Lab07

Name: Tet Davann

ID: IDTB080023

✓ *Lab07.1*

```java
import java.awt.*;
import java.util.Calendar;
import java.util.Scanner;

abstract class ShapeArea{
    abstract double calculateRectangleArea(double width,double height);
    abstract double calculateCircleArea(double radius);
    abstract double calculateTraingleArea(double a,double b,double c);
    abstract double calculateTraingleArea(double base,double height);
    abstract double calculateSemicircleArea(double radius);
    abstract double calculateSectorArea(double radius,double angle);
}
class Calculator extends ShapeArea{

    @Override
    double calculateRectangleArea(double width, double height) {
        return width*height;
    }

    @Override
    double calculateCircleArea(double radius) {
        return 3.14*radius*radius;
    }
    @Override
    double calculateTraingleArea(double a, double b, double c) {
        return 0.25*Math.sqrt((a+b+c)*(-a+b+c)*(a-b+c)*(a+b-c));
    }

    @Override
    double calculateTraingleArea(double base, double height) {
        return base*height/2;
    }

    @Override
    double calculateSemicircleArea(double radius) {
        return 0.5*3.14*radius*radius;
    }

    @Override
    double calculateSectorArea(double radius, double angle) {
        return (angle/360)*3.14*radius*radius;
    }
}
public class Lab07_1 {
    private static Scanner sc=new Scanner(System.in);
    private static void menu(){
        Calculator cal = new Calculator();
        System.out.print("==== Shape Area Calculation ===\n" +
                "1. Rectangle\n" +
                "2. Circle\n" +
                "3. Triangle (three sides)\n" +
                "4. Triangle (base and height)\n" +
```

```
                "5. Semi circle\n" +
                "6. Sector\n" +
                "7. Quit\n" +
                "Choose an opt:");
        int opt = sc.nextInt();
        switch (opt) {
            case 1->{
                System.out.print("Input width: ");
                double w = sc.nextDouble();
                System.out.print("Input height: ");
                double h = sc.nextDouble();
                System.out.println("Result: "+cal.calculateRectangleArea(w,h));
                menu();
            }
            case 2->{
                System.out.print("Input radius: ");
                double radius = sc.nextDouble();
                System.out.println("Result: "+cal.calculateCircleArea(radius));
                menu();
            }
            case 3->{
                System.out.print("Input A: ");
                double a =  sc.nextDouble();
                System.out.print("Input B: ");
                double b = sc.nextDouble();
                System.out.print("Input C: ");
                double c = sc.nextDouble();
                System.out.println("Result: "+cal.calculateTraingleArea(a,b,c));
                menu();
            }
            case 4->{
                System.out.print("Input base: ");
                double base = sc.nextDouble();
                System.out.print("Input height: ");
                double height = sc.nextDouble();
                System.out.println("Result:
"+cal.calculateTraingleArea(base,height));
                menu();
            }
            case 5->{
                System.out.print("Input radius: ");
                double radius = sc.nextDouble();
                System.out.println("Result:
"+cal.calculateSemicircleArea(radius));
                menu();
            }
            case 6->{
                System.out.print("Input radius: ");
                double radius = sc.nextDouble();
                System.out.print("Input angle: ");
                double angle = sc.nextDouble();
                System.out.println("Result:
"+cal.calculateSectorArea(radius,angle));
                menu();
            }
            case 7->System.out.println("Quited");
            default -> menu();
        }
```

```
    }
    public static void main(String[] args){
        menu();
    }
}
```

```
==== Shape Area Calculation ====
1. Rectangle
2. Circle
3. Triangle (three sides)
4. Triangle (base and height)
5. Semi circle
6. Sector
7. Quit
Choose an opt:1
Input width: 10
Input height: 20
Result: 200.0
```

```
==== Shape Area Calculation ====
1. Rectangle
2. Circle
3. Triangle (three sides)
4. Triangle (base and height)
5. Semi circle
6. Sector
7. Quit
Choose an opt:2
Input radius: 10
Result: 314.0
```

```
==== Shape Area Calculation ====
1. Rectangle
2. Circle
3. Triangle (three sides)
4. Triangle (base and height)
5. Semi circle
6. Sector
7. Quit
Choose an opt:3
Input A: 3
Input B: 4
Input C: 5
Result: 6.0
```

```
==== Shape Area Calculation ====
1. Rectangle
2. Circle
3. Triangle (three sides)
4. Triangle (base and height)
5. Semi circle
6. Sector
7. Quit
Choose an opt:4
Input base: 5
Input height: 7
Result: 17.5
```

```
==== Shape Area Calculation ====
1. Rectangle
2. Circle
3. Triangle (three sides)
4. Triangle (base and height)
5. Semi circle
6. Sector
7. Quit
Choose an opt:5
Input radius: 10
Result: 157.0
```

