MONASH University

FIT3042
System tools and programming languages

Unit guide

Semester 1, 2009

Last updated : 20 Apr 2009

Table of Contents

FIT3042 System tools and programming languages - Semester 1, 2009

Unit leader :

Jon McCormack

Lecturer(s) :

Clayton

- Jon McCormack

Tutors(s) :

Clayton

- Jon McCormack
- Jay Zeal
- Tim Ho

Introduction

Welcome to FIT3042 Systems Tools and Programming forsemester 1, 2009. This 6 point unit is an elective for BCS Students and a core unit for BSE students. The unit has been designed to provide you with anunderstanding of standard UNIX operating system tools. It also looks at scripting languages, editing, data processing, and systems programming in the C programming language. The course emphasis is on the practical application of these tools to common IT tasks and applications.

Unit synopsis

ASCED: 020103 Programming

Additional ASCED Code: 020117 Operating Systems

The subject introduces:

UNIX tools for managing processes; searching, editing and modifying files and data streams; and command interpreters and shell scripts;An introduction to scripting languages common to UNIX and other platformsSimple build management tools on UNIX systems a typical system call interface and it use for systems programming in a language like C.

Learning outcomes

Knowledge and Understanding

K.1 Knowledge of the Unix philosophy at shell and system call levels.

K.2 Comprehension of Unix shells and the POSIX standard.

K.3 Knowledge of the variety of tools available and understanding of a core selection of them.

K.4 Knowledge of the Unix system call interface and associated systems programming.

Practical Skills

P.1 Programming skills at the Unix shell level using pipelines and shell scripts applying a nember of tools.

P.2 Programming skills at the system call level for systems programming.

Workload

For on campus students, workload commitments are:

- two-hour lecture per week and
- two-hour laboratory per week (requiring advance preparation)
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.
- You will need to allocate up to 5 hours per week in some weeks, for use of a computer, including time for newsgroups/discussion groups.

Off-campus students generally do not attend lecture and tutorial sessions, however, you should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

Unit relationships

Prerequisites

Before attempting this unit you must have satisfactorily completed

FIT1008 or FIT1015 or CSE1303, or equivalent.You should have some basic knowledge of the Unix operating system and practical programming experience in a procedural language.

Relationships

FIT3042 is a core unit in the Batchelor of Software Engineering degree and an elective in the Batchelor of Computer Science degree.

Before attempting this unit you must have satisfactorily completed FIT1008 or FIT1015 or CSE1303, or equivalent.

You may not study this unit and CSE2391, CSE3391 in your degree.

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/

Improvements to this unit

This unit will be subject to a Monquest evaluation during one of the lectures. Students are strongly encouraged to participate in the evaluation, in order to improve the unit.

Unit staff - contact details

Unit leader

Associate Professor Jon McCormack
Associate Professor
Phone +61 3 990 59298
Fax +61 3 990 55157

Lecturer(s) :

Associate Professor Jon McCormack
Associate Professor
Phone +61 3 990 59298
Fax +61 3 990 55157

Tutor(s) :

Mr Jay Zeal
Associate Professor Jon McCormack
Associate Professor
Phone +61 3 990 59298
Fax +61 3 990 55157
Mr Ka Chung Tim Ho

Teaching and learning method

Lectures are used to introduce important concepts and illustrate applications of the tools and topics discussed. Laboratory classes are provided to give students practical experience and understanding of how lecture concepts and tools can be used in a programming environment.

Tutorial allocation

On-campus students should register for tutorials/laboratories using Allocate+.

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	Unit Introduction, Introduction to prosesses	
2	Editing with the vim editor	
3	Filters	
4	Borne shell programming	
5	sed	
6	awk	
Mid semester break		
7	perl 1: scalars & arrays	
8	perl 2: subroutines & hashes	
9	Regular expressions	
10	Introduction to C, Make	
11	C Programming: pointers & data structures	
12	UNIX I/O	
13	Revision	

Unit Resources

Prescribed text(s) and readings

none.

Recommended text(s) and readings

Palmer, Michael, Jack Dent & Toby Gaddis: “Guide to UNIX Using Linux” (3rd edition), Thompson 2005. ISBN: 0-619-21562-3

Required software and/or hardware

You will need access to:

- UNIX based computer with standard UNIX operating environment (access to programs such as csh, tsh, vi, sed, awk, perl, gcc, gdb, make)
- A web browser such as Safari or Firefox

Equipment and consumables required or provided

Students studying off-campus are required to have the minimum system configuration specified by the Faculty as a condition of accepting admission, and regular Internet access. On-campus students, and those studying at supported study locations may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate up to **n** hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

Study resources we will provide for your study are:

- Weekly detailed lecture notes outlining the learning objectives, discussion of the content, required readings and exercises;
- Weekly laboratory tasks and exercises with sample solutions provided one to two weeks later;
- Assignment specifications;
- A sample examination;
- Discussion groups;
- This Unit Guide outlining the administrative information for the unit;
- The unit web site on MUSO, where resources outlined above will be made available.

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

To pass this unit, a student must obtain :

- 40% or more in the unit's examination and
- 40% or more total in the unit's 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 assessment then a mark of no greater than 44-N will be recorded for the unit.

Assignment tasks

- **Assignment Task**

  Title : Assignment 1

  Description :

  Unix tools programming assignment (shell scripting)
  Weighting : 20%

  Criteria for assessment :

  Correctness; efficiency; quality of solution; documentation;
  Due date : Thursday 30 April 2009
- **Assignment Task**

  Title : Assignment 2

  Description :

  Unix systems programming assignment
  Weighting : 20%

Criteria for assessment :

Correctness; efficiency; quality of solution; documentation
Due date : Friday 22 May 2009

- **Assignment Task**

Title : Laboratory Exercises

Description :

Exercises held during laboratory sessions.
Weighting : 10%

Criteria for assessment :

Lab exercises are assessed during the scheduled laboratory session. Marks are awarded for successful completion of the laboratory exercises.
Due date : At the end of each lab session

Examinations

- **Examination 1**

Weighting : 50%

Length : 3 hours

Type (open/closed book) : Closed book

Assignment submission

Assignments will be submitted by electronic submission using the Unix-based *submit* program. Do not email submissions as they cannot be accepted. The due date is the date by which the submission must be received. Late submissions will be accepted up to one week after the due date, however penalties are imposed for late submissions.

Assignment coversheets

Electronic submissions must unclude the following header declaration in all source code submitted:

```
# Monash University, Faculty of Information Technology
# Student submission for FIT3042
# This submission is the original work of #YOUR NAME#, ID: #YOUR ID NUMBER#
# My email address is #YOUR_EMAIL_ADDRESS#
# I, #YOUR_NAME# declare that this submission is my own work and has not been
# copied from any other source without attribution. I have read the School and Faculty
# rules on plagiarism and I acknowledge that severe penalties
# exist for any copying of code without attribution, including a mark of 0
# for this assessment.
```

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.

Requests for extensions must be made to the unit lecturer at your campus at least two days before the due date. 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

Assignments received after the due date will be subject to a penalty of 5% per day, including weekends. Assignments received later than one week (seven days) after the due date will not normally be accepted. In some cases, this period may be shorter if there is a need to release sample solutions.

This policy is strict because comments or guidance will be given on assignments as they are returned, and sample solutions may also be published and distributed, after assignment marking or with the returned assignment.

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 within 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.