/\*

SINGLE SERVO

Sweep a servo motor back and forth through its full range of motion.

A "servo", short for servomotor, is a motor that includes

feedback circuitry that allows it to be commanded to move to

specific positions. This one is very small, but larger servos

are used extensively in robotics to control mechanical arms,

hands, etc. You could use it to make a (tiny) robot arm,

aircraft control surface, or anywhere something needs to be

moved to specific positions.

Hardware connections:

The servo has a cable attached to it with three wires.

Because the cable ends in a socket, you can use jumper wires

to connect between the Arduino and the servo. Just plug the

jumper wires directly into the socket.

Connect the RED wire (power) to 5 Volts (5V)

Connect the ORANGE wire (signal) to digital pin 9

Connect the BROWN wire (ground) to ground (GND)

\*/

// If we had to write a sketch to control a servo from scratch,

// it would be a lot of work. Fortunately, others have done the

// hard work for you. We're going to include a **"library"**

// that has the functions needed to drive servos.

// A library is an set of additional functions you can add to

// your sketch. Numerous libraries are available for many uses,

// see http://arduino.cc/en/Reference/Libraries for information

// on the standard libraries, and Google for others. When you're

// using a new part, chances are someone has written a library

// for it.

#include <Servo.h> // servo library

// Now we'll create a servo "object", called servo1. You should

// create one of these for each servo you want to control.

// You can control a maximum of twelve servos on the Uno

// using this library.

Servo servo1; // servo control object

void setup()

{

// We'll now "attach" the servo1 object to digital pin 9.

// If you want to control more than one servo, attach more

// servo objects to the desired pins (must be digital).

// Attach tells the Arduino to begin sending control signals

// to the servo. Servos require a continuous stream of control

// signals, even if you're not currently moving them.

// While the servo is being controlled, it will hold its

// current position with some force. If you ever want to

// release the servo (allowing it to be turned by hand),

// you can call servo1.detach().

servo1.attach(9);

}

void loop()

{

// To control a servo, you give it the angle you'd like it

// to turn to. Servos cannot turn a full 360 degrees, but you

// can tell it to move anywhere between 0 and 180 degrees.

// Change position at full speed:

servo1.write(90); // Tell servo to go to 90 degrees

delay(1000); // Pause to give it time to move

servo1.write(180); // Tell servo to go to 180 degrees

delay(1000); // Pause to give it time to move

servo1.write(0); // Tell servo to go to 0 degrees

delay(1000); // Pause to get it time to move

// Change position at a slower speed:

// To slow down the servo's motion, we'll use a for() loop

// to give it a bunch of intermediate positions, with 20ms

// delays between them. You can change the step size to make

// the servo slow down or speed up. Note that the servo can't

// move faster than its full speed, and you won't be able

// to update it any faster than every 20ms.

// Tell servo to go to 180 degrees, stepping by two degrees

for(position = 0; position < 180; position += 2)

{

servo1.write(position); // Move to next position

delay(20); // Short pause to allow it to move

}

// Tell servo to go to 0 degrees, stepping by one degree

for(position = 180; position >= 0; position -= 1)

{

servo1.write(position); // Move to next position

delay(20); // Short pause to allow it to move

}

}