

# CoderDojo Trento



SCRATCH



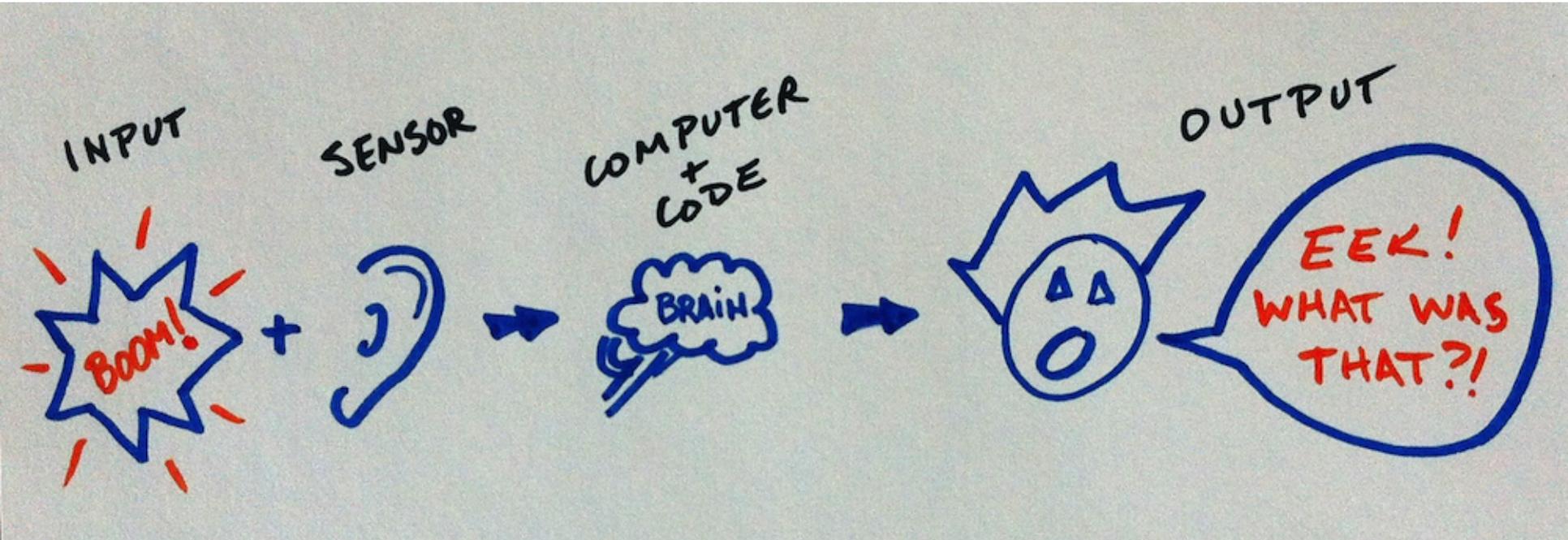
## Scratch & Arduino Workshop



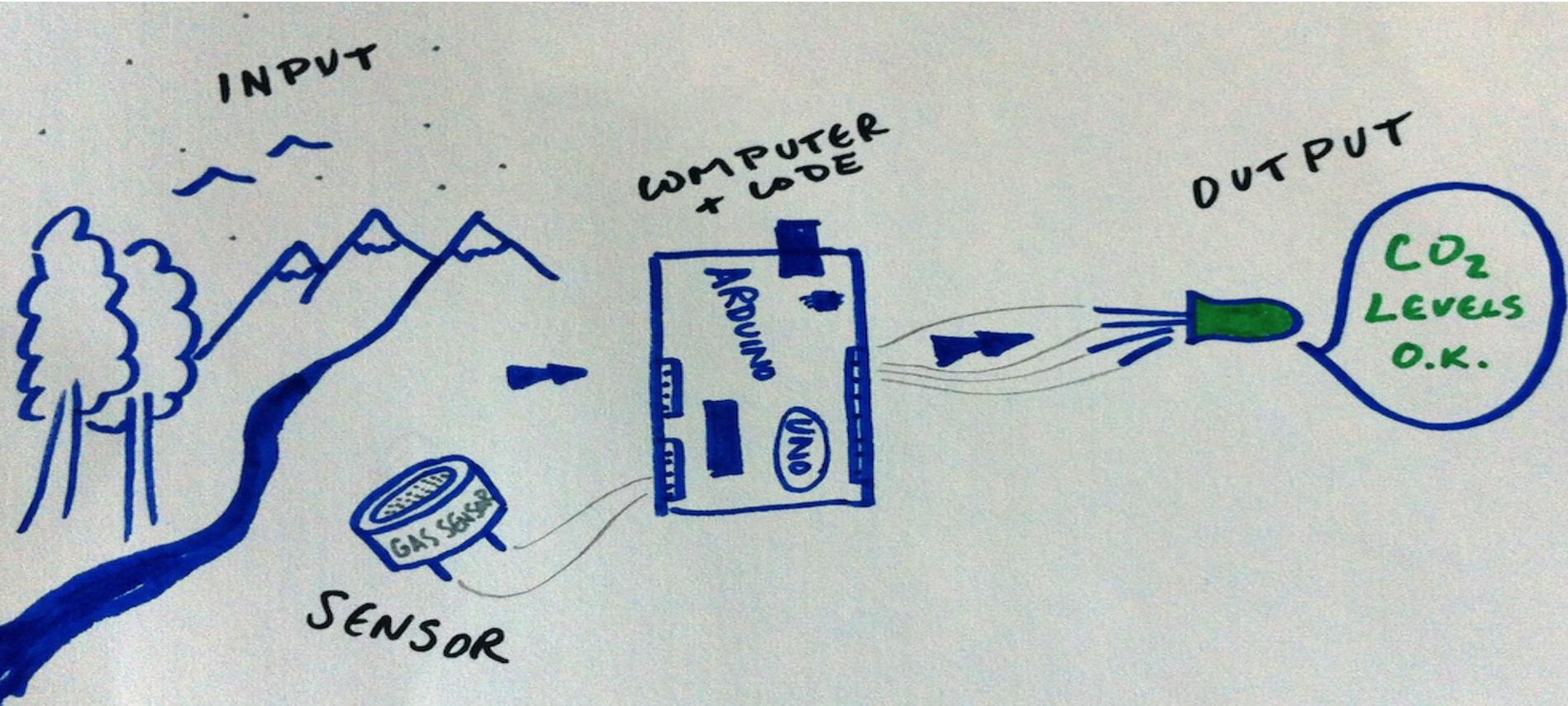
by Giulio Pilotto & Mirco Piccin  
@giulio\_pilotto @mircopiccin



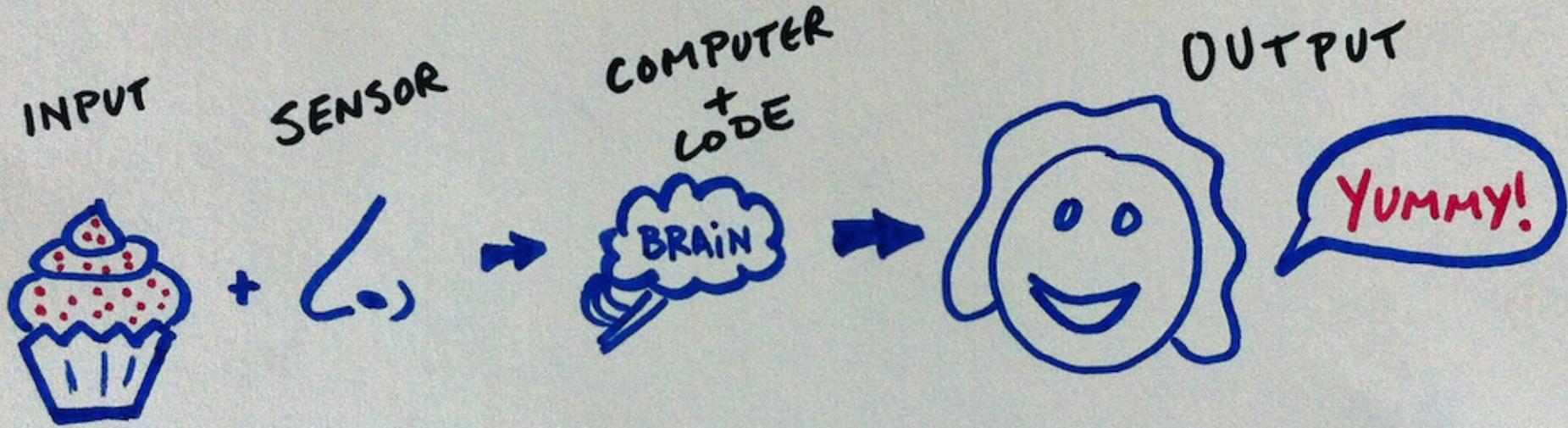
# Come noi..



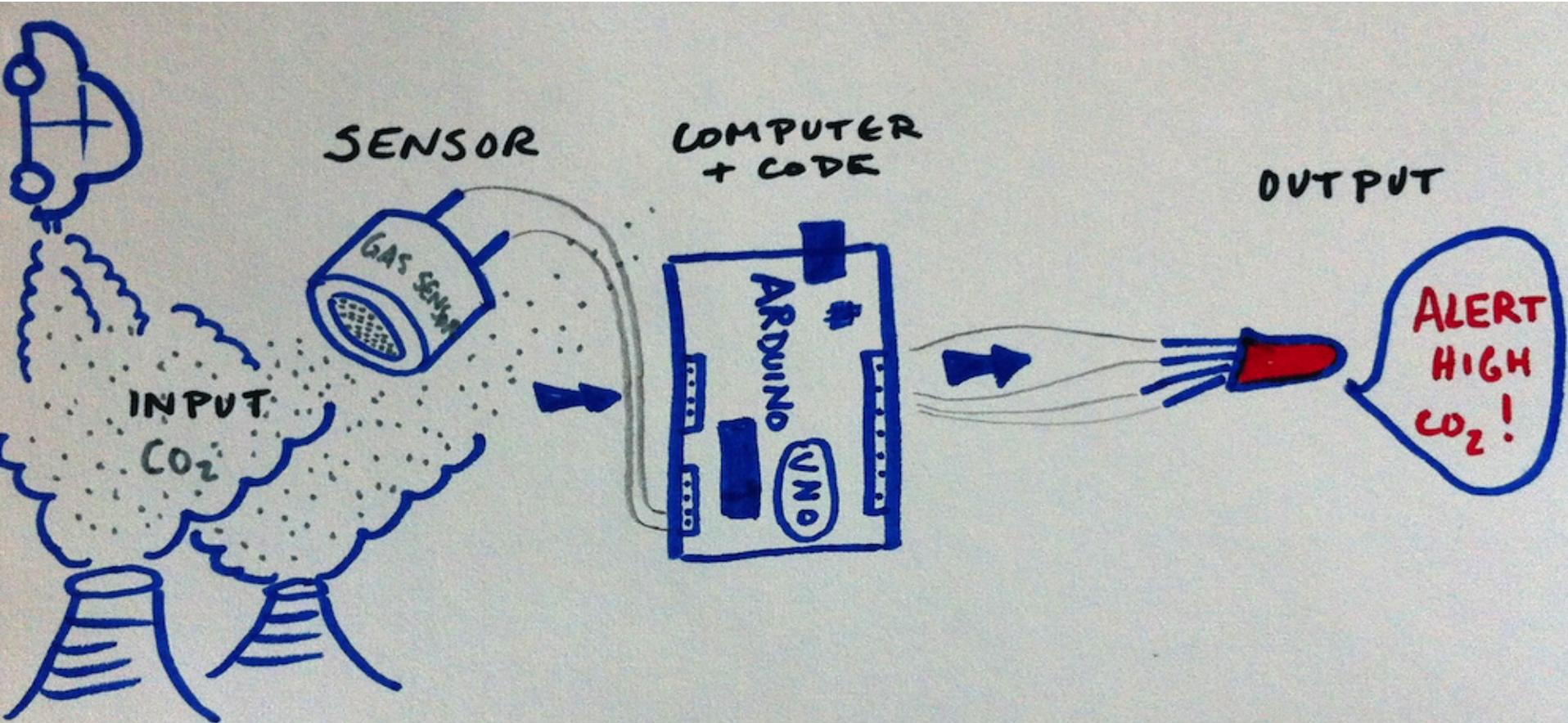
# Anche Arduino...



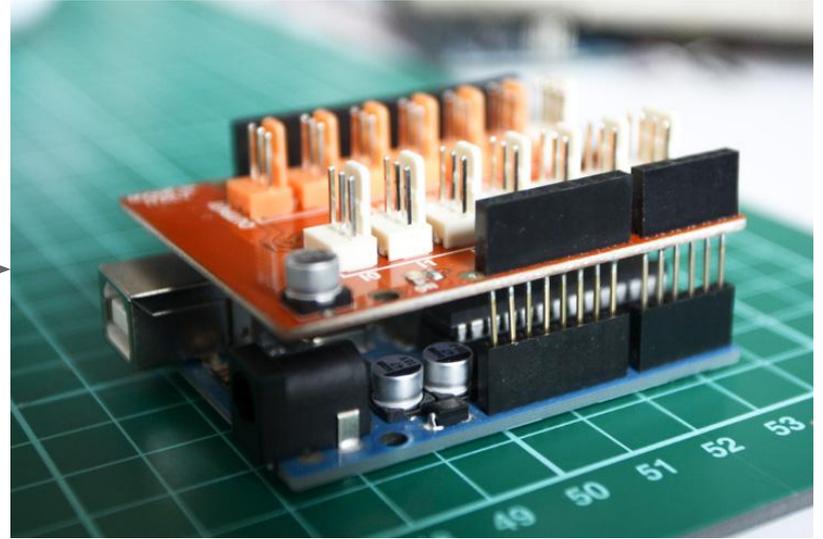
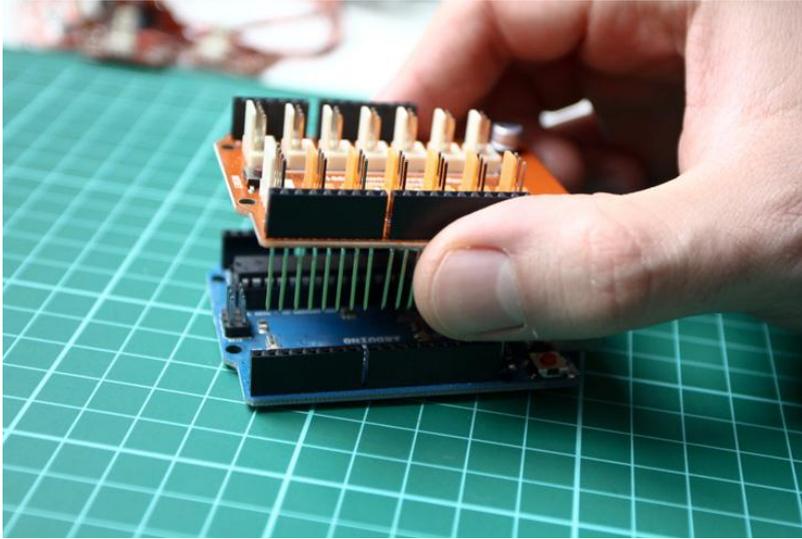
# Come noi..



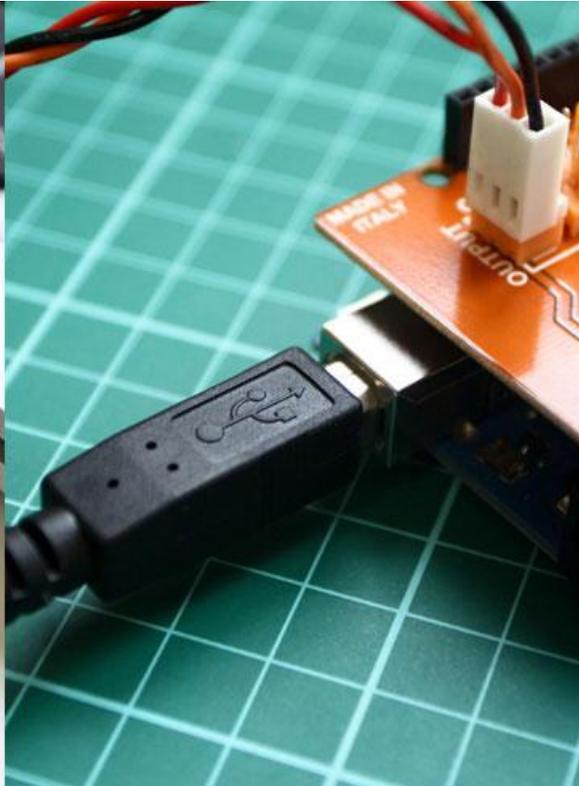
# Anche Arduino...



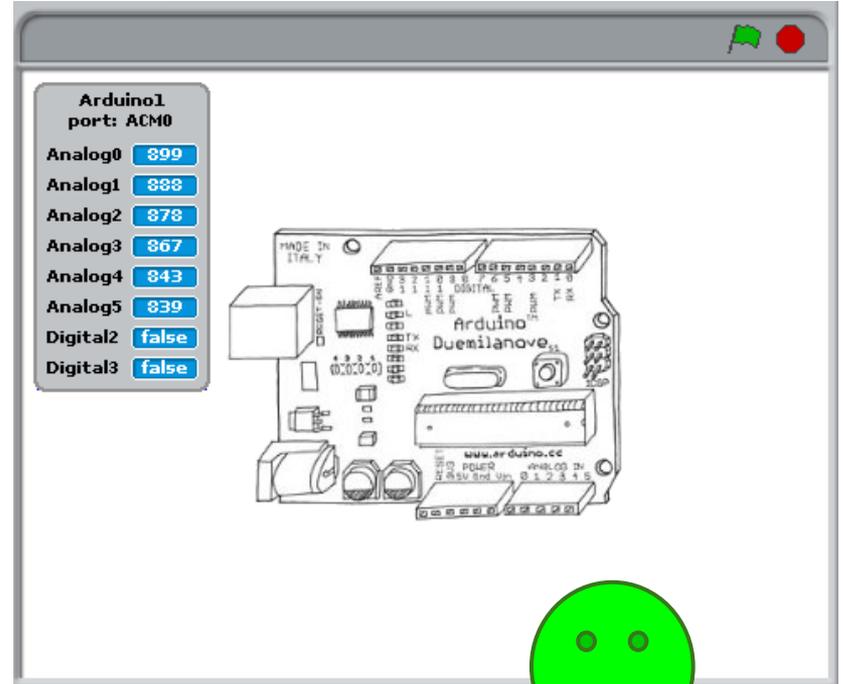
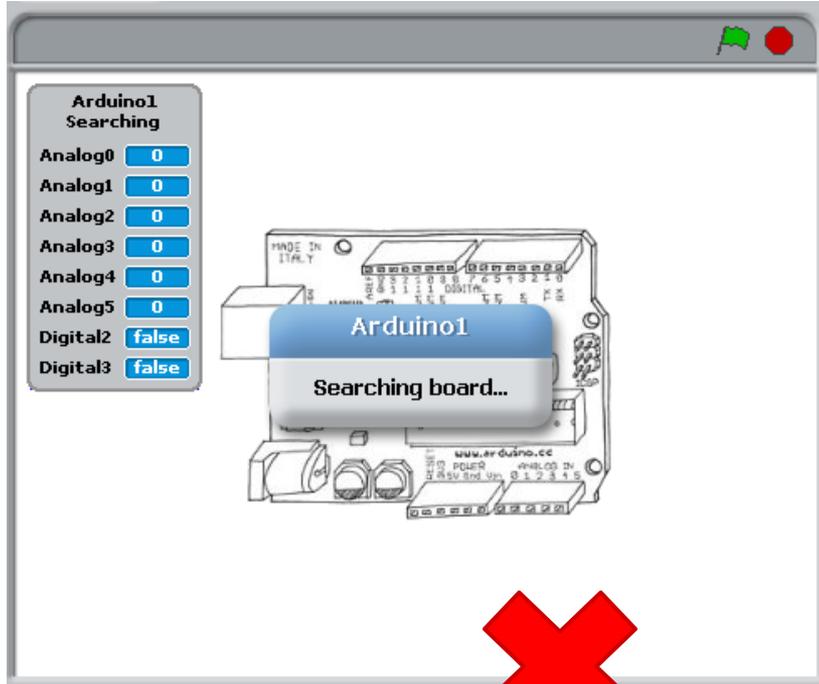
# Prepariamo Arduino



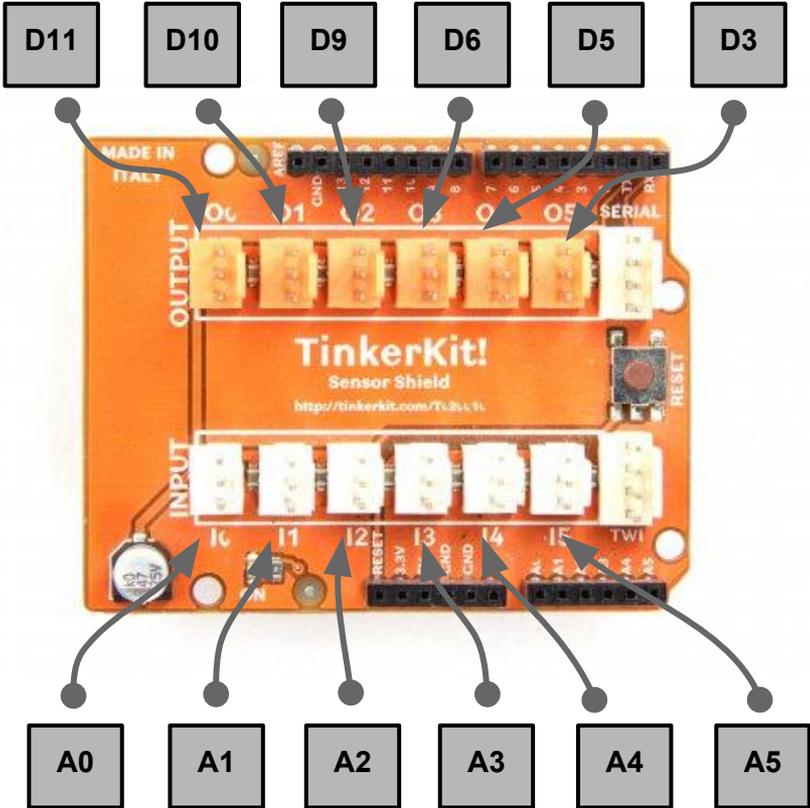
**..e attacchiamola al computer**



# Prepariamo S4A

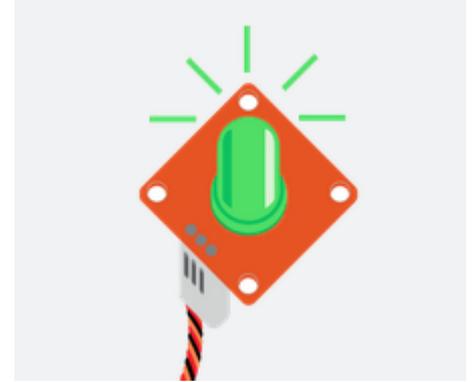


# Schema pin

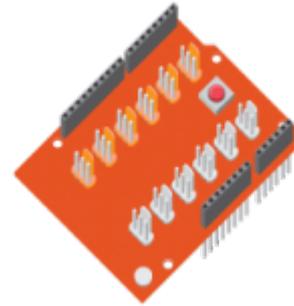
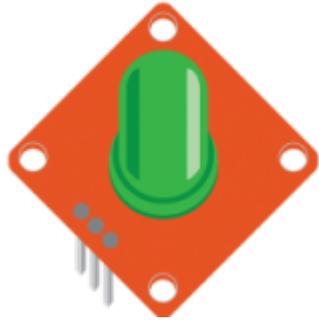


# Led blink

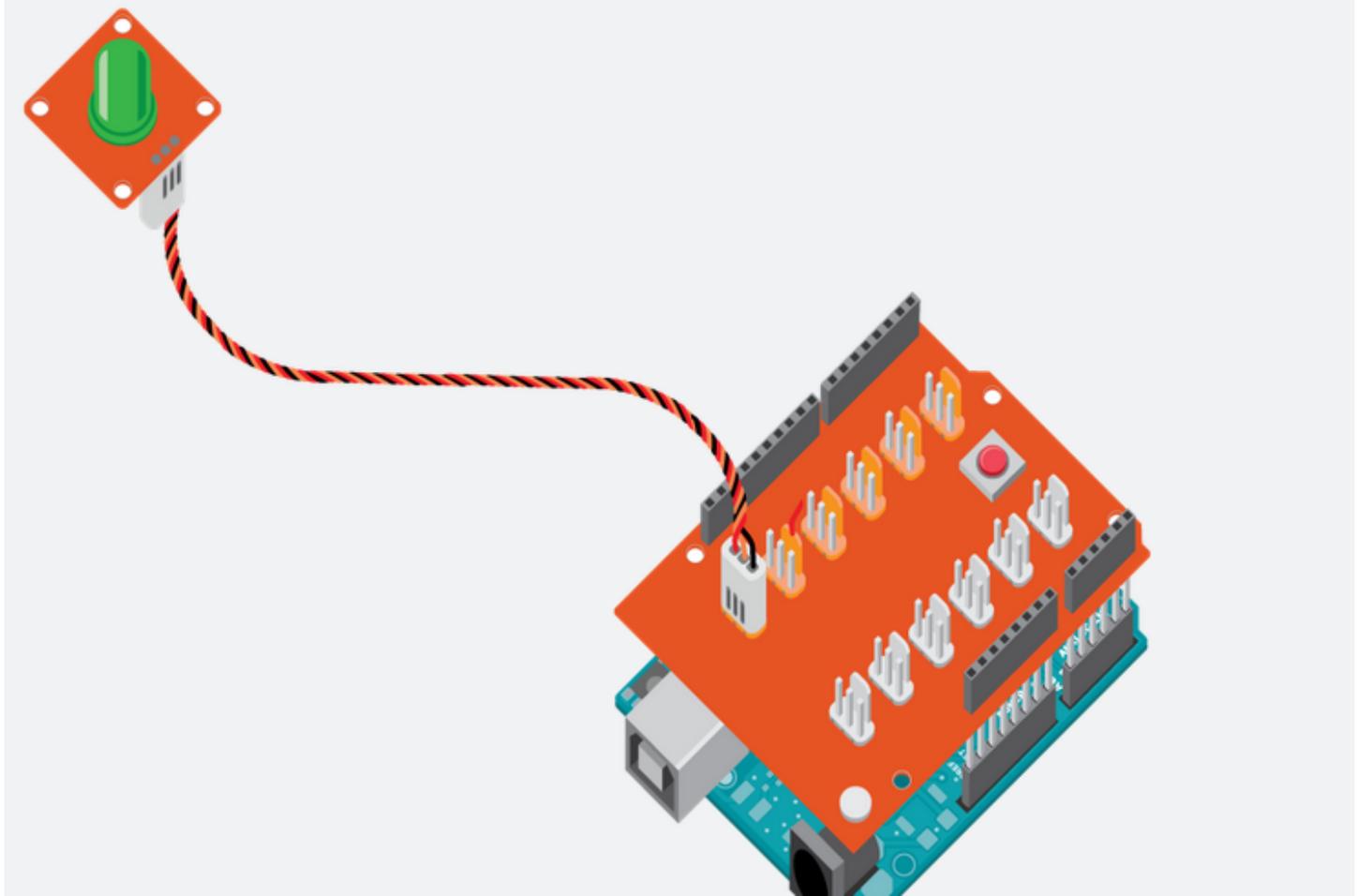
SCRATCH



# Cosa serve ad Arduino??



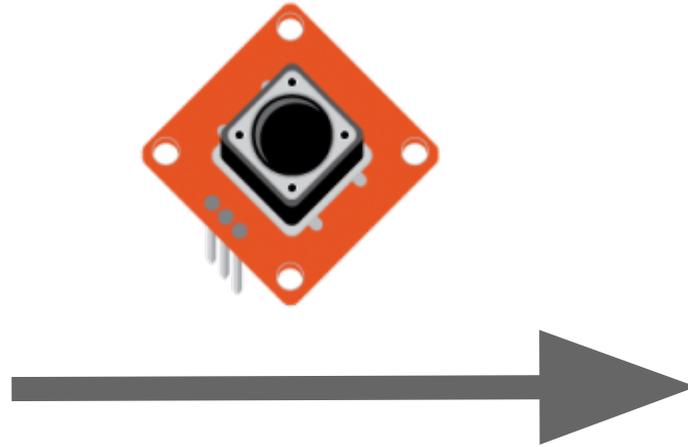
# Connetti il led VERDE al pin D11



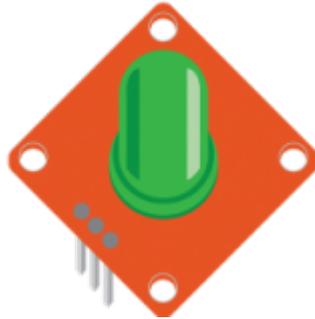
# E a Scratch cosa serve??



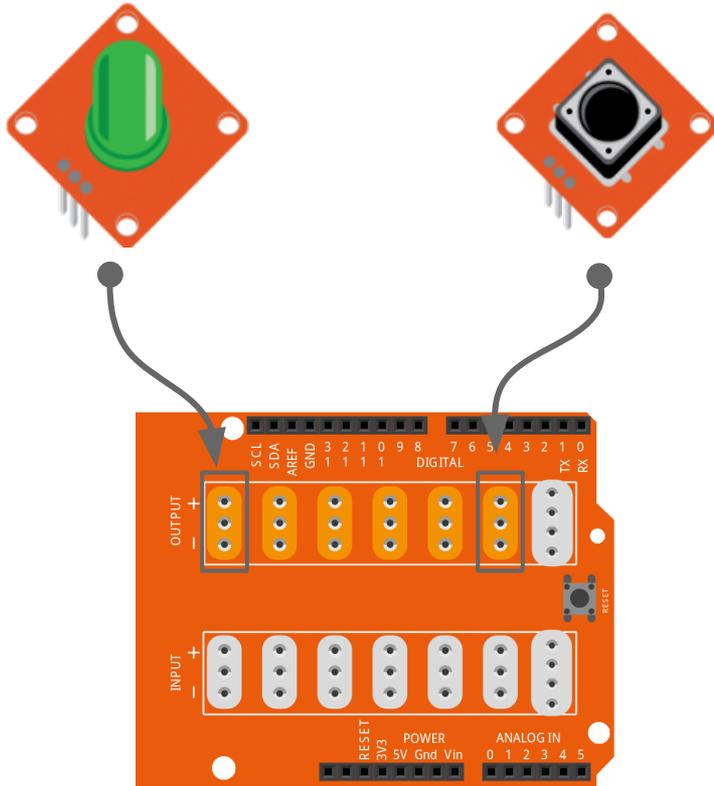
# Bottone e led



# Cosa serve ad Arduino??

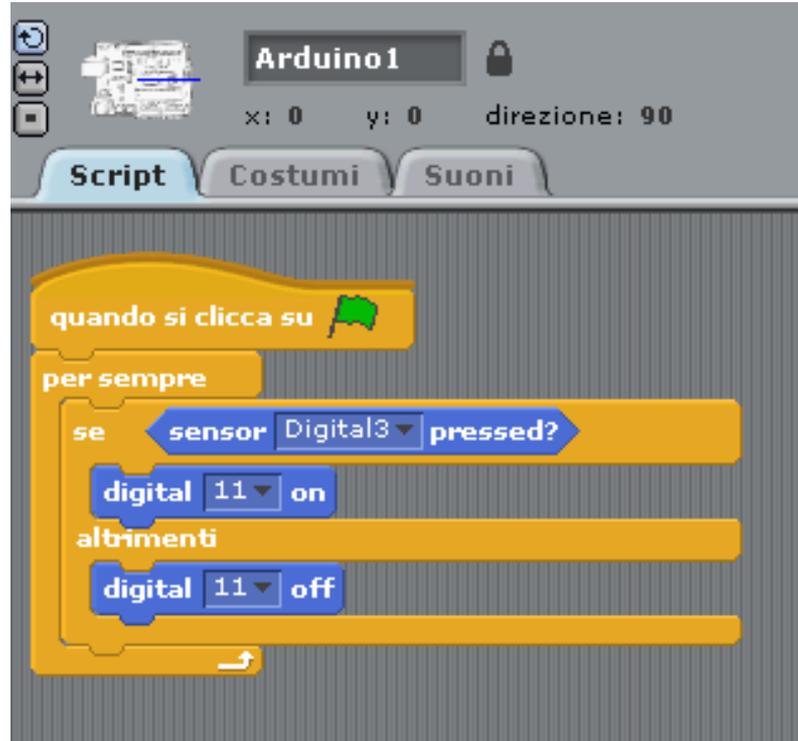


# Cosa serve ad Arduino??

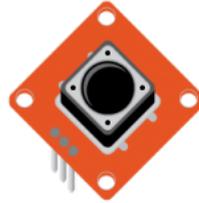
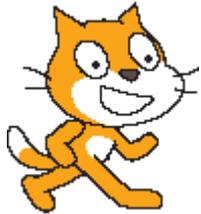


Aggiungiamo un botton  
che colleghiamo  
al pin **D3**.

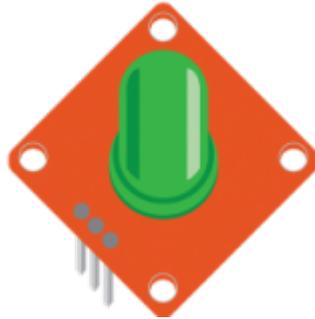
# E a Scratch cosa serve??



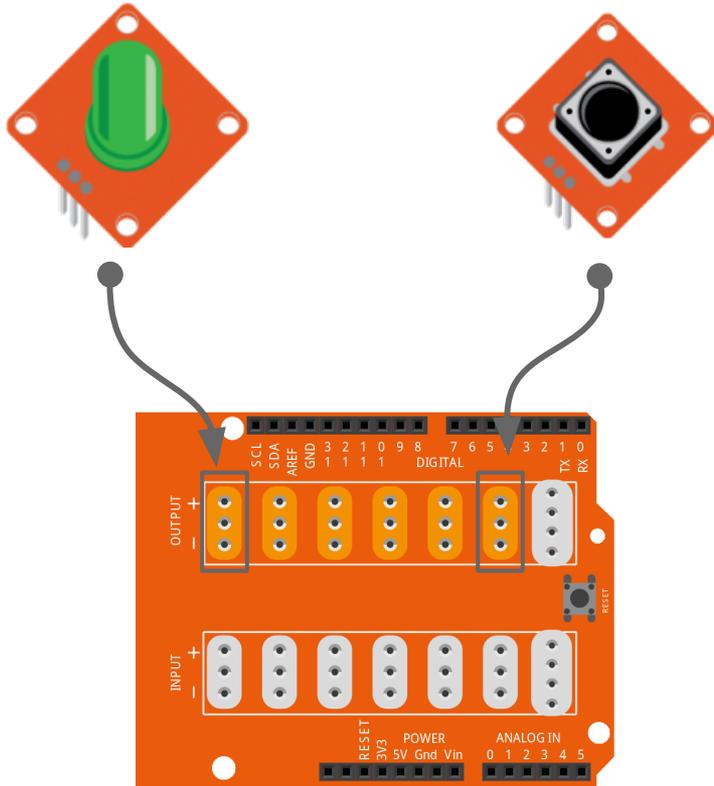
# Bottoone & Scratch



# Cosa serve ad Arduino??

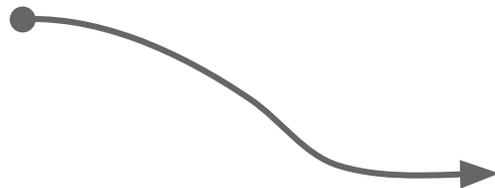
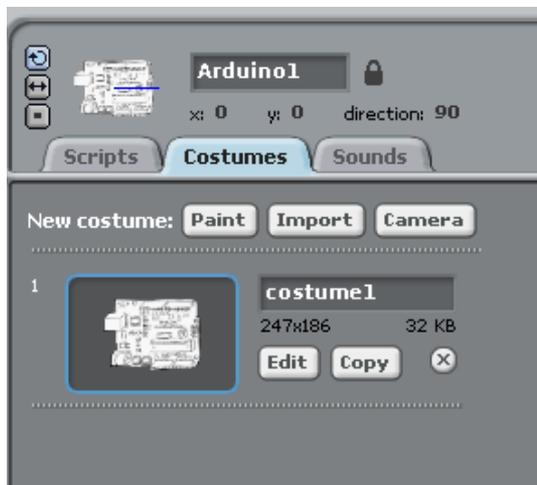


# Cosa serve ad Arduino??



Aggiungiamo un botto  
ne che colleghiamo  
al pin **D3**.

# Modifichiamo il costume



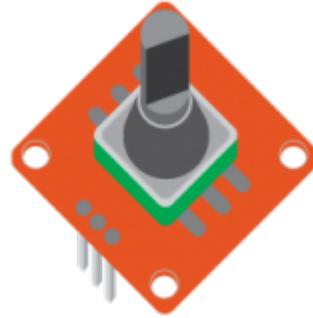
## Cambiamo il costume di Arduino

- 1) Importiamo il costume gatto
- 2) Importiamo un altro costume, e scegliamo il secondo gatto
- 3) Eliminiamo il costume Arduino

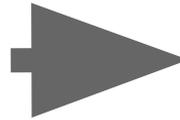
# E a Scratch cosa serve??



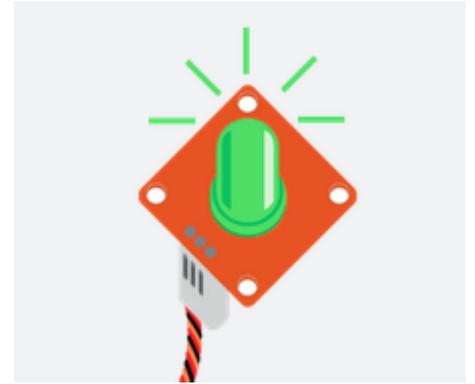
# Potenzimetro e Led



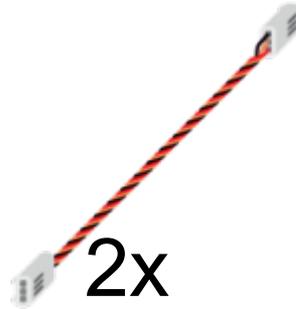
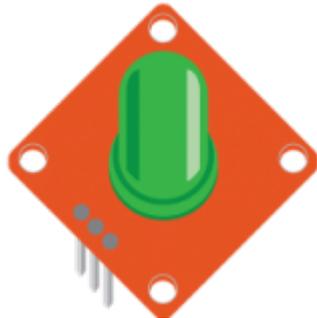
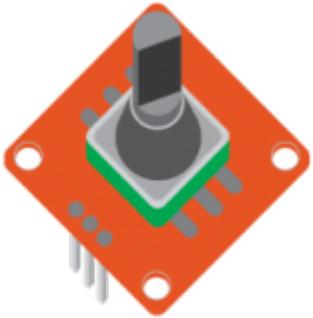
0



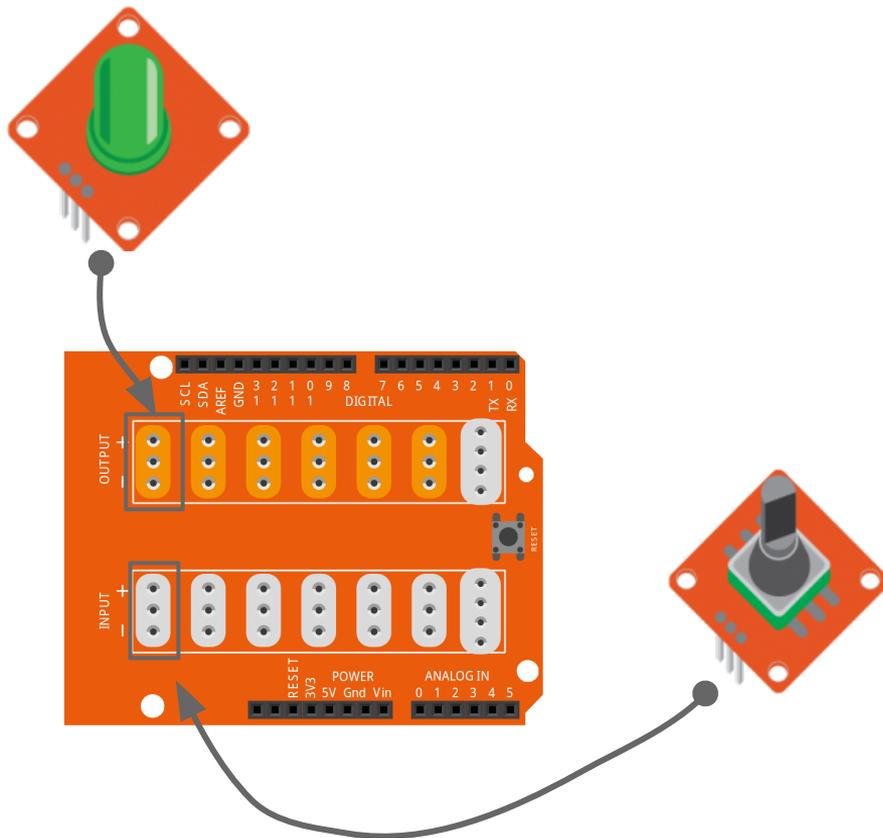
1024



# Cosa serve ad Arduino??

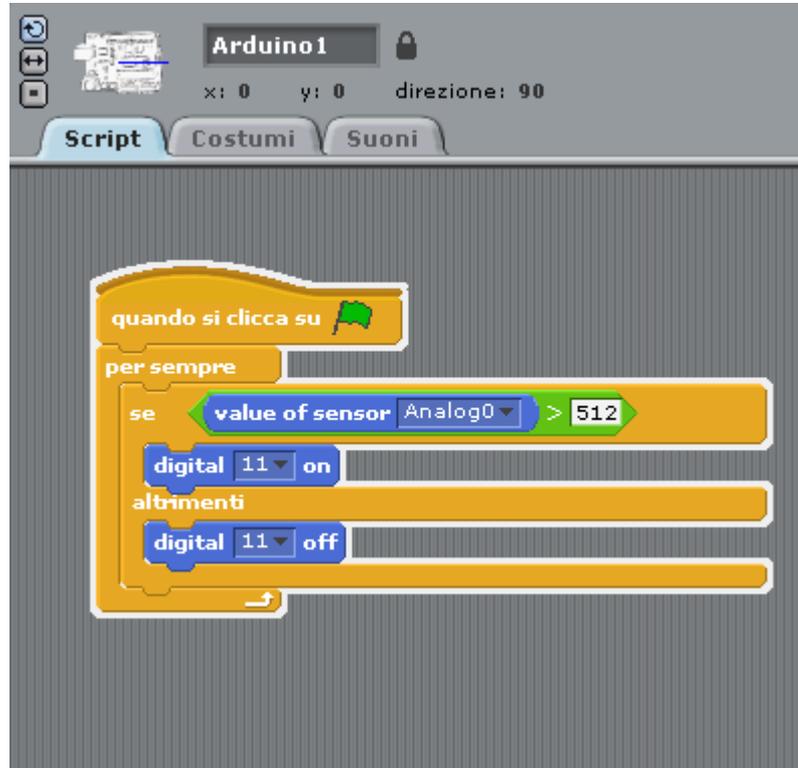


# Cosa serve ad Arduino??

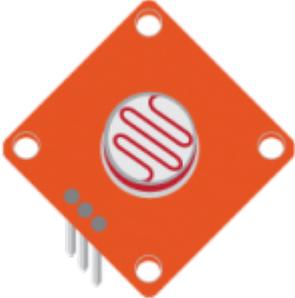


Aggiungiamo un potenziometro che colleghiamo al pin **A0**

# Cosa serve a Scratch??



# Sensore di luce & Scratch Stage

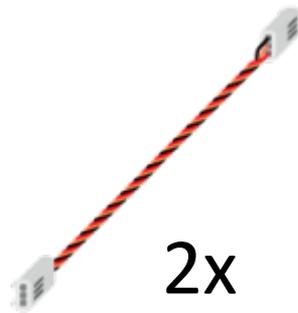
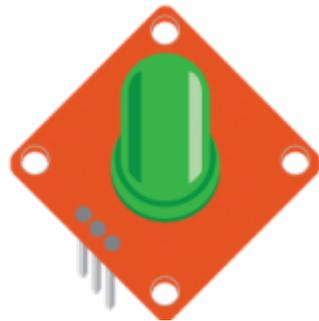
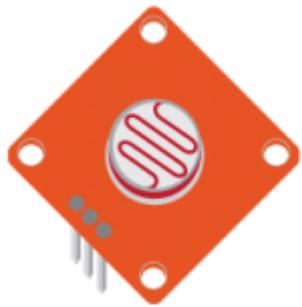


0

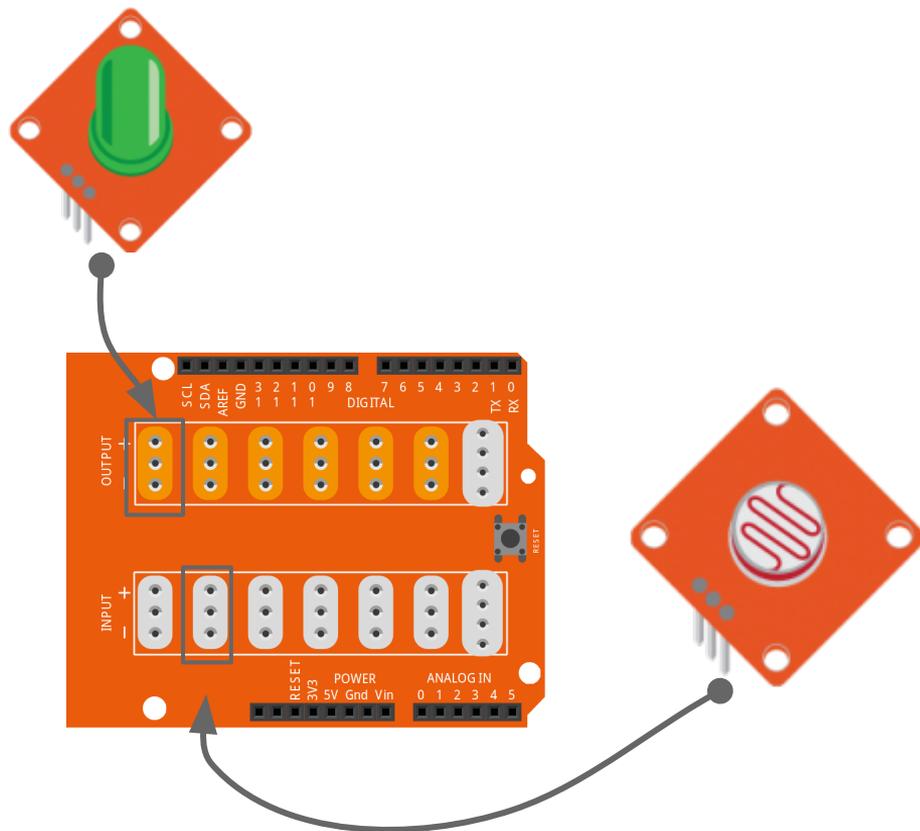
1024



# Cosa serve ad Arduino??

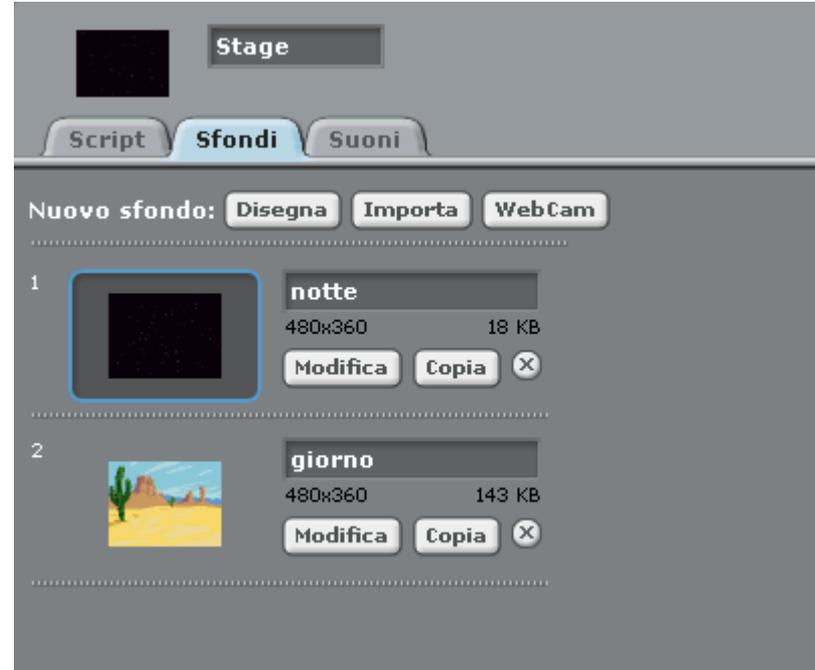


# Cosa serve ad Arduino??



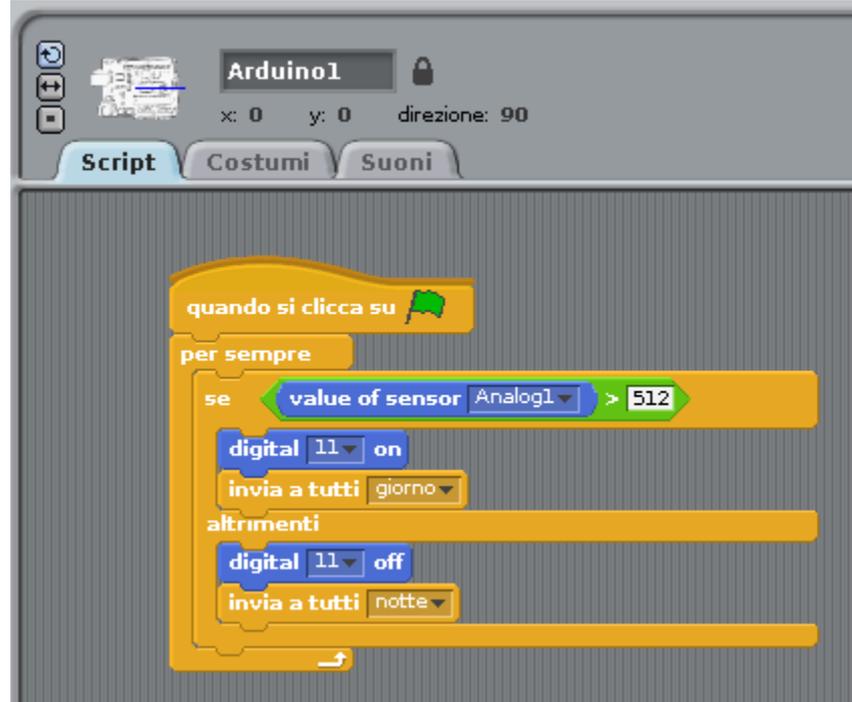
Aggiungiamo un sensore di luce che connettiamo al pin **A1**

# Prepariamo un paio di sfondi



- 1) Clicca sullo Stage
- 2) Vai su Sfondi
- 3) Importa 2 nuovi sfondi

# Cosa serve a Scratch??





Ora clicca su Script  
e inserisci i seguenti  
blocchi!

Credits:

Slide made by:

- Mirco Piccin @mircopiccin
- Giulio Pilotto @giulio\_pilotto

Foto :

- TinkerKit:

<http://store.arduino.cc/category/16?language=it>

- Fritzing Blog:

<http://blog.fritzing.org/2013/12/06/how-can-your-kids-learn-with-arduino/>



# CoderDojo Trento



SCRATCH



## Scratch & Arduino Workshop

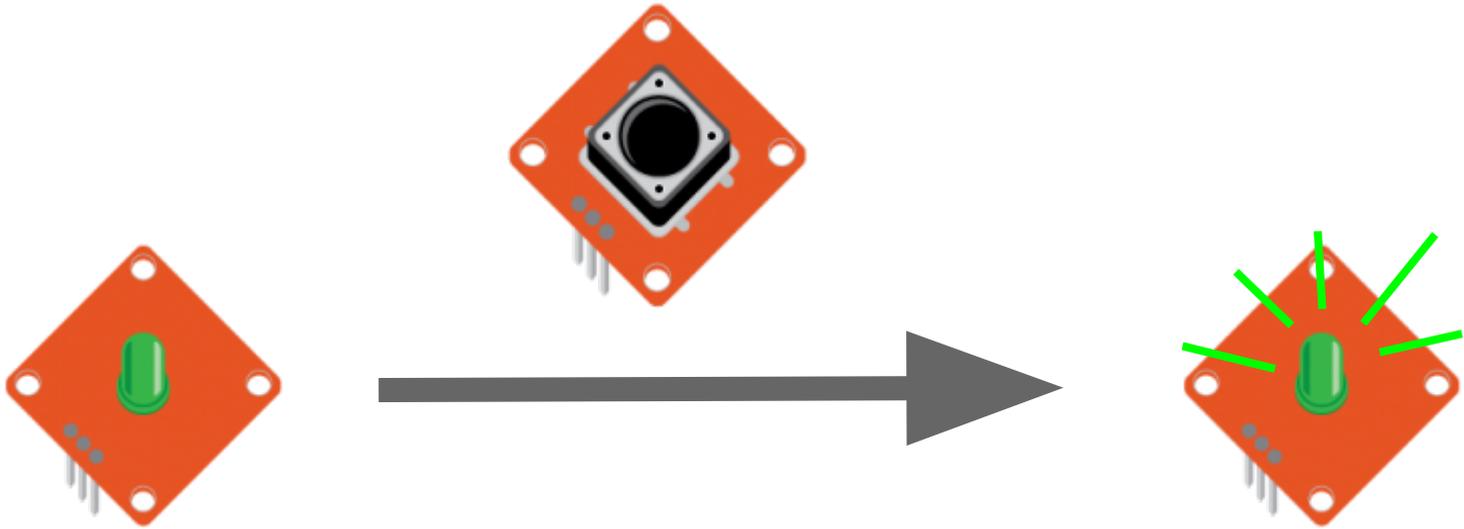


## 2<sup>^</sup> parte

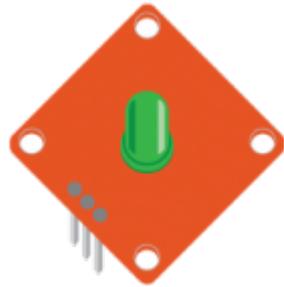
by Giulio Pilotto & Mirco Piccin  
@giulio\_pilotto @mircopiccin



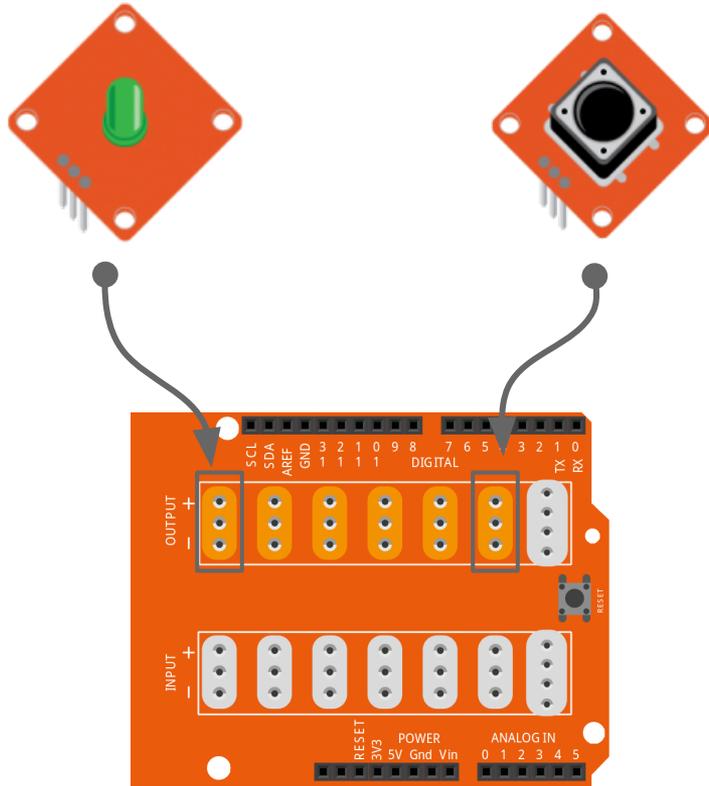
# Bottonne e led



# Cosa serve ad Arduino??

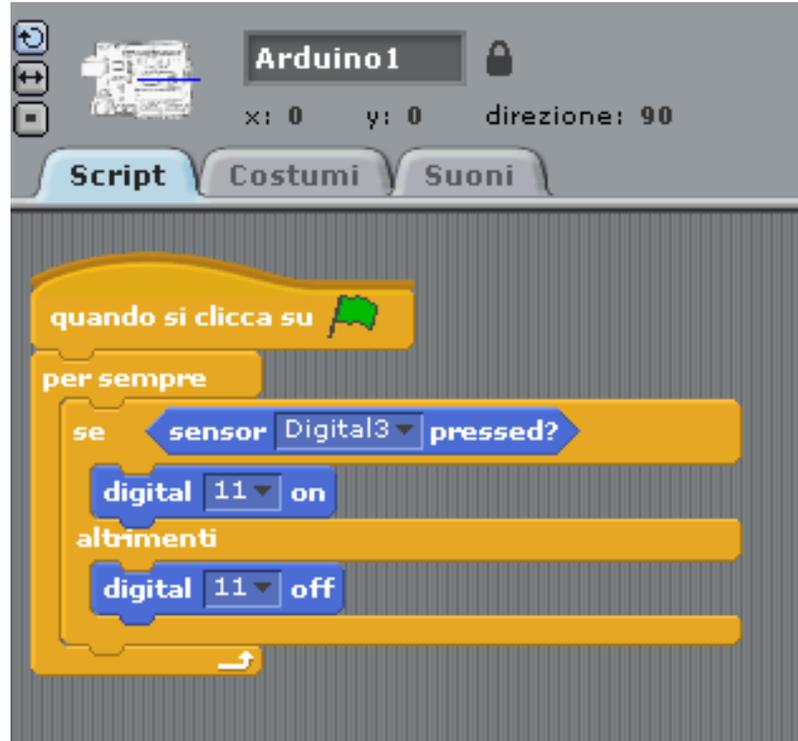


# Cosa serve ad Arduino??

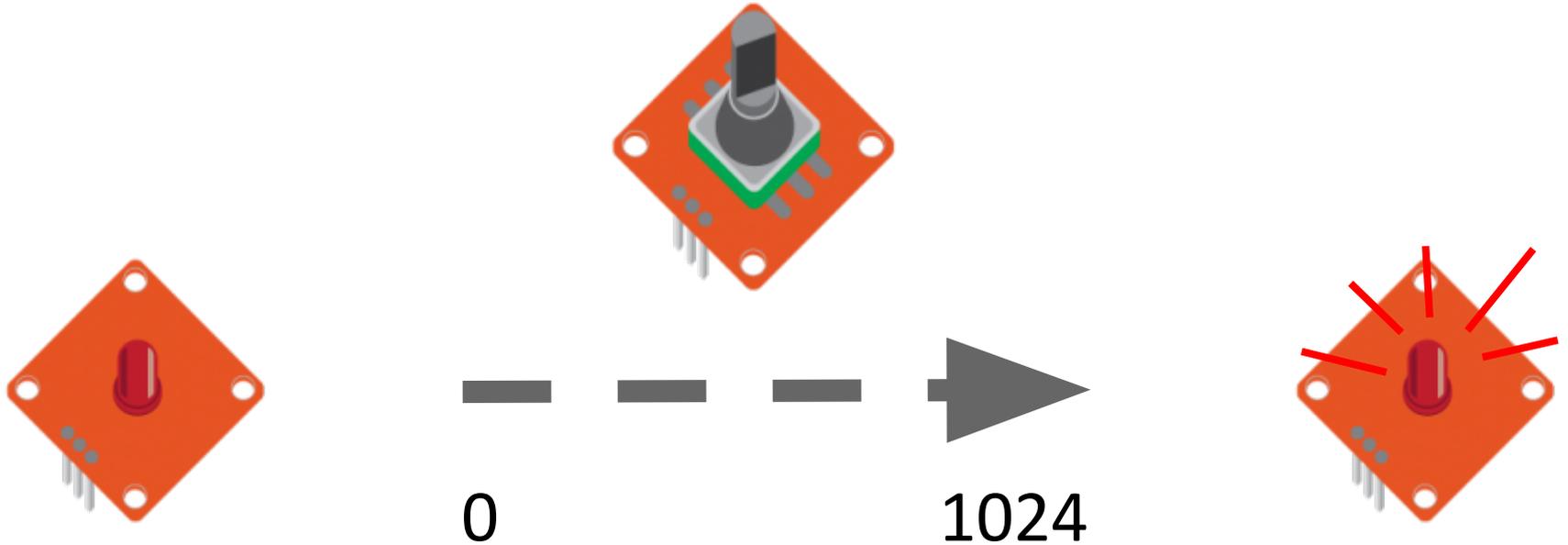


Aggiungiamo un bottone che colleghiamo al pin **D3** e un led al pin **D11**.

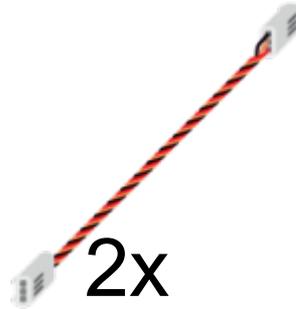
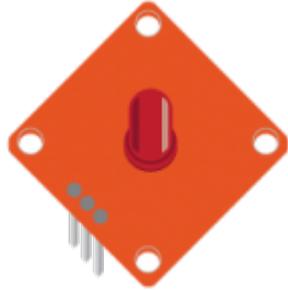
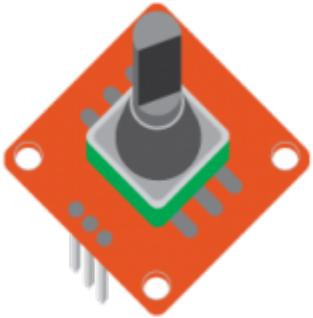
# E a Scratch cosa serve??



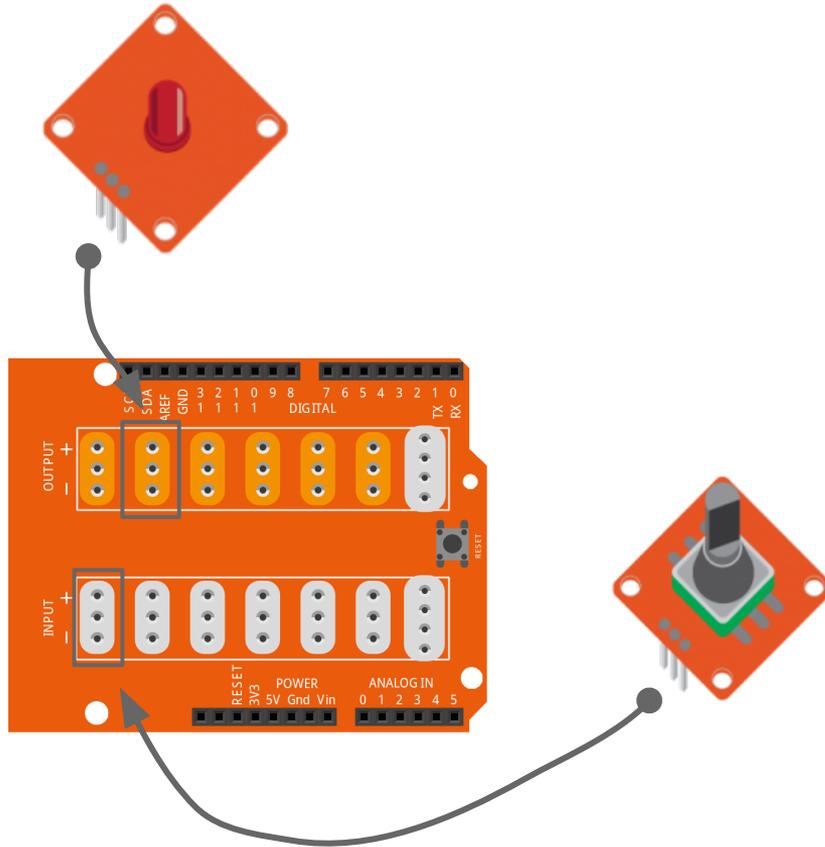
# ..aggiungiamo Potenziometro e Led



# Cosa serve ad Arduino??

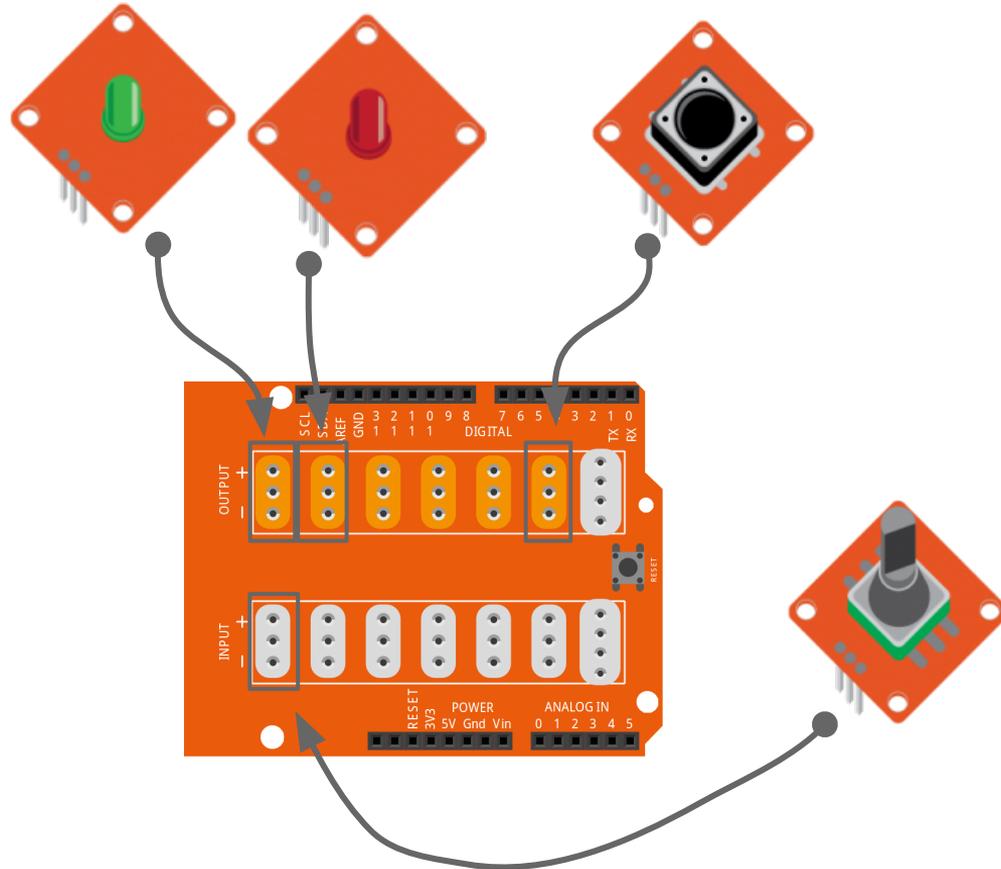


# Cosa serve ad Arduino??

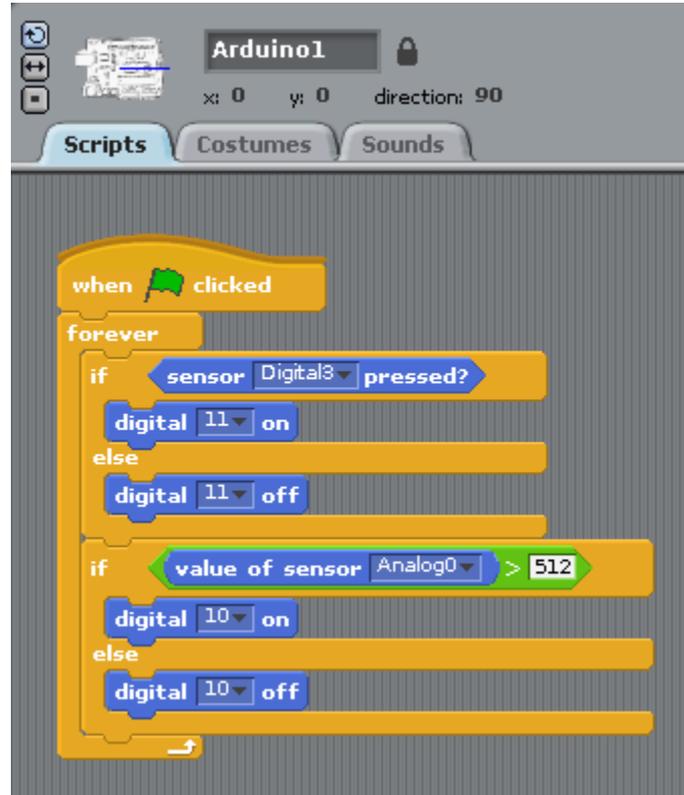


Aggiungiamo un potenziometro che colleghiamo al pin **A0** e un led al pin **D10**

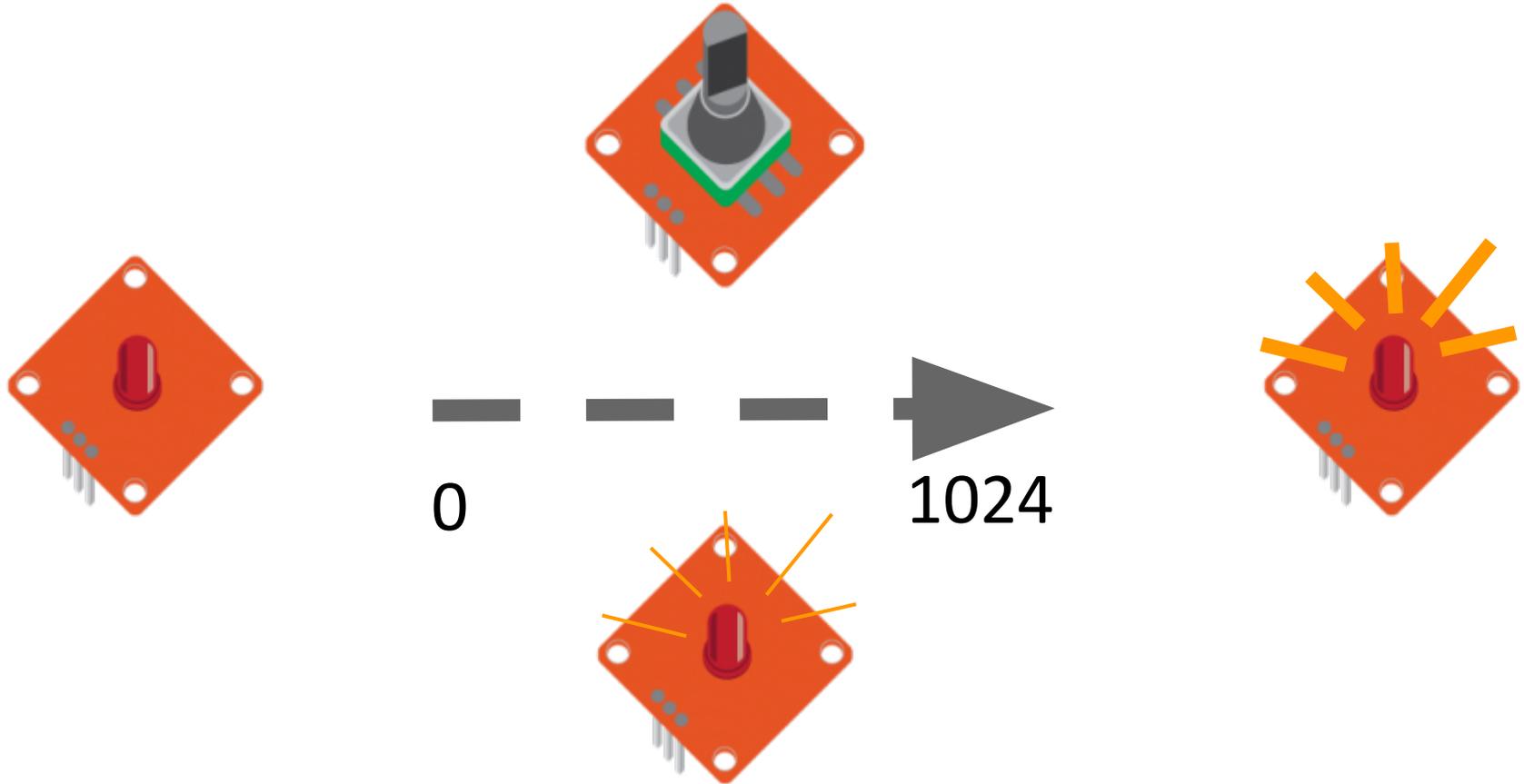
# ...completo:



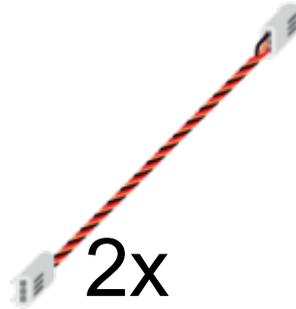
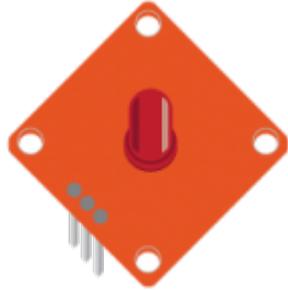
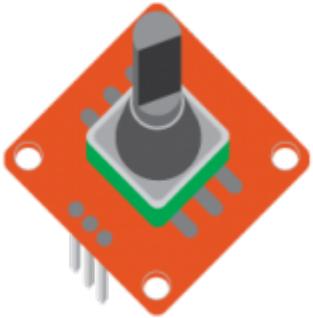
# Cosa serve a Scratch??



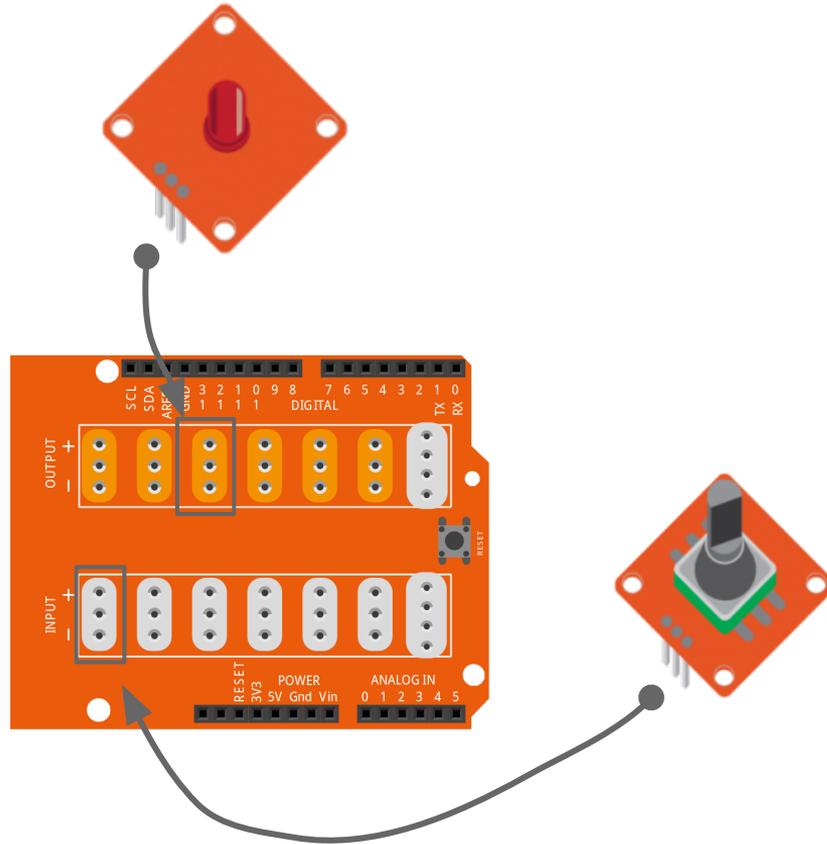
# ...led con dissolvenza



# Cosa serve ad Arduino??

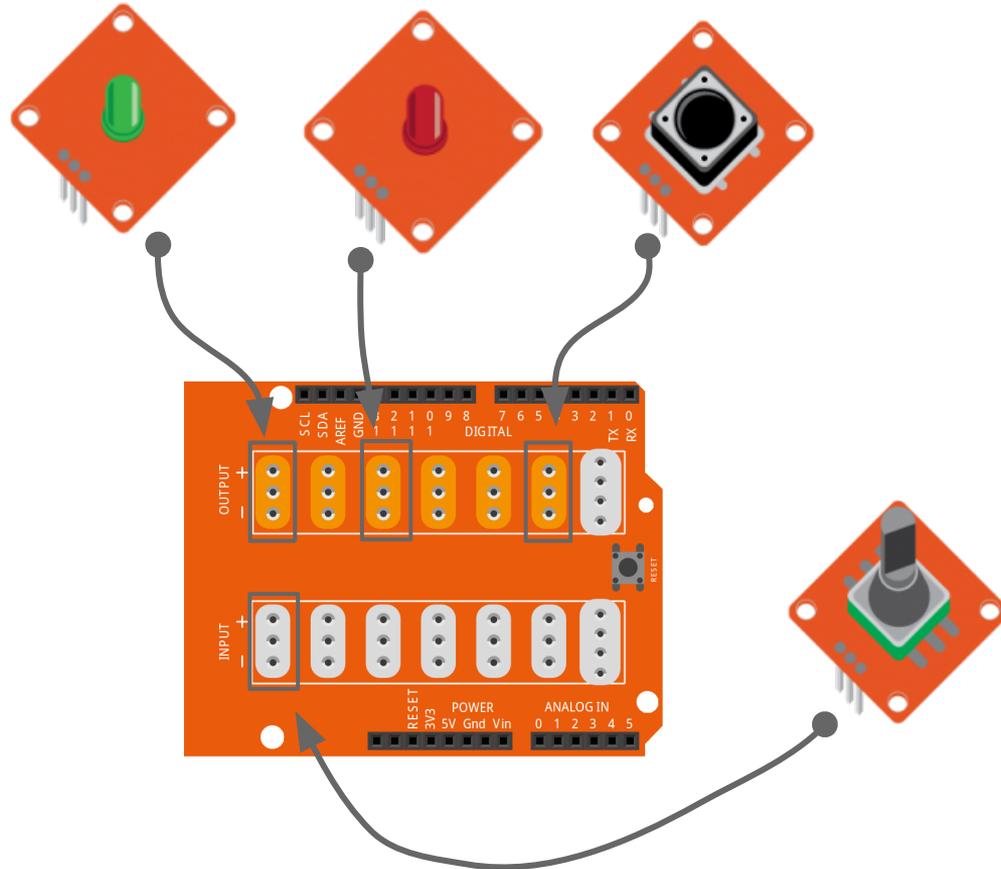


# Cosa serve ad Arduino??

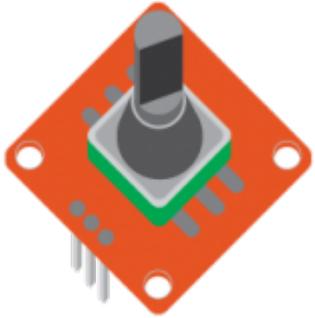


Spostiamo il led  
sul pin **D9**

# ...completo:

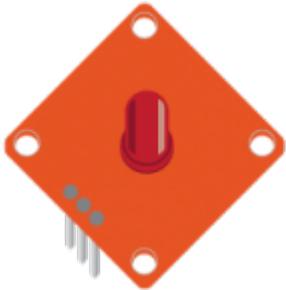


# Cosa serve a Scratch??

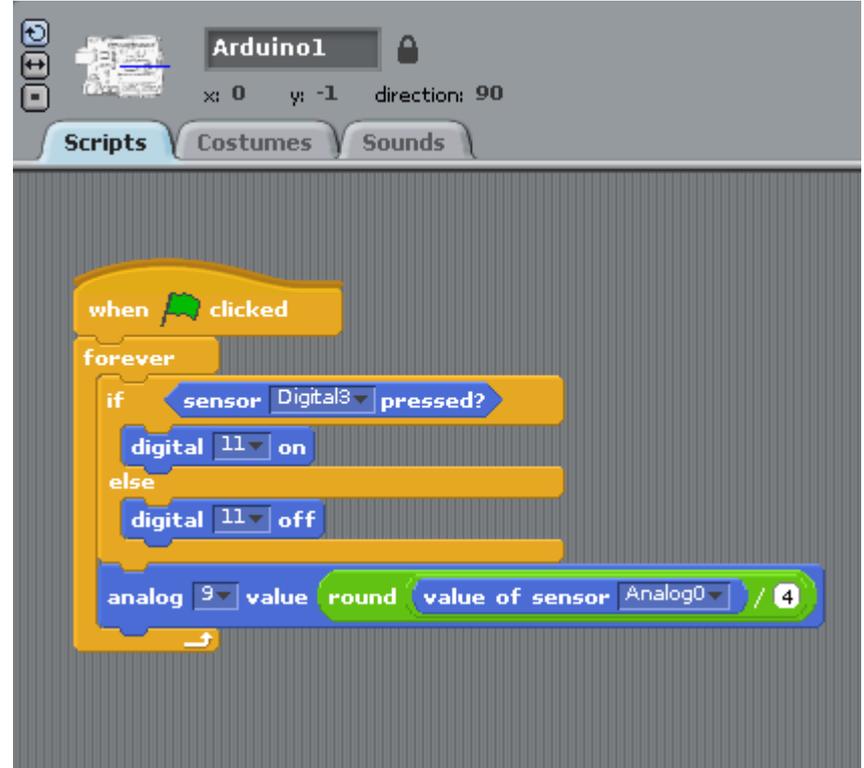


..da 0 a 1023

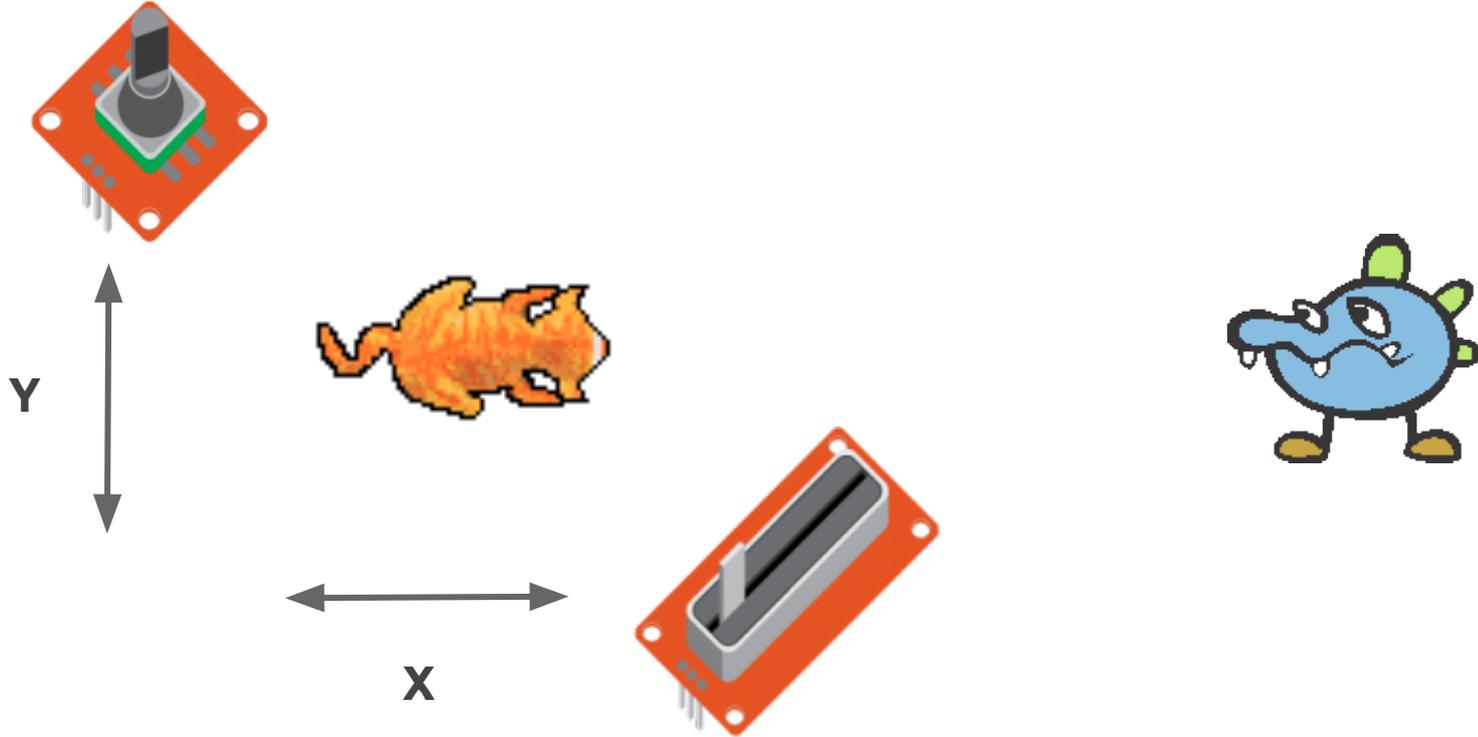
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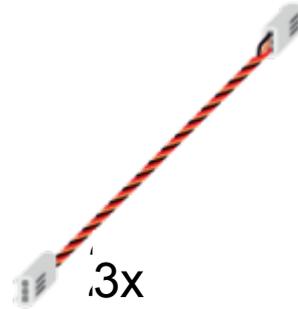
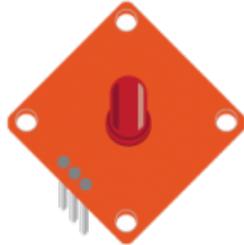
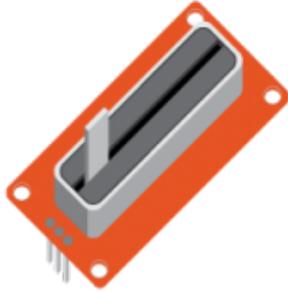
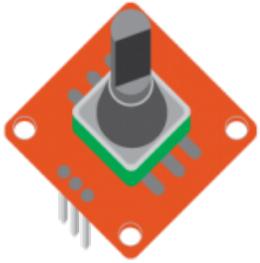
..da 0 a 255



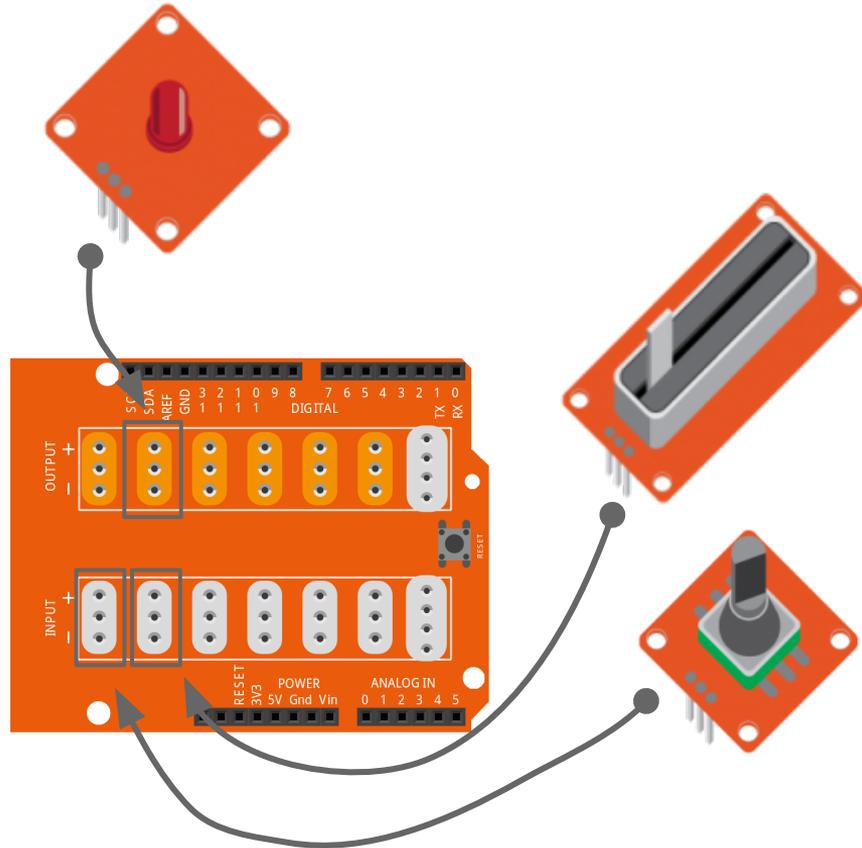
# Potenzimetri & Scratch



# Cosa serve ad Arduino??



# Cosa serve ad Arduino??



Aggiungiamo due potenziometri che colleghiamo al pin **A0** e **A1** un led al pin **D10**

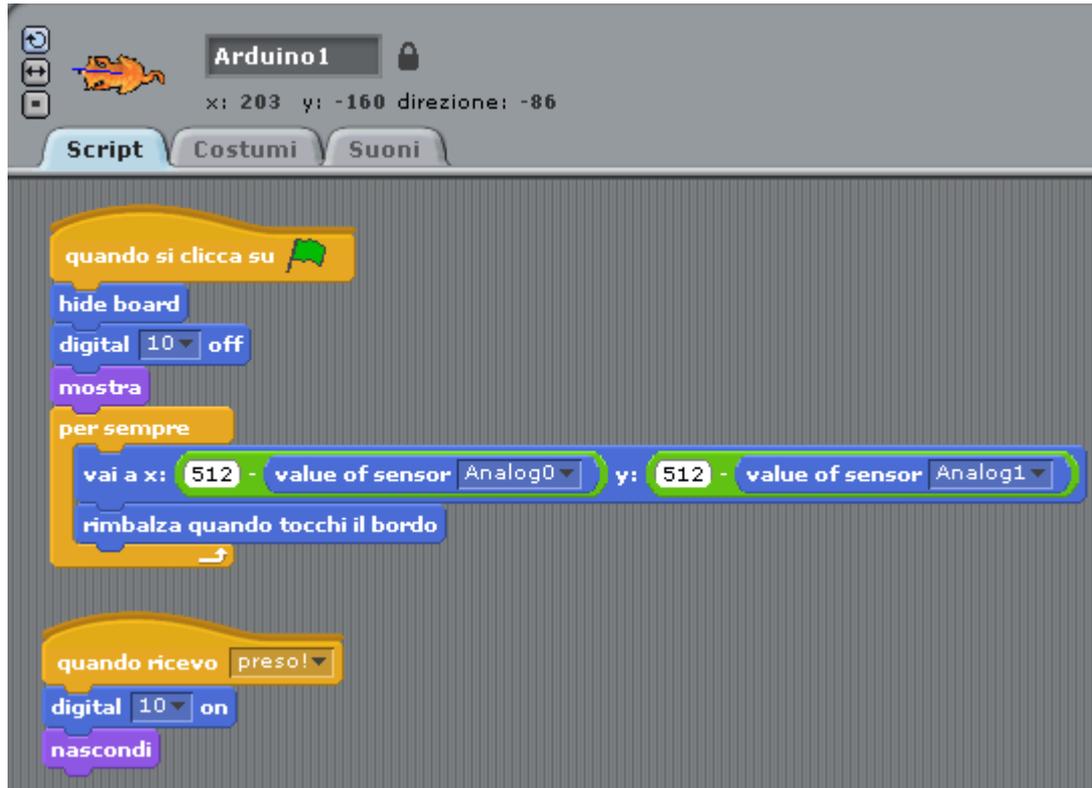
# Modifichiamo il costume



## Cambiamo il costume di Arduino

- 1) Importiamo il costume gatto
- 2) Eliminiamo il costume Arduino

# Cosa serve a Scratch??



The image shows a screenshot of the Scratch IDE interface. At the top, the workspace is titled "Arduino1" and displays a small orange Scratch character. Below the title, the coordinates "x: 203 y: -160" and the direction "direzione: -86" are shown. The interface includes three tabs: "Script", "Costumi", and "Suoni". The "Script" tab is active, displaying a script with the following blocks:

- quando si clicca su** (when clicked) block with a green flag icon.
- hide board** block.
- digital 10 off** block.
- mostra** (show) block.
- per sempre** (forever) loop block containing:
  - vai a x: 512 - value of sensor Analog0 y: 512 - value of sensor Analog1** block.
  - rimbalza quando tocchi il bordo** (bounce when hit edge) block.

Below the first script, there is another script starting with:

- quando ricevo preso!** (when I receive) block.
- digital 10 on** block.
- nascondi** (hide) block.

# Cosa serve a Scratch??

Importiamo un nuovo sprite



# Cosa serve a Scratch??

The screenshot shows the Scratch programming environment. At the top, a sprite named "Sprite2" is displayed with its coordinates (x: 198, y: -152) and direction (146). Below the sprite are three tabs: "Script", "Costumi", and "Suoni". The "Script" tab is active, showing two scripts for the sprite.

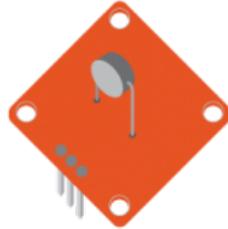
The first script is a "quando si clicca su" (when clicked) event block. It contains the following actions:

- vai a x: 179 y: 181 (go to x: 179 y: 181)
- per sempre (forever) loop containing:
  - se distanza da Arduino1 > 10 (if distance from Arduino1 > 10)
  - punta verso Arduino1 (turn towards Arduino1)
  - fai 2 passi (move 2 steps)

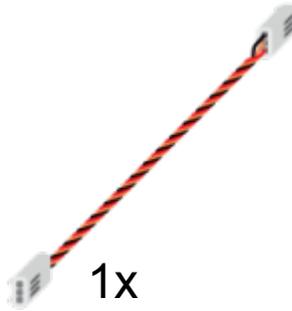
The second script is a "quando si clicca su" (when clicked) event block. It contains the following actions:

- per sempre quando sta toccando Arduino1 (forever when touching Arduino1) loop containing:
  - invia a tutti preso! (send to all: preso!)
  - dire Ti ho preso!! per 5 secondi (say: Ti ho preso!! for 5 seconds)

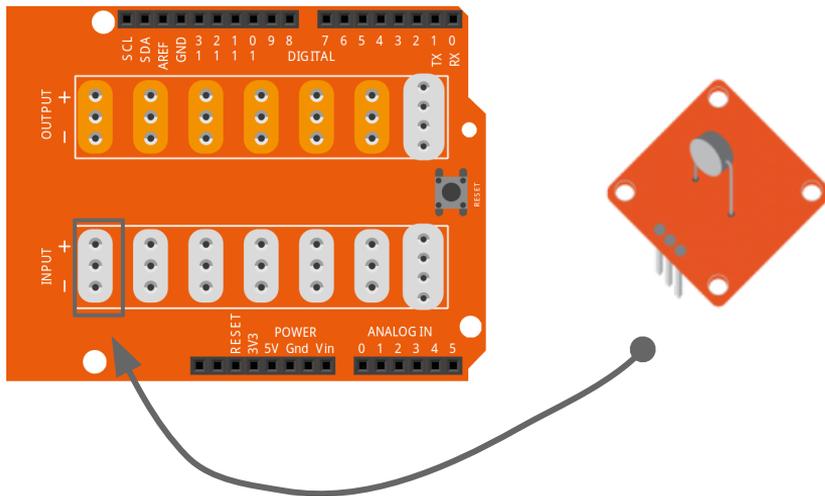
# Sensore Temperatura & Scratch



# Cosa serve ad Arduino??

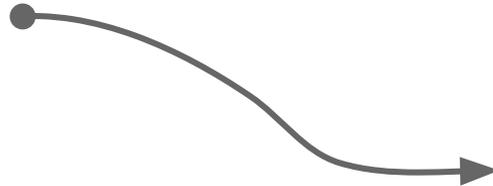


# Cosa serve ad Arduino??



Aggiungiamo il sensore di temperatura che colleghiamo al pin **A0**

# Modifichiamo il costume



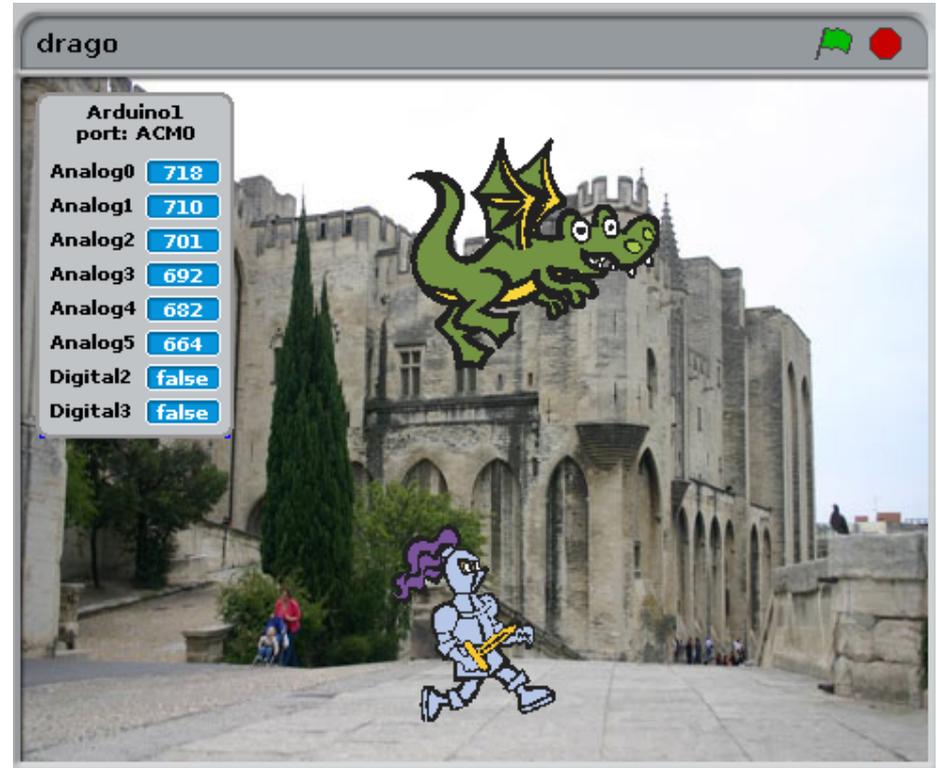
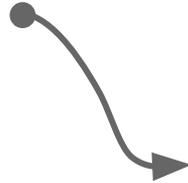
- 1) Importiamo il costume drago
- 2) Importiamo un altro costume, e scegliamo il secondo drago
- 3) Eliminiamo il costume Arduino

# Aggiungiamo uno sprite



- 1) Importiamo il cavaliere
- 2) rimpiccioliamolo

# Modifichiamo lo sfondo



- 1) Importiamo il castello
- 2) eliminiamo lo sfondo bianco

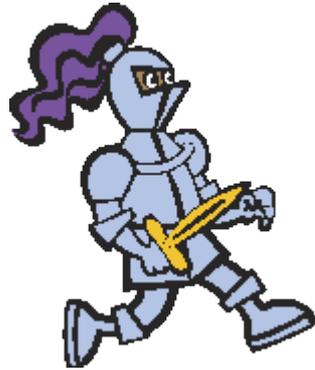
# Cosa serve a Scratch??



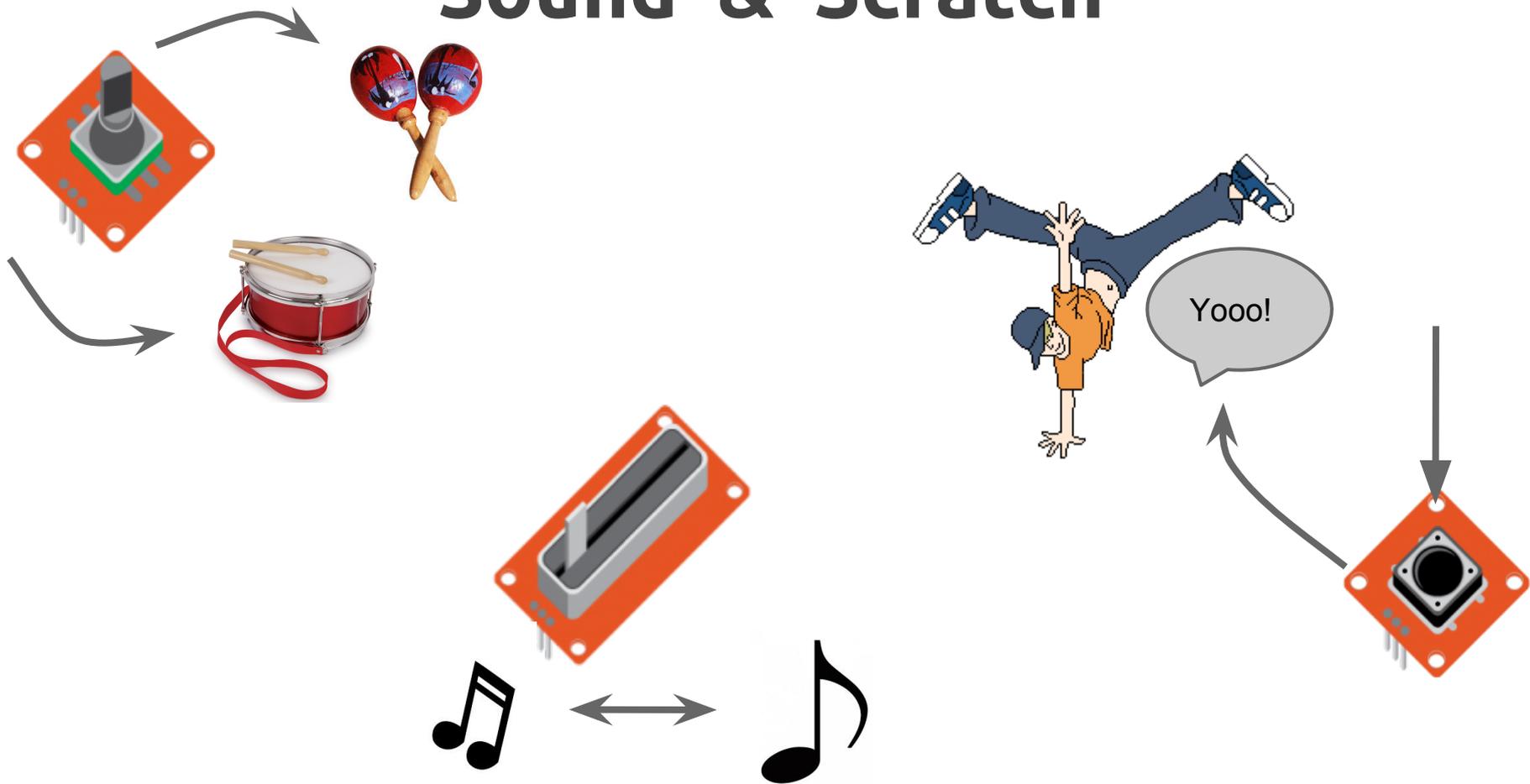
The screenshot shows the Scratch programming environment with a character named "Arduino1" (a green dragon) on the stage. The character's coordinates are x: -4, y: 88, and its direction is 90 degrees. The script is as follows:

- quando si clicca su (when clicked)
- per sempre (forever loop)
  - fai 5 passi (move 5 steps)
  - rimbalza quando tocchi il bordo (bounce when touching edge)
  - se (if) value of sensor Analog0 > 743
    - vai dove y è -65 (go to y: -65)
    - passa al costume dragon1-b (switch to costume dragon1-b)
  - altrimenti (otherwise)
    - vai dove y è 88 (go to y: 88)
    - passa al costume dragon1-a (switch to costume dragon1-a)
  - se (if) numero costume = 2 e sta toccando Sprite1
    - invia a tutti preso (broadcast message to all: preso)

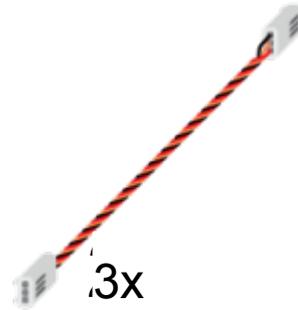
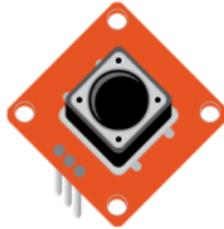
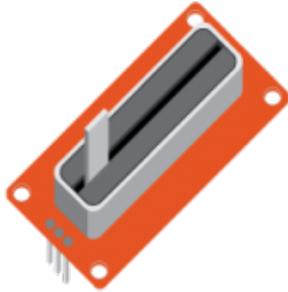
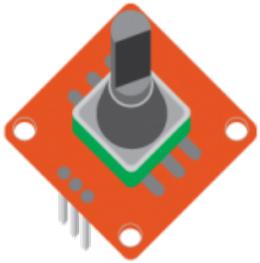
# Cosa serve a Scratch??



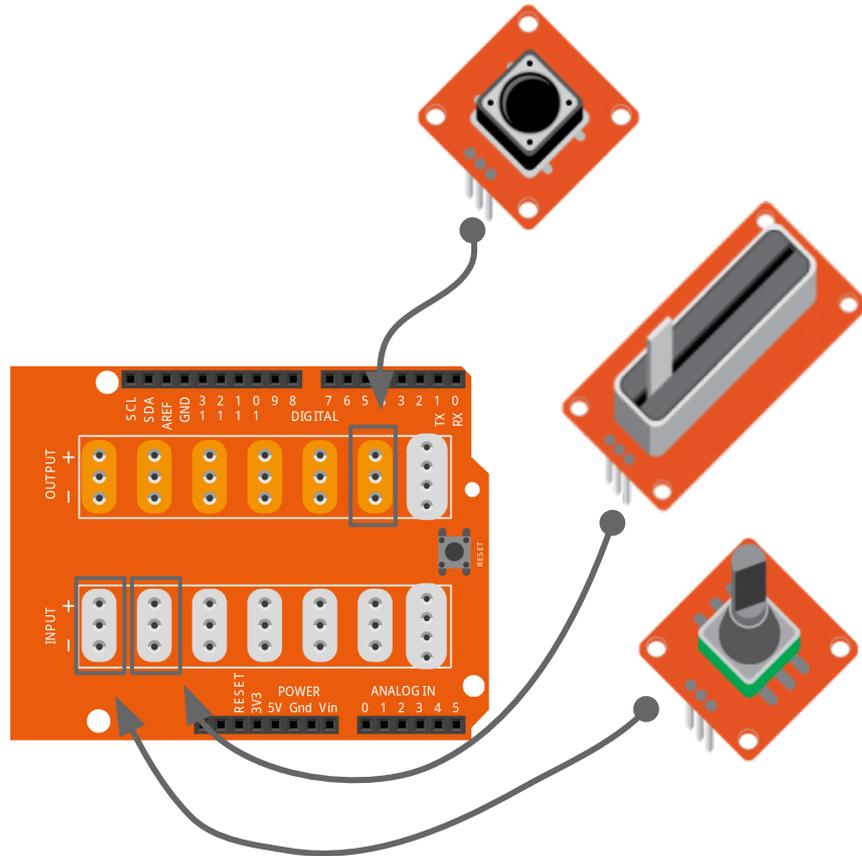
# Sound & Scratch



# Cosa serve ad Arduino??

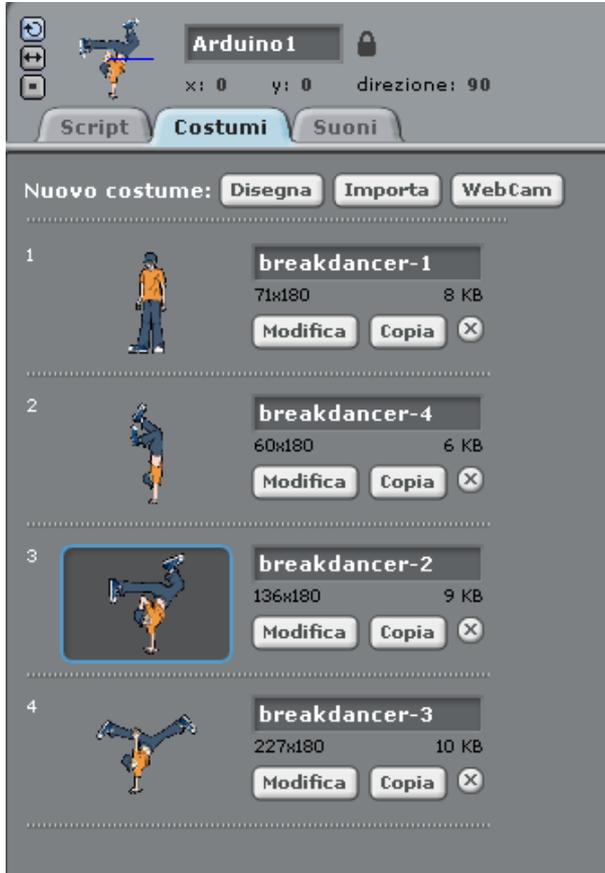


# Cosa serve ad Arduino??



Aggiungiamo due potenziometri che colleghiamo al pin **A0** e **A1** e bottone che colleghiamo al pin **D3**

# Cosa serve a Scratch??



Importiamo 4 nuovi  
costumi

# Cosa serve a Scratch??



Importiamo 1 nuovo  
suono

# Cosa serve a Scratch??

The image shows a Scratch script for an Arduino board named "Arduino1". The script is divided into two main sections, each starting with a "quando si clicca su" (when clicked) event block.

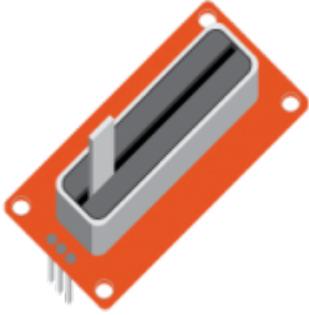
**Section 1:**

- per sempre (forever) loop:
  - porta tempo a value of sensor Analog1 / 1200
  - suona tamburo arrotonda value of sensor Analog0 / 22 + 35 per tempo battute
  - se sensor Digital3 pressed?
    - produci suono Ya
    - dire Yahoooo per 2 secondi

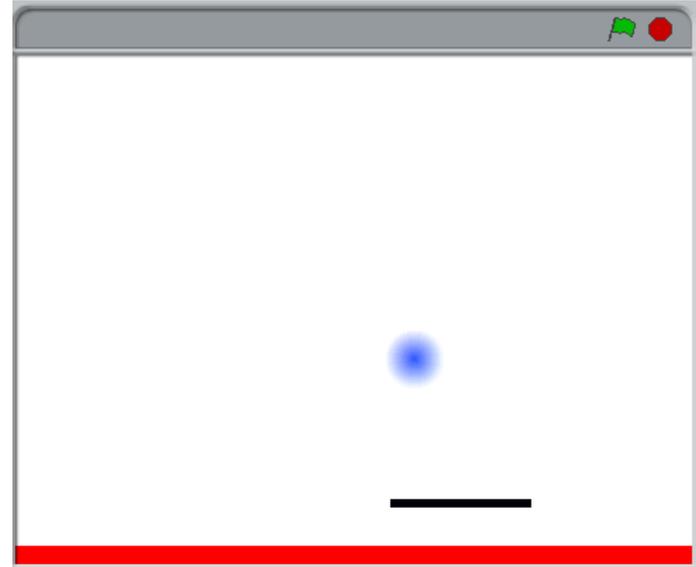
**Section 2:**

- per sempre (forever) loop:
  - passa al costume seguente
  - attendi tempo secondi

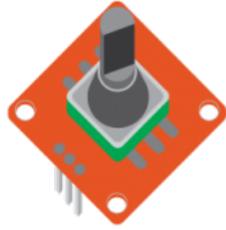
# Challenges



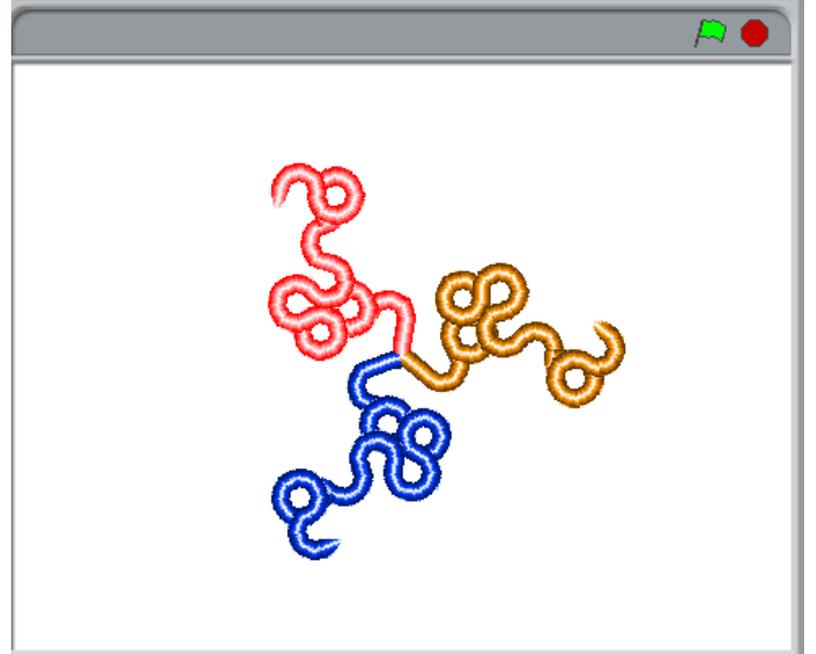
+



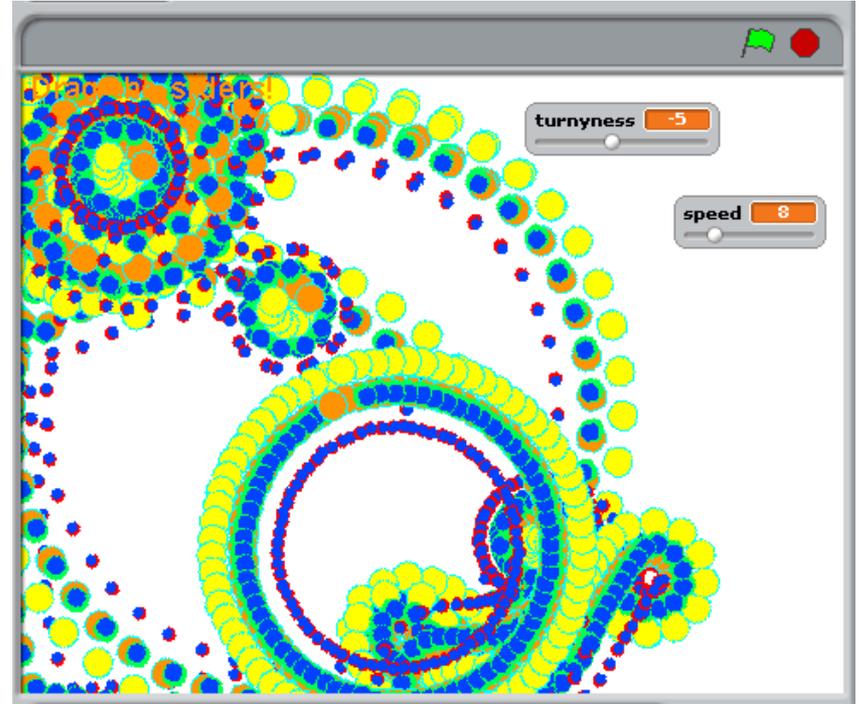
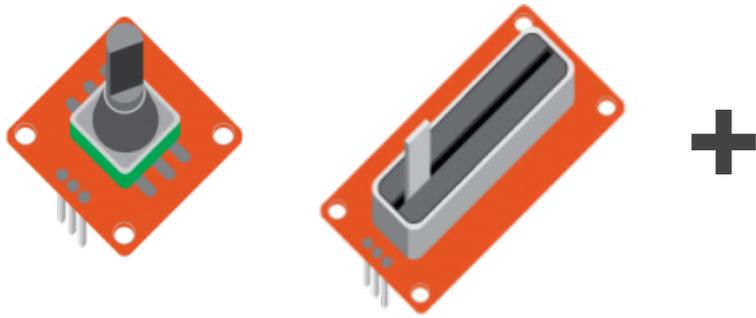
# Challenges



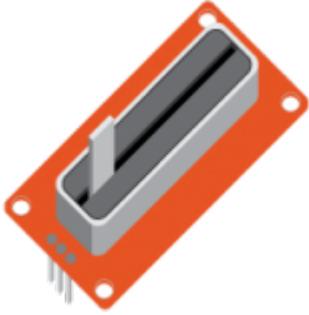
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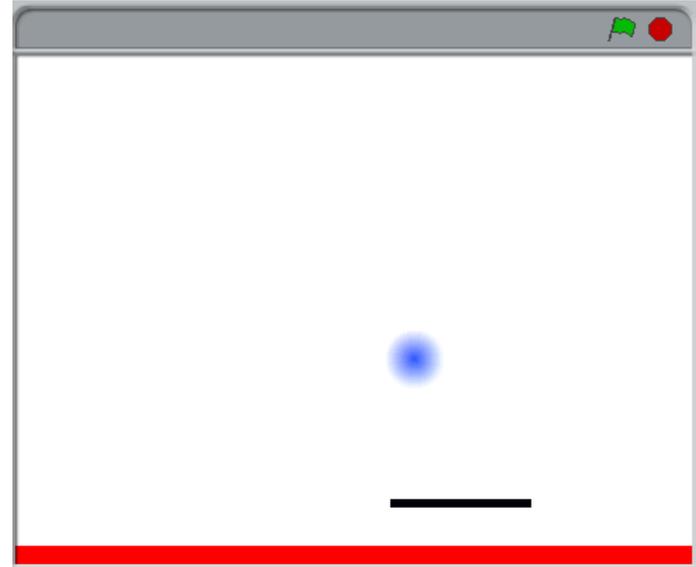
# Challenges



# Challenges



+



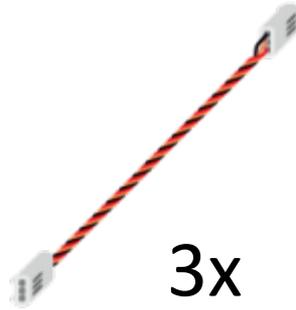
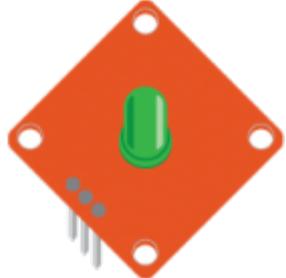
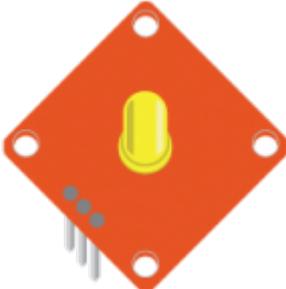
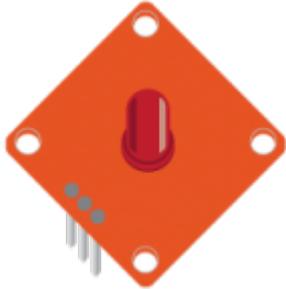
# Sensore Tilt (e muovi)



uguale al bottone, cambia solo tiul al posto di bottone

magari prima di sfondo, questo più semplice

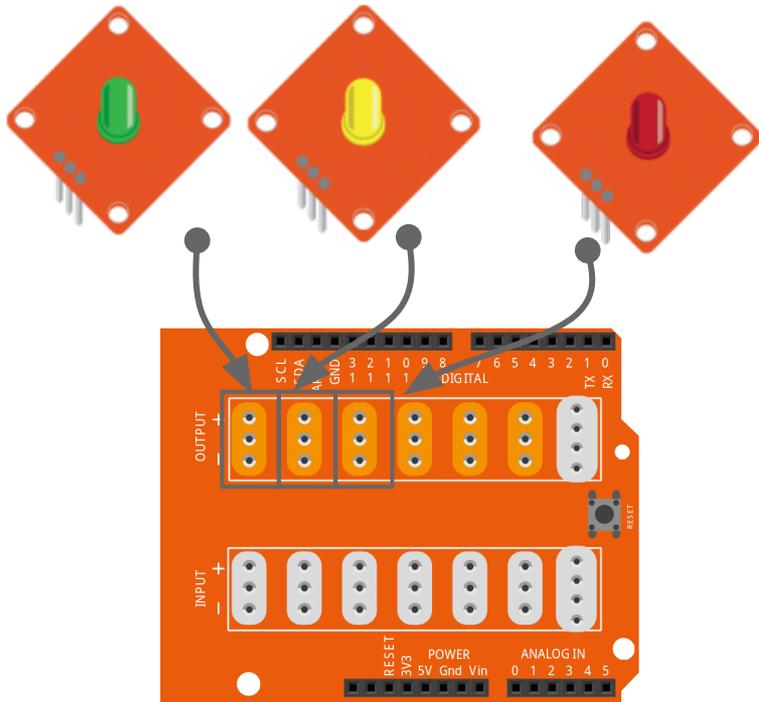
# Semaforo



3x



# Cosa serve ad Arduino??



Credits:

Slide made by:

- Mirco Piccin @mircopiccin
- Giulio Pilotto @giulio\_pilotto

Foto :

- TinkerKit:

<http://store.arduino.cc/category/16?language=it>

- Fritzing Blog:

<http://blog.fritzing.org/2013/12/06/how-can-your-kids-learn-with-arduino/>

