A **binary tree** is a data structure that has a root node and two branches, referred to as the left child and the right child. The top node is called the **root** that serves as the top level of the structure. Each node in a binary tree has value and pointers to its two children, forming a network of relationships that supports optimized search, sort, and representation of hierarchical data.

Every **node** in a binary tree has one parent, except for the **root**. The tree grows like a real tree from the roots: With **sub-trees**, which are also binary trees. These sub-trees lie on either left or right of a node. Each node (except for the root) is a child of another node and a **leaf** is a node that has no children -- it does not branch out any further. The leaves usually represent the end of the data or the final values in the tree.

The **depth** of a node is the number of edges from the node to the tree's root node. For instance, root has a depth of 0 and then the level below it root increases the depth by 1. Alternatively, the height of a node is the maximum number of edges on the longest path from the node to a leaf. The **height** of the whole tree is the height of the root, which gives you a measure for how "tall" the construction is.

Binary Trees are typically built using **nodes** that have three attributes: a data element, a pointer to the left child which is also a node, and a pointer to the right child which is again a node. This is typically done, for instance, in Python or Java with a node that models the structure of each node. For example, here is a simple class in Python:

```
class Node:
   def __init__(self, data):
      self.data = data
      self.left = None
```

```
self.right = None
```

To form a binary tree, we link nodes together such that one becomes the root, while others are assigned as offspring based on specified requirements or rules. In binary search trees, for example, nodes are placed in a way that maintains order—left children have values less than their parent, whereas right children include values larger than their parent (Goodrich et al., 2014).

The utility of binary trees covers various disciplines. They are particularly useful in tasks that involve hierarchical data representation, such as file systems or decision-making procedures. Moreover, certain versions, such balanced binary trees (e.g., AVL trees or red-black trees), assure optimal performance by maintaining equal heights across branches, preventing degeneration into linear structures (Knuth, 1997).

In conclusion, a binary tree is a fundamental yet powerful data structure that organizes data in a branching style with a clear hierarchy. The root anchors the structure, nodes convey data and connections, and leaves signify endpoints. Understanding notions such as depth and height is crucial to understanding the tree's efficiency and behavior. With its flexible and recursive character, the binary tree remains a basic idea in computer science and software development.

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