Faculty of Applied Sciences

SINF1151   Problem solving using computers

[+60h exercises] 7 credits

Teacher(s):   Kim Mens
Language: French
Level: First cycle

Aims

The goal of this "laboratory" is to give students a first experience with developing an object-oriented program
and giving them the occasion to construct a simple application from its specification until its implementation.
More specifically, the goals of this laboratory are to :
- give a more precise idea of how computer science can be used as a vehicle to solve problems in an organisation;
- let the students experience a software development process which includes the analysis of a simple problem,
the construction of a solution to that problem, and the implementation of this solution using a set of
software development tools;
- make the students familiar with the use of web technology as a communication tool.
- acquaint the students with working on a project in small groups.

Main themes

- analysing a simple problem;
- structuring a problem in terms of classes and methods;
- creating a simple Java program that is correct, modular, readable and well-documented;
- using a programming environment (BlueJ) : editor, compiler, debugger, file management system;
- using tests to verify program exactness;
- work in group with one or more other persons to achieve a non-trivial programming project.

Content and teaching methods

This course will be organised in two parts. During the first semester, the course is conceived as a course that supports the
parallel course, with 30 hours of practical sessions in the computer rooms. In the second semester the course becomes a
programming project, which will count for the largest part of the final course mark. Nevertheless, the first half of the course is
essential (and presence of the students is obligatory) because the basics of programming in Java will be introduced, explained
and trained.
The second half of the course will be organised as a programming project to be conducted by small groups of students.
Each group has to:
- analyse the problem;
- design the application to be implemented;
- implement the application (in Java);
- document the application (preconditions, postconditions, invariants, alternative solutions, algorithms used, manual);
- test the application;
- write a report;
- defend and give a demonstration of the final application.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites
SINF1160 - Introduction à l'algorithmique et à la programmation. Baudouin Le Charlier.
SINF1161 - Introduction à l'algorithmique et à la programmation. Baudouin Le Charlier.
References
John Lewis and William Loftus, Java Software Solutions: Foundations of Program Design. Addison-Wesley.
Support
The project details, the exercises of and solutions to the practical sessions and all other practical information related to the course will be made available on iCampus http://www.icampus.ucl.ac.be/LINF1151/
iCampus will also be the preferred means of communication between the students and the assistants and professor.
Evaluation
Different intermediate evaluations will contribute to the final mark of this course :
- one evaluation during the first semester (a test on the students' knowledge of Java will take place near the end of November or early December);
- two intermediate evaluations (on the progress of the programming project) during the second semester;
- an exam during the official exam session (June or September : final report, defence of the programming project and demonstration of the final application).
The evaluations during the year will be organised only once and having participated to these evaluations is a necessary condition for being able to pass the exam in June. The final mark of the course, attributed after the evaluation in June, is computed as follows:
- The evaluations throughout the year count for 2/3 of the total (= 67%)
- 15% for the Java test in first semester
- 26% for each of the intermediate evaluations in second semester
- The final report and defence during the exam in June will count for 1/3 (= 33%) of the final mark.
The evaluations held throughout the year will no longer contribute to the final mark in September, and having participated in the evaluations throughout the year is therefore no longer a condition to participate in the exam in September. However, the students will have to finish and improve the programming project achieved for the session in June and are also required to implement a non-trivial extension to the programming project. The final mark for the September session will therefore depend only on the quality of the produced code and its documentation, and will be evaluated based on a report and a project defence, as for the June session.

Other credits in programs

SINF11BA   Première année d'études de bachelier en sciences informatiques (7 credits)   Mandatory