✓ Lab07.2

```
import java.sql.SQLSyntaxErrorException;
import java.util.Arrays;
import java.util.Scanner;

abstract class NumberRandomizer{
    abstract int randomizeInBetween(int min,int max);
    abstract int[] randomizeUniqueInBetween(int min,int max,int amount);
}
```

```java
class Random extends NumberRandomizer{

    @Override
    int randomizeInBetween(int min, int max) {
        int result = 0 ;
        do{
            result =(int) (Math.random()*max);
        }while(result<min);
        return result;
    }

    @Override
    int[] randomizeUniqueInBetween(int min, int max, int amount) {
        int[] result = new int[amount];
        int num = amount;
        do {
            int rand = (int) (Math.random()*max);
            if(rand>=min){
                for(int i = 0;i<result.length;i++){
                    if(min!=result[i]){
                        result[num-1] = rand;
                    }
                }
                num--;
            }
        }while (num>0);
        return result;
    }
}
public class Lab07_2 {
    private static Scanner sc = new Scanner(System.in);
    private static Random rand = new Random();
    private static void menu(){
        System.out.print("==== Number Randomizer ===\n" +
                "1. In between\n" +
                "2. Unique in between\n" +
                "3. Quit\n" +
                "Choose an opt:");
        int opt = sc.nextInt();
        switch (opt) {
            case 1->{
                System.out.print("Input min: ");
                int min = sc.nextInt();
                System.out.print(("Input max: "));
                int max = sc.nextInt();
                System.out.println("Result: "+rand.randomizeInBetween(min,max));
                menu();
            }
            case 2->{
                System.out.print("Input min: ");
                int min = sc.nextInt();
                System.out.print(("Input max: "));
                int max = sc.nextInt();
                System.out.print(("Input amount: "));
                int amount = sc.nextInt();
                System.out.println("Result: "+
Arrays.toString(rand.randomizeUniqueInBetween(min, max, amount)));
                menu();
```

```
            }
            case 3->System.out.println("Quited");
            default -> menu();
        }
    }
    public static void main(String[] args){
        menu();
    }
}
```

```
==== Number Randomizer ===
1. In between
2. Unique in between
3. Quit
Choose an opt:1
Input min: 2
Input max: 9
Result: 3
```

```
==== Number Randomizer ===
1. In between
2. Unique in between
3. Quit
Choose an opt:2
Input min: 2
Input max: 9
Input amount: 5
Result: [5, 2, 6, 3, 8]
```

✓ Lab07.3

```
import java.sql.Array;
import java.sql.SQLSyntaxErrorException;
import java.util.Arrays;
import java.util.Scanner;

abstract class TextRandomizer{
    abstract char randomizeACharacter();
    abstract String randomizeAString(int length);
    abstract String[] randomizeStrings(int length,int amount);
}
class TextRandom extends TextRandomizer{

    @Override
    char randomizeACharacter() {
        char ch = ' ';
        do{
            ch = (char) (int)(Math.random()*(int)'z');
        }while (!((ch>='A'&&ch<='Z')||(ch>='a'&&ch<='z')));
        return ch;
    }

    @Override
    String randomizeAString(int length) {
        String str = "";
        do{
            str+=randomizeACharacter();
        }while (str.length()<length);
        return str;
    }

    @Override
    String[] randomizeStrings(int length, int amount) {
        String str[] = new String[amount];
```

```
        for(int i=0; i<amount; i++){
            str[i]=randomizeAString(length);
        }
        return str;
    }
}
public class Lab07_3 {
    private static Scanner sc = new Scanner(System.in);
    private static TextRandom random = new TextRandom();
    private static void menu(){
        System.out.print("==== Text Randomizer ===\n" +
                "1. A Character\n" +
                "2. A String\n" +
                "3. Unique Strings\n" +
                "Choose an opt:");
        int opt = sc.nextInt();
        switch (opt) {
            case 1->{
                System.out.println("Result: "+random.randomizeACharacter());
                menu();
            }
            case 2->{
                System.out.print("Input length: ");
                int len = sc.nextInt();
                System.out.println("Result: "+random.randomizeAString(len));
                menu();
            }
            case 3->{
                System.out.print("Input length: ");
                int len = sc.nextInt();
                System.out.print("Input amount: ");
                int amount = sc.nextInt();
                System.out.println("Result: "+
Arrays.toString(random.randomizeStrings(len, amount)));
                menu();
            }
            case 4->System.out.print("Quited");
            default -> menu();
        }

    }
    public static void main(String[] args){
        menu();
    }
}
```

```
==== Text Randomizer ===
1. A Character
2. A String
3. Unique Strings
Choose an opt:1
Result: i
```

```
==== Text Randomizer ===
1. A Character
2. A String
3. Unique Strings
Choose an opt:2
Input length: 10
Result: TRXsaANHGN
```

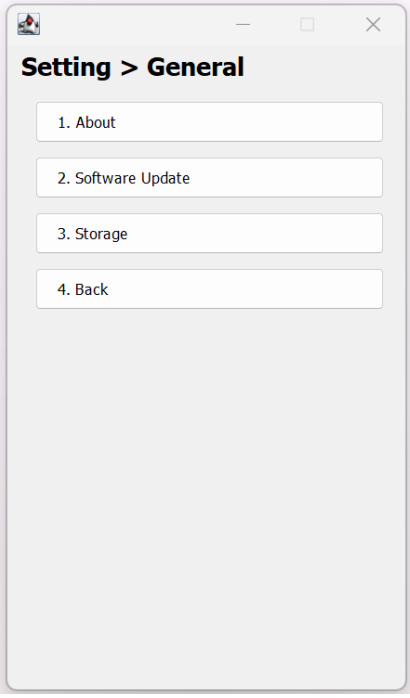
```
==== Text Randomizer ≡
1. A Character
2. A String
3. Unique Strings
Choose an opt:3
Input length: 10
Input amount: 5
Result: [QyXjHAWdSO, jtoPFnKHJA, ypKygNQlQo, dMqNifbRho, YfHFeTrVIL]
```

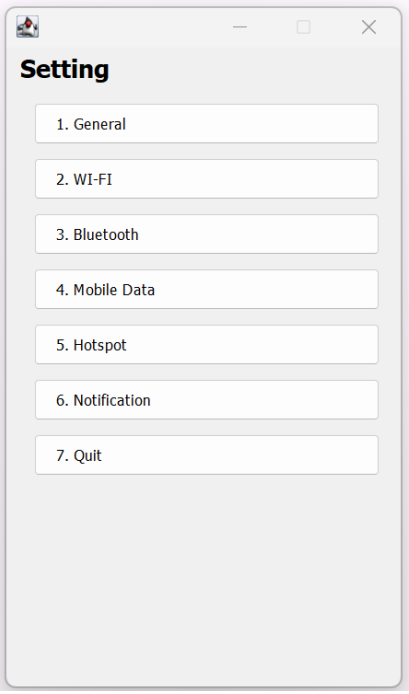
✓ Lab07.4

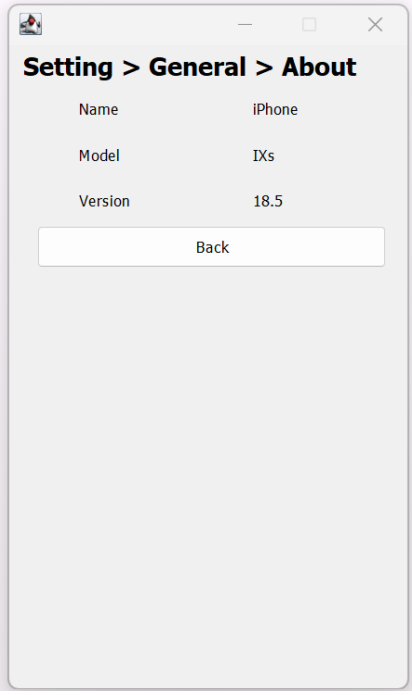
```
import javax.swing.*;
import java.awt.*;


class Setting extends JFrame {
    public Setting(){
        try {

UIManager.setLookAndFeel("com.sun.java.swing.plaf.windows.WindowsLookAndFeel");
        } catch (Exception e) {
            e.printStackTrace();
        }
        setSize(300,500);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLocationRelativeTo(null);
        setLayout(null);
        setResizable(false);
        //superPanel
        JPanel superPanel = new JPanel();
        superPanel.setBounds(0,0,300,500);
        superPanel.setLayout(new GridLayout());
        //panel-1
        JPanel panel1 = new JPanel();
        panel1.setSize(300,500);
        panel1.setLayout(null);
        //title of panel-1
        JLabel title1 = new JLabel("<html><h2>Setting</h2></html>");
        title1.setBounds(10,-10,250,50);
        panel1.add(title1);
        //buttons
        String[] bntText = {"General","WI-FI","Bluetooth","Mobile
Data","Hotspot","Notification","Quit"};
        JButton[] buttons = new JButton[bntText.length];
        for(int i = 0;i<bntText.length;i++){
            buttons[i] = new JButton((i+1)+". "+bntText[i]);
            buttons[i].setBounds(20,10*(i+1)+30*i+30,250,30);
            buttons[i].setHorizontalAlignment(SwingConstants.LEFT);
            panel1.add(buttons[i]);
        }


        //panel-2
        JPanel panel2 = new JPanel();
        panel2.setSize(300,500);
        panel2.setLayout(null);
        //title panel-2
```

```
        JLabel title2 = new JLabel("<html><h2>Setting > General</h2></html>");
        title2.setBounds(10,-10,250,50);
        panel2.add(title2);
        //buttons2
        String[] bntText2 = {"About","Software Update","Storage","Back"};
        JButton[] buttons2 = new JButton[bntText2.length];
        for(int i = 0;i<bntText2.length;i++){
            buttons2[i] = new JButton((i+1)+". "+bntText2[i]);
            buttons2[i].setBounds(20,10*(i+1)+30*i+30,250,30);
            buttons2[i].setHorizontalAlignment(SwingConstants.LEFT);
            panel2.add(buttons2[i]);
        }
        buttons2[0].addActionListener(e->{

        });
        //panel-3
        JPanel panel3 = new JPanel();
        panel3.setSize(300,500);
        panel3.setLayout(null);
        //title panel-3
        JLabel title3 = new JLabel("<html><h2>Setting > General >
About</h2></html>");
        title3.setBounds(10,-10,250,50);
        panel3.add(title3);
        //buttons3
        JButton buttons3 = new JButton("Back");
        buttons3.setBounds(20,130,250,30);
        panel3.add(buttons3);
        //click
        JPanel panel3_1 = new JPanel();
        panel3_1.setBounds(50,30,250,100);
        panel3_1.setLayout(new GridLayout(3,2));
        String[] typeText={"Name","iPhone","Model","IXs","Version","18.5"};
        JLabel[] lblType = new JLabel[typeText.length];
        for(int i=0;i<lblType.length;i++){
            lblType[i] = new JLabel(typeText[i]);
            panel3_1.add(lblType[i]);
        }
        panel3.add(panel3_1);
        buttons[0].addActionListener(e->{
            superPanel.removeAll();
            superPanel.add(panel2);
            revalidate();
            repaint();
        });
        buttons2[bntText2.length-1].addActionListener(e->{
            superPanel.removeAll();
            superPanel.add(panel1);
            revalidate();
            repaint();
        });
        buttons[bntText.length-1].addActionListener(e->{
           dispose();
        });
        buttons2[0].addActionListener(e->{
            superPanel.removeAll();
            superPanel.add(panel3);
            revalidate();
```

```
            repaint();
        });
        buttons3.addActionListener(e->{
            superPanel.removeAll();
            superPanel.add(panel2);
            revalidate();
            repaint();
        });
        superPanel.add(panel1);
        add(superPanel);
        setVisible(true);

    }

}
public class Lab07_4{
    public static void main(String[] args){
        Setting setting = new Setting();
    }

}
```







