Welcome!

Bit by Bit Week 5

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This Weeks Goals

What we will be working on

4 Pillars to Work on

1 **LeetCode**

- Searches/Sorting Algos

2 **Cracking the Coding Interview**

- Sorting & Searching Chapter

3 **Behavioral Question**

- Why are you interested in Company X?

4 **Application Material**

- Githubs
- Personal Websites

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Technical Review

Thinking about Sorting and Searching

Bubble Sort

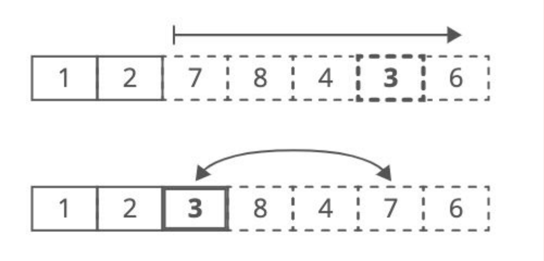
Runtime Average	O(n^2)
Runtime Worst	O(n^2)
Runtime Best	O(n)
Memory	O(1)

- Basic Sorting Algorithm
- Uses
    - Decide whether or not the list is already sorted
- Algo
    - Start at beginning and swap if the first is greater than the second
    - Then we go to the next pair
    - Smaller items bubble up to the beginning

Selection Sort

Runtime Av	O(n^2)
Runtime Worst	O(n^2)
Runtime Best	O(n^2)
Memory	O(1)

- Basic Sorting Algorithm but Inefficient
- Uses
  - When you need an algo that requires no other space use
- Algo
  - Pick the minimum element from the unsorted subarray
  - Swap it with the leftmost element of the unsorted subarray
  - Now the leftmost element of unsorted subarray becomes a part (rightmost) of sorted subarray and will not be a part of unsorted subarray

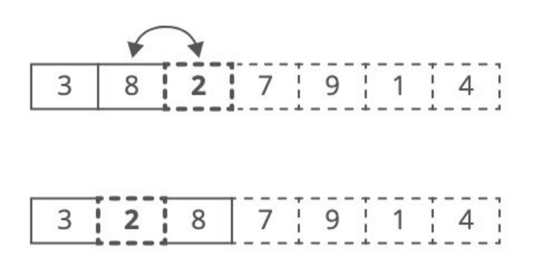


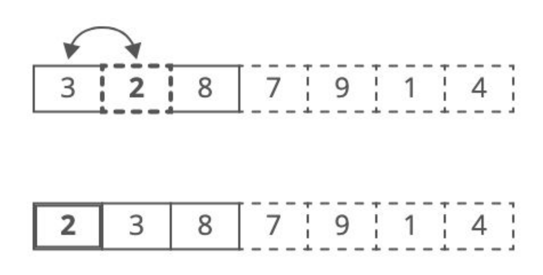
1	2	7	8	4	**3**	6
1	2	**3**	8	4	7	6

Insertion Sort

Runtime Av	O(n^2)
Runtime Worst	O(n^2)
Runtime Best	O(n)
Memory	O(1)

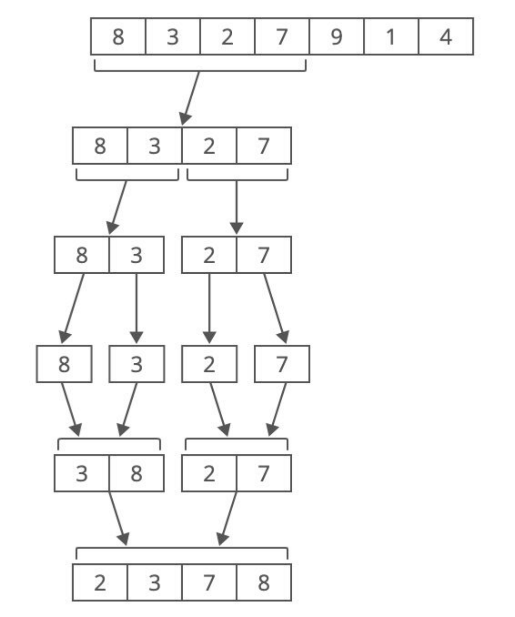
- Basic Sorting Algorithm but Inefficient
- Uses
  - When you need an algo that requires no other space use
- Algo
  - We'll break the the list into two chunks: a sorted portion and an unsorted portion
  - The idea is to "swap" each new item to the left until it's in the right spot





Merge Sort

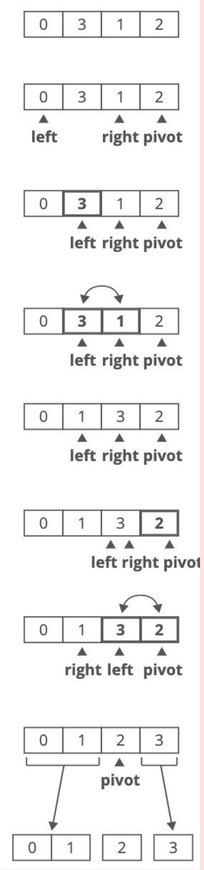
- Very Efficient
- Uses
  - When you have large data sets
- Algo
  - Split the input in half
  - Sort each half by recursively using this same process
  - Merge the sorted halves back together



