FIT5041
Component technology for internet applications

Unit Guide

Semester 1, 2013

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

Last updated: 04 Mar 2013
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Cloud computing has recently emerged as an efficient and cost-effective means of using distributed systems to deliver content and applications as a service via the Internet. This unit will provide students with the necessary knowledge to design and develop enterprise-scale applications that leverage cloud computing on different platforms and incorporate web services for interacting with other systems. Students will explore the fundamental concepts of cloud computing, the advantages and limitations of the platform architecture, and review literature regarding current research on the topic to gain a greater insight into future developments of the platform.

Mode of Delivery

Caulfield (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

Students will be expected to spend a total of 12 hours per week during semester on this unit as follows:

- two-hour lecture and
- two-hour tutorial (or laboratory) (requiring advance preparation)
- and up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

Unit Relationships

Prohibitions

CSE5000

Prerequisites

(FIT9004 or FIT9017) and (FIT9003 or FIT9019)
Recommended knowledge: Students undertaking this subject are expected to have knowledge in object-oriented programming and have basic skills in SQL.

Chief Examiner

Dr Jefferson Tan
Campus Lecturer

Caulfield

Jefferson Tan
Academic Overview

Learning Outcomes

At the completion of this unit students will:

- understand the role of distributed systems architecture in the design and implementation of cloud computing applications;
- understand the advantages and limitations of cloud computing over other enterprise web architectures;
- understand how to design effective web applications that incorporate cloud and web service components;
- have developed the knowledge and skills to develop enterprise-scale web systems relevant to current industry standards;
- understand advanced topics in cloud computing and related technologies;
- have developed a professional attitude towards the development of cloud computing applications.
## Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Unit Overview, Introduction to Cloud Computing</td>
<td>Tutorials start in Week 1</td>
</tr>
<tr>
<td>2</td>
<td>Distributed Systems</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Introduction to .NET Framework Development</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>XML Applications and Web Services, Component Technology</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.NET WCF Services</td>
<td>Assessment Task 1 due Friday, 12 April at 5 pm</td>
</tr>
<tr>
<td>6</td>
<td>Introduction to ASP.NET, Web Application Interfaces</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cloud Platforms and Services</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Windows Azure Development</td>
<td>Assessment Task 2 due Friday, 3 May, 5 pm</td>
</tr>
<tr>
<td>9</td>
<td>Cloud Infrastructure and Security</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Enterprise Cloud Computing</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Enterprise Web Application Design</td>
<td>Assessment Task 3 due Week 11, Friday, 24 May, 5 pm. Presentations are conducted in tutorials Week 11 and 12</td>
</tr>
<tr>
<td>12</td>
<td>Emerging Developments in Cloud Computing</td>
<td>Assessment Task 4: software submission Week 16 - Monday 24 June at 5 pm, demos scheduled across the week up to 28 June 5 pm</td>
</tr>
<tr>
<td>SWOT VAC</td>
<td></td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

## Assessment Summary

Practical assessments: 60%; Written assessments: 40%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed System Evaluation</td>
<td>15%</td>
<td>Week 5 - Friday 12 April at 5 pm</td>
</tr>
<tr>
<td>Distributed Application</td>
<td>30%</td>
<td>Week 8, Friday, 3 May, 5 pm</td>
</tr>
<tr>
<td>Research Paper</td>
<td>25% - Research Paper 15% &amp; Presentation 10%</td>
<td>Week 11, Friday, 24 May, 5 pm</td>
</tr>
</tbody>
</table>
Unit Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Application</td>
<td>30%</td>
</tr>
</tbody>
</table>

Software submission on Monday 24 June, 5pm; Demo will be scheduled during that week.

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at
http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

• Assessment task 1

Title:
Distributed System Evaluation

Description:
A detailed report evaluating an existing distributed system. The evaluation should provide
an analysis of platform technologies being used, strengths and weaknesses of the system
and provide a suggestion for potential improvements. A list of potential systems to
evaluate will be provided on Moodle in the assignment specification.

Minimum of 2000 words.

Weighting:
15%

Criteria for assessment:

♦ This is an individual assignment and is to be entirely your own work.
♦ The assignment will be marked against criteria of correctness, substance and
  clarity.
♦ Further detailed assessment criteria will be available with the assignment
  specification.

Due date:
Week 5 - Friday 12 April at 5 pm

Remarks:
If you wish to develop using a different development platform, you must first seek approval
from the lecturer.

