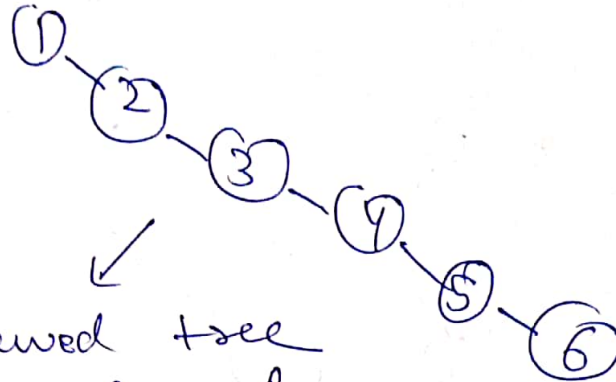


Approach for solving Problem

If we make simple BST



This skewed tree would be formed.

Approach

Now on the ^{search} complexity →
At each step we check whether the currently formed B.S.T is ~~skewed~~ balanced or not.

Let's start

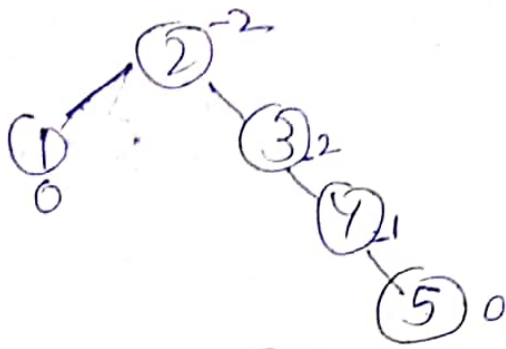
$(1)^0 \rightarrow$ balanced
 \rightarrow move forward

$(1)^{-1} \begin{matrix} \swarrow \\ (2)^0 \end{matrix} \rightarrow$ balanced
 \rightarrow continue

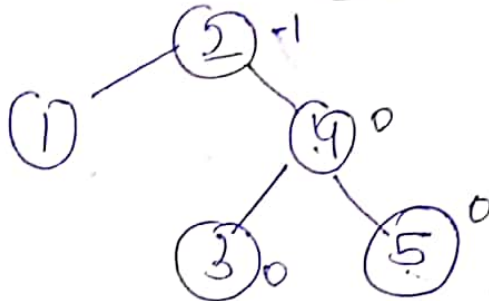
$(1)^{-2} \begin{matrix} \swarrow \\ (2)^{-1} \end{matrix} \begin{matrix} \swarrow \\ (3)^0 \end{matrix} \rightarrow$ unbalanced
 \rightarrow perform rotations (RR)

$\begin{matrix} & \downarrow \\ (1)^0 & \begin{matrix} \swarrow \\ (2)^0 \end{matrix} \begin{matrix} \swarrow \\ (3)^0 \end{matrix} \end{matrix} \rightarrow$ balanced
 \rightarrow continue

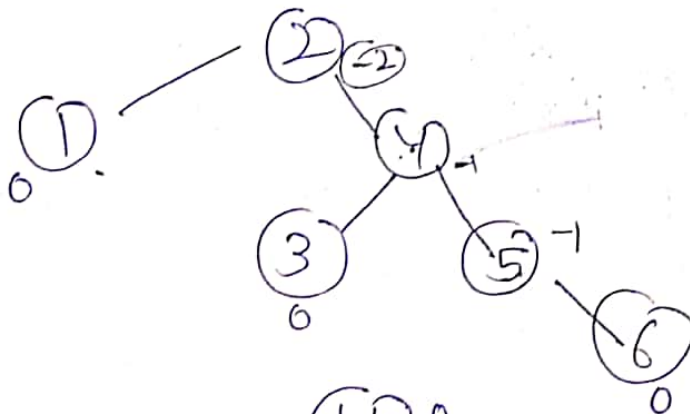
$\begin{matrix} & \begin{matrix} \swarrow \\ (2)^{-1} \end{matrix} \\ (1)^0 & \begin{matrix} \swarrow \\ (3)^{-1} \end{matrix} \begin{matrix} \swarrow \\ (4)^0 \end{matrix} \end{matrix} \rightarrow$ balanced
 \rightarrow continue



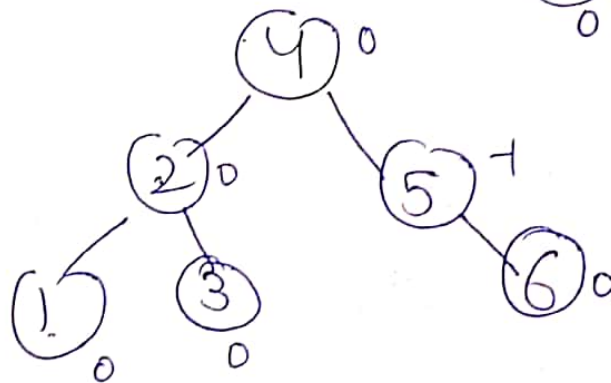
→ unbalanced
 → perform rotations (LR)



→ balanced
 → move forward



→ unbalanced
 → rotate (RR)



→ balanced