EE P 596
ML Interviewing Master Class | DAY 2

Introduction | Coding Tips | Mock Practice | Guest Sharing

Dr. Karthik Mohan, Apr 27 2025 | Spring Quarter course | PMP, ECE, UW

Coding

One of the things you quickly realize in the process of giving coding interviews - Its not enough to come up with “a solution” - You need an optimal solution.

And its not enough to come up with an “optimal solution”. You need to code it up down to the details.

And its not enough to code the details right. You need to also verify and write test cases and show they pass.

And be efficient as you do all of this!

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Coding Types you can expect

Leet Code Question

Design a class

ML Coding Question

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Example: Design a class that can take in streaming data and output the running average and standard deviation when needed

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E.g. 1,2,-1,2,0,3,8,-11,4,3,... Assume a new number comes in 7 - What's the time complexity to output the new running average and new running standard deviation?

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Problem Types (Data Structures and Algos)

Heaps

Two Pointers

Hash Maps

String Manipulations

Trees

Graphs (BFS/DFS)

Dynamic Programming/Recursion

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Problem Types (Data Structures and Algos)

- Deque
- Heaps
- Two Pointers
- Hash Maps
- String Manipulations
- Trees
- Graphs (BFS/DFS)
- Dynamic Programming/Recursion

9 step Process for Coding Round

1. Read and understand the coding question
2. Ask any clarifying questions
3. Come up with test examples and validate with interviewer
4. Come up with a brute force solution and sharing time complexity
5. Think of a more optimal solution and check in with interviewer
6. Share time and space complexity/write it down
7. Structure your code execution and start coding
8. Manually verify the code with test examples earlier
9. Write simple unit tests with couple of test cases and actually execute your code

How to practice leetcoding?

Practice Code like you would in an interview

Keep track of time taken

Follow the 9 step process

Look to get the LeetCode submission right on first attempt

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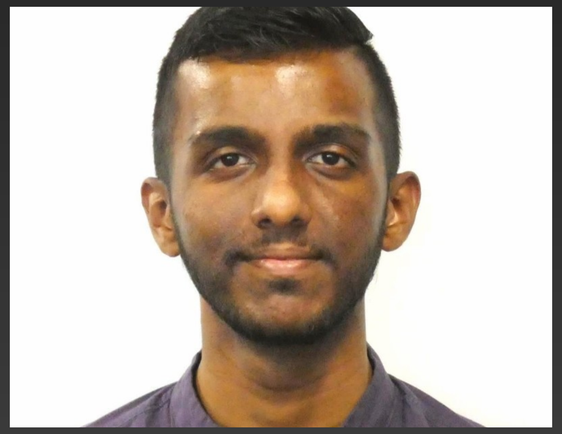
Lets look at a live coding question

Two Sum

Guest Engineer Sharing

Welcome Sairam, an engineer at Meta to share about his personal story with the interviewing process



Guest Engineer Sharing

Welcome Radhika, an engineer at Apple to share about her personal story with the interviewing process

Mock Coding Interview Time! (15 minutes per person)

We follow the same process as yesterday. Teams of 2. Person A is the interviewer and Person B is interviewed and switch roles.

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Coding question: Find the average of node values in each level of the binary tree

Leet Code: “Average of Levels in Binary Tree”

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Leet Code: “Average of Levels in Binary Tree”

Evaluate on scale of 1-5 for a) Optimal solution b) Correct Time complexity c) Clear communication with interviewer d) Test cases passing e) Clean and modularized code

Mock Coding Interview Time! (15 minutes per person)

We follow the same process as yesterday. Teams of 2. Person B is the interviewer and Person A is interviewed and switch roles.

Coding question: Check if a string is a palindrome or not (reads the same forwards and backwards) Ignore any spaces in the string.

LeetCode: “Valid Palindrome”

Evaluate on scale of 1-5 for a) Optimal solution b) Correct Time complexity c) Clear communication with interviewer d) Test cases passing e) Clean and modularized code

Lets discuss learnings from mock interviewing

Mock Interview II

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Class DataStream:

    def __init__(self):
        pass

<Add other methods here>
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Interviewer A:

- Check for clean code
- Working code
- Test cases
- Time complexity

Lets discuss learnings from mock interviewing

Spreadsheet for tracking coding progress

ML Coding

Solving a ML question through a coding exercise

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Solving a ML question through a coding exercise

Example: Can you code up the solution to a linear regression problem - given matrices A and vector b.

ML Coding Question

Given a set of N vectors that live in d dimensions
- Implement k-means clustering

Requires knowledge of the k-means clustering algorithm. With the knowledge, implementation is straightforward.

What is the time complexity per iteration of k-means?

