

Project 0: Lisp Introduction and Set Operations

CSCI 561

August 21, 2018

1. Describe the Lisp development environment that you used for this project. (*Hint: The correct answer is SLIME or similar.*)
2. What are the types of the following Lisp expressions?
 - (a) `1` :
 - (b) `(+ 1 2)` :
 - (c) `'(+ 1 2)` :
 - (d) `(eval '(+ 1 2))` :
 - (e) `(lambda () (+ 1 2))` :
 - (f) `"foo"` :
 - (g) `'bar` :
3. Tail Calls:
 - (a) What is tail recursion?
Answer:
 - (b) In the recursive implementation, will `fold-left` or `fold-right` be more memory-efficient? Why?
Answer:
4. Lisp and Python represent code differently.
 - (a) Contrast the representations of Lisp code and Python code.
Answer:
 - (b) How does Python's `eval()` differ from the approach of Lisp?
Answer:
5. GCC supports an extension to the C language that allows local/nested functions (functions contained in other functions). A GCC local function can access local variables from its parent function.
 - (a) What problems would arise if you return a function pointer to a GCC local function? (*Hint: "Funarg problem"*)
Answer:
 - (b) How does Lisp handle this problem?
Answer: