**COSC 359**

**Binary Encryption and Decryption**

Data on a computer is stored in binary form, in the form of bytes (8 bits of 1's or 0's). As an example, binary data can easily be "encrypted" with a "key" based on a little Boolean operation called an xor, or exclusive or.

When we xor a single bit (a 1 or 0) with another bit:

if 1 bit is true and 1 bit is false, it returns true, otherwise it returns false; so:  
  
1 xor 1 = 0  
1 xor 0 = 1  
0 xor 1 = 1  
0 xor 0 = 0  
  
And now, one reason this is useful is because if we take the new bit and xor it with the same key (the second bit) the result will always be the first bit. So:  
  
0 xor 1 = 1  
1 xor 0 = 1  
1 xor 1 = 0  
0 xor 0 = 0

***Now using the above, demonstrate encryption and decryption by writing a program in C++ (or language of your choice). Use keyboard to input values for your program variables, and the monitor for outputting results.***