



COMPUTER SCIENCE 312 (Winter Term 2021)  
**Programming Language Design**  
Prof. Levy

## Problem Set 4

Due on github 11:59PM Monday 23 March

### 1 Reading Assignment: *Essentials of Programming Languages*, Chapter 3, Sections 3.1 - 3.7

### 2 Programming Assignment

These are all simple additions to the interpreter. Download the interpreter code from the link next to where you downloaded this document, and add to it to do the exercises. You will have to add a little code to the `define-the-grammar` and `apply-primitive` routines. You will also have to add some code to implement argument checking for 3.9. When you add a piece of code, please comment it with the number of the problem that you are solving with that code (3.5, 3.6, etc.). No other comments are necessary.

To test your modifications, you can use the `run` function, as in `(run "add1(5)")`, or you can invoke the interpreter loop with `(read-eval-print)` and type your toy program at the `-->` prompt.

**Exercise 3.5**, page 79. You will find the built-in `display` and `newline` functions useful here. The `display` function takes one argument and prints it out. The `newline` function takes no arguments and prints out a carriage return.

**Exercise 3.6**, page 79.

**Exercise 3.9**, page 79. Make sure to implement the suggestion in parentheses about static argument-count checking: i.e., do it in the grammar. If you do this right, then, for example, `run("+ (3,4,5) ")` will give you a big ugly parsing error.

**Exercise 3.11**, page 81.