***Assignment # 3***

**Subject Name**

**CS301**

**(Data Structures)**

**By**

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**Submitted To**

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**Question:**

You are required to construct AVL tree from the following data:

**15 ,18 ,12, 8, 54, 5, 14, 13, 9, 61, 20, 17, 21**

**Solution:**

**In the Given problem there are 5 roations**

**1st Rotation:**

When I insert (5) tree becomes unbalanced so while inserting (5) single right rotation is applied to balance tree after balancing the tree we get following balance tree as shown in fig 1.1

**Fig 1.1**

**2nd Rotation:**

When I insert (13) tree becomes unbalanced so while inserting (13) rotation is applied to balance tree after balancing the tree we get following balance tree as shown in fig 1.2.

**Fig 1.2**

**3rd Rotation:**

When I insert (9) tree becomes unbalanced so while inserting (9) rotation is applied to balance tree after balancing the tree I get following balance tree as shown in fig 1.3.

**Fig 1.3**

**4th Rotation:**

When I insert (61) tree becomes unbalanced so while inserting (61) single left rotation is applied to balance tree after balancing the tree I get following balance tree as shown in fig 1.4.

**Fig 1.4**

**5th Rotation:**

When I insert (21) tree becomes unbalanced so while inserting (21) rotation is applied to balance tree after balancing the tree I get following balance tree as shown in fig 1.5.

**Fig 1.5**

**Final AVL Tree is given Below in Fig 1.6**

**Fig 1.6**