91.301, Organization of Programming Language
Fall 2007, Prof. Yanco

Quiz 2 Solutions

Problem 1

```
(1 2 3)
(4 1 2 3)
13
5
```

Problem 2

```
0
1
(x y)
((x y) z)
(x y)
```

Problem 3

```
F F T
F F T
T T T
F F T
T T T
```

Problem 4

```
(define (spiral painter n)
  (if (= n 0)
      painter
      (beside (below (rotate180 (spiral painter (- n 1)))
                     (rotate90 painter))
              painter)))
```

Problem 5

```
(define (occurrences s tree)
  (accumulate-tree tree
                   (lambda (x) (if (eqv? x s) 1 0))
                   +
                   0))
```

Problem 6

C

Problem 7

```
(define (make-clock)
   (let ((pendulum 'tock))
      (lambda ()
         (if (eq? pendulum 'tick)
             (begin (set! pendulum 'tick) pendulum)
             (begin (set! pendulum 'tock) pendulum)))))
```

Problem 8

Missing lines of code:

```
(set! current (car old))
(set! old (cdr old))
current
```

Note that you did not have to check if there was no prior value, although bonus points were given if you did.