RSGIS

Lab- Assignment

M.Sc. Computer Science, 3rd Sem, 2022-23

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Roll: 90/MCS NO.210015

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Paper Code: MCS-DSE-311

1 Write a program to assign two features in an RS-GIS image.

Answer:

Source Code:

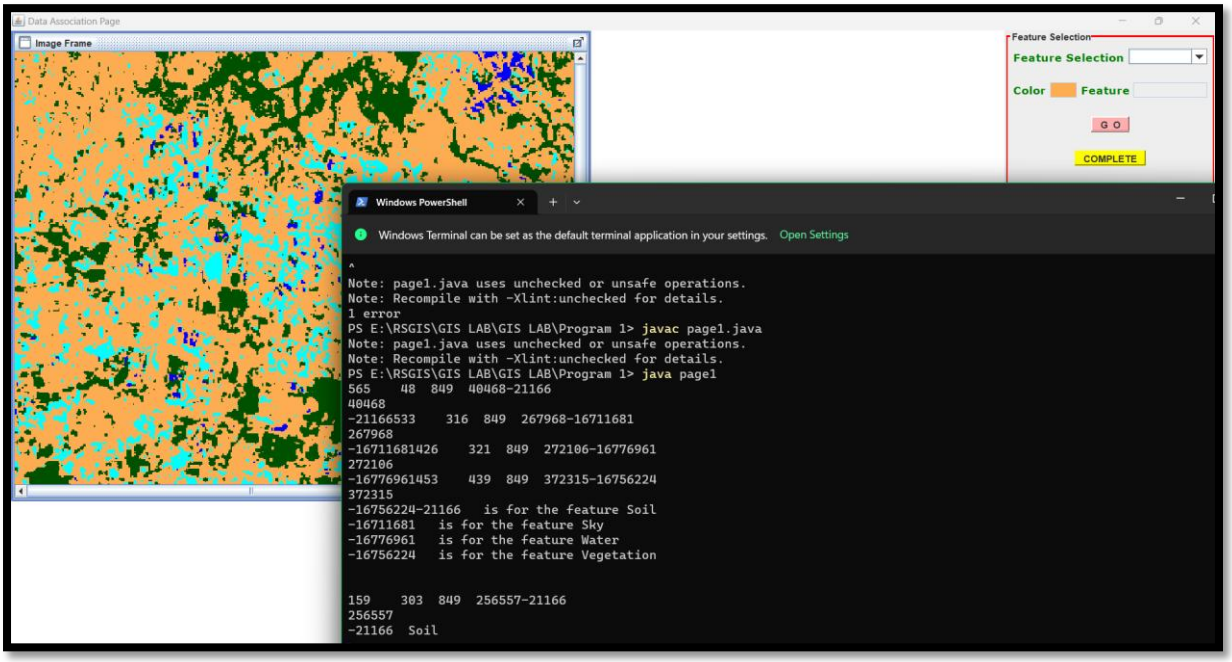
```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class page1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
	JFrame f;
	JLabel l;
	JPanel p1;
	ImageIcon ii;
	Image img;
	int height;
	int width;
	Container c;
	int pixels[];
	PixelGrabber pg;
	JPanel panel;
	JLabel leb1,leb2,leb3;
	JComboBox cb1a;
	JTextField tf1,tf2;
	JButton fcb,cb;
	Color cc=new Color(160,160,220,200);
	int x,y;
	int rgb;
	int frgb[]=new int[4];
	String fea[]=new String[4];
	int count=0;
	String ss;
	int ccb=0;

	page1()
	{
		f=new JFrame("Data Association Page");
		ii=new ImageIcon("session1.gif");
		img=ii.getImage();
		height=ii.getIconHeight();
		width=ii.getIconWidth();
		pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
		pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
		try
		{
			pg.grabPixels();
		}
		catch(InterruptedException k)
		{
		}
		l=new JLabel(ii,JLabel.CENTER);
		c=f.getContentPane();
		JDesktopPane desk = new JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
		JScrollPane scroll = new JScrollPane(l);
		p.setContentPane(scroll);
		p.setBounds(0, 0, 740, 600);
		desk.add(p);
		p.setVisible(true);
		l.addMouseListener(this);
		l.addMouseMotionListener(this);

		panel=new JPanel();
		panel.setLayout(new GridLayout(4,1));
		panel.setBackground(cc);

		p1=new JPanel();
	p1.setBorder(new TitledBorder(new LineBorder(Color.red,2),"Feature Selection"));
	p1.setLayout(new GridLayout(4,1));
	panel.add(p1);
	/*--------------------*/
```

```
            JPanel p1a=new JPanel();
            String ht1 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";
                        leb1=new JLabel(ht1);
                        p1a.add(leb1);

                        cb1a=new JComboBox();
                        cb1a.setPreferredSize(new Dimension (100,20) );
            cb1a.setEditable(false);
            cb1a.setBackground(Color.WHITE);
            cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
            cb1a.addItem("      ");


           //cb1a.addActionListener(this);
            p1a.add(cb1a);
                        p1.add(p1a);

                        /*--------------------*/
                        JPanel p1b=new JPanel();
                        String ht2 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Color</font> </p>";
                        leb2=new JLabel(ht2);
                        p1b.add(leb2);
                        tf1=new JTextField(3);
            tf1.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
            tf1.setEditable(false);
            tf1.setBackground(Color.white);
            p1b.add(tf1);

                        /*--------------------*/

                        String ht3 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature</font> </p>";
                        leb3=new JLabel(ht3);
                        p1b.add(leb3);
                        tf2=new JTextField(9);
            tf2.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
            p1b.add(tf2);

            p1.add(p1b);
            /*--------------------*/

                        JPanel p1c=new JPanel();
                        fcb=new JButton("   G  O   ");
                        fcb.setBackground(Color.pink);
                        fcb.setBorder(new BevelBorder (BevelBorder.RAISED));
                        fcb.addActionListener(this);
                        fcb.setBorder(new BevelBorder(BevelBorder.RAISED));
                        p1c.add(fcb);

                        p1.add(p1c);
                         /*--------------------*/
                        JPanel p1d=new JPanel();
                        cb=new JButton("   COMPLETE   ");
                        cb.setBackground(Color.yellow);
                        cb.setBorder(new BevelBorder (BevelBorder.RAISED));
                        cb.addActionListener(this);
                        cb.setBorder(new BevelBorder(BevelBorder.RAISED));
                        p1d.add(cb);

                        p1.add(p1d);
                         /*--------------------*/
                        c.add(desk, BorderLayout.CENTER);
                        c.add(panel,BorderLayout.EAST);
              f.setSize(1024,738);
                        f.setVisible(true);

        }

        public static void main(String args[])
        {
                        new page1();
        }
```

```
public void mouseClicked(MouseEvent me)
{
 ColorModel md=pg.getColorModel();
 x=me.getX();
 y=me.getY();
 int a1=(y-1)*ii.getIconWidth()+x;
 System.out.println(x+"    "+y+"  "+ii.getIconWidth()+"  "+a1+pixels[a1]);
System.out.println(a1);
 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 tf1.setBackground(new Color(rgb));
 for(int i=0;i<count;i++)
 {
            if(rgb==frgb[i])
            {
                        System.out.print("  "+fea[i]+"\n\n");
                        break;
            }
 }
}
public void mouseEntered(MouseEvent me)
{
}
public void mouseExited(MouseEvent me)
{
}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{
}
public void mouseMoved(MouseEvent me)
{
}
public void mouseDragged(MouseEvent me)
{
}

public void actionPerformed(ActionEvent ae)
{
            if(ae.getSource()==fcb)
            {
                        int flag=0;
                        if(count==4)
                        {
                                    JOptionPane.showMessageDialog((Component)null,"Assignment completed before",
                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                    flag=1;
                                    tf1.setBackground(Color.white);
                                    tf2.setText(null);

                        }
                        ss=tf2.getText();
                        if(ss.length()==0&&flag==0)
                        {
                                    JOptionPane.showMessageDialog((Component)null,"Please Assign Feature Name",
                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                    flag=1;
                        }
              if(rgb==0&&flag==0)
              {
                        JOptionPane.showMessageDialog((Component)null,"Please Select Feature",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
              }

              if(flag==0)
              {
              for(int i=0;i<count;i++)
              {
                        if(rgb==frgb[i])
                        {
                         JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
```

```
                        }

                        if(ss.equalsIgnoreCase(fea[i]))
                        {
                         JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        tf2.setText(null);
                        }

                    }
                    }

                    if(flag==0)
                    {
                            frgb[count]=rgb;
                            //System.out.println(rgb);
                            fea[count]=ss;
                            count++;
                            tf1.setBackground(Color.white);
                            tf2.setText(null);
                            rgb=0;
                    }
                    if(count==4&&flag==0)
                    {
                            JOptionPane.showMessageDialog((Component)null,"Assignment completed",
                            "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                            tf1.setBackground(Color.white);
                            tf2.setText(null);
                            tf2.setEditable(false);
                    }
                   }

            if(ae.getSource()==cb)
            {
                    if(count==4&& ccb==0)
                    {
                     for(int i=0;i<4;i++)
                     {
                            cb1a.addItem(fea[i]);
                            System.out.println(frgb[i]+"   is for the feature "+fea[i]);
                     }
                     System.out.print("\n\n");
                     ccb=1;
                    }
            }
           }
}
```

Output:



2 Write a GIS based program to draw a polygon (four different places with 1 cm,7cm,9cm width) into a GIS image.

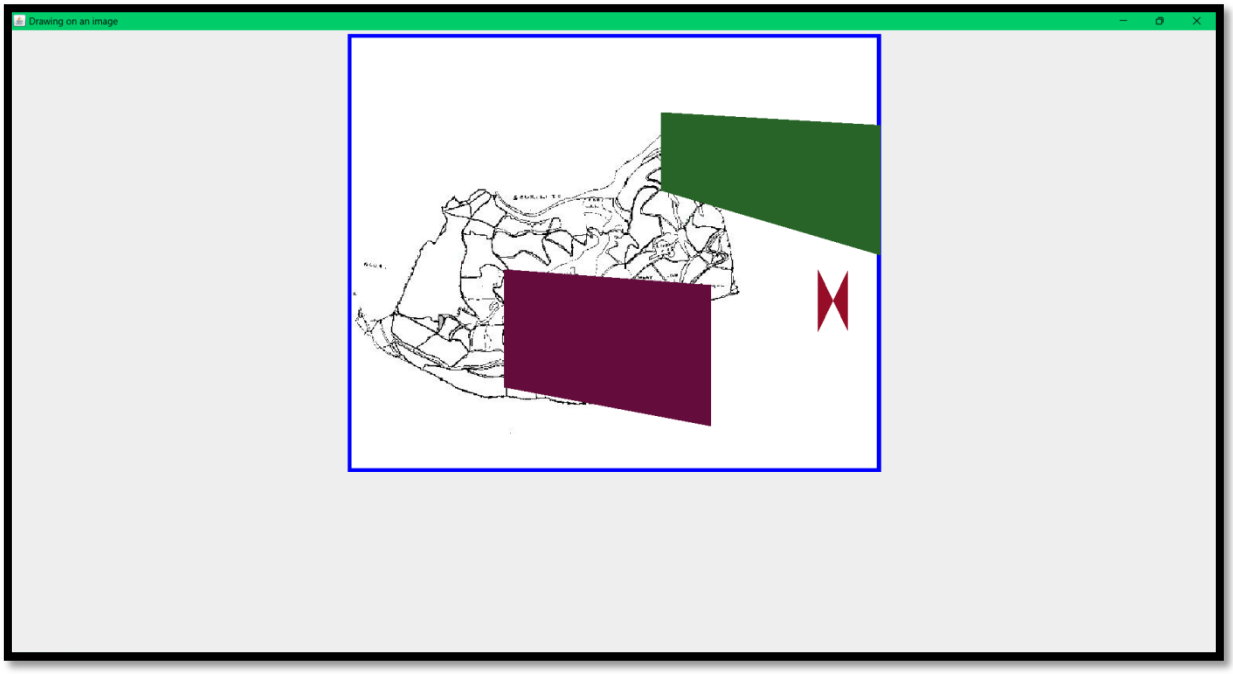
Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class poly extends JFrame implements MouseListener,MouseMotionListener
{
	JFrame f;
	JLabel l;
	JPanel panel;
	Container c;
	ImageIcon ii;
	Image img;
	int pixels[];
	PixelGrabber pg;
	ColorModel cm;
	Graphics2D gg;
	poly()
	{
		f=new JFrame("Drawing on an image");
		f.setSize(1024,738);
		ii=new ImageIcon("subhrajit.jpg");
		img=ii.getImage();
		pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
		pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
		try
		{
			pg.grabPixels();
		}
		catch(InterruptedException k)
		{
		}
		l=new JLabel(ii,JLabel.CENTER);
		l.addMouseListener(this);
		l.addMouseMotionListener(this);
		l.setBorder(BorderFactory.createLineBorder(Color.blue,5));
		panel=new JPanel();
		panel.setLayout(new FlowLayout());
		panel.add(l);



		c=f.getContentPane();
		c.add(panel);
		f.setVisible(true);
	}
public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}
```

```
public void mousePressed(MouseEvent me)
{
}
public void mouseReleased(MouseEvent me)
{
}

public void mouseMoved(MouseEvent me)
{
        ColorModel cm=pg.getColorModel();
        gg=(Graphics2D)l.getGraphics();

  //Drawing Polygons
        Polygon pp1=new Polygon();
        pp1.addPoint(600,300);
        pp1.addPoint(600,380);
        pp1.addPoint(638,300);
        pp1.addPoint(638,380);
        gg.setColor(new Color(150,13,40) );
        gg.fillPolygon(pp1);
        Polygon pp2=new Polygon();
        pp2.addPoint(200,300);
        pp2.addPoint(200,450);
        pp2.addPoint(464,500);
        pp2.addPoint(464,320);
        gg.setColor(new Color(100,13,60) );
        gg.fillPolygon(pp2);
        Polygon pp3=new Polygon();
        pp3.addPoint(400,100);
        pp3.addPoint(400,200);
        pp3.addPoint(740,300);
        pp3.addPoint(740,120);
        gg.setColor(new Color(40,100,40) );
        gg.fillPolygon(pp3);
}
public void mouseDragged(MouseEvent me)
{
}

        public static void main(String aa[])
        {
                new poly();
        }
}
```

Output:



3 Write a program to draw line(2cm,6cm,9cm) in three different places and point into a GIS image

Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class lp extends JFrame implements MouseListener,MouseMotionListener
{
	JFrame f;
	JLabel l;
	JPanel panel;
	Container c;
	ImageIcon ii;
	Image img;
	int pixels[];
	PixelGrabber pg;
	ColorModel cm;
	Graphics2D gg;
	lp()
	{
		f=new JFrame("Drawing on an image");
		f.setSize(1024,738);
		ii=new ImageIcon("habra.jpg");
		img=ii.getImage();
		pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
		pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
		try
		{
			pg.grabPixels();
		}
		catch(InterruptedException k)
		{
		}
		l=new JLabel(ii,JLabel.CENTER);
		l.addMouseListener(this);
		l.addMouseMotionListener(this);
		l.setBorder(BorderFactory.createLineBorder(Color.blue,5));
		panel=new JPanel();
		panel.setLayout(new FlowLayout());
		panel.add(l);



		c=f.getContentPane();
		c.add(panel);
		f.setVisible(true);
	}

public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{
```

```
}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}


public void mouseMoved(MouseEvent me)

{
        ColorModel cm=pg.getColorModel();
        gg=(Graphics2D)l.getGraphics();
          //Drawing line

        gg.setColor(Color.red);
        gg.drawLine(300,200,260,108);
        gg.setColor(Color.green);
        gg.drawLine(350,310,541,370);
        gg.setColor(Color.blue);
        gg.drawLine(410,238,342,530);

}
public void mouseDragged(MouseEvent me)
{
}

        public static void main(String aa[])
        {
                new lp();
        }
}
```

Output:

4 Write a program to show various process to open GIS image into desktop (at least three) with resizing it mark some portion of the image with some color and point it with attribute.

Answer:

Source Code:

Option1

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
	JFrame f;
	JLabel l;
	JPanel p1;
	ImageIcon ii;
	Image img;
	int height;
	int width;
	Container c;
	int pixels[];
	PixelGrabber pg;
	JPanel panel;
	JLabel leb1,leb2,leb3;
	JComboBox cb1a;
	JTextField tf1,tf2;
	JButton fcb,cb;
	Color cc=new Color(160,160,220,200);
	int x,y;
	int rgb;
	int frgb[]=new int[5];
	String fea[]=new String[5];
	int count=0;
	String ss;
	int ccb=0;
	Graphics2D gg1,gg2,gg3,gg4;
	Polygon pp1=new Polygon();
	Polygon pp2=new Polygon();
	Polygon pp3=new Polygon();
	Polygon pp4=new Polygon();

	option1()
	{
		f=new JFrame("Style 1 to open an image");
		ii=new ImageIcon("habra.jpg");
		img=ii.getImage();
		height=ii.getIconHeight();
		width=ii.getIconWidth();
		pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
		pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
		try
		{
			pg.grabPixels();
		}
		catch(InterruptedException k)
		{
		}
		l=new JLabel(ii,JLabel.CENTER);
		c=f.getContentPane();
		JDesktopPane desk = new JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
		JScrollPane scroll = new JScrollPane(l);
```

```
                    p.setContentPane(scroll);
                    p.setBounds(0, 0, 500, 400);
                    desk.add(p);
                    p.setVisible(true);
                    l.addMouseListener(this);
                    l.addMouseMotionListener(this);
                    pp1.addPoint(300,300);
                    pp1.addPoint(340,300);
                    pp1.addPoint(340,260);
                    pp1.addPoint(300,260);
                    pp2.addPoint(200,280);
                    pp2.addPoint(230,280);
                    pp2.addPoint(240,260);
                    pp2.addPoint(230,240);
                    pp2.addPoint(210,235);
                    pp2.addPoint(180,250);
                    pp3.addPoint(130,400);
                    pp3.addPoint(180,420);
                    pp3.addPoint(150,380);
                    pp4.addPoint(340,80);
                    pp4.addPoint(200,100);
                    pp4.addPoint(100,350);
                    panel=new JPanel();
                    panel.setLayout(new GridLayout(4,1));
                    panel.setBackground(cc);
                    p1=new JPanel();
          p1.setBorder(new TitledBorder(new LineBorder(Color.red,2),"Feature Selection"));
          p1.setLayout(new GridLayout(4,1));
          panel.add(p1);
          /*--------------------*/
          JPanel p1a=new JPanel();
          String ht1 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";
                    leb1=new JLabel(ht1);
                    p1a.add(leb1);
        cb1a=new JComboBox();
                    cb1a.setPreferredSize(new Dimension (100,20) );
          cb1a.setEditable(false);
          cb1a.setBackground(Color.WHITE);
          cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
          cb1a.addItem("     ");


         //cb1a.addActionListener(this);
          p1a.add(cb1a);
                    p1.add(p1a);

                    /*--------------------*/
                    JPanel p1b=new JPanel();
                    String ht2 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Color</font> </p>";
                    leb2=new JLabel(ht2);
                    p1b.add(leb2);
                    tf1=new JTextField(3);
          tf1.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
          tf1.setEditable(false);
          tf1.setBackground(Color.white);
          p1b.add(tf1);
                    String ht3 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature</font> </p>";
                    leb3=new JLabel(ht3);
                    p1b.add(leb3);
                    tf2=new JTextField(9);
          tf2.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
          p1b.add(tf2);
```

```
  p1.add(p1b);
            JPanel p1c=new JPanel();
            fcb=new JButton("   G  O   ");
            fcb.setBackground(Color.pink);
            fcb.setBorder(new BevelBorder (BevelBorder.RAISED));
            fcb.addActionListener(this);
            fcb.setBorder(new BevelBorder(BevelBorder.RAISED));
            p1c.add(fcb);
            p1.add(p1c);
            JPanel p1d=new JPanel();
            cb=new JButton("   COMPLETE   ");
            cb.setBackground(Color.yellow);
            cb.setBorder(new BevelBorder (BevelBorder.RAISED));
            cb.addActionListener(this);
            cb.setBorder(new BevelBorder(BevelBorder.RAISED));
            p1d.add(cb);
            p1.add(p1d);
            c.add(desk, BorderLayout.CENTER);
            c.add(panel,BorderLayout.EAST);
  f.setSize(1024,738);
            f.setVisible(true);
}
public static void main(String args[])
{
            new option1();
}

public void mouseClicked(MouseEvent me)
{
 boolean contain1,contain2,contain3,contain4;
 ColorModel md=pg.getColorModel();
 x=me.getX();
 y=me.getY();

 contain1=pp1.contains(x,y);
 contain2=pp2.contains(x,y);
 contain3=pp3.contains(x,y);
 contain4=pp4.contains(x,y);
 System.out.print("\nPoint inside polygon:"+(contain1||contain2||contain3||contain4)+"\n");
 int a1=(y-1)*ii.getIconWidth()+x;
 System.out.println(x+"    "+y+"  "+ii.getIconWidth()+"  "+a1+""+pixels[a1]);

 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 if(contain1==true)
 {
            Color color = new Color(255, 0, 0);
            rgb = color.getRGB();
            tf1.setBackground(new Color(255,0,0));
 }
 else if(contain2==true)
 {
            Color color = new Color(0, 255, 0);
            rgb = color.getRGB();
            tf1.setBackground(new Color(0,255,0));
 }
 else if(contain3==true)
 {
            Color color = new Color(0, 0, 255);
            rgb = color.getRGB();
            tf1.setBackground(new Color(0,0,255));
 }
 else if(contain4==true)
 {
            Color color = new Color(128, 128,128);
            rgb = color.getRGB();
            tf1.setBackground(new Color(128, 128,128));
```

```
 }
 else
        tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
        if(rgb==frgb[i])
        {
                System.out.print("  "+fea[i]+"\n\n");
                break;
        }
 }
}

public void mouseEntered(MouseEvent me)
{
}
public void mouseExited(MouseEvent me)
{
}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
        ColorModel cm=pg.getColorModel();
        gg1=(Graphics2D)l.getGraphics();
        gg1.setColor(new Color(255,0,0) );
        gg1.fillPolygon(pp1);
        gg2=(Graphics2D)l.getGraphics();
        gg2.setColor(new Color(0,255,0) );
        gg2.fillPolygon(pp2);
        gg3=(Graphics2D)l.getGraphics();
        gg3.setColor(new Color(0,0,255) );
        gg3.fillPolygon(pp3);
        gg4=(Graphics2D)l.getGraphics();
        gg4.setColor(new Color(128,128,128) );
        gg4.fillPolygon(pp4);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
        if(ae.getSource()==fcb)
        {
                int flag=0;
                if(count==4)
                {
                        JOptionPane.showMessageDialog((Component)null,"Assignment completed before",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        tf1.setBackground(Color.white);
                        tf2.setText(null);

                }
                ss=tf2.getText();
```

```
                    if(ss.length()==0&&flag==0)
                    {
                            JOptionPane.showMessageDialog((Component)null,"Please Assign Feature Name",
                            "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                            flag=1;
                    }
                if(rgb==0&&flag==0)
                {
                    JOptionPane.showMessageDialog((Component)null,"Please Select Feature",
                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
                }

                if(flag==0)
                {
                for(int i=0;i<count;i++)
                {
                    if(rgb==frgb[i])
                    {
                     JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",
                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
                    }

                    if(ss.equalsIgnoreCase(fea[i]))
                    {
                      JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",
                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
                    tf2.setText(null);
                    }

