



Real Scripting with Lua

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Uses of Lua

- Widely used in some niches
 - not a “web language”
- Embedded systems
- Scripting for applications
- Games

Embedded systems

TVs (Samsung), routers (Cisco), keyboards (Logitech), printers (Olivetti, Océ), set-top boxes (Ginga, Verizon), M2M devices (Sierra Wireless, Koneki), calculators (TI-Nspire), mobiles (Huawei), ...

Scripting for applications

Wireshark, Snort, Nmap, VLC Media Player, lighttpd, LuaTeX, Flame, ...

Slashdot: News for nerds, Feb 1, 2012:

“Wikipedia Chooses Lua As Its New template language”

Adobe Lightroom
more than one milion lines
of Lua code





Enter door to LUA Bar

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CLOSE WINDOW



PlayStation.2

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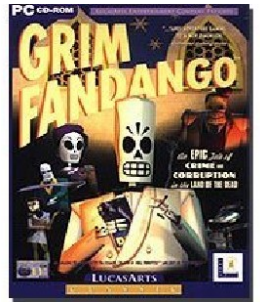
What About Lua?

- Yet another scripting language
- Goals
 - Emphasis on *scripting*
 - Portable
 - Small
 - Simple
 - Efficient

Scripting

- Scripting language x dynamic language
 - scripting emphasizes inter-language communication
- Program written in two languages
 - a scripting language and a system language
- System language implements the hard parts of the application
 - algorithms, data structures
 - little change
- Scripting *glues* together the hard parts
 - flexible, easy to change

Scripting in Grim Fandango



[The engine] doesn't know anything about adventure games, or talking, or puzzles, or anything else that makes Grim Fandango the game it is. It just knows how to render a set from data that it's loaded and draw characters in that set. [...]

The real heroes in the development of Grim Fandango were the scripters. They wrote everything from how to respond to the controls to dialogs to camera scripts to door scripts to the in-game menus and options screens. [...]

A TREMENDOUS amount of this game is written in Lua. The engine, including the Lua interpreter, is really just a small part of the finished product.

