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Introduction to Hardware

Basics of Electronics Part-II

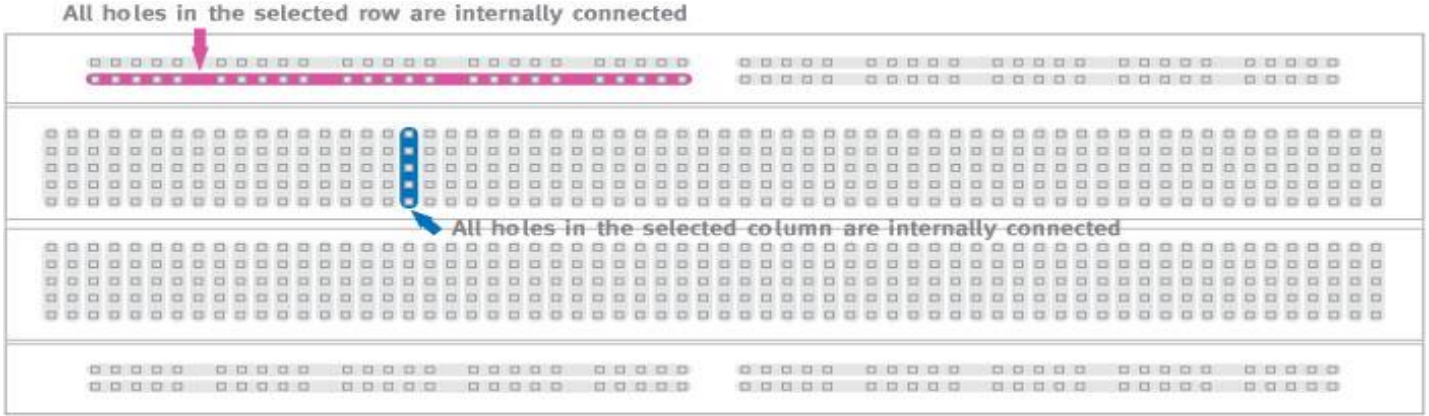
Agenda

- Breadboard
- PCB
- Memory
- Hardware Tools

Breadboard

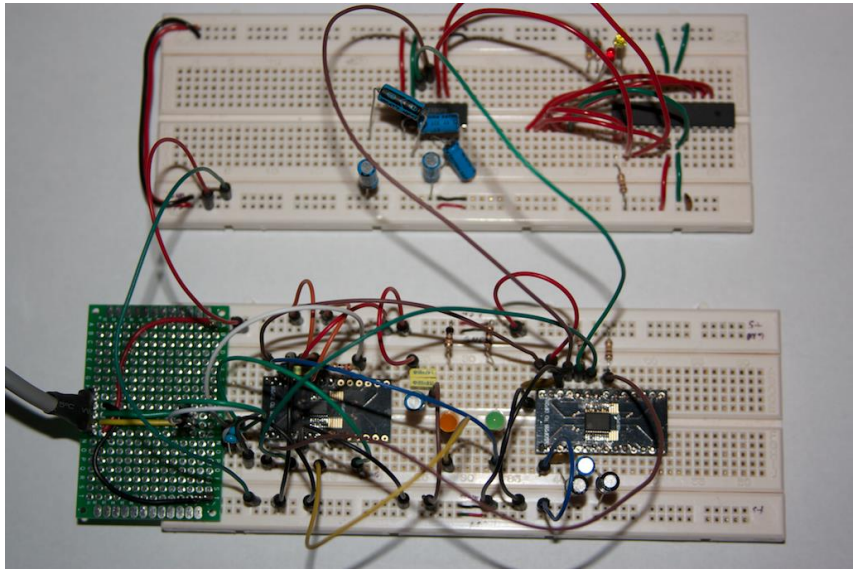
- **What is a breadboard?**

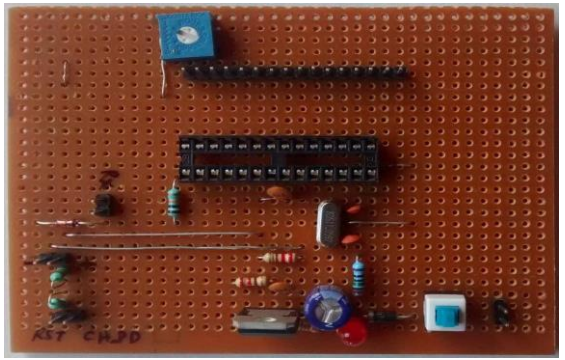
  A breadboard is a solderless device for temporary prototype with electronics and test circuit designs. Most electronic components in electronic circuits can be interconnected by inserting their leads or terminals into the holes and then making connections through wires where appropriate. The breadboard has strips of metal underneath the board and connect the holes on the top of the board.

