

FIT2065
Operating systems and the Unix environment

Unit Guide

Semester 1, 2011

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: 27 Feb 2011

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FIT2065 Operating systems and the Unix environment - Semester 1, 2011

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)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

There are 4 contact hours for this unit per week.

- 2 hours/lecture
- 2 hours/tutorial

The amount of time students need to allocate to their assignment work and understanding of material will vary from student to student. The university model of a 6 point unit suggests that an average workload would be 12 hours per week including classes, assigned work and private study.

Unit Relationships

Prohibitions

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

Prerequisites

FIT1001 or CSE1201 or equivalent and FIT1002 or CSE1202 or equivalent

Chief Examiner

Balasubramaniam Srinivasan

Campus Lecturer

Caulfield

Prof. Bala Srinivasan

Tutors

Caulfield

Prof. Bala Srinivasan

Learning Objectives

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.

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

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

Assessment Task	Value	Due Date
Assignment	20%	Paper copy submission in week 10 in the lecture, soft copy through file transfer - refer to the assignment sheet
Unit Test	20%	Week 7 tutorial class
Examination 1	60%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

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
- Test results and feedback
- 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.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Required Resources

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

Unit Schedule

Week	Date*	Activities	Assessment
0	21/02/11		No formal assessment or activities are undertaken in week 0
1	28/02/11	Introduction to and history of Unix. The concept of the Unix file and the file system	
2	07/03/11	The Unix shell and editors	
3	14/03/11	Process and memory management I	
4	21/03/11	Process and memory management II	
5	28/03/11	Shell scripting I	
6	04/04/11	Regular expressions, Shell Scripting (cont'd) II	
7	11/04/11	Unix utilities including awk, sort, diff, etc	Unit test during the tutorial sessions
8	18/04/11	Networking in Unix	
Mid semester break			
9	02/05/11	System administration	
10	09/05/11	System calls	Paper copy submission in week 10 in the lecture, soft copy through file transfer - refer to the assignment sheet
11	16/05/11	Unix Security	
12	23/05/11	Review	
	30/05/11	SWOT VAC	No formal assessment is undertaken SWOT VAC

*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.

Assessment Policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit

Assessment Tasks

Participation

• Assessment task 1

Title:

Assignment

Description:

An individual assessment where students have to develop a working shell script for a practical problem. This is purely an programming exercise. The specification of the problem will be provided in week 3.

Weighting:

20%

Criteria for assessment:

Assessment will be based on the following:

1. Functionality is implemented as against the specification;
2. Efficiency of the implementation;
3. Generality of the software;
4. Error conditions, trapping and messages; and
5. Readability, modularity of the code.

Due date:

Paper copy submission in week 10 in the lecture, soft copy through file transfer - refer to the assignment sheet

• Assessment task 2

Title:

Unit Test

Description:

The unit test will be conducted in week 7 tutorial class. A combination of multiple choice written test and a scripting exercise. Since it is conducted during the tutorial sessions,

each tutorial class will have different set of multiple choice and scripting questions. The examination paper will have similar format of the unit test.

Weighting:

20%

Criteria for assessment:

Due date:

Week 7 tutorial class

Examinations

• Examination 1

Weighting:

60%

Length:

2 hours

Type (open/closed book):

Closed book

Electronic devices allowed in the exam:

None

Assignment submission

Assignment coversheets are available via "Student Forms" on the Faculty website:

<http://www.infotech.monash.edu.au/resources/student/forms/>

You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

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.infotech.monash.edu.au/resources/student/equity/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

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>)
- Assessment (<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-p>)
- Special Consideration (<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- 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
- Academic and Administrative Complaints and Grievances Policy (<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy>)

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 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. 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://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html>;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

READING LIST

This list may be subject to change

- Silberschatz, Galvin and Gagne, "Operating Systems Concepts", John Wiley & Sons, Inc. Seventh Ed.
- Marshall Kirk McKusick and George V Neville-Neil, "The Design and Implementation of Free BSD Unix Operating System, Addison-Wesley Professional", Latest Ed.
- Andrew S. Tanenbaum, "Modern Operating System", Prentice-Hall, Latest Ed.
- Craig Hunt, "TCP/IP Network Administration", O'Reilly & Associates Inc. Latest Ed.
- Simson Garfinkel and Gene Spafford, "Practical Unix & Internet Security", O'Reilly & Associates Inc. Second Ed, 1996.