be working on

4 Pillars to Work on

1

LeetCode

- Queues and Stacks Learn

2

Cracking the Coding Interview

- Queues and Stacks Chapter
- Big O chapter

3

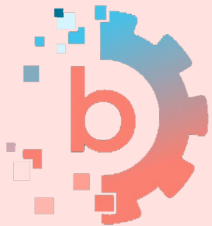
Behavioral Question

- "What role do you play on a team"

4

Application Material

- Work on editing your Resume
- Send Resume in slack





Technical Review

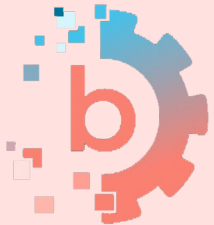
Thinking about Stacks and Queues

Stacks

- Last in, First Out
 - Like a Stack of Pancakes
- Always used with DFS
 - Longest path
 - Farther from the source
- Key words
 - Syntax Checking
 - Recursion
 - Backtracking
 - Reversing a Word

Action	Runtime
Access Element	$O(n)$
Remove element	$O(1)$
Add element	$O(1)$
Searching	$O(n)$

Run Time Cheat Sheet

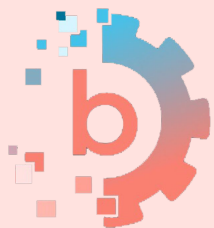


Queues

- First in, First Out
 - Like waiting in a Queue
- Always used with BFS
 - Shortest path
 - Minimize Distance
- Key words
 - Minimum
- Priority Queues
 - Queue sorted by something specific (ex: alphabetically)

Action	Runtime
Access Element	$O(n)$
Remove element	$O(1)$
Add element	$O(1)$
Searching	$O(n)$

Run Time Cheat Sheet



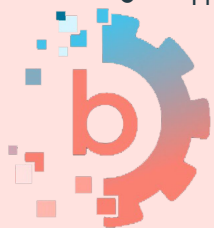
BFS / DFS

Depth-First Search with a Stack: go down a path until we get to a dead end, then backtrack

- Create a set (has been visited)
- Create a stack (to be visited)
- Add root to stack
- while the stack is not empty
 - Curr = get the top element in stack
 - Return true if cur is target
 - Iterate through neighbors
 - If neighbor has not been visited
 - Mark it as visited
 - Add it to the stack
- There is no path so return false

Breadth-First Search with a Queue: explore by steps (find all possible next values and enqueue them)

- Create a Queue (will be visited)
- Create a set (has been visited)
- Keep track of num steps
- Add root to queue;
- while queue is not empty
 - Increase Steps
 - Save queue size cause this will change
 - Iterate from 0 to saved queue size
 - Curr = get first node from queue
 - return step if curr is target
 - Find all possible next choices and enqueue them (if not visited yet)
- If it gets to here, there is no path



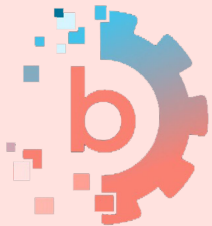


Behavioral Tips

Teamwork and Resumes

“What role do you play on a team”

- Don't pigeonhole yourself- have a main role or two, but also say that you can adapt and do anything needed
- Use examples
- This is more about teamwork than type of coding you like
- How to figure out your role on a team
 - What is your work style?
 - Would you rather code alone or with others?
 - What are your key defining personality traits?
 - How would your teammates describe your contributions?
 - If all fails, take the Myers Briggs test and you can probably find something



My personal “What role do you play on a team”

Explain my Role

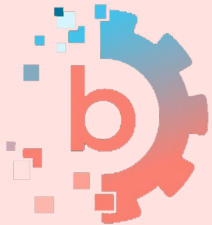
My role on a team is
an innovator
This means I
do XYZ

