DATA STRUCTURES AND ITS APPLICATIONS
UE19CS202

Shylaja S S & Kusuma K V
Department of Computer Science & Engineering

DATA STRUCTURES AND ITS APPLICATIONS

BST: Deletion Operations

Shylaja S S
Department of Computer Science & Engineering

DATA STRUCTURES AND ITS APPLICATIONS

Binary Search Tree - Deletion

Deletion of a Node in Binary Search Tree

case1: Node with no child (leaf node)

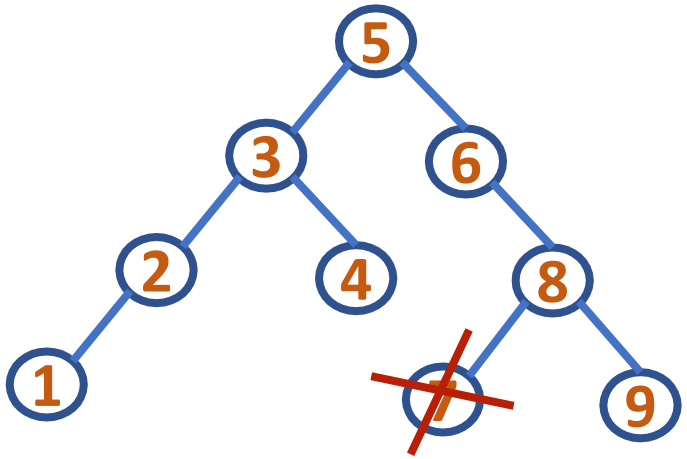
case2: Node with 1 child

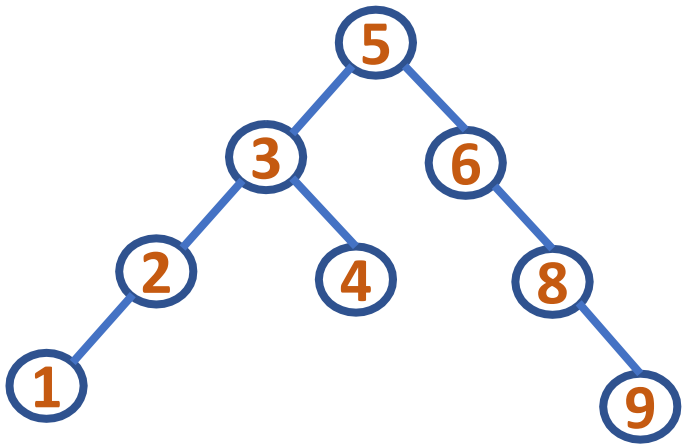
case3: Node with 2 children

DATA STRUCTURES AND ITS APPLICATIONS

Binary Search Tree - Deletion

case1: Node with no child (leaf node)





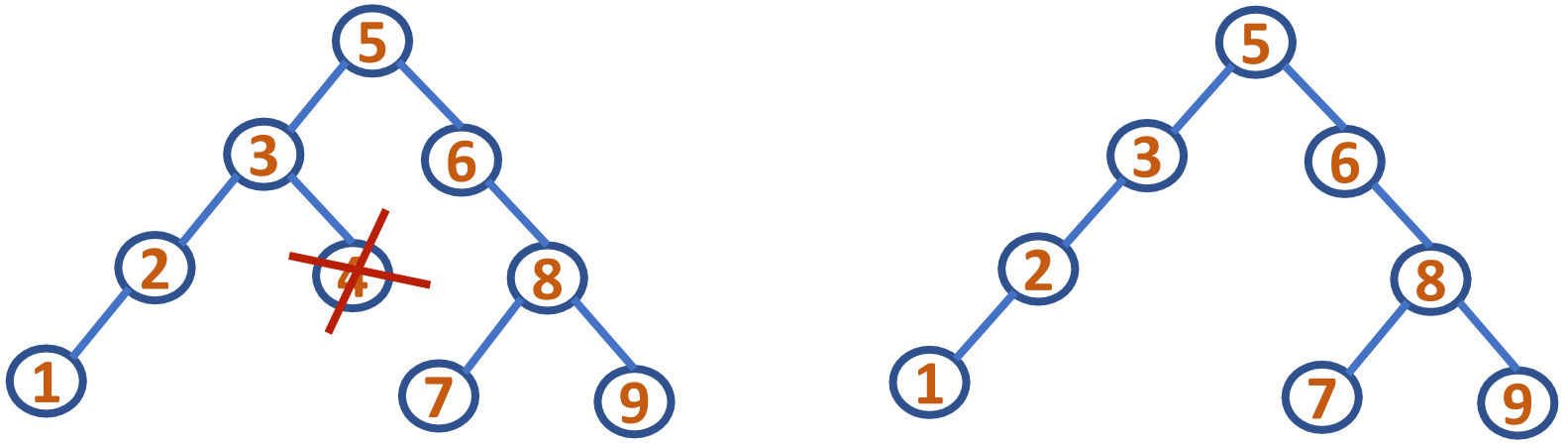
To delete the node with info 7:

