

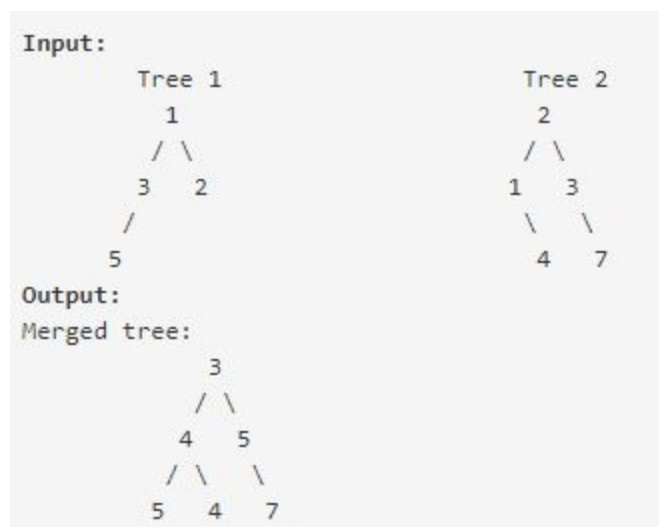
Software Engineer, Machine Learning Assessment

Complete the following exercises in Python, and submit your answers on a .txt file. In addition to your code, provide a test case that your code will work as intended. If you're unable to reach an answer, provide your code so we can evaluate your thought process and attempt.

Question 1: Given two binary trees, imagine that when you overlay one on top of the other, some nodes of the two trees are overlapped while the others are not.

Merge them 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 new tree.

Example:



Note: The merging process must start from the root node of both trees.

Question 2. Write a function to find the longest common prefix string amongst an array of strings. Assume the input array exclusively consists of non zero length strings containing alphanumeric characters.

Question 3. Say you have an array for which the i th element is the price of a given stock on day i . If you were only permitted to complete at most one transaction (ie, buy one and sell one share of the stock), design an algorithm to find the maximum profit.

Example:

Input: [7, 6, 4, 3, 1]

Output: 0

In this case, no transaction is done, i.e. max profit = 0.