



MONASH University
Information Technology

FIT3042
System tools and programming languages

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.

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FIT3042 System tools and programming languages - Semester 1, 2011

This unit provides students with an introduction to UNIX tools for managing processes; searching, editing and modifying files and data streams; and command interpreters and shell scripts. In addition, students will learn about a typical system call interface and its use for systems programming in a language like C.

Mode of Delivery

Clayton (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

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

Prohibitions

CSE2391, CSE3391

Prerequisites

One of [FIT1008](#), FIT1015, CSE1303

Chief Examiner

Robert Merkel

Campus Lecturer

Clayton

Robert Merkel

Learning Objectives

At the completion of this unit students will have:

- knowledge of the Unix philosophy at shell and system call levels;
- comprehension of Unix shells and the POSIX standard;
- knowledge of the variety of tools available and understanding of a core selection of them;
- knowledge of the Unix system call interface and associated systems programming;
- programming skills at the Unix shell level using pipelines and shell scripts applying a number of tools;
- programming skills at the system call level for systems programming.

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 (3 hours): 50%; In-semester assessment: 50%

Assessment Task	Value	Due Date
Assignment 1	20%	Monday 18 April 2011
Assignment 2	20%	Friday 27 May 2011
Laboratory Exercises	10%	At the end of each lab session
Examination 1	50%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

The teaching and learning approach provides facilitated learning, practical exploration and peer learning, equipping you with the ability to apply skills upon completion.

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
- Test results and feedback

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

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

These may be accessed at no cost in Monash computer laboratories, or by remotely using a (freely-downloadable) ssh utility to log into the ra-clay Monash Linux server. Linux distributions are also downloadable at no cost, but no installation support will be provided for these.

Unit Schedule

Week	Date*	Activities	Assessment
0	21/02/11		No formal assessment or activities are undertaken in week 0
1	28/02/11	Unit Introduction, Editing with the Vim Editor	Laboratory Exercises are assessed at the end of each lab session
2	07/03/11	Introduction to C, Make	
3	14/03/11	C programming: Pointers & Data structures	
4	21/03/11	Unix C Programming	
5	28/03/11	Inter-process communication, the GLib utility library	Assignment 1 handed out
6	04/04/11	Introduction to shell programming	
7	11/04/11	Shell filters	
8	18/04/11	Shell programming	Assignment 1 due Monday 18 April 2011
Mid semester break			
9	02/05/11	Regular expressions	
10	09/05/11	Perl 1: scalars & arrays	Assignment 2 handed out
11	16/05/11	Perl 2: Perl regexes	
12	23/05/11	Perl 3: Perl modules, Perl 6.	Assignment 2 due Friday 27 May 2011
	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

Participants must attend at least 8 of the 11 labs.

- **Assessment task 1**

Title:

Assignment 1

Description:

C/Unix programming assignment

Weighting:

20%

Criteria for assessment:

Correctness; efficiency; quality of solution; documentation

Due date:

Monday 18 April 2011

- **Assessment task 2**

Title:

Assignment 2

Description:

Shell/Perl programming assignment

Weighting:

20%

Criteria for assessment:

Correctness; efficiency; quality of solution; documentation

Due date:

Friday 27 May 2011

- **Assessment task 3**

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

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

Recommended texts:

Practical Guide to Linux Commands, Editors, and Shell Programming, A (2nd Edition), Mark G. Sobell, ISBN978-0131367364.

The C Programming Language, Brian W. Kernighan and Dennis M. Ritchie (2nd edition). ISBN 9780131103627

The Linux Programming Interface, Michael Kerrisk, ISBN 978-1-59327-220-3

Programming Perl, Third Edition, Larry Wall, Tom Christiansen and Jon Orwant. ISBN 978-0-596-00027-1