CS152: Data Structure

Week 11 Worksheet
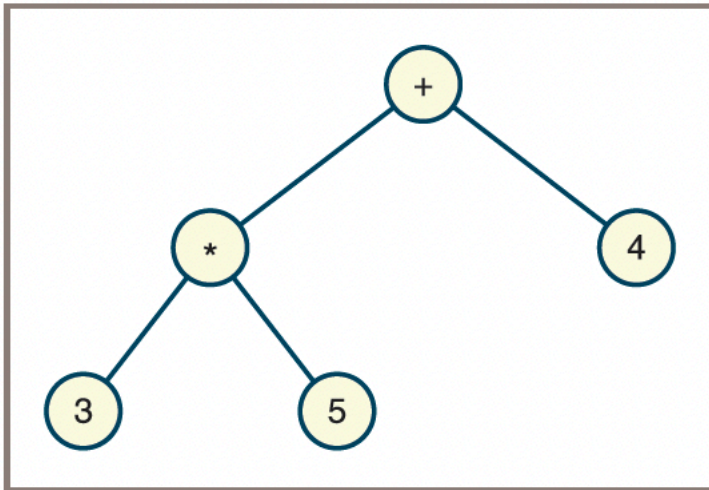
Write the full name of all collaborators inside this box

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Discuss these questions and write your answers in the space provided below it.

1. What is the difference between a perfectly balanced binary tree and a complete binary tree?

2. What is the difference between a complete binary tree and a full binary tree?

3. A full binary tree has a height of 5. How many nodes does it contain?

4. A complete binary tree contains 125 nodes. What is its height?

5. How many nodes are on a given level L in a full binary tree? Express your answer in terms of L.

6. What is the heap property for a min-heap?

7. How is a binary search tree different from a binary tree?

8. Write the expression represented by the following expression tree in `infix`, `prefix`, and `postfix` notations. (**Hint**: Use the `inorder`, `preorder`, and `postorder` traversals discussed in the last class to obtain your answers.)

a) `infix`:
b) `prefix`:
c) `postfix`:

9. Draw diagrams of the expression trees for the following expressions:

a. 3 * 5 + 6

b. 3 + 5 * 6

c. 3 * 5 ** 6