TD 1

Handling and use of basic components

Hardware (not exhaustive) :

- 1 Arduino (UNO)
- 1 Arduino USB USB Cable
- 1 Breadboard
- 1 Button
- 3 LED with different colours
- 1 LED RGB
- 3 resistor 220 ohm
- 1 Buzzer
- 1 Potentiometer
- About 10 Dupont cables male/male
- About 10 Dupont cables male/female

1. Configuration and PC interaction - Arduino

IDE Configuration :

1. Wire the USB cable between your PC and your Arduino
2. In Tools → Board : Select your card reference
3. In Tools → Port : Select the port on which your Arduino is connected (generally /dev/ttyUSB0 on linux or COMX (arduino X) on windows)
4. Click on Verify (‘V’ icon) then Upload (‘→’).

If an error appears:

- Check the card model
- Check the COM port

If no error appears: Congratulations! You have just put your first program (which does nothing) on the Arduino board!

Keep this program with empty setup() and loop() under your belt to " reset" your card if necessary. Indeed, when the card is powered on, the last program loaded in memory is launched.

2. Hello World - Blink Blink

The purpose of this section is to make a "Hello World" with the most basic components of the Arduino kit.

1. Go to the following address: https://www.arduino.cc/en/Tutorial/BuiltInExamples/Blink
2. Follow the steps to make the LED on the Aduino flash
3. Make the connection proposed in the tutorial and follow the steps to make an external LED flash

Caution: always put a resistor in front of an LED to prevent it from burning out as indicated in the component datasheet: https://www.sparkfun.com/datasheets/Components/LED/COM-09590-YSL-R531R3D-D2.pdf

It is always important to check the electrical properties of the components you are handling before wiring them.

Today it's LEDs for a few cents, tomorrow it will be components for 2 million or with 6 months of supply. Good practice starts now!

3. Serial communication

1. Go to the following address: https://www.arduino.cc/reference/en/language/functions/communication/serial/read/
2. Follow the steps in order to be able to communicate with the Arduino via the IDE console (small magnifying glass at the top right)

4. Push button

1. Go to the following address: https://www.arduino.cc/en/Tutorial/BuiltInExamples/Button
2. Follow the steps to be able to control the internal LED of the Arduino via the push button

5. Potentiometer

1. Go to the following address: https://www.arduino.cc/en/Tutorial/BuiltInExamples/AnalogInput
2. Follow the steps to understand how the potentiometer works

6. Buzzer

1. Go to the following address: https://www.instructables.com/id/How-to-use-a-Buzzer-Arduino-Tutorial/
2. Follow the steps to make different sounds

7. LED RGB

1. Go to the following address: https://learn.adafruit.com/adafruit-arduino-lesson-3-rgb-leds/overview
2. Follow the steps to understand how the RGB LED works