MONASH University

FIT4033
Object oriented application programming in C++

Unit Guide

Semester 2, 2009

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Introduction

Welcome to FIT4033 Applications with C++. This is a 6 point unit.

Unit synopsis

This unit investigates the use of object-oriented languages to implement application software. Topics covered are aspects of object-oriented design, object-oriented programming, styles and idioms related to the C++ programming language, memory management, exception handling, the C++ standard library, performance and efficiency. Typical application areas studied include graphical user interfaces, event driven systems, simulations, and distributed systems

Learning outcomes

At the completion of this unit students will:

1. Understand object-oriented design and programming with C++ for large software development
2. Achieve sound knowledge of concurrent design and programming with programming languages which do not have built-in features to support concurrency like C++
3. Know how to develop high performance software with programming languages that do not support concurrency such as C++
4. Achieve sound knowledge and good experience of network and distributed programming using C++

Contact hours

2 hours of lectures/week, 2 hours of tutorials/week

Unit relationships

Prerequisites

FIT9017

Prohibitions

CSE4530

Relationships

FIT4033 is an elective unit.

Before attempting this unit you must have satisfactorily completed

CPE1001 or CSE1202 or FIT1002 or equivalent.

Students must have the following background:

 - Fundamental programming

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 - Introduction to OO design and programming

 - Operating system and networking

You may not study this unit and CSE3400 or CSE4530 in your degree.

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Teaching and learning method

2 hour lecture per week

2 hour tutorial per week

on-line information; discussion group; consultation

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system:
http://allocate.cc.monash.edu.au/

Unit Schedule

Week	Topic	Key dates
1	Introduction to Applications Programming - Basic Concepts	
2	Introduction to C++	
3	Object Oriented Programming Design and Construction	
4	Object Oriented Programming continued	
5	Introduction to Concurrent Programming	
6	Concurrent Programming Design Issues	
7	Concurrent Programming continued	Assignment 1 due
8	Introduction to Network and Distributed Programming	
9	Network and Distributed Programming with C++	
10	Network and Distributed Programming with C++ continued	
Mid semester break		
11	C++ Strengths and Weaknesses for OO, DP and CP	
12	Reading in Applications Programming	Assignment 2 due
13	revision	

Unit Resources

Prescribed text(s) and readings

- Stroustrup, B. The C++ Programming Language (3rd ed.), Addison-Wesley, 1997
- Easttom, C++ Programming Fundamentals, Charles River Media, 2003.
- Booch G., Object Oriented Analysis and Design, Benjamin Cummings, Latest Ed..
- Atkinson C., Object-Oriented Reuse, Concurrency and Distribution, Addison-Wesley, Latest Ed..
- Ben-Ari M., Principles of Concurrent and Distributed Programming, Prentice Hall, Latest Ed..
- Hughes C., Parallel and Distributed Programming with C++, Addison-Wesley, Latest Ed..
- Gregory A., Concurrent Programming: Principles and Practice, Benjamin Cummings, Latest Ed..
- Kleiman S., Shah D. and Smaalders B., Programming with Threads. Prentice Hall, Latest Ed..
- Lea D., Concurrent Programming in Java: Design Principles and Patterns, Addison-Wesley. Latest Ed..

Text books are available from the Monash University Book Shops. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

Recommended text(s) and readings

- Easttom, C++ Programming Fundamentals, Charles River Media, 2003.
- Booch G., Object Oriented Analysis and Design, Benjamin Cummings, Latest Ed..
- Atkinson C., Object-Oriented Reuse, Concurrency and Distribution, Addison-Wesley, Latest Ed..
- Ben-Ari M., Principles of Concurrent and Distributed Programming, Prentice Hall, Latest Ed..
- Hughes C., Parallel and Distributed Programming with C++, Addison-Wesley, Latest Ed..
- Gregory A., Concurrent Programming: Principles and Practice, Benjamin Cummings, Latest Ed..
- Kleiman S., Shah D. and Smaalders B., Programming with Threads. Prentice Hall, Latest Ed..
- Lea D., Concurrent Programming in Java: Design Principles and Patterns, Addison-Wesley. Latest Ed..

Required software and/or hardware

GNU gcc compiler set: g++ (compiler) and gdb (debugger)

Make build management tool.

Tread and Socket libraries (supplied).

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:

Weekly detailed lecture notes outlining the learning objectives, discussion of the content, required readings and exercises;

Weekly tutorial exercises;

A sample exam;

- 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.

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Assessment

Overview

Assignment work: 40%, Exam (3 hour): 60%

Faculty 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 44% then a mark of no greater than 44-N will be recorded for the unit.

Assignment tasks

Assignment coversheets

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.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

- ### Assignment task 1

  Title:
  > Assignment 1
  Description:
  > Object Oriented Programming and Concurrency
  Weighting:
  > 20%
  Due date:
  > Week 7

- ### Assignment task 2

  Title:
  > Assignment 2
  Description:
  > Object Oriented Programming and Network Programming
  Weighting:
  > 20%
  Due date:
  > Week 12

- **Assignment task 3**

  Title:
  > Lab work

  Description:
  > Weekly lab tasks to be completed during 2 hour lab session

  Weighting:
  > *10%*

  Due date:
  > Must be completed during weekly lab session

Examination

- **Weighting:** 50% (this is correct and different from the information in the overview of the subject due to 10% of the lab work)
  Length: 3 hours
  Type (open/closed book): Closed book

See Appendix for End of semester special consideration / deferred exams process.

Due dates and extensions

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 not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms:
http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html

Late assignment

Asignments received after the due date will be subject to a penalty of 5 marks 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.

Appendix

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams