The Adaptive Huffman Tree shown below results from processing the string aabcce. (Interior nodes are circular, and leaf nodes are rectangular. Each node shows its ID number (in parentheses) and its "weight" (which is the sum of the frequencies of all leaf nodes in its subtree). Leaf nodes also show the associated character.)

Each problem asks you to show what the tree would look like after processing one or more subsequent characters. In each problem, begin with the tree that is shown, not with the tree that is the answer to the previous problem.

Keep in mind that an Adaptive Huffman Tree of N nodes (numbered 0..N-1 and where weight(k) is the weight of node k) satisfies these conditions:
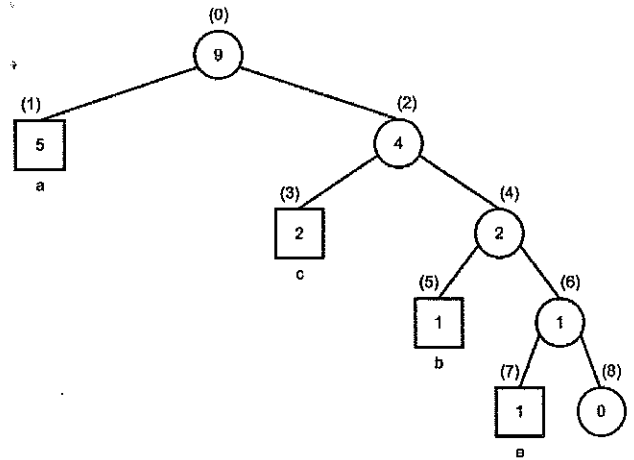
1. Node 0 is the root
2. For all i in 1..N-1, weight(i-1) ≥ weight(i),
3. weight(k) = 0 if and only if k = N-1
4. For every k in 1..N/2, nodes 2k-1 and 2k are siblings.
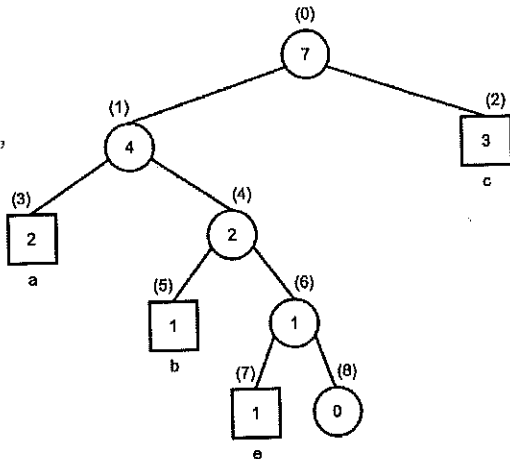5. For every pair of siblings, the sum of their weights is the weight of their parent.
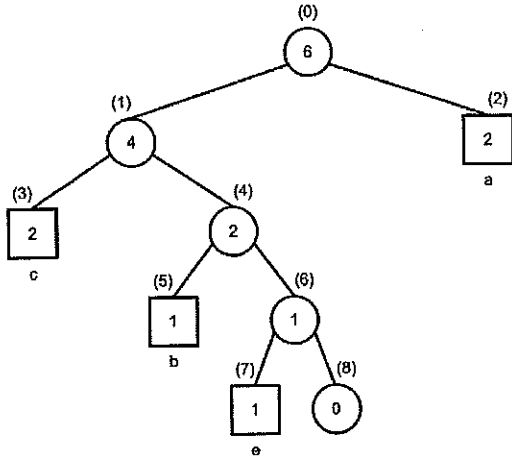
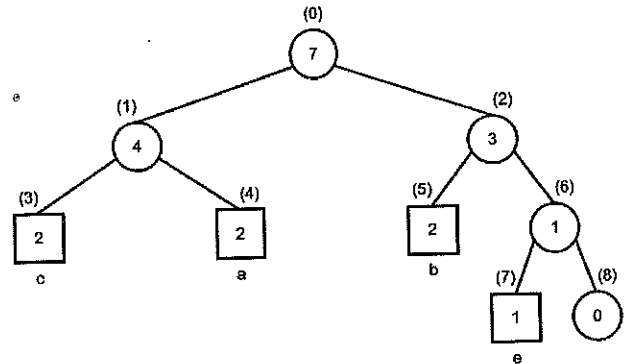1. Suppose that the next character is a.
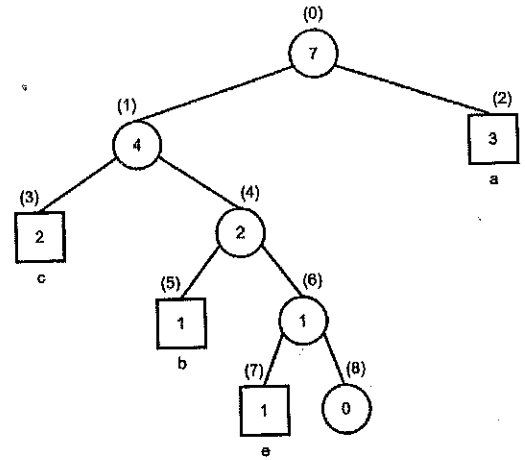
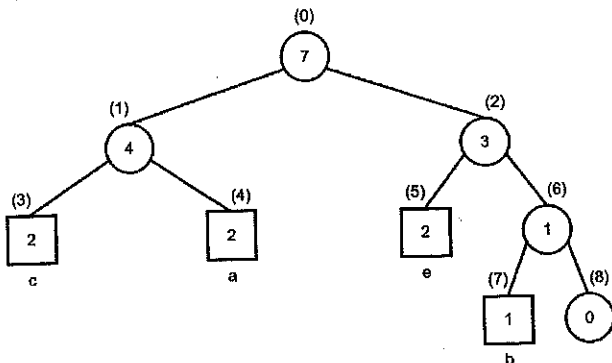2. Suppose that each of the next three characters is a.

3. Suppose that the next character is c.

4. Suppose that the next character is b.

5. Suppose that the next character is e.

6. Suppose that the next character is d.