Let's talk about Lua

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Slides online: tinyurl.com/veltas-lua

Questions at end, if time.

Lua

- made by
  - Roberto Ierusalimschy
  - Waldemar Celes
  - Luiz Henrique de Figueiredo
- *Pontifical Catholic University of Rio de Janeiro*

Lua

In order of importance:
1. popular
2. embeddable
3. easy
4. portable
5. small
6. fast

Use it for...?

- Games!
- Driving applications with scripts: "glue language"
- Using scripts within applications
  - AI
  - Config scripts
  - Entire Game Engines

Example

```
function factorial(n)
    if n == 0 then
        return 1
    else
        return n * factorial(n - 1)
    end
end
```

Some odd conventions

- 1-based indexing
- ~= is the inequality operator
- .. is the concatenation operator
- `object:method()`

Support

- IRC channel on Freenode: #lua
- Mailing list lua-l (search it)

Paradigm agnostic

- OOP is *hinted at* by the language
- Metaprogramming
  - Metatables
- Useful language features can be *implemented*
  - Inheritance, constness, properties, etc. with metatables
  - Useful for many domains
  - Semi-DSL

Metables inheritance/instancing

```
MyClass = {value = 5} -- New class: MyClass, value has default

function MyClass:New(obj) -- Define constructor for class
    setmetatable(obj, {__index = self}) -- fallback lookup
    return obj
end

function MyClass:DoSomething() -- Define method for class
    print(self.value)
end

Derived = MyClass:New{} -- Define class inheriting from MyClass

derivedObj = Derived:New{} -- Create object of Derived type

derivedObj:DoSomething() -- Use method on object
```

# Projects using Lua

# Typed Lua

- Lua analog of TypeScript
- No IDE, just compiler
  - with colours!
- Flexible deduction (not needed in prototypes)
- WIP
  - Better 'class' support
  - Module code is buggy

# Sailor!

- (Good) MVC web framework
- Open Source
- Lua is a good choice
  - Easy to add inline HTML etc. to Lua
  - Simple language, useful features
  - Low overhead
  - Probably 'scalable', *right?*

# LÖVE

- Open Source game engine
- Easily write simple 2D games
- Very flexible, has been used for professional game projects
- Good documentation
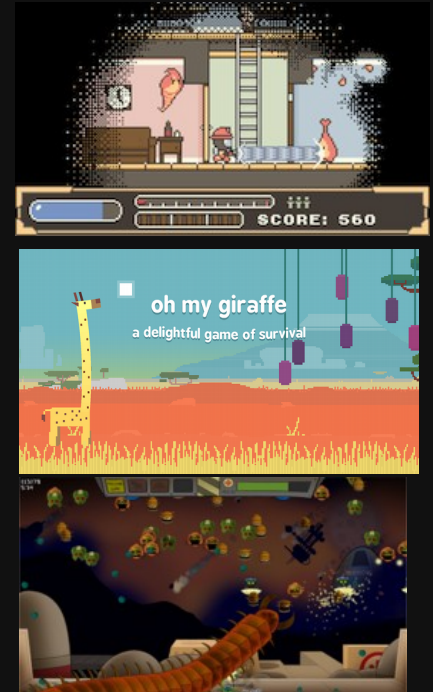
# Games using Lua

# *Grim Fandango* - 1998

- First game to use Lua

- Largely written in Lua

- Devs brought info to other developers at a GDC'99? scripting roundtable

- Back in the day there were some issues (which have all since been remedied)

# *World of Warcraft* - 2004

- Interface scripting with Lua added after release

- WoW now has many add-ons to improve the UI

- Lua introduced to much larger audience

# *Garry's Mod* - 2006 standalone

- Lua scripting added to v9, before standalone

- *"out of every feature added to GMod it was the most revolutionary"*

- Spawns the wide array of gamemodes in GMod

- Lua once again introduced to many more modders/devs

# Natural Selection 2 - 2012

- Company wrote an IDE for Lua (Decoda - now Open Source)
- Core dev team of 9 people
- Custom C++ engine (not Unreal or anything)
- Gameplay entirely written in Lua
- Devs used an "OOP without hierarchy" approach with Lua
- Used 'Mixins' in Lua
  - Attached functionality to different entities
- More on YouTube

# Some more games using Lua

- Baldur's Gate
- Escape from Monkey Island
- Multiple "The Sims" games
- Psychonauts
- FarCry
- Cobalt

- Crysis
- Some GTA titles
- Some Saints Row titles
- Star Wars: Battlefront I and II
- Fable II
- Angry Birds apparantly

# Question time

Possible topics:
- Lack of OOP conventions
- Using C/C++ API
- Training non-devs

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