

PS N° 1 : Getting started

Basic elements of algorithmics

Learning Objectives

- Discover the Code::Blocks interface.
- Understand the concepts of the C language, compiler, and library.
- Create, compile, and run a first simple program in C.

1. Présentation du langage C

The C language is a general-purpose programming language created in 1972 by Dennis Ritchie.

Benefits :

- Fast and efficient.
- Portable (can run on different platforms).
- Widely used in operating systems (Linux, Windows), device drivers, embedded systems, and as the basis for many other programming languages (C++, Java, etc.).

2. What is a compiler?

A compiler translates the source code written by the programmer into machine code that can be executed by the computer.

Example: GCC (GNU Compiler Collection) is one of the most widely used compilers for C.

3. What is a library?

A library is a collection of ready-to-use functions that programmers can use instead of writing everything from scratch.

Example: The standard library `<stdio.h>` provides functions such as `printf` (for output) and `scanf` (for input).

A library is included in a program using the **`#include` directive**.

4. Introduction to Code::Blocks

Code::Blocks is an **IDE (Integrated Development Environment)** that includes:

- **An editor** → for writing source code.
- **A compiler** → for compiling the program and generating an executable file.
- **A debugger** → for finding and fixing errors.

Code::Blocks is available for free download from the official website:

[Code::Blocks official website](https://www.codeblocks.org/)

Main Interface Buttons

1. **New Project** → Create a new project.
2. **Open** → Open an existing project.

3. **Build** (gear icon ⚙) → Compile the program.
4. **Run** (green triangle ▶) → Run the compiled program.
5. **Build & Run** (gear icon ⚙ + green triangle ▶) → Compile and run the program in a single step.
6. **Stop** (red square ■) → Stop the program execution.

6. Practical exercises

Translate into C the exercises 5 → 9 of the TS series.

5. First program in C

Example: Display a text

```
#include <stdio.h> Inclusion of the standard I/O library

int main() {
    printf("Hello, I am a first-year Computer Science student!\n");
    return 0;
}
```

Steps in Code::Blocks

1. Ouvrir Code::Blocks → File → New → Project → Console Application (C).
2. Write the code in the editor.
3. Click on Build & Run.
4. Observe the result in the console.

Modify the program as follows :

```
#include<stdio.h>
int main()
{
    int A, B, S ;
    printf("Donner la valeur de A :");
    scanf ("%d" , &A);
    printf("Donner la valeur de B :");
    scanf ("%d" , &B);
    S = A+B ;
    printf ("Somme = %d" , S);
    return 0;
}
```

Modify the program by deleting the first two printf, what happens?
