

## Common DSA Coding Patterns Asked in Interviews

(Youtube Playlists, Websites & Practice Questions also included)

Pattern	Example Problems	YouTube Videos
<b>Two Pointers</b>	<ol style="list-style-type: none"> <li>Two Sum in a sorted array.</li> <li>Remove duplicates from a sorted array.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=cQ1Oz4ckceM&amp;t=162s">https://www.youtube.com/watch?v=cQ1Oz4ckceM&amp;t=162s</a></li> <li><a href="https://www.youtube.com/watch?v=Fm_p9IJ4Z_8&amp;t=16s">https://www.youtube.com/watch?v=Fm_p9IJ4Z_8&amp;t=16s</a></li> </ol>
<b>Fast and Slow Pointers</b>	<ol style="list-style-type: none"> <li>Detect a cycle in a linked list.</li> <li>Find the middle node of a linked list.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=354J83hX7RI">https://www.youtube.com/watch?v=354J83hX7RI</a></li> <li><a href="https://www.youtube.com/watch?v=7LjQ57RqgEc">https://www.youtube.com/watch?v=7LjQ57RqgEc</a></li> </ol>
<b>Sliding Window</b>	<ol style="list-style-type: none"> <li>Maximum sum subarray of size K.</li> <li>Longest substring without repeating characters.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=KtpgeN0Goro">https://www.youtube.com/watch?v=KtpgeN0Goro</a></li> <li><a href="https://www.youtube.com/watch?v=-zSxTJkcdAq">https://www.youtube.com/watch?v=-zSxTJkcdAq</a></li> </ol>
<b>Divide and Conquer</b>	<ol style="list-style-type: none"> <li>Implement quicksort or mergesort.</li> <li>Find the maximum subarray sum.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=ogjf7ORkfd8">https://www.youtube.com/watch?v=ogjf7ORkfd8</a></li> <li><a href="https://www.youtube.com/watch?v=w_KEocd_20">https://www.youtube.com/watch?v=w_KEocd_20</a></li> </ol>
<b>In-place Reversal of a Linked List</b>	<ol style="list-style-type: none"> <li>Reverse a linked list.</li> <li>Reverse the first k nodes of a linked list.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=D2vl2DNJGd8">https://www.youtube.com/watch?v=D2vl2DNJGd8</a></li> <li><a href="https://www.youtube.com/watch?v=llar1skcQYI">https://www.youtube.com/watch?v=llar1skcQYI</a></li> </ol>
<b>Modified Binary Search</b>	<ol style="list-style-type: none"> <li>Search in a rotated sorted array.</li> <li>Find the 1st or last occurrence of an element in a sorted array.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=U8XE Nwh8Oy8">https://www.youtube.com/watch?v=U8XE Nwh8Oy8</a></li> <li><a href="https://www.youtube.com/watch?v=4sQLZR5ySUU">https://www.youtube.com/watch?v=4sQLZR5ySUU</a></li> </ol>
<b>Cyclic Sort</b>	<ol style="list-style-type: none"> <li>Sort an array containing numbers from 1 to n.</li> <li>Find the missing number in an array.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=eKli_12-2kk">https://www.youtube.com/watch?v=eKli_12-2kk</a></li> <li><a href="https://www.youtube.com/watch?v=WnPLSRLSANE">https://www.youtube.com/watch?v=WnPLSRLSANE</a></li> </ol>
<b>Matrix Traversal</b>	<ol style="list-style-type: none"> <li>Search an element in a sorted matrix where each row and column is sorted.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=_reu46LJtyk">https://www.youtube.com/watch?v=_reu46LJtyk</a></li> </ol>
<b>Merge Intervals</b>	<ol style="list-style-type: none"> <li>Merge overlapping intervals.</li> <li>Insert a new interval into a list of non-overlapping intervals.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=44H3cEC2fFM">https://www.youtube.com/watch?v=44H3cEC2fFM</a></li> <li><a href="https://www.youtube.com/watch?v=A8NUOmlwOIM">https://www.youtube.com/watch?v=A8NUOmlwOIM</a></li> </ol>
<b>Two Heaps</b>	<ol style="list-style-type: none"> <li>Find the median of a stream of numbers.</li> <li>Implement a sliding window median.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=itmhHVaHupI">https://www.youtube.com/watch?v=itmhHVaHupI</a></li> <li><a href="https://www.youtube.com/watch?v=NT5Lp5vaMmQ">https://www.youtube.com/watch?v=NT5Lp5vaMmQ</a></li> </ol>
<b>Top k Elements</b>	<ol style="list-style-type: none"> <li>Find the kth largest element in an array.</li> <li>Top k frequent elements in an array.</li> </ol>	<ol style="list-style-type: none"> <li><a href="https://www.youtube.com/watch?v=XEmy13g1Qxc">https://www.youtube.com/watch?v=XEmy13g1Qxc</a></li> <li><a href="https://www.youtube.com/watch?v=YPTqKlqVlK-k">https://www.youtube.com/watch?v=YPTqKlqVlK-k</a></li> </ol>

<b>K-way Merge</b>	<ol style="list-style-type: none"> <li>1. Merge k sorted arrays or lists.</li> <li>2. Find the median of two sorted arrays of different sizes.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=q5a5QjGbT6Q">https://www.youtube.com/watch?v=q5a5QjGbT6Q</a></li> <li>2. <a href="https://www.youtube.com/watch?v=C2rRzz-JDk8">https://www.youtube.com/watch?v=C2rRzz-JDk8</a></li> </ol>
<b>Breadth First Search (BFS)</b>	<ol style="list-style-type: none"> <li>1. Shortest path in an unweighted graph from source to destination.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=C4gxQTal71U">https://www.youtube.com/watch?v=C4gxQTal71U</a></li> </ol>
<b>Depth First Search (DFS)</b>	<ol style="list-style-type: none"> <li>1. Path Sum in a binary tree.</li> <li>2. Detect cycle in a directed graph.</li> <li>3. Find all paths between 2 nodes.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=LSKQyOz_P8I">https://www.youtube.com/watch?v=LSKQyOz_P8I</a></li> <li>2. <a href="https://www.youtube.com/watch?v=9twcmfQj4DU">https://www.youtube.com/watch?v=9twcmfQj4DU</a></li> <li>3. <a href="https://www.youtube.com/watch?v=TrEloQBv7WQ">https://www.youtube.com/watch?v=TrEloQBv7WQ</a></li> </ol>
<b>Topological Sort</b>	<ol style="list-style-type: none"> <li>1. Schedule tasks with dependencies (course schedule problem).</li> <li>2. Alien Dictionary problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=Egl5nU9etnU">https://www.youtube.com/watch?v=Egl5nU9etnU</a></li> <li>2. <a href="https://www.youtube.com/watch?v=6kTZYvNNyps">https://www.youtube.com/watch?v=6kTZYvNNyps</a></li> </ol>
<b>Subsets</b>	<ol style="list-style-type: none"> <li>1. Generate all possible subsets of a set.</li> <li>2. Subsets with duplicates.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=REOH22Xwdkk">https://www.youtube.com/watch?v=REOH22Xwdkk</a></li> <li>2. <a href="https://www.youtube.com/watch?v=Vn2v6ajA7U0">https://www.youtube.com/watch?v=Vn2v6ajA7U0</a></li> </ol>
<b>Bitwise XOR</b>	<ol style="list-style-type: none"> <li>1. Find the missing number where all numbers from 1 to n are present except one.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=5nMGY4VUoRY">https://www.youtube.com/watch?v=5nMGY4VUoRY</a></li> </ol>
<b>Trie</b>	<ol style="list-style-type: none"> <li>1. Implement autocomplete (prefix search).</li> <li>2. Find if a string is a prefix of any word in a sentence.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=oobqoCJIHA0">https://www.youtube.com/watch?v=oobqoCJIHA0</a></li> <li>2. <a href="https://www.youtube.com/watch?v=iWNFp4YL4I0">https://www.youtube.com/watch?v=iWNFp4YL4I0</a></li> </ol>
<b>Backtracking</b>	<ol style="list-style-type: none"> <li>1. N-Queens problem.</li> <li>2. Generate all valid parentheses combinations.</li> <li>3. Sudoku Solver.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=Ph95IHmRp5M">https://www.youtube.com/watch?v=Ph95IHmRp5M</a></li> <li>2. <a href="https://www.youtube.com/watch?v=s9fokUqJ76A">https://www.youtube.com/watch?v=s9fokUqJ76A</a></li> <li>3. <a href="https://www.youtube.com/watch?v=tRi4VlVTat8">https://www.youtube.com/watch?v=tRi4VlVTat8</a></li> </ol>
<b>Monotonic Stack</b>	<ol style="list-style-type: none"> <li>1. Find the next greater element for each element in an array.</li> <li>2. Largest Rectangle in Histogram.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=e7XQLtOQM3I">https://www.youtube.com/watch?v=e7XQLtOQM3I</a></li> <li>2. <a href="https://www.youtube.com/watch?v=zx5Sw9130L0">https://www.youtube.com/watch?v=zx5Sw9130L0</a></li> </ol>
<b>Fibonacci Numbers</b>	<ol style="list-style-type: none"> <li>1. Calculate the nth Fibonacci number efficiently.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=xAYJc9fu7xA">https://www.youtube.com/watch?v=xAYJc9fu7xA</a></li> </ol>
<b>0/1 Knapsack</b>	<ol style="list-style-type: none"> <li>1. Solve the classic 0/1 knapsack problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=GqOmJHQZivw">https://www.youtube.com/watch?v=GqOmJHQZivw</a></li> </ol>
<b>Palindromic Subsequence</b>	<ol style="list-style-type: none"> <li>1. Find the longest palindromic subsequence.</li> <li>2. Count palindromic subsequences in a string.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=6i_T5kKfv4A">https://www.youtube.com/watch?v=6i_T5kKfv4A</a></li> <li>2. <a href="https://www.youtube.com/watch?v=vlbA8oUxSV0">https://www.youtube.com/watch?v=vlbA8oUxSV0</a></li> </ol>
<b>Longest Common Substring</b>	<ol style="list-style-type: none"> <li>1. Find the longest common substring between two strings.</li> <li>2. Shortest Supersequence problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="https://www.youtube.com/watch?v=wP9mWNPL5w">https://www.youtube.com/watch?v=wP9mWNPL5w</a></li> <li>2. <a href="https://www.youtube.com/watch?v=xElxAuBcvsU">https://www.youtube.com/watch?v=xElxAuBcvsU</a></li> </ol>

### YouTube Videos to learn DSA

- [https://youtube.com/playlist?list=PLgUwDviBlf0oF6QL8m22w1hIDC1vJ\\_BHz&si=QBJU4WYSBnWR44GY](https://youtube.com/playlist?list=PLgUwDviBlf0oF6QL8m22w1hIDC1vJ_BHz&si=QBJU4WYSBnWR44GY)
- [https://youtube.com/playlist?list=PL2\\_aWCzGMAwI3W\\_JlcBbtYTwIQSsOTa6P&si=KsQ8xnnnwELNCzjD](https://youtube.com/playlist?list=PL2_aWCzGMAwI3W_JlcBbtYTwIQSsOTa6P&si=KsQ8xnnnwELNCzjD)
- <https://youtube.com/playlist?list=PLAXnLdrLnQpRcveZTtD644gM9uzYqJCwr&si=I5Bl5EoqADwGJMet>
- [https://youtube.com/playlist?list=PLu0W\\_9lI9ahIappRPN0MCAgtOu3lQjQi&si=pfpS MaRHl8\\_hEcRi](https://youtube.com/playlist?list=PLu0W_9lI9ahIappRPN0MCAgtOu3lQjQi&si=pfpS MaRHl8_hEcRi)

### Websites to learn DSA

- <https://takeuforward.org/strivers-a2z-dsa-course/strivers-a2z-dsa-course-sheet-2/>
- <https://www.geeksforgeeks.org/dsa-tutorial-learn-data-structures-and-algorithms/>
- <https://www.w3schools.com/dsa/>

### Practice Questions

- <https://github.com/krishnadey30/LeetCode-Questions-CompanyWise>
- <https://www.geeksforgeeks.org/top-100-data-structure-and-algorithms-dsa-interview-questions-topic-wise/>
- <https://leetcode.com/discuss/interview-question/4258631/Top-100-DSA-Interview-Questions>
- [https://www.w3schools.com/dsa/dsa\\_exercises.php](https://www.w3schools.com/dsa/dsa_exercises.php)
- [https://youtube.com/playlist?list=PL9gnSGHSqcnr\\_DxHsP7AW9ftq0AtAyYqJ&si=EHWCY9lff1snVEXf](https://youtube.com/playlist?list=PL9gnSGHSqcnr_DxHsP7AW9ftq0AtAyYqJ&si=EHWCY9lff1snVEXf)