

Critical Problem Solving
Assignment-4 (Tree, Graph)

Week-5

1. Given the root of a binary tree, check whether it is a mirror of itself (i.e., symmetric around its center). [Leetcode 101](#)
2. Given an $m \times n$ 2D binary grid grid which represents a map of '1's (land) and '0's (water), return the number of islands. An island is surrounded by water and is formed by connecting adjacent lands horizontally or vertically. You may assume all four edges of the grid are all surrounded by water. [Leetcode 200](#)
3. Given the root of a binary tree and an integer targetSum, return the number of paths where the sum of the values along the path equals targetSum. The path does not need to start or end at the root or a leaf, but it must go downwards (i.e., traveling only from parent nodes to child nodes). [Leetcode 437](#)
4. Given the root of a binary tree, return the length of the diameter of the tree. The diameter of a binary tree is the length of the longest path between any two nodes in a tree. This path may or may not pass through the root. The length of a path between two nodes is represented by the number of edges between them. [Leetcode 543](#)
5. You are given two binary trees root1 and root2. Imagine that when you put one of them to cover the other, some nodes of the two trees are overlapped while the others are not. You need to merge the two trees into a new binary tree. The merge rule is that if two nodes overlap, then sum node values up as the new value of the merged node. Otherwise, the NOT null node will be used as the node of the new tree. Return the merged tree. [Leetcode 617](#)
6. There are n cities connected by some number of flights. You are given an array flights where $flights[i] = [from_i, to_i, price_i]$ indicates that there is a flight from city $from_i$ to city to_i with cost $price_i$. You are also given three integers src, dst, and k, return the cheapest price from src to dst with at most k stops. If there is no such route, return -1. [Leetcode 787](#)