In-Class Coding Exercise / Submit on canvas

Given a set of N vectors that live in d dimensions - Implement k-means clustering

Also generate N=100 random points with d =2 dimensions and visualize the result after your k-means clustering (color each cluster different)

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Code up on VSCode or any Python IDE

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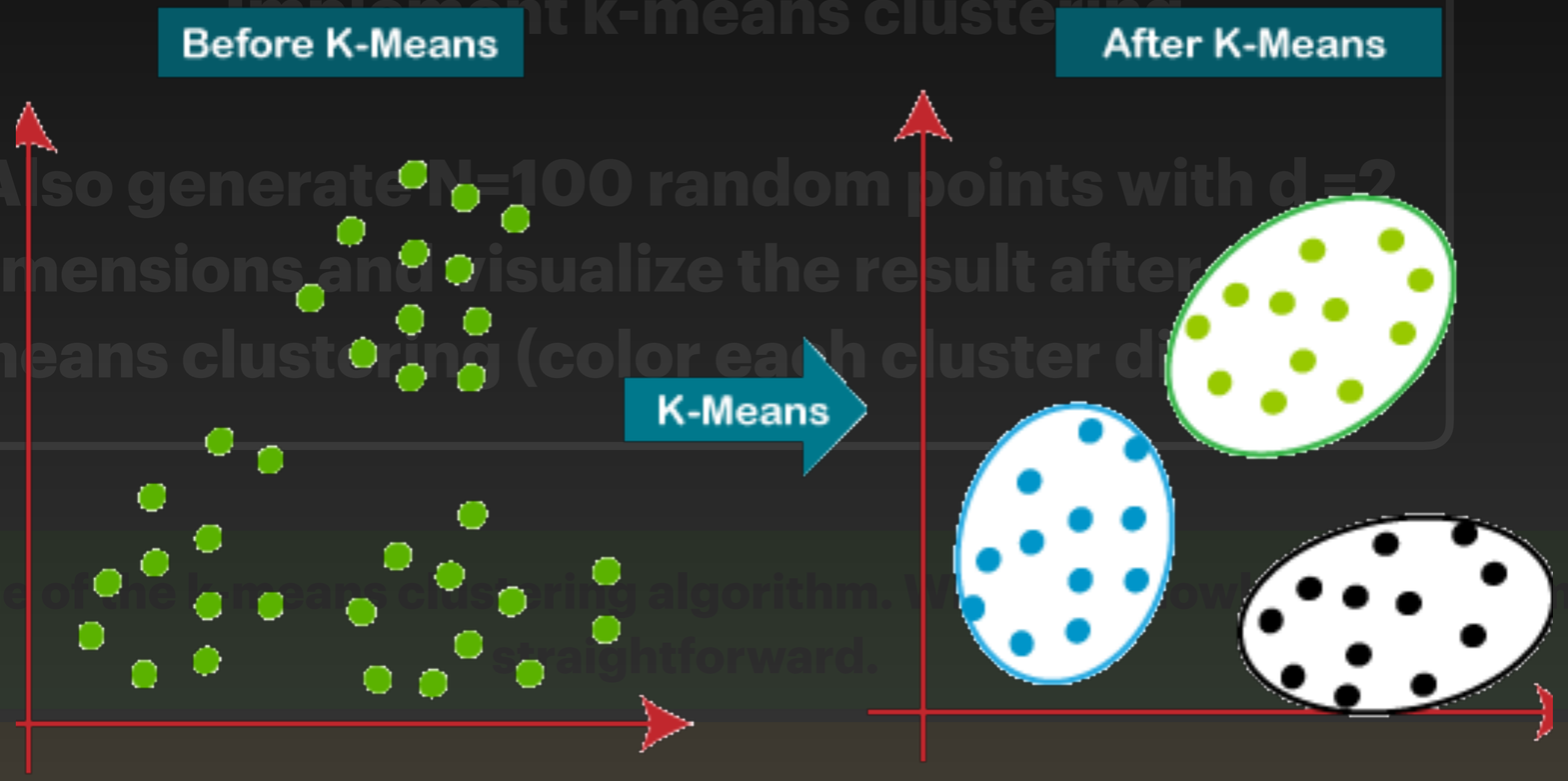

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Take Home Assignment

Part 1: Solve 1 easy problem and 1 medium problem from LeetCode on each of the following topics:
Two pointers, string, hash_maps, tree, recursion and document your solutions through the template spreadsheet. Submit your spreadsheet on canvas along with code solution

Part 2: Also add the running average and running standard deviation problem to the spreadsheet and submit code for the same

Part 3: Finish the in-class coding exercise on k-means and submit

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Experience Nugget: When you are in the flow and have practiced enough - You can easily do part 1,2 and 3 of this in 3 hours!

Practice makes perfect