INFS3202/INFS7202 Practical 10 – Full Web Application

The goal of this practical is to explore a full web application. This practical counts 5% towards your assessment. You must present this practical to your lab tutor during your scheduled lab sessions in the week starting 31/5/10.

This practical extends the University course management and timetabling system introduced in practicals 8 & 9.

Guidelines

As a final practical, consider all the different aspects of Web Information Systems that you have learnt to implement in all the previous practicals during the semester, including:

- Design and structuring content using mark-ups.
- Client-side processing, presentation and interactivity.
- Server-side processing.
- Client-server communications.
- User authentication authorization and access.
- Data management using databases.

Use this last practical as an opportunity to review and make use of what you have learnt. The quality of any web application is dependant on your creative use of these various aspects of the application.

Task – Timetabling in the Course Management System (5 Marks)

Requirements:

1. Add a master administrator to your system implemented in Practical 9 task 2. Add the capacity for this master administrator to log in to the system and get it to timetable lectures. This means that the system will automatically allocate and schedule weekly lectures for all courses on campus according to the following requirements: **(2 marks)**

   - Each course has one lecture of 2 hours per week.
   - The university has a set of rooms to be used for lectures. Each room has a seating capacity that must not be exceeded.
   - All lectures can only be conducted between 8am-4pm Monday to Friday.
   - A room should not be allocated to more than one course at one time.

   The timetabling process should also try to minimise the number of students who end up with timetable clashes (ie. two courses having common enrolled students, and scheduled at overlapping times).

2. During the period when system is in the timetabling process, the system should go into maintenance mode. During maintenance mode, the system should operate with the following requirements: **(1 mark)**

- Students and lecturers should have access to viewing data as they normally do;
- Students and lecturers should not be able to add, delete or modify any of the data, including students' enrolments. They should be notified about the system being in maintenance mode when they try such operations.

3. Once timetabling is completed, the following should be available to a lecturer who logs on: **(1 mark)**

    - The lecturer should be able to view the results of the timetabling allocations for the courses he is responsible for.
    - There should be an alert if the timetabling process was not able to allocate any of the lecturer's courses to a room with the right seating capacity. The lecturer should be presented with the list of available rooms and times, so that he can select smaller rooms to book his lectures into.

4. Once timetabling is completed, the following should be available to a student who logs on: **(1 mark)**
    - The student should be presented with their list of enrolled courses with the room allocation details included (venue, time and date).
    - Student should be able to still drop courses and sign up to new one, as long as enrolling in a course do not result in the course lecture going over its allocated room's capacity.

Hints

You are required to have adequate test data in your database to demonstrate all of the above features. Marks cannot be awarded if you do not have test data that demonstrate the features required.

For requirement 2, you will need to be able to test the maintenance mode while it is in effect. If the number of courses in your database is small, the timetabling process may be completed too quickly for you to do so. You may need to introduce an artificial delay into your code to do your testing, or require a master administrator action to explicitly exit the maintenance mode. Leave this facility in your application so that you may demonstrate meeting the requirement to your tutor.

You may also consider using multiple browsers during your testing and demonstration to avoid having to log in and out as different users to test different features.