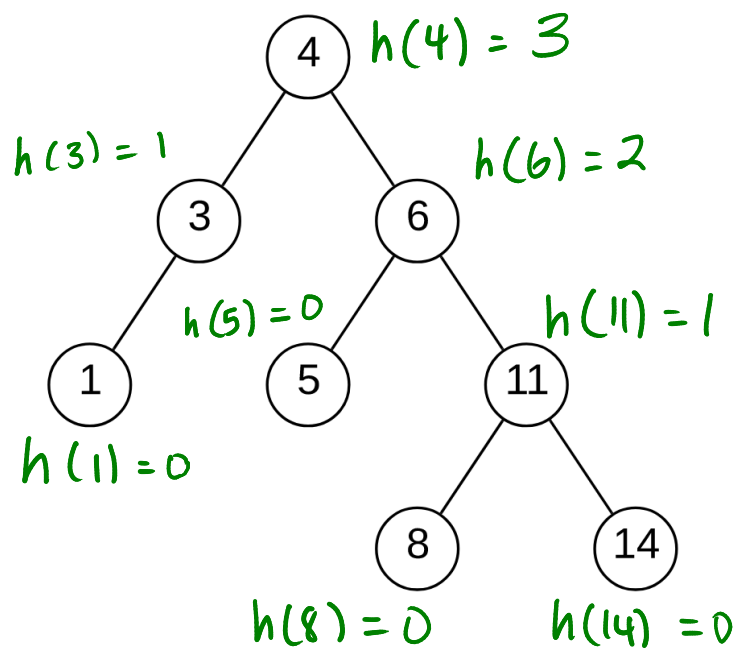
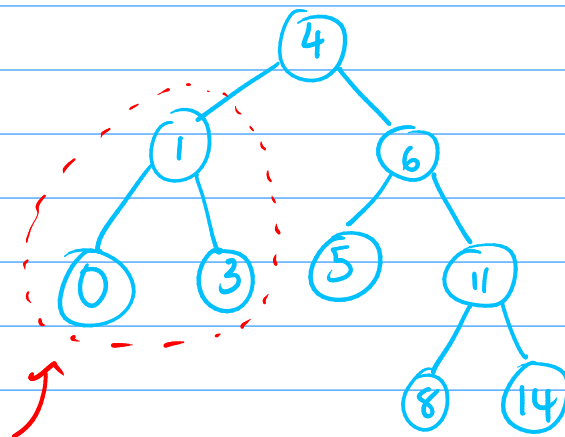


Q1.



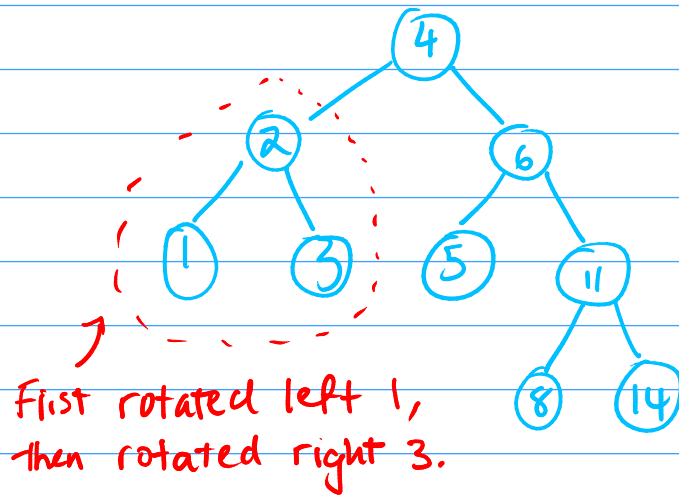
Is This already an AVL tree? Yes. All heights of the subtrees of each node differ by ≤ 1 .

