Universidad Politécnica de Madrid

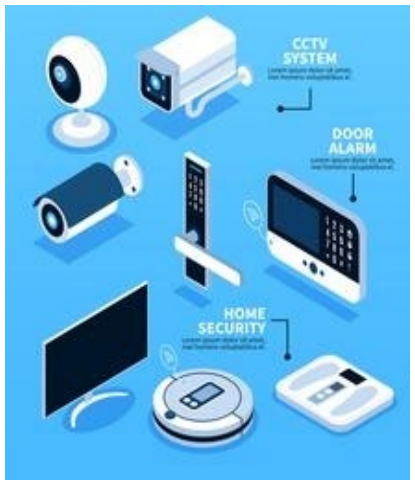
Uso del IoT para construir tú mismo un hogar digital

Entorno de prototipado basado en Arduino

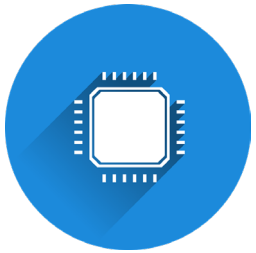
Santiago Berrezueta

¿Qué queremos hacer?

Objetos inteligentes

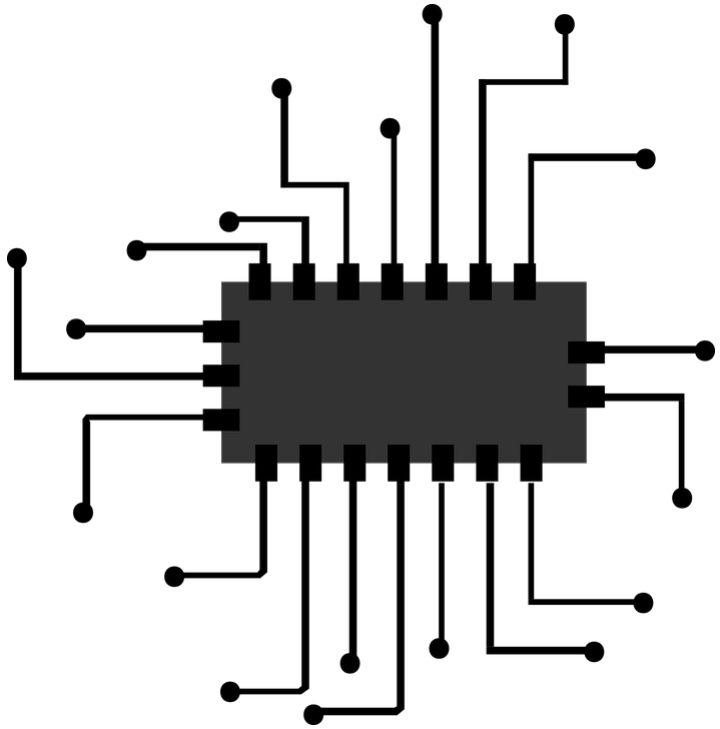


Hogar digital



Microcontroladores

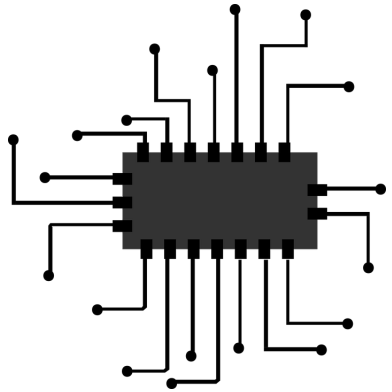
Microcontrolador

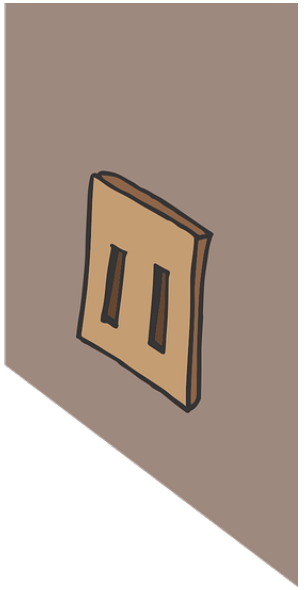


- Memoria
- UCP
- Periféricos
- I/O

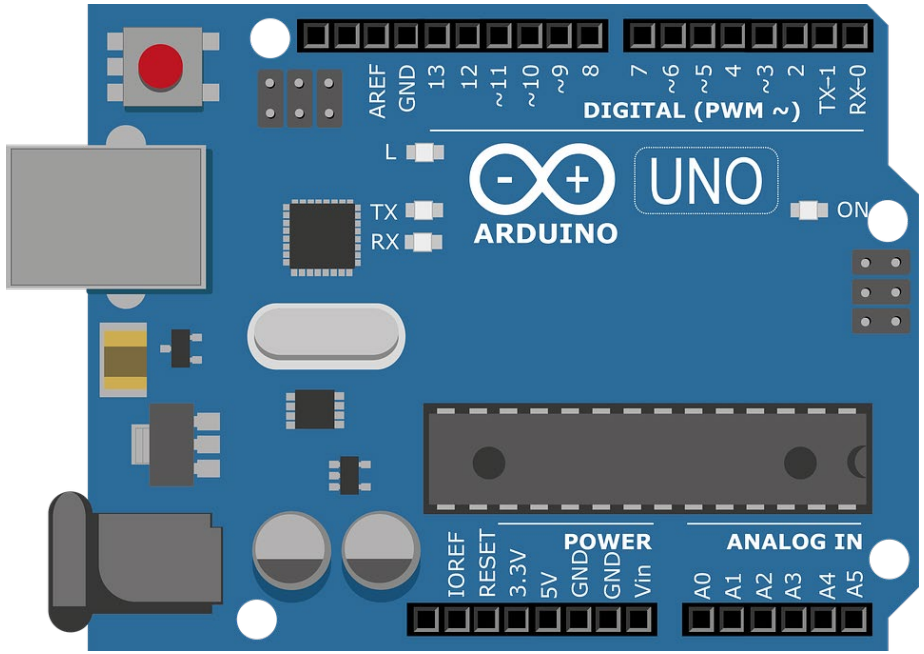
Microcontrolador

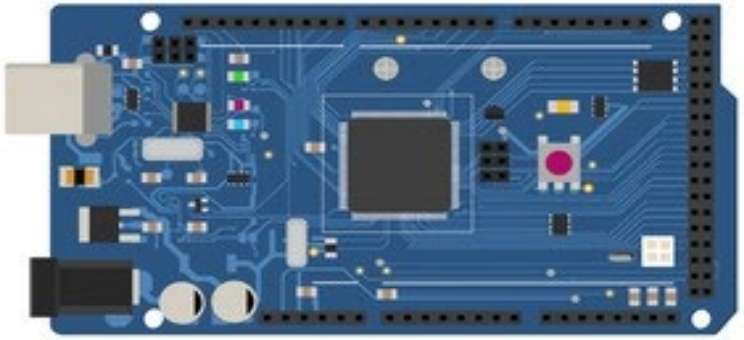
Programación

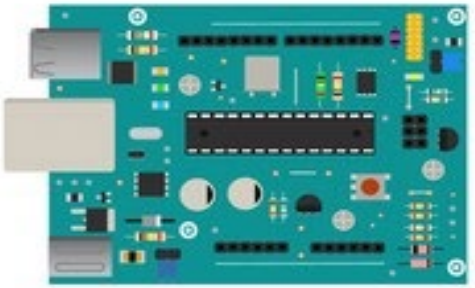


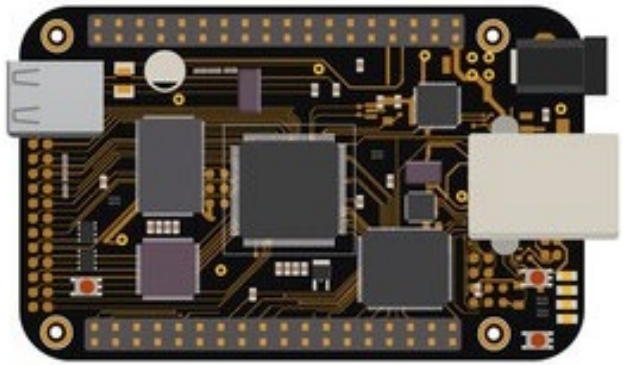


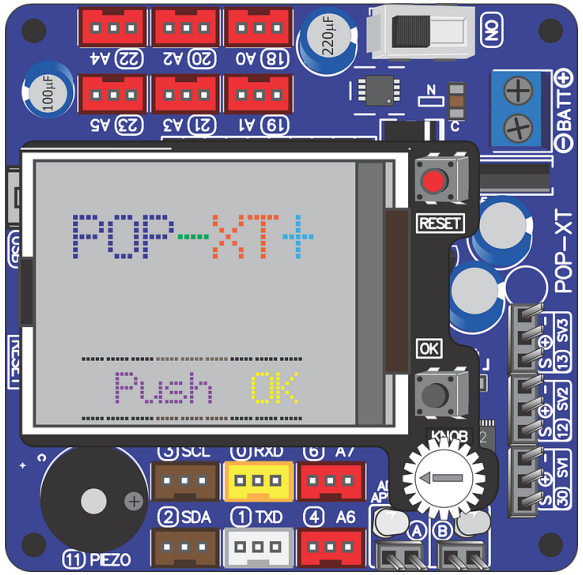
Microcontrolador



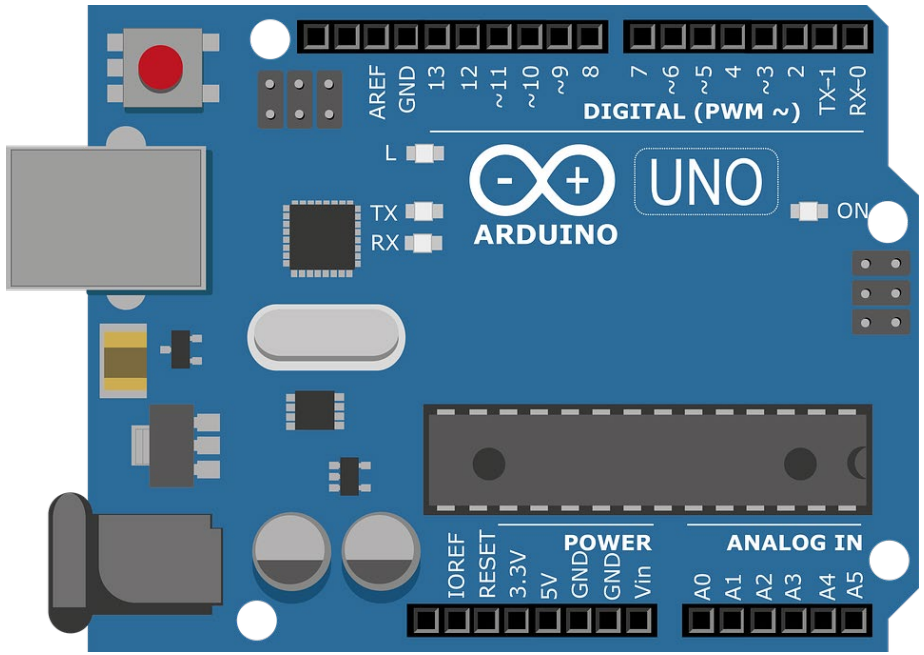


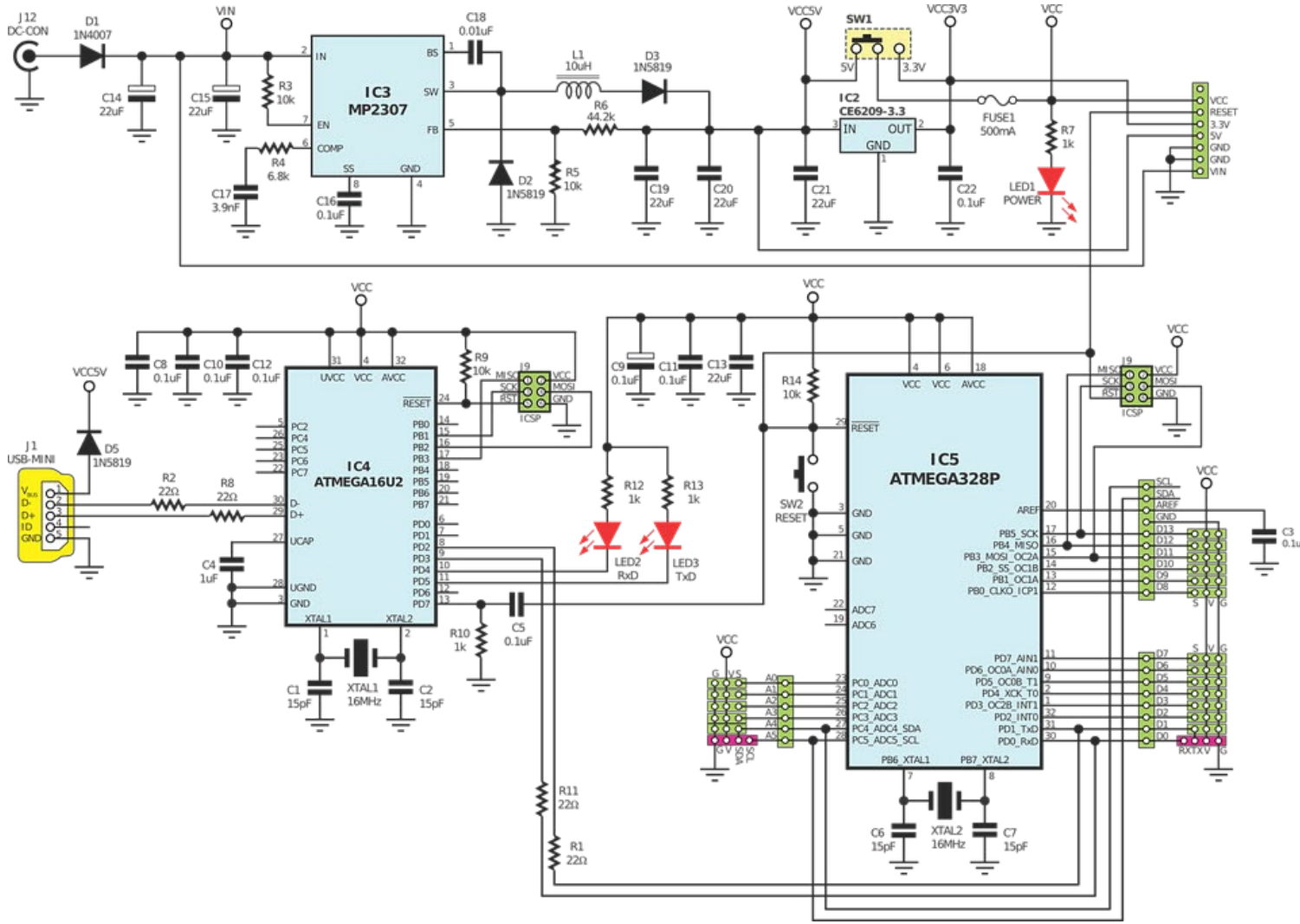




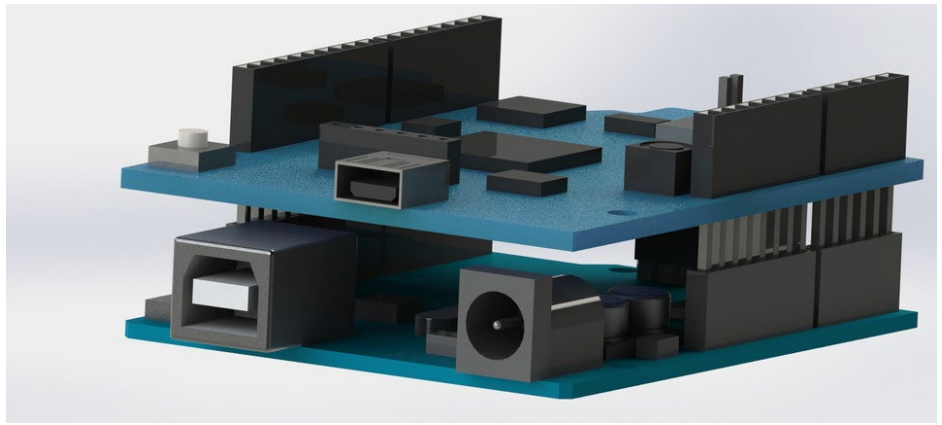


ARDUINO


AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM ~)
L
TX
RX
ON
UNO
ARDUINO
POWER
ANALOG IN
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5


J12
DC-CON
D1
1N4007
C14
22uF
VIN
C15
22uF
R3
10k
R4
6.8k
C17
3.9nF
IC3
MP2307
IN
EN
COMP
BS
SW
FB
SS
GND
C18
0.01uF
C16
0.1uF
L1
10uH
D3
1N5819
D2
1N5819
R6
44.2k
R5
10k
C19
22uF
C20
22uF
VCC5V
SW1
5V
3.3V
VCC3V3
IC2
CE6209-3.3
IN
OUT
GND
C21
22uF
C22
0.1uF
FUSE1
500mA
R7
1k
LED1
POWER
VCC
RESET
3.3V
5V
GND
GND
VIN
J1
USB-MINI
D5
1N5819
R2
22Ω
R8
22Ω
C4
1uF
C8
0.1uF
C10
0.1uF
C12
0.1uF
IC4
ATMEGA16U2
UVCC
VCC
AVCC
RESET
UCAP
UGND
GND
XTAL1
XTAL2
R9
10k
J9
MISO
SCK
RST
VCC
MOSI
GND
ICSP
C1
15pF
XTAL1
16MHz
C2
15pF
R10
1k
C5
0.1uF
C9
0.1uF
C11
0.1uF
C13
22uF
R12
1k
R13
1k
LED2
RxD
LED3
TxD
R14
10k
SW2
RESET
IC5
ATMEGA328P
AREF
ADC7
ADC6
PB6_XTAL1
PB7_XTAL2
C6
15pF
XTAL2
16MHz
C7
15pF
R11
22Ω
R1
22Ω
C3
0.1uF

ARDUINO



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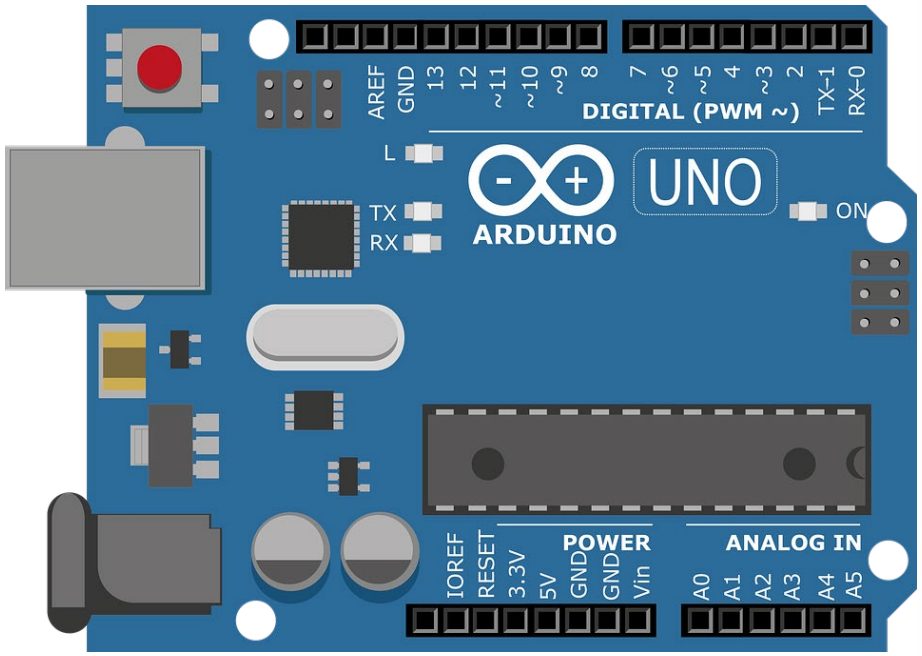
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM ~)
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UNO
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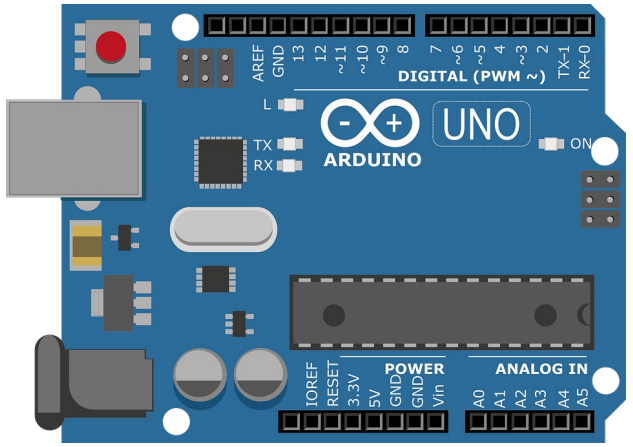
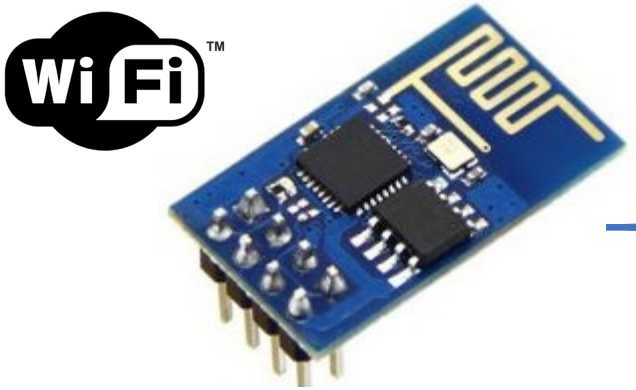
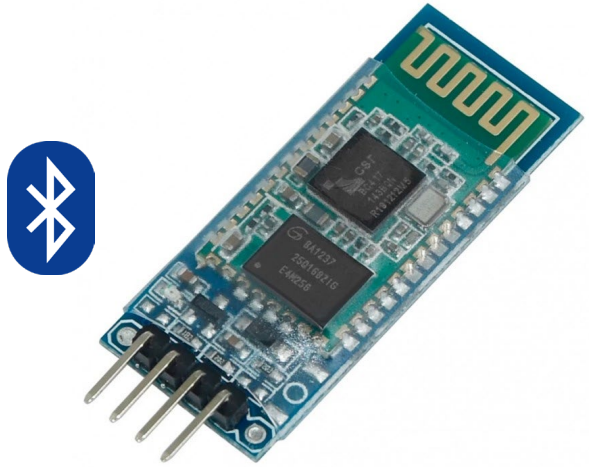
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5

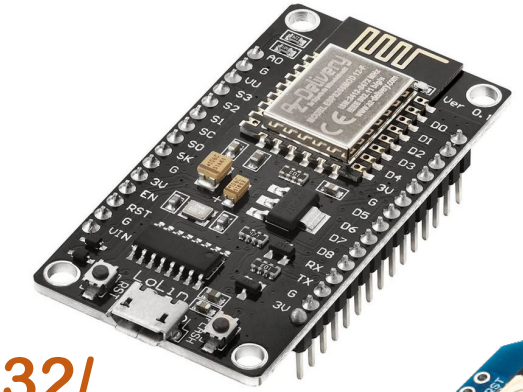

JOYSTICK
FLAME
RGB LED
HEARTBEAT
2PCS LIGHT CUP
HALL MAGNETIC
RELAY
LINEAR HALL
SMD RGB
7 COLOR FLASH
TILT SWITCH
18B20 TEMP
BIG SOUND
TOUCH
TWO-COLOR
LASER EMIT
BALL SWITCH
ANALOG TEMP
SMALL SOUND
DIGITAL TEMPERATURE
MINI TWO-COLOR
BUTTON
PHOTOR-ESISTOR
IR EMISSION
TRACKING
BUZZER
REED SWITCH
SHOCK
TEMP AND HUMIDITY
IR RECEIVER
AVOIDANCE
PASSIVE BUZZER
MINI SWITCH
ROTARY ENCODERS
ANALOG HALL
TAP MODULE
LIGHT BLOCKING

ARDUINO

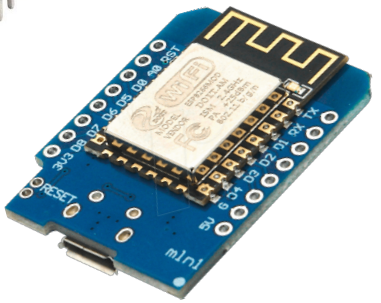








ESP32/
ESP8266

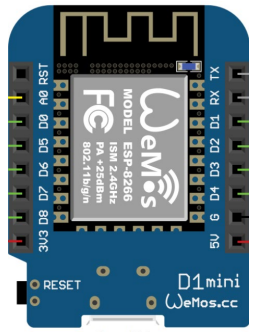


Wemos D1 mini

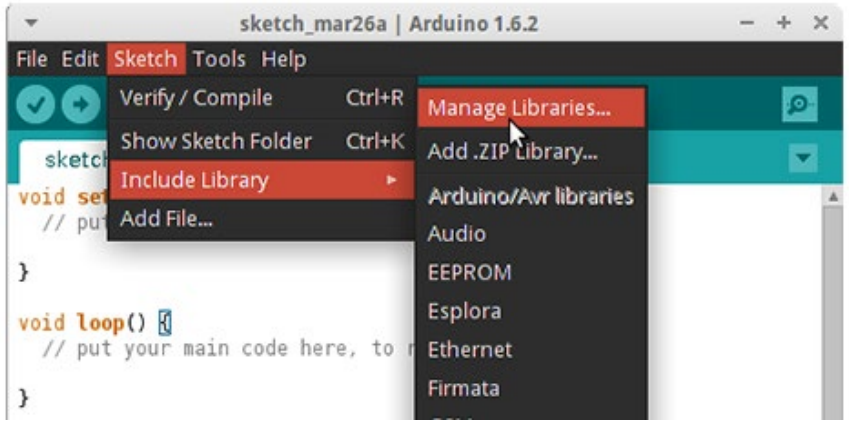
ARDUINO


Blink | Arduino 1.8.13
File Edit Sketch Tools Help
Blink
modified 2 Sep 2016
by Arturo Guadalupi
modified 8 Sep 2016
by Colby Newman
This example code is in the public
http://www.arduino.cc/en/Tutorial/
// the setup function runs once when
void setup() {
// initialize digital pin LED_BUILT
pinMode(LED_BUILTIN, OUTPUT);
}
// the loop function runs over and ov
void loop() {
digitalWrite(LED_BUILTIN, HIGH);
ARDUINO
Genuino
AN OPEN PROJECT WRITTEN, DEBUGGED,
AND SUPPORTED BY ARDUINO.CC AND
THE ARDUINO COMMUNITY WORLDWIDE
LEARN MORE ABOUT THE CONTRIBUTORS
OF ARDUINO.CC on arduino.cc/credits
Starting...
Arduino Uno on COM4
ARDUINO
UNO

=


WeMos
MODEL ESP-8266
ISM 2.4GHz
PA +25dBm
802.11b/g/n
RESET
D1mini
WeMos.cc
Source: Fritzing

+


sketch_mar26a | Arduino 1.6.2
File Edit Sketch Tools Help
Verify / Compile Ctrl+R
Show Sketch Folder Ctrl+K
Include Library
Add File...
Manage Libraries...
Add .ZIP Library...
Arduino/Avr libraries
Audio
EEPROM
Esplora
Ethernet
Firmata
void loop() {
// put your main code here, to
}