When an imbalance is caused by a node being inserted into the right subtree (C) of the right subtree (B), we use a left rotation.

When an imbalance is caused by a node being inserted into the left subtree (C) of the left subtree (B), we use a right rotation.

When an imbalance is caused by a node being inserted into the right subtree (B) of the left subtree (A), we use a left-right rotation.

When an imbalance is caused by a node being inserted into the left subtree (B) of the right subtree (A), we use a right-left rotation.

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| --- | --- |
|  | **Insert 20, 9**  No rebalance required. |
|  | **Insert 3**  Node 20’s subtrees are unbalanced.  Imbalance caused by insertion into left subtree of left subtree.  Right rotation required. |
|  | **Right rotation on 20 and 9**  Tree is now balanced. |
|  | **Insert 7**  No rebalance required. |
|  | **Insert 5**  Node 3’s subtrees are unbalanced. Imbalance caused by insertion into left subtree of right subtree.  Right-left rotation required. |
|  | Right-left rotation on 3, 7 and 5 - Right rotation on 7 and 6 - Left rotation on 3 and 5Tree is now balanced |
|  | **Insert 8** Node 9’s subtrees are unbalanced. Imbalance caused by insertion into right subtree of left subtree.  Left-right rotation required. |
|  | **Left-right rotation on 9, 5 and 7**  - Left rotation on 5 and 7 - Right rotation on 9 and 7  - Re-parent 8 (7’s right child) to left-most of its new right child.  Tree is now balanced. |