



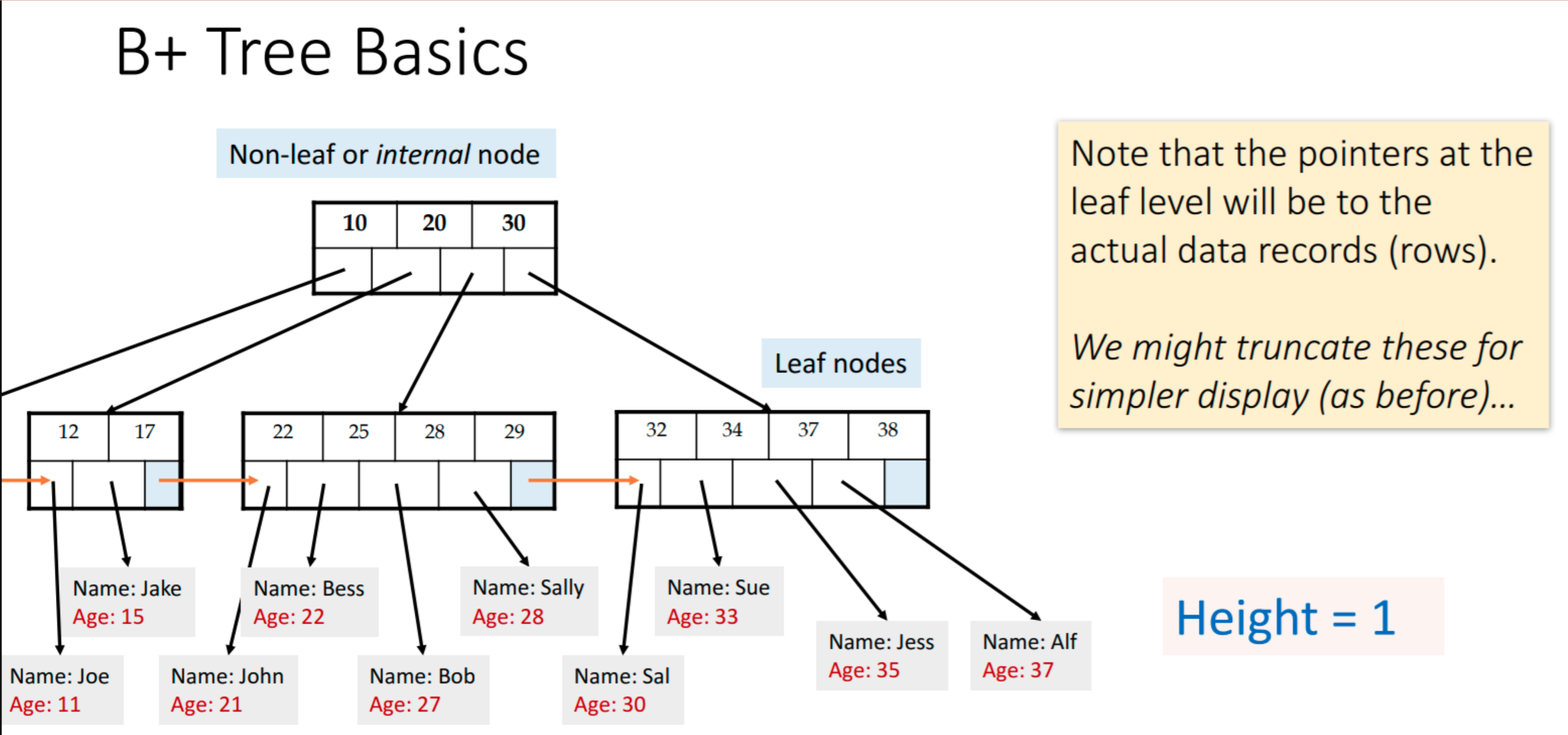
# **Database Using B+ Trees**

## **DSA Mini Project**

### **Sem -4**



# Structure Of BPlus Tree



# Basics Of BPlus Tree

- Stored record only at leaf node.
- Leaf node stores all keys along with data ptr.
- All leaf nodes are at same level.
- The root has atleast Two children.
- Each node except root can contain :  
Max :  $m$  children , Min :  $m/2$  children
- Each node contain :  
Max :  $m - 1$  children , Min :  $m/2 - 1$  children

# Why BPlus Tree ?

- B+tree provides sequential search capabilities in addition to the binary search, which gives the database more control to search non-index values in a database.
- Database is Searching Oriented Application hence B Plus is preferred over other data structures as it reduces Complexity for searching operation.
- The B+ tree is a balanced binary search tree. It follows a multi-level index format.
- It keeps the height of tree as low as possible.

# Time Complexity

- During the search operation,  $h$  nodes are read from the disk to the main memory where  $h$  is the height of the B+-tree.
- As previously stated, the height of the B+-tree is  $h = O(\log n)$  where  $n$  is the number of the keys stored in the tree.
- Therefore Time complexity of search operation in B plus tree is :  $O(n \log n)$



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