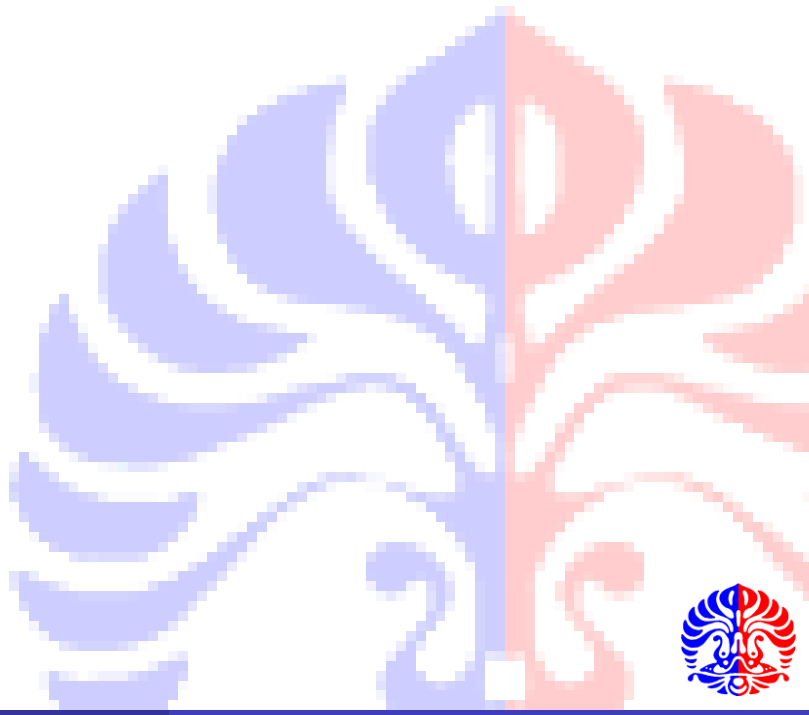
IKI10400 • Struktur Data & Algoritma: AVL Tree Example Operation

Fakultas Ilmu Komputer • Universitas Indonesia

Slide acknowledgments:
Bayu Distiawan

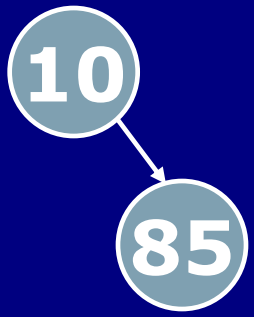
Gambarkan step by step hasil operasi berikut:

- Insert:10, 85, 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55

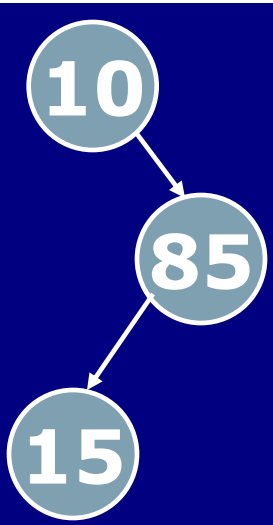


Insert 10, 85, 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55

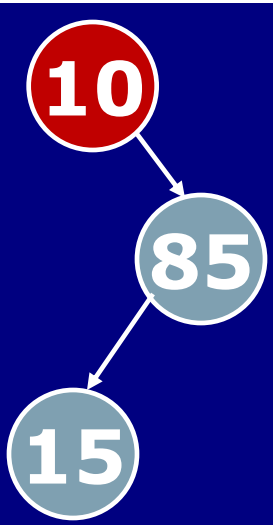
Insert 85, 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55



Insert 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55

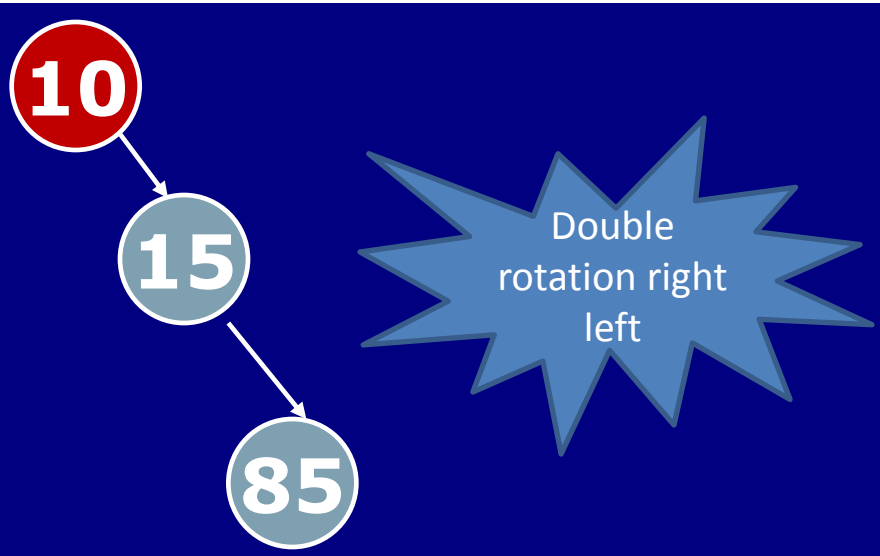


Insert 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55

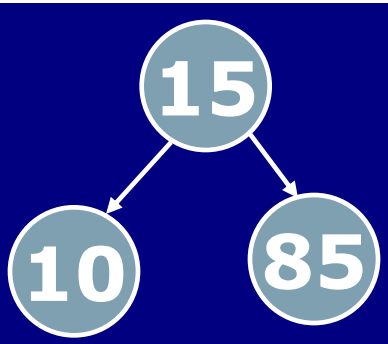


Double rotation right left

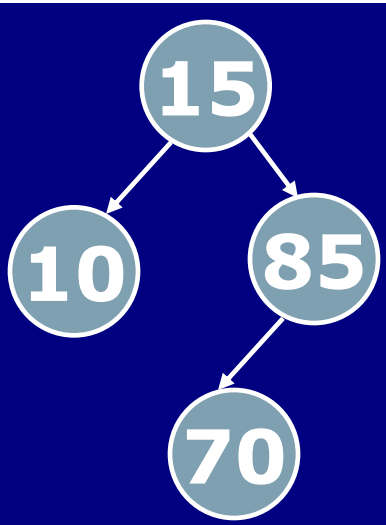
Insert 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55



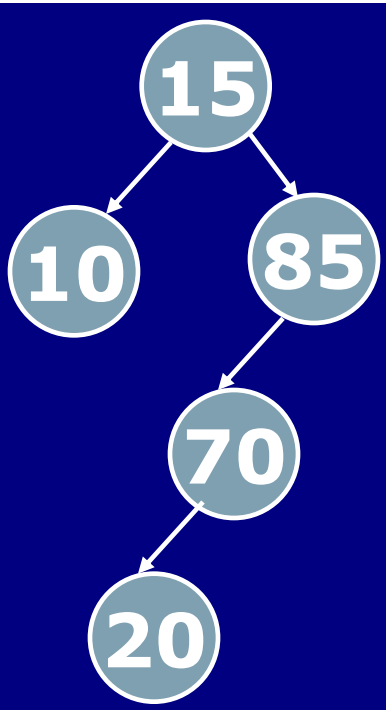
Insert 15, 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55



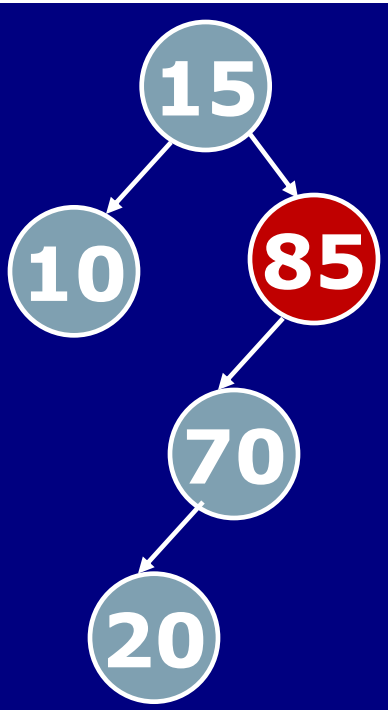
Insert 70, 20, 60, 30, 50, 65, 80, 90, 40, 5, 55



Insert 20, 60, 30, 50, 65, 80, 90, 40, 5, 55

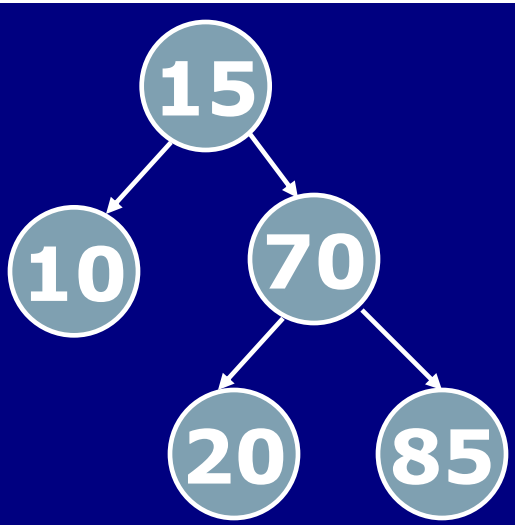


Insert 20, 60, 30, 50, 65, 80, 90, 40, 5, 55

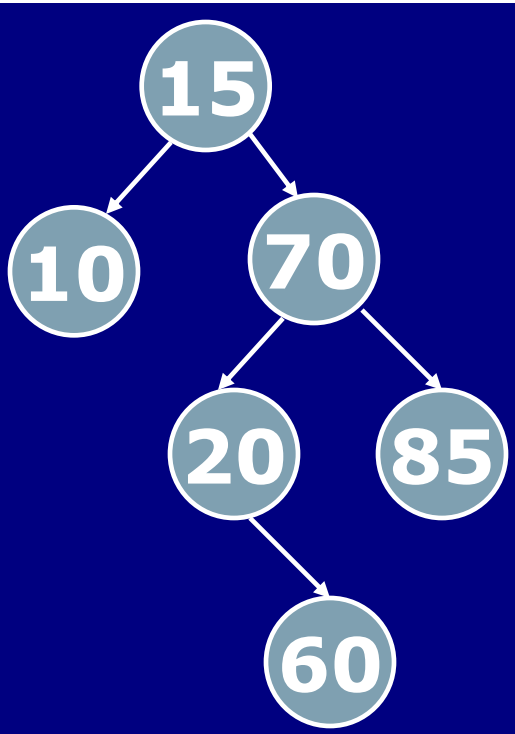


Single
rotation right

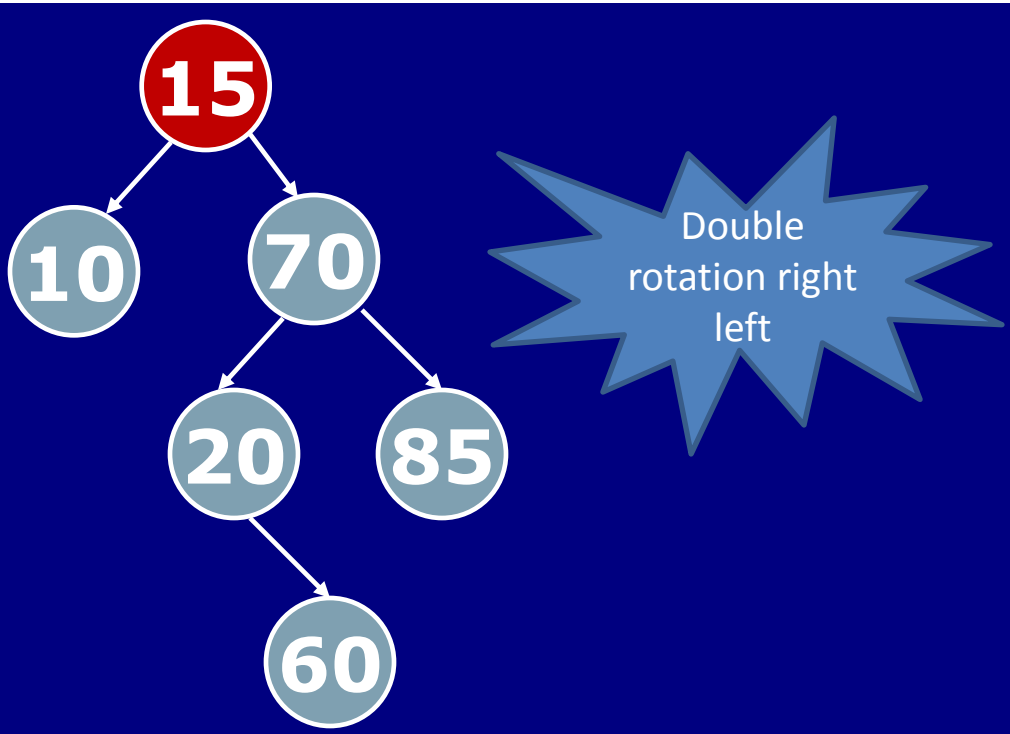
Insert 20, 60, 30, 50, 65, 80, 90, 40, 5, 55



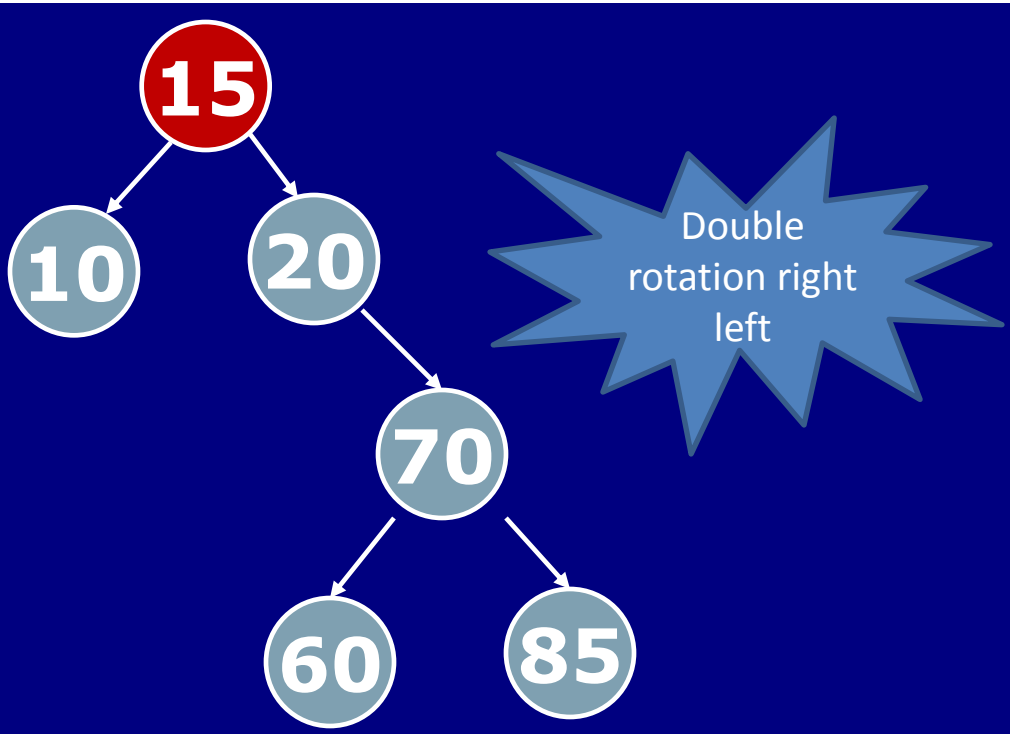
Insert 60, 30, 50, 65, 80, 90, 40, 5, 55



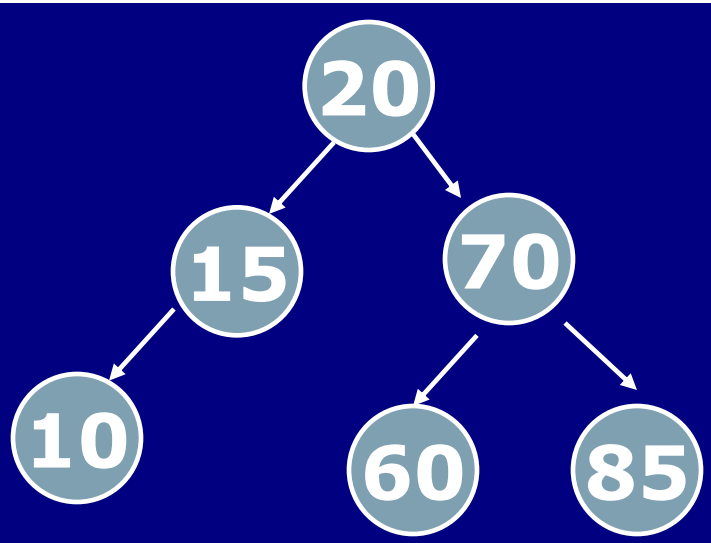
Insert 60, 30, 50, 65, 80, 90, 40, 5, 55



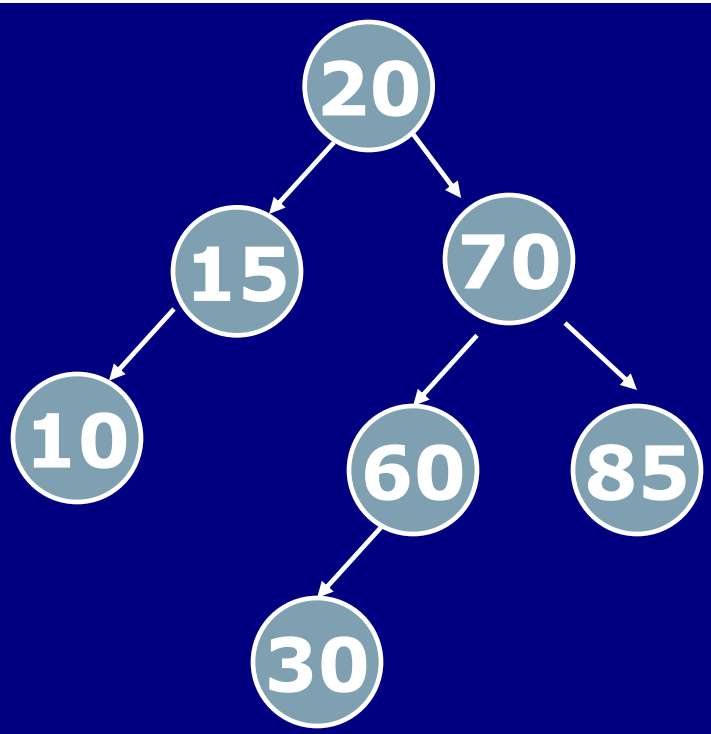
Insert 60, 30, 50, 65, 80, 90, 40, 5, 55



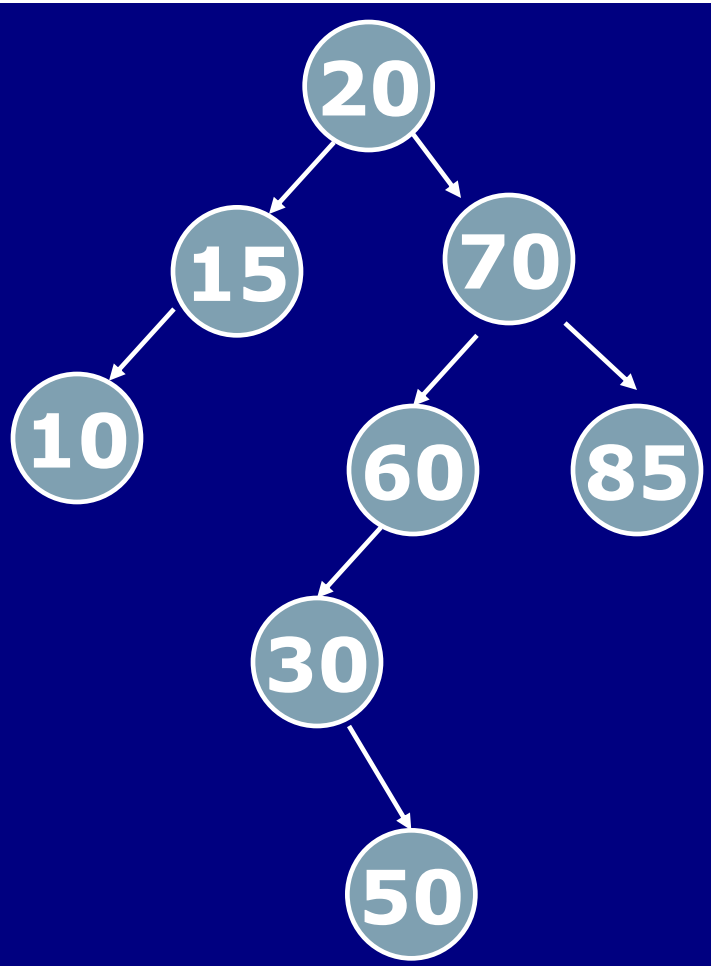
Insert 60, 30, 50, 65, 80, 90, 40, 5, 55



