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Assignment 2

CS 4337.0U2

1. See first page for drawing
2. (caaar '((((() apple ()) orange (grape) banana)) apple))

= caar ’((() apple ()) orange (grape) banana))

= car ‘(() apple ()) orange (grape) banana)

= ( () apple () )

(caddr'((apple) orange (()(grape) banana)))

= cadr’(orange (()(grape) banana))

= car’((()(grape) banana))

= ( () (grape) banana )

(cadadr'( orange (()(grape () (apple)) banana)))

= cadar’( (()(grape () (apple)) banana) )

= cadr’(()(grape () (apple)) banana)

= car’((grape () (apple)) banana)

= ( grape () (apple) )

1. (car(cdr(cdr ‘(1 (2 3) 7) ))) = 7,

(car(car(cdr(car(car ‘(((1 (7))))))))) = 7,

(car(car(cdr(car(cdr(car(cdr(car(cdr(car(cdr(car(cdr ‘(1(2(3(4(5(6(7)))))))) ))))))))))))) = 7

1. This scheme procedure “x” is a conditional statement. It first checks if the argument passed is a null list, if so it returns 0. Then it checks if the first element of the list argument is itself a list. If the first argument is a list it then goes into another nested conditional statement. This nested conditional checks if the first element is “#f” or false. If it is then it recursively calls itself on the remainder of the list without adding to the total “(x (cdr lis))”. If the first element is not “#f”, then it recursively calls itself and adds 1 to the total. If the first argument is a list, then the function will recursively call itself on the first argument and add it to the remainder of the list.

This function overall is used to iterate over a list, which can contain other nested lists, and it counts the amount of times something other than “#f” appears, presumably “#t”. It then returns the count at the end.