COMP-335
Evan Chessman
Bryan Jensen
October 27, 2014

Homework #2 Written Answer

1. The worst case runtime for *get-fundef* and *lookup* is O(n), as worst case the identifier is not in the list and you have to iterate every element once. To improve runtime speed, we could use something like a dictionary from Python or a map from C++ to provide a constant time lookup speed, O(1), mapping from the identifier to the actual function definition.
2. The evaluation scheme for this interpreter is eager, as the function expects ExprC's in its argument slot, but immediately converts that expression into a number before storing it as a binding in the *env* variable.
3. Global pi
    a. There are multiple ways to solve this dilemma. The best approach we could think of would be to alter the "empty" *env* variable (*mt-env*) to include the *pi* variable by default.
    b. With the approach we suggested in (a), there would be no issue with the function calls given in example, and all three would evaluate to the same value, roughly 8.1416.
    c. The first print would output 10, and the second would print out 3.1416. The makes sense along with our understanding of scope defining two different *pi* variables, one inside the function *mypi* and one outside. Changing the value of one by passing in 5 as the value of the inner *pi* doesn't change the outer one, and you still get the original un-mutated 3.1416 *pi*.