CS330: Programming Language Project (PLP)

Assignment 5: Functions and parameter passing

Being able to write functions that can be called more than once and sent different information each time is a huge part of most programming languages. However, there are a lot of variations in how functions are declared, where they have to be put, how they accept parameters, and how the function output is returned. In your programming language, do the following:

- Check some programming guides for your language and implement a few of the functions described there
- Write a function that takes in two numbers, multiplies them, and returns the output
- Write a recursive function (if possible)
- Write a function that takes in a string (or your language's equivalent) and splits it into two strings, then returns both strings
- Call your functions from main, and save the results of the function calls in variables.
- Write a function that tests whether your language is pass-by-reference or pass-by-value.

For your write-up, answer the following questions:

1. **What is the syntax for declaring a function in your language?**
   The syntax is:
   function *functionName* () with the word end to stop the function.
2. **Are there any rules about where the function has to be placed in your code file so that it can run?**
   No, I didn't encounter any rules about where the function has to be placed in my code file.
3. **Does your language support recursive functions?**
   Yes, Lua supports recursive functions.
4. **Can functions in your language accept multiple parameters? Can they be of different data types?**
   Yes, Lua accepts multiple parameters and they could be of different data types.
5. **Can functions in your language return multiple values at the same time? How is that implemented? If not, are there ways around that problem? What are they?**
   Yes, Lua can return multiple values at the same time, and to do so, we use return with comma between each value. It has to be set to equal to two different values in the main functions.
6. **Is your language pass-by reference or value? Check your code against outside sources in case there is anything tricky going on (like in Perl).**
   From the code, it shows that Lua is a pass-by value, however the parameters in tables are pass-by-reference.
7. **Are there any other aspects of functions in your language that aren't specifically asked about here, but that are important to know in order to write one? What are they?**

Functions are also first class values like number and class. They could be stored in both global and local variables.

As always, write out the answers to these questions as though you were writing a guide for a new learner. Make your answers as clear as possible, and don't just answer the questions in one or two words. Explain the reasoning behind the answers as much as possible. If there is no clear-cut answer to a question, explain why not. And cite your sources!

Turn in both your code and your written answers, and be prepared to run your code for me in lab.