Introduction
MIF08

Laure Gonnord

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Lyon 1

What's compilation?

source language ⟶ | compiler | ⟶ targuet language

↓

errors
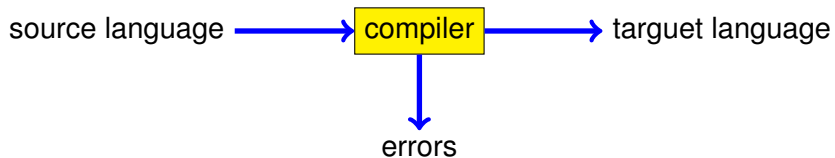
Compilation toward the machine language

We immediatly think of the translation of a high-level language (C,Java,OCaml) into the machine language of a processor (Pentium, PowerPC...)

```
% gcc -o sum sum.c
int main(int argc, char **argv) {
  int i, s = 0;
  for (i = 0; i <= 100; i++) s += i*i;
  printf("0*0+...+100*100 = %d\n", s);
}
```
$\longrightarrow$

```
0010011110111101111111111110000010101111011111100000000000010100
1010111110100100000000000010000010101111101001010000000000100100
1010111110100000000000000001100010101111101000000000000000011100
1000111110101110000000000000011100
```

But this is only one aspect, we will see more!

Course Objective

Be familiar with the mecanisms inside a (simple) compiler.
Beyond the scope: compilers optimisations of the 21th century.

Course Content

- Syntax Analysis : lexing, parsing, AST
- Evaluators
- Code generation
- (Code Optimisation)

Support language: Python 2.7
Frontend infrastructure : ANTLR 4.

Course Organization

- 4 TD groups: S. Brandel, L. Gonnord, N. Louvet, X.Urbain (@univ-lyon1.fr
- 6 (or 7) TP groups: S. Brandel, T. Excoffier, E. Guillou, S. Guelton+Kevin Marquet, (??), N. Louvet, X.Urbain.

The official URL :

http://laure.gonnord.org/pro/teaching/compilM1.html

Evaluation

- One "quick" during an exercise session (surprise!).
- 2 mini-projects.
- A final exam.