**CS 121 Exam One Study Notes**

Part One. (10 Points): General Information, definitions and short answer questions.

* + Study Exam Preparation Exercises Chapter 1 Pages 39 – 40.
  + Section 1.2 How does a Computer Run a Program (pages 9-12).
  + Section 1.3 What’s Inside the Computer. Figure 1.8 (page 20).
  + Know the steps involved from problem analysis through execution and results.
  + Know the rules for forming an identifier.
  + Know what a preprocessor directive is.
  + Know how to select a type for a quantity. E.g. What is the difference between a float and a double type for a variable.
  + Types: int, short int, unsigned int, float, double, char, string, and bool
  + Know the code required to open a file, read a record and close the file

Part 2. (40 points) Input, Output, and String manipulation functions

* + Study Exam Preparation Exercises Chapter 3 (pages 134-136).
  + Study Exam Preparation Exercises Chapter 4 (pages 182-184).
  + CAREFULLY study section 4.1 (Pages 142-152)
  + Know the following formatting operations: Section 3.7 (pages 113-119).
    - fixed, setw( ), setprecision ( ), left, right, setfill( )
  + Given some variables initialized with specific values and a series of cout statements show the resulting output.
  + Remember that setw only applies to the very next output. Others apply until explicitly changed.
  + Remember that setw also will be overridden if the width is set too small.
  + Know how to use cin to read input data. Remember it skips over blanks and end lines.
  + Know the following string manipulation functions: Section 3.8 (pages 122-128)
    - length , size, find, substr, at, toupper and tolower
  + Also know cin.peek – looks at the next character in the input buffer but does not read it
  + And cin.putback – returns or puts a single character back into the input buffer
  + Know how input data is read from the Input Buffer by cin and its associated functions.
  + Know the stream input functions cin.get or infile.get, getline(infile, dataline), ignore
  + Given a sample input, show the value of variables and the state of the **input buffer** after a sequence of cin operations.
    - Example: Assume you type CS121 <enter>
    - If your program has cin.get(ch1); and cin.get(ch2); then ch1 = C, ch2 = S and the input buffer still has 121.
  + Given a string variable initialized to some set of characters and a series of statements show the result of the operation.
    - string one = “ABCDEF”; cout << one.find(”CD”);

Part Three. (10 points) Find the syntax errors in the following code segments.

Be good at debugging.

Part Four. (5 points) Arrays

* + Be able to declare an array variable: int numbers[100];
  + Know how “zero out” the array when declared: int numbers[100] = {0};
  + Know how to use the rand( ) random number generator to initialize the array with a range of values:
    - For (int j = 0; j < 100; j++)
      * Numbers[j] = rand( ) % 100;
  + Remember that the index of an array begins with 0.
  + The first element is stored at index 0.
  + Know how to swap two elements with the array.

Part 5. (5 points) Show the output of a given program segment.

Part 6. (30 points) Programs. Take Home Programming Problems