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HW12
Answers to the Problems for Huffman Encoding
1)
T = 0
A = 10
C = 110
G = 111

2a)
A = 0
B = 10
C = 110
D = 1110
E = 1111

2b)
Total = $(\frac{1}{2} * 1 + \frac{1}{4} * 2 + \frac{1}{8} * 3 + \frac{1}{16} * 4 + \frac{1}{16} * 4) * 1,000,000$
Total = 1,875,000 bits

3a) $(\frac{1}{2}, \frac{1}{4}, \frac{1}{4})$
3b) Huffmam is prefix free code by definition and 0 is a prefix of 00 so it is not valid.
3c) A binary tree corresponding to the optimal prefix code must be a full binary tree (Slides). This code is not optimal because "a" can be replaced with 1 instead of 10 and it will not affect b or c (01, 00). Huffman is optimal therefore this cannot be valid.