BSc (Hons) in Information Technology

Year 2

Data Structures and Algorithms – IT2070

Worksheet 4 – Trees

Question 1

Arrange the following sequence of integers into a binary search tree

280   308   180   416   298   350   156   255   580   275   12

Question 2

Print the elements in the tree built in Question1 using the following traversing methods.

a)   inorder
b)   preorder
c)   postorder

Question 3

Draw the tree structures for the binary tree created in Question 1 for each of the following delete commands.

a)   Delete(255)
b)   Delete(308)
c)   Delete (180)
d)   Delete(280)

Question 4

Consider the Node class and Tree class given below. Implement a method called **minimum( )** which find the minimum key in a tree.

Node
int iData double dData Node leftChild Node rightChild
void displayNode( )

Tree
Node root
Node find(int key) void insert(int id, double dd) boolean delete(int id) void inOrder( )

Question 5

Write a java program to implement the following.

    a) Implement a **Node** class to store a height of a child. In the same class implement displayNode ( ) method to display the data stored in a Node.

    b) Implement the **Tree** class with the following data members and methods.

Tree
Node root
void insert(int height) Node minimum( ) Node maximum ( ) void descendingOrder ( )

    c) In your application, enter the height of 10 children in a class from the key board and store them in a tree. Use the above implemented methods to display the height of the tallest child, shortest child in the class. Also display the height of all ten children in descending order.