                }
                }

                if(flag==0)
                {
                    frgb[count]=rgb;
                    //System.out.println(rgb);
                    fea[count]=ss;
                    count++;
                    tf1.setBackground(Color.white);
                    tf2.setText(null);
                    rgb=0;
                }
                //allowing only three attribute here
                if(count==4)
                {
                            fcb.setVisible(false);
                }
               }

          if(ae.getSource()==cb)
          {
                    if(count==5&& ccb==0)
                    {
                     for(int i=0;i<4;i++)
                     {
                        cb1a.addItem(fea[i]);
                        System.out.println(frgb[i]+"   is for the feature "+fea[i]);
                     }
                     System.out.print("\n\n");
                     ccb=1;
                    }
          }
         }
}
```

Option2

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option2 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
	JFrame f;
	JLabel l;
	JPanel p1;
	ImageIcon ii;
	Image img;
	int height;
	int width;
	Container c;
	int pixels[];
	PixelGrabber pg;
	JPanel panel;
	JLabel leb1,leb2,leb3;
	JComboBox cb1a;
	JTextField tf1,tf2;
	JButton fcb,cb;
	Color cc=new Color(160,160,220,200);
	int x,y;
	int rgb;
	int frgb[]=new int[4];
	String fea[]=new String[4];
	int count=0;
	String ss;
	int ccb=0;
	Graphics2D gg1,gg2,gg3;
	Polygon pp1=new Polygon();
	Polygon pp2=new Polygon();
	Polygon pp3=new Polygon();

	option2()
	{
		f=new JFrame("Style 2 to open an image");
		ii=new ImageIcon("prasun.jpg");
		img=ii.getImage();
		height=ii.getIconHeight();
		width=ii.getIconWidth();
		pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
		pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
		try
		{
			pg.grabPixels();
		}
		catch(InterruptedException k)
		{
		}
		l=new JLabel(ii,JLabel.CENTER);
		c=f.getContentPane();
		JDesktopPane desk = new JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
		JScrollPane scroll = new JScrollPane(l);
		p.setContentPane(scroll);
		p.setBounds(0, 0, 600,600);
		desk.add(p);
		p.setVisible(true);
		l.addMouseListener(this);
		l.addMouseMotionListener(this);
```

```
                pp1.addPoint(300,300);
                pp1.addPoint(340,300);
                pp1.addPoint(340,260);
                pp1.addPoint(300,260);

                pp2.addPoint(130,400);
                pp2.addPoint(180,420);
                pp2.addPoint(150,380);

                pp3.addPoint(200,280);
                pp3.addPoint(230,280);
                pp3.addPoint(240,260);
                pp3.addPoint(230,240);
                pp3.addPoint(210,235);
                pp3.addPoint(180,250);




                panel=new JPanel();
                panel.setLayout(new GridLayout(4,1));
                panel.setBackground(cc);

                p1=new JPanel();
        p1.setBorder(new TitledBorder(new LineBorder(Color.red,2),"Feature Selection"));
        p1.setLayout(new GridLayout(4,1));
        panel.add(p1);
        /*---------------------*/
        JPanel p1a=new JPanel();
        String ht1 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";
                leb1=new JLabel(ht1);
                p1a.add(leb1);

                cb1a=new JComboBox();
                cb1a.setPreferredSize(new Dimension (100,20) );
        cb1a.setEditable(false);
        cb1a.setBackground(Color.WHITE);
        cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
        cb1a.addItem("     ");


       //cb1a.addActionListener(this);
        p1a.add(cb1a);
                p1.add(p1a);

                /*---------------------*/
                JPanel p1b=new JPanel();
                String ht2 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Color</font> </p>";
                leb2=new JLabel(ht2);
                p1b.add(leb2);
                tf1=new JTextField(3);
        tf1.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
        tf1.setEditable(false);
        tf1.setBackground(Color.white);
        p1b.add(tf1);

                /*---------------------*/

                String ht3 =
"<html><p><font color=\"GREEN\" "+
```

```
"size=\"4\" face=\"Verdana\">Feature</font> </p>";
                leb3=new JLabel(ht3);
                p1b.add(leb3);
                tf2=new JTextField(9);
          tf2.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
          p1b.add(tf2);

          p1.add(p1b);
          /*--------------------*/

                JPanel p1c=new JPanel();
                fcb=new JButton("   G  O   ");
                fcb.setBackground(Color.pink);
                fcb.setBorder(new BevelBorder (BevelBorder.RAISED));
                fcb.addActionListener(this);
                fcb.setBorder(new BevelBorder(BevelBorder.RAISED));
                p1c.add(fcb);

                p1.add(p1c);
                 /*--------------------*/
                JPanel p1d=new JPanel();
                cb=new JButton("   COMPLETE   ");
                cb.setBackground(Color.yellow);
                cb.setBorder(new BevelBorder (BevelBorder.RAISED));
                cb.addActionListener(this);
                cb.setBorder(new BevelBorder(BevelBorder.RAISED));
                p1d.add(cb);

                p1.add(p1d);
                 /*--------------------*/
                c.add(desk, BorderLayout.CENTER);
                c.add(panel,BorderLayout.EAST);
          f.setSize(1024,738);
                f.setVisible(true);

        }

        public static void main(String args[])
        {
                new option2();
        }

        public void mouseClicked(MouseEvent me)
        {
         boolean contain1,contain2,contain3;
         ColorModel md=pg.getColorModel();
         x=me.getX();
         y=me.getY();

         contain1=pp1.contains(x,y);
         contain2=pp2.contains(x,y);
         contain3=pp3.contains(x,y);
         System.out.print("\nPoint inside polygon:"+(contain1||contain2||contain3)+"\n");
         int a1=(y-1)*ii.getIconWidth()+x;
         System.out.println(x+"    "+y+"  "+ii.getIconWidth()+"  "+a1+""+pixels[a1]);

         rgb=(md.getRGB(pixels[a1]));
         System.out.print(rgb);
         if(contain1==true)
         {
                Color color = new Color(255, 0, 0);
                rgb = color.getRGB();
                tf1.setBackground(new Color(255,0,0));
         }
         else if(contain2==true)
         {
                Color color = new Color(0, 255, 0);
                rgb = color.getRGB();
```

```
                tf1.setBackground(new Color(0,255,0));
        }
        else if(contain3==true)
        {
                Color color = new Color(0, 0, 255);
                rgb = color.getRGB();
                tf1.setBackground(new Color(0,0,255));
        }
        else
                tf1.setBackground(new Color(rgb));

        for(int i=0;i<count;i++)
        {
                if(rgb==frgb[i])
                {
                        System.out.print("  "+fea[i]+"\n\n");
                        break;
                }
        }


}

public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
                ColorModel cm=pg.getColorModel();
                gg1=(Graphics2D)l.getGraphics();
                gg1.setColor(new Color(255,0,0) );
                gg1.fillPolygon(pp1);
                gg2=(Graphics2D)l.getGraphics();
                gg2.setColor(new Color(0,255,0) );
                gg2.fillPolygon(pp2);
                gg3=(Graphics2D)l.getGraphics();
                gg3.setColor(new Color(0,0,255) );
                gg3.fillPolygon(pp3);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
                if(ae.getSource()==fcb)
                {
                        int flag=0;
                        if(count==4)
                        {
```

```
                                JOptionPane.showMessageDialog((Component)null,"Assignment completed before",
                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                                tf1.setBackground(Color.white);
                                tf2.setText(null);

                        }
                        ss=tf2.getText();
                        if(ss.length()==0&&flag==0)
                        {
                                JOptionPane.showMessageDialog((Component)null,"Please Assign Feature Name",
                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                        }
                if(rgb==0&&flag==0)
                {
                        JOptionPane.showMessageDialog((Component)null,"Please Select Feature",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }

                if(flag==0)
                {
                for(int i=0;i<count;i++)
                {
                        if(rgb==frgb[i])
                        {
                         JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        }

                        if(ss.equalsIgnoreCase(fea[i]))
                        {
                          JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        tf2.setText(null);
                        }

                }
                }

                if(flag==0)
                {
                        frgb[count]=rgb;
                        //System.out.println(rgb);
                        fea[count]=ss;
                        count++;
                        tf1.setBackground(Color.white);
                        tf2.setText(null);
                        rgb=0;
                }
                //allowing only three attribute here
                if(count==3)
                {
                                fcb.setVisible(false);
                }
           }

if(ae.getSource()==cb)
{
           if(count==4&& ccb==0)
           {
            for(int i=0;i<4;i++)
            {
                        cb1a.addItem(fea[i]);
                        System.out.println(frgb[i]+"   is for the feature "+fea[i]);
```

```
                        }
                        System.out.print("\n\n");
                        ccb=1;
                       }
                  }
                 }
}
```

Option3

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option3 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
        JFrame f;
        JLabel l;
        JPanel p1;
        ImageIcon ii;
        Image img;
        int height;
        int width;
        Container c;
        int pixels[];
        PixelGrabber pg;
        JPanel panel;
        JLabel leb1,leb2,leb3;
        JComboBox cb1a;
        JTextField tf1,tf2;
        JButton fcb,cb;
        Color cc=new Color(160,160,220,200);
        int x,y;
        int rgb;
        int frgb[]=new int[4];
        String fea[]=new String[4];
        int count=0;
        String ss;
        int ccb=0;
        Graphics2D gg1,gg2,gg3;
        Polygon pp1=new Polygon();
        Polygon pp2=new Polygon();
        Polygon pp3=new Polygon();

        option3()
        {
                f=new JFrame("Style 3 to open an image");
                ii=new ImageIcon("prasun.jpg");
                img=ii.getImage();
                height=ii.getIconHeight();
                width=ii.getIconWidth();
                pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
                pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
                try
                {
                        pg.grabPixels();
                }
                catch(InterruptedException k)
                {
                }
                l=new JLabel(ii,JLabel.CENTER);
                c=f.getContentPane();
                JDesktopPane desk = new JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
                JScrollPane scroll = new JScrollPane(l);
```

```
                    p.setContentPane(scroll);
                    p.setBounds(0, 0, 200,300);
                    desk.add(p);
                    p.setVisible(true);
                    l.addMouseListener(this);
                    l.addMouseMotionListener(this);


                    pp1.addPoint(130,400);
                    pp1.addPoint(180,420);
                    pp1.addPoint(150,380);

                    pp2.addPoint(300,300);
                    pp2.addPoint(340,300);
                    pp2.addPoint(340,260);
                    pp2.addPoint(300,260);

                    pp3.addPoint(200,280);
                    pp3.addPoint(230,280);
                    pp3.addPoint(240,260);
                    pp3.addPoint(230,240);
                    pp3.addPoint(210,235);
                    pp3.addPoint(180,250);



                    panel=new JPanel();
                    panel.setLayout(new GridLayout(4,1));
                    panel.setBackground(cc);

                    p1=new JPanel();
          p1.setBorder(new TitledBorder(new LineBorder(Color.red,2),"Feature Selection"));
          p1.setLayout(new GridLayout(4,1));
          panel.add(p1);
          /*--------------------*/
          JPanel p1a=new JPanel();
          String ht1 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";
                    leb1=new JLabel(ht1);
                    p1a.add(leb1);

                    cb1a=new JComboBox();
                    cb1a.setPreferredSize(new Dimension (100,20) );
          cb1a.setEditable(false);
          cb1a.setBackground(Color.WHITE);
          cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
          cb1a.addItem("     ");


         //cb1a.addActionListener(this);
          p1a.add(cb1a);
                    p1.add(p1a);

                    /*--------------------*/
                    JPanel p1b=new JPanel();
                    String ht2 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Color</font> </p>";
                    leb2=new JLabel(ht2);
                    p1b.add(leb2);
                    tf1=new JTextField(3);
          tf1.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
          tf1.setEditable(false);
          tf1.setBackground(Color.white);
          p1b.add(tf1);

                    /*--------------------*/
```

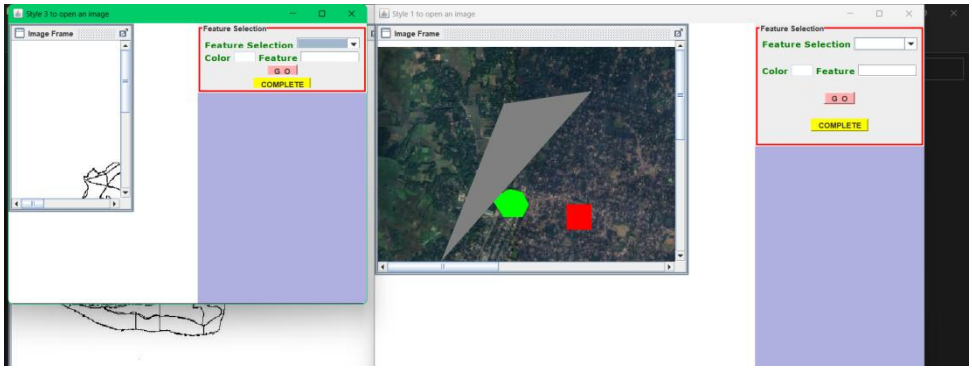
```
                String ht3 =
"<html><p><font color=\"GREEN\" "+
"size=\"4\" face=\"Verdana\">Feature</font> </p>";
                leb3=new JLabel(ht3);
                p1b.add(leb3);
                tf2=new JTextField(9);
          tf2.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
          p1b.add(tf2);

          p1.add(p1b);
          /*--------------------*/

                JPanel p1c=new JPanel();
                fcb=new JButton("   G  O   ");
                fcb.setBackground(Color.pink);
                fcb.setBorder(new BevelBorder (BevelBorder.RAISED));
                fcb.addActionListener(this);
                fcb.setBorder(new BevelBorder(BevelBorder.RAISED));
                p1c.add(fcb);

                p1.add(p1c);
                 /*--------------------*/
                JPanel p1d=new JPanel();
                cb=new JButton("   COMPLETE   ");
                cb.setBackground(Color.yellow);
                cb.setBorder(new BevelBorder (BevelBorder.RAISED));
                cb.addActionListener(this);
                cb.setBorder(new BevelBorder(BevelBorder.RAISED));
                p1d.add(cb);

                p1.add(p1d);
                 /*--------------------*/
                c.add(desk, BorderLayout.CENTER);
                c.add(panel,BorderLayout.EAST);
          f.setSize(1024,738);
                f.setVisible(true);

        }

        public static void main(String args[])
        {
                new option3();
        }

        public void mouseClicked(MouseEvent me)
        {
          boolean contain1,contain2,contain3;
          ColorModel md=pg.getColorModel();
          x=me.getX();
          y=me.getY();

          contain1=pp1.contains(x,y);
          contain2=pp2.contains(x,y);
          contain3=pp3.contains(x,y);
          System.out.print("\nPoint inside polygon:"+(contain1||contain2||contain3)+"\n");
          int a1=(y-1)*ii.getIconWidth()+x;
          System.out.println(x+"    "+y+"  "+ii.getIconWidth()+"  "+a1+""+pixels[a1]);

          rgb=(md.getRGB(pixels[a1]));
          System.out.print(rgb);
          if(contain1==true)
          {
                Color color = new Color(255, 0, 0);
                rgb = color.getRGB();
                tf1.setBackground(new Color(255,0,0));
          }
          else if(contain2==true)
```

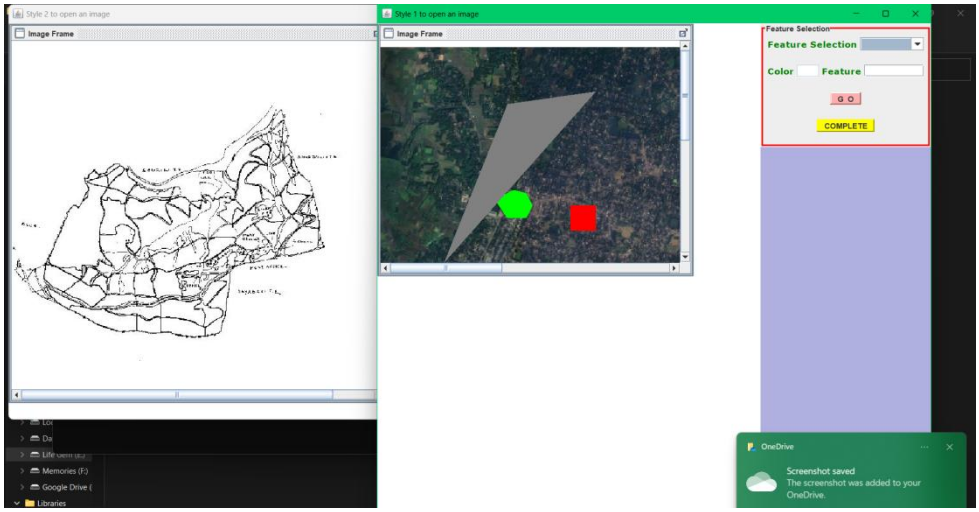
```
 {
		Color color = new Color(0, 255, 0);
		rgb = color.getRGB();
		tf1.setBackground(new Color(0,255,0));
 }
 else if(contain3==true)
 {
		Color color = new Color(0, 0, 255);
		rgb = color.getRGB();
		tf1.setBackground(new Color(0,0,255));
 }
 else
		tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
		if(rgb==frgb[i])
		{
			System.out.print("  "+fea[i]+"\n\n");
			break;
		}
 }
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
		ColorModel cm=pg.getColorModel();
		gg1=(Graphics2D)l.getGraphics();
		gg1.setColor(new Color(255,0,0) );
		gg1.fillPolygon(pp1);
		gg2=(Graphics2D)l.getGraphics();
		gg2.setColor(new Color(0,255,0) );
		gg2.fillPolygon(pp2);
		gg3=(Graphics2D)l.getGraphics();
		gg3.setColor(new Color(0,0,255) );
		gg3.fillPolygon(pp3);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
		if(ae.getSource()==fcb)
		{
			int flag=0;
			if(count==4)
			{
```

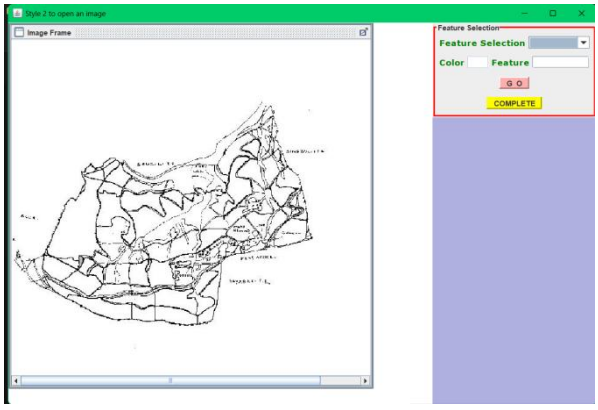
```
                                JOptionPane.showMessageDialog((Component)null,"Assignment completed before",
                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                                tf1.setBackground(Color.white);
                                tf2.setText(null);

                        }
                        ss=tf2.getText();
                        if(ss.length()==0&&flag==0)
                        {
                                JOptionPane.showMessageDialog((Component)null,"Please Assign Feature Name",
                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                        }
                if(rgb==0&&flag==0)
                {
                        JOptionPane.showMessageDialog((Component)null,"Please Select Feature",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }

                if(flag==0)
                {
                for(int i=0;i<count;i++)
                {
                        if(rgb==frgb[i])
                        {
                         JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        }

                        if(ss.equalsIgnoreCase(fea[i]))
                        {
                          JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",
                        "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        tf2.setText(null);
                        }

                }
                }

                if(flag==0)
                {
                        frgb[count]=rgb;
                        //System.out.println(rgb);
                        fea[count]=ss;
                        count++;
                        tf1.setBackground(Color.white);
                        tf2.setText(null);
                        rgb=0;
                }
                //allowing only three attribute here
                if(count==3)
                {
                                fcb.setVisible(false);
                }
           }

if(ae.getSource()==cb)
{
           if(count==4&& ccb==0)
           {
            for(int i=0;i<4;i++)
            {
                        cb1a.addItem(fea[i]);
                        System.out.println(frgb[i]+"   is for the feature "+fea[i]);
```

```
                    }
                    System.out.print("\n\n");
                    ccb=1;
                }
            }
        }
}
```

Output:







5 Write a program to cascade multiple designed pages(at least three) with resizing tool, take some tools to input and output data.

Answer:

Source Code:

Page1

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

class page1 extends JFrame implements ActionListener,ItemListener
{
 JFrame f;
 JPanel panel,p1,p2,p3,p31,p32;
 JLabel leb1,leb2,leb3;
 JTextField tf1;
 JComboBox cb;
 JButton b;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);
 String ss="Select";

 page1()
 {
            f=new JFrame("Page Design 1");
            f.setSize(500,300);
            f.setLocation(200,150);
            panel=new JPanel();
            panel.setLayout(new GridLayout(3,1));

            p1=new JPanel();
            p1.setBackground(c1);
            panel.add(p1);
            String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Enter Your Name</font> </p>";
                        leb1=new JLabel(ht1);
                        p1.add(leb1);
            tf1=new JTextField(15);
            tf1.setFont(new Font("TIMES NEW ROMAN", Font.PLAIN,14));
            p1.add(tf1);

            p2=new JPanel();
            p2.setBackground(c2);
            panel.add(p2);
            String ht2 =
    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">Choose Your Course</font> </p>";
                        leb2=new JLabel(ht2);
            p2.add(leb2);
            cb= new JComboBox();
            cb.setEditable(false);
            cb.setMaximumRowCount(3);
            cb.addItem("Select");
            cb.addItem("M. Tech");
            cb.addItem("MCA");
            cb.addItem("M.Sc");
            cb.addItem("M.A");
            cb.addItemListener(this);
            p2.add(cb);

            p3=new JPanel();
```

```
		panel.add(p3);
		p3.setLayout(new GridLayout(2,1));
		p31=new JPanel();
		p31.setBackground(c3);
		p3.add(p31);
		String ht3 =
	"<html><p><font color=\"RED\" "+
	"size=\"6\" face=\"Verdana\">Press the Button for Page 2</font> </p>";
				leb3=new JLabel(ht3);
		p31.add(leb3);
		p32=new JPanel();
		p32.setBackground(c3);
		p3.add(p32);
		b=new JButton(" BUTTON ");
		b.setBackground(Color.pink);
		b.setBorder(new BevelBorder (BevelBorder.RAISED));
		b.addActionListener(this);
		p32.add(b);

		c=f.getContentPane();
		c.add(panel);
		f.setVisible(true);
 }
 public static void main(String aa[])
 {
		new page1();

 }
 public void actionPerformed(ActionEvent ae)
 {
		if(ae.getSource()==b)
		{
			int flag=0;
			String st=tf1.getText();
			if(st.length()==0)
			{
			JOptionPane.showMessageDialog((Component)null,"Please  Write your Name",
		"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
		flag=1;
			}
			if(ss.equals("Select"))
			{
				JOptionPane.showMessageDialog((Component)null,"Please  Select The Course",
		"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
		flag=1;
			}
			if(flag==0)
			{
				//f.setVisible(false);
				new page2(st,ss);

			}
		}
 }
 public void itemStateChanged(ItemEvent ie)
 {
		ss =(String)cb.getSelectedItem();
 }

}
```

Page2

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

class page2 extends JFrame implements ActionListener,ItemListener
```

```
{
 JFrame f;
 JPanel panel,p1,p2,p3;
 JLabel leb1,leb2,leb3;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);

 String nam;
 String course;

 //JFrame f;
 JPanel panel1,p11,p21,p31,p311,p321;
 JLabel leb11,leb21,leb31;
 JTextField tf11;
 JComboBox cb1;
 JButton b1;
 Container co;
 Color c11=new Color(160,160,220,200);
 Color c21=new Color(160,100,10,100);
 Color c31=new Color(20,160,10,100);
 String ss1="Select";

 page2(String aa, String bb)
 {
        nam=aa;
        course=bb;
        f=new JFrame("Page Design 2");
        f.setSize(500,400);
        f.setLocation(200,150);
        panel=new JPanel();
        panel.setLayout(new GridLayout(3,1));

        p1=new JPanel();
        p1.setBackground(c1);
        panel.add(p1);
        String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">My Name is "+nam+"</font> </p>";
                leb1=new JLabel(ht1);
                p1.add(leb1);

        p2=new JPanel();
        p2.setBackground(c2);
        panel.add(p2);
        String ht2 =
    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">I am a Student of "+course+"</font> </p>";
                leb2=new JLabel(ht2);
        p2.add(leb2);
        f.setVisible(true);


        panel1=new JPanel();
        panel.setLayout(new GridLayout(2,1));

        p11=new JPanel();
        p11.setBackground(c11);
        panel.add(p11);
        String ht11 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Enter Country</font> </p>";
                leb11=new JLabel(ht11);
                p11.add(leb11);
        tf11=new JTextField(15);
        tf11.setFont(new Font("TIMES NEW ROMAN", Font.PLAIN,14));
        p11.add(tf11);
```

```
        p21=new JPanel();
        p21.setBackground(c21);
        panel.add(p21);
        String ht21 =
    "<html><p><font color=\"YELLOW\" "+
    "size=\"6\" face=\"Verdana\">Choose Gender</font> </p>";
                leb21=new JLabel(ht21);
        p21.add(leb21);
        cb1= new JComboBox();
        cb1.setEditable(false);
        cb1.setMaximumRowCount(3);
        cb1.addItem("Select");
        cb1.addItem("Male");
        cb1.addItem("Female");

        //cb1.addItemListener(this);
        p21.add(cb1);

        p31=new JPanel();
        p31.setLayout(new GridLayout(2,1));
        p31.setBackground(c31);
        p21.add(p31);
        String ht31 =
    "<html><p><font color=\"RED\" "+
    "size=\"6\" face=\"Verdana\">Press the Button for Page 3</font> </p>";
                leb31=new JLabel(ht31);
        p31.add(leb31);
        b1=new JButton(" BUTTON ");
        b1.setBackground(Color.pink);
        b1.setBorder(new BevelBorder (BevelBorder.RAISED));
        b1.addActionListener(this);
        p21.add(b1);

        co=f.getContentPane();
        co.add(panel);
        f.setVisible(true);

}

 public void actionPerformed(ActionEvent ae)
  {

        if(ae.getSource()==b1)
                {
                int flag=0;
                String st1=tf11.getText();
                String ss1 =(String)cb1.getSelectedItem();
                if(st1.length()==0)
                {
                JOptionPane.showMessageDialog((Component)null,"Please  Write your country",
            "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
            flag=1;
                }
                if(ss1.equals("Select"))
                {
                        JOptionPane.showMessageDialog((Component)null,"Please  Select The gender",
            "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
            flag=1;
                }
                if(flag==0)
                {
                        //f.setVisible(false);
                        new page3(st1,ss1);

