FIT2034
Computer programming 2

Unit Guide

Semester 2, 2014

Last updated: 15 Jul 2014

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FIT2034 Computer programming 2 - Semester 2, 2014

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 gives more practical skills in designing, building and testing larger computer programs, including ones having graphical user interfaces, and utilising file I/O.

Mode of Delivery

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

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour laboratory

(b.) Study schedule for off-campus students:

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

(c.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

Unit Relationships

Prohibitions

CPE1004, CSE1203, CSE2305, GCO1812, FIT1007

Prerequisites

FIT1040 or FIT1002

Chief Examiner

Dr Chris Ling

Campus Lecturer

Caulfield

Elliot Wilson

Gippsland

Shane Moore

South Africa

Sheelagh Walton

Malaysia

Jojo Wong

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' undertanding 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

Academic Overview

Learning Outcomes

On completion of this unit, students should be able to:

- implement basic programming concepts through designing and constructing simple programs using Java as the implementation language;
- explain object-oriented concepts such as inheritance, polymorphism, and abstract classes and interfaces and interpret how they are implemented in Java;
- apply the object-oriented design principles to a multiple-class object-oriented program;
- construct Java programs that include graphical user interface with event handling, collection classes, exception handling and files for persistent data storage;
- identify a range 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 exericses) due
4	Topic 4: Object Orientation	
5	Topic 5: Understanding Object References	Assessed Practical (week 3 and 4 lab exericses) 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 Friday.
	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.

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 Summary

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

Assessment Task	Value	Due Date
Practical - Topic 2: Basic Console-Based Java Programs with	4%	Week 3

Selection and Repetition

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
Major Assignment	20%	Major Assignment due 11:59pm on Friday in Week 12
Examination 1	60%	To be advised

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurd

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

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

constructs will not get a grade higher than a Credit.
Due date:
Major Assignment due 11:59pm on Friday 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 (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

Faculty of Information Technology Style Guide

Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see
http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html

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/student-academic-integrity-managing-pla 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:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ; 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

Faculty resources and policies

Important student resources including Faculty policies are located at http://intranet.monash.edu.au/infotech/resources/students/

Graduate Attributes Policy

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

Student Charter

www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.html

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 Malaysia 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 Malaysia, 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 Commuity Services at 03 55146018 at Malaysia
- 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, Malaysia Campus

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
- 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