After inserting 0:

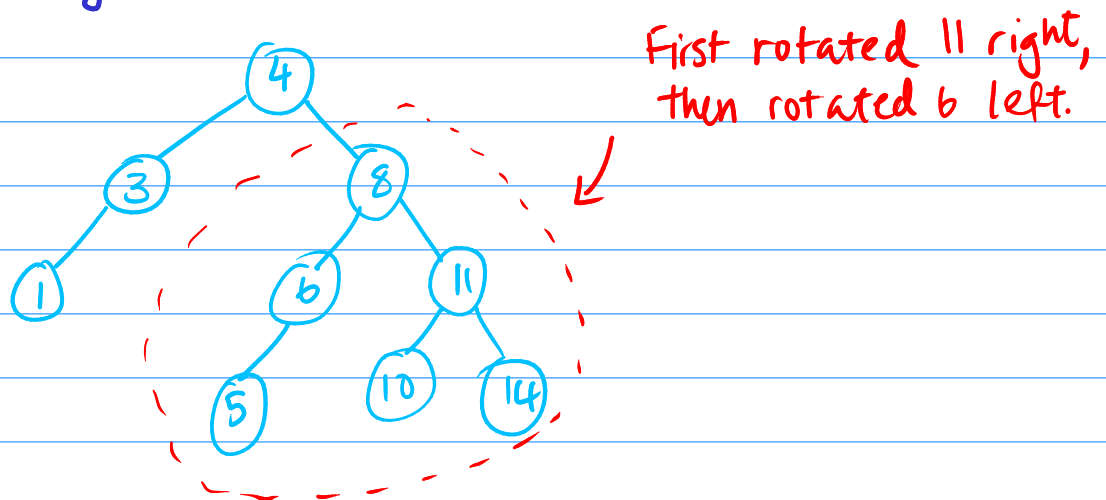


Left rotated 3.

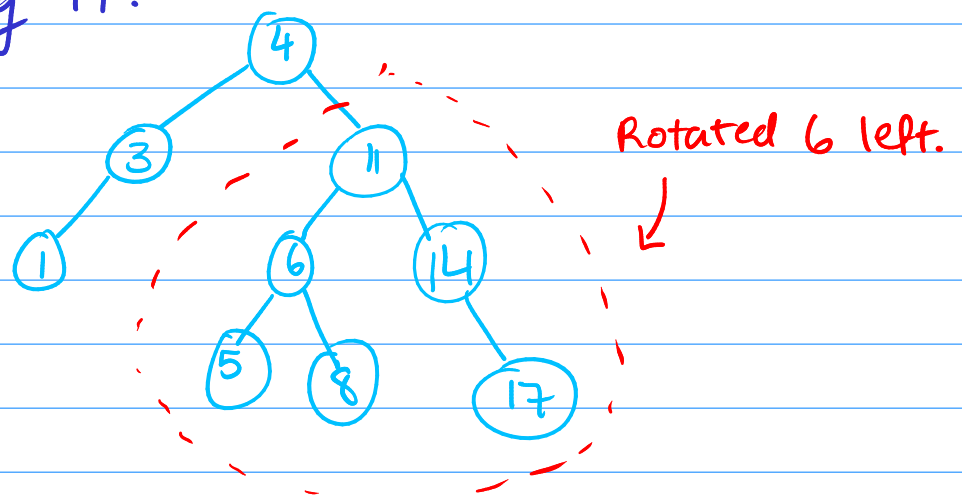
After inserting 2:



After inserting 10:



After inserting 17:

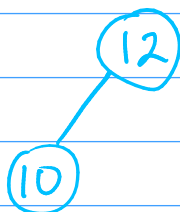


Q2. Insert ~~12~~ ~~10~~ ~~8~~ ~~6~~ ~~4~~ ~~2~~

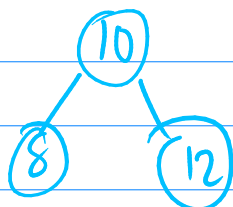
12:



10:

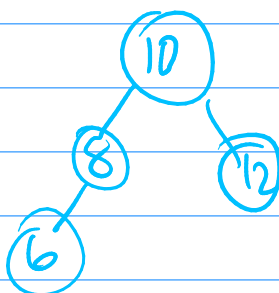


8:

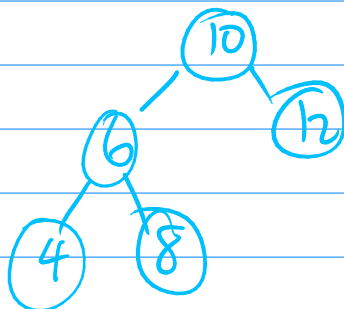


Rotated 12 right

6:

