

# Vala (programming language)

**Vala** is an object-oriented programming language with a self-hosting compiler that generates C code and uses the GObject system.

Vala is syntactically similar to C# and includes notable features such as anonymous functions, signals, properties, generics, assisted memory management, exception handling, type inference, and foreach statements.<sup>[2]</sup> Its developers, Jürg Billeter and Raffaele Sandrini, wanted to bring these features to the plain C runtime with little overhead and no special runtime support by targeting the GObject object system. Rather than compiling directly to machine code or assembly language, it compiles to a lower-level intermediate language. It source-to-source compiles to C, which is then compiled with a C compiler for a given platform, such as GCC.<sup>[3]</sup>

For memory management, the GObject system provides reference counting. In C, a programmer must manually manage adding and removing references, but in Vala, managing such reference counts is automated if a programmer uses the language's built-in reference types rather than plain pointers.

Using functionality from native code libraries requires writing vapi files, defining the library interfacing. Writing these interface definitions is well-documented for C libraries, especially when based on GObject. However, C++ libraries are not supported. Vapi files are provided for a large portion of the GNOME platform, including GTK.

Vala was conceived by Jürg Billeter and was implemented by him and Raffaele Sandrini, finishing a self-hosting compiler in May 2006.<sup>[4]</sup>

## Contents

**Code example**

**See also**

**References**

**External links**

## Code example

A simple "Hello, World!" Vala program:

```
void main () {
    print ("Hello World\n");
}
```

## Vala



<b>Paradigm</b>	Multi-paradigm: imperative, structured, object-oriented
<b>Developer</b>	Jürg Billeter, Raffaele Sandrini
<b>First appeared</b>	2006
<b>Stable release</b>	0.48.6 <sup>[1]</sup> / 18 May 2020
<b>Typing discipline</b>	static, strong
<b>OS</b>	Cross-platform all supported by GLib, but distributed as source code only.
<b>License</b>	LGPLv2.1+
<b>Filename extensions</b>	.vala, .vapi
<b>Website</b>	wiki.gnome.org /Projects/Vala (http s://wiki.gnome.org/Projects/Vala)
<b>Influenced by</b>	C, C++, C#, D, Java, Boo

A more complex version, showing some of Vala's object-oriented features:

```
class Sample : Object {
    void greeting () {
        stdout.printf ("Hello World\n");
    }

    static void main (string[] args) {
        var sample = new Sample ();
        sample.greeting ();
    }
}
```

Sample code to show Vala interface with default implementation (mixin)

```
using GLib;

interface Printable {
    abstract string print ();
    string pretty_print () {
        return "Please " + print ();
    }
}

class NormalPrint : Object, Printable {
    override string print () {
        return "don't forget about me";
    }
}

class OverridePrint : Object, Printable {
    override string print () {
        return "Mind the gap";
    }

    override string pretty_print () {
        return "Override";
    }
}

void main (string[] args) {
    var normal = new NormalPrint ();
    var overridden = new OverridePrint ();

    print (normal.pretty_print ());
    print (overridden.pretty_print ());
}
```

An example using GTK to create a GUI "Hello, World!" program (see also GTK hello world):

```
using Gtk;

int main (string[] args) {
    Gtk.init (ref args);

    var window = new Window ();
    window.title = "Hello, World!";
    window.border_width = 10;
    window.window_position = WindowPosition.CENTER;
    window.set_default_size (350, 70);
    window.destroy.connect (Gtk.main_quit);

    var label = new Label ("Hello, World!");

    window.add (label);
    window.show_all ();

    Gtk.main ();
    return 0;
}
```

The last example needs an extra parameter to compile on GNOME 3 platforms:

```
valac --pkg gtk+-3.0 hellogtk.vala
```

## See also

---

- Genie, a programming language for the Vala compiler with a syntax closer to Python.
- Shotwell, an image organiser written in Vala.
- Geary, an email client written in Vala.
- elementary OS, a Linux distribution with a desktop environment programmed mostly in Vala.

## References

---

1. "Vala - Compiler Using the GObject Type System" (<https://wiki.gnome.org/Projects/Vala>). GNOME Project. News section. Retrieved 20 June 2020.
2. "Vala: high-level programming with less fat" (<https://arstechnica.com/information-technology/2007/09/vala-high-level-programming-with-less-fat/>). Ars Technica. Retrieved 13 December 2011.
3. "A look at two new languages: Vala and Clojure" (<https://lwn.net/Articles/335966/>).
4. "Writing Multimedia Applications with Vala" (<https://web.archive.org/web/20120828170152/http://www.gnomejournal.org/article/80/writing-multimedia-applications-with-vala>). Archived from the original (<http://gnomejournal.org/article/80/writing-multimedia-applications-with-vala>) on 28 August 2012.

## External links

---

- Official website (<https://wiki.gnome.org/Projects/Vala>)
- ValaToWindows (<https://sourceforge.net/projects/valatowindows/>), Vala compiled binaries for Windows
- LibGee (<https://wiki.gnome.org/Projects/Libgee>), a collection library for Vala.
- API Documentation (<http://valadoc.org>)
- Vala sample code for beginners (<http://bazaar.launchpad.net/~sepisoada/vala-tutorials/ValaTutorials/files>)
- List of Vala programs ([https://wiki.gnome.org/Projects/Vala/Documentation#Projects\\_Developed\\_in\\_Vala](https://wiki.gnome.org/Projects/Vala/Documentation#Projects_Developed_in_Vala))
- web-vala (<https://code.google.com/p/web-vala/wiki/GettingStarted>), a simple web application framework for Vala
- Autovala, a program that automatizes and simplifies creating CMake and Meson files for Vala/C projects (<https://www.rastersoft.com/programas/autovala.html>)
- VLS (<https://github.com/benwaffle/vala-language-server>), Vala Language Server Protocol implementation in Vala
- GVLS (<https://gitlab.gnome.org/esodan/gvls>), Another Vala Language Server Protocol implementation in Vala
- The Vala community on GitHub (<https://github.com/vala-lang/>)

## Comparison with other languages

- Vala and Java (<https://wiki.gnome.org/Projects/Vala/ValaForJavaProgrammers>)
- Vala and C# (<https://wiki.gnome.org/Projects/Vala/ValaForCSharpProgrammers>)

- [Benchmark of Vala versus C# and C \(https://code.google.com/p/vala-benchmarks/\)](https://code.google.com/p/vala-benchmarks/)
  - [More Vala benchmarks \(https://code.google.com/p/vala-benchmarks/wiki/BenchResults\)](https://code.google.com/p/vala-benchmarks/wiki/BenchResults)
- 

Retrieved from "[https://en.wikipedia.org/w/index.php?title=Vala\\_\(programming\\_language\)&oldid=963520160](https://en.wikipedia.org/w/index.php?title=Vala_(programming_language)&oldid=963520160)"

---

**This page was last edited on 20 June 2020, at 07:12 (UTC).**

Text is available under the [Creative Commons Attribution-ShareAlike License](#); additional terms may apply. By using this site, you agree to the [Terms of Use](#) and [Privacy Policy](#). Wikipedia® is a registered trademark of the [Wikimedia Foundation, Inc.](#), a non-profit organization.