Faculty of Information Technology  
Department of Computer Systems  
Subject Outline  

Spring 2007  

32549 – Advanced Internet Programming  

Number of Credit Points: 6 credit points  

Presentation:  
1.5 hours lecture per week  
1.5 hours lab per week  

Assumed Knowledge: Students are expected to be competent Java programmers before entering this subject.  

Prerequisites: 32516 Internet Programming or equivalent.  

Co-requisites: None.  

Handbook Entry: This subject complements and extends 32516 Internet Programming. It focuses on server side issues and the construction of medium to large scale web-based business to business (B2B) applications. In this subject, application servers, integration of data from multiple sources, transactions, and delivery of resultant data as XML or WAP to multiple client mechanisms are dealt with. Topics include Java Server Pages (JSP), Servlets, Java Data Base Connectivity (JDBC), Java Naming and Directory Interface (JNDI) and Enterprise Java Beans (EJB). Consideration is also given to dealing with legacy systems. RMI and CORBA are discussed.  

Objectives: At the end of this subject a student will be able to:  

1. Implement a medium sized web application incorporating multiple data sources, transaction integrity, data and application security for more than one front-end delivery mechanism;  
2. Describe at a conceptual level, a full e-commerce application;  
3. Describe the components that make up a multi-tier web based application, including application servers;  
4. Describe the features of a web based application system that provides robustness, high availability and security;  
5. Explain how transactions are used in web applications;  
6. Introduce security features to web applications;
7. Compare and contrast competing web application architectures and list their advantages and disadvantages;

8. Provide an analysis of alternative solutions, for a web based application scenario and prepare a recommendation.

Contribution:
The subject 32516 Internet Programming introduced students to small web based applications using HTML, Java applets and CGI scripts. In short it deals primarily with client side issues and business to consumer (B2C) applications. This subject focuses on the server side and medium to large scale web based application issues and Business to Business issues (B2B). The focus in this subject is on application servers, integration of data from multiple data sources and distribution of business logic. Data is then delivered using HTML or XML, as needed for delivery to a variety of front-end client mechanisms. Server side issues, servlets, J2EE, Enterprise Java Beans, Java Server Pages, Security and Transaction issues are not dealt with elsewhere in the course but are now key to the way in which business is seeking to write applications that are vendor independent and web based.

Topics:
Topics are selected from the Java 2 Enterprise Edition (J2EE) specification such as:

- Architecture
- Design
- Servlets
- Java Server Pages (JSP)
- Database Connectivity (JDBC)
- Remote Method Invocation (RMI)
- Directory Services (JNDI)
- Enterprise Java Beans (EJB)
- Security
- Transactions
- Legacy Systems

And other topics such as:

- Extensible Markup Language (XML)
- Emerging Technologies (Spring, Hibernate, Ajax, Velocity)
- Web services

Assessment:
The subject will be assessed by assignments and a final examination, as detailed below.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weighting</th>
<th>Objectives</th>
<th>Week Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1 (individual)</td>
<td>30%</td>
<td>1,2,3,7</td>
<td>Week 8</td>
</tr>
<tr>
<td>Assignment 2 (group)</td>
<td>50%</td>
<td>1-8</td>
<td>Progress/Design Report: Week 10</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
<td>2-8</td>
<td>UTS Exam Period</td>
</tr>
</tbody>
</table>
1. **Programming assignment** (30%)

Students will build a simple three-tier web application based on Java Servlet and/or JSP. This assignment is to be carried out as **individual** work and will be demonstrated in the labs. The source code and project report will be electronically submitted to the marker on the day of demonstration. This assignment addresses objectives 2, 3 and 7, and partially addresses objective 1. The assignment will be handed out to students on 8 August, 2007. The working application will be due in week 8.

2. **E-business Project** (50%)

Students will design and implement a medium sized web application incorporating multiple data sources, transaction integrity, data and application security for more than one front-end delivery mechanism. This project will be carried out in small **groups of 2 students**. The deliverables will include both design documentation and a working application that must be demonstrated in the labs and electronically submitted to the marker as an email attachment. The email’s subject field must be:

Subject: AIP S2007 – assignment 2 submission

The email must contain the student’s full name and student number in the text.

This assignment addresses objectives 1-8. The assignment will be handed out to students on 3 September, 2007. A progress report plus design document will be due in week 10. The working application and final report will be due in week 13 (please see Subject Schedule section).

3. **Final examination** (20%)

The final examination will consist of questions requiring either multiple choice answers, short answers or more descriptive essay-style answers. The final exam addresses objectives 2-8.

Late assignments will be deducted two marks per day late, more than fourteen days late the assignment will receive zero. Special consideration, for late submission, must be arranged beforehand with the Subject Coordinator.

For the group assessment in this Subject, students will be assessed as a team, where each member of the team will receive the same mark for the assignment. If you have trouble with the operation of your group, ask your tutors for advice (preferably ask as a group). If some of the group feels that other member(s) are not contributing, the tutor should be informed and a group meeting held to produce a solution. Should the need arise, the mark allocated for individuals within
groups can reflect an agreed level of contribution by members of the group.

**To pass the subject, a student’s overall score must be equal to or greater than 50%**.

Note that the assessment pattern for this subject does not require the offering of a supplementary examination, and no supplementary exam will be available.

**NO conceded passes are to be granted due to University Policy.**

**Online Support:**
Lecture & tutorial notes will be made available on the subject web page. Please check regularly for news and notices:  
http://learn.it.uts.edu.au/32549/

**References:**

**Textbook:**
No textbook is prescribed for this subject.

**Recommended Reading:**
Students may find the following books useful in studying this subject. Note that they have been categorized as ‘recommended’ or ‘nice to have’.

**J2EE Books**

**Java Programming Books**


**Servlets & JSP Books**

MVC Books


Design Patterns


Other reference books, recommended in previous years are shown below. Although these are no longer explicitly recommended, they can still provide useful guidance and support material. Note that all three books provide similar coverage.


Additionally, the following book can also be used for reference (a copy can be freely downloaded from the Sun web site).

  Download from: [http://java.sun.com/j2ee/download.html](http://java.sun.com/j2ee/download.html) (J2EE Blueprints)

An additional reading list will be supplied during lectures, as well as on the subject web site. A large range of free reference books are also available for download at [www.theserverside.com](http://www.theserverside.com).
Subject Coordinators: Associate Professor Robert Steele
Room: CB10.04.553, Phone: 9514-7872
Email: rsteele@it.uts.edu.au

Andrew Singer
Email: amsinger@it.uts.edu.au

The Subject Coordinator may be contacted by email or phone if you have matters of a personal nature to discuss, e.g., illness, study problems, team problems, team re-assignment, or a request for an appointment outside the given consultation hours.

All email must bear a meaningful description in the ‘Subject’ box at the top of the email, beginning with the Subject number in brackets: e.g., [32549] team problems, [32549] request for late submission. Generally questions regarding assessment and the Subject should be raised in the lectures or tutorials. This ensures that all students get the benefit of the information given. Emails that are considered better answered in class may not receive a response.

Lecturers: Andrew Singer
Email: amsinger@it.uts.edu.au

Tutors: Andrew Singer
Email: amsinger@it.uts.edu.au

Assessor: Dr Maolin Huang

Assessors are nominated within the Faculty by the Responsible Academic Officer (RAO). Assessors are responsible for ensuring that the Subject Outline and assessment for a Subject are appropriate and reasonable. In this role, assessors liaise with Subject Coordinators, not Students directly.

Academic Standards: Students are reminded of the principles laid down in the Faculty’s Statement of Academic Integrity - Good Practice and Ethics in Informal Assessment found at; <wiki.it.uts.edu.au/start/Academic_Integrity>

The University’s rules regarding academic misconduct can be found at; <www.gsu.uts.edu.au/rules/16-2.html>

Assignments in this Subject should be your own original work. The inclusion in assessable work of any material such as code, graphics or essay text obtained from other persons or sources without citation of the source is plagiarism and is a breach of University Rule 16.2.2.
Any collaboration with another person should be limited to those described in the “Acceptable Behaviour” section of the Statement of Academic Integrity. Similarly, any group work should be the result of collaboration only within the group. Any infringement by a student will be considered a breach of discipline and will be dealt with in accordance with the Rules and By-Laws of the University.

Students are not to give to or receive from any other persons copies of their assessable work in any form (hard copy or an electronic file). To do so is ‘academic misconduct’ and is a breach of University Rule 16.2.2. That is, assisting other students to cheat or to act dishonestly in a submitted assignment.

Accidental submission of another student's work as your own is considered to be a breach of University Rule 16.2.2 in that you are acting dishonestly since you should not have a copy of another student's work.

The Faculty penalty for proven and serial misconduct of this nature is zero marks for the Subject. For more information go to; <wiki.it.uts.edu.au/start/Academic_Integrity>

The assignments in this Subject should be your own original work. Where code from the text or workshops is used this should be acknowledged in comments attached to the code. Any collaboration with another student should be limited to those matters described in the “Acceptable Behaviour” section. In particular, specific code, web, EJB or database design is not to be shared, or developed jointly. Material taken from a textbook, journal, the Internet or any other source should be acknowledged.

