Blink without Delay, Tracking Timer

http://www.arduino.cc/en/Tutorial/BlinkWithoutDelay

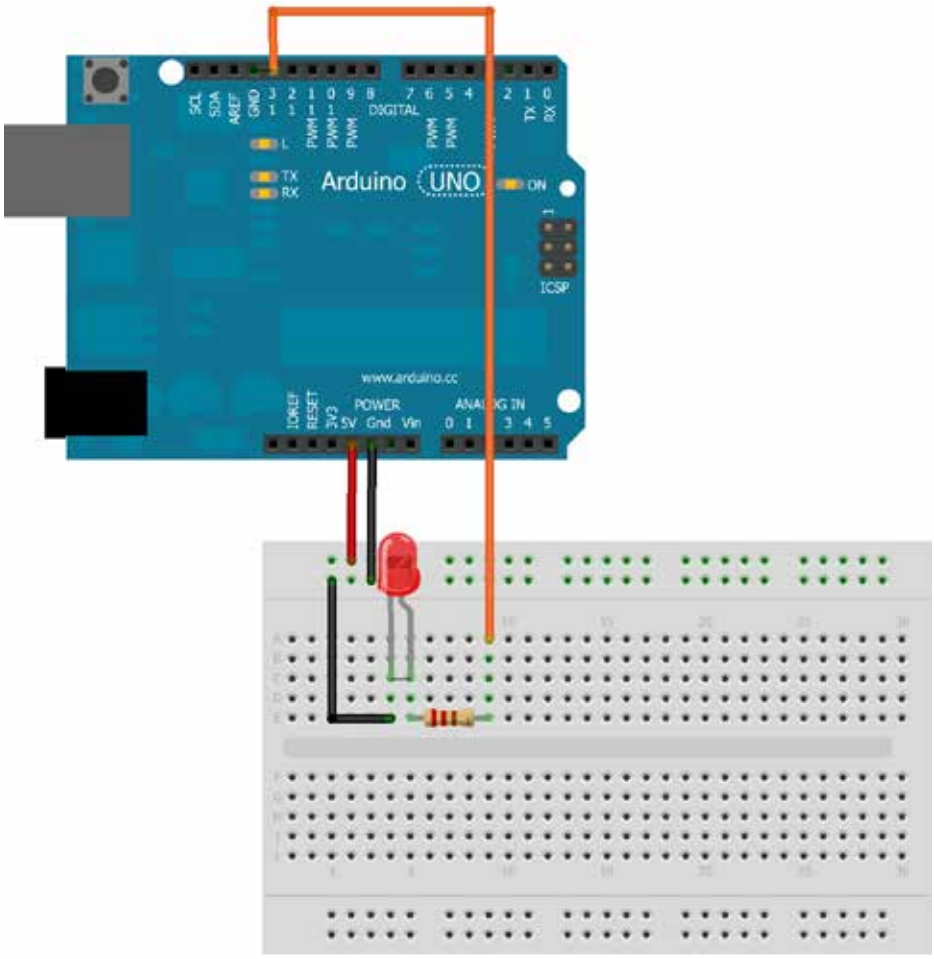
HARDWARE REQUIRED

Arduino Board
1 LED
1 Resistor 220 ohm
breadboard
hook-up wires

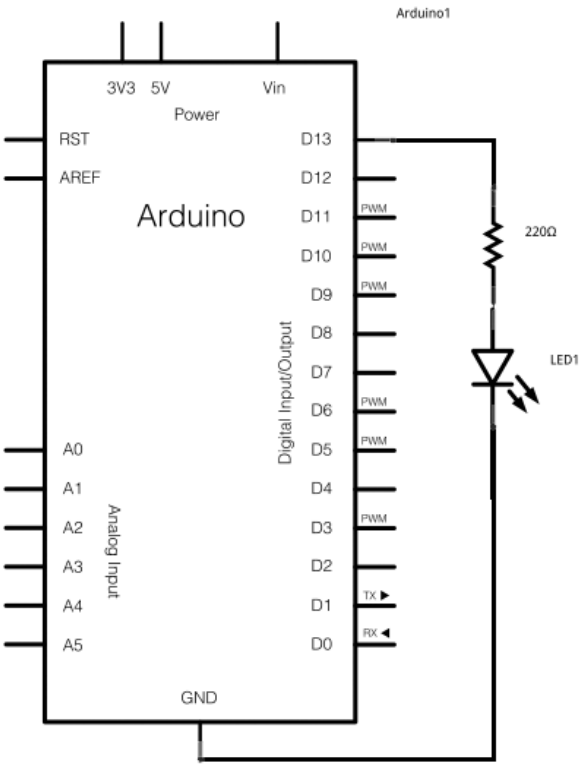
CIRCUIT

Sometimes you need to do two things at once. For example you might want to blink an LED (or some other time-sensitive function) while reading a button press or other input. In this case, you can't use delay(), or you'd stop everything else the program while the LED blinked. The program might miss the button press if it happens during the delay(). This sketch demonstrates how to blink the LED without using delay(). It keeps track of the last time the Arduino turned the LED on or off. Then, each time through loop(), it checks if a long enough interval has passed. If it has, it toggles the LED on or off.

IMAGE



SCHEMATIC



CODE

```
// constants won't change. Used here to
// set pin numbers:
const int ledPin =  13;      // the number of the LED pin

// Variables will change:
int ledState = LOW;          // ledState used to set the LED
long previousMillis = 0;     // will store last time LED was updated

// the follow variables is a long because the time, measured in miliseconds,
// will quickly become a bigger number than can be stored in an int.
long interval = 1000;        // interval at which to blink (milliseconds)

void setup() {
  // set the digital pin as output:
  pinMode(ledPin, OUTPUT);
}

void loop()
{
  // here is where you'd put code that needs to be running all the time.

  // check to see if it's time to blink the LED; that is, if the
  // difference between the current time and last time you blinked
  // the LED is bigger than the interval at which you want to
  // blink the LED.
  unsigned long currentMillis = millis();

  if(currentMillis - previousMillis > interval) {
    // save the last time you blinked the LED
    previousMillis = currentMillis;

    // if the LED is off turn it on and vice-versa:
    if (ledState == LOW)
      ledState = HIGH;
    else
      ledState = LOW;

    // set the LED with the ledState of the variable:
    digitalWrite(ledPin, ledState);
  }
}
```

```
/* Blink without Delay

 Turns on and off a light emitting diode(LED) connected to a digital
 pin, without using the delay() function.  This means that other code
 can run at the same time without being interrupted by the LED code.

 The circuit:
 * LED attached from pin 13 to ground.
 * Note: on most Arduinos, there is already an LED on the board
 that's attached to pin 13, so no hardware is needed for this example.


 created 2005
 by David A. Mellis
 modified 8 Feb 2010
 by Paul Stoffregen

 This example code is in the public domain.


 http://www.arduino.cc/en/Tutorial/BlinkWithoutDelay
 */
```