UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Programming 2

2021-1-E3101Q106

Aims

At the end of the course the student is expected to master the major abstraction mechanisms useful in the analysis, the design and the testing of small Java software applications.

Contents

Basic elements of software design with UML. Object-oriented programming using Java. Usage of some Java libraries. Eclipse as IDE. Swing based graphical user interfaces. Testing and debugging exploiting JUnit.

Detailed program

1 Basic concepts:

- analysis, design, and programming

- abstractions: classification, generalization, aggregation

- UML notation: class diagram, object diagram

- Object-Oriented Programming

2 Class definition and objects instantiation:

- from the class diagram to Java classes

- memory management and references

- 1 to 1 associations

- 1 to many associations

- lists

3 Methods:

- instance methods

- overloading

- parameters of type class

- class method"

4 "Information hiding e encapsulation

- get e set methods

- visibility

- constructors

5 Eclipse, Junit, and Debug

6 Inheritance

- Uml and Java

- overriding

- costructors in derived classes

- polymorphism

- abstract classes and interfaces"

7 "Exceptions

- exception handling

- definition of exception classes

8 Examples of standard libraries:

- I/O

- collection framework

Prerequisites

Imperative programming (see Programming 1)

Teaching form

Lectures and recitations. Practice labs via e-learning, with tutor support and auxiliary leaning material (exercises, self-test questions).

The course will be given in Italian.

During covid-19 emergency, the lectures and recitations will be both online and recorded.

Textbook and teaching resource

Programmazione di base e avanzata con Java - seconda edizione, Walter Savitch, Edizione in Italiano, EAN 9788891904577, Pearson, 2018

Semester

Second semester.

Assessment method

The assessment of the exam consists of a written test, which is divided into two parts:

- The first part aims to assess theoretical knowledge. The test consists of a set of closed-answer questions delivered through the Perception platform.
- The second part aims to assess practical skills. The test consists in the implementation of a Java program whose specification is provided as a UML class diagram.

Evaluation criteria used: correctness of the answers given in the first part; quality of the solution and absence of redundancy in the second part.

During the course, two intermediate tests will be provided. These tests are written exams organized as described above. The passing of both intermediate tests allows the passing of the exam. The evaluation criteria are the same as for the overall verification.

Office hours

Contact by e-mail.