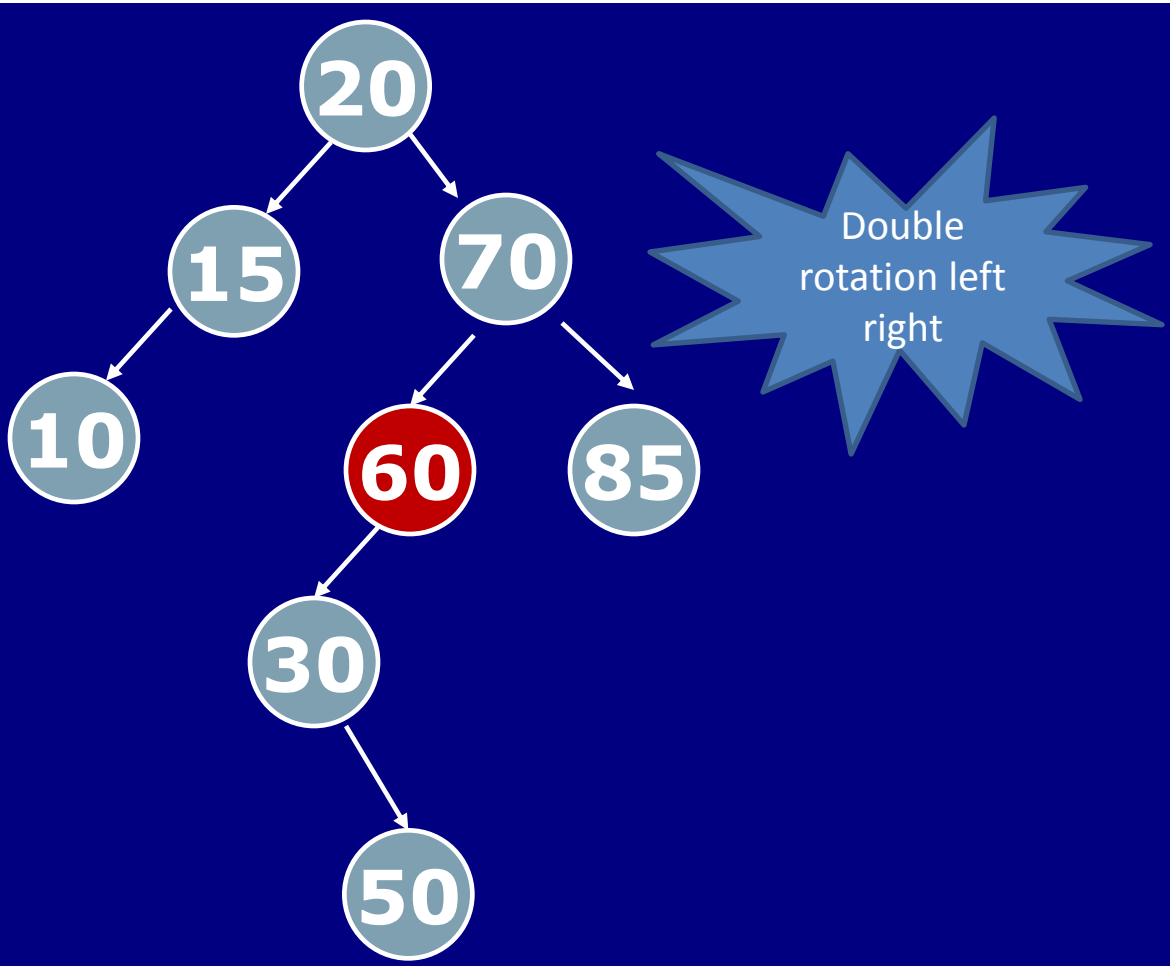
Insert 30, 50, 65, 80, 90, 40, 5, 55



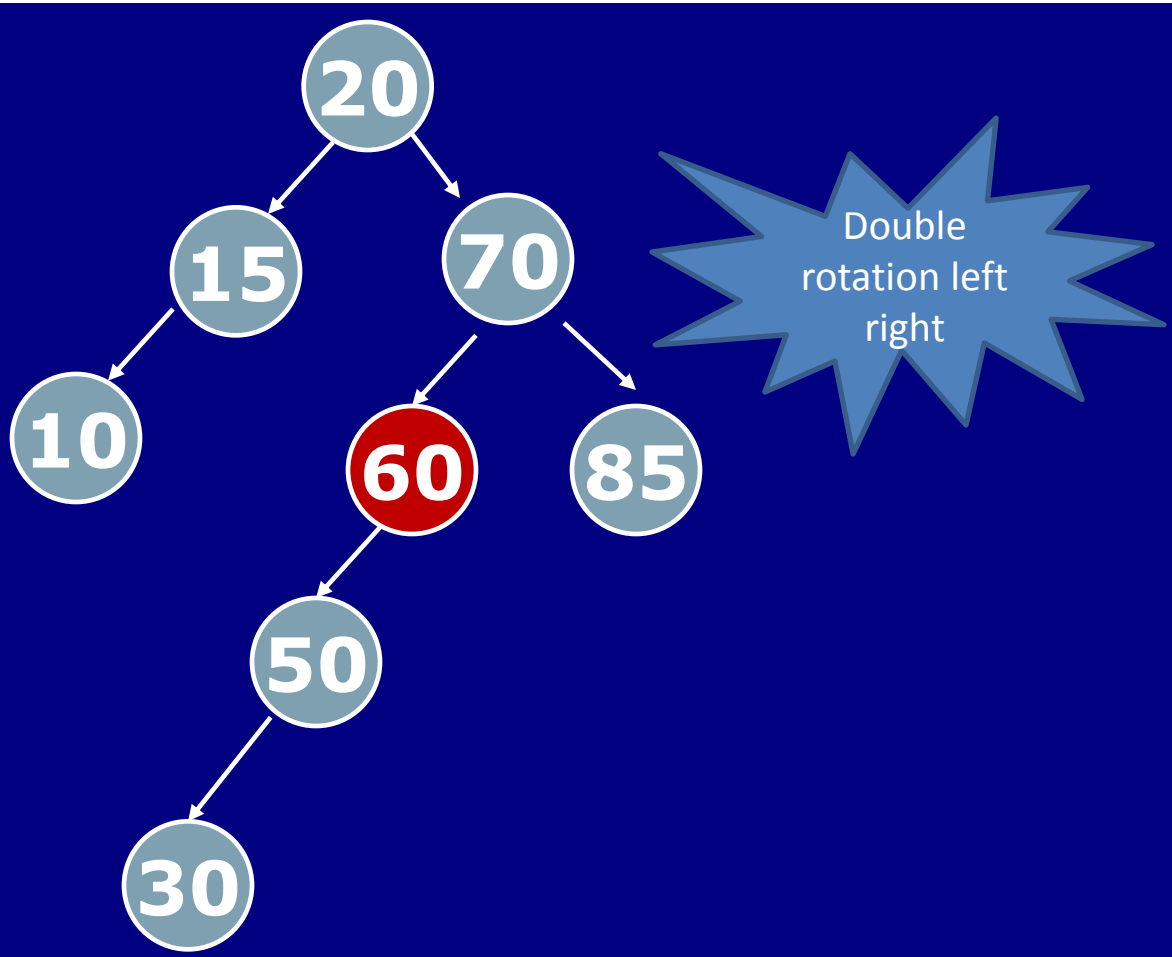
Insert 50, 65, 80, 90, 40, 5, 55



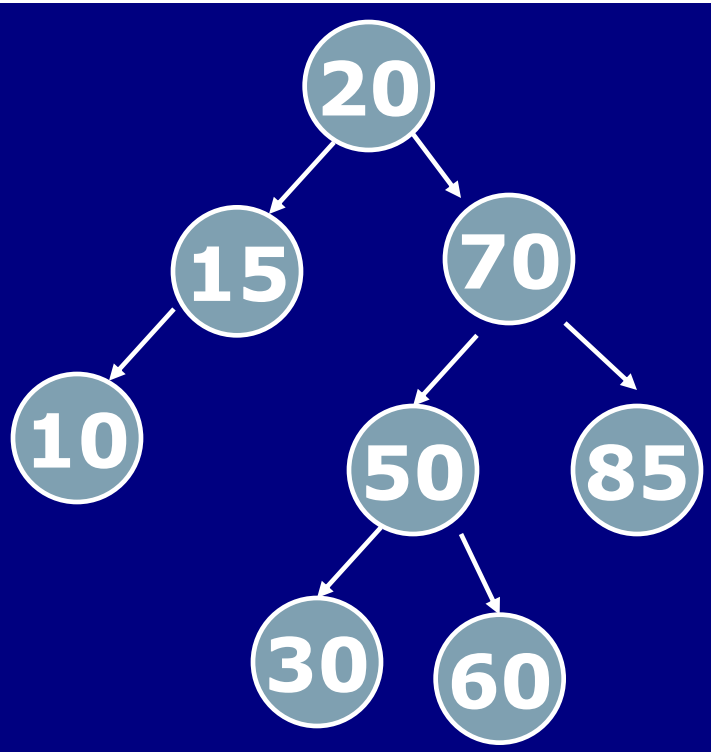
Insert 50, 65, 80, 90, 40, 5, 55



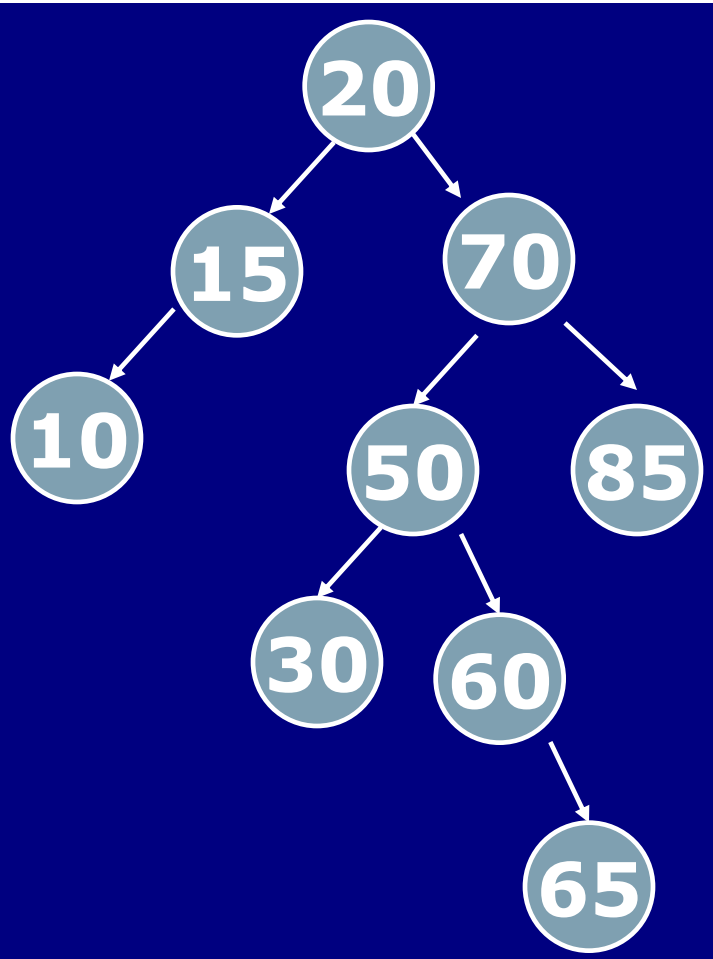
Insert 50, 65, 80, 90, 40, 5, 55



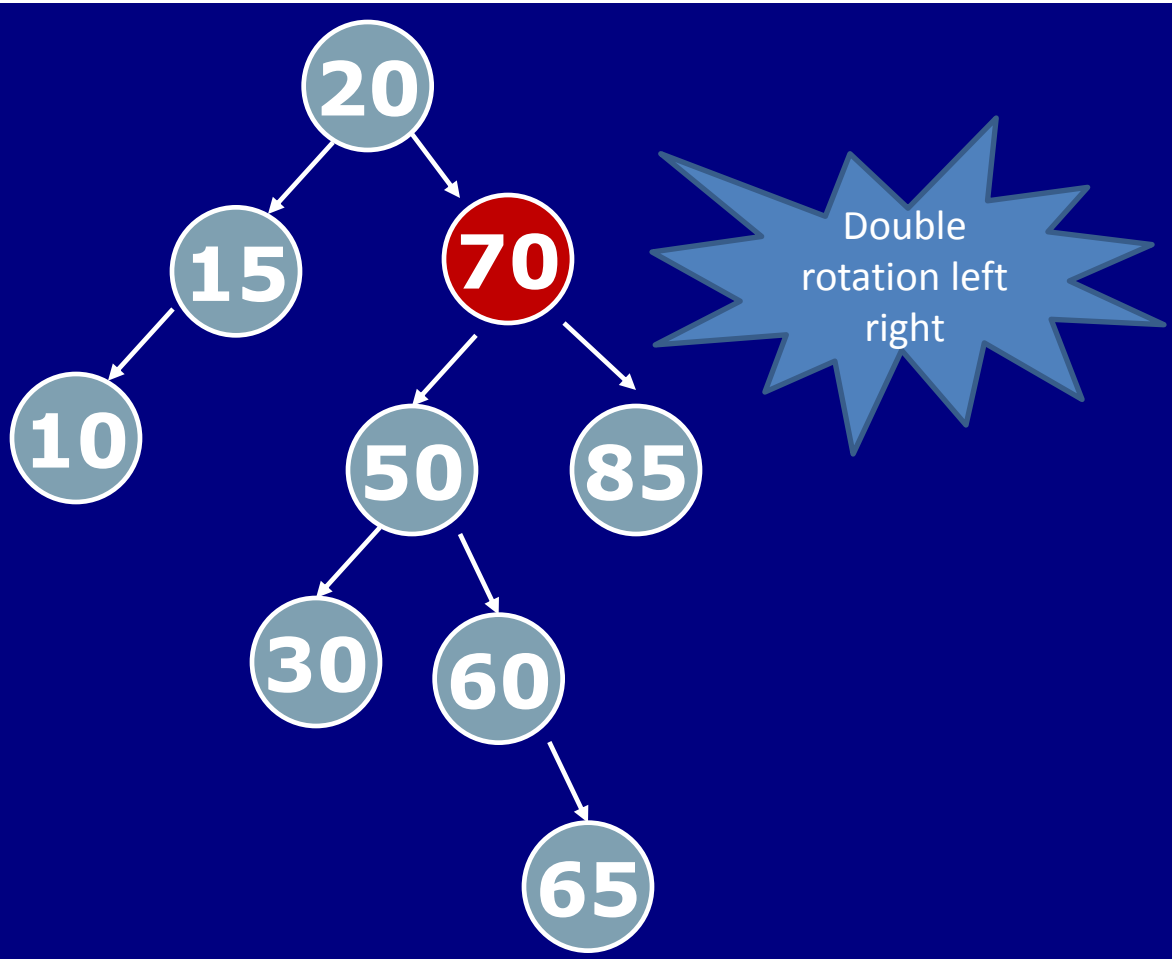
Insert 50, 65, 80, 90, 40, 5, 55



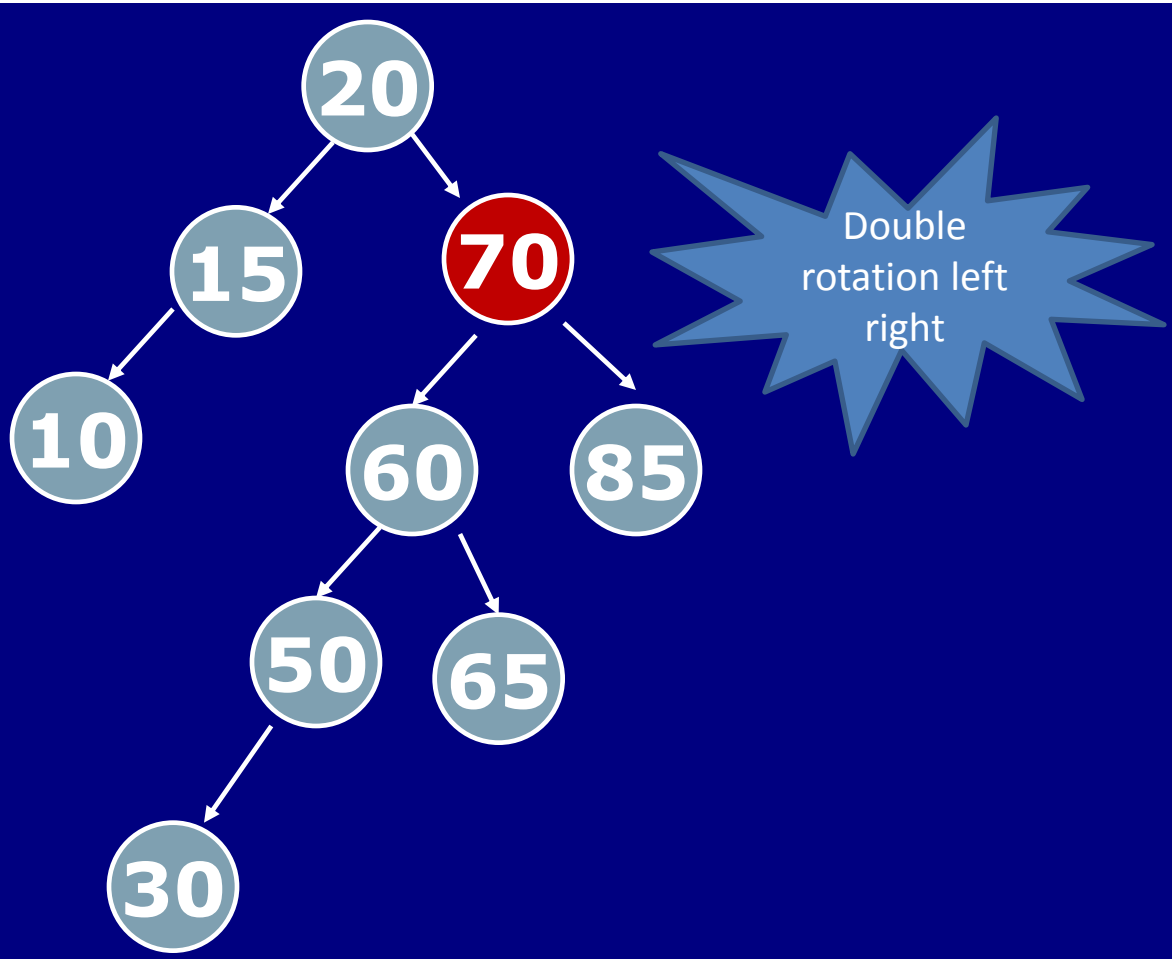
Insert 65, 80, 90, 40, 5, 55



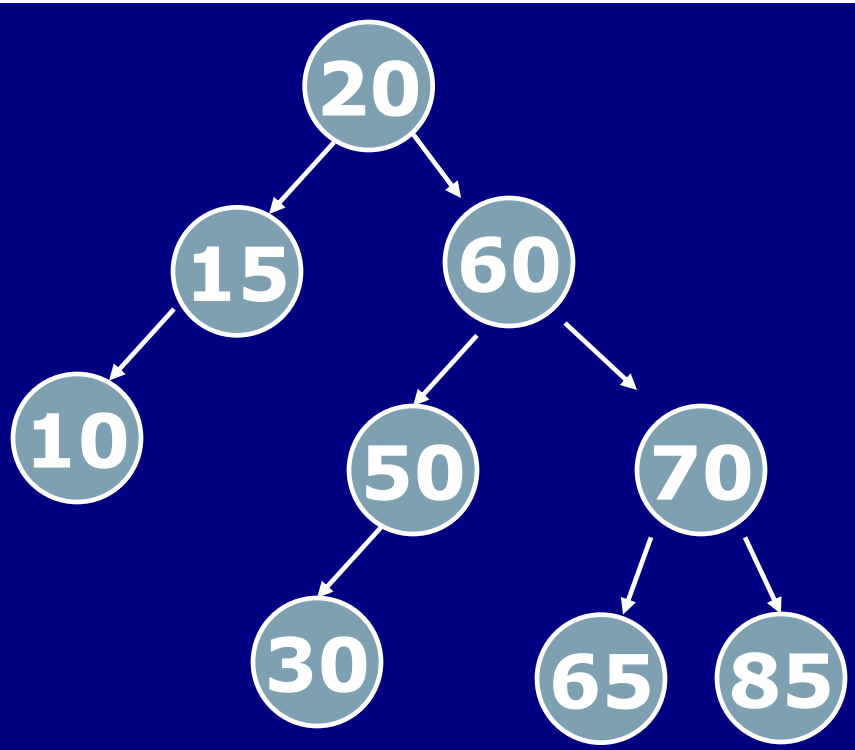
Insert 65, 80, 90, 40, 5, 55



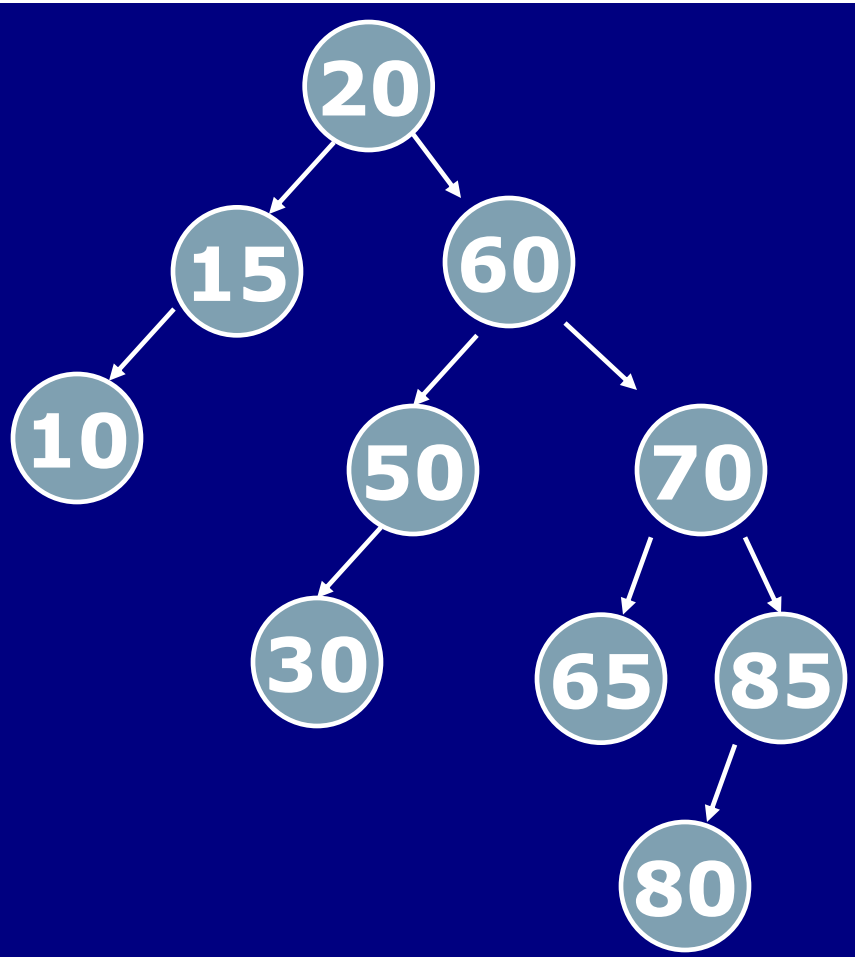
Insert 65, 80, 90, 40, 5, 55