                }
        }
}
```

```
 public void itemStateChanged(ItemEvent ie)
 {
            ss1 =(String)cb1.getSelectedItem();
 }
}
```

Page3

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

class page3 extends JFrame implements ActionListener,ItemListener
{
 JFrame f;
 JPanel panel,p1,p2,p3;
 JLabel leb1,leb2,leb3;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);

 String nam;
 String course;

 //JFrame f;
 JPanel panel1,p11,p21,p31,p311,p321;
 JLabel leb11,leb21,leb31;
 JTextField tf11;
 JComboBox cb1;
 JButton b1;
 Container co;
 Color c11=new Color(160,160,220,200);
 Color c21=new Color(160,100,10,100);
 Color c31=new Color(20,160,10,100);
 String ss1="Select";

 page3(String aa, String bb)
 {
            nam=aa;
            course=bb;
            f=new JFrame("Page Design 3");
            f.setSize(500,400);
            f.setLocation(200,150);
            panel=new JPanel();
            panel.setLayout(new GridLayout(3,1));

            p1=new JPanel();
            p1.setBackground(c1);
            panel.add(p1);
            String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">My Name is "+nam+"</font> </p>";
                        leb1=new JLabel(ht1);
                        p1.add(leb1);

            p2=new JPanel();
            p2.setBackground(c2);
            panel.add(p2);
            String ht2 =
    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">I am a Student of "+course+"</font> </p>";
                        leb2=new JLabel(ht2);
            p2.add(leb2);
            f.setVisible(true);
```

```
            panel1=new JPanel();
            panel.setLayout(new GridLayout(2,1));

            p11=new JPanel();
            p11.setBackground(c11);
            panel.add(p11);
            String ht11 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Enter Address</font> </p>";
                        leb11=new JLabel(ht11);
                        p11.add(leb11);
            tf11=new JTextField(15);
            tf11.setFont(new Font("TIMES NEW ROMAN", Font.PLAIN,14));
            p11.add(tf11);

            p21=new JPanel();
            p21.setBackground(c21);
            panel.add(p21);
            String ht21 =
    "<html><p><font color=\"YELLOW\" "+
    "size=\"6\" face=\"Verdana\">Are you an NRI?</font> </p>";
                        leb21=new JLabel(ht21);
            p21.add(leb21);
            cb1= new JComboBox();
            cb1.setEditable(false);
            cb1.setMaximumRowCount(3);
            cb1.addItem("Select");
            cb1.addItem("Yes");
            cb1.addItem("No");

            //cb1.addItemListener(this);
            p21.add(cb1);

            p31=new JPanel();
            p31.setLayout(new GridLayout(2,1));
            p31.setBackground(c31);
            p21.add(p31);
            String ht31 =
    "<html><p><font color=\"RED\" "+
    "size=\"6\" face=\"Verdana\">Press the Button for Page 3</font> </p>";
                        leb31=new JLabel(ht31);
            p31.add(leb31);
            b1=new JButton(" BUTTON ");
            b1.setBackground(Color.pink);
            b1.setBorder(new BevelBorder (BevelBorder.RAISED));
            b1.addActionListener(this);
            p21.add(b1);

            co=f.getContentPane();
            co.add(panel);
            f.setVisible(true);

}

 public void actionPerformed(ActionEvent ae)
 {

            if(ae.getSource()==b1)
                        {
                        int flag=0;
                        String st1=tf11.getText();
                        String ss1 =(String)cb1.getSelectedItem();
                        if(st1.length()==0)
                        {
                        JOptionPane.showMessageDialog((Component)null,"Please  enter your address",
                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
                        }
```

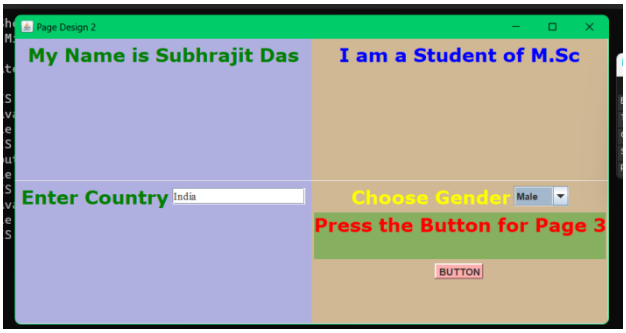
```
                        if(ss1.equals("Select"))
                        {
                                JOptionPane.showMessageDialog((Component)null,"Please  Select are you an NRI or not",
                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        }
                        if(flag==0)
                        {
                                //f.setVisible(false);
                                new page4(st1,ss1);

                        }
                }
 }

 public void itemStateChanged(ItemEvent ie)
 {
                ss1 =(String)cb1.getSelectedItem();
 }
}
```

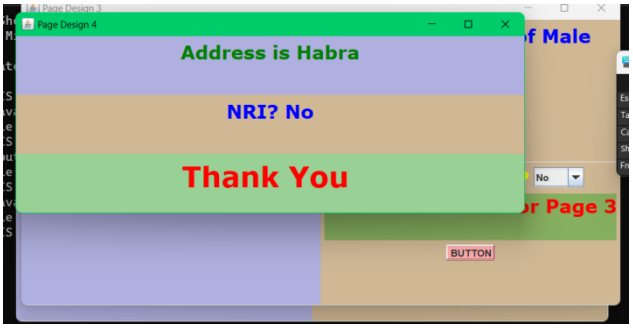
Page4

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


class page4 extends JFrame
{
 JFrame f;
 JPanel panel,p1,p2,p3;
 JLabel leb1,leb2,leb3;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);
 String nam;
 String course;
 page4(String aa, String bb)
 {
                nam=aa;
                course=bb;
                f=new JFrame("Page Design 4");
                f.setSize(500,200);
                f.setLocation(200,150);
                panel=new JPanel();
                panel.setLayout(new GridLayout(3,1));

                p1=new JPanel();
                p1.setBackground(c1);
                panel.add(p1);
                String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Address is "+nam+"</font> </p>";
                        leb1=new JLabel(ht1);
                        p1.add(leb1);

                p2=new JPanel();
                p2.setBackground(c2);
                panel.add(p2);
                String ht2 =
    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">NRI? "+course+"</font> </p>";
                        leb2=new JLabel(ht2);
                p2.add(leb2);

                p3=new JPanel();
```

```
            panel.add(p3);
            p3.setBackground(c3);
            String ht3 =
      "<html><p><font color=\"RED\" "+
      "size=\"10\" face=\"Verdana\"> Thank  You </font> </p>";
            leb3=new JLabel(ht3);
            p3.add(leb3);


            c=f.getContentPane();
            c.add(panel);
            f.setVisible(true);
 }

}
```

Output:





6 Write a program to assign three features in RS-GIS image. Compute how many segments has features of a type.

Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import java.util.Arrays;
import java.lang.Math;
class page1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
JFrame f;
JLabel l;
JPanel p1;
ImageIcon ii;
Image img;
int height;
int width;
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3,leb4;
JComboBox cb1a;
JTextField tf1,tf2,tf4;
JButton fcb,cb,fs;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb=0;
int frgb[]=new int[3];
String fea[]=new String[3];
int count=0;
String ss;
int ccb=0;

int[][] imageArray=new int[1000][1000];

page1()
{
        f=new JFrame("Data Association
Page");

        ii=new ImageIcon("session1.gif");
        img=ii.getImage();
        height=ii.getIconHeight();
        width=ii.getIconWidth();
        pixels=new
int[(ii.getIconWidth()+1)*(ii.getIconHeight()+1)];

        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,1,ii.getIconWidth());

        try
        {
                pg.grabPixels();
        }
        catch(InterruptedException k)
        {
        }
        l=new JLabel(ii,JLabel.CENTER);
        c=f.getContentPane();
        JDesktopPane desk = new
JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);

        JScrollPane scroll = new JScrollPane(l);
        p.setContentPane(scroll);
        p.setBounds(0, 0, 740, 600);
        desk.add(p);
        p.setVisible(true);
        l.addMouseListener(this);
        l.addMouseMotionListener(this);
```

```
                                                                    panel=new JPanel();
                                                                    panel.setLayout(new GridLayout(4,1));
                                                                    panel.setBackground(cc);

                                                                    p1=new JPanel();
                                                                p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                                p1.setLayout(new GridLayout(6,1));
                                                                panel.add(p1);
                                                                /*--------------------*/
                                                                JPanel p1a=new JPanel();
                                                                String ht1 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";

                                                                    leb1=new JLabel(ht1);
                                                                    p1a.add(leb1);

                                                                    cb1a=new JComboBox();
                                                                    cb1a.setPreferredSize(new Dimension
(100,20) );

                                                                cb1a.setEditable(false);
                                                                cb1a.setBackground(Color.WHITE);
                                                                cb1a.setFont(new Font("Dialog", Font.BOLD,
10));

                                                                cb1a.addItem("     ");


                                                               //cb1a.addActionListener(this);
                                                                p1a.add(cb1a);
                                                                    p1.add(p1a);

                                                                    /*--------------------*/
                                                                    JPanel p1b=new JPanel();
                                                                    String ht2 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Color</font> </p>";

                                                                    leb2=new JLabel(ht2);
                                                                    p1b.add(leb2);
                                                                    tf1=new JTextField(3);
                                                                tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                tf1.setEditable(false);
                                                                tf1.setBackground(Color.white);
                                                                p1b.add(tf1);

                                                                    /*--------------------*/

                                                                    String ht3 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature</font> </p>";

                                                                    leb3=new JLabel(ht3);
                                                                    p1b.add(leb3);
                                                                    tf2=new JTextField(9);
                                                                tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                p1b.add(tf2);

                                                                p1.add(p1b);
                                                                /*--------------------*/

                                                                    JPanel p1c=new JPanel();
                                                                    fcb=new JButton("   G O   ");
                                                                    fcb.setBackground(Color.pink);
                                                                    fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                    fcb.addActionListener(this);
                                                                    fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                    p1c.add(fcb);

                                                                    p1.add(p1c);
                                                                     /*--------------------*/
                                                                    JPanel p1d=new JPanel();
                                                                    cb=new JButton("   COMPLETE   ");
                                                                    cb.setBackground(Color.yellow);
                                                                    cb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                    cb.addActionListener(this);
```

```
BevelBorder(BevelBorder.RAISED));
                                                                        cb.setBorder(new
                                                                        p1d.add(cb);

                                                                        p1.add(p1d);
                                                                         /*--------------------*/
                                                                         /*--------------------*/
                                                                        JPanel p1e=new JPanel();

                                                                        fs=new JButton("Find No of segment");
                                                                        fs.setBackground(Color.yellow);
                                                                        fs.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                        fs.addActionListener(this);
                                                                        fs.setBorder(new
BevelBorder(BevelBorder.RAISED));
                                                                        p1e.add(fs);


                                                                        tf4=new JTextField(15);
                                                                  tf4.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));
                                                                  tf4.setEditable(false);
                                                                  tf4.setBackground(Color.white);
                                                                  p1e.add(tf4);

                                                                        tf4.setVisible(false);
                                                                        fs.setVisible(false);
                                                                        p1.add(p1e);

                                                                        c.add(desk, BorderLayout.CENTER);
                                                                        c.add(panel,BorderLayout.EAST);
                                                                  f.setSize(1024,738);
                                                                        f.setVisible(true);

                                                                }

                                                                public static void main(String args[])
                                                                {
                                                                        new page1();
                                                                }

                                                                public void mouseClicked(MouseEvent me)
                                                                {
                                                                 ColorModel md=pg.getColorModel();
                                                                 x=me.getX();
                                                                 y=me.getY();
                                                                 int a1=(y-1)*ii.getIconWidth()+x;
                                                                 System.out.println(x+"    "+y+"
"+ii.getIconWidth()+"  "+a1+pixels[a1]);
                                                                 // System.out.println(a1);
                                                                 rgb=(md.getRGB(pixels[a1]));
                                                                 System.out.print(rgb);
                                                                 tf1.setBackground(new Color(rgb));
                                                                 for(int i=0;i<count;i++)
                                                                 {
                                                                        if(rgb==frgb[i])
                                                                        {
                                                                                System.out.print("
"+fea[i]+"\n\n");
                                                                                break;
                                                                        }
                                                                 }
                                                                }

                                                                public void mouseEntered(MouseEvent me)
                                                                {

                                                                }
                                                                public void mouseExited(MouseEvent me)
                                                                {

                                                                }

                                                                public void mousePressed(MouseEvent me)
                                                                {

                                                                }
```

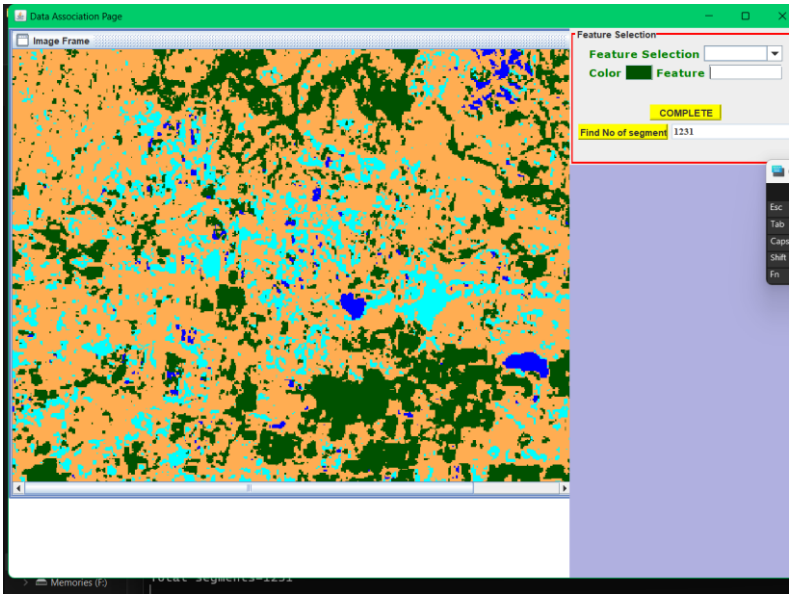
```
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)
{

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
        ColorModel md=pg.getColorModel();
        int rgb1;


        if(ae.getSource()==fcb)
        {
                int flag=0;
                if(count>=3)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Assignment completed before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;

tf1.setBackground(Color.white);
                        tf2.setText(null);

                }
                ss=tf2.getText();
                if(ss.length()==0&&flag==0)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Please Assign Feature Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }
            if(rgb==0&&flag==0)
            {

JOptionPane.showMessageDialog((Component)n
ull,"Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
            }

            if(flag==0)
            {
            for(int i=0;i<count;i++)
            {
                        if(rgb==frgb[i])
                        {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        }


if(ss.equalsIgnoreCase(fea[i]))
                        {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                        tf2.setText(null);
```

```
                    }

                }
                }

                if(flag==0)
                {
                        frgb[count]=rgb;
                        //System.out.println(rgb);
                        fea[count]=ss;
                        count++;

tf1.setBackground(Color.white);
                        tf2.setText(null);
                        rgb=0;
                }
                if(count==3)
                {

fcb.setVisible(false);
                }
            }

  if(ae.getSource()==cb)
  {
            if(count==3&& ccb==0)
            {
              for(int i=0;i<3;i++)
              {
                        cb1a.addItem(fea[i]);

System.out.print("\n"+frgb[i]+"   is for the feature
"+fea[i]);

              }
              System.out.print("\n\n");
              ccb=1;
            }
            tf4.setVisible(true);
            fs.setVisible(true);
            rgb=0;
  }


            if(ae.getSource()==fs)
            {
                        int a1,i,j;
                        int count1=0;
                        int current_label=1;
                        int k,l,row,col;
                        int front=-1,rear=-1;


                        int[] visited=new
int[(width*height)+1];
                        int[] labelled=new
int[(width*height)+1];
                        int[] queue=new
int[(width*height)+1];
                        double temp,temp1;


                        if(rgb==0)
                        {

JOptionPane.showMessageDialog((Component)n
ull,"Please Click on Feature to Find Number of Segments","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        }
                        else
                        {


for(i=1;i<=height;i++)
                                    {

for(j=1;j<=width;j++)
                                                {

a1=(i-1)*width+j;
```

```
rgb1=(md.getRGB(pixels[a1]));
if(rgb1==rgb)
{
        imageArray[i][j]=1;
}
else
        imageArray[i][j]=0;
                }
        }

for(i=1;i<=height;i++)
        {
for(j=1;j<=width;j++)
                {
if(imageArray[i][j]==1 && visited[(i-
1)*width+j]==0 && labelled[(i-1)*width+j]==0)
{
        rear++;
        front++;
        queue[rear]=(i-1)*width+j;
        visited[(i-1)*width+j]=1;
        current_label++;
        labelled[(i-1)*width+j]=current_label;

        //now insert adjacent pixel one by one
        while(front<=rear)
        {
                temp=queue[front];
                temp1=width;

row=(int)Math.ceil(temp/temp1);
                col=queue[front]%width;
                if(col==0)
                        col=width;

                for(k=-1;k<=1;k++)
                {
                        for(l=-1;l<=1;l++)
                        {

if(imageArray[row+k][col+l]==1 &&
                                {
visited[(row+k-1)*width+col+l]==0 && labelled[(row+k-1)*width+col+l]==0)
```

```
                                                                rear++;

                                                                queue[rear]=(row+k-1)*width+col+l;

                                                                visited[(row+k-1)*width+col+l]=1;

                                                                labelled[(row+k-1)*width+col+l]=current_label;
                                                                                                }
                                                                                        }
                                                                                }
                                                                                front++;
                                                                                visited[(row-
1)*width+col]=1;

                                                                                labelled[(row-
1)*width+col]=current_label;

                                                                        }
                                                        }
                                                        //initialize queue
                                                        for(k=0;k<height*width+1;k++)
                                                        {
                                                                queue[k]=0;
                                                                front=-1;
                                                                rear=-1;
                                                        }
                                                                                                }
                                                                                        }

                                                        System.out.println("Total
segments="+(current_label-1));

                                                        tf4.setText(Integer.toString(current_label-1));
                                                                                }
```

}Output:



7 Write a GIS based program to draw a polygon (four different places with 5 cm,7cm,9cm width) into a GIS image and designate the mark with some attribute.

Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import java.awt.Color;
import java.awt.Dimension;
import java.awt.Graphics;
import java.awt.Point;
import java.awt.event.MouseEvent;
import java.awt.event.MouseMotionAdapter;

import javax.swing.JFrame;
import javax.swing.JPanel;
import javax.swing.SwingUtilities;

class page1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
JFrame f;
JLabel l;
JPanel p1;
ImageIcon ii;
Image img;
int height;
int width;
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3;
JComboBox cb1a;
JTextField tf1,tf2;
JButton fcb,cb;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb;
int frgb[]=new int[2];
String fea[]=new String[2];
int count=0;
String ss;
int ccb=0;
Graphics2D gg;
Polygon pp1=new Polygon();


page1()
{
        f=new JFrame("Data Association
Page");

        ii=new ImageIcon("subhrajit.jpg");
        img=ii.getImage();
        height=ii.getIconHeight();
        width=ii.getIconWidth();
        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

        try
        {
                pg.grabPixels();
        }
        catch(InterruptedException k)
        {
        }
```

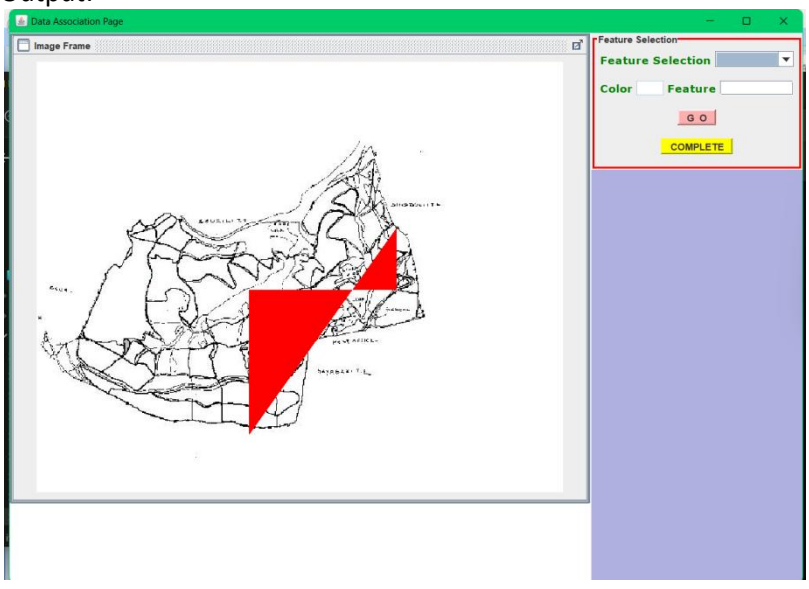
```
                                                                pp1.addPoint(300,300);
                                                                pp1.addPoint(488,300);
                                                                pp1.addPoint(488,220);
                                                                pp1.addPoint(300,484);


                                                                l=new JLabel(ii,JLabel.CENTER);
                                                                c=f.getContentPane();
                                                                JDesktopPane desk = new
JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
                                                                JScrollPane scroll = new JScrollPane(l);
                                                                p.setContentPane(scroll);
                                                                p.setBounds(0, 0, 740, 600);
                                                                desk.add(p);
                                                                p.setVisible(true);
                                                                l.addMouseListener(this);
                                                                l.addMouseMotionListener(this);



                                                                panel=new JPanel();
                                                                panel.setLayout(new GridLayout(4,1));
                                                                panel.setBackground(cc);

                                                                p1=new JPanel();
                                                            p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                            p1.setLayout(new GridLayout(4,1));
                                                            panel.add(p1);
                                                            /*--------------------*/
                                                            JPanel p1a=new JPanel();
                                                            String ht1 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";
                                                                leb1=new JLabel(ht1);
                                                                p1a.add(leb1);

                                                                cb1a=new JComboBox();
                                                                cb1a.setPreferredSize(new Dimension
(100,20) );

                                                            cb1a.setEditable(false);
                                                            cb1a.setBackground(Color.WHITE);
                                                            cb1a.setFont(new Font("Dialog", Font.BOLD,
10));

                                                            cb1a.addItem("     ");


                                                           //cb1a.addActionListener(this);
                                                            p1a.add(cb1a);
                                                                p1.add(p1a);

                                                                /*--------------------*/
                                                                JPanel p1b=new JPanel();
                                                                String ht2 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Color</font> </p>";
                                                                leb2=new JLabel(ht2);
                                                                p1b.add(leb2);
                                                                tf1=new JTextField(3);
                                                            tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                            tf1.setEditable(false);
                                                            tf1.setBackground(Color.white);
                                                            p1b.add(tf1);

                                                                /*--------------------*/

                                                                String ht3 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature</font> </p>";
                                                                leb3=new JLabel(ht3);
                                                                p1b.add(leb3);
                                                                tf2=new JTextField(9);
                                                            tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));
```

```
                                                                    p1b.add(tf2);

                                                                    p1.add(p1b);
                                                                    /*--------------------*/

                                                                            JPanel p1c=new JPanel();
                                                                            fcb=new JButton("   G  O   ");
                                                                            fcb.setBackground(Color.pink);
                                                                            fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                            fcb.addActionListener(this);
                                                                            fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));
                                                                            p1c.add(fcb);

                                                                            p1.add(p1c);
                                                                             /*--------------------*/
                                                                            JPanel p1d=new JPanel();
                                                                            cb=new JButton("   COMPLETE   ");
                                                                            cb.setBackground(Color.yellow);
                                                                            cb.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                            cb.addActionListener(this);
                                                                            cb.setBorder(new
BevelBorder(BevelBorder.RAISED));
                                                                            p1d.add(cb);

                                                                            p1.add(p1d);
                                                                             /*--------------------*/
                                                                            c.add(desk, BorderLayout.CENTER);
                                                                            c.add(panel,BorderLayout.EAST);
                                                                    f.setSize(1024,738);
                                                                            f.setVisible(true);

                                                            }


                                                            public static void main(String args[])
                                                            {
                                                                            new page1();
                                                            }

                                                            public void mouseClicked(MouseEvent me)
                                                            {
                                                             boolean contain;
                                                             ColorModel md=pg.getColorModel();
                                                             x=me.getX();
                                                             y=me.getY();

                                                             contain=pp1.contains(x,y);
                                                             System.out.print("\nPoint inside
polygon:"+contain+"\n");
                                                             int a1=(y-1)*ii.getIconWidth()+x;
                                                             System.out.println(x+"    "+y+"
"+ii.getIconWidth()+"  "+a1+""+pixels[a1]);

                                                             rgb=(md.getRGB(pixels[a1]));
                                                             System.out.print(rgb);
                                                             if(contain==true)
                                                             {
                                                                            Color color = new Color(255, 0, 0);
                                                                            rgb = color.getRGB();
                                                                            tf1.setBackground(new
Color(255,0,0));
                                                             }
                                                             else
                                                                            tf1.setBackground(new Color(rgb));

                                                             for(int i=0;i<count;i++)
                                                             {
                                                                            if(rgb==frgb[i])
                                                                            {
                                                                                            System.out.print("
"+fea[i]+"\n\n");
                                                                                            break;
                                                                            }
                                                             }
                                                            }
```

```
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
        ColorModel cm=pg.getColorModel();
        gg=(Graphics2D)l.getGraphics();


        gg.setColor(new Color(255,0,0) );
        gg.fillPolygon(pp1);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
        if(ae.getSource()==fcb)
        {
                int flag=0;
                if(count>=2)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Assignment completed before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;

tf1.setBackground(Color.white);
                        tf2.setText(null);

                }
                ss=tf2.getText();
                if(ss.length()==0&&flag==0)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Please Assign Feature Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }
            if(rgb==0&&flag==0)
            {

JOptionPane.showMessageDialog((Component)n
ull,"Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
            }

            if(flag==0)
            {
            for(int i=0;i<count;i++)
            {
                        if(rgb==frgb[i])
```

```
                                        {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

                                                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                        flag=1;
                                        }


                                if(ss.equalsIgnoreCase(fea[i]))
                                        {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

                                                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                        flag=1;
                                        tf2.setText(null);
                                        }

                                }
                                }

                                if(flag==0)
                                {
                                        frgb[count]=rgb;
                                        fea[count]=ss;
                                        count++;

tf1.setBackground(Color.white);
                                        tf2.setText(null);
                                        rgb=0;
                                }

                                        if(count==2)
                                {

fcb.setVisible(false);
                                }
                        }

  if(ae.getSource()==cb)
  {
                if(count==2&& ccb==0)
                {
                  for(int i=0;i<2;i++)
                  {
                                        cb1a.addItem(fea[i]);
                                        System.out.println(frgb[i]+"

