Python & DSA Preparation Checklist for Google STEP

Python Topics

Basics

- Variables & Data Types

- Input/Output

- Operators & Expressions

- Conditional Statements (if, elif, else)

- Loops (for, while)

Data Structures in Python

- Strings

- Lists

- Tuples

- Sets

- Dictionaries

Functions

- Defining & calling functions

- Parameters & return values

- Lambda functions

- Recursion

Object-Oriented Programming

- Classes and Objects

- __init__() Constructor

- Instance vs Class variables

- Inheritance & Polymorphism

Advanced Python

- File Handling (read, write, with)

- Exception Handling (try, except)

- List Comprehension

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- Modules & Packages

- Working with JSON

- map(), filter(), reduce(), zip()

DSA Topics

Arrays & Strings

- Traversal, Insertion, Deletion

- Prefix Sum

- Sliding Window

- Two Pointers

- Subarrays and substrings

Linked Lists

- Singly & Doubly Linked List

- Reversal, Middle, Cycle Detection

Stacks & Queues

- Using Lists, Deque

- Parentheses problems

- Monotonic Stack

Recursion & Backtracking

- Factorial, Fibonacci

- Subsets, Permutations

- N-Queens (basic idea)

Hashing (Dictionaries & Sets)

- Frequency Counting

- HashMaps

- HashSet Problems

Searching & Sorting

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- Linear & Binary Search

- Bubble, Selection, Insertion Sort

- Merge Sort, Quick Sort

Trees (Basic)

- Binary Trees, BST

- Traversals (Inorder, Preorder, Postorder)

- Height, Count, Sum

Graphs (Intro)

- DFS, BFS

- Adjacency List/Matrix

Dynamic Programming (Basic)

- Fibonacci, Coin Change

- 0/1 Knapsack (just the concept)