



# Xamarin

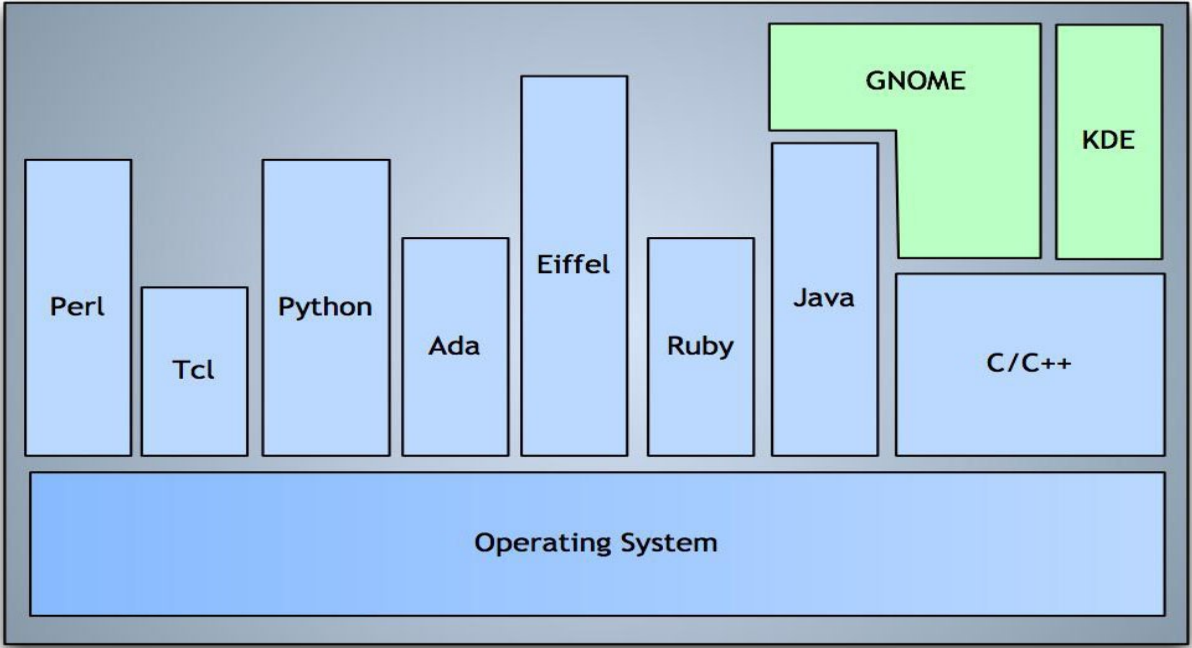
## The Mono Project

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# What is a development platform?

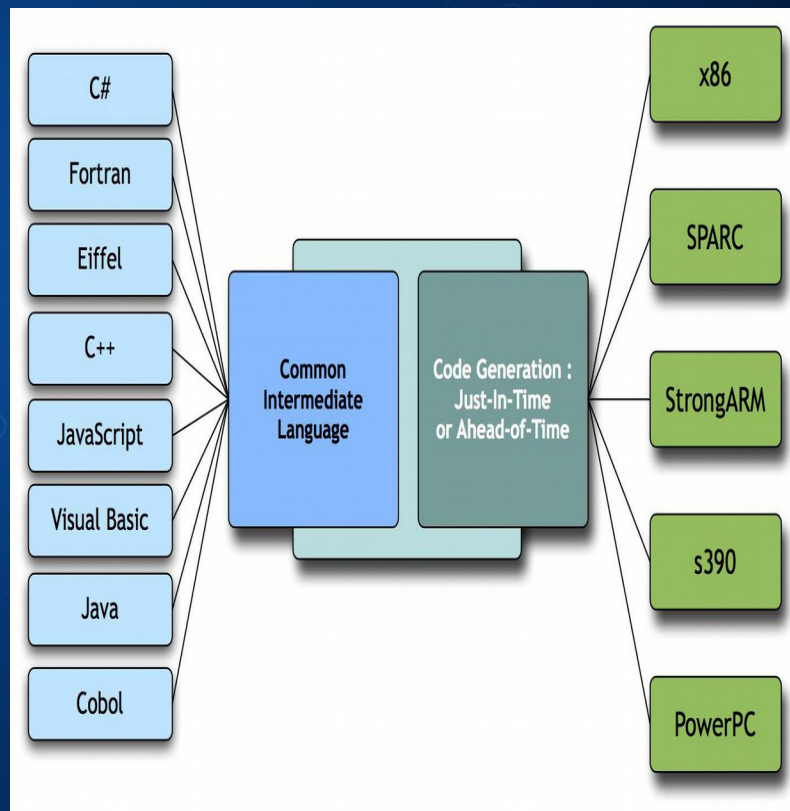
- Programming language(s)
- (Class) libraries
- Tools (compilers/linker, debugger, profiler, [interpreter], IDE)
- Runtime (virtual machine)
- Documentation
- Ecosystem of applications/developers

- HTTP
- Garbage Coll.
- Parsing
- GUI
- XML
- IO / VFS
- Threading
- Server
- Mime
- NNTP
- Indexing



# What is .NET?

- A development platform 1<sup>st</sup> introduced by Microsoft
- Multi-language (C#, F#, VB.NET, ...)
- Common Language Runtime (CLR)
- Available for Windows and Windows Phone
- ECMA standard



# .NET features

- Common Language Runtime (CLR)
- Garbage collection
- Object oriented
- Easy interface with unmanaged code
- Reflection
- Simplified deployment
- Security



# What is Mono?

- A free implementation of the .NET platform
- Created by Miguel de Icaza at Ximian to bring a modern development platform to Linux/GNOME
- Available today for Linux, Mac, Windows, Android, iOS, Xbox, ...
- And several hardware platforms (x86, SPARC, PPC, ARM, Alpha, MIPS, ...)
- A very active community
- Backed by Xamarin, Microsoft, IBM

# Mono History

- Started in 2001 by Ximian Labs Team as an experiment
- Soon 1<sup>st</sup> version of the compiler was working
- Initial implementation of the huge class libraries
- ECMA standard up to C# 4.5/5.0
- Extended class libraries (GNOME, KDE, ...)

# What can I use it for?

- Command-line tools
- Desktop (Linux, Mac, Windows) apps
- Mobile apps (Xamarin.Android, Xamarin.iOS, Windows Phone)
- Websites/web services
- 3D/games
- Anything



# C#

- Object oriented (OOP)
- Modern general-purpose programming language
- Includes everything you would expect in a modern language (Generics, events/properties, functional programming, lambdas, components)

# F#

- Functional language
- Can access the whole .NET class library
- Perfect for data analysis
- But can be used for anything, contrary to popular belief (see <https://github.com/dvdsgl/shallow> for an iOS app written in F#)

# Other languages

- VB.NET (forget about it)
- Boo, IronPython, IronRuby, IronLisp, Eiffel, Component Pascal, Nemerle
- C++/CLI (¿¿??)
- J# (Java), P# (Prolog), A# (Ada), Jscript.NET, L# (LISP)
- Anyone implementing the CLI

# Class libraries

- All basic stuff (multithreading, collections, IO, XML, class/method attributes, security, networking)
- Data queries (LINQ, System.Data)
- System.Drawing/System.Media
- Reflection/remoting/runtime interaction
- Accessibility/localization

# Tools

- Fully integrated IDE (MonoDevelop)
- Command line:
  - `mcs -o program.exe program.cs` (compiler)
  - `mono program.exe` (runtime)
  - `Mono -profile=log:... program.exe` (profiler)
  - Xbuild, msbuild



# Cross platform features

- The world is cross-platform
- Conditional compilation
- PCLs/Shared projects for business logic sharing
- UI sharing (Xwt, Xamarin.Forms)

# The future of .NET

- MS just open sourced a part of it (MIT license), and will continue doing so with other parts
- Creation of the .NET foundation
- Software market is multi-platform
- Mono adoption a big driver for this move
- Miguel de Icaza deserves many thanks for helping in this huge move for Microsoft
- Mono and .NET convergence?

# Q&A

- <http://mono-project.com>
- <http://www.dotnetfoundation.org/>
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