Hands on activities 4 - IR Remote

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Embedded Systems/Cyber Physical Systems

CS 4380 / CS 5331

Example 1: IR Remote

```
#include <IRremote.hpp>
int IR_RECEIVE_PIN = 7;
void setup() {
  Serial.begin(9600);
  IrReceiver.begin(IR_RECEIVE_PIN, ENABLE_LED_FEEDBACK); // Start the receiver
}
void loop() {
  if (IrReceiver.decode()) {
    Serial.println(IrReceiver.decodedIRData.decodedRawData, HEX);
    // Print "old" raw data
    /* USE NEW 3.x FUNCTIONS */
    IrReceiver.printIRResultShort(&Serial);
    // Print complete received data in one line
    IrReceiver.printIRSendUsage(&Serial);
    // Print the statement required to send this data
    IrReceiver.resume(); // Enable receiving of the next value
  }
}
```
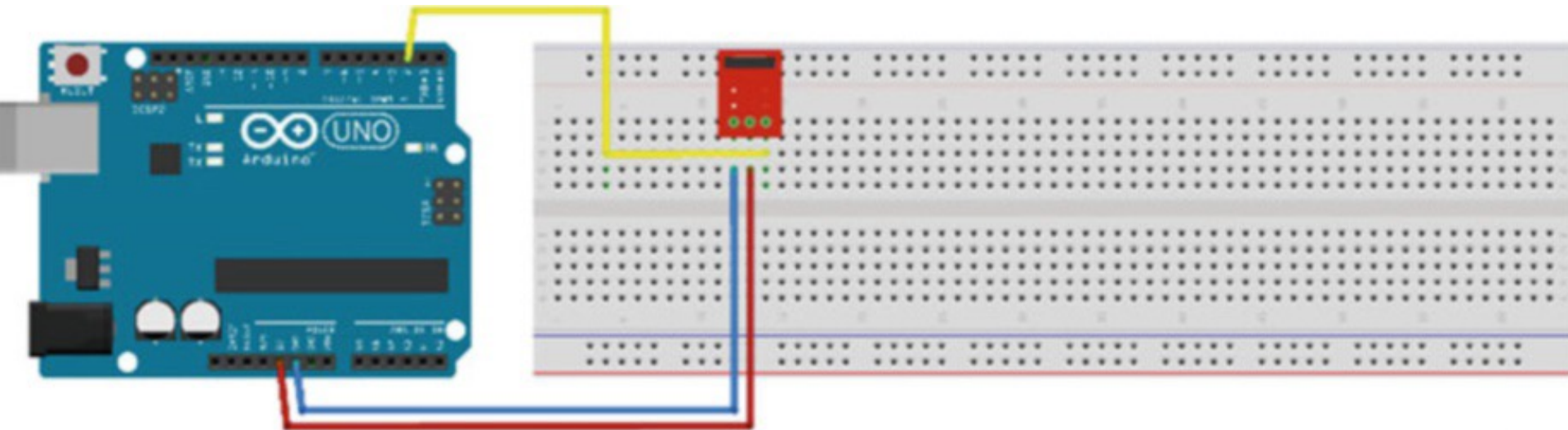
IrReceiver.decodedIRData.<field>
List of fields:
protocol / address / command /
extra / numberOfBits / flags

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The IR receiver has 3 pins: GND (G), VDD (R), and Signal (Y). Attach the IR receiver on the breadboard so that the IR sensor is exposed for you to use the remote. The Signal pin connects to Digital Pin 2.

