

Truth Table: Binary Addition

In the last lecture, we explored “Binary Addition”. Let’s see if we can begin to design the circuit to complete the binary addition!

Truth Table:

A	B	A + B	SUM	CARRY

Circuit Diagram for a “Half Adder”:

Truth Table:

A	B	CARRY _{in}	CARRY _{in} + A + B	SUM	CARRY _{out}

Circuit Diagram for a “Full Adder”:

Complete Circuit for a “Ripple Carry Adder”:

Disadvantages:

- [Speed]:
- [Parallel Operations]:

Building Complex Circuits:

Memory Hierarchy:

The third foundation of a computer system is the memory -- the storage of data to be processed by our CPU. There are many different types of common memory in a system:

1. [Processor Registers]:
2. [Processor Cache]:
3. [RAM]:
4. [Solid State / Flash Memory/Storage]:
5. [Hard Disk Storage]:
6. [High-Density / Offline / Tape Storage]: