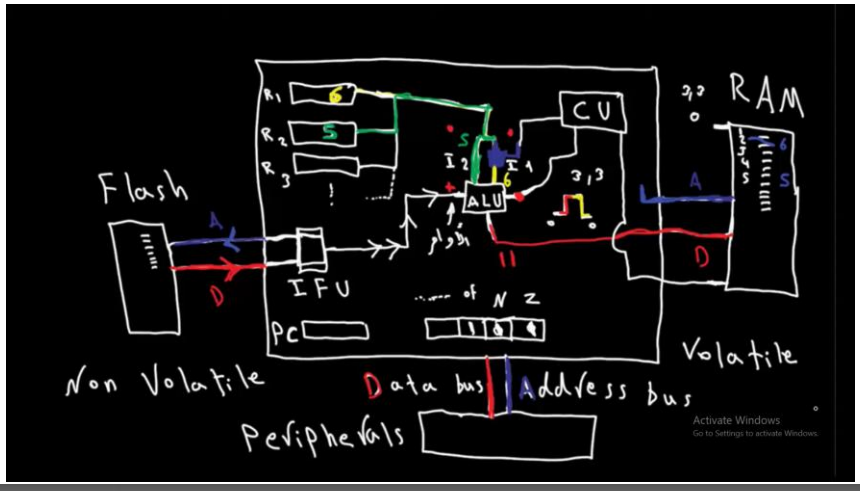
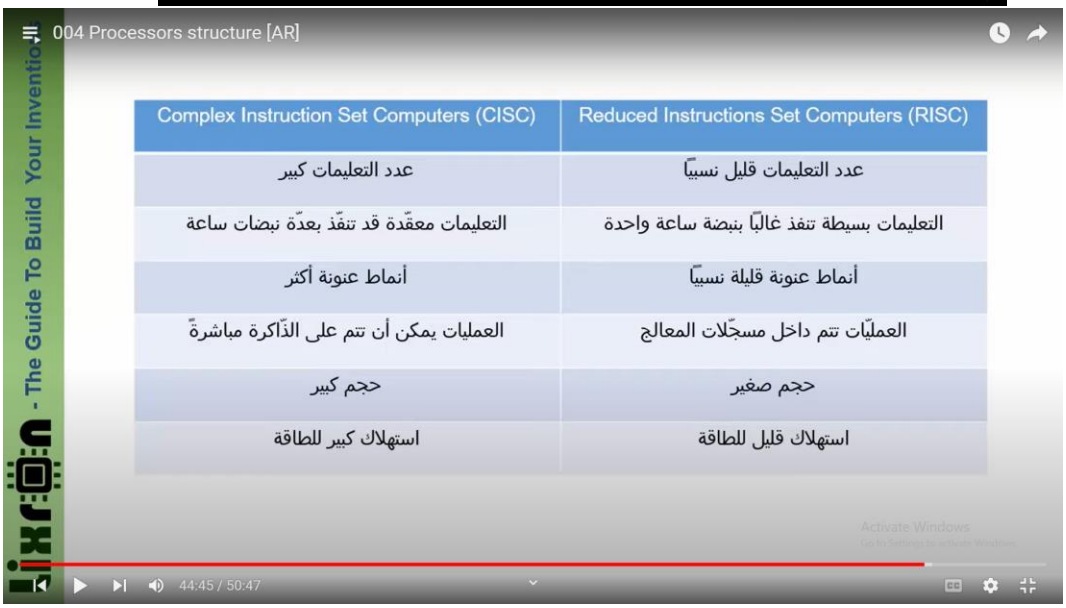
V.4:

The instructor starts by a brief about Arduino which we will use then he illustrates what the ARM is which it is:

- Arithmetic and logic unit
- Registers (have many purposes and special jobs)
- Buses
- Nested vector interrupts controller
- Memory protection unit (MPU)
- Debugging

Then he contains by ARM inner structure and how it works





comperhenssion between CISC and RISC

V.5:

In this video we learn that are different number systems and know each system and how to convert from one to another:

- Decimal: 0 1 2 3 4 5 6 7 8 9
- Binary: 0 1
- Octal: 0 1 2 3 4 5 6 7
- Hexa decimal: 0 1 2 3 4 5 6 7 8 9 A B C D E F

Convert to decimal:

EX.1: (1011)2: 1*2^0 + 0* 2^1 + 1*2^2 + 1* 2^3 = (11)10

Convert Hexa decimal to Binary:

