

Programming the Arduino



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6:30-8:30 PM

Today we'll be covering:

- Syntax
- Branches
- Loops
- Functions
- Classes

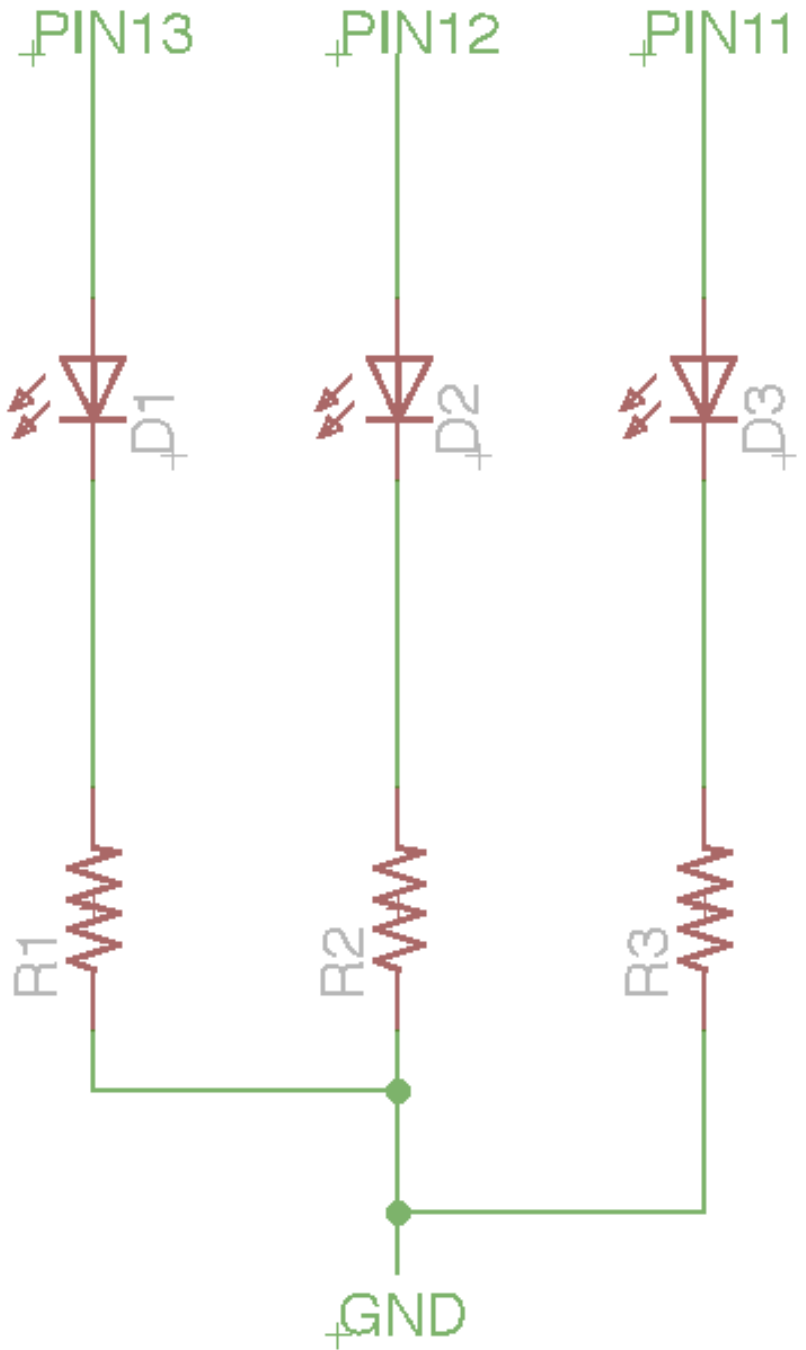
Structure and Syntax

Magic Words

Storing information

That's enough talking.
Let's make stuff

Controlling LEDs with “if”




```
//the below lines define what pins the
//LEDs are on
int LED1 = 13;

//the below lines keep track of whether
//the LED is on or off
int state1 = LOW;

void setup() {
  pinMode(LED1, OUTPUT);
  Serial.begin(9600);
}

void loop() {
  if (Serial.available()) {
    char value = Serial.read();
    if (value == '1') {
      if (state == HIGH) {
        state = LOW;
        digitalWrite(LED, LOW);
      } else {
        state = HIGH;
        digitalWrite(LED, HIGH);
      }
    }
  }
}
```

Put functionality in your functions

```
//the below lines define what pins the
//LEDs are on
int LED1 = 13;
int LED2 = 12;
int LED3 = 11;

//the below lines keep track of whether
//the LED is on or off
int state1 = LOW;
int state2 = LOW;
int state3 = LOW;

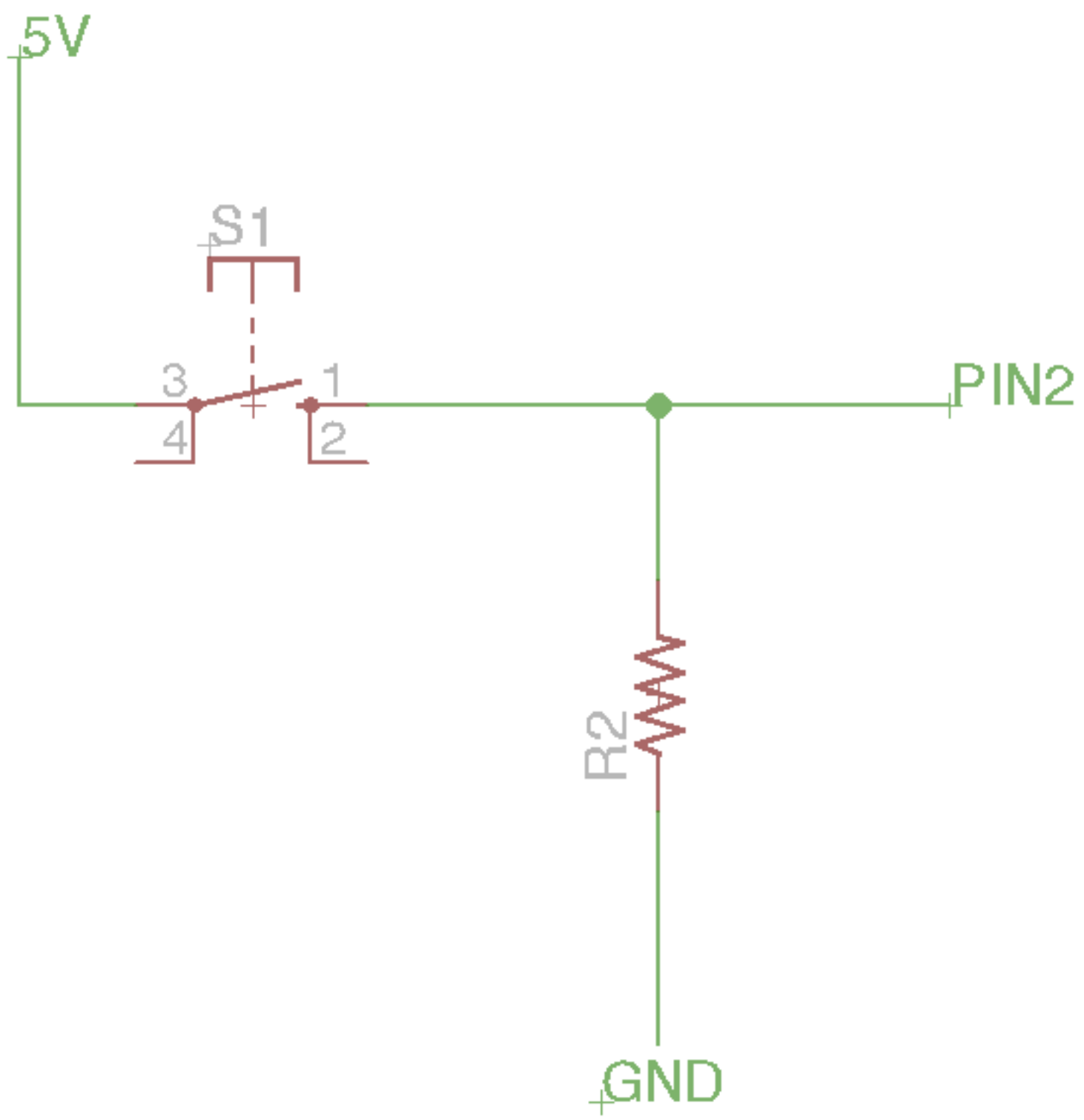
int flashLED(int LED, int state) {
  if (state == HIGH) {
    state = LOW;
    digitalWrite(LED, LOW);
  } else {
    state = HIGH;
    digitalWrite(LED, HIGH);
  }
  return state;
}

void setup() {
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  pinMode(LED3, OUTPUT);
  Serial.begin(9600);
}
```

```
void loop() {
  if (Serial.available()) {
    char value = Serial.read();

    if (value == '1') {
      state1 = flashLED(LED1, state1);
    } else if (value == '2') {
      state2 = flashLED(LED2, state2);
    } else if (value == '3') {
      state3 = flashLED(LED3, state3);
    }
  }
}
```

Make your Arduino loopy



```

//the below lines define what pins the
//LEDs are on
int LED1 = 13;
int LED2 = 12;
int LED3 = 11;

//button pin
int button = 2;

//the below lines keep track of whether
//the LED is on or off
int state1 = LOW;
int state2 = LOW;
int state3 = LOW;

int flashLED(int LED, int state) {
  if (state == HIGH) {
    state = LOW;
    digitalWrite(LED, LOW);
  } //otherwise
  else {
    state = HIGH;
    digitalWrite(LED, HIGH);
  }

  return state;
}

void setup()
{
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  pinMode(LED3, OUTPUT);
  pinMode(button, INPUT);
  Serial.begin(9600);
}

```

```

void loop() {

  while (digitalRead(button) == LOW) {
    state1 = flashLED(LED1, state1);
    delay(100);
  }

  if (Serial.available()) {
    char value = Serial.read();

    if (value == '1') {
      state1 = flashLED(LED1, state1);
    } else if (value == '2') {
      state2 = flashLED(LED2, state2);
    } else if (value == '3') {
      state3 = flashLED(LED3, state3);
    }
  }
}

```

Classes aren't just for students