Example 2: Servo Motor

```
#include <Servo.h>
Servo myservo; // create servo object
int pos = 0; // servo position
void setup() {
  myservo.attach(9); // attaches the servo on pin 9
}
void loop() {
  for(pos = 0; pos < 180; pos += 1) {    // forward
    myservo.write(pos);
    delay(10);
  }
  for(pos = 180; pos>=1; pos-=1) {    // backward
    myservo.write(pos);
    delay(10);
  }
}
```
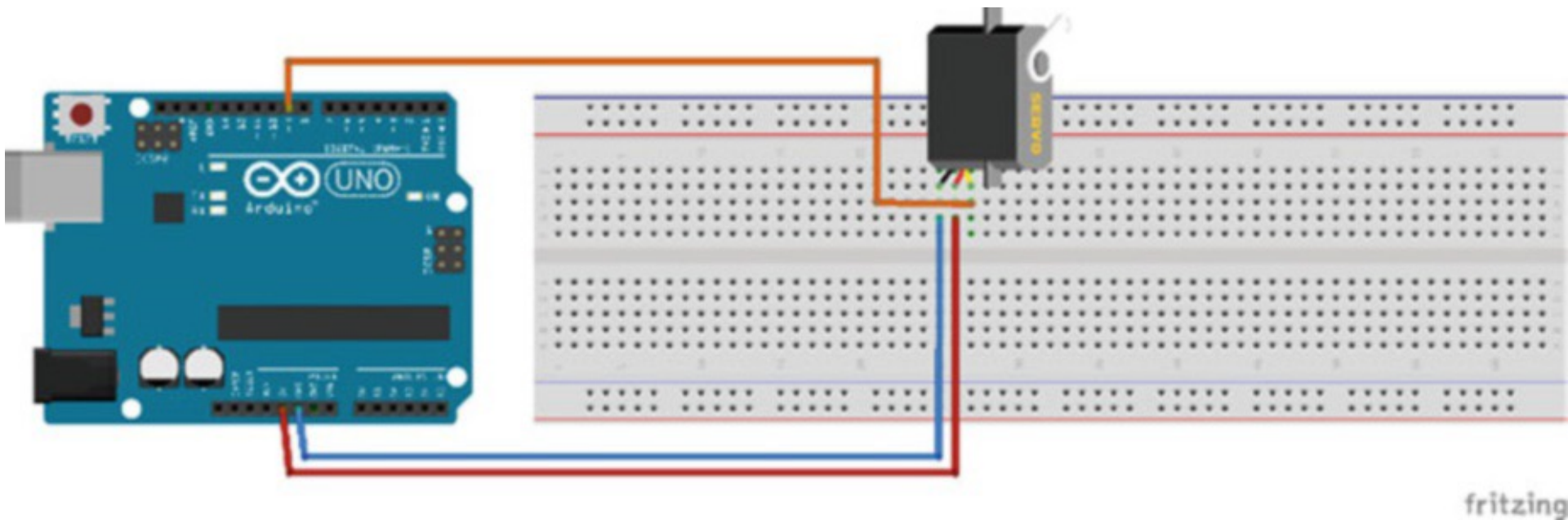
The Servo Motor has 3 pins: Brown (Gnd), Red (5 V), and Signal (Orange). Attach the Servo Motor on the breadboard as shown (You might have a different connector with a socket wired to Servo Motor, then you will plug in the jumper wire directly to the socket). The Signal pin connects to Digital Pin 9.

Example 3: Remote Servo Control

```
#include <IRremote.hpp>
#include <Servo.h>
int IR_RECEIVE_PIN = 7;
int value;
Servo myservo; // create servo object
int pos = 0; // servo position
void setup() {
  Serial.begin(9600);
  IrReceiver.begin(IR_RECEIVE_PIN, ENABLE_LED_FEEDBACK); // Start the receiver
  myservo.attach(9); // attaches the servo on pin 9
}
void loop() {
  if (IrReceiver.decode()) {
    value = IrReceiver.decodedIRData.decodedRawData;
    //Serial.println( value, HEX); // Print "old" raw data
    /* USE NEW 3.x FUNCTIONS */
    //IrReceiver.printIRResultShort(&Serial); // Print complete received data in one line
    //IrReceiver.printIRSendUsage(&Serial); // Print the statement required to send this data
```

Replace X1 and X2 with the two codes of remote control (example 1) that you selected

Example:
X1 -> Remote button 1 is "0x43"
X2 -> Remote button 3 is "0x44"

Example 3: Remote Servo Control (cont.)

```
switch(IrReceiver.decodedIRData.command) {
  case 0xX1: { for(pos = 0; pos < 180; pos += 1) { // forward
              myservo.write(pos);
              delay(50);
              }
              break;
           }
  case 0xX2: { for(pos = 180; pos >= 1; pos -= 1) { // forward
              myservo.write(pos);
              delay(50);
              }
              break;
           }
  }
  IrReceiver.resume(); // Enable receiving of the next value
 }
}
```