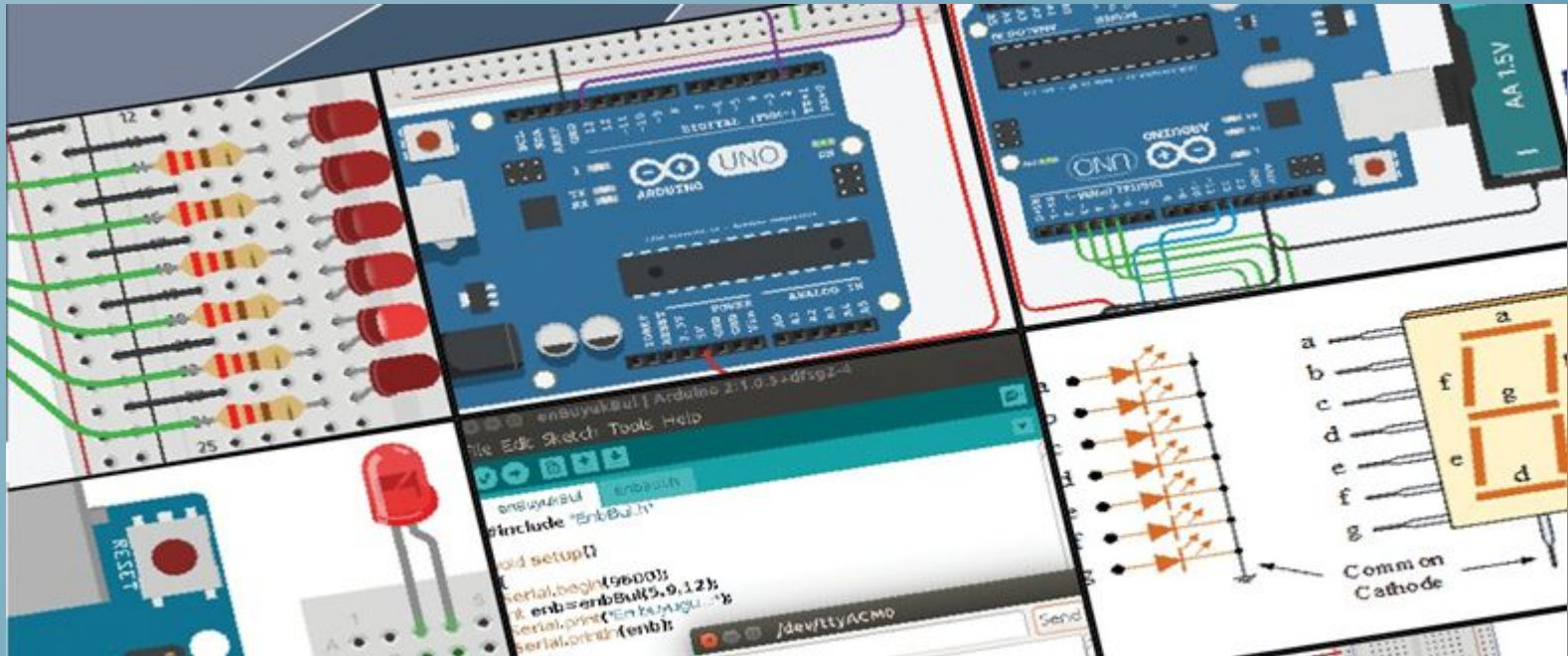


WHAT IS AN ARDUINO?

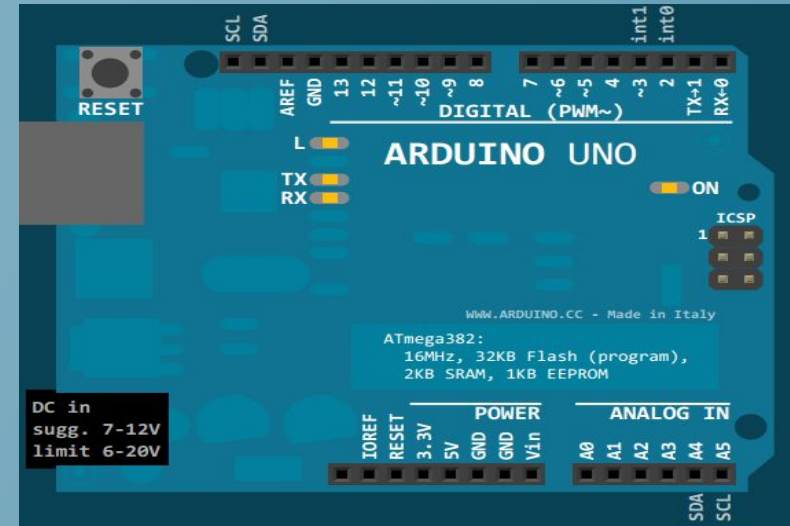
Introduction to ARDUINO



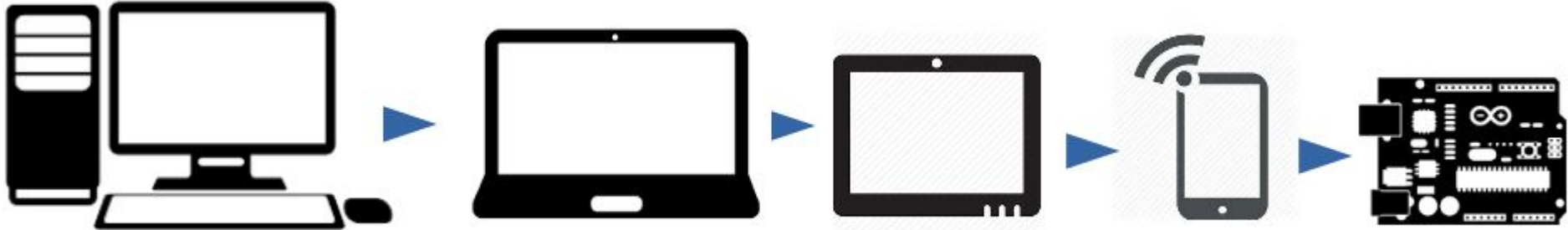
Author: Dr. Bülent Çobanoğlu

WHAT IS AN ARDUINO?

- The name **Arduino** is an Italian male name, meaning “strong friend”
- Arduino was born at the Ivrea Interaction Design Institute (in Ivrea, Italy) as an easy tool for fast prototyping, aimed at students without a background in electronics and programming.
- Arduin of Ivrea was the main historical character of the town where this institute is located and Arduino is named after this character.



WHAT IS AN ARDUINO?



Technology is getting smaller, faster and cheaper every day.

- Arduino is a small-sized microcomputer. More precisely, it is a special-purpose **microcontroller** platform.
- Arduino is an open-source electronics platform (designed around a popular microcontroller family-ATMEL) based on easy-to-use hardware and software.
- Electronic circuit, compiler, and libraries are shared for free on the Internet.

WHAT IS A MICROCONTROLLER (MCU)?

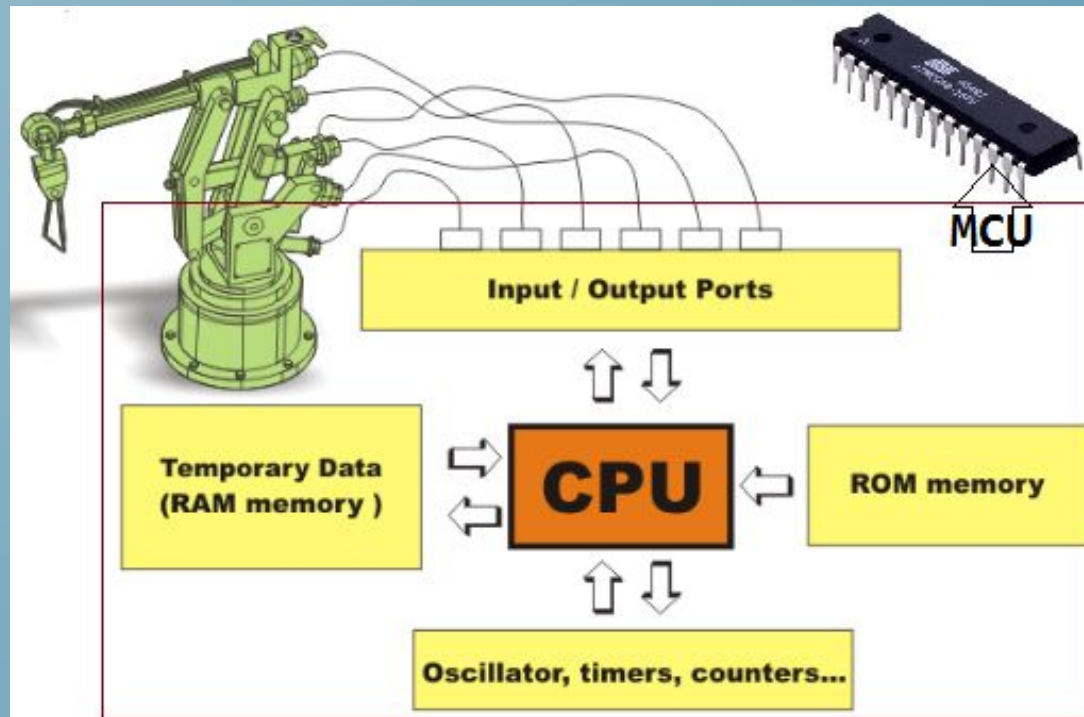
- A **microcontroller** (sometimes abbreviated μC , uC or **MCU**) is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals.
- Briefly, the microcontroller is an electronic circuit element.



- Arduino use Atmel AVR MCUs (owned by Microchip). For example; **Arduino Uno** is a microcontroller board based on the ATmega328P.

WHAT IS A MICROCONTROLLER (MCU)?

- Microcontrollers are used in automatically controlled products and devices; such as automobile engine control systems, robotic arms and other embedded systems.



A microcontroller contains CPU (processor) along with RAM/ROM memory and programmable input/output peripherals.

MCU= CPU+ Input/Output Ports+ Memory(RAM/ROM) +Oscillator(System clock)+...

WHAT IS A MICROCONTROLLER(MCU)?

Video source: www.youtube.com/watch?v=QhNniCb6A6w

What is a
microcontroller?

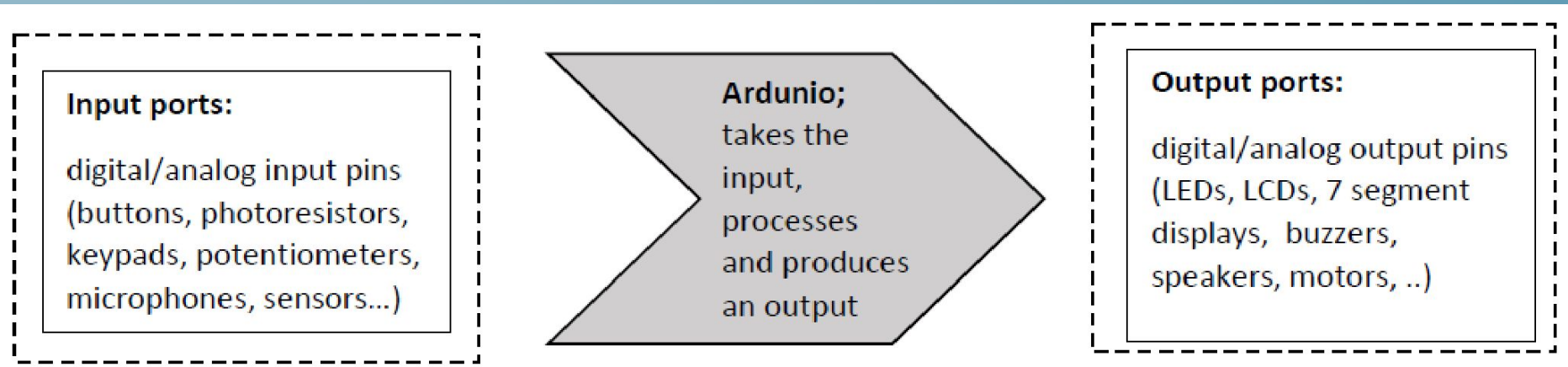


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WHAT DOES THE ARDUINO DO?

- **Arduino:**
 - gets/reads data from input pins,
 - processes the data,
 - produces an output through output pins.



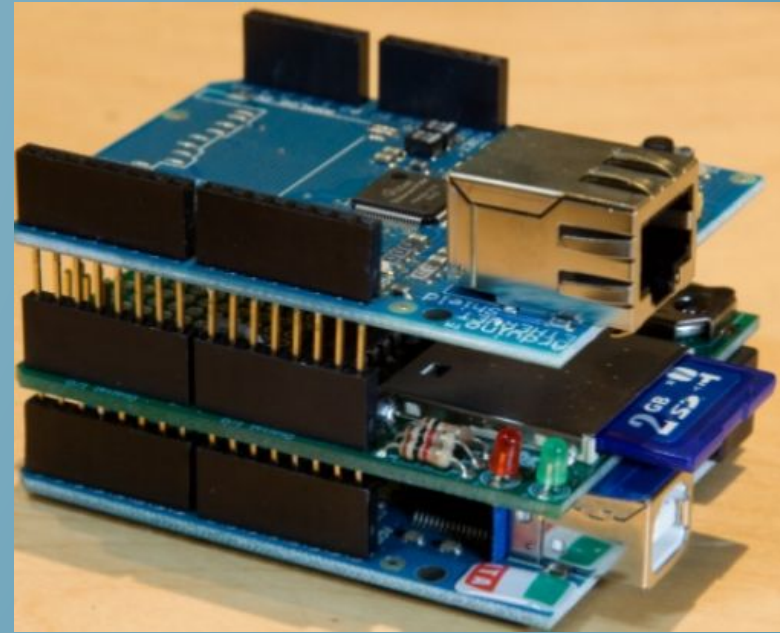
- Basically, you can write code to monitor and control various electronic components (motors, LED, LCD, sensors,..) by using Arduino input/output pins and microcontroller.

WHAT CAN YOU DO WITH ARDUINO?

- Medical applications (<https://create.arduino.cc/projecthub/projects/tags/health>)
- Robotic Applications ([*Make an Arduino-Controlled Robot by Michael Margolis*](#))
- Humanoid Robots (www.instructables.com/id/Arduino-Based-Humanoid-Robot-Using-Servo-Motors/)
- Wearable Applications (<https://create.arduino.cc/projecthub/projects/tags/wearables>)
- Wireless Applications ([*Wifi Projects*](#))
- Smart cards (RFID-NFC) Applications ([*RFID Projects*](#), [*NFC Projects*](#))
- Home automation ([*Programming Your Home Automate with Arduino, Android, and Your Computer*](#) -Mike Riley)
- Mobile Applications ([*Android Projects*](#))
- IoT (Internet of Things) Applications ([*IoT Projects*](#))
- 3D printing ([*3D printing projects*](#))
- Mechatronic Applications ([*Robot Projects*](#))
-

WHAT IS AN ARDUINO SHIELD?

- The circuit attachments added on the Arduino board are called shields.
- Shields are boards that can be plugged on top of the Arduino PCB extending its capabilities. The different shields follow the same philosophy as the original toolkit: they are easy to mount, and cheap to produce.
- Shields can be added to the Arduino board without using any additional connecting wires or solder.
- For the list of Arduino shields : www.shieldlist.org



ARDUINO PRODUCTS

Arduino offers many different products to its users according to their purpose. An updated list of these products is available at www.arduino.cc/en/Main/Products

ENTRY LEVEL	UNOLEONARDO101ESPLORAMICRONANOMINIMKR2UNO ADAPTER
	STARTER KITLCD SCREEN
ENHANCED FEATURES	MEGAZERODUEMEGA ADKMO MO PROMKR ZERO MOTOR SHIELD
	USB HOST SHIELDPROTO SHIELDMKR PROTO SHIELD4 RELAYS SHIELDMEGA PROTO SHIELD
	MKR RELAY PROTO SHIELDISPUSB2SERIAL MICROUSB2SERIAL CONVERTER
INTERNET OF THINGS	YÚNETHERNETTIANINDUSTRIAL 101LEONARDO ETHMKR FOX 1200
	MKR WAN 1300MKR CSM 1400MKR1000YUN MINICYÚN SHIELDWIRELESS SD SHIELD
	WIRELESS PROTO SHIELDETHERNET SHIELD V2CSM SHIELD V2MKR IoT BUNDLE
EDUCATION	CTC 101
WEARABLE	GEMMALILYPAD ARDUINO USBLILYPAD ARDUINO MAIN BOARDLILYPAD ARDUINO SIMPLE
	LILYPAD ARDUINO SIMPLE SNAP
3D PRINTING	MATERIA 101

BOARDSMODULESSHIELDSKITSACCESSORIESCOMING NEXT

WHAT HAVE WE LEARNED IN THIS MODULE?

1	<i>Technology is getting smaller, faster and cheaper every day.</i>
2	Arduino is an open-source electronics platform (designed around a popular microcontroller family-ATMEL) based on easy-to-use hardware and software.
3	The Arduino project started at the Interaction Design Institute Ivrea (IDII) in Ivrea, Italy.
4	Electronic circuit, compiler and libraries are shared for free on the Internet environment.
5	A microcontroller contains CPU (processor) along with RAM/ROM memory and programmable input/output peripherals.
6	A microcontroller (sometimes abbreviated μC, uC or MCU) is a small computer on a single integrated circuit.
7	Arduino use Atmel AVR MCUs (owned by Microchip).
8	The circuit attachments added on the Arduino board are called shields.
9	Arduino offers many different products to its users according to their purposes. An updated list of these products is available at www.arduino.cc/en/Main/Products .

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