Recursion Based Practice Problems:

1. Write a recursive program to find the GCD of x and y where x, y are positive integers. (Hint: use Euclid's algorithm. Two ways to solve this.)
2. Write a recursive program to count the number of digits of an integer.
3. Write a recursive program to check if a given positive integer is a palindrome or not. An integer is a palindrome when it reads the same backward as forward.
4. Write a recursive implementation of binary search in a sorted array.
5. Given a set of parentheses check if they are balanced or not using a recursive function
6. Write a recursive program to find the sum of the elements of an array of size n.
7. Write a recursive program to find the maximum of the elements of an array of size n.
8. Write a recursive program to print the prime numbers of an array of n integers
9. Write a recursive program to find the maximum of a 2d array.
10. Write a recursive program to check if a given positive integer is a palindrome or not. An integer is a palindrome when it reads the same backward as forward.
11. Implement in-order, preorder and postorder traversal of a graph using recursion.

Divide and Conquer Based Practice Problems:

1. Merge Two Sorted Arrays
2. Find the total number of inversions to sort an array
3. Find the Kth smallest element in an array
4. Karatsuba's algorithm for fast multiplication
5. Calculate pow(x, n)
6. Convex Hull Problem
7. Search an element in a rotated sorted array
8. Find an element in a sorted array [binary search]

Some useful tutorials:

- https://youtube.com/playlist?list=PLncy2sD7w4Yr0uz_n0nXc1lAYLAZL6sS_&si=TCnGLE3thosndEXa
- https://youtu.be/0oJyNmEbS4w?si=I5Al3k5bRnGd-mj7
- https://youtu.be/9N3hDuS28EI?si=JPvpjjqeO1JKnUQI