✓ Lab07.5

```
import javax.swing.*;
import javax.swing.table.DefaultTableModel;
import java.awt.*;
import java.util.concurrent.atomic.AtomicReference;

class StudentManagement extends JFrame {
    public StudentManagement(){
        super("Student Management System");
        try {
```

```
UIManager.setLookAndFeel("com.sun.java.swing.plaf.windows.WindowsLookAndFeel");
        } catch (Exception e) {
            e.printStackTrace();
        }
        setSize(800,500);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLocationRelativeTo(null);
        setLayout(null);
        setResizable(false);

        //Title
        JLabel title = new JLabel("<html><h1>Student Management<h1><html>");
        title.setBounds(20,10,300,30);
        add(title);
        setVisible(true);

        // title for textField
        String[] titleField = {"First Name","Last Name","Age","Major"};
        JLabel[] titleTextField =new JLabel[titleField.length];
        for(int i=0;i<titleField.length;i++){
            titleTextField[i] = new JLabel(titleField[i]);
            titleTextField[i].setBounds(25+150*i,50,200,20);
            add(titleTextField[i]);
        }
        // jTextField
        JTextField[] textFields = new JTextField[titleField.length];
        for(int i=0;i<textFields.length;i++){
            textFields[i] = new JTextField();
            textFields[i].setBounds(25+150*i,70,150,25);
            add(textFields[i]);

        }
        //button add
        Button btnAdd = new Button("ADD");
        btnAdd.setBounds(640,70,120,25);
        btnAdd.setBackground(Color.BLUE);
        btnAdd.setForeground(Color.white);
        add(btnAdd);
        //table
        JPanel ptable = new JPanel();
        ptable.setLayout(new GridLayout());
        ptable.setBounds(25,120,735,300);
        ptable.setBackground(Color.RED);
        DefaultTableModel defaultTableModel = new DefaultTableModel();
        defaultTableModel.addColumn("First name");
        defaultTableModel.addColumn("Last name");
        defaultTableModel.addColumn("Age");
        defaultTableModel.addColumn("Major");
        btnAdd.addActionListener(e->{
            defaultTableModel.addRow(new
Object[]{textFields[0].getText(),textFields[1].getText(),textFields[2].getText(),
textFields[3].getText()});
        });
        JTable table = new JTable(defaultTableModel);
        DefaultTableModel defaultTable = new DefaultTableModel();
        defaultTable.addRow(new Object[]{"a","b","c","d"});
        JScrollPane scrollPane = new JScrollPane(table);
        ptable.add(scrollPane);
```

```
        add(ptable);
        //click


        revalidate();
        repaint();
    }
}
public class Lab07_5 {
    public static void main(String[] args){
        StudentManagement studentManagement = new StudentManagement();
    }
}
```