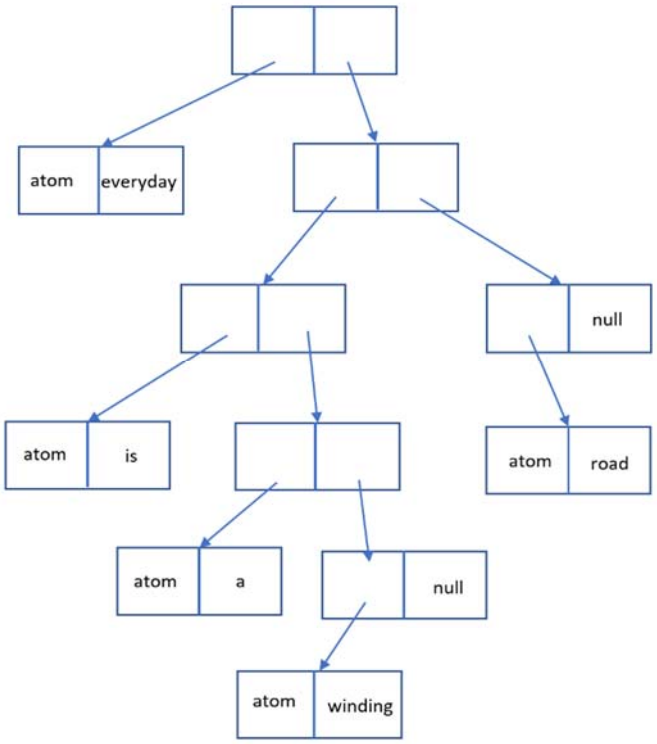
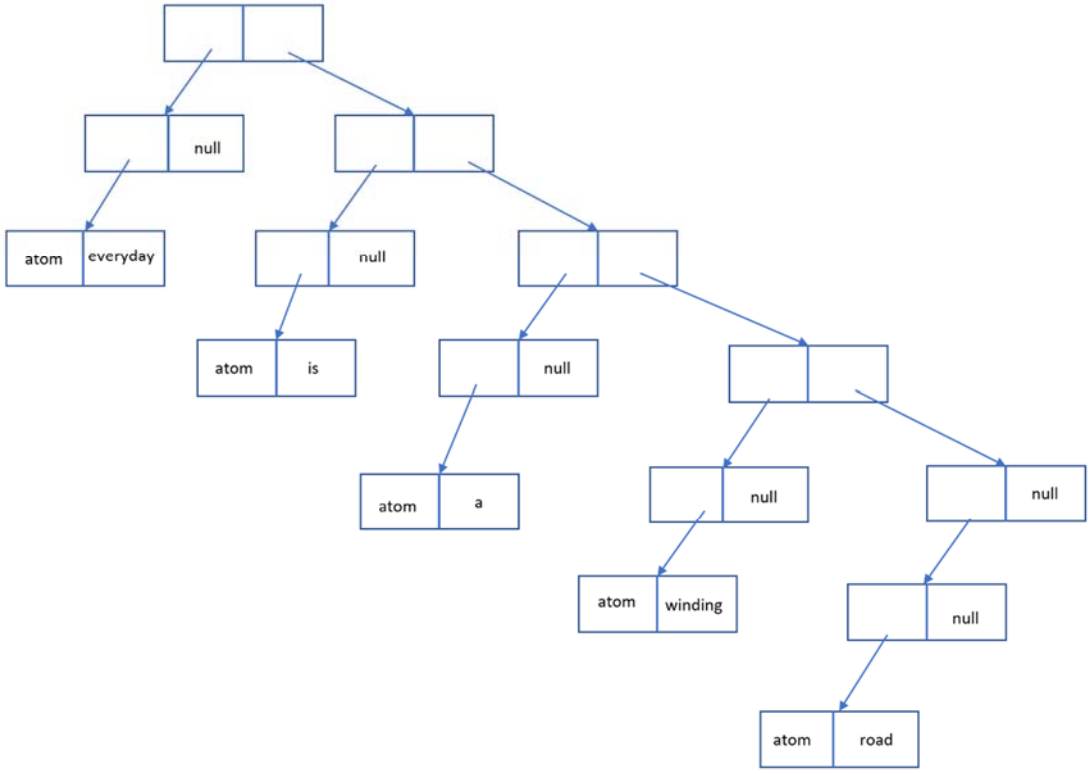
Homework 7 Solution
CMPSC 461 2018 Spring, Prof. G. Tan

