Dynamic Programming Questions

Question 1 : EASY

Tribonacci
Sequence

The Tribonacci sequence Tn is defined as follows:
T0 = 0, T1 = 1, T2 = 1, and Tn+3 = Tn + Tn+1 + Tn+2 for n >= 0.
Given n, return the value of Tn. [Go to Qs]

Question 2 : MEDIUM

Maximum profit after buying and selling stocks with transaction fees

You are given an array of prices where prices[i] is the price of a given stock on the ith day, and an integer fee representing a transaction fee.

Find the maximum profit you can achieve. You may complete as many transactions as you like, but you need to pay the transaction fee for each transaction.

Note: You may not engage in multiple transactions simultaneously (i.e., you must sell the stock before you buy again).
The transaction fee is only charged once for each stock purchase and sale. [Go to Qs]

Question 3 : HARD

Longest Increasing Path in Matrix

Given an m x n integers matrix, return the length of the longest increasing path in the matrix.

From each cell, you can either move in four directions: left, right, up, or down. You may not move diagonally or move outside the boundary (i.e., wrap-around is not allowed). [Go to Qs]

Question 4 : MEDIUM

Generate Parentheses

Given n pairs of parentheses, write a function to generate all combinations of well-formed parentheses. [Go to Qs]

Question 5 : MEDIUM

House Thief

You are a professional robber planning to rob houses along a street. Each house has a certain amount of money stashed, the only constraint stopping you from robbing each of them is that adjacent houses have security systems connected and it will automatically contact the police if two adjacent houses were broken into on the same night.

Given an integer array nums representing the amount of money of each house, return the maximum amount of money you can rob tonight without alerting the police. [Go to Qs]

Question 6 : MEDIUM

Longest Palindromic Subsequence

Given a string s, find the longest palindromic subsequence's length in s.

A subsequence is a sequence that can be derived from another sequence by deleting some orno elements without changing the order of the remaining elements. [Go to Qs]

Question 7 : MEDIUM

Equal Subset Sum Difference

Given an integer array nums, return true if you can partition the array into two subsets such that the sum of the elements in both subsets is equal or false otherwise. [Go to Qs]

Question 8 : HARD

Mountain Array(Longest Bitonic Subsequence)

You may recall that an array arr is a mountain array if and only if:

- arr.length >= 3
- There exists some index i (0-indexed) with 0 < i < arr.length - 1 such that:
  - arr[0] < arr[1] < ... < arr[i - 1] < arr[i]
  - arr[i] > arr[i + 1] > ... > arr[arr.length - 1]

Given an integer array nums, return the minimum number of elements to remove to make nums a mountain array. [Go to Qs]

Question 9 : HARD

Box Stacking

Given n cuboids where the dimensions of the ith cuboid is cuboids[i] = [widthi, lengthi, heighti] (0-indexed). Choose a subset of cuboids and place them on each other.

You can place cuboid i on cuboid j if widthi <= widthj and lengthi <= lengthj and heighti <= heightj. You can rearrange any cuboid's dimensions by rotating it to put it on another cuboid.

Return the maximum height of the stacked cuboids. [Go to Qs]

Question 10 : **MEDIUM**

Palindrome Partitioning

Given a string s, partition s such that every substring of the partition is a palindrome. Return all possible palindrome partitioning of s. [Go to Qs]