Practical Programming Introduction

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http://www.debug-pro.com/epita/prog/s3/index.html

Programming Style

- Indent your code.
- Stay coherent.
- Stay clear.
- Identifiers should be explicit and short.
- 80 columns are enough.

Optimization

- *“Make it right before you make it fast. Make it clear before you make it faster. Keep it right when you make it faster.”*
  P.J. Plauger – The Elements of Programming Style
- *“We should forget about small efficiencies, say about 97% of the time: premature optimization is the root of all evil.”* Donald E. Knuth – Structured Programming with Goto Statements

Comments

- Even good code needs comments.
- Keep comments in sync with the code.
- Good comments are never a waste of time.

Main Types of Languages

Compiled Languages

- The source code is not executed.
- It is used to generate native machine code that will be executed by the microprocessor.
- Examples: C, C++, Go, Rust

Main Types of Languages

Interpreted Languages

- The source code is executed by an interpreter.
- No machine code is generated.
- Examples: JavaScript, PHP, Python

Main Types of Languages

Be careful! These definitions are purely theoretical.

In practice, some interpreted languages can be compiled and vice versa.

There are also *bytecode-compiled* languages that are compiled in an intermediate bytecode language, which is not the native machine code of the microprocessor. This intermediate language is then interpreted or just-in-time compiled (Java, C#).

Main Types of Languages

Lower-Level Languages

- Closer to hardware.
- Little abstraction from memory management.
- Less safe.
- Development process is slower.
- Execution is faster.

Main Types of Languages

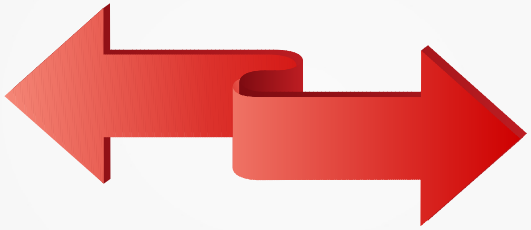
Higher-Level Languages

- Strong abstraction from hardware.
- Strong abstraction from memory management.
- Safer.
- Development process is faster.
- Execution is slower.

Main Types of Languages

Lower-Level

Less safe
More Control
Faster



Higher-Level

Safer
Less control
Slower

Assembly C++ Go Java Python Ruby

C C# PHP JavaScript

Usually Compiled

Usually Interpreted