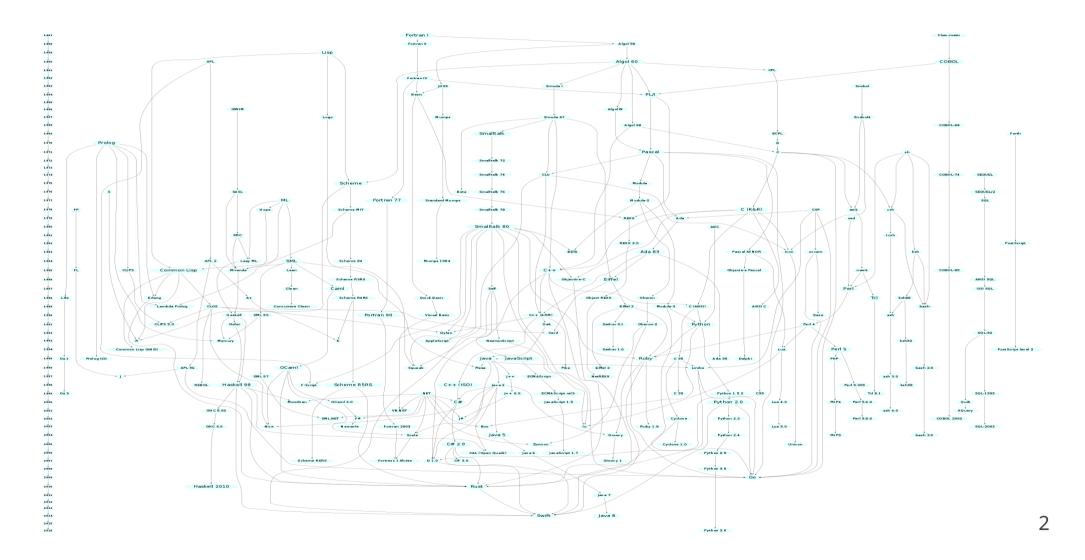
# Overview

Concepts of Programming Languages 4 October 2018

Johannes Weigend QAware GmbH

# **Evolution of Programming Languages**

## img/01-Languages.png (img/01-Languages.png)



#### Types of Programming Languages

**Imperative**: Assembler as root (Operations and Control Structures)

**Declarative:** 

Domain Specific Languages (HTML, XML, YAML, ...) => Limited in scope. Some are not Turing Complete.

**Procedural** (Control Structures and Procedures)

Fortran / Algol / Pascal / C

**Object Oriented** (Classes and Objects)

Smalltalk / Objective C / C++ / Eifel / Java / C#

Functional (Lambdas + Closures): Haskell, Erlang, F#

Logic: Prolog

Best of Breed: Kotlin, Scala, Rust, JS, Go

More Languages (https://en.wikipedia.org/wiki/List\_of\_programming\_languages\_by\_type)

## **Areas for Programming Languages**

- Application Programming (small / large scale, web, central, cloud)
- Systems Programming
- Network Programming
- Realtime Systems
- User Interface Programming
- Embedded Systems

4

### **Orthogonal Classifications**

- Static vs. Dynamic Typed
- Compiled vs. Interpreted
- Sequential vs. Parallel
- Static Linked vs. Dynamic Linked
- Safe vs. Unsafe (Crash a process or even the system)
- Simple vs. Complex
- Platform Independent Bytecode vs. Platform Dependent Assemblercode
- Plattform Dependent Compiler vs. Cross Compiler

\_

### Some Thoughts

- There are many solutions for a given problem
- The "best" language is nothing without a proper ecosystem (Libraries, Examples, Community)
- There are straight forward choices for a given platform (Mac: Swift + Objectiv-C, Linux: C + Python, Android: Java)
- Dont expect "Magic" from programming Languages
- Clean code and good programming is orthogonal to the language
- Learn more than one programming language at a professional level

# Thank you

Johannes Weigend QAware GmbH johannes.weigend@qaware.de (mailto:johannes.weigend@qaware.de) http://www.qaware.de (http://www.qaware.de) @johannesweigend (http://twitter.com/johannesweigend)