Advanced Java Programming Lab Sheet
III Year /VI Part
Faculty: BCA

Lab sheet 1

Objectives:
1. Execution of sample program.
2. Design and create simple graphics application using different Swing layouts.
3. Use java.awt.Graphics API to render different 2D shapes.

Objective 1:

```java
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JPasswordField;
import javax.swing.JTextField;

public class LoginForm {

    public static void main(String[] args) {

        JFrame mainWindow;
        JLabel lbl_usrname, lbl_password;
        JTextField txt_usrname;
        JPasswordField txt_password;
        JButton btn_login;

        mainWindow = new JFrame();
        mainWindow.setTitle("Texas Login");
        mainWindow.setSize(400, 300);
        mainWindow.setLayout(null);
        lbl_usrname = new JLabel("Username : ");
        lbl_usrname.setBounds(10, 10, 100, 30);
        txt_usrname = new JTextField();
        txt_usrname.setBounds(110, 10, 100, 30);
        lbl_password = new JLabel("Password : ");
        lbl_password.setBounds(10, 50, 100, 30);
        txt_password = new JPasswordField();
        txt_password.setBounds(110, 50, 100, 30);
        btn_login = new JButton("Login");
        btn_login.setBounds(100, 100, 100, 40);
        mainWindow.add(lbl_usrname);
        mainWindow.add(txt_usrname);
        mainWindow.add(lbl_password);
        mainWindow.add(txt_password);
        mainWindow.add(btn_login);
```

```
            mainWindow.setVisible(true);
            mainWindow.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Assignment:

1.0. Note the input code and output of above program and modify the above program as below note down the

input and output of modified program and discuss the difference between them.

```java
import java.awt.FlowLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JPanel;
import javax.swing.JPasswordField;
import javax.swing.JTextField;

class Parent extends JFrame {
    private static final long serialVersionUID = 1L;
    JLabel lbl_usrname, lbl_password;
    JTextField txt_usrname;
    JPasswordField txt_password;
    JButton btn_login;
    Parent() {
            setTitle("Texas Login");
            setBounds(10, 10, 400, 300);
            setLayout(null);
            JPanel panel = new JPanel(new FlowLayout(FlowLayout.LEFT, 6, 6));
            panel.setSize(this.getWidth(), this.getHeight());
            lbl_usrname = new JLabel("Username : ");
            txt_usrname = new JTextField(6);
            lbl_password = new JLabel("Password : ");
            txt_password = new JPasswordField(6);
            btn_login = new JButton("Login");
            panel.add(lbl_usrname);
            panel.add(txt_usrname);
            panel.add(lbl_password);
            panel.add(txt_password);
            panel.add(btn_login);
            add(panel);
            setVisible(true);
            setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}

public class LoginForm2 {
```

```java
    public static void main(String[] args) {
        new Parent();
    }
}
```

Objective 2:

```java
import java.awt.Container;
import javax.swing.ButtonGroup;
import javax.swing.JButton;
import javax.swing.JCheckBox;
import javax.swing.JComboBox;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JRadioButton;
import javax.swing.JTextArea;
import javax.swing.JTextField;

class Window extends JFrame {

  private static final long serialVersionUID = 1L;

  JLabel lblName, lblMobile, lblGender, lblDob, lblAddress;
  JTextField txtName, txtMobile;
  JTextArea txtAddress;
  JRadioButton rdgenderMale, rdgenderFeMale, rdgenderOther;

  JComboBox<String> day, month, year;
  JCheckBox chkAccept;

  JButton btn_submit;
  ButtonGroup gender_group;
  Container container;

  Window() {
        container = this.getContentPane();

        lblName = new JLabel("Name : ");
        lblName.setBounds(10, 10, 100, 30);
        txtName = new JTextField();
        txtName.setBounds(110, 10, 200, 30);

        lblGender = new JLabel("Gender : ");
        lblGender.setBounds(10, 50, 100, 30);
        rdgenderMale = new JRadioButton("Male");
        rdgenderMale.setBounds(110, 50, 60, 30);
        rdgenderMale.setActionCommand("Male");
```

