



MONASH University

FIT2065
Operating systems and the Unix environment

Unit guide

Semester 1, 2009

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FIT2065 Operating systems and the Unix environment - Semester 1, 2009

Unit leader :

Bala Srinivasan

Lecturer(s) :

Caulfield

- Bala Srinivasan

Tutors(s) :

Caulfield

- Osama Dandash
- Guy Kijthaweesinpoon

Introduction

This unit guide contains information regarding the intended delivery of FIT2065 in Semester 1, 2009. The synopsis of the unit, the objectives of the unit and broad assessment details for the unit are published in the official Monash University handbook entry:

<http://www.monash.edu.au/pubs/handbooks/units/FIT2065.html>

This unit guide does not supercede the official handbook entry and this unit guide is congruent with the unit objectives outlined in the official handbook entry. However, the sequence of lectures and topics, or the degree of emphasis on topics implied through their inclusion in the weekly topic list in this unit guide may be varied during Semester 1, 2009 at the discretion of the FIT2065 chief examiner, as long as such variation is judged by the FIT2065 chief examiner not to compromise the unit objectives.

Unit synopsis

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.

Learning outcomes

At the completion of this unit, students will be able to demonstrate understanding of:

1. the role of operating systems in the architecture of computer systems;
2. the practical considerations involved in the use of the Unix operating system, specifically memory

- management, process management and file system implementations;
- 3. the role, utility and syntax of Unix scripting languages;
- 4. considerations and techniques for securing the Unix operating system;
- 5. the responsibilities of and tasks undertaken by Unix system administrators;
- 6. points of contrast and similarity between Unix and other operating systems in widespread use.

At the completion of this unit, students will:

1. appreciate the motivational context of the Unix operating system as it is implemented in modern computer systems;
2. recognise the utility of the Unix scripting approach to the solution of problems;
3. appreciate the Unix programming philosophy.

At the completion of this unit, students will have the ability to:

1. install and configure the Unix environment;
2. construct and test Unix scripts;
3. implement security controls in the Unix environment;
4. use Unix utilities for data processing;
5. monitor and tune Unix installations with respect to system performance.

At the completion of this unit, students will be able to:

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

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

Prerequisites

FIT1001 or CSE1201 or equivalent and FIT1002 or CSE1202 or equivalent.

It will be assumed students have basic knowledge of both operating systems and the theory of programming. If you have not completed the prerequisite units but believe you have gained the prerequisite knowledge through other study, please approach the lecturer to check if the prerequisite unit rules can be waived for you. Also check with your course director or advisor if any doubt as to whether this unit can be credited towards your course.

Relationships

You may not study this unit and CPE3007, CPE2008, CSE2208, CSE2391, CSE3001, CSE3208, CSE3391, FIT3041 or GCO3813 in your degree.

The role of this unit depends on the course in which you are enrolled. Students should check with their course director or course advisor if in any doubt as to whether this unit can count towards their course.

Continuous improvement

Monash is committed to 'Excellence in education' (Monash Directions 2025 - <http://www.monash.edu.au/about/monash-directions/directions.html>) and strives for the highest possible quality in teaching and learning.

To monitor how successful we are in providing quality teaching and learning Monash regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. The University's Unit Evaluation policy (<http://www.policy.monash.edu/policy-bank/academic/education/quality/unit-evaluation-policy.html>) requires that every unit offered is evaluated each year. Students are strongly encouraged to complete the surveys as they are an important avenue for students to "have their say". The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

Faculties have the option of administering the Unit Evaluation survey online through the my.monash portal or in class. Lecturers will inform students of the method being used for this unit towards the end of the semester.

Student Evaluations

If you wish to view how previous students rated this unit, please go to <http://www.adm.monash.edu.au/cheq/evaluations/unit-evaluations/>

Unit staff - contact details

Unit leader

Professor Balasubramaniam Srinivasan

Professor, and Head of School

Phone +61 3 990 31333 +61 3 990 55222

Fax +61 3 990 55157

Contact hours : To be advised in lectures

Lecturer(s) :

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Professor, and Head of School

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Tutor(s) :

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Mr Osama Dandash

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Teaching and learning method

Lectures, tutorials and practical work. Learning is achieved by performing hands-on exercises in the tutorial sessions.

Tutorial allocation

Refer to Allocate+. There are no tutorials/laboratory in week 1.

Communication, participation and feedback

Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. You will receive feedback on your work and progress in this unit. This may take the form of group feedback, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions (on line and in class) as well as more formal feedback related to assignment marks and grades. You are encouraged to draw on a variety of feedback to enhance your learning.

It is essential that you take action immediately if you realise that you have a problem that is affecting your study. Semesters are short, so we can help you best if you let us know as soon as problems arise. Regardless of whether the problem is related directly to your progress in the unit, if it is likely to interfere with your progress you should discuss it with your lecturer or a Community Service counsellor as soon as possible.

Unit Schedule

Week	Topic	Key dates
1	Introduction to and history of Unix. The concept of the Unix file and the file system	
2	The Unix shell and editors	
3	Process and memory management	
4	Shell scripting I	
5	Shell scripting II	
6	Regular expressions, sed, awk	
Mid semester break		
7	Unix utilities	
8	Networking in Unix	
9	System administration	
10	System calls	
11	Unix Security	
12	Current Topics	
13	Revision	

Unit Resources

Prescribed text(s) and readings

There is no prescribed text.

Recommended text(s) and readings

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.
- Simon Garfinkel and Gene Spafford, "Practical Unix & Internet Security", O'Reilly & Associates Inc. Second Ed, 1996.

Required software and/or hardware

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

Study resources

Study resources we will provide for your study are:

Your study resources will be available in Blackboard. The study resources provided for your study include copies of the lecture slides, tutorial and assignment sheets. If you have enrolled in this unit, you should be able to access this site through your my monash login.

Library access

The Monash University Library site contains details about borrowing rights and catalogue searching. To learn more about the library and the various resources available, please go to <http://www.lib.monash.edu.au>.

The Educational Library and Media Resources (LMR) is also a very resourceful place to visit at <http://www.education.monash.edu.au/library/>

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Blackboard is the primary application used to deliver your unit resources. Some units will be piloted in Moodle. If your unit is piloted in Moodle, you will see a link from your Blackboard unit to Moodle (<http://moodle.monash.edu.au>) and can bookmark this link to access directly. In Moodle, from the Faculty of Information Technology category, click on the link for your unit.

You can access MUSO and Blackboard via the portal: <http://my.monash.edu.au>

Click on the Study and enrolment tab, then Blackboard under the MUSO learning systems.

In order for your Blackboard unit(s) to function correctly, your computer needs to be correctly configured.

For example:

- Blackboard supported browser
- Supported Java runtime environment

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:

<http://www.monash.edu.au/muso/support/index.html>

Assessment

Unit assessment policy

FIT2065 is assessed with one assignment, one unit test and a two hour closed book examination.

The Faculty of IT mandates the following 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 44% then a mark of 44-N will be recorded for the unit."

Assignment tasks

- **Assignment Task**

Title : Assignment

Description :

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

Weighting : 20%

Criteria for assessment :

Due date : Week 10 in the lecture

• **Assignment Task**

Title : Unit Test

Description :

Will be conducted in week 8 tutorial class. A combination of multiple choice written test and a scripting exercise. Since it is conducted during the tutorial sessions, each group will have different set of questions and scripting exercise.

Weighting : 20%

Criteria for assessment :

Due date : Week 8 tutorial class

Examinations

• **Examination 1**

Weighting : 60%

Length : 2 hours

Type (open/closed book) : Closed book

Assignment submission

Assignments will be submitted directly to the lecturer in a manner to be advised when assignment specifications are released.

Assignment coversheets

Assignment coversheets can be found :

- via the "Student assignment coversheets" (<http://infotech.monash.edu.au/resources/student/assignments/>) page on the faculty website.

