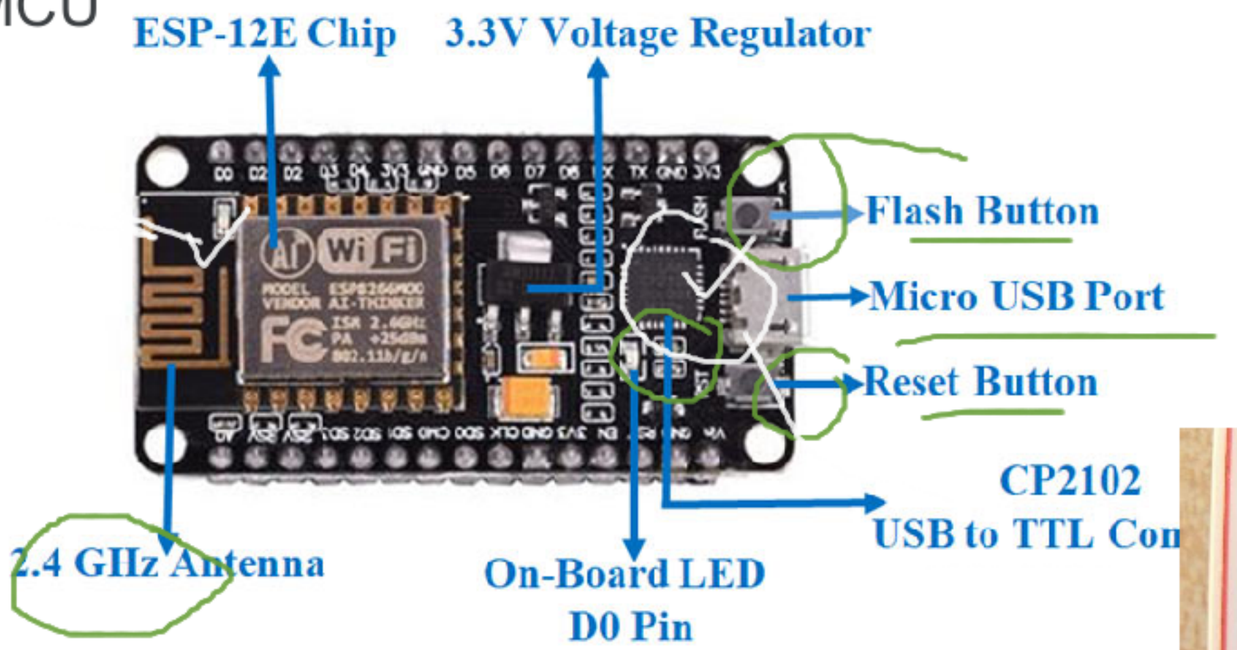
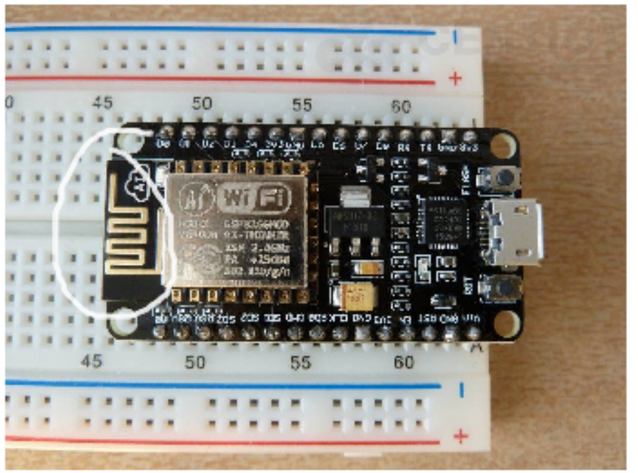
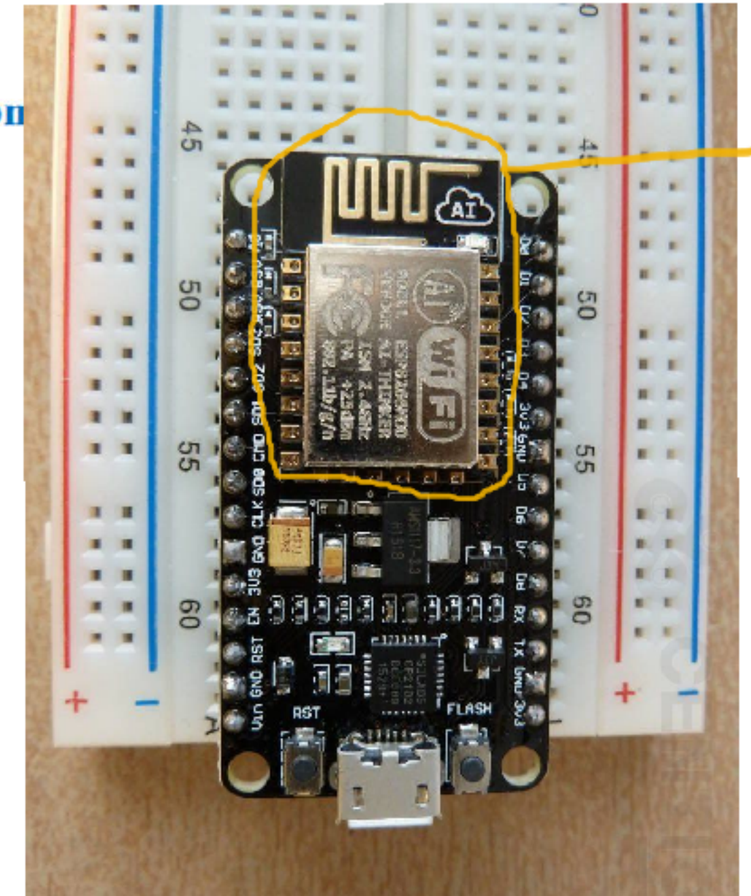
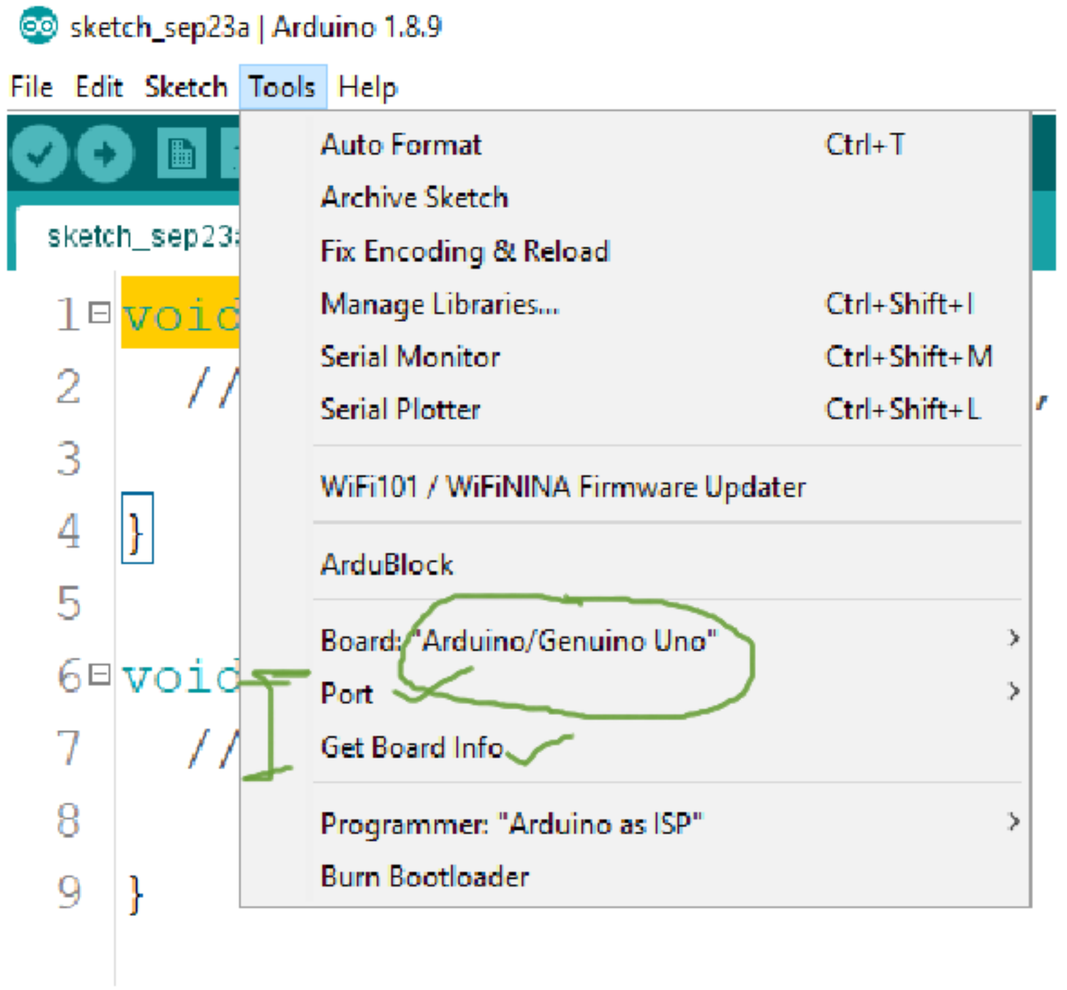
NodeMCU

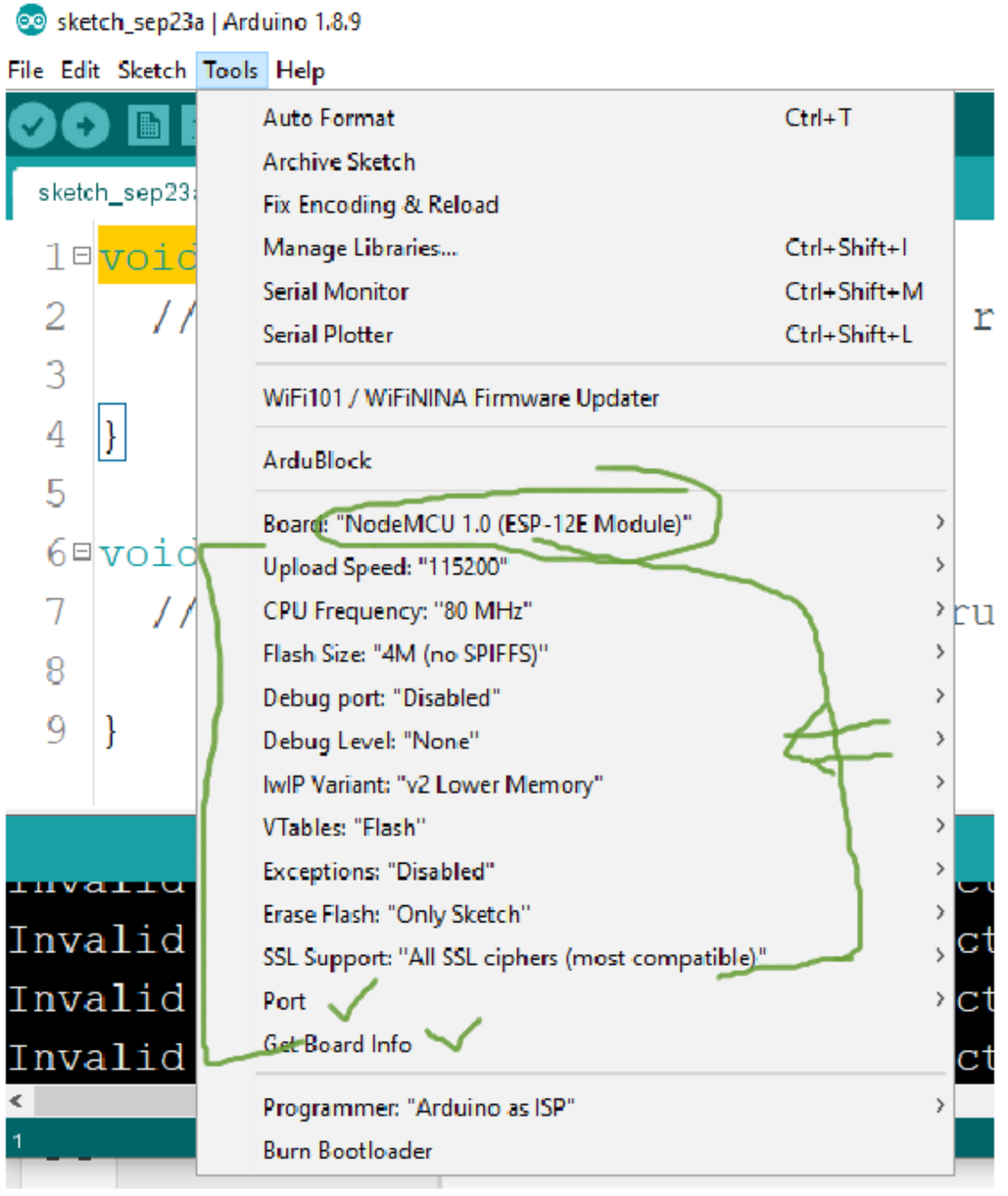






https://lastminuteengineers.com/esp8266-nodemcu-arduino-tutorial/


sketch_sep23a | Arduino 1.8.9
File Edit Sketch Tools Help
sketch_sep23
1 void
2 //
3
4 }
5
6 void
7 //
8
9 }
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Manage Libraries... Ctrl+Shift+I
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 / WiFiNINA Firmware Updater
ArduBlock
Board: "Arduino/Genuino Uno"
Port
Get Board Info
Programmer: "Arduino as ISP"
Burn Bootloader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Fix Encoding & Reload
Manage Libraries... Ctrl+Shift+I
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 / WiFiNINA Firmware Updater
ArduBlock
Board: "NodeMCU 1.0 (ESP-12E Module)"
Upload Speed: "115200"
CPU Frequency: "80 MHz"
Flash Size: "4M (no SPIFFS)"
Debug port: "Disabled"
Debug Level: "None"
lwIP Variant: "v2 Lower Memory"
VTables: "Flash"
Exceptions: "Disabled"
Erase Flash: "Only Sketch"
SSL Support: "All SSL ciphers (most compatible)"
Port
Get Board Info
Programmer: "Arduino as ISP"
Burn Bootloader

GPIO - General Purpose Input and output

NodeMCU - onboard LED blinking

```
int ledPin=2 ;
void setup() {
  pinMode(ledPin, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(ledPin, HIGH);
  delay(1000);
  digitalWrite(ledPin, LOW);
  delay(1000);
}
```

https://pastebin.com/73fpWFjJ

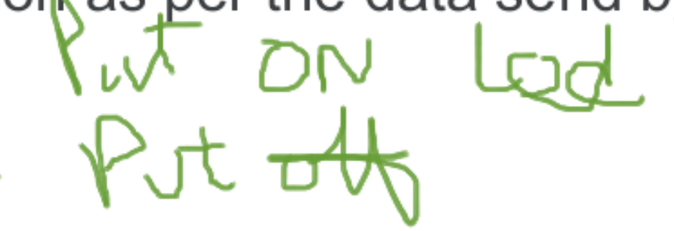
step 1 : connect nodemcu with wifi
username/SSID and pwd
SSID - secure set Identifier

step 2 : Node is connect to wifi (modem/Mobile hotspot..)
MAC (it has) + IP (assigned) + (for comm . port no is selected)

step 3 : create server object listening at port 80

Step 4: listen to incoming request from client browser

Step 5 : take action as per the data send by user i.e.
/LED=ON
/LED=OFF



Step 6 : display the update webpage to client . Go to Step 4

Basics of Networking

TCP/IP
Transmission control Protocol / Internet Protocol

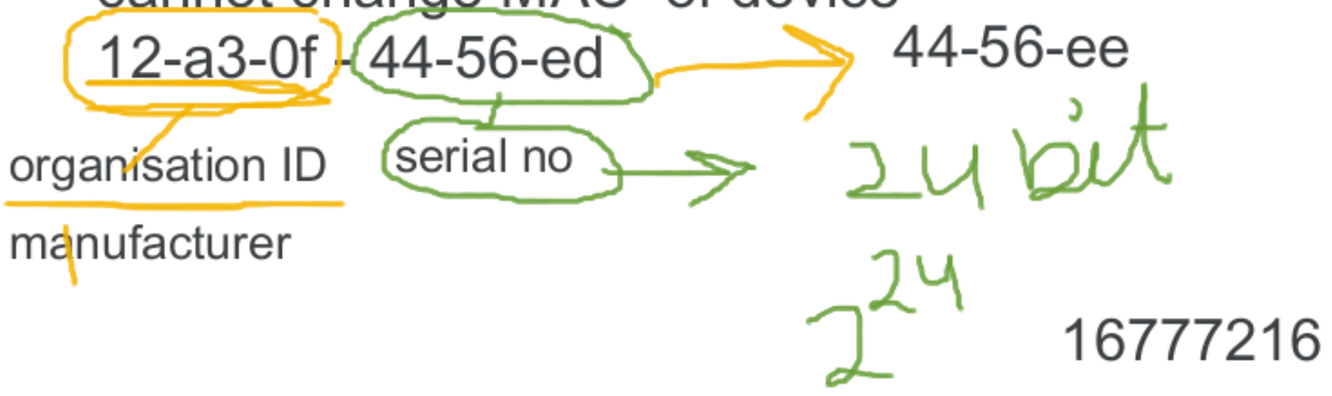
MAC id - Medium access control
IP address

802.11 IEEE project for wifi
a
b
g
n

check ip and mac in windows
>ipconfig

Linux
$ ifconfig

MAC address is 48 bit (12 hexa decimal character)
burnt inside the hardware by manufacturer .
commonly known as DNA .
cannot change MAC of device



MAC - Physical address
IP - logical address
Port no - (1-65535)

Socket

encrypt

1 —— 1023 —— Resume —— 80 — HTTP

443 HTTPs

50000 > T R