Runtime Av	O(nlgn)
Runtime Worst	O(nlgn)
Runtime Best	O(nlgn)
Memory	O(n)

Quick Sort

- Efficient but worst case slow
- Uses
    - Quick sort is used everywhere for faster results and in the cases where there are space constraints
- Algo
    - Make any element as pivot
    - Partition the array on the basis of pivot
    - Divide list into two parts
    - Repeat the steps for the left and right sublists recursively

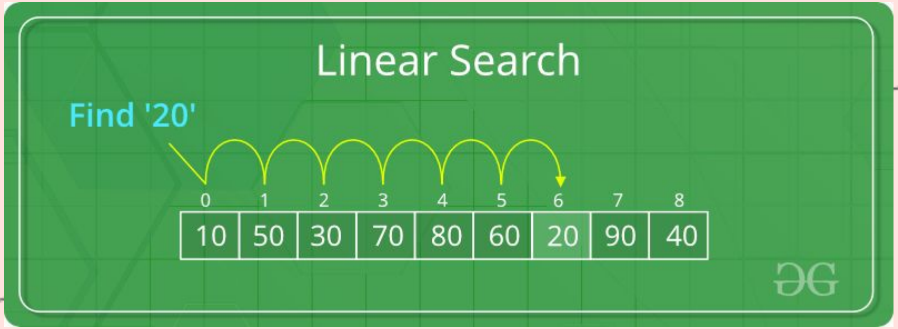


Runtime Av	O(nlgn)
Runtime Worst	O(n^2)
Runtime Best	O(nlgn)
Memory	O(lgn)

Linear Search

- Literally going down the list to find your element
- Uses
    - Rarely - great brute force solution
- Algo
    - Start from the leftmost element of arr[] and one by one compare x with each element of arr[]
    - If x matches with an element, return the index
    - If x matches with an element, return the index

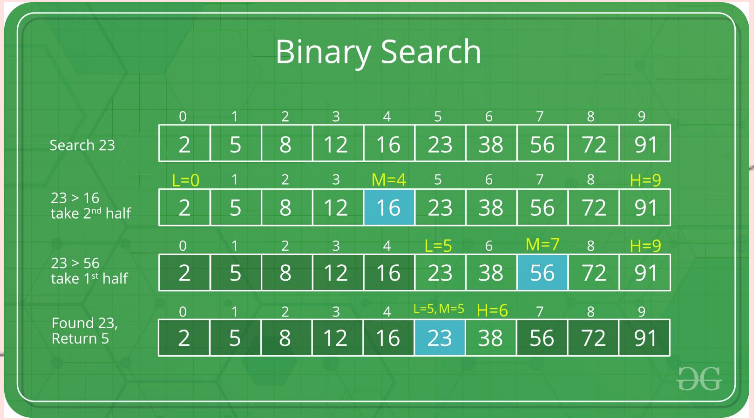
Runtime Av	O(n)
Runtime Worst	O(n)
Runtime Best	O(1)
Memory	O(1)



Binary Search

- Splitting array in half
- Uses
  - When an array is already sorted!!
- Algo
  - Compare x with the middle element.
  - If x matches with middle element, we return the mid index.
  - Else If x is greater than the mid element, then x can only lie in right half subarray after the mid element. So we recur for right half.
  - Else (x is smaller) recur for the left half.

Runtime Av	O(lg n)
Runtime Worst	O(lg n)
Memory Recursive	O(lg n)
Memory Iterative	O(1)



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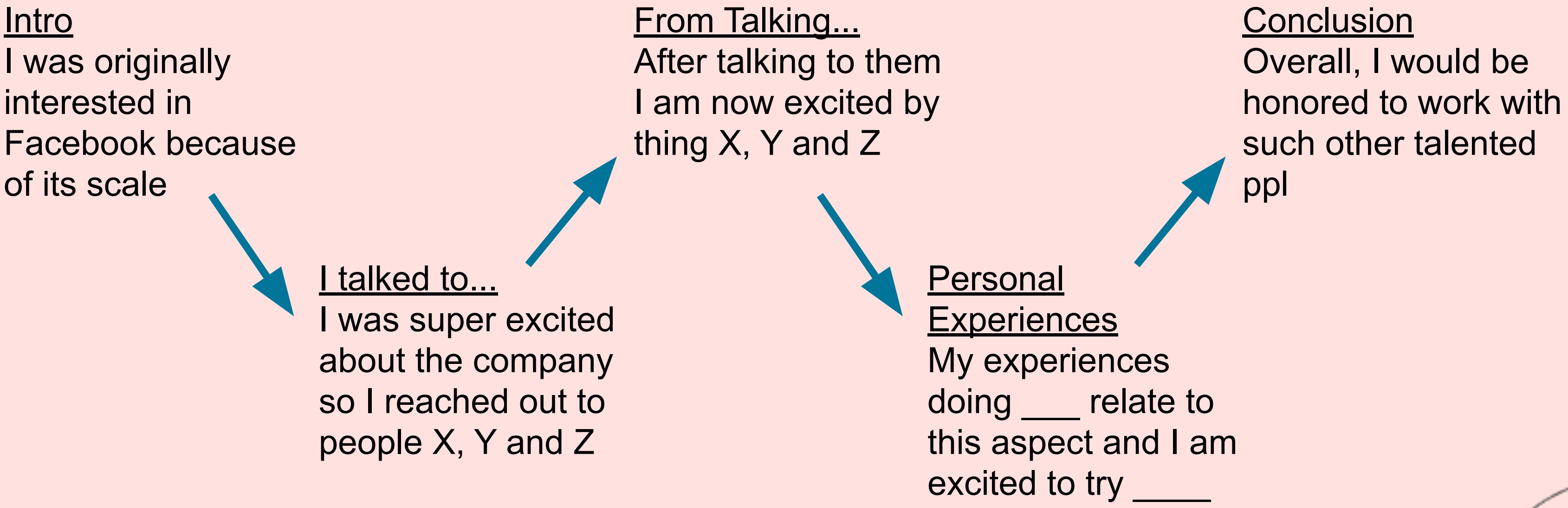
Behavioral Tips