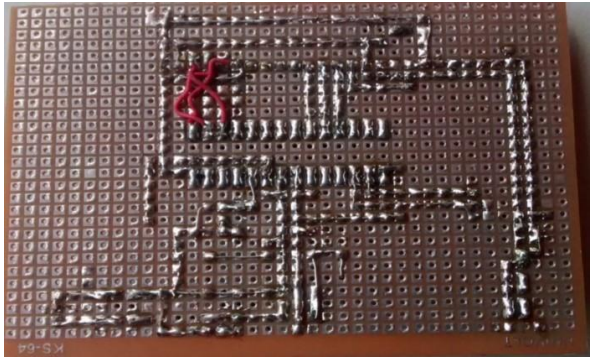


Breadboard

Prototype of Circuits

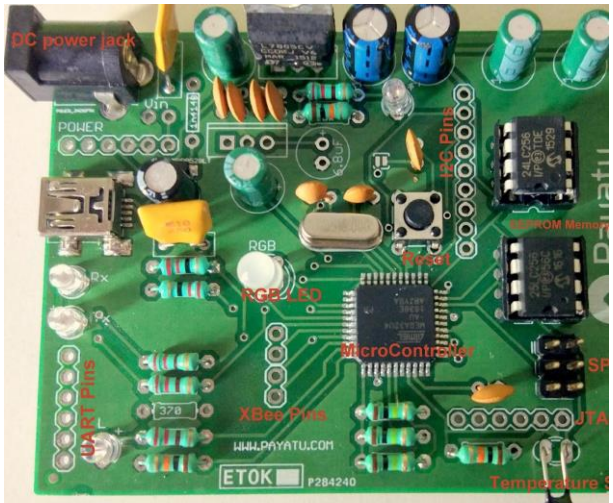


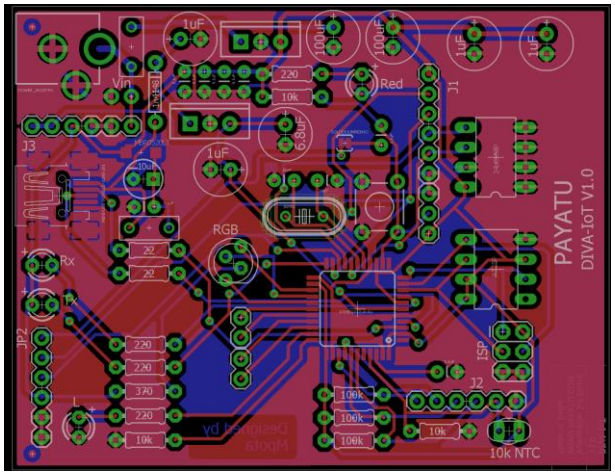




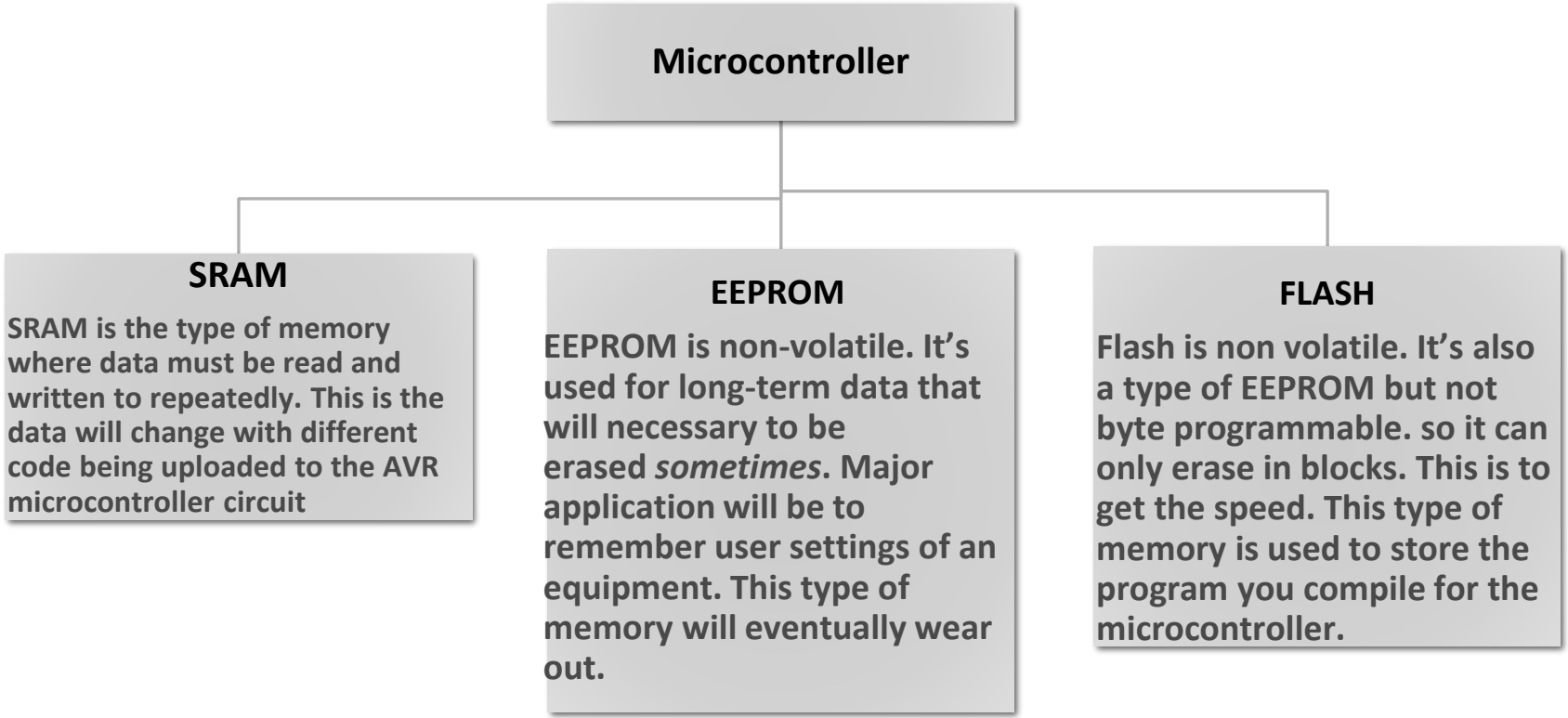
PCB

- PCB stands for Printed Circuit Board
- It is a compact version of Breadboard version of Circuit
- How to make out what's what ?
- Pcbs come in different layers. 2 layer, to upto 8 layers





