Quiz #3 Answers

1. Given this piece of code, what will the last command return? (Show work for partial credit.)

```
(define (do-something func list)
      (cond
            ((null? list) '())
            ((null? (cdr list)) list)
            (else (cons (func (car list) (cadr list))
                  (do-something func (cddr list))))))

(define (other-thing v1 v2)
      (* v1 v2))

(do-something other-thing '(1 2 3 4 5 6 7))
```

(2 12 30 7)

do-something applies the provided function to the first two elements of a list and builds a list from the results. If it is left with zero or one elements it returns the list that was passed in.

2. What functions do you use for input and output in Scheme? Describe why each is fundamentally non-functional.

read is used for input and display is used for output. read isn't a function because it can return different values without different arguments being passed in. display isn't a function because it doesn't return anything, it just has the side effect of printing to screen.

Extra Credit: Write a min selection sort in Scheme on the back of the page.

```
(define (min-sort list)
      (cond
            ((null? list) '())
            ((null? (cdr list)) list)
            (else (let
                  ((min (eval (cons 'min list))))
              (cons min (min-sort (remove-first min list))))))

(define (remove-first item list)
      (cond
            ((null? list) '())
            ((equal? item (car list)) (cdr list))
            (else (cons (car list) (remove-first item (cdr list))))))
```