Why are you interested in Company X, GitHubs, Resumes

“Why are you interested in Company X”

- Have an answer prepared
- Show off that you have networked with people and done your research about the company
- Explain Passions and Experiences that make you a good applicant
- Make sure your answer is unique!
- Be enthusiastic

My personal “why am I interested in FB”



Intro
I was originally interested in Facebook because of its scale

I talked to...
I was super excited about the company so I reached out to people X, Y and Z

From Talking...
After talking to them I am now excited by thing X, Y and Z

Personal Experiences
My experiences doing ___ relate to this aspect and I am excited to try ____

Conclusion
Overall, I would be honored to work with such other talented ppl

GitHubs!

- You want ReadMe’s that explain the project you worked on and why you created it
- Make sure your GitHub explains how to run the program (or visit it live) if people actually try to use it
- It always makes GitHub’s seem more impressive with pictures or gifs of the product working in real life
- Also great to have a picture and information filled in for your GitHub Profile so it looks like you use it frequently.

Personal Websites

- Goal: To show off the coding projects you have made
  - These can be class projects, personal projects, hackathon projects, etc
- You don’t need to have one, just an added bonus if you do
  - Helps get you an interview, but the interview performance is what gets you an offer
- If you have a personal website
  - Make sure everything is spell checked
  - Make sure it is mobile friendly (they could ask to see it during an interview)
  - Have it somewhat aesthetically appealing

Personal Websites Resources

- Free URL/hosting if you use GitHub pages
- Bootstrap/Materialize for CSS component libraries
- Codepen for cool effects
- Unsplash for images
- Domain from Namecheap
  - Need to use college email for a free domain for a year
- Icons from fontawesome
- The noun project has more icons

Great Personal Website Examples

- http://www.garysheng.com/
- http://www.pascalvangemert.nl/
- https://brittanychiang.com/
- https://isaacgluck.com/

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Submitted Questions

What you all want to know

Ideas for side projects

- Be creative!
    - Look into tutorials for tech stacks you want to learn
    - Get some friends together to create a product that can act as a solution to a problem you all face
    - Join a hackathon and bring a team / get matched with a team
- If you are interested in a specific company
    - Figure out what tech stack that company uses and do a project with that stack
    - Make a side project that relates to the field they work in
    - See if said company offers API's you can try to use

Examples of what you can ask recruiters

- "Dear Recruiter X… "
    - "… I am interested in applying to company Y. I was hoping you could tell me more about the application process and timeline…"
    - "… I submitted my application to company Y a week ago, and still have not heard back. I was wondering when I should expect to hear back about next steps… "
    - "… I am sad to hear that I will not be moving forward in the application process with company Y. Working at company Y is a dream of mine, and I was hoping you would be able to share any feedback about my application or interviews so I can improve my chances of getting an offer from you in the future…"
    - "… I just received an offer letter from company P. While I am excited about the opportunity, I would rather work at company X. Is there any way we could expedite my interview process because I need to respond to my offer within the next two weeks.…"

Staying timely during the recruiting process

- Stay organized! Keep track of all the companies you are applying to on a spreadsheet and their deadlines so you can make sure to apply before the deadlines
    - Set personal goals of when you want to have gotten specific applications in
- Never ignore an email - if you get an email from someone at the company respond ASAP so you don’t put it off and forget
- Set aside time every day to keep up to date on emails, prep for interviews or research companies. This can be just 30m a day!

What matters more between experience vs. interview performance?

- Experience helps you GET the interview and Interview performance helps you get the job
  - Mostly how you handle technical questions
  - Some of it is behaviorals
    - Only time experience would come into an interview

- Don’t stress if you don’t have a lot of experience on your resume
  - But something to think about full time if you aren’t getting first rounds at places you want

What round do they ask behavioral?

- Usually 1-2 questions before each technical interview
- If they do a full behavioral, it's almost always the last thing they'll do
  - This would be during an on site interview

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Questions

What didn’t make sense?