- Set its parent's left child field to point to NULL
- Free memory allocated to node with info 7

DATA STRUCTURES AND ITS APPLICATIONS

Binary Search Tree - Deletion

case1: Node with no child (leaf node)

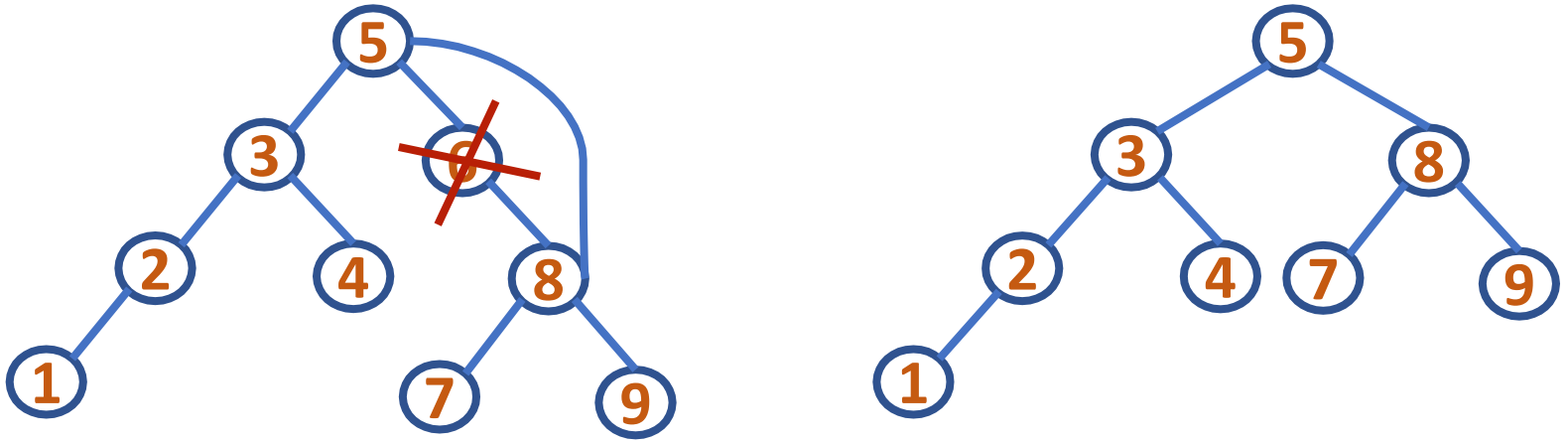


To delete the node with info 4:

- Set its parent's right child field to point to NULL
- Free memory allocated to node with info 4

Binary Search Tree - Deletion

case2: Node with 1 child



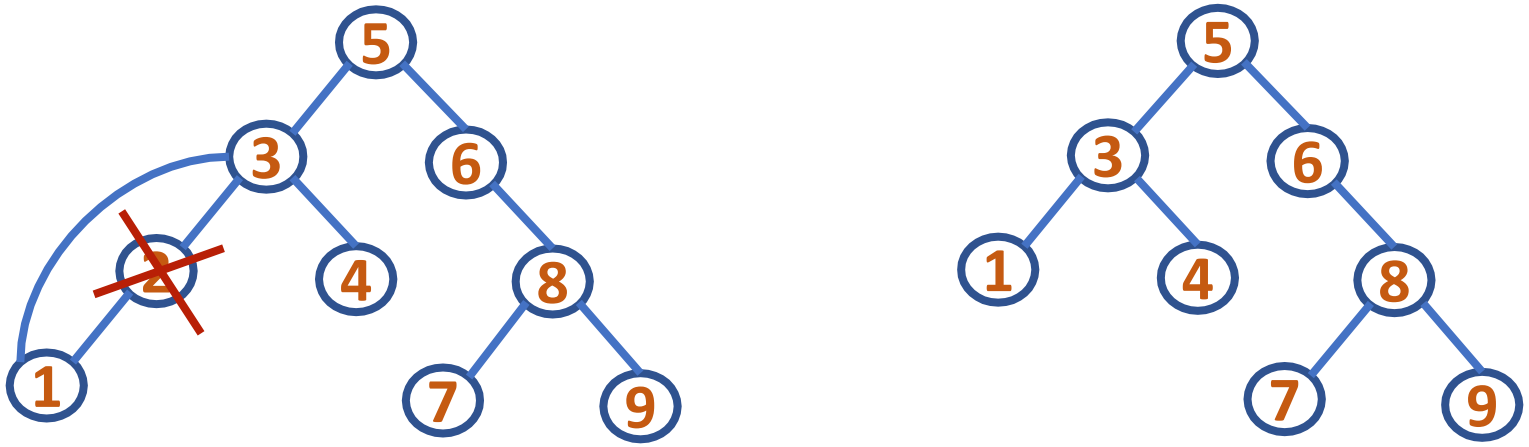
To delete the node with info 6:

- Set its parent's right child field to point to its only child
- Free memory allocated to node with info 6

DATA STRUCTURES AND ITS APPLICATIONS

Binary Search Tree - Deletion

case2: Node with 1 child

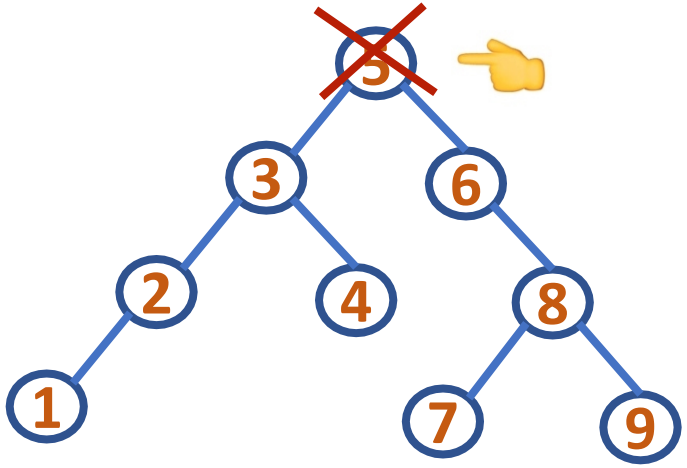


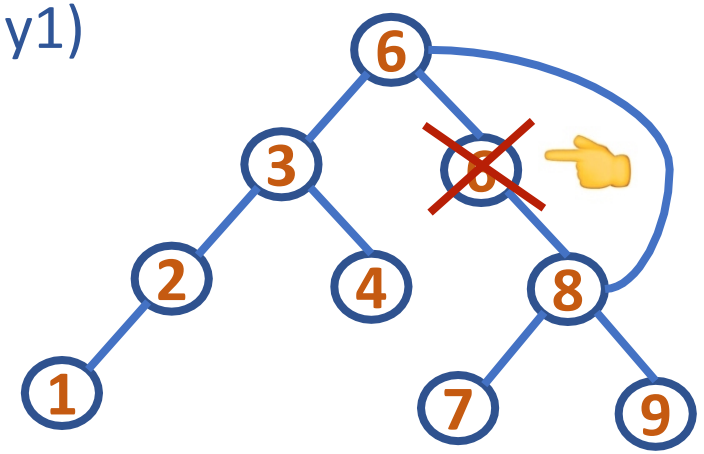
To delete the node with info 2:

- Set its parent's left child field to point to its only child
- Free memory allocated to node with info 2

Binary Search Tree - Deletion

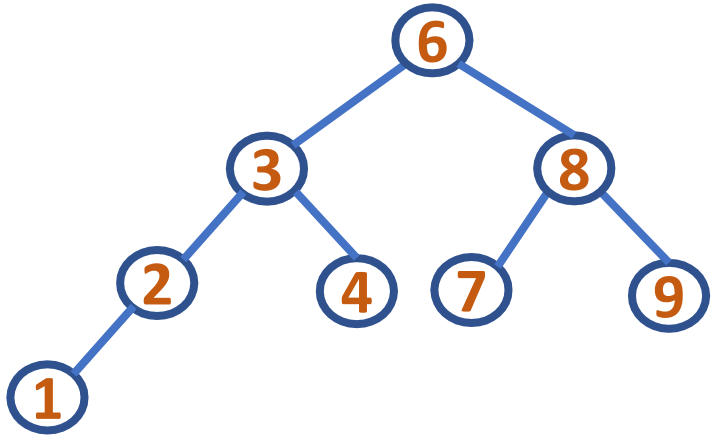
case3: Node with 2 children (Replace with inorder successor) (Way1)





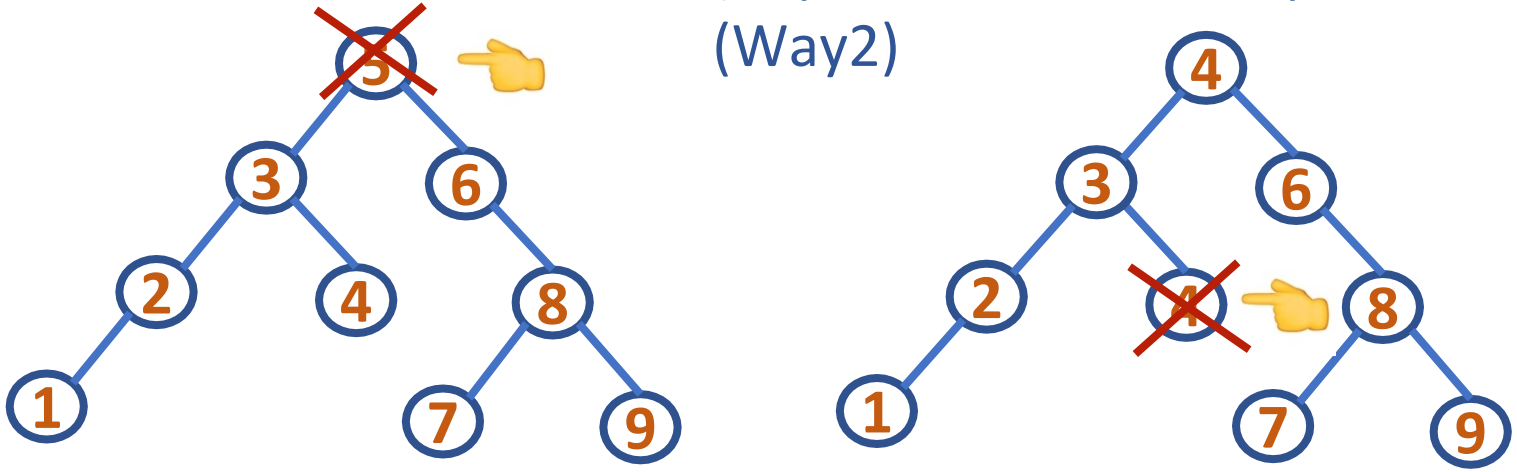
To delete the node with info 5:

- Replace 5 with its **inorder successor** and delete that inorder successor
- Now case3 has got changed to case2 (In general may change to case2 or case1)



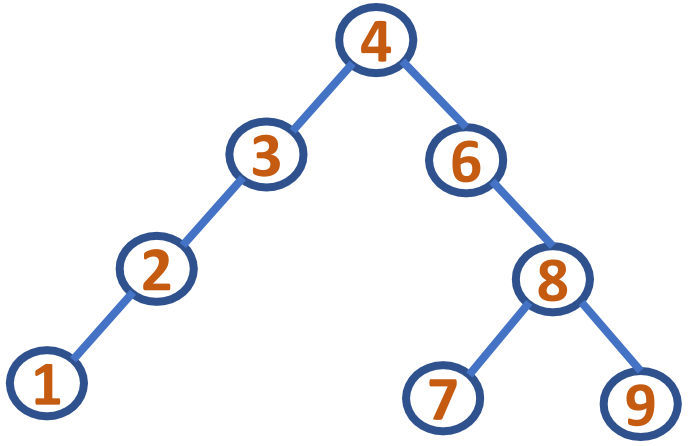
Binary Search Tree - Deletion

case3: Node with 2 children (Replace with inorder predecessor) (Way2)



To delete the node with info 5:

- Replace 5 with its **inorder predecessor** and delete that inorder predecessor
- Here case3 has got changed to case1 (In general may change to case2 or case1)



THANK YOU

Shylaja S S

Department of Computer Science & Engineering

shylaja.sharath@pes.edu

+91 9449867804