### Name:\_\_\_\_\_\_\_\_\_\_\_\_\_

**Application Engineering and Development INFO 5100**

# FINAL Exam

## Friday Dec 18, 2010

1. (25 pts) Consider the blood supply model we study in class. The model includes a common work model that enables the design and the java implementation programs for different roles like the receptionist office, nurse work area supporting nurses, lab work, and inventory management. The model incorporates ideas for donor definition and donation action. Draw a precise UML class definition of the model you used in your project to support all the features you implemented. You must include all inheritance and connection relationships. Please be clear with all your naming conventions and drawings. The correctness of your answers must meet two criteria: 1) The design we worked out in the class as well as the model that is part of your project submission.
2. (25 pts)Product management personnel maintain the company’s product catalog on an ongoing basis. For example, sometimes they want to update the product definition in terms of prices, description, etc. To make changes, management requires that old versions of the product definition must be preserved. So if one is to make a change to a product, a new copy of the current product is made and the current product is saved as old. The following class definition has some methods that allow you to create versions of the product which are then maintained part of the product definition. Extend the class definition below by defining a subclass called Product, adding attributes to keep track of the person making the change as well as adding the update date (use the System.currentTimeMillis() method which will return the time as long. Store it and displayed as long for the purposes of this exercise). Make sure to fully implement all the abstract methods in the Product class using proper java syntax.

public abstract class AbstractProduct {

String name;

int price;

private AbstractProduct previousversion; //this ref variable keeps track of the earlier version of the product

public abstract AbstractProduct(){

}

Public abstract AbstractProduct updateProduct();

public void setName(String n){

name = n;

}

public void setPrice(int p){

price = p;

}

public AbstractProduct getPreviousVerson(){

return previousversion;

}

public abstract ArrayList<AbstractProduct> getProductHistory(); //returns all previous copies (versions) of the product.

}

1. (25 pts) What is a singleton class? Suppose we want to take the Business class and implemented as a singleton, show a java implementation of the Business class.
2. (25 pts) We discussed a way of linking users to work areas related to their specialty or role without the need for multiple if statements. The work area class keeps track of the jpanel associated with nurse work responsibilities. For example, during user account creation a user account with the role of nurse is attached to a work area that knows how to display the nurse work area. After a successful login, the jpanel associated with the nurse is displayed in the tabbedpane on the right. Show how to use abstract classes to implement a solution that does not require multiple if statements to display the right work area for the login user role. Provide java implementation of the key classes of your solution. Include any relevant attributes and methods. Do this for at least two separate roles.