ELSSA:

If you think you need help with your English, or feel unable to express yourself correctly in assignments, contact the English Language Study Skills Assistance (ELSSA) Centre, Level 18 Tower Building, Broadway, phone 9514-2327.

ALO:

Academic Liaison Officers’ (ALO) are academics who help students with special needs (students with temporary or permanent disabilities, students with language problems who are from non-English speaking backgrounds, or students who are primary carers).

If you require assistance with assessment tasks and exams, the Faculty ALO will help you negotiate special conditions with your Lecturers. For example;

- the use of a dictionary and extra time in exams if your first language is not English (only available for your first two years at UTS)
- tests and exams printed in larger type if you have a vision impairment
- use of a lap-top if you cannot write because of an injury
- extra time to complete assignments if your studies have been disrupted by illness or disability.
If you require it, the ALO will talk to all your Lecturers so that you don't have to explain your circumstances to each of them individually. Privacy is important and personal information is only passed on to university staff on a "need to know" basis. Students with disabilities are encouraged to contact the Special Needs Service for advice before contacting the ALO.

The Faculty ALO is Dr Jim Underwood, Program Director BScIT, who can be contacted by email <jim@it.uts.edu.au> or phone 9514 1831.

Student support: Information regarding support available to students undertaking this Subject is available at; <wiki.it.uts.edu.au/start/Student_Support> Support for learning and teamwork skills is available at; <www.bell.uts.edu.au> and <www.star.uts.edu.au>

Having problems? If you are experiencing problems while undertaking this Subject then help and assistance are available both within the Faculty and also within the wider University. More information is at; <wiki.it.uts.edu.au/start/Student_Support>.

You should attempt to resolve the problem through the following chain: 1. Tutor, 2. Lecturer, 3. Subject Coordinator, 4. Head of Department, and finally 5. the Responsible Academic Officer, (Associate Dean Education)
Subject Schedule

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<thead>
<tr>
<th>Week Commencing</th>
<th>Week Number</th>
<th>Lecture</th>
<th>Tutorial/Deadlines</th>
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<tr>
<td>30 July</td>
<td>1</td>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>6 August</td>
<td>2</td>
<td>Architecture and Design</td>
<td>Ass 1 Out</td>
</tr>
<tr>
<td>13 August</td>
<td>3</td>
<td>Servlets</td>
<td></td>
</tr>
<tr>
<td>20 August</td>
<td>4</td>
<td>JSP</td>
<td></td>
</tr>
<tr>
<td>27 August</td>
<td>5</td>
<td>MVC (e.g. Struts, Spring &amp; JSF)</td>
<td>Ass 2 Out</td>
</tr>
<tr>
<td>3 September</td>
<td>6</td>
<td>No Lecture or Lab</td>
<td>Faculty Non-Teaching Week</td>
</tr>
<tr>
<td>10 September</td>
<td>7</td>
<td>JDBC, XML &amp; Other Technologies (e.g. Ajax &amp; Velocity) Good Friday 6/4</td>
<td>Ass 1 Due (Report &amp; Demo)</td>
</tr>
<tr>
<td>17 September</td>
<td>8</td>
<td>Introduction to EJB Remote Method Invocation (RMI) Directory Services (JNDI)</td>
<td></td>
</tr>
<tr>
<td>24 September</td>
<td></td>
<td>No Lecture or Lab</td>
<td>Vice-Chancellor’s Week</td>
</tr>
<tr>
<td>1 October</td>
<td>9</td>
<td>Enterprise Java Beans 1 (EJB) Labour Day 01/10</td>
<td></td>
</tr>
<tr>
<td>8 October</td>
<td>10</td>
<td>Enterprise Java Beans 2 (EJB) SFS Surveys</td>
<td>Ass 2 (Progress Report) Due</td>
</tr>
<tr>
<td>15 October</td>
<td>11</td>
<td>Spring, Hibernate &amp; Other Technologies (e.g. JDO)</td>
<td></td>
</tr>
<tr>
<td>22 October</td>
<td>12</td>
<td>Security &amp; Transactions</td>
<td></td>
</tr>
<tr>
<td>29 October</td>
<td>13</td>
<td>Legacy Systems &amp; Integration</td>
<td>Ass 2 (Final Report &amp; Demo) Due</td>
</tr>
<tr>
<td>5 November</td>
<td>14</td>
<td>Review</td>
<td></td>
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</tbody>
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Student Attendance
The Faculty of Information Technology expects that students will attend all scheduled sessions for a Subject in which they are enrolled.

Students are also expected to undertake work in their own time. This includes additional work on laboratory exercises, participation in on-line discussion groups and doing assignments.

The subject is very practical in nature, and keeping up with the weekly laboratory exercises is essential. All coding in this subject will be carried out using the Java programming language.