Programming Languages

Dr. Gurka, Spring 2019

March 13

Bonus Lisp Function

This is an extra credit Lisp function, points to be added to the Lisp quiz. Work must be complete, correct, and excellent to get the extra points. Use only the basic Lisp functions that were used for the homework. No collaboration, please.

Due: Sunday, March 17, 11:55 pm, on Moodle, with brief cover letter. Submit the .lsp file (containing the test plan) Your submission is your claim that all test cases worked correctly. I will run additional test cases. 5 points (= 10% of the Lisp quiz).

Function

The function is named check-call. It receives a list that is supposed to be a Lisp-like function call. Your function checks that a) the first item in the list is a valid function name, and b) it has the right number of arguments. The function returns true or nil. It does not check argument types.

The function has two parameters: 1) a list of valid functions and the number of parameters they require, and 2) the function call to be checked.

See the complete list of valid functions at the end. It’s a list of sublists, where each sublist has two elements. The first element is the function name (lowercase), the second is the number of arguments needed. Example, a list of three valid functions:

( (stuff 4) ; a call to stuff requires 4 arguments

(blob 1)

(thing 0) ) ; thing takes no arguments

The valid list is guaranteed to be non-empty, to be in the correct format, and to have only non-negative argument counts; it is not ordered in any way.

Test Plan

In the same fashion as the Lisp assignment, create a test plan for this function using the function list below. Each test case has three parts: English description (what particular category of data is being tested?), specific data to test the case, expected result / output. Test at least three good cases (valid function calls) and three bad cases. Do not test anything the function is not supposed to handle.

Sample good call, using the function list below:

(stuff 33 lst (a b c) 101)

Stuff is a legal function name and there are four arguments (which happen to be a number, a non-numeric atom, a list, and another number, but no types are checked).

Sample bad call: (thing happy)

The thing function doesn’t take any arguments.

Valid function list:

( (stuff 4) (blob 1) (thing 0) (flapdoodle 3) (thingie 1) (junk 3) (func 2) (fn 0)

(calc 4) (fun 2) )