Bret Mogilefsky

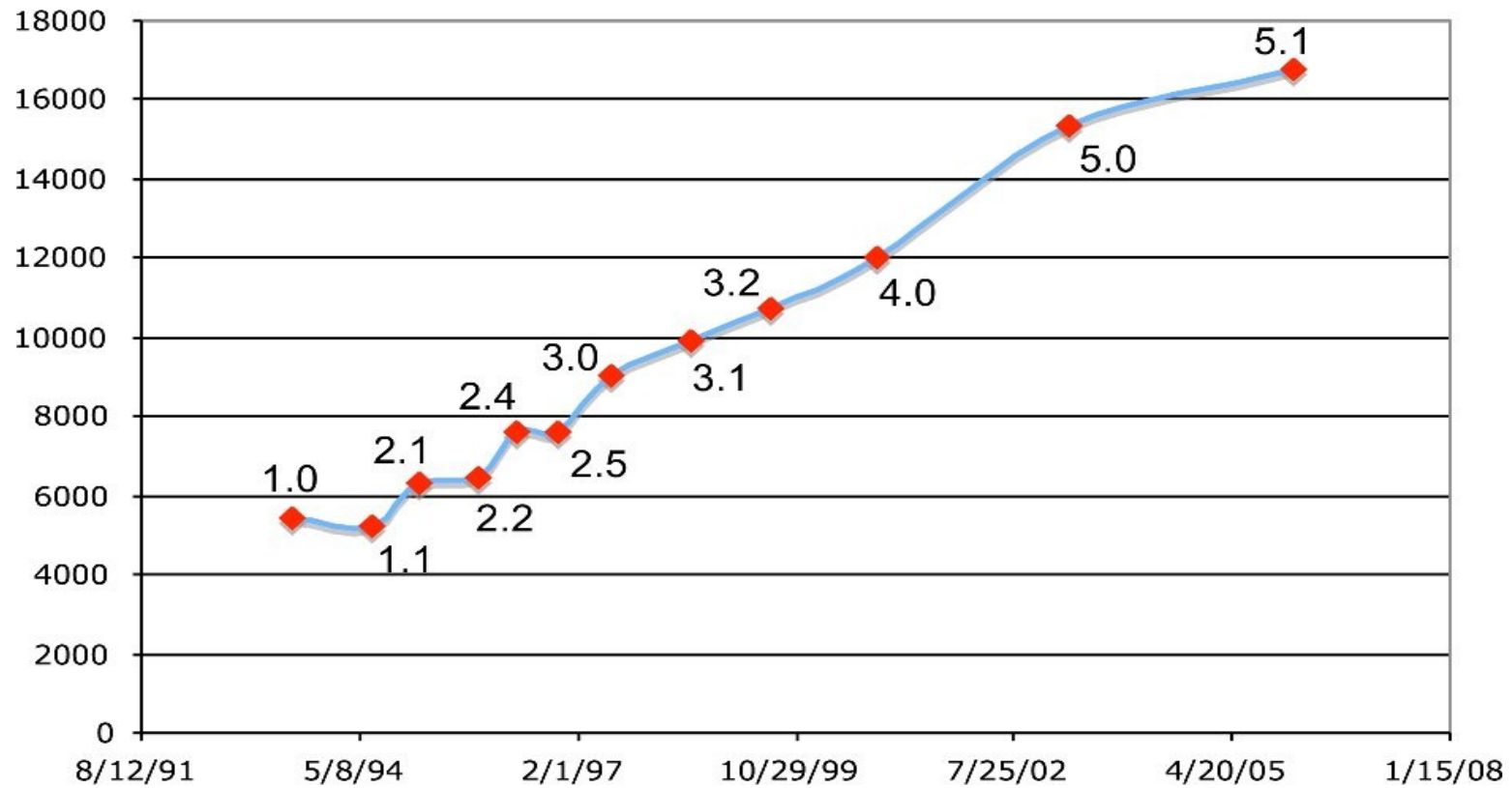
Lua and Scripting

- Lua is implemented as a library
- Lua has been designed for scripting
- Good for *embedding* and *extending*
- Embedded in C/C++, Java, Fortran, C#, Perl, Ruby, Python, etc.

Portability

- Runs virtually everywhere
 - Symbian, Nintendo DS, PSP, PS3, Android, iOS, IBM z/OS, etc.
 - Written in ANSI C
- Kernel is a free-standing application
 - Can run inside the OS kernel
 - Can run over the “bare metal”

