FIT5041
Component technology for internet applications

Unit Guide

Semester 1, 2012

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: 21 Feb 2012
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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

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

Recommended knowledge: Students undertaking this subject are expected to have knowledge in object-oriented programming and have basic skills in SQL.

Chief Examiner

Ms Janet Fraser
Campus Lecturer

Caulfield

Matthew Kairys

Consultation hours: Monday: 5pm - 6pm, Tuesday: 1pm - 3pm
Academic Overview

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.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:
   a. engage in an internationalised world
   b. exhibit cross-cultural competence
   c. demonstrate ethical values

critical and creative scholars who:

   a. produce innovative solutions to problems
   b. apply research skills to a range of challenges
   c. communicate perceptively and effectively

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 30 March 2012 at 5 pm</td>
</tr>
<tr>
<td>Distributed Application</td>
<td>30%</td>
<td>Week 8, Friday, 27 April 2011, 5 pm</td>
</tr>
<tr>
<td>Research Paper</td>
<td>25% - Research Paper 15% &amp; Presentation 10%</td>
<td>Week 11, Friday, 18 May 2011, 5 pm</td>
</tr>
<tr>
<td>Cloud Application</td>
<td>30%</td>
<td>Week 14 - Friday 8 June 2012 at 5pm</td>
</tr>
</tbody>
</table>
Teaching Approach

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

Feedback

Our 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

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 SETU, Student Evaluation of Teacher and Unit. 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, and on student evaluations, see:
http://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
Required Resources

Please check with your lecturer before purchasing any Required Resources. 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
- Microsoft Access 2010 / SQL Server 2008
- 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.
# 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, 30 March 2012 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, 27 April 2011, 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, 18 May 2011, 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 due Week 14 - Friday 8 June 2012 at 5pm</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</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 MUSO (Blackboard or Moodle) learning system.*
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

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 and clarity.
♦ Further detailed assessment criteria will be available with the assignment specification.

Due date:
Week 5 - Friday 30 March 2012 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%

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.
Assessment Requirements

- Further detailed assessment criteria will be available with the assignment specification.

**Due date:**
Week 8, Friday, 27 April 2011, 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 and clarity.
- Further detailed assessment criteria will be available with the assignment specification.

**Due date:**
Week 11, Friday, 18 May 2011, 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.

**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:**
Assessment Requirements

Week 14 - Friday 8 June 2012 at 5pm

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

Examinations

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 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 VLE site for this unit, which you can access via links in the my.monash portal.

Extensions and penalties

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


Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.
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: http://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/key-dates/)
- Orientation and Transition (http://www.infotech.monash.edu.au/resources/student/orientation/); and
- Codes of Practice for Teaching and Learning (http://www.policy.monash.edu/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teaching.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 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/

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to http://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/.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: http://monash.edu/equity-diversity/disability/index.html
- Email: dl@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway
Other Information

Other

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Moodle(http://moodle.monash.edu.au ) is the primary application used to deliver your unit resources.

You can access MUSO and Moodle via the portal: http://my.monash.edu.au. Click on the Study and enrolment tab, then Moodle under the MUSO learning systems.

For more information, please visit:
http://www.monash.edu.au/muso/support/students/downloadables-student.html

You can contact the MUSO Support by phone : (+61 3) 9903 1268

For further contact information including operational hours, please visit:
http://www.monash.edu.au/muso/support/students/contact.html

Further information can be obtained from the MUSO support site: