

# Controlling a LED

## Code

```
void setup()

  pinMode(LED_BUILTIN, OUTPUT);
}

void loop() {

  digitalWrite(LED_BUILTIN, HIGH);

  delay(1000);

  digitalWrite(LED_BUILTIN, LOW);

  delay(1000);

}
```

## Photo

## What I Learned

Well, this project is cool how you can vary the time settings to have it do a mini light show. At first I was confused; there are no integers(variables) included in the sketch. But at second glance I realised you can just do manually(without the variables) by typing it directly into were the variable would go otherwise.

# Controlling 8 LEDs

## Code

```
int ledCount = 8;

int ledPins[] = { 6, 7, 8, 9, 10, 11, 12, 13 };

int ledDelay = 300;

void setup() {

  for (int thisLed = 0; thisLed < ledCount; thisLed++) {

    pinMode(ledPins[thisLed], OUTPUT);

  }

}

void loop() {

  for (int thisLed = 0; thisLed < ledCount-1; thisLed++) {

    digitalWrite(ledPins[thisLed], HIGH);

    delay(ledDelay);

    digitalWrite(ledPins[thisLed], LOW);

  }

  for (int thisLed = ledCount-1; thisLed > 0; thisLed--) {

    digitalWrite(ledPins[thisLed], HIGH);

    delay(ledDelay);

    digitalWrite(ledPins[thisLed], LOW);

  }

}
```

## Photo

## What I learned

Well, first of all I'd like to say that this isn't easy. I thought I killed three LEDs! But actually, the breadboard was malfunctioning and the LED on pin 13 was not working so, I switched out the LED and replaced it with another one and that didn't work. Next I changed out the resistor and no, it still didn't work. Then I modified it so the pin 13 was on a different column. Finally it was working! Other than that it was good. I learn how to debug the hardware and the software.

eGats assignment 4

# Reading Digital (On/Off) Input

## Code

```
int ledCount = 14;

int ledPins[] = { 6, 7, 8, 9, 10, 11, 12, 13, 12, 11, 10, 9, 8, 7 };

int ledDelay = 300;

int buttonPin = 2;

void setup() {

  for (int thisLed = 0; thisLed < ledCount; thisLed++) {

    pinMode(ledPins[thisLed], OUTPUT);

  }

  pinMode(buttonPin, INPUT);

}

void loop() {

  for (int thisLed = 0; thisLed < ledCount-1; thisLed++) {

    digitalWrite(ledPins[thisLed], HIGH);

    delay(ledDelay);

    while(digitalRead(buttonPin) == HIGH) {

      delay(10);

    }

    digitalWrite(ledPins[thisLed], LOW);

  }

}
```

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## What I Learned

Well, the main thing is that the “`digitalWrite(ledPins[thisLed], HIGH);`” was a bit confusing at first, but now I know that in the “`(int thisLed = 0; thisLed < ledCount-1; thisLed++)`” that it sets the “`int thisLed`” to the pin that it is currently has a status of “HIGH” so that if the Momentary pushbutton has an output of 5V and the pin D2 has a reading of high, with in turn signals to the computer what is going on. Once the computer registers the signal, it tells the Arduino to “`delay(ledDelay);`” with delays the one that is lit to pause until the voltage from D2 registers 0V.

# Reading Analog (Variable) Input

## Code

```
int led = 11;

int lightLevel;

void setup()
{
  Serial.begin(38400);
  pinMode(led, OUTPUT);
}

void loop()
{
  lightLevel = analogRead(A0);
  Serial.print("Light level: ");
  Serial.println(lightLevel, DEC);
  digitalWrite(led, HIGH);
  delay(lightLevel);
  digitalWrite(led, LOW);
  delay(lightLevel);
}
```

Photo

## What I learned

The whole script makes out to be a bit less gibberish than the last. The main reason is that I've kind of gotten used to the programming language now after reading the book a couple of times and done a couple of experiments. And while I'm writing this I have the serial monitor open and I've seen quite a drop in the light level, I think it's a great module!

eGats assignment 4

# Dimming LEDs with PWM

## Code

```
int led = 11;
int brightness = 0;
int delayTime = 10;
void setup() {
  pinMode(led, OUTPUT);
}
void loop() {
  while(brightness < 255)
  {
    analogWrite(led, brightness);
    delay(delayTime);
    brightness = brightness + 1;
  }
  while(brightness > 0)
  {
    analogWrite(led, brightness);
    delay(delayTime);
    brightness = brightness - 1;
  }
}
```

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## What I Learned

The use of PWM is really useful in thing like in car's headlights when you dim them. Other than that it is a neat little experiment. Actually, I don't have much to say about this project, unlike the others.

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