

SAI UNIVERSITY - 90 HRS SESSION PLAN



SessionNo	Subject	Topic	Subtopic	Practice	Homework
1	DBMS	DBMS Basics	DBMS vs RDBMS, Keys	File I/O vs SQLite	5 MCQs
2	DBMS	ER Models	Entities, Attributes	ER for Library Mgmt	ER for College Mgmt
3	DBMS	Normalization	1NF, 2NF, 3NF	Normalize table	Normalize Hospital DB
4	DBMS	SQL Basics	DDL, DML	Python sqlite3: Create schema	E-commerce schema
5	DBMS	SQL Queries	SELECT, WHERE, ORDER	Queries in SQLite	10 queries
6	DBMS	Joins	INNER, OUTER, SELF	Join queries	10 join queries
7	DBMS	Subqueries & Views	Nested, Views	Subquery problems	5 view queries
8	DBMS	Aggregates	COUNT, GROUP, HAVING	Aggregation queries	Sales DB queries
9	DBMS	Transactions	ACID, Commit, Rollback	Python demo: Commit/Rollback	Case study
10	DBMS	Indexing	Clustered vs Non	Create index in SQLite	Compare query times
11	DBMS	Stored Procedures	Triggers, Functions	Simulate with Python functions	2 SQL functions
12	DBMS	Placement Qs	SQL Mock Test	Solve Zoho/TCS SQL Qs	Revise mistakes
13	OOPs	Classes & Objects	Python OOP basics	Student class	Employee system
14	OOPs	Encapsulation	@property, setters	Bank Account example	Validation program
15	OOPs	Inheritance	Single, Multi	Vehicle → Car	Multi-level inheritance
16	OOPs	Polymorphism	Overloading, Overriding	Shape/Area example	Override Qs
17	OOPs	Abstraction	ABC, Interfaces	Payment gateway demo	Abstract example
18	OOPs	Constructors	__init__, __del__	Constructor demo	Copy with copy
19	OOPs	Static & Class Methods	@staticmethod, @classmethod	Utility class demo	MCQs
20	OOPs	Exception Handling	try-except-finally	Calculator with exceptions	Exception programs
21	OOPs	Collections	List, Dict, Set	Python demos	Mini project
22	OOPs	Code Tracing	Debugging OOPs	Zoho-style snippets	Output prediction
23	OOPs	Placement Problems	OOPs coding Qs	Solve Zoho Qs	More practice
24	OOPs	Mock Test + Mini Project	Python OOPs	Student Mgmt System	Upload to GitHub
25	DSA	Arrays 1	Kadane's, Prefix	LC 53, LC 121	LC 152
26	DSA	Arrays 2	Subarray Problems	LC 560	LC 238
27	DSA	Arrays 3	Matrix Problems	LC 73	LC 48
28	DSA	Two Pointers 1	Pair Sum, Dutch Flag	LC 167, LC 75	LC 283
29	DSA	Two Pointers 2	3Sum, 4Sum	LC 15, LC 18	LC 16
30	DSA	Sliding Window 1	Fixed Window	LC 209	LC 76
31	DSA	Sliding Window 2	Longest Substring	LC 3	LC 159
32	DSA	Strings 1	Palindrome, Reverse	LC 5	LC 647
33	DSA	Strings 2	Anagrams, Substring Search	LC 242, LC 438	LC 28
34	DSA	Recursion 1	Fibonacci, Factorial	LC 509	LC 70
35	DSA	Recursion 2	Subsets, Combinations	LC 77, LC 78	LC 90
36	DSA	Backtracking 1	Permutations	LC 46	LC 47
37	DSA	Backtracking 2	N-Queens, Word Search	LC 51, LC 79	LC 131
38	DSA	Hashing 1	Two Sum, HashMap	LC 1, LC 387	LC 451
39	DSA	Hashing 2	Frequency, Top K	LC 347	LC 692
40	DSA	Stack 1	Parentheses, Min Stack	LC 20, LC 155	LC 150
41	DSA	Stack 2	Monotonic Stack	LC 739	LC 84
42	DSA	Queue 1	Queue, Deque	LC 232, LC 641	LC 933
43	DSA	Queue 2	Sliding Window Max	LC 239	LC 862
44	DSA	LL 1	Reverse, Middle	LC 206, LC 876	LC 234
45	DSA	LL 2	Cycle Detection	LC 141, LC 142	LC 287
46	DSA	LL 3	Merge, Intersection	LC 21, LC 160	LC 19
47	DSA	LL 4	Add Numbers, Copy Random	LC 2, LC 138	LC 445
48	DSA	Trees 1	Traversals	LC 94, LC 102	LC 144
49	DSA	Trees 2	Height, Diameter	LC 543, LC 104	LC 112
50	DSA	Trees 3	Symmetric, Subtree	LC 101, LC 572	LC 226
51	DSA	Trees 4	Path Sum, Max Path	LC 112, LC 124	LC 437
52	DSA	BST 1	Insert, Validate	LC 700, LC 98	LC 230
53	DSA	BST 2	LCA, Kth Smallest	LC 235, LC 230	LC 236
54	DSA	Heap 1	Kth Largest	LC 215	LC 973
55	DSA	Heap 2	Median of Stream	LC 295	LC 378
56	DSA	Graph 1	BFS, DFS	LC 200, LC 133	LC 695
57	DSA	Graph 2	Connected Components	LC 323	LC 547
58	DSA	Graph 3	Topo Sort, Cycle Detection	LC 207, LC 210	LC 785
59	DSA	Graph 4	Shortest Path	LC 743	LC 787
60	DSA	DP 1	Climb Stairs, House Robber	LC 70, LC 198	LC 746
61	DSA	DP 2	Coin Change, Subset Sum	LC 322, LC 416	LC 518
62	DSA	DP 3	Target Sum, Knapsack	LC 494	LC 1049
63	DSA	DP 4	LCS, Edit Distance	LC 1143, LC 72	LC 583
64	DSA	DP 5	Grid Paths	LC 62, LC 63	LC 64
65	DSA	DP 6	DP on Strings	LC 647, LC 516	LC 1312
66	DSA	Greedy 1	Interval Scheduling	LC 435	LC 452
67	DSA	Greedy 2	Jump Game	LC 55	LC 45
68	DSA	Bit Manip 1	Single Number, XOR	LC 136, LC 268	LC 338
69	DSA	Bit Manip 2	Subsets with Bits	LC 78	LC 90
70	DSA	Wrap-Up 1	Arrays + Strings Discussion	2 problems	Debug & notes
71	DSA	Wrap-Up 2	Recursion + Backtracking	2 problems	Debug & notes
72	DSA	Wrap-Up 3	Graph + DP	2 problems	Debug & notes
73	OS	Processes	FCFS, SJF, RR	Gantt Chart + Python threading	5 Qs
74	OS	Deadlocks & Memory	Banker's Algo, Paging	Python Deadlock Demo	Case study
75	OS	Synchronization	Semaphores, Mutex	Producer-Consumer (Python)	10 MCQs
76	OS	Virtual Memory	Page Replacement	Python LRU Cache	5 Qs
77	OS	File Systems	Allocation, I/O Mgmt	Python file ops	FS MCQs
78	OS	Mock Test	OS Questions	Solve OS test	Revise mistakes
79	System Design	Basics	HLD vs LLD	Draw Library Mgmt	Notes
80	System Design	Caching & DBs	Redis, SQL vs NoSQL	Python dict as cache	CAP notes
81	System Design	Sharding & Replication	Partitioning	DB Shard diagram	Homework
82	System Design	Microservices	Monolith vs Micro	Flask demo	Diagram
83	System Design	Case Study 1	URL Shortener	Flask + SQLite mini app	Refine
84	System Design	Case Study 2	Chat App	Design chat flow	Refine
85	Soft Skills	Quant 1	Percentages, Ratios	20 Apt Qs	20 more
86	Soft Skills	Quant 2	Time, Speed, Work	20 Apt Qs	20 more
87	Soft Skills	Logical Reasoning	Puzzles, Seating	15 Reasoning Qs	15 more
88	Soft Skills	Resume	Resume + GitHub	Draft Resume	Final Resume
89	Soft Skills	HR Questions	Self-Intro, Strengths	Mock HR round	Refine answers
90	Soft Skills	Mock Interview	Tech + HR Simulation	Panel-style	Self-eval

# Summary Hours



Subject	Hours
DBMS	12
OOPS	12
DSA/Leetcode	48
OS	6
System Design	6
Aptitude / Soft Skills	6
Total	90