THE INTERNATIONAL INSTITUTE OF
SUPINFO
INFORMATION TECHNOLOGY

# Java Enterprise Edition

**Academic Year – 2013 - 2014**

Courses

Graded Exercise

# Context

Do you know Coursera or Udacity? These MOOCs schools provide online courses with text, quizzes and interactive content. Online schooling becomes more and more popular nowadays, and a company asks you to develop an online course system. Because they want a robust and sure development language, you naturally choose to develop it with Java Enterprise Edition.

# Specifications

The first version of the website will be composed of several functionalities listed below:

- Register, Log in and out
- Display courses
- Take a course and pass quizzes
- Print certifications
- Provide web services for external applications

You have to use EJB 3.1 technologies.

## 1. Data Structure

Before starting the project, draw an UML class diagram representing the JPA Entities you will need with their relationships.

This diagram will be useful for you and for the team that will develop the next version of the platform.

The class diagram must be returned in ***jpeg***, ***png*** *or* ***pdf*** format (otherwise your STA will hate you!).

## 2. Application structure

For this application, you will need a special architecture, service oriented. Several layers are mandatory in your application:

- Servlets for each page
- EJBs called by Servlets containing all business logic
- DAO pattern for accessing database
- Entities with Metamodel API
- Web Services relying on entities

Take the time to organize your application structure and use all elements listed above.

## 3. Register, Log in and out

Your application must provide and authentication system.
For anonymous, the website must display all courses descriptions, such as name, description, modules list, duration etc.
For authenticated users, the website must display buttons in order to follow courses and receive certifications.
Because we care a lot about security, your database must contain hashed password only!

## 4. Display courses

Courses data must be available in database, passing through the website architecture to display elements. You're free to use a servlet for all courses, or per category, or per course.

For content, you can use the one available on SUPINFO website, "Courses" section. Do not focus too much on content; five different courses will be fine.

## 5. Take a course and pass quizzes

Authenticated users can take courses and pass quizzes. For the first version of this feature, a simple button “Take this course” might be displayed. Clicking on it will change user’s information to remember he actually viewed the course content.

They can also pass quizzes related to courses. Create the related entity in your project in order to support online quizzes. For the first version of this feature, create a single simple five questions quiz linked to all course materials, just to demonstrate.

## 6. Print certifications

Your online school can print certifications and send them to users, when they successfully followed all courses and pass the quiz. This printer must be available with JMS. The printer system must take the following parameters:

- Student first and last name
- Course passed
- Date

For the first version of this feature, data must be printed in the console for further use.

## 7. Web Services

Create the following SOAP web services features for an external application:

- Authenticate: Must return an unique token for other authenticated request
- Get user: (Authenticated) Return an user by its ID
- List courses: Display all courses information
- Get course: Return a course by its ID
- Take a course: (Authenticated) Consider the course taken
- Pass quiz: (Authenticated) Consider the quiz for a supplied course passed
- Print certification: (Authenticated) Call the printer

# Instructions

- Plagiarism is forbidden.
- Make accessible his code on a public sharing platform (as GitHub) before the end of the evaluation is forbidden.

Don't abiding by these rules will result in suspension of your assessment and will be considered cheating.

# Notation

| Functionalities | Points |
|---|---|
| Data structure | 2 |
| EJB | 2 |
| DAO | 1 |
| Metamodel & Criteria API | 2 |
| Register, Log in and out | 1 |
| Display courses | 2 |
| Take course and pass quizzes | 2 |
| Print certifications | 1 |
| Web Services | 5 |
| Code Quality | 2 |
| **TOTAL** | **20** |

# Return

Return your graded exercise as a ZIP archive named as follows:
**4JVA_Courses_Campus_IdBooster.zip**.
For example: 4JVA_Courses_Lille_10000.zip
Not following this convention will result in point loss.

You will send the archive **to your STA SUPINFO email address only** and **before the March 6th at 11:59PM**. After that delay, your graded exercise **will not be corrected and the mark 0 will be assigned to you**.