Questions

1. Design an algorithm to find a path from one node in a binary search tree to another.

2. How can you quickly determine whether a number is a power of 2?

3. There are N children standing in a line. Each child is assigned a rating value. You are giving candies to these children subjected to the following requirements:
   - Each child must have at least one candy.
   - Children with a higher rating get more candies than their neighbors.
   Find the minimum number of candies you must give?

4. Given a string, find the longest substring that contains only two unique characters. For example, given "abcbbbcbbbcdcccdaab", the longest substring that contains 2 unique character is "bcbbbbcccb".

5. Write a function to find the longest common prefix string amongst an array of strings.

6. You are asked to design a calculator. You are only allowed to use integer data type (no float, no double). Show how you would implement the division function.

7. Given a binary tree, determine if it is height-balanced.
   For this problem, a height-balanced binary tree is defined as a binary tree in which the depth of the two subtrees of every node never differ by more than 1.

8. Given a binary tree, flatten it to a linked list in-place.

9. Given a singly linked list where elements are sorted in ascending order, convert it to a height balanced BST.

10. Find the contiguous subarray within an array (containing at least one number) which has the largest product.
    For example, given the array [2,3,-2,4], the contiguous subarray [2,3] has the largest product = 6.