

Quiz 3 CSCI 431 Fall 2005

Closed notes section

2 December, 2005

Name: _____

This is the closed notes section of Quiz 3. You must turn this section in before you “open” any reference material such as notes or books. This section must be turned in by 11:15 am.

Problem 1 (8 points)

In what sorts of languages can the use of dope vectors increase the speed of array indexing?

Problem 2 (8 points)

Draw appropriately linked cons cells to show how the list (5 6) is represented in LISP or Scheme.

Problem 3 (8 points)

In C++ classes can have both virtual and non-virtual methods. Describe the differences in invoking virtual and non-virtual methods. You can pretend the C++ does not support multiple inheritance. It might help to draw a picture.

Problem 4 (8 points)

What are the significant differences between call by value and call by reference? Also, which are supported in the following three languages: C, C++, and Java.

Problem 5 (8 points)

What is the amazing thing about the class of algorithms that can be implemented with Turing machines and the class that can be implemented with lambda-calculus expressions?

Problem 6 (8 points)

Java threads and C Pthreads have very different mechanisms for locking short sequences of code. Briefly describe these two.

Problem 7 (8 points)

In which order does a compiler perform the following three phases of analyses: lexical, semantic, and syntactic. What are the types of grammars used to describe these phases?