

Student Name: _____ Student ID # _____

UOSA Statement of Academic Integrity

On my honor I affirm that I have neither given nor received inappropriate aid in the completion of this exercise.

Signature: _____ Date: _____

Question 1: Layout Managers (20 points)

A. Why does Java provide layout managers, rather than having the programmer specify the pixel coordinates for components within containers?

B. Why might you wish to have a different layout manager in a panel than in its enclosing frame?

Question 2: Events (20 points)

A. *Explain* the purpose of listener registration.

B. *Explain* the purpose of the `getSource()` method for events.

C. *Explain* the purpose of listener interface adapters.

Question 3: GUIs and Applets (30 points)

The version of `MVCDemo.java` provided on the author's website has additional lines of code that are not found in the textbook for `MVCDemo.java` (listing 30.4, page 1013). In particular, the following lines are in the online version of the code but not in your textbook:

```
public static void main(String[] args) {
    MVCDemo applet = new MVCDemo();
    JFrame frame = new JFrame();
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setTitle("MVCDemo");
    frame.getContentPane().add(applet, BorderLayout.CENTER);
    frame.setSize(400, 320);
    frame.setVisible(true);
}
```

A. *Explain*, line by line, the purpose of each of these lines of code.

B. Could we run compile and run `MVCDemo.java` with only the Java code provided in your textbook (that is, not including the Java code given on the preceding page)? *Explain* your answer.

Question 4: MVC (20 points)

A. In the Model, View, Controller (MVC) paradigm, why does the model notify its views of changes to the model's own internal state? *Explain* your answer.

B. In the version of the MVC paradigm exemplified by the Circle example in Chapter 30 of your textbook and discussed in class, *how* does the model notify its views of changes to its internal state? *Explain* your answer.

C. In the MVC paradigm, why does a view query a model about the model's internal state? *Explain* your answer.

D. In the MVC paradigm exemplified by the Circle example in Chapter 30 of your textbook and discussed in class, *how* does a view query a model about the model's internal state? *Explain* your answer.

Question 5: Binary I/O (10 points)

A. *Explain* why all Java GUI components are serializable.

B. If you have an object of type `ArrayList` that contains 22 objects that are all serializable, how many times will you need to call `writeObject` in your code to ensure that the `ArrayList` object and all of the objects it contains are written? *Explain* your answer.