Memory



Hardware Tools

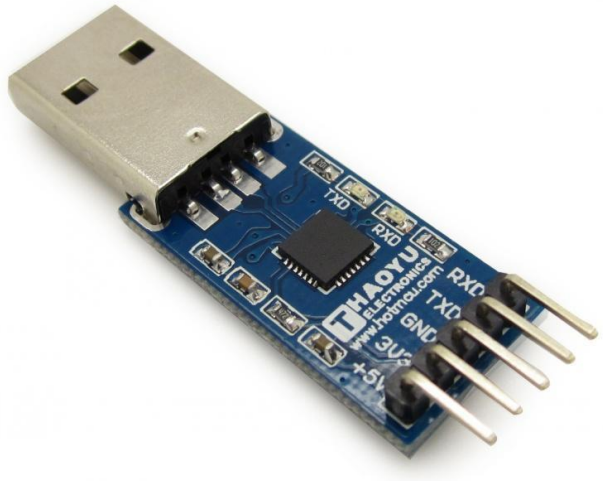
DMM (Digital Multimeter):

- Voltage (V) AC/DC
- Current (A)
- Resistance (OHM)
- Continuity Test

Hardware Tools

- DMM (Digital Multimeter)
- **USB to UART Serial Adapter:**

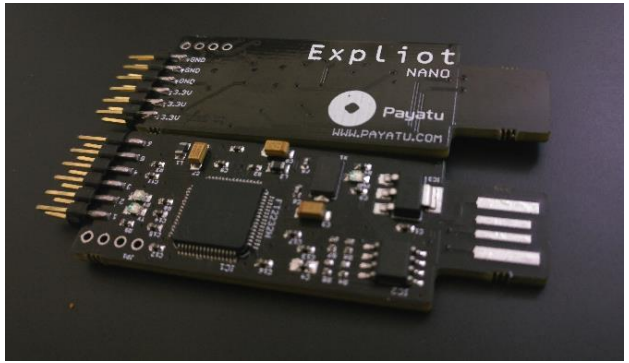
CP2102



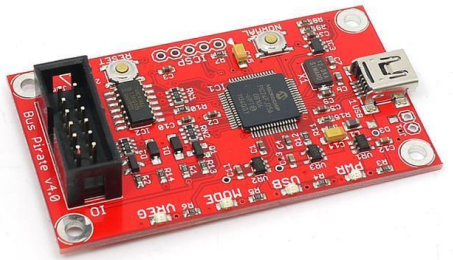
Hardware Tools

- DMM (Digital Multimeter)
- USB UART Serial Adapter
- **Hardware Protocol Adapter:**

Expliot Nano



Bus Pirate



Hardware Tools

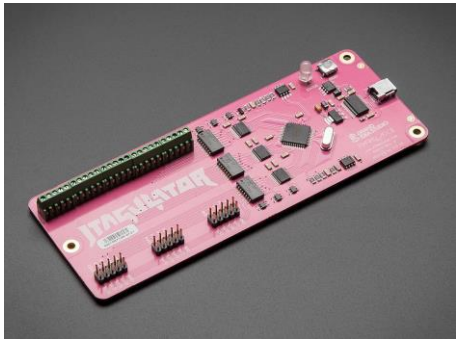
- DMM (Digital Multimeter)
- USB UART Serial Adapter
- Hardware Protocol Adapter
- **Logic Analyzer:**

Hardware Tools

- DMM (Digital Multimeter)
- USB UART Serial Adapter
- Hardware Protocol Adapter
- Logic Analyzer
- **JTAG Scanner:**

Bus Auditor

JTAGulator



Hardware Tools

- DMM (Digital Multimeter)
- USB UART Serial Adapter
- Hardware Protocol Adapter
- Logic Analyzer
- JTAG Scanner
- **Zigbee Auditor:**

Zigbee Auditor

Hardware Tools

- DMM (Digital Multimeter)
- USB UART Serial Adapter
- Hardware Protocol Adapter
- Logic Analyzer
- JTAG Scanner
- Zigbee Auditor:
- **Universal Programmer:**

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The End

PCB

- How to make out what's what ?
- Pcbs come in different layers. 2 layer, 3 layer, and on and on.
- Common things in pcb.
- Track size is different for different paths
- Majorly GND is connected to outer metallic shield of various components like Ethernet port,Usb port or Dc Jack

The top and bottom track of a pcb are connected using a VIA (small metal ring on ckts)