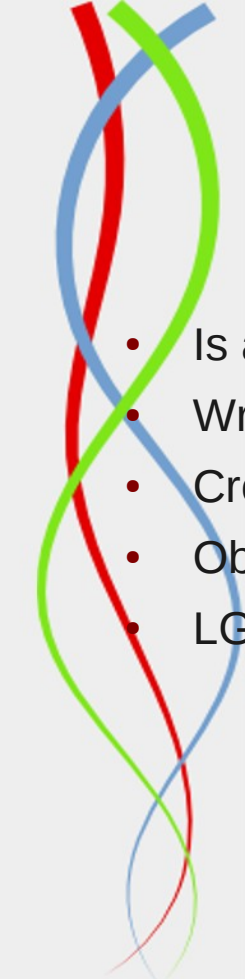




نگاهی به Gtk+3

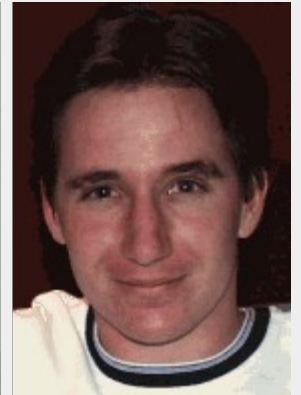
علی وکیلزاده

Gtk+

- 
- Is a Widget Toolkit
 - Written In C
 - Cross Platform
 - Object Oriented
 - LGPL 2

History

- 1995 Gimp Development Start
- 1996 Gimp First Public Release 0.54 (Motif)
- Gimp 0.60 (Gtk)
- Gimp 0.99 (Gtk+)
- 1997 Gnome Development started
- 1998 Gtk+ 1.0.6
- 1999 Gnome 1.0.0
- 2002 Gtk+ 2.0.9
- 2003 Gnome 2.0
- 2011 Gtk+ 3.0.11
- Gtk+ 3.1.10 (last version on git)



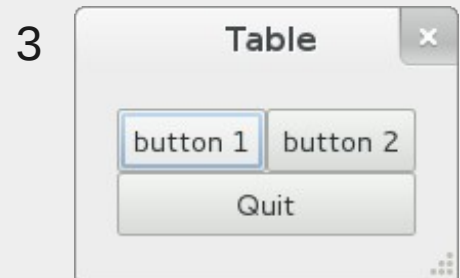
Gtk+

- The GTK+ library itself contains widgets, that is, GUI components such as GtkButton or GtkTextView.

- GtkSwitch
- GtkApplication
- GtkSettings
- Theming Changes



```
.tooltip {  
    padding: 4 4;  
    border-style: none;  
    background-color: @theme_tooltip_bg_color;  
    border-radius: 4;  
    color: #fff;  
}
```





GLib

A general-purpose utility library, not specific to graphical user interfaces. GLib provides many useful data types, macros, type conversions, string utilities, file utilities, a main loop abstraction, and so on.

- GLib Core Application Support
 - Basic Data Types
 - Threads
 - Thread Pools
 - GModule
 - Asynchronous Queues
 - Message Logging



Glib (2)

- GLib Utilities

- String Utility Functions
- Base64 Encoding
- Data Checksums
- Spawning Processes
- Commandline option parser
- Glob-style pattern matching (*.cpp)
- Perl-compatible RegEx
 - [First Group]
 - # Comment
 - Welcome=Hello
 - Welcome[de]=Hallo

- GLib Data Types

- Linked Lists
- Hash Tables
- Strings
- Pointer Arrays
- Byte Arrays
- Balanced Binary Trees



GObject

A library that provides a type system, a collection of fundamental types including an object type, a signal system.

