Sample Exam 1

Name: ________________________________

Answer each question in the space provided. Point values are listed next to each question number. You may use your textbook and class notes while taking this exam.

1) Using the following diagram, identify the components listed in parts a-d by labeling each component with its corresponding letter. Be sure to label all components that match a particular description:
   • objects
   • classes
   • messages
   • data

2) Write a description of the process depicted in the diagram.
3) Draw a diagram showing the relationships between the classes (indicated with bold type) in the following description:

**Sassafrass** is the parent of **Eucalyptus** and **Cactus**; it implements the interface **Bubble**, and contains a **Waffle** and a **Gridiron**.

4) Create an interface called **Visible** that includes two methods: **makeVisible** and **makeInvisible**. Both methods should take no arguments and should return a boolean result.
5) (25 points) Use the diagram below to answer questions a – e:

a) Write the class heading for class xyz:

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

c) Name the direct and indirect subclasses of abc:

d) Is rst a subclass of efg? Why or why not?

e) What is the superclass of abc?

6) Consider the following Java code fragment:

```java
public class A extends AZ implements ABC {
    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’);
    b. B wallaby = new A(-2, ‘$’);
    c. AZ badger = new ABC(1006, ‘~’);
```
7) Using the description below, perform the following:
   • Write a use case with a minimum of three steps and at least one variation;
   • Identify two classes and list at least two responsibilities for each

A jukebox plays songs selected by a user from a list of available songs. The user puts money in the coin slot, and may select a specified number of songs depending on the amount of money deposited. The users’ selections are played in the order selected; if several users have made several selections, they are played in order from the least recent user to the most recent user. The owner of the jukebox can change the song selections, and can change the settings so that a different number of songs may be chosen for a particular amount of money.