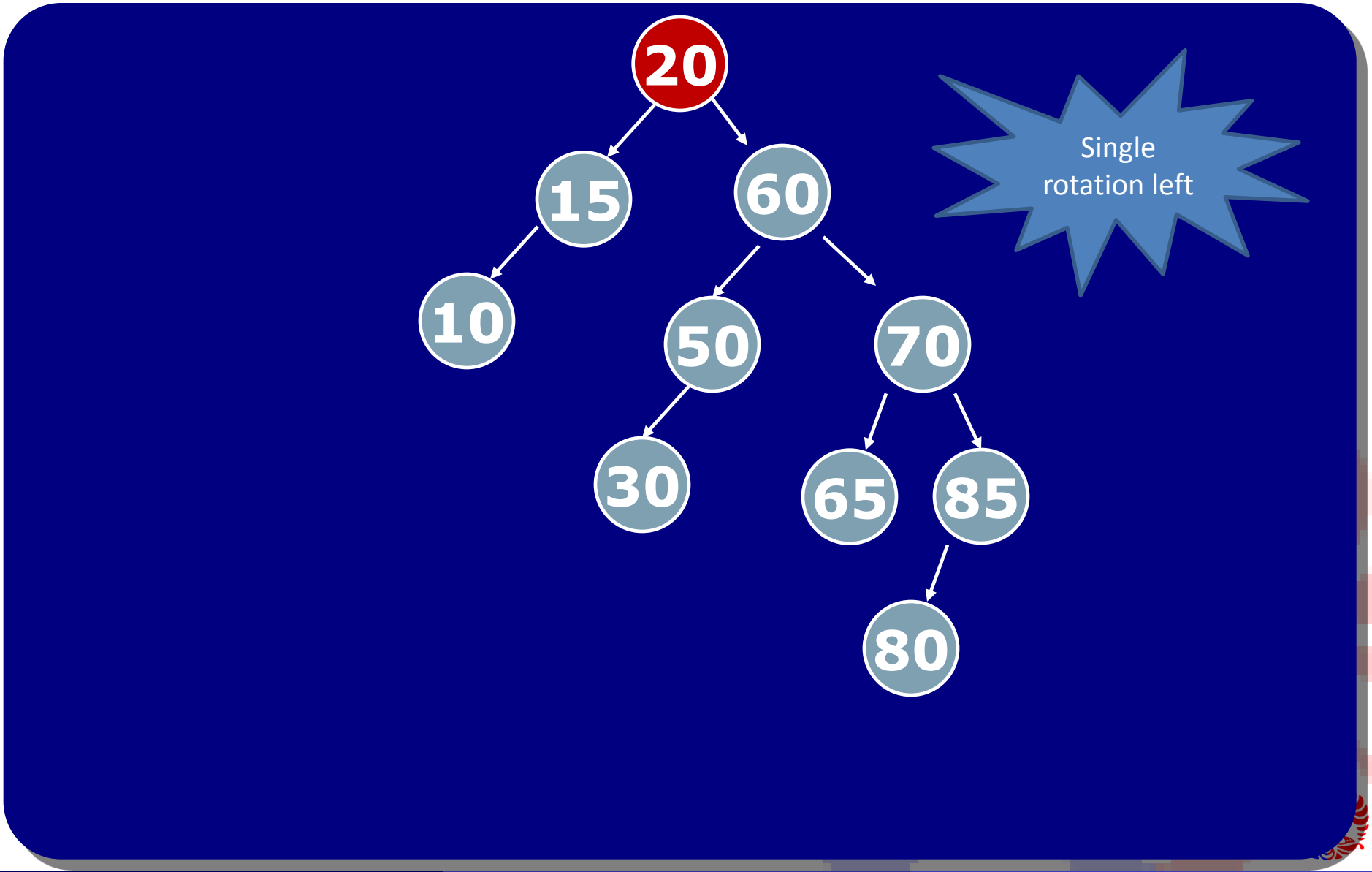
Insert 65, 80, 90, 40, 5, 55



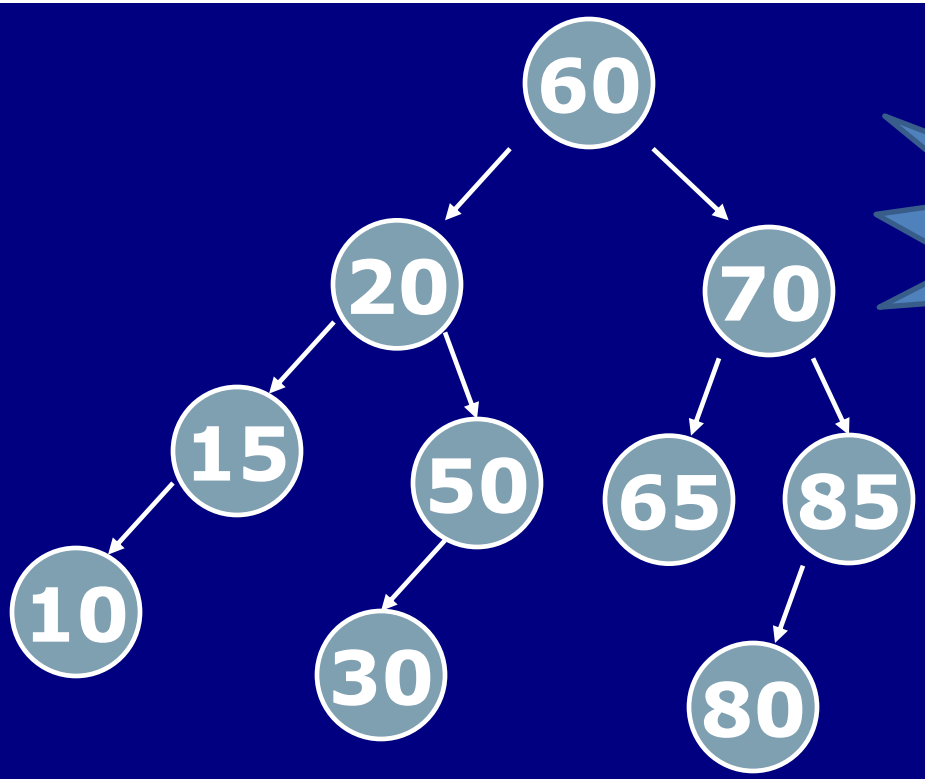
Insert 80, 90, 40, 5, 55



Insert 80, 90, 40, 5, 55

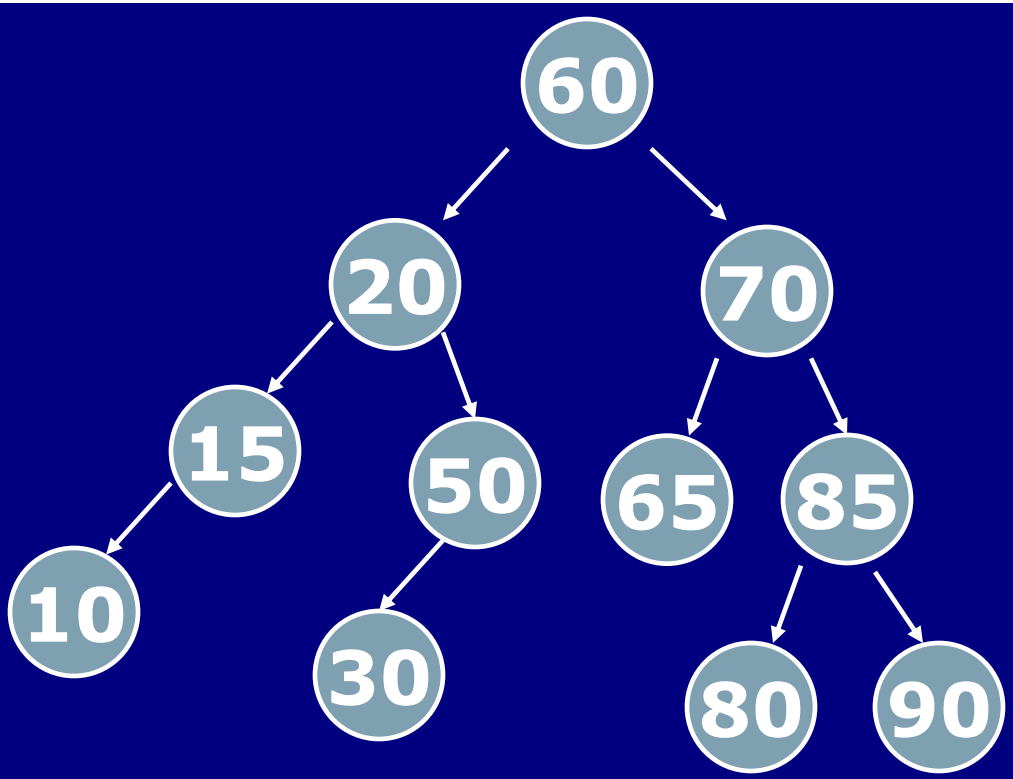


Insert 80, 90, 40, 5, 55

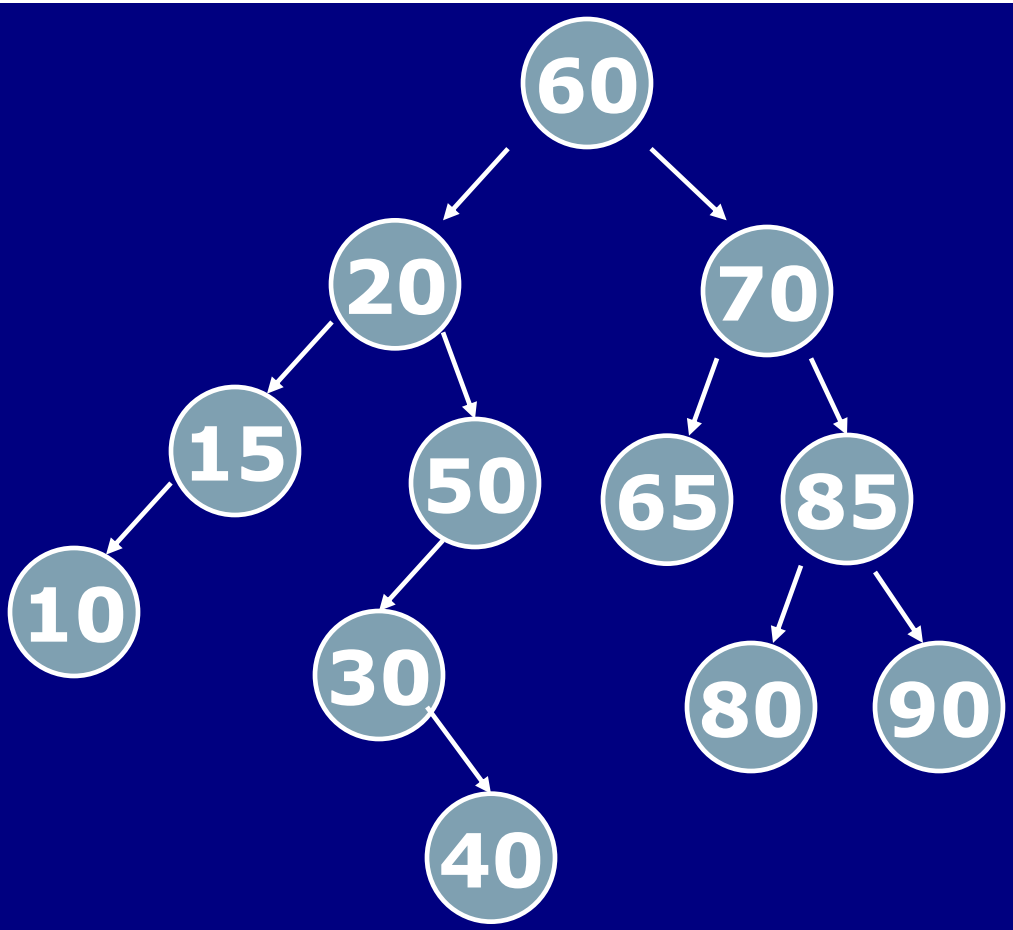


Single rotation left

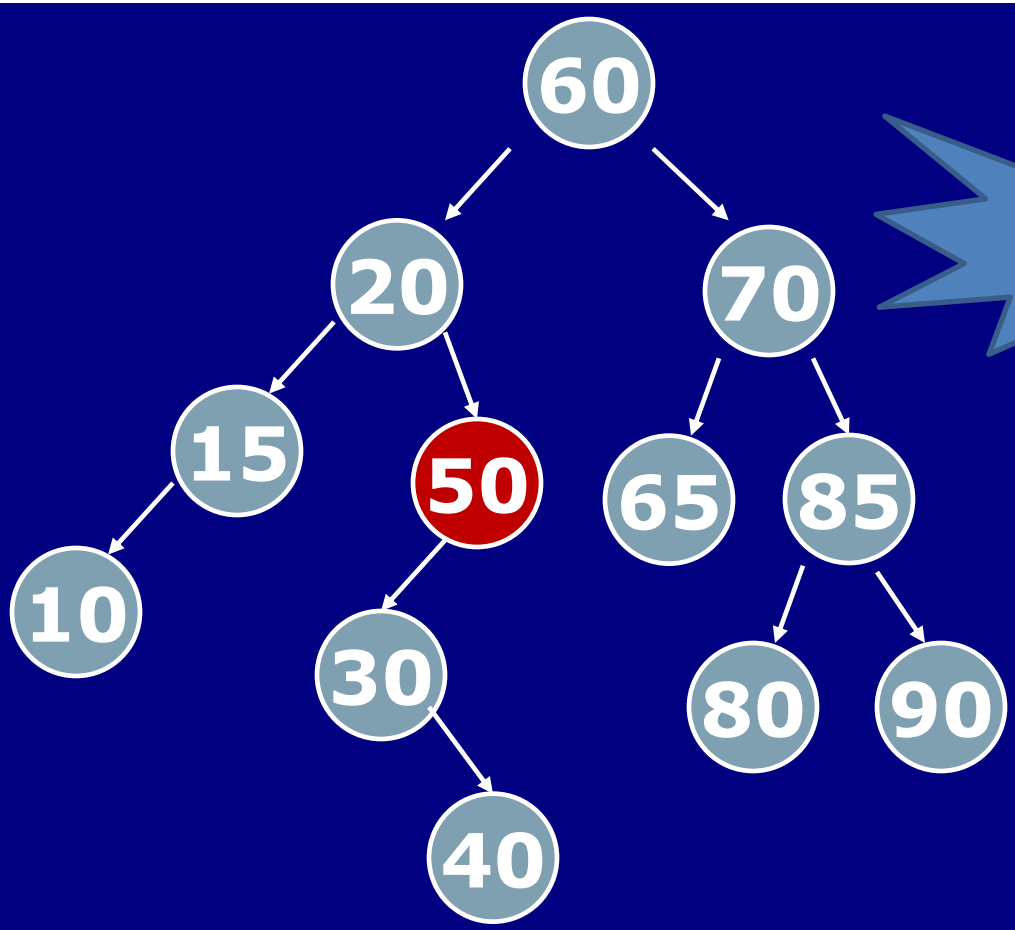
Insert 90, 40, 5, 55



Insert 40, 5, 55

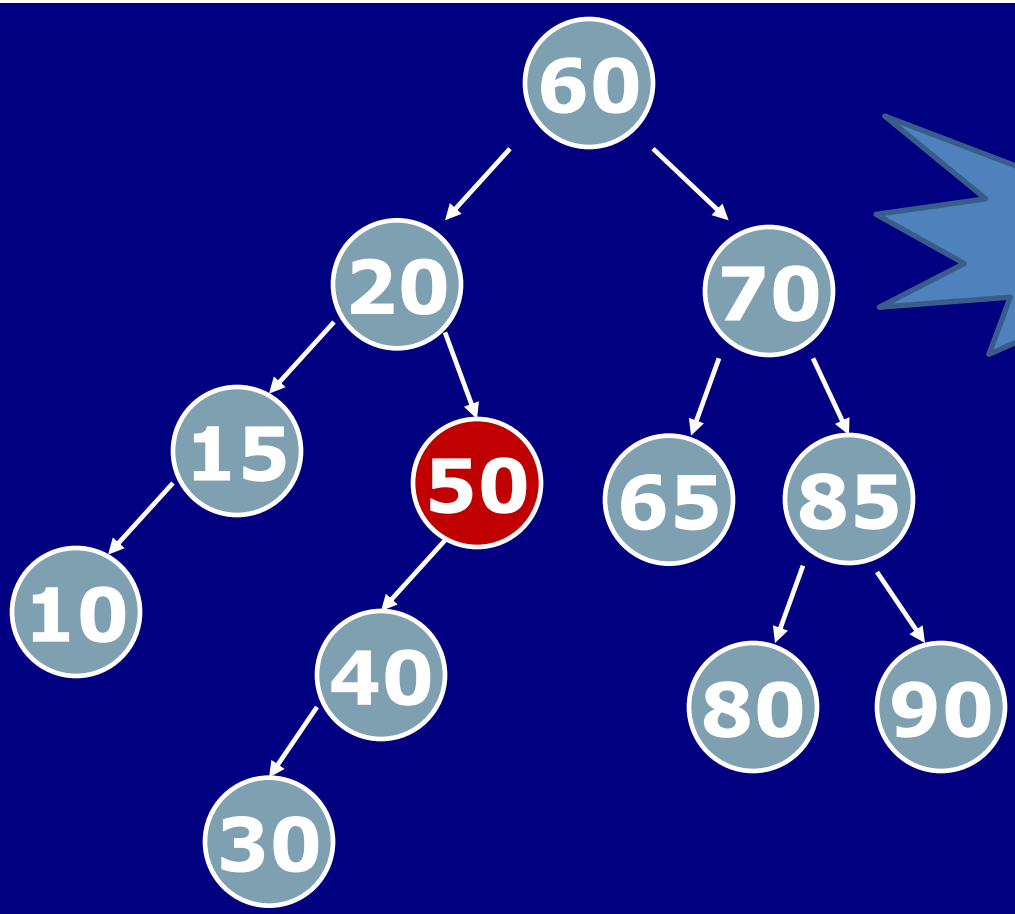


Insert 40, 5, 55



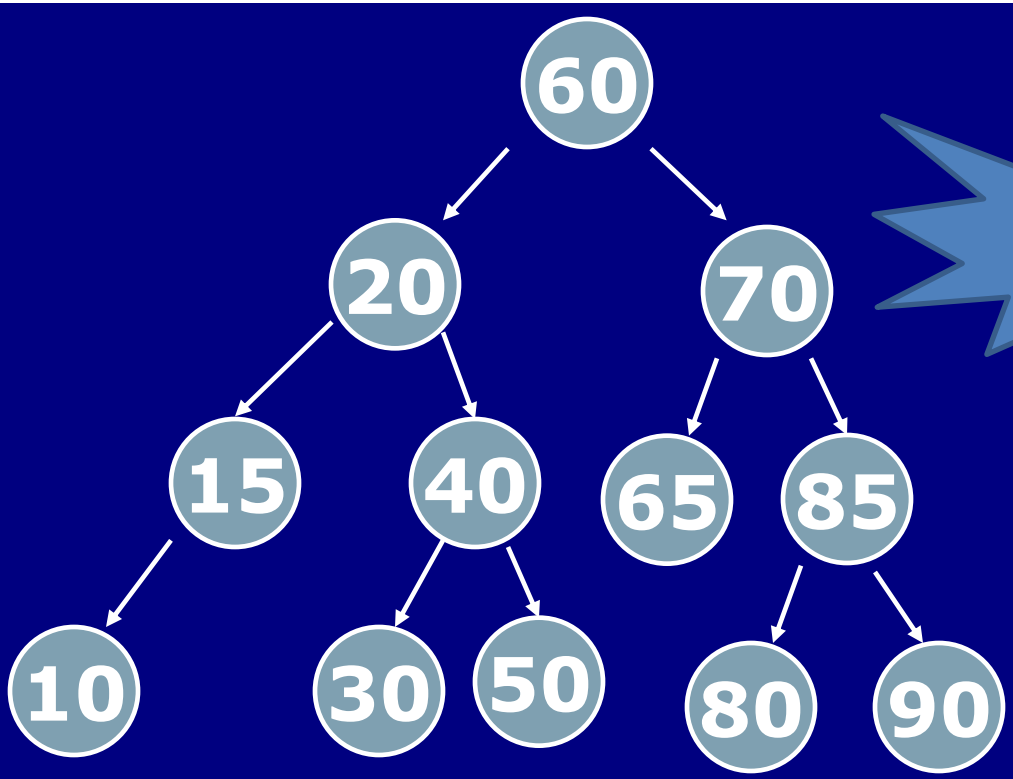
Double rotation left right

Insert 40, 5, 55



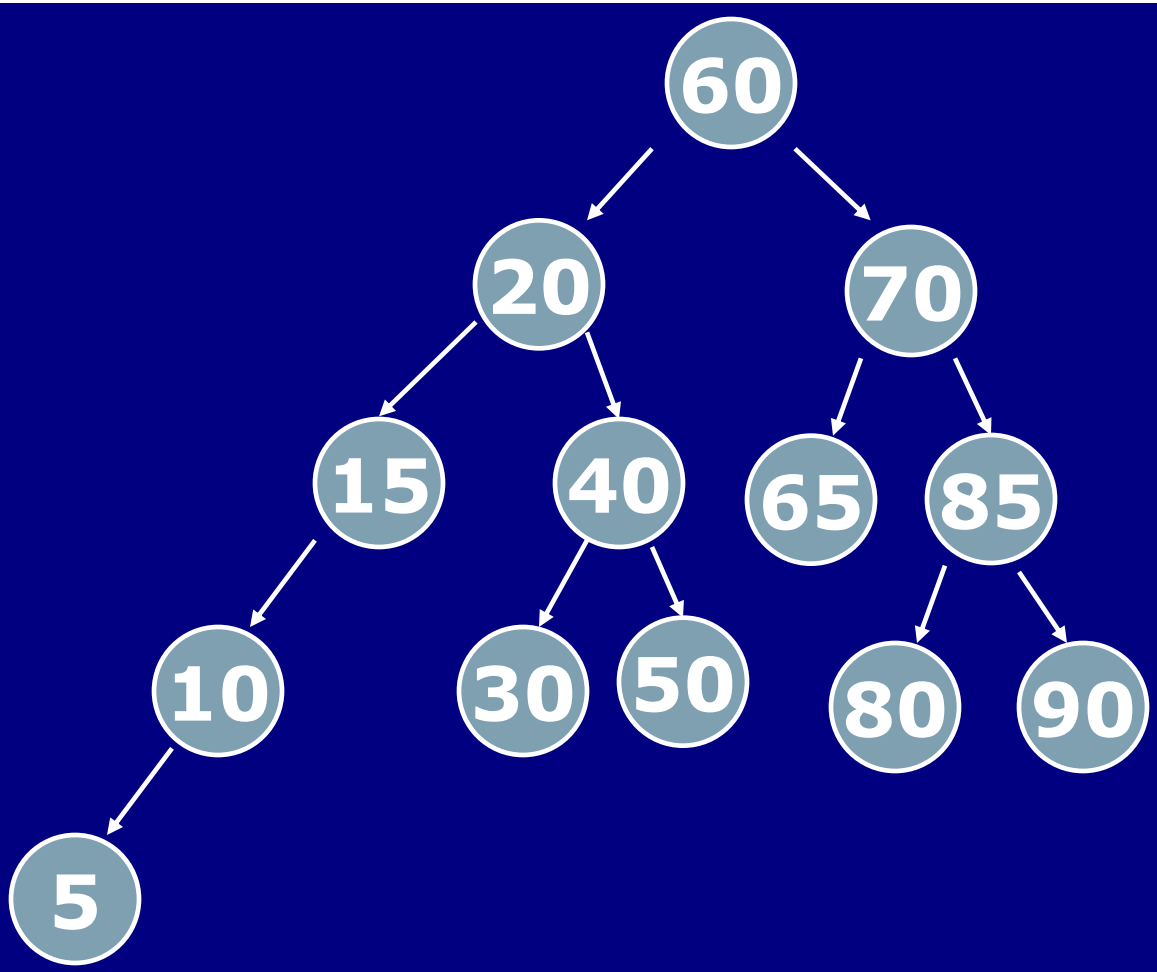
Double rotation left right

Insert 40, 5, 55

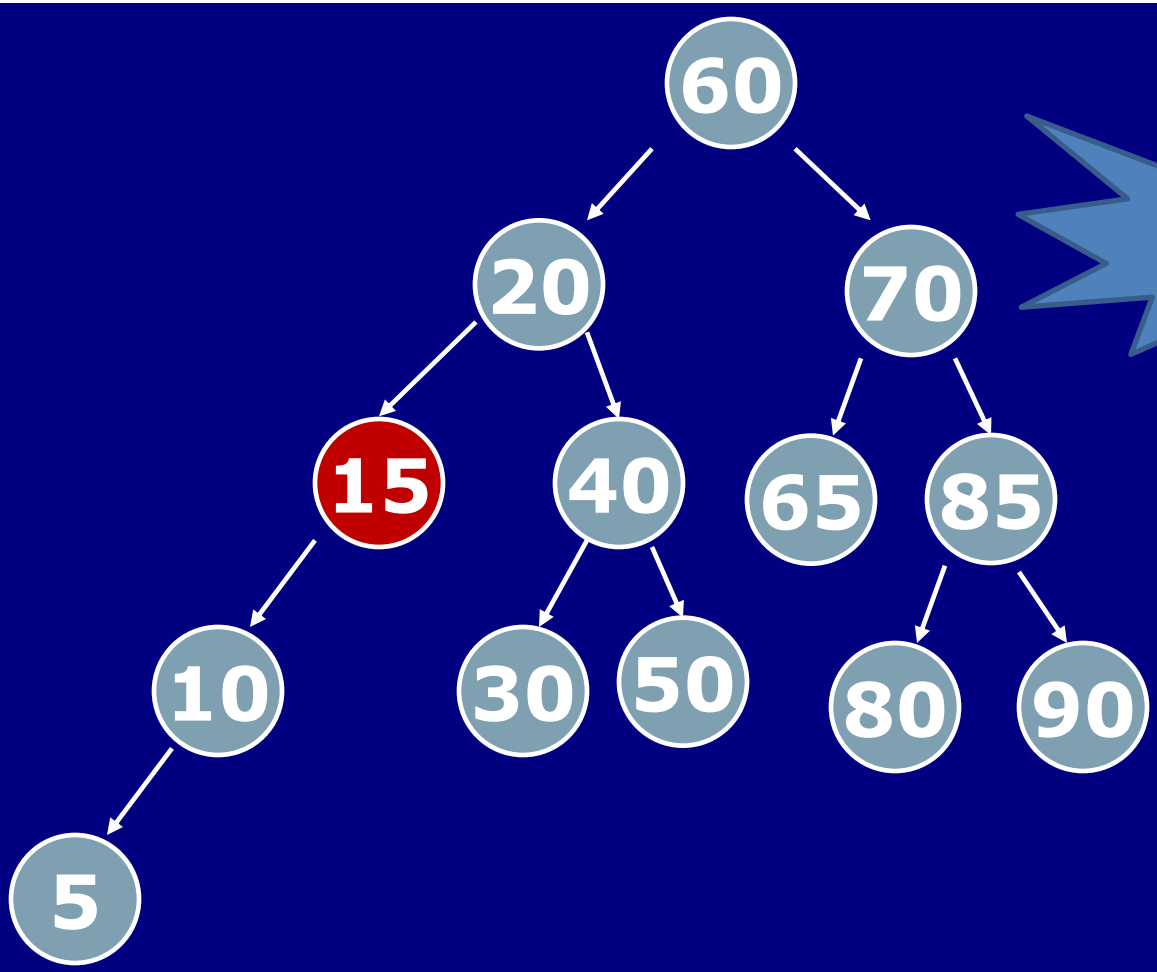


Double rotation left right

Insert 5, 55

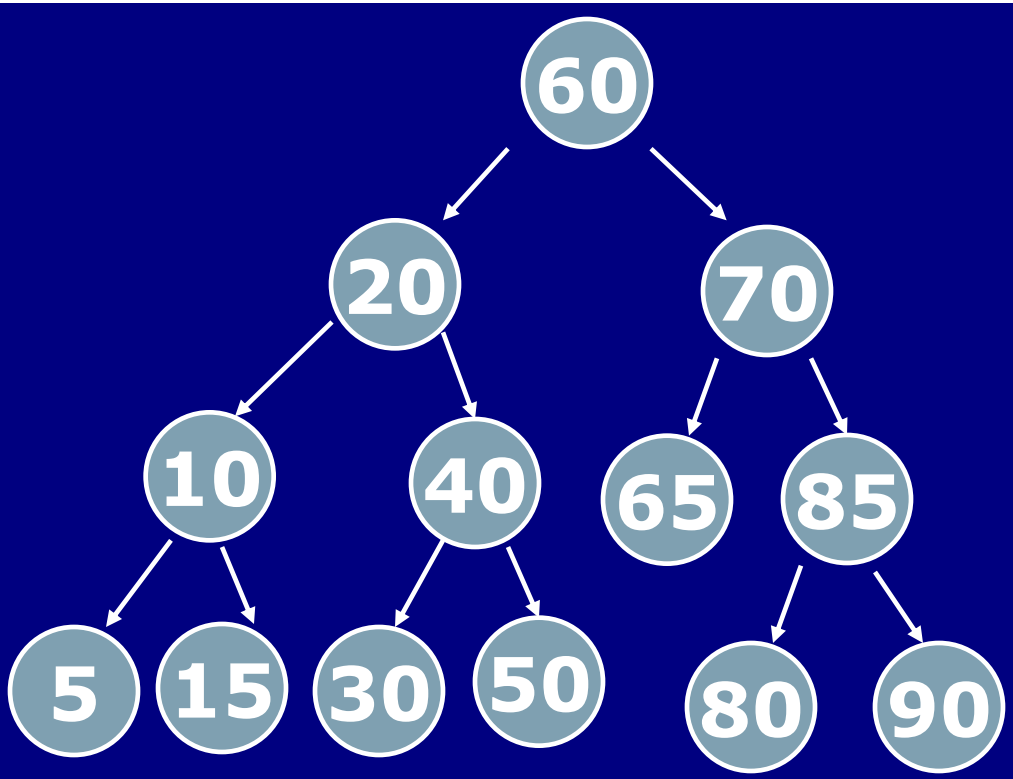


Insert 5, 55

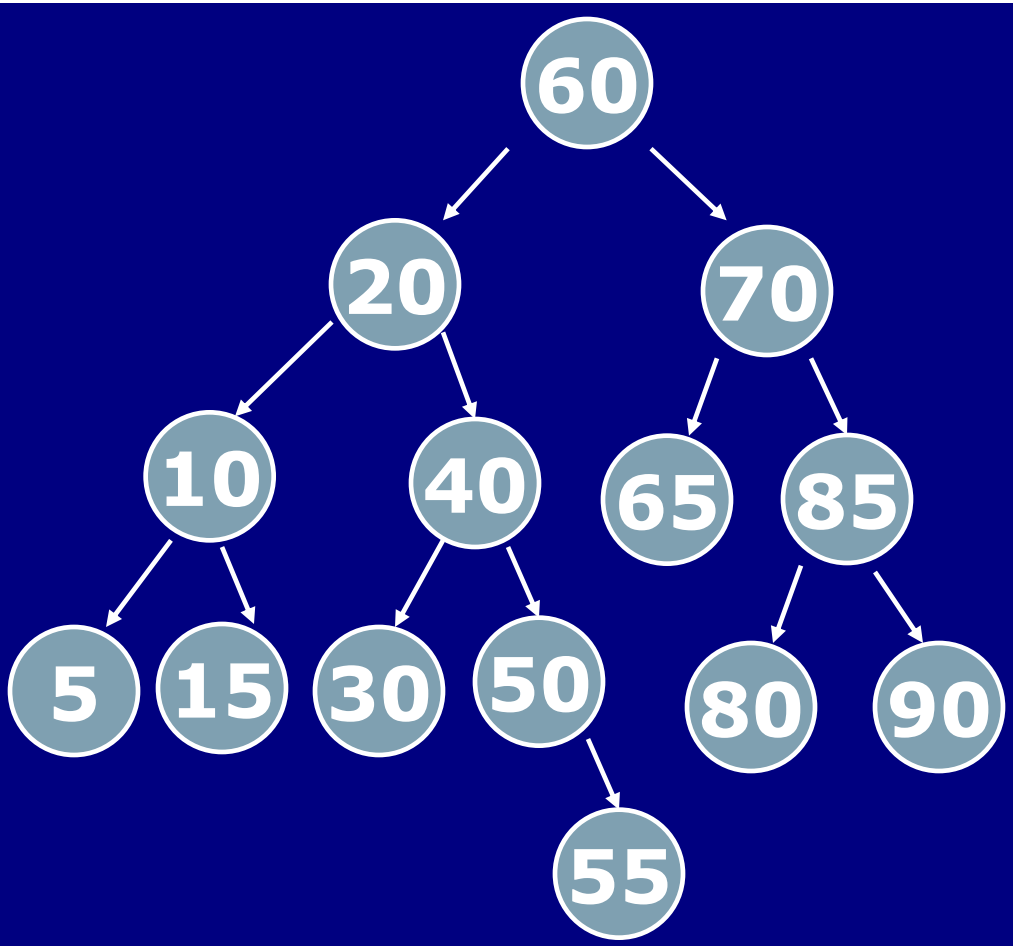


Single
rotation right

Insert 5, 55



Insert 55

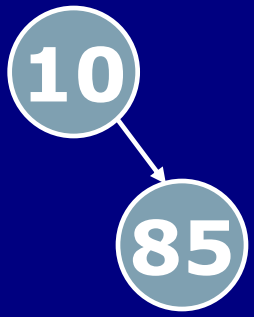


AVL Trees: Latihan

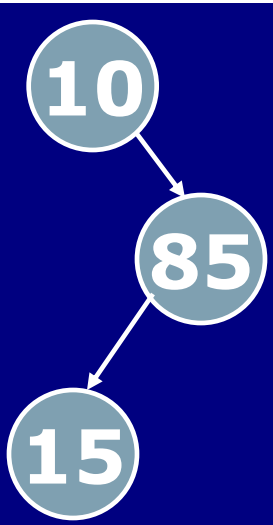
- Coba simulasikan urutan proses pada sebuah AVL Tree berikut ini
  - insert 10, 85, 15, 70, 20, 60, 30,
  - delete 15, 10,
  - insert 50, 65, 80,
  - delete 20, 60,
  - insert 90, 40, 5, 55
  - delete 70
- Gambarkan kondisi akhir dari AVL Tree tersebut.

Insert 10, 85, 15, 70, 20, 60, 30

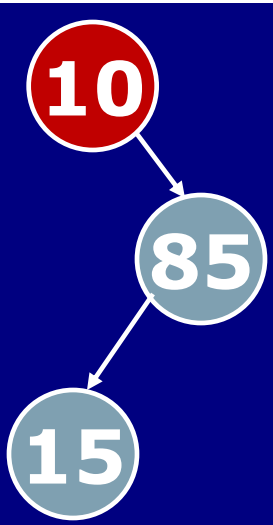
Insert 85, 15, 70, 20, 60, 30



Insert 15, 70, 20, 60, 30

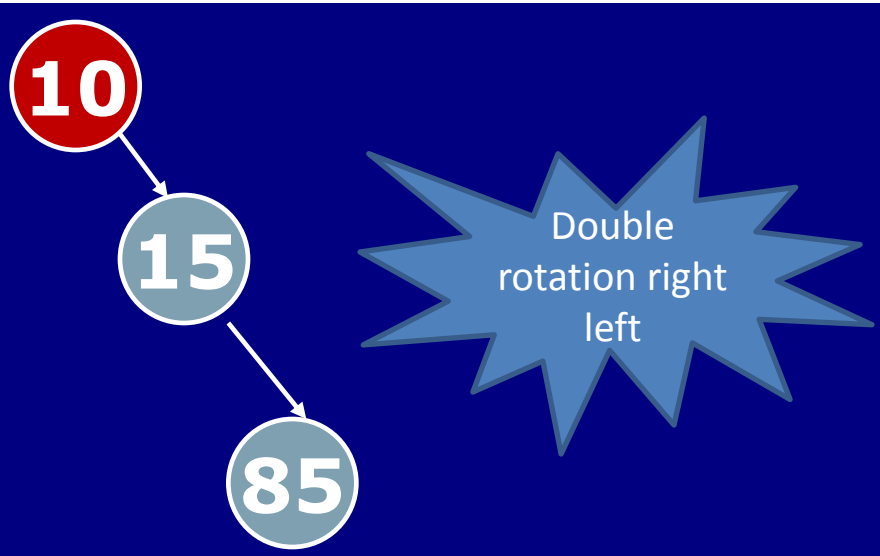


Insert 15, 70, 20, 60, 30

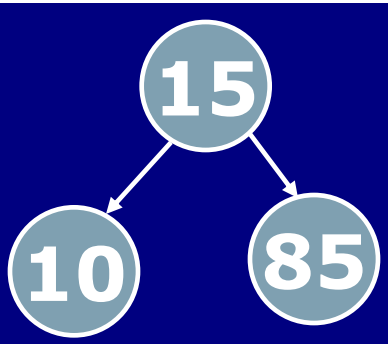


Double rotation right left

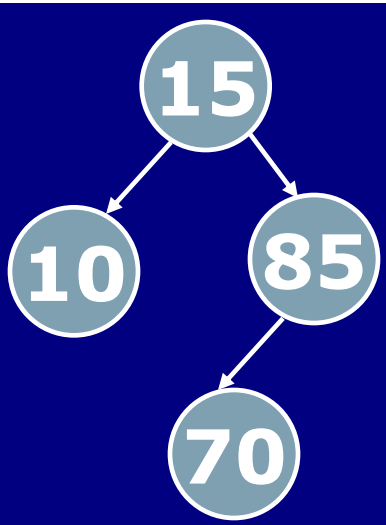
Insert 15, 70, 20, 60, 30



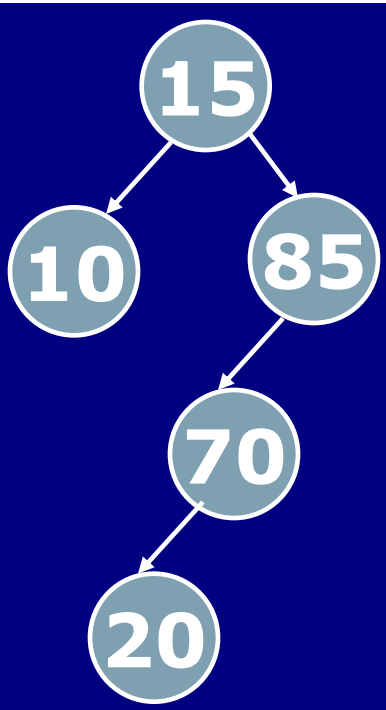
Insert 15, 70, 20, 60, 30



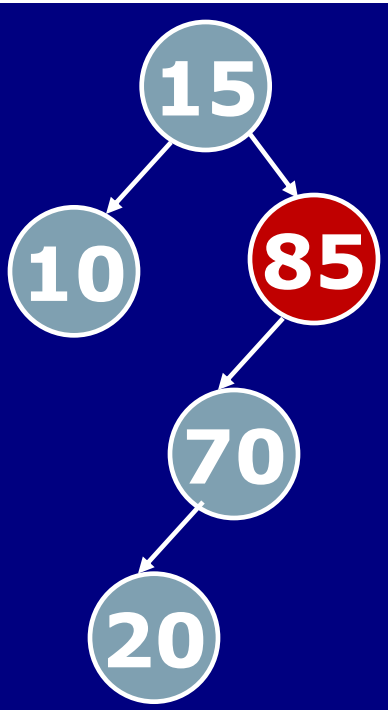
Insert 70, 20, 60, 30



Insert 20, 60, 30

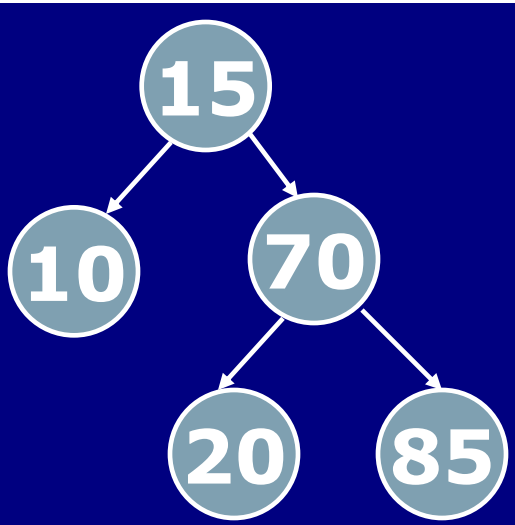


Insert 20, 60, 30

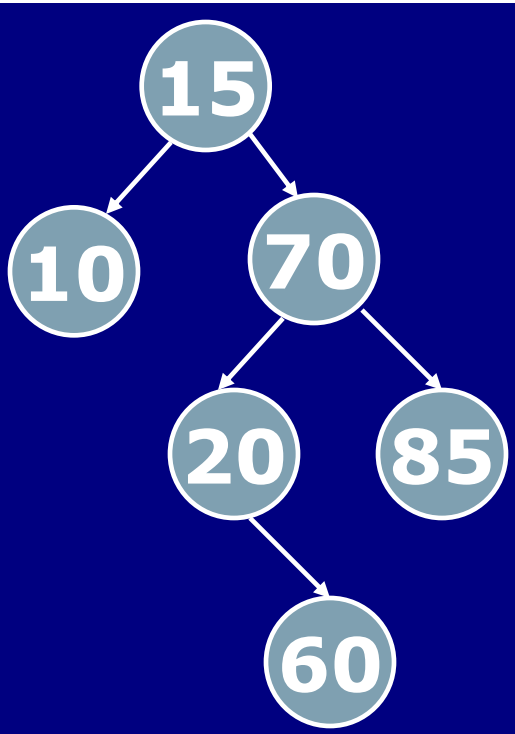


Single
rotation right

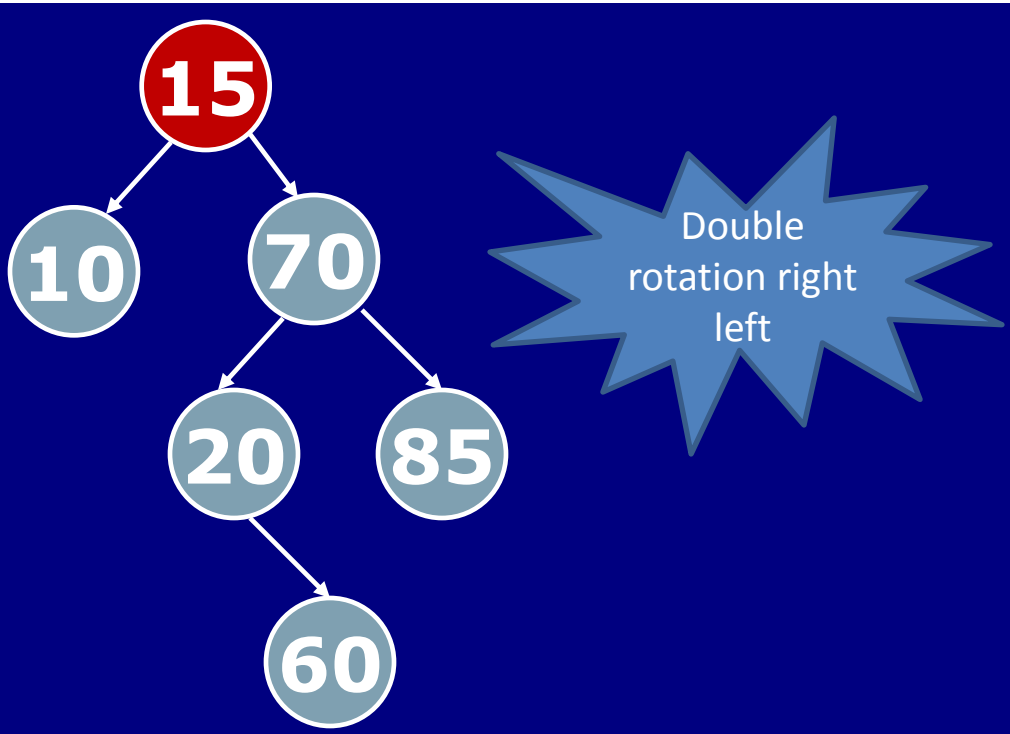
Insert 20, 60, 30



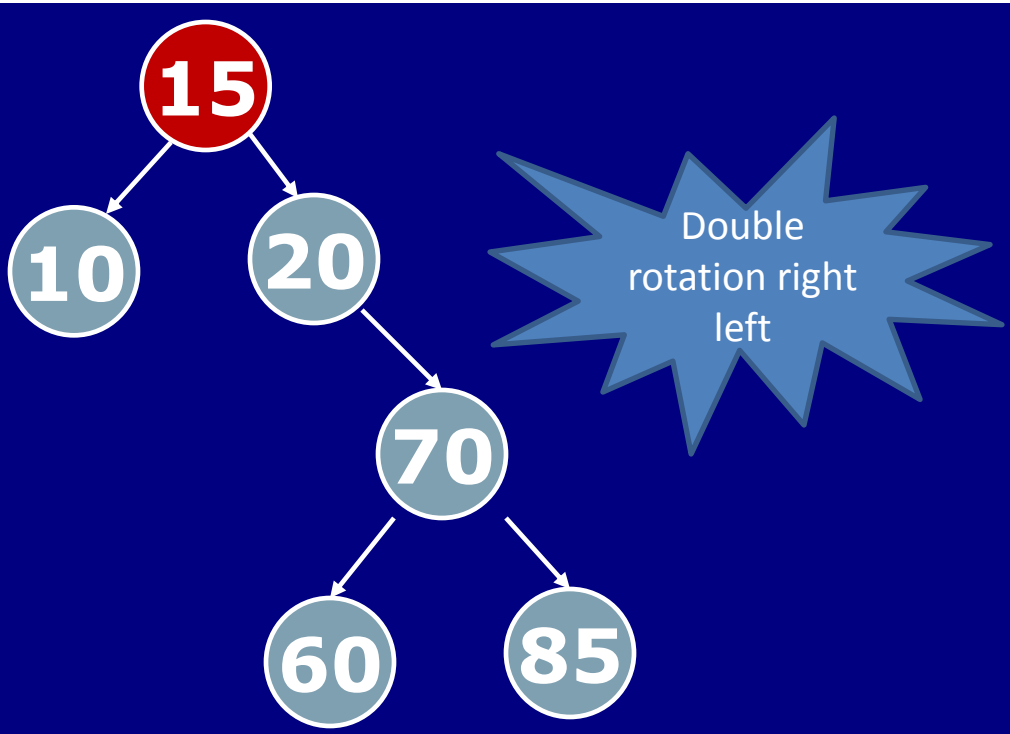
Insert 60, 30



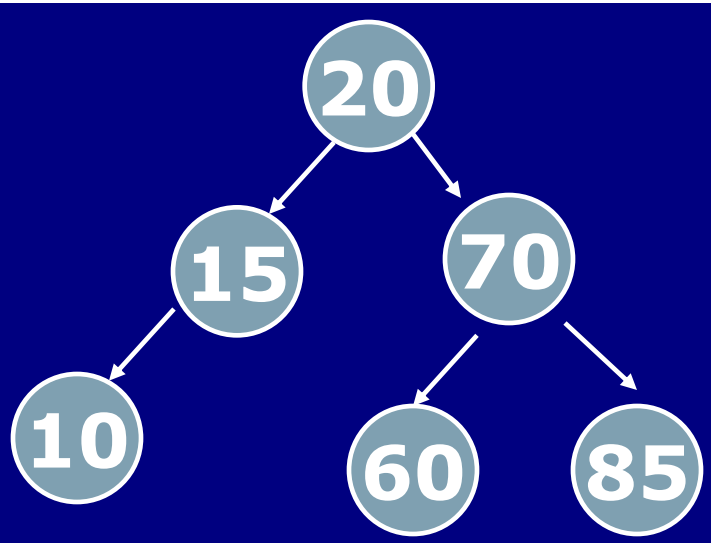
Insert 60, 30



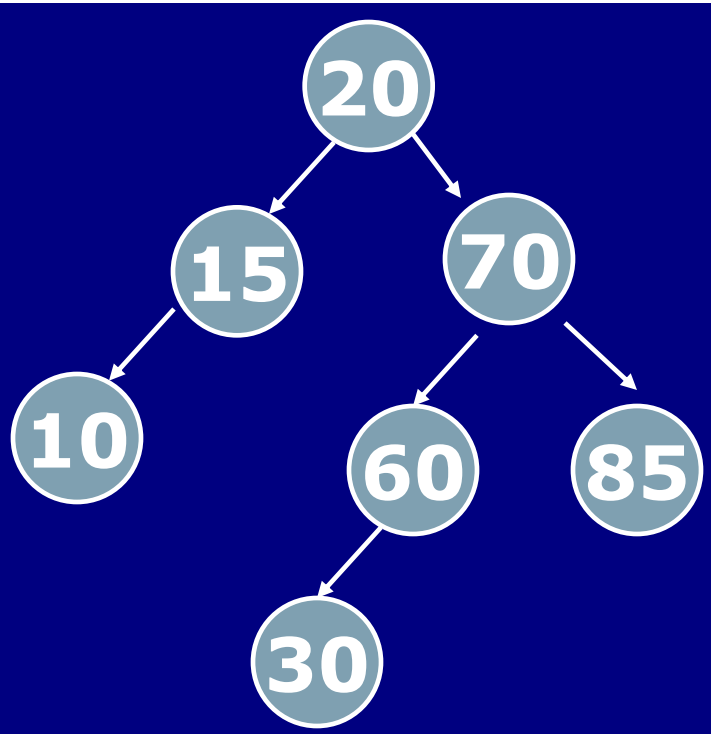
Insert 60, 30



