1. ActionListener = JButton
   InBuilt Function = public void actionPerformed(ActionEvent e)

   Eg. b1.addActionListener(this)

2. TreeSelectionListener = JTree

InBuilt Function = public void valueChanged(TreeSelectionEvent e)

   Eg. t.addTreeSelectionListener(this);

3. ItemListener = JComboBox

   InBuilt Function = public void itemStateChanged(ItemEvent e)

   Eg. cb.addItemListener(this);

Codes:

1. Connecting Java with SQL

```
package edu;
import java.sql.*;
import java.util.*;

public class dbDemo {

	public static void main(String[] args)
	{
		Scanner sc = new Scanner(System.in);




		try
		{
			boolean check = false;
			Class.forName("org.mariadb.jdbc.Driver");   //Driver is a Class which will act as a translator between mysql and java
```

```
                    Connection connection =
DriverManager.getConnection("jdbc:mariadb://localhost:3306/ishtee","root","maria");  // I wrote ishtee because in
mysql my database name is ishtee.

                    System.out.println("Connection Worked");

                    System.out.println("Enter UID: ");

                    int uid = sc.nextInt();

                    System.out.println("Enter Password: ");

                    String name = sc.next();

                    PreparedStatement ps = connection.prepareStatement("select * from authentication where
uid=? and password=?");

                    ps.setInt(1,uid);

                    ps.setString(2, name);

                    ResultSet rs = ps.executeQuery();

                    while(rs.next())

                    {

                              check = true;

                              System.out.println("You are a " + rs.getString("role"));

                    }

                    if(check==true)

                    {

                              System.out.println("You are Authorized");

                    }

                    else

                    {

                              System.out.println("Access Denied");

                    }


          }


          catch(Exception e)

          {

                    e.printStackTrace();   //it means "show me the errors" but in computer language it is print
stack trace.

          }


    }
```

```
}
```

## 2. GUI for ENO and ENAME

```
package edu;
import javax.swing.*;
import java.sql.*;
import java.awt.*;
import java.awt.event.*;

public class practice1 implements ActionListener
{

	JLabel j1,j2,j3;
	JTextField t1;
	JPasswordField pwd;
	JButton b1;
	JPanel p1;
	JFrame f1;

	practice1()
	{
		j1 = new JLabel("ENO");
		j2 = new JLabel("ENAME");
		j3 = new JLabel("");
		pwd = new JPasswordField(20);
		t1 = new JTextField(20);
		b1 = new JButton("Submit");
		b1.addActionListener(this);

		p1 = new JPanel();
		p1.setLayout(new GridLayout(3,2));
		p1.add(j1);
		p1.add(t1);
```

```
		p1.add(j2);
		p1.add(pwd);
		p1.add(j3);
		p1.add(b1);

		f1 = new JFrame();
		f1.add(p1);
		f1.pack();
		f1.setVisible(true);
	}

	public static void main(String[] args)
	{
		new practice1();
	}

	public void actionPerformed(ActionEvent e)
	{
		try
		{
			Class.forName("org.mariadb.jdbc.Driver");   //Driver is a Class which will act as a translator between sql and java
			Connection connection = DriverManager.getConnection("jdbc:mariadb://localhost:3306/mydb","root","admin");  // I wrote mydb because in sql my database name is mydb.

			PreparedStatement ps = connection.prepareStatement("select * from student where eno=? and password=?");
			ps.setInt(1,Integer.parseInt(t1.getText()));
			ps.setString(2, pwd.getText());
			ResultSet rs = ps.executeQuery();
			while(rs.next())
		  {
			System.out.println(rs.getString(1)+" "+rs.getString(2));
		  }
		}
```

```
                catch(Exception e1)
                {
                        e1.printStackTrace();
                }

        }

}
```

## 3. Tree Nodes

```
package edu;
import javax.swing.*;
import javax.swing.tree.*;
import javax.swing.event.*;
import java.sql.*;
import java.awt.*;
import java.awt.event.*;

public class practice2 implements TreeSelectionListener
{
        JFrame f;
        DefaultMutableTreeNode a,a1,a2,a3;
        DefaultMutableTreeNode r,b,b1,b2,b3;
        JPanel p;
        JTree t;
        JTextField jt;

        practice2()
        {
                jt = new JTextField();
                r = new DefaultMutableTreeNode("R");
                a = new DefaultMutableTreeNode("A");
                a1 = new DefaultMutableTreeNode("A1");
                a2 = new DefaultMutableTreeNode("A2");
```

```
        a3 = new DefaultMutableTreeNode("A3");
        b = new DefaultMutableTreeNode("B");
        b1 = new DefaultMutableTreeNode("B1");
        b2 = new DefaultMutableTreeNode("B2");
        b3 = new DefaultMutableTreeNode("B3");
        a.add(a1);
        a.add(a2);
        a.add(a3);
        b.add(b1);
        b.add(b2);
        b.add(b3);
        r.add(a);
        r.add(b);

        t = new JTree(r);
        t.addTreeSelectionListener(this);

        p = new JPanel();
        p.setLayout(new BorderLayout());
        p.add("Center",t);
        p.add("South",jt);

        f = new JFrame();
        f.add(p);
        f.setSize(100,200);
        f.setVisible(true);
}

public void valueChanged(TreeSelectionEvent e)
{
        jt.setText(e.getPath().toString());
}

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

