Conocimientos Básicos

Facultad de Estadística e Informática

03 / Julio / 2017

Elementos que intervienen:

- Para trabajar con Arduino, se requiere de ciertos conocimientos básicos:
  - Electrónica.
    - Componentes electrónicos.
    - Circuitos.
    - Tipos de señal.
    - Ley de Ohm.
  - Programación.
    - Declaración de elementos.
    - Asignación de valores.
    - Estructuras de control.
    - Impresión de elementos.

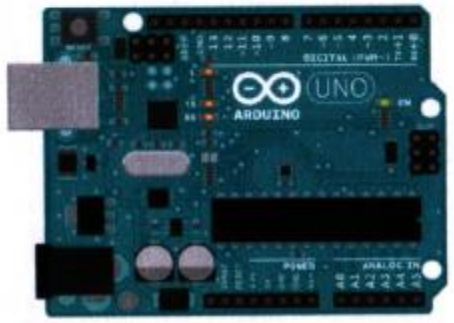
Componentes Electrónicos

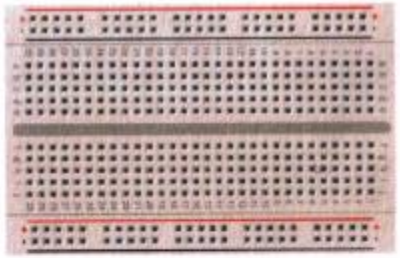
- Existen muchísimos componentes, sin embargo, analizaremos los que están incluidos en los kits.

- Protoboard.
- Capacitores.
- Motor DC.
- Diodos.
- Puente H.
- Diodos.
- LCD.
- Piezo.
- Potenciometro.
- Pulsador.
- Resistencia.
- Servo-Motor.
- Sensor de Temperatura.
- Sensor de Inclinación.
- Transistor.

Componentes Electrónicos

PARTS IN YOUR KIT

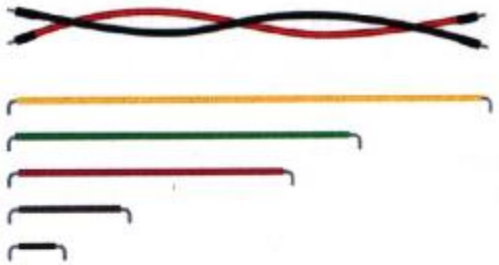




Breadboard - A board on which you can build electronic circuits. It's like a patch panel, with rows of holes that allow you to connect wires and components together. Versions that require soldering are available, as well as the solder-less type used here.

nets, causing the shaft to spin. If the direction of the electricity is reversed, the motor will spin in the opposite direction.

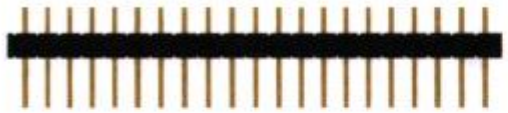
Diode - Ensures electricity only flows in one direction. Useful when you have a motor or other high current/voltage load in your circuit. Diodes are polarized, meaning that the direction that they're placed in a circuit matters. Placed one way, they allow current to pass through. Placed the other way, they block it. The anode side generally connects to the point of higher energy in your circuit. The cathode typically connects to the point of lower energy, or to ground. The cathode is usually marked with a band on one side of the component's body.



Jumper wires - Use these to connect components to each other on the breadboard, and to the Arduino.

Light Emitting Diodes (LEDs) - A type of diode that illuminates when electricity passes through

Componentes Electrónicos



Male header pins - These pins fit into female sockets, like those on a breadboard. They help make connecting things much easier.

Optocoupler - This allows you to connect two circuits that do not share a common power supply. Internally there is a small LED that, when illuminated, causes a photoreceptor in-

Potentiometer - A variable resistor with three pins. Two of the pins are connected to the ends of a fixed resistor. The middle pin, or wiper, moves across the resistor, dividing it into two halves. When the external sides of the potentiometer are connected to voltage and ground, the middle leg will give the difference in voltage as you turn the knob. Often referred to as a pot.

Servo motor - A type of geared motor that can only rotate 180 degrees. It is controlled by sending electrical pulses from your Arduino. These pulses tell the motor what position it should move to.

ling high current/high voltage components like motors. One pin connects to ground, another to the component being controlled, and the third connects to the Arduino. When the component receives voltage on the pin connected to an Arduino, it closes the circuit between the ground and the other component.

Componentes Electrónicos

ıe to close an internal switch. When you ap-
y voltage to the + pin, the LED lights and the
ternal switch closes. The two outputs replace
switch in the second circuit.

ezo - An electrical component that can be
ed to detect vibrations and create noises.

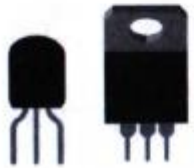
otoresistor - (also called a photocell, or light-
pendent resistor). A variable resistor that

Pushbuttons - Momentary switches that close a circuit when pressed. They snap into breadboards easily. These are good for detecting on/off signals.

Resistors - Resist the flow of electrical energy in a circuit, changing the voltage and current as a result. Resistor values are measured in ohms (represented by the Greek omega character: Ω). The colored stripes on the sides of

put depending on the temperature of the component. The outside legs connect to power and ground. The voltage on the center pin changes as it gets warmer or cooler.

Tilt sensor - A type of switch that will open or close depending on its orientation. Typically they are hollow cylinders with a metal ball inside that will make a connection across two leads when tilted in the proper direction.



Arduino Uno to your personal computer for programming. It also provides power to the Arduino for most of the projects in the kit.

Circuitos

- Un circuito, es un sistema eléctrico que inicia con una entrada de energía y culmina con una conexión a tierra.

- Existen diversos tipos de conexión.

Tipos de Señales

- Existen 2 tipos de señales que se utilizarán
  - Análogas.
  - Digitales

Entradas y salidas

- Entrada, es la información que recibe el Arduino para su procesamiento.

- Salida, es la información que proporciona Arduino para utilizarla en conjunto con otros elementos.

Ley de Ohm

- La ley de Ohm nos indica que existen 3 elementos en un circuito eléctrico que deben ser considerados:
    - Voltaje
    - Resistencia
    - Corriente

Protoboard

- Es una placa que permite crear circuitos o prototipos de circuitos antes de hacerlos con placas de cobre.
- Utiliza la misma información en las líneas.
- Tiene un punto de anclaje de voltaje y uno de tierra.

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