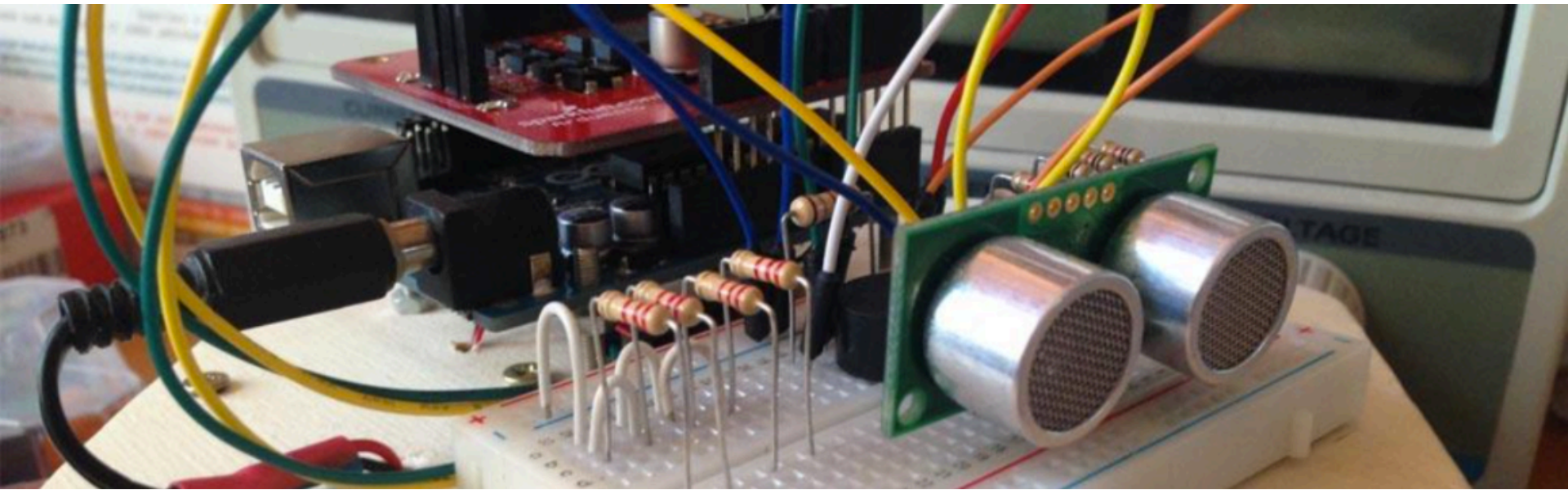# Electronic Prototyping
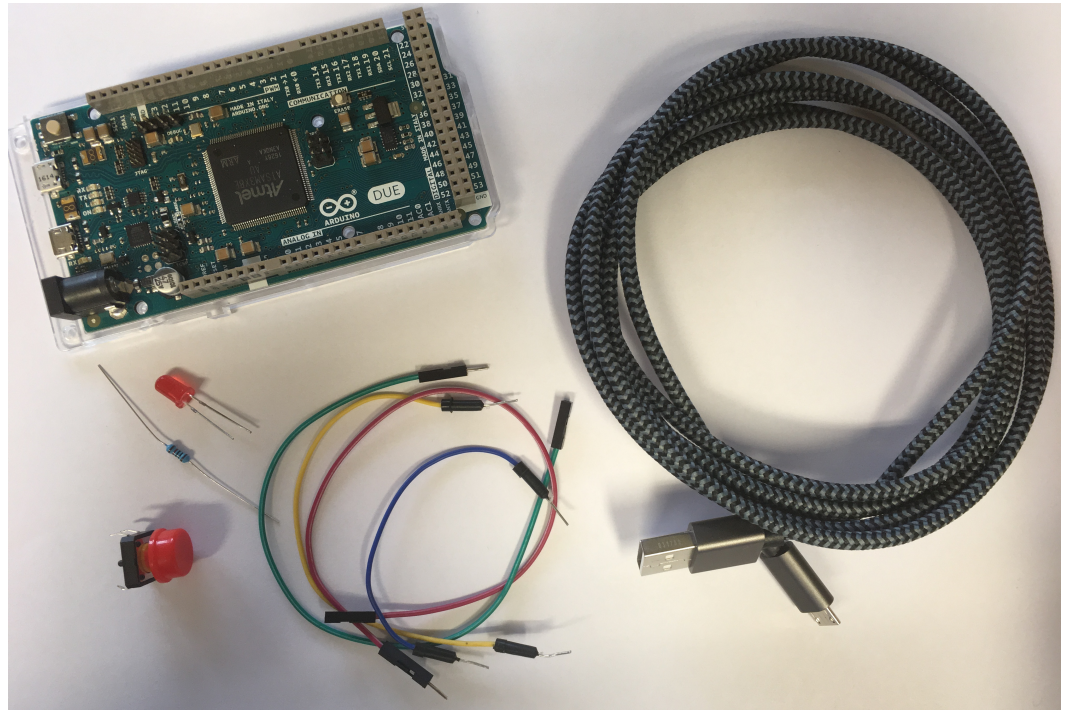## LED and BUTTON Use
Lesson 3
PhD Student Licia Di Pietro

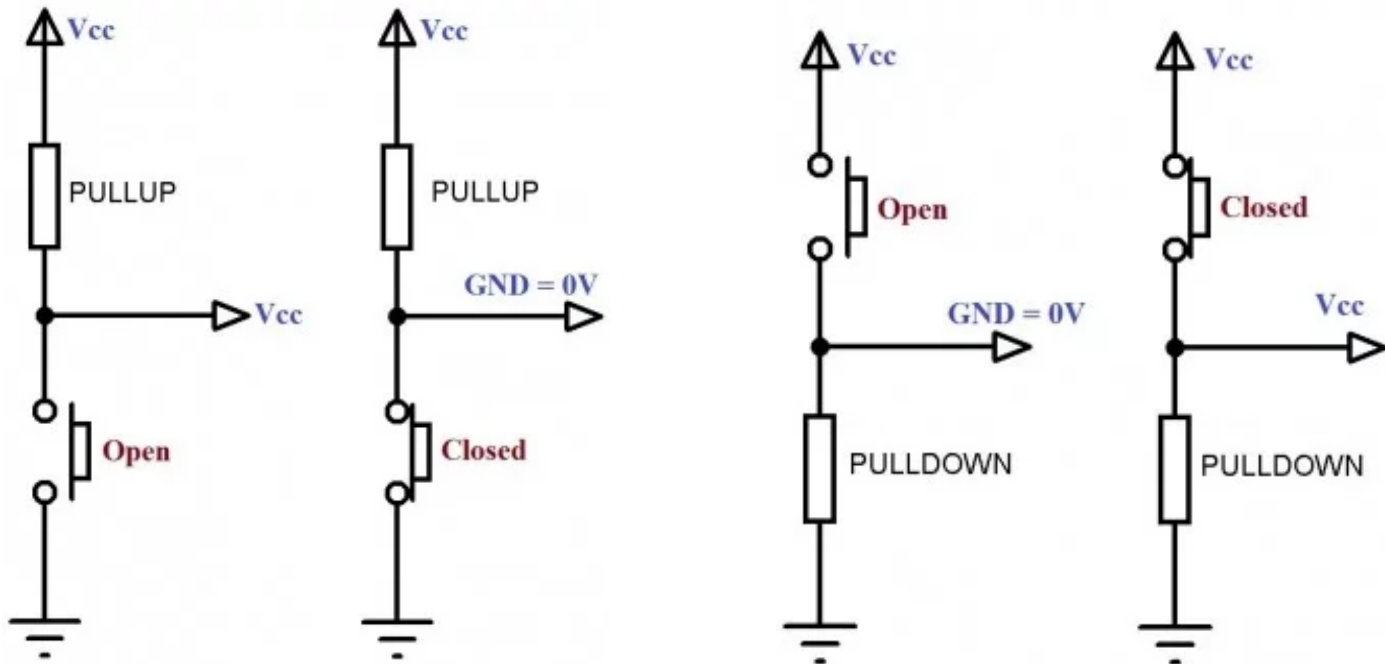# Turn on a led with a button

What we are going to use?

- Arduino DUE
- Breadboard
- USB Cable
- LED
- Button
- 10k resistance
- 220 resistance
- cables

How to connect a button?

- PULL-UP and PULL-DOWN Resistor

Internal PULL-UP Resistor

- Digital Pins of Arduino can be configured as
  - **OUTPUT**,
  - **INPUT** or
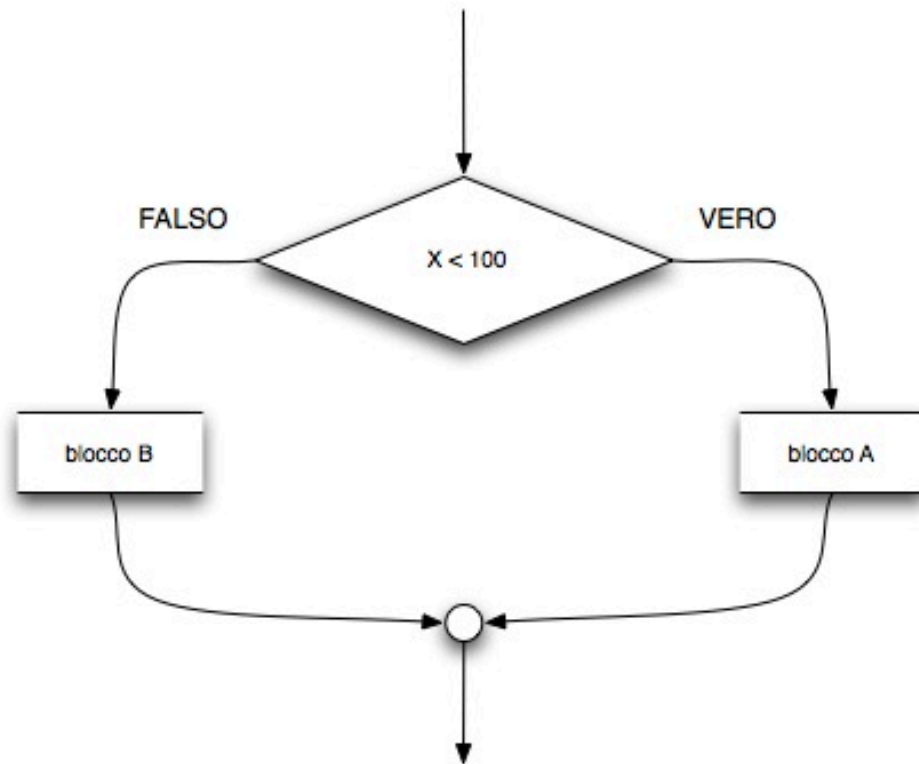 - **INPUT_PULLUP**

 mode using **pinMode()** function.

- INPUT_PULLUP mode is used to enable the Internal PULL-UP Resistor.

- The value of Internal PULL-UP resistor of Arduino Uno is about 20-50KΩ

- The value of Internal PULL-UP resistor of Arduino DUE is about 100KΩ

Example 1: Arduino Code

- Turn on a led with a button:
  - If Button pressed → Turn on a LED
  - Else → Turn off a LED

Open Example 1 in the share folder

Example 1: Flux Diagram

Example 2: Arduino Code

- Use the button as a switch to turn on a LED
  - Button press → turn on the led
  - Button press the second time → turn off the led

  Open Example 2 in the share folder

Example 3: Arduino Code

Open Example 3 in the share folder

Example 4: Arduino Code

Open Example 4 in the share folder

Exercise

Create a program that performs this function:

- **when a button is pressed the LED diode flashes,**

- **when the button is pressed a second time the LED stops blinking and it is always turn on**