Unit Outline: KXA456 Computation and Functional Programming

Semester 1, 2004

Sandy Bay Campus, Hobart
Newnham Campus, Launceston

Prerequisites
None

Corequisites
None

Unit Weight
12.5% of one academic year

Unit Coordinator
Neville Holmes

Scheduled Teaching Sessions
Lectures: 4 hr/wk
The Unit Timetable can be accessed from the Study Resources section of the School website. (http://www.comp.utas.edu.au/app/studyresources.jsp).
All sessions are delivered via video conference.

Unit Website
The unit website is accessed from http://vista.utas.edu.au/. You will need to use your university email pop account username and password to log on to the WebCT system. Once authenticated by the system your personalised MyWebCT area will be displayed. It contains links to the websites that you have permission to access - including the website for this unit.
This unit is Web Dependent: content & communication. This means that you will need to use the Web for this unit. The unit website contains unit information and resources.
If you are not able to access the unit website, please contact the University IT help desk:
  Entrance Level, Morris Miller Library, Sandy Bay Campus;
  Entrance Level, Launceston Campus Library, Newnham Campus.
The 1300 number is a local call from within Tas, with the exception of mobiles.
Email: servicedesk@utas.edu.au
Website: http://www.utas.edu.au/servicedesk/student/index.html

University Website
Information and Resources for 'Current Students' are available on the university website at: http://www.utas.edu.au/students/

Provider
School of Computing - Faculty of Science, Engineering, and Technology. http://www.comp.utas.edu.au

OVERVIEW

Introduction
This unit aims to investigate the computational aspects of problems using purely functional programming techniques. The first seven weeks of the unit introduce a functional programming language in its application to various algorithmic problems. Students are then required by then to have chosen a topic of their own, to investigate that topic using functional techniques, and to formally report their findings.
Classes will continue to meet after the seventh week but only for discussion of techniques needed by students in their project work.

Prior Learning
General programming skills

Objectives
On successful completion of this unit, you will be able to:

1. Program in a pure functional style
2. Apply functional programming techniques to practical ends

Unit Content
- Introduction to tacit J
- Basic functions
- Structural functions
- Basic operators
- Further operators
- Gerunds
- Foreign conjunctions for platform interfacing
Generic Skills

The university has defined a set of generic graduate attributes expected in its graduates. [http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RULES/POLGEN.html](http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RULES/POLGEN.html) Your course is designed to enable you to develop generic skills that are valued in, and expected of, graduates. These are skills that you will need to develop over time. Hence you are encouraged to look for opportunities, as you study each unit, to reflect on and improve these skills.

LEARNING AND TEACHING

Approach to Learning

You are expected to spend about 130 hrs studying in this unit - this includes attendance at scheduled teaching sessions. (For a 13 week semester this is, on average, 10 hr/wk.) This is the amount of study time that the 'typical' student will need to reach the level of competence and understanding required to fulfil the unit objectives.

You are expected to:

- attend all scheduled lectures, unless otherwise notified by the unit coordinator
- prepare for, and actively participate in lectures
- complete the assigned learning tasks
- review what has been learnt
- complete assessment items and submit them on time
- access and be familiar with the information and resources available on the unit website
- seek help from teaching staff if you have any questions or difficulties in studying this unit

You are encouraged to read the university's Code of Conduct for Teaching and Learning. Part A describes the 'Responsibility of the University to Students' and part B describes the 'Responsibilities of Students to the University'. [http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RULES/CTEA.html](http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RULES/CTEA.html)

Schedule

See the 'Schedule' section on the unit website.

There are four hours of lectures for the first half of the semester, and meetings for progress reports, tuition and consultation at the same time and place for the rest of the semester, each lasting as long as is needed up to the scheduled two hours.

Tutorial material will be made available weekly.

Project work: Tuition will be given in class meetings from Week 8 onwards as needed for the students' chosen projects.

Teaching and Support Staff

Teaching Staff

Unit Coordinator:

Neville Holmes
E-Mail: Neville.Holmes@utas.edu.au
Phone: (03) 6324 3393
Room: V168, Newnham Campus, Launceston

Lecturing Staff

Sandy Bay Campus, Hobart: Neville Holmes
Newnham Campus, Launceston: Neville Holmes

School Help Desk

Contact the School Help Desk if you have any queries or problems with accessing, using, or printing from the computers in the School of Computing labs.

- **Hobart:** the Help Desk is located near the School's reception desk and is open in the morning from 9-11, and in the afternoon from 12-1 and 2-4, Monday-Friday. The phone number is 6226 2960.
- **Launceston:** the Help Desk is located near the entrance to the computing labs and is open in the morning from 10-12, and in the afternoon from 2-4:30, Monday-Thursday. On Fridays it is open from 10-12 in the morning and 2-4 in the afternoon. The phone number is 6324 3447.
- **Burnie:** the computer labs at the NWC are maintained by ITS. Please contact the University Help Desk for assistance. The 6 Macs are maintained by the School of Computing. If you have a query or problem that is specific to the School of Computing please phone the School of Computing Help Desk.
University Services and Support

The University has staff available to assist you, such as the:

- Learning Development Advisor
- Student Counselor
- Careers Advisor
- Disability Officer

For more information and contact details see the Services and Support section on the University 'Current Students' web page. http://www.utas.edu.au/students/

Resources

Unit Website

The unit website contains unit information and resources.

Prescribed Text

None

Readings

Descriptive material is available in lectures or on the website for the unit.

Software

The software that you will need to access the unit website and to study this unit, including general purpose software such as word processors, is provided on the computers in the School's computing labs. If you intend to use software on other computers please check that the versions are compatible.

The J interpreter is to be used. The free version of this interpreter available through the unit website should be adequate for any work to be done by the student.

Computing Facilities

The School has PC labs (Windows XP), Mac labs (Mac OS-X 10.3), and Networking labs at the Newnham and Sandy Bay campuses. It also maintains 6 Macs (Mac OS-X 10.3) at the NW Centre. Unix accounts can be accessed from all Macs and PCs.

If you have not used these facilities before please contact the School Help Desk to organise your account details. If you would like to access the facilities at the Newnham and Sandy Bay campuses after hours please contact the School Help Desk.

Please contact the School Help Desk if you have difficulty accessing or using these facilities.

Use of Facilities

Use of computing facilities provided by the School is subject to the School's Ethics Guidelines - http://www.comp.utas.edu.au/app/ethics.jsp. Copies of the guidelines are also available in all School labs. The School's facilities may only be used for study-related purposes, and may not be used for personal gain. The playing of games is strictly prohibited in all labs at all times. Before being granted access to the School's facilities, you will be required to sign a declaration that you have read and understand these guidelines, and that you will abide by them. Disciplinary action may be taken against students who violate the guidelines.

Occupational Health and Safety

The university is committed to providing a safe and secure teaching and learning environment. For more information see http://www.admin.utas.edu.au/hr/ohs/pol_proc/

ASSESSMENT

Assessment Items

Item 1

Title: Assignment 1
Type: In-Semester - individual assignment
Weighting: 5%
Due: Beginning of first Week 2 lecture

Assigned in Week 1 lecture

**Item 2**

Title: Assignment 2
Type: In-Semester - individual assignment
Weighting: 5%
Due: Beginning of first Week 3 lecture

Assigned in Week 2 lecture

**Item 3**

Title: Assignment 3
Type: In-Semester - individual assignment
Weighting: 5%
Due: Beginning of first Week 4 lecture

Assigned in Week 3 lecture

**Item 4**

Title: Assignment 4
Type: In-Semester - individual assignment
Weighting: 5%
Due: Beginning of first lecture of Week 5

Assigned in Week 4

**Item 5**

Title: Assignment 5
Type: In-Semester - individual assignment
Weighting: 5%
Due: Beginning of first Week 6 lecture

Assigned in Week 5

**Item 6**

Title: Assignment 6
Type: In-Semester - individual assignment
Weighting: 5%
Due: Beginning of first lecture of Week 7

Assigned in Week 6

**Item 7**

Title: Project
Type: In-Semester - individual project
Weighting: 70%
Due: Week 14

This is effectively a final examination

See the 'Assessment' section in unit website for more detailed information about assessment items.

**In-Semester Assessment**

Unless specifically stated in the specification of the assessment item provided on the unit website, it is required that:

- work submitted by a student is the work of that student alone OR
- where the assessment item is to be completed by a group of students, the work submitted by the group of students is the work of that group of students alone.
The six in-semester assignments are to be assigned in the second lecture of each week and to be handed in (posted electronically) by the beginning of the first lecture of the following week.

**Plagiarism**

Plagiarism is a form of cheating. It is taking and using someone else's thoughts, writings or inventions and representing them as your own, for example:

- using an author's words without putting them in quotation marks and citing the source;
- using an author's ideas without proper acknowledgment and citation; or
- copying another student's work.

If you have any doubts about how to refer to the work of others in your assignments, please consult your lecturer or tutor for relevant referencing guidelines, and the academic integrity resources on the web at [http://www.utas.edu.au/tl/supporting/academicintegrity/index.html](http://www.utas.edu.au/tl/supporting/academicintegrity/index.html).

The intentional copying of someone else's work as one's own is a serious offence punishable by penalties that may range from a fine or deduction/cancellation of marks and, in the most serious of cases, to exclusion from a unit, a course or the University. Details of penalties that can be imposed are available in the Ordinance of Student Discipline ? Part 3 Academic Misconduct, see [http://www.utas.edu.au/policy/subject.html#students](http://www.utas.edu.au/policy/subject.html#students).

The University reserves the right to submit assignments to plagiarism detection software, and might then retain a copy of the assignment on its database for the purpose of future plagiarism checking.

**Referencing**

The university document on plagiarism contains information about referencing the work or ideas of others. (See [http://www.utas.edu.au/plagiarism/](http://www.utas.edu.au/plagiarism/)) The preferred text referencing systems for the School is the Harvard system (also referred to as the author-date system).

**Submissions**

All in-semester assignment submissions (including electronic submissions) are to include an Assignment Cover Sheet which includes a statement confirming that the submission is your own work. If this undertaking is not signed, the assignment will not be marked. The Assignment Cover Sheet is available from the School Help Desk in Launceston and Hobart, and on the School's web site [http://www.comp.utas.edu.au/app/studyresources.jsp](http://www.comp.utas.edu.au/app/studyresources.jsp).

**Extensions**

Assessment items will not be accepted after the due date except under the conditions stated in the school policy on late assessment. [http://www.comp.utas.edu.au/app/late_assess.jsp](http://www.comp.utas.edu.au/app/late_assess.jsp)

**Final Grade**

Passing grades will be awarded based on the AVCC guidelines:

- PP at least 50% of the overall mark but less than 60%
- CR at least 60% of the overall mark but less than 70%
- DN at least 70% of the overall mark but less than 80%
- HD at least 80% of the overall mark

The maximum mark awarded to a student who fails the unit will be 44.

For more information, including other grades such as Supplementary and Terminating grades, see the School of Computing's guidelines for assessment - available at: [http://www.comp.utas.edu.au/app/assess.jsp](http://www.comp.utas.edu.au/app/assess.jsp)