Question 1:

**Print tree is a Post-order-traversal, O(n)**

Text

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**Print tree is a Pre-order-traversal, O(n)**

Text

Description automatically generated

**Print tree is a In-order-traversal, O(n)**

Text

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**T(n) = 2T(n/2) + O(1)**

Question 2:

**Arrays:**

**Search:** O(n) for finding elements due to comparisons.

**Insertion:** Array must be moved/copied into larger array therefore O(n)

**Removal:** O(n) - Deletion from a random index. Values must be moved back together

**Min/max:** A sorted array would have min and max at the back therefore, O(1).

**Space-complexity:** Memory stored in contiguous addresses, linearly connected

**Trees:**

**Search:** O(log n)

**Insertion:** O(log n)

**Removal:** O(log n)

**Min/max:** O(log n)

**Space-complexity:** Recursive, so takes up more memory due to tracking multiple address

Question 3:

Text

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Iteratively: O(n) due to the ‘n’ number of elements. Store memory addresses and iterate through them.

Graphical user interface, text, application

Description automatically generated

Recursively: O(log n) due to the recursive calls. This is more memory intensive because each recursive call creates many copies of the function code.

Question 4:

In this case we must traverse from root to the deepest leaf node and in that case height of the tree becomes n therefore time complexity in the worst case becomes O(n).

Question 5:

Question 6:

A picture containing diagram

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Question 7: