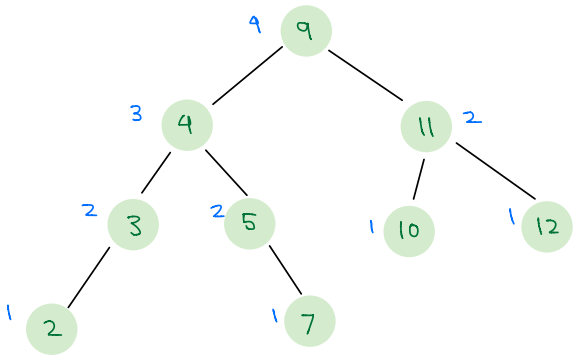
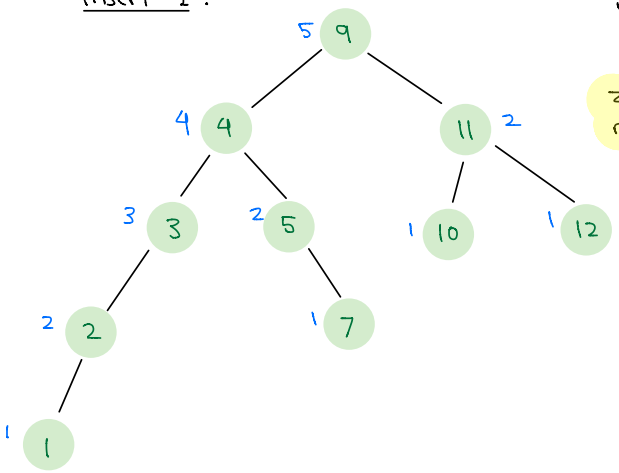
initial state:

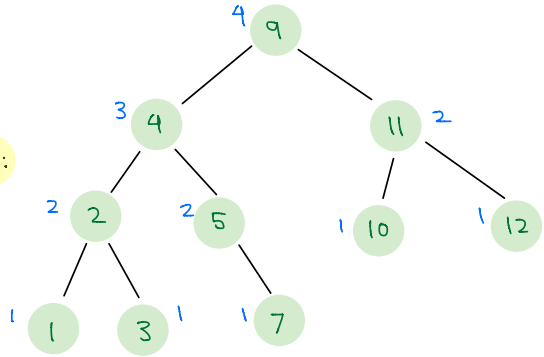


insert 1 :

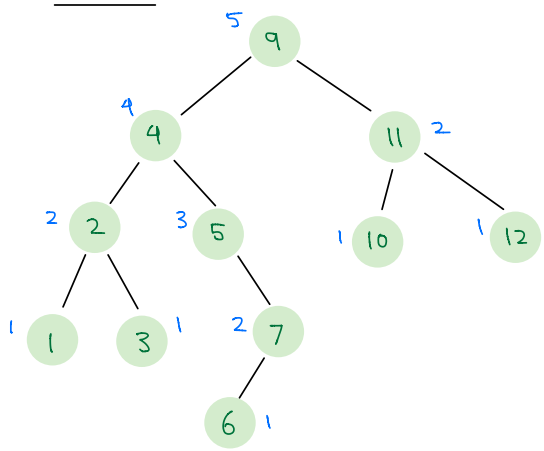


z = 3
y = 2
x = 1

zig zig
right rotate:

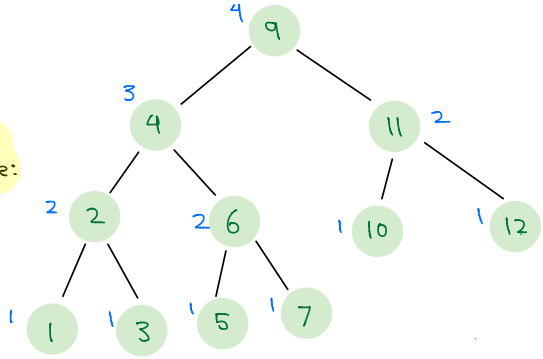


insert 6 :

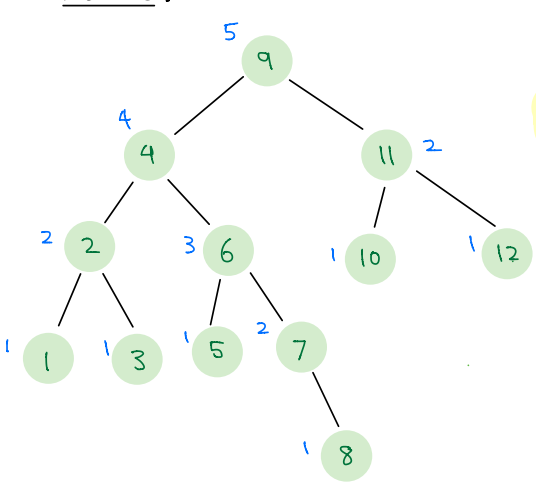


z = 5
y = 7
x = 6

zig zag
left rotate:

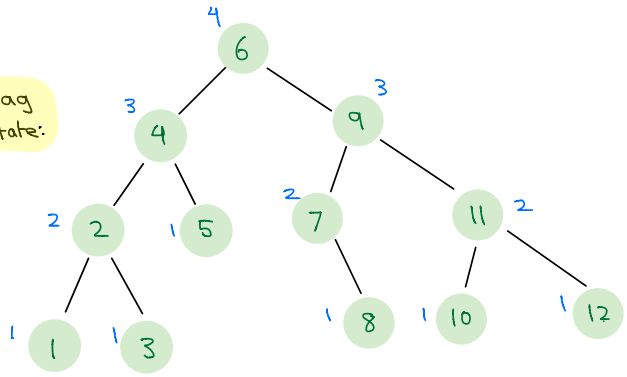


insert 8:

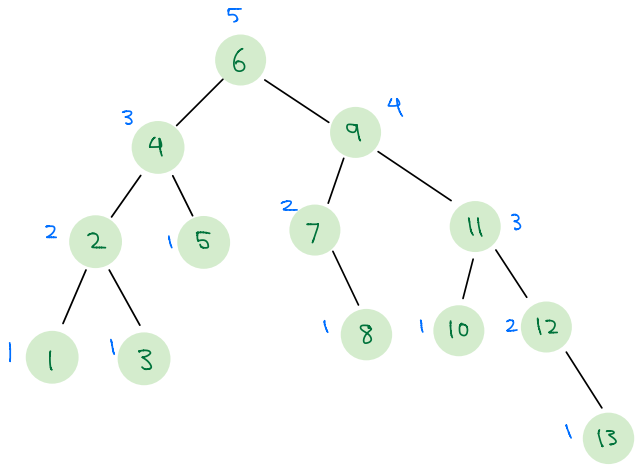


z = 9
y = 4
x = 6

zig zag
left rotate:

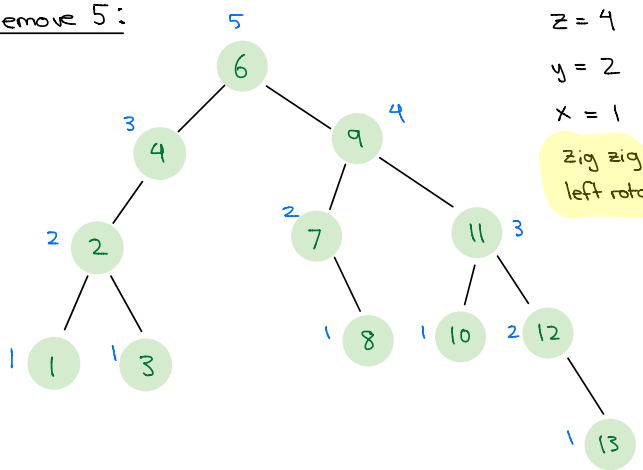


insert 13:



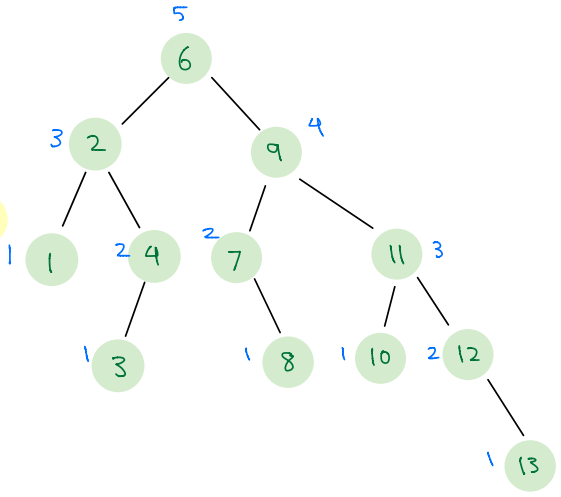
still balanced ✓

Remove 5:

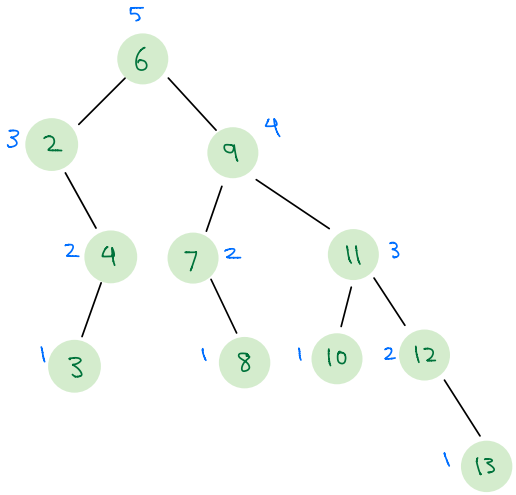


z = 4
y = 2
x = 1

zig zig
left rotate

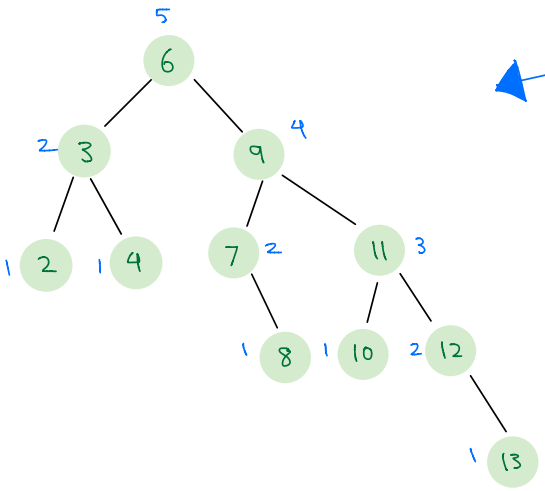


Remove 1 :



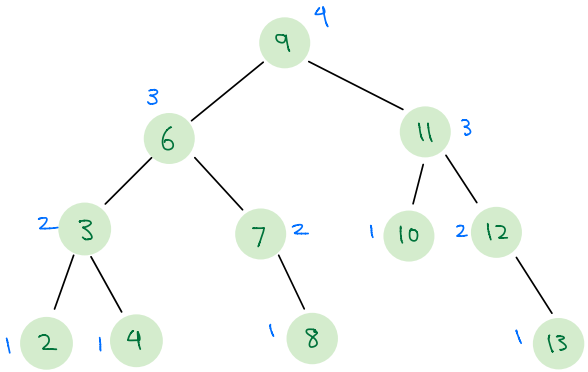
z = 2
y = 4
x = 3

zig zag
left rotate



z = 6
y = 9
x = 11

zig zig
left rotate



balanced AVL result