

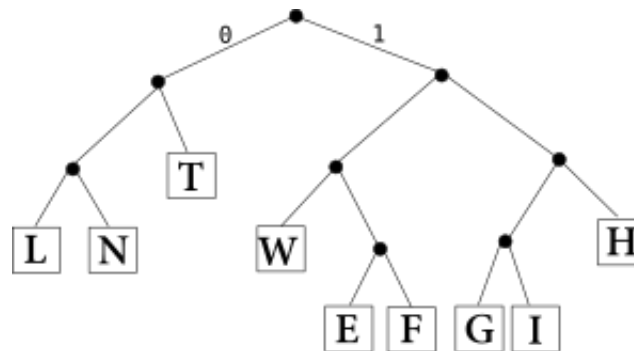
Quiz 2 Solutions

Wed Feb 14

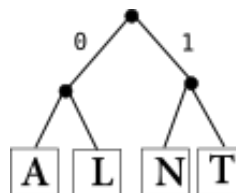
You have up to 20 minutes. You may use a standard calculator if necessary, but no text book or notes.

1. Below is a tree representing a variable-width encoding of 9 letters. Use it to:

- decode the bits 10111101110011101 into a word: FIGHT
- encode the word FELT as bits: 101110100001



2. Draw a tree representing a **variable-width** encoding of the four letters A, L, N, and T. Use it to encode the word ATLANTA. The **fixed-width tree** (below) uses exactly 2 bits per character, so encoding ATLANTA requires 14 bits. How many bits does **your** tree need to encode ATLANTA?



Here is one possible solution. In this tree, L and N are extended to 3 bits each, so that A can be just 1 bit. We can then encode ATLANTA as 13 bits: 0101100111100.

