

Languages and Compilers

Person in charge: Rafael ANGARITA-AROCHA

Prerequisite: Knowledge of any programming language

Organization: lectures & labs (7 * 4 hours)

Evaluation: Project (40%), Exam (60%)

ECTS: 2.5 credits

Context

Programming languages are the foundations that allow programmers to control the machine and make it solve more or less complex problems. Depending on the intended field of application, the level of abstraction and expressiveness of the language varies, which explains the great diversity of languages available on the market.

Compilers are programs that, from a program written in a given language, generate the code directly executable by the machine. The construction of a language and its associated compiler is a complex process that will be detailed in a practical way in this module.

Objectives

Skills

In terms of skills, this module aims to introduce students to the construction of languages, design and implementation of interpreters and compilers.

Knowledge

This module enables students to develop the following concepts and skills.

- **Concepts**
 - Norms, certifications and guides
 - Law and Regulation
 - Social and societal aspects
 - Audit process: rules, key points, ethics, objectives
 - Forensic

- Policy for Governance
- Business Continuity Plan

- **Know-How**
 - Definition of a BNF grammar
 - Using Java parsers (JFlex, CUP, or equivalents)
 - Implementation of languages and compilers

Pedagogical Approach

Presentation of fundamentals with exercises and case studies (about 60% of the time). Practical implementation in the form of an individual project or in pairs.

References

- CUP : <http://www2.cs.tum.edu/projects/cup/>
- JFlex : <http://jflex.de/>
- Classgen : <http://classgen.sourceforge.net/>