

Emerging Technologies

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Languages

Go – Getting Started

Languages

Popular programming languages

JavaScript “high-level, dynamic, untyped, and interpreted”

SQL “special-purpose programming language”

Java “general-purpose, concurrent, class-based, object-oriented”

C# “multi-paradigm programming language”

PHP “ server-side scripting”

Python “high-level, general-purpose, interpreted, dynamic”

C++ “general-purpose, imperative, object-oriented and generic”

C “general-purpose, imperative”

Others Node.js, AngularJS, Ruby, Objective-C (in order).

Kinds of programming languages

Interpreted Software interprets the language at runtime.

Compiled Software translates the language into machine code, which is then run.

Systems Designed with operating system, device drivers development in mind.

Applications Designed with user applications development in mind.

High-level Abstraction from the nitty-gritty computer details.

Imperative Statements change the program state.

New languages

Go 2009 at Google.

Rust 2010 at Mozilla.

Swift 2014 at Apple.

Hack 2014 at Facebook, variant of PHP.

Scala 2004 at EPFL (Martin Odersky).

Julia 2012 at MIT.

Dart 2011 at Google.



I'm always delighted by the light touch and stillness of early programming languages. Not much text; a lot gets done. Old programs read like quiet conversations between a well-spoken research worker and a well studied mechanical colleague, not as a debate with a compiler. Who'd have guessed sophistication bought such noise?

— Dick Gabriel

People: Dennis Ritchie



Dennis Ritchie 1941-2011 (right)

- Helped Ken Thompson (left in above photo) to create UNIX.
- Created C, wrote book with Brian Kernighan.

People: Ken Thompson



Ken Thompson (left)

- Created UNIX.
- One of the creators of Go.

People: Brian Kernighan



- Wrote *The C Programming Language* with Dennis Ritchie.
- Coined Hello, world!.
- Wrote *The Go Programming Language* (with Alan Donovan).

People: Bjarne Stroustrup



- Created C++.
- Former head of Large-scale Programming Research at Bell Labs.

Places: Bell Labs



- Pretty much set up by Alexander Graham Bell.
- Eight Nobel prizes, two Turing awards.
- Owned by Alcatel-Lucent, who were bought by Nokia.

Go – Getting Started

Hello, World!

```
package main
import "fmt"
func main() {
    fmt.Println("Hello, world!")
}
```

Concurrency is builtin with light-weight goroutines, channels.

Fast compiling is a goal.

Packages are easily managed and dependencies are quickly resolved.

Type inference is available (sometimes).

C-like in syntax.

Tools like go fmt and godoc are builtin.

Garbage collection is builtin.