

Guided Reading in CODE

The reading in **Code** builds up to how we can use binary and transistors to build a computer. Essentially the history of representing information using alternative methods such as Morse code and Braille, were technology breakthroughs. Automating alternative information representations with electricity continued this progress.

Keep reading...

Chapter 11

1. Briefly describe the four gates explained in Chapter 11. Describe the behavior of each gate based on the input values to the gate.
 - AND gate – A basic AND gate requires at least two switches. Both switches must let voltage through to produce an output.
 - OR gate – A basic OR also requires at least two switches. One or more switches have to let electricity through to produce an output.
 - NAND & NOR gates – These gates work the same way as the AND/OR, but are inverted compared to their counterparts

Chapter 12

2. A half adder is built from how many "sub components" and has how many inputs and outputs?
There is a AND gate and an XOR gate involved with the half adder. Also, it takes two inputs and has two outputs.
3. A full adder is built from how many "sub components" and has how many inputs and outputs?
The components for the full adder are two half adders and an OR gate. It has three inputs and one output.
4. How many total inputs and outputs are there for an 8-bit adding circuit?
17 inputs and 9 outputs
5. How many total transistors are needed for the ripple version of the 8-bit adder?
144

Chapter 13

1. Design the following circuits with Logisim and post a snapshot of the circuit (a jing video of showing the circuit in action would be nice).
 - a. Half Adder and Full Adder
 - b. 8 Bit Adder
 - c. 8 Bit Adder with the Ones' Complement circuit and the Sub input to the circuit for subtraction

Chapter 14

1. Design the following circuits with Logisim and post a snapshot of the circuit (a jing video of showing the circuit in action would be nice).
 - a. Adding machine (page ~~159~~**168**). A bit of a challenge
 - b. Edge Triggered D FlipFlop (page ~~163~~**172**)
 - c. 8 Bit ripple counter (use Logisim D FF, page ~~168~~**177**)

Chapter 15

1. Define byte.
2. What is the range of an unsigned byte? A signed two's complement byte?
3. What does the X in the following binary number represent 1010X10101?
4. What is the base 16 number system called?
5. Why is base 16 a good choice for representing binary numbers?
6. What base 16 number is 101011000011? What is an easy way to determine this without using a calculator?
7. What does the X represent in the following base 16 number D4AXF0?
8. The book describes how to convert decimal to base 2 or base 16. Research and describe a technique that allows conversion of decimal to any base (2-36).

Chapter 16

1. What do the prefix names kilo, mega, giga, tera, and peta represent in bytes and what were the Greek origins of the words?
2. At the end of Chapter 16 the author reminds the reader about something that is "very important," what is this?