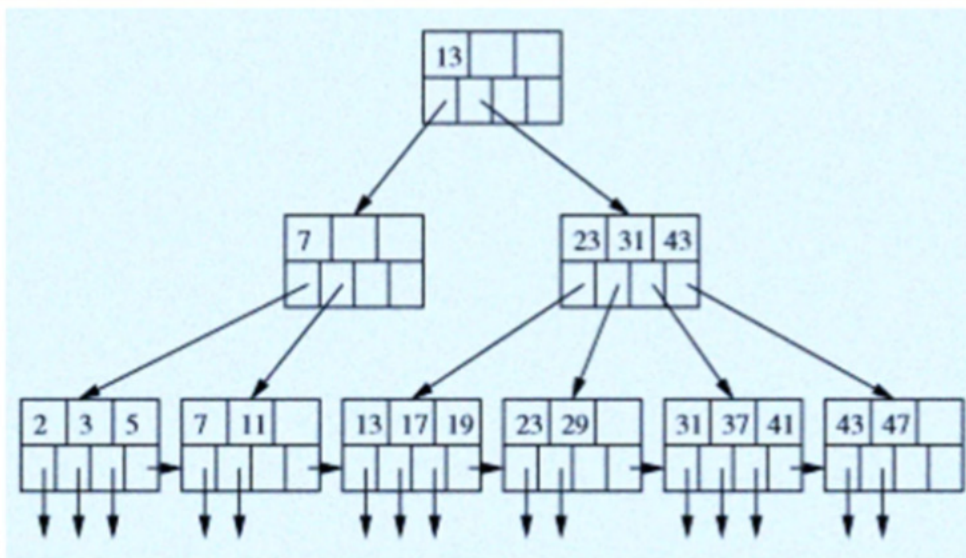# Database Technologies Lab-2

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Sem – 6, Sec – B
Date – 02 - Feb – 2022

Insertion and deletion from B- Trees
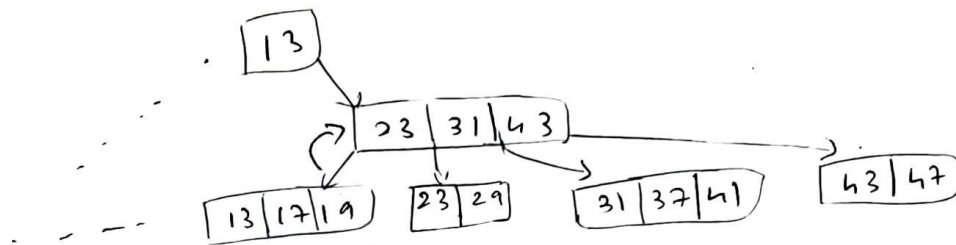
DATABASE TECHNOLOGIES

Index Structure – B Trees

- Insert key 20
- Delete key 29

Solution:

Insert 20 to the given B-tree

→ consider only the right half for now

```
                    [13]
                   ↗
            [23│31│43]
         ↙       ↓      ↘              ↘
   [13│17│19]  [23│29]  [31│37│41]   [43│47]
```
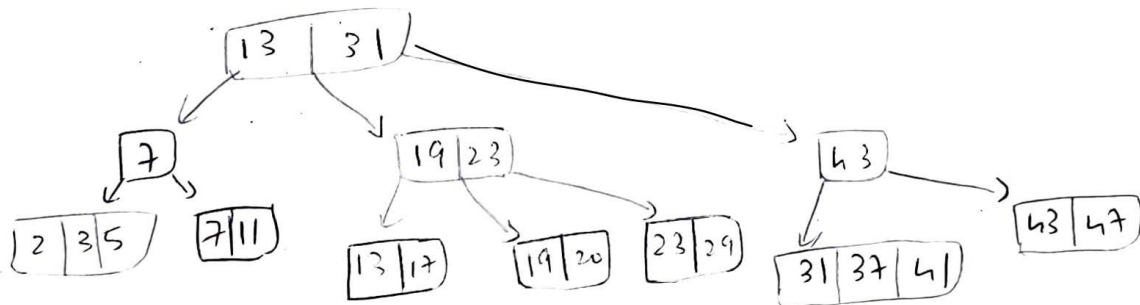
Insert 20

To accomodate 20, we need to promote 19 to parent slot and break leaf into [13│17] & [19│20] pairs

Now even the parent has 4 elements, again, promote 31 to parent & break into subtrees.

∴ The final tree will become

```
              [13 │ 31]
           ↙       ↓           ↘
        [7]      [19│23]             [43]
       ↙  ↘     ↙    ↓   ↘          ↙      ↘
 [2│3│5] [7│11] [13│17] [19│20] [23│29] [31│37│41]  [43│47]
```

Deletion of key 29

Since 29 is a leaf node, there is no need for any rotations

The new tree will become: