CSSE 221: Fundamentals of Software Development Honors

Programming assignment (due by Monday 11:59 pm)

Finish Fifteen, as stated in the specification, being sure you have checked in your final, fully-documented copy to the repository.

Written homework to do before week 4 (due before beginning of class on Monday, Sept 24).

Answers are to be written in your own words! As usual, please bring hardcopy for written answers to class to hand in on Monday.

1. Weekly reading. You may also want to refer to the Sun Java tutorial on Swing as a reference.

2. (15 pts) Describe any three different LayoutManagers in Swing.

    SOLUTION:

    FlowLayout – adds components from left to right, top to bottom – default layout manager for JPanel

    BorderLayout – adds components in the regions North, South, East, West, and Center. The region to add the component to must be specified when adding a component

    GridLayout – creates a grid with the specified number of rows and columns. Unless a location is specified, the GridLayout will fill itself left to right, top to bottom as components are loaded.

3. (10 pts) Describe any advantages of having a panel be a subclass of JPanel rather than using JPanel as-is.

    SOLUTION:

    Extending JPanel allows the developer to reuse all protected and public members of the JPanel class, rather than rewriting the code. Also, it allows the user to customize the JPanel by adding new fields/methods, etc.

4. (6 pts) When is it appropriate to use the ActionListener interface? What method must you implement when using it?

SOLUTION:

It is appropriate to use the ActionListener interface when you want to catch an action performed by the user. You must implement the actionPerformed(ActionEvent e) method.

5. (4 pts) Look at the API for MouseListener, MouseMotionListener, KeyListener, and ChangeListener. Name one method from each interface.

SOLUTION: One from each of the following lists

MouseListener – mouseClicked(MouseEvent e), mouseEntered(MouseEvent e), mouseExited(MouseEvent e), mousePressed(MouseEvent e), mouseReleased(MouseEvent e)

MouseMotionListener – mouseMoved(MouseEvent e) or MouseDragged(MouseEvent e)

KeyListener – keyPressed(KeyEvent e), keyReleased(KeyEvent e), keyTyped(KeyEvent e)

ChangeListener – stateChanged(ChangeEvent e)

6. (15 pts) Write a class called MyButton extending JButton. When a button of this type is pressed, it turns another panel, myPanel (stored as a field), the color green.

SOLUTION:

```
public class MyButton extends JButton implements ActionListener{

        private JPanel myPanel;

        public MyButton(String message, JPanel myPanel) {

                super(message);

                this.myPanel = myPanel;
```

```
                this.addActionListener(this);

        }

        public void actionPerformed(ActionEvent e) {

                myPanel.setBackground(Color.GREEN);

        }

}
```

OR:

```
    public class MyButton extends JButton {

        private JPanel myPanel;

        public MyButton(String message, JPanel myPanel) {

                super(message);

                this.myPanel = myPanel;

                this.addActionListener(new ActionListener() {

                        public void actionPerformed(ActionEvent e) {

                                myPanel.setBackground(Color.GREEN);

                        }

                });

        }

}
```

7. (5 pts) What is the difference between JTextField and JTextArea?

SOLUTION:

JTextField is used for a single line of input, JTextArea is used for multiple lines of input.

8. (15 pts) Say you wanted to create a two-dimensional dynamically sized 2D array (i.e. a 2D ArrayList). Write a short paragraph speculating how you might tackle this problem.

SOLUTION:

Use an ArrayList that contains ArrayLists. This way, the number of ArrayLists can be manipulated by adding to the first ArrayList and the number of objects can be manipulated by adding to the second ArrayList.

Reminder that assistants are in Moench F217 every weekday afternoon and from 7-9pm on Sunday through Thursday nights to help you.