

Worksheet 13: AVL & Splay Trees

The goal of this worksheet is to get some practice at manipulating AVL and Splay Trees. For each question below, show the state of the AVL / Splay Tree after each operation

Hand up your answer to Q2 and Q3 (50% each).

1. Perform the following operations on an AVL Tree:

Insert(25)	Insert(12)	Insert(7)	Insert(4)	Insert(2)
Insert(15)	Insert(19)	Insert(23)	Insert(45)	Insert(17)
Remove(4)	Remove(15)	Insert(9)	Insert(6)	Insert(39)
Insert(42)	Insert(31)	Remove(7)	Insert(6)	Insert(24)

2. Perform the following operations on a Splay Tree:

Insert(25)	Insert(12)	Insert(7)	Insert(4)	Insert(2)
Insert(15)	Insert(19)	Insert(23)	Insert(45)	Insert(17)
Remove(4)	Remove(15)	Insert(9)	Insert(6)	Insert(39)
Insert(42)	Insert(31)	Remove(7)	Insert(6)	Insert(24)

3. Perform the following operations on an AVL Tree:

Insert(3)	Insert(6)	Insert(9)	Insert(12)	Insert(15)
Insert(18)	Insert(21)	Remove(9)	Insert(24)	Insert(27)
Insert(30)	Remove(18)	Insert(2)	Insert(4)	Insert(8)
Insert(10)	Insert(14)	Remove(12)	Remove(30)	Insert(14)

4. Perform the following operations on a Splay Tree:

Insert(3)	Insert(6)	Insert(9)	Insert(12)	Insert(15)
Insert(18)	Insert(21)	Remove(9)	Insert(24)	Insert(27)
Insert(30)	Remove(18)	Insert(2)	Insert(4)	Insert(8)
Insert(10)	Insert(14)	Remove(12)	Remove(30)	Insert(14)

5. Perform the following operations on an AVL Tree:

Insert(20)	Insert(10)	Insert(30)	Insert(5)	Insert(35)
Insert(15)	Insert(25)	Remove(20)	Insert(18)	Insert(22)
Insert(16)	Insert(24)	Remove(5)	Insert(2)	Insert(38)
Insert(4)	Insert(36)	Insert(6)	Insert(34)	Remove(10)

6. Perform the following operations on a Splay Tree:

Insert(20)	Insert(10)	Insert(30)	Insert(5)	Insert(35)
Insert(15)	Insert(25)	Remove(20)	Insert(18)	Insert(22)
Insert(16)	Insert(24)	Remove(5)	Insert(2)	Insert(38)
Insert(4)	Insert(36)	Insert(6)	Insert(34)	Remove(10)