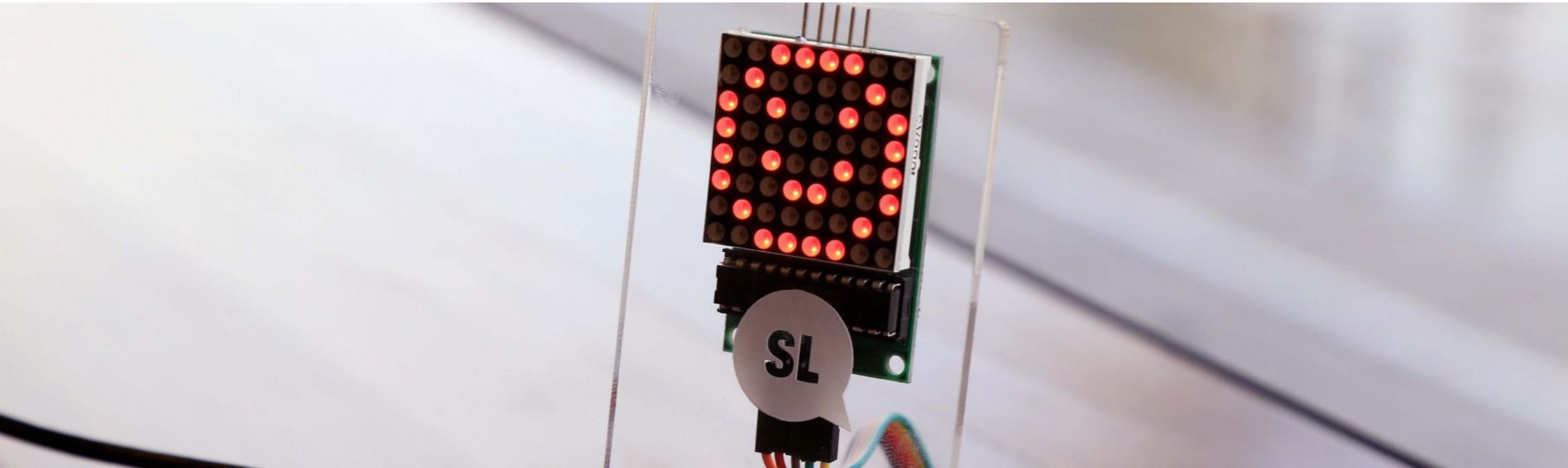


# Desktop Oddity (Online)

An intro to Arduino microcontrollers!



# BEFORE WE START

- Make sure you're comfortable!
  - Workspace
  - Sitting position
  - Distractions (screens, pets, noise)
- How we will be working
  - Workflow
  - [Wiki](#)
  - Links
  - Questions and troubleshooting
- What do we need?
  - Desktop Oddity Kit (next slide)
  - No tools required