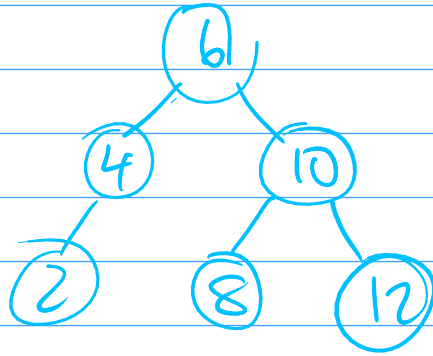


4:



Rotated 8 right

2:



Rotated 6 right

Q3. Insert ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ ~~8~~ ~~6~~ ~~7~~ ~~9~~ ~~10~~

1:



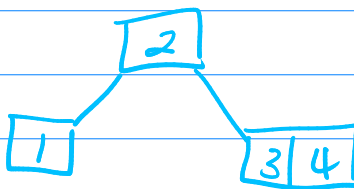
2:



3:

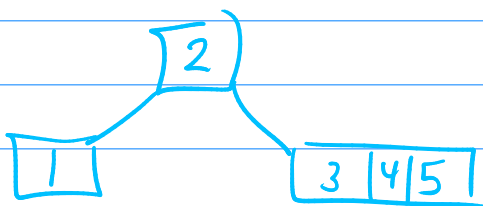


4:

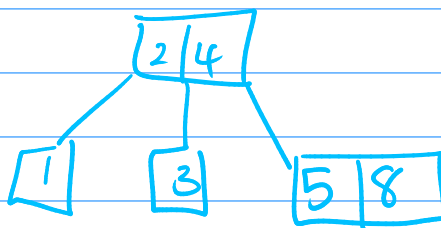


Split 1 | 2 | 3, promote 2

5:

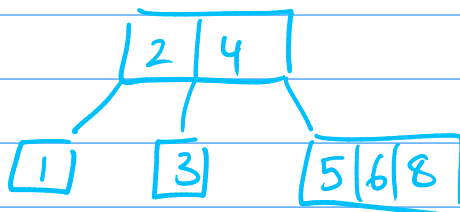


8:

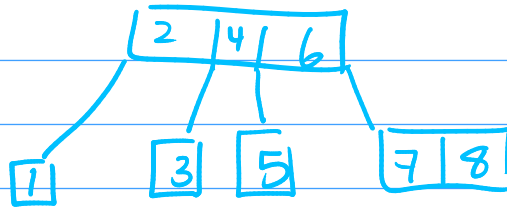


Split 3 | 4 | 5, promote 4

6:

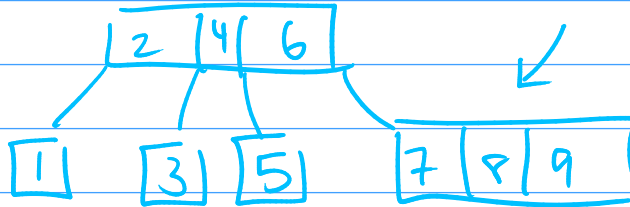


7:

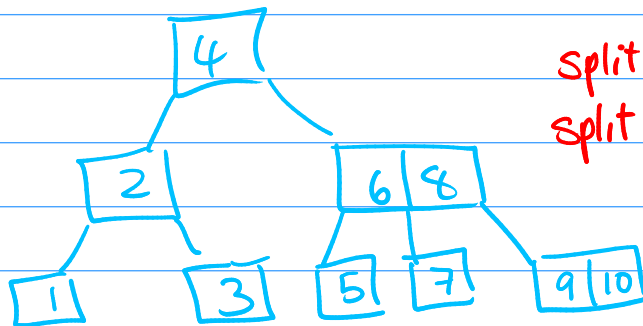


Split [5 | 6 | 8],
promote 6

9:



10:



Split [7 | 8 | 9], promote 8
Split [2 | 4 | 6], promote 4

#. of comparisons needed to search:

value	1	7	9	13
comps	3	4	4	5

compared with
4, 6, 8, 9, 10

compared with 4, 2, 1
compared with 4, 6, 8, 7
compared with 4, 6, 8, 9