**CS 121 Final Exam Study Note**

**Part One (15 Points)** Short definitions for symbols and terms from the C++ Language

* Given a symbol or term explain its uses. Examples: &, <<, void, {}, etc.
	+ Example: & - Address Operator, Reference Operator, Part of And (&&)

**Part Two (15 Points)** Input and Output; String Functions

* Know the I/O functions: setw(n), setprecision(n), fixed, scientific, setfill(‘.’), right, left.
* Know the string processing functions: length(), at, find, substr.
* Also: getline(cin, dataline), cin.get, cin.ignore(10, ‘\n’)

**Part Three (10 Points)** Sorting and Searching

* Like Exam 2. Given a sequence of values show how to sort with Bubble Sort and Selection Sort

**Part Three Arrays(25 Points)**

* Know how to declare and array (1D and 2D)
* Be able to initialize the array when declared.
* Know how to index the array.
* Know how to pass an array to a function. Remember for 2D arrays you must specify the number of Columns) Example: InitArray(numbers[ ][COLS]);
* Be able to write a function that acts on an array (1D or 2D) such as find maximum, initialize all elements with rand() or make a copy. (You may have to pass two or more arrays to the function.)
* Know how to extract a single row or column from a 2D array.
	+ // Get all data in column 5

 for (k = 0; k < ROWS; k++)

 array\_1d[k] = array\_2d[k, 5];

**Part Four Pointers (10 Points)**

* Given example code show values stored in memory. Like Homework Six.
* Be able to declare a pointer variable
* Be able to initialize a pointer variable
* Know how to use New and Delete
* Know how to index an array with pointers

**Part Five Structures (10 Points)**

* Given a collection of information about an entity be able to organize it into a struct type.

**Design (15 Points)**

* Given a description of a problem design a solution. You may use pseudocode, flow chart, English statements or actual C++ code.

Example: Design a program that will extract a subset of data from a 2D array.

Suppose that you wanted to get the 4 shaded values from the 4 X 5 array below.

 4 6 9 12 5

 10 3 7 15 0

 8 14 11 22 4

 1 5 17 2 8

What steps do you need to take?