Lua Scripting 5.1 Cheat Sheet by SrGMC

programming scripting c lua

Types

number
string
boolean
table
function
userdata
thread
nil

Variable type can be obtained with **type(variable)**
Note: Table index starts at 0, but can be extended to 0 or negative numbers

Arithmetic Expressions

Sum	+
Negation/Subtraction	-
Product	*
Division	/
Modulo	%
Power	^

Relational Expressions

Equal to	==
Not equal to	~=
Less than	<
Greater than	>
Less than or equal to	<=
Greater than or equal to	>=

Logical Operators

not
and
or

Even though Lua does not have a Ternary operator (condition ? truevalue : falsevalue), we can use *and* and *or* to achieve a similar effect:

```
value = (condition and truevalue) or falsevalue
```

In this case *and* returns truevalue when the condition is true and falsevalue otherwise

Tables

Tables are used with the table[key] syntax
Example:
> t = {foo="bar"} -- Same as t={["foo"]="bar"}
> t.foo
bar

They can also be used as arrays
a = {1, 2, 3}

But in this case, index starts at 1
a = {[0]=1, [1]=2}

Tables can be extended to index 0 or even negative numbers

Table size can be found with:
> a = {1, 2, 3}
> # a
3

Functions and modules

Functions
value = **function**(*args*) body **end**
function functionName(*args*) body **end**

Functions can be used as arguments:
function f(*f2, arg1*) f2(arg1) **end**

Return skips other code below it

Modules
A common module declaration usually is:
local mymodule = {}
function mymodule.foo() **print**(*"bar"*) **end**
return mymodule

As tables can have functions assigned to a key.

To import it, just do:
> module = require("mymodule")
> module.foo()
bar

Also, you can make private functions by putting local in front of the function declaration.

Math Library

math.abs(number)
math.acos(radians), math.asin(radians), math.atan(radians)
math.ceil(number), math.floor(number)
math.cos(radians), math.sin(radians), math.tan(radians)
math.deg(radians), math.rad(degrees)
math.exp(number), math.log(number)
math.min(num1, num2, ...), math.max(num1, num2, ...)
math.sqrt(number)
math.random(), math.random(upper), math.random(lower, upper)
math.randomseed(seed)
math.huge *--represents infinity*
math.pi

On trigonometric calculations, the number is expressed as radians.
On math.random() lower and upper are inclusive.
math.huge can be also represented with -math.huge

Control Structures

if/else statement
if (condition1) then
block
elseif (condition2) then
block
else
block
end

while loop
while (condition) do
block
end

repeat loop
Like while loop, but condition is inverted
repeat
block
until (condition)

Numeric for loop
for variable = start, stop, step do
block
end

Iterator for loop
for var1, var2, var3 in iterator do
block
end

Table Library

table.concat(table [, sep [, i [, j]]])	Concatenate the elements of a table to form a string. Each element must be able to be coerced into a string.
table.foreach(table, f)	Apply the function f to the elements of the table passed. On each iteration the function f is passed the key-value pair of that element in the table. Apply the function f to the elements of the table passed. On each iteration the function f is passed the key-value pair of that element in the table. *Deprecated*
table.foreachi(table, f)	Apply the function f to the elements of the table passed. On each iteration the function f is passed the index-value pair of that element in the table. This is similar to table.foreach() except that index-value pairs are passed, not key-value pairs. *Deprecated*
table.sort(table [, comp])	Sort the elements of a table in-place. A comparison function can be provided to customise the element sorting. The comparison function must return a boolean value specifying whether the first argument should be before the second argument in the sequence.
table.insert(table, [pos,] value)	Insert a given value into a table. If a position is given insert the value before the element currently at that position.
table.remove(table [, pos])	Remove an element from a table. If a position is specified the element at that the position is removed. The remaining elements are reindexed sequentially and the size of the table is updated to reflect the change. The element removed is returned by this function.

table.sort() example:
> t = { 3,2,5,1,4 }
> table.sort(t, function(a,b) return a<b end)
> = table.concat(t, ", ")
1, 2, 3, 4, 5

String

Classes. Table based

```
local Person = {}
Person.__index = Person

function Person.new(name, surname)
  local self = setmetatable({}, Person)
  self.name = name
  self.surname = surname
  return self
end

function Person.setName(self, name)
  self.name = name
end

function Person.getName(self)
  return self.name
end

function Person.setSurname(self, surname)
  self.surname = surname
end

function Person.getSurname(self)
  return self.surname
end

return Person

-- Import with ClassName = require("classname")
-- Use with local i = ClassName.init(params)
```

Faster to create. Does not have private attributes

Classes. Closure/Instance Based

```
local function MyClass(init)
    local self = {
        public_field = 0
    }

    local private_field = init

    function self.foo()
        return private_field
    end

    function self.bar()
        private_field = private_field + 1
    end

    return self
end

return MyClass

-- Import with MyClass = require("MyClass")
-- Use with local i = MyClass(init)
```

Can have private attributes. Slower to create