1. Program to draw Circle, Rectangle, Line in Applet.
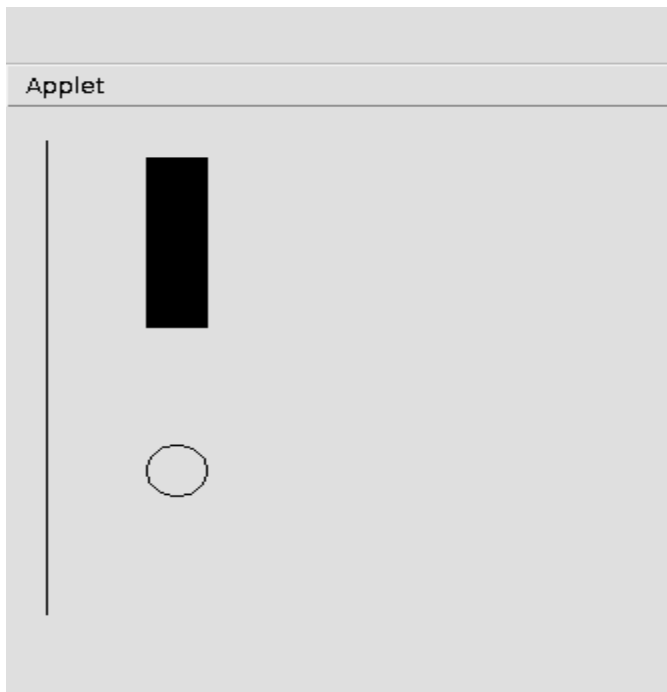
CODE:-

```
import java.applet.Applet;
import java.awt.Color;
import java.awt.Graphics;
public class prgm1 extends Applet {
 public void paint (Graphics g)
 {
    g.setColor(Color.BLACK);
    g.drawLine(20,20,20,300);
    g.drawRect(70,30,30,100);
    g.fillRect(70, 30,30, 100);
    g.drawOval(70,200,30,30);
 }
}
```

OUTPUT:-

2. Program to find maximum of three numbers using AWT.

CODE:-

```java
import java.awt.*;
import java.awt.event.*;
public class prgm2 implements ActionListener{
    Frame f=new Frame();
    Label l1=new Label("First Number");
    Label l2=new Label("Second Number");
    Label l3=new Label("Third Number");
    Label res=new Label("Result");
    TextField t1=new TextField();
    TextField t2=new TextField();
    TextField t3=new TextField();
    Button b1=new Button("Largest !");
    prgm2(){
    l1.setBounds(50,100,100,20);
    l2.setBounds(50,140,100,20);
    l3.setBounds(50,180,100,20);
    t1.setBounds(150,100,100,20);
    t2.setBounds(150,140,100,20);
    t3.setBounds(150,180,100,20);
    b1.setBounds(50,220,100,20);
    res.setBounds(50,260,100,20);
    f.add(l1);
    f.add(l2);
    f.add(l3);
    f.add(t1);
    f.add(t2);
    f.add(t3);
    f.add(res);
    f.add(b1);
    b1.addActionListener(this);
    f.setLayout(null);
```

```java
    f.setVisible(true);
    f.setSize(400,400);
}
public static void main(String[] args){
    new prgm2();
}
public void actionPerformed(ActionEvent e){
if(e.getSource()==b1){
int n1=Integer.parseInt(t1.getText());
int n2=Integer.parseInt(t2.getText());
int n3=Integer.parseInt(t3.getText());
int largerest= (n1 > n2) ? (n1 > n3 ? n1 : n3) : (n2 > n3 ? n2 : n3);
res.setText(String.valueOf(largerest)+" is the largest");
}
}
}
}
```

OUTPUT:-

First Number   23

Second Number56

Third Number   100

[Largest !]

100 is the large

3. Find the percentage of marks obtained by a student in 5 subjects. Display a happy face if he secures above 50% or a sad face if otherwise.

CODE:-

```java
import java.applet.*;
import java.awt.*;
import java.awt.event.*;
public class prgm3 extends Applet implements ActionListener {
    TextField t1,t2,t3,t4;
    Button b;
    Label l1,l2,l3,l4;
    public void init(){
        l1=new Label("mark1");
        t1= new TextField(5);
//t1.setBounds(100,50,200,20);
        l2=new Label("mark2");
//l2.setBounds(100,130,100,30);
        t2= new TextField(5);
//t2.setBounds(100,80,100,20);
        l3=new Label("mark3");
//l3.setBounds(100,160,100,20);
        t3= new TextField(5);
//t3.setBounds(100,120,100,20);
        l4=new Label("result");
//l4.setBounds(100,200,100,20);
        t4=new TextField(5);
        t1.setBounds(210,40,100,20);
        t2.setBounds(210,80,100,20);
        t3.setBounds(210,120,100,20);
        t4.setBounds(210,140,100,20);
        l1.setBounds(100,40,100,20);
        l2.setBounds(100,80,100,20);
        l3.setBounds(100,120,100,20);
        l4.setBounds(100,140,100,20);
        b=new Button("find");
        b.setBounds(230,150,60,50);
```

```java
    add(l1);
    add(l2);
    add(l3);
    add(l4);
    add(t1);
    add(t2);
    add(t3);
    add(t4);
    add(b);
    b.addActionListener(this);
}
public void actionPerformed(ActionEvent e){
    int x=0;
    int y=0;
    int z=0;
    int total=0;
    x= Integer.parseInt(t1.getText());
    y= Integer.parseInt(t2.getText());
    z= Integer.parseInt(t3.getText());
    if(e.getSource()==b){
        total=(x+y+z)/3;
        t4.setText(String.valueOf(total));
    }
}
    public void paint(Graphics g){
        int x=0;
        int y=0;
        int z=0;
        int total=0;
        x= Integer.parseInt(t1.getText());
        y= Integer.parseInt(t2.getText());
        z= Integer.parseInt(t3.getText());
        total=(x+y+z)/3;
        if(total > 50){
            g.setColor(Color.YELLOW);
            g.fillOval(80,70, 150, 150);
            g.setColor(Color.BLACK);
```

```
            g.fillOval(120,120,15,15);
            g.fillOval(170,120,15,15);
            g.drawArc(130,180,50,20,180,180);
        }
        else
        {
            g.setColor(Color.PINK);
            g.fillOval(80,70, 150, 150);
            g.setColor(Color.BLACK);
            g.fillOval(120,120,15,15);
            g.fillOval(170,120,15,15);
            g.drawArc(130,180,50,20,180,-180);
        }
    }
}
```

OUTPUT:-

4. Using 2D graphics commands in an Applet, construct a house. On mouse click event, change the color of the door from blue to red.
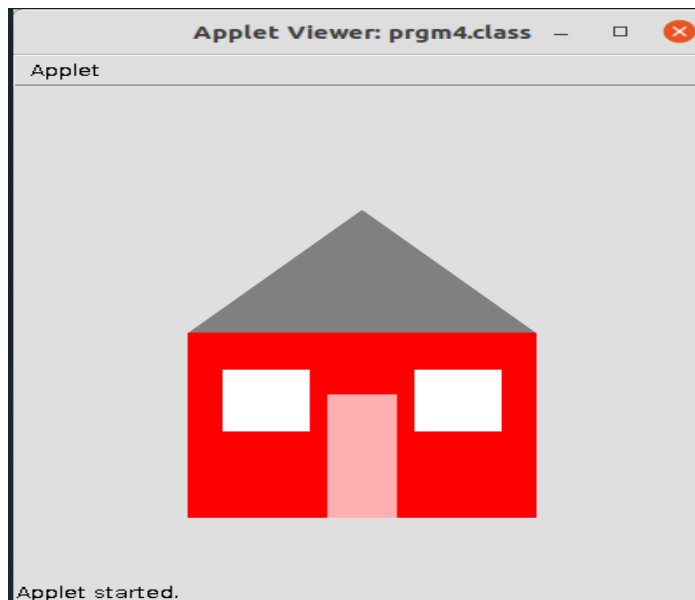
CODE:-

```
import java.awt.*;
import java.applet.*;
import java.awt.event.*;
public class prgm4  extends Applet implements MouseListener {
    private Color doorColor = Color.BLUE;
    public void init() {
        setSize(400, 400);
        addMouseListener(this);
    }
    public void paint(Graphics g) {
        drawHouse(g);
    }
    public void drawHouse(Graphics g) {
        g.setColor(Color.RED);
        g.fillRect(100, 200, 200, 150);
        int[] xPoints = {100, 200, 300};
        int[] yPoints = {200, 100, 200};
        g.setColor(Color.GRAY);
        g.fillPolygon(xPoints, yPoints, 3);
        g.setColor(doorColor);
        g.fillRect(180, 250, 40, 100);
        g.setColor(Color.WHITE);
        g.fillRect(120, 230, 50, 50);
        g.fillRect(230, 230, 50, 50);
    }
    public void mouseClicked(MouseEvent e) {
        int mouseX = e.getX();
        int mouseY = e.getY();
        if (mouseX >= 180 && mouseX <= 220 && mouseY >= 250 && mouseY <= 350)
{

            doorColor = (doorColor == Color.BLUE) ? Color.PINK : Color.BLUE;
```

```java
            repaint();
        }
    }
    @Override
    public void mousePressed(MouseEvent me) {
        throw new UnsupportedOperationException("Not supported yet.");
    }
    @Override
    public void mouseReleased(MouseEvent me) {
        throw new UnsupportedOperationException("Not supported yet.");
    }
    @Override
    public void mouseEntered(MouseEvent me) {
        throw new UnsupportedOperationException("Not supported yet.");
    }
    @Override
    public void mouseExited(MouseEvent me) {
        throw new UnsupportedOperationException("Not supported yet.");
    }
}
```