                  }
                  System.out.print("\n\n");
                  ccb=1;
                }
  }             }

is for the feature "+fea[i]);



}
```

Output:



8 Write a program to draw line(4cm,5cm,6cm) in three different places and point into a GIS image so that they can form a triangle.

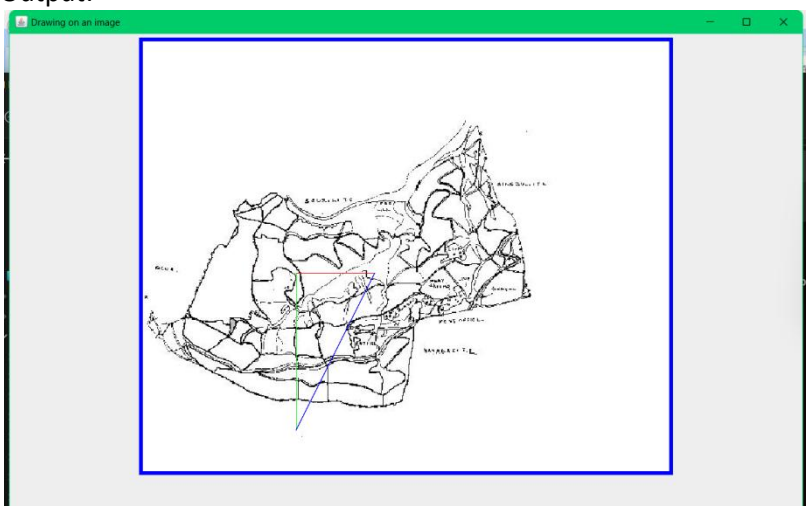
Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class triangle extends JFrame implements MouseListener,MouseMotionListener
{
                                                                                JFrame f;
                                                                                JLabel l;
                                                                                JPanel panel;
                                                                                Container c;
                                                                                ImageIcon ii;
                                                                                Image img;
                                                                                int pixels[];
                                                                                PixelGrabber pg;
                                                                                ColorModel cm;
                                                                                Graphics2D gg;
                                                                                triangle()
                                                                                {
                                                                                        f=new JFrame("Drawing on an
image");
                                                                                        f.setSize(1024,738);
                                                                                        ii=new ImageIcon("subhrajit.jpg");
                                                                                        img=ii.getImage();
                                                                                        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];
                                                                                        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
                                                                                        try
                                                                                        {
                                                                                                pg.grabPixels();
                                                                                        }
                                                                                        catch(InterruptedException k)
                                                                                        {
                                                                                        }
                                                                                        l=new JLabel(ii,JLabel.CENTER);
                                                                                        l.addMouseListener(this);
                                                                                        l.addMouseMotionListener(this);
                                                                                l.setBorder(BorderFactory.createLineBorder(Color
.blue,5));
                                                                                        panel=new JPanel();
                                                                                        panel.setLayout(new FlowLayout());
                                                                                        panel.add(l);
                                                                                        c=f.getContentPane();
                                                                                        c.add(panel);
                                                                                        f.setVisible(true);
                                                                                }
public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}
```

```
public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}


public void mouseMoved(MouseEvent me)

{
                                                                    ColorModel cm=pg.getColorModel();
                                                                    gg=(Graphics2D)l.getGraphics();
                                                                      //Drawing line

                                                                    gg.setColor(Color.red);
                                                                    gg.drawLine(300,300,200,300);
                                                                    gg.setColor(Color.green);
                                                                    gg.drawLine(200,300,200,500);
                                                                    gg.setColor(Color.blue);
                                                                    gg.drawLine(300,300,200,500);

}
public void mouseDragged(MouseEvent me)
{
}

                                                                    public static void main(String aa[])
                                                                    {
                                                                                new triangle();
                                                                    }
}
```

Output:



9 Write a program to show various process to open GIS image into desktop (at least three) with resizing tool.

Answer

Source Code:

Option1

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
                                                                    JFrame f;
                                                                    JLabel l;
                                                                    JPanel p1;
                                                                    ImageIcon ii;
                                                                    Image img;
                                                                    int height;
                                                                    int width;
```

```
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3;
JComboBox cb1a;
JTextField tf1,tf2;
JButton fcb,cb;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb;
int frgb[]=new int[5];
String fea[]=new String[5];
int count=0;
String ss;
int ccb=0;
Graphics2D gg1,gg2,gg3,gg4;
Polygon pp1=new Polygon();
Polygon pp2=new Polygon();
Polygon pp3=new Polygon();
Polygon pp4=new Polygon();

option1()
{
        f=new JFrame("Style 1 to open an
image");

        ii=new ImageIcon("habra.jpg");
        img=ii.getImage();
        height=ii.getIconHeight();
        width=ii.getIconWidth();
        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

        try
        {
                pg.grabPixels();
        }
        catch(InterruptedException k)
        {
        }
        l=new JLabel(ii,JLabel.CENTER);
        c=f.getContentPane();
        JDesktopPane desk = new
JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);

        JScrollPane scroll = new JScrollPane(l);
        p.setContentPane(scroll);
        p.setBounds(0, 0, 500, 400);
        desk.add(p);
        p.setVisible(true);
        l.addMouseListener(this);
        l.addMouseMotionListener(this);


        pp1.addPoint(300,300);
        pp1.addPoint(340,300);
        pp1.addPoint(340,260);
        pp1.addPoint(300,260);

        pp2.addPoint(200,280);
        pp2.addPoint(230,280);
        pp2.addPoint(240,260);
        pp2.addPoint(230,240);
        pp2.addPoint(210,235);
        pp2.addPoint(180,250);

        pp3.addPoint(130,400);
        pp3.addPoint(180,420);
        pp3.addPoint(150,380);

        pp4.addPoint(340,80);
        pp4.addPoint(200,100);
        pp4.addPoint(100,350);
```

```
                                                                panel=new JPanel();
                                                                panel.setLayout(new GridLayout(4,1));
                                                                panel.setBackground(cc);

                                                                p1=new JPanel();
                                                        p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                        p1.setLayout(new GridLayout(4,1));
                                                        panel.add(p1);
                                                        /*--------------------*/
                                                        JPanel p1a=new JPanel();
                                                        String ht1 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";


                                                                leb1=new JLabel(ht1);
                                                                p1a.add(leb1);

                                                                cb1a=new JComboBox();
                                                                cb1a.setPreferredSize(new Dimension
(100,20) );

                                                        cb1a.setEditable(false);
                                                        cb1a.setBackground(Color.WHITE);
                                                        cb1a.setFont(new Font("Dialog", Font.BOLD,
10));
                                                        cb1a.addItem("     ");


                                                       //cb1a.addActionListener(this);
                                                        p1a.add(cb1a);
                                                                p1.add(p1a);

                                                                /*--------------------*/
                                                                JPanel p1b=new JPanel();
                                                                String ht2 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Color</font> </p>";


                                                                leb2=new JLabel(ht2);
                                                                p1b.add(leb2);
                                                                tf1=new JTextField(3);
                                                        tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                        tf1.setEditable(false);
                                                        tf1.setBackground(Color.white);
                                                        p1b.add(tf1);

                                                                /*--------------------*/

                                                                String ht3 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature</font> </p>";


                                                                leb3=new JLabel(ht3);
                                                                p1b.add(leb3);
                                                                tf2=new JTextField(9);
                                                        tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                        p1b.add(tf2);

                                                        p1.add(p1b);
                                                        /*--------------------*/

                                                                JPanel p1c=new JPanel();
                                                                fcb=new JButton("   G  O   ");
                                                                fcb.setBackground(Color.pink);
                                                                fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                fcb.addActionListener(this);
                                                                fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                p1c.add(fcb);

                                                                p1.add(p1c);
                                                                 /*--------------------*/
                                                                JPanel p1d=new JPanel();
                                                                cb=new JButton("   COMPLETE   ");
                                                                cb.setBackground(Color.yellow);
                                                                cb.setBorder(new BevelBorder
(BevelBorder.RAISED));
```

```
                cb.addActionListener(this);
                cb.setBorder(new
BevelBorder(BevelBorder.RAISED));
                p1d.add(cb);

                p1.add(p1d);
                 /*--------------------*/
                c.add(desk, BorderLayout.CENTER);
                c.add(panel,BorderLayout.EAST);
  f.setSize(1024,738);
                f.setVisible(true);

}

public static void main(String args[])
{
                new option1();
}

public void mouseClicked(MouseEvent me)
{
 boolean contain1,contain2,contain3,contain4;
 ColorModel md=pg.getColorModel();
 x=me.getX();
 y=me.getY();

 contain1=pp1.contains(x,y);
 contain2=pp2.contains(x,y);
 contain3=pp3.contains(x,y);
 contain4=pp4.contains(x,y);
 System.out.print("\nPoint inside
polygon:"+(contain1||contain2||contain3||contain4)+"\n");

 int a1=(y-1)*ii.getIconWidth()+x;
 System.out.println(x+"    "+y+"
"+ii.getIconWidth()+"  "+a1+""+pixels[a1]);

 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 if(contain1==true)
 {
                Color color = new Color(255, 0, 0);
                rgb = color.getRGB();
                tf1.setBackground(new
Color(255,0,0));
 }
 else if(contain2==true)
 {
                Color color = new Color(0, 255, 0);
                rgb = color.getRGB();
                tf1.setBackground(new
Color(0,255,0));
 }
 else if(contain3==true)
 {
                Color color = new Color(0, 0, 255);
                rgb = color.getRGB();
                tf1.setBackground(new
Color(0,0,255));
 }
 else if(contain4==true)
 {
                Color color = new Color(128, 128,128);
                rgb = color.getRGB();
                tf1.setBackground(new Color(128,
128,128));
 }
 else
                tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
                if(rgb==frgb[i])
                {
                                System.out.print("
"+fea[i]+"\n\n");
                                break;
                }
 }
```

```
                                                                    }

                                                                    public void mouseEntered(MouseEvent me)
                                                                    {

                                                                    }
                                                                    public void mouseExited(MouseEvent me)
                                                                    {

                                                                    }

                                                                    public void mousePressed(MouseEvent me)
                                                                    {

                                                                    }
                                                                    public void mouseReleased(MouseEvent me)
                                                                    {

                                                                    }

                                                                    public void mouseMoved(MouseEvent me)

                                                                    {
                                                                            ColorModel cm=pg.getColorModel();
                                                                            gg1=(Graphics2D)l.getGraphics();
                                                                            gg1.setColor(new Color(255,0,0) );
                                                                            gg1.fillPolygon(pp1);
                                                                            gg2=(Graphics2D)l.getGraphics();
                                                                            gg2.setColor(new Color(0,255,0) );
                                                                            gg2.fillPolygon(pp2);
                                                                            gg3=(Graphics2D)l.getGraphics();
                                                                            gg3.setColor(new Color(0,0,255) );
                                                                            gg3.fillPolygon(pp3);
                                                                            gg4=(Graphics2D)l.getGraphics();
                                                                            gg4.setColor(new Color(128,128,128)
);

                                                                            gg4.fillPolygon(pp4);

                                                                    }
                                                                    public void mouseDragged(MouseEvent me)
                                                                    {

                                                                    }

                                                                    public void actionPerformed(ActionEvent ae)
                                                                    {
                                                                            if(ae.getSource()==fcb)
                                                                            {
                                                                                    int flag=0;
                                                                                    if(count==4)
                                                                                    {

                                                                    JOptionPane.showMessageDialog((Component)n
ull,"Assignment completed before",

                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                                            flag=1;

                                                                    tf1.setBackground(Color.white);
                                                                                            tf2.setText(null);

                                                                                    }
                                                                                    ss=tf2.getText();
                                                                                    if(ss.length()==0&&flag==0)
                                                                                    {

                                                                    JOptionPane.showMessageDialog((Component)n
ull,"Please Assign Feature Name",

                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                                            flag=1;
                                                                                    }
                                                                            if(rgb==0&&flag==0)
                                                                            {
```

```
                                                                    JOptionPane.showMessageDialog((Component)n
ull,"Please Select Feature",

                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                            flag=1;
                                                                    }

                                                                    if(flag==0)
                                                                    {
                                                                    for(int i=0;i<count;i++)
                                                                    {
                                                                            if(rgb==frgb[i])
                                                                            {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                            flag=1;
                                                                            }


                                                                    if(ss.equalsIgnoreCase(fea[i]))
                                                                            {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                            flag=1;
                                                                            tf2.setText(null);
                                                                            }

                                                                    }
                                                                    }

                                                                    if(flag==0)
                                                                    {
                                                                            frgb[count]=rgb;
                                                                            //System.out.println(rgb);
                                                                            fea[count]=ss;
                                                                            count++;

                                                                    tf1.setBackground(Color.white);
                                                                            tf2.setText(null);
                                                                            rgb=0;
                                                                    }
                                                                    //allowing only three attribute here
                                                                    if(count==4)
                                                                    {

                                                                    fcb.setVisible(false);
                                                                    }
                                                                    }

                                                                      if(ae.getSource()==cb)
                                                                      {
                                                                                if(count==5&& ccb==0)
                                                                                {
                                                                                  for(int i=0;i<4;i++)
                                                                                  {
                                                                                            cb1a.addItem(fea[i]);
                                                                                            System.out.println(frgb[i]+"
is for the feature "+fea[i]);

                                                                                  }
                                                                                  System.out.print("\n\n");
                                                                                  ccb=1;
                                                                                }
                                                                      }
                                                                    }
}
Option2

import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
```

```
class option2 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
                                                                                    JFrame f;
                                                                                    JLabel l;
                                                                                    JPanel p1;
                                                                                    ImageIcon ii;
                                                                                    Image img;
                                                                                    int height;
                                                                                    int width;
                                                                                    Container c;
                                                                                    int pixels[];
                                                                                    PixelGrabber pg;
                                                                                    JPanel panel;
                                                                                    JLabel leb1,leb2,leb3;
                                                                                    JComboBox cb1a;
                                                                                    JTextField tf1,tf2;
                                                                                    JButton fcb,cb;
                                                                                    Color cc=new Color(160,160,220,200);
                                                                                    int x,y;
                                                                                    int rgb;
                                                                                    int frgb[]=new int[4];
                                                                                    String fea[]=new String[4];
                                                                                    int count=0;
                                                                                    String ss;
                                                                                    int ccb=0;
                                                                                    Graphics2D gg1,gg2,gg3;
                                                                                    Polygon pp1=new Polygon();
                                                                                    Polygon pp2=new Polygon();
                                                                                    Polygon pp3=new Polygon();

                                                                                    option2()
                                                                                    {
                                                                                            f=new JFrame("Style 2 to open an
image");

                                                                                            ii=new ImageIcon("prasun.jpg");
                                                                                            img=ii.getImage();
                                                                                            height=ii.getIconHeight();
                                                                                            width=ii.getIconWidth();
                                                                                            pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

                                                                                            pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

                                                                                            try
                                                                                            {
                                                                                                    pg.grabPixels();
                                                                                            }
                                                                                            catch(InterruptedException k)
                                                                                            {
                                                                                            }
                                                                                            l=new JLabel(ii,JLabel.CENTER);
                                                                                            c=f.getContentPane();
                                                                                            JDesktopPane desk = new
JDesktopPane();

      JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
                                                                                            JScrollPane scroll = new JScrollPane(l);
                                                                                            p.setContentPane(scroll);
                                                                                            p.setBounds(0, 0, 600,600);
                                                                                            desk.add(p);
                                                                                            p.setVisible(true);
                                                                                            l.addMouseListener(this);
                                                                                            l.addMouseMotionListener(this);



                                                                                            pp1.addPoint(300,300);
                                                                                            pp1.addPoint(340,300);
                                                                                            pp1.addPoint(340,260);
                                                                                            pp1.addPoint(300,260);

                                                                                            pp2.addPoint(130,400);
                                                                                            pp2.addPoint(180,420);
                                                                                            pp2.addPoint(150,380);

                                                                                            pp3.addPoint(200,280);
                                                                                            pp3.addPoint(230,280);
                                                                                            pp3.addPoint(240,260);
```

```
                                                                pp3.addPoint(230,240);
                                                                pp3.addPoint(210,235);
                                                                pp3.addPoint(180,250);




                                                                panel=new JPanel();
                                                                panel.setLayout(new GridLayout(4,1));
                                                                panel.setBackground(cc);

                                                                p1=new JPanel();
                                                        p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                        p1.setLayout(new GridLayout(4,1));
                                                        panel.add(p1);
                                                        /*--------------------*/
                                                        JPanel p1a=new JPanel();
                                                        String ht1 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";

                                                                leb1=new JLabel(ht1);
                                                                p1a.add(leb1);

                                                                cb1a=new JComboBox();
                                                                cb1a.setPreferredSize(new Dimension
(100,20) );

                                                        cb1a.setEditable(false);
                                                        cb1a.setBackground(Color.WHITE);
                                                        cb1a.setFont(new Font("Dialog", Font.BOLD,
10));

                                                        cb1a.addItem("     ");


                                                       //cb1a.addActionListener(this);
                                                        p1a.add(cb1a);
                                                                p1.add(p1a);

                                                                /*--------------------*/
                                                                JPanel p1b=new JPanel();
      "<html><p><font color=\"GREEN\" "+                        String ht2 =
      "size=\"4\" face=\"Verdana\">Color</font> </p>";

                                                                leb2=new JLabel(ht2);
                                                                p1b.add(leb2);
                                                                tf1=new JTextField(3);
                                                        tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                        tf1.setEditable(false);
                                                        tf1.setBackground(Color.white);
                                                        p1b.add(tf1);

                                                                /*--------------------*/

                                                                String ht3 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature</font> </p>";

                                                                leb3=new JLabel(ht3);
                                                                p1b.add(leb3);
                                                                tf2=new JTextField(9);
                                                        tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                        p1b.add(tf2);

                                                        p1.add(p1b);
                                                        /*--------------------*/

                                                                JPanel p1c=new JPanel();
                                                                fcb=new JButton("   G  O   ");
                                                                fcb.setBackground(Color.pink);
                                                                fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                fcb.addActionListener(this);
                                                                fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                p1c.add(fcb);
```

```
                p1.add(p1c);
                 /*--------------------*/
                JPanel p1d=new JPanel();
                cb=new JButton("   COMPLETE   ");
                cb.setBackground(Color.yellow);
                cb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                cb.addActionListener(this);
                cb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                p1d.add(cb);

                p1.add(p1d);
                 /*--------------------*/
                c.add(desk, BorderLayout.CENTER);
                c.add(panel,BorderLayout.EAST);
  f.setSize(1024,738);
                f.setVisible(true);

}

public static void main(String args[])
{
                new option2();
}

public void mouseClicked(MouseEvent me)
{
 boolean contain1,contain2,contain3;
 ColorModel md=pg.getColorModel();
 x=me.getX();
 y=me.getY();

 contain1=pp1.contains(x,y);
 contain2=pp2.contains(x,y);
 contain3=pp3.contains(x,y);
 System.out.print("\nPoint inside
polygon:"+(contain1||contain2||contain3)+"\n");

 int a1=(y-1)*ii.getIconWidth()+x;
 System.out.println(x+"    "+y+"
"+ii.getIconWidth()+"  "+a1+""+pixels[a1]);


 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 if(contain1==true)
 {
                Color color = new Color(255, 0, 0);
                rgb = color.getRGB();
                tf1.setBackground(new
Color(255,0,0));

 }
 else if(contain2==true)
 {
                Color color = new Color(0, 255, 0);
                rgb = color.getRGB();
                tf1.setBackground(new
Color(0,255,0));

 }
 else if(contain3==true)
 {
                Color color = new Color(0, 0, 255);
                rgb = color.getRGB();
                tf1.setBackground(new
Color(0,0,255));

 }
 else
                tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
                if(rgb==frgb[i])
                {
                                System.out.print("
"+fea[i]+"\n\n");

                                break;
                }
 }
```

```
}

public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
        ColorModel cm=pg.getColorModel();
        gg1=(Graphics2D)l.getGraphics();
        gg1.setColor(new Color(255,0,0) );
        gg1.fillPolygon(pp1);
        gg2=(Graphics2D)l.getGraphics();
        gg2.setColor(new Color(0,255,0) );
        gg2.fillPolygon(pp2);
        gg3=(Graphics2D)l.getGraphics();
        gg3.setColor(new Color(0,0,255) );
        gg3.fillPolygon(pp3);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
        if(ae.getSource()==fcb)
        {
                int flag=0;
                if(count==4)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Assignment completed before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;

tf1.setBackground(Color.white);
                        tf2.setText(null);

                }
                ss=tf2.getText();
                if(ss.length()==0&&flag==0)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Please Assign Feature Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }
          if(rgb==0&&flag==0)
          {

JOptionPane.showMessageDialog((Component)n
ull,"Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
          }
```

```
                    if(flag==0)
                    {
                    for(int i=0;i<count;i++)
                    {
                              if(rgb==frgb[i])
                              {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

                                                                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                              flag=1;
                              }


                                                                                if(ss.equalsIgnoreCase(fea[i]))
                              {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

                                                                                "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                              flag=1;
                              tf2.setText(null);
                              }

                    }
                    }

                    if(flag==0)
                    {
                              frgb[count]=rgb;
                              //System.out.println(rgb);
                              fea[count]=ss;
                              count++;

                                                                                tf1.setBackground(Color.white);
                              tf2.setText(null);
                              rgb=0;
                    }
                    //allowing only three attribute here
                    if(count==3)
                    {

                                                                                fcb.setVisible(false);
                    }
                   }

  if(ae.getSource()==cb)
  {
                  if(count==4&& ccb==0)
                  {
                    for(int i=0;i<4;i++)
                    {
                              cb1a.addItem(fea[i]);
                              System.out.println(frgb[i]+"

is for the feature "+fea[i]);

                    }
                    System.out.print("\n\n");
                    ccb=1;
                  }
  }
}

}

Option3
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option3 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
                                                                                JFrame f;
                                                                                JLabel l;
                                                                                JPanel p1;
                                                                                ImageIcon ii;
```

```
Image img;
int height;
int width;
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3;
JComboBox cb1a;
JTextField tf1,tf2;
JButton fcb,cb;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb;
int frgb[]=new int[4];
String fea[]=new String[4];
int count=0;
String ss;
int ccb=0;
Graphics2D gg1,gg2,gg3;
Polygon pp1=new Polygon();
Polygon pp2=new Polygon();
Polygon pp3=new Polygon();

option3()
{
        f=new JFrame("Style 3 to open an
image");

        ii=new ImageIcon("prasun.jpg");
        img=ii.getImage();
        height=ii.getIconHeight();
        width=ii.getIconWidth();
        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

        try
        {
                pg.grabPixels();
        }
        catch(InterruptedException k)
        {
        }
        l=new JLabel(ii,JLabel.CENTER);
        c=f.getContentPane();
        JDesktopPane desk = new
JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);

        JScrollPane scroll = new JScrollPane(l);
        p.setContentPane(scroll);
        p.setBounds(0, 0, 200,300);
        desk.add(p);
        p.setVisible(true);
        l.addMouseListener(this);
        l.addMouseMotionListener(this);


        pp1.addPoint(130,400);
        pp1.addPoint(180,420);
        pp1.addPoint(150,380);

        pp2.addPoint(300,300);
        pp2.addPoint(340,300);
        pp2.addPoint(340,260);
        pp2.addPoint(300,260);

        pp3.addPoint(200,280);
        pp3.addPoint(230,280);
        pp3.addPoint(240,260);
        pp3.addPoint(230,240);
        pp3.addPoint(210,235);
        pp3.addPoint(180,250);



        panel=new JPanel();
        panel.setLayout(new GridLayout(4,1));
```

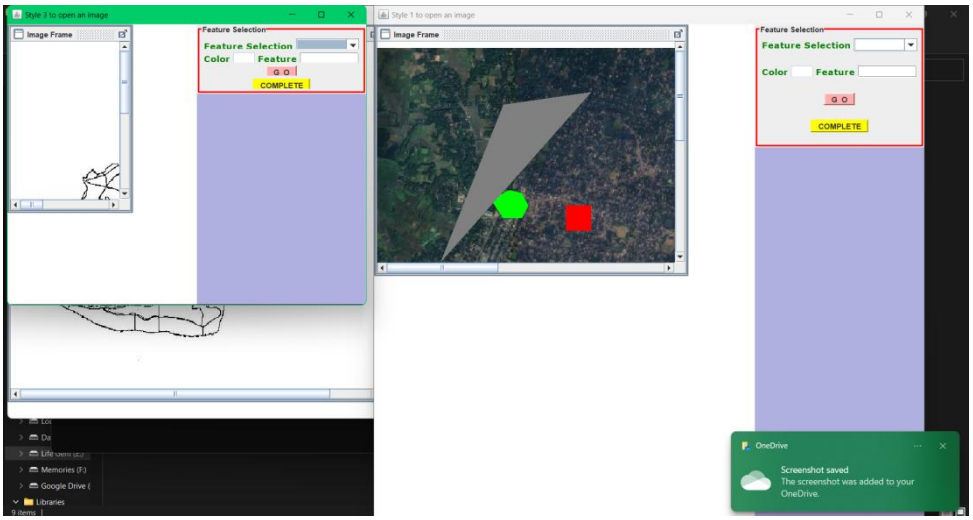
```
                                                                    panel.setBackground(cc);

                                                                    p1=new JPanel();
                                                                p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                                p1.setLayout(new GridLayout(4,1));
                                                                panel.add(p1);
                                                                /*--------------------*/
                                                                JPanel p1a=new JPanel();
                                                                String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";

