

FIT2034
Computer programming 2

Unit Guide

Semester 2, 2013

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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FIT2034 Computer programming 2 - Semester 2, 2013

The emphasis in this unit is on the application of fundamental programming concepts using an object-oriented programming language. It also introduces more advanced object-oriented programming topics such as inheritance and polymorphism. It gives students a deeper understanding of programming and data structures by introducing recursion and dynamic data structures. It also gives more practical skills in designing, building and testing larger computer programs, including ones having graphical user interfaces, and utilising file I/O. Modern software tools to support programming activities of testing and group-based development are also demonstrated.

Mode of Delivery

- Caulfield (Day)
- Gippsland (Day)
- Gippsland (Off-campus)
- Sunway (Day)
- South Africa (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

Students will be expected to spend a total of 12 hours per week during semester on this unit as follows:

For on-campus students:

Lectures: 2 hours per week

Tutorials/Lab Sessions: 2 hours per week per tutorial

and up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

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

CPE1004, CSE1203, CSE2305, GCO1812, FIT1007

Prerequisites

FIT1040 or FIT1002

Chief Examiner

Mr Shane Moore

Campus Lecturer

Caulfield

Leah Garrett

Gippsland

Shane Moore

South Africa

Sheelagh Walton

Sunway

Jojo Wong

Academic Overview

Learning Outcomes

On completion of this unit, students will:

- attain programming experience through designing and constructing simple object-oriented programs using Java as the implementation language;
- demonstrate an understanding of advanced object-oriented concepts such as inheritance, polymorphism, and abstract classes and interfaces as provided for in Java;
- be able to create programs that provide a graphical user interface and use event handling;
- be able to write programs involving abstract and dynamic data structures, and implement algorithms for searching, insertion and deletion;
- be able to use the collection classes in the Java API;
- be able to implement algorithms that utilise recursion;
- have an understanding of design principles for building a multiple-class object-oriented program;
- be able to implement exception handling techniques;
- be able to use files for persistent storage of data;
- be able to construct test harnesses for multiple-class programs;
- demonstrate an understanding of the range and purpose of modern tools to support the process of programming complex software systems.

Unit Schedule

Week	Activities	Assessment
0	Register for tutorials and check out the unit website, review what you learned in FIT1002	No formal assessment or activities are undertaken in week 0
1	Topic 1: Introduction to Java	Practical classes commence
2	Topic 2: Strings, Scanner, Selection and Repetition	
3	Topic 3: Modularity with Methods and Classes	Assessed Practical (week 2 lab exercises) due
4	Topic 4: Object Orientation	
5	Topic 5: Understanding Object References	Assessed Practical (week 3 and 4 lab exercises) due
6	Topic 6: Arrays and Aggregation	
7	Topic 7: Inheritance and Polymorphism	Assessed Practical (week 6 lab exercises) due
8	Topic 8: Interfaces, Abstract Classes and Callbacks	Assessed Practical (week 7 lab exercises) due
9	Topic 9: File Input and Output, and Exceptions	
10	Topic 10: Graphical User Interfaces and Event Handling	Assessed Practical (week 9 lab exercises) due
11	Topic 11: Java's Collection API	
12	Topic 12: Techniques for Searching and Sorting	Major Assignment due 11:59pm on day of lab class
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your learning system.

Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Practical - Topic 2: Basic Console-Based Java Programs with Selection and Repetition	4%	Week 3
Practical - Topics 3 and 4: Modularity with Methods and Classes	4%	Week 5
Practical - Topic 6: Arrays and Aggregation	4%	Week 7
Practical - Topic 7: Inheritance and Polymorphism	4%	Week 8
Practical - Topic 9: File Input and Output	4%	Week 10

Unit Schedule

Major Assignment	20%	Major Assignment due 11:59pm on day of lab class in Week 12
Examination 1	60%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

Lectures are used to present new programming language concepts, and to present example code that uses these concepts.

Practicals are used to give you hands-on experience at programming using the newly taught concepts.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

([http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu](http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hurdles)

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at

<http://lib.monash.edu/tutorials/citing/>

Assessment Tasks

Participation

• Assessment task 1

Title:

Practical - Topic 2: Basic Console-Based Java Programs with Selection and Repetition

Description:

The practical exercises for the practical class on topic 2, which is done during week 2, will be assessed during the week 3 practical class. The work must be the result of your own individual efforts, with guidance given by your tutor (through answering questions you may have), or asked on the discussion forum.

Weighting:

4%

Criteria for assessment:

Broadly, the criteria used to assess your work will be:

1. Your ability to write small programs in Java which successfully compile and execute.
2. Your ability to use selection and repetition constructs to control a program.
3. Whether the program meets the behavioural requirements as specified.

Details on how grades are allocated will be explained in the specification.

Due date:

Week 3

Remarks:

For off-campus students, due dates of assessed practicals are Monday evening of the stated week. For on-campus students, you must submit to Moodle prior to the scheduled start time of the lab class of the stated week, as interviews will commence when the lab commences.

• Assessment task 2

Title:

Practical - Topics 3 and 4: Modularity with Methods and Classes

Description:

The practical exercises relating to topics 3 and 4 (Modularity with Methods and Classes, Object Orientation) will be assessed in the week 5 practical class.

Weighting:

4%

Criteria for assessment:

Broadly, the criteria used to assess your work will be:

1. Your ability to write methods and basic classes, to create a small multiple class program that compiles and executes without errors.
2. Your ability to explain how various object-oriented constructs have been incorporated into your program.
3. Whether the program meets the behavioural requirements as specified.

Details on how grades are allocated will be explained in the specification.

Due date:

Week 5

• Assessment task 3

Title:

Practical - Topic 6: Arrays and Aggregation

Description:

The practical exercises relating to topic 6 (Arrays and Aggregation) will be assessed during the week 7 practical class.

Weighting:

4%

Criteria for assessment:

Broadly, the criteria used to assess your work will be:

1. Your ability to use programming constructs to demonstrate an understanding of arrays, and the ArrayList class.
2. Your ability to explain how you used the programming constructs in your program.
3. Whether the program meets the behavioural requirements as specified.

Details on how grades are allocated will be explained in the specification.

Due date:

Week 7

• Assessment task 4

Title:

Practical - Topic 7: Inheritance and Polymorphism

Description:

The practical exercises relating to topic 7 (Inheritance and Polymorphism) will be assessed during the week 8 practical class.

Weighting:

4%

Criteria for assessment:

Broadly, the criteria used to assess your work will be:

1. Your ability to use programming constructs to demonstrate an understanding of inheritance and polymorphism.
2. Your ability to explain how you used the programming constructs in your program.
3. Whether the program meets the behavioural requirements as specified.

Details on how grades are allocated will be explained in the specification.

Due date:

Week 8

• **Assessment task 5**

Title:

Practical - Topic 9: File Input and Output

Description:

The practical exercises relating to topic 9 (File Input and Output) will be assessed during the week 10 practical class.

Weighting:

4%

Criteria for assessment:

Broadly, the criteria used to assess your work will be:

1. Your ability to use programming constructs to demonstrate an understanding of file-based input and output.
2. Your ability to explain how you used the programming constructs in your program.
3. Whether the program meets the behavioural requirements as specified.

Details on how grades are allocated will be explained in the specification.

Due date:

Week 10

• **Assessment task 6**

Title:

Major Assignment

Description:

In addition to the assessment of the preceding practical classes, there is a major assignment which will integrate concepts from many of the topics of this unit. The program will involve sorting and searching, graphical user interactions, inheritance and polymorphism, and file input and output.

Weighting:

20%

Criteria for assessment:

More specific criteria will be provided with the task specification document, but broadly, the criteria used to assess your work will include such things as:

1. Your ability to perform problem solving to create a working computer program from a given problem description
2. Your ability to apply object-oriented principles in designing a software solution.
3. Your ability to use inheritance and polymorphism techniques.
4. Your ability to implement association/aggregation.
5. Your ability to use techniques of file input and output.
6. Your ability to use a range of the Collections classes.
7. Your ability to construct a simple graphical user interface.
8. Your ability to appropriately deal with exceptions.
9. Your ability to follow industry standards in terms of documenting your programs.
10. Your ability to explain how you used various programming constructs in your program.
11. Your ability to ensure that the program meets the behavioural requirements as specified.

Details on how grades are allocated will be explained in the specification. A program which does not compile without errors will not be given a Pass or higher grade. A program which achieves all functional requirements but without using the expected programming

Assessment Requirements

constructs will not get a grade higher than a Credit.

Due date:

Major Assignment due 11:59pm on day of lab class in Week 12

Remarks:

You will not be given time during class to do this assignment. You will be able to start working on this assignment before the mid-semester break, although some aspects will not be taught until after the mid-semester break.

Examinations

• Examination 1

Weighting:

60%

Length:

3 hours

Type (open/closed book):

closed book

Electronic devices allowed in the exam:

None

Learning resources

Monash Library Unit Reading List

<http://readinglists.lib.monash.edu/index.html>

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
- Interviews
- Solutions to tutes, labs and assignments
- Other: Staff responses to queries posted in discussion forums

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.monash.edu.au/exams/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.

Resubmission of assignments

Assignments may only be submitted once and considered once for assessment purposes.

Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz). Please note that it is your responsibility to retain copies of your assessments.

Online submission

You must submit all your work to the relevant "Assignment" within Moodle before anything will be marked.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

Prescribed Software

You must have the Java SE 7 Software Development Kit (called the JDK) installed on your computer. This software can be downloaded for free from the internet by going to <http://www.oracle.com/technetwork/java/javase/downloads/index.html> and clicking on the 'download' button in the JDK column.

Note that some IDEs (see below) install their own version of the SDK - this is fine, provided that it is compatible to Java SE 7. Some IDEs require the SDK to be separately installed.

Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.

Stuart Reges and Marty Stepp. (2014). *Building Java Programs: A Back to Basics Approach*. (3rd Edition (2nd Edition also acceptable)) Addison Wesley (ISBN: 0-13-336090-3).

Recommended Resources

Useful Software

Whilst the JDK provides the compiler and runtime interpreter for the Java language, you will most likely want to make use of an Integrated Development Environment (IDE). You may use any IDE that you are comfortable with, but we strongly suggest you use **Eclipse**, because of the features included within it and its popularity within industry. Eclipse can be downloaded from: <http://www.eclipse.org/>

Examination material or equipment

It is a closed book exam. No material or equipment besides pens/pencils is permitted.

Other Information

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:

www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Academic integrity;
<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h>
- Assessment in Coursework Programs;
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po>
- Special Consideration;
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht>
- 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/dates/>
- Orientation and Transition; <http://intranet.monash.edu.au/infotech/resources/students/orientation/>
- Academic and Administrative Complaints and Grievances Policy;
<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h>
- Code of Practice for Teaching and Learning;
<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teac>

Graduate Attributes Policy

<http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h>

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 <http://www.monash.edu.au/students>. For Sunway see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in [my.monash](#) portal for more information. At Sunway, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

Disability Liaison Unit

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://www.monash.edu/equity-diversity/disability/index.html> Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway Email: dlu@monash.edu Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

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 the Student Evaluation of Teaching and Units (SETU) survey. 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, see:

www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Most unit evaluations in the past for this unit have rated the unit in the range 4-5. Not too much feedback has been received in recent offerings, and this semester the unit has undergone a significant redesign due to changes in the pre-requisite unit. However, changes we made in previous semesters as a result of feedback included:

1. To change the assignment weighting.
2. To focus on programming skills rather than the implementation of prototype features in all practical assignments.
3. To align the assessment requirements with students' understanding of programming concepts rather than prototype features. The alignment was done by making individual labs assessed, and this assessment based on weekly learning objectives.

If you wish to view how previous students rated this unit, please go to
<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Other

Study Resources

Resources we will provide for your study are:

- This *Unit Information Guide* outlining the administrative information for the unit
- Weekly **Study Guide** modules, which include detailed objectives for each week's learning
- Weekly **lecture slides** and any **sample programs** used during lectures

Other Information

- Weekly practical tasks and solutions
- Assignment specification (and later a solution)
- Links to additional electronic resources (such as Java API documentation)
- Discussion forums
- The FIT2034 web site on Moodle, where most of the above resources can be located
- Lectures from some campuses are recorded and available for access at <http://mulo.monash.edu>