```
                new practice2();
        }
}
```

## 4. JTabbedPane

```
package edu;
import javax.swing.*;
import java.awt.event.*;
import java.awt.*;

public class demo2
{
        JTabbedPane jp;
        JTextField jt;
        Container c;
        JFrame jf;
        demo2()
        {
                jp = new JTabbedPane();
                jp.add("sys", new SisPanel());
                jp.add("radio", new ColorPanel());
                c = new Panel();
                c.setLayout(new FlowLayout());
                c.add(jp);
                jf = new JFrame();
                jf.getContentPane().add(c);
                jf.setSize(400,500);
                jf.setVisible(true);
        }
        public static void main(String[] args)
        {
                new demo2();
        }
```

```
}

class SisPanel extends JPanel
{
	JComboBox jc;
	SisPanel()
	{
		jc = new JComboBox();
		jc.addItem("abc");
		jc.addItem("pqr");
		jc.addItem("efg");
		jc.addItem("klm");
		add(jc);
	}
}

class ColorPanel extends JPanel
{
	JRadioButton r1,r2,r3,r4;
	ButtonGroup bg;
	ColorPanel()
	{
		r1 = new JRadioButton("A");
		r2 = new JRadioButton("B");
		r3 = new JRadioButton("C");
		r4 = new JRadioButton("D");
		bg = new ButtonGroup();
		bg.add(r1);
		bg.add(r2);
		bg.add(r3);
		bg.add(r4);
		add(r1);
		add(r2);
		add(r3);
		add(r4);
```

```
    }
}
```

## 5. JComboBox

```
package edu;
import javax.swing.*;
import java.awt.event.*;
import java.awt.*;

public class demo3 implements ItemListener
    {
    JLabel j1;
    JComboBox <String> cb;
    JPanel p;
    JFrame f;
    ImageIcon ic;
    demo3()
    {
            cb = new JComboBox<String>();
            cb.addItem("cat");
            cb.addItem("camel");
            cb.addItem("parrot");
            cb.addItemListener(this);
            j1 = new JLabel("Testing...");
            ic = new ImageIcon("C:\\Users\\XKC21\\Documents\\cat.jpg");
            j1.setIcon(ic);
            p = new JPanel();
            p.add(cb);
            p.add(j1);

            f = new JFrame();
            f.add(p);
            f.pack();
```

```
		f.setVisible(true);
	}

	public static void main(String[] args)
	{
		new demo3();
	}

	public void itemStateChanged(ItemEvent e) {
		ic = new ImageIcon("C:\\Users\\XKC21\\Documents\\"+e.getItem().toString()+".jpg");
		j1.setIcon(ic);
		j1.setText(e.getItem().toString() + " is being displayed");
	}

}
```

## 6. JTabbedPane 2

```
package edu;
import javax.swing.*;
import java.awt.event.*;
import java.awt.*;

public class demo
{
	JTabbedPane jp;
	JTextField jt;
	Container c;
	JFrame jf;
	demo()
	{
		jp = new JTabbedPane();
		jp.add("FY", new FyPanel());
		jp.add("SY", new SyPanel());
		jf = new JFrame();
```

```
                jf.getContentPane().add(jp);
                jf.setSize(400,500);
                jf.setVisible(true);
        }

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

}

class FyPanel extends JPanel implements ItemListener
{
        JLabel j1,j2;
        JOptionPane op;
        JComboBox jc;
        FyPanel()
        {
                j1 = new JLabel();
                j2 = new JLabel();
                op = new JOptionPane();
                j1.setText("Courses");
                add(j1);
                jc = new JComboBox();
                jc.addItem("BSCIT");
                jc.addItem("BMS");
                jc.addItem("BMM");
                jc.addItemListener(this);
                add(jc);
        }

        public void itemStateChanged(ItemEvent e)
        {
                String a = "";
```

```
                if(e.getStateChange()==ItemEvent.SELECTED)
                {
                        a = e.getItem().toString();
                        op.showMessageDialog(null, "You selected "+a);
                }
        }
}

class SyPanel extends JPanel
{
        JLabel j1;
        ImageIcon ic;
        SyPanel()
        {
                j1 = new JLabel();
                ic = new ImageIcon("C:\\Users\\Hp\\Pictures\\java\\sun.jfif");
                j1.setIcon(ic);
                add(j1);
        }
}
```