OUTPUT:-

5. Implement a simple calculator using AWT components.
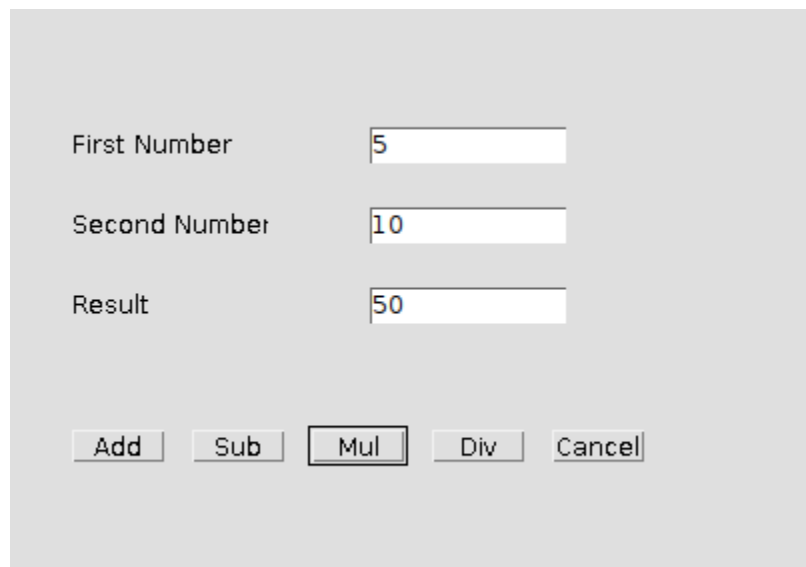
CODE:-

```java
import java.awt.*;
import java.awt.event.*;
public class prgm5  implements ActionListener
{
    Frame f=new Frame();
    Label l1=new Label("First Number");
    Label l2=new Label("Second Number");
    Label l3=new Label("Result");
    TextField t1=new TextField();
    TextField t2=new TextField();
    TextField t3=new TextField();
    Button b1=new Button("Add");
    Button b2=new Button("Sub");
Button b3=new Button("Mul");
Button b4=new Button("Div");
Button b5=new Button("Cancel");
prgm5(){
l1.setBounds(50,100,100,20);
l2.setBounds(50,140,100,20);
l3.setBounds(50,180,100,20);
t1.setBounds(200,100,100,20);
t2.setBounds(200,140,100,20);
t3.setBounds(200,180,100,20);
b1.setBounds(50,250,50,20);
b2.setBounds(110,250,50,20);
b3.setBounds(170,250,50,20);
b4.setBounds(230,250,50,20);
b5.setBounds(290,250,50,20);
f.add(l1);
f.add(l2);
f.add(l3);
f.add(t1);
f.add(t2);
```

```java
f.add(t3);
f.add(b1);
f.add(b2);
f.add(b3);
f.add(b4);
f.add(b5);
b1.addActionListener(this);
b2.addActionListener(this);
b3.addActionListener(this);
b4.addActionListener(this);
b5.addActionListener(this);
f.setLayout(null);
f.setVisible(true);
f.setSize(400,350);
}
public void actionPerformed(ActionEvent e){
int n1=Integer.parseInt(t1.getText());
int n2=Integer.parseInt(t2.getText());
if(e.getSource()==b1)
{
t3.setText(String.valueOf(n1+n2));
}
if(e.getSource()==b2)
{
t3.setText(String.valueOf(n1-n2));
}
if(e.getSource()==b3)
{
t3.setText(String.valueOf(n1*n2));
}
if(e.getSource()==b4)
{
t3.setText(String.valueOf(n1/n2));
}
if(e.getSource()==b5)
{
System.exit(0);
```

```
}
}
public static void main(String...s)
{
new prgm5();
}
}


}
```

