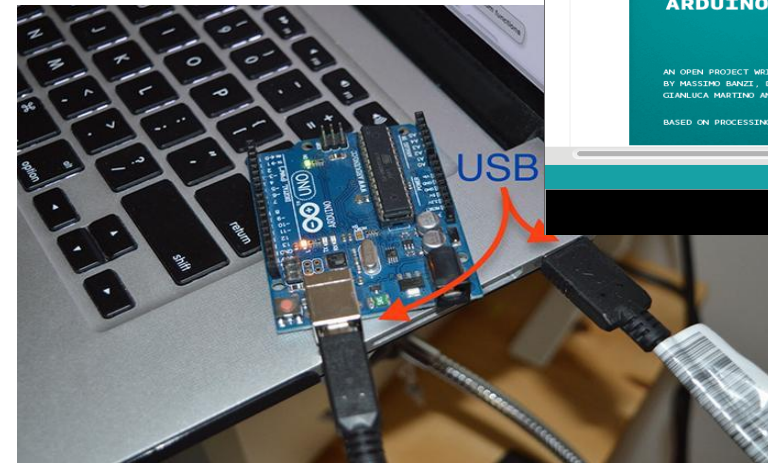
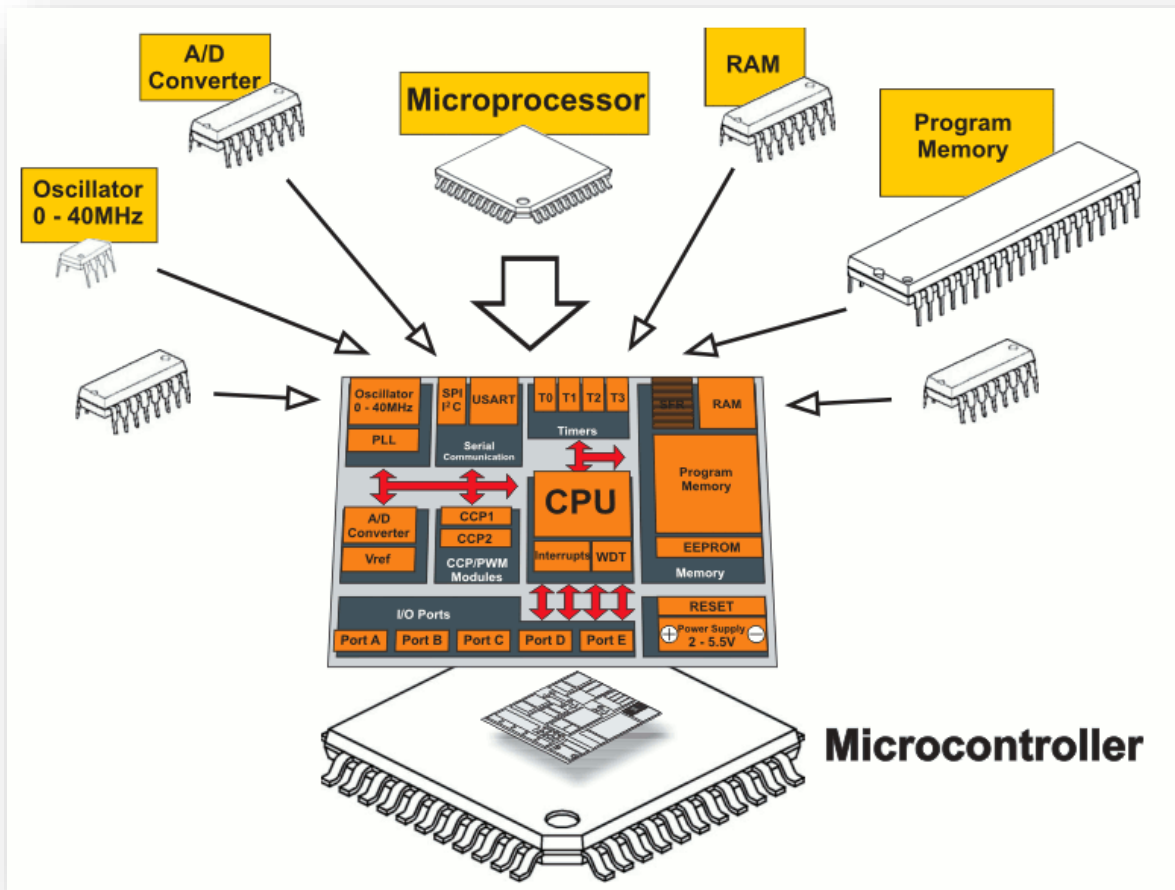




