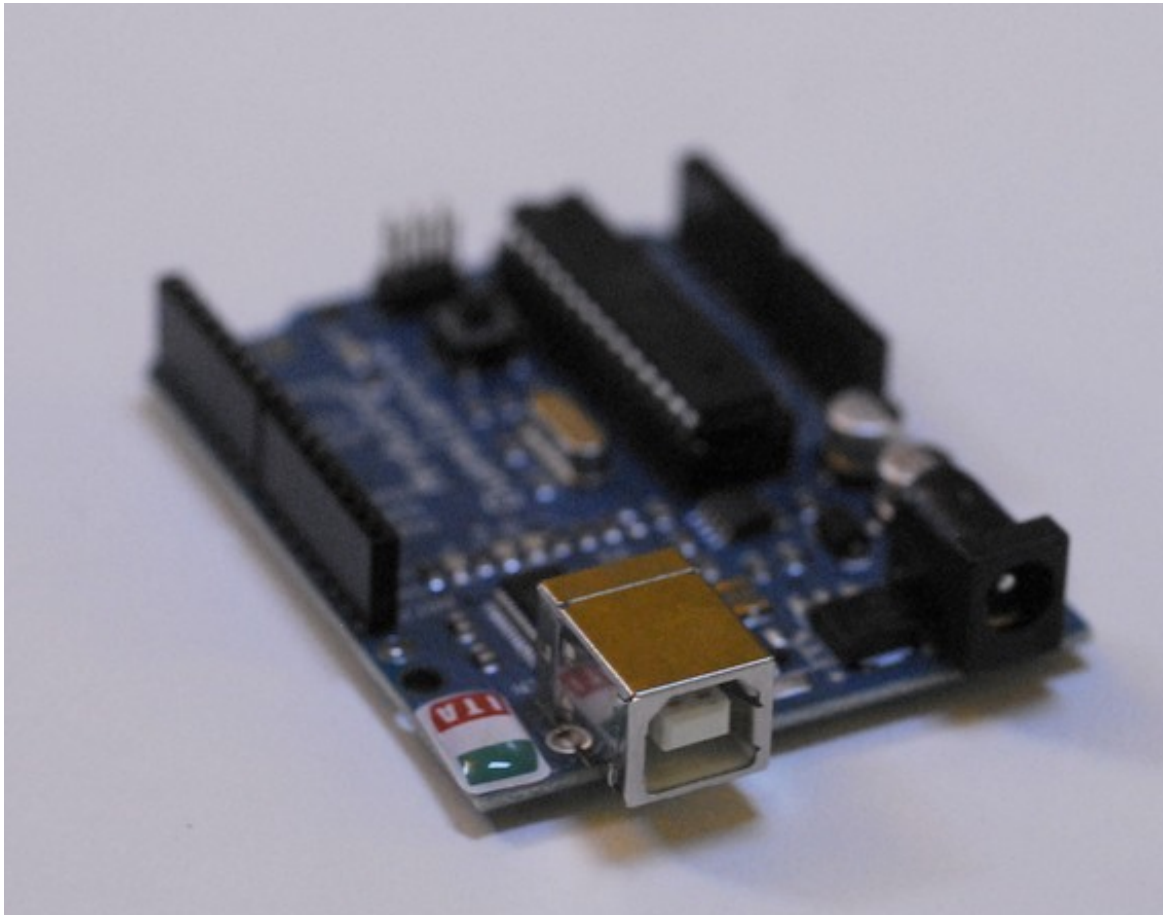
Arduino Input and Output



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6:30-8:30 PM

Today we'll be covering:

- PWM
- LED brightness
- Analog Input
- Servos

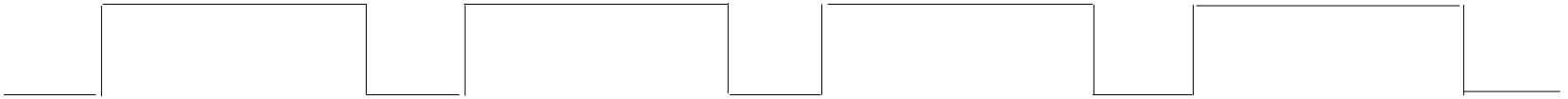
PWM

Create a time averaged analog value by pulsing a digital value

25% duty cycle: average 1.25V

50% duty cycle: average 2.5V

75% duty cycle: average 3.75V



LED brightness

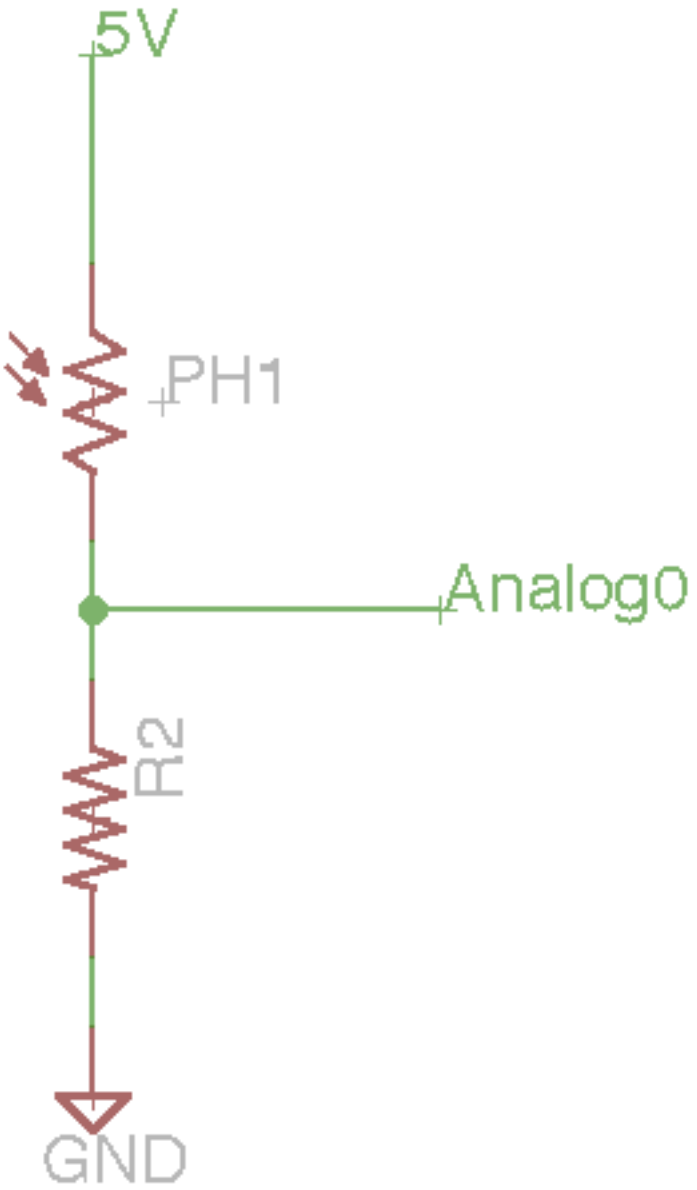
LED brightness

```
int LED = 6;

void setup() {
 //no pinMode for analogWrite
}

void loop() {
 //write an analog value for use with PWM
 analogWrite(LED, 70);
}
```

Analog Input



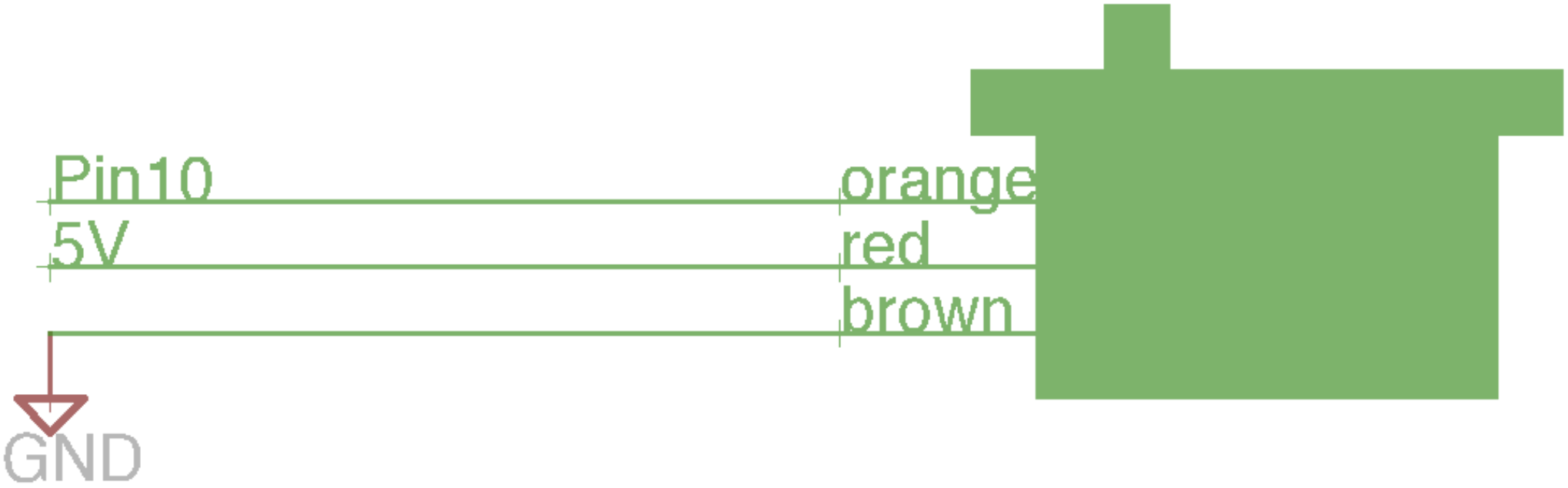
Analog Input

```
int LED = 6; //digital pin 6
int analogIn = 0; //analog pin 0

void setup() {
 //no pinMode for analogWrite
 //no pinMode for analogRead
}

void loop() {
 //input value is between 0 and 1024
 int value = analogRead(analogIn);
 //scale value so that it is between 0 and 255
 value = value / 4;
 //write an analog value for use with PWM
 analogWrite(LED, value);
}
```

Servos



Servos

```
//make sure you have the code available
#include <Servo.h>

int LED = 6; //digital pin 6
int analogIn = 0; //analog pin 0
int servoPin = 10;

Servo myMotor; //make the motor exist

void setup() {
 //no pinMode for analogWrite
 //no pinMode for analogRead
 myMotor.attach(servoPin); //tell the motor which pin
}

void loop() {
 //input value is between 0 and 1024
 int value = analogRead(analogIn);
 //scale value so that it is between 0 and 255
 value = value / 4;
 //write an analog value for use with PWM
 analogWrite(LED, value);
 myMotor.write(value);
}
```