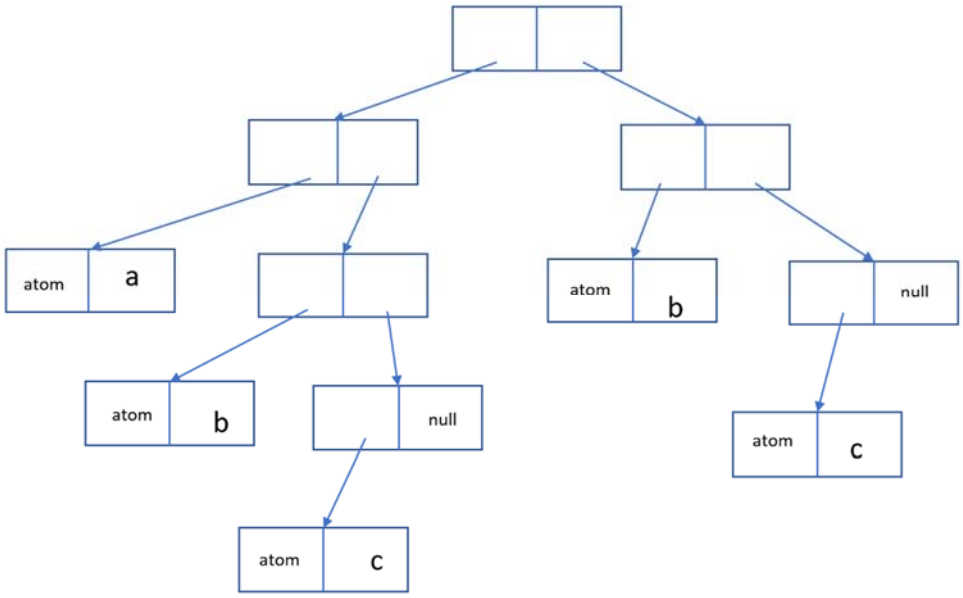
1 (4pts)
1.a



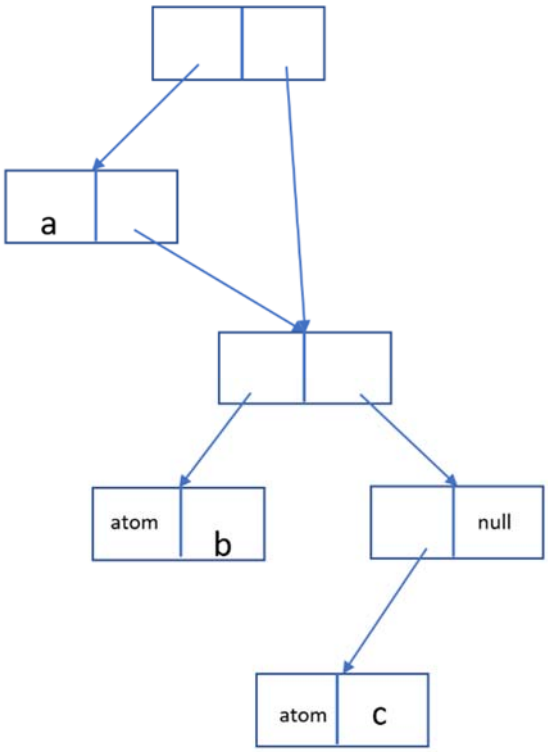
1.b



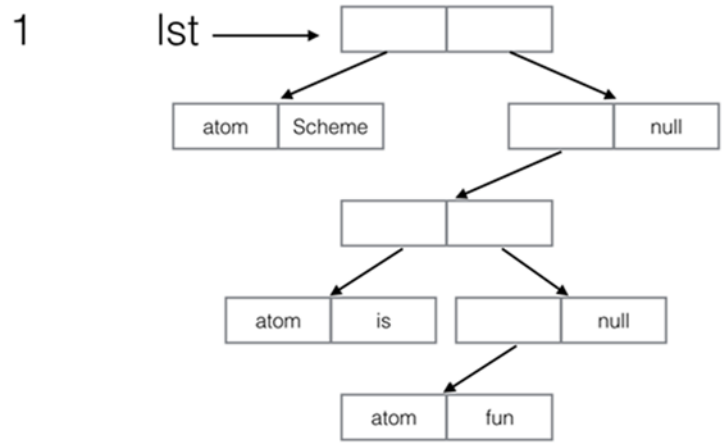
2 (4 points)
2.a



2.b

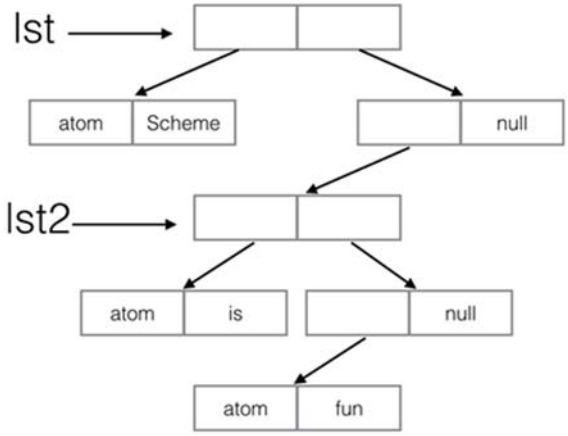


3.a (2 points)
(define lst ’(Scheme (is fun)))



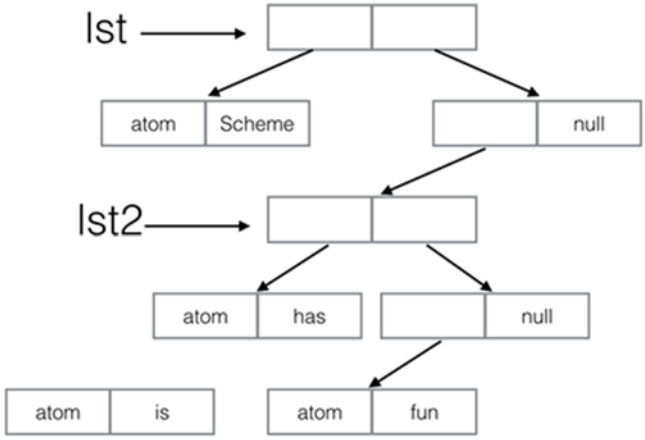
(define lst2 (car (cdr lst)))

2



(set-car! lst2 ’has)

3



3.b (1 pt) What is the value of lst at the end?

(Scheme (has fun))

3.c (1 pt) Suppose the system decides to perform a Mark-and-Sweep Garbage Collection at the end, which memory cells would be recycled?

The atom cell “is” is recycled at the end.

4 (3 points)

C/C++ programmers can use the Boehm-Demers-Weiser conservative garbage collector, which uses a mark-and-sweep algorithm. The package provides replacements for malloc() and new(); calls to free() and delete() are optional.