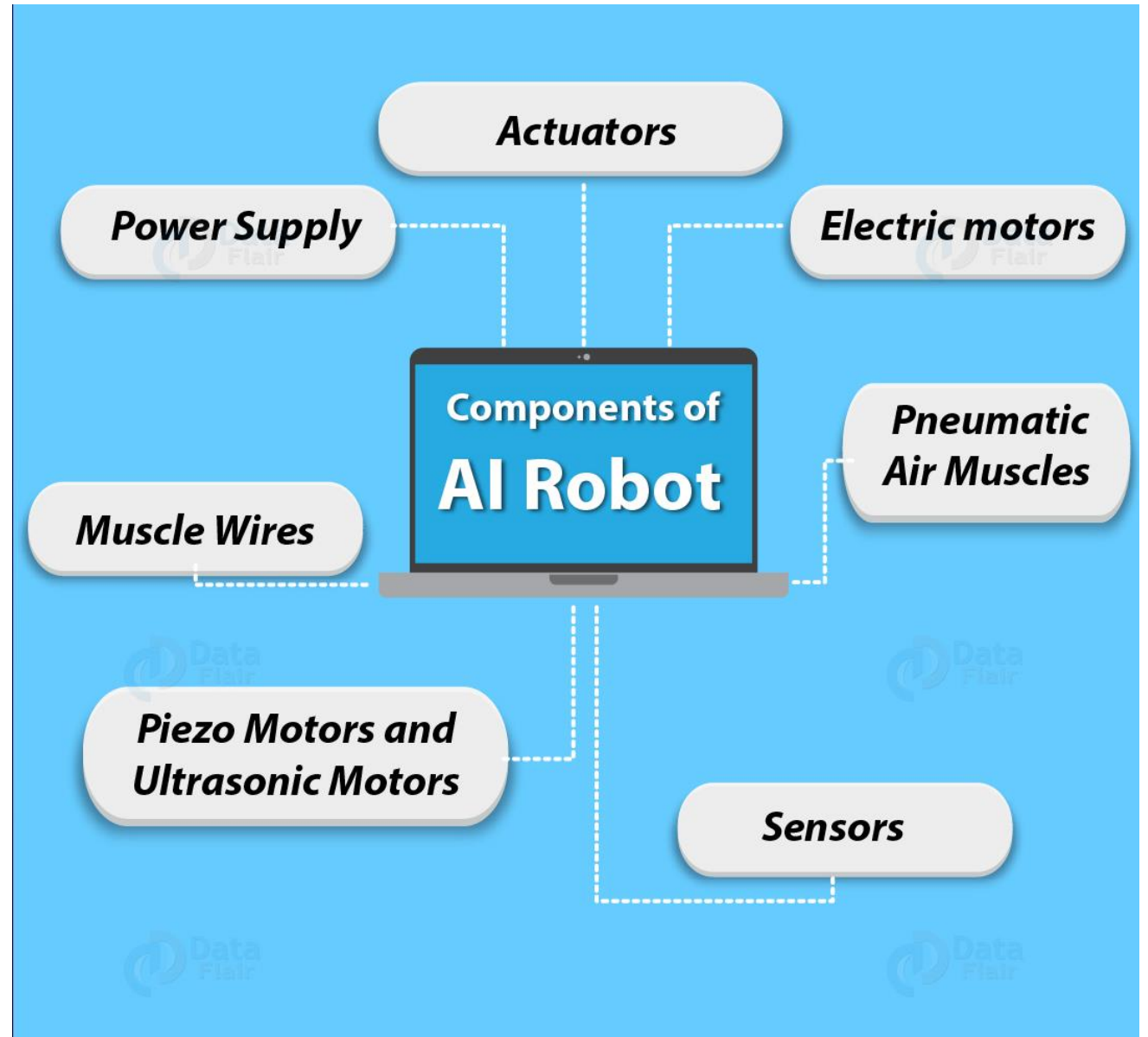
# Robotics and Arduino



# Microcontroller



What is the difference between Microcontroller And Microprocessor ?



## Components of a Robot

Robots are constructed with the following –

**Power Supply** – The robots are powered by batteries, solar power, hydraulic, or pneumatic power sources.

**Actuators** – They convert energy into movement.

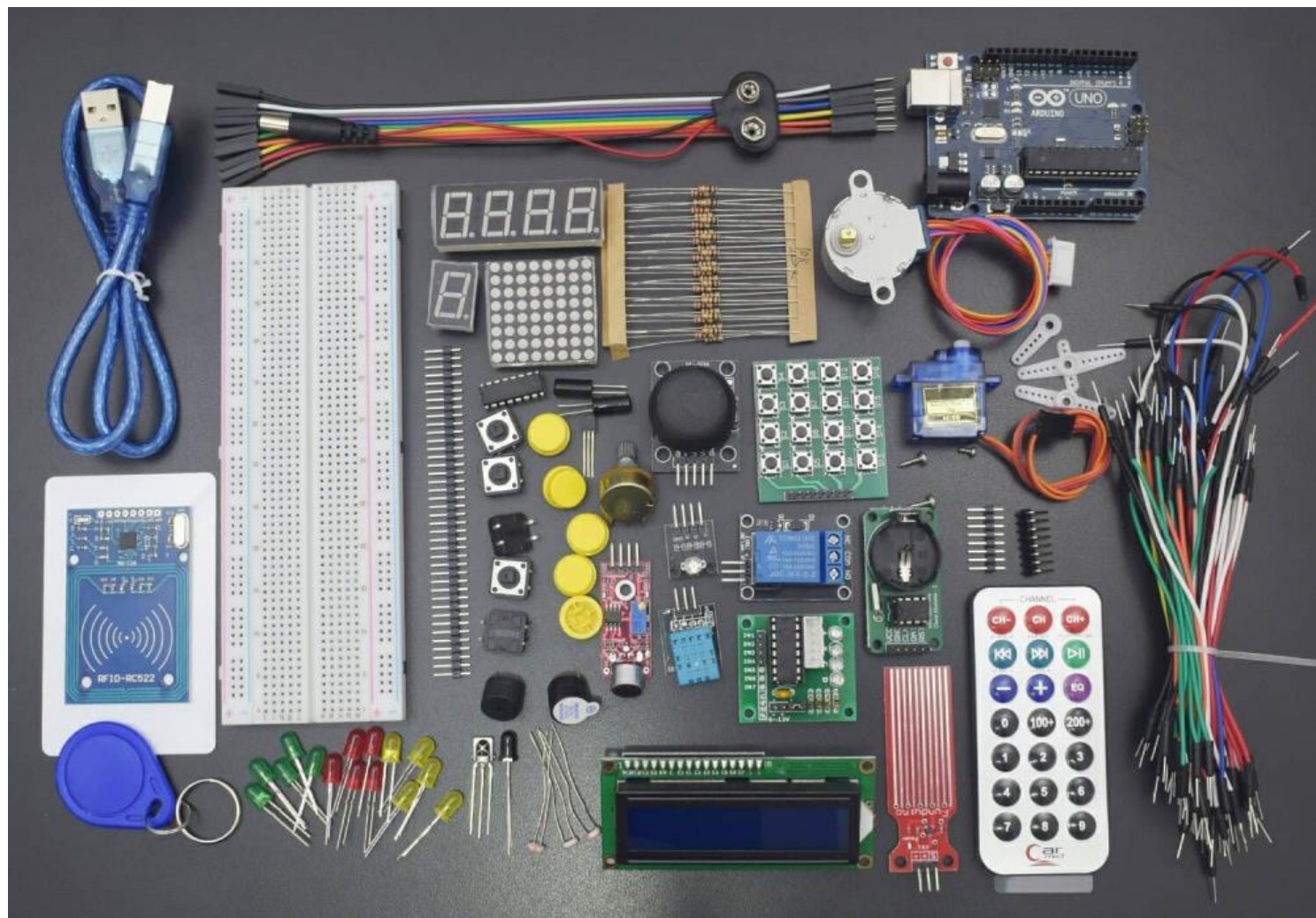
**Electric motors (AC/DC)** – They are required for rotational movement.

**Pneumatic Air Muscles** – They contract almost 40% when air is sucked in them.

**Muscle Wires** – They contract by 5% when electric current is passed through them.

**Piezo Motors and Ultrasonic Motors** – Best for industrial robots.

**Sensors** – They provide knowledge of real time information on the task environment. Robots are equipped with vision sensors to be to compute the depth in the environment. A tactile sensor imitates the mechanical properties of touch receptors of human fingertips.







المداخل والمخارج الرقمية Digital I/O

زر إعادة إقلاع

مدخل البرمجة

مدخل الطاقة

