

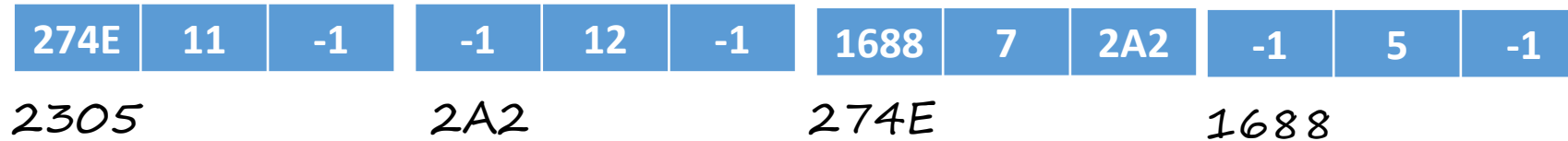
BST Data Structure

Definitions, terminologies, notations, operations

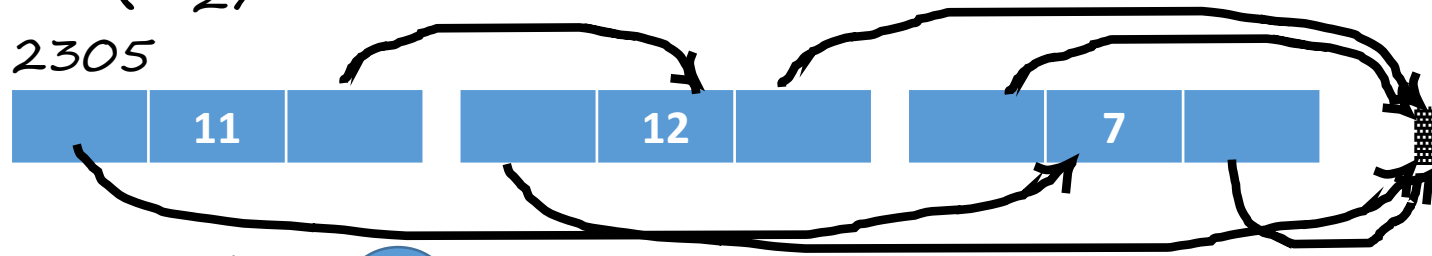
- A data structure to represent sets whose elements are ordered by some linear order.
- **Binary Search Tree (BST)**
 - A binary tree in which the nodes are labelled with the elements of the set.
 - Each node satisfies the **binary search tree property**:
 - All the elements stored in the left subtree of any node k are all lesser than the elements stored at k , and
 - All the elements stored in the right subtree of any node k are all greater than the elements stored at k .
- ↓
- The element stored in the left child of any node k is lesser than the element stored at k , and
- The element stored in the right child of any node k is greater than the element stored at k .
- **Operations**: Member, Insert, Delete, DeleteMin All in $O(h)$ time

Which of the following are BSTs?

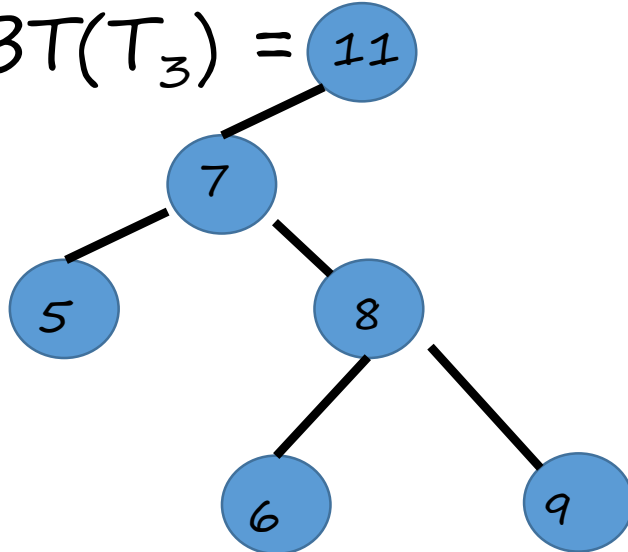
- $BT(T_1) = 2305$



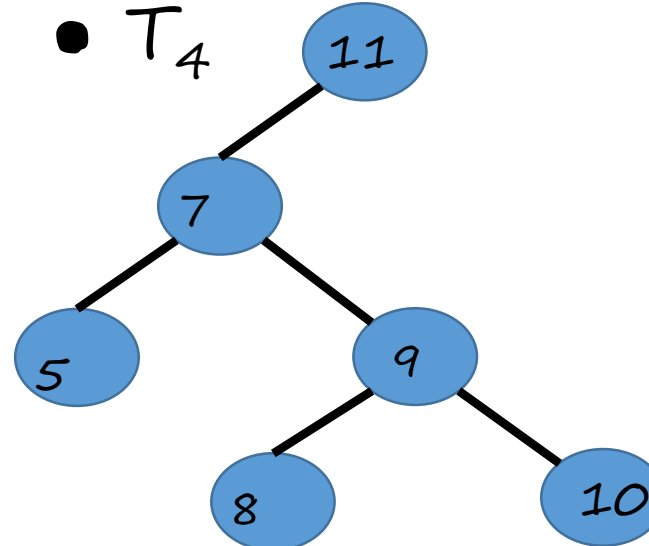
- $BT(T_2) = 2305$



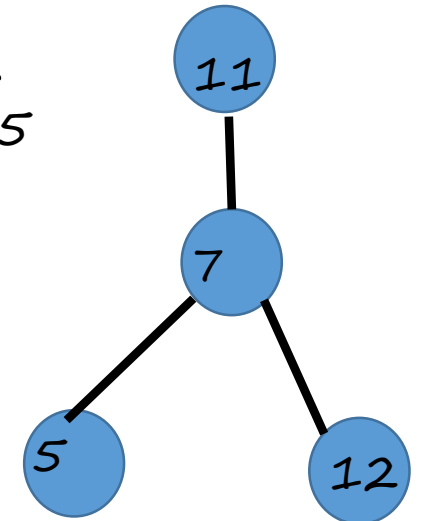
- $BT(T_3) = 11$



- T_4

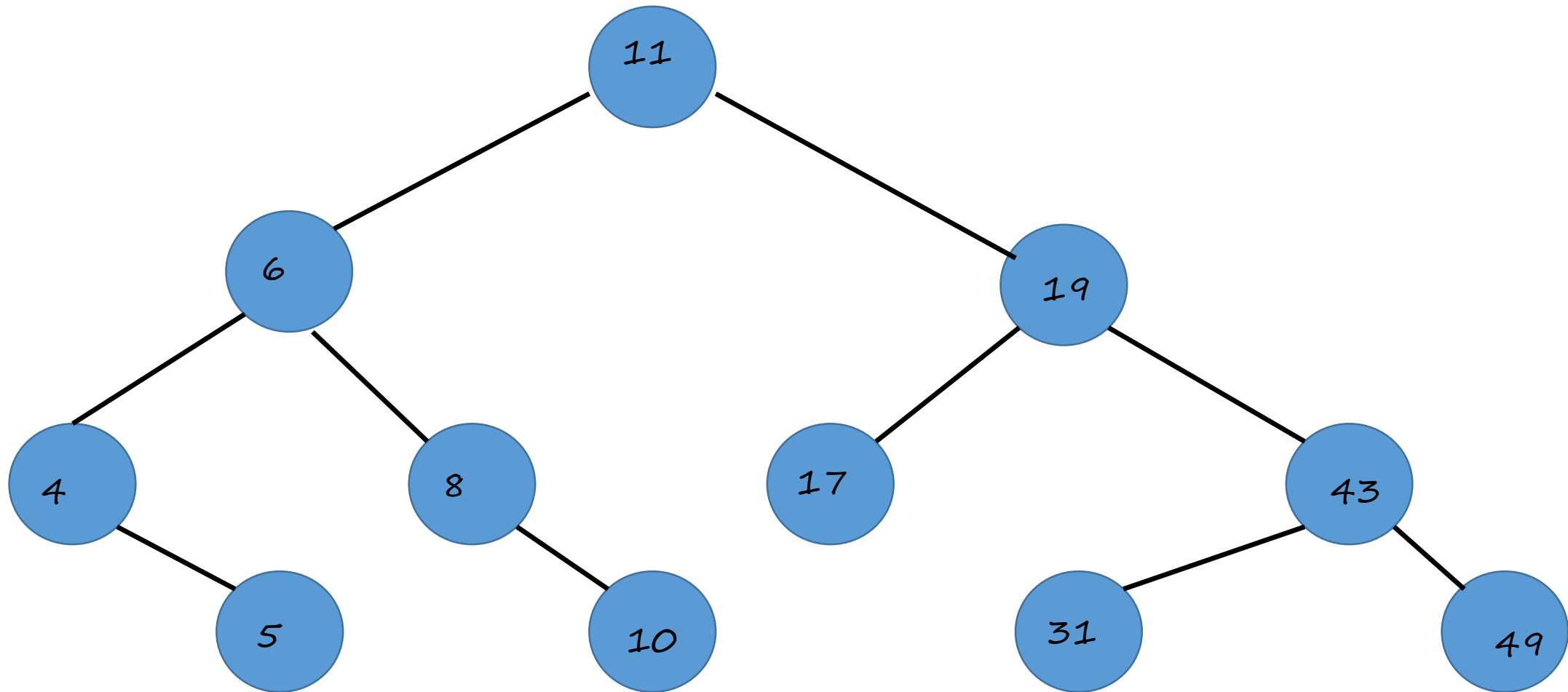


- T_5



Represent $\{11, 6, 8, 19, 4, 10, 5, 17, 43, 49, 31\}$ as a BST. Is it unique?

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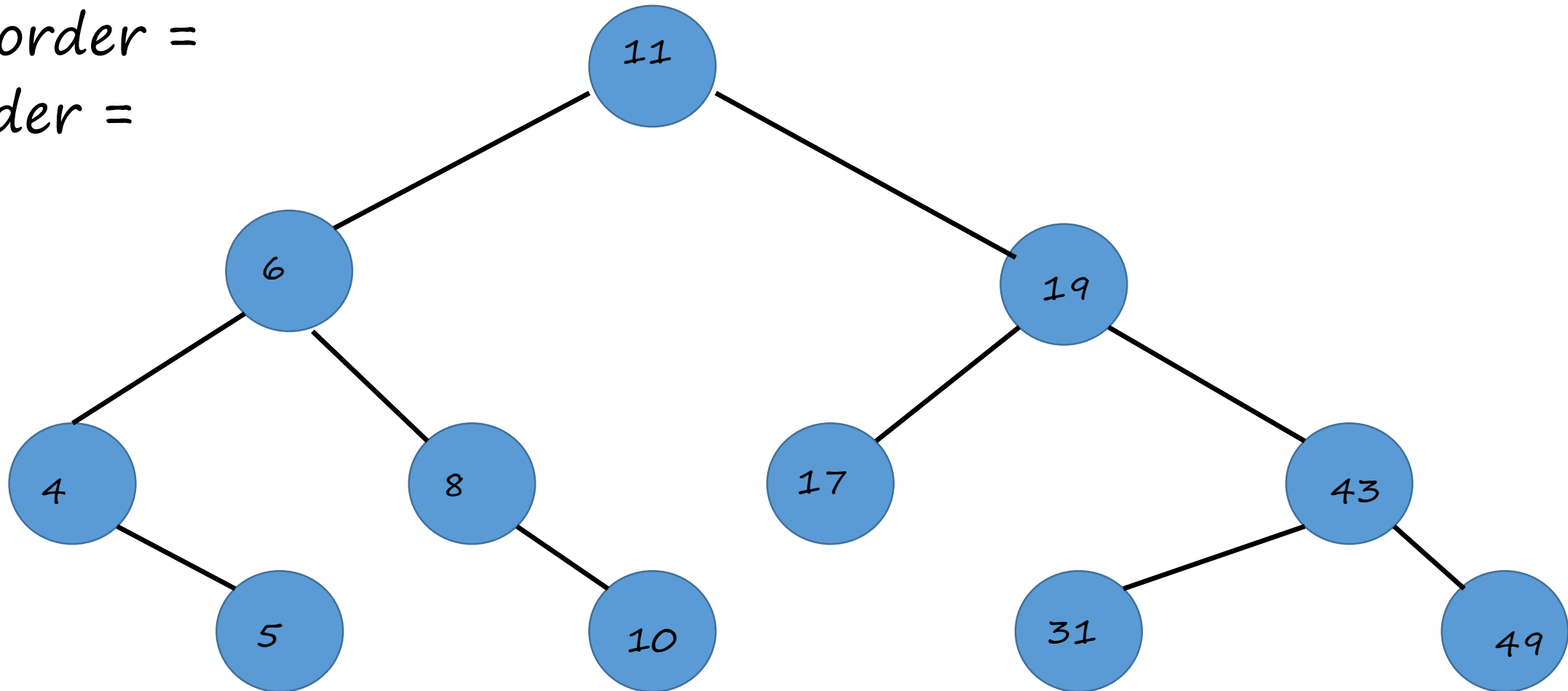


Traverse the BST

Preorder =

Postorder =

Inorder =



$Delete(<31, 4, 11>, T)$

