8 Weeks DSA-Python course plan

Week 1	Day 1	• Analysis of Algorithm : Best, Average and Worst Case, Notation, Time and Space Complexity.
	Day 2,3	• Mathematics : Sum of Natural Number, Count Digit, Palindrome, Factorial, GCD OR HCF and LCM of Two number , check for prime factorization, Divisor of a Number
	Day 4,5,6	• List in Python: Average & Mean of list, slicing, reverse and rotation of List.
	Day 7	• Hashing : Hashing function, collision, chaining, set and dictionary in python.
Week 2	Day 1,2	• Recursion : Applications, Tower of Hanoi, josephus problem and practise available problems.
	Day 3, 4	• Searching : Linear & Binary search, count Occurrence and Recursive binary Search. •
	Day 5 & 6	• Sorting : Bubble, Selection, Merge, Insertion, and Quick Sort with their analysis. •
	Day 7	• Linked List : Introduction, Application, Traversal, Search •
Week 3	Day 1	• Linked list: Deletion, Sorting and Reverse of linked list.
	Day 2,3	• Circular Linked List : Advantages and Disadvantages, Traversal, Insertion and Deletion. Attempt Contest 1.
	Day 4,5	• Doubly Linked List: Advantages & Disadvantages, Insertion, and Deletion.
	Day 6, 7	• Stack : Applications, Implementation, Infix, Prefix, & Postfix evaluation.
Week 4	Day 1, 2	• Queue : Applications, Implementation, and practice available problems
	Day 3, 4, 5	• Tree : Introduction, Application, Searching and practice available problems.
	Day 6, 7	• Binary Search Tree : Introduction, Application, Searching and practice available problems.
Week 5	Day 1, 2	• Heap : Introduction, Implementation, Sorting and Build Heap.
	Day 3, 4	• Bit Magic: Bitwise operation in python, count set bits, power of 2, odd occurring's, power set using bitwise.
	Day 5, 6, 7	• Advanced List : Rotation, stock buy and sell problem, rain water trapping and subarray sum problem, sliding window and prefix sum technique.

Week 6	Day 1	• Advance Recursion: rope cutting problem, subset of string, tower of hanoi and printing all permutations
	Day 2, 3	• Advanced Searching: Binary Search in python, First and Last Occurrence in array, count 1's in sorted binary list
	Day 4, 5, 6	• Advanced Sorting: Tail call Elimination in quick sork,Kth smallest and chocolate Distribution problem,Sort Array with 2,3 types of element, counting sort, bucket sort,radix sort
	Day 7	• Contest
Week 7	Day 1, 2	• Matrix and Hashing : Matrix Traversal and transpose, rotation of matrix, searching in matrix, Union and intersection of two unsorted array, subarray with given sum, check for palindrome, largest subarray with given sum and n/k occurrence.
	Day 3	• String: KMP Algorithm, anagram search, lexicographic rank of string, longest substring with distinct character
	Day 4, 5	• Stack and Queue: K stack in array, largest area in histogram, infix to prefix,infir to postfit ,prefit to post fit conversion, Queue Implementation using circular list, reverse queue, designing data structure with min/max operations
	Day 6	• Tree and Binary Search tree: order traversal , vertical traversal of Binary Tree, Binary tree to Doubly Linked List, LCA of Binary Tree,counting nodes, finding Kth smallest BST, pair sum with given BST.
	Day 7	• Graph: Introduction, Representation, Application of DFS and BFS, solve available practice problem. • Contest
Week 8	Day 1	• Greedy: Activity selection, Knapsack problem, Job Sequencing Problem:,Huffman Coding
	Day 2	• BackTracking: solve all problem in backtracking
	Day 3, 4,5	• Dynamic Programming: memoization and tabulation methods, LCS, Coin Exchange Problem,LIS, Rope Cutting Problem,Knapsack,Optimal Stategy for a game,Egg Dropping Puzzle,Palindrome partitioning, matrix chain multiplication,
	Day 6	• Binary Indexed Tree and Disjoint set: Construction, Prefix sum Implementation, find and union operation on disjoint set, union by rank, kruskal algorithm
	Day 7	• Contest

All the Best