```java
        rdgenderFeMale = new JRadioButton("FeMale");
        rdgenderFeMale.setBounds(170, 50, 80, 30);
        rdgenderFeMale.setActionCommand("FeMale");

        rdgenderOther = new JRadioButton("Other");
        rdgenderOther.setBounds(250, 50, 130, 30);
        rdgenderOther.setActionCommand("Other");

        gender_group = new ButtonGroup();
        gender_group.add(rdgenderMale);
        gender_group.add(rdgenderFeMale);
        gender_group.add(rdgenderOther);

        lblDob = new JLabel("DOB : ");
        lblDob.setBounds(10, 90, 100, 30);

        String[] day_data = { "1", "2", "3", "4", "5", "6", "7", "8", "9",
    "10", "11", "12", "13", "14", "15", "16",
                "17", "18", "19", "20", "21", "22", "23", "24", "25",
    "26", "27", "28", "29", "30", "31" };
        String[] month_data = { "1", "2", "3", "4", "5", "6", "7", "8",
    "9", "10", "11", "12" };
        String[] year_data = { "1980", "1981", "1982", "1983", "1984",
    "1985", "1986", "1987", "1988", "1989", "1990",
                "1991", "1992", "1993", "1994", "1995", "1996", "1997",
    "1998", "1999", "2000", "2001", "2002", "2003",
                "2004", "2005", "2006", "2007", "2008", "2009", "2010",
    "2011", "2012", "2013", "2014", "2015", "2016",
                "2017", "2018", "2019", "2020", "2021" };

        day = new JComboBox<String>(day_data);
        day.setBounds(110, 90, 50, 30);
        month = new JComboBox<String>(month_data);
        month.setBounds(180, 90, 50, 30);
        year = new JComboBox<String>(year_data);
        year.setBounds(250, 90, 70, 30);
        lblAddress = new JLabel("Address : ");
        lblAddress.setBounds(10, 140, 100, 30);
        txtAddress = new JTextArea();
        txtAddress.setBounds(110, 140, 200, 50);

        lblMobile = new JLabel("Mobile : ");
        lblMobile.setBounds(10, 210, 100, 30);
        txtMobile = new JTextField();
        txtMobile.setBounds(110, 210, 200, 30);
        chkAccept = new JCheckBox("Accept terms and condition!");
        chkAccept.setBounds(60, 260, 200, 30);
        btn_submit = new JButton("Register");
        btn_submit.setBounds(100, 330, 110, 30);
        container.add(lblName);
```

```java
            container.add(txtName);
            container.add(lblGender);
            container.add(rdgenderMale);
            container.add(rdgenderFeMale);
            container.add(rdgenderOther);
            container.add(lblDob);
            container.add(day);
            container.add(month);
            container.add(year);
            container.add(lblAddress);
            container.add(txtAddress);
            container.add(lblMobile);
            container.add(txtMobile);
            container.add(chkAccept);
            container.add(btn_submit);

    }

}

public class RegistrationForm {

  public static void main(String[] args) {

        Window main_frame = new Window();
        main_frame.setBounds(10, 10, 400, 450);
        main_frame.setLayout(null);
        main_frame.setTitle("Texas Registration Form");

        main_frame.setVisible(true);
        main_frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

    }
}
```

Assignment:

2.0. Modify the above program and use the Grid Layout, Flow Layout, Border Layout and Grid Bag Layout.

Objective 3:

```java
import java.awt.Color;
import java.awt.Font;
import java.awt.Graphics;

import javax.swing.JPanel;

public class Class_1_2D_Shapes_Panel extends JPanel {
```

```java
        private static final long serialVersionUID = 1L;

        @Override
        public void paint(Graphics g) {
            super.paint(g);

            Font font =  new Font(Font.SERIF, Font.ITALIC, 20);
            g.setColor(Color.WHITE);
            g.setFont(font);
            g.drawString("Texas Internation College", 20, 20);

            g.drawLine(20, 25, 60, 60);

            g.drawRect(20, 100, 100, 80);

            g.fillRect(20, 190, 100, 80);

            g.fillOval(20, 290, 100, 50);


            g.drawOval(20, 350, 50, 50);
            g.fillArc(150, 100, 200, 200, 15, 125);

            int x [] = {400,350,450};
            int y [] = {400,600,600};
            int n=3;
            g.drawPolygon(x, y, n);

        }

    }
```

Assignment:

3.0. Draw 2D shapes of Triangle, Circle, Pentagon, Hexagon, Octagon, and Car using drawPolygon.