Example

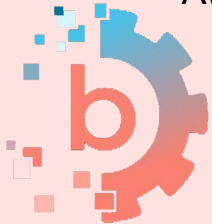
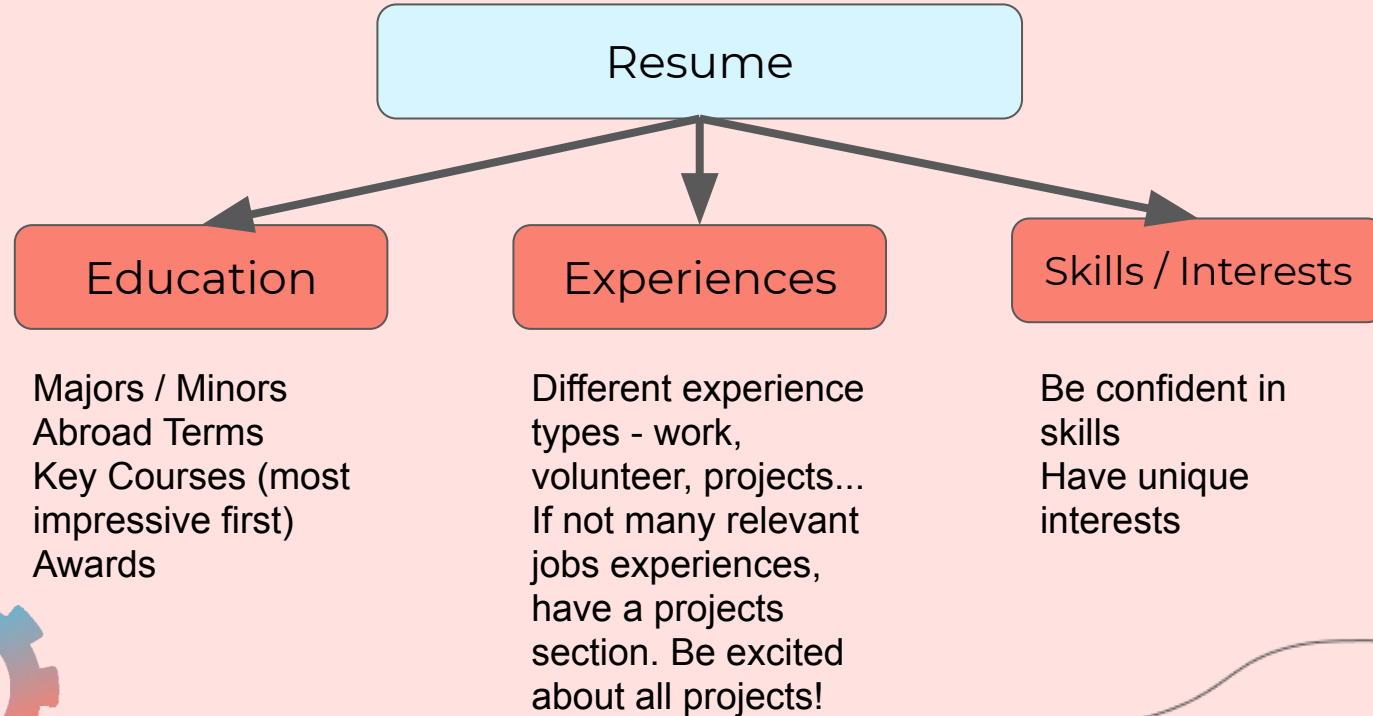
Story about a team
and the example
where you were in a
role, but were able
to balance others

Being Open Minded

While I am the most
comfortable doing
XYZ, there have
been times I have
been able to take on
other roles



Main Resume Sections



Resume Sentences

Action Verb + What you did + Outcome (numbers if possible)

BAD: Worked on the Ads Manager Team which is in charge of the website where advertisers post ads

BETTER: Worked on the Ads Manager Team and enhanced their platform by creating a feature that allows users to review multiple ads before publishing them.

BEST: Interned with the Ads Manager Team to enhanced their platform by creating a feature that allows users to review multiple ads before publishing them; in production and used by 50% of advertisers



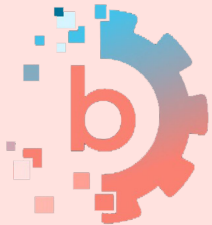


Mock Interviews

Frameworks and booking

Feedback For Everyone

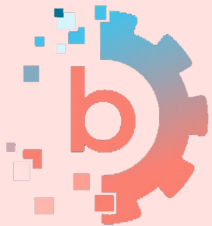
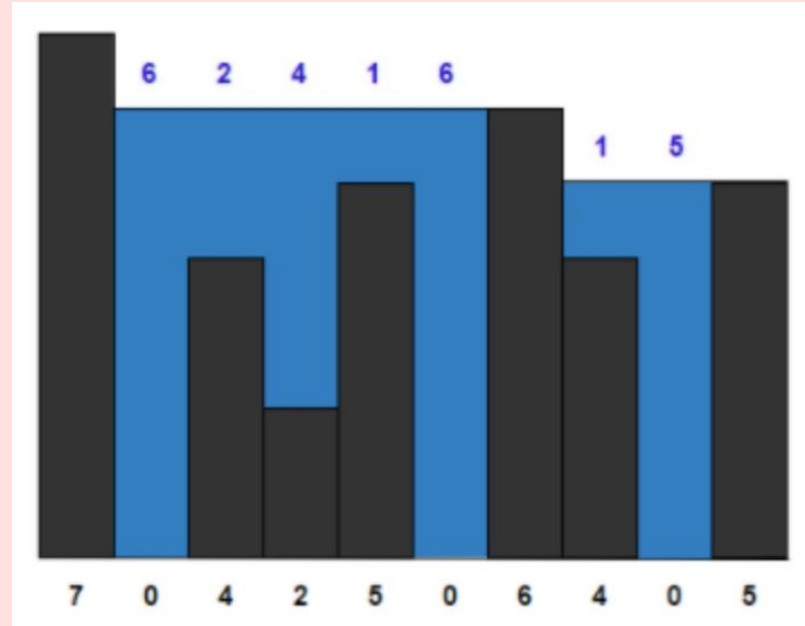
- Adding “Why” you are doing something
 - OK: Now i’m going to do a for loop from 0 to i
 - Great: Because I need to look at every value, I am going to do a for loop...
- Outline a solution at the beginning
 - Use comments, pseudocode, but enough detail you feel confident
- Keep track on the Word Doc for test cases
 - Actually type of variables and how they are changing (or do this on paper and mention it!)
- Ask questions!
 - “Am I on the right track?” “Are there edge cases you think I am missing?”



Breakout Room Question

Find the maximum amount of water that can be trapped within a given set of bars where the width of each bar is 1 unit.

For example: input array with bar heights [7, 0, 4, 2, 5, 0, 6, 4, 0, 5] can trap 25 units of water.

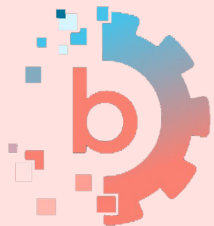


[Doc Here](#)

Breakout Room Question

The idea is to calculate the maximum height bar on the left and right of every bar. The amount of water that can be stored on top of each bar is equal to the minimum (between high left and high right) minus the height of the current bar.

This soln is $O(n)$ and $O(1)$ space. They could also do it using $O(n)$ space if they decided to use an additional array to store info.



```
public static int trap(int[] heights){
    int left = 0;
    int right = heights.length-1;
    int water = 0;
    int maxLeft = heights[left];
    int maxRight = heights[right];

    // move inwards from the edges
    while(left < right){

        // figure out which is the limiting bar, the left or the right
        if(heights[left] <= heights[right]){
            left++;
            maxLeft = Integer.max(maxLeft, heights[left]);
            water += (maxLeft - heights[left]);
        }
        else{
            right--;
            maxRight = Integer.max(maxRight, heights[right]);
            water += (maxRight - heights[right]);
        }
    }

    return water;
}
```




Questions

What didn't make sense?