INDEX

Experiment: 01

Java Environment Setup

Java is a general-purpose computer programming language that is concurrent, class-based, object-oriented, etc. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of computer architecture. The latest version is Java 17. Below are the environment settings for both Linux and Windows.

1. **Open Advanced System Settings**

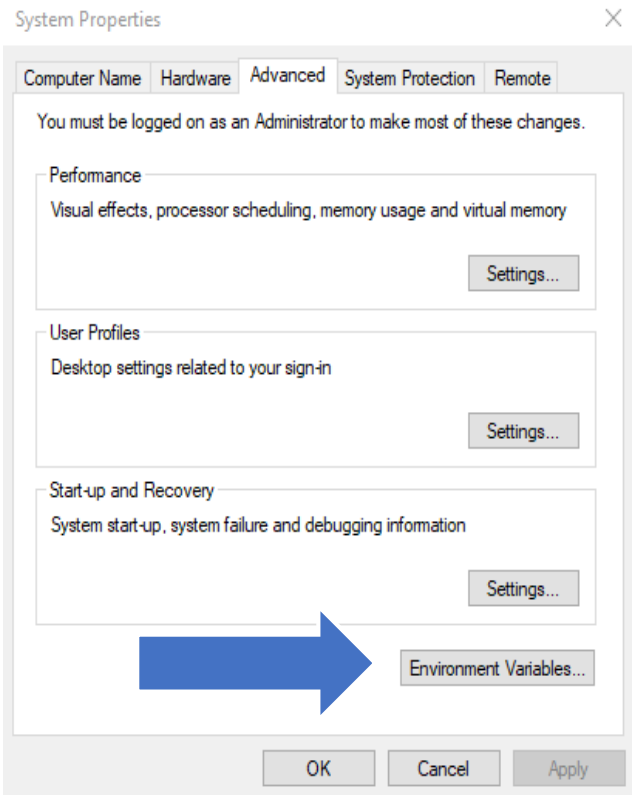
- In Windows 10 press Window key + Pause key. This will open the System Settings window. Go to change setting and select the Advanced tab.
- In search file type : Advanced System settings
- Click on the match in the top of the list

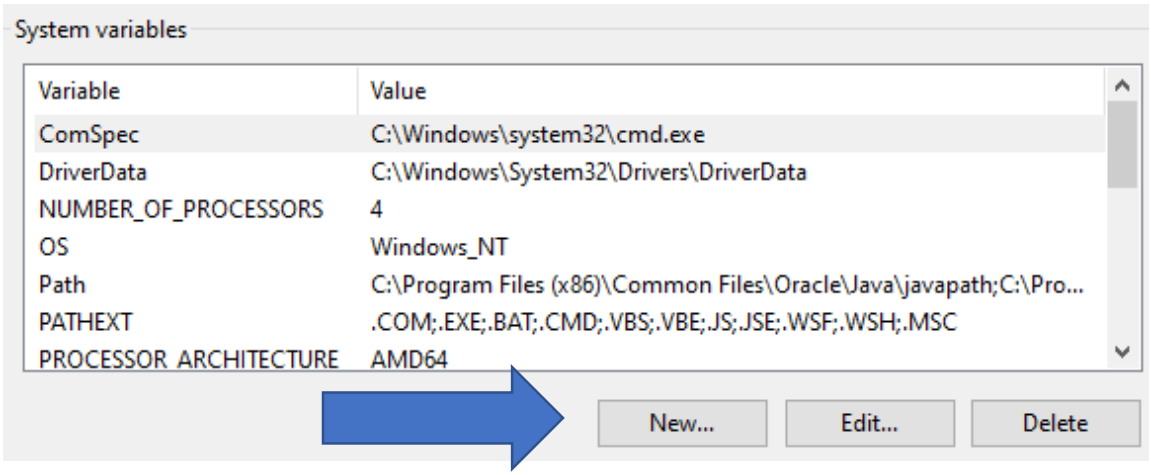
2. **Set Java Environment variable**

- In “System Properties window” click Environment variable.
- Under the System variable click the “New” button and enter Java Home as Variable Name
- The path fot Java JDK directory is under “Variable Value”

3. **Update System Path**

- Under Environment value select Path
- Click on “Edit”
- Click on “New”
- Type “ Java Home”





4. Test Configuration

Open a new command prompt and type in: Java Home

This will print out the directory Java Home point to or empty line if the environment variable is not set correctly

Experiment: 02

Calculator Design and Implementation

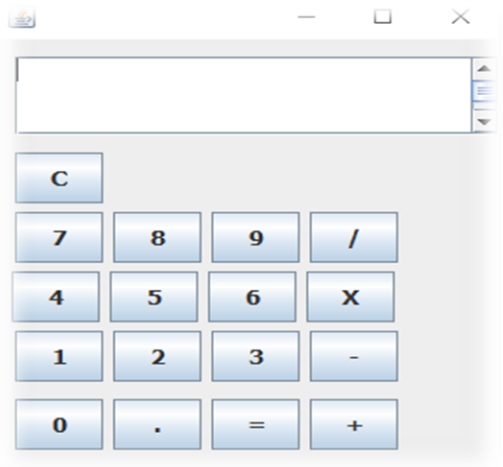
```
package calculator;
public class MainFrame extends javax.swing.JFrame {

   double firstnum;
   double secondnum;
   double result;
   String operations;
      public MainFrame() {
       initComponents();
   }
private void jButton3ActionPerformed(java.awt.event.ActionEvent evt) {
String Enternumber = JTX.getText() +  jButton3.getText();
JTX.setText(Enternumber);

   }

  private void jButton10ActionPerformed(java.awt.event.ActionEvent evt) {
       String Enternumber = JTX.getText() +  jButton10.getText();
JTX.setText(Enternumber);
   }

   private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
String Enternumber = JTX.getText() +  jButton1.getText();
JTX.setText(Enternumber);
   }
```

```
    private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
      String Enternumber = JTX.getText() +  jButton2.getText();
JTX.setText(Enternumber);

    }

    private void jButton6ActionPerformed(java.awt.event.ActionEvent evt) {
   String Enternumber = JTX.getText() +  jButton6.getText();
JTX.setText(Enternumber);
    }

    private void jButton7ActionPerformed(java.awt.event.ActionEvent evt) {
       String Enternumber = JTX.getText() +  jButton7.getText();
JTX.setText(Enternumber);
    }

    private void jButton11ActionPerformed(java.awt.event.ActionEvent evt) {
       String Enternumber = JTX.getText() +  jButton11.getText();
JTX.setText(Enternumber);
    }
private void jButton15ActionPerformed(java.awt.event.ActionEvent evt) {
       secondnum = Double.parseDouble(JTX.getText());
       double result = 0;
       if(operations=="+"){
          result = firstnum+secondnum;
       }
       if(operations=="-")
```

```
{
        result = firstnum-secondnum;
      }
      if(operations=="*"){
        result = firstnum*secondnum;
      }
      if(operations=="/"){
        result = firstnum/secondnum;
      }
      JTX.setText(""+result);
      operations=null;
    }


    public static void main(String args[]) {


       java.awt.EventQueue.invokeLater(new Runnable() {
           public void run() {

              String Enternumber;
              new MainFrame().setVisible(true);
           }
       });
    }
private javax.swing.JTextArea JTX;
    private javax.swing.JButton jButton1;
```

```
    private javax.swing.JButton jButton10;
    private javax.swing.JButton jButton11;
    private javax.swing.JButton jButton12;
    private javax.swing.JButton jButton13;
    private javax.swing.JButton jButton14;
    private javax.swing.JButton jButton15;
    private javax.swing.JButton jButton16;
    private javax.swing.JButton jButton17;
    private javax.swing.JButton jButton2;
    private javax.swing.JButton jButton3;
    private javax.swing.JButton jButton4;
    private javax.swing.JButton jButton5;
    private javax.swing.JButton jButton6;
    private javax.swing.JButton jButton7;
    private javax.swing.JButton jButton8;
    private javax.swing.JButton jButton9;
    private javax.swing.JScrollPane jScrollPane1;
}
```

Output:

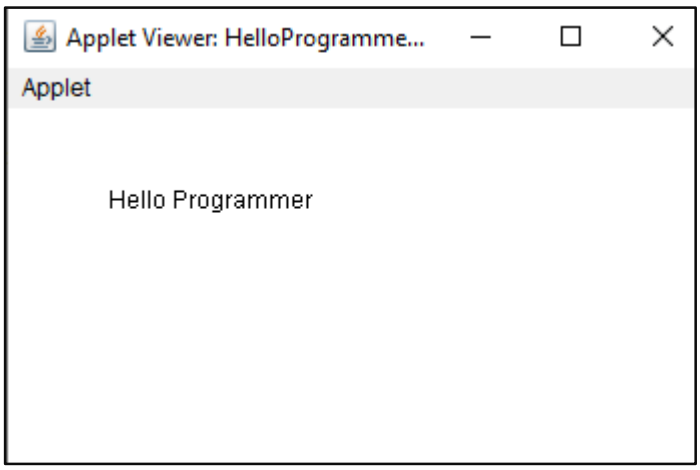


Experiment: 03

Applet

```
 import java.applet.Applet;
import java.awt.Graphics;


public class HelloProgrammer extends Applet
{


 public void paint(Graphics g)
   {
      g.drawString("Hello Programmer", 20, 20);
   }


}
```

Output:



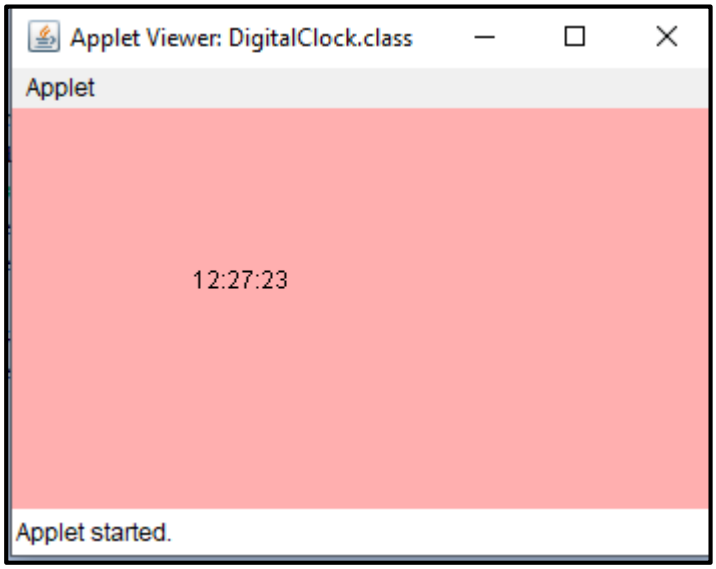
Experiment: 04

Digital Clock

```
import java.applet.*;
import java.awt.*;
import java.util.*;
import java.text.*;

public class DigitalClock extends Applet implements Runnable {

  Thread t = null;
  int hours=0, minutes=0, seconds=0;
  String timeString = "";

  @Override
  public void init() {
    setBackground( Color.pink);
  }

  @Override
  public void start() {
      t = new Thread( this );
      t.start();
  }


  @Override
```

```
  public void run() {
    try {
      while (true) {

        Calendar cal = Calendar.getInstance();
        hours = cal.get( Calendar.HOUR_OF_DAY );
        if ( hours > 12 ) hours -= 12;
        minutes = cal.get( Calendar.MINUTE );
        seconds = cal.get( Calendar.SECOND );

        SimpleDateFormat formatter = new SimpleDateFormat("hh:mm:ss");
        Date date = cal.getTime();
        timeString = formatter.format( date );

        repaint();
        t.sleep( 1000 );
      }
    }
    catch (Exception e) { }
  }


  public void paint( Graphics g ) {
    g.setColor( Color.black );
    g.drawString( timeString, 90, 90 );
  }
}
```

Output:


Applet Viewer: DigitalClock.class
Applet
12:27:23
Applet started.

Experiment: 05

Integer Division

```
public class NewJFrame extends javax.swing.JFrame {

    public NewJFrame() {
     initComponents();
   }

  @SuppressWarnings("unchecked")

   private void initComponents() {

      jTextField1 = new javax.swing.JTextField();
      label1 = new java.awt.Label();
      label2 = new java.awt.Label();
      textField1 = new java.awt.TextField();
      textField2 = new java.awt.TextField();
      div = new javax.swing.JButton();
      label3 = new java.awt.Label();
      jButton1 = new javax.swing.JButton();

      setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

      jTextField1.addActionListener(new java.awt.event.ActionListener() {
          public void actionPerformed(java.awt.event.ActionEvent evt) {
              jTextField1ActionPerformed(evt);
```

```
    }
});

label1.setText("First Number");

label2.setText("Second Number");

textField1.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        textField1ActionPerformed(evt);
    }
});

textField2.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        textField2ActionPerformed(evt);
    }
});

div.setText("Division");
div.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        divActionPerformed(evt);
    }
});

label3.setText("Result");

jButton1.setText("Clear");
```

```
        jButton1.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                jButton1ActionPerformed(evt);
            }
        });
private javax.swing.JButton div;
    private javax.swing.JButton jButton1;
    private javax.swing.JTextField jTextField1;
    private java.awt.Label label1;
    private java.awt.Label label2;
    private java.awt.Label label3;
    private java.awt.TextField textField1;
    private java.awt.TextField textField2;
}
```

Output: