Csc11 Notes

**Overview**

* Architecture
* Number systems

**Architectures**

* Von Neuman Architecture
  + Store program concept
* CPU
  + Central processing unit
  + Controls processes
* ALU
  + Arithmetic Logic Unit
  + Handles math logic statements
* Architecture Flow
  + Input device > CPU/ALU > Output devices
* Memory devices
  + Memory Ram
  + ROM
    - Read only memory
  + Processed to CPU through a bus
* 64 Comodor (Old computer)
  + 64Kb memory
  + Had Basic language built in
    - Still exists in Visual basic
    - Good for beginners
    - All symbolic

Cache

* Faster than memory
* Computers have 2 types of cache
  + Data cache
  + Instruction cache
* Cache is located on CPU
* Types of cache
  + Slower but cheaper
    - Ram (cost 1x)
    - L3 (cost 10x)
    - L2 (cost 100x)
    - L1 (cost 1000x)
  + Faster but costly

Rasberry PI

* ARM cortex A53

Threads

* Screens

**Number Systems**

Converting decimal to binary

* Method 1: subtraction
  + Take base 10 decimal number and subtract and fill binary chart.
    - Ex 23 base 10
      * 126 64 32 16 8 4 2 1
      * 0 0 0 1 0 1 1 1
      * Ans: 10111 base 2 == 23 base 10
* Method 2: Division
  + Take the base that you want to convert to and divide the number.
  + Take the remainder and set it as the first digit
  + Take the divisor and divide by the base.
  + Repeat until divisor == 0
    - Ex 23 base 10
      * 23/2 = 11 r1; 11/2 = 5 r1; 5/2 = 2 r1; 2/2 = 1 r0; 2/1 = 0 r1;
      * Take first number and set it as first digit, then so on.
      * Ans: 10111 base 2 == 23 base 10
  + Works for ALL base conversions