

CSCI 2330 – Binary Exercises

1. How many values can be represented using a 9-bit binary number?
2. Write decimal value 230 in (a) binary using 8 bits, and (b) hex.
3. Write binary value 0b10001111 in (a) decimal, and (b) hex.
4. Write hex value 0x55 in (a) decimal, and (b) binary using 8 bits.
5. Compute $0x69 \mid 0x55$ and write your answer in hex.
6. Compute $0x69 \mid\mid 0x55$ and write your answer in hex.
7. Assuming 8-bit numbers, compute (a) $5 \ll 1$, (b) $5 \ll 2$, and (c) $5 \ll 3$. Write your answers in decimal. What do you notice?
8. C does not provide a logical XOR operator (which you might reasonably expect to be \wedge). How could you compute the logical XOR of two ints x and y using existing logical operators ($==$, $!=$, $\mid\mid$, $\&\&$, and $!$)? **Hint:** The logical NOT operator ($!$) is a useful way to transform any numeric value into only the values 0 (false) or 1 (true).