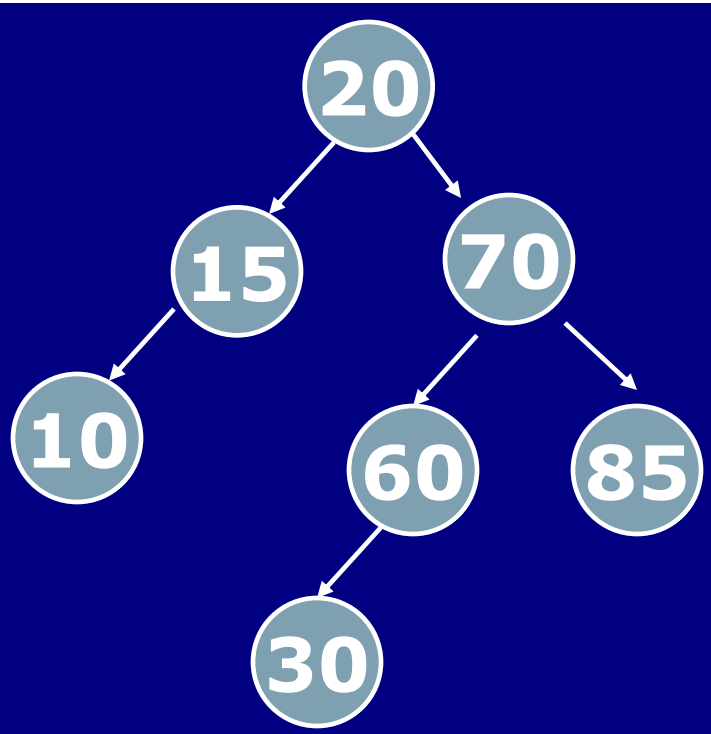
Insert 60, 30



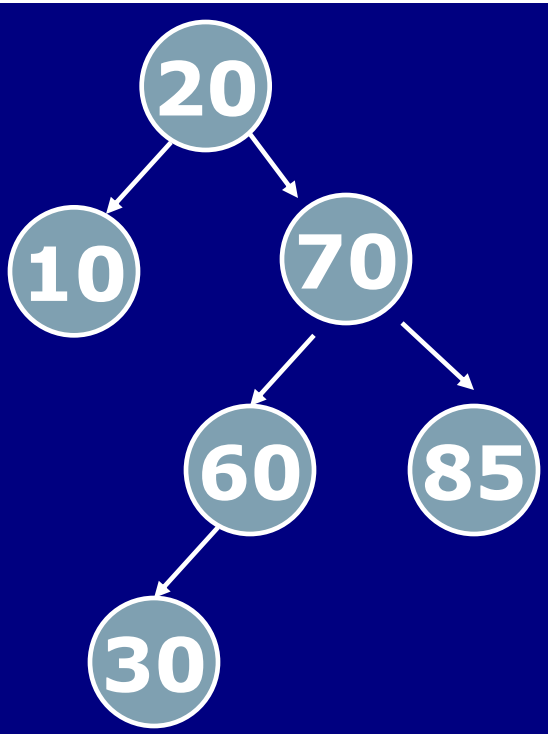
Insert 30



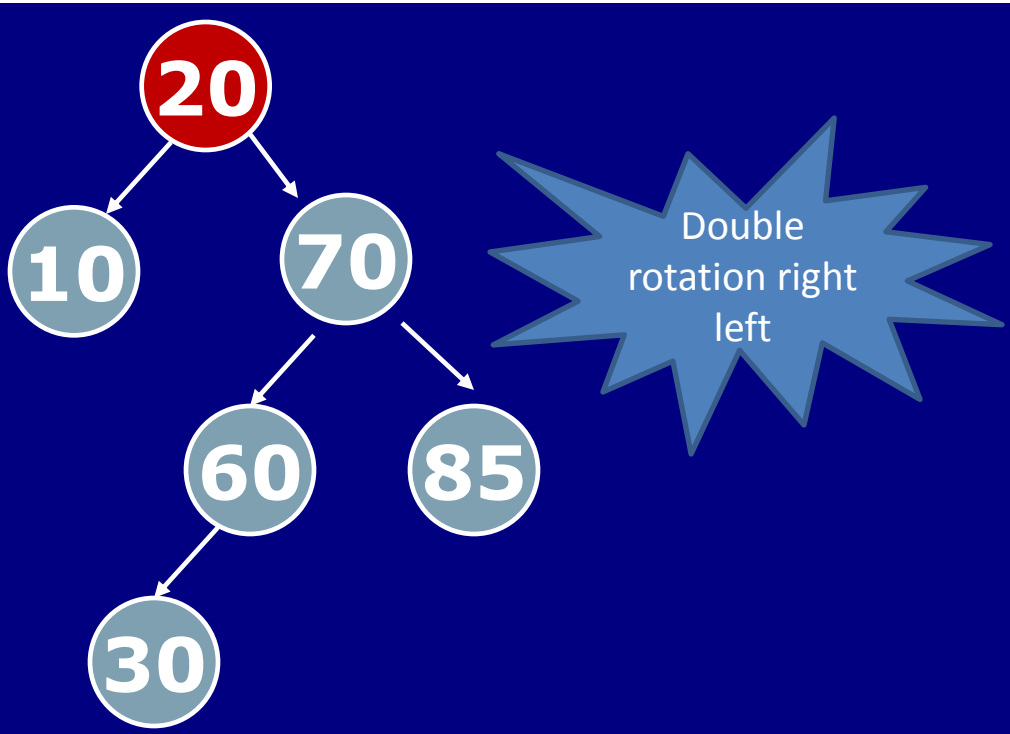
Delete 15, 10



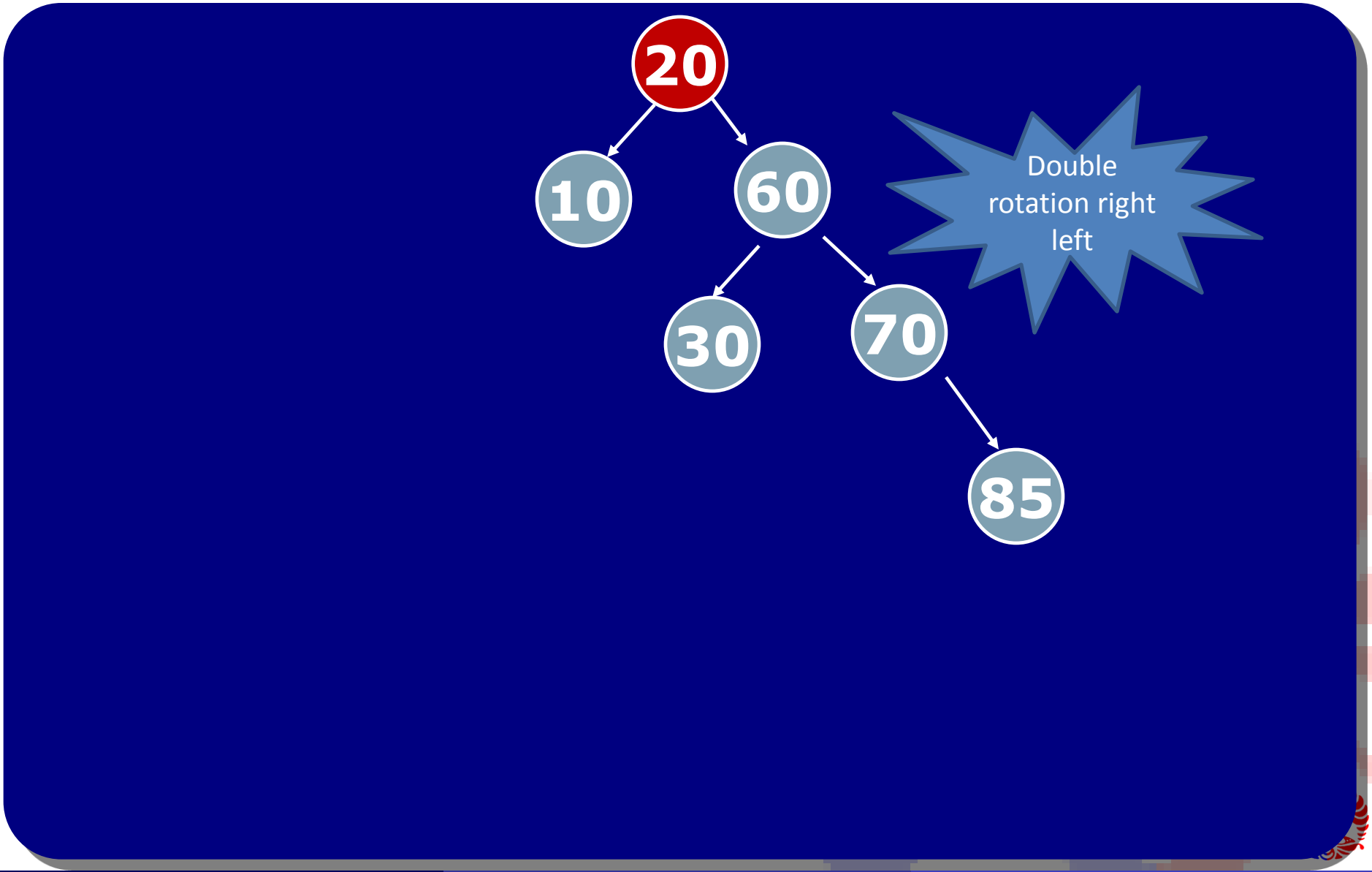
Delete 15, 10



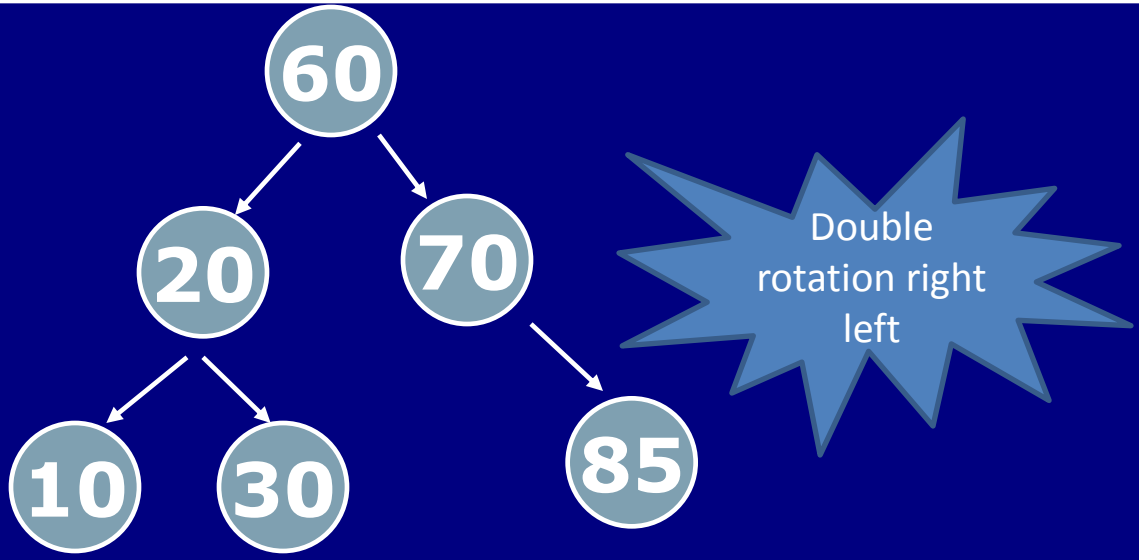
Delete 15, 10



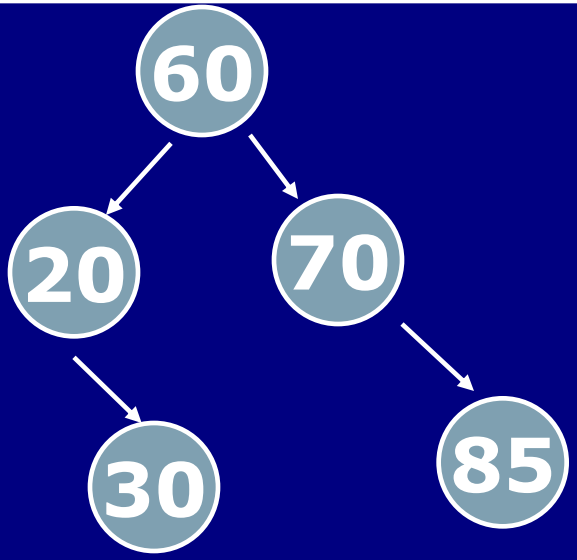
Delete 15, 10



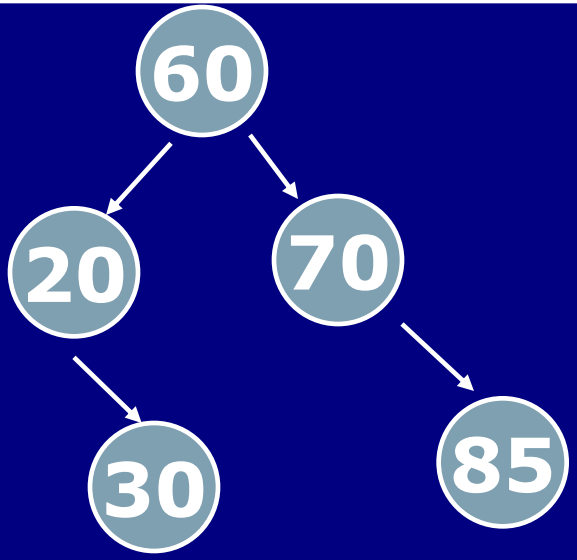
Delete 15, 10



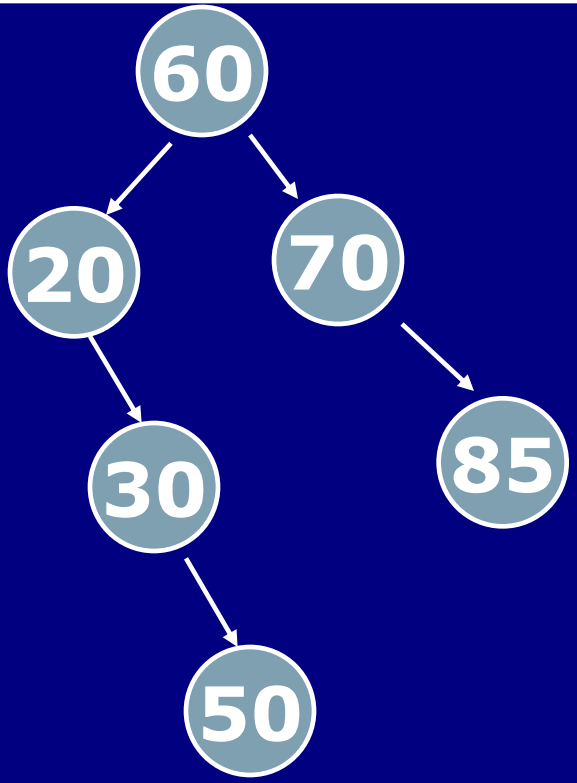
Delete 10



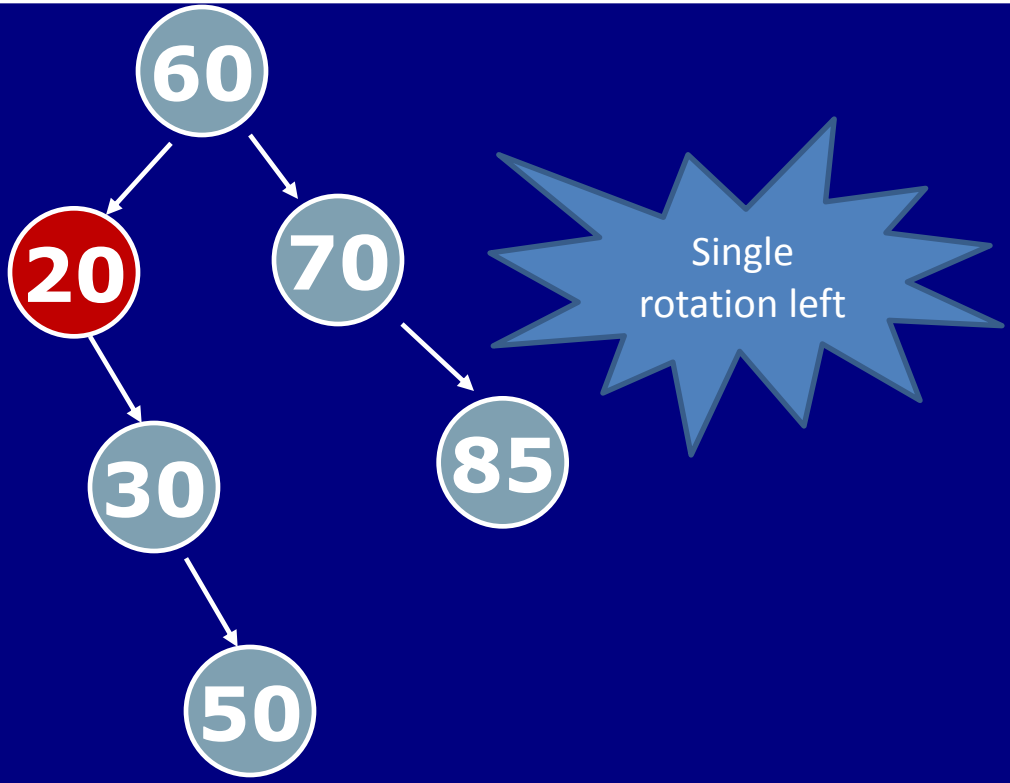
Insert 50, 65, 80



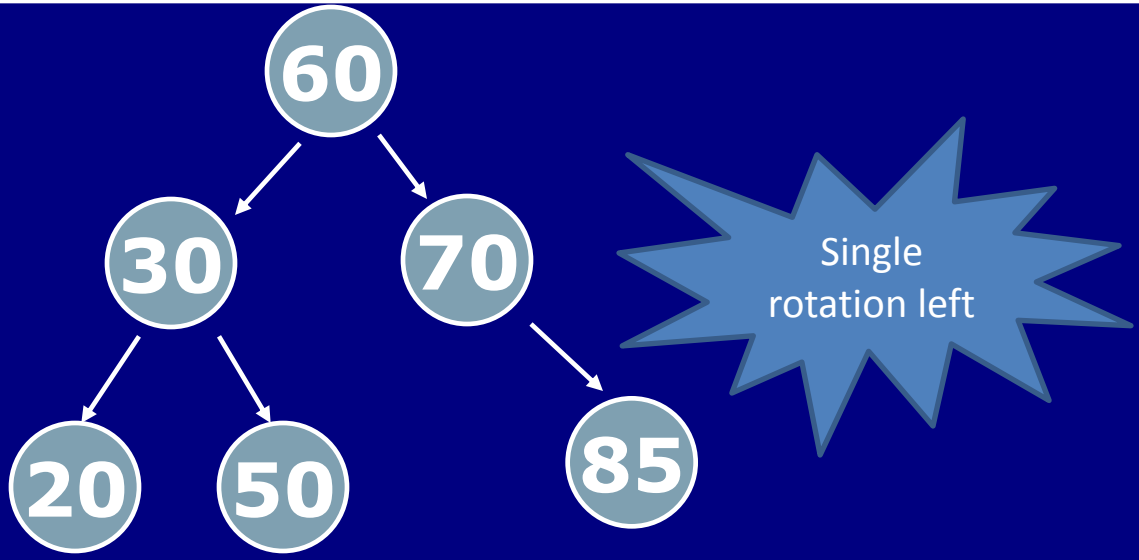
Insert 50, 65, 80



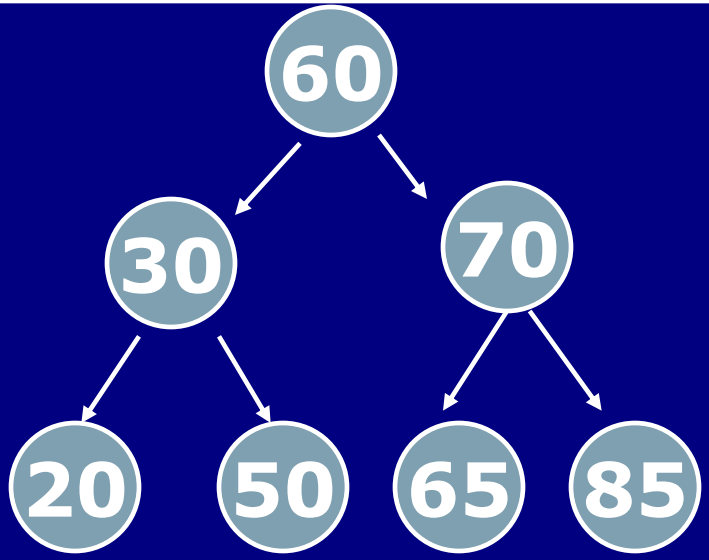
Insert 50, 65, 80



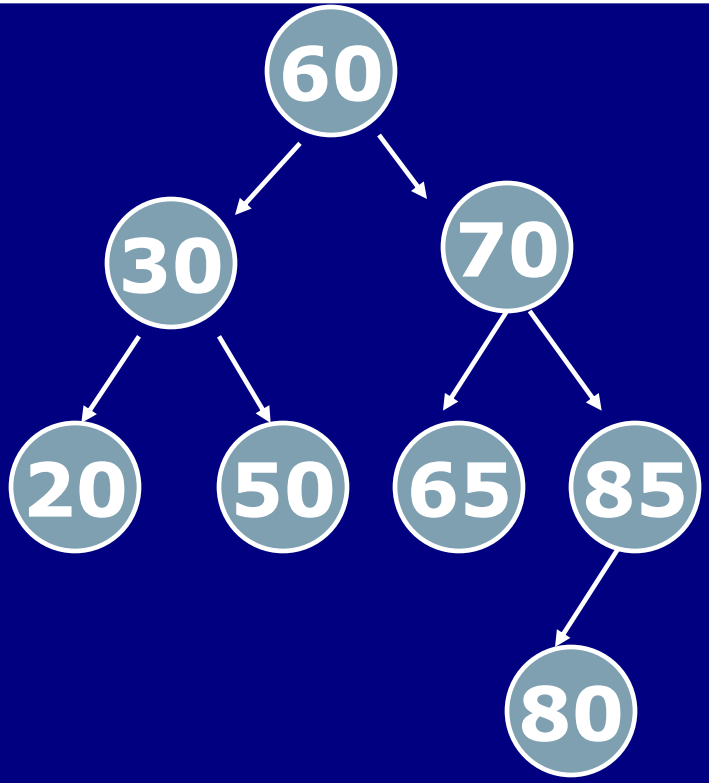
Insert 50, 65, 80



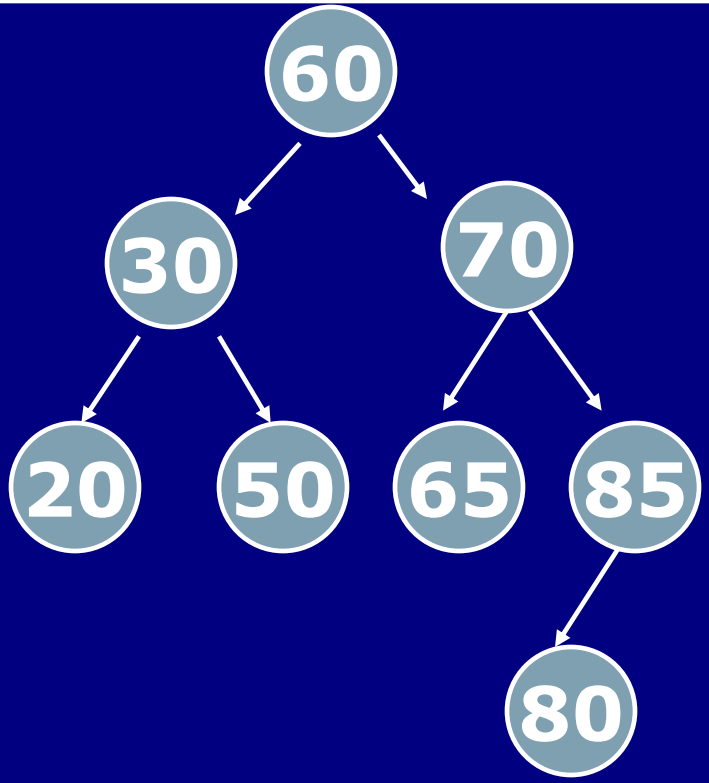
Insert 65, 80



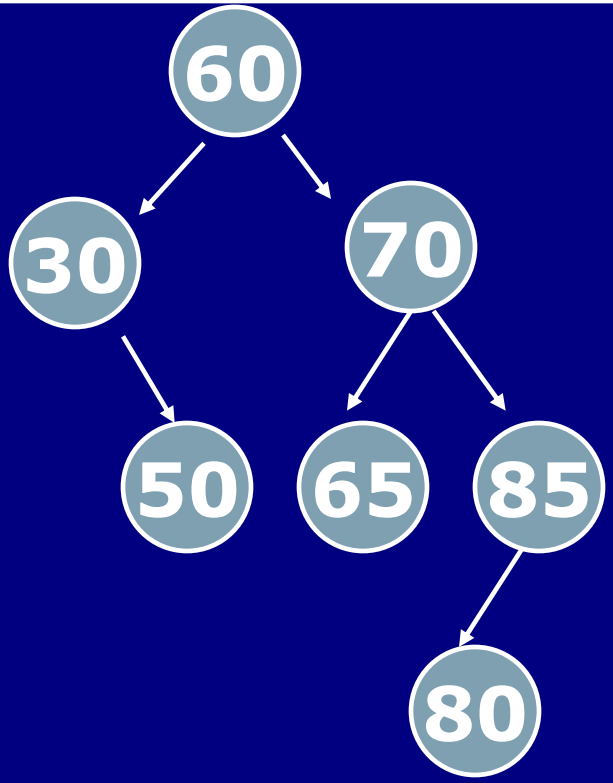
Insert 80



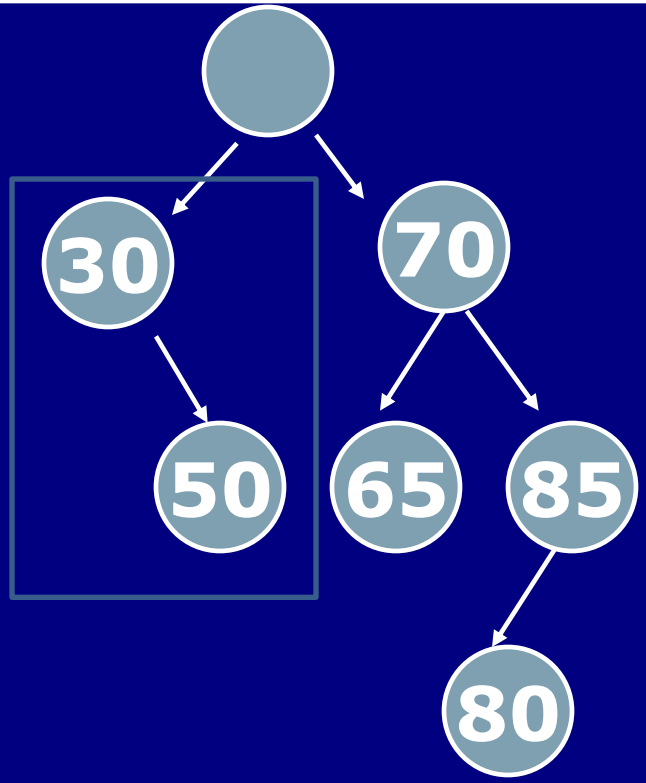
Delete 20, 60



Delete 20, 60

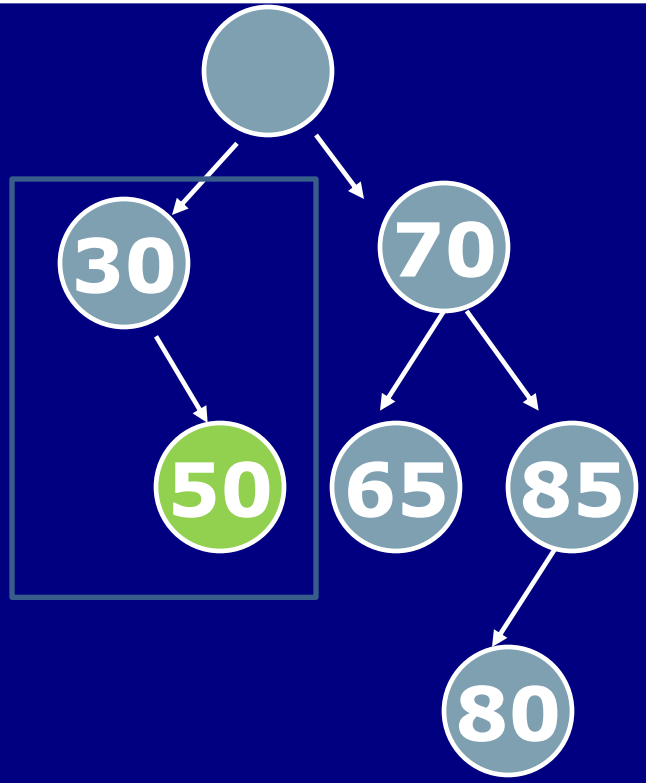


Delete 60



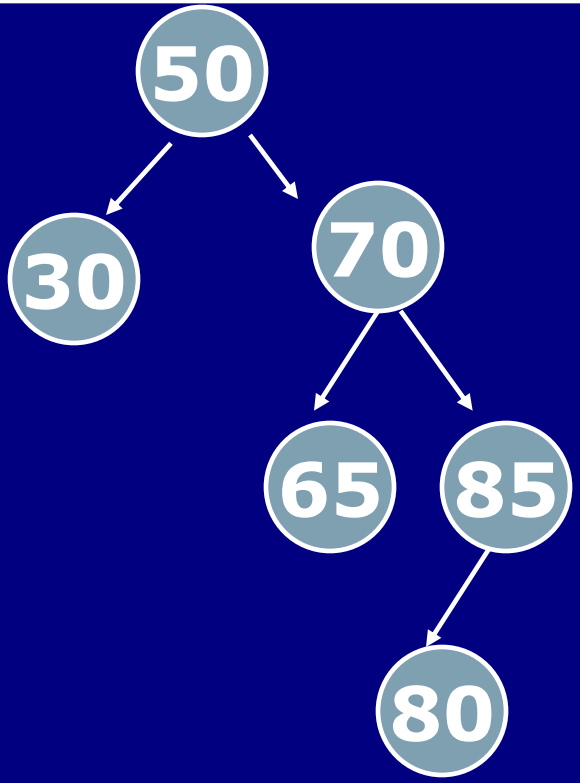
Gantikan dengan predecessor inordernya

Delete 60

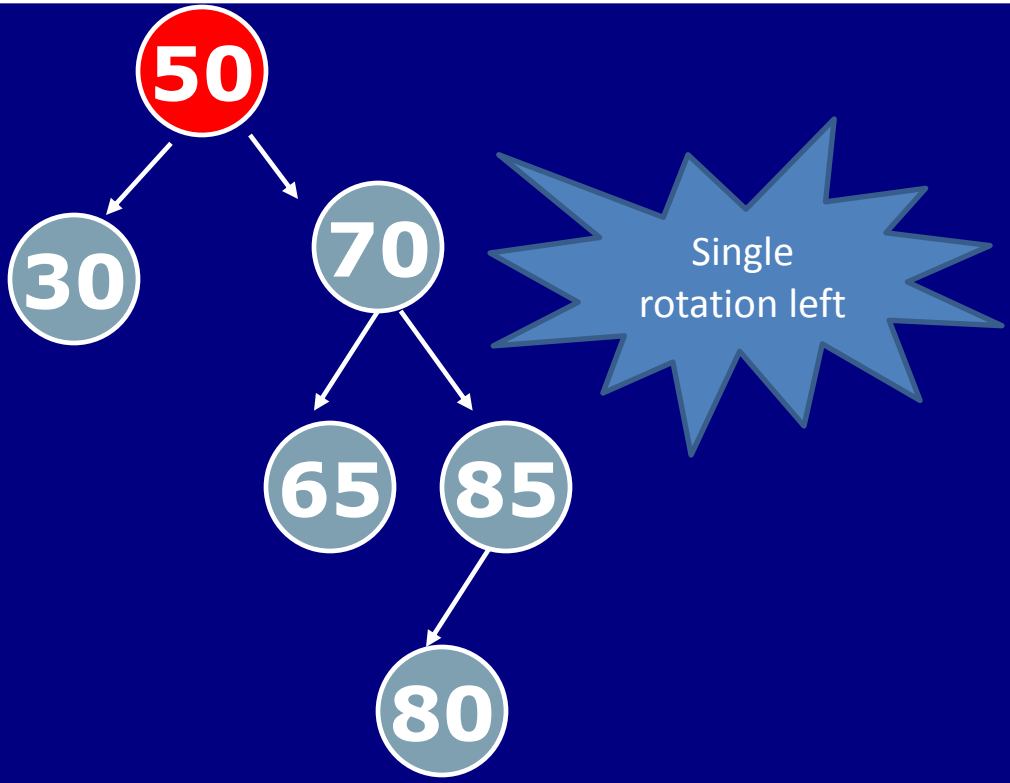


Gantikan dengan predecessor inordernya

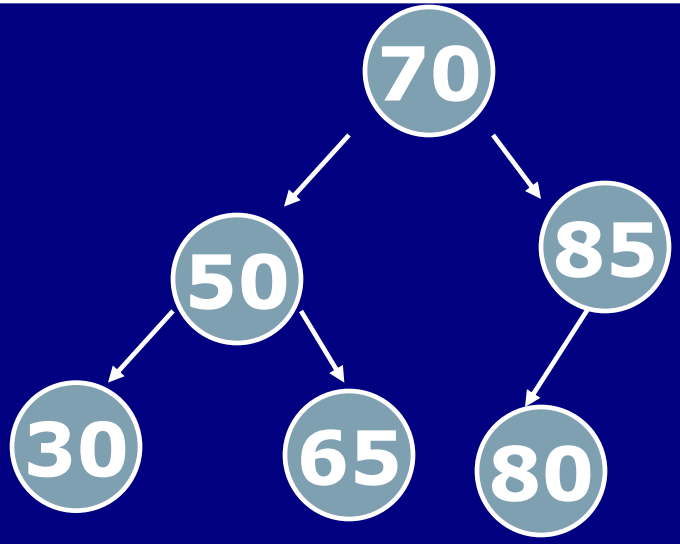
Delete 60



Delete 60

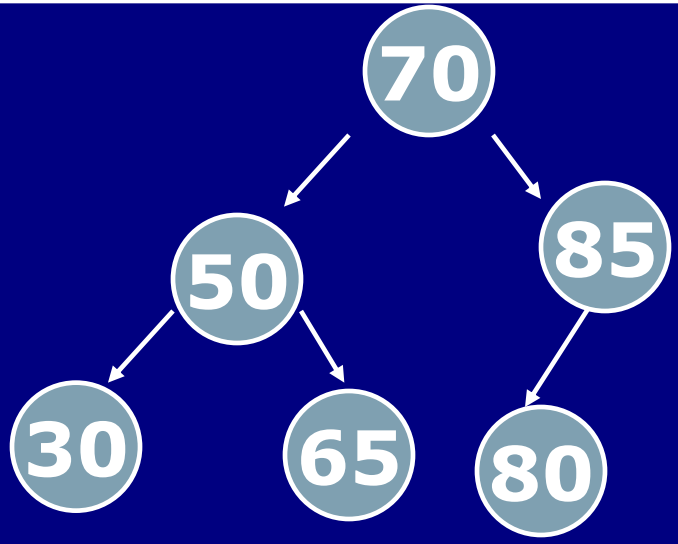


Delete 60

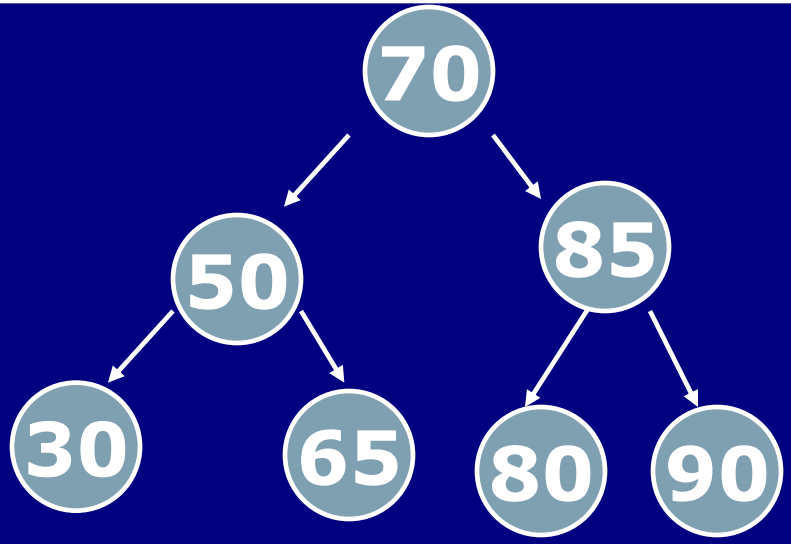


Single
rotation left

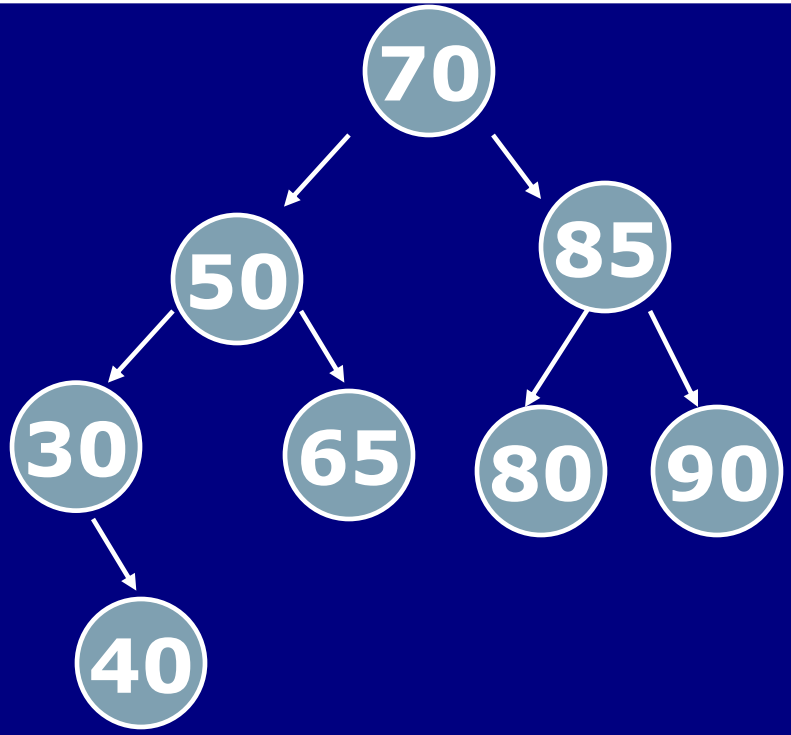
Insert 90, 40, 5, 55



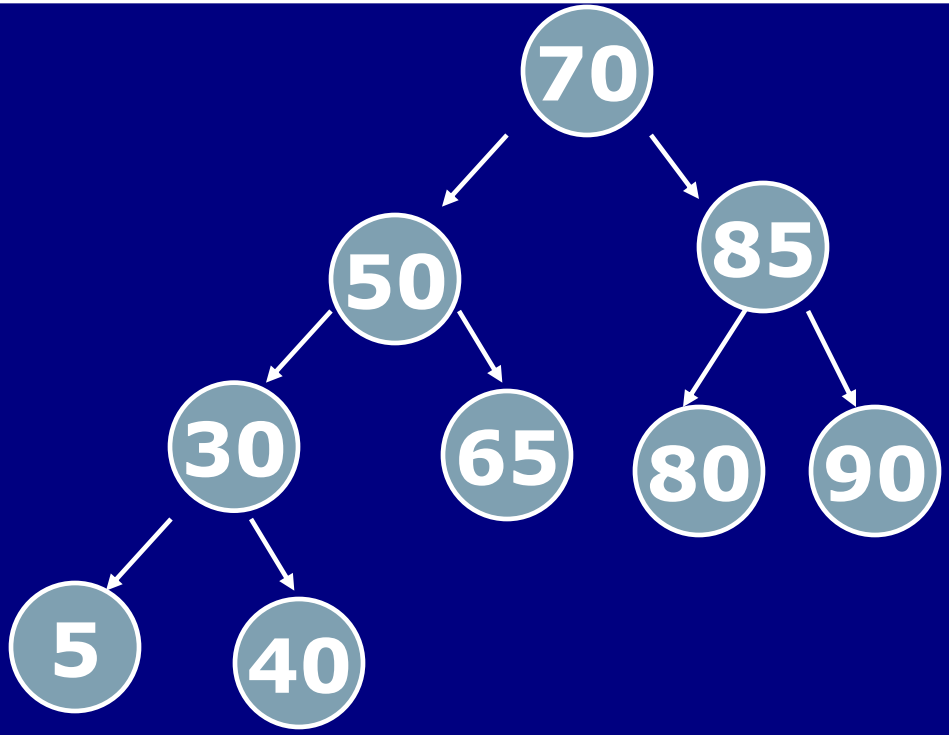
Insert 90, 40, 5, 55



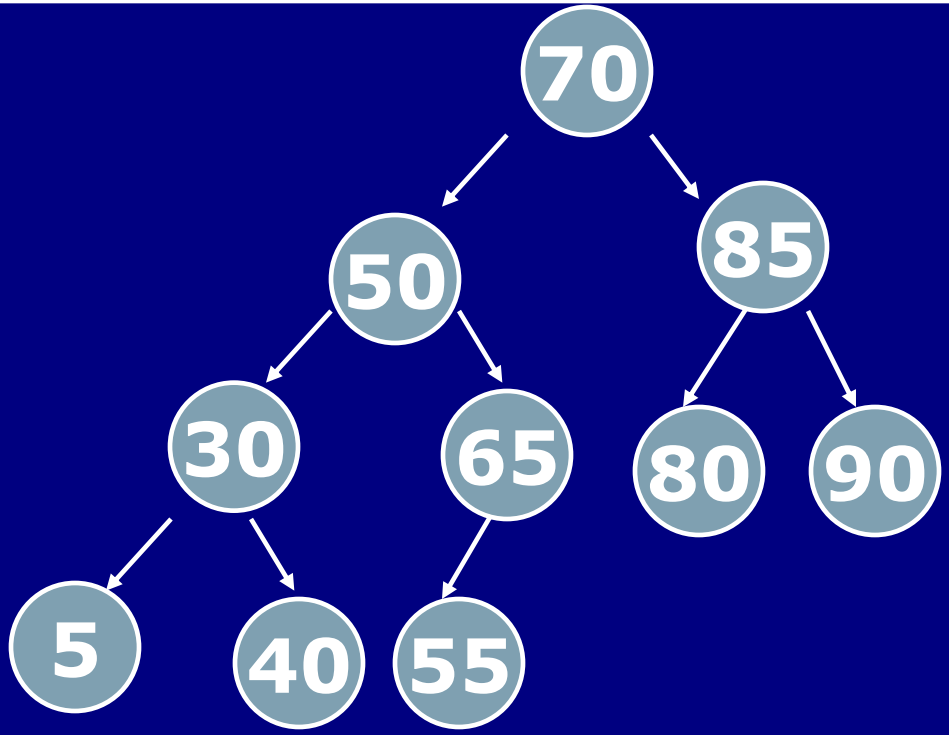
Insert 40, 5, 55



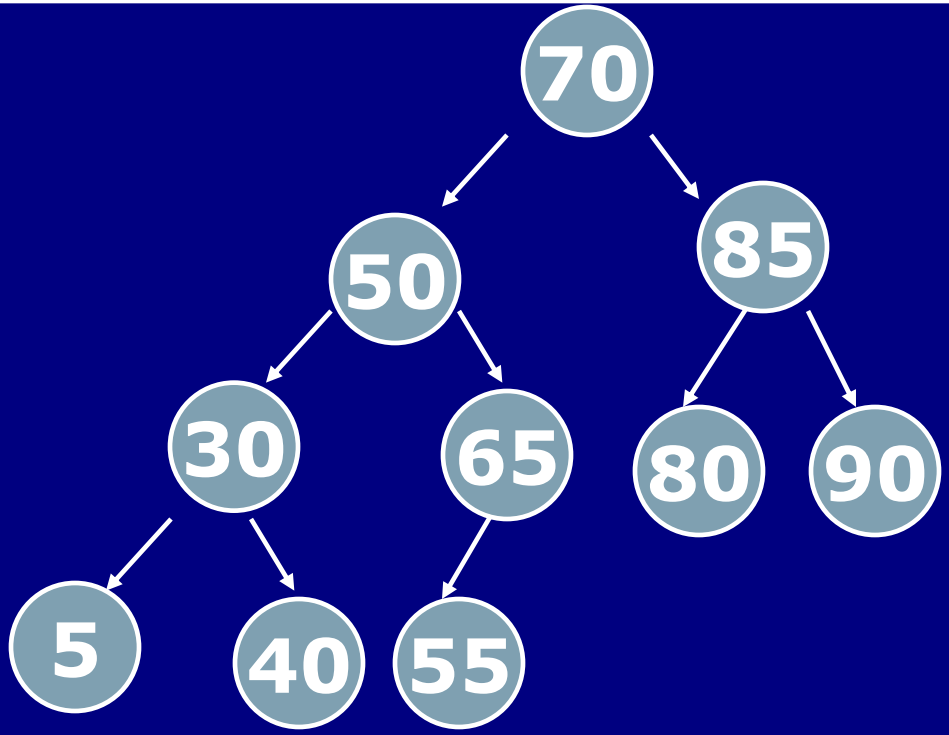
Insert 5, 55



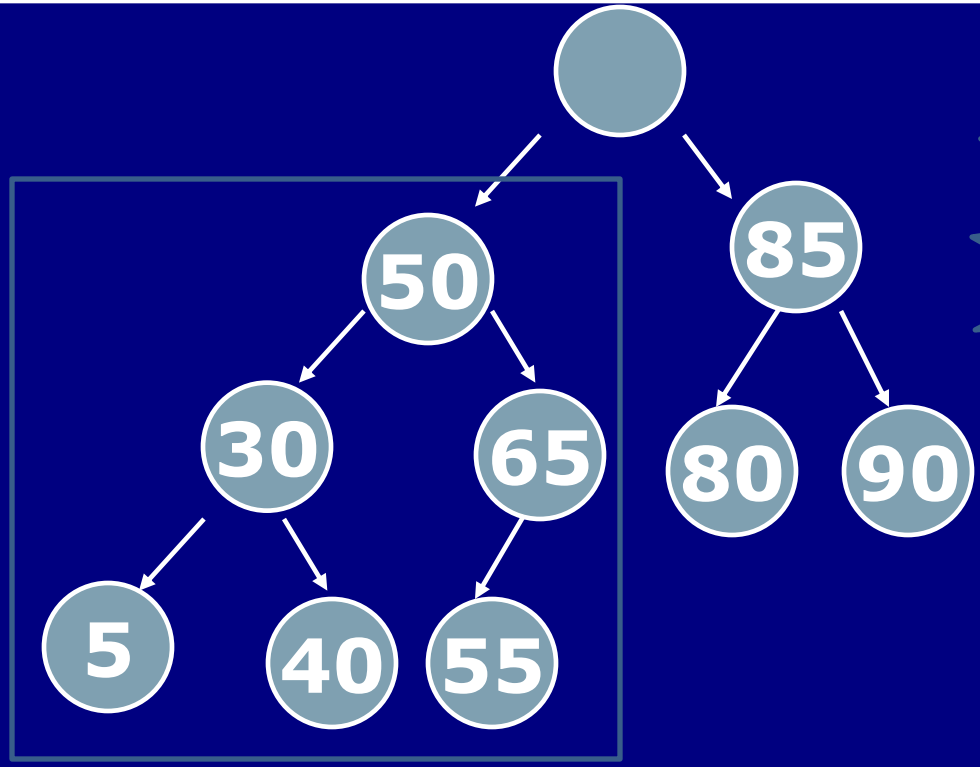
Insert 55



Delete 70

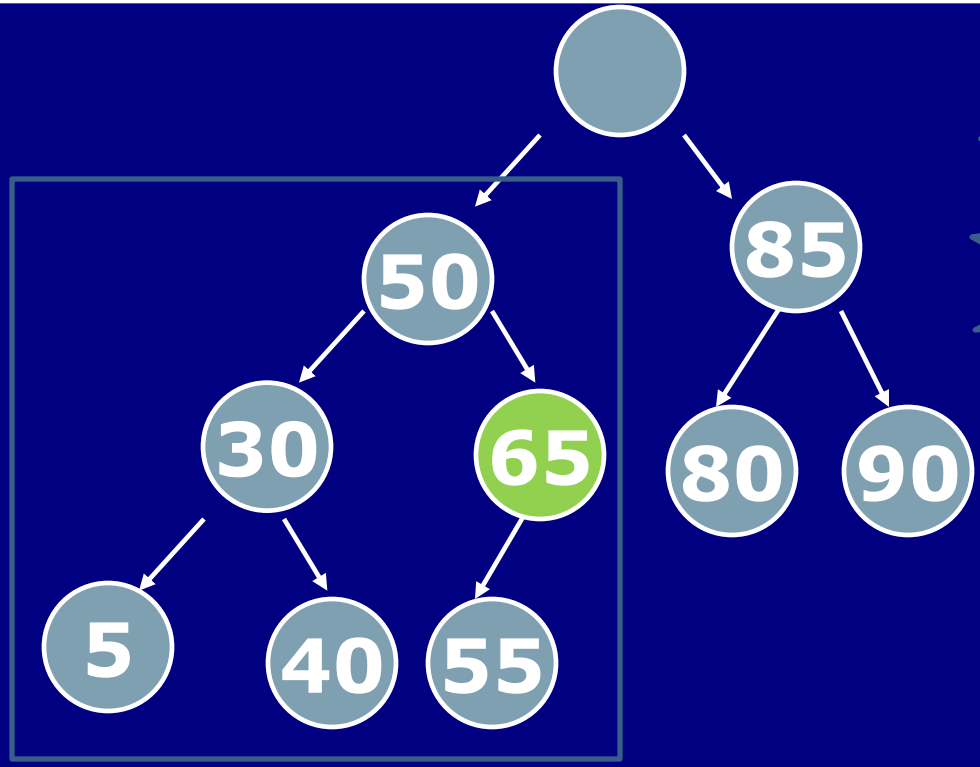


Delete 70



Gantikan dengan predecessor inordernya

Delete 70



Gantikan dengan predecessor inordernya

Delete 70