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

**Application Engineering and Development ISY 100**

# Exam I

## Friday Oct 31, 2008

1. Consider the following scenario: You are responsible for building a multi-participant application that allows for a retailer like Wal-Mart or Best-Buy to cooperate with its suppliers using one single application for all of them. That means the application must support all kinds of users depending on the company they are from and the role they play (work responsibilities). Wal-Mart and each of its partners are considered separate businesses with their own employees. However, users share a common application platform. The collection of businesses forms an enterprise of networking partners. On the Wal-Mart side for example such roles include system administrators, supplier registration and management; on the supplier side, there will be product management, product pricing management (supplier marketing department), and others. So the role will be used to determine the appropriate work area for the user.

**Supplier**

**User Account Directory**

**Business**

**User Account**

**Person**

**Employee Directory**

Now consider the method AuthenticateUser method which takes a user name, password as input and determines if the user is a valid user or not. If the user is valid then AuthenticateUser returns the role associated with the user account. If the user name and password don’t match then then the AuthenticateUser method returns null. Otherwise it returns a valid user account. The application must ensure that user ids are unique user.

1. Identify and explain in detail the most appropriate place for this method and why.
2. What changes you will make to the methods and attributes of the model above to support the AuthenticateUser method. Write complete java code that shows how you would implement the AuthenticateUser method as specified above. You must define all java classes, methods, and attributes that are required to implement the method. Please ignore any methods and attributes that irrelevant to the question.
3. Write java code fragment (no need for a complete method definition) that shows how you determine which work area your program will display in case the user is a valid one and they are in the right role. Assume that the work area screens are named UserRoleWorkArea(), e.g. “AdminWorkArea”. Please note, you are not required to show proficiency in Swing or user interface programming. In the case of displaying jpanel screens write statements like

<display UserRoleWorkArea( parameters)>

1. For the model below, the Location class defines street address, city, and country of where the factory is located. Define all java changes you will make to this model to implement the getAllFactoriesByCountry(countryname) method on the FactoryDirectory class. You are responsible for defining all methods and attributes necessary to return the list of factories that are located in a certain country.

**Location**

**Business**

**Factory Directory**

**Supplier**

**Factor**

1. Continuing with the previous model from 2, suppose that on the business class we define a method called findNumberOfCountriesOfManufacturingBySupplierName which takes a string name as input and returns the number of countries where supplier has factories. Write detailed java implementation for this method.
2. Continuing with the previous model from 2, suppose that on the business class we define a method called findAllLocationsOfManufacturing which returns a list of all locations associated with all suppliers. Write detailed java implementation for this method.
3. Define what is a static variable in Java? What is the definition of a static method in Java? Show a concrete example of how to use static variables and methods in Java. This must include a class definition and a fragment of code of how to use the class and elements of the class. Your example must be show what is unique when it comes to the use of static methods and variables.