

Prižiganje lučk z Arduinom



Kaj bomo danes počele?

Spoznale:

- Arduino Nano
 - Testno ploščico (Breadboard)
 - LED lučke, upornike, žičke, foto senzorje
 - Osnove programiranja v C++ (spremenljivke, funkcija, for zanka)
-
- Koda: <https://github.com/22nds/lfu-arduino-basics>
 - Arduino IDE: <https://www.arduino.cc/en/Main/Software>

Kaj potrebujemo?

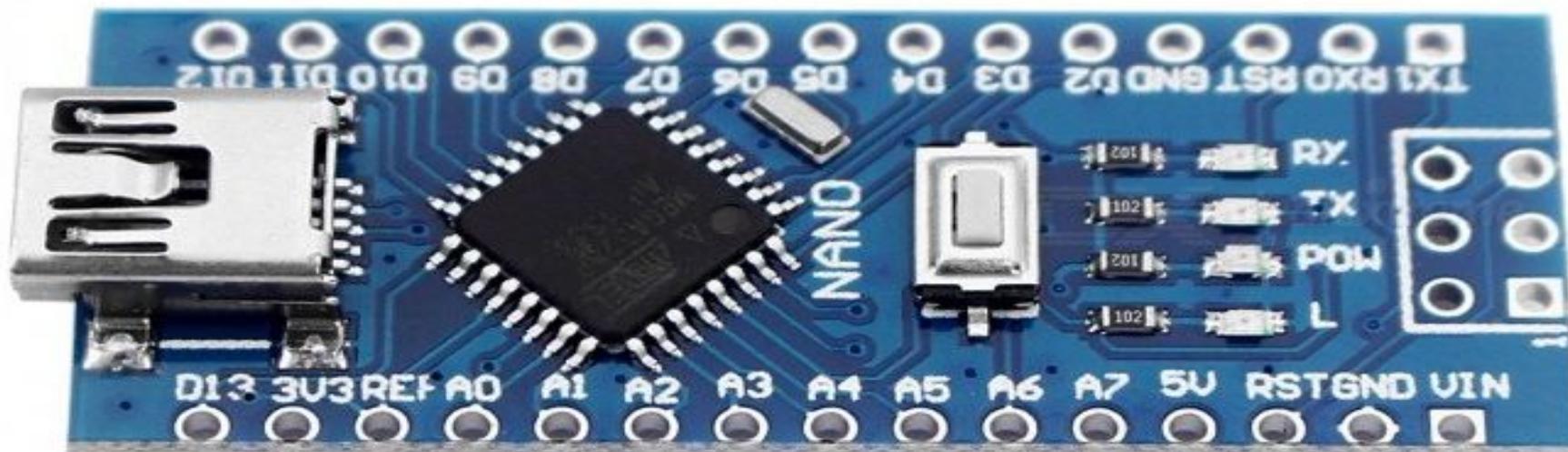
- 2 x LED
- 1 x RGB LED
- 3 x 220 Ohm upornik
- 1 x 1k Ohm upornik
- 2 x žičke
- 1 x gumb
- 1 x senzor svetlobe
- Testna ploščica (Breadboard)
- USB kabel
- Računalnik
- Programska oprema (Arduino, Processing)

Arduino Nano

Arduino Uno ->

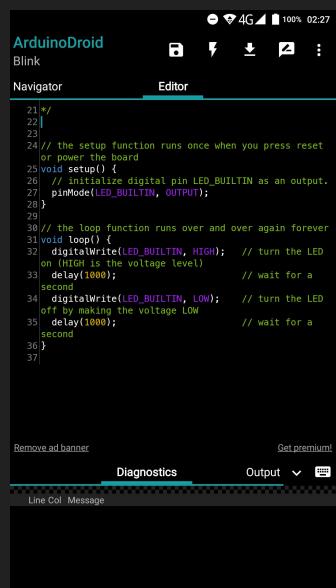
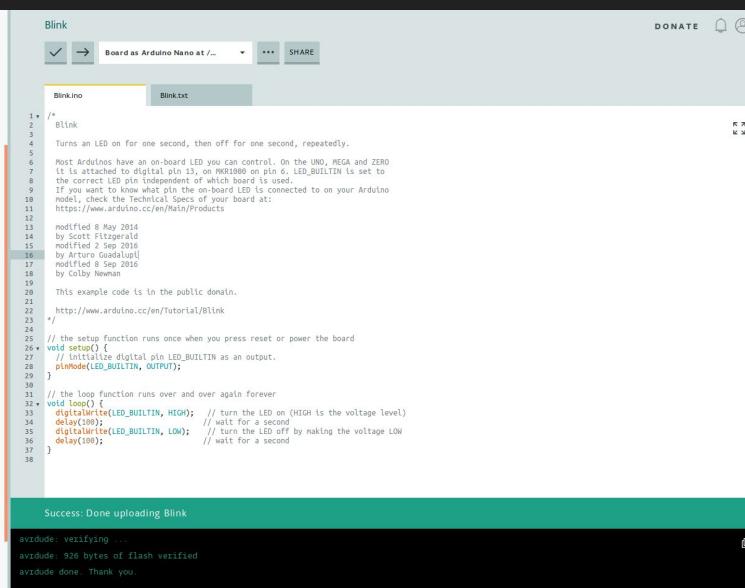
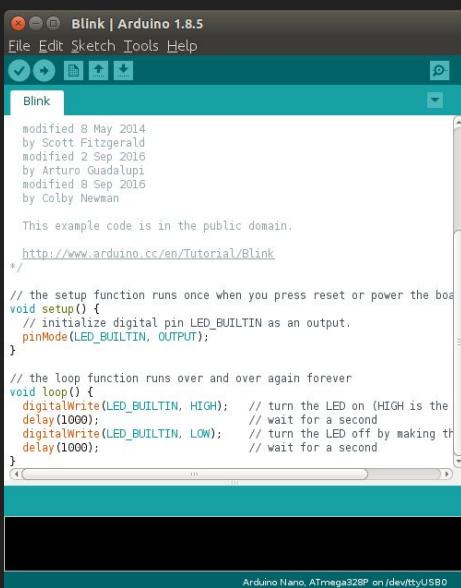


- Uradna stran: <https://store.arduino.cc/arduino-nano>

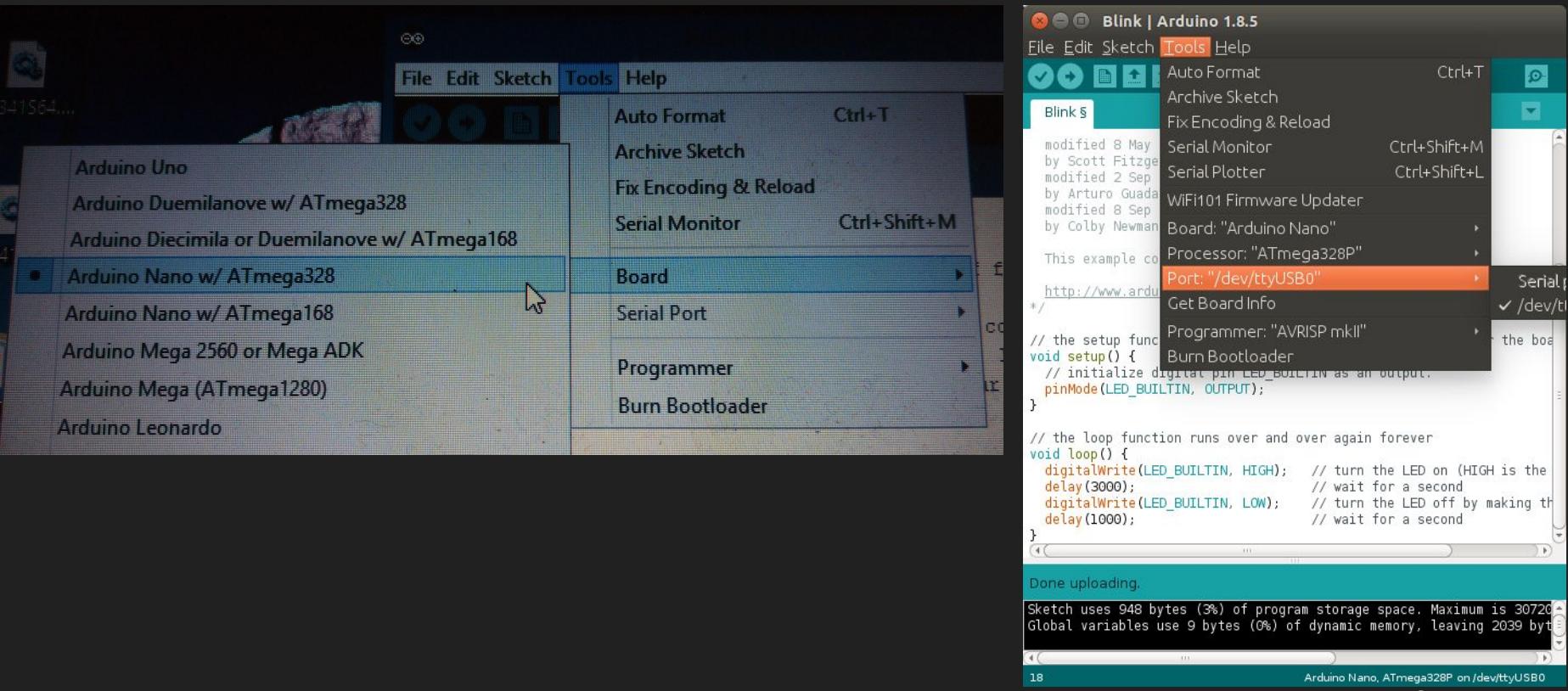


Programska oprema za Arduino

- Arduino IDE <https://www.arduino.cc/en/Main/Software> ali
- Arduino Editor (online) <https://create.arduino.cc/editor/> ali
- ArduinoDroid (Android): <https://play.google.com/store/apps/details?id=name.antonsmirnov.android.arduinodroid2>

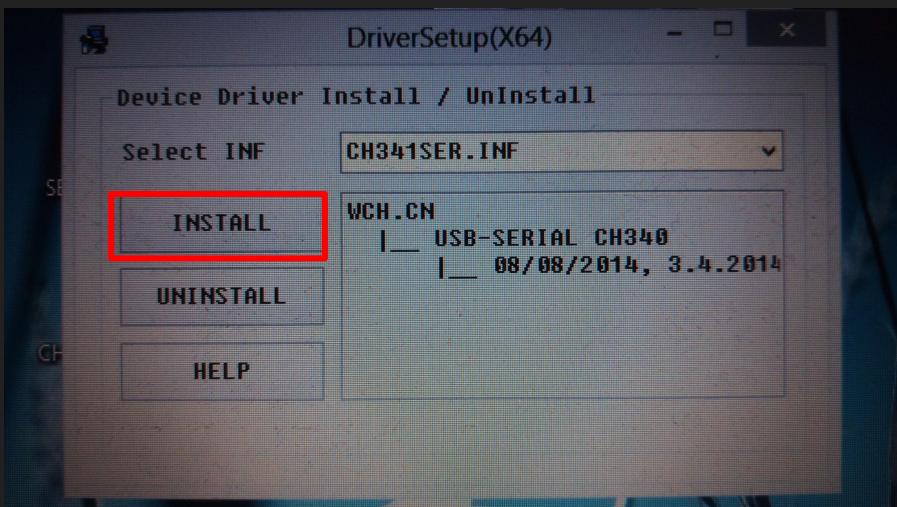


Nastavitve za Arduino v Arduino IDE (Win/Linux)



Namestitev gonilnikov za Windows

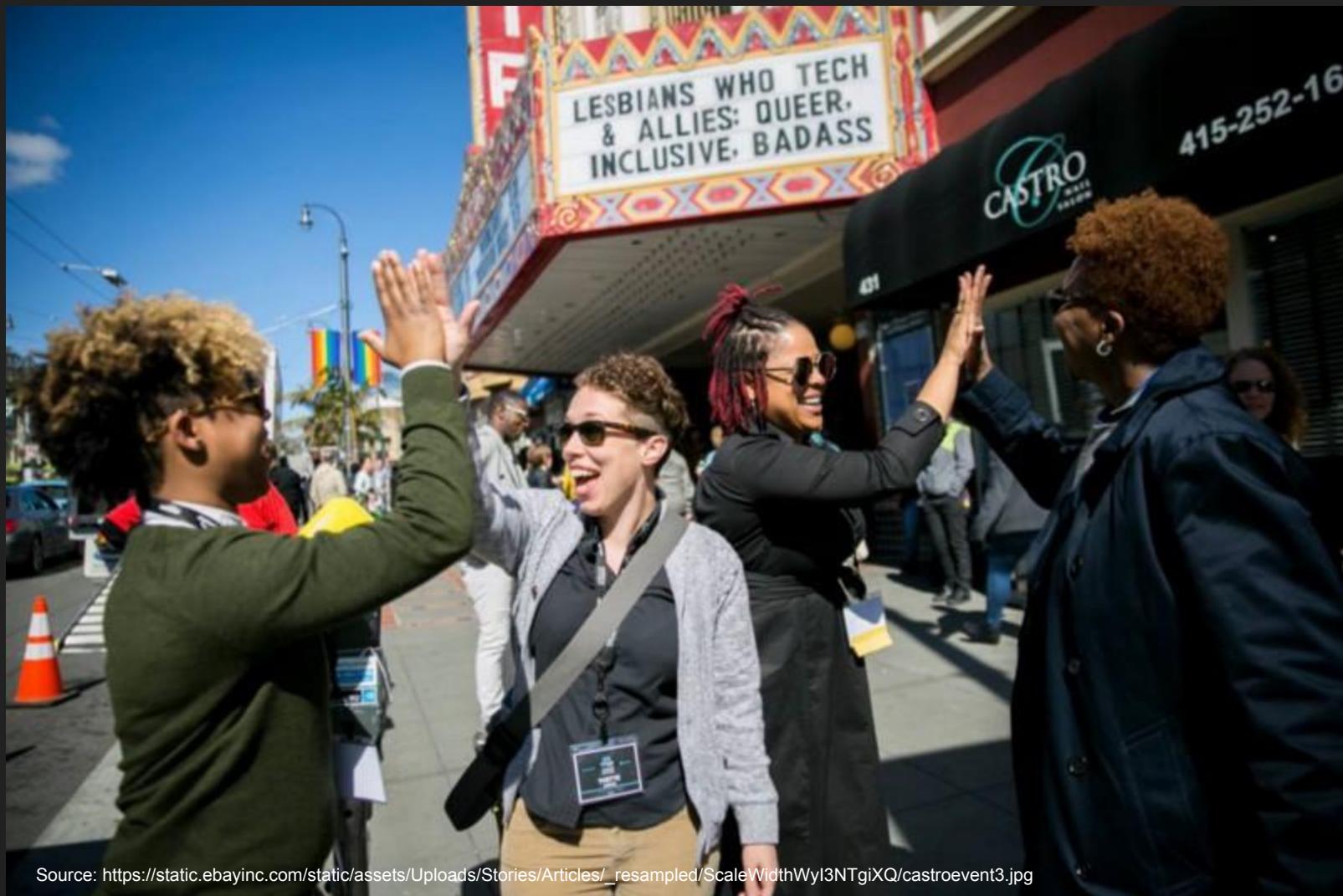
- I:\driver\CH34x\Install_Windows_v3.4.zip ali
- <http://sparks.gogo.co.nz/ch340.html> ali
- <http://www.arduined.eu/ch340-windows-8-driver-download/>



Gonilniki za Mac

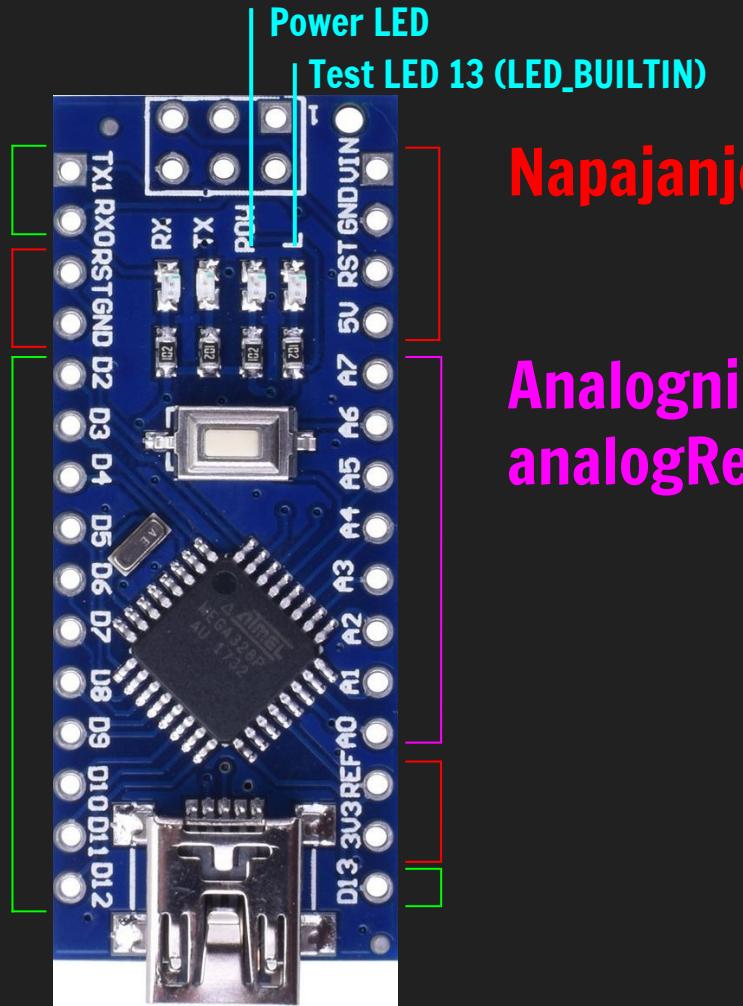
<https://kig.re/2014/12/31/how-to-use-arduino-nano-mini-pro-with-CH340G-on-mac-osx-yosemite.html>

Na Linuxu so gonilniki že nameščeni!



Source: https://static.ebayinc.com/static/assets/Uploads/Stories/Articles/_resampled/ScaleWidthWyl3NTgiXQ/castroevent3.jpg

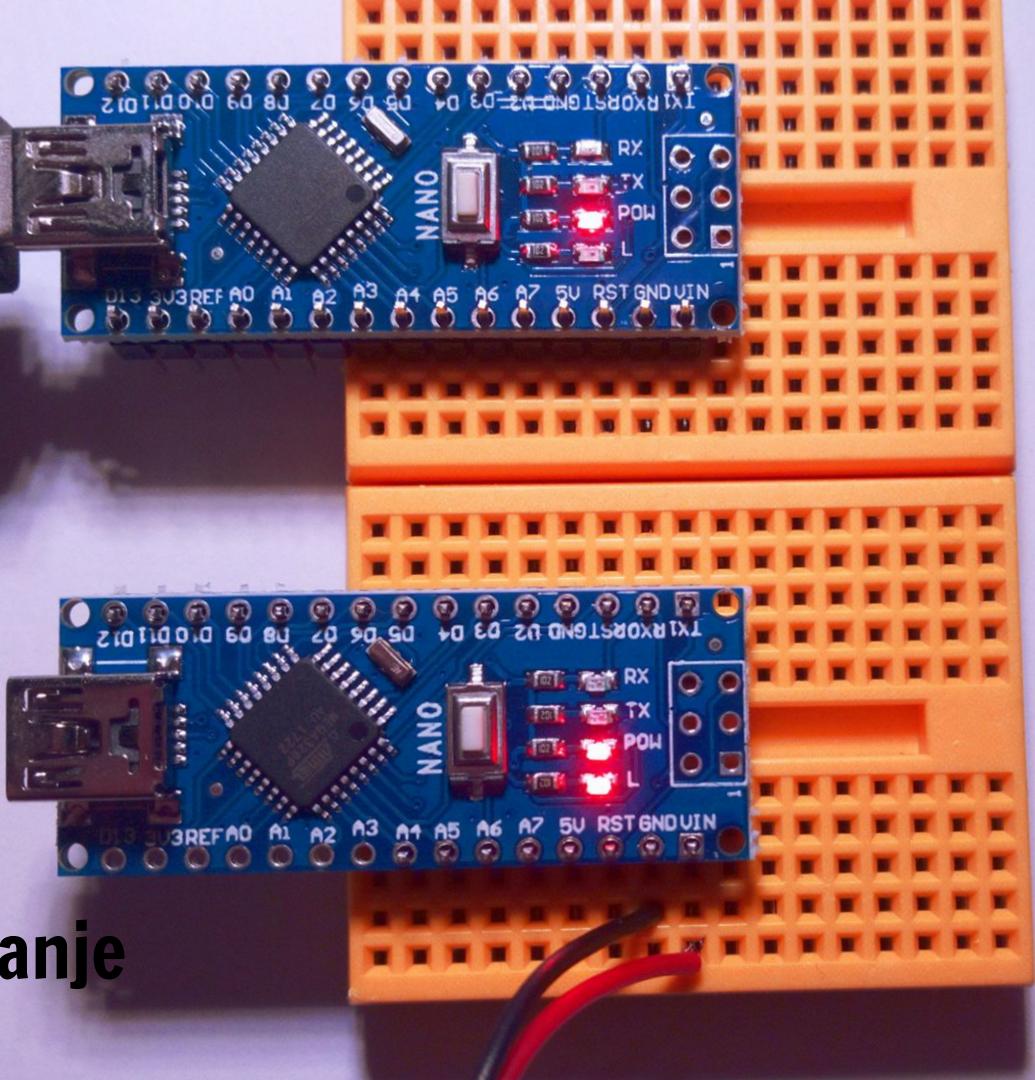
Digitalni pini
pinMode()
DigitalRead()
DigitalWrite()
AnalogWrite() - PWM
3, 5, 6, 9, 10, 11



Napajanje

Analogni pini
analogRead()

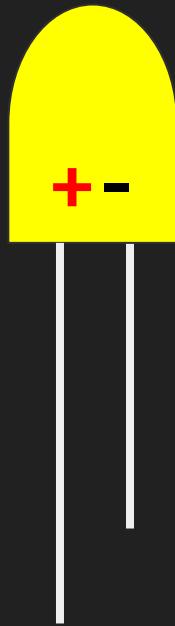
Napajanje



Testna ploščica



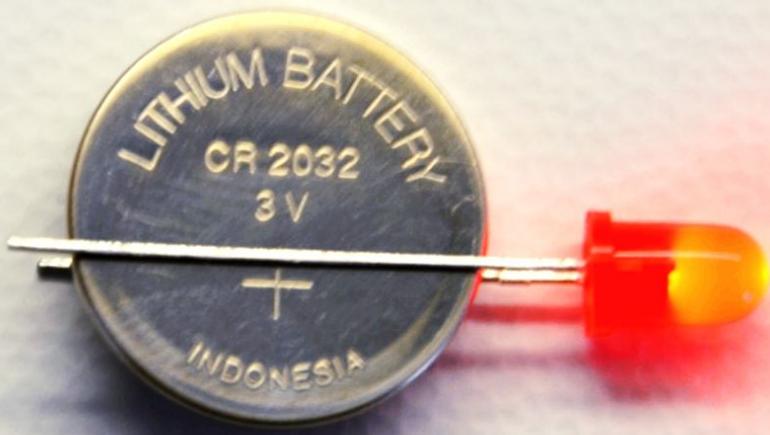
LED lučke



LED



RGB LED



Uporniki - moč in računanje upora

Upornik se upira električnemu toku in mu preprečuje, da bi nemoteno tekel skozenj.

Napetost (V) = Tok(I) * Upor(R)

Upor: 220 Ohmov

Napetost: 5 Voltov

=====

Tok: 23 mA (mili amperov)

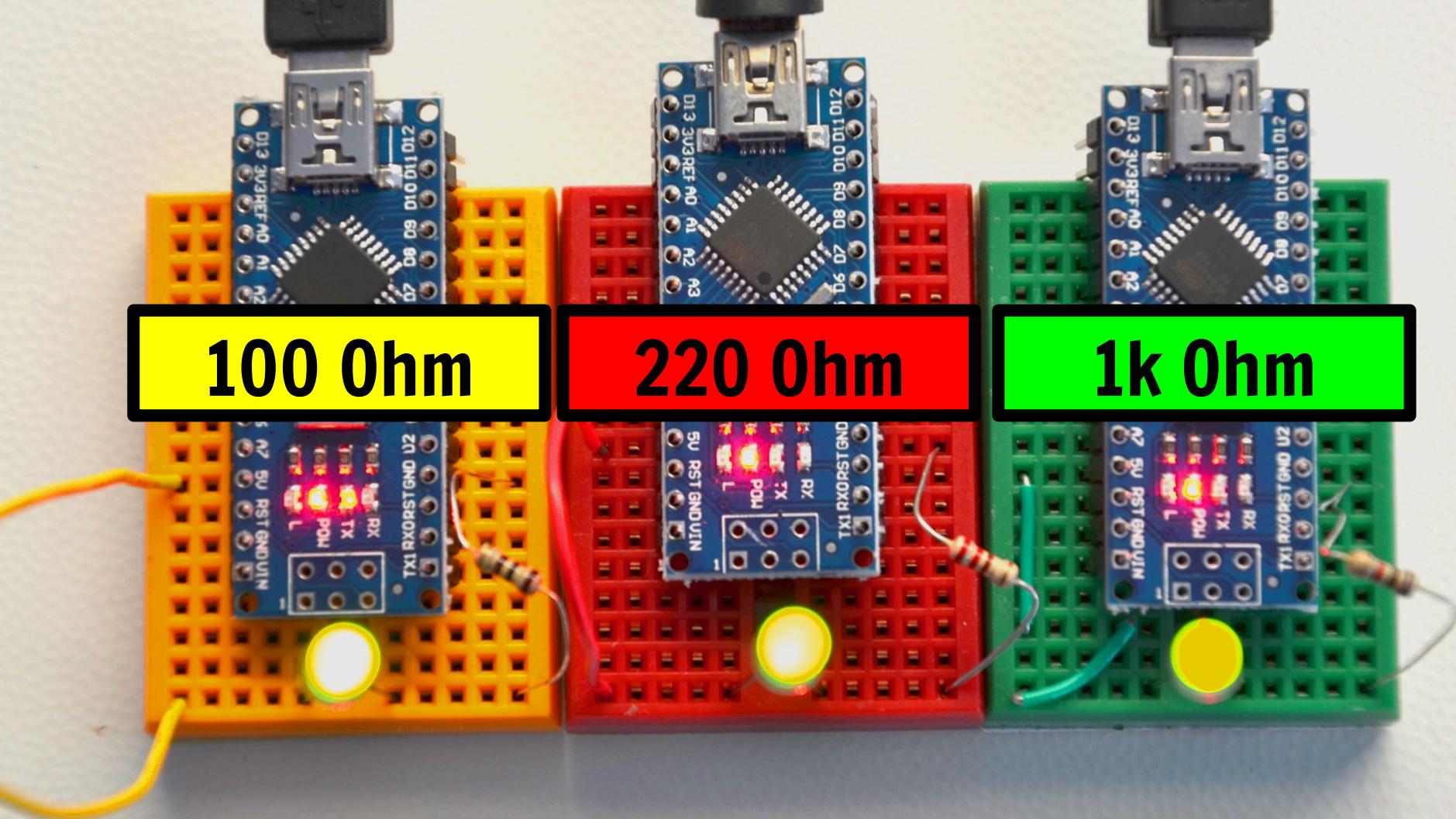
$$5V = 23 \text{ mA} * 220 \text{ Oh}$$

$$5V = 0.0227A * 220 \text{ Oh}$$

100 Ohm

220 Ohm

1k Ohm



$100\Omega \pm 5\% [E24]$

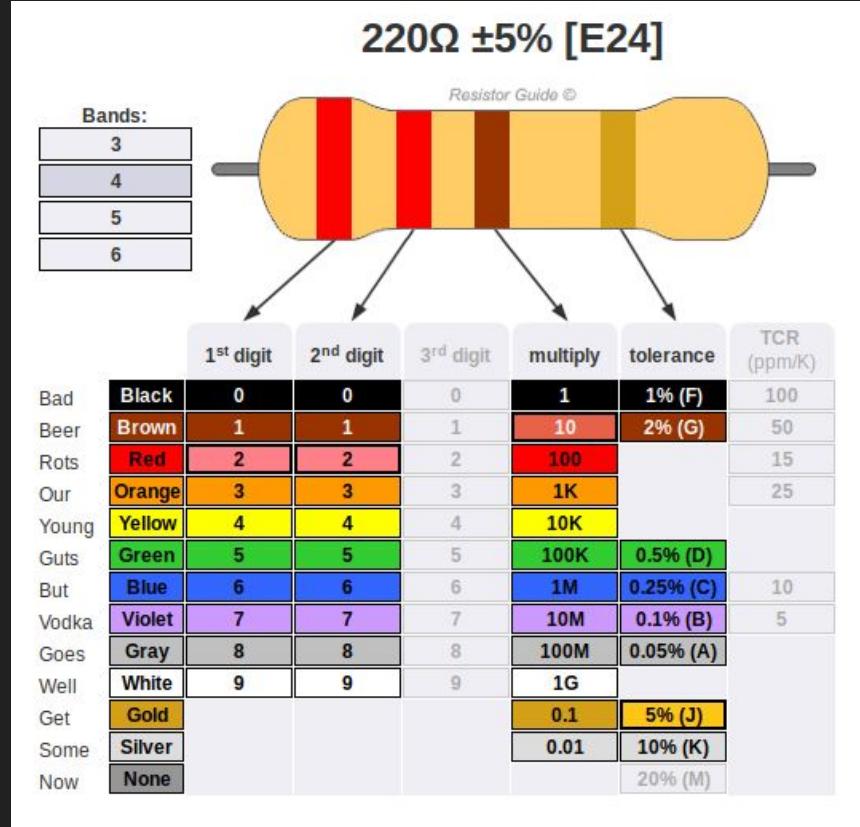
Resistor Guide ©

Bands:

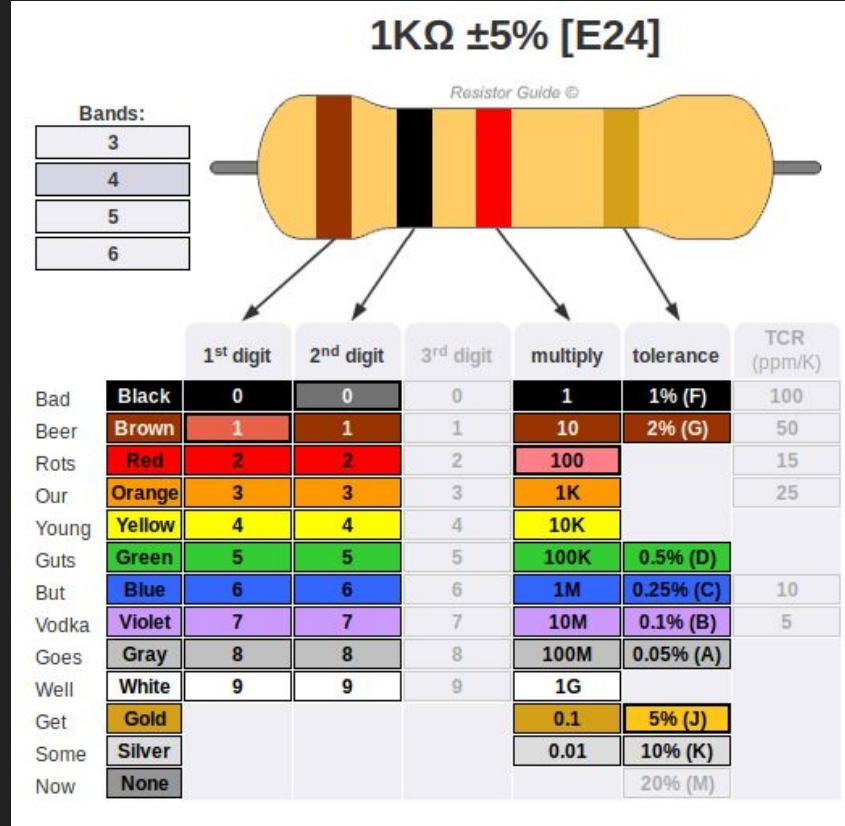
3
4
5
6

	1 st digit	2 nd digit	3 rd digit	multiply	tolerance	TCR (ppm/K)
Bad	Black	0	0	0	1	1% (F)
Beer	Brown	1	1	1	10	2% (G)
Rots	Red	2	2	2	100	
Our	Orange	3	3	3	1K	
Young	Yellow	4	4	4	10K	
Guts	Green	5	5	5	100K	0.5% (D)
But	Blue	6	6	6	1M	0.25% (C)
Vodka	Violet	7	7	7	10M	0.1% (B)
Goes	Gray	8	8	8	100M	0.05% (A)
Well	White	9	9	9	1G	
Get	Gold				0.1	5% (J)
Some	Silver				0.01	10% (K)
Now	None					20% (M)

<http://www.resistorguide.com/resistor-color-code-calculator/>



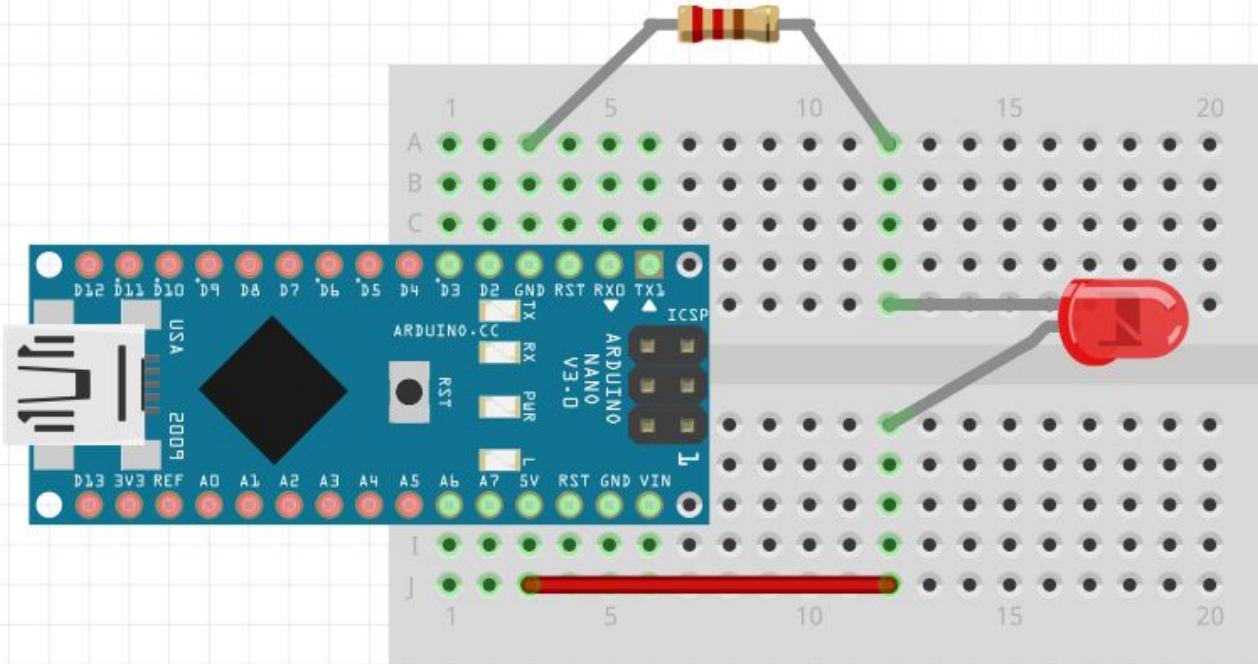
<http://www.resistorguide.com/resistor-color-code-calculator/>



<http://www.resistorguide.com/resistor-color-code-calculator/>

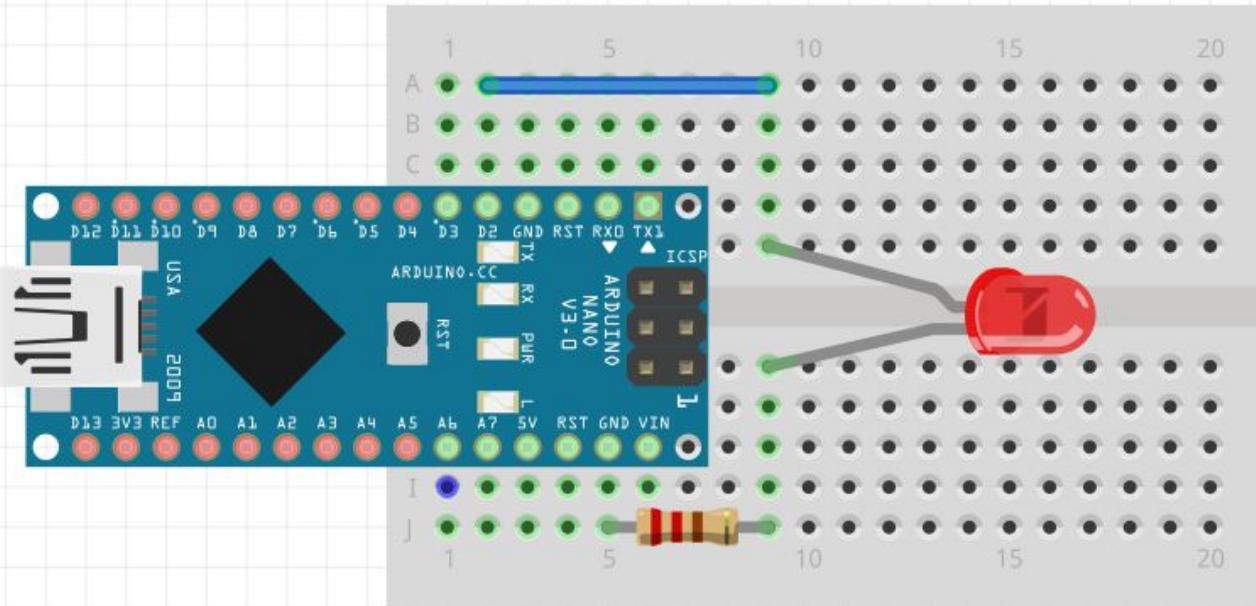
[00]

Lučka brez programa



[01]

Utripanje lučke



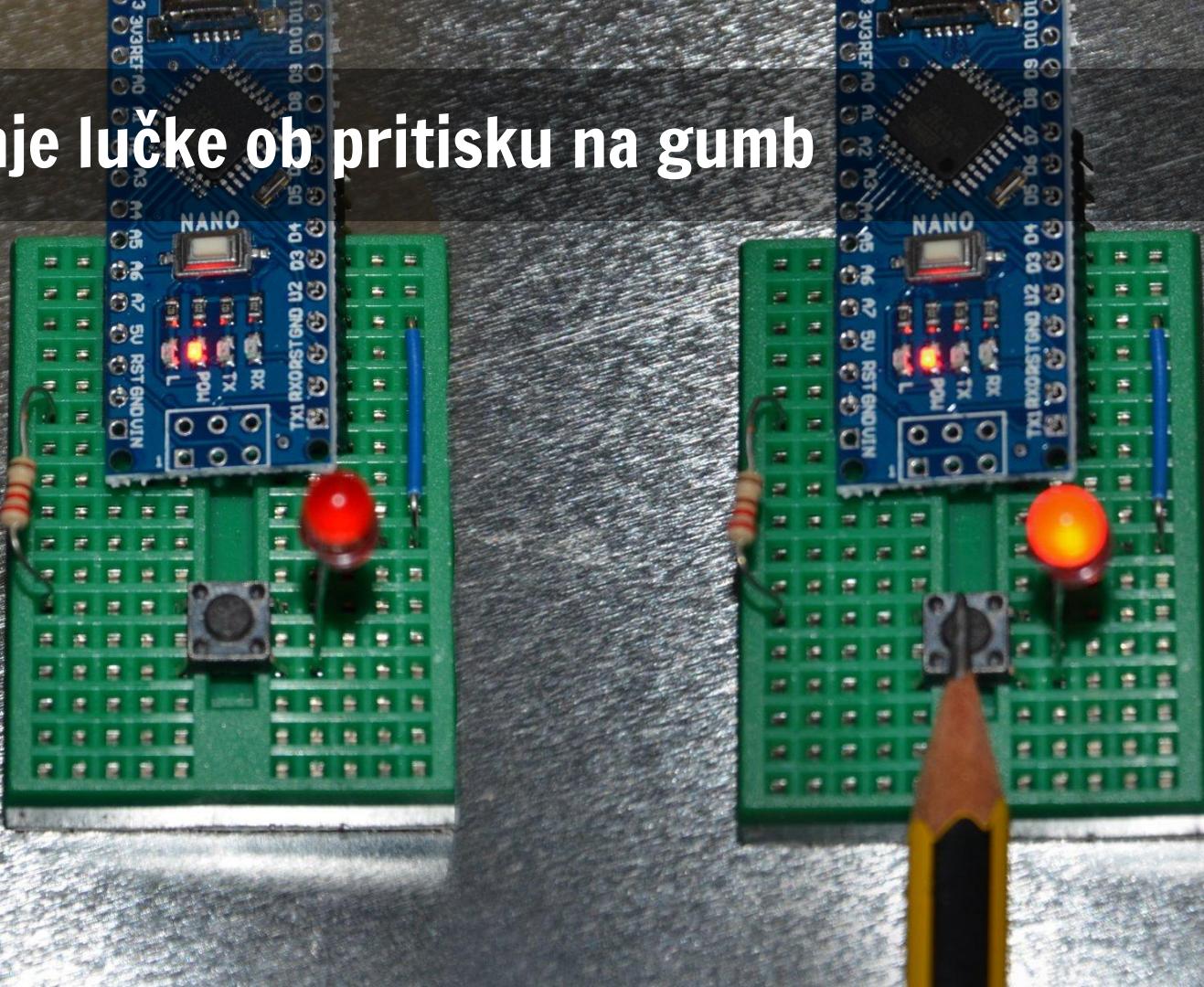
```
int LED = 2;

void setup() {
    pinMode(LED, OUTPUT);
}

void loop() {
    digitalWrite(LED, HIGH);
    delay(1000);
    digitalWrite(LED, LOW);
    delay(1000);
}
```

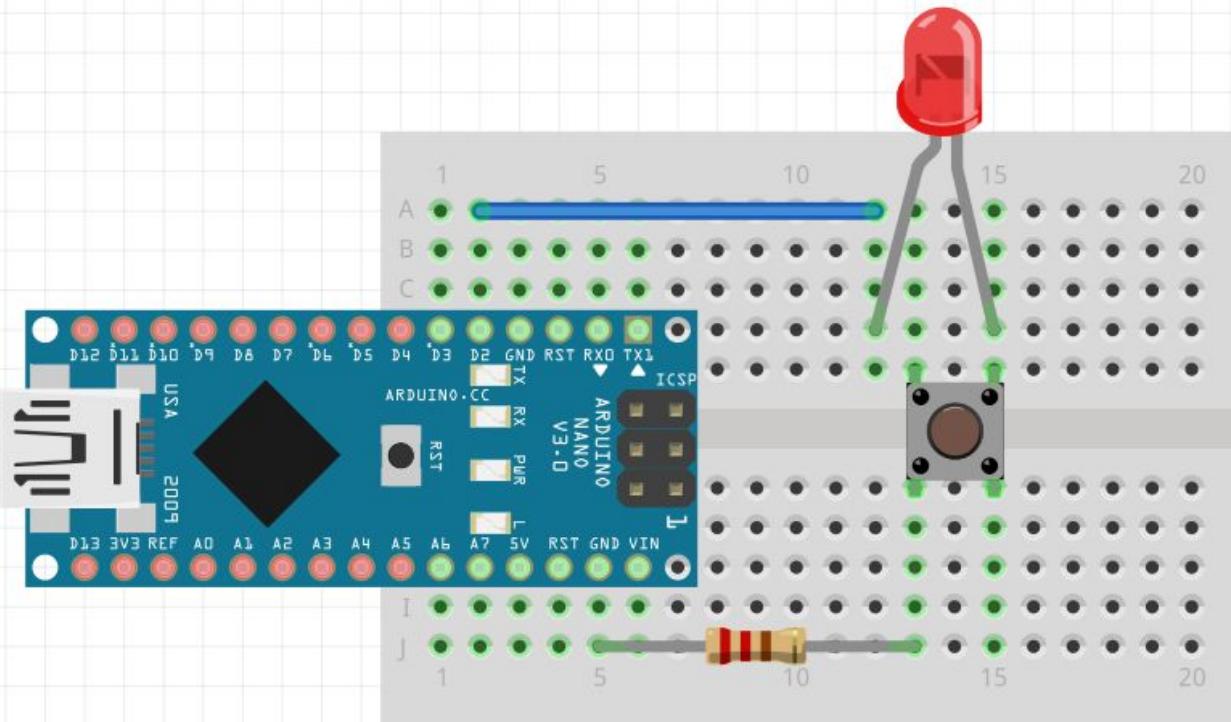
Utripanje lučke ob pritisku na gumb

[02]



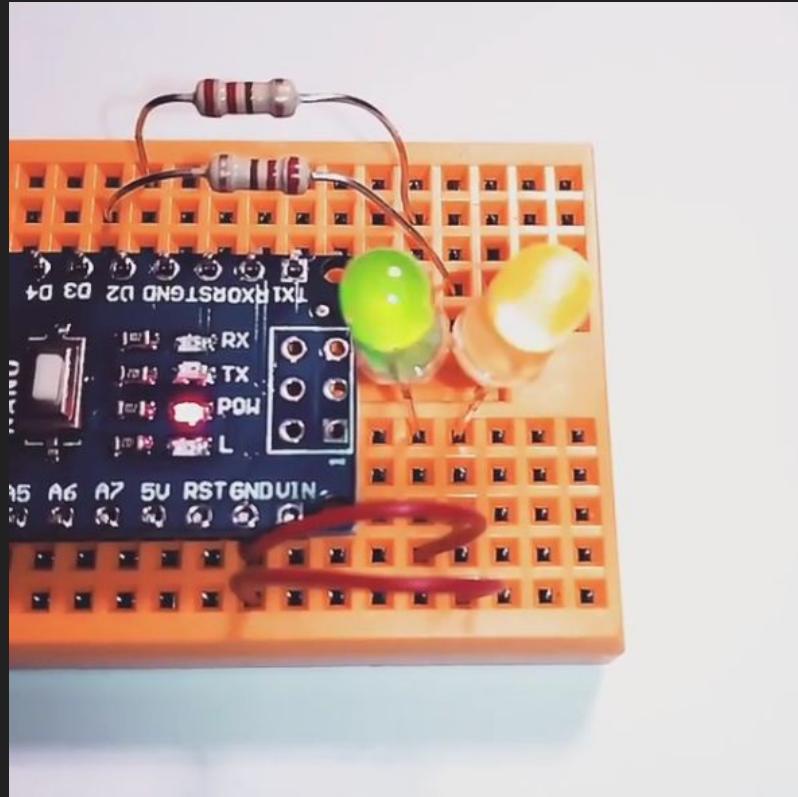
[02]

Utripanje lučke ob pritisku na gumb

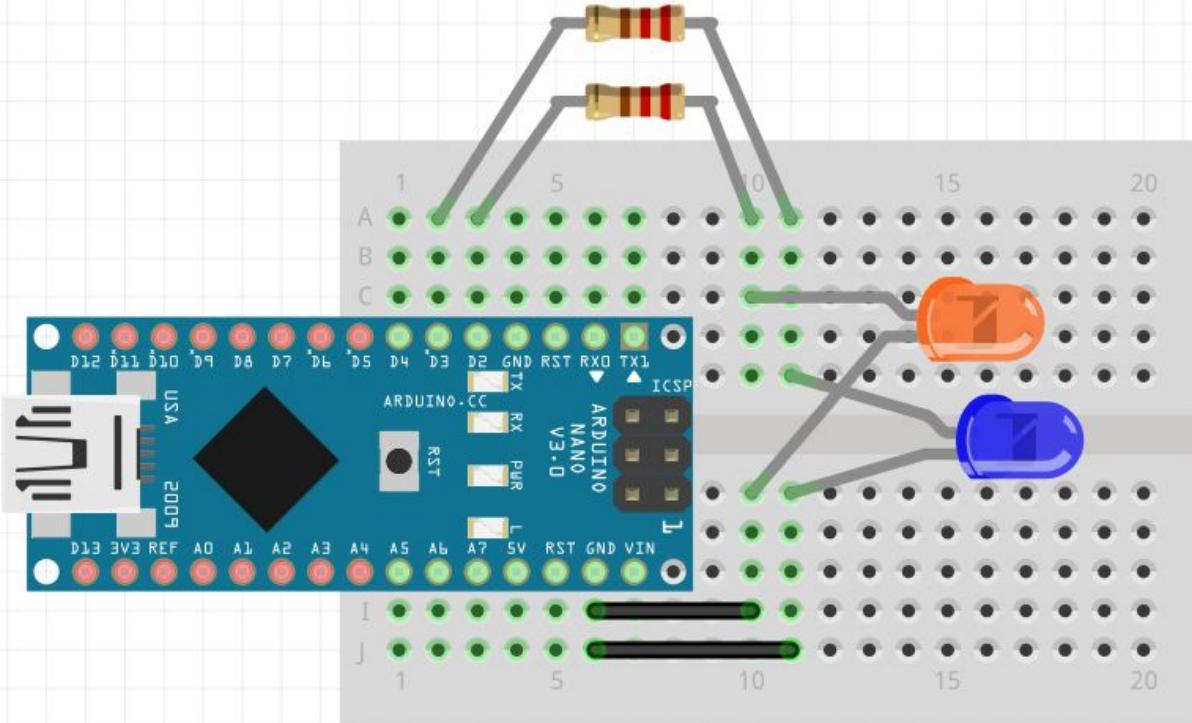


[03]

Izmenično utripanje LED lučk



Izmenično utripanje



```
int led_one = 2;
int led_two = 3;

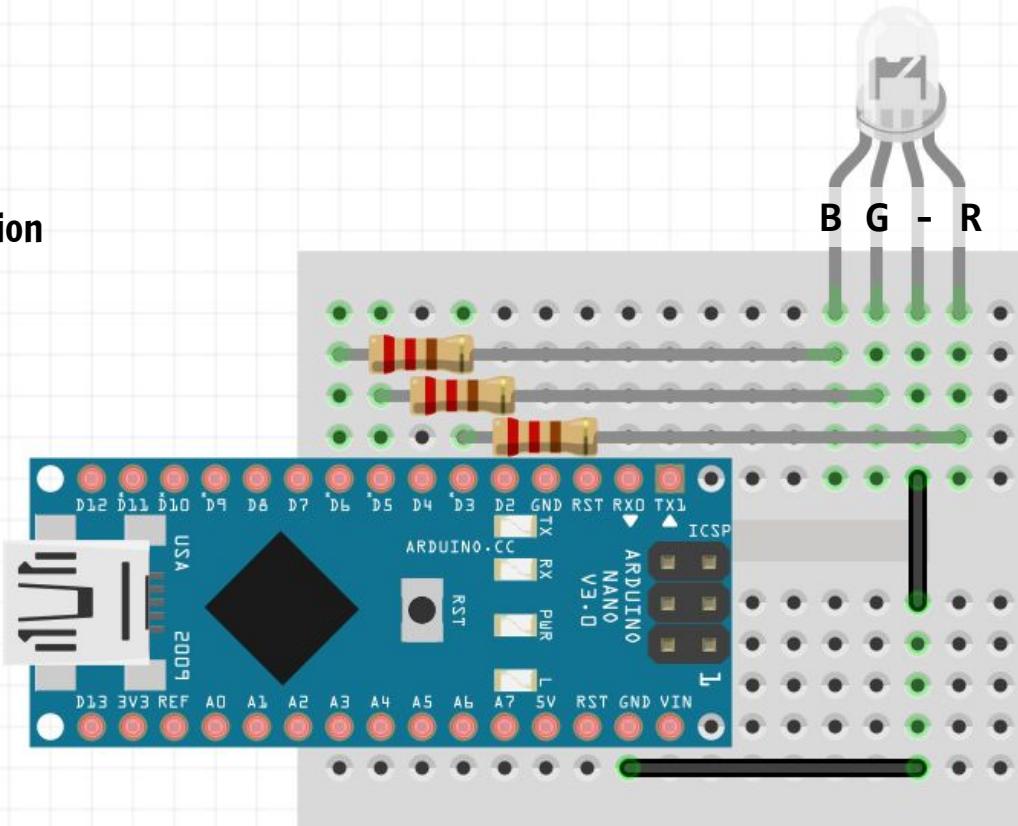
void setup() {
    // set up LED as OUTPUT
    pinMode(led_one, OUTPUT);
    pinMode(led_two, OUTPUT);
}

void loop() {
    digitalWrite(led_one, HIGH);
    digitalWrite(led_two, LOW);
    delay(500); // wait 0.5 second
    digitalWrite(led_one, LOW);
    digitalWrite(led_two, HIGH);
    delay(500); // wait 0.5 second
}
```

[04]
[05]

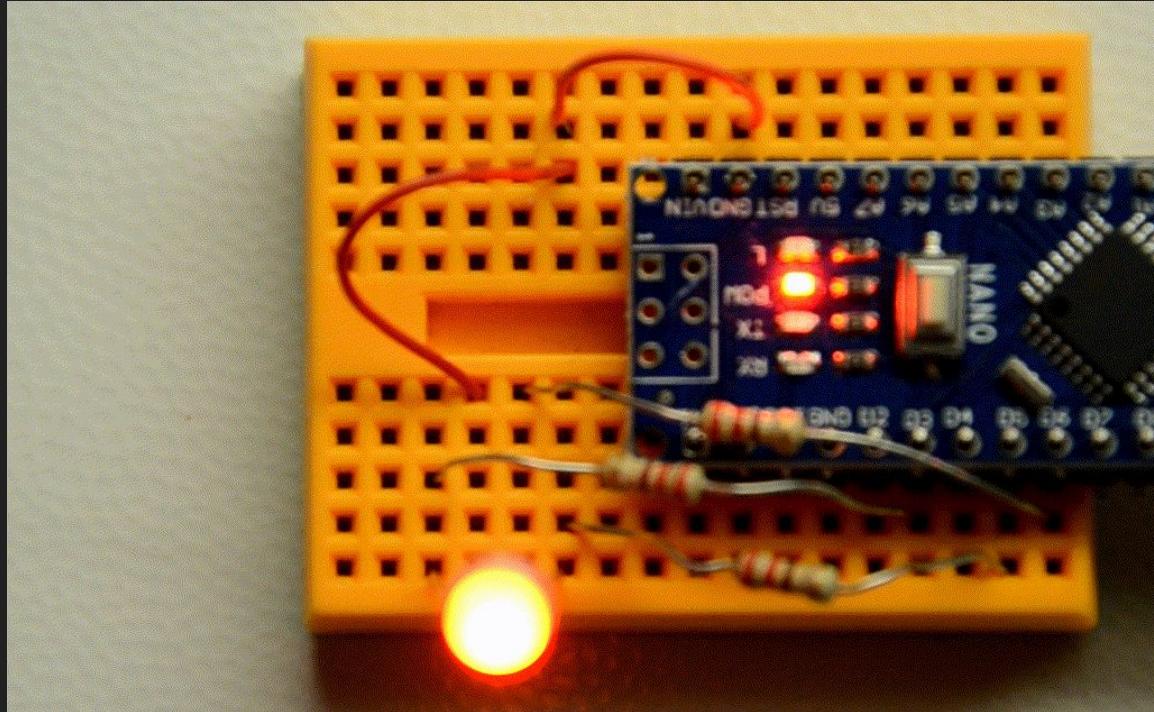
RGB lučka

PWM pins *Pulse Width Modulation



[04]

RGB lučka menja barve



```
int redPin = 3;
int greenPin = 6;
int bluePin = 5;

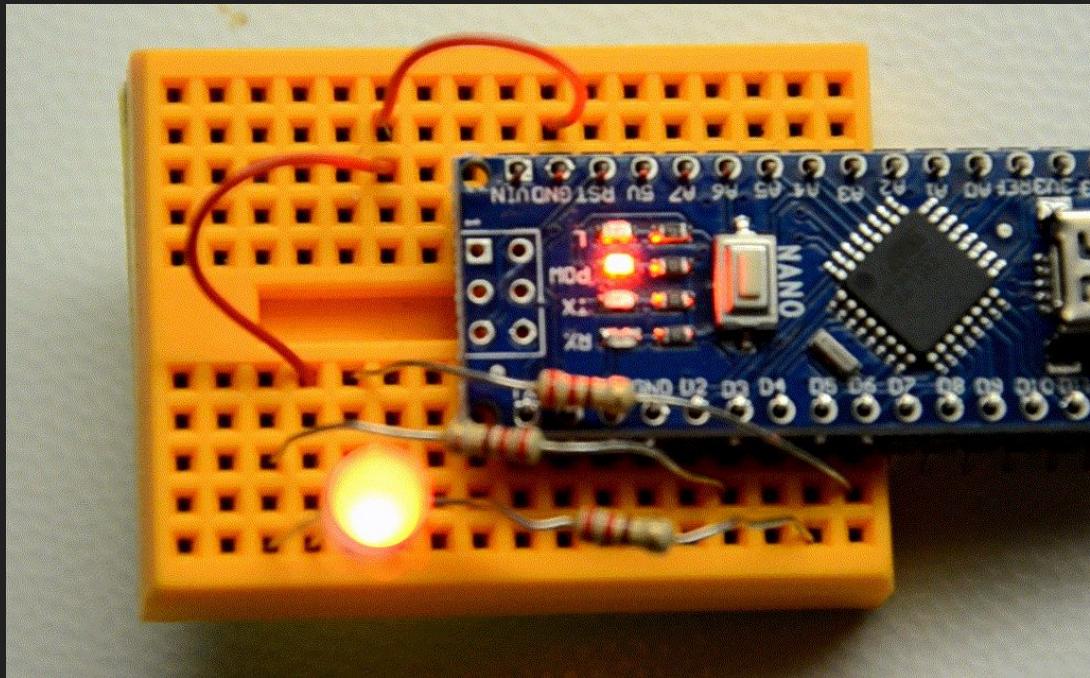
void setup() {
    pinMode(redPin, OUTPUT);
    pinMode(greenPin, OUTPUT);
    pinMode(bluePin, OUTPUT);
}

void loop()
{
    setColor(255, 0, 0); // red
    delay(3000);
    setColor(0, 255, 0); // green
    delay(2000);
    setColor(0, 0, 255); // blue
    delay(1000);
}

void setColor(int red, int green, int blue)
{
    analogWrite(redPin, red);
    analogWrite(greenPin, green);
    analogWrite(bluePin, blue);
}
```

[05]

RGB lučka pulzajoče barve



```
int redPin = 3;
int greenPin = 5;
int bluePin = 6;
int i;

void setup() {
    // set up OUTPUTS
    pinMode(redPin, OUTPUT);
    pinMode(greenPin, OUTPUT);
    pinMode(bluePin, OUTPUT);
}

void loop()
{
    for (i=0; i<=255; i++) {
        analogWrite(redPin, i);
        analogWrite(greenPin, 0);
        analogWrite(bluePin, 0);
        delay(5);
    }
}
```

Senzorji in serial port



The image shows the Arduino IDE interface. A sketch titled "06_photo_resistor" is open in the editor. The code reads an analog value from pin A7 and prints it to the serial port:

```
int sensorPin = A7;  
void setup() {  
  Serial.begin(9600);  
}  
void loop() {  
  int sensorValue = analogRead(sensorPin);  
  Serial.println(sensorValue);  
}
```

Below the IDE, a breadboard is visible with a red LED connected to digital pin 13. A photoresistor is connected between pin A7 and ground. The Arduino Nano board is shown at the bottom.

