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Built-in Examples

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Blink

Turn an LED on and off every second.

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This example shows the simplest thing you can do with an Arduino to see physical output: it blinks the on-board LED.

Hardware Required

- Arduino Board

optional

- LED
- 220 ohm resistor

Circuit

This example uses the built-in LED that most Arduino boards have. This LED is connected to a digital pin and its number may vary from board type to board type. To make your life easier, we have a constant that is specified in every board descriptor file. This constant is *LED_BUILTIN* and allows you to control the built-in LED easily. Here is the correspondence between the constant and the digital pin

D13 - 101

D13 - Due

D1 - Gemma

D13 - Intel Edison

D13 - Intel Galileo Gen2

D13 - Leonardo and Micro

D13 - LilyPad

D13 - LilyPad USB

D13 - MEGA2560

D13 - Mini

D6 - MKR1000

D13 - Nano

D13 - Pro

D13 - Pro Mini

D13 - UNO

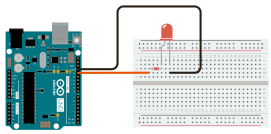
D13 - Yún

D13 - Zero

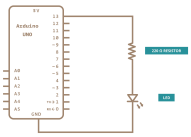
If you want to light an external LED with this sketch, you need to build this circuit, where you connect one end of the resistor to the digital pin correspondent to the *LED_BUILTIN* constant. Connect the long leg of the LED (the positive leg, called the anode) to the other end of the resistor. Connect the short leg of the LED (the negative leg, called the cathode) to the GND. In the diagram below we show an

the LED_BUILTIN value.

The value of the resistor in series with the LED may be of a different value than 220 ohms; the LED will light up also with values up to 1K ohm.



Schematic



Code

After you build the circuit plug your Arduino board into your computer, start the Arduino Software (IDE) and enter the code below. You may also load it from the menu File/ Examples/01.Basics/Blink . The first thing you do is to initialize LED_BUILTIN pin as an output pin with the line

```
pinMode(LED_BUILTIN, OUTPUT);
```

In the main loop, you turn the LED on with the line:

```
digitalWrite(LED_BUILTIN, HIGH);
```

LED anode. That creates a voltage difference across the pins of the LED, and lights it up. Then you turn it off with the line:

```
digitalWrite(LED_BUILTIN, LOW);
```

That takes the LED_BUILTIN pin back to 0 volts, and turns the LED off. In between the on and the off, you want enough time for a person to see the change, so the `delay()` commands tell the board to do nothing for 1000 milliseconds, or one second. When you use the `delay()` command, nothing else happens for that amount of time. Once you've understood the basic examples, check out the **BlinkWithoutDelay** example to learn how to create a delay while doing other things.

Once you've understood this example, check out the **DigitalReadSerial** example to learn how read a switch connected to the board.

```
/*
  Blink

  Turns an
LED on for
one second,
then off for
one second,
repeatedly.

  Most
Arduinos have
an on-board
LED you can
control. On
the UNO, MEGA
and ZERO
  it is
attached to
digital pin
13, on
MKR1000 on
pin 6.
LED_BUILTIN
is set to
  the correct
LED pin
independent
of which
board is used.
  If you want
to know what
pin the on-
board LED is
connected to
on your
Arduino
  model,
check the
```

See Also

Learn more

You can find more basic tutorials in the **built-in examples** section.

You can also explore the **language reference**, a detailed collection of the Arduino programming language.

DOCS

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Suggest changes

The content on docs.arduino.cc is facilitated through a public GitHub repository. If you see anything wrong, you can edit this page here.

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