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INTRODUCTION TO ARDUINO

Sistemas Embutidos 2020/21
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References

- Arduino site and wikis, examples, tutorial

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What's Arduino

- From the [company's site](#):

"Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists and anyone interested in creating interactive objects or environments."

- You can build the boards or buy them preassembled.
- Software and hardware are open source
- More on [What is Arduino?](#)

These are our Arduinos

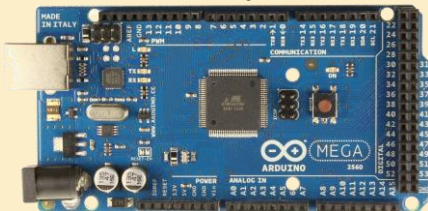
Arduino UNO



Arduino Mega ADK



Arduino Mega 2560



Arduino Galileo



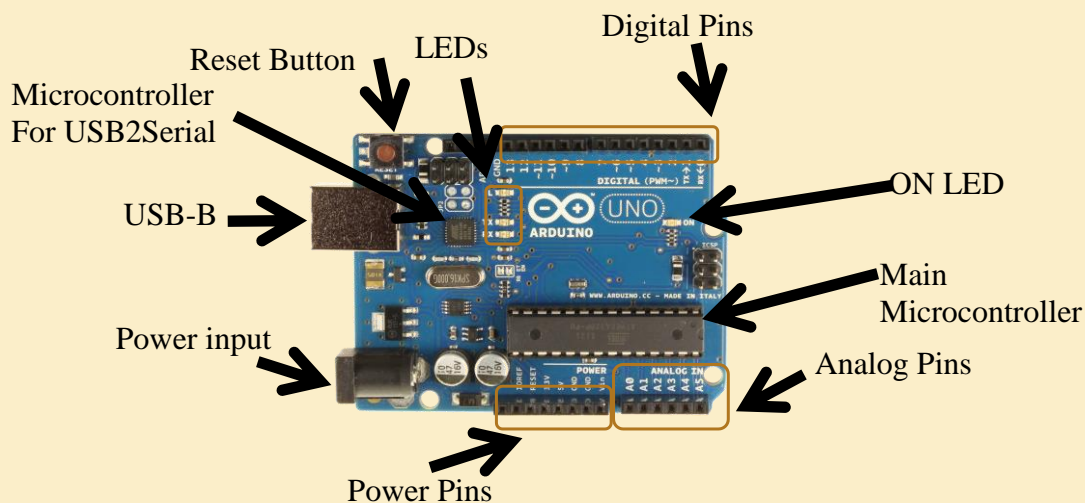
Arduinos' Specs

- ADK has a USB host
 - It is intended to work with Android and its Accessory Development Kit (ADK)

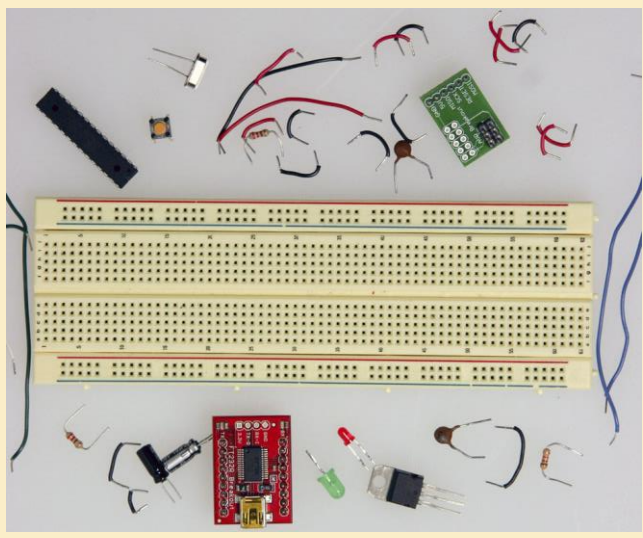
Name	Processor	Operating Voltage/Input Voltage	CPU	Analog In/Out	Digital IO/PWM	EEPROM [KB]	SRAM [KB]	Flash [KB]	USB	UART
Uno	ATmega328	5 V/7-12 V	16 Mhz	6/0	14/6	1	2	32	Regular	1
Mega 2560	ATmega2560	5 V/7-12 V	16 Mhz	16/0	54/15	4	8	256	Regular	4
Mega ADK	ATmega2560	5 V/7-12 V	16 Mhz	16/0	54/15	4	8	256	Regular/Host	4
Galileo V1	Quark SoC X1000	3.3 V/5 V	400 Mhz	6/0	14/5	11	512	8192	Regular/Host	2

DRAM 256 MB
Mini-PCI
10/100 Ethernet

Arduino UNO



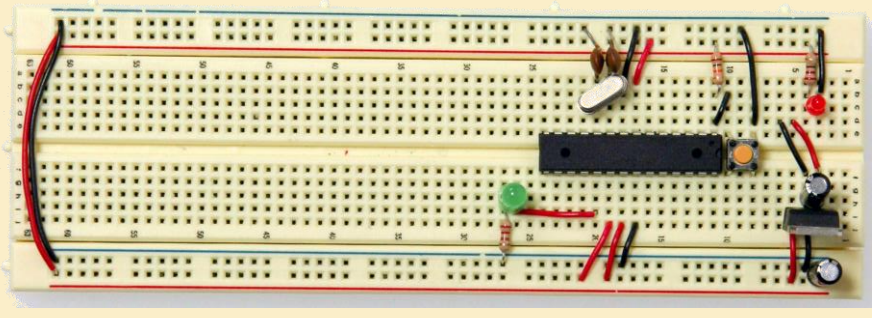
Breadboard and components



From [Arduino.cc](https://www.arduino.cc)

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Breadboard and components



From [Arduino.cc](https://www.arduino.cc)

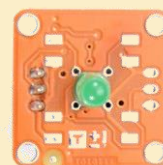
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Memories

- 3 pools in the microcontroller:
 - *Flash memory (program space)*, is where the *Arduino sketch* is stored.
 - *SRAM (static random access memory)* is where the sketch creates and manipulates variables when it runs.
 - *EEPROM* is memory space that programmers can use to store long-term information. (use [EEPROM library](#))
- As seen, SRAM in UNO is 2k → use it sparingly
 - can store (immutable) variables in Flash ([PROGMEM](#))
 - Examples are strings for LCD display
 - See the link for more

From [Arduino.cc Memory](#)

Electronics Quickie - Tinkerkit



Electronics quickie - Breadboards

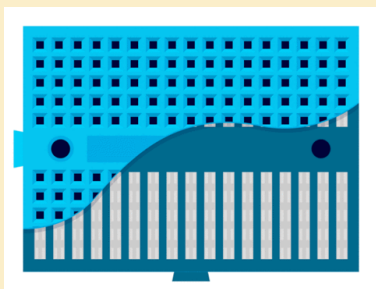


Image from [Pimoroni](#)

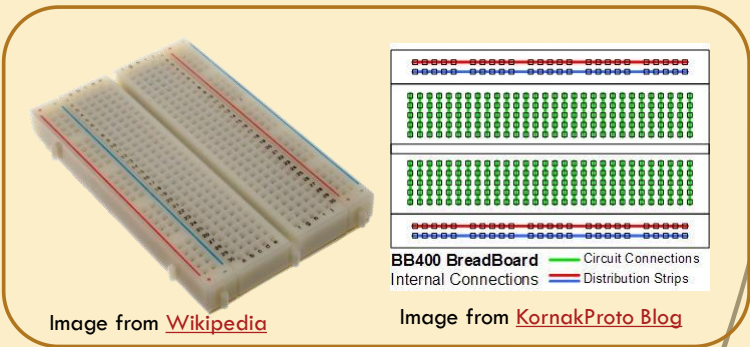
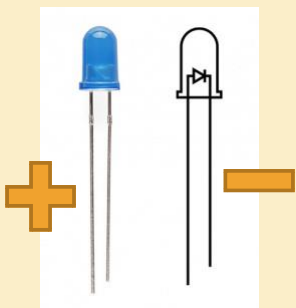


Image from [Wikipedia](#)

Image from [KornakProto Blog](#)

LEDs and resistors



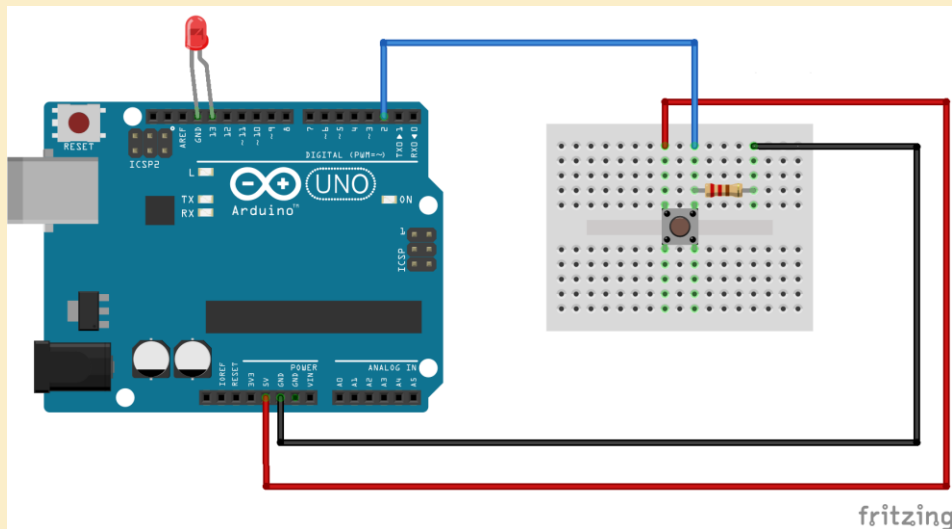
Images from [SparkFun](#)



Resistor calculator from [DigiKey](#)

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Connection example



fritzing
fritzing

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ON TO THE DEMO...

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DO IT

<https://www.arduino.cc/en/Tutorial/Blink>

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