• Assessment task 2

Title:
Distributed Application

Description:
Create a distributed application that consists of multiple systems to solve a problem that
has been approved by the lecturer. The application should demonstrate strong support for
key characteristics found in a high quality distributed system. Students are free to choose
the type of application to develop however they must first seek approval from their tutor.
This assignment can be used as the basis for the final assessment.

Weighting:
30%
Assessment Requirements

Criteria for assessment:

- This is an individual assignment and is to be entirely your own work.
- The assignment will be marked against criteria of correctness, substance and clarity.
- Further detailed assessment criteria will be available with the assignment specification.

Due date:

Week 8, Friday, 3 May, 5 pm

Remarks:

If you wish to develop using a different development platform, you must first seek approval from the lecturer.

• Assessment task 3

Title:

Research Paper

Description:

Investigate and produce a detailed paper regarding a specific issue related to distributed systems or cloud computing. Suggestions for potential topics to explore will be provided on Moodle under the assignment specification. You will be expected to present your findings to your tutorial class in Weeks 11 and 12.

Minimum of 3500 words.

Weighting:

25% - Research Paper 15% & Presentation 10%

Criteria for assessment:

- This is an individual assignment and is to be entirely your own work.
- The assignment will be marked against criteria of correctness, substance and clarity.
- Further detailed assessment criteria will be available with the assignment specification.

Due date:

Week 11, Friday, 24 May, 5 pm

• Assessment task 4

Title:

Cloud Application

Description:

Create or extend an existing distributed application to operate on a cloud platform to solve a problem that has been approved by the lecturer. The application should incorporate functionality supported by the cloud architecture and strengthen the overall quality of the distributed system. Web service support should be integrated to allow communication with other services.

If you do not wish to extend your previous distributed application, you must first consult with your tutor to discuss the possibility of starting development on a new application. It is recommended that you develop your application using .NET Framework 4.0, Windows Communication Foundation and Windows Azure which is covered in the weekly topics.

Demonstrations of the application will be conducted in the last week of exams.

Weighting:
30%
Criteria for assessment:

- This is an individual assignment and is to be entirely your own work.
- The assignment will be marked against criteria of correctness and clarity.
- Further detailed assessment criteria will be available with the assignment specification.

Due date:
Software submission on Monday 24 June, 5pm; Demo will be scheduled during that week.

Remarks:
- If you wish to develop on a different platform, you must first seek approval from the lecturer.
- Students are welcome to arrange for an earlier demo if exams in other units clash with the timetable of demonstrations.

Learning resources

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Interviews
- Solutions to tutes, labs and assignments

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the
Assessment Requirements

online assignment submission, hand-in a hard copy, or use an online quiz).

Online submission

Submission will be in both electronic and paper submission. Paper submission is can be handed to the tutor or Caulfield School of IT office (Building H, Level 6), and the online submission is to be submitted via Moodle.

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

You will need access to:

- Microsoft Visual Studio .NET 2010 or later
- Microsoft Access 2010 / SQL Server 2008 or later
- Microsoft Visio or similar modelling/graphical documentation tools
- Web browser such as Google Chrome, Mozilla Firefox or Microsoft Internet Explorer

Select Microsoft products are also available for students at no cost through MSDNAA at http://infotech.monash.edu/itsupport/msdnaa.html
Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University’s academic standards, and to provide advice on how they might uphold them. You can find Monash’s Education Policies at: www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Plagiarism; http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html
- Grading Scale; http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html
- Discipline: Student Policy; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html
- Academic Calendar and Semesters; http://www.monash.edu.au/students/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Graduate Attributes Policy http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu.au/students. For Sunway see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.
Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: http://www.monash.edu/equity-diversity/disability/index.html Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway Email: dlu@monash.edu Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University’s student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash’s educational strategy, see:

www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

This unit has been revised based upon a staff review and several improvements have been made including:

- objectives now focus on cloud computing due to its rapid deployment in industry;
- topics have been adjusted to provide greater detail in aspects of designing enterprise web applications and systems on cloud platforms;
- cloud computing platforms such as Windows Azure will be covered in detail to provide students with practical knowledge in deploying cloud-enabled web applications.

Student feedback has also informed improvements to this unit including:

- additional notes and sample code for projects reflecting technologies covered during the lectures and tutorials will be provided;
- the option to use alternative development platforms other than .NET for practical assessments with approval from the lecturer.

If you wish to view how previous students rated this unit, please go to https://emuapps.monash.edu.au/unitevaluations/index.jsp