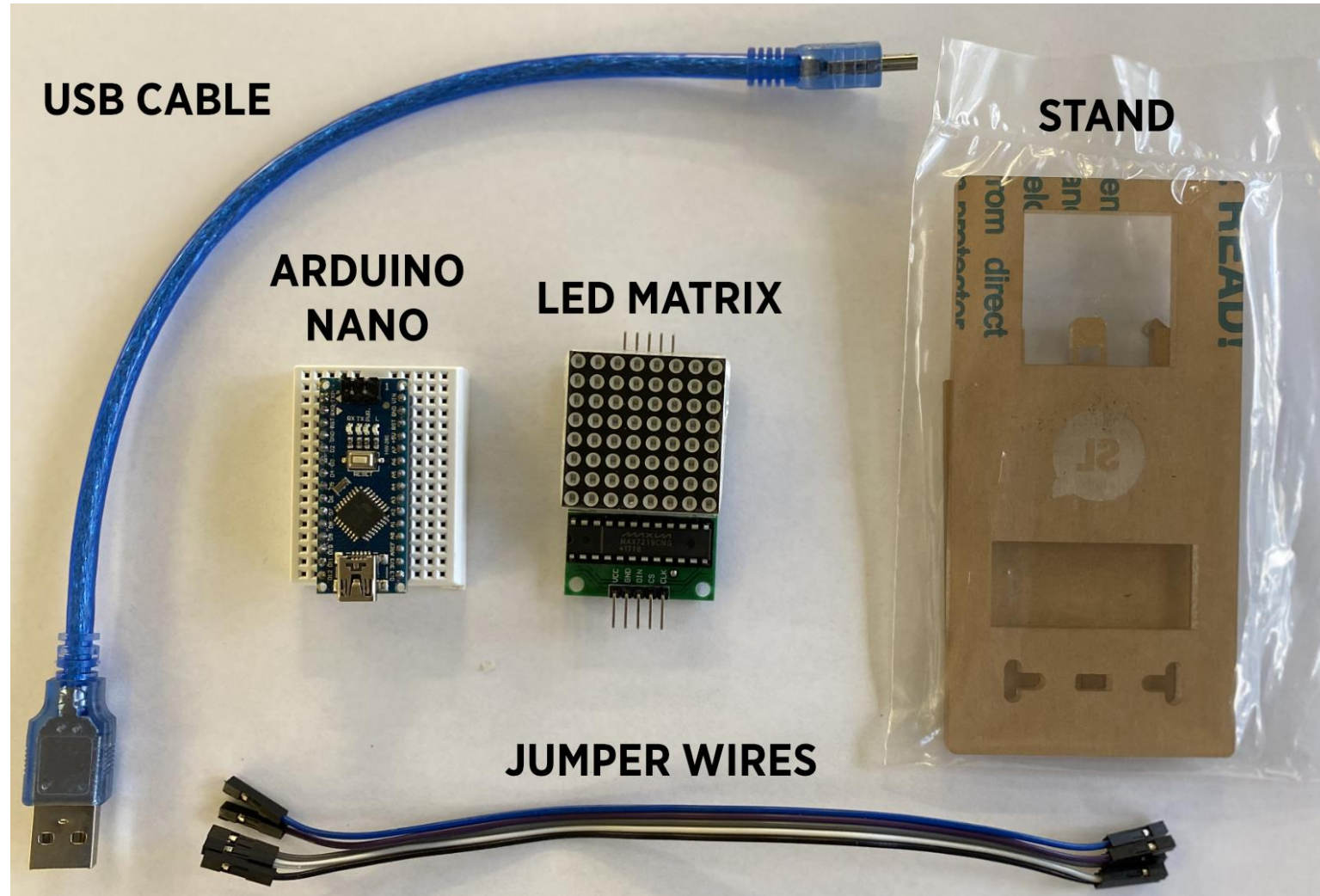
## Session 1

- Intro to Arduino and microcontrollers
- Setting up the Arduino IDE and the Nano
- Getting the project files ready

## Session 2

- Connecting the LED Matrix
- Playing around with the code
- What comes next?

# WHAT'S IN YOUR KITS?



# WHAT IS A MICROCONTROLLER?

- A microcontroller (or MCU for microcontroller unit) is a small computer on a single integrated circuit.
- one or more CPUs (processor cores)
- memory
- programmable input/output peripherals
- can be mixed signal devices interacting with
  - digital signals (0,1)
  - analogue signals (0.2, 0.567, 0.99, 1.0)

# WHY USE AN MCU?

Microcontrollers are small, low powered and robust, making them perfect for [embedded systems](#) such as:

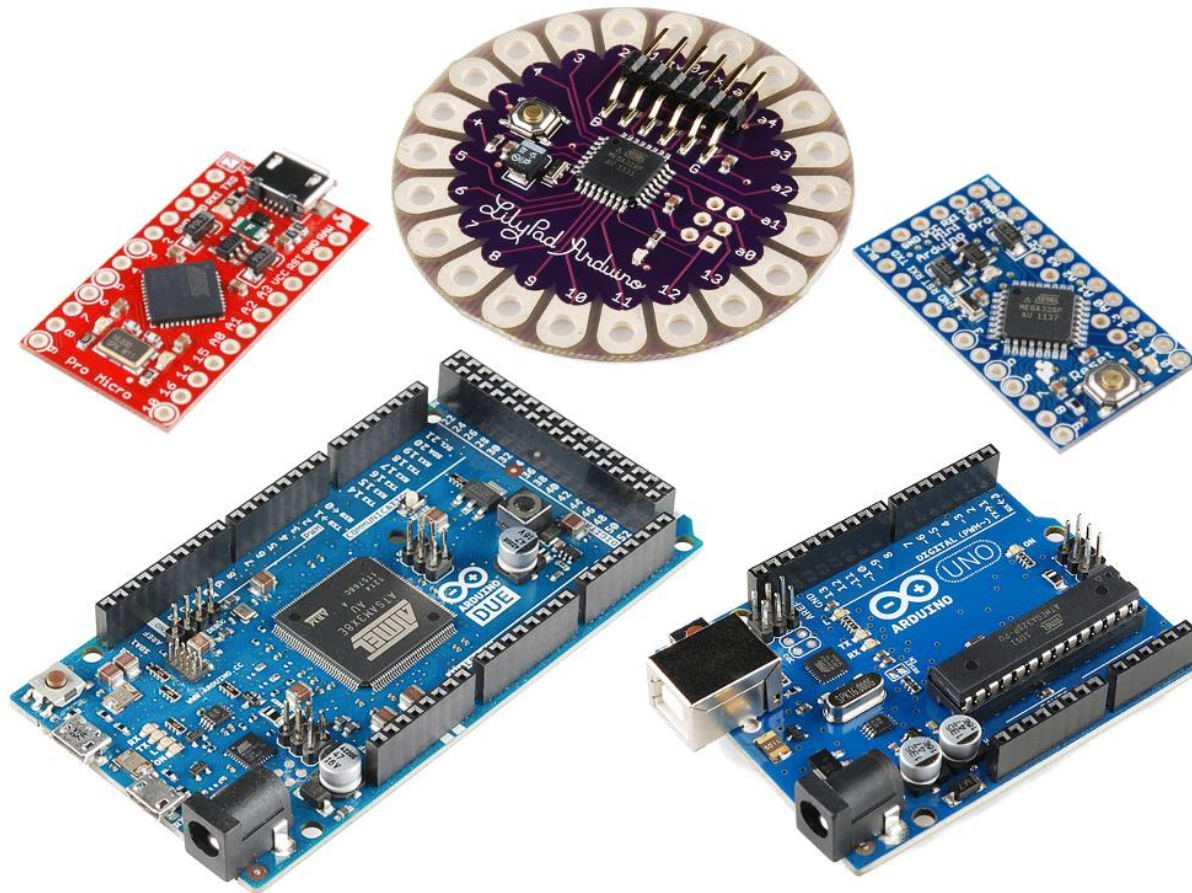
- Medical devices
- Remote controls
- Office machines
- Appliances
- Power tools
- Toys
- Smart Home devices
- Art installations

# WHAT IS ARDUINO?

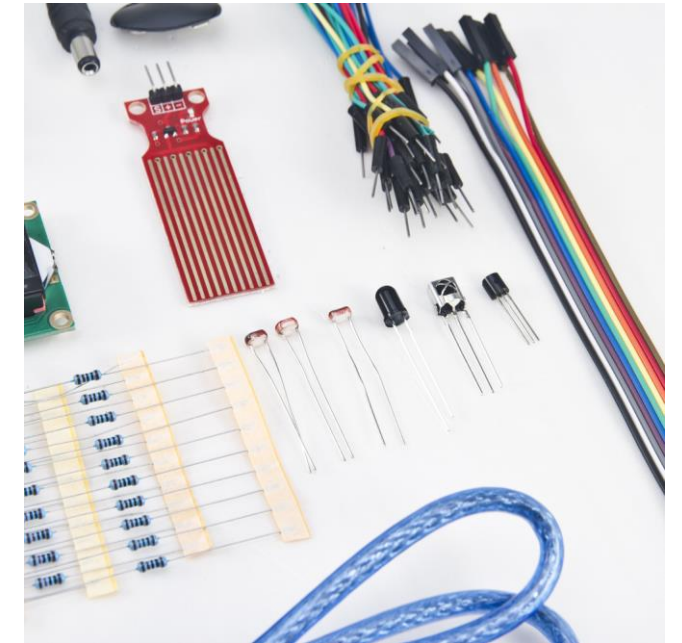
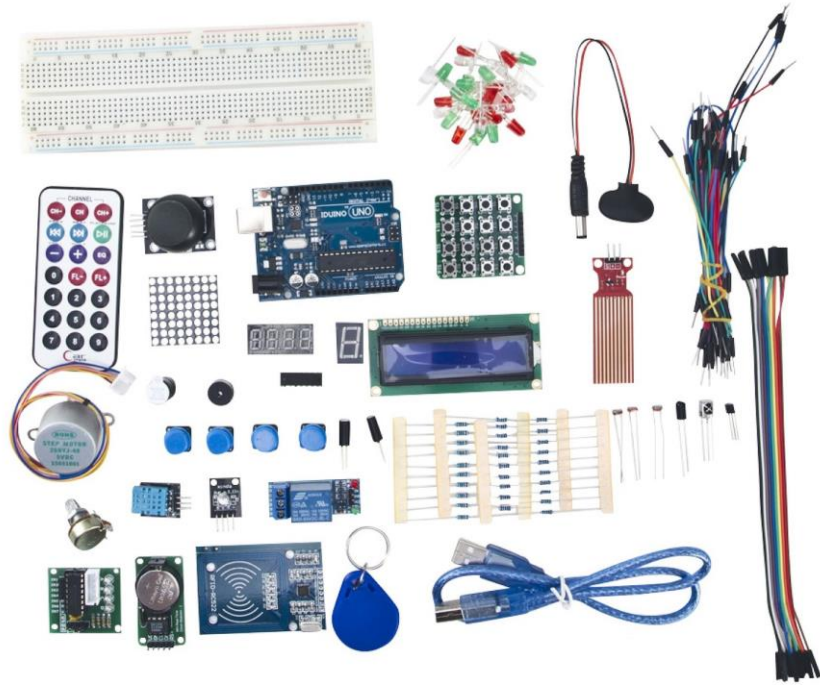
Arduino is an open source computer hardware and software company, project, and user community.