University and Faculty policy on assessment

Due dates and extensions

The due dates for the submission of assignments are given in the previous section. Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are seldom regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Extensions are not normally granted, except where a student's ability to complete a piece of assessment has been severely compromised by serious events beyond their control.

Requests for extensions must be made to the lecturer. You will be asked to forward original medical certificates in cases of illness, and may be asked to provide other forms of documentation where necessary. A copy of the email or other written communication of an extension must be attached to the assignment submission.

Late assignment

Unless an extension is granted no late assignment will be accepted.

Return dates

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

Assessment for the unit as a whole is in accordance with the provisions of the Monash University Education Policy at <http://www.policy.monash.edu/policy-bank/academic/education/assessment/>

We will aim to have assignment results made available to you approximately two weeks after assignment receipt.

Plagiarism, cheating and collusion

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students have been severely penalised, from losing all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, I will ask you to acquaint yourself with the University Plagiarism policy and procedure (<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) which applies to students detected plagiarising.

In this University, cheating means seeking to obtain an unfair advantage in any examination or any other written or practical work to be submitted or completed by a student for assessment. It includes the use, or attempted use, of any means to gain an unfair advantage for any assessable work in the unit, where the means is contrary to the instructions for such work.

When you submit an individual assessment item, such as a program, a report, an essay, assignment or other piece of work, under your name you are understood to be stating that this is your own work. If a submission is identical with, or similar to, someone else's work, an assumption of cheating may arise. If you are planning on working with another student, it is acceptable to undertake research together, and discuss problems, but it is not acceptable to jointly develop or share solutions unless this is specified by your lecturer.

Intentionally providing students with your solutions to assignments is classified as "assisting to cheat" and students who do this may be subject to disciplinary action. You should take reasonable care that your solution is not accidentally or deliberately obtained by other students. For example, do not leave copies of your work in progress on the hard drives of shared computers, and do not show your work to other students. If you believe this may have happened, please be sure to contact your lecturer as soon as possible.

Cheating also includes taking into an examination any material contrary to the regulations, including any bilingual dictionary, whether or not with the intention of using it to obtain an advantage.

Plagiarism involves the false representation of another person's ideas, or findings, as your own by either copying material or paraphrasing without citing sources. It is both professional and ethical to reference clearly the ideas and information that you have used from another writer. If the source is not identified, then you have plagiarised work

of the other author. Plagiarism is a form of dishonesty that is insulting to the reader and grossly unfair to your student colleagues.

Register of counselling about plagiarism

The university requires faculties to keep a simple and confidential register to record counselling to students about plagiarism (e.g. warnings). The register is accessible to Associate Deans Teaching (or nominees) and, where requested, students concerned have access to their own details in the register. The register is to serve as a record of counselling about the nature of plagiarism, not as a record of allegations; and no provision of appeals in relation to the register is necessary or applicable.

Non-discriminatory language

The Faculty of Information Technology is committed to the use of non-discriminatory language in all forms of communication. Discriminatory language is that which refers in abusive terms to gender, race, age, sexual orientation, citizenship or nationality, ethnic or language background, physical or mental ability, or political or religious views, or which stereotypes groups in an adverse manner. This is not meant to preclude or inhibit legitimate academic debate on any issue; however, the language used in such debate should be non-discriminatory and sensitive to these matters. It is important to avoid the use of discriminatory language in your communications and written work. The most common form of discriminatory language in academic work tends to be in the area of gender inclusiveness. You are, therefore, requested to check for this and to ensure your work and communications are non-discriminatory in all respects.

Students with disabilities

Students with disabilities that may disadvantage them in assessment should seek advice from one of the following before completing assessment tasks and examinations:

- Faculty of Information Technology Student Service staff, and / or
- your Unit Coordinator, or
- [Disabilities Liaison Unit](#)

Deferred assessment and special consideration

Deferred assessment (not to be confused with an extension for submission of an assignment) may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement. Information and forms for Special Consideration and deferred assessment applications are available at <http://www.monash.edu.au/exams/special-consideration.html>. Contact the Faculty's Student Services staff at your campus for further information and advice.