

TREE – LAB 05  
EC 4070  
DATA STRUCTURES AND ALGORITHMS

NAME : WIJAYAWARDHANA W.A.H.A.  
REGISTRATION NO. : 2019/E/166  
SEMESTER : SEMESTER 04  
DATE ASSIGNED : 24 MARCH 2022

01.

**Code:-**

```
package lab06;
public class CityDatabaseN {
    double[][] cityDetails = new double[10][3];
    String[][] cityNameArray = new String[10][2];
    int arraySize = 3;
    double longitude;
    double latitude;
    String cityName;
    int root;
    int leftNode;
    int rightNode;
    int idNumber = 1;
    public void setCityDataDetails(String cityName , double latitude , double longitude)
    {
        if(root == 0)
        {
            cityDetails[1][0] = idNumber;
            cityDetails[1][1] = latitude;
            cityDetails[1][2] = longitude;
            cityNameArray[1][0] = String.valueOf(idNumber);
            cityNameArray[1][1] = cityName;
            idNumber++;
            System.out.println(cityName + " added.");
        }
        else
        {
            this.cityName = cityName;
            this.latitude = latitude;
            this.longitude = longitude;
            cityDetails[1][0] = idNumber;
            cityDetails[1][1] = latitude;
            cityDetails[1][2] = longitude;
            cityNameArray[1][0] = String.valueOf(idNumber);
            cityNameArray[1][1] = cityName;
            idNumber++;
        }
    }

    public void insertion(String cityName , double latitude , double longitude)
    {
        this.cityName = cityName;
        this.latitude = latitude;
```

```

        this.longitude = longitude;

        root = 1;
        findArrayIndex(root);
    }

    public boolean alphabeticalOrder(String city01 , String city02)
    {
        return city01.compareTo(city02)>0;
    }

    public void findArrayIndex(int i)
    {
        boolean city02High = alphabeticalOrder(cityNameArray[i][1],cityName);
        if(city02High == true)
        {
            if(cityNameArray[2*root][1] == null)
            {
                cityNameArray[2*root][1] = cityName;
                System.out.println(cityName + " added.");
                return;
            }

            else
            {
                findArrayIndex(i++);
            }
        }
        else
        {
            if(cityNameArray[2*root+1][1] == null)
            {
                cityNameArray[2*root+1][1] = cityName;
                System.out.println(cityName + " added.");
                return;
            }

            else
            {
                findArrayIndex(i++);
            }
        }
    }

    public void printDetails()
    {
        for (int i = 1; i < arraySize; i++)
        {
            for (int j = i + 1; j < arraySize; j++)
            {

```

```

        if(cityNameArray[i][1].compareTo(cityNameArray[j][1]) > 0)
        {
            String temp = cityNameArray[i][1];
            String temp2 = cityNameArray[i][0];
            cityNameArray[i][1] = cityNameArray[j][1];
            cityNameArray[i][0] = cityNameArray[j][0];
            cityNameArray[j][1] = temp;
            cityNameArray[j][0] = temp2;
        }
    }

}

for(int i =0; i<cityNameArray.length;i++)
{
    if(cityNameArray[i][1] != null)
        System.out.println(cityNameArray[i][1]);
}

}

public void deleteItem(String cityNameToDelete)
{
    int i =0;
    for(; i<arraySize; i++)
    {
        if(cityNameArray[i][1] == cityNameToDelete)
        {
            System.out.println(cityNameArray[i][1] + " deleted.");
            cityNameArray[i][0] = null;
            cityNameArray[i][1] = null;
            arraySize--;
        }
    }
}

public static void main(String[] args) {
    CityDatabaseN newObject = new CityDatabaseN();
    newObject.setCityDataDetails("Colombo",6.927079,79.861244);
    newObject.insertion("Chicago",41.881832,-87.623177);
    newObject.insertion("Sydney" , -33.865143 ,151.20990);
    newObject.printDetails();
    newObject.deleteItem("Colombo");
    newObject.printDetails();

}
}

```

## Output:



```
Run: CityDatabaseN x
C:\Users\User\.jdk\openjdk-17.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\Intelli
Colombo added.
Chicago added.
Sydney added.
Chicago
Colombo
Sydney
Colombo deleted.
Chicago
Sydney

Process finished with exit code 0
```