MONASH University
Information Technology

FIT2065
Operating systems and the Unix environment

Unit Guide

Semester 1, 2014

Last updated: 04 Mar 2014

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FIT2065 Operating systems and the Unix environment - Semester 1, 2014

The main topics covered in this unit include computer systems, operating systems, process management and coordination, memory management including modern implementations of virtual memory, file systems, operating system security, shell variant scripting, regular expressions, Unix utilities, Unix file system, Unix system administration and installation, Unix programming, research and development.

Mode of Delivery

Caulfield (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour laboratory

(b.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

Unit Relationships

Prohibitions

CPE3007, CPE2008, CSE2208, CSE2391, CSE3001, CSE3208, CSE3391, FIT3041, GCO3813

Prerequisites

One of FIT1001, FIT1031 or CSE1201 or equivalent

Chief Examiner

Professor Bala Srinivasan

Campus Lecturer

Caulfield

Campbell Wilson

Consultation hours: TBA

Abdul Malik Khan

Consultation hours: TBA

Tutors

Caulfield

(TBA)

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

Based on feedback:

- The practical component will be complemented with theoretical questions in the tutorials;
- Supporting theory will be added as part of the lectures; and
- The non-assessable weekly quizzes will continue.

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

Academic Overview

Learning Outcomes

At the completion of this unit students will have -A knowledge and understanding of:

- the role of operating systems in the architecture of computer systems;
- the practical considerations involved in the use of the Unix operating system; specifically memory management, process management and file system implementations;
- the role, utility and syntax of Unix scripting languages;
- considerations and techniques for securing the Unix operating system;
- the responsibilities of and tasks undertaken by Unix system administrators;
- points of contrast and similarity between Unix and other operating systems in widespread use.

Developed attitudes that enable them to:

- appreciate Unix operating system as it is implemented in modern computer systems - Unix system file system, memory management, and networking, and practical functions;
- know how to solve many systems problems using Unix scripting and system facilities;
- appreciate Unix system programming, research and development, and security.

Developed the skills to:

- use important Unix utilities to monitor Unix systems and Unix networks; construct Unix shell scripts to solve many system problems;
- implement security controls in the Unix environment;
- use Unix utilities for data processing, system development and research;
- install and configure the Unix environment;
- use Unix OS for important network servers and tailor their Unix systems to provide important system and network services.

Demonstrated the communication skills necessary to:

- understand the need to balance requirements of users in multiuser operating system environments;
- confidently discuss issues in groups with regard to the implementation of Unix;
- articulate opinions in group environments with respect to the implementation of operating system environments.

Unit Schedule

Week	Activities	Assessment
0	Please be aware this schedule is subject to change	No formal assessment or activities are undertaken in week 0
1	Computer systems overview, introduction to Unix and brief history of Unix	
2	Getting a handle on the Unix OS	
3	Shell scripting	
4	Process description and control	
5	Concurrency and Threads	
6	Deadlock and starvation	Assignment 1 due
7	Memory management	
8	File management	
9	Unix utilities	
10	Unix security	Unit Test in the tutorial class
11	System administration	
12	Review	Assignment 2 due
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

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

Teaching Approach

Lecture and tutorials or problem classes

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

Assessment Summary

Examination (2 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment 1 - Shell Scripting	10%	Week 6. Unless special consideration is approved, late assignments are NOT accepted.
Assignment 2 - Concurrent Programming	20%	Week 12. Unless special consideration is approved, late assignments are NOT accepted.
Unit Test	10%	Week 10 Tutorial Class
Examination 1	60%	To be advised

Unit Schedule

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurd

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

Assessment Tasks

Participation

Students will be encouraged to participate in lecture room questions, through an online polling system.
A mark will be awarded to all students based on overall classroom participation.

- **Assessment task 1**

  Title:
  Assignment 1 - Shell Scripting
  Description:
  An individual assessment where students have to develop a working shell script for a
  practical problem. This is purely a programming exercise. The specification of the
  assignment will be provided in Week 3.
  Weighting:
  10%
  Criteria for assessment:
  The program will be assessed on the following:

  - ♦ Functionality;
  - ♦ Efficiency;
  - ♦ Correctness;
  - ♦ Generality of the software;
  - ♦ Error conditions, error trapping and error messages; and
  - ♦ Readability and modularity of the code.

  Due date:
  Week 6. Unless special consideration is approved, late assignments are NOT accepted.
  Remarks:
  Submission of soft copy through file transfer on the unit Moodle web site.

- **Assessment task 2**

  Title:
  Assignment 2 - Concurrent Programming
  Description:
  An individual assessment where students have to develop a working program for a
  practical problem using concurrency concepts learned in this unit.   Programs must be
  coded in either C or Java.
  Weighting:
  20%
  Criteria for assessment:

♦Functionality;
♦ Efficiency;
♦ Correctness;
♦ Generality of the software;
♦ Error conditions, error trapping and error messages; and
♦ Readability and modularity of the code.

Due date:
Week 12. Unless special consideration is approved, late assignments are NOT accepted.

• **Assessment task 3**

Title:
Unit Test
Description:
The unit test will be conducted in the week 10 tutorial class a combination multiple choice test and scripting exercise.   Since it is conducted during tutorial sessions, each tutorial class will have a different set of questions.
Weighting:
10%
Criteria for assessment:
Correct answers (no negative marks for incorrect answers)

Correctness of script
Due date:
Week 10 Tutorial Class

Examinations

• **Examination 1**

Weighting:
60%
Length:
2 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
None

Learning resources

Reading list

Texts which may be of use to you include the following:

• William Stallings, "Operating Systems: Internals and Design Principles", 7th Ed.
• Silberschatz, Galvin and Gagne, "Operating Systems Concepts", John Wiley & Sons, Inc. 7th Ed.
• Simson Garfinkel and Gene Spafford, "Practical Unix & Internet Security", O'Reilly & Associates, Inc. Latest Ed.

A number of links to web based reference material will be provided on the unit's website.

Assessment Requirements

Monash Library Unit Reading List (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

Faculty of Information Technology Style Guide

Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html

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

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Interviews
- Test results and feedback
- Quiz results

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: http://www.monash.edu.au/exams/special-consideration.html

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/student-academic-integrity-managing-pla 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). Please note that it is your responsibility to retain copies of your assessments.

Online submission

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.

Technological Requirements

Students are encouraged to bring devices to the lecture that can access the web (e.g. smartphone, laptop, tablet etc).

Recommended Resources

Access to Linux or Unix off-campus would be useful, but is not required.

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:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h
- Assessment in Coursework Programs;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po
- Special Consideration;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht
- 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/
- Academic and Administrative Complaints and Grievances Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h

Faculty resources and policies

Important student resources including Faculty policies are located at
http://intranet.monash.edu.au/infotech/resources/students/

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h

Student Charter

www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.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 Malaysia 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 Malaysia, 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 Commuity Services at 03 55146018 at Malaysia
- 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, Malaysia Campus