JAVA IOT DEVELOPER

LAB - 5

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(2020-2023)

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DEVICE CLASS:

```java
package lab5;
public class Device {
    public String name;
    private int deviceID;
    private static int count = 0;

    public Device(){
        count++;
        deviceID = count;
    }

    @Override
    public String toString() {
        return "Device{" + "deviceID=" + deviceID + '}';
    }

    public int compareTo(Device other){
        if (this.deviceID == other.deviceID) {return 1;}
        else { return 0; }
    }
}
```

CONNECTION CLASS:

```java
package lab5;

public class Connection {
    private Device sourceDevice;
    private Device targetDevice;
    private int connectionID;
    private static int count = 0;

    public Connection(Device sourceDevice, Device targetDevice){
        this.sourceDevice = sourceDevice;
        this.targetDevice = targetDevice;
        count++;
        connectionID = count;
    }

    @Override
    public String toString() {
        return "Connection{" + "sourceDevice=" + sourceDevice + ", targetDevice="
                + targetDevice + ", connectionID=" + connectionID + '}';
    }

    public int compareTo(Connection other) {
        if((this.sourceDevice == other.sourceDevice)&&
                (this.targetDevice == other.targetDevice)&&
                (this.connectionID == other.connectionID)){ return 1; }
        else { return 0; }
    }

    public Device getSourceDevice() { return sourceDevice; }
    public Device getTargetDevice() { return targetDevice; }
}
```

ANetwork INTERFACE:

```java
package lab5;

public interface ANetwork {
    void setConnectionList(Connection c);
    Device getSource(Connection c);
    Device getTarget(Connection c);
}
```

CNetwork CLASS:

```java
package lab5;
import java.util.*;

public class CNetwork implements ANetwork {
    List<Device> deviceList;
    List<Device> connectedDeviceList;
    List<Connection> connectionList;

    public CNetwork() {
        deviceList = new ArrayList<>();
        connectionList = new ArrayList<>();
        connectedDeviceList = new ArrayList<>();
    }

    public void setConnectionList(Connection c){
        connectionList.add(c);
    }

    public void addDevice(Device d) {
        deviceList.add(d);
        }

    @Override
    public String toString() {
        return "Network{" + "deviceList=" + deviceList +
                ", connectionList=" + connectionList + '}';
    }
```

```java
@Override
public Device getSource(Connection con) {
    return con.getSourceDevice();
}

@Override
public Device getTarget(Connection con) {
    return con.getTargetDevice();
}

public void connectDeviceInList(Connection con) {
    Device sd=con.getSourceDevice();
    Device td=con.getTargetDevice();
    connectedDeviceList.add(sd);
    connectedDeviceList.add(td);
}

public int deviceExist(Device d) {
    int count = 0;
    for (Device dev : deviceList) {
        if (dev.compareTo(d) == 1) {
            count++;
        }
    }
    if (count > 0) {
        System.out.println(d+" exists!");
```

```
    }
    if (count > 0) {
        System.out.println(d+" exists!");
        return 1;
    }
    else {
        System.out.println(d+" doesn't exists in devices list!");
        return 0;
    }
}
public Connection deleteConnection(Device device) {
    for (Connection c : connectionList) {
        for (Device d : deviceList) {
            if (getSource(c).compareTo(device) ==1 || getTarget(c).compareTo(device)==1) { return c; }
        }
    }
    return null;
}
public int checkDeviceInNetwork(Device dev) {
    int count = 0;
    for (Device d : deviceList) {
        for (Device n : connectedDeviceList) {
            if (d.compareTo(dev) == 1 && n.compareTo(dev) == 1) {
                count++;
            }
        }
    }
    if (count > 0) {
```

```
        if (count > 0) {
            System.out.println(dev+" is present in Network");
            return 1;

        } else {
            System.out.println(dev+" is not present in Network");
            return 0;
        }
    }

    public void deleteDevice(Device dev) {
        if (deviceExist(dev) == 1) {
            if (checkDeviceInNetwork(dev) == 1) {
                if (deleteConnection(dev) != null) {
                    deviceList.remove(dev);
                    connectionList.remove(deleteConnection(dev));
                    connectedDeviceList.remove(dev);
                }
            }
            else {deviceList.remove(dev); }
        }
        else { System.out.println(dev+" doesn't exist in the Network!"); }
    }

}
```

MAIN CLASS:

```
kage lab5;
lic class Main {
 public static void main(String[] args) {
     Device d101 = new Device();
     Device d102 = new Device();
     Device d103 = new Device();
     Device d104 = new Device();
     Device d105 = new Device();
     Device d106 = new Device();
     Device d107 = new Device();
     Device d108 = new Device();

     Connection c1 = new Connection(d101, d102);
     Connection c2 = new Connection(d104, d105);
     Connection c3 = new Connection(d102, d103);
     Connection c4 = new Connection(d106, d107);

     CNetwork c = new CNetwork();

     c.setConnectionList(c1);
     c.setConnectionList(c2);
     c.setConnectionList(c3);
     c.setConnectionList(c4);
```

```
        c.connectDeviceInList(c1);
        c.connectDeviceInList(c2);
        c.connectDeviceInList(c3);
        c.connectDeviceInList(c4);

        c.addDevice(d101);
        c.addDevice(d102);
        c.addDevice(d103);
        c.addDevice(d104);
        c.addDevice(d105);
        c.addDevice(d106);
        c.addDevice(d107);

        for (Device d: c.deviceList) { System.out.println(d); }

        c.deleteDevice(d105);
        c.deleteDevice(d108);

        System.out.println("After deleting the device");
        for (Device d : c.deviceList) {
            System.out.println(d);
        }
    }
}
```

OUTPUT:

```
"C:\Program Files\Java\jdk-16.0.2\bin\java.exe" "-jav
Device{deviceID=1}
Device{deviceID=2}
Device{deviceID=3}
Device{deviceID=4}
Device{deviceID=5}
Device{deviceID=6}
Device{deviceID=7}
Device{deviceID=5} exists!
Device{deviceID=5} is present in Network
Device{deviceID=8} doesn't exists in devices list!
Device{deviceID=8} doesn't exist in the Network!
After deleting the device
Device{deviceID=1}
Device{deviceID=2}
Device{deviceID=3}
Device{deviceID=4}
Device{deviceID=6}
Device{deviceID=7}

Process finished with exit code 0
```