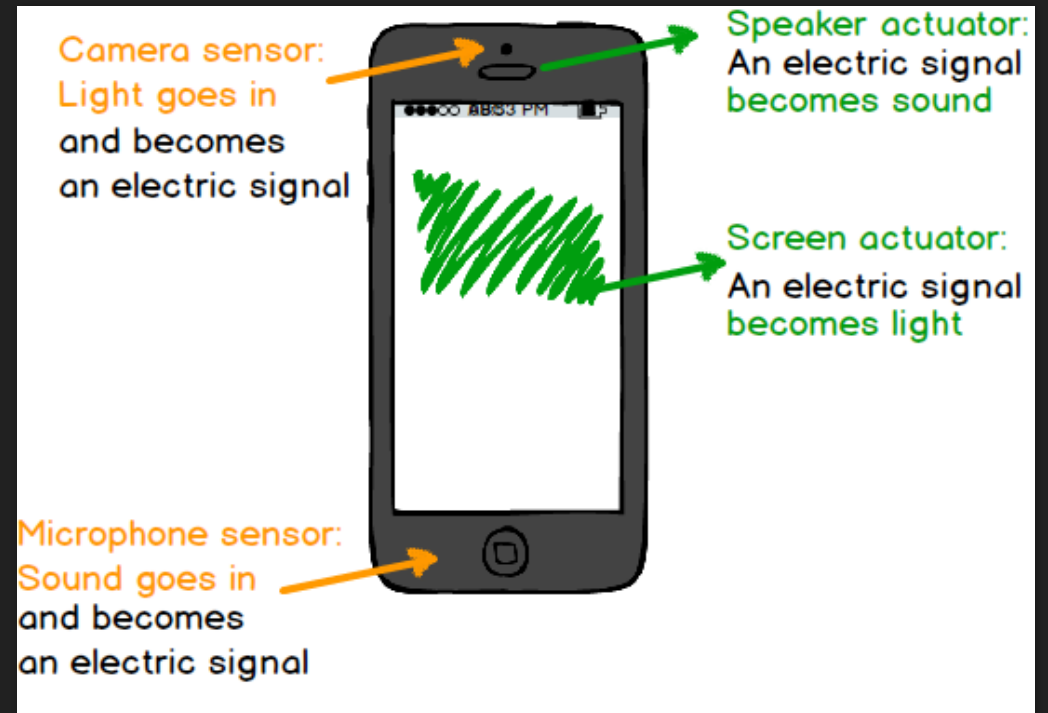# Sensores y Actuadores

Universidad Autónoma de Nuevo León (UANL)

Recapitulemos…

- ¿Qué es un sensor?
- ¿Qué es un actuador?
- ¿Qué es un transductor?
- ¿Cuáles son sus diferencias?
- ¿Qué es un principio de transducción?

Camera sensor: Light goes in and becomes an electric signal

Speaker actuator: An electric signal becomes sound

Screen actuator: An electric signal becomes light

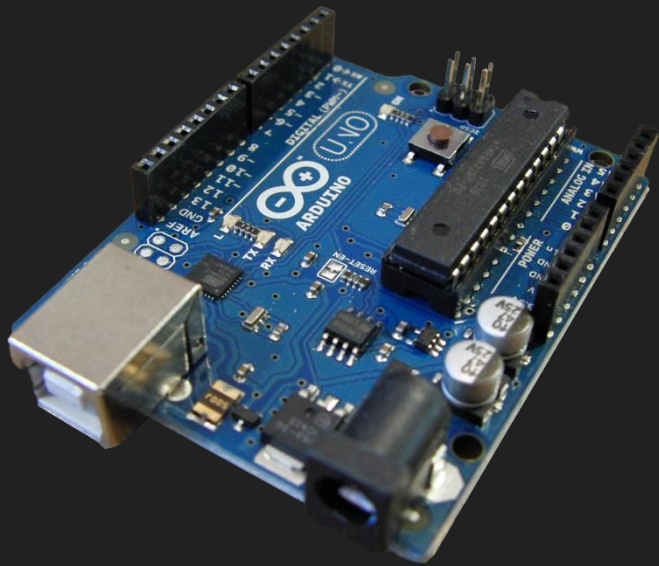Microphone sensor: Sound goes in and becomes an electric signal

Quote in english (100% real, no fake)

Be curious.
Read widely.
Try new things.
What people
call intelligence
just boils down
to curiosity.
-Aaron Swartz, software developer

¿Qué es Arduino?

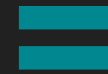○ Es una simple placa de entrada/salida (E/S) y un entorno de desarrollo.

¿Por qué Arduino?

- Multiplataforma
- Entorno de programación simple y claro
- Código abierto
- Comunidad de usuarios activa
- Económico
- Didáctico
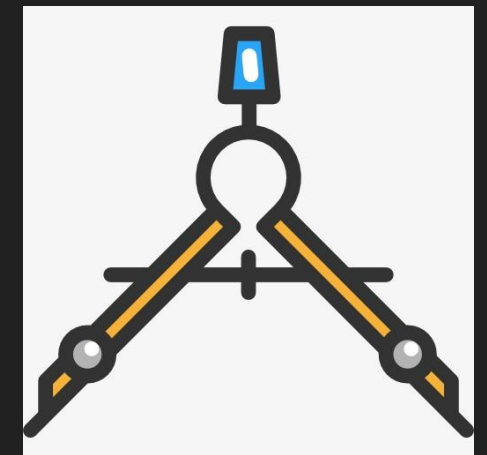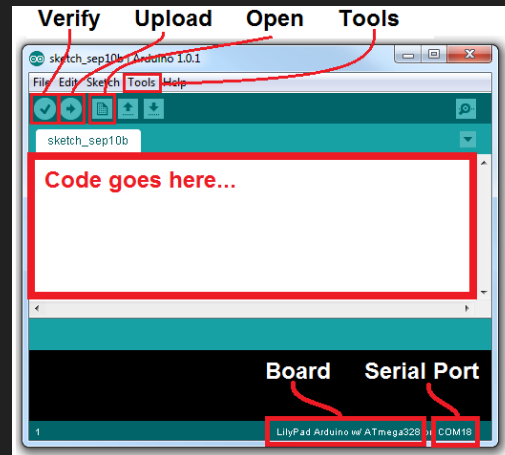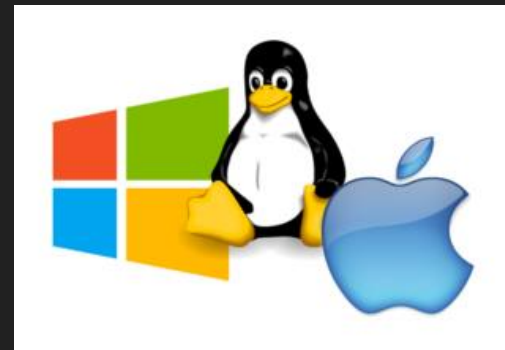
Computación física

○ Interacción entorno-objeto por medio de sensores y actuadores controlados por un software dentro de un chip.

Creador: Massimo Banzi

Partes del hardware

Partes del software

Blink | Arduino 1.6.13

```
// the setup function runs once when you press reset or power the b
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH);   // turn the LED on (HIGH is th
  delay(1000);                       // wait for a second
  digitalWrite(LED_BUILTIN, LOW);    // turn the LED off by making
  delay(1000);                       // wait for a second
}
```
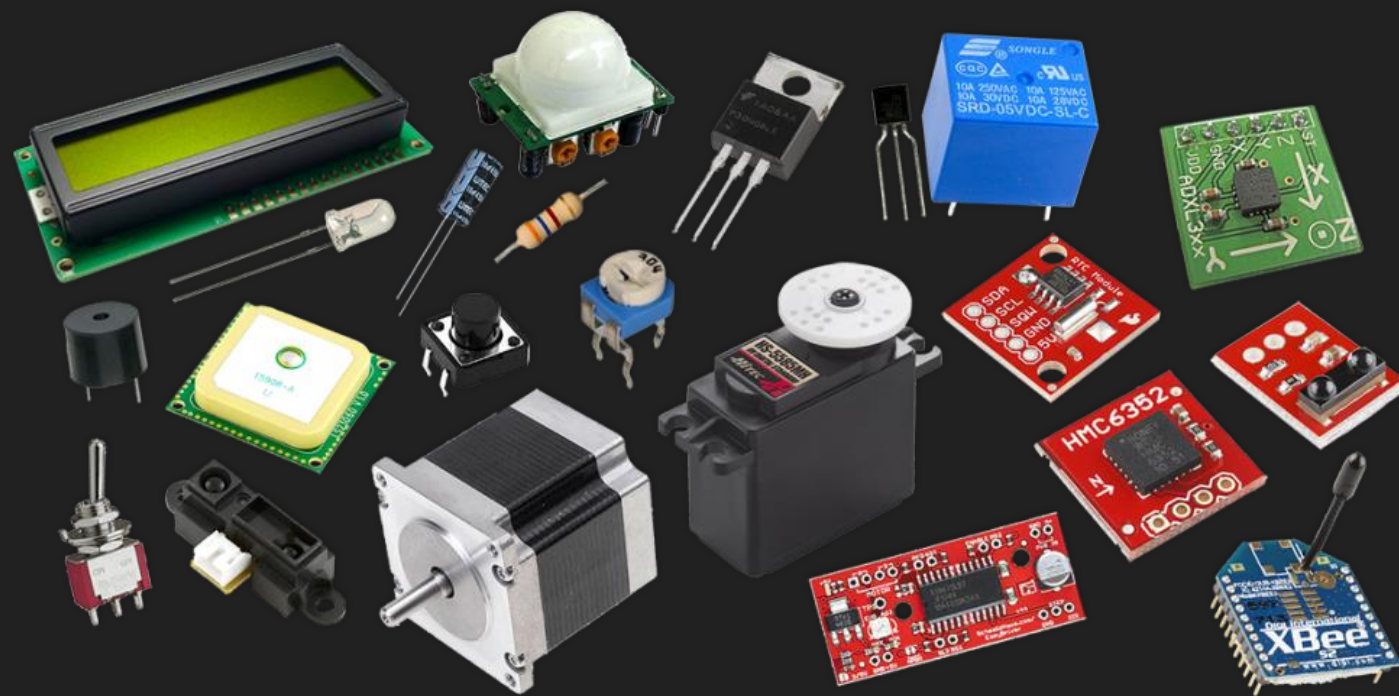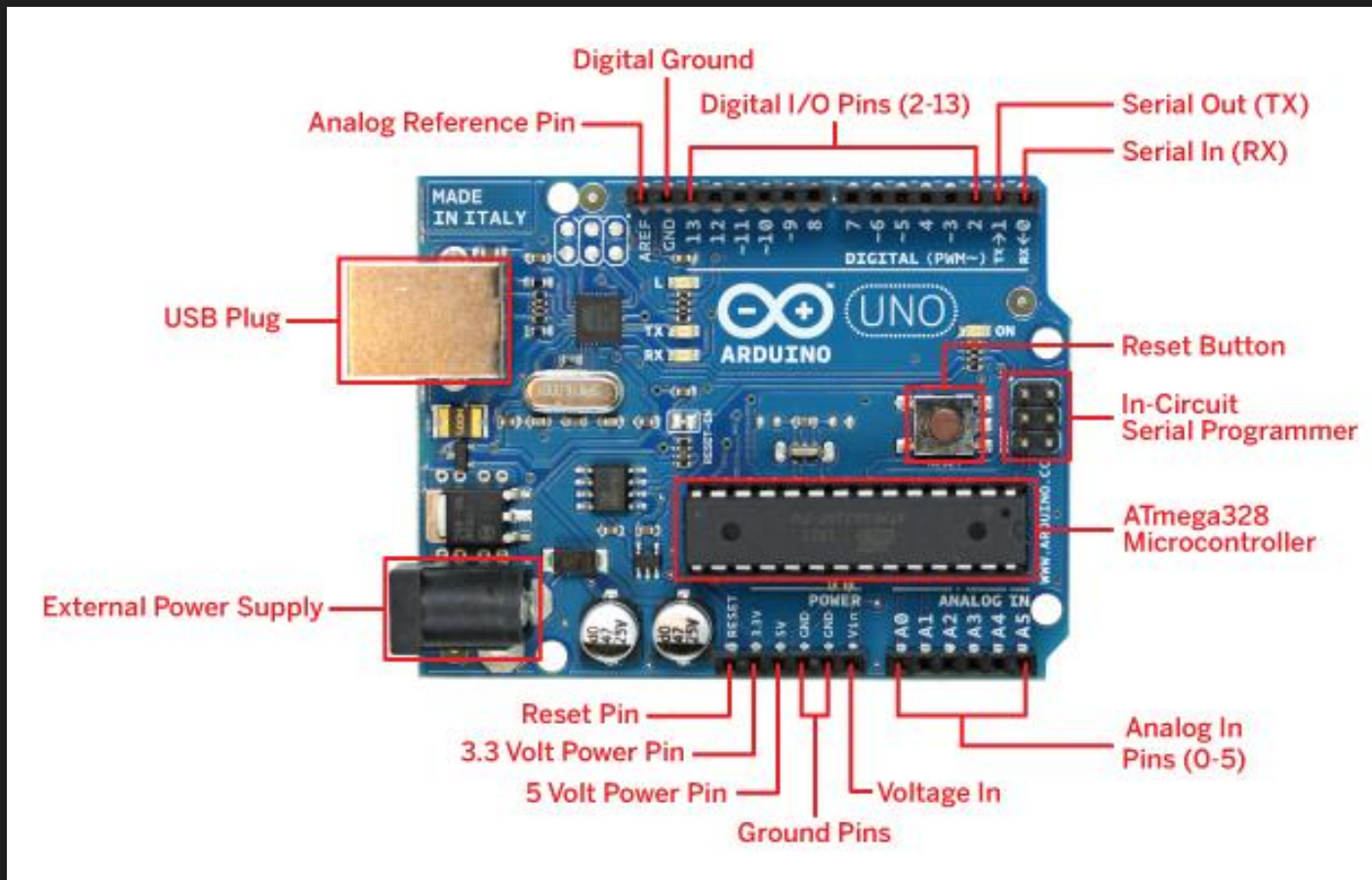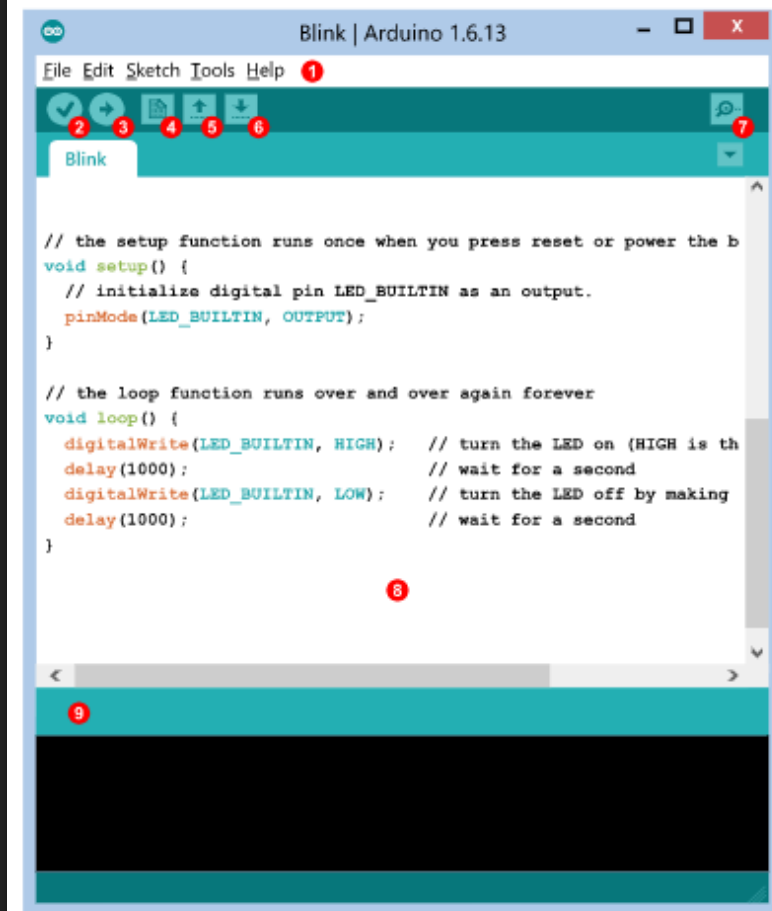
1. **Menu:** Selections of software features.

2. **Verify:** Compiles and verifies your sketch.

3. **Upload:** Send your sketch to STEMTera™ Breadboard.

4. **New:** Opens a new sketch window.

5. **Open:** Open and existing sketch.

6. **Save:** Save current active sketch.

7. **Monitor:** Opens a window to send and receive information.

8. **Editor:** Code editor area. Type your sketch in this area.

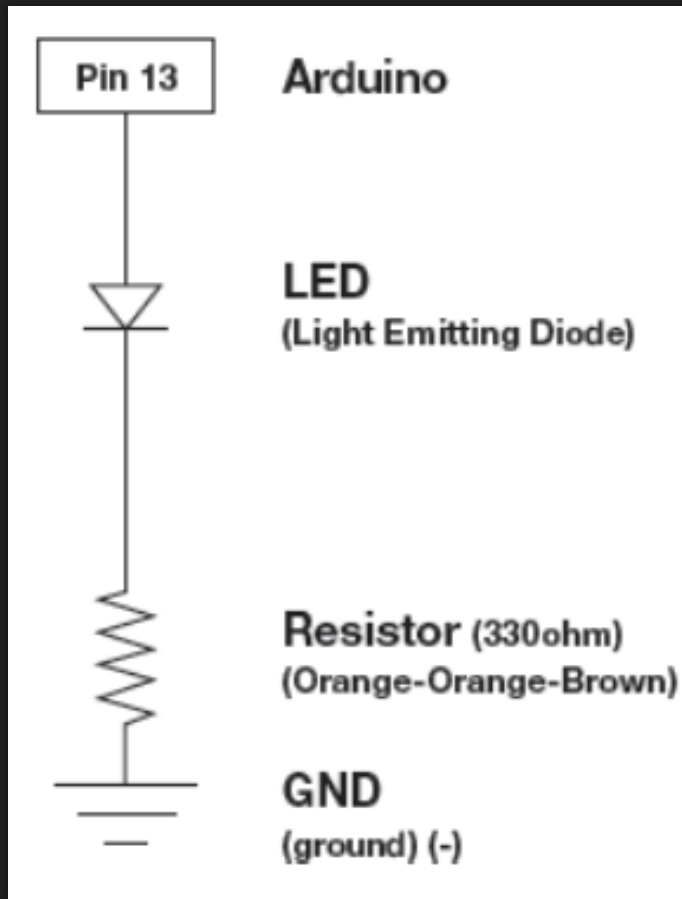9. **Message:** IDE reports success or failure messages here.
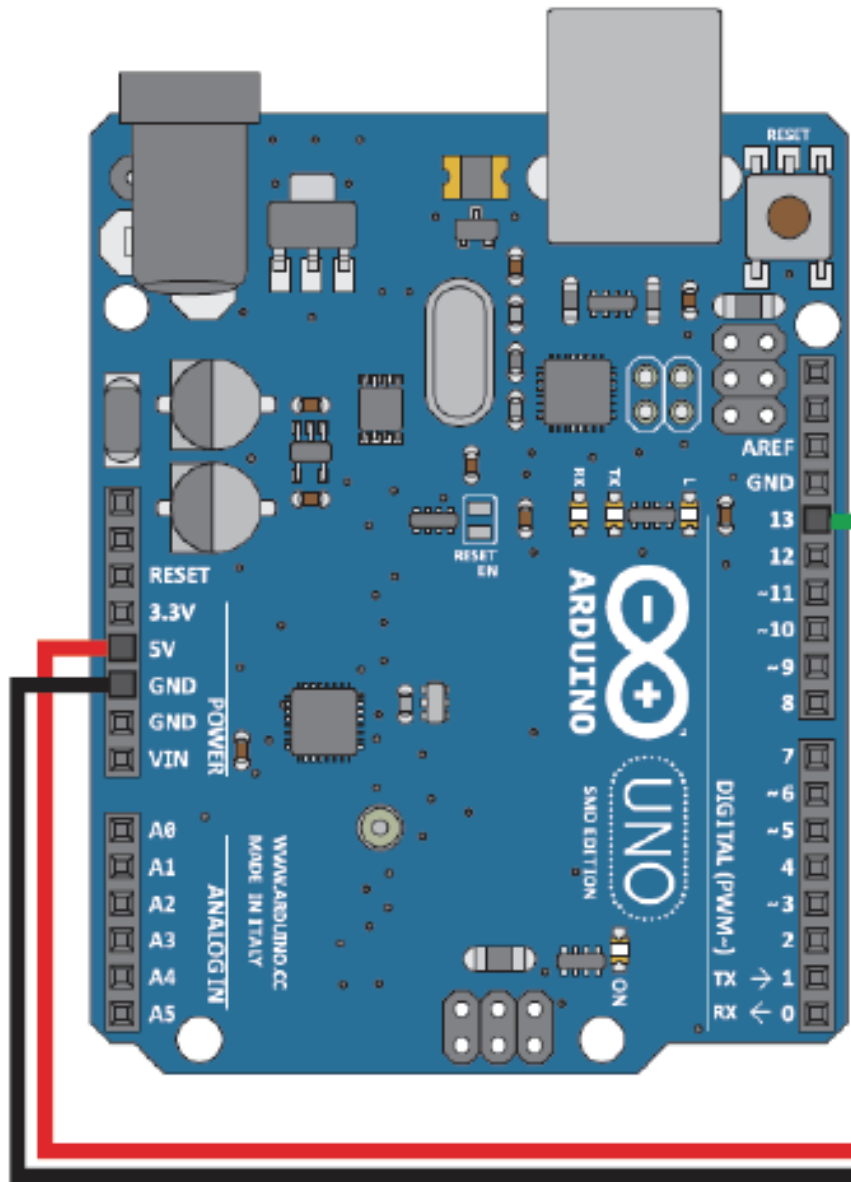
Estructura interna de una protoboard
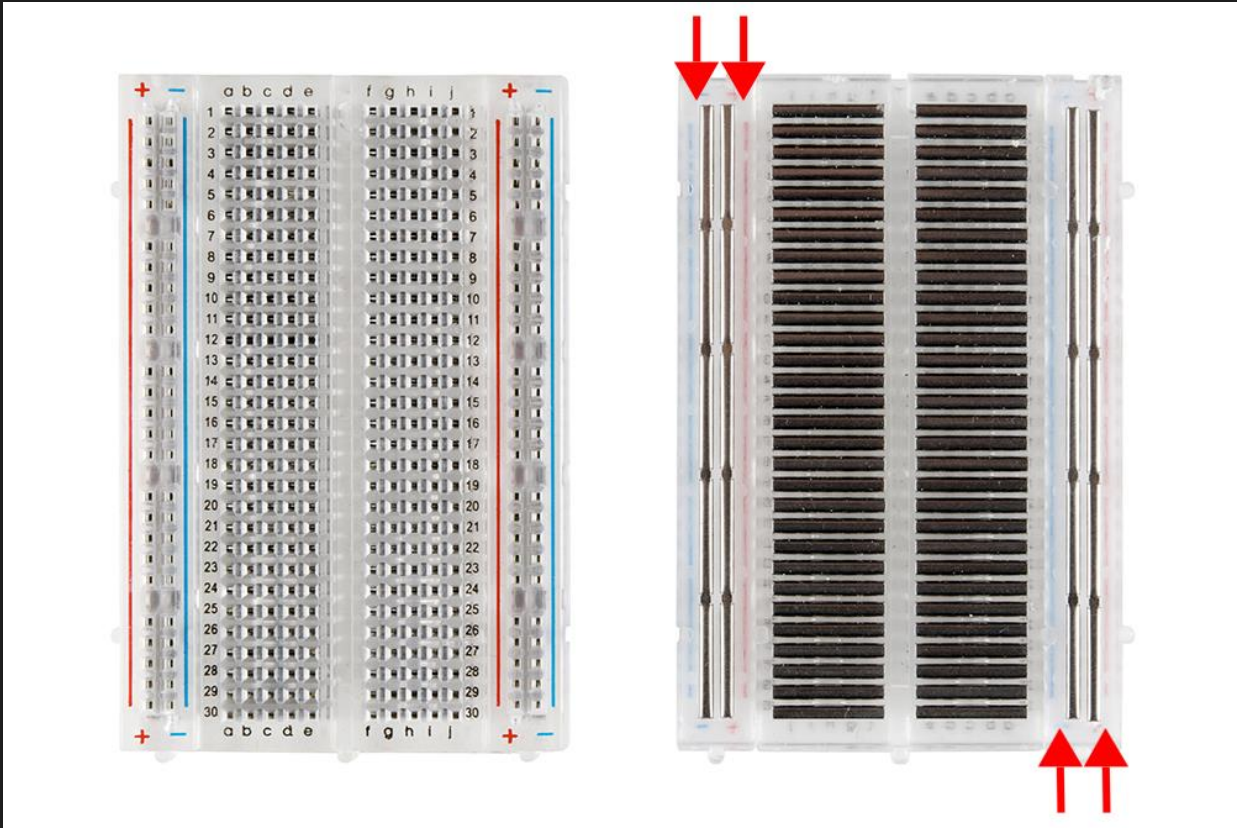
Estructura interna de una protoboard
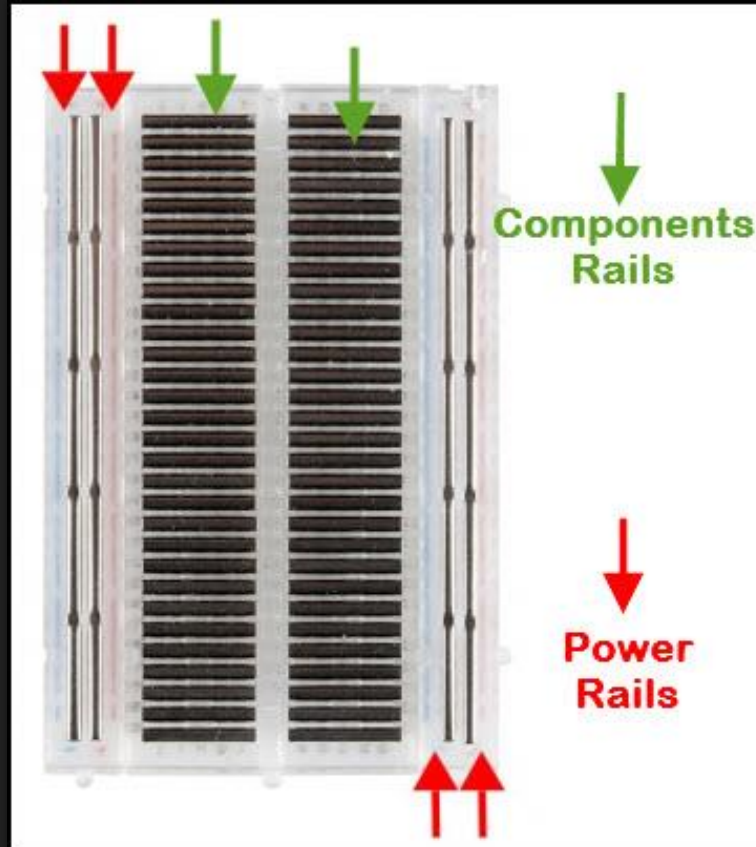
Conectando un circuito simple

+ **330Ω Resistor:** The color banding should read orange-orange-brown-gold. The component legs can go in either hole.

+ **LED:** Make sure the short leg, marked with flat side, goes into the negative position (-).

Flat Edge

Short Leg

+ **Jumper Wire:** All jumper wires work the same. They are used to connect two points together. This guide will show the wires with different colored insulations for clarity, but using different combinations of colors is completely acceptable.

```
int led = 13;

void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
}

// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(led, HIGH);    // turn the LED on (HIGH is the voltage level)
  delay(1000);                // wait for a second
  digitalWrite(led, LOW);     // turn the LED off by making the voltage LOW
  delay(1000);                // wait for a second
}
```

Software

Actividad

- Descargar aplicación: Kahoot!