- The hardware is based on the Amtel 8-bit AVR MCU
- The software uses the Processing IDE, with a simplified version of the Java language (also supports C/C++)
- Open source has led to the creation of a huge range of
  - clones
  - compatible devices
  - peripherals
- A strong community means
  - “Someone, Somewhere has solved the problem”
  - we can run this workshop using and adapting existing resources

# ARDUINOS ...

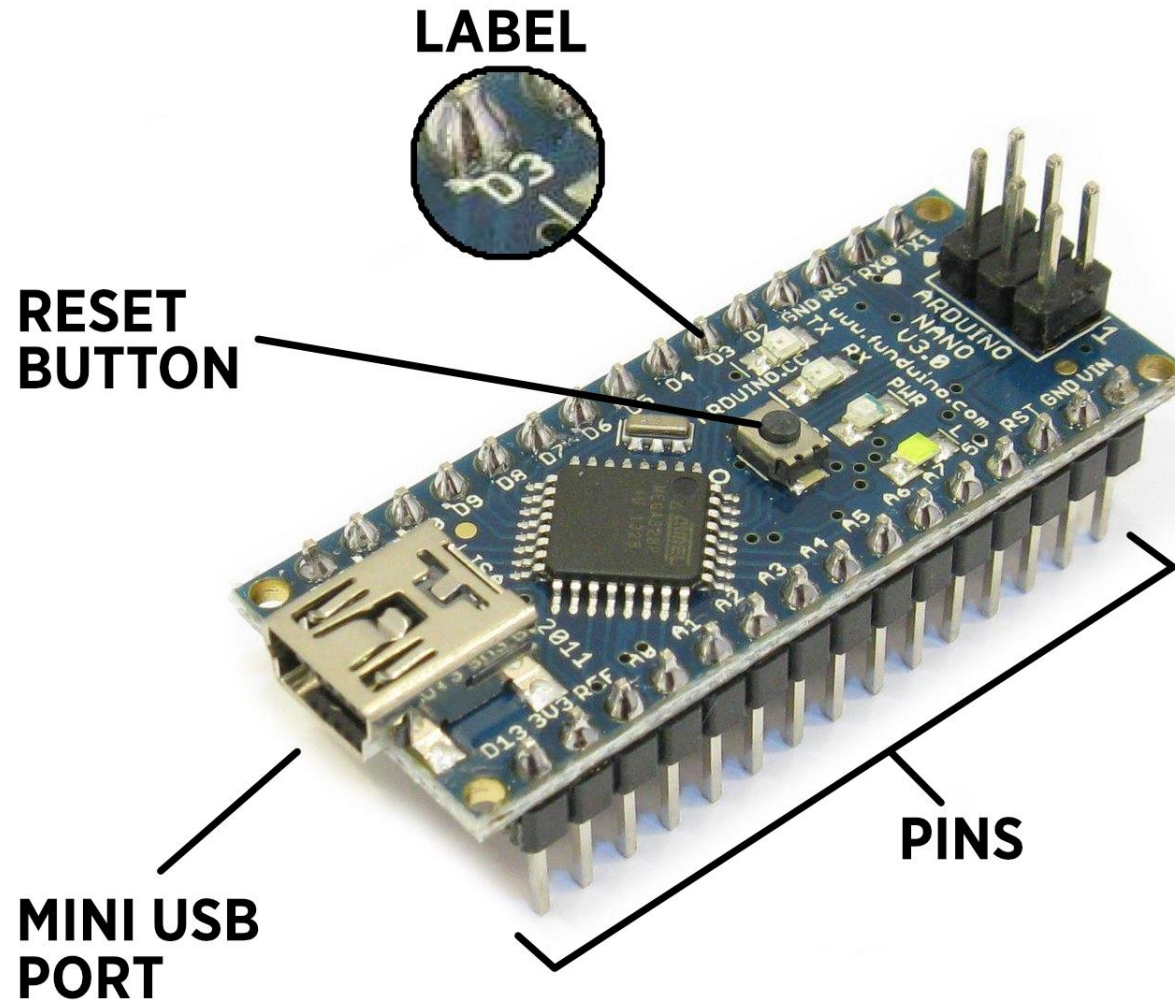


# PERIPHERALS





# ARDUINO NANO



# CONNECTING THE NANO

- [Windows 10](#)
- [macOS 10.14+](#) (Mojave, Catalina)
- Mac OS X 10.13 or older ([download](#) and install drivers)

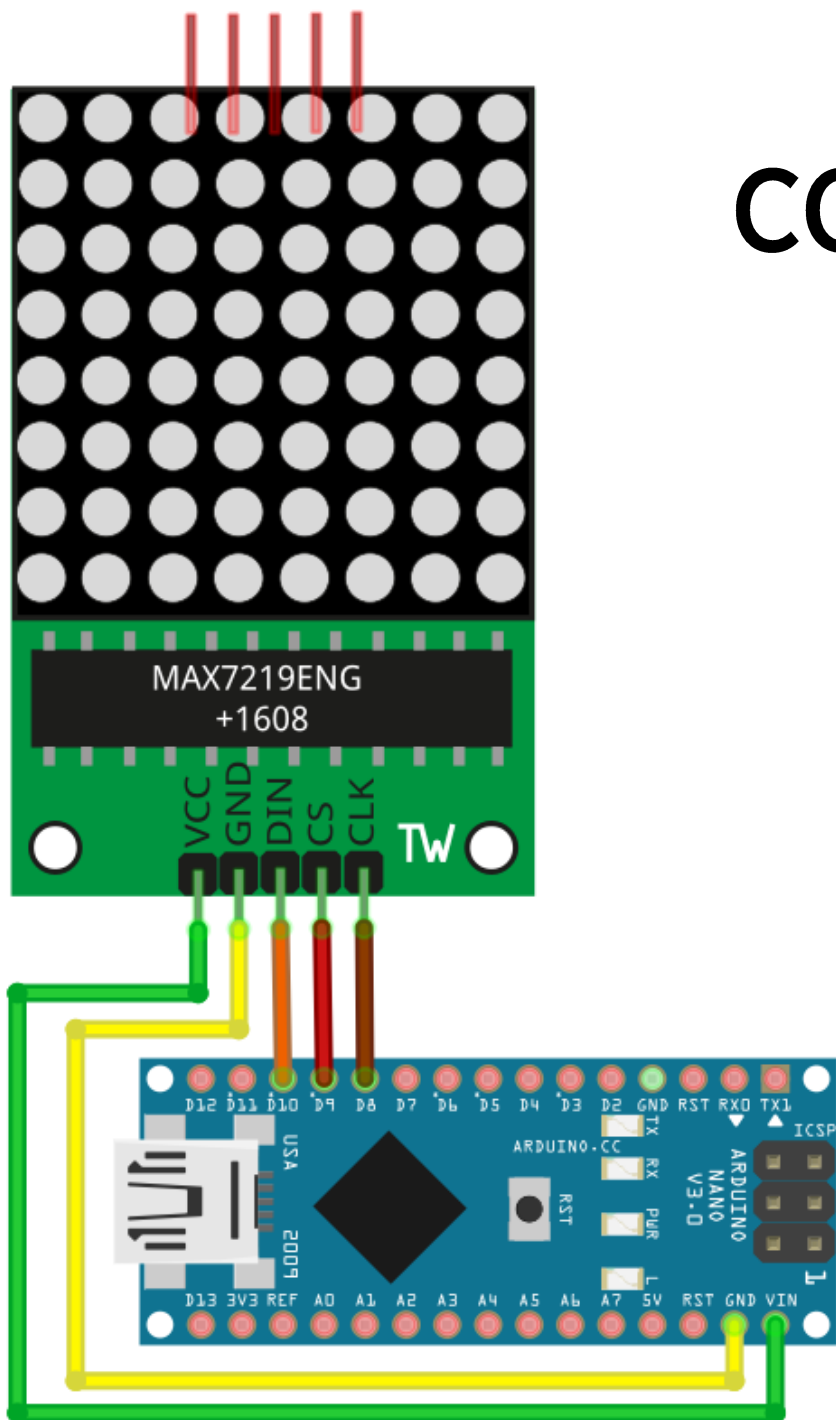


**Always disconnect your Arduino from power when working with any of the hardware**

# ARDUINO CREATE

- <https://create.arduino.cc>
- [Arduino Create wiki page](#)
- Sign up if you haven't
- Click the link in the confirmation email

# CONNECTING THE LED MATRIX



MATRIX	NANO
VCC	VIN
GND	GND
DIN	D10
CS	D9
CLK	D8