SFWR ENG/ COMP SCI 2S03
Principles of Programming

(Version,September 4, 2012)

Instructor

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Teaching Assistants

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You also can seek help from Asghar Bokhari (bokhari) and John Nakamura (nakamura) at the Drop-in Centre (ITB/242).

Lectures: Monday, Tuesday, and Thursday from 1:30 PM to 2:20 PM in room ITB/137

Tutorial: There are 5 tutorial sections: T01 (Tu, 11:30AM), T02 (Mo, 11:30 AM), T03 (Th, 2:30 PM), T04 (Tu, 2:30 PM), T05 (We, 3:30PM). All the tutorials are in room JHE/210.

Prerequisites

COMP SCI 1MD3 or ENGINEER 1D04

Antirequisite

COMP ENG 2SH4, 2SH3

Calendar Description

Fundamental concepts of imperative programming (procedures, statements, control structures, iteration, recursion, exceptions); basic data structures (references, records, arrays, dynamic structures); basic concepts of operating systems.

Course objective

The course provides a comprehensive coverage of the fundamental programming concepts. It provides students with a foundation that can be used to move on to the more specialised and advanced technologies that use Java and other Object Oriented languages.

By the end of this course students will be able to understand

- the concept of an interface and the principles of designing and writing well-documented and well-structured programs.

- recursion and applications.

- the relation between efficiency and data representation.

- basic concepts of operating systems.

The course assumes no prior knowledge of programming beyond the basic skills required to use a computer.

Textbooks

We strongly recommend the following two books which are available at McMaster bookstore.

1. **Course Textbook:** Khalid A. Mughal, Torill Hamre, and Rolf W. Rasmussen. *Java Actually: A Comprehensive Primer in Programming*, Cengage Learning, ISBN: 978-1-84480-933-2.

2. **A Programming Style Guide:** Allen Vermeulen, Scott W. Ambler, Greg Bumgardner, Eldon Metz, Trevor Misfeldt, Jim Shur, and Patrick Thompson. *The Elements of Java Style*, Cambridge University Press, ISBN 978-0-521-77768-1.

Course Information on Web

At `http://www.cas.mcmaster.ca/~khedri/?page_id=98` you find the latest version of the course outline, the slides used in class, the assignments, the material needed or used in the tutorial sessions, and announcements. It is the student's responsibility to be aware of the information in the course Web pages, and to check regularly for announcements.

Some of the course website features are only accessible by students with a valid course password. A valid password can be obtained by students registered in the course via the course website.

Assessment Information

Assignments

There will be four (4) assignments. The best three (3) assignments will count toward the final grade for the course. Each one of the three assignments counts for 15%. Problem sets will be handed out and will be due around the following dates:

Problem Set	Handed Out	Due Date
A1	September 20	October 1
A2	October 11	October 22
A3	November 01	November 12
A4	November 22	December 03

Your solutions to the problem sets are due before **the beginning of the lecture** on the due date.

You are permitted to discuss *general aspects* of the problem sets with other students in the class, but each person should hand in her/his own work. You may consult outside sources, such as textbooks, but any use of **any** source **must** be documented.

Late assignments will be marked with a late penalty of 20% of the full grade per day (unless you provide the instructor with a *Course of Action for Missed Work* form delivered by the Associate Dean Office). Graded assignments and tests will be returned during tutorial sessions.

The assignments will be marked by the TAs. Any request for remarking must be first directed to the TA that has marked your assignment. After you have talked to your TA and still believe that you deserve a higher mark, then you can contact the instructor. When the instructor remarks an assignment or an exam, all the assignment/exam questions will be remarked.

Midterm exam

There will be one midterm exam. It will be a closed book exam. It will take place on *Monday, October 29*, from 1:30 PM to 2:20 PM (during the lecture time). The location of the midterm exam will be posted on the course website in due time. It covers material from the lectures, tutorials, assignments, and from the required textbook. The mid-term exam is worth 20% of the final score.

The midterm exam consists of two parts: a set of multiple-choice questions and a few programming (written) questions. For answering the multiple-choice questions of the exam, the standard McMaster forms are used. The forms are evaluated by the McMaster Optical Scanner. The multiple-choice forms are kept by the instructor and can be viewed by student on request to the instructor.

Final exam

The final examination will be scheduled by the Registrar's office in the usual way. It will be a three hours in duration and will cover the material of the lectures, tutorials, assignments, and of the required textbook. It consists of a multiple-choice part and a written part. The final exam counts for 35% of your final score.

Detailed course outline

- Structured programming: Basic programming elements; Program control flow.

- Object-based programming: Using objects; More on control structures; Arrays; Defining classes.

- Useful techniques for building programs: Sorting and searching arrays; Exception handling; Text file I/O and simple GUI dialogs.

- Object-Oriented Programming: Inheritance; Polymorphism and interfaces.

- Using dynamic data structures: Character sequences; Collections; Lists; Sets; Maps; Subtypes; Super-types; Specifying any type; Generic methods.

- Recursion: Recursion and iteration; Designing recursive algorithms; Infinite recursion.

- Exception handling: Exception classes; Throwing an exception programmatically; Handling several types of exceptions.

- Files and streams: Streams; Terminal window; Binary files; Object serialisation; Random access files.

- Graphical user interfaces

Policy Statements and Notes

1. **Missed assignment or exam:** You must submit appropriate documentation (e.g. note from physician) to the Associate Dean office. It is your responsibility to follow-up with the instructor. A zero will be entered for the missed work unless the instructor receives a *Course of Action for Missed Work* form delivered by the Associate Dean Office before submitting the final grades to the faculty.

2. **Tutorials:** Each group will have a one hour tutorial per week. Attendance at tutorials is compulsory. You MUST attend your assigned session of the tutorial.

3. The instructor reserves the right to adjust the grades for an assignment, midterm exam, or the final exam by increasing or decreasing every score by a fixed number of points.

4. The instructor reserves the right to increase by a fixed number of points the final scores of all the students **who handed in all the assignments and attended all the tutorial sessions** (except if the student misses a tutorial for a justifiable reason).

5. The instructor reserves the right to assign extra grades for extra work done by willing students. However, the work subject to extra grades should be advertised during the lectures.

6. A remarking request of an assignment or midterm exam is considered by the TAs and the instructor only if it is made **within the two weeks that follow the return date of the majority of the concerned assignment or midterm exam**.

7. The instructor reserves the right to require a deferred exam to be oral.

8. No responsibility for loss of assignments can be assumed by either the instructor or the Teaching Assistants. **Keep copies of your own assignments**.

9. Calculators are not needed for this course and their use will not be permitted during exams.

10. The lectures will not necessary follow the order in which the topics are presented in the detailed course outline. Regular class attendance is required.

11. Significant study, reading, and group discussions outside of class and tutorials are required.

12. **Suggestions on how to improve the course and the instructor's teaching methods are always welcomed.**

Important warning

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Discrimination

The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem that cannot be resolved by discussion among the persons concerned individuals are reminded that they should contact there Chair, the Sexual Harassment Office of the Human Rights Consultant, as soon as possible.

Academic Integrity

Students are reminded that they should read and comply with the Statements on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registrations and available in the Senate Office.

" Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g., the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at *http://www.mcmaster.ca/senate/academic/ac_integrity.htm.*

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g., the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorised aids in tests and examinations.

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