OUTPUT:-

6. Develop a program that has a Choice component which contains the names of shapes such as rectangle, triangle, square and circle. Draw the corresponding shapes for given parameters as per user's choice.
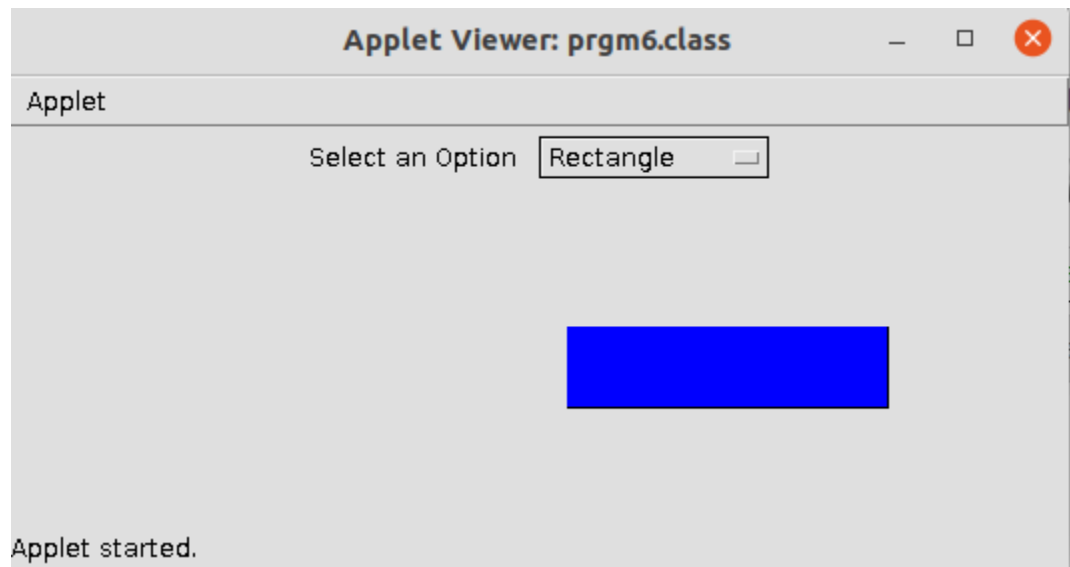
CODE:-

```
import java.awt.*;
import java.applet.*;
import java.awt.event.ItemEvent;
import java.awt.event.ItemListener;
import java.awt.Graphics;
public class prgm6  extends Applet implements ItemListener {
    Choice ch;
    int n;
    public void init(){
        Label l1;
        l1=new Label("Select an Option");
        l1.setBounds(50, 80, 100, 20);
        add(l1);
        ch =new Choice();
        ch.addItem("choose shape");
        ch.addItem("Rectangle");
        ch.addItem("Triangle");
        ch.addItem("Square");
        ch.addItem("Circle");
        ch.addItemListener(this);
        add(ch);
    }
    public void paint(Graphics d){
        if(n==0){
        }
        if(n==1){
            d.drawRect(280, 100, 160, 40);
            d.setColor(Color.blue);
            d.fillRect(280,100,160,40);
            d.setColor(Color.CYAN);
        }
```

```java
        if(n==2) {
            int[] x = new int[]{50, 50, 200};
            int[] y = new int[]{500, 400, 500};
            d.drawPolygon(x,y,3);
            d.setColor(Color.GREEN);
            d.fillPolygon(x,y,3);
        }
        if(n==3) {
            d.drawRect(100, 100, 100, 100);
            d.setColor(Color.pink);
            d.fillRect(100,100,100,100);
            d.setColor(Color.gray);
        }
        if(n==4) {
            d.setColor(Color.blue);
            d.drawOval(400, 300, 150, 175);
            d.fillOval(400,300,150,175);
            d.setColor(Color.green);
        }
    }
    public void itemStateChanged (ItemEvent e)
    {
        n = ch.getSelectedIndex();
        repaint();
    }
}
```

OUTPUT:-

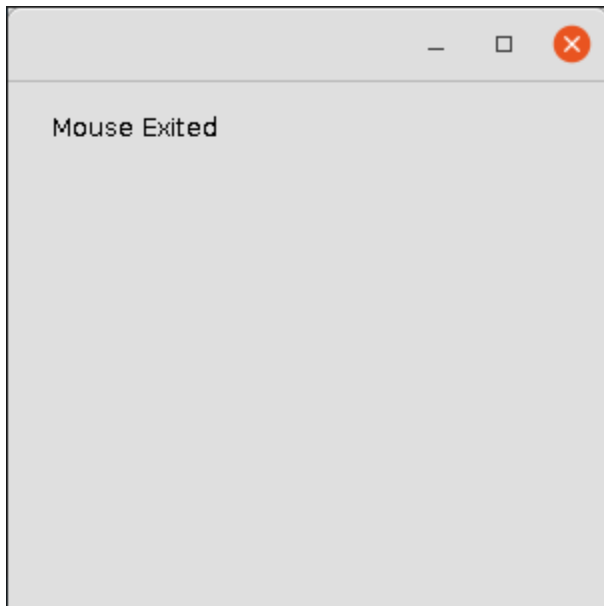**7.** Develop a program to handle all mouse events and window events.

CODE:-

```java
import java.awt.*;
import java.awt.event.*;
public class prgm7 extends Frame implements MouseListener{
    Label l;
    prgm7(){
        addMouseListener(this);

        l=new Label();
        l.setBounds(20,50,100,20);
        add(l);
        setSize(300,300);
        setLayout(null);
        setVisible(true);
    }
    public void mouseClicked(MouseEvent e) {
        l.setText("Mouse Clicked");
    }
    public void mouseEntered(MouseEvent e) {
        l.setText("Mouse Entered");
    }
    public void mouseExited(MouseEvent e) {
        l.setText("Mouse Exited");
    }
    public void mousePressed(MouseEvent e) {
        l.setText("Mouse Pressed");
    }
    public void mouseReleased(MouseEvent e) {
        l.setText("Mouse Released");
    }
public static void main(String[] args) {
    new prgm7();
}
}
}
```

}

OUTPUT:-

Mouse Exited

8. Develop a program to handle Key events.

CODE:-

```
import java.awt.FlowLayout;
import java.awt.Frame;
import java.awt.Label;
import java.awt.TextField;
import java.awt.event.KeyEvent;
import java.awt.event.KeyListener;
public class prgm8 implements KeyListener
{
Label lb1, lbl2, lb;
TextField tf1;
Frame fr;
String s;
prgm8()
{
fr = new Frame("KeyEventListener Example");
lb1= new Label(" Key Events will be displayed based on the actions",
Label.CENTER);
lbl2= new Label();
lb= new Label();
tf1 = new TextField(20);
fr.setLayout(new FlowLayout());
fr.add(lb1);
fr.add(tf1);
fr.add(lbl2);
tf1.addKeyListener(this);
fr.setSize(460,250);
fr.setVisible(true);
}
public void keyPressed(KeyEvent ev)
{

lbl2.setText(" Key pressed");
}
```

```java
public void keyReleased(KeyEvent ev)
{
lbl2.setText("Released");
}
public void keyTyped(KeyEvent ev)
{
lbl2.setText("Key is typed");
fr.setVisible(true);
}
public static void main(String[] args)
{
new prgm8();
}
}
```

OUTPUT:-