LESSON 7: PUSH BUTTON

INTRODUCTION

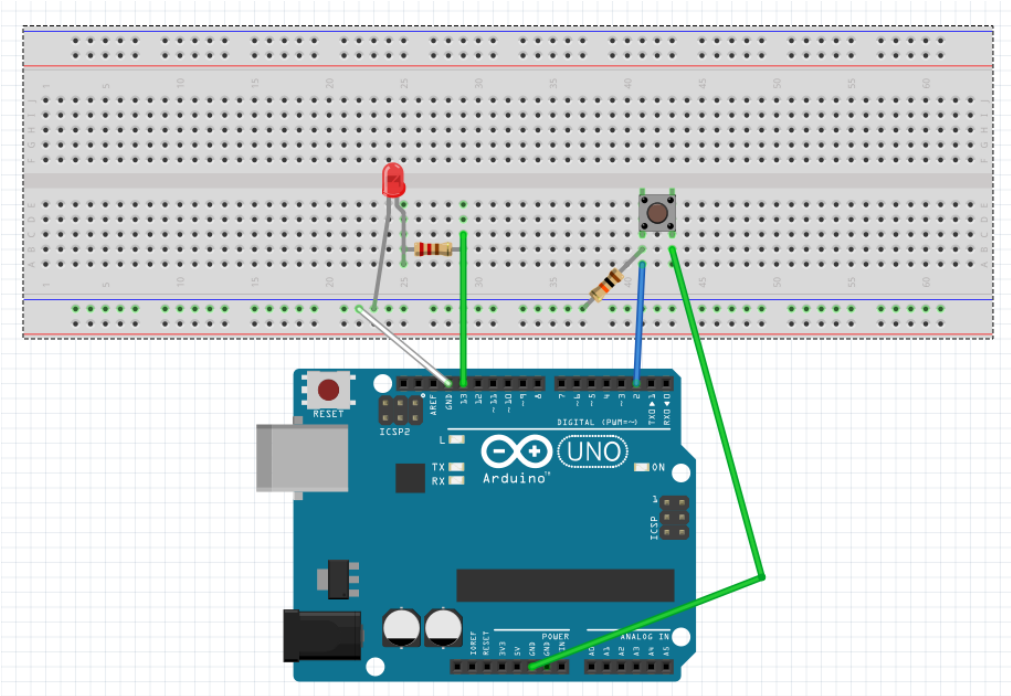
Push buttons or switches connect two points in a circuit when you press them. This example turns on one led when the button pressed, and off when the button unpressed.

COMPONENTS

- Arduino uno
- Breadboard
- LED
- 220 Ohm & 10K Ohm resistor
- Push button
- Jumper wire

CONNECTION

STEP 1: The circuit

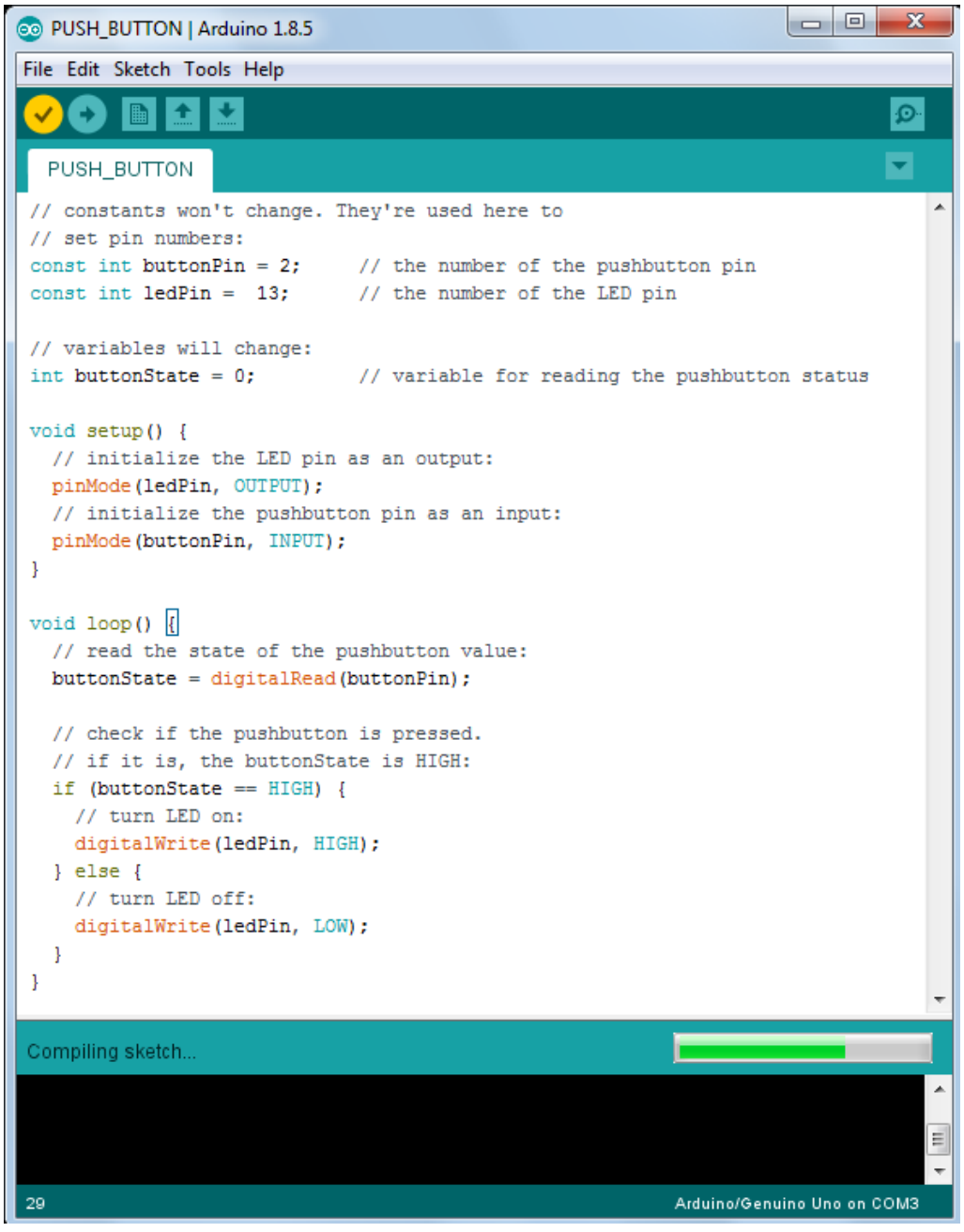


1. Connect one of the Arduino GND pins to one of the long power rails on the breadboard – this will be the ground rail.
2. Connect the short leg of the LED to this same ground rail on the breadboard then connect the long leg to a row on the breadboard.
3. Connect the 220-ohm resistor to pin 13.
4. Place the pushbutton on the breadboard. Most buttons will straddle the center trench on the breadboard.
5. Connect a jumper wire from the 5-volt pin to one side of the pushbutton.
6. Connect a jumper wire from pin 2 to the other side of the pushbutton.
7. Connect one side of the 10k resistor from the ground rail on the breadboard to the other side to the pushbutton – on the same side that pin 2 connects.

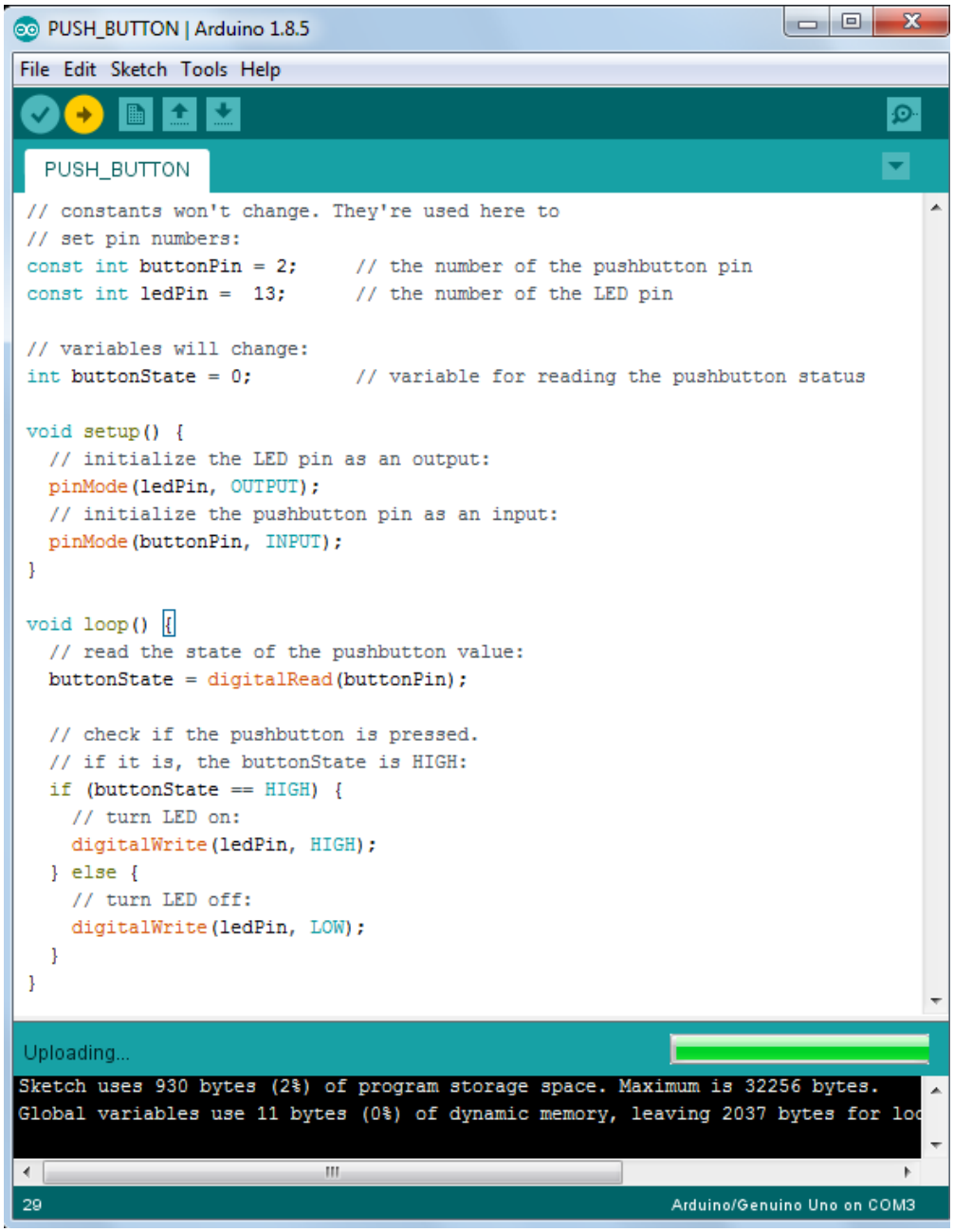
STEP 2: Program

```
// constants won't change. They're used here to
// set pin numbers:
const int buttonPin = 2;     // the number of the pushbutton pin
const int ledPin =  13;      // the number of the LED pin

// variables will change:
int buttonState = 0;         // variable for reading the pushbutton status

void setup() {
  // initialize the LED pin as an output:
  pinMode(ledPin, OUTPUT);
  // initialize the pushbutton pin as an input:
  pinMode(buttonPin, INPUT);
}

void loop() {
  // read the state of the pushbutton value:
  buttonState = digitalRead(buttonPin);

  // check if the pushbutton is pressed.
  // if it is, the buttonState is HIGH:
  if (buttonState == HIGH) {
    // turn LED on:
    digitalWrite(ledPin, HIGH);
  } else {
    // turn LED off:
    digitalWrite(ledPin, LOW);
  }
}
```

STEP 3: Compile the code. Click the Verify button on the top left. It should turn orange and then back to blue.



STEP 4: Upload the sketch to Arduino UNO board. Click the Upload button. It will also turn orange and then blue once the sketch has finished uploading to your Arduino board.



RESULT: When the pushbutton is open (unpressed) there is no connection between the two legs of the pushbutton, so the pin is connected to ground (through the pull-down resistor) and we read a LOW. When the button is closed (pressed), it makes a connection between its two legs, connecting the pin to 5 volts, so that we read a HIGH.