

Guidelines for the Project¹

The project is an integral part of the course. Its mark contributes 30% to the final mark.

Topic

You are asked to develop a compiler for an application and a language of your choice. The compiler should develop the following aspects:

- Lexical Analysis: A LEX file with the various tokens to be recognized and the corresponding Regular Expressions;
- A Grammar specifying the syntax of the chosen language using YACC, the language can be a sub-language of C or a language at the choice of the students;
- Conflict Resolution: All the Shift/Reduce and Reduce/Reduce conflicts must be solved and YACC should not report (unless well motivated) any conflict;
- Semantic Rules: Mostly devoted to the construction of the Symbol Table where the variables are stored together with their types, and possibly a shallow form of Type Checking can be performed;
- To manage the Symbol Table, write access functions to manage a dynamic data structure (put in practice what you learned from the Data Structure course).

Evaluation

The project will be evaluated during an oral presentation in terms of the quality of the solution, which comprises:

- the complexity and originality of the programming language to be compiled;
- the data structures used in implementing the compiler, for instance for realizing the symbol table;
- the depth of the interaction with YACC in solving conflicts;
- the robustness of the compiler (does it work without breaking down?).

Teams

You can work in teams of up to three students.

¹These guidelines summarize the information given in the lectures, the labs, and in the course presentation form.

Material to Deliver

Your work should result in a package comprising the following documents and files:

- A short 1/2 page(s) documentation that explains the project, containing: a general explanation of what the compiler does, a grammar of the language that is parsed, a description of what the input should look like, instructions of how to run the program;
- LEX and YACC files;
- Examples of source code files (one that parses without errors and another with errors).

Submission

Upload a zipped file to the Teams course page, folder “Project”, by **Friday 28th August 2020, 11:59am**.

Project Presentation

The Project will be presented orally by each group on: **Monday, 31st August, 2020**