

A. Vocabulary: Answer each question specifically, based on what was taught in class.

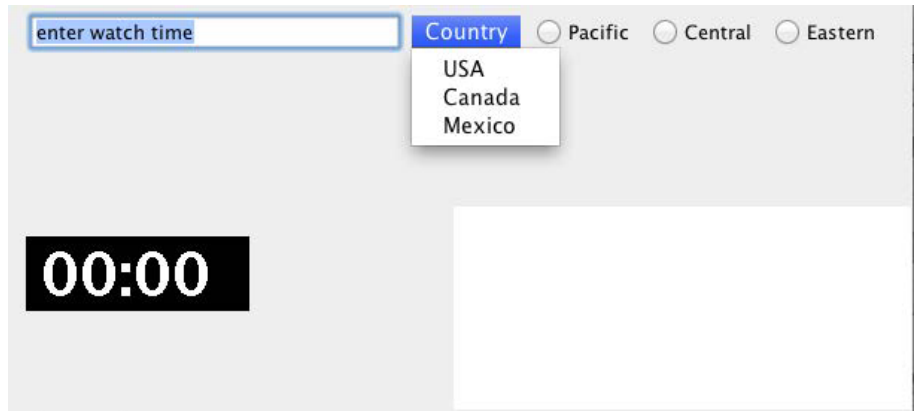
Term	Question	Answer
JScrollBar(a, b, c, d, e)	Describe <i>c</i> .	
ChangeEvent	What component creates this event?	
JTextField (x, y)	Describe <i>x</i> .	
one.add(two) two.add(three)	a) If <i>one</i> , <i>two</i> , and <i>three</i> are components associated with menus (JMenu, JMenuBar, or JMenuItem), then which is a JMenu? b) Write code to place the JMenuBar on the panel, assuming this code is in the constructor of the panel and JMenuBar is either <i>one</i> , <i>two</i> , or <i>three</i> .	a) b)
Component that does not use a listener.	a) Write the component class name. b) Write one property that makes this a component.	a) b)
john.show(fred, sally)	a) What layout is this associated with? b) Describe what <i>john</i> is.  c) Describe what <i>sally</i> is.	a) b)  c)

B. Draw what the code produces - assume it runs in a 600x 600 pixel HTML window. Please **label colors**.

```
public class LayoutEx3 extends JFrame
{
    LayoutEx3() - a frame that is 600 by 600 pixels, PanelA added to the frame & visible
    public static void main(String[] args)
    {
        LayoutEx3 le3 = new LayoutEx3();
    }
    class PanelA extends JPanel
    {
        public PanelA()
        {
            setLayout(new BorderLayout(5,5));
            PanelB x = new PanelB();
            PanelC y = new PanelC();
            JPanel z = new JPanel();
            //default size of a generic panel is about 10 x 10 pixels
            PanelC a = new PanelC();
            add(x, BorderLayout.SOUTH);
            add(y, BorderLayout.NORTH);
            add(z, BorderLayout.WEST);
            add(a, BorderLayout.CENTER);
        }
        public void paintComponent(Graphics g)
        {
            setBackground(Color.BLACK);
            super.paintComponent(g);
        }
    }
    class PanelB extends JPanel
    {
        public PanelB()
        {
            setLayout( new GridLayout(1,2,5,5));
            add(new JButton("items"));
            add(new JTextArea("information", 25, 5));
        }
        public void paintComponent(Graphics g)
        {
            setBackground(Color.BLUE);
            super.paintComponent(g);
        }
    }
    class PanelC extends JPanel
    {
        public PanelC()
        {
            add (new JCheckBox("select"));
            add (new JScrollBar(JScrollBar.VERTICAL, 50, 10, 0, 100));
            add (new JRadioButton("choose"));
        }
        public void paintComponent(Graphics g)
        {
            setBackground(Color.RED);
            super.paintComponent(g);
        }
    }
}
```

Draw output in a 600 x 600 HTML window. Label colors.

C. TimeChanger Applet. Complete the code shown to create a JApplet that runs several panels as shown to the right:



When TimeChanger runs the user:

- enters the time on his watch (his former destination time) into a text field
- selects a country menu item from a menu, then sees:  
local currency and language in a text area
- uses a group of radio buttons with time zone options to select the appropriate time zone (Pacific, Central, or Eastern). (**Ignore exceptions:** *Go ahead and ignore the fact that Mexico does not have a land mass in the Eastern time region, and time zones can be further subdivided (for instance, Mountain and Atlantic zones.)*)
- the local time is calculated based on the menu item and radio button, then drawn into a big digital clock (huge font String like "12:00" written into a big rectangle) (**Ignore Exception:** *You need not add code to use %12 so hours cannot exceed 12 or 24.*)

Assume the user's prior location is California. Time is calculated based on the hour portion entered in the text field; minutes stay the same. The time will always be entered in the format "xx:yy" with xx being the hour and yy being the minutes. `Integer.parseInt(enteredText.substring(0,enteredText.indexOf(":"))` returns the hour entered as an int, so a number can be added to it. Values to add are shown below. You do not need to use arrays.

Country	Region	Hours to Add
USA or Canada or Mexico	Pacific	0
USA or Canada or Mexico	Central	2
USA or Canada or Mexico	Eastern	3

Country	Currency	Language
USA	US Dollars	English
Canada	Canadian Dollars	English or French
Mexico	Pesos	Spanish

Much code is provided for you, and you can assume the HTML file is completely written. Please add code to complete it; pseudocode helps direct your attention towards what is missing.

```
import javax.swing.*;           //This is the Applet file - it is complete

public class TimeChanger extends JApplet
{
    public void init()
    {
        TimeChangerPanel tcp = new TimeChangerPanel();
        setContentPane(tcp);
    }
}
```

**//These are the panels - complete as indicated with pseudocode**

```
import javax.swing.*;
```

```
import java.awt.*;
```

```
import java.awt.event.*;
```

```
public class TimeChangerPanel extends JPanel
```

```
{
```

```
    private TimePanel1 tp1;
```

```
    private TimePanel2 tp2;
```

```
    private ClockDisplay clock;
```

```
    public TimeChangerPanel()
```

```
    {
```

**//instantiate TimePanel1 and TimePanel2 and add them using the required layout**

```
}
```

```
class TimePanel1 extends JPanel implements
```

```
{
```

**//fill in blank above**

```
    private JTextField timeEnter;
```

```
    private JMenuBar mb;
```

```
    private JMenu country;
```

```
    private JMenuItem us;
```

```
    private JMenuItem canada;
```

```
    private JMenuItem mexico;
```

```
    private ButtonGroup bg;
```

```
    private JRadioButton pacific;
```

```
    private JRadioButton central;
```

```
    private JRadioButton eastern;
```

```
    private String newTime;
```

```
    private String info;
```

```
    public TimePanel1()
```

```
    {
```

```
        newTime = "00:00";
```

```
        info= "Currency:          , Language:          ";
```

```
        timeEnter = new JTextField("enter watch time", 20);
```

```
        mb = new JMenuBar();
```

```
        country = new JMenu(_____); //fill me in!
```

```
        us = new JMenuItem("USA");
```

```
        canada = new JMenuItem("Canada");
```

```
        mexico = new JMenuItem("Mexico");
```

```
        bg = new ButtonGroup();
```

```
        pacific = new JRadioButton ("Pacific");
```

```
        central = new JRadioButton ("Central");
```

```
        eastern = new JRadioButton ("Eastern");
```

```
//Use the space below to do three things: (1) add components to this panel in the
//appropriate layout, (2) add listeners as appropriate, and (3) make it so only
//one radio button can be used in the group
```

```
}
```

```
//for the event handler method below, just fill in the lines. For Q1, just fill
//in the first blank labeled Q1. For Q2, just fill in the first blank labeled Q2
//(both Q1s are similar, and all Q2s are identical).
```

```
public void _____ ( _____ )
{
    String timeEntered = _____;
        //line above: acquire the String from the text field

    int hour = 0;
    if(timeEntered.indexOf(":") != -1)
    { // next line is long and I wanted it on one line so it extends out
hour = Integer.parseInt(timeEntered.substring(0,timeEntered.indexOf(":")));
        int timeToAdd = 0;

        if(Q1 _____ ()) //if central button picked

            timeToAdd = 2;

        else if ( _____ Q1 _____ ()) //if eastern button picked

            timeToAdd = 3;

        hour= hour + timeToAdd;
        newTime = hour + timeEntered.substring(timeEntered.indexOf(":"));

        clock.repaint();
    }
    if(Q2 _____ == us) //if us menu item was used

        info= "Currency: US Dollars, Language: English";
    else if ( _____ Q2 _____ == canada) //if canada was used

        info = "Currency: Canadian Dollars, Language: English or French";
```

```

else if( _____Q2_____ == mexico) //if mexico was used
    info = "Currency: Pesos, Language: Spanish";
    tp2._____._____ (_____);
//put info into the text area
}
}

```

```

class TimePanel2 extends JPanel //nested (1 deep)
{
    private JTextArea infoArea;

    public TimePanel2()
    {
        infoArea = new JTextArea(" ", 2, 20);
        infoArea.setLineWrap(true);

```

**//instantiate ClockDisplay then add it and a text area using the appropriate  
//layout**

```

}
}
class ClockDisplay extends JPanel //nested (1 deep)
{
    public void paintComponent(Graphics g)
    {
        g.fillRect(20, 20, 150, 50);
        g.setColor(Color.WHITE);
        Font hugeFont = new Font("SansSerif", Font.BOLD, 40);
        g.setFont(hugeFont);
        g.drawString(tp1._____, 30, 60); //print calculated time
    }
}
}
}

```