

## INFS3202/INFS7202 Practical 9 – Web Application Data Exchange

The goal of this practical is to explore data exchange between client and server sides in a 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 24/05/2010.

This practical extends the University course management and timetabling system introduced in Practical 8. You will be adding more features to this system in Practical 10.

### Preparation

Before attempting this practical you should have a good working knowledge of AJAX, JSON and PHP or JSP. You should understand the difference between JSON and XML as data interchange formats, and how to implement the two different approaches. You should also understand how JSON interchange happens within AJAX communication.

Before attempting this practical please ensure:

- You have covered the material in Lectures 1 - 9
- You have reviewed the work you did in Practical 8.
- You understand the JSON format, its comparison to XML, and how it works in AJAX.

Beside the lecture notes, you may find the following references helpful

- <http://en.wikipedia.org/wiki/JSON>
- <http://www.developer.com/lang/jscript/article.php/3596836/Speeding-Up-AJAX-with-JSON.htm>
- You understand the support for JSON parsing and manipulation in the server side scripting language of your choice. Beside the lecture notes, you may find the following references and examples helpful
  - PHP <http://php.net/manual/en/book.json.php>
  - <http://ditio.net/2008/07/17/php-json-and-javascript-usage/>
  - JSP <http://www.roseindia.net/tutorials/json/json-jsp-example.shtml>
  - <http://code.google.com/p/json-simple/wiki/JSPAndAJAXExamples>

### Task 1 – Data Exchange using JSON (2 Marks)

For this task, you will convert the Course Management Web Application you implemented in Practical 8 so that it uses JSON instead of XML as its format for data exchange between the client and server. You may use standard JSON parsers available

The application must maintain the asynchronous requirements in Practical 8, where pages do not need to be refreshed for communication between the client and server to happen.

Requirements:

1. The web application uses JSON as the data interchange format. **(1 mark)**
2. The web application maintains the asynchronous display requirements from practical 8. **(0.5 marks)**

3. You are able to demonstrate and explain using monitoring tools (such as Firefox's Firebug) the difference between the data being exchanged in Practical 8 and in this task. You must show a good understanding of the details of the data interchange **(0.5 marks)**

Please keep a copy of your solution from Practical 8 before beginning the tasks above. You will require both solutions for requirements 3 above.

## **Task 2 – Adding Administration Functions to Course Management Web Application (3 Marks)**

For this task, you will extend the Course Management Web Application (from Practical 8, or from task 1 above) so that it contains administration functions for lecturers to use.

Create a set of administrator users (lecturers) who must log in to access administration functions. Each administrator should only have access to data on a specific set of courses. However, each administrator may view (but not modify) data on all students.

Requirements: Add the following administration functions

1. View student and course data. Once logged in, an administrator should be presented with a list of students and a list of courses. The administrator should be able to view any details of a student, including the courses the student is enrolled in, asynchronously without needing a page refresh. Similarly, the administrator should be able to view any details of courses he has access to, including students enrolled in it, asynchronously. **(1 marks)**
2. Add, delete and modify course (but not student) data. An administrator should be able to modify the details of a course, add new courses, or delete an existing course. The administrator do not have the capacity to change the enrolment status of a student in a course. **(1 mark)**
3. When a course is modified by an administrator as required in (b), any students enrolled in that course should be alerted the next time the student logs in. The details of the change should be presented to the student during the alert. **(1 mark)**