CS150 Exam #2 Review Topics

1) advanced output using #include <iomanip>
   fixed, setprecision, setw, sticky, tabular formatting of data
2) if statement
   single-alternative, double-alternative, multiple-alternative
3) static_cast
4) are two program segments identical (i.e. will produce the same results in all cases). Are the two program segments below equivalent? Why or why not?

```
switch (value)                  if (1 == value || 2 == value)
{                               {
   case 1:                         ++x;
   case 2: ++x;                 }
   case 3: ++y;                 else if (3 == value)
}                               {
                                   ++y;
                                }
```

5) What are logical operators?
6) What is a relational expression?
7) Rewrite !(salary < MIN_SALARY) as an equivalent expression without using the !
8) What is an ordinal data type?
9) The default of a switch is equivalent to the what of an if?
10) Rewrite the logic of a switch as an if and the logic of an if as a switch
11) Can you easily rewrite the following if logic as a switch? Why or why not?

```
if (count > 10 && count < 100)
{
   cout << count + 1;
}
else
{
   cout << count - 1;
}
```

12) What are the three looping control structures?
13) Which looping structure is used when the number of iterations through a loop is known?
14) Which looping structure is used when data validation is required?
15) Which looping structures are pre-tested in nature?
16) What does the flowchart for a do-while look like?
17) How many consecutive positive integers must be added together to produce a result that exceeds 10,000. Write your solution using a while, for, and do-while loop.

18) Print the characters from 'A' to 'Z' on the screen one line at a time using a loop.
19) Know the difference between ++x, x++, --x, x--, and the combined arithmetic operators such as -=, /=, %=, ...
20) What is the meaning of k = x--;
21) What is the output?

```cpp
int count = 0, sum = 0;
while (++count < 5)
{
  sum += count++;
  cout << count << ' ' << count - 1 << endl;
}
cout << count << ' ' << sum;
```

22) What header file is needed for reading from a file?
23) How would you open the file "data.txt" for reading?
24) What is a sentinel value?
25) Ask the user to enter any integer that is not 12, 13, or 17. Keep asking until the user enters a valid number.
26) Ask the user to enter any letter that is not a capital letter. Keep asking until the user enters a valid letter.
27) Consider the following program segment:

```cpp
for (int count = 0; count < 10; count += 3)
{
  cout << count << ' ' << count - 1 << endl;
}
```

What is the scope of count? What is the output? Rewrite as a while loop.
28) Using a for loop, compute and print the sum of the first 100 multiples of 3.
29) A data file "data.txt" exists with an unknown number of integer values, one per line. The sentinel value is -999. Write a C++ program that will print each value read from the file three values per line. Each value is to be printed right-justified in a field of 3. The file below produces the result to the right.

```
2                          2   5   7
5                          8  11
7
8
11
-999
```