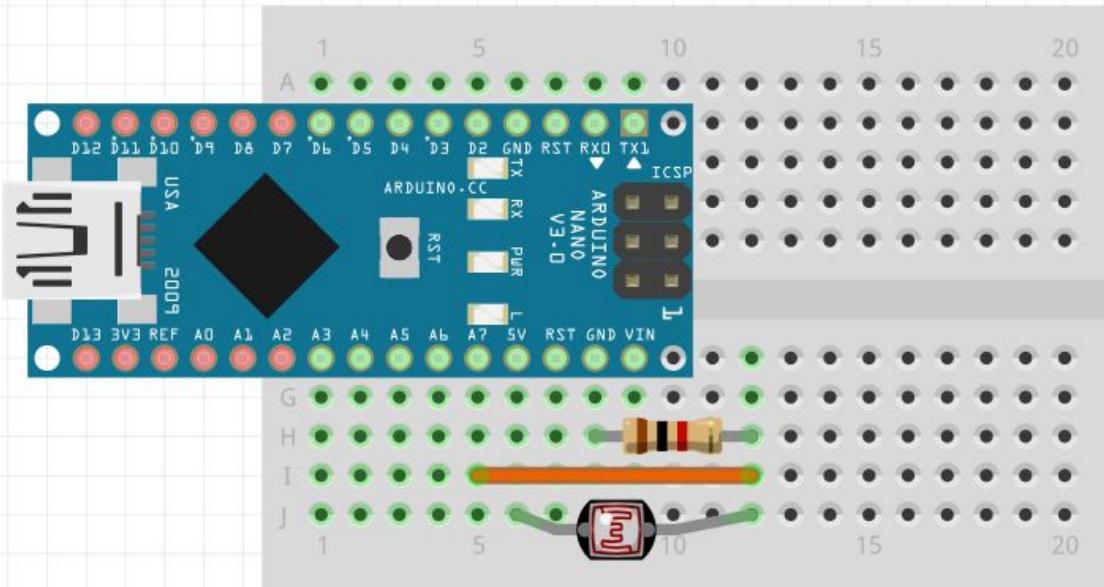


The serial monitor window is open, showing a continuous stream of data. The baud rate is set to 9600. The data consists of a series of numbers, likely representing the analog reading from the photoresistor, with the "Autoscroll" option checked.

882
883
889
899
892
894
896
898
899
900
901
902
902
902

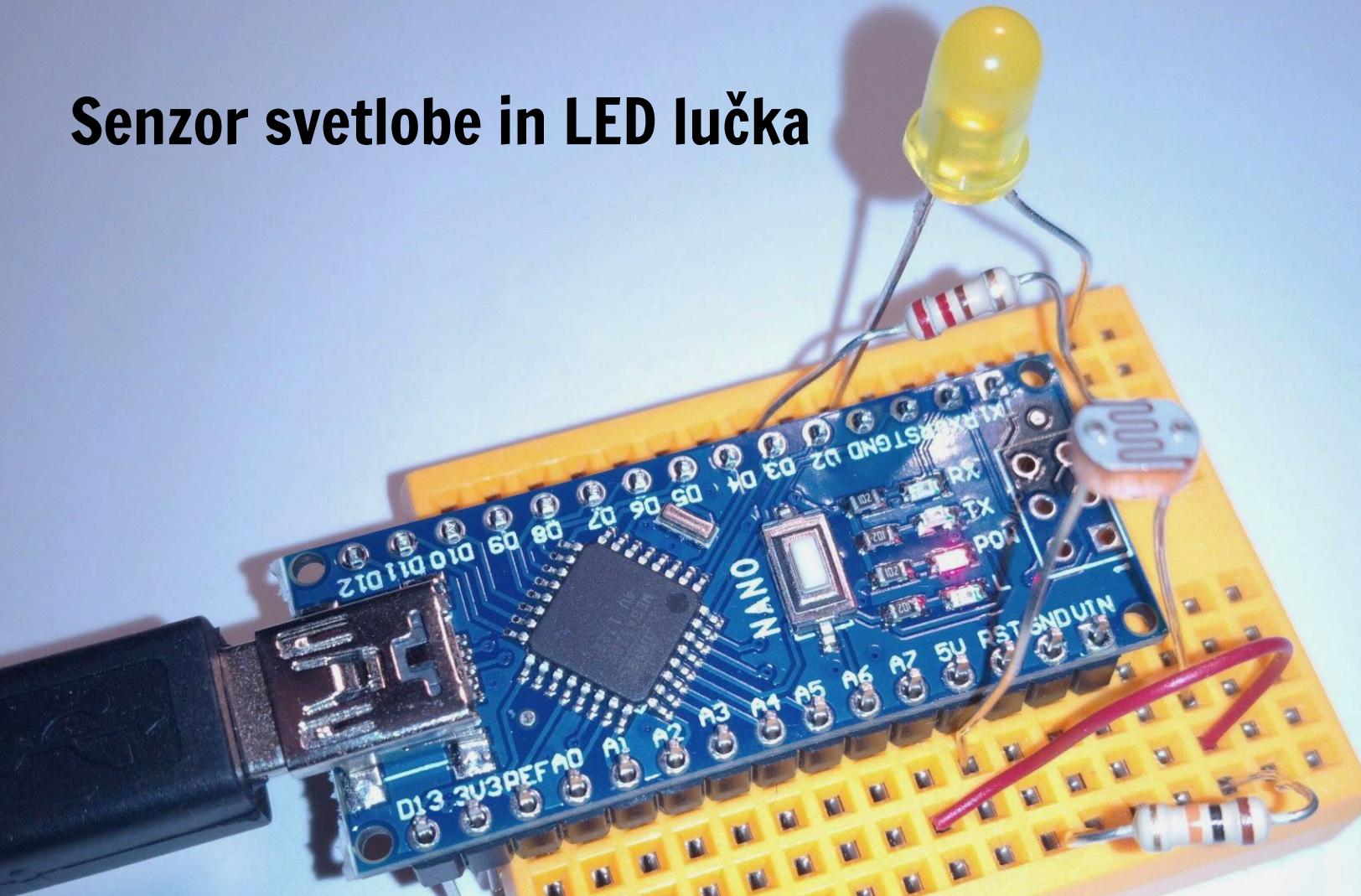
[06]

Foto-upornik & Serial port

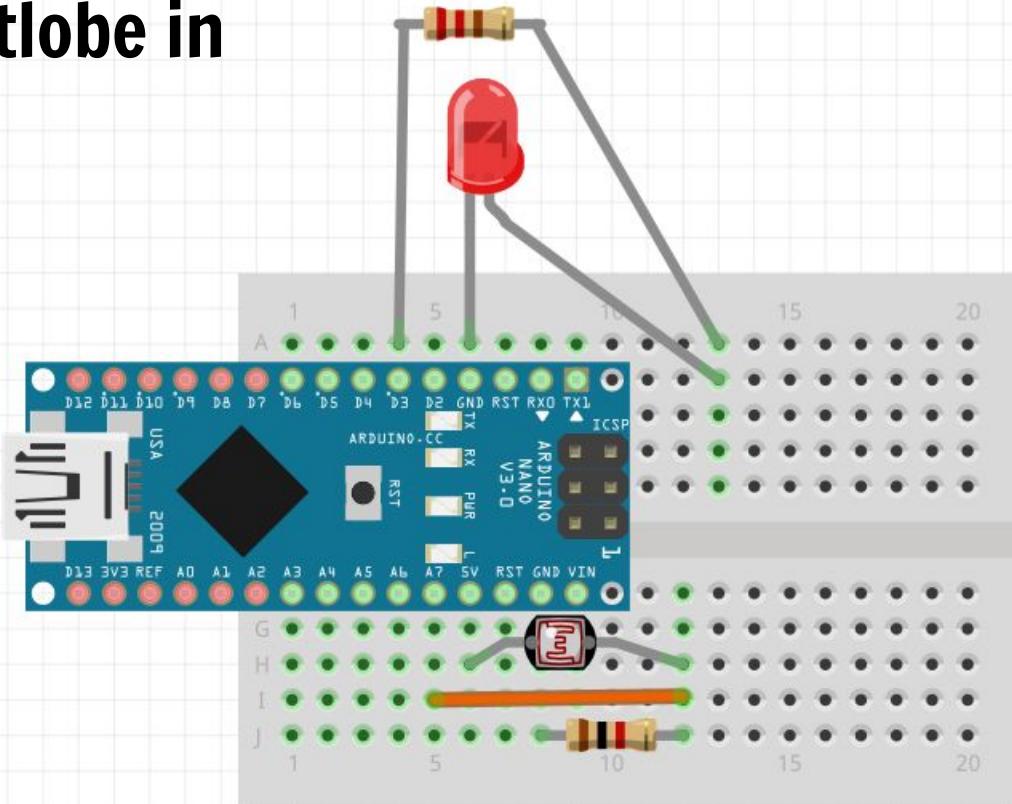


[07]

Senzor svetlobe in LED lučka



Senzor svetlobe in LED lučka



```
int sensorPin = A7;  
int led = 3;  
int input;  
int output;  
  
void setup() {  
    Serial.begin(9600);  
}  
  
void loop()  
{  
    input = analogRead(sensorPin);  
    output = input / 4;  
    delay(1000);  
    analogWrite(led, output);  
    Serial.print( input );  
    Serial.print( " - " );  
    Serial.println( output );  
}
```

Processing Demo

Processing

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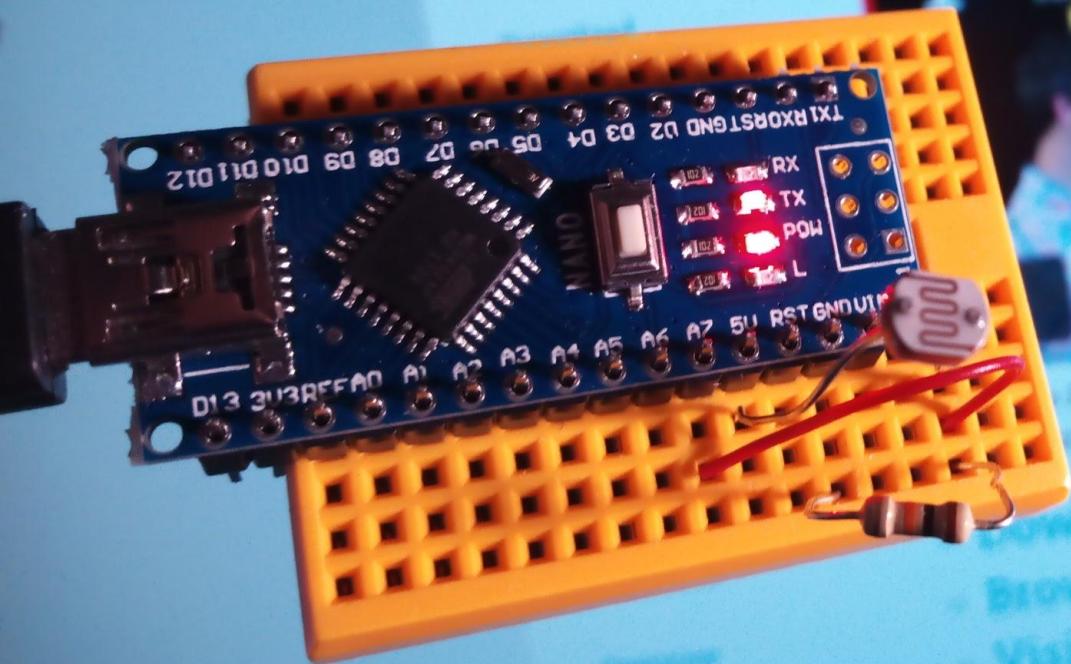
3.3.6 (4 September 2017)

[Windows 64-bit](#)[Windows 32-bit](#)[Linux 64-bit](#)[Linux 32-bit](#)[Linux ARMv6hf](#)[Mac OS X](#)[» Github](#)Read about the [changes in 3.0](#). The [list of revisions](#) covers the differences

<https://processing.org/download/>

[08]

Processing

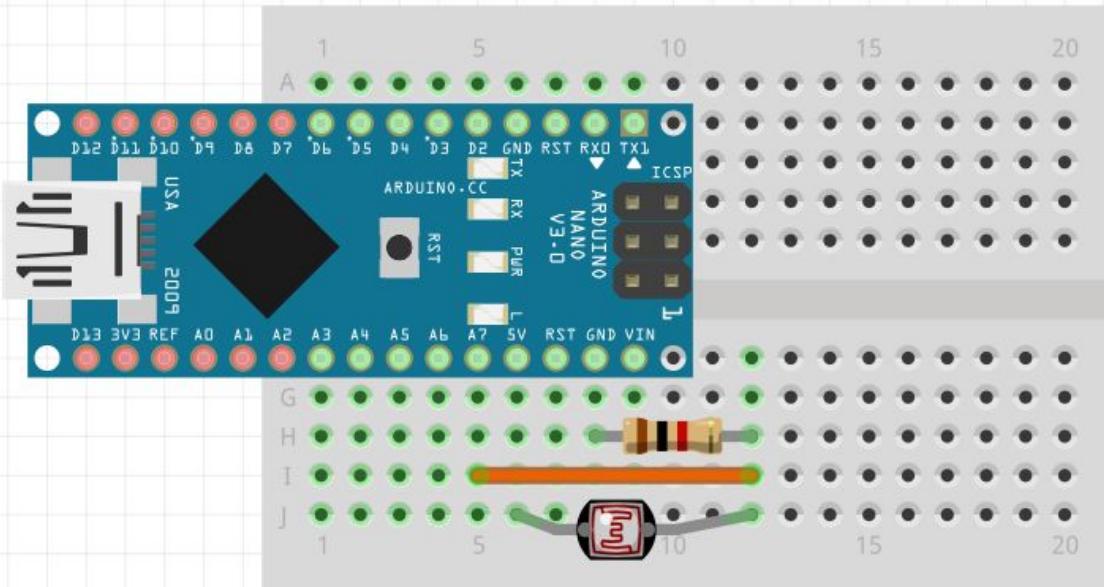


Processing is a programming language and environment for�
learning how to code within the context of the visual arts, design, and
technology. It is used by millions of people around the world to
explore art, science, and engineering through computation and
visual expression.

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Visit the Reference

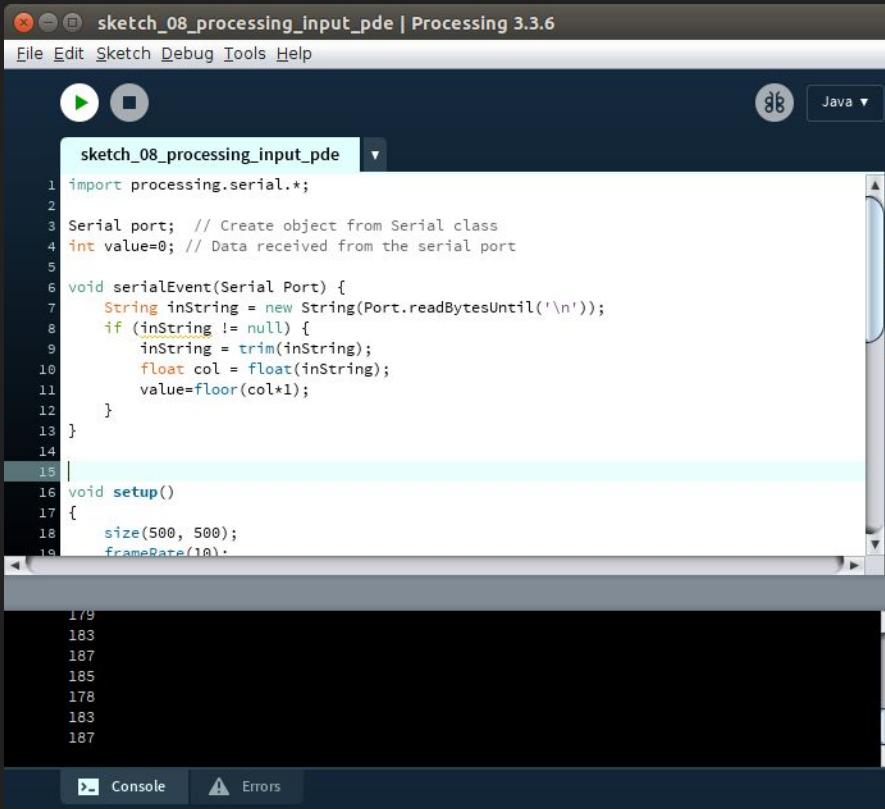
[08]

Foto-upornik & Serial port



```
int sensorPin = A7;  
int input;  
int output;  
  
void setup() {  
    Serial.begin(9600);  
}  
  
void loop()  
{  
    input = analogRead(sensorPin);  
    output = input / 4;  
    delay(10);  
    Serial.println( output );  
}
```

Processing sketch



The screenshot shows the Processing 3.3.6 IDE interface. The title bar reads "sketch_08_processing_input_pde | Processing 3.3.6". The menu bar includes File, Edit, Sketch, Debug, Tools, and Help. Below the menu is a toolbar with a play button, a square button, and a Java dropdown set to "Java". The main area displays the sketch code. The code imports the Serial class and defines a variable value. It contains a serialEvent function to handle incoming data from a serial port and a setup function to initialize the window size and frame rate.

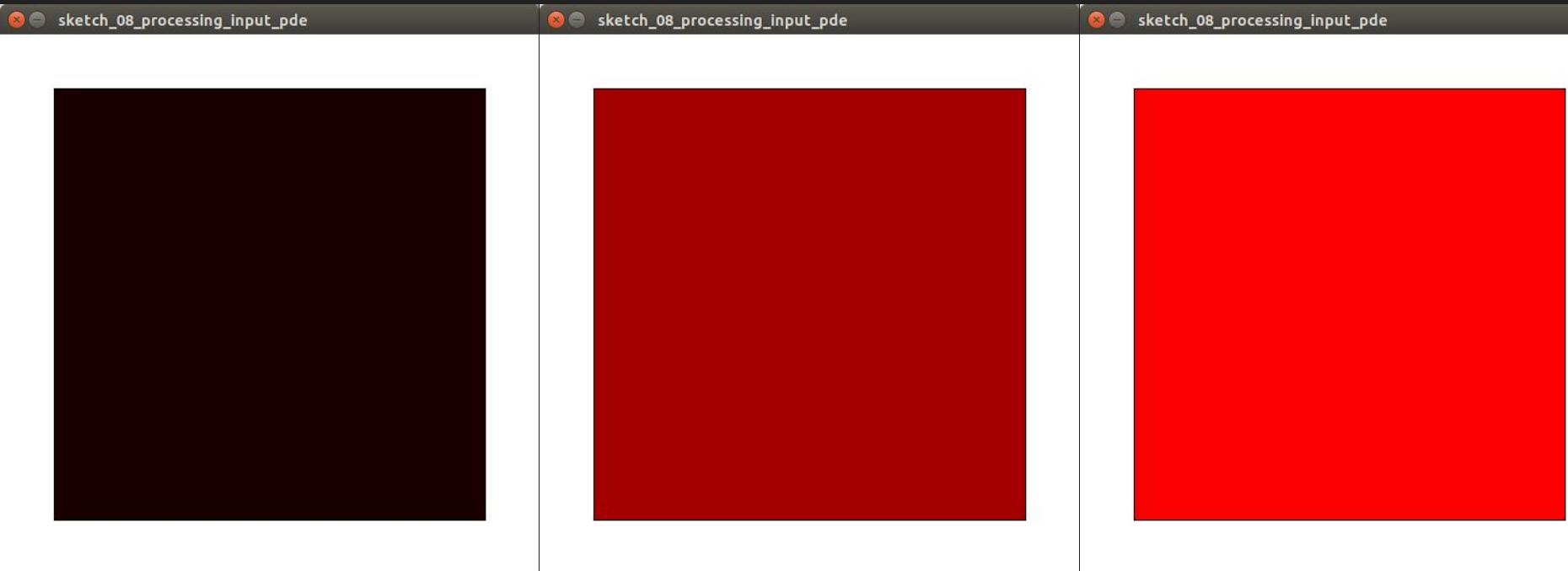
```
sketch_08_processing_input_pde
import processing.serial.*;
Serial port; // Create object from Serial class
int value=0; // Data received from the serial port
void serialEvent(Serial Port) {
    String inString = new String(Port.readBytesUntil('\n'));
    if (inString != null) {
        inString = trim(inString);
        float col = float(inString);
        value=floor(col*1);
    }
}
void setup()
{
    size(500, 500);
    frameRate(10);
}
```

The bottom console window shows the following output:

```
179
183
187
185
178
183
187
```

[08]

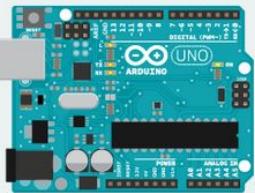
Processing - Resultat



Povezave



WHAT IS ARDUINO?

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THE IMPERIALIZER MAKES
QUICK WORK OF METRIC
CONVERSIONS



REDEFINING THE
LEARNING EXPERIENCE
ONE CLASSROOM
AT A TIME

[BLOG](#)

ARDUINO MKR ZERO,
THE POWER OF THE
ZERO IN A SMALLER



<https://www.arduino.cc/>

and access cool tutorials!



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SEARCH PROJECTS



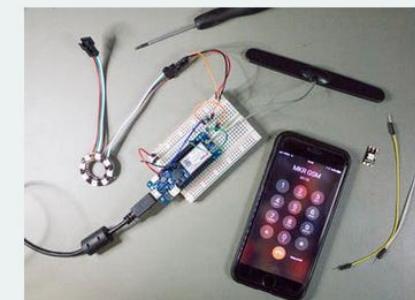
All products ▾

All categories ▾

Trending ▾

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Any type ▾



<https://create.arduino.cc/projecthub>

77 VIEWS 0 COMMENTS 1 RESPECT

1,916 VIEWS 0 COMMENTS 4 RESPECTS

1,596 VIEWS 0 COMMENTS 7 RESPECTS

The screenshot shows the Arduino IDE's online editor interface. On the left, a sidebar lists categories like Sketchbook, Examples, Libraries, Monitor, Help, and Preferences. The Examples section is selected, showing examples categorized by type: BUILT IN, FROM LIBRARIES, 01.BASICS (6), 02.DIGITAL (9), 03.ANALOG (6), 04.COMMUNICATION (12), 05.CONTROL (6), and 06.SENSORS (4). The 'Blink' example under '01.BASICS' is currently selected, highlighted with a grey background.

The main workspace displays the code for the 'Blink' sketch. The code is split into two tabs: 'Blink.ino' and 'Blink.txt'. The 'Blink.ino' tab contains the C++ code for the sketch, which controls an LED on pin 13. The 'Blink.txt' tab contains the raw text of the code. A yellow banner at the top states: "No Plugin Connection. Uploading is disabled until you reconnect." A 'HELP' button is located in the top right corner of the banner.

```
/*
  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 Technical Specs of your board at:
  https://www.arduino.cc/en/Main/Products

  modified 8 May 2014
  by Scott Fitzgerald
  modified 2 Sep 2016
  by Arturo Guadalupi
  modified 8 Sep 2016
  by Colby Newman

  This example code is in the public domain.

  http://www.arduino.cc/en/Tutorial/Blink
*/
// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH);    // turn the LED on (HIGH is the voltage level)
  delay(1000);                      // wait for a second
  digitalWrite(LED_BUILTIN, LOW);     // turn the LED off by making the voltage LOW
  delay(1000);                      // wait for a second
}
```

<https://create.arduino.cc/editor>



Simulator time: 00:00:15

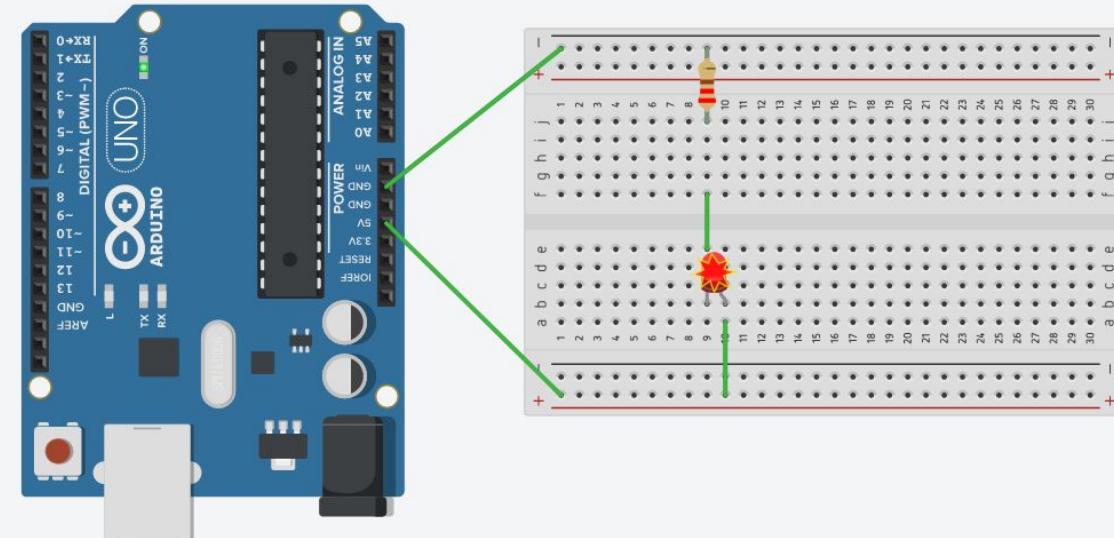
Code Editor

Components

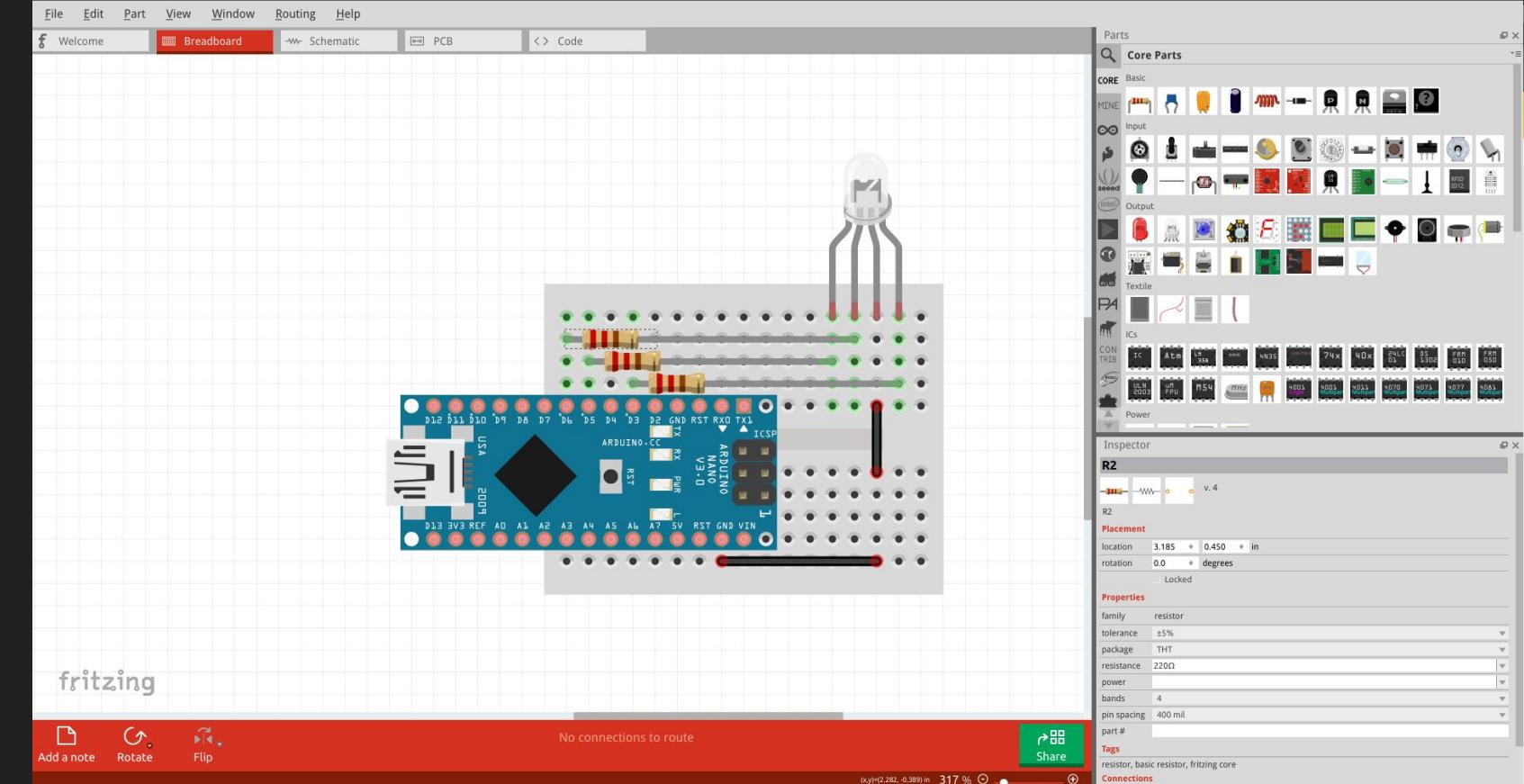
Stop Simulation

Export

Share



<https://www.tinkercad.com/>



<http://fritzing.org/download/>

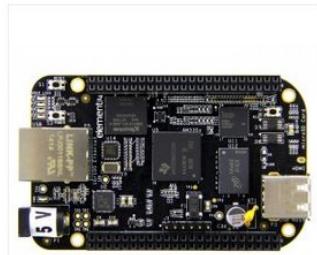
Išči po celotni trgovini...

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SMAKSHOP : GENUINO/ARDUINO, LILYPAD, MAKERBEAM, 3D (TISKALNIKI, ABS, PLA), SPARKFUN



AKCIJA



NAROČI SE NA OBJAVE

* potrebna polja
email *

Ime in priimek *

NAROČI SE

Način dostave po pošti (Pošta Slovenije d.o.o.).

Strošek dostave je 3,55 EUR in brezplačna dostava pri naročilih nad 99,00 EUR.

Način dostave osebni prevzem na lokaciji podjetja.

Predhodno se je potrebno dogovoriti za termin prevzema.

Podpora kupcem(med 8:30-15:30, Pon - Pet)

elektronska pošta
tel: 041 3344 86

<https://smakshop.si>

149,99 € 129,99 €

299,99 € 249,99 €



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- Other Accessories(104)
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- Sensors(274)

arduino(1198)



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<http://www.dx.com/slarduino>

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» Boards & Shields

» Boards & Shields

» Displays



LANGUAGE

FUNCTIONS

VARIABLES

STRUCTURE

LIBRARIES

GLOSSARY

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Find anything that can be improved? [Suggest corrections and new documentation via GitHub](#).

Doubts on how to use Github? Learn everything you need to know in this [tutorial](#).

Language Reference

Arduino programming language can be divided in three main parts: structure, values (variables and constants), and functions.

FUNCTIONS

For controlling the Arduino board and performing computations.

Digital I/O

[`digitalRead\(\)`](#)[`digitalWrite\(\)`](#)[`pinMode\(\)`](#)

Analog I/O

[`analogRead\(\)`](#)[`analogReference\(\)`](#)[`analogWrite\(\)`](#)

<https://www.arduino.cc/reference/en/>

Advanced I/O

[`noTone\(\)`](#)[`pulseIn\(\)`](#)

Extra

Namestitev gonilnikov za Windows - 2

- http://www.wch.cn/download/CH341SER_ZIP.html

The screenshot shows the WCH website interface. In the top left, there's a logo with a blue arrow pointing upwards. The main navigation bar includes links for '关于我们' (About Us), '产品中心' (Product Center), 'BBS', '在线下载' (Online Download), '招贤纳士' (Recruitment), and '联系我们' (Contact Us). Below the navigation, there's a search bar with the placeholder '搜索 全部'. A large blue button labeled 'DOWNLOAD' with a downward arrow is highlighted with a red box.

CH341SER.ZIP

资料名称: CH341SER.ZIP
资料类型: 驱动工具
资料大小: 159KB
资料版本: 3.4
更新时间: 2018-09-27
软件简介: CH341SER的USB串口WINDOWS驱动程序和DOLL驱动库，内含非标准波特率的设置等使用说明。支持32位Windows 10/8/7/VISTA/XP, SERVER 2016/2012/2008/2003, 2000/ME/98, 支持WinCE 3.0及以上的操作系统。
适用范围: CH340G, CH340C, CH340S, CH340T, CH340K, CH341A, CH341T, CH341H

相关资料:

- CH341SER.EXE
- CH340CH341SER的USB串口WINDOWS驱动程序的安装包, 支...
- CH341SER_LINUX.ZIP
- CH340CH341SER的USB串口Linux驱动程序, 支持32位...
- CH341SER_MAC_ZIP
- CH340CH341SER的USB串口Mac OS驱动程序的安装包, 支持...
- CH341SER1.PDF
- CH341SER技术手册, USB总线转换芯片, 接口方案, 平台驱动齐全, 附于...
- CH340PC1.PDF
- CH340的USB转串口的数据原理PCB, 用于USB转串口, 打印口, ...
- CH341PCB.ZIP
- CH341的USB转串口的数据原理PCB, 用于USB转串口, 打印口, ...
- CH340PCB.ZIP
- CH340的USB转串口, USB转打印机, USB转串口的原理图和...
- CH341SER_ANDROID.ZIP
- CH340CH341SER的USB串口安卓驱动程序, 适用于andro...

