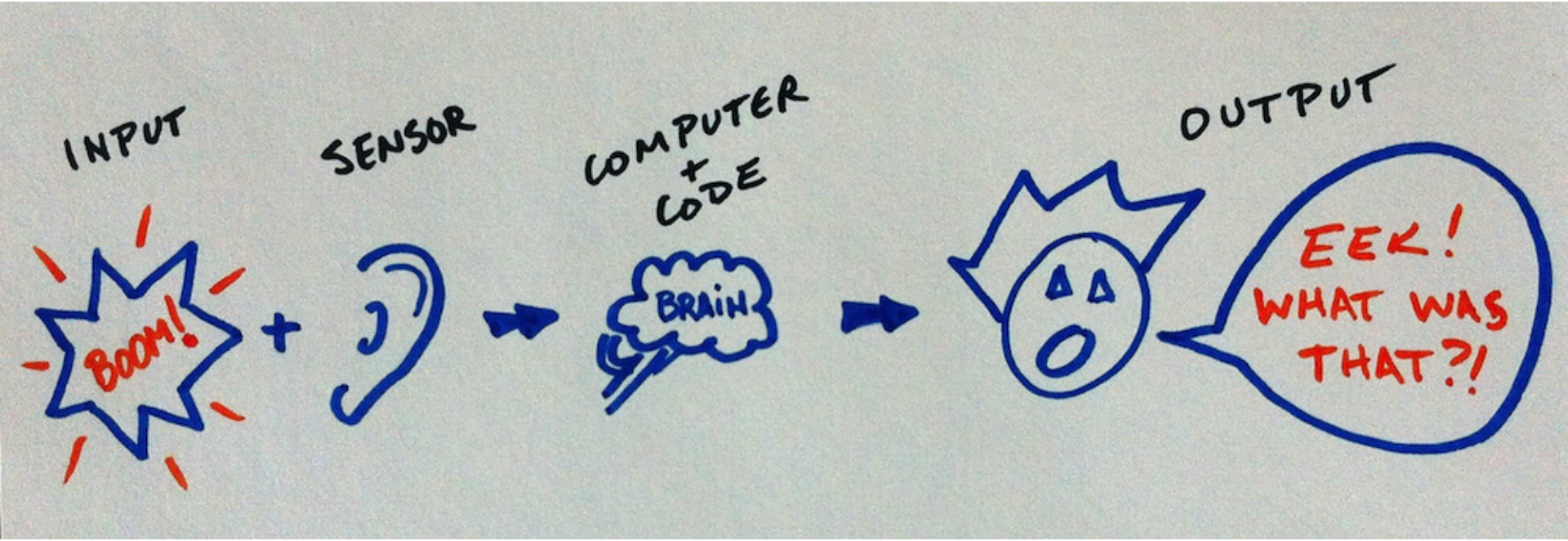
CoderDojo Trento

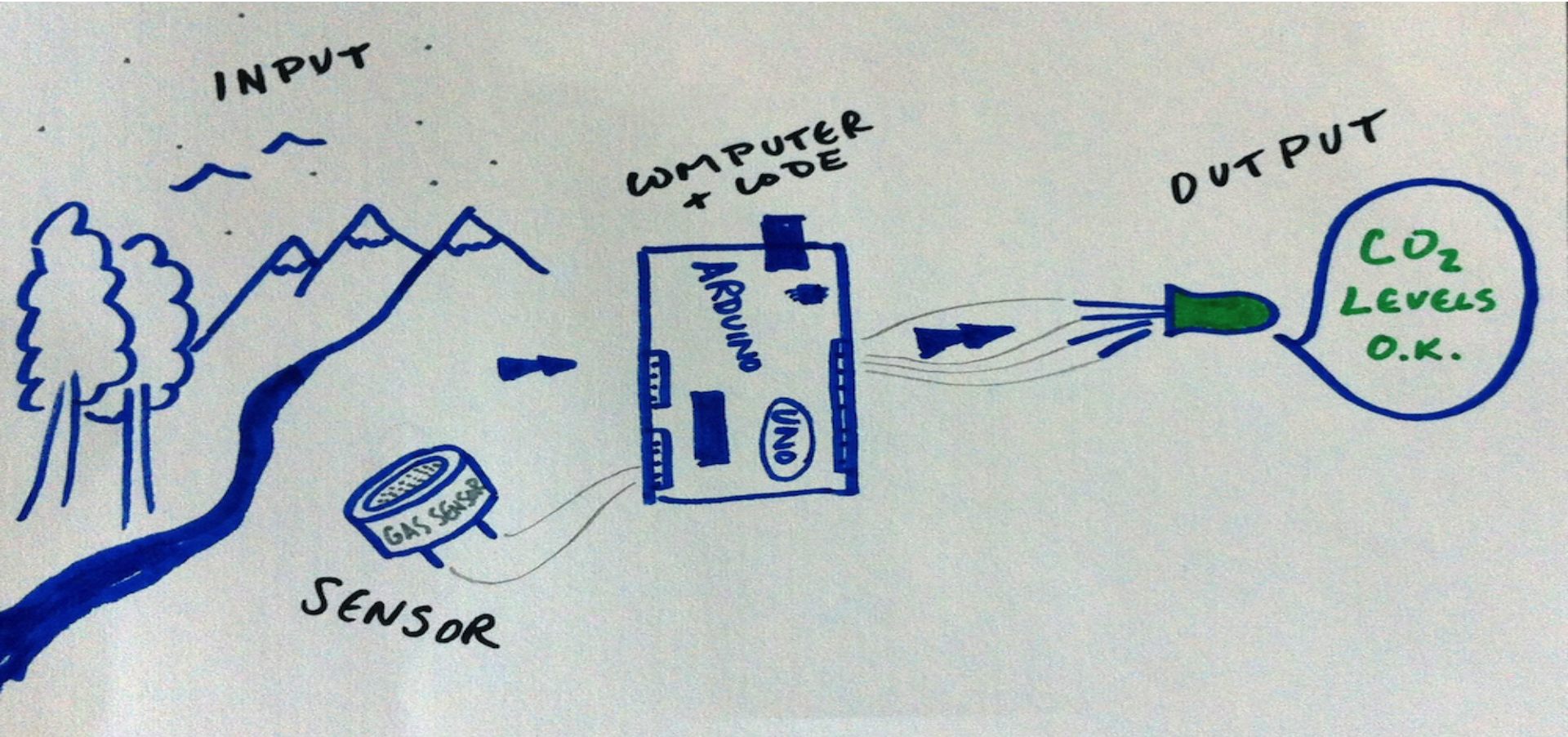
Scratch & Arduino Workshop

by Giulio Pilotto & Mirco Piccin
@giulio_pilotto @mircopiccin

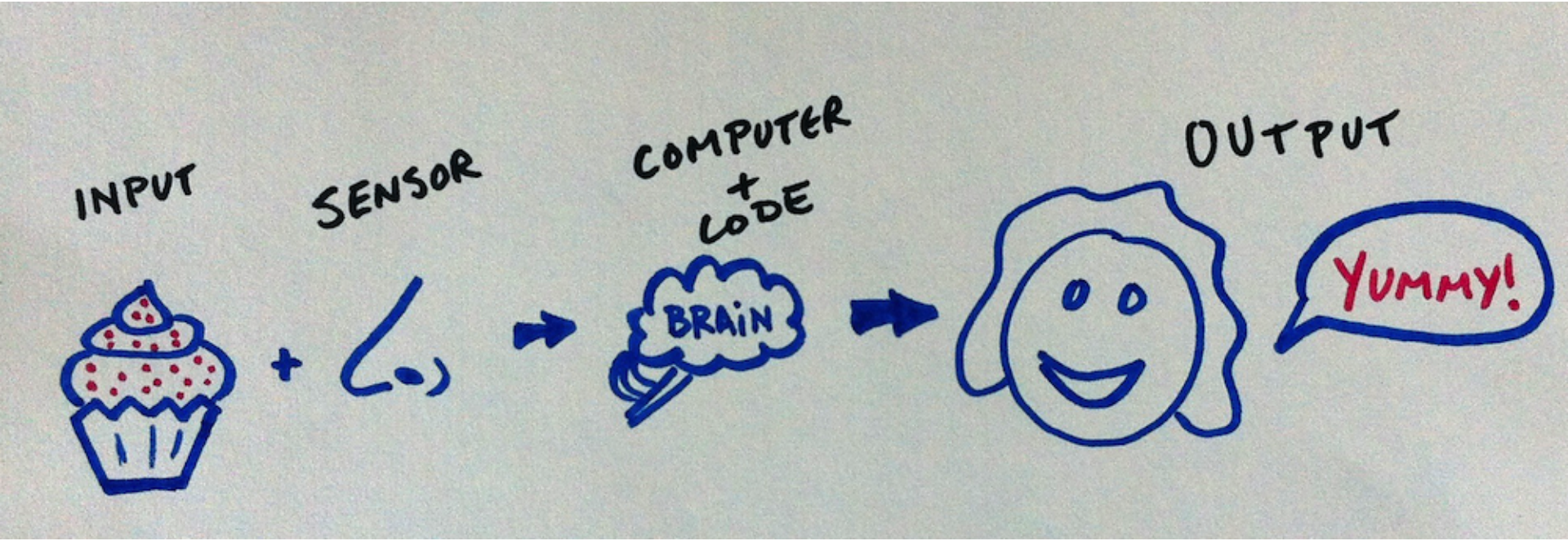
Come noi...


INPUT
SENSOR
COMPUTER + CODE
OUTPUT
BOOM!
+
BRAIN
EEK! WHAT WAS THAT?!

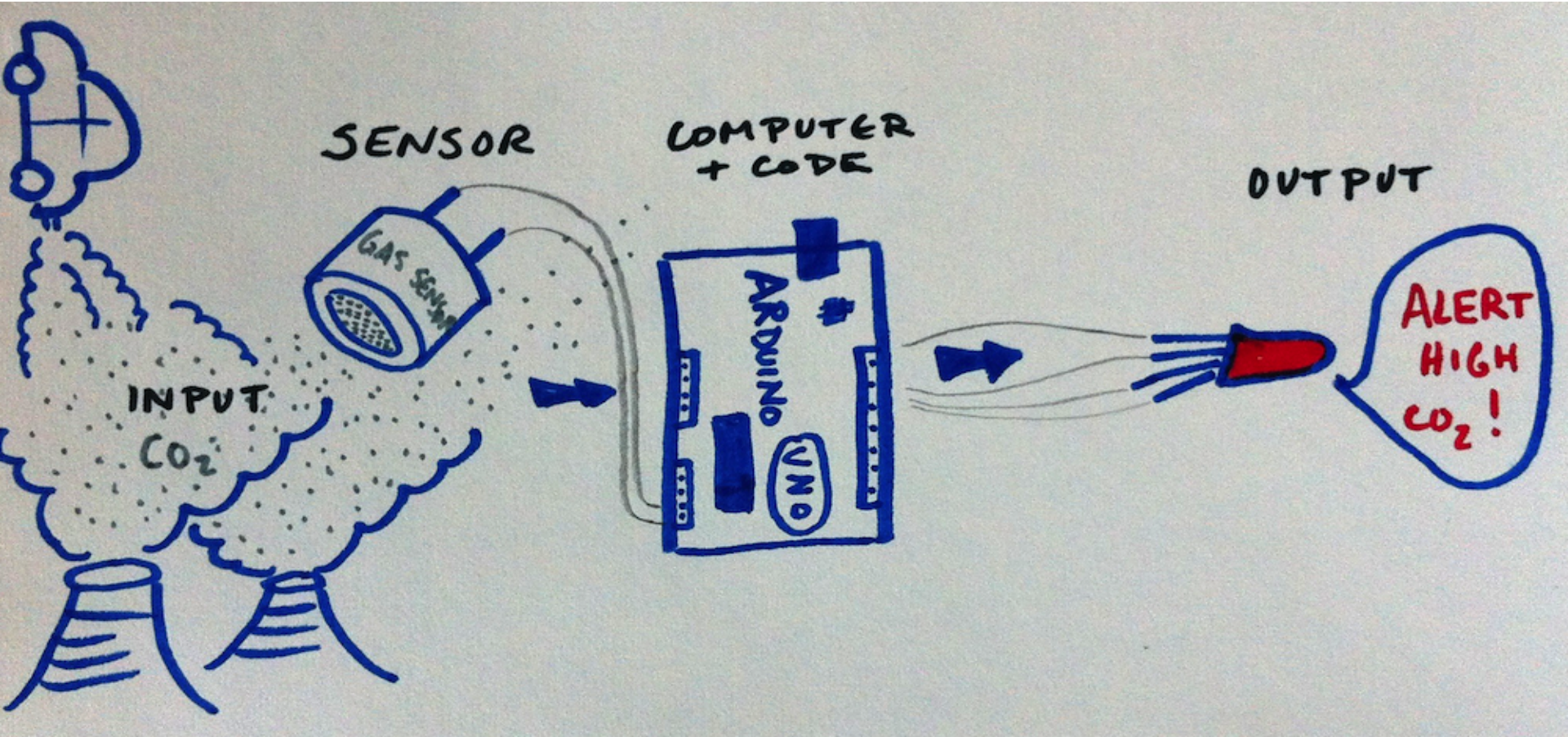
Anche Arduino...



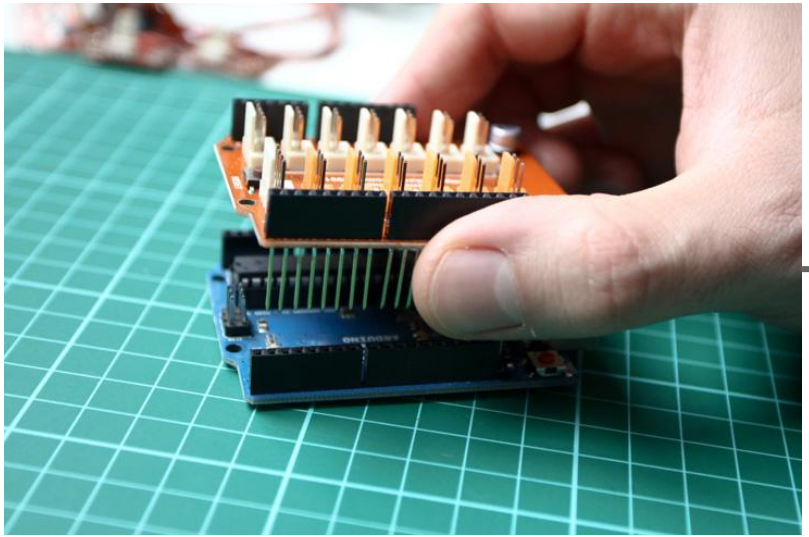
Come noi...

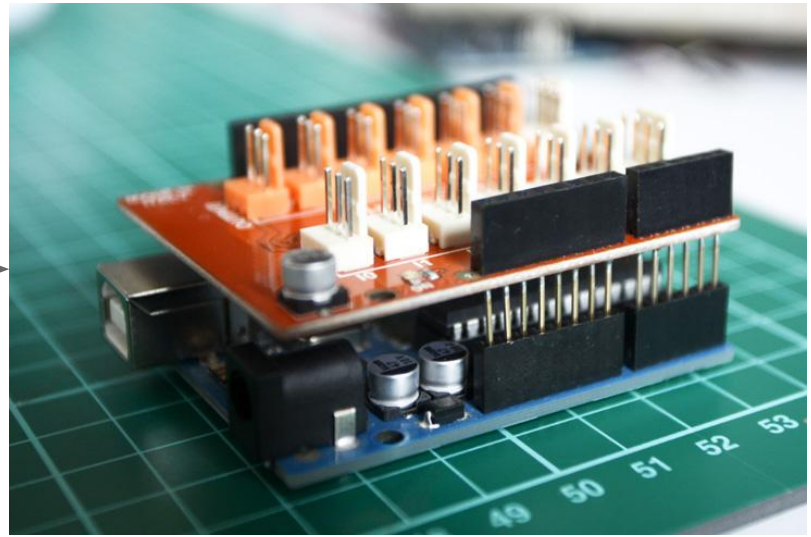


Anche Arduino...

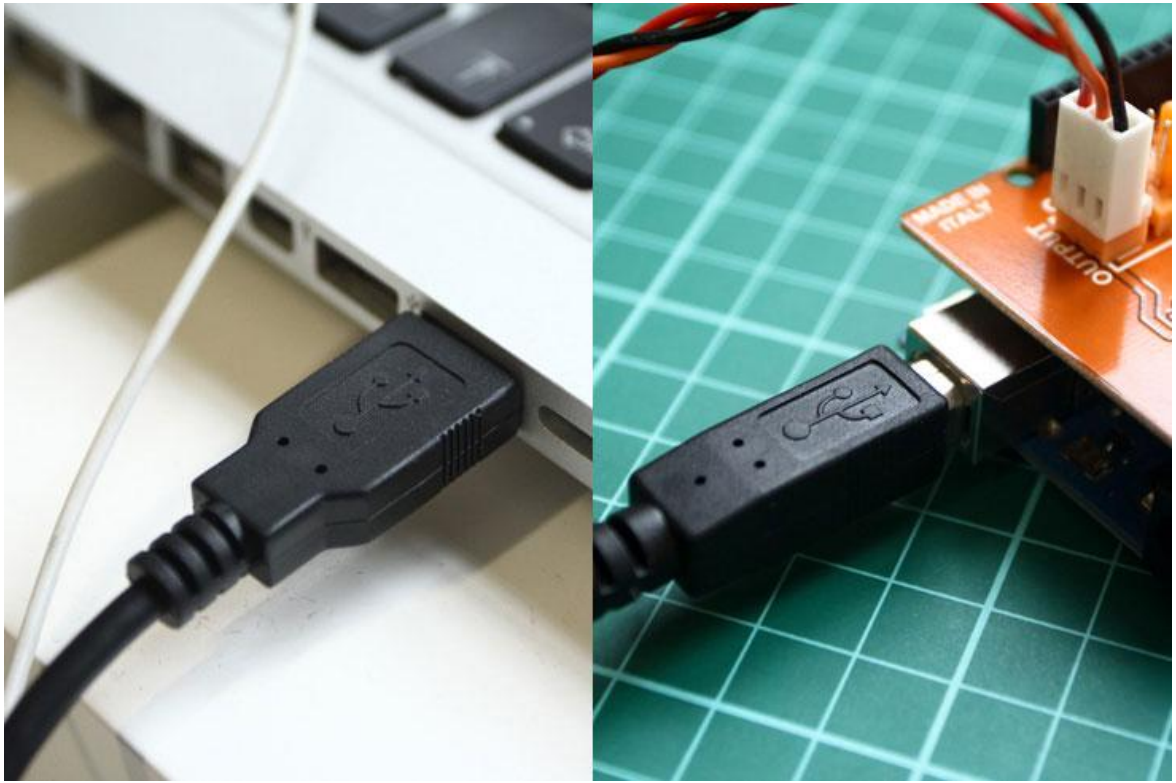


Prepariamo Arduino

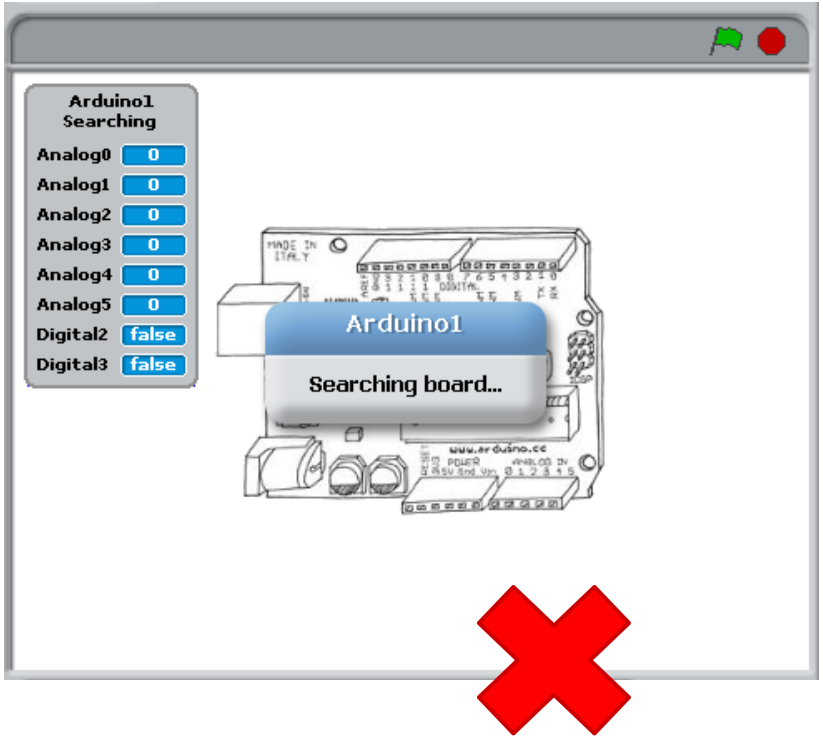


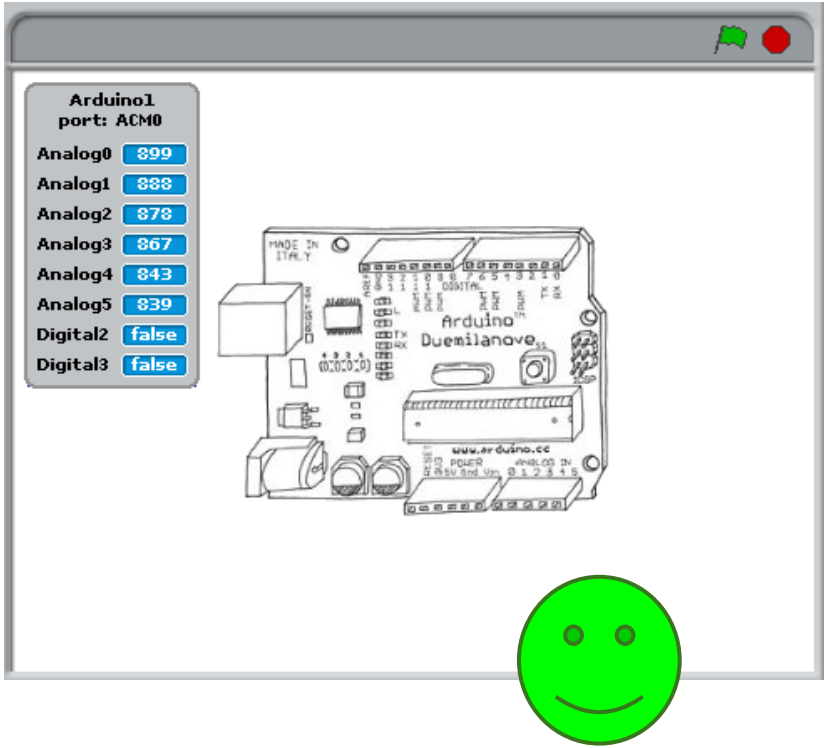


..e attacchiamola al computer

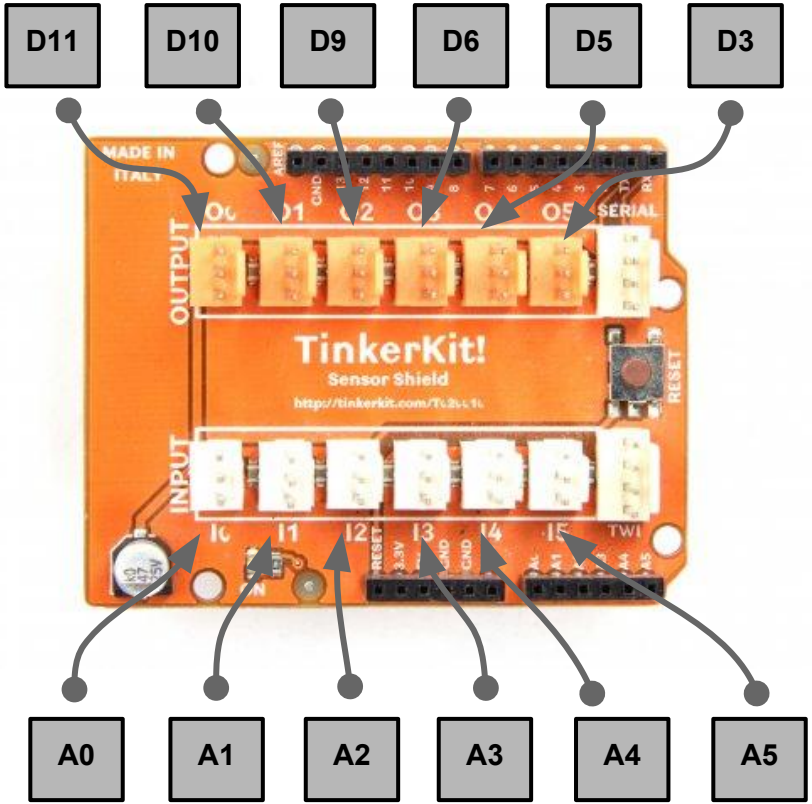


Prepariamo S4A



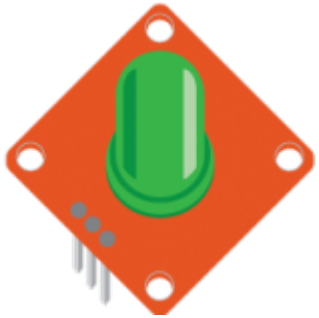


Schema pin

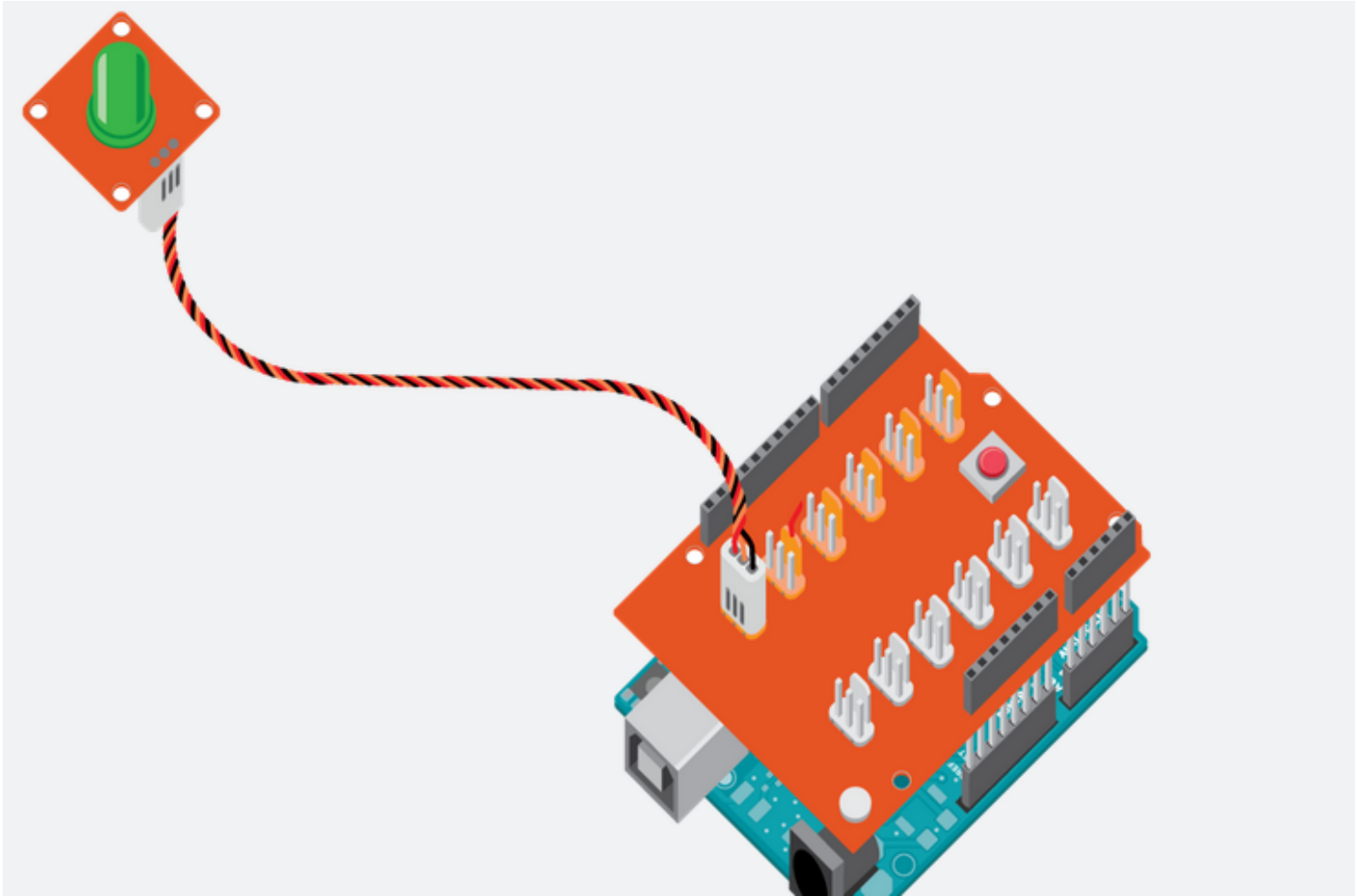

D11
D10
D9
D6
D5
D3
MADE IN ITALY
OUTPUT
SERIAL
TinkerKit!
Sensor Shield
RESET
INPUT
TWI
A0
A1
A2
A3
A4
A5

Led blink

Cosa serve ad Arduino??



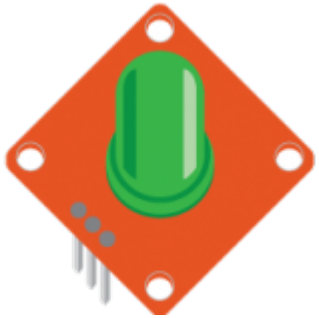
Connetti il led VERDE al pin D11

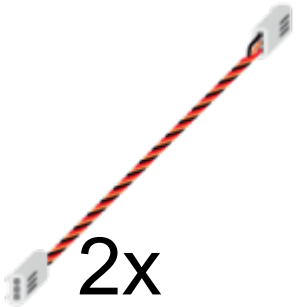


E a Scratch cosa serve??

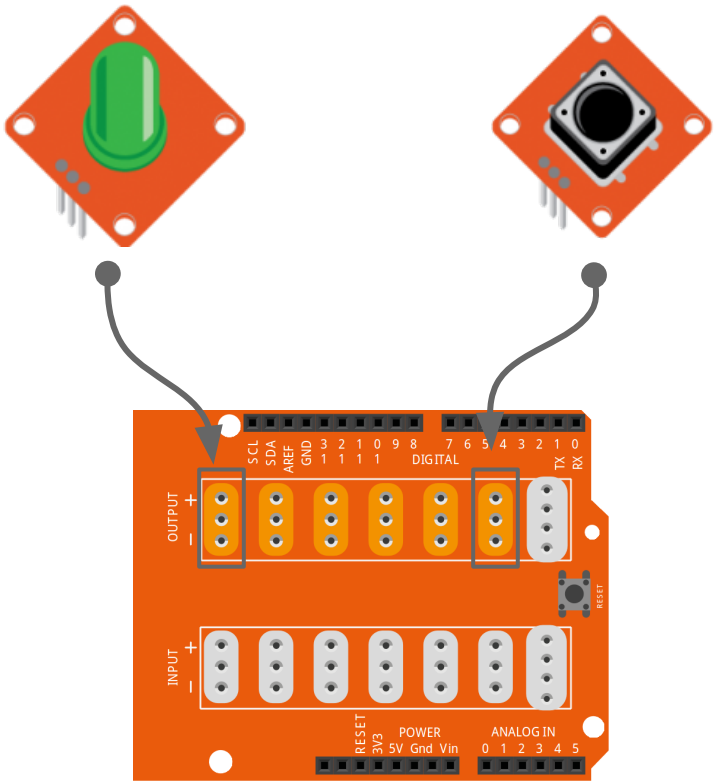
Bottone e led

Cosa serve ad Arduino??



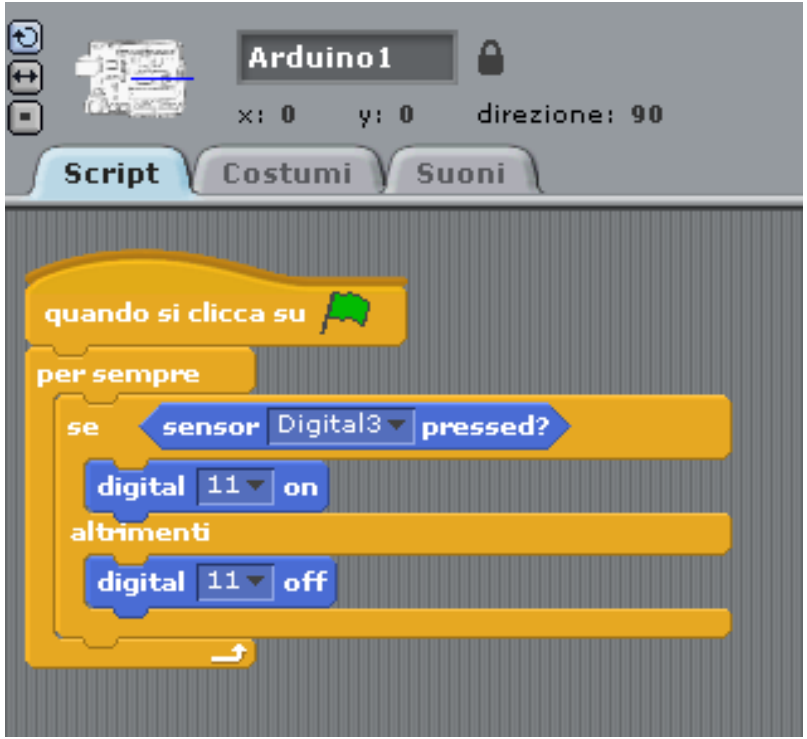


Cosa serve ad Arduino??



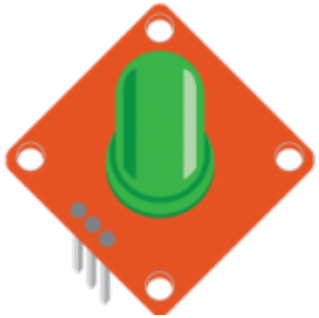
Aggiungiamo un
<u>bottone</u>
che colleghiamo
al pin **D3**.

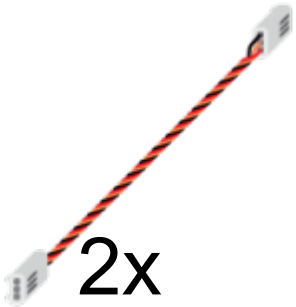
E a Scratch cosa serve??



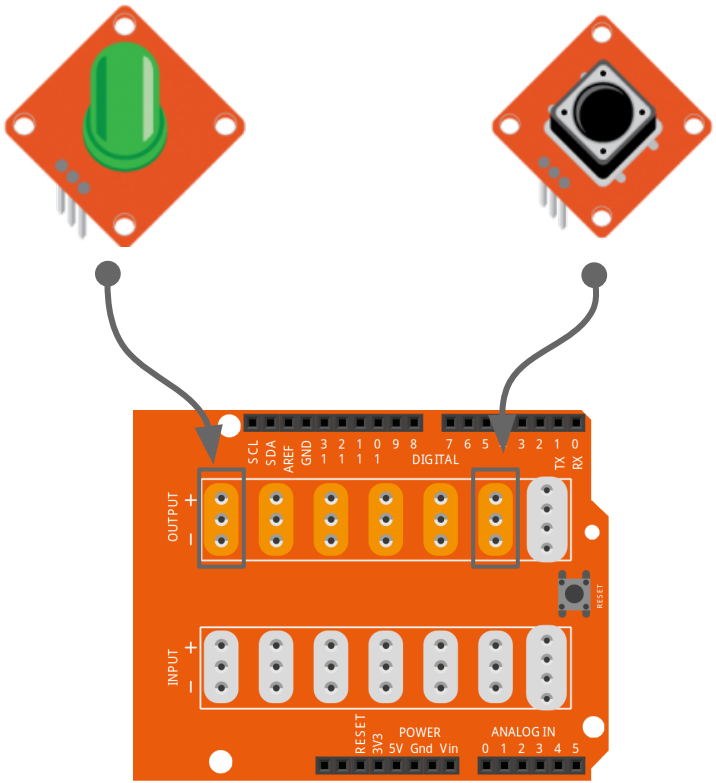
Bottone & Scratch

Cosa serve ad Arduino??



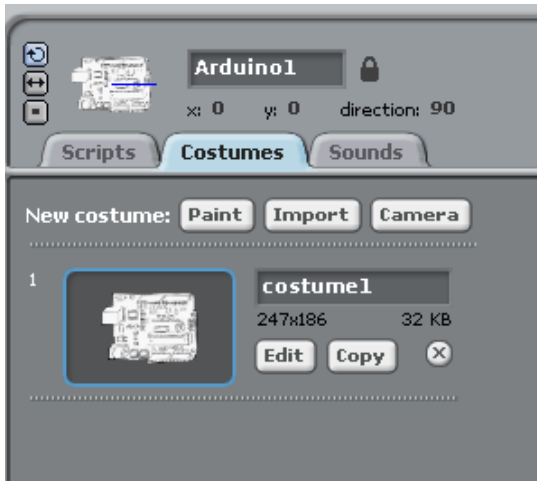


Cosa serve ad Arduino??



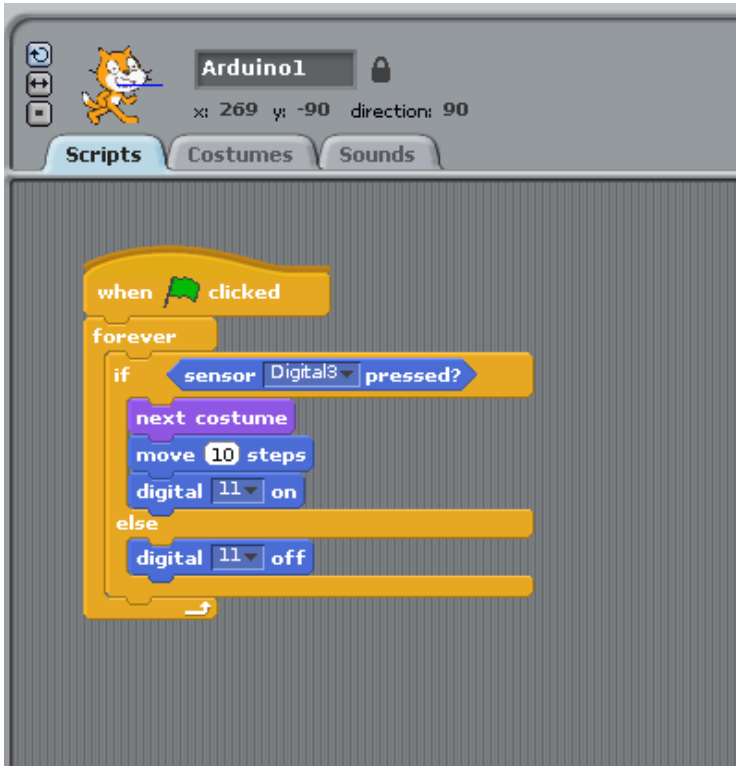
Aggiungiamo un
<u>bottone</u>
che colleghiamo
al pin **D3**.

Modifichiamo il costume

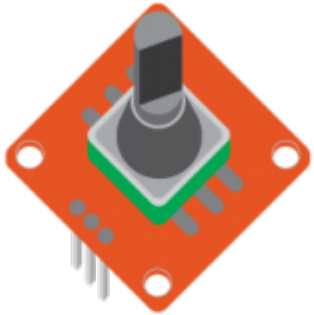


Cambiamo il costume di Arduino
1) Importiamo il costume gatto
2) Importiamo un altro costume, e scegliamo il secondo gatto
3) Eliminiamo il costume Arduino

E a Scratch cosa serve??



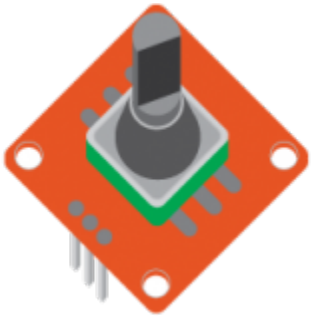
Potenziometro e Led

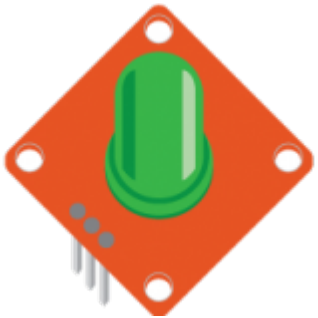


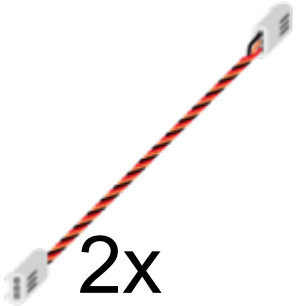
0

1024

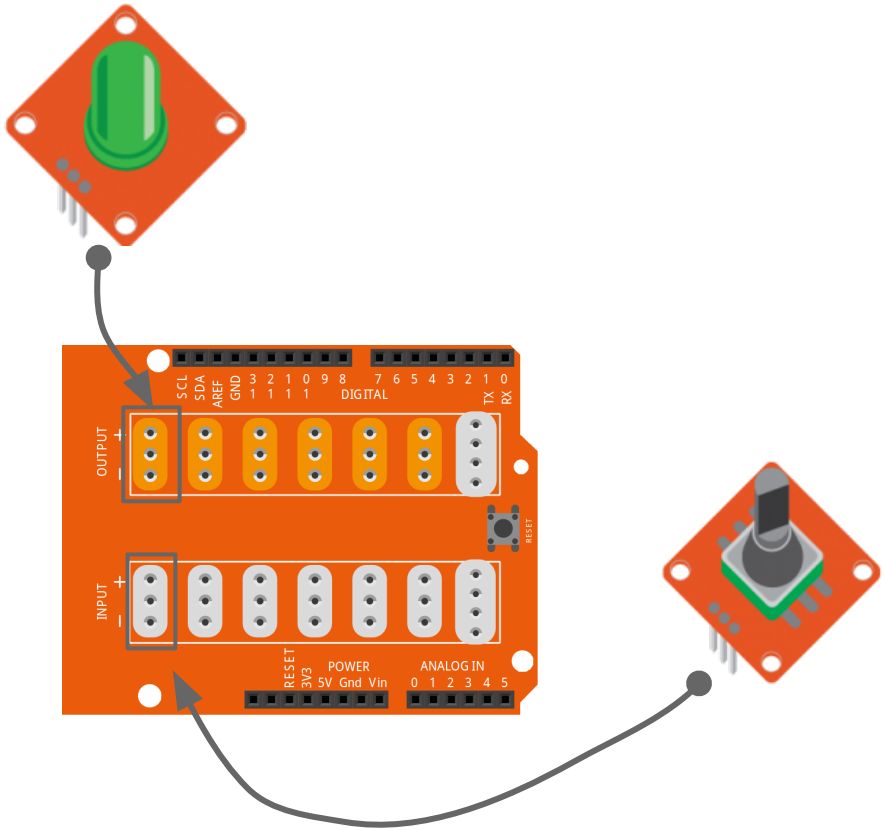
Cosa serve ad Arduino??





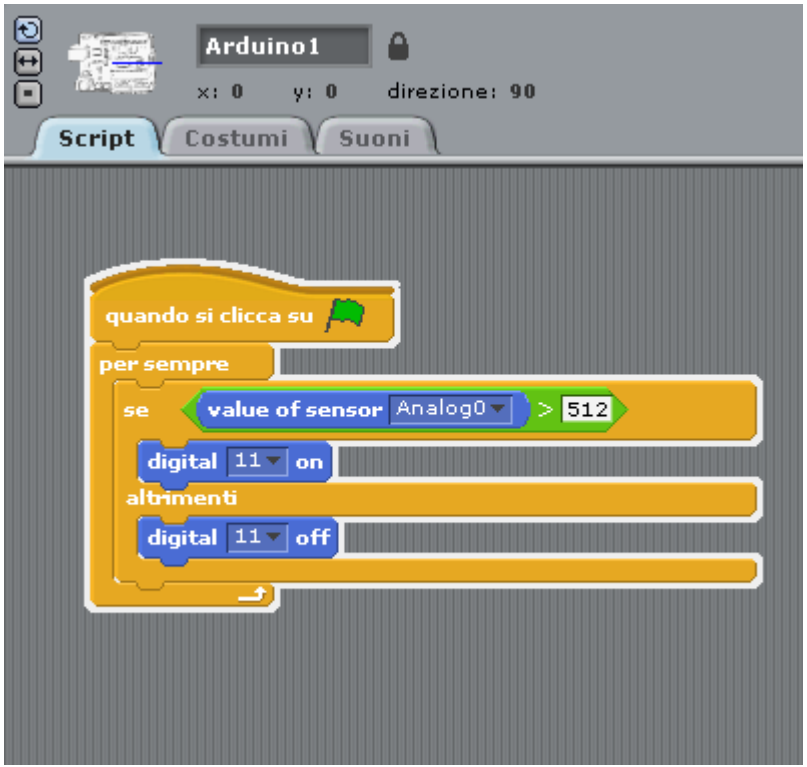


Cosa serve ad Arduino??

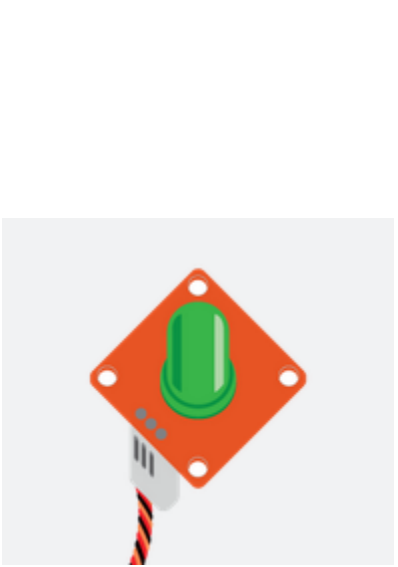


Aggiungiamo un potenziometro che colleghiamo al pin **A0**

Cosa serve a Scratch??



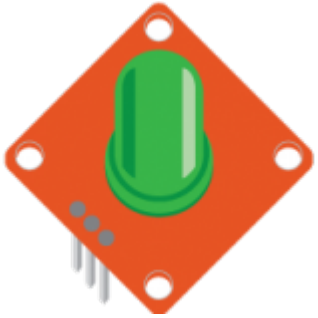
Sensore di luce & Scratch Stage

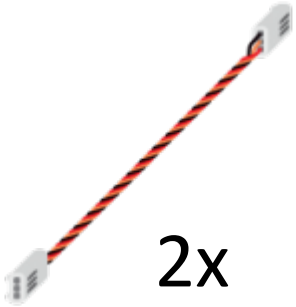


0

1024

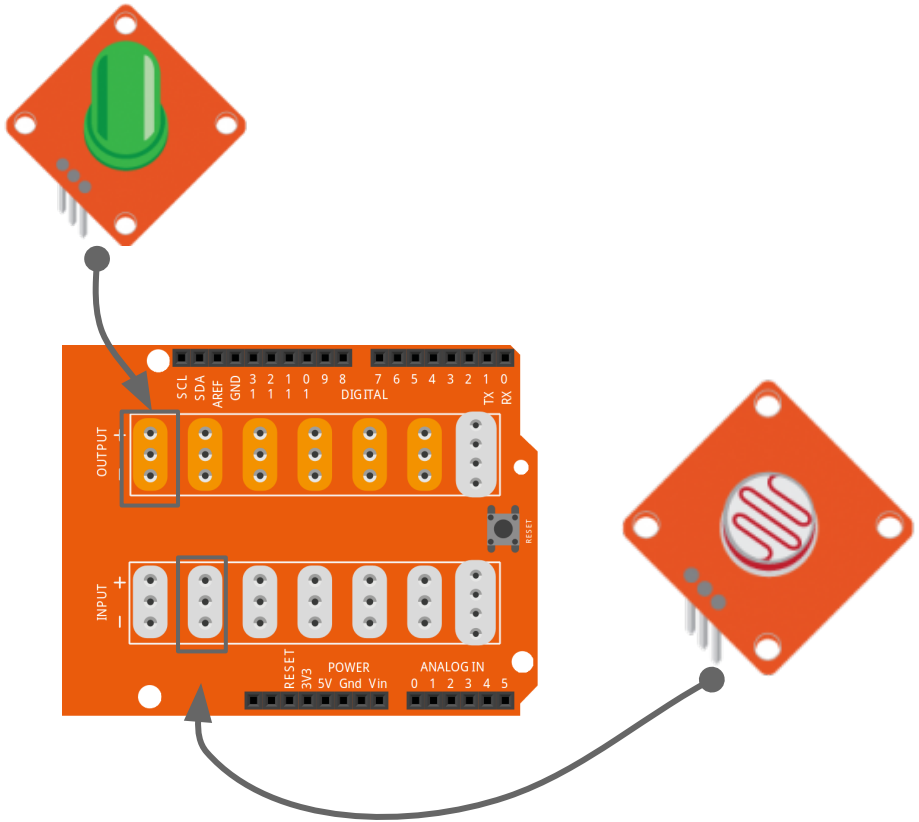
Cosa serve ad Arduino??





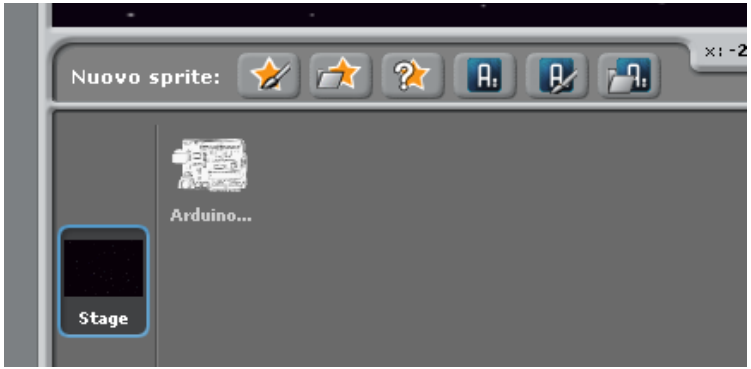
2x

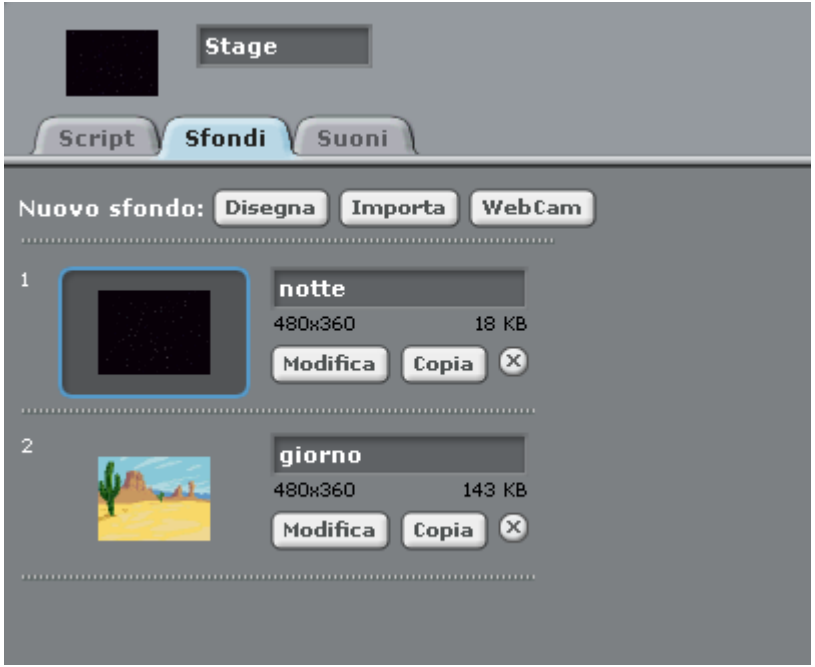
Cosa serve ad Arduino??



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

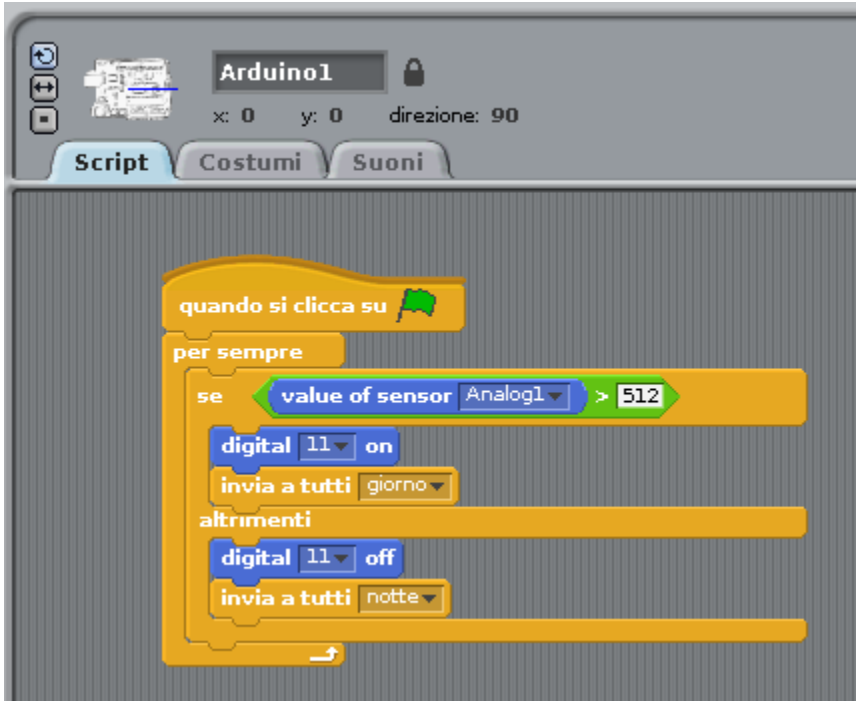
Prepariamo un paio di sfondi





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/

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2^ parte

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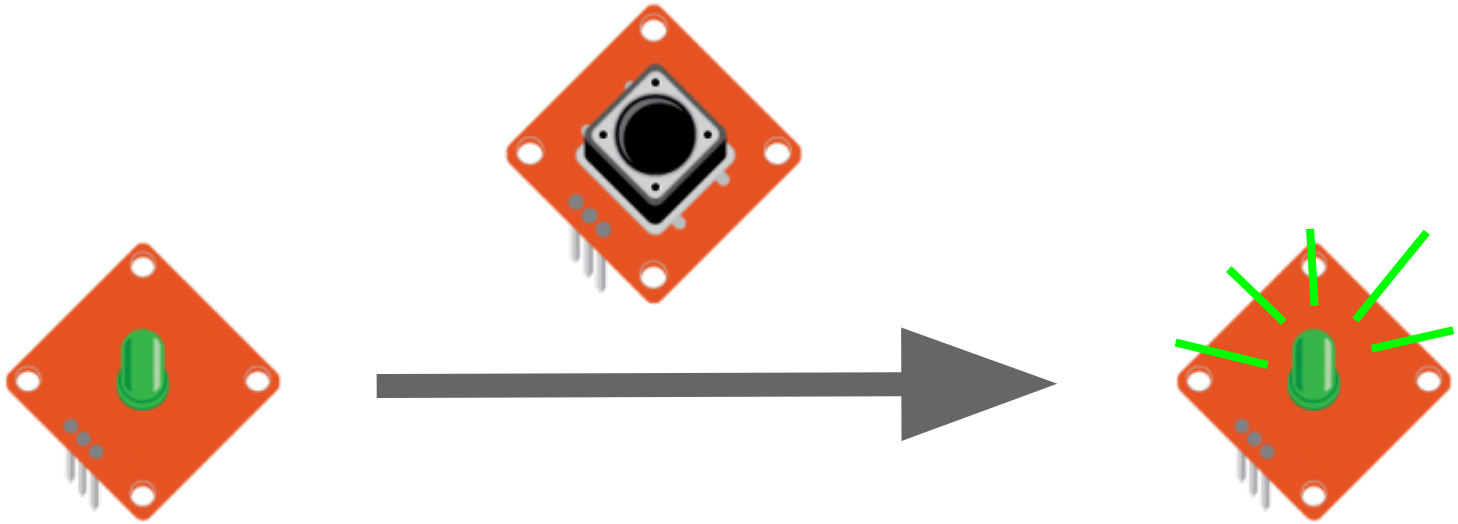
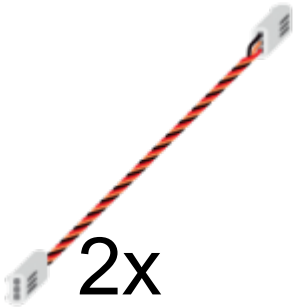
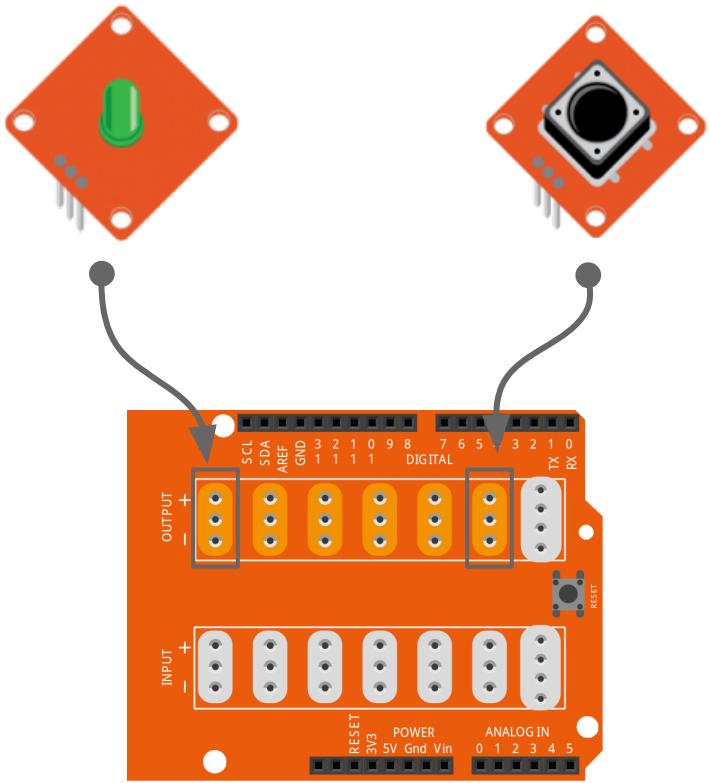
Bottone e led



Cosa serve ad Arduino??

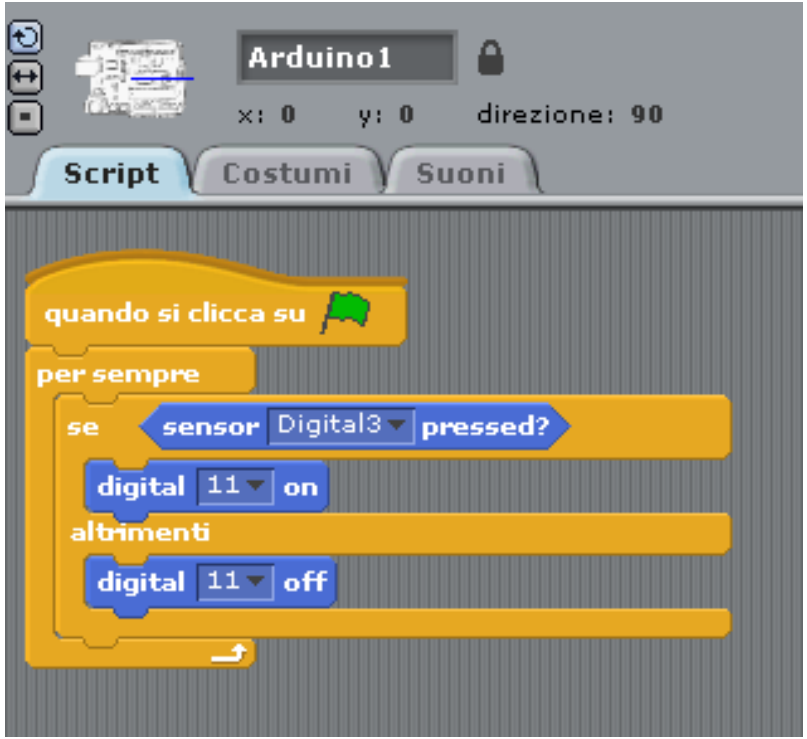


Cosa serve ad Arduino??

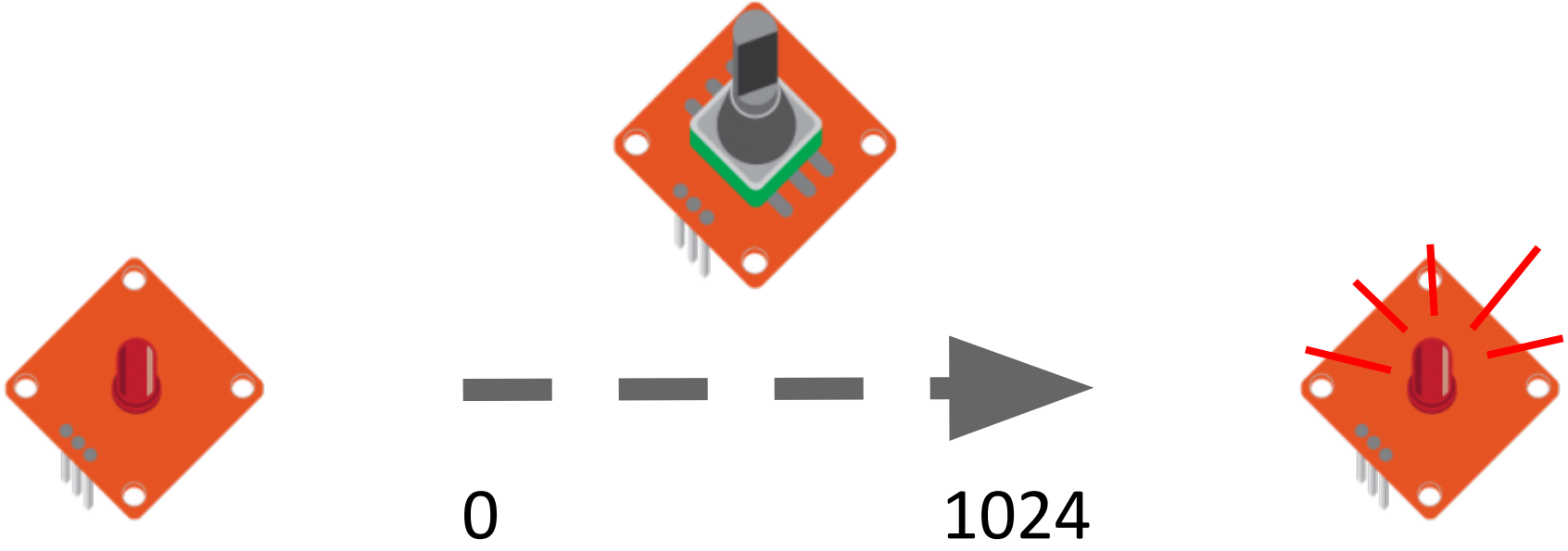


Aggiungiamo un
bottone
che colleghiamo
al pin **D3** e
un led al pin **D11**.

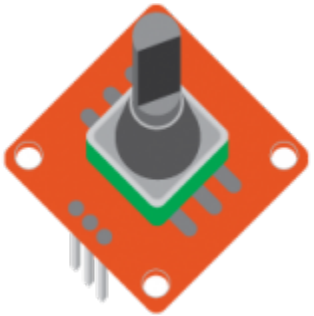
E a Scratch cosa serve??

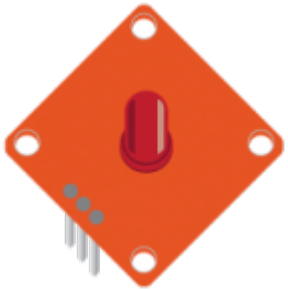


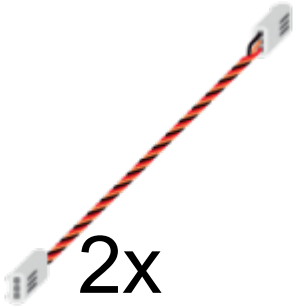
..aggiungiamo Potenziometro e Led



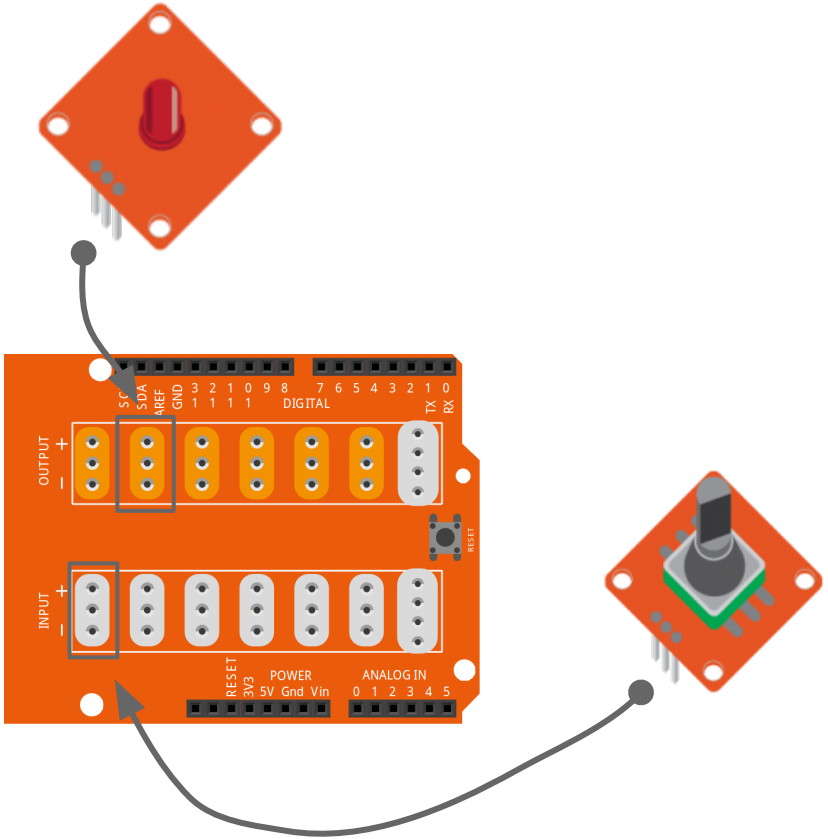
Cosa serve ad Arduino??





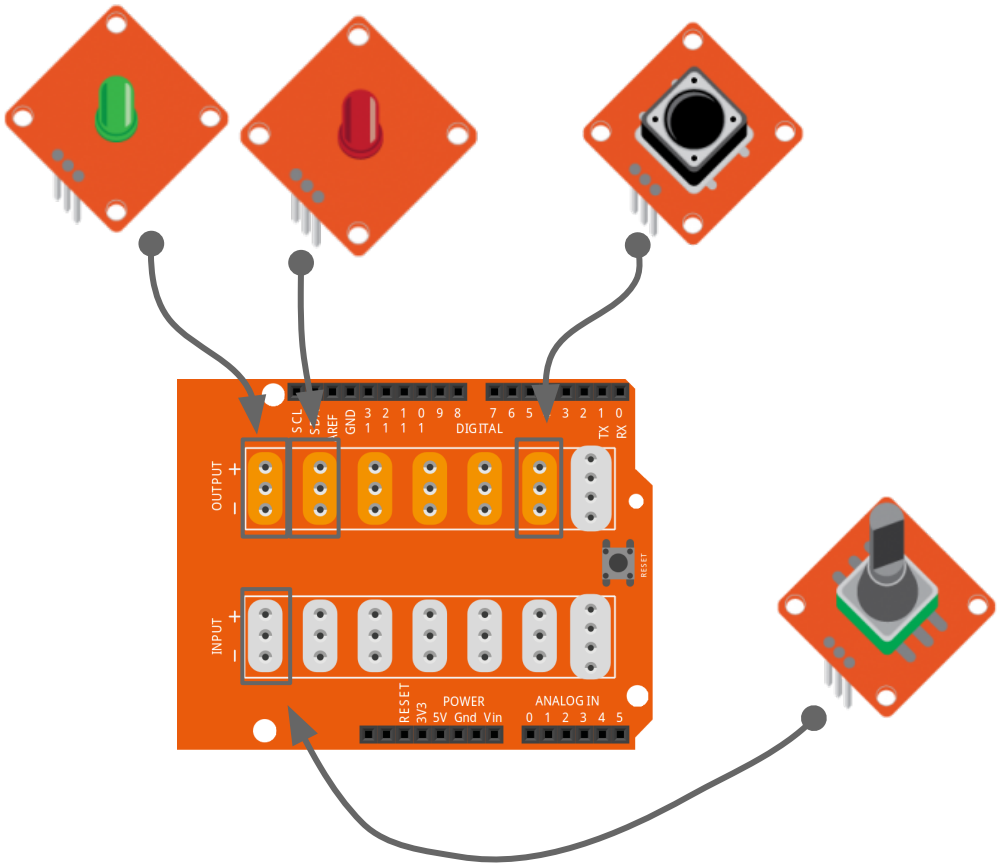


Cosa serve ad Arduino??

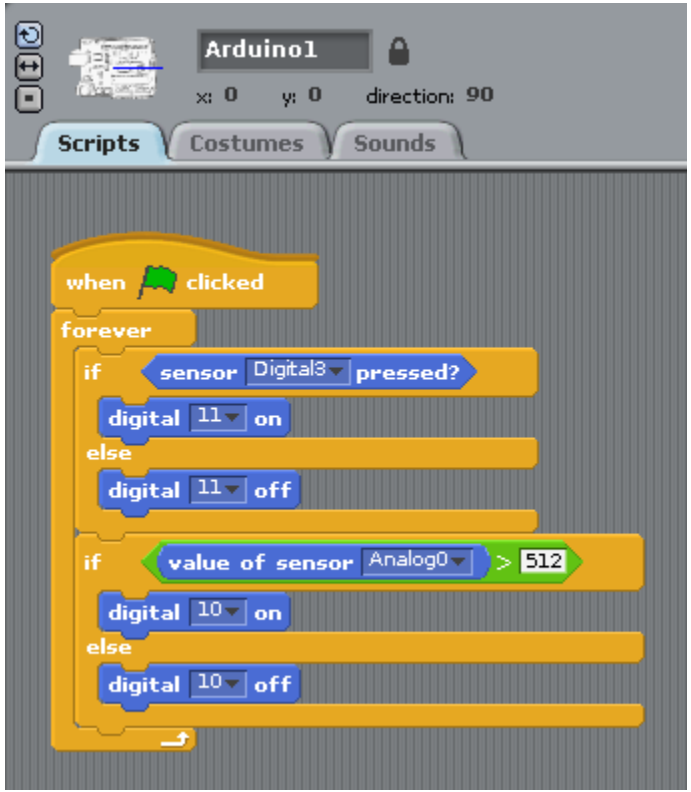


Aggiungiamo un potenziometro che colleghiamo al pin **A0** e un led al pin **D10**

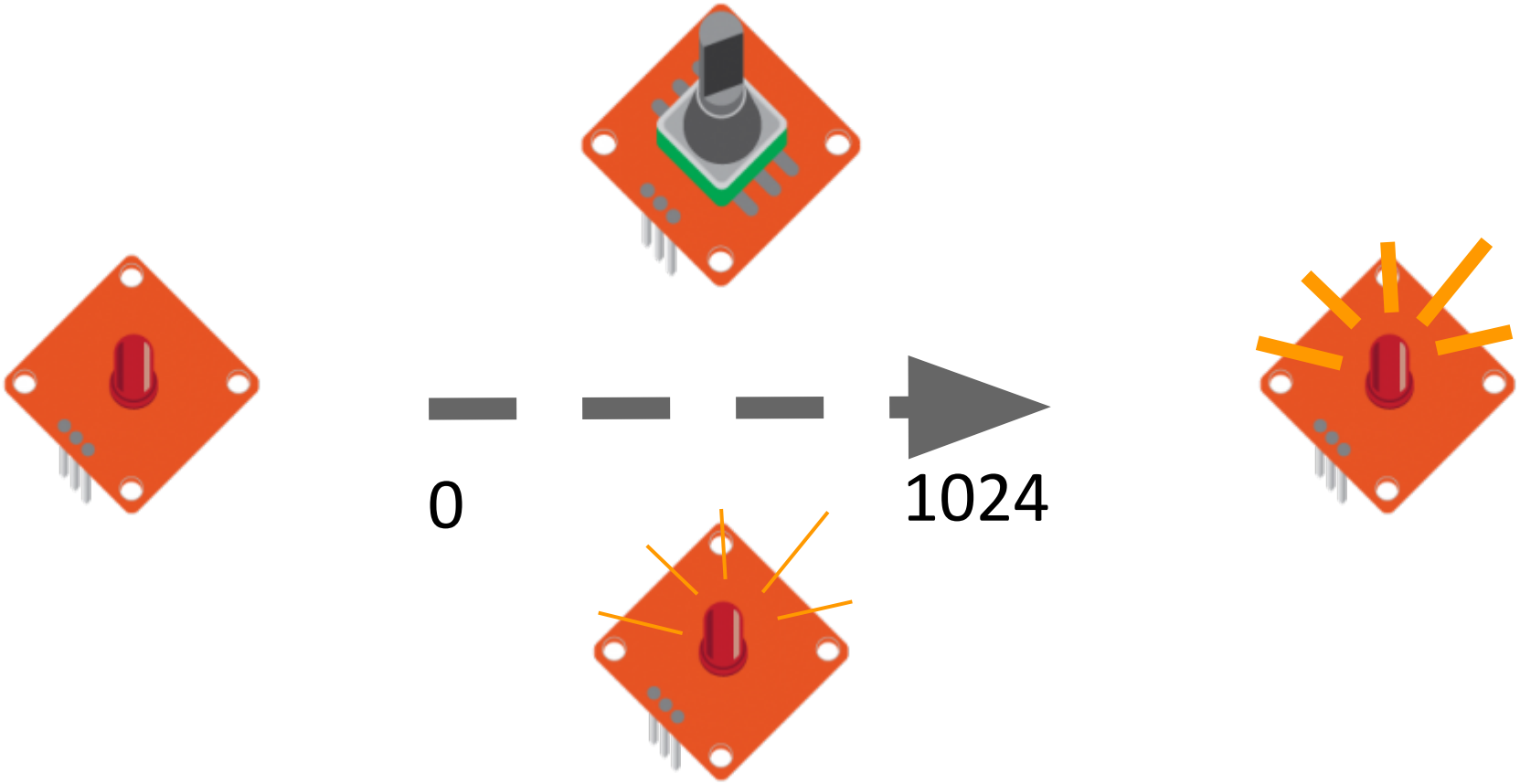
...completo:



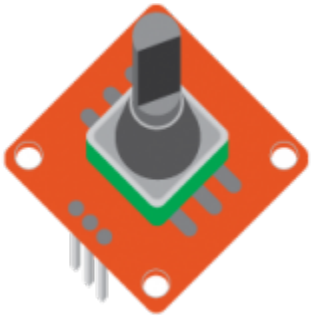
Cosa serve a Scratch??

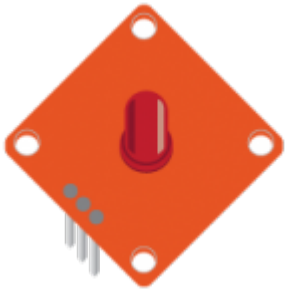


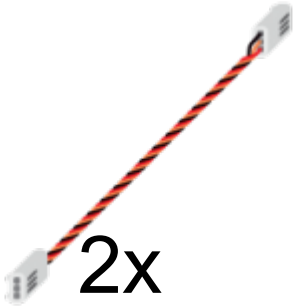
...led con dissolvenza



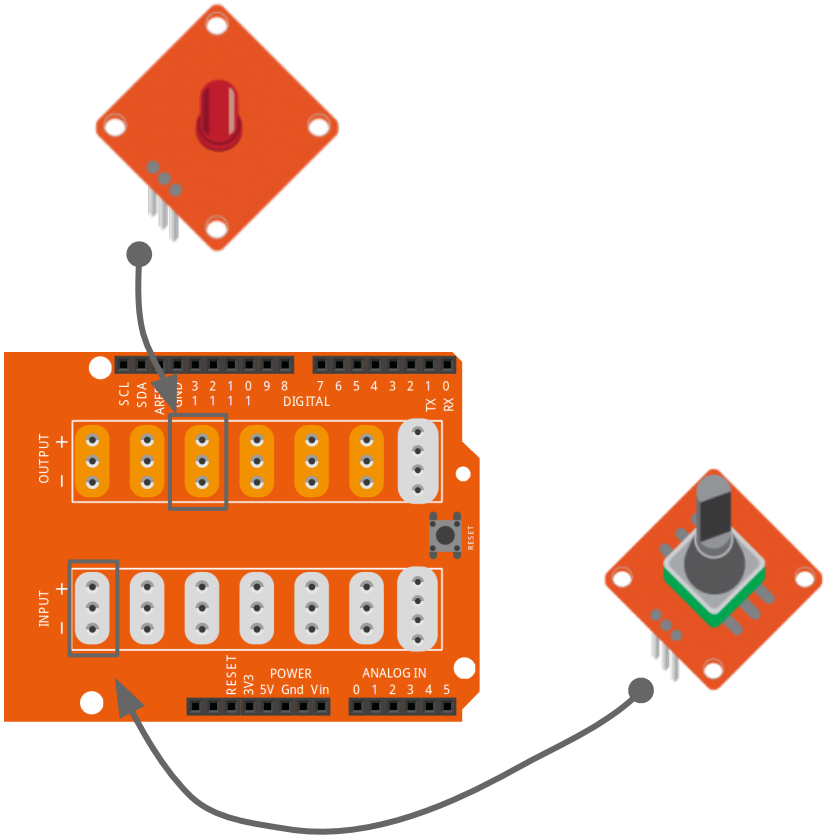
Cosa serve ad Arduino??





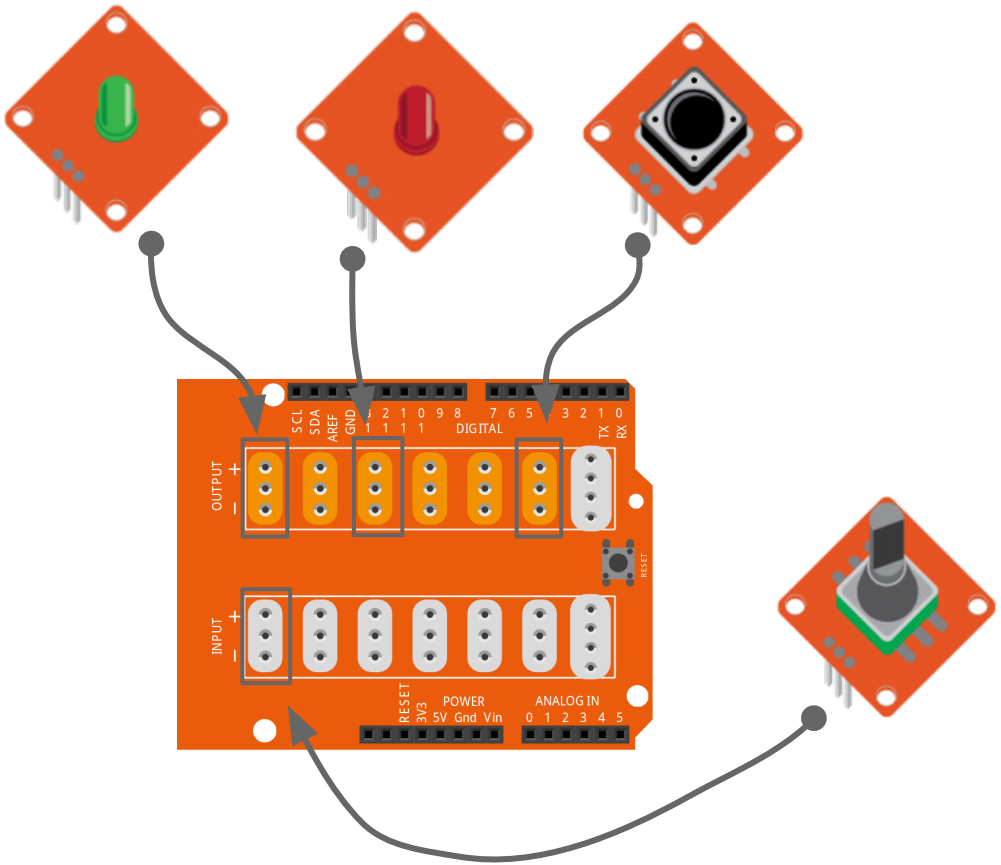


Cosa serve ad Arduino??

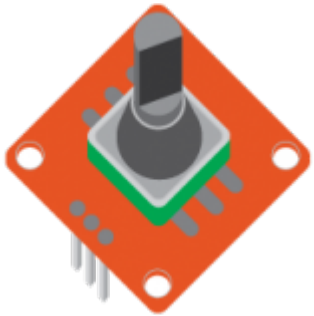


Spostiamo il led
sul pin **D9**

...completo:

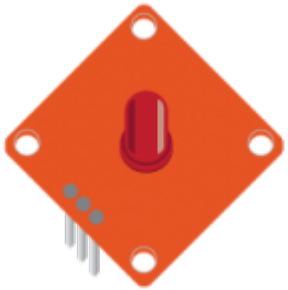

SCL
SDA
AREF
GND
13 12 11 10 9 8
DIGITAL
7 6 5
3 2 1 0
TX
RX
OUTPUT
+
−
RESET
INPUT
+
−
RESET
3V3
POWER
5V Gnd Vin
ANALOG IN
0 1 2 3 4 5

Cosa serve a Scratch??

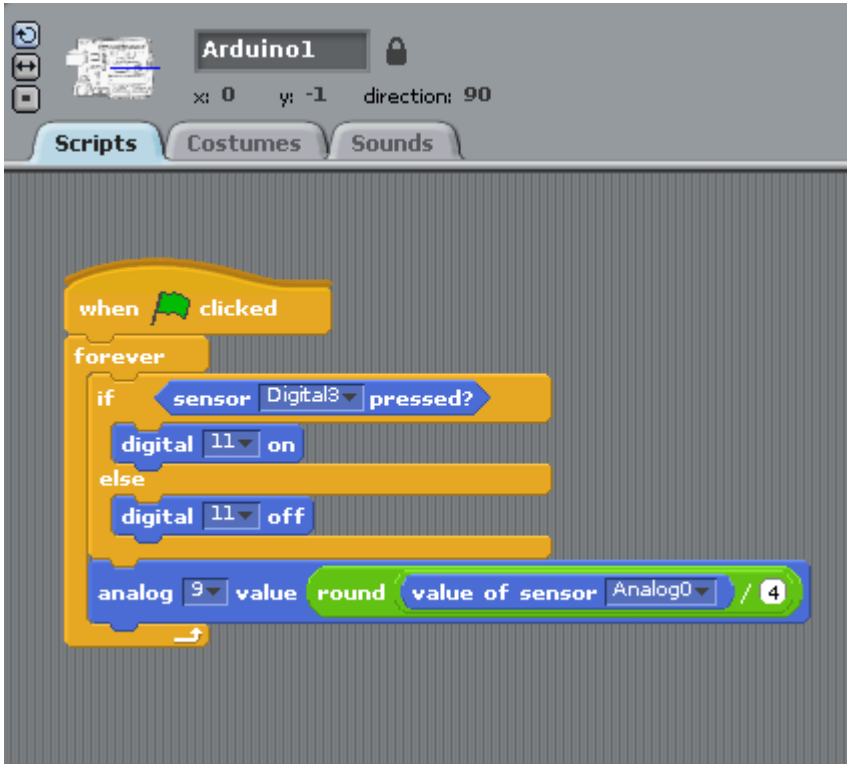


..da 0 a 1023

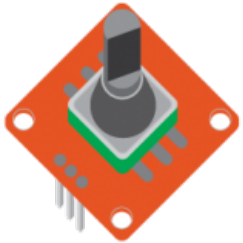
/ 4



..da 0 a 255

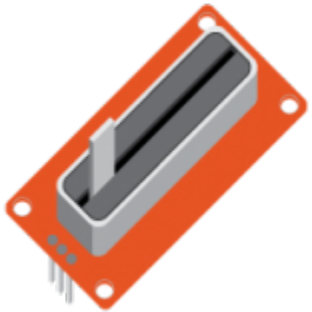


Potenziometri & Scratch

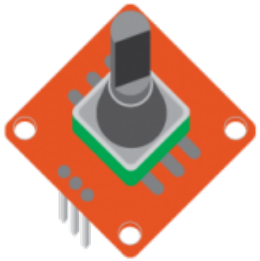


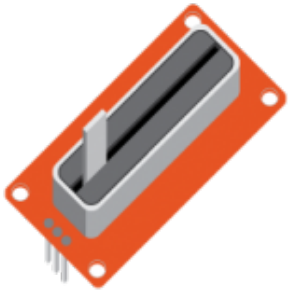
Y

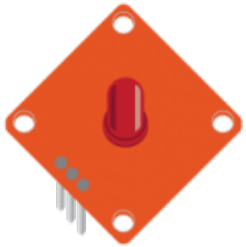
X

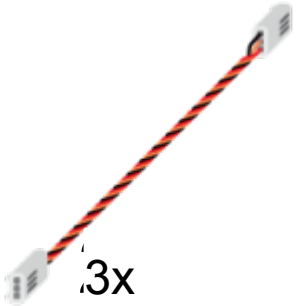


Cosa serve ad Arduino??

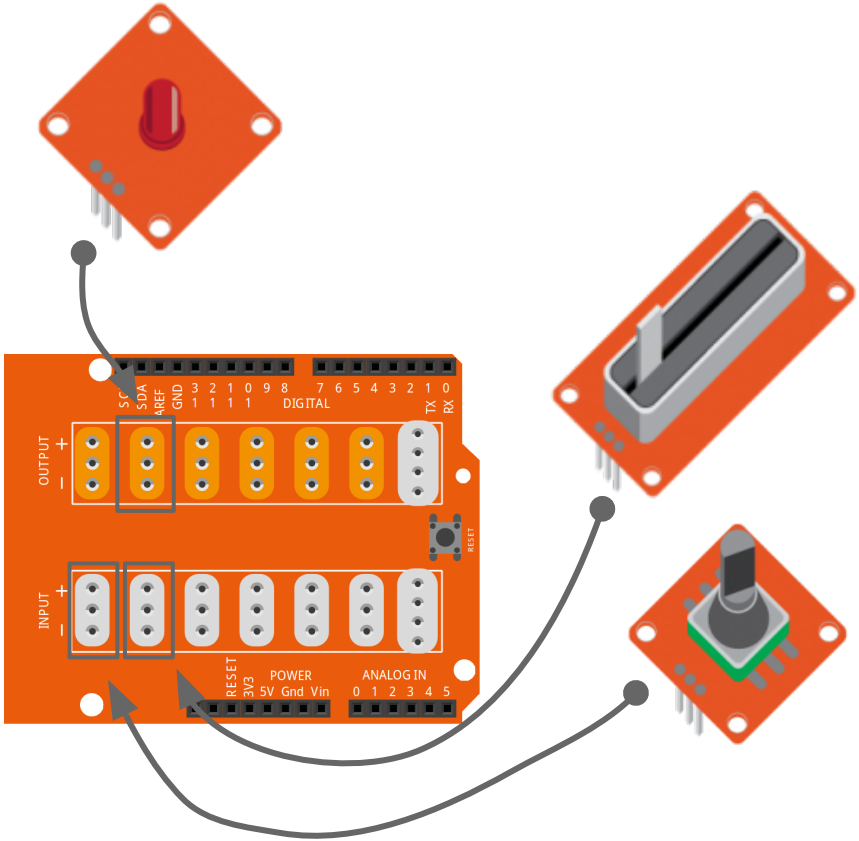






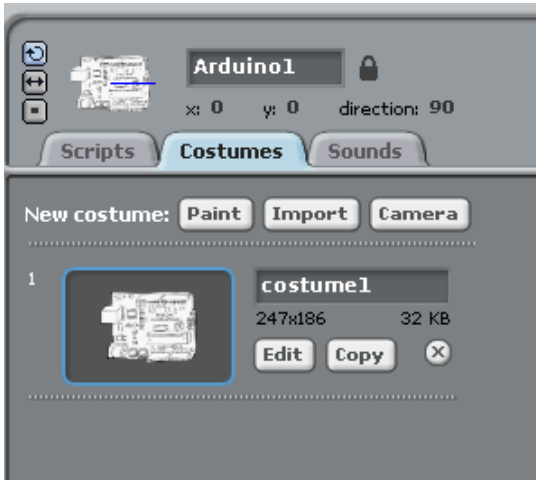


Cosa serve ad Arduino??



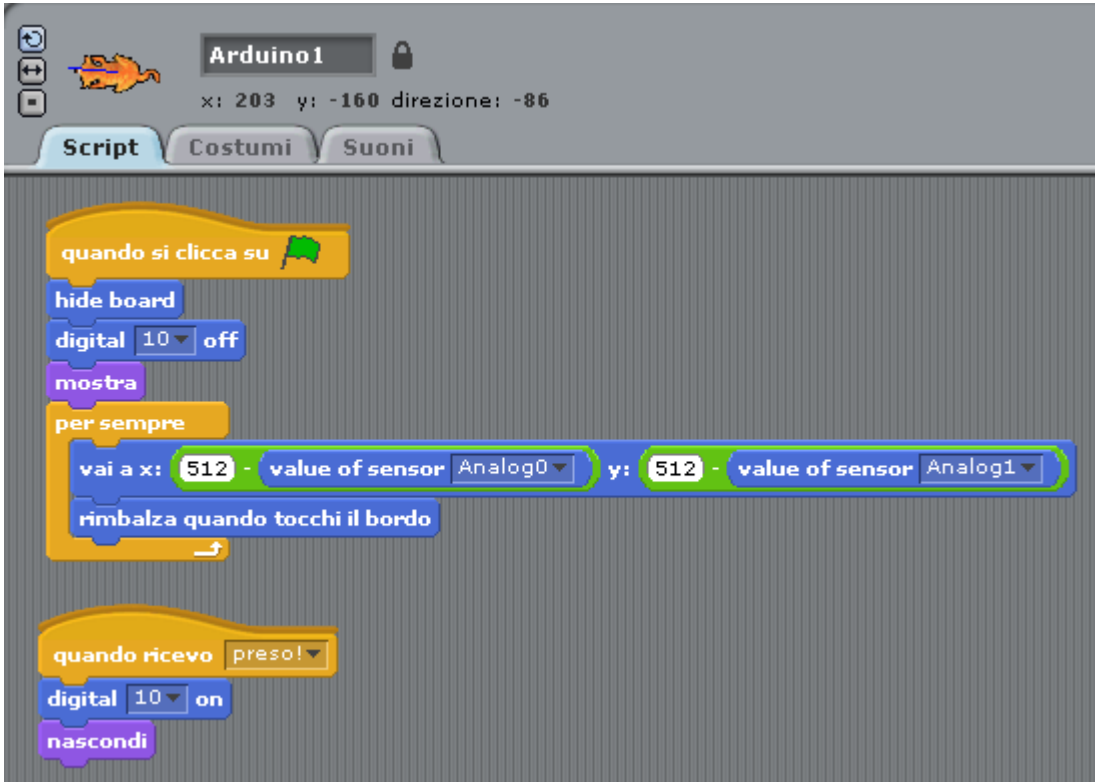
Aggiungiamo due
potenziometri
che colleghiamo
al pin **A0** e **A1**
un led al pin **D10**

Modifichiamo il costume



Cambiamo il costume di Arduino
1) Importiamo il costume gatto
2) Eliminiamo il costume Arduino

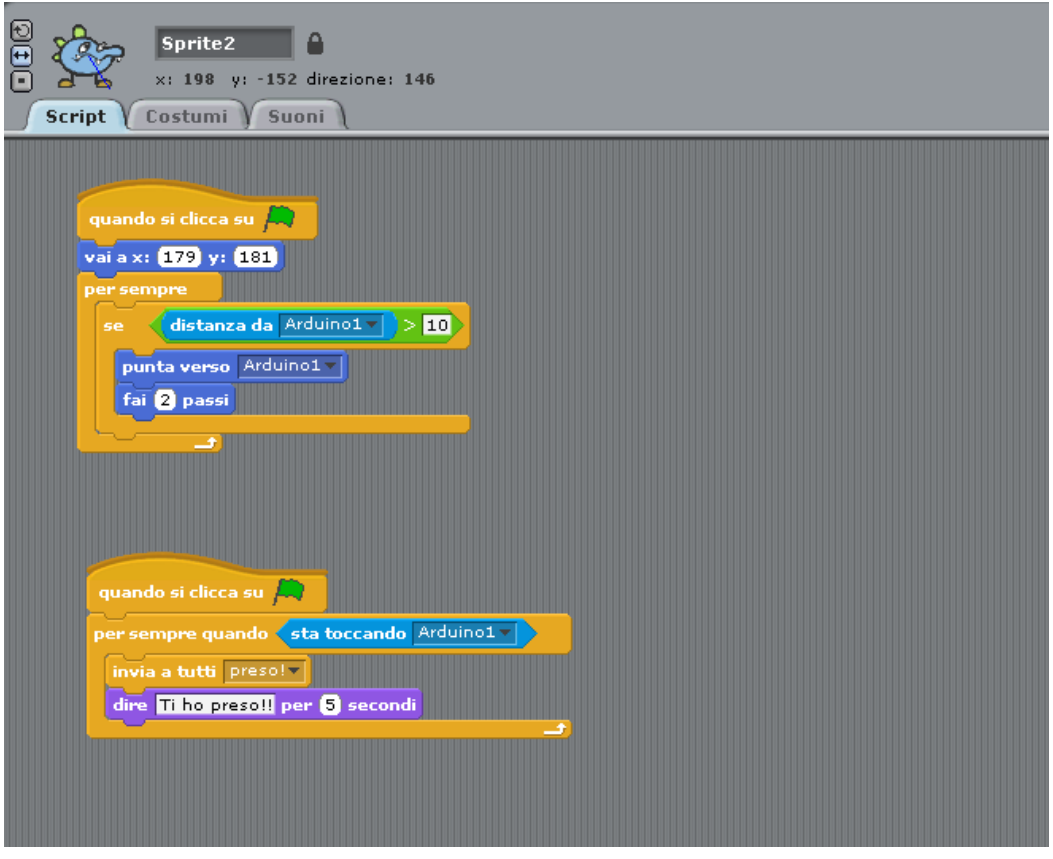
Cosa serve a Scratch??



Cosa serve a Scratch??

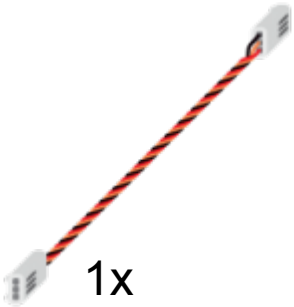
Importiamo un nuovo sprite

Cosa serve a Scratch??

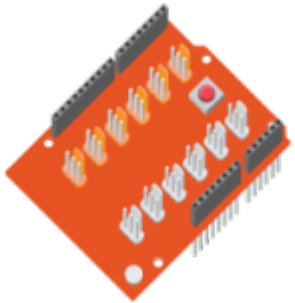


Sensore Temperatura & Scratch

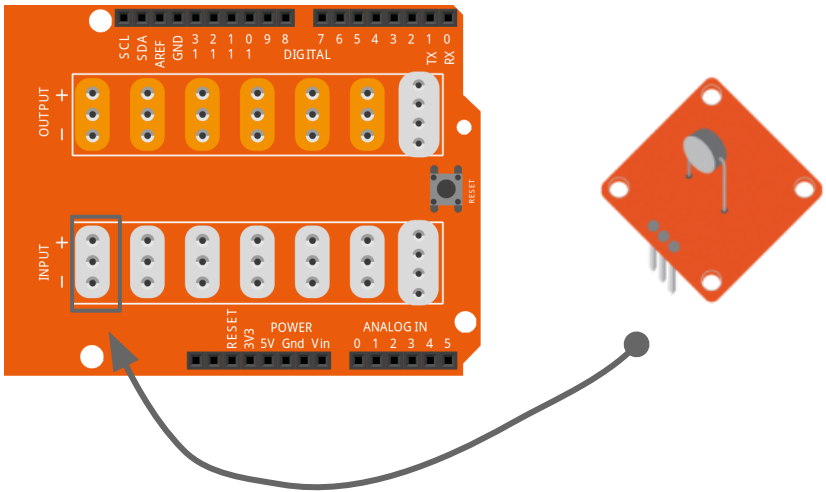
Cosa serve ad Arduino??



1x

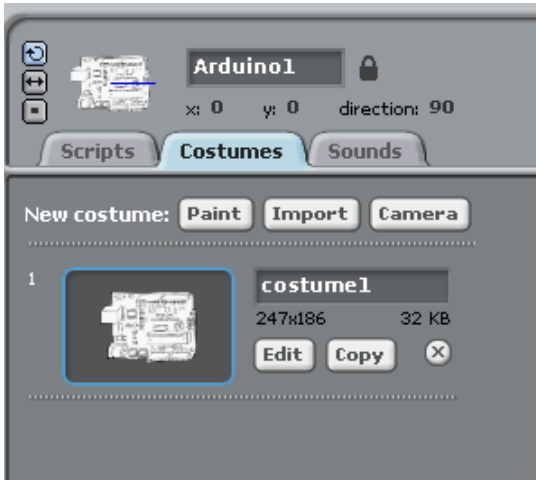


Cosa serve ad Arduino??



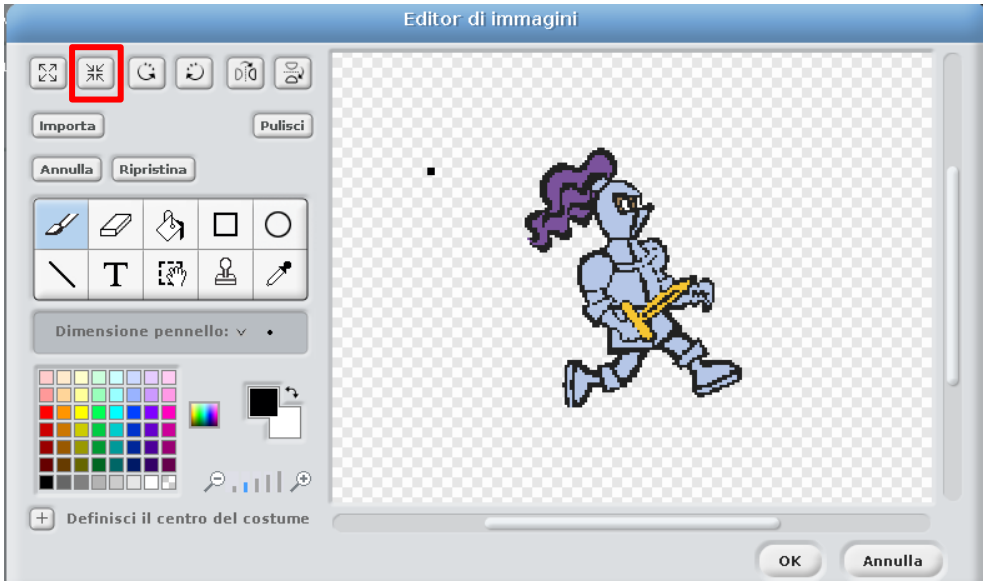
Aggiungiamo il sensore di temperatura che colleghiamo al pin **A0**

Modifichiamo il costume



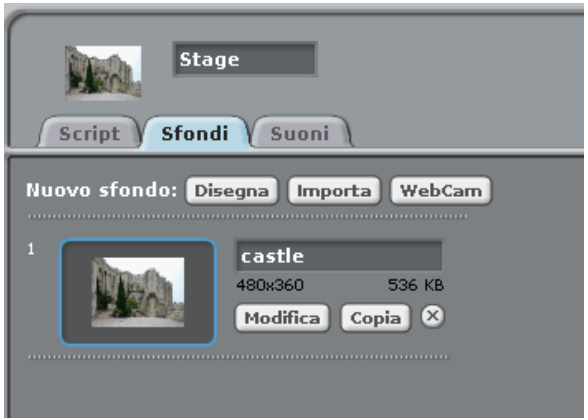
1) Importiamo il costume drago
2) Importiamo un altro costume, e scegliamo il secondo drago
3) Eliminiamo il costume Arduino

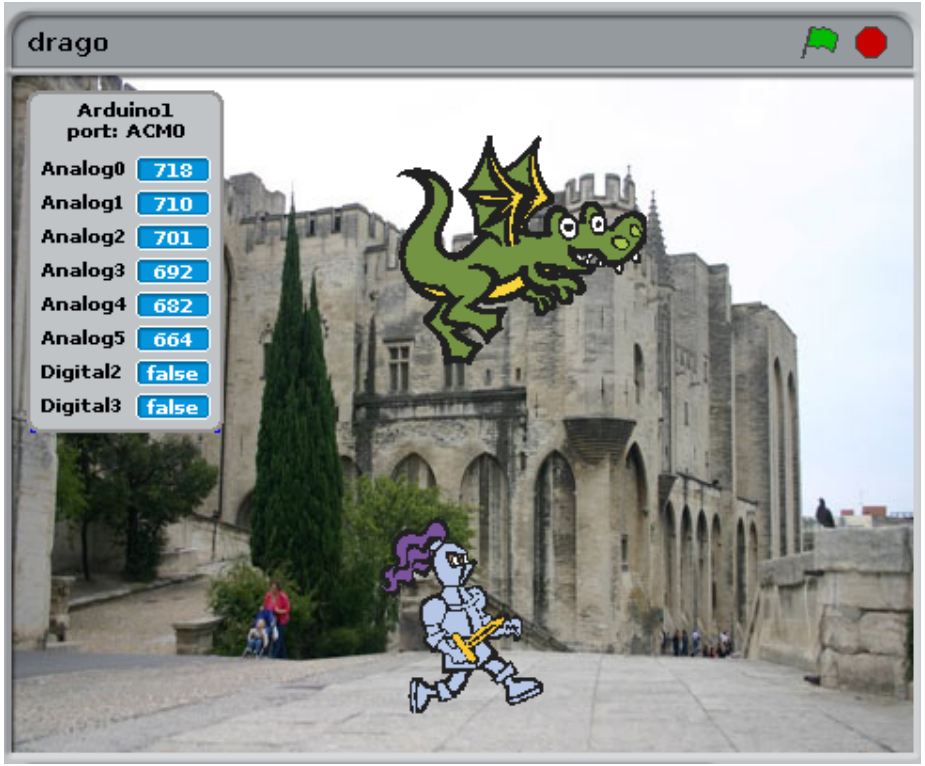
Aggiungiamo uno sprite



1) Importiamo il cavaliere
2) rimpiccioliamolo

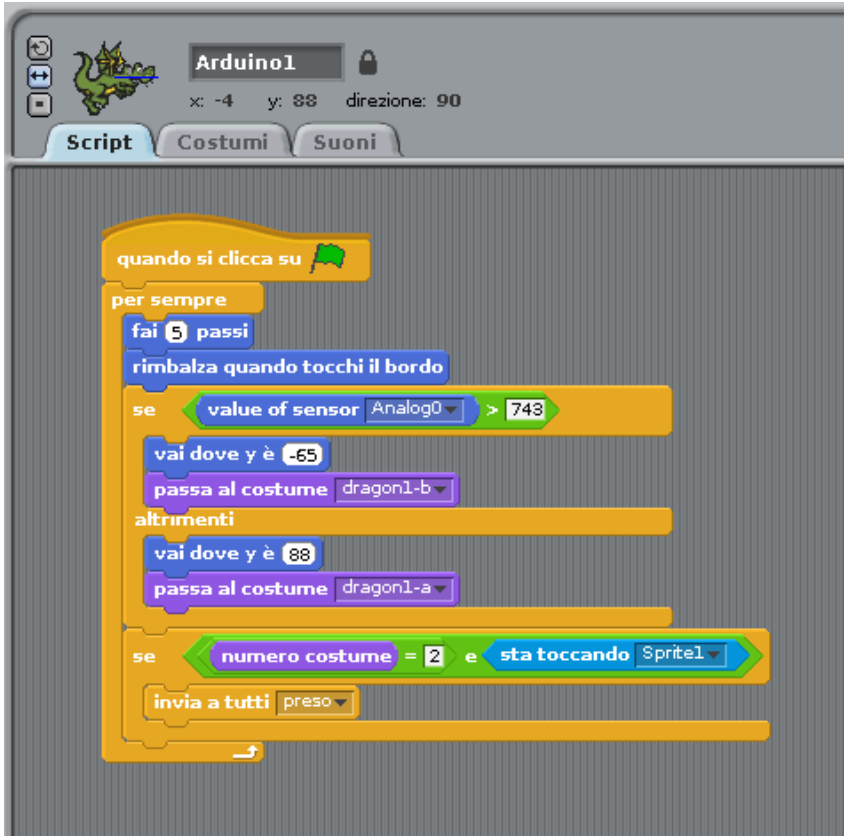
Modifichiamo lo sfondo



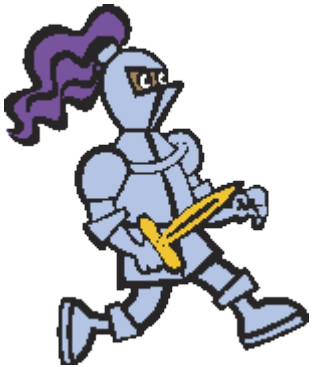


1) Importiamo il castello
2) eliminiamo lo sfondo bianco

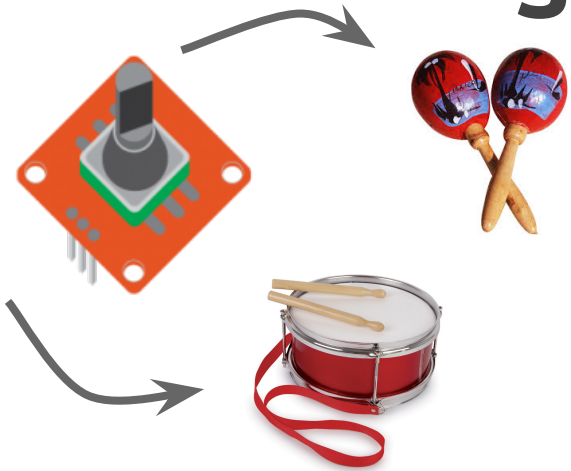
Cosa serve a Scratch??

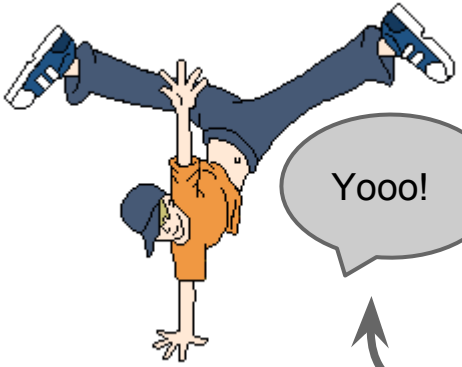


Cosa serve a Scratch??

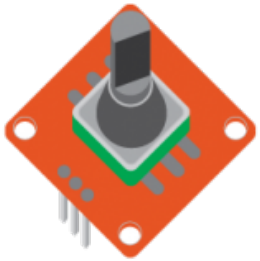


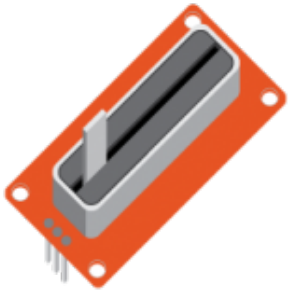
Sound & Scratch

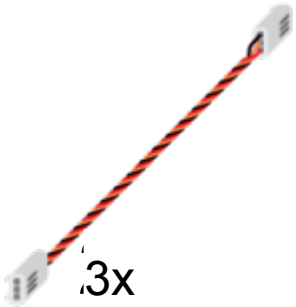




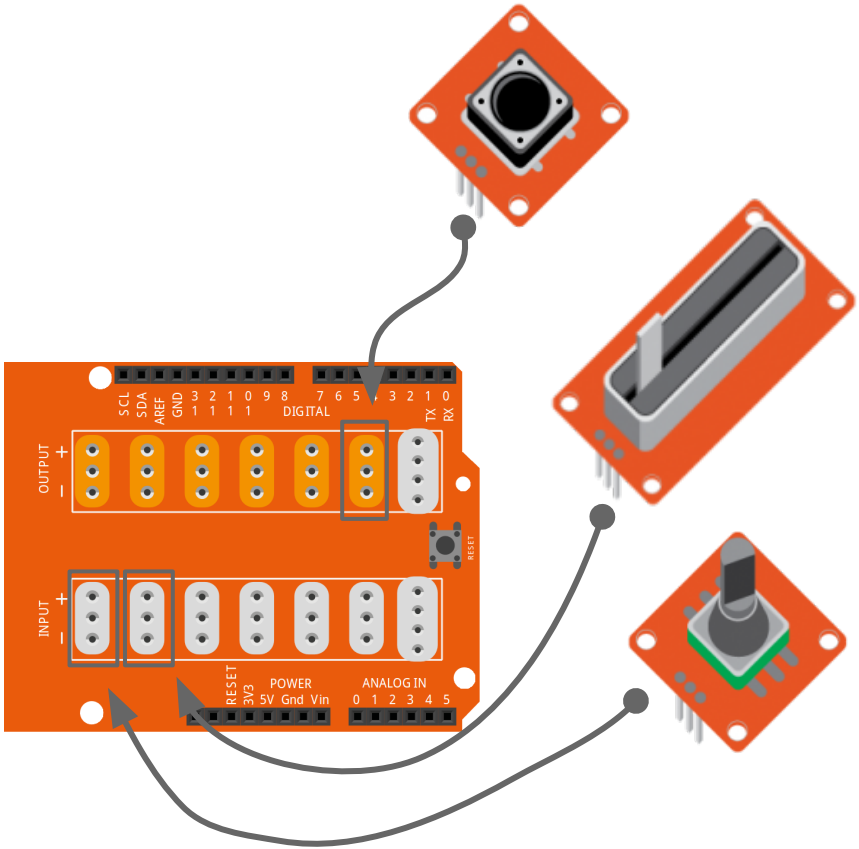
Cosa serve ad Arduino??





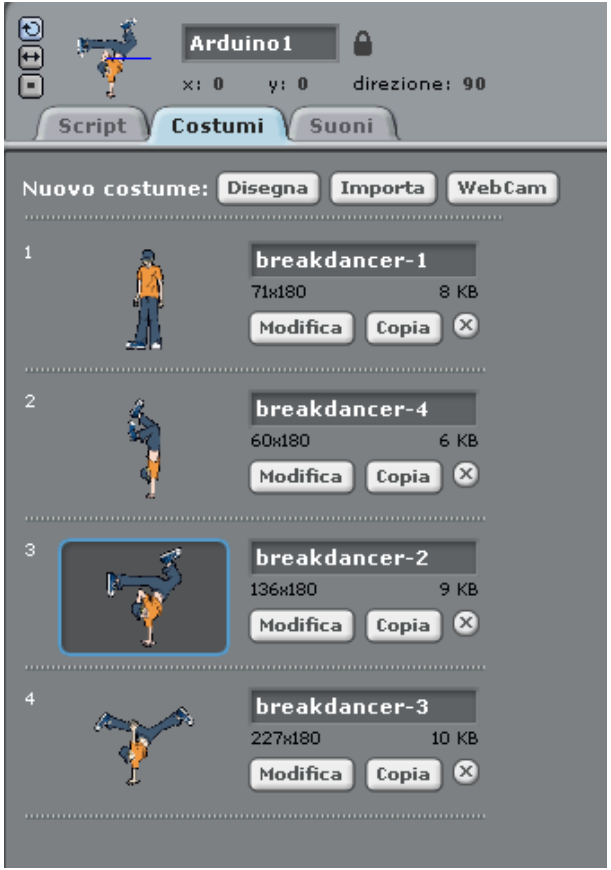


Cosa serve ad Arduino??



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

Cosa serve a Scratch??

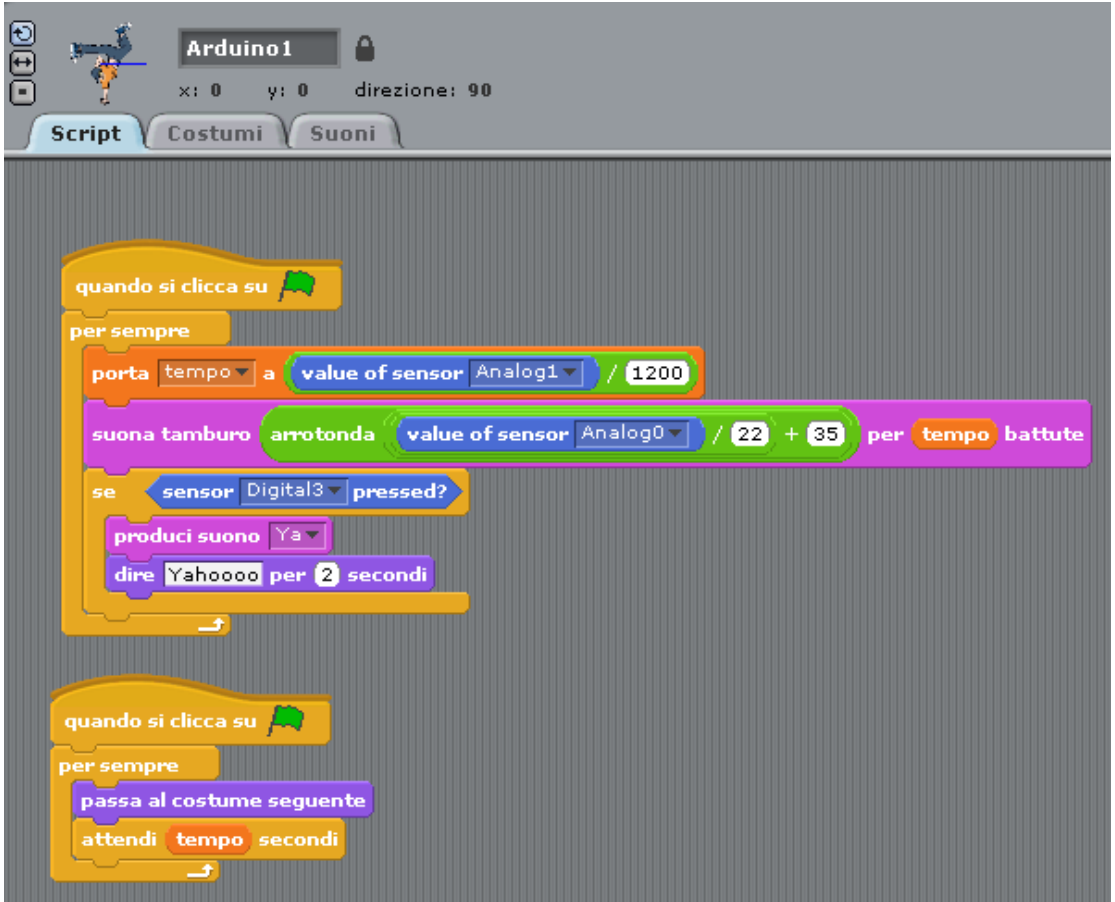


Importiamo 4 nuovi costumi

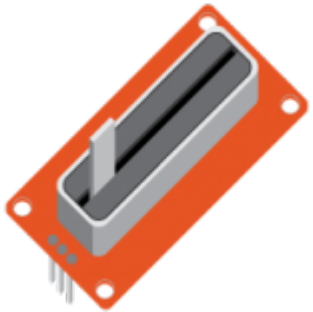
Cosa serve a Scratch??

Importiamo 1 nuovo suono

Cosa serve a Scratch??



Challenges



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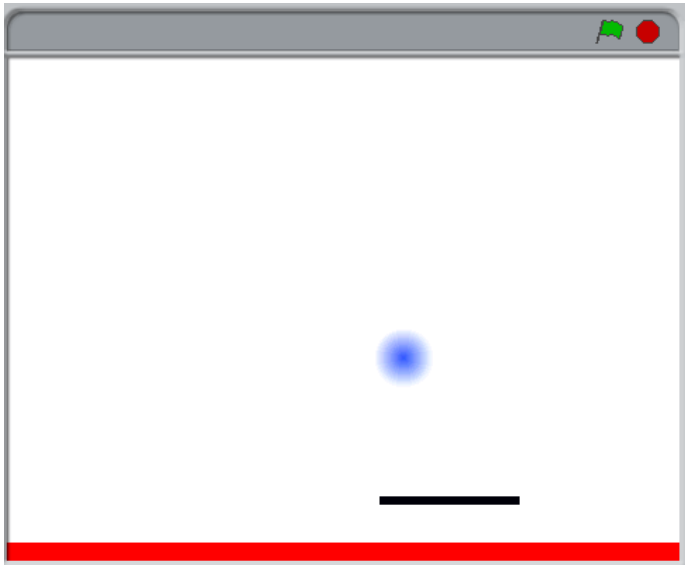
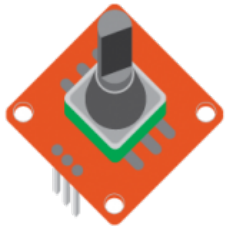


Challenges



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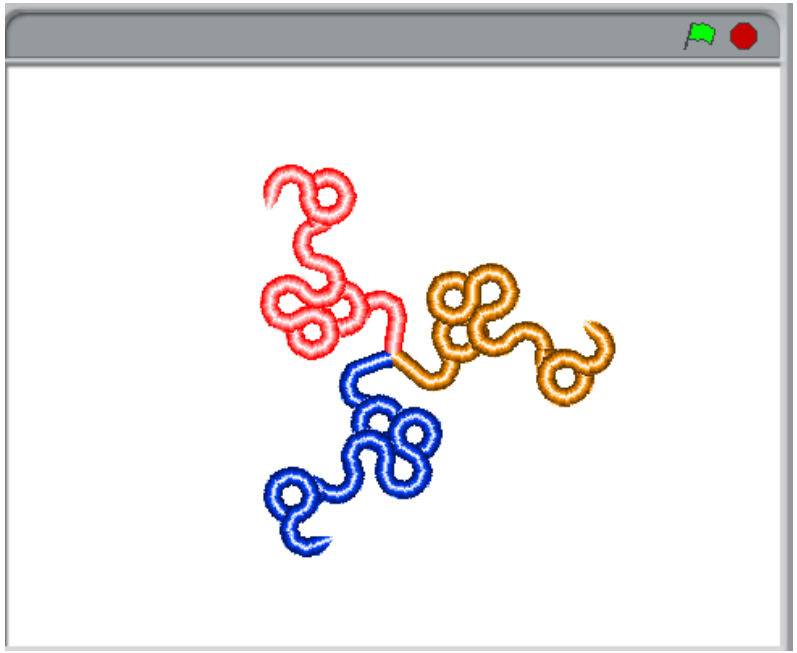
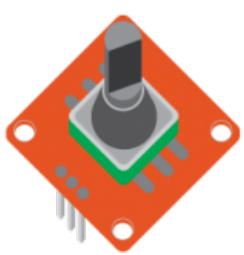
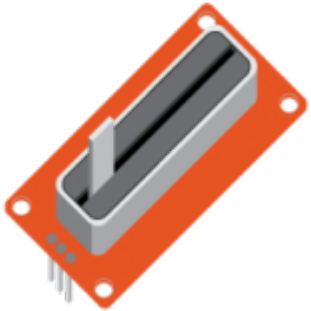


Challenges





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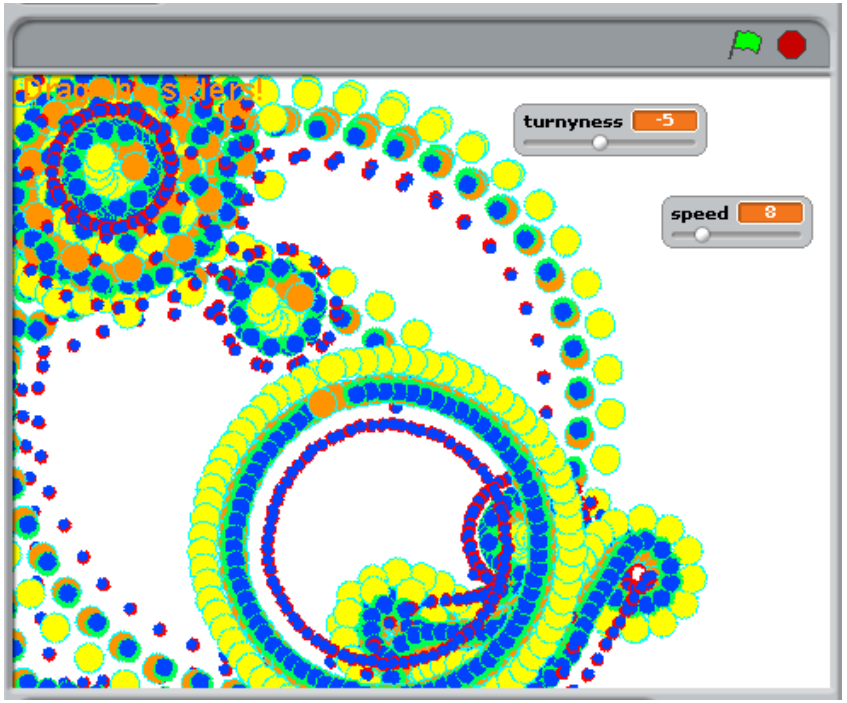
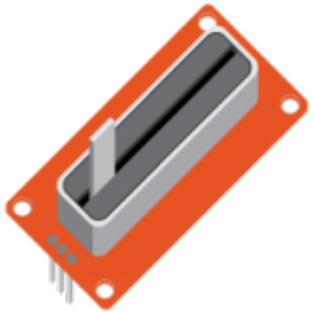


Challenges



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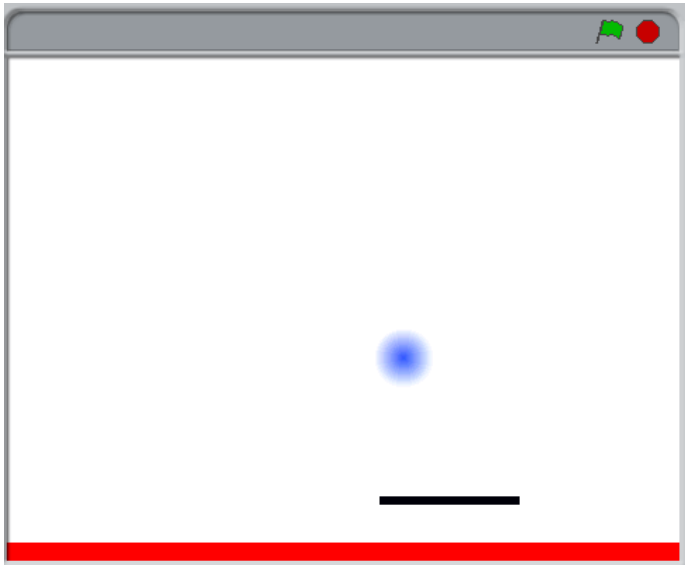
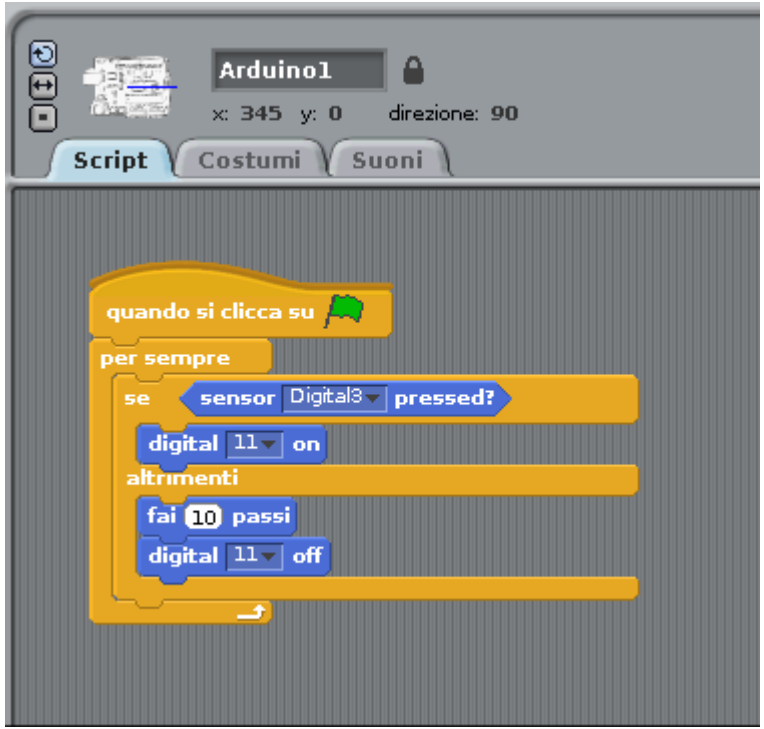


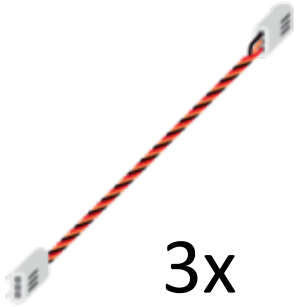
Sensore Tilt (e muovi)



uguale al bottone, cambia solo tiul al posto di bottone

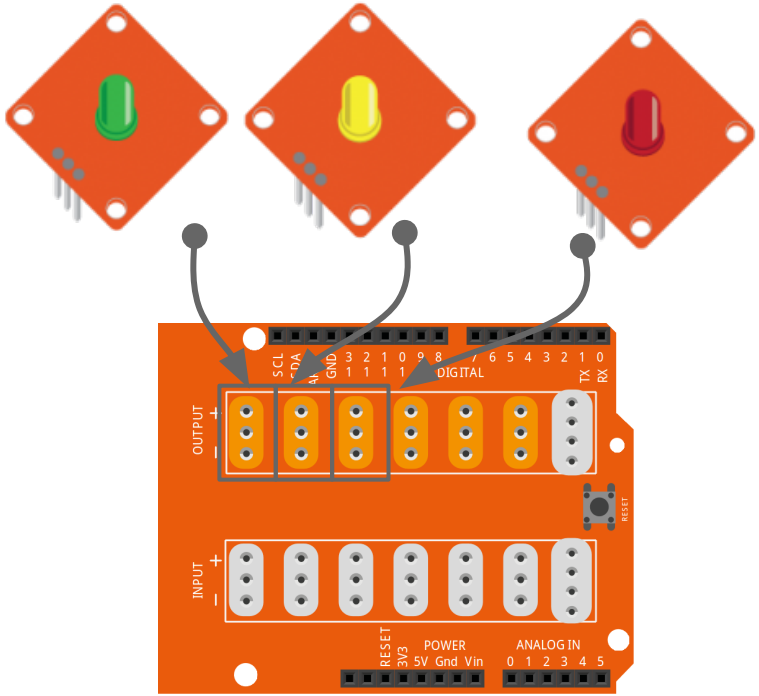
magari prima di sfondo, questo più semplice

Semaforo



3x

Cosa serve ad Arduino??



Credits:

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- Giulio Pilotto @giulio_pilotto

Foto :

- TinkerKit:
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- Fritzing Blog:
  http://blog.fritzing.org/2013/12/06/how-can-your-kids-learn-with-arduino/