

Arduino – Nivel 1

SESIÓN I – INTRODUCCIÓN

Arduino UNO

HARDWARE

Arduino UNO

- Microcontrolador basado en el ATmega328
- 14 líneas de Entrada/Salida Digital (6 configurables como PWM)
- 6 líneas de Entrada Analógica
- 16 MHz

D13,D12,...D2,D1,D0



A0 - A5

ATMEGA 82U/16U2 ICSP

7-12V Depending on current drawn

GND VIN 2.1mm

Absolute MAX per pin 40mA recommended 20mA

Absolute MAX 200mA for entire package

IOREF provides a logic reference voltage for shields that use it. It is connected to the 5V bus.

R3 Only

The input voltage to the board when it is running from external power. Not USB bus power.

Cut to disable autoreset

ICSP

DIGITAL [#-DUM1]

TX RX

RESISTOR

RESET BUTTON

USB JACK Type B

PCINT14 RESET PC6 1

PCINT13 ADC5 PC5 28

PCINT12 ADC4 PC4 27

PCINT11 ADC3 PC3 26

PCINT10 ADC2 PC2 25

PCINT9 ADC1 PC1 24

PCINT8 ADC0 PC0 23

PCINT7 PB7 21

PCINT6 PB6 20

PCINT5 PB5 19

PCINT4 PB4 18

PCINT3 PB3 17

PCINT2 PB2 16

PCINT1 PB1 15

PCINT0 PB0 14

PCINT23 OC0A

PCINT22 OC0B

PCINT21 OC0C

PCINT20 XCK

PCINT19 OC2B

PCINT18 INT0

PCINT17 TXD

PCINT16 RXD

PCINT15 PD0

PCINT14 PD1

PCINT13 PD2

PCINT12 PD3

PCINT11 PD4

PCINT10 PD5

PCINT9 PD6

PCINT8 PD7

PCINT7 AIN1

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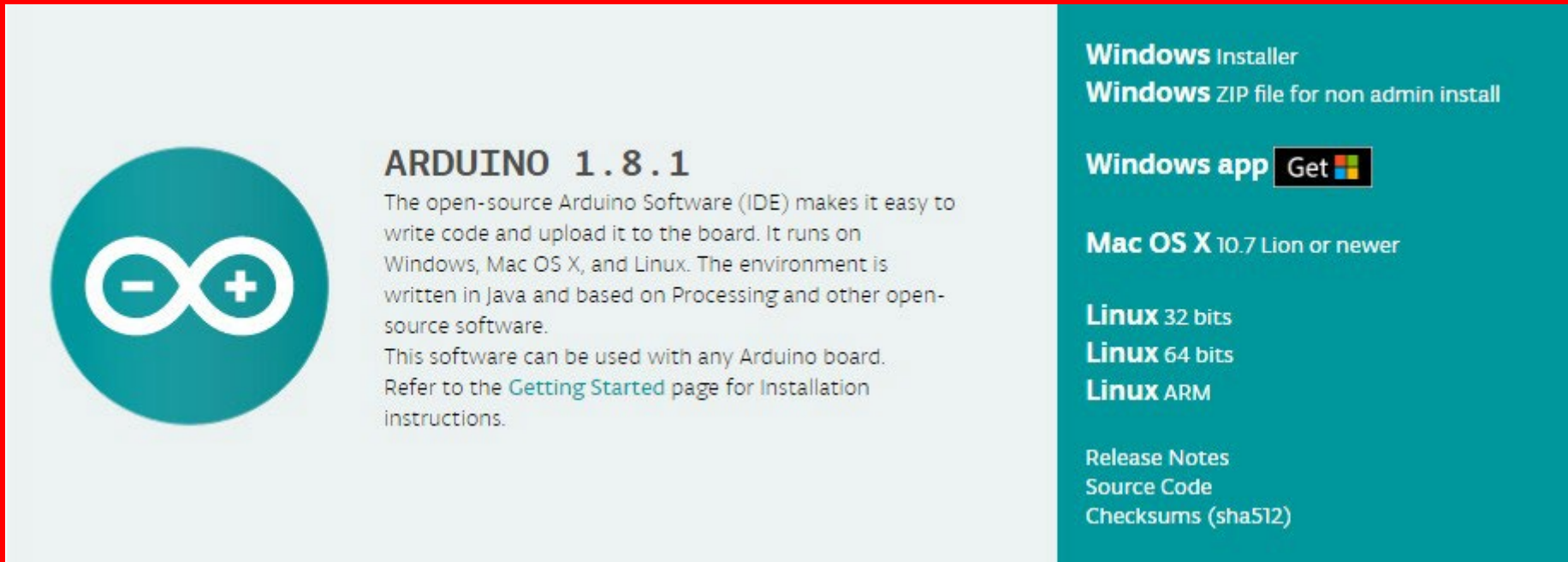
Arduino IDE

SOFTWARE Y DRIVERS

Descargar Software

Arduino IDE

- <https://www.arduino.cc/en/main/software>




The screenshot shows the Arduino 1.8.1 download page. On the left is the Arduino logo, a teal circle with a white infinity symbol containing a minus sign on the left and a plus sign on the right. To the right of the logo, the text reads: **ARDUINO 1.8.1**, followed by a paragraph describing the IDE as open-source software for Windows, Mac OS X, and Linux, written in Java and based on Processing. Below this, it states the software can be used with any Arduino board and refers to the 'Getting Started' page for installation instructions. On the right side of the page, there is a teal sidebar with links for Windows (Installer, ZIP file for non admin install, app with a 'Get' button), Mac OS X (10.7 Lion or newer), Linux (32 bits, 64 bits, ARM), Release Notes, Source Code, and Checksums (sha512).

ARDUINO 1.8.1

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.

This software can be used with any Arduino board. Refer to the [Getting Started](#) page for Installation instructions.

Windows Installer
Windows ZIP file for non admin install
Windows app [Get](#) 
Mac OS X 10.7 Lion or newer
Linux 32 bits
Linux 64 bits
Linux ARM
[Release Notes](#)
[Source Code](#)
[Checksums \(sha512\)](#)

Editor Online

Arduino Web Editor

- <https://create.arduino.cc/editor>



ARDUINO WEB EDITOR

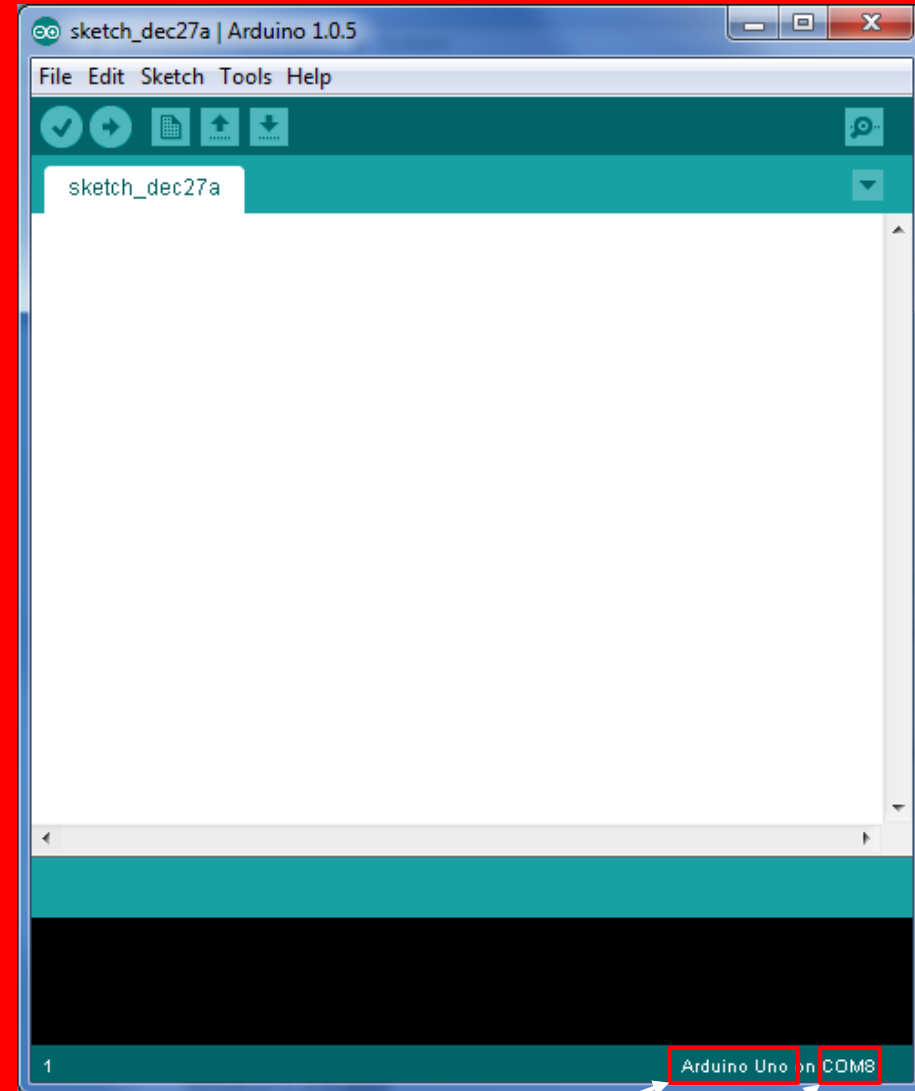
Start coding online with the [Arduino Web Editor](#), save your sketches in the cloud, and always have the most up-to-date version of the IDE, including all the contributed libraries and support for new Arduino boards. The Arduino Web Editor is one of the [Arduino Create platform's](#) tools.

Try It Now
Getting Started



Arduino IDE

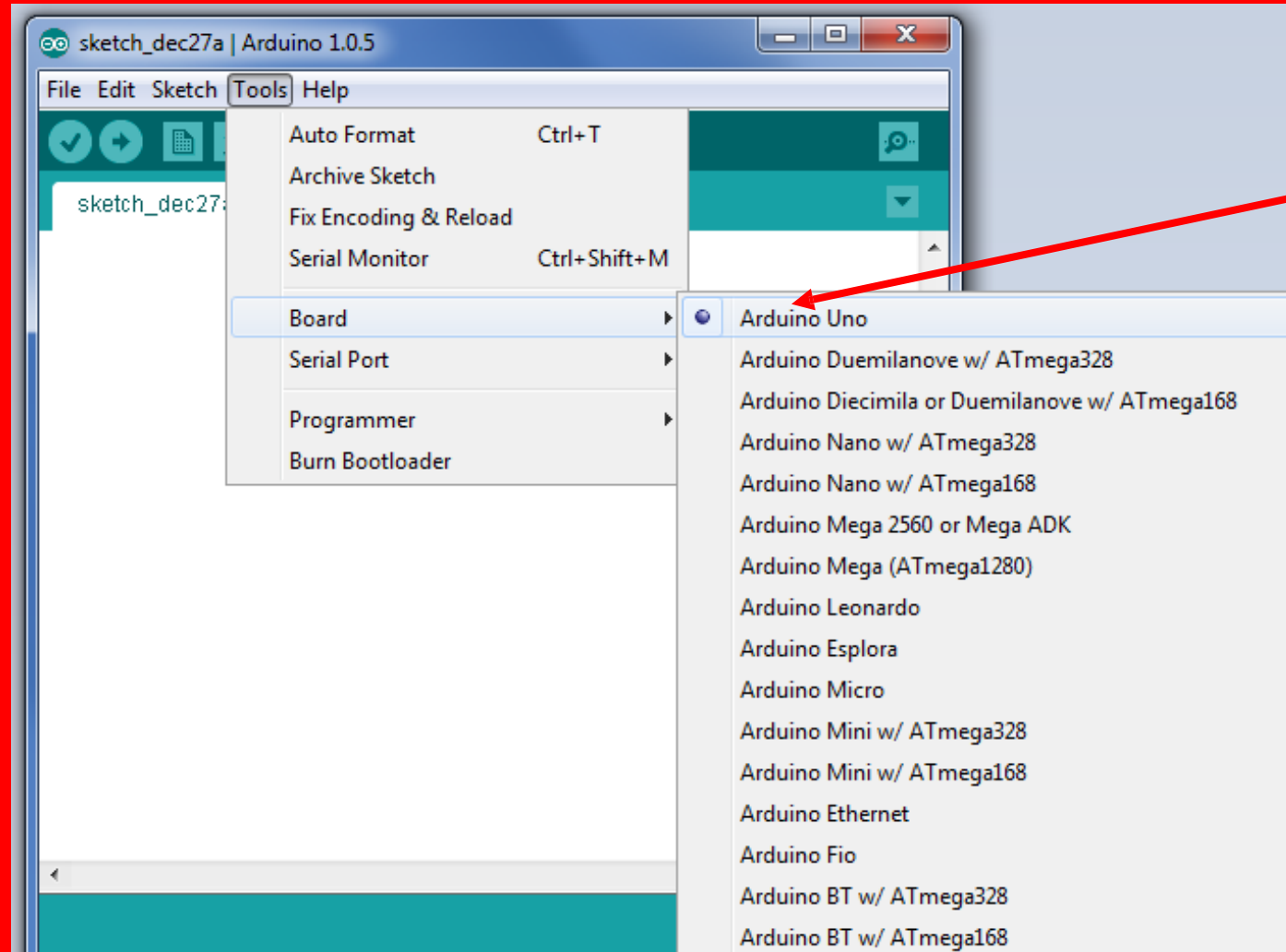
- Para empezar, click *Menú Inicio* → *Arduino*
- Verifique que el modelo de su placa (Arduino Uno) y el Puerto (depende de su PC) sean los correctos.



Modelo de la Placa

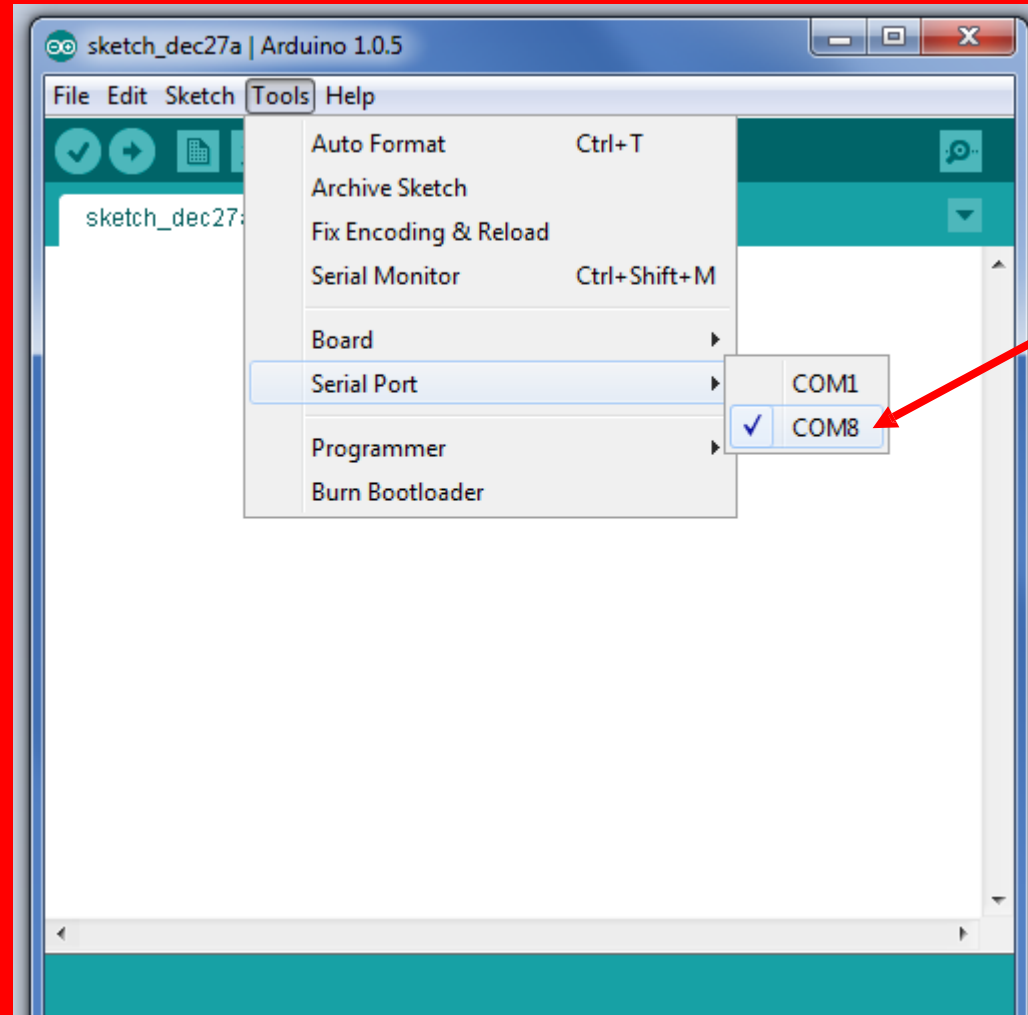
El Puerto al que
está conectado

Selección su Placa



Selección su placa

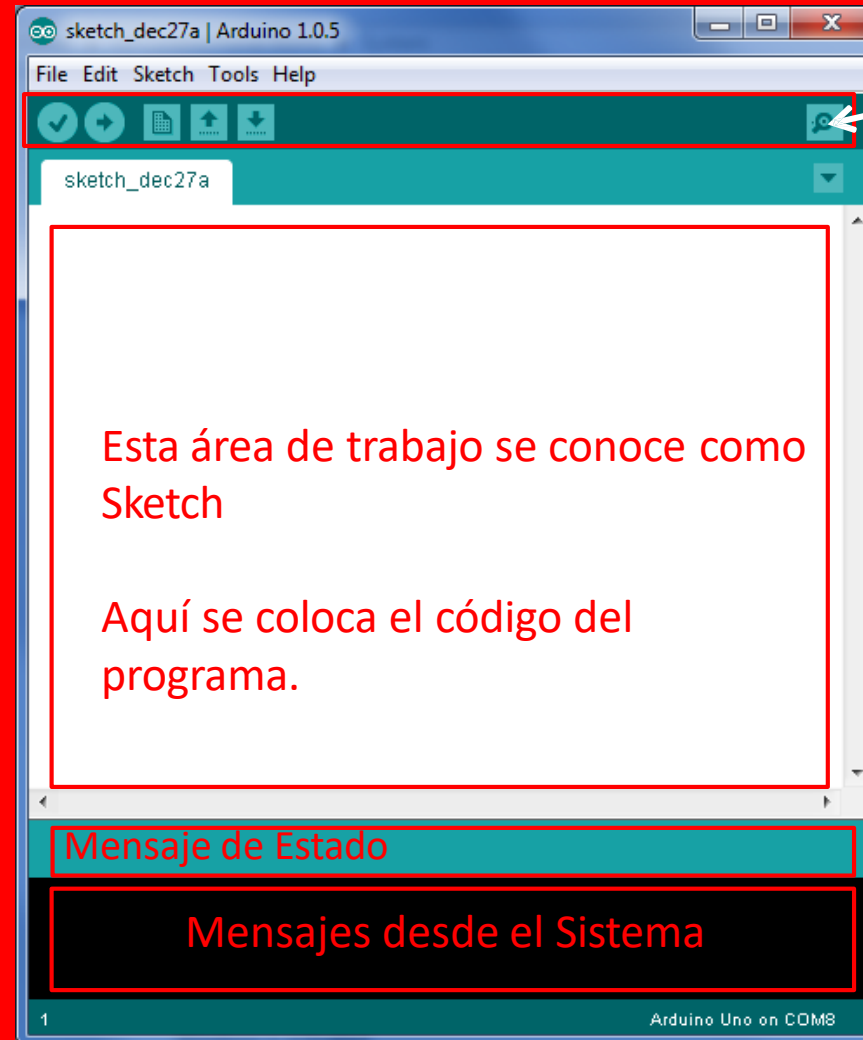
Selección el Puerto



Seleccione el Puerto
correcto.
El número depende
de su S.O.







Arduino IDE

Barra de
Herramientas



Monitor Serial,
Utilice esta
herramienta para
mostrar mensajes y
enviar comandos
a la Placa.

Barra de Herramientas (Toolbar)

- Verificar (Verify) 
 - Verifica los Errores del Código
- Subir (Upload) 
 - Compila y sube el código a la placa Arduino
- Nuevo (New) 
 - Crea un nuevo sketch
- Abrir (Open) 
 - Open sketch
- Salvar (Save) 
 - Guarda el sketch
- Monitor Serie 
 - Visualiza la data serial enviada desde la placa Arduino

Arduino Code

Para ejecutar un programa en Arduino, su sketch debería contener estos dos métodos

```
void setup()
{
  // Inicialización de variables, modo de los pines, librerías
  // Se ejecuta una vez después de inicializar o resetear
  // un programa
}

void loop()
{
  // Repite el contenido cíclicamente permitiendo al programa
  // cambiar y responder
}
```

Tipos de Datos

- Byte — 8 bits sin decimales (0 — 255)

byte miVariable = 200;

- Int — 16 bits sin decimales (-32,767 a 32,768)

int unaVariable = 5555;

- Long — 32 bits sin decimales (-2147483648 a 2147483647)

long tuVariable = 2016;

- Float — 32 bits con decimales (-3.4028235 E38 a 3.4028235 E38)

float losDecimales = 3.141516;

Tipos de Datos

- Arrays

```
int miArray[] = (valor0, valor1, valor2...)
```

```
int otroArray[5];
```

```
otroArray[3] = 10;
```

```
x = otroArray[3];
```

Operaciones

- Suma: +
- Resta: -
- Multiplicación: *
- División: /

Comunicación Serial

- Configurar Puerto

`Serial.begin(tasa de transmisión)`

- Enviar Datos

`Serial.println(dato);`

`Serial.print(dato, tipo de dato); //DEC, OCT, BIN, HEX, BYTE, ASCII`

- Leer la cantidad de Datos Disponible en el Puerto

`Serial.available(); //Devuelve 0 si no hay algún dato presente`

- Recibir Datos

`Serial.read();`

Otras opciones

Autodesk Circuits

- <https://circuits.io/>

