



ERASMUS+ PROJECT

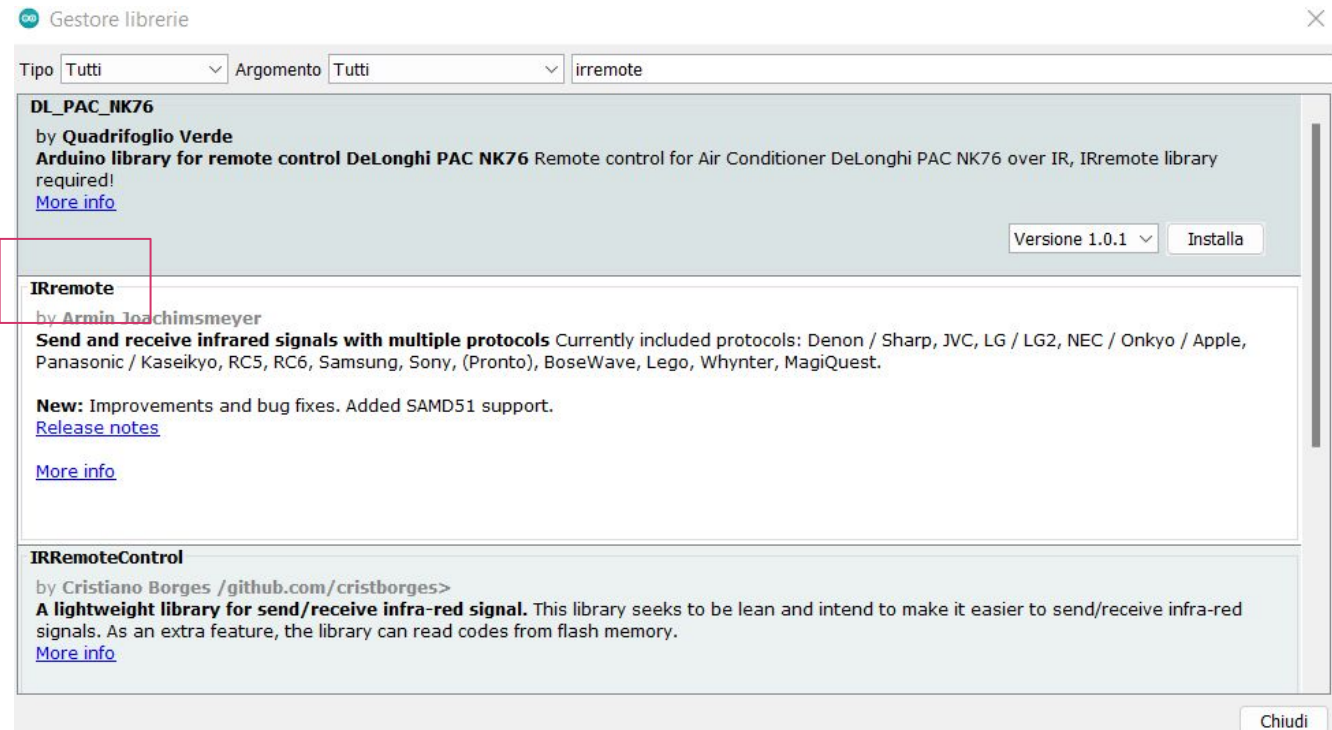
Innovative Information Technologies in the Modern VET School

2020-1-RS01-KA202-065381

Arduino Connections

Operating examples: the Single Led

We need to install the «IRremote» library before working with the infrared remote receiver



Gestore librerie

Tipo Tutti Argomento Tutti irremote

DL_PAC_NK76
by [Quadrifoglio Verde](#)
Arduino library for remote control DeLonghi PAC NK76 Remote control for Air Conditioner DeLonghi PAC NK76 over IR, IRremote library required!
[More info](#) Versione 1.0.1 Installa

IRremote
by [Armin Joachimsmeyer](#)
Send and receive infrared signals with multiple protocols Currently included protocols: Denon / Sharp, JVC, LG / LG2, NEC / Onkyo / Apple, Panasonic / Kaseikyo, RC5, RC6, Samsung, Sony, (Pronto), BoseWave, Lego, Whynter, MagiQuest.
New: Improvements and bug fixes. Added SAMD51 support.
[Release notes](#)
[More info](#)

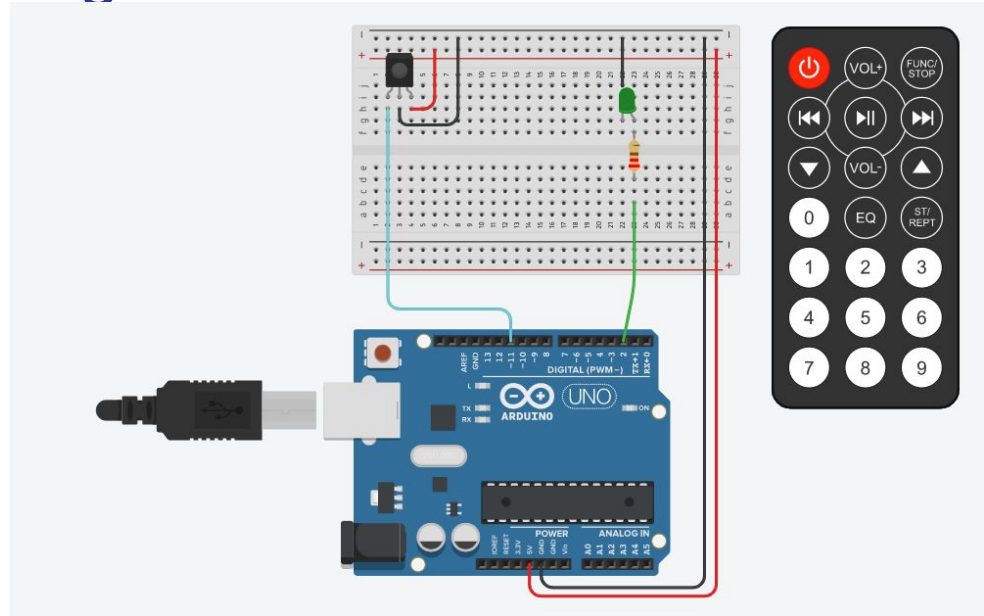
IRRemoteControl
by [Cristiano Borges / github.com/cristborges](#)
A lightweight library for send/receive infra-red signal. This library seeks to be lean and intend to make it easier to send/receive infra-red signals. As an extra feature, the library can read codes from flash memory.
[More info](#)

Chiudi

Operating examples: the Single Led

Let's examine the electrical circuit with the proper code

<https://www.tinkercad.com/things/1UJs1xw7ofj>

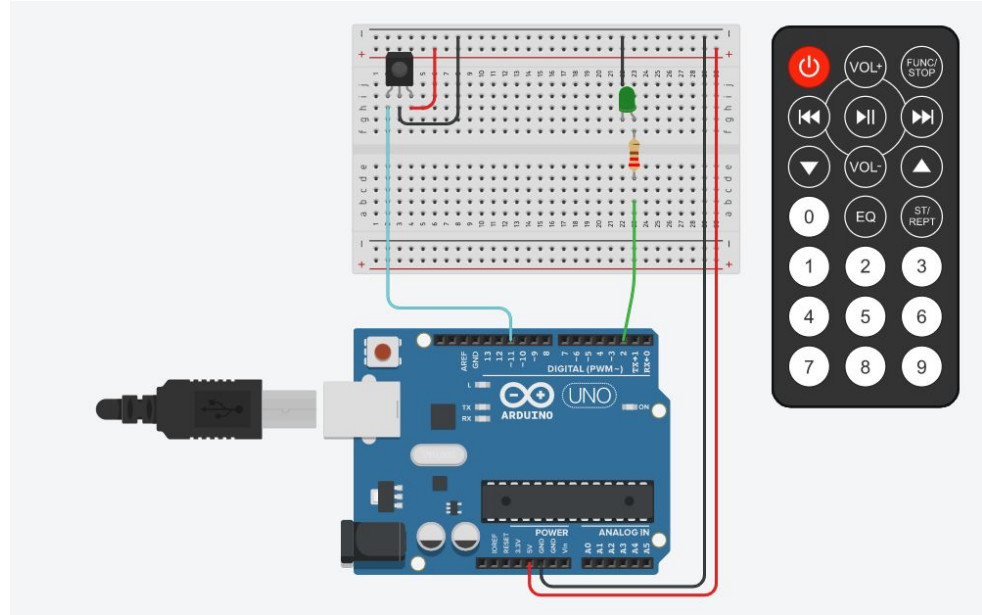


Operating examples: the Single Led

The 220 Ω resistor has the task of limiting the current to an ideal value for switching on the LED.

Considering that the ON voltage of a green LED diode is about $V_d = 2V$ and that the Arduino output voltage is equal to $E=5V$, by using Kirchoff's Current Law, we obtain that the current is about $I=13.5\text{ mA}$.

$$I = \frac{E - V_d}{R}$$

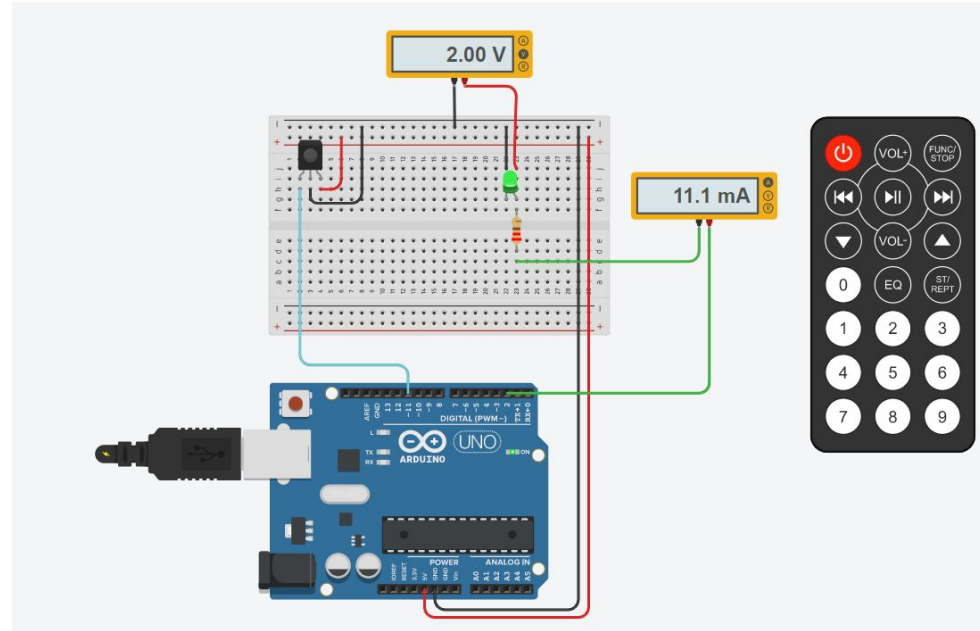


Operating examples: the Single Led

By measuring these values with TinkerCAD virtual instruments we obtain a current value very close to the theoretical one previously calculated.

This is acceptable as the simulation takes into account the internal resistances of the instruments.

<https://www.tinkercad.com/things/jUhE7J1PTNB>



Operating examples: single led

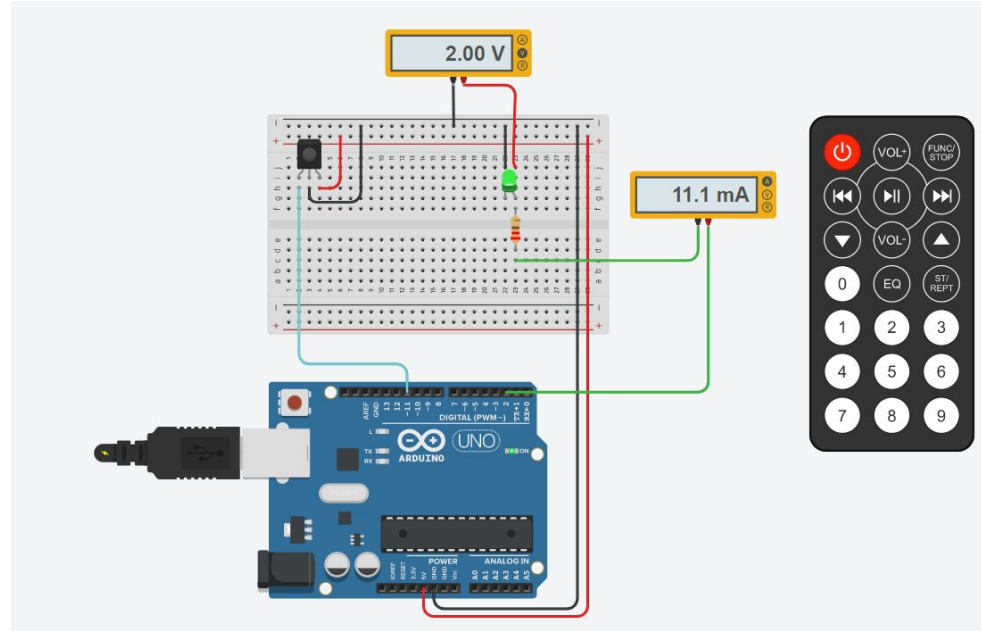
IMPORTANT NOTE n° 1

To determine what is the hexadecimal code of a key, you can use the Arduino SERIAL MONITOR



Arduino **kit** monitor output example

```
FF18E7 ← #1 push button
FFFFFFFF
FF10EF ← #4 push button
FFFFFFFF
FF38C7
FFFFFFFF
FF42BD
4CB0FADF
FFFFFFFF
```



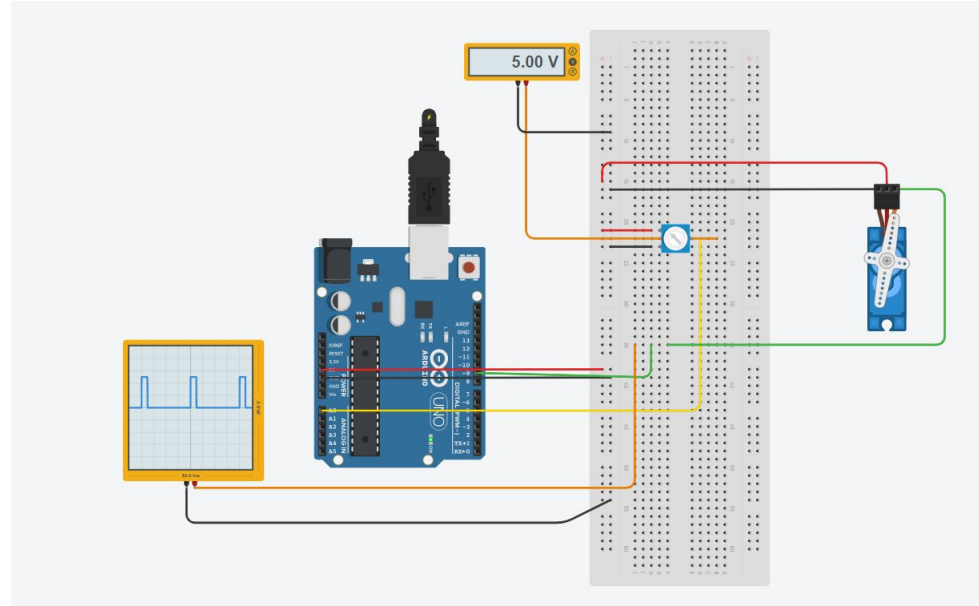
Operating examples: the Servomotor

In this example we check the operation of a servomotor

With the trimmer (variable resistor) we generate a variable voltage that we apply in input to Arduino.

The Arduino ADC (Analog Digital Converter) generates a number from 0 to 1023

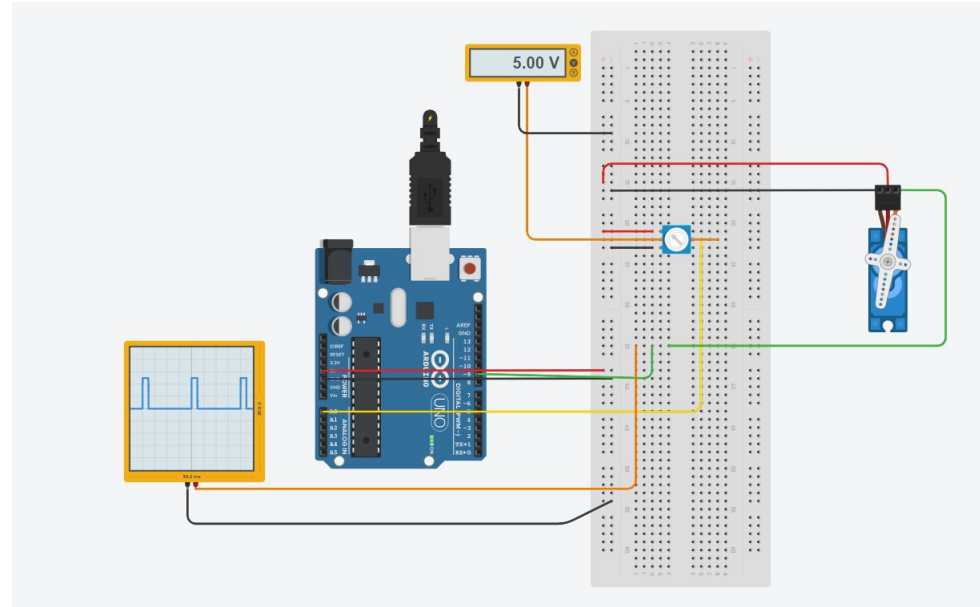
With the Arduino “map” function we generate a rotation angle proportional to this number



Operating examples: the Servomotor

For all details see the example code

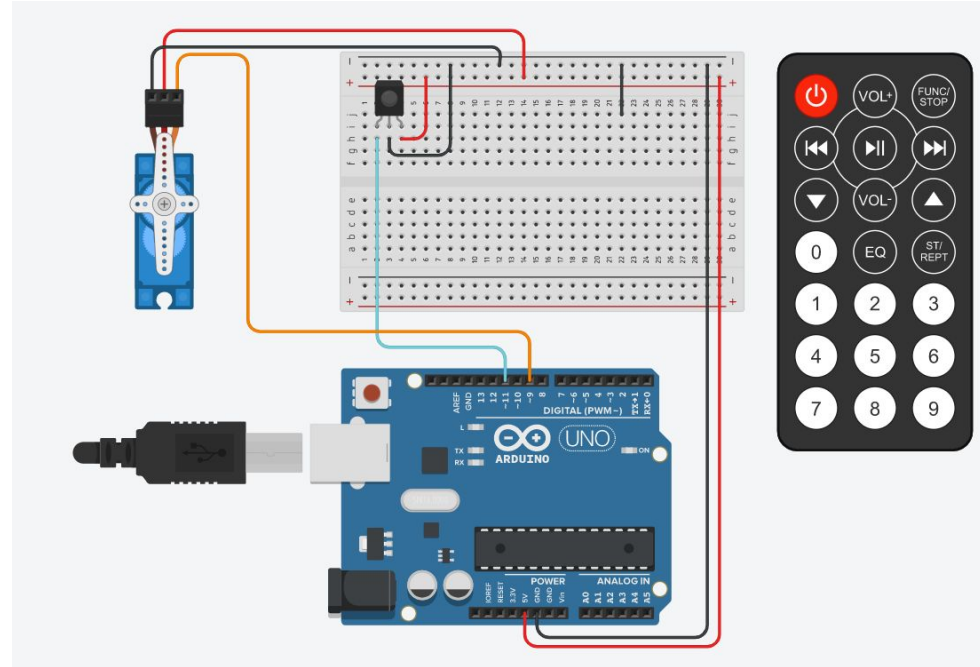
<https://www.tinkercad.com/things/bz1EH6xp15W>



Operating examples: the Servomotor

In this example we use the remote control to operate the servomotor.

<https://www.tinkercad.com/things/emPTPSHnx1i>



Thanks for your attention



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