**CS 515 Exercise D08: AVL Tree operations**

\_\_\_\_\_ /100

**Names: Ryan J. Skelly\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Wildcats ID’s : 988977861\_\_\_\_\_\_**

**Lecture Section: 02**

**[70 pts.]** Show how you would execute successive portions of this question into the tree structures provided, starting with the tree in section one, and continuing from your most recent answer. You may need to add a node here or there…

3

1. Insert 5 and then 40, then  
   show what the heights  
   are at  
   the end.

2

1

0

1

0

20

35

25

40

30

5

10

0

1. Insert 45, and update the  
   heights. Rotate using  
   the next tree  
   if needed.

2

20

35

25

40

30

5

10

1

0

3

45

2

20

40

25

35

45

30

5

10

1

0

*More on the back…*

1. Insert 34, and update the  
   heights. Rotate using  
   the next 2 trees  
   as needed.

0

3

2

20

40

25

35

45

30

5

10

1

0

0

34

20

35

25

34

40

30

5

20

3

45

2

20

40

30

45

25

34

35

5

10

1

1

0

0

0

**[30 pts.]** What rotations would be required to rebalance this tree after removing the node with key 13? Indicate the root-node of the rotation and the direction for each.

2

10

19

13

17

15

6

5

2

8

1

3

4

-1

1

0

5

17

6

15

10

3

2

1

4

8

19

10

19

15

17