CSI 333 – Systems Fundamentals

Lab 6 – Bitwise Operators

The bitwise operators are very similar to the ones that you might remember from Java. They are used a lot more frequently in C, though, because C is mostly chosen when you want to write low level programs.

A quick reminder:

& (bitwise AND). Takes two numbers as operand and does AND on every bit of two numbers. The result of AND is 1 only if both bits are 1.

| (bitwise OR). Takes two numbers as operand and does OR on every bit of two numbers. The result of OR is 1 any of the two bits is 1.

^ (bitwise XOR). Takes two numbers as operand and does XOR on every bit of two numbers. The result of XOR is 1 if the two bits are different.

<< (left shift). Takes two numbers, left shifts the bits of first operand, the second operand decides the number of places to shift.

>> (right shift). Takes two numbers, right shifts the bits of first operand, the second operand decides the number of places to shift.

~ (bitwise NOT). Takes one number and inverts all bits of it

Remember that && and || are different from & and |.

Your assignment:

Write a program that takes a number from the command line.
It should print:
The number.
The number of bits in the number that are set to 0 and 1.
For example:
./myProgram 48
Your number was 48
In 48, there are 30 bits set to 0.
In 48, there are 2 bits set to 1.