Engineering at Goldman Sachs

Digital Campus Syllabus

Overview

Congratulations on qualifying for the aptitude test. This document outlines the key topics that will help you prepare for the next test on Computer Science and Quantitative Aptitude Skills. The list of topics is indicative and by no means exhaustive. We also provide two mock tests that give you an idea of the potential pattern of questions. The eligibility criteria to qualify is provided in the test paper itself.

At a high level, the question paper will cover following sections -

- Programming - Easy and Medium Programming questions
- Quantitative Aptitude - Multiple choice questions related to mathematics. Sample topics provided below.
- Computer Science - Multiple choice questions related to concepts of Computer Science. Sample topics given below.
- Advanced Programming - A hard programming question on advanced data structures and algorithms.
- Tell Us About Your Self - Two subjective questions to understand your thought process.

All questions and sections are required. You increase your chances of qualification by scoring maximum in all sections. However, scoring in every section is not a pre-requisite for qualification. More details in the sample paper.

For the below topics, please feel free to refer to standard books, websites, and platforms that cover these concepts.

Sample tests

Mock Test 1

Mock Test 2

Suggested Syllabus

Computer Science

Data Structure and Algorithms

Preliminaries

Arrays, Structures, Linked lists

Basic Data Structures

Stacks and queues,

graphs and trees,

binary trees

Asymptotic notations complexity analysis of algorithms, worst case

and average case.

Algorithmic paradigms divide and conquer, recursion, greedy, dynamic programming, string

matching algorithms

Searching:

binary search trees and balanced binary search trees

AVL trees and red-black trees,

B-trees, skip lists, hashing. Priority queues, heaps, Interval trees, tries.

Sorting with worst and average case analysis comparison based

sorting - e.g. quick sort, heap sort, merge sort

Decision tree model and (worst case) lower bound on sorting.

Sorting in linear time - e.g. radix sort, bucket sort etc

Graph Algorithms

BFS, DFS, connected components,

topological sort, minimum spanning trees

Directed Acyclic Graph, shortest paths - single source and all pairs.

Operating System concepts

- Memory management: Example virtual memory, paging, etc
- Process management: Example context switching, process scheduling strategies, etc

OOPs concepts

- Inheritance
- Polymorphism
- Abstraction
- Encapsulation

Programming & Advanced Programming

There would be programming questions that would test problem solving skills and ability to program in either Python, C++ or Java.

The problems would derive from concepts covered in the Computer Science section above.

Test cases would evaluate code for correctness and performance of the solution.

Problem Solving **Logical**

Reasoning

Probability & Statistics

- Permutations & Combinations
- Bayes theorem
- Random variables
- Expected values
- Distributions
- Means & Variances

Number Theory

Algebra

- Polynomials
- Logarithmic equations

Trigonometry

Geometry Set

Theory

Contact us

In case you have any questions, please post them via email to:
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