Sample Exam 2

1) Create an interface called Visible that includes two methods: makeVisible and makeInvisible. Both methods should take no arguments and should return a boolean result.

2) You can give a title to a border by using the TitledBorder class. For example,
   ```java
   panel.setBorder (new TitledBorder (new EtchedBorder(), “Select an option”));
   ```

   Which pattern is at work here? Explain.

3) Write a line of Java code to test each of these situations:
   - Determine if object x belongs to the Rectangle class

   - Determine if object x is a subclass of JPanel (but not a JPanel itself)

   - Determine whether or not the class of object x implement the Cloneable interface
4) Use the diagram below to answer questions a – e:

- `abc` is a class.
- `xyz` is a class that extends `abc`.
- `efg` is an interface that `abc` implements.
- `rst` is a class.

a) Write the class heading for class `xyz`:

```
public class XYZ {
    // class body
}
```

b) Could `xyz` be an abstract class? Why or why not?

```
public abstract class XYZ {
    // abstract class body
}
```

c) Name the direct and indirect subclasses of `abc`:

```
public class ABC {
    // class body
}
```

Is `rst` a subclass of `efg`? Why or why not?

```
public class rst extends ABC {
    // class body
}
```

5) Consider the following Java code fragment:

```java
public class A extends AZ implements ABC {
    // class body
}
```

Suppose class `A` has a subclass, `B`. Mark each of the declarations below as valid or invalid. If a declaration is not valid, explain what makes it invalid:

a. `ABC possum = new A(14, 'h');`

```
public class A {
    // class body
}
```

b. `B wallaby = new A(-2, '$');`

```
public class A {
    // class body
}
```

c. `AZ badger = new ABC(1006, '~');`

```
public class A {
    // class body
}
```
6) Give an example of how the Simple Graph Editor framework uses inversion of control.

7) Suppose you are given the following interface:

```java
public interface Measurer
{
    double measure (Object x);
}
```

Describe how the action of a Measurer would differ between, for example, Strings and Rectangles.

What principle does this difference represent?