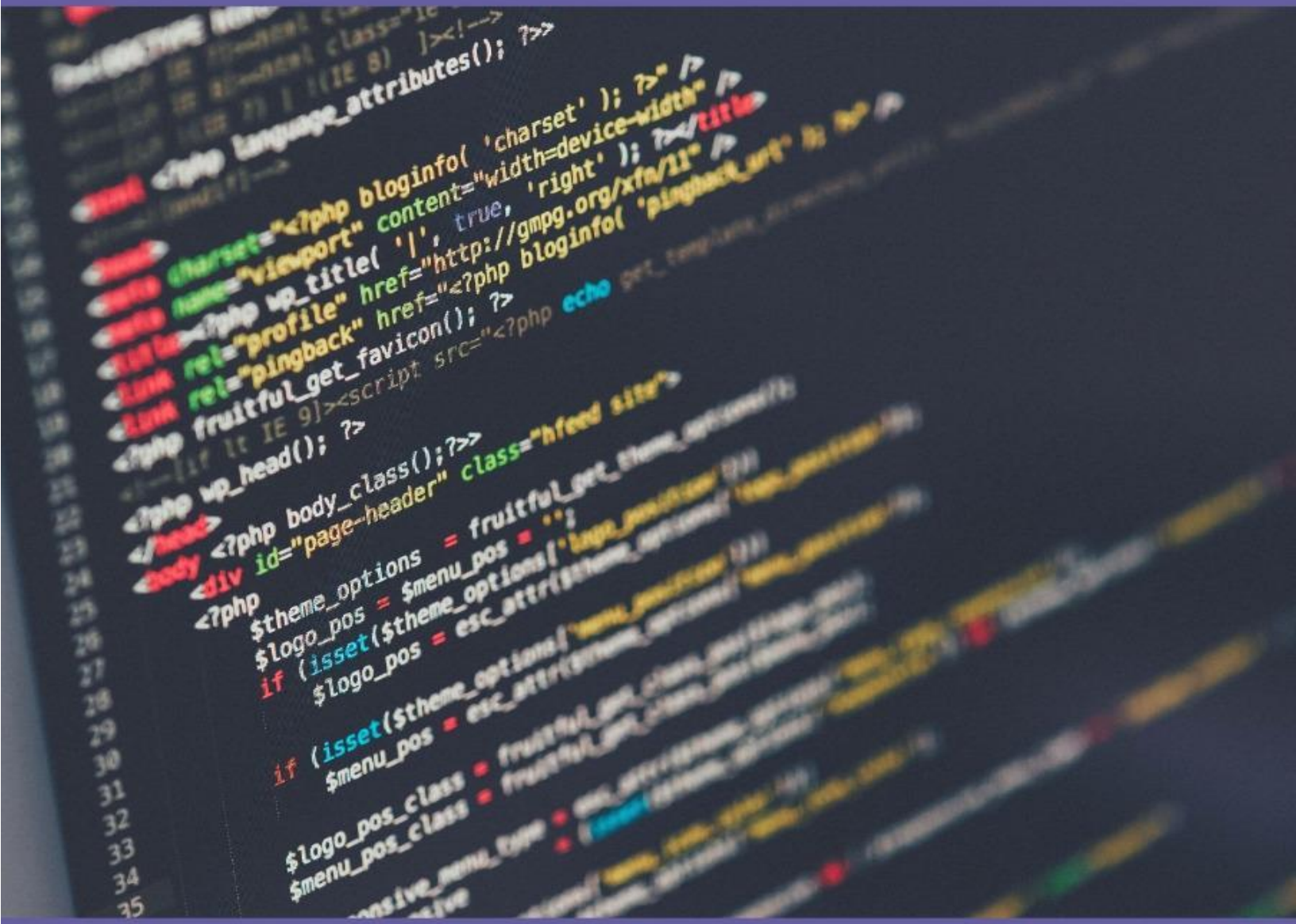
acm - CEG

Student Chapter

C.O.D.E



INTERNSHIP AND PLACEMENT PREPARATION MATERIAL

Dynamic Programming (DP):

What is Dynamic Programming?

Here's an article to give you a better insight about dynamic programming.

https://www.hackerearth.com/practice/algorithms/dynamicprogramming/introduction-to-dynamic-programming-1/tutorial/

Day-1:

Reference: https://www.youtube.com/watch?v=vYquumk4nWw&ab_channel=CSDojo

Let's start with some easy DP problems.

Easy:

1. https://leetcode.com/problems/climbing-stairs/
2. https://leetcode.com/problems/pascals-triangle/
3. https://leetcode.com/problems/maximum-subarray/

Medium:

4. https://leetcode.com/problems/house-robber/
5. https://practice.geeksforgeeks.org/problems/stock-buy-and-sell-1587115621/1

Day 2:

1. 0/1 Knapsack Problem :
   Reference : https://www.youtube.com/watch?v=xCbYmUPvc2Q&t=742s
   Practice: https://practice.geeksforgeeks.org/problems/0-1-knapsackproblem/0
2. Coin Change Problem:
   Reference: https://www.youtube.com/watch?v=DJ4a7cmjZY0&t=625s Practice: https://www.hackerrank.com/challenges/coin-change/problem
3. Minimum number of coins:
   Reference: https://www.youtube.com/watch?v=jgiZlGzXMBw
   Practice: https://practice.geeksforgeeks.org/problems/-minimum-numberof-coins/0

Now try these problems:

1. https://practice.geeksforgeeks.org/problems/box-stacking/1
2. https://leetcode.com/problems/maximum-length-of-pair-chain/

Day 3:

1. Longest Common Sequence:
   Reference : https://www.youtube.com/watch?v=ASoaQq66foQ&t=206s Practice: https://leetcode.com/problems/longest-common-subsequence/
2. Hard Distance:
   Reference: https://www.youtube.com/watch?v=MiqoA-yF-0M&t=629s
   Practice: https://leetcode.com/problems/edit-distance/

Problems:

1. https://practice.geeksforgeeks.org/problems/longest-common-substring/0
2. https://leetcode.com/problems/longest-increasing-subsequence/
3. https://leetcode.com/problems/unique-paths/

Day 4:

Problems:

1. https://leetcode.com/problems/longest-palindromic-substring/
2. https://leetcode.com/problems/word-break/
3. https://practice.geeksforgeeks.org/problems/optimal-strategy-for-agame/0
4. https://leetcode.com/problems/maximal-square/

Want to explore more?

Go ahead and solve these problems

https://leetcode.com/discuss/general-discussion/458695/dynamic-programmingpatterns

https://leetcode.com/discuss/general-discussion/662866/dp-for-beginnersproblems-patterns-sample-solutions