Module	CS4012 – Representation and Modelling
Day	1
Lab	1
Topic	Using the Lua interpreter

Summary

(program) : A series of coded software instructions to control the operation of a computer or other machine.

When we speak to a computer in the Lua programming language we do so through an interpreter. The Lua interpreter is just another computer program that performs or *executes* the coded instructions of a Lua program in a way that a computer can understand. Similar to the way a spoken language might be translated, the Lua interpreter can do this line-by-line or in one big chunk. Taking and executing code one line at a time is called the "interactive mode", while doing it in one big chunk is the "normal mode". Programs of several lines of code lend themselves to be translated line-by-line. Since our first Lua program is a single line long we will run it in interactive mode first, before going on to explore the normal mode approach. In keeping with programming tradition, our first program will output the message "Hello World".

Exercise 1: using the Lua interpreter online

The interface between you and the interpreter determines how it can be used. Combining the advantages of both the interactive and normal modes, many online Lua interpreter interfaces exist that allow you to write and test Lua code through your internet browser – even if you don't have Lua installed on your local machine.

Tasks:

1. Write your first program
   a. Use your browser to navigate to https://www.jdoodle.com/. From the home page options scroll to find and select Lua.
   b. Click the "Others" button and select "Clear all" to clear existing code from the "Your code" text box.
   c. In the "Your code" text box type the code statement "print("Hello World")" and click the "execute" button.
   d. Observed the output in the "Result" text box.

2. Experiment by altering the code
   a. The sequence of characters formed by "Hello World" is known as a string literal – literally a string of characters. Change the input string to "Hello Friend" and observe the result.
   b. A string is formed by enclosing a character sequence in quotes. It doesn't matter whether single or double are used, as long as the opening and closing quotes match. Observe the result of enclosing the input string with different opening and closing quotes.
   c. Lua code is case sensitive, try changing "print" to "Print" and make note of the output message.

3. Download your program
   a. Click the windows start button and navigate to your home folder. Create a new folder to contain your Lua code – a new one for each lab session is recommended.

b. Back in your browser, click the “Others” button and select “Download”; from the options that appear choose “open file “, which should open your code in a text editor.
c. From the text editor save your file to the folder created for your Lua code. Change the file name to “helloWord” and choose “.lua” as the file type.
d. Close your browser. Congratulations! You’ve just written and run your first Lua program.

Exercise 2: running the Lua interpreter from the command-line

Many interfaces exist for interactively using the Lua interpreter. The next to be considered is the Windows command-prompt - referred interchangeably as the command-line. It is a text based interface that runs typed commands that in the previous exercise were achieved by a mouse click.

The usage of Lua on the command-line has the following form: *lua [options] [script [args]]*

Breaking the command into in constituent parts: “lua” calls the interpreter; “options” tells the interpreter what mode to enter; “script” tells the interpreter where to find the big chunk of code; “args” allows additional data to be supplied to your script.

Tasks:

1. Open the command prompt
   a. Enter the start menu by clicking the Windows start button.
   b. In the *search programs and files* text box, type “cmd” and press enter.
   c. From the results that appear, select the “cmd.exe” program. This will open the Windows command prompt.

2. Run the interpreter in interactive mode
   a. At the prompt type the command “lua -i”, and press enter. This will call the interpreter in interactive mode.
   b. If successful, an output similar to the following should be displayed: *Lua 5.3.3 Copyright (C) 1994-2016 Lua.org, PUC-Rio*. Immediately below this line a new prompt (“>”) should be appear.

3. Output “Hello World” to the command-line
   a. At the prompt type the code statement “print(“Hello World”)”, and press enter. This will output the message “Hello World” to the command-line.
   b. Enter ctrl + z and exit the Lua interpreter.

4. Run the interpreter in normal mode
   a. At the prompt type the command “lua” followed by the file path of your program from Exercise 1, e.g. “C:\User \helloWorld.lua”.
   b. Observe the output to the command-line. After the last line of code executes the program file ends and the interpreter exits.

5. Run the interpreter in normal and interactive modes concurrently
   a. It may be desirable to enter the interpreter interactive mode instead of exiting after your program has finished. Call the interpreter as above, but in this instance supply the interactive mode (“-i”) option: “lua –i C:\User\ helloWorld.lua”.
   b. Enter a new print statement into the command-line (practice makes perfect) and then exit the interpreter.