

**CS 4100, Fall 2017**  
**Lisp Programming**  
**November 17, 2017**

The purpose of this assignment is to get some hands-on experience using Lisp.

At one of the computers in the lab booted into OSX, you should be able to type “clisp” at the command line. If you have problems, check with Deep or me. To get out of clisp type “ctrl d”.

Please write code for the following problems. This needs to be your own work: you have the tools to do it. Any resources used must be cited. You should upload a text file to the homework submission system that shows your programs and the results of running them.

1. Write “Hello World” using the `print` function (it will print twice, this is fine).

2. Write a function that computes one root of a quadratic equation using the quadratic formula. In other words, use  $\frac{-b + \sqrt{b^2 - 4ac}}{2a}$ . Test your function on at

least:

```
(a b c) = (1 2 1);  
(a b c) = (1 4 4);  
(a b c) = (1 -4 4).
```

3. Consider the list:

```
((name (light bulb)) (mfgnr ge) (watts 60) (id 357)  
(quantity 6))
```

write a function to access the `id` using `car` and `cdr`. (Your function should return the value 357.)

4. Write the recursive `append` function we discussed in class and test it and `cons` on pieces of your favorite quotation (text).

5. Write a recursive function that computes the length of a list.

For example, `(mylen '(1 2 3 4))` should output 4.

And `(mylen '(blue green yellow brown red))` should output 5.

6. Write a recursive function to write a list in reverse order.

For example, `(myrev '(1 2 3 4))` should output `(4 3 2 1)`.

(Hint: there is a built-in function `list (arg)` that turns `arg` into a list.