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CS 590 Homework Assignment
8: Reinforcement Exercises

Due Date: March 27, 2022

Problem 10.5.6:
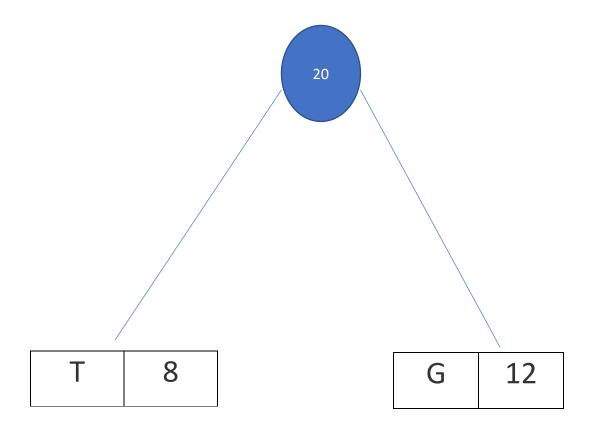
'o' - 21

'i' - 23

'a'- 25

's'- 26

't' - 27

'e' - 40

First, o and i will join. Then, a and s will join as other pair. Then, t and e will join as other pair. Then o,i,a,s will have same grandparent and t and e will be directly under root, making it a complete binary tree.
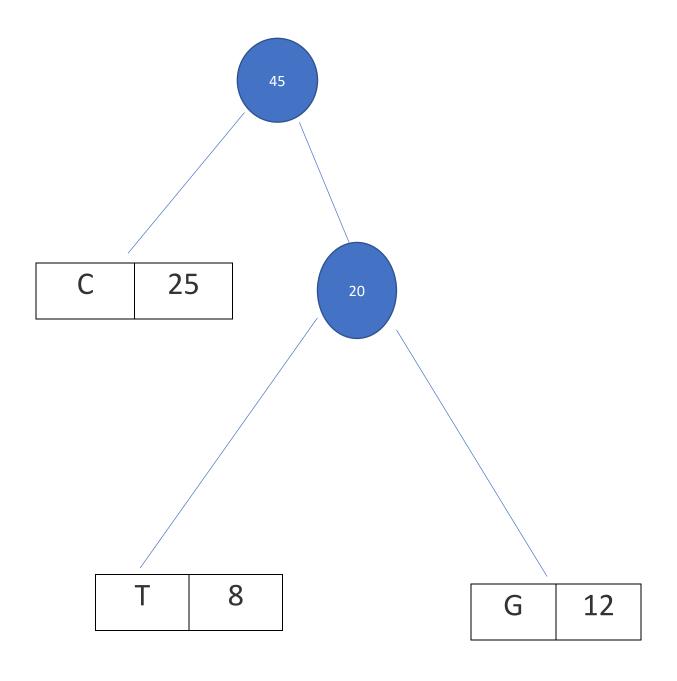
Problem 10.5.7:

Consider the following frequencies for A, C, T, G as follows below:

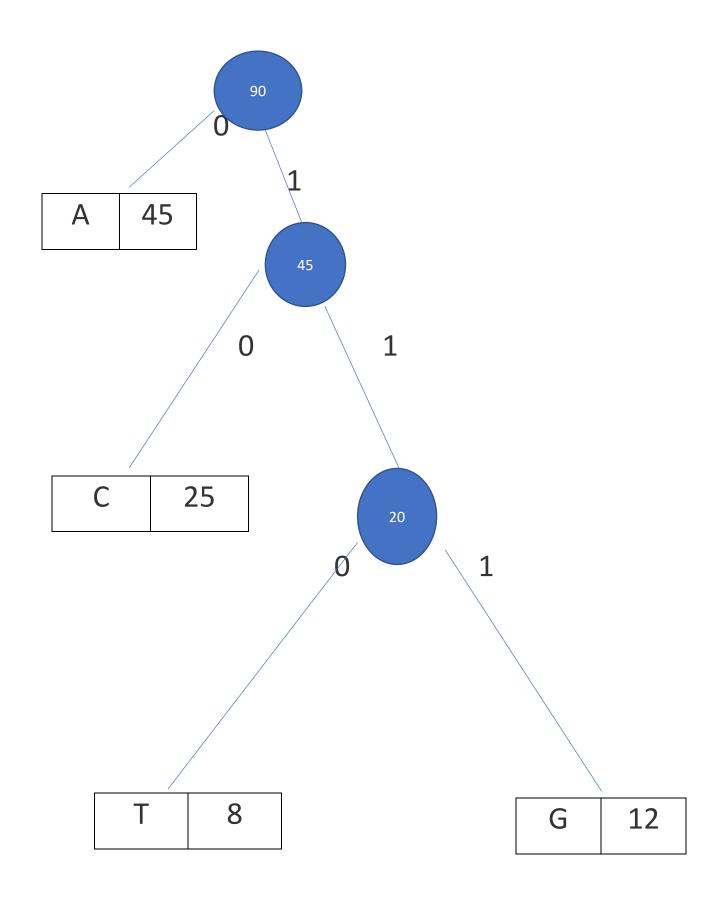| Characters	Frequencies
A	45
C	25
G	12
T	8

Let's construct the Huffman Tree right now

First Step let's start with the 2 lowest frequencies as follows:

Now, let's add C with its frequency of 25

Now, let's add A with its frequency of 45 as below:

From the above, we can see the tree Huffman code as follows:

Characters	Huffman Code
A	0
C	10
G	111
T	110

So, this is above an example of frequencies of A, C, G, and T that could have resulted in the Huffman codes above, which are stated in the exercise instructions.