

Міністерство освіти і науки України
Національний університет «Львівська політехніка»

Кафедра ЕОМ



Звіт

до лабораторної роботи №3
з дисципліни: «Кросплатформенні засоби
програмування»

На тему: «КЛАСИ ТА ПАКЕТИ »

Виконав: ст. гр. КІ-36
Лабенський В.В.
Прийняв:
Іванов Ю.С.

Львів 2022

Лабораторна робота №3

Мета: ознайомитися з процесом розробки класів та пакетів мовою Java.

Варіант №13

13. Телефон

Код програми:

Файл PhoneAps.java

```
/**
 * Lab3 package
 */
package Lab_3_lahan;

import java.io.*;

/**
 * Phone Application class implements main method for Phone
 * class possibilities demonstration
 * @author roman
 * @version 1.0
 * @see Phone
 */
public class PhoneAps {

    public static void main(String[] args) throws FileNotFoundException {
        Phone xphone = new Phone(67);
        xphone.showCharge();
        //Call
        xphone.callTO("380673135428");
        xphone.showCharge();
        //make Picture
        xphone.makePicture();
        xphone.showCharge();
        //turn off camera
        xphone.turnOn_Off();
        //Make picture with turned off camera
        xphone.makePicture();
        //Change Volume
        xphone.clickUpButton();
        xphone.clickDownButton(7);
        //Invalid call
        xphone.callTO("1111111");
        xphone.showCharge();
        //End
    }
}
```

```
        xphone.fileClose();  
  
    }  
}
```

Файл Phone.java

```
/**  
 * Lab 3 package  
 */  
package Lab_3_lahan;  
  
import java.io.*;  
import java.util.regex.Matcher;  
import java.util.regex.Pattern;  
  
import java.util.Scanner;  
  
/**  
 * Class <code>Phone</code> implements phone  
 * @author roman  
 * @version 1.0  
 */  
public class Phone {  
    private VolButton Button;  
    private Battery Bat;  
    private PrintWriter fout;  
    private Camera Camera;  
  
    /**  
     * Constructor  
     *  
     * @throws FileNotFoundException the file not found exception  
     */  
    public Phone() throws FileNotFoundException {  
        Button = new VolButton();  
        Bat = new Battery();  
        Camera = new Camera();  
        fout = new PrintWriter(new File("Log.txt"));  
    }  
  
    /**  
     * Constructor  
     *  
     * @param charge the Battery Charge value  
     * @throws FileNotFoundException the file not found exception  
     */  
    public Phone(int charge) throws FileNotFoundException {  
        Button = new VolButton();  
    }  
}
```

```

        Bat = new Battery(charge);
        Camera = new Camera();
        fout = new PrintWriter(new File("Log.txt"));
    }

    /**
     * Method checks if the phone number is correct
     * @param s the phone number
     * @return is phone number Valid
     */
    private static boolean isValid(String s) {
        Pattern p = Pattern.compile("380\\d{9}");
        Matcher m = p.matcher(s);
        return (m.matches());
    }

    /**
     * Method calls the phone number
     *
     * @param phoneNumber the Phone number
     */
    public void callTO(String phoneNumber) {
        //Is phone number correct
        if (isValid(phoneNumber)) {
            //is phone battery charged
            if (Bat.getBatteryCharge() >= 0) {
                //Start calling
                System.out.println("You calling to :\n" + phoneNumber);
                //Time in start calling
                long time1 = System.currentTimeMillis();
                //End call
                System.out.println("To end call press Enter:");
                Scanner s = new Scanner(System.in);
                s.nextLine();
                s.close();
                //Time in end calling
                long time2 = System.currentTimeMillis();

                System.out.println("Your call was in progress " + (time2 - time1)
                    / 1000 + " seconds");

                Bat.setBatteryCharge((int) (Bat.getBatteryCharge() - (time2 -
                    time1) / 30000));

                fout.println("You call to " + phoneNumber + "\t and spoke " +
                    (time2 - time1) / 1000 + " seconds");

            } else {
                System.out.println("Your battery is drained");
            }
        }
    }

```

```

    } else {
        System.out.println("Wrong number");
    }

}

/**
 * Method make picture on camera
 */
public void makePicture() {

    if (Camera.getState()) {
        // camera on

        if (Bat.getBatteryCharge() >= 0) {
            // battery charged
            Bat.setBatteryCharge(Bat.getBatteryCharge() - 3);
            System.out.println("You make photo");
            fout.println("You made photo");

        } else
            // battery is not charged
            System.out.println("Your battery is drained");

    } else
        // camera off

        System.out.println("Your camera is off");

}

/**
 * Method changes the state of camera to opposite
 */
public void turnOn_Off(){
    if(Camera.getState())
    {
        Camera.setState(false);
        System.out.println("Camera turn off");
    }
    else
    {
        Camera.setState(true);
        System.out.println("Camera turn on");
    }
}

/**
 * Method click on upper volume button
 */

```

```

public void clickUpButton()
{

    Button.ClickUpButton();
    System.out.println("Volume = "+Button.getVolume());
    fout.println("Volume changed to "+Button.getVolume());

}

/**
 * Method click on upper volume button n times
 *
 * @param n the n
 */
public void clickUpButton(int n)
{
    for(int i =0;i<n;i++)
        Button.ClickUpButton();
    System.out.println("Volume = "+Button.getVolume());
    fout.println("Volume changed to "+Button.getVolume());
}

/**
 * Method click on lower volume button
 */
public void clickDownButton()
{
    Button.ClickDownButton();
    System.out.println("Volume = "+Button.getVolume());
    fout.println("Volume changed to "+Button.getVolume());
}

/**
 * Method click on lower volume button n times
 *
 * @param n the n
 */
public void clickDownButton(int n)
{
    for(int i =0;i<n;i++)
        Button.ClickDownButton();
    System.out.println("Volume = "+Button.getVolume());
    fout.println("Volume changed to "+Button.getVolume());
}

/**
 * Method close file
 */
public void fileClose(){fout.close();}

/**
 * Method print in console phone charge

```

```

        */
    public void showCharge(){
        System.out.println("Charge : "+Bat.getBatteryCharge()+" %");
    }

}

/**
 * Class <code>Battery</code> implements phone battery
 */
class Battery {
    private int BatteryCharge;
    private static final int Max_BatteryCharge = 100;
    private static final int Min_BatteryCharge = 0;

    /**
     * Constructor
     */
    public Battery() {
        BatteryCharge = 100;
    }

    /**
     * Constructor
     *
     * @param num the Battery Charge value
     */
    public Battery(int num) {
        if (num > Max_BatteryCharge) {
            BatteryCharge = Max_BatteryCharge;
        } else BatteryCharge = Math.max(num, Min_BatteryCharge);
    }

    /**
     * Method set Battery Charge value in
     range[Min_BatteryCharge,Max_BatteryCharge]
     *
     * @param num the Battery Charge value
     */
    public void setBatteryCharge(int num) {
        if (num > Max_BatteryCharge) {
            BatteryCharge = Max_BatteryCharge;
        } else BatteryCharge = Math.max(num, Min_BatteryCharge);
    }

    /**
     * Method return Battery Charge value

```

```

        *
        * @return the Battery Charge value
        */
    public int getBatteryCharge() {
        return BatteryCharge;
    }
}

/**
 * Class <code>Camera</code> implements camera
 */
class Camera {
    /**
     * The State.
     */
    boolean state;

    /**
     * Constructor
     */
    public Camera() {
        state = true;
    }

    /**
     * Constructor
     *
     * @param status the status
     */
    public Camera(boolean status) {
        state = status;
    }

    /**
     * Method returns Camera State
     *
     * @return the camera state
     */
    public boolean getState() {
        return state;
    }

    /**
     * Method set Camera state
     *
     * @param status the status
     */
    public void setState(boolean status) {
        state = status;
    }
}

```



```

}

/**
 * Class <code>VolButton</code> implements Volume button
 */
class VolButton {
    private static final int Min_Volume = 0;
    private static final int MAX_Volume = 10;
    private int Volume;

    /**
     * Constructor
     */
    public VolButton() {
        Volume = MAX_Volume;
    }

    /**
     * Constructor
     *
     * @param Vol Volume in range[Min_Volume,Max_Volume]
     */
    public VolButton(int Vol) {
        if (Vol > MAX_Volume) {
            Volume = MAX_Volume;
        } else Volume = Math.max(Vol, Min_Volume);
    }

    /**
     * Method Simulate increasing Volume by 1 in
    range[Min_Volume,Max_Volume]
     */
    public void ClickUpButton() {
        if (Volume != MAX_Volume)
            Volume++;
    }

    /**
     * Method Simulate decreasing Volume by 1 in
    range[Min_Volume,Max_Volume]
     */
    public void ClickDownButton() {
        if (Volume != Min_Volume)
            Volume--;
    }
}

```

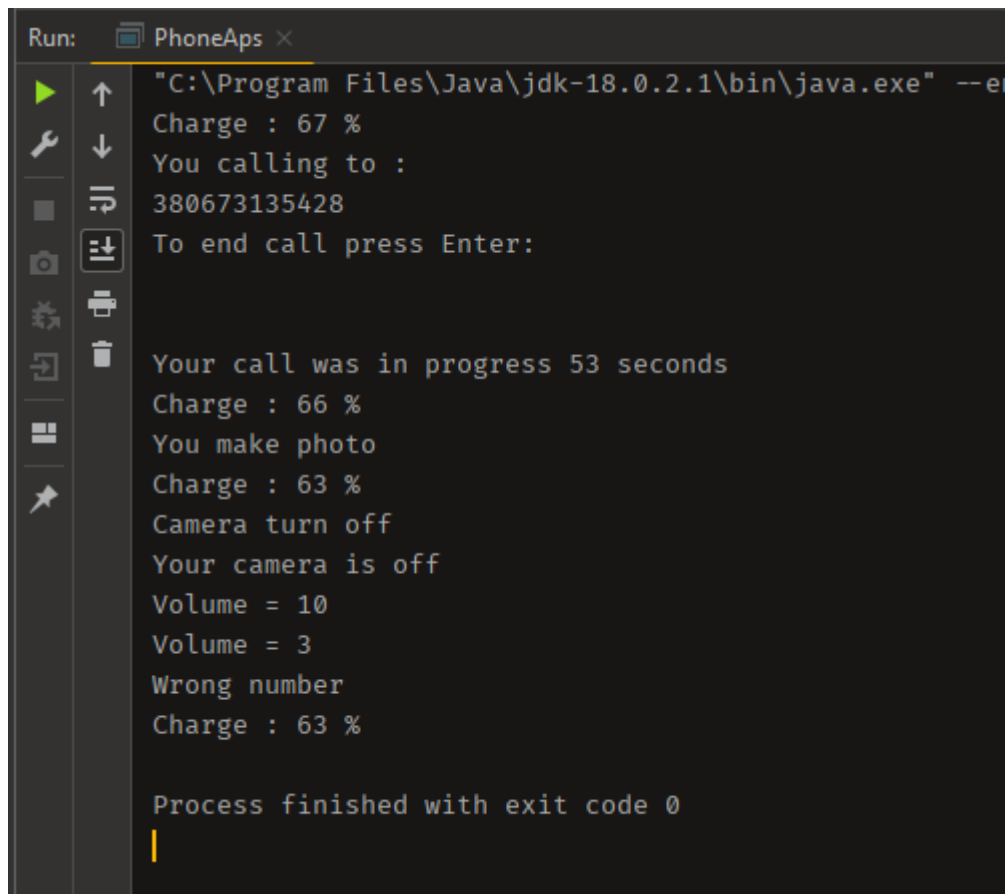
```

/**
 * Method returns Value of Volume
 *
 * @return Volume volume
 */
public int getVolume() {
    return Volume;
}

/**
 * Method set Volume in range[Min_Volume,Max_Volume]
 *
 * @param Vol the Volume value
 */
public void setVolume(int Vol) {
    if (Vol > MAX_Volume) {
        Volume = MAX_Volume;
    } else Volume = Math.max(Vol, Min_Volume);
}
}

```

Приклад виконання програми:



```

Run: PhoneAps x
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" --e
Charge : 67 %
You calling to :
380673135428
To end call press Enter:

Your call was in progress 53 seconds
Charge : 66 %
You make photo
Charge : 63 %
Camera turn off
Your camera is off
Volume = 10
Volume = 3
Wrong number
Charge : 63 %

Process finished with exit code 0

```

Висновок: На даній лаборатоній роботі я ознайомився з процесом розробки класів та пакетів мовою Java.