Bit Manipulation

Basics:

And (&):	0 & 0 = 0	1 & 0 = 0	0 & 1 = 0	1 & 1 = 1
Or (|):	0 |0 = 0	1 |0 = 1	0 |1 = 1	1 |1 = 1
Xor ($\bigwedge$):	0 ^0 = 0	1 ^0 = 0	0 ^1 = 0	1 ^1 = 1

Shifts:

- Left Shift: If you run out of space the bits drop off
  - Both arith and logical shift in 0

  1. 00011001 <<2 = 01100100
  2. 00011001 <<4 = 10010000

- Right Shift if you run out of space the bits drop off
  - arithmetic shift - shift in sign bit (sticky shift), logical-shift in 0

  1. 00011001 >>2 = 00000110
  2. 00011001 >>4 = 00000001

Notes:

- Windows calculator can do operations in binary, view programmer