                                                                    leb1=new JLabel(ht1);
                                                                    p1a.add(leb1);

                                                                    cb1a=new JComboBox();
                                                                    cb1a.setPreferredSize(new Dimension
(100,20) );

                                                                cb1a.setEditable(false);
                                                                cb1a.setBackground(Color.WHITE);
                                                                cb1a.setFont(new Font("Dialog", Font.BOLD,
10));
                                                                cb1a.addItem("     ");


                                                               //cb1a.addActionListener(this);
                                                                p1a.add(cb1a);
                                                                    p1.add(p1a);

                                                                    /*--------------------*/
                                                                    JPanel p1b=new JPanel();
                                                                    String ht2 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Color</font> </p>";

                                                                    leb2=new JLabel(ht2);
                                                                    p1b.add(leb2);
                                                                    tf1=new JTextField(3);
                                                                tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                tf1.setEditable(false);
                                                                tf1.setBackground(Color.white);
                                                                p1b.add(tf1);

                                                                    /*--------------------*/

                                                                    String ht3 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature</font> </p>";

                                                                    leb3=new JLabel(ht3);
                                                                    p1b.add(leb3);
                                                                    tf2=new JTextField(9);
                                                                tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                p1b.add(tf2);

                                                                p1.add(p1b);
                                                                /*--------------------*/

                                                                    JPanel p1c=new JPanel();
                                                                    fcb=new JButton("   G O   ");
                                                                    fcb.setBackground(Color.pink);
                                                                    fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                    fcb.addActionListener(this);
                                                                    fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                    p1c.add(fcb);

                                                                    p1.add(p1c);
                                                                     /*--------------------*/
                                                                    JPanel p1d=new JPanel();
                                                                    cb=new JButton("   COMPLETE   ");
                                                                    cb.setBackground(Color.yellow);
                                                                    cb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                    cb.addActionListener(this);
                                                                    cb.setBorder(new
BevelBorder(BevelBorder.RAISED));
```

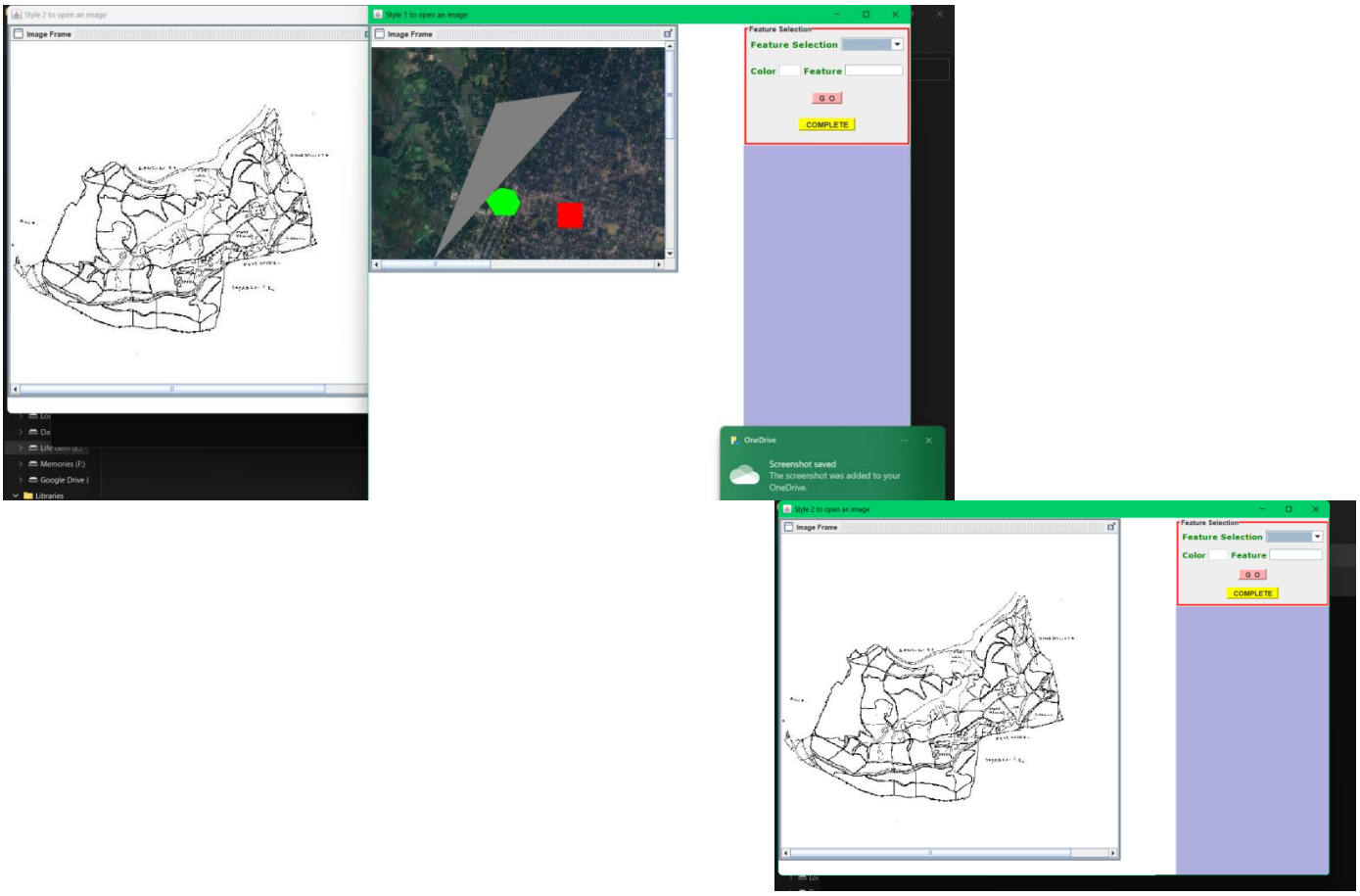
```
                p1d.add(cb);

                p1.add(p1d);
                 /*--------------------*/
                c.add(desk, BorderLayout.CENTER);
                c.add(panel,BorderLayout.EAST);
   f.setSize(1024,738);
                f.setVisible(true);

}

public static void main(String args[])
{
                new option3();
}

public void mouseClicked(MouseEvent me)
{
 boolean contain1,contain2,contain3;
 ColorModel md=pg.getColorModel();
 x=me.getX();
 y=me.getY();

 contain1=pp1.contains(x,y);
 contain2=pp2.contains(x,y);
 contain3=pp3.contains(x,y);
 System.out.print("\nPoint inside

polygon:"+(contain1||contain2||contain3)+"\n");

 int a1=(y-1)*ii.getIconWidth()+x;
 System.out.println(x+"    "+y+"

"+ii.getIconWidth()+"  "+a1+""+pixels[a1]);

 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 if(contain1==true)
 {
                Color color = new Color(255, 0, 0);
                rgb = color.getRGB();
                tf1.setBackground(new

Color(255,0,0));

 }
 else if(contain2==true)
 {
                Color color = new Color(0, 255, 0);
                rgb = color.getRGB();
                tf1.setBackground(new

Color(0,255,0));

 }
 else if(contain3==true)
 {
                Color color = new Color(0, 0, 255);
                rgb = color.getRGB();
                tf1.setBackground(new

Color(0,0,255));

 }
 else
                tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
                if(rgb==frgb[i])
                {
                                System.out.print("

"+fea[i]+"\n\n");

                                break;
                }
 }


}

public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{
```

```
}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
        ColorModel cm=pg.getColorModel();
        gg1=(Graphics2D)l.getGraphics();
        gg1.setColor(new Color(255,0,0) );
        gg1.fillPolygon(pp1);
        gg2=(Graphics2D)l.getGraphics();
        gg2.setColor(new Color(0,255,0) );
        gg2.fillPolygon(pp2);
        gg3=(Graphics2D)l.getGraphics();
        gg3.setColor(new Color(0,0,255) );
        gg3.fillPolygon(pp3);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
        if(ae.getSource()==fcb)
        {
                int flag=0;
                if(count==4)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Assignment completed before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;

tf1.setBackground(Color.white);
                        tf2.setText(null);

                }
                ss=tf2.getText();
                if(ss.length()==0&&flag==0)
                {

JOptionPane.showMessageDialog((Component)n
ull,"Please Assign Feature Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }
          if(rgb==0&&flag==0)
          {

JOptionPane.showMessageDialog((Component)n
ull,"Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
          }

          if(flag==0)
          {
          for(int i=0;i<count;i++)
          {
                if(rgb==frgb[i])
                {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",
```

```
                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                                flag=1;
                                                                                }


                                                                    if(ss.equalsIgnoreCase(fea[i]))
                                                                                {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

                                                                    "NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                                flag=1;
                                                                                tf2.setText(null);
                                                                                }

                                                                            }
                                                                            }

                                                                            if(flag==0)
                                                                            {
                                                                                        frgb[count]=rgb;
                                                                                        //System.out.println(rgb);
                                                                                        fea[count]=ss;
                                                                                        count++;

                                                                    tf1.setBackground(Color.white);
                                                                                        tf2.setText(null);
                                                                                        rgb=0;
                                                                            }
                                                                            //allowing only three attribute here
                                                                            if(count==3)
                                                                            {

                                                                    fcb.setVisible(false);
                                                                            }
                                                                        }

                                                                      if(ae.getSource()==cb)
                                                                      {
                                                                                if(count==4&& ccb==0)
                                                                                {
                                                                                  for(int i=0;i<4;i++)
                                                                                  {
                                                                                        cb1a.addItem(fea[i]);
                                                                                        System.out.println(frgb[i]+"

is for the feature "+fea[i]);

                                                                                  }
                                                                                  System.out.print("\n\n");
                                                                                  ccb=1;
                                                                                }
                                                                      }
                                                                    }


}
```

Output:





10 Write a program to cascade multiple designed pages(at least three) with resizing tool.

Answer:

Source Code:

Page1

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

class page1 extends JFrame implements ActionListener,ItemListener
{
 JFrame f;
 JPanel panel,p1,p2,p3,p31,p32;
 JLabel leb1,leb2,leb3;
 JTextField tf1;
 JComboBox cb;
 JButton b;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);
```

```
String ss="Select";

page1()
{
                                                                    f=new JFrame("Page Design 1");
                                                                    f.setSize(500,300);
                                                                    f.setLocation(200,150);
                                                                    panel=new JPanel();
                                                                    panel.setLayout(new GridLayout(3,1));

                                                                    p1=new JPanel();
                                                                    p1.setBackground(c1);
                                                                    panel.add(p1);
                                                                    String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Enter Your Name</font> </p>";
                                                                            leb1=new JLabel(ht1);
                                                                            p1.add(leb1);
                                                                    tf1=new JTextField(15);
                                                                    tf1.setFont(new Font("TIMES NEW ROMAN",
Font.PLAIN,14));
                                                                    p1.add(tf1);

                                                                    p2=new JPanel();
                                                                    p2.setBackground(c2);
                                                                    panel.add(p2);
                                                                    String ht2 =
    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">Choose Your Course</font> </p>";
                                                                            leb2=new JLabel(ht2);
                                                                    p2.add(leb2);
                                                                    cb= new JComboBox();
                                                                    cb.setEditable(false);
                                                                    cb.setMaximumRowCount(3);
                                                                    cb.addItem("Select");
                                                                    cb.addItem("M. Tech");
                                                                    cb.addItem("MCA");
                                                                    cb.addItem("M.Sc");
                                                                    cb.addItem("M.A");
                                                                    cb.addItemListener(this);
                                                                    p2.add(cb);

                                                                    p3=new JPanel();
                                                                    panel.add(p3);
                                                                    p3.setLayout(new GridLayout(2,1));
                                                                    p31=new JPanel();
                                                                    p31.setBackground(c3);
                                                                    p3.add(p31);
                                                                    String ht3 =
    "<html><p><font color=\"RED\" "+
    "size=\"6\" face=\"Verdana\">Press the Button for Page 2</font> </p>";
                                                                            leb3=new JLabel(ht3);
                                                                    p31.add(leb3);
                                                                    p32=new JPanel();
                                                                    p32.setBackground(c3);
                                                                    p3.add(p32);
                                                                    b=new JButton(" BUTTON ");
                                                                    b.setBackground(Color.pink);
                                                                    b.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                    b.addActionListener(this);
                                                                    p32.add(b);

                                                                    c=f.getContentPane();
                                                                    c.add(panel);
                                                                    f.setVisible(true);
}
public static void main(String aa[])
{
                                                                    new page1();

}
public void actionPerformed(ActionEvent ae)
{
                                                                    if(ae.getSource()==b)
                                                                    {
                                                                            int flag=0;
                                                                            String st=tf1.getText();
```

```
                    if(st.length()==0)
                    {

JOptionPane.showMessageDialog((Component)n
ull,"Please  Write your Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
                    }
                    if(ss.equals("Select"))
                    {

JOptionPane.showMessageDialog((Component)n
ull,"Please  Select The Course",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
                    }
                    if(flag==0)
                    {
                                //f.setVisible(false);
                                new page2(st,ss);

                    }
}


 }
 public void itemStateChanged(ItemEvent ie)
 {
ss =(String)cb.getSelectedItem();
 }

}
Page2
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.event.*;
import javax.swing.border.*;

class page2 extends JFrame implements ActionListener,ItemListener
{
 JFrame f;
 JPanel panel,p1,p2,p3;
 JLabel leb1,leb2,leb3;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);

 String nam;
 String course;

 //JFrame f;
 JPanel panel1,p11,p21,p31,p311,p321;
 JLabel leb11,leb21,leb31;
 JTextField tf11;
 JComboBox cb1;
 JButton b1;
 Container co;
 Color c11=new Color(160,160,220,200);
 Color c21=new Color(160,100,10,100);
 Color c31=new Color(20,160,10,100);
 String ss1="Select";

 page2(String aa, String bb)
 {
nam=aa;
course=bb;
f=new JFrame("Page Design 2");
f.setSize(500,400);
f.setLocation(200,150);
panel=new JPanel();
panel.setLayout(new GridLayout(3,1));

p1=new JPanel();
p1.setBackground(c1);
panel.add(p1);
String ht1 =
```

```
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">My Name is "+nam+"</font> </p>";
                                                                                    leb1=new JLabel(ht1);
                                                                                    p1.add(leb1);

                                                                                p2=new JPanel();
                                                                                p2.setBackground(c2);
                                                                                panel.add(p2);
                                                                                String ht2 =

    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">I am a Student of "+course+"</font> </p>";
                                                                                    leb2=new JLabel(ht2);
                                                                                p2.add(leb2);
                                                                                f.setVisible(true);


                                                                                panel1=new JPanel();
                                                                                panel.setLayout(new GridLayout(2,1));

                                                                                p11=new JPanel();
                                                                                p11.setBackground(c11);
                                                                                panel.add(p11);
                                                                                String ht11 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Enter Country</font> </p>";
                                                                                    leb11=new JLabel(ht11);
                                                                                    p11.add(leb11);
                                                                                tf11=new JTextField(15);
                                                                                tf11.setFont(new Font("TIMES NEW ROMAN",
Font.PLAIN,14));
                                                                                p11.add(tf11);

                                                                                p21=new JPanel();
                                                                                p21.setBackground(c21);
                                                                                panel.add(p21);
                                                                                String ht21 =

    "<html><p><font color=\"YELLOW\" "+
    "size=\"6\" face=\"Verdana\">Choose Gender</font> </p>";
                                                                                    leb21=new JLabel(ht21);
                                                                                p21.add(leb21);
                                                                                cb1= new JComboBox();
                                                                                cb1.setEditable(false);
                                                                                cb1.setMaximumRowCount(3);
                                                                                cb1.addItem("Select");
                                                                                cb1.addItem("Male");
                                                                                cb1.addItem("Female");

                                                                                //cb1.addItemListener(this);
                                                                                p21.add(cb1);

                                                                                p31=new JPanel();
                                                                                p31.setLayout(new GridLayout(2,1));
                                                                                p31.setBackground(c31);
                                                                                p21.add(p31);
                                                                                String ht31 =

    "<html><p><font color=\"RED\" "+
    "size=\"6\" face=\"Verdana\">Press the Button for Page 3</font> </p>";
                                                                                    leb31=new JLabel(ht31);
                                                                                p31.add(leb31);
                                                                                b1=new JButton(" BUTTON ");
                                                                                b1.setBackground(Color.pink);
                                                                                b1.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                                b1.addActionListener(this);
                                                                                p21.add(b1);

                                                                                co=f.getContentPane();
                                                                                co.add(panel);
                                                                                f.setVisible(true);


 }

  public void actionPerformed(ActionEvent ae)
   {

                                                                                if(ae.getSource()==b1)
                                                                                    {
                                                                                    int flag=0;
```

```
                                                                String st1=tf11.getText();
                                                                String ss1
=(String)cb1.getSelectedItem();
                                                                if(st1.length()==0)
                                                                {
                                                            JOptionPane.showMessageDialog((Component)n
ull,"Please  Write your country",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                flag=1;
                                                                }
                                                                if(ss1.equals("Select"))
                                                                {
                                                            JOptionPane.showMessageDialog((Component)n
ull,"Please  Select The gender",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                flag=1;
                                                                }
                                                                if(flag==0)
                                                                {
                                                                        //f.setVisible(false);
                                                                        new page3(st1,ss1);

                                                                }
                                                            }
 }

 public void itemStateChanged(ItemEvent ie)
 {
                                                            ss1 =(String)cb1.getSelectedItem();
 }
}
Page3
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.event.*;
import javax.swing.border.*;

class page3 extends JFrame implements ActionListener,ItemListener
{
 JFrame f;
 JPanel panel,p1,p2,p3;
 JLabel leb1,leb2,leb3;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);

 String nam;
 String course;

 //JFrame f;
 JPanel panel1,p11,p21,p31,p311,p321;
 JLabel leb11,leb21,leb31;
 JTextField tf11;
 JComboBox cb1;
 JButton b1;
 Container co;
 Color c11=new Color(160,160,220,200);
 Color c21=new Color(160,100,10,100);
 Color c31=new Color(20,160,10,100);
 String ss1="Select";

 page3(String aa, String bb)
 {
                                                            nam=aa;
                                                            course=bb;
                                                            f=new JFrame("Page Design 3");
                                                            f.setSize(500,400);
                                                            f.setLocation(200,150);
                                                            panel=new JPanel();
                                                            panel.setLayout(new GridLayout(3,1));

                                                            p1=new JPanel();
```

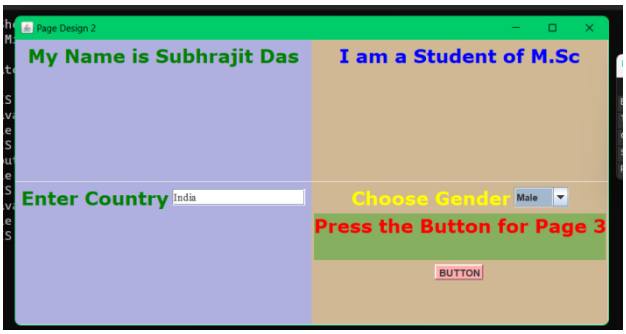
```
p1.setBackground(c1);
panel.add(p1);
String ht1 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">My Name is "+nam+"</font> </p>";
        leb1=new JLabel(ht1);
        p1.add(leb1);

p2=new JPanel();
p2.setBackground(c2);
panel.add(p2);
String ht2 =
    "<html><p><font color=\"BLUE\" "+
    "size=\"6\" face=\"Verdana\">I am a Student of "+course+"</font> </p>";
        leb2=new JLabel(ht2);
p2.add(leb2);
f.setVisible(true);


panel1=new JPanel();
panel.setLayout(new GridLayout(2,1));

p11=new JPanel();
p11.setBackground(c11);
panel.add(p11);
String ht11 =
    "<html><p><font color=\"GREEN\" "+
    "size=\"6\" face=\"Verdana\">Enter Address</font> </p>";
        leb11=new JLabel(ht11);
        p11.add(leb11);
tf11=new JTextField(15);
tf11.setFont(new Font("TIMES NEW ROMAN",
Font.PLAIN,14));
p11.add(tf11);

p21=new JPanel();
p21.setBackground(c21);
panel.add(p21);
String ht21 =
    "<html><p><font color=\"YELLOW\" "+
    "size=\"6\" face=\"Verdana\">Are you an NRI?</font> </p>";
        leb21=new JLabel(ht21);
p21.add(leb21);
cb1= new JComboBox();
cb1.setEditable(false);
cb1.setMaximumRowCount(3);
cb1.addItem("Select");
cb1.addItem("Yes");
cb1.addItem("No");

//cb1.addItemListener(this);
p21.add(cb1);

p31=new JPanel();
p31.setLayout(new GridLayout(2,1));
p31.setBackground(c31);
p21.add(p31);
String ht31 =
    "<html><p><font color=\"RED\" "+
    "size=\"6\" face=\"Verdana\">Press the Button for Page 3</font> </p>";
        leb31=new JLabel(ht31);
p31.add(leb31);
b1=new JButton(" BUTTON ");
b1.setBackground(Color.pink);
b1.setBorder(new BevelBorder
(BevelBorder.RAISED));
b1.addActionListener(this);
p21.add(b1);

co=f.getContentPane();
co.add(panel);
f.setVisible(true);

 }

 public void actionPerformed(ActionEvent ae)
  {
```

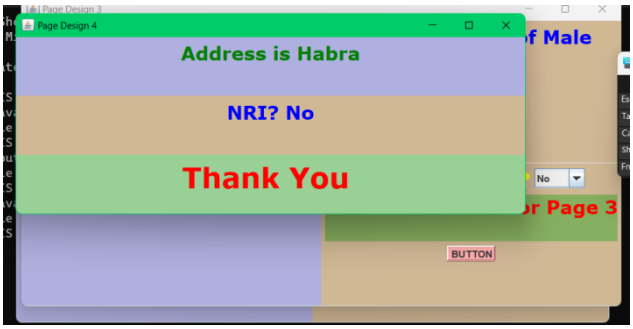
```
                                                                    if(ae.getSource()==b1)
                                                                            {
                                                                            int flag=0;
                                                                            String st1=tf11.getText();
                                                                            String ss1
=(String)cb1.getSelectedItem();
                                                                            if(st1.length()==0)
                                                                            {
                                                                    JOptionPane.showMessageDialog((Component)n
ull,"Please  enter your address",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                        flag=1;
                                                                            }
                                                                            if(ss1.equals("Select"))
                                                                            {
                                                                    JOptionPane.showMessageDialog((Component)n
ull,"Please  Select are you an NRI or not",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                                                        flag=1;
                                                                            }
                                                                            if(flag==0)
                                                                            {
                                                                                    //f.setVisible(false);
                                                                                    new page4(st1,ss1);
                                                                            }
                                                                    }
 }
 public void itemStateChanged(ItemEvent ie)
 {                                                                  ss1 =(String)cb1.getSelectedItem();
 }
}
Page4
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.event.*;
import javax.swing.border.*;

class page4 extends JFrame
{
 JFrame f;
 JPanel panel,p1,p2,p3;
 JLabel leb1,leb2,leb3;
 Container c;
 Color c1=new Color(160,160,220,200);
 Color c2=new Color(160,100,10,100);
 Color c3=new Color(20,160,10,100);
 String nam;
 String course;
 page4(String aa, String bb)
 {
                                                                    nam=aa;
                                                                    course=bb;
                                                                    f=new JFrame("Page Design 4");
                                                                    f.setSize(500,200);
                                                                    f.setLocation(200,150);
                                                                    panel=new JPanel();
                                                                    panel.setLayout(new GridLayout(3,1));

                                                                    p1=new JPanel();
                                                                    p1.setBackground(c1);
                                                                    panel.add(p1);
                                                                    String ht1 =
     "<html><p><font color=\"GREEN\" "+
     "size=\"6\" face=\"Verdana\">Address is "+nam+"</font> </p>";
                                                                            leb1=new JLabel(ht1);
                                                                            p1.add(leb1);

                                                                    p2=new JPanel();
                                                                    p2.setBackground(c2);
```

```
"<html><p><font color=\"BLUE\" "+
"size=\"6\" face=\"Verdana\">NRI? "+course+"</font> </p>";



"<html><p><font color=\"RED\" "+
"size=\"10\" face=\"Verdana\"> Thank  You </font> </p>";



 }

}
```

```
panel.add(p2);
String ht2 =


            leb2=new JLabel(ht2);
p2.add(leb2);

p3=new JPanel();
panel.add(p3);
p3.setBackground(c3);
String ht3 =


leb3=new JLabel(ht3);
p3.add(leb3);


c=f.getContentPane();
c.add(panel);
f.setVisible(true);
```

Output:





11 Draw Point, Line, Polygon, text, oval and gradient on the image.

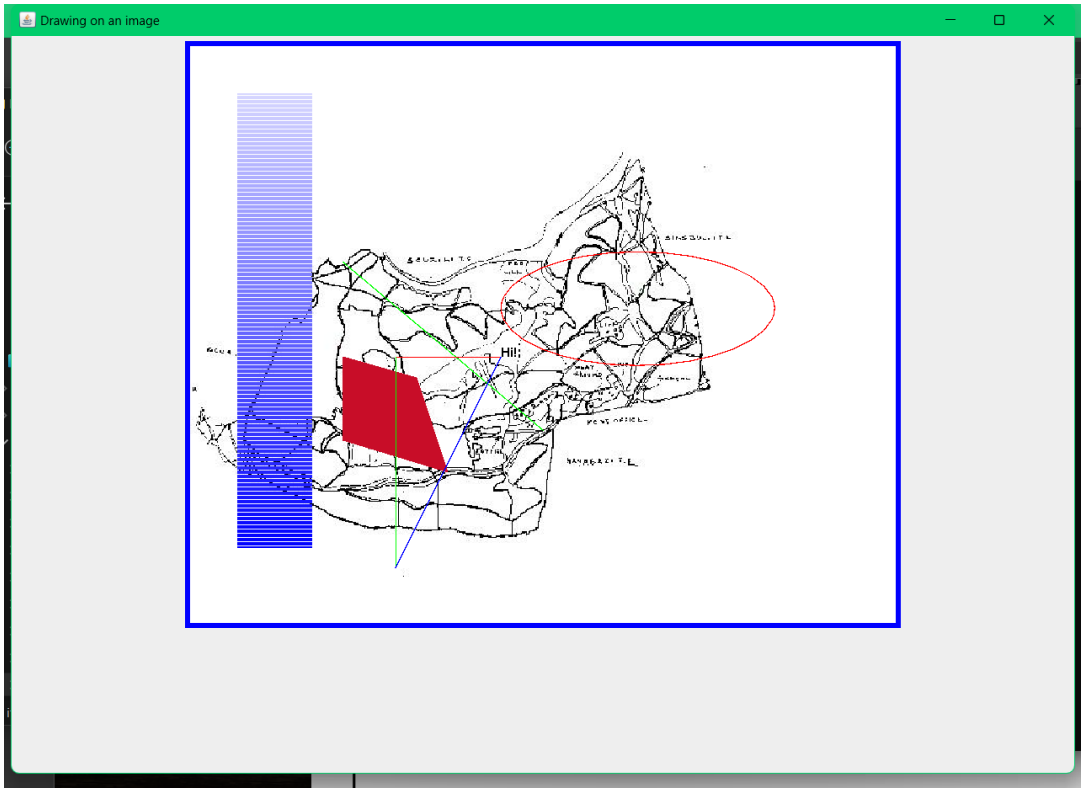
Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class lp extends JFrame implements MouseListener,MouseMotionListener
{
                                                                    JFrame f;
                                                                    JLabel l;
                                                                    JPanel panel;
                                                                    Container c;
                                                                    ImageIcon ii;
                                                                    Image img;
                                                                    int pixels[];
                                                                    PixelGrabber pg;
                                                                    ColorModel cm;
                                                                    Graphics2D gg;
                                                                    lp()
                                                                    {
                                                                        f=new JFrame("Drawing on an image");
                                                                        f.setSize(1024,738);
                                                                        ii=new ImageIcon("subhrajit.jpg");
                                                                        img=ii.getImage();
                                                                        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

                                                                        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

                                                                        try
                                                                        {
                                                                                pg.grabPixels();
                                                                        }
                                                                        catch(InterruptedException k)
                                                                        {
                                                                        }
                                                                        l=new JLabel(ii,JLabel.CENTER);
                                                                        l.addMouseListener(this);
                                                                        l.addMouseMotionListener(this);

                                                                    l.setBorder(BorderFactory.createLineBorder(Color.blu
e,5));

                                                                        panel=new JPanel();
                                                                        panel.setLayout(new FlowLayout());
                                                                        panel.add(l);



                                                                        c=f.getContentPane();
                                                                        c.add(panel);
                                                                        f.setVisible(true);
                                                                    }

public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{
```

```
}
public void mouseReleased(MouseEvent me)
{

}


public void mouseMoved(MouseEvent me)

{
                                                                    ColorModel cm=pg.getColorModel();
                                                                    gg=(Graphics2D)l.getGraphics();
                                                                      //Drawing line

                                                                    //draw oval
                                                                    gg.setColor(Color.red);
                                                                    gg.drawOval(300,200,260,108);
                                                                    //draw line
                                                                    gg.setColor(Color.green);

                                                                    int x1=150;
                                                                    int x2=340;
                                                                    int y2=370;
                                                                    int y1=210;
                                                                    gg.drawLine(x1,y1,x2,y2);

                                                                    //draw gradient
                                                                    int k=0,l=0;
                                                                    for(int i=480;i>=50;i=i-2) {
                                                                        gg.setColor(new Color(k,l,255));
                                                                        gg.drawRect(50,i,70,1);
                                                                        k=k+1;
                                                                        l=l+1;
                                                                    }


                                                                    //draw text
                                                                    gg.setColor(Color.black);
                                                                    gg.drawString("Hi!", 300, 300);
                                                                    //Draw Polygons
                                                                    Polygon pp1=new Polygon();
                                                                    pp1.addPoint(150,300);
                                                                    pp1.addPoint(150,380);
                                                                    pp1.addPoint(250,410);
                                                                    pp1.addPoint(220,320);
                                                                    gg.setColor(new Color(200,13,40) );
                                                                    gg.fillPolygon(pp1);

                                                                    //Drawing line

                                                                    gg.setColor(Color.red);
                                                                    gg.drawLine(300,300,200,300);
                                                                    gg.setColor(Color.green);
                                                                    gg.drawLine(200,300,200,500);
                                                                    gg.setColor(Color.blue);
                                                                    gg.drawLine(300,300,200,500);

}
public void mouseDragged(MouseEvent me)
{
}


                                                                    public static void main(String aa[])
                                                                    {
                                                                        new lp();
                                                                    }
}
```

Output:



12 Write a program to perform the following operations click the mouse on a particular color(feature) of the image then the RGB value of the selected feature will be calculated. Then assign the name of the feature in the corresponding text field...session1.gif image has four features they are.

1. Vegetation 2. water body 3. moist land 4. bare soil

Answer:

Source Code:

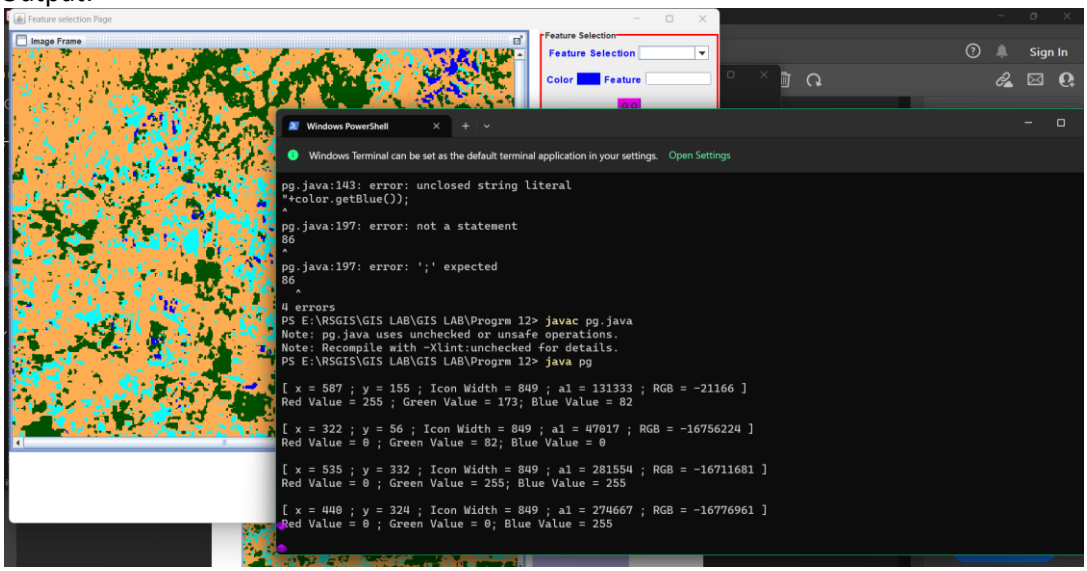
```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
class pg extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
JFrame f;
JLabel l;
JPanel p1;
ImageIcon ii;
Image img;
int height;
int width;
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3;
JComboBox cb1a;
JTextField tf1,tf2;
JButton fcb,cb;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb;
int noOfFeatures = 4;
int frgb[]=new int[noOfFeatures];
String fea[]=new String[noOfFeatures];
int count=0;
String ss;
int ccb=0;
pg()
{
```

```
f=new JFrame("Feature selection Page");
ii=new ImageIcon("session1.gif");
img=ii.getImage();
height=ii.getIconHeight();
width=ii.getIconWidth();
pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
try
{
pg.grabPixels();
}
catch(InterruptedException k)
{
}
l=new JLabel(ii,JLabel.CENTER);
c=f.getContentPane();
JDesktopPane desk = new JDesktopPane();
JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
JScrollPane scroll = new JScrollPane(l);
p.setContentPane(scroll);
p.setBounds(0, 0, 740, 600);
desk.add(p);
p.setVisible(true);
l.addMouseListener(this);
l.addMouseMotionListener(this);
panel=new JPanel();
panel.setLayout(new GridLayout(4,1));
panel.setBackground(cc);
p1=new JPanel();
p1.setBorder(new TitledBorder(new LineBorder(Color.red,2),"Feature Selection"));
p1.setLayout(new GridLayout(4,1));
panel.add(p1);
/*--------------------*/
JPanel p1a=new JPanel();
String ht1 =
"<html><p><font color=\"BLUE\" "+
"size=\"4\" face=\"Arial\">Feature Selection</font> </p>";
leb1=new JLabel(ht1);
p1a.add(leb1);
cb1a=new JComboBox();
cb1a.setPreferredSize(new Dimension (100,20) );
cb1a.setEditable(false);
cb1a.setBackground(Color.WHITE);
cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
cb1a.addItem(" ");
//cb1a.addActionListener(this);
p1a.add(cb1a);
p1.add(p1a);
/*--------------------*/
JPanel p1b=new JPanel();
String ht2 =
"<html><p><font color=\"BLUE\" "+
"size=\"4\" face=\"Arial\">Color</font> </p>";
leb2=new JLabel(ht2);
p1b.add(leb2);
tf1=new JTextField(3);
tf1.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
tf1.setEditable(false);
tf1.setBackground(Color.white);
p1b.add(tf1);
/*--------------------*/
String ht3 =
"<html><p><font color=\"BLUE\" "+
"size=\"4\" face=\"Arial\">Feature</font> </p>";
leb3=new JLabel(ht3);
p1b.add(leb3);
tf2=new JTextField(9);
tf2.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
p1b.add(tf2);
p1.add(p1b);
/*--------------------*/
JPanel p1c=new JPanel();
fcb=new JButton(" G O ");
fcb.setBackground(Color.MAGENTA);
fcb.setBorder(new BevelBorder (BevelBorder.RAISED));
fcb.addActionListener(this);
fcb.setBorder(new BevelBorder(BevelBorder.RAISED));
p1c.add(fcb);
```

```
p1.add(p1c);
/*--------------------*/
JPanel p1d=new JPanel();
cb=new JButton(" DONE ");
cb.setBackground(Color.ORANGE);
cb.setBorder(new BevelBorder (BevelBorder.RAISED));
cb.addActionListener(this);
cb.setBorder(new BevelBorder(BevelBorder.RAISED));
p1d.add(cb);
p1.add(p1d);
/*--------------------*/
c.add(desk, BorderLayout.CENTER);
c.add(panel,BorderLayout.EAST);
f.setSize(1024,738);
f.setVisible(true);
}
public static void main(String args[])
{
new pg();
}
public void mouseClicked(MouseEvent me)
{
ColorModel md=pg.getColorModel();
x=me.getX();
y=me.getY();
int a1=(y-1)*ii.getIconWidth()+x;
System.out.print("\n[ x = "+x+" ; y = "+y+" ; Icon Width = "+ii.getIconWidth());
rgb=(md.getRGB(pixels[a1]));
Color color = new Color(rgb);
System.out.println(" ; a1 = "+a1+" ; RGB = "+rgb+" ]");
System.out.println("Red Value = "+color.getRed()+" ; Green Value = "+color.getGreen()+"; Blue Value = "+color.getBlue());
tf1.setBackground(new Color(rgb));
for(int i=0;i<count;i++)
{
if(rgb==frgb[i])
{
System.out.print(" -> "+fea[i]+"\n\n");
break;
}
}
}
public void mouseEntered(MouseEvent me)
{
}
public void mouseExited(MouseEvent me)
{
}
public void mousePressed(MouseEvent me)
{
}
public void mouseReleased(MouseEvent me)
{
}
public void mouseMoved(MouseEvent me)
{
}
public void mouseDragged(MouseEvent me)
{
}
public void actionPerformed(ActionEvent ae)
{
if(ae.getSource()==fcb)
{
int flag=0;
if(count==noOfFeatures)
{
JOptionPane.showMessageDialog((Component)null,"Feature assignments isn't complete yet..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
tf1.setBackground(Color.white);
tf2.setText(null);
}
ss=tf2.getText();
if(ss.length()==0&&flag==0)
{
JOptionPane.showMessageDialog((Component)null,"Please Assign Feature Name..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
}
if(rgb==0&&flag==0)
```

```
{
JOptionPane.showMessageDialog((Component)null,"Please Select Feature..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
}
if(flag==0)
{
for(int i=0;i<count;i++)
{
if(rgb==frgb[i])
{
JOptionPane.showMessageDialog((Component)null,"Please Select New Feature..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
}
if(ss.equalsIgnoreCase(fea[i]))
{
JOptionPane.showMessageDialog((Component)null,"Feature Name is Used..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
tf2.setText(null);
}
}
}
if(flag==0)
{
frgb[count]=rgb;
fea[count]=ss;
count++;
tf1.setBackground(Color.white);
tf2.setText(null);
rgb=0;
}
if(count==noOfFeatures&&flag==0)
{
JOptionPane.showMessageDialog((Component)null,"Assignment complete","NOTIFICATION",JOptionPane.INFORMATION_MESSAGE);
tf1.setBackground(Color.white);
tf2.setText(null);
tf2.setEditable(false);
}
}
if(ae.getSource()==cb)
{
if(count==noOfFeatures&& ccb==0)
{
for(int i=0;i<noOfFeatures;i++)
{
cb1a.addItem(fea[i]);
System.out.println("");
System.out.println(frgb[i]+" is for the feature "+fea[i]);
}
System.out.print("\n\n");
ccb=1;
}
}
}
}
```

Output:



13 Write a GIS based program to draw a polygon (four different places with 2 cm,6cm,8cm width) into a GIS image.

Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class poly extends JFrame implements MouseListener,MouseMotionListener
{
                                                                    JFrame f;
                                                                    JLabel l;
                                                                    JPanel panel;
                                                                    Container c;
                                                                    ImageIcon ii;
                                                                    Image img;
                                                                    int pixels[];
                                                                    PixelGrabber pg;
                                                                    ColorModel cm;
                                                                    Graphics2D gg;
                                                                    poly()
                                                                    {
                                                                        f=new JFrame("Drawing on an image");
                                                                        f.setSize(1024,738);
                                                                        ii=new ImageIcon("subhr.jpg");
                                                                        img=ii.getImage();
                                                                        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];
                                                                        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
                                                                        try
                                                                        {
                                                                                pg.grabPixels();
                                                                        }
                                                                        catch(InterruptedException k)
                                                                        {
                                                                        }
                                                                        l=new JLabel(ii,JLabel.CENTER);
                                                                        l.addMouseListener(this);
                                                                        l.addMouseMotionListener(this);

                                                                    l.setBorder(BorderFactory.createLineBorder(Color.blu
e,5));
                                                                        panel=new JPanel();
                                                                        panel.setLayout(new FlowLayout());
                                                                        panel.add(l);



                                                                        c=f.getContentPane();
                                                                        c.add(panel);
                                                                        f.setVisible(true);
                                                                    }
public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{
```

```
}
public void mouseReleased(MouseEvent me)
{

}


public void mouseMoved(MouseEvent me)

{
```

```
ColorModel cm=pg.getColorModel();
gg=(Graphics2D)l.getGraphics();
```

```
   //Drawing Polygons
```

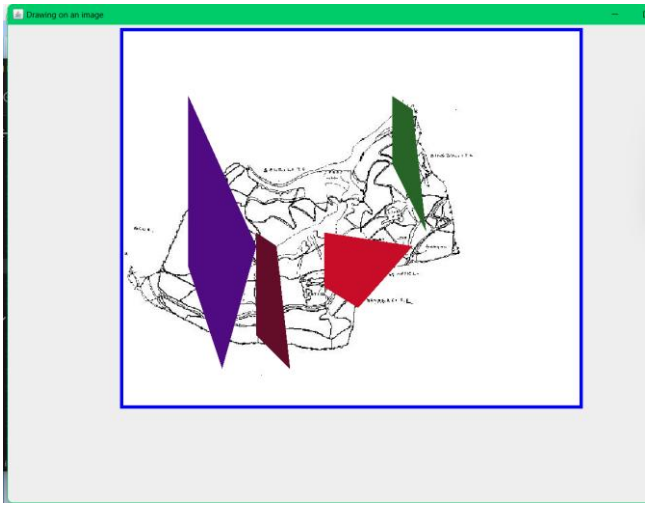
```
Polygon pp1=new Polygon();
pp1.addPoint(300,300);
pp1.addPoint(300,380);
pp1.addPoint(350,410);
pp1.addPoint(430,320);
gg.setColor(new Color(200,13,40) );
gg.fillPolygon(pp1);

Polygon pp2=new Polygon();
pp2.addPoint(200,300);
pp2.addPoint(200,450);
pp2.addPoint(250,500);
pp2.addPoint(230,320);
gg.setColor(new Color(100,13,40) );
gg.fillPolygon(pp2);


Polygon pp3=new Polygon();
pp3.addPoint(400,100);
pp3.addPoint(400,200);
pp3.addPoint(450,300);
pp3.addPoint(430,120);
gg.setColor(new Color(40,100,40) );
gg.fillPolygon(pp3);

Polygon pp4=new Polygon();
pp4.addPoint(100,100);
pp4.addPoint(100,350);
pp4.addPoint(150,500);
pp4.addPoint(200,320);
gg.setColor(new Color(80,10,130) );
gg.fillPolygon(pp4);
```

```
}
public void mouseDragged(MouseEvent me)
{
}
```

```
public static void main(String aa[])
{
     new poly();
}
```

```
}
```

Output:



14 Write a GIS application program that will do the followings: a. it will open an image in a panel. b. an option will be there for labelling region in the current image depending on the pixel color. c. after completion of step 2, the user can ask for percentage of particular region in the current image. Program should be able to show the percentage value of the region with respect to the whole image. d. the above stated problem in step 3, should be implemented for an image where same color pixels are scattered.

Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import java.util.Arrays;
class page1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
                                                                    JFrame f;
                                                                    JLabel l;
                                                                    JPanel p1;
                                                                    ImageIcon ii;
                                                                    Image img;
                                                                    int height;
                                                                    int width;
                                                                    Container c;
                                                                    int pixels[];
                                                                    PixelGrabber pg;
                                                                    JPanel panel;
                                                                    JLabel leb1,leb2,leb3,leb4;
                                                                    JComboBox cb1a;
                                                                    JTextField tf1,tf2,tf4;
                                                                    JButton fcb,cb,fs;
                                                                    Color cc=new Color(160,160,220,200);
                                                                    int x,y;
                                                                    int rgb=0;
                                                                    int frgb[]=new int[3];
                                                                    String fea[]=new String[3];
                                                                    int count=0;
                                                                    String ss;
                                                                    int ccb=0;
                                                                    int[][] w = new int[10000][10000];
                                                                    int[] components=new int[50000];
                                                                    int[][] imageArray=new int[1000][1000];
                                                                    int[] dx = new int[] {-1,0,1,1,1,0,-1,-1};
                                                                    int[] dy = new int[] {1,1,1,0,-1,-1,-1,0};

                                                                    page1()
                                                                    {
                                                                        f=new JFrame("Data Association Page");
                                                                        ii=new ImageIcon("session1.gif");
                                                                        img=ii.getImage();
                                                                        height=ii.getIconHeight();
                                                                        width=ii.getIconWidth();
                                                                        pixels=new
int[(ii.getIconWidth()+1)*(ii.getIconHeight()+1)];
                                                                        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,1,ii.getIconWidth());
                                                                        try
                                                                        {
                                                                                pg.grabPixels();
                                                                        }
                                                                        catch(InterruptedException k)
                                                                        {
                                                                        }
                                                                        l=new JLabel(ii,JLabel.CENTER);
                                                                        c=f.getContentPane();
                                                                        JDesktopPane desk = new JDesktopPane();
    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
                                                                        JScrollPane scroll = new JScrollPane(l);
                                                                        p.setContentPane(scroll);
                                                                        p.setBounds(0, 0, 740, 600);
                                                                        desk.add(p);
                                                                        p.setVisible(true);
                                                                        l.addMouseListener(this);
                                                                        l.addMouseMotionListener(this);
```

```
                                                                    panel=new JPanel();
                                                                    panel.setLayout(new GridLayout(4,1));
                                                                    panel.setBackground(cc);

                                                                    p1=new JPanel();
                                                                  p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                                  p1.setLayout(new GridLayout(6,1));
                                                                  panel.add(p1);
                                                                  /*--------------------*/
                                                                  JPanel p1a=new JPanel();
                                                                  String ht1 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";

                                                                    leb1=new JLabel(ht1);
                                                                    p1a.add(leb1);

                                                                    cb1a=new JComboBox();
                                                                    cb1a.setPreferredSize(new Dimension (100,20) );
                                                                  cb1a.setEditable(false);
                                                                  cb1a.setBackground(Color.WHITE);
                                                                  cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
                                                                  cb1a.addItem("      ");


                                                                 //cb1a.addActionListener(this);
                                                                  p1a.add(cb1a);
                                                                    p1.add(p1a);

                                                                    /*--------------------*/
                                                                    JPanel p1b=new JPanel();
                                                                    String ht2 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Color</font> </p>";

                                                                    leb2=new JLabel(ht2);
                                                                    p1b.add(leb2);
                                                                    tf1=new JTextField(3);
                                                                  tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                  tf1.setEditable(false);
                                                                  tf1.setBackground(Color.white);
                                                                  p1b.add(tf1);

                                                                    /*--------------------*/

                                                                    String ht3 =
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature</font> </p>";

                                                                    leb3=new JLabel(ht3);
                                                                    p1b.add(leb3);
                                                                    tf2=new JTextField(9);
                                                                  tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                  p1b.add(tf2);

                                                                  p1.add(p1b);
                                                                  /*--------------------*/

                                                                    JPanel p1c=new JPanel();
                                                                    fcb=new JButton("   G  O   ");
                                                                    fcb.setBackground(Color.pink);
                                                                    fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                    fcb.addActionListener(this);
                                                                    fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                    p1c.add(fcb);

                                                                    p1.add(p1c);
                                                                     /*--------------------*/
                                                                    JPanel p1d=new JPanel();
                                                                    cb=new JButton("   COMPLETE   ");
                                                                    cb.setBackground(Color.yellow);
                                                                    cb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                    cb.addActionListener(this);
                                                                    cb.setBorder(new
BevelBorder(BevelBorder.RAISED));
```

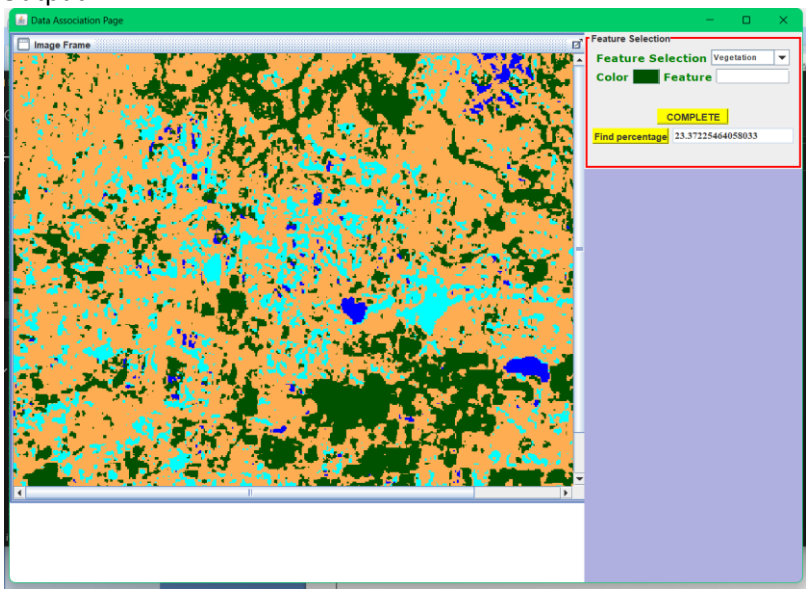
```
                                                    p1d.add(cb);

                                                    p1.add(p1d);
                                                     /*--------------------*/
                                                     /*--------------------*/
                                                    JPanel p1e=new JPanel();

                                                    fs=new JButton("Find percentage");
                                                    fs.setBackground(Color.yellow);
                                                    fs.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                    fs.addActionListener(this);
                                                    fs.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                    p1e.add(fs);


                                                    tf4=new JTextField(15);
                                                  tf4.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                  tf4.setEditable(false);
                                                  tf4.setBackground(Color.white);
                                                  p1e.add(tf4);

                                                    tf4.setVisible(false);
                                                    fs.setVisible(false);
                                                    p1.add(p1e);
                                                    /*--------------------*/
                                                    c.add(desk, BorderLayout.CENTER);
                                                    c.add(panel,BorderLayout.EAST);
                                                  f.setSize(1024,738);
                                                    f.setVisible(true);

                                                }

                                                public static void main(String args[])
                                                {
                                                    new page1();
                                                }

                                                public void mouseClicked(MouseEvent me)
                                                {
                                                 ColorModel md=pg.getColorModel();
                                                 x=me.getX();
                                                 y=me.getY();
                                                 int a1=(y-1)*ii.getIconWidth()+x;
                                                 System.out.println(x+"   "+y+"  "+ii.getIconWidth()+"
"+a1+pixels[a1]);

                                                // System.out.println(a1);
                                                 rgb=(md.getRGB(pixels[a1]));
                                                 System.out.print(rgb);
                                                 tf1.setBackground(new Color(rgb));
                                                 for(int i=0;i<count;i++)
                                                 {
                                                    if(rgb==frgb[i])
                                                    {
                                                                System.out.print("  "+fea[i]+"\n\n");
                                                                break;
                                                    }
                                                 }
                                                }

                                                public void mouseEntered(MouseEvent me)
                                                {

                                                }
                                                public void mouseExited(MouseEvent me)
                                                {

                                                }

                                                public void mousePressed(MouseEvent me)
                                                {

                                                }
                                                public void mouseReleased(MouseEvent me)
                                                {
```

```
}

public void mouseMoved(MouseEvent me)
{

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
    ColorModel md=pg.getColorModel();
    int rgb1;
    double temp,temp1;
    if(ae.getSource()==fcb)
    {
            int flag=0;
            if(count>=3)
            {

JOptionPane.showMessageDialog((Component)null,"
Assignment completed before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;

tf1.setBackground(Color.white);
                    tf2.setText(null);

            }
            ss=tf2.getText();
            if(ss.length()==0&&flag==0)
            {

JOptionPane.showMessageDialog((Component)null,"
Please Assign Feature Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
            }
      if(rgb==0&&flag==0)
      {

JOptionPane.showMessageDialog((Component)null,"
Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
            flag=1;
      }

      if(flag==0)
      {
      for(int i=0;i<count;i++)
      {
            if(rgb==frgb[i])
            {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
            flag=1;
            }

            if(ss.equalsIgnoreCase(fea[i]))
            {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
            flag=1;
            tf2.setText(null);
            }

      }
      }
```

```
        if(flag==0)
        {
                frgb[count]=rgb;
                //System.out.println(rgb);
                fea[count]=ss;
                count++;
                tf1.setBackground(Color.white);
                tf2.setText(null);
                rgb=0;
        }
        if(count==3)
        {
                        fcb.setVisible(false);
        }
      }

    if(ae.getSource()==cb)
    {
      if(count==3&& ccb==0)
      {
       for(int i=0;i<3;i++)
       {
                cb1a.addItem(fea[i]);
                System.out.print("\n"+frgb[i]+"   is for
the feature "+fea[i]);

       }
       System.out.print("\n\n");
       ccb=1;
      }
      tf4.setVisible(true);
      fs.setVisible(true);
      rgb=0;
    }


      if(ae.getSource()==fs)
      {
                int a1,i,j;
                int count1=0;

                if(rgb==0)
                {

JOptionPane.showMessageDialog((Component)null,"
Please Click on Feature to Find Percentage","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                }
                else
                {

                        int count=0;
                        for(i=1;i<=height;i++)
                        {

for(j=1;j<=width;j++)
                                {
                                        a1=(i-
1)*width+j;


rgb1=(md.getRGB(pixels[a1]));

if(rgb1==rgb)
                                        {

count++;
                                        }
                                }
                        }


System.out.print("\n\n\ncount="+count+"\n\n\n");
                        //calculate percentage
                        temp=count;
                        temp1=height*width;
                        temp=count*100/temp1;

tf4.setText(Double.toString(temp));
```

```
                                                                    System.out.print("\n\n\nPercentage="+temp+"\n\n\
n");


                                                                                }
                                                                      }
                                                                    }
}
```

Output:



15 Write a program to show various process to open GIS image into desktop (at least three) with resizing it, mark some portion of the image with some color and point it with attribute.

Answer:

Source Code:

Option1

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option1 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
                                                                    JFrame f;
                                                                    JLabel l;
                                                                    JPanel p1;
                                                                    ImageIcon ii;
                                                                    Image img;
                                                                    int height;
                                                                    int width;
                                                                    Container c;
                                                                    int pixels[];
                                                                    PixelGrabber pg;
                                                                    JPanel panel;
                                                                    JLabel leb1,leb2,leb3;
                                                                    JComboBox cb1a;
                                                                    JTextField tf1,tf2;
                                                                    JButton fcb,cb;
                                                                    Color cc=new Color(160,160,220,200);
                                                                    int x,y;
                                                                    int rgb;
                                                                    int frgb[]=new int[5];
                                                                    String fea[]=new String[5];
                                                                    int count=0;
                                                                    String ss;
                                                                    int ccb=0;
                                                                    Graphics2D gg1,gg2,gg3,gg4;
                                                                    Polygon pp1=new Polygon();
                                                                    Polygon pp2=new Polygon();
                                                                    Polygon pp3=new Polygon();
                                                                    Polygon pp4=new Polygon();

                                                                    option1()
```

```
{
    f=new JFrame("Style 1 to open an image");
    ii=new ImageIcon("habra.jpg");
    img=ii.getImage();
    height=ii.getIconHeight();
    width=ii.getIconWidth();
    pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

    pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

    try
    {
                pg.grabPixels();
    }
    catch(InterruptedException k)
    {
    }
    l=new JLabel(ii,JLabel.CENTER);
    c=f.getContentPane();
    JDesktopPane desk = new JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);

    JScrollPane scroll = new JScrollPane(l);
    p.setContentPane(scroll);
    p.setBounds(0, 0, 500, 400);
    desk.add(p);
    p.setVisible(true);
    l.addMouseListener(this);
    l.addMouseMotionListener(this);



    pp1.addPoint(300,300);
    pp1.addPoint(340,300);
    pp1.addPoint(340,260);
    pp1.addPoint(300,260);

    pp2.addPoint(200,280);
    pp2.addPoint(230,280);
    pp2.addPoint(240,260);
    pp2.addPoint(230,240);
    pp2.addPoint(210,235);
    pp2.addPoint(180,250);

    pp3.addPoint(130,400);
    pp3.addPoint(180,420);
    pp3.addPoint(150,380);

    pp4.addPoint(340,80);
    pp4.addPoint(200,100);
    pp4.addPoint(100,350);



    panel=new JPanel();
    panel.setLayout(new GridLayout(4,1));
    panel.setBackground(cc);

    p1=new JPanel();
p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

p1.setLayout(new GridLayout(4,1));
panel.add(p1);
/*--------------------*/
JPanel p1a=new JPanel();
String ht1 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";

    leb1=new JLabel(ht1);
    p1a.add(leb1);

    cb1a=new JComboBox();
    cb1a.setPreferredSize(new Dimension (100,20) );
cb1a.setEditable(false);
cb1a.setBackground(Color.WHITE);
cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
cb1a.addItem("      ");
```

```
      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Color</font> </p>";



ROMAN",Font.BOLD,12));




      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature</font> </p>";



ROMAN",Font.BOLD,12));









(BevelBorder.RAISED));

BevelBorder(BevelBorder.RAISED));









(BevelBorder.RAISED));

BevelBorder(BevelBorder.RAISED));
```

```
  //cb1a.addActionListener(this);
   p1a.add(cb1a);
     p1.add(p1a);

     /*--------------------*/
     JPanel p1b=new JPanel();
     String ht2 =


     leb2=new JLabel(ht2);
     p1b.add(leb2);
     tf1=new JTextField(3);
   tf1.setFont(new Font("TIMES NEW

   tf1.setEditable(false);
   tf1.setBackground(Color.white);
   p1b.add(tf1);

     /*--------------------*/

     String ht3 =


     leb3=new JLabel(ht3);
     p1b.add(leb3);
     tf2=new JTextField(9);
   tf2.setFont(new Font("TIMES NEW

   p1b.add(tf2);

   p1.add(p1b);
   /*--------------------*/

     JPanel p1c=new JPanel();
     fcb=new JButton("   G  O   ");
     fcb.setBackground(Color.pink);
     fcb.setBorder(new BevelBorder

     fcb.addActionListener(this);
     fcb.setBorder(new

     p1c.add(fcb);

     p1.add(p1c);
      /*--------------------*/
     JPanel p1d=new JPanel();
     cb=new JButton("   COMPLETE   ");
     cb.setBackground(Color.yellow);
     cb.setBorder(new BevelBorder

     cb.addActionListener(this);
     cb.setBorder(new

     p1d.add(cb);

     p1.add(p1d);
      /*--------------------*/
     c.add(desk, BorderLayout.CENTER);
     c.add(panel,BorderLayout.EAST);
   f.setSize(1024,738);
     f.setVisible(true);

}

public static void main(String args[])
{
     new option1();
}

public void mouseClicked(MouseEvent me)
{
  boolean contain1,contain2,contain3,contain4;
  ColorModel md=pg.getColorModel();
  x=me.getX();
  y=me.getY();

  contain1=pp1.contains(x,y);
```

```
polygon:"+(contain1||contain2||contain3||contain4)+"\n");


"+a1+""+pixels[a1]);
```

```
 contain2=pp2.contains(x,y);
 contain3=pp3.contains(x,y);
 contain4=pp4.contains(x,y);
 System.out.print("\nPoint inside

 int a1=(y-1)*ii.getIconWidth()+x;
 System.out.println(x+"    "+y+"  "+ii.getIconWidth()+"


 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 if(contain1==true)
 {
    Color color = new Color(255, 0, 0);
    rgb = color.getRGB();
    tf1.setBackground(new Color(255,0,0));
 }
 else if(contain2==true)
 {
    Color color = new Color(0, 255, 0);
    rgb = color.getRGB();
    tf1.setBackground(new Color(0,255,0));
 }
 else if(contain3==true)
 {
    Color color = new Color(0, 0, 255);
    rgb = color.getRGB();
    tf1.setBackground(new Color(0,0,255));
 }
 else if(contain4==true)
 {
    Color color = new Color(128, 128,128);
    rgb = color.getRGB();
    tf1.setBackground(new Color(128, 128,128));
 }
 else
    tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
    if(rgb==frgb[i])
    {
                System.out.print("  "+fea[i]+"\n\n");
                break;
    }
 }


}

public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
    ColorModel cm=pg.getColorModel();
    gg1=(Graphics2D)l.getGraphics();
    gg1.setColor(new Color(255,0,0) );
    gg1.fillPolygon(pp1);
    gg2=(Graphics2D)l.getGraphics();
    gg2.setColor(new Color(0,255,0) );
    gg2.fillPolygon(pp2);
```

```
        gg3=(Graphics2D)l.getGraphics();
        gg3.setColor(new Color(0,0,255) );
        gg3.fillPolygon(pp3);
        gg4=(Graphics2D)l.getGraphics();
        gg4.setColor(new Color(128,128,128) );
        gg4.fillPolygon(pp4);

    }
    public void mouseDragged(MouseEvent me)
    {

    }

    public void actionPerformed(ActionEvent ae)
    {
        if(ae.getSource()==fcb)
        {
                int flag=0;
                if(count==4)
                {

JOptionPane.showMessageDialog((Component)null,"
Assignment completed before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;

tf1.setBackground(Color.white);
                        tf2.setText(null);

                }
                ss=tf2.getText();
                if(ss.length()==0&&flag==0)
                {

JOptionPane.showMessageDialog((Component)null,"
Please Assign Feature Name",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                }
            if(rgb==0&&flag==0)
            {

JOptionPane.showMessageDialog((Component)null,"
Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
            }

            if(flag==0)
            {
            for(int i=0;i<count;i++)
            {
                if(rgb==frgb[i])
                {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
                }

                if(ss.equalsIgnoreCase(fea[i]))
                {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                flag=1;
                tf2.setText(null);
                }

            }
            }

            if(flag==0)
```

```
        {
                frgb[count]=rgb;
                //System.out.println(rgb);
                fea[count]=ss;
                count++;
                tf1.setBackground(Color.white);
                tf2.setText(null);
                rgb=0;
        }
        //allowing only three attribute here
        if(count==4)
        {
                        fcb.setVisible(false);
        }
      }

  if(ae.getSource()==cb)
  {
     if(count==5&& ccb==0)
     {
       for(int i=0;i<4;i++)
       {
                cb1a.addItem(fea[i]);
                System.out.println(frgb[i]+"   is for the
feature "+fea[i]);

       }
       System.out.print("\n\n");
       ccb=1;
     }
  }
}
}
```

Option2

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option2 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
JFrame f;
JLabel l;
JPanel p1;
ImageIcon ii;
Image img;
int height;
int width;
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3;
JComboBox cb1a;
JTextField tf1,tf2;
JButton fcb,cb;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb;
int frgb[]=new int[4];
String fea[]=new String[4];
int count=0;
String ss;
int ccb=0;
Graphics2D gg1,gg2,gg3;
Polygon pp1=new Polygon();
Polygon pp2=new Polygon();
Polygon pp3=new Polygon();

option2()
{
    f=new JFrame("Style 2 to open an image");
    ii=new ImageIcon("prasun.jpg");
    img=ii.getImage();
    height=ii.getIconHeight();
    width=ii.getIconWidth();
```

```
int[ii.getIconWidth()*ii.getIconHeight()];
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
LineBorder(Color.red,2),"Feature Selection"));
    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";
```

```
pixels=new
pg=new
try
{
        pg.grabPixels();
}
catch(InterruptedException k)
{
}
l=new JLabel(ii,JLabel.CENTER);
c=f.getContentPane();
JDesktopPane desk = new JDesktopPane();

JScrollPane scroll = new JScrollPane(l);
p.setContentPane(scroll);
p.setBounds(0, 0, 600,600);
desk.add(p);
p.setVisible(true);
l.addMouseListener(this);
l.addMouseMotionListener(this);

pp1.addPoint(300,300);
pp1.addPoint(340,300);
pp1.addPoint(340,260);
pp1.addPoint(300,260);

pp2.addPoint(130,400);
pp2.addPoint(180,420);
pp2.addPoint(150,380);

pp3.addPoint(200,280);
pp3.addPoint(230,280);
pp3.addPoint(240,260);
pp3.addPoint(230,240);
pp3.addPoint(210,235);
pp3.addPoint(180,250);

panel=new JPanel();
panel.setLayout(new GridLayout(4,1));
panel.setBackground(cc);

p1=new JPanel();
p1.setBorder(new TitledBorder(new

p1.setLayout(new GridLayout(4,1));
panel.add(p1);
/*--------------------*/
JPanel p1a=new JPanel();
String ht1 =

leb1=new JLabel(ht1);
p1a.add(leb1);

cb1a=new JComboBox();
cb1a.setPreferredSize(new Dimension (100,20) );
cb1a.setEditable(false);
cb1a.setBackground(Color.WHITE);
cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
cb1a.addItem("      ");

//cb1a.addActionListener(this);
p1a.add(cb1a);
p1.add(p1a);

/*--------------------*/
JPanel p1b=new JPanel();
String ht2 =
```

```
    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Color</font> </p>";
                                                                    leb2=new JLabel(ht2);
                                                                    p1b.add(leb2);
                                                                    tf1=new JTextField(3);
                                                                  tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));
                                                                  tf1.setEditable(false);
                                                                  tf1.setBackground(Color.white);
                                                                  p1b.add(tf1);

                                                                    /*--------------------*/

                                                                    String ht3 =

    "<html><p><font color=\"GREEN\" "+
    "size=\"4\" face=\"Verdana\">Feature</font> </p>";

                                                                    leb3=new JLabel(ht3);
                                                                    p1b.add(leb3);
                                                                    tf2=new JTextField(9);
                                                                  tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));
                                                                  p1b.add(tf2);

                                                                  p1.add(p1b);
                                                                  /*--------------------*/

                                                                    JPanel p1c=new JPanel();
                                                                    fcb=new JButton("   G  O   ");
                                                                    fcb.setBackground(Color.pink);
                                                                    fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                    fcb.addActionListener(this);
                                                                    fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));
                                                                    p1c.add(fcb);

                                                                    p1.add(p1c);
                                                                     /*--------------------*/
                                                                    JPanel p1d=new JPanel();
                                                                    cb=new JButton("   COMPLETE   ");
                                                                    cb.setBackground(Color.yellow);
                                                                    cb.setBorder(new BevelBorder
(BevelBorder.RAISED));
                                                                    cb.addActionListener(this);
                                                                    cb.setBorder(new
BevelBorder(BevelBorder.RAISED));
                                                                    p1d.add(cb);

                                                                    p1.add(p1d);
                                                                     /*--------------------*/
                                                                    c.add(desk, BorderLayout.CENTER);
                                                                    c.add(panel,BorderLayout.EAST);
                                                                  f.setSize(1024,738);
                                                                    f.setVisible(true);

                                                                }

                                                                public static void main(String args[])
                                                                {
                                                                    new option2();
                                                                }

                                                                public void mouseClicked(MouseEvent me)
                                                                {
                                                                 boolean contain1,contain2,contain3;
                                                                 ColorModel md=pg.getColorModel();
                                                                 x=me.getX();
                                                                 y=me.getY();

                                                                 contain1=pp1.contains(x,y);
                                                                 contain2=pp2.contains(x,y);
                                                                 contain3=pp3.contains(x,y);
                                                                 System.out.print("\nPoint inside
polygon:"+(contain1||contain2||contain3)+"\n");
                                                                 int a1=(y-1)*ii.getIconWidth()+x;
                                                                 System.out.println(x+"   "+y+"  "+ii.getIconWidth()+"
"+a1+""+pixels[a1]);
```

```
 rgb=(md.getRGB(pixels[a1]));
 System.out.print(rgb);
 if(contain1==true)
 {
    Color color = new Color(255, 0, 0);
    rgb = color.getRGB();
    tf1.setBackground(new Color(255,0,0));
 }
 else if(contain2==true)
 {
    Color color = new Color(0, 255, 0);
    rgb = color.getRGB();
    tf1.setBackground(new Color(0,255,0));
 }
 else if(contain3==true)
 {
    Color color = new Color(0, 0, 255);
    rgb = color.getRGB();
    tf1.setBackground(new Color(0,0,255));
 }
 else
    tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
    if(rgb==frgb[i])
    {
                System.out.print("  "+fea[i]+"\n\n");
                break;
    }
 }


}

public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
    ColorModel cm=pg.getColorModel();
    gg1=(Graphics2D)l.getGraphics();
    gg1.setColor(new Color(255,0,0) );
    gg1.fillPolygon(pp1);
    gg2=(Graphics2D)l.getGraphics();
    gg2.setColor(new Color(0,255,0) );
    gg2.fillPolygon(pp2);
    gg3=(Graphics2D)l.getGraphics();
    gg3.setColor(new Color(0,0,255) );
    gg3.fillPolygon(pp3);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
    if(ae.getSource()==fcb)
    {
                int flag=0;
```

```
                    if(count==4)
                    {
JOptionPane.showMessageDialog((Component)null,"
Assignment completed before",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
tf1.setBackground(Color.white);
                        tf2.setText(null);
                    }
                    ss=tf2.getText();
                    if(ss.length()==0&&flag==0)
                    {
JOptionPane.showMessageDialog((Component)null,"
Please Assign Feature Name",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                        flag=1;
                    }
        if(rgb==0&&flag==0)
        {
JOptionPane.showMessageDialog((Component)null,"
Please Select Feature",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
        }

        if(flag==0)
        {
        for(int i=0;i<count;i++)
        {
                    if(rgb==frgb[i])
                    {
JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
                    }

                    if(ss.equalsIgnoreCase(fea[i]))
                    {
JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",
"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                    flag=1;
                    tf2.setText(null);
                    }

        }
        }

        if(flag==0)
        {
                    frgb[count]=rgb;
                    //System.out.println(rgb);
                    fea[count]=ss;
                    count++;
                    tf1.setBackground(Color.white);
                    tf2.setText(null);
                    rgb=0;
        }
        //allowing only three attribute here
        if(count==3)
        {
                        fcb.setVisible(false);
        }
      }

  if(ae.getSource()==cb)
  {
```

```
                                                                    if(count==4&& ccb==0)
                                                                    {
                                                                     for(int i=0;i<4;i++)
                                                                     {
                                                                                cb1a.addItem(fea[i]);
                                                                                System.out.println(frgb[i]+"   is for the
feature "+fea[i]);

                                                                     }
                                                                     System.out.print("\n\n");
                                                                     ccb=1;
                                                                    }
                                                                  }
                                                                }
}

Option3
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;

class option3 extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
                                                                JFrame f;
                                                                JLabel l;
                                                                JPanel p1;
                                                                ImageIcon ii;
                                                                Image img;
                                                                int height;
                                                                int width;
                                                                Container c;
                                                                int pixels[];
                                                                PixelGrabber pg;
                                                                JPanel panel;
                                                                JLabel leb1,leb2,leb3;
                                                                JComboBox cb1a;
                                                                JTextField tf1,tf2;
                                                                JButton fcb,cb;
                                                                Color cc=new Color(160,160,220,200);
                                                                int x,y;
                                                                int rgb;
                                                                int frgb[]=new int[4];
                                                                String fea[]=new String[4];
                                                                int count=0;
                                                                String ss;
                                                                int ccb=0;
                                                                Graphics2D gg1,gg2,gg3;
                                                                Polygon pp1=new Polygon();
                                                                Polygon pp2=new Polygon();
                                                                Polygon pp3=new Polygon();

                                                                option3()
                                                                {
                                                                    f=new JFrame("Style 3 to open an image");
                                                                    ii=new ImageIcon("prasun.jpg");
                                                                    img=ii.getImage();
                                                                    height=ii.getIconHeight();
                                                                    width=ii.getIconWidth();
                                                                    pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

                                                                    pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

                                                                    try
                                                                    {
                                                                                pg.grabPixels();
                                                                    }
                                                                    catch(InterruptedException k)
                                                                    {
                                                                    }
                                                                    l=new JLabel(ii,JLabel.CENTER);
                                                                    c=f.getContentPane();
                                                                    JDesktopPane desk = new JDesktopPane();

    JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
                                                                    JScrollPane scroll = new JScrollPane(l);
                                                                    p.setContentPane(scroll);
```

```
                                                                    p.setBounds(0, 0, 200,300);
                                                                    desk.add(p);
                                                                    p.setVisible(true);
                                                                    l.addMouseListener(this);
                                                                    l.addMouseMotionListener(this);


                                                                    pp1.addPoint(130,400);
                                                                    pp1.addPoint(180,420);
                                                                    pp1.addPoint(150,380);

                                                                    pp2.addPoint(300,300);
                                                                    pp2.addPoint(340,300);
                                                                    pp2.addPoint(340,260);
                                                                    pp2.addPoint(300,260);

                                                                    pp3.addPoint(200,280);
                                                                    pp3.addPoint(230,280);
                                                                    pp3.addPoint(240,260);
                                                                    pp3.addPoint(230,240);
                                                                    pp3.addPoint(210,235);
                                                                    pp3.addPoint(180,250);



                                                                    panel=new JPanel();
                                                                    panel.setLayout(new GridLayout(4,1));
                                                                    panel.setBackground(cc);

                                                                    p1=new JPanel();
                                                                  p1.setBorder(new TitledBorder(new
LineBorder(Color.red,2),"Feature Selection"));

                                                                  p1.setLayout(new GridLayout(4,1));
                                                                  panel.add(p1);
                                                                  /*--------------------*/
                                                                  JPanel p1a=new JPanel();
                                                                  String ht1 =

      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature Selection</font> </p>";

                                                                    leb1=new JLabel(ht1);
                                                                    p1a.add(leb1);

                                                                    cb1a=new JComboBox();
                                                                    cb1a.setPreferredSize(new Dimension (100,20) );
                                                                  cb1a.setEditable(false);
                                                                  cb1a.setBackground(Color.WHITE);
                                                                  cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
                                                                  cb1a.addItem("      ");


                                                                 //cb1a.addActionListener(this);
                                                                  p1a.add(cb1a);
                                                                    p1.add(p1a);

                                                                    /*--------------------*/
                                                                    JPanel p1b=new JPanel();
                                                                    String ht2 =

      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Color</font> </p>";

                                                                    leb2=new JLabel(ht2);
                                                                    p1b.add(leb2);
                                                                    tf1=new JTextField(3);
                                                                  tf1.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));

                                                                  tf1.setEditable(false);
                                                                  tf1.setBackground(Color.white);
                                                                  p1b.add(tf1);

                                                                    /*--------------------*/

                                                                    String ht3 =

      "<html><p><font color=\"GREEN\" "+
      "size=\"4\" face=\"Verdana\">Feature</font> </p>";

                                                                    leb3=new JLabel(ht3);
                                                                    p1b.add(leb3);
                                                                    tf2=new JTextField(9);
                                                                  tf2.setFont(new Font("TIMES NEW
ROMAN",Font.BOLD,12));
```

```
                                                                    p1b.add(tf2);

                                                                    p1.add(p1b);
                                                                    /*--------------------*/

                                                                      JPanel p1c=new JPanel();
                                                                      fcb=new JButton("   G  O   ");
                                                                      fcb.setBackground(Color.pink);
                                                                      fcb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                      fcb.addActionListener(this);
                                                                      fcb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                      p1c.add(fcb);

                                                                      p1.add(p1c);
                                                                       /*--------------------*/
                                                                      JPanel p1d=new JPanel();
                                                                      cb=new JButton("   COMPLETE   ");
                                                                      cb.setBackground(Color.yellow);
                                                                      cb.setBorder(new BevelBorder
(BevelBorder.RAISED));

                                                                      cb.addActionListener(this);
                                                                      cb.setBorder(new
BevelBorder(BevelBorder.RAISED));

                                                                      p1d.add(cb);

                                                                      p1.add(p1d);
                                                                       /*--------------------*/
                                                                      c.add(desk, BorderLayout.CENTER);
                                                                      c.add(panel,BorderLayout.EAST);
                                                                    f.setSize(1024,738);
                                                                      f.setVisible(true);

                                                                  }

                                                                  public static void main(String args[])
                                                                  {
                                                                      new option3();
                                                                  }

                                                                  public void mouseClicked(MouseEvent me)
                                                                  {
                                                                   boolean contain1,contain2,contain3;
                                                                   ColorModel md=pg.getColorModel();
                                                                   x=me.getX();
                                                                   y=me.getY();

                                                                   contain1=pp1.contains(x,y);
                                                                   contain2=pp2.contains(x,y);
                                                                   contain3=pp3.contains(x,y);
                                                                   System.out.print("\nPoint inside
polygon:"+(contain1||contain2||contain3)+"\n");

                                                                   int a1=(y-1)*ii.getIconWidth()+x;
                                                                   System.out.println(x+"    "+y+"  "+ii.getIconWidth()+"
"+a1+""+pixels[a1]);


                                                                   rgb=(md.getRGB(pixels[a1]));
                                                                   System.out.print(rgb);
                                                                   if(contain1==true)
                                                                   {
                                                                      Color color = new Color(255, 0, 0);
                                                                      rgb = color.getRGB();
                                                                      tf1.setBackground(new Color(255,0,0));
                                                                   }
                                                                   else if(contain2==true)
                                                                   {
                                                                      Color color = new Color(0, 255, 0);
                                                                      rgb = color.getRGB();
                                                                      tf1.setBackground(new Color(0,255,0));
                                                                   }
                                                                   else if(contain3==true)
                                                                   {
                                                                      Color color = new Color(0, 0, 255);
                                                                      rgb = color.getRGB();
                                                                      tf1.setBackground(new Color(0,0,255));
                                                                   }
                                                                   else
```

```
        tf1.setBackground(new Color(rgb));

 for(int i=0;i<count;i++)
 {
     if(rgb==frgb[i])
     {
                 System.out.print("  "+fea[i]+"\n\n");
                 break;
     }
 }


}

public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}

public void mouseMoved(MouseEvent me)

{
     ColorModel cm=pg.getColorModel();
     gg1=(Graphics2D)l.getGraphics();
     gg1.setColor(new Color(255,0,0) );
     gg1.fillPolygon(pp1);
     gg2=(Graphics2D)l.getGraphics();
     gg2.setColor(new Color(0,255,0) );
     gg2.fillPolygon(pp2);
     gg3=(Graphics2D)l.getGraphics();
     gg3.setColor(new Color(0,0,255) );
     gg3.fillPolygon(pp3);

}
public void mouseDragged(MouseEvent me)
{

}

public void actionPerformed(ActionEvent ae)
{
     if(ae.getSource()==fcb)
     {
                 int flag=0;
                 if(count==4)
                 {

JOptionPane.showMessageDialog((Component)null,"
Assignment completed before",


"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                             flag=1;

tf1.setBackground(Color.white);
                             tf2.setText(null);

                 }
                 ss=tf2.getText();
                 if(ss.length()==0&&flag==0)
                 {

JOptionPane.showMessageDialog((Component)null,"
Please Assign Feature Name",


"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
```

```
                                        flag=1;
                                }
                        if(rgb==0&&flag==0)
                        {

JOptionPane.showMessageDialog((Component)null,"
Please Select Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                        }

                        if(flag==0)
                        {
                        for(int i=0;i<count;i++)
                        {
                                if(rgb==frgb[i])
                                {

JOptionPane.showMessageDialog((Component)null,"Please Select New Feature",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                                }

                                if(ss.equalsIgnoreCase(fea[i]))
                                {

JOptionPane.showMessageDialog((Component)null,"Feature Name Used Before",

"NOTIFICATION",JOptionPane.ERROR_MESSAGE);
                                flag=1;
                                tf2.setText(null);
                                }

                        }
                        }

                        if(flag==0)
                        {
                                frgb[count]=rgb;
                                //System.out.println(rgb);
                                fea[count]=ss;
                                count++;
                                tf1.setBackground(Color.white);
                                tf2.setText(null);
                                rgb=0;
                        }
                        //allowing only three attribute here
                        if(count==3)
                        {
                                        fcb.setVisible(false);
                        }
                    }

                  if(ae.getSource()==cb)
                  {
                     if(count==4&& ccb==0)
                     {
                      for(int i=0;i<4;i++)
                      {
                                cb1a.addItem(fea[i]);
                                System.out.println(frgb[i]+"   is for the
feature "+fea[i]);

                      }
                      System.out.print("\n\n");
                      ccb=1;
                     }
                  }
                }

}
```

Output:

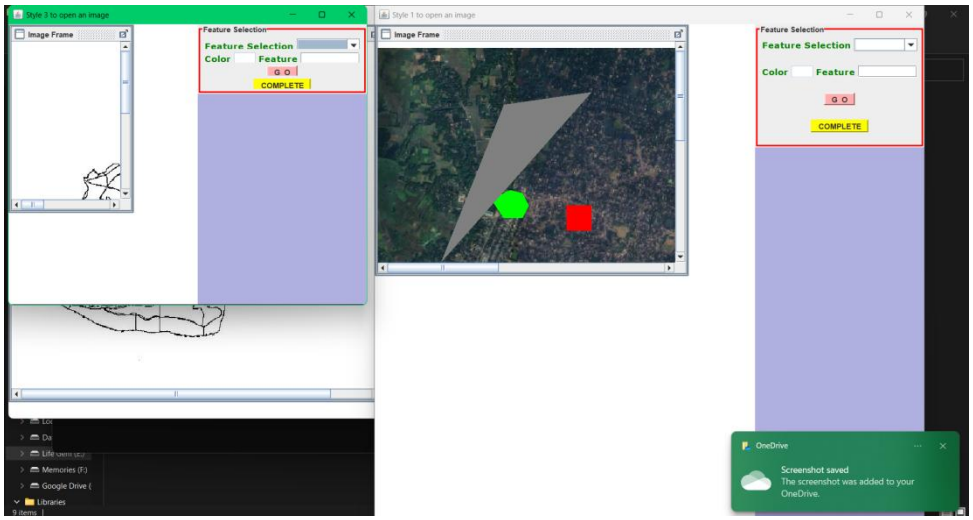


Image Frame
Feature Selection
Color
Feature
GO
COMPLETE
OneDrive
Screenshot saved
The screenshot was added to your OneDrive.

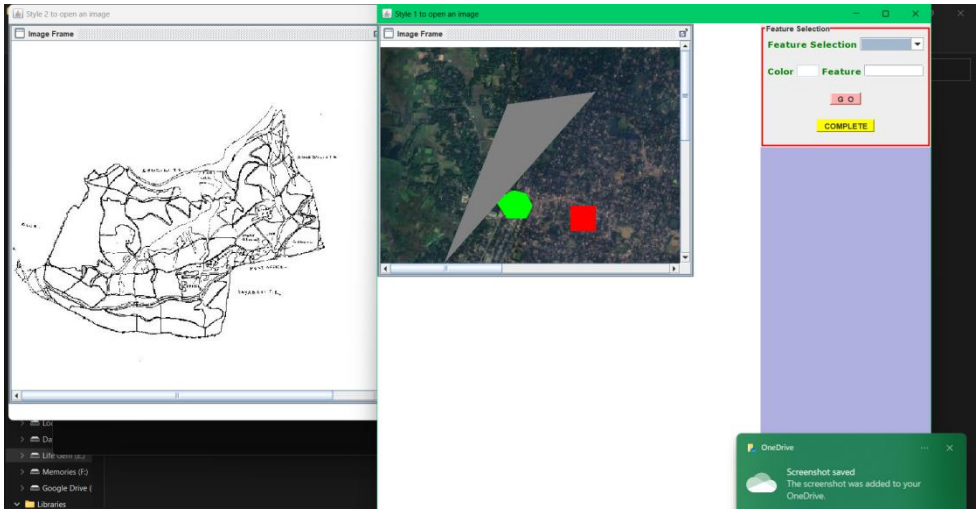


Image Frame
Feature Selection
Color
Feature
GO
COMPLETE
OneDrive
Screenshot saved
The screenshot was added to your OneDrive.

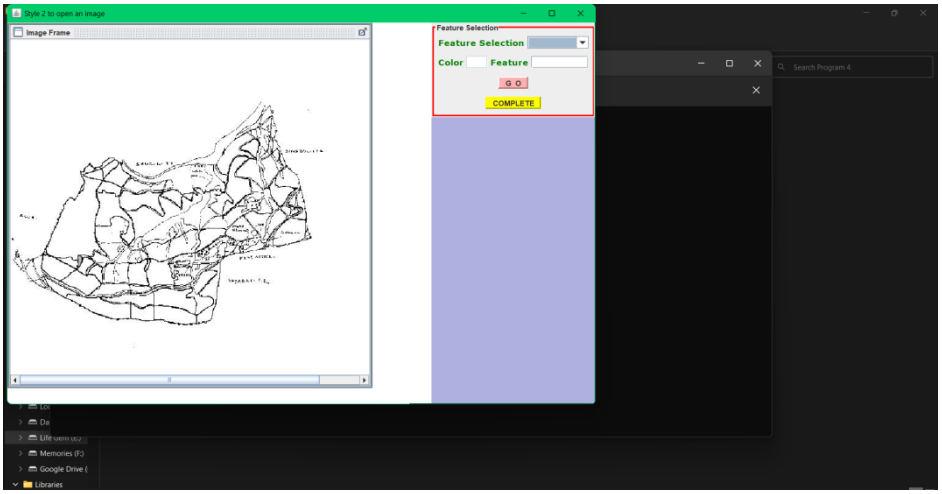


Image Frame
Feature Selection
Color
Feature
GO
COMPLETE

16 Write a program to perform the following operations click the mouse on a particular color(feature) of the image then the RGB value of the selected feature will be calculated. Then assign the name of the feature in the corresponding text field...session1.gif image has four features they are.1. Rock 2. River 3. moist land 4. bare soil

Answer

Source Code:

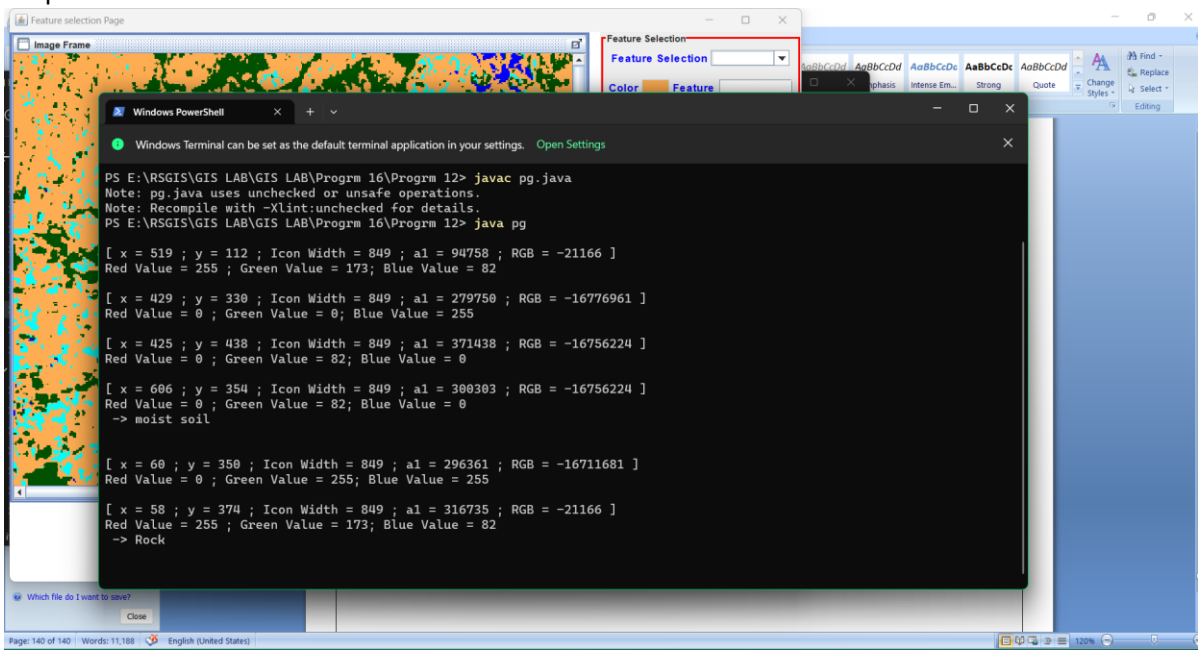
```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.image.*;
class pg extends JFrame implements MouseListener,MouseMotionListener ,ActionListener
{
JFrame f;
JLabel l;
JPanel p1;
ImageIcon ii;
Image img;
int height;
int width;
Container c;
int pixels[];
PixelGrabber pg;
JPanel panel;
JLabel leb1,leb2,leb3;
JComboBox cb1a;
JTextField tf1,tf2;
JButton fcb,cb;
Color cc=new Color(160,160,220,200);
int x,y;
int rgb;
int noOfFeatures = 4;
int frgb[]=new int[noOfFeatures];
String fea[]=new String[noOfFeatures];
int count=0;
String ss;
int ccb=0;
pg()
{
f=new JFrame("Feature selection Page");
ii=new ImageIcon("session1.gif");
img=ii.getImage();
height=ii.getIconHeight();
width=ii.getIconWidth();
pixels=new int[ii.getIconWidth()*ii.getIconHeight()];
pg=new PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
try
{
pg.grabPixels();
}
catch(InterruptedException k)
{
}
l=new JLabel(ii,JLabel.CENTER);
c=f.getContentPane();
JDesktopPane desk = new JDesktopPane();
JInternalFrame p = new JInternalFrame("Image Frame",false, false, true, false);
JScrollPane scroll = new JScrollPane(l);
p.setContentPane(scroll);
p.setBounds(0, 0, 740, 600);
desk.add(p);
p.setVisible(true);
l.addMouseListener(this);
l.addMouseMotionListener(this);
panel=new JPanel();
panel.setLayout(new GridLayout(4,1));
panel.setBackground(cc);
p1=new JPanel();
p1.setBorder(new TitledBorder(new LineBorder(Color.red,2),"Feature Selection"));
p1.setLayout(new GridLayout(4,1));
panel.add(p1);
/*--------------------*/
JPanel p1a=new JPanel();
String ht1 =
"<html><p><font color=\"BLUE\" "+
"size=\"4\" face=\"Arial\">Feature Selection</font> </p>";
leb1=new JLabel(ht1);
```

```
p1a.add(leb1);
cb1a=new JComboBox();
cb1a.setPreferredSize(new Dimension (100,20) );
cb1a.setEditable(false);
cb1a.setBackground(Color.WHITE);
cb1a.setFont(new Font("Dialog", Font.BOLD, 10));
cb1a.addItem(" ");
//cb1a.addActionListener(this);
p1a.add(cb1a);
p1.add(p1a);
/*--------------------*/
JPanel p1b=new JPanel();
String ht2 =
"<html><p><font color=\"BLUE\" "+
"size=\"4\" face=\"Arial\">Color</font> </p>";
leb2=new JLabel(ht2);
p1b.add(leb2);
tf1=new JTextField(3);
tf1.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
tf1.setEditable(false);
tf1.setBackground(Color.white);
p1b.add(tf1);
/*--------------------*/
String ht3 =
"<html><p><font color=\"BLUE\" "+
"size=\"4\" face=\"Arial\">Feature</font> </p>";
leb3=new JLabel(ht3);
p1b.add(leb3);
tf2=new JTextField(9);
tf2.setFont(new Font("TIMES NEW ROMAN",Font.BOLD,12));
p1b.add(tf2);
p1.add(p1b);
/*--------------------*/
JPanel p1c=new JPanel();
fcb=new JButton(" G O ");
fcb.setBackground(Color.MAGENTA);
fcb.setBorder(new BevelBorder (BevelBorder.RAISED));
fcb.addActionListener(this);
fcb.setBorder(new BevelBorder(BevelBorder.RAISED));
p1c.add(fcb);
p1.add(p1c);
/*--------------------*/
JPanel p1d=new JPanel();
cb=new JButton(" DONE ");
cb.setBackground(Color.ORANGE);
cb.setBorder(new BevelBorder (BevelBorder.RAISED));
cb.addActionListener(this);
cb.setBorder(new BevelBorder(BevelBorder.RAISED));
p1d.add(cb);
p1.add(p1d);
/*--------------------*/
c.add(desk, BorderLayout.CENTER);
c.add(panel,BorderLayout.EAST);
f.setSize(1024,738);
f.setVisible(true);
}
public static void main(String args[])
{
new pg();
}
public void mouseClicked(MouseEvent me)
{
ColorModel md=pg.getColorModel();
x=me.getX();
y=me.getY();
int a1=(y-1)*ii.getIconWidth()+x;
System.out.print("\n[ x = "+x+" ; y = "+y+" ; Icon Width = "+ii.getIconWidth());
rgb=(md.getRGB(pixels[a1]));
Color color = new Color(rgb);
System.out.println(" ; a1 = "+a1+" ; RGB = "+rgb+" ]");
System.out.println("Red Value = "+color.getRed()+" ; Green Value = "+color.getGreen()+"; Blue Value = "+color.getBlue());
tf1.setBackground(new Color(rgb));
for(int i=0;i<count;i++)
{
if(rgb==frgb[i])
{
System.out.print(" -> "+fea[i]+"\n\n");
break;
```

```
}
}
}
public void mouseEntered(MouseEvent me)
{
}
public void mouseExited(MouseEvent me)
{
}
public void mousePressed(MouseEvent me)
{
}
public void mouseReleased(MouseEvent me)
{
}
public void mouseMoved(MouseEvent me)
{
}
public void mouseDragged(MouseEvent me)
{
}
public void actionPerformed(ActionEvent ae)
{
if(ae.getSource()==fcb)
{
int flag=0;
if(count==noOfFeatures)
{
JOptionPane.showMessageDialog((Component)null,"Feature assignments isn't complete yet..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
tf1.setBackground(Color.white);
tf2.setText(null);
}
ss=tf2.getText();
if(ss.length()==0&&flag==0)
{
JOptionPane.showMessageDialog((Component)null,"Please Assign Feature Name..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
}
if(rgb==0&&flag==0)
{
JOptionPane.showMessageDialog((Component)null,"Please Select Feature..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
}
if(flag==0)
{
for(int i=0;i<count;i++)
{
if(rgb==frgb[i])
{
JOptionPane.showMessageDialog((Component)null,"Please Select New Feature..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
}
if(ss.equalsIgnoreCase(fea[i]))
{
JOptionPane.showMessageDialog((Component)null,"Feature Name is Used..","NOTIFICATION",JOptionPane.ERROR_MESSAGE);
flag=1;
tf2.setText(null);
}
}
}
if(flag==0)
{
frgb[count]=rgb;
fea[count]=ss;
count++;
tf1.setBackground(Color.white);
tf2.setText(null);
rgb=0;
}
if(count==noOfFeatures&&flag==0)
{
JOptionPane.showMessageDialog((Component)null,"Assignment complete","NOTIFICATION",JOptionPane.INFORMATION_MESSAGE);
tf1.setBackground(Color.white);
tf2.setText(null);
tf2.setEditable(false);
}
}
```

```
if(ae.getSource()==cb)
{
if(count==noOfFeatures&& ccb==0)
{
for(int i=0;i<noOfFeatures;i++)
{
cb1a.addItem(fea[i]);
System.out.println("");
System.out.println(frgb[i]+" is for the feature "+fea[i]);
}
System.out.print("\n\n");
ccb=1;
}
}
}
}
```

Output:



17&18 Write a program to draw line(6cm,8cm,10cm) in three different places and point into a GIS image so that they can form a triangle.

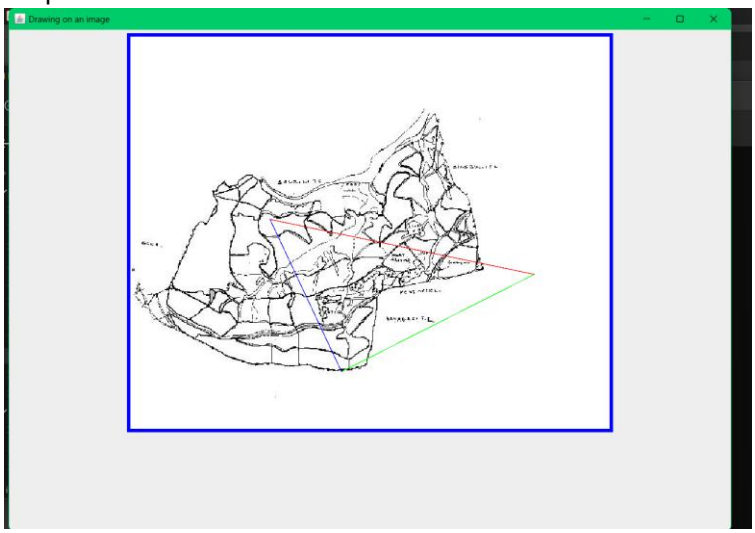
Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class triangle extends JFrame implements MouseListener,MouseMotionListener
{
                                                    JFrame f;
                                                    JLabel l;
                                                    JPanel panel;
                                                    Container c;
                                                    ImageIcon ii;
                                                    Image img;
                                                    int pixels[];
                                                    PixelGrabber pg;
                                                    ColorModel cm;
                                                    Graphics2D gg;
                                                    triangle()
                                                    {
```

```
    f=new JFrame("Drawing on an image");
    f.setSize(1024,738);
    ii=new ImageIcon("subhrajit.jpg");
    img=ii.getImage();
    pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];

    pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());

    try
    {
            pg.grabPixels();
    }
    catch(InterruptedException k)
    {
    }
    l=new JLabel(ii,JLabel.CENTER);
    l.addMouseListener(this);
    l.addMouseMotionListener(this);

l.setBorder(BorderFactory.createLineBorder(Color.blu
e,5));

    panel=new JPanel();
    panel.setLayout(new FlowLayout());
    panel.add(l);



    c=f.getContentPane();
    c.add(panel);
    f.setVisible(true);
}

public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}


public void mouseMoved(MouseEvent me)

{
ColorModel cm=pg.getColorModel();
gg=(Graphics2D)l.getGraphics();
   //Drawing line

gg.setColor(Color.red);
gg.drawLine(200,260,570,337);
gg.setColor(Color.green);
gg.drawLine(570,337,300,473);
gg.setColor(Color.blue);
gg.drawLine(300,473,200,260);

}
public void mouseDragged(MouseEvent me)
{
}



public static void main(String aa[])
{
    new triangle();
}

}
```

Output:



19 Write a GIS based program to draw a polygon (four different places with 4 cm,8cm,12cm width) into a GIS image

Answer:

Source Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.awt.color.*;
import javax.swing.border.*;
import java.awt.image.*;
import java.awt.Graphics.*;
import javax.swing.event.*;
import java.awt.event.MouseListener;
import java.awt.event.MouseEvent;
import java.io.File;
class poly extends JFrame implements MouseListener,MouseMotionListener
{
                                                                    JFrame f;
                                                                    JLabel l;
                                                                    JPanel panel;
                                                                    Container c;
                                                                    ImageIcon ii;
                                                                    Image img;
                                                                    int pixels[];
                                                                    PixelGrabber pg;
                                                                    ColorModel cm;
                                                                    Graphics2D gg;
                                                                    poly()
                                                                    {
                                                                        f=new JFrame("Drawing on an image");
                                                                        f.setSize(1024,738);
                                                                        ii=new ImageIcon("subhrajit.jpg");
                                                                        img=ii.getImage();
                                                                        pixels=new
int[ii.getIconWidth()*ii.getIconHeight()];
                                                                        pg=new
PixelGrabber(img,0,0,ii.getIconWidth(),ii.getIconHeight(),pixels,0,ii.getIconWidth());
                                                                        try
                                                                        {
                                                                                pg.grabPixels();
                                                                        }
                                                                        catch(InterruptedException k)
                                                                        {
                                                                        }
                                                                        l=new JLabel(ii,JLabel.CENTER);
                                                                        l.addMouseListener(this);
                                                                        l.addMouseMotionListener(this);
                                                                    l.setBorder(BorderFactory.createLineBorder(Color.blu
e,5));
                                                                        panel=new JPanel();
                                                                        panel.setLayout(new FlowLayout());
                                                                        panel.add(l);
```

```
        c=f.getContentPane();
        c.add(panel);
        f.setVisible(true);
    }
public void mouseClicked(MouseEvent me)
{
}
public void mouseEntered(MouseEvent me)
{

}
public void mouseExited(MouseEvent me)
{

}

public void mousePressed(MouseEvent me)
{

}
public void mouseReleased(MouseEvent me)
{

}


public void mouseMoved(MouseEvent me)

{
                                                    ColorModel cm=pg.getColorModel();
                                                    gg=(Graphics2D)l.getGraphics();


//Drawing Polygons
Polygon pp2=new Polygon(); // 4 cm
pp2.addPoint(280,410);
pp2.addPoint(320,480);
pp2.addPoint(400,502);
pp2.addPoint(355,450);
gg.setColor(Color.RED);
gg.fillPolygon(pp2);
Polygon pp3=new Polygon(); // 8 cm
pp3.addPoint(400,100);
pp3.addPoint(480,200);
pp3.addPoint(550,363);
pp3.addPoint(340,230);
gg.setColor(Color.GREEN);
gg.fillPolygon(pp3);
Polygon pp1=new Polygon(); // 12 cm
pp1.addPoint(100,200);
pp1.addPoint(250,260);
pp1.addPoint(300,607);
pp1.addPoint(108,370);
gg.setColor(Color.BLUE);
gg.fillPolygon(pp1);
}
public void mouseDragged(MouseEvent me)
{
}
                                                    public static void main(String aa[])
                                                    {
                                                        new poly();
                                                    }
}
```

Output: