Why Do We Need Programming Languages

The Role of the Central Processing Unit (CPU)

The CPU is the brain of the computer. It performs calculations and runs tasks. For example, it can quickly generate multiplication tables for the first thousand numbers, a task that would take humans much longer.

Writing Programs for the CPU

The CPU understands instructions in a format called binary, which is a sequence of 0s and 1s. Writing programs directly in binary is very difficult for humans because remembering and writing long sequences of 0s and 1s is impractical. This is where high-level programming languages come into play.

Programming Languages

Languages like C, C++, Java, and Python make it easier for humans to give instructions to the CPU. These languages have specific rules (syntax) that must be followed precisely. A small mistake can cause the program to fail.

Depending on the language you choose, we say that your code is either **compiled** or **interpreted** into machine code capable of being executed by your CPU. Most programming languages include a program called a **compiler** or an **interpreter** which performs this translation step.

COMPILER VS INTERPRETER

COMPILER	INTERPRETER
A compiler translates the entire source code in a single run.	An interpreter translates the entire source code line by line.
It consumes less time i.e., it is faster than an interpreter.	It consumes much more time than the compiler i.e., it is slower than the compiler.