Fall 2006 EE380L Quiz 5: NAME: _____

RULES: No internet searches. You may work on this examination for 2 hours (no longer). The time can be distributed over at most two contiguous intervals where each interval is at least 15 minutes long. When you elect to work on the examination, you must be in a private work environment with no outside assistance of any kind. Text books are permitted, as are all EE380L materials (including the EE380L web sites). You are not permitted to consult any "research papers" or published articles of any kind (only text books). You may use a compiler to write and test possible solutions. However, it is not necessary that your solution compile or run in order to receive a perfect score (be wary, as the compiler can be a time sink).

Addendum: You are permitted a grand total of four hours on this assignment. You can spend at most 2 hours actively working on your solution. In addition to the two hours of active work, you are permitted to "daydream" about the problem for at most an additional two hours. That means, if you are thinking about this problem on your ride home today, then that time spent in the car/bus will not count against the time you have available to spend sitting at your desk working on the exam. You can think about the problem while you're in the shower, lay awake at night thinking about it, etc. However, you must not abuse this license. After two hours of stewing over the problem, any additional time you spend thinking on the problem counts against the time allotted. Time spent in class today does not count against your four hours.

By attaching your name to this paper, you affirm the following statement:
I have fully complied with both the letter and the spirit of the academic honesty policies for this examination. I recognize that this examination is intended to be an evaluation of my ability to develop my own designs. Therefore, I recognize that searching for and/or reproducing designs, approaches or solutions developed by others (whether published or not) is in violation of the academic honesty rules. I attest that the following log accurately reflects the time I spent working on this examination:

Date time started time completed

_____

_____

A couple of puzzles. Choose one.

1. Write a template class *HasVirtualDestructor*<T> that provides a static data member called *ANS* such that *ANS* is true if the destructor for class T is virtual, and ANS is false otherwise. You are not required to make ANS a compile-time constant (although it is a better solution if it is a compile-time constant). You cannot place any restrictions on type T.

2. Implement a template class Array<T, dims> where dims is an integer and indicates the number of dimenions in the array. In this problem, I just want to see you implement the operator[]() function for your Array template, so please do not provide constructors, destructors etc. For any Array<T, 1>, *x*[k] should be a legal expression, and the operator[] should print out the value of k. For any Array<T, 2>, *y*, y[k, j] should be a legal expression, ,and operator[] should print out (in order) the values of k and j. And so on such that an Array<T, n> *z*, should have an operator[] such that z[k_0, k_1, …k_{n-1}] is a legal expression and the operator[] should print out (in sequence) the value of all the k_i's. This problem is interesting enough and challenging enough if your operator[] does nothing more than print the arguments, and if your Array class is empty except for the operator[] function. Hint: you can overload the comma operator in C++. For full credit, you must make it a compile-time error to pass the wrong number of values to the operator[] (I don't care what the error message is, as long as it's a compile-time error).