# ECE253 Abridged

Aman Bhargava

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# Chapter 1

# Review: Bit Manipulation

Have you ever wanted to be a cool computer person who does things with ones and zero's instead of actual letters and numbers like a normal person? If so, this is the right chapter for you!

## 1.1 Converting to and from Different Bases

Base 10, 2, and 16 are most commonly used. Base 16 is just a way to read base 2 in a more efficient manner. In order to work with bits it's pretty important to know how to convert back and forth because the test is all on paper.

### 1.1.1 Converting from base 10 → base 2

You keep dividing by two, keeping track of the remainder. Eventually the number you will be trying to divide by two will be 1. You keep going until it's zero + remainder(1). Then you read the reaminders upward from that final 1.

### 1.1.2 Converting from base 2 → base 16

Any hex number can be expressed as 4 binary digits. Make a correspondence table between quadruplets of binary numbers and hex (1-f, inclusive). To convert to base 16 subdivide from right to left in groups of four binary digits. Pad the leftmost part with leading zeros and convert using the table.

### 1.1.3 Converting from base 10 $\rightarrow$ base 16 (and vice versa)

Just go through base 2 fam.

# Chapter 2

# Logic Functions and Logic Gates

## 2.1   Or Gate

1. Symbols

2. Switch structure

3. Truth table

## 2.2   And Gate

## 2.3   Inverter

## 2.4   XOR

## 2.5   Boolean Algebra