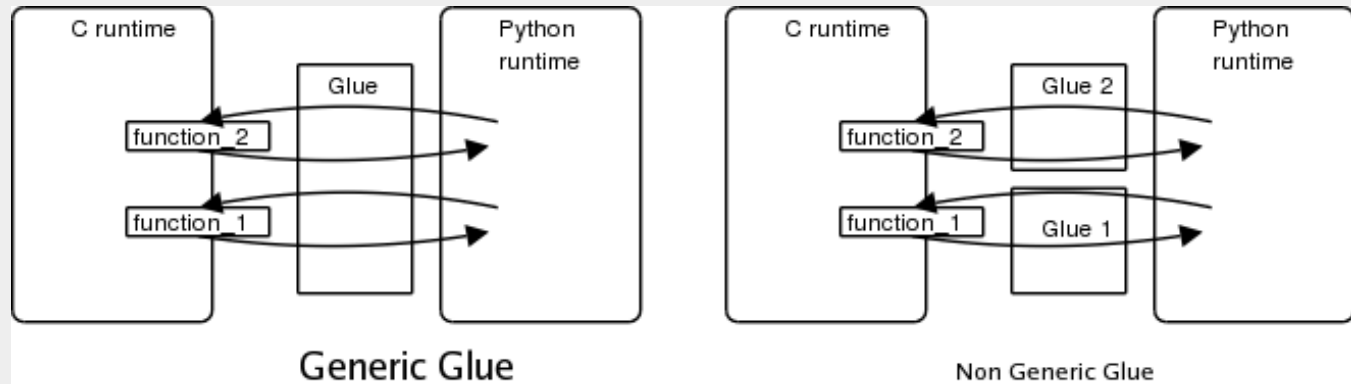
- signals
- object-oriented C-based API
- automatic transparent API bindings to other compiled or interpreted languages.

Object Introspection

- Find where the function is located.

This probably means finding the binary generated by the C compiler which exports this function.

- Load the code of the function in executable memory.
- Convert the Python parameters to C-compatible parameters before calling the function.
- Call the function with the right calling convention.
- Convert the return values of the C function to Python-compatible variables to return them to the Python code.





Gio

A modern, easy-to-use VFS API including abstractions for files, drives, volumes, stream IO, as well as network programming and DBus communication.


- File Operations
- File System Monitoring
- Zlib compressor/decompressor
- Gmount
- Gsocket
- TLS (SSL) support
- D-Bus Support
- GSettings

Other libraries in Gtk


- **Pango:** Pango is a library for internationalized text handling. It centers around the PangoLayout object, representing a paragraph of text. Pango provides the engine for GtkTextView, GtkLabel, GtkEntry, and other widgets that display text.
- **ATK:** ATK is the Accessibility Toolkit. It provides a set of generic interfaces allowing accessibility technologies to interact with a graphical user interface. For example, a screen reader uses ATK to discover the text in an interface and read it to blind users. GTK+ widgets have built-in support for accessibility using the ATK framework.
- **Cairo:** Cairo is a 2D graphics library with support for multiple output devices.
- **GdkPixbuf:** This is a small library which allows you to create GdkPixbuf ("pixel buffer") objects from image data or image files. Use a GdkPixbuf in combination with GtkImage to display images.
- **GDK:** GDK is the abstraction layer that allows GTK+ to support multiple windowing systems. GDK provides window system facilities on X11, Windows, and OS X










External Libs

- 
- LibGDA
 - GtkWebkit
 - LibPeas
 - C
 - Python
 - JavaScript

Program Libraris

- 
- Brasero
 - Epiphany
 - Evince
 - Gstreamer
 - Totem
 - Glade
 - Anjuta
 - Rhythmbox
 - Empathy
 - Evolution
 - Gedit
 - Abiword

Language Bindings

Language		2.8	2.10	2.12	2.14	2.16	2.18	2.20	2.22	2.24	3.0
C++ ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C# ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Java ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Python ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Javascript ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vala ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Perl ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruby ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PHP ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lua ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guile ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ada ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OCaml ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Haskell ↗		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FreeBASIC ↗		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D ↗		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fortran ↗		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Vala



- GObject Based Programming Language
- Java/C# Like syntax
- Can generate C code
- Cross Platform

```
using Gtk;

class Test: Window{
    public Window(){
        this.title = "First GTK+ Program";
        this.set_default_size (300, 50);
        this.position = WindowPosition.CENTER;
        this.destroy.connect (Gtk.main_quit);


        var button = new Button.with_label ("Click me!");
        button.clicked.connect (() => {
            button.label = "Thank you";
        });

        this.add (button);
    }

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

        var window = new Test ();
        window.show_all ();
        Gtk.main ();
        return 0;
    }
}
```

Summery

- 
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 - GObject
 - GObject Introspection
 - Gio
 - Other libraries in Gtk
 - External Libs
 - Program Libraris
 - Language Bindings
 - Vala