

Quiz 2 CSCI 431 Fall 2005

Open notes section

2 December, 2005

Name: _____

This is the open notes section of Quiz 3. This section must be turned in by 11:15 am.

Problem 1 (10 points)

Give an example of a code sequence that prints “UNCA” when executed with dynamic scoping but prints “WCU” when executed with static scoping. You may use the pseudo-code of your choice.

Problem 2 (10 points)

Write a Perl subroutine that, when passed two integer variables, returns 1 when the first is odd and the second is even; returns 2, when the second is odd and the first is even; and returns 0, otherwise.

```
sub prob6answer {
```

```
}
```

Problem 3 (10 points)

Describe what the following LISP program does when it is applied to `(4 (5) 6)`. The predicate `NULL` returns `T` only when applied to `NIL`, the empty list. The predicate `NUMBERP` returns `T` only when applied to an integer atom. The function `PLUS` returns the sum of its two arguments, if both are integer atoms, and returns `NIL` otherwise.

```
(DEFUN quiz3 (L)
  (COND
    ((NULL L) 0)
    ((NUMBERP (CAR L)) (PLUS (CAR L) (quiz3 (CDR L))))
    (T (quiz3 (CDR L)))))
```

Problem 4 (8 points)

Apply at least two interesting reductions to the following lambda expression:

```
(λ x . λ y . y (x y)) (λ z . z)
```

Problem 5 (8 points)

Under what circumstances does using multiple inheritance in C++ require the use of multiple virtual functions?