0: 0000

1: 0001

2: 0010

3: 0011

A: 1010

E: 1110

F: 1111

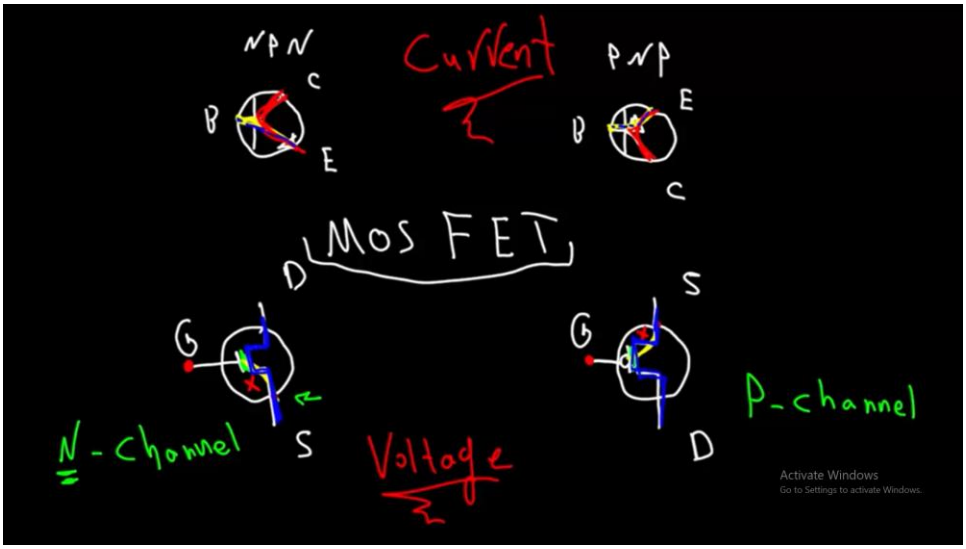
V.6:

In this video we learn about electrical engineering basics which are:

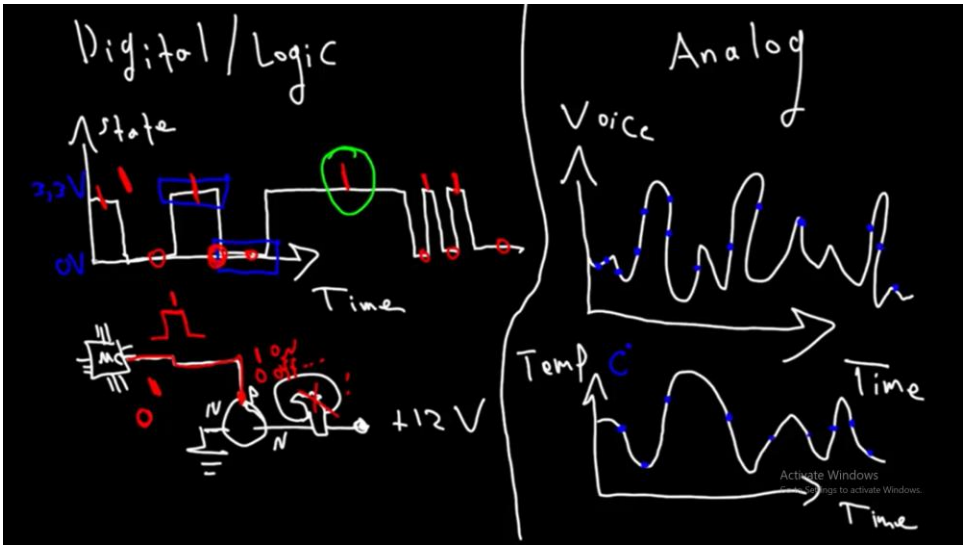
- Voltage (V) : Volt (V)
- Current (I) : Amper (A)
- Resistance (R): Ohm
- **V = I*R**
- Electrons direction is opposite to current direction
- Voltage divider: **Vout = Vin*R2\(R1+R2)**

V.7:

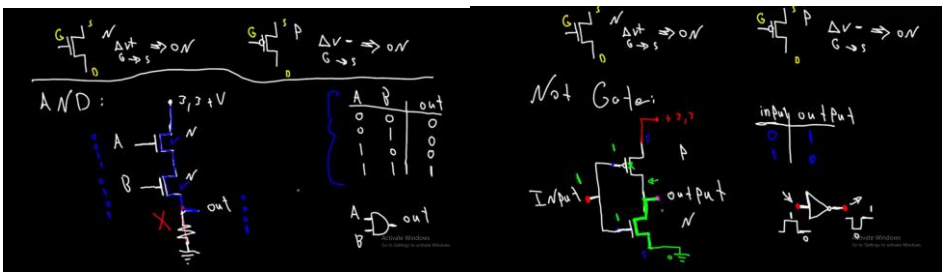
In the first, he starts by Transistor types:



Then difference between digital and analog:

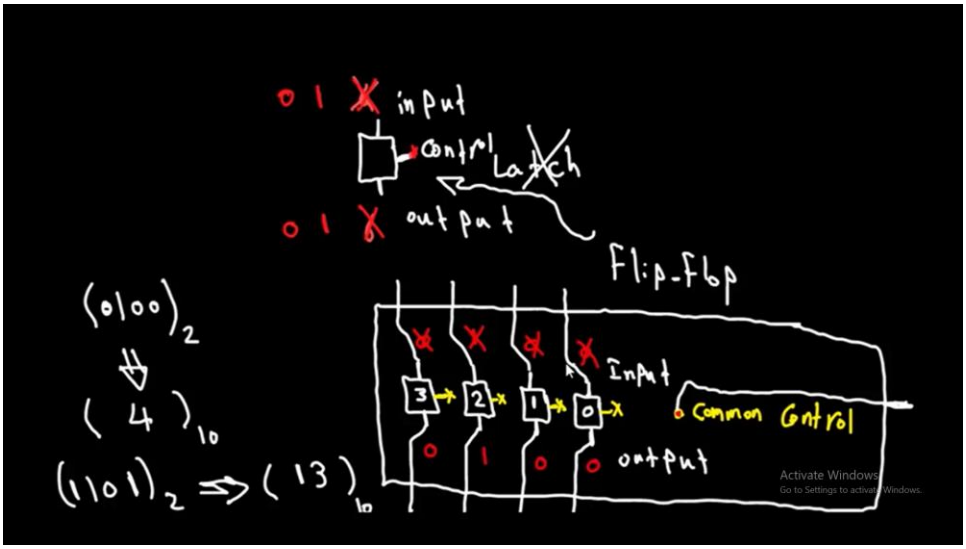


And at the end AND and NOT gates:

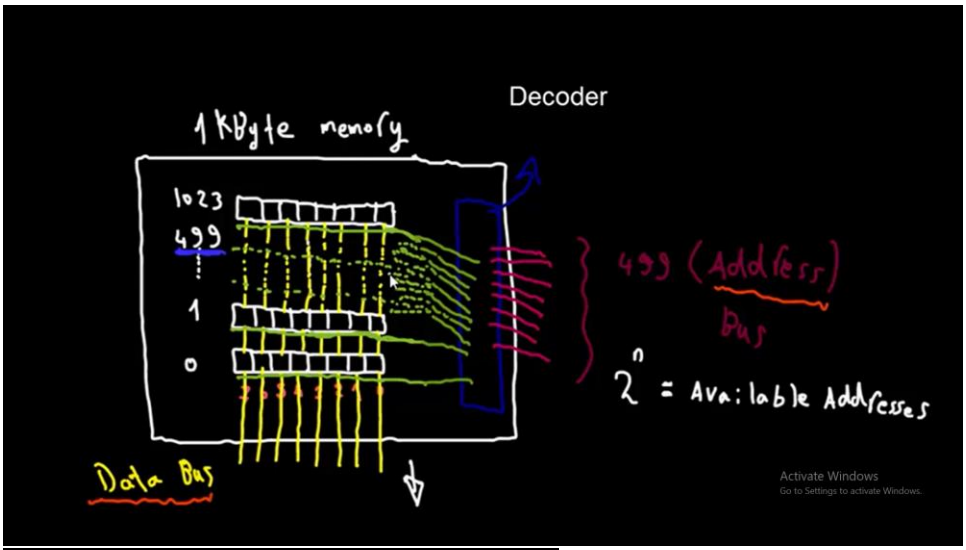


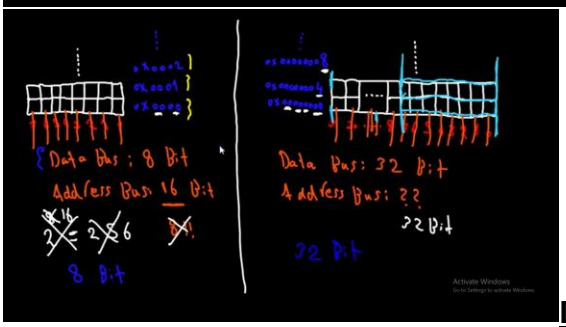
V.8:

- Volatile memory: likes RAM which storages data until unplug current



- non-volatile memory: likes flash and HDD which storages data even if unplugging current





Diffrence between 8bit and 32bit memory