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

**Application Engineering and Development INFO 5100**

# Exam I

## Saturday Mar 3, 2012

## Time: From 2:00 to 4:30

1. [20 pts] Draw the object model for the Best Buy business. The model must show the suppliers, the customers, as well the orders assuming a customer self service model. In plain language (pseudo-code) explain how to navigate the model to calculate the total sales revenues?
2. [20 pt] Suppose we want to expand the model above to support the Xerox way of doing business. In your design, incorporate their innovative way of doing sales and managing price performance using range pricing techniques. Highlight the pricing attributes and their placements in the class definitions. Remember, Xerox sells products to companies through their sales organization. Also, extend the model to capture the **invoice** the **payment** aspects of the sale. Draw the Xerox object model, and makes sure to show the placement of key attributes.
3. [20 pts] Consider the following calculations per the model you presented in problem 3 above. Give the name of the class where the calculation is most appropriate to place. Explain in plain language how the values will be calculated.

* 1. For a particular sales person, calculate the total sales revenues
  2. Who is the best sales person in the company in terms sales volume
  3. What is the total sales volume for a particular product?
  4. List all unpaid orders

1. [20 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 version of the 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” primitive. 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. [20 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 team work responsibilities. For example, during user account creation a user account with the role of sales person is attached to a work area that knows how to display the sales person work area. After a successful login, the jpanel associated with the sales person is displayed in the splitpane 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.