Size

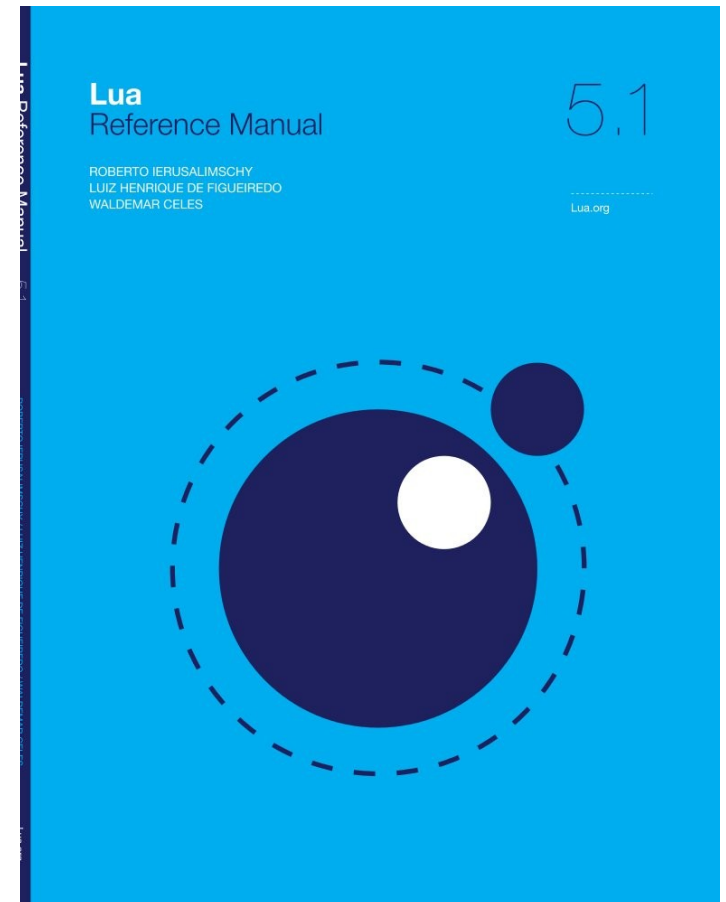


Simplicity

Reference manual with 100 pages

Documents the language, the C API, and the standard libraries

(spine)



Efficiency

- Several benchmarks show Lua among the fastest languages in the realm of interpreted languages with dynamic typing
- Mix of simplicity and some new techniques
- LuaJIT

Aren't these goals about the implementation, not about the language?

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No.

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No.

(Maybe, but big impact on language design.)

Impact on Design

- Emphasis on *scripting*
 - few syntactical constructions
 - function-style
- Portable
 - few standard libraries
 - even fewer primitive operations
- Small, Simple
 - minimalistic design
- Efficient

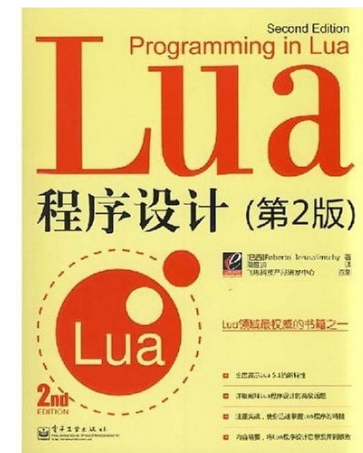
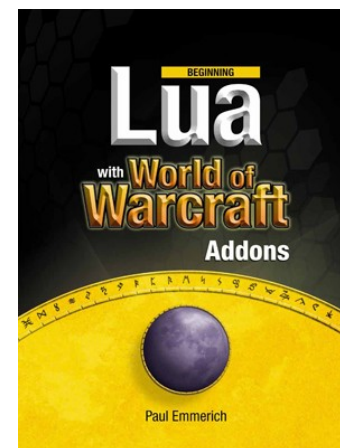
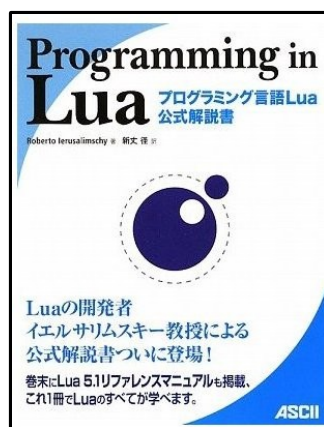
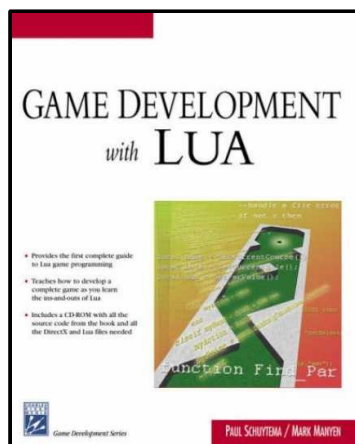
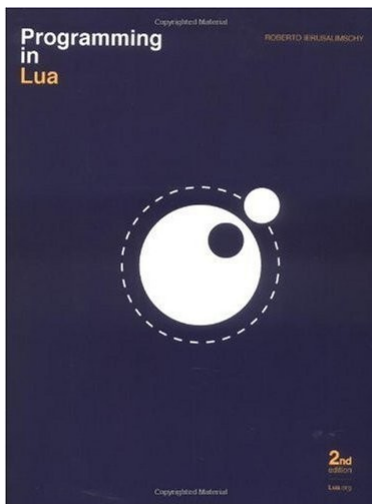
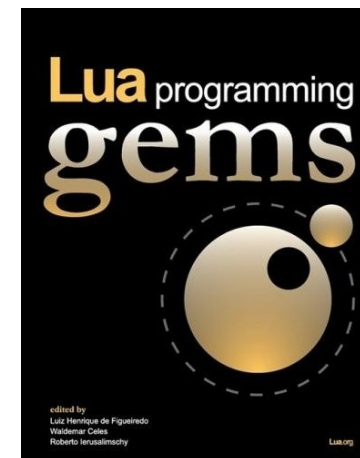
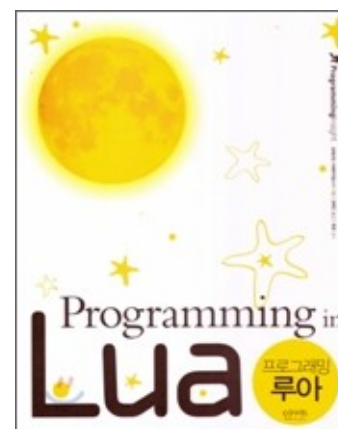
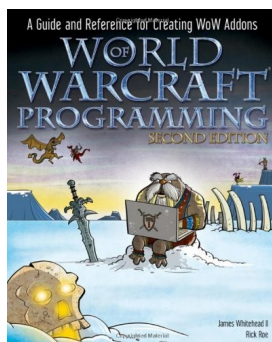
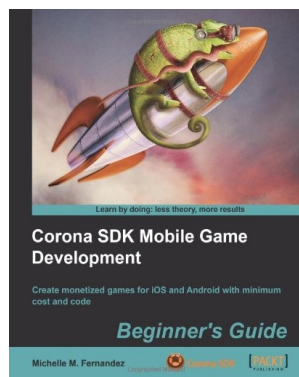
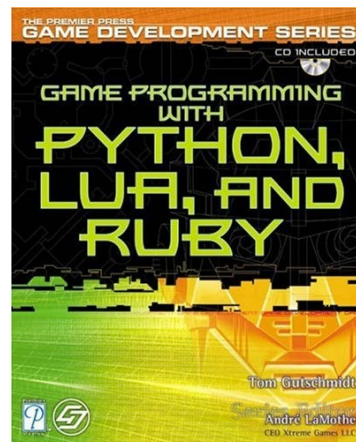
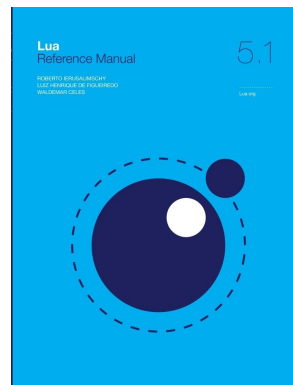
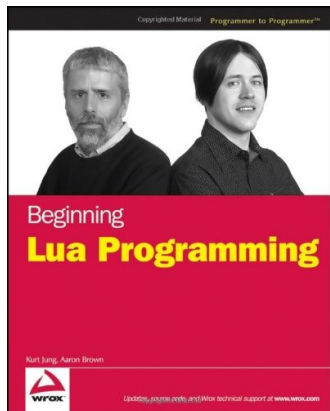
Lectures

- Introduction about Lua, scripting
- Tables
- Modules and Objects
- Coroutines
- API Lua-C



www.lua.org

Books



If programming languages were cars



Lua: cute, efficient,
and becoming very
trendy

[http://machinegestalt.posterous.com/
if-programming-languages-were-cars](http://machinegestalt.posterous.com/if-programming-languages-were-cars)

If programming languages were religions

Lua would be Wicca - A pantheistic language that can easily be adapted for different cultures and locations. Its code is very liberal, and allows for the use of techniques that might be described as magical by those used to more traditional languages. It has a strong connection to the moon.

[http://blog.aegisub.org/2008/12/
if-programming-languages-were-
religions.html](http://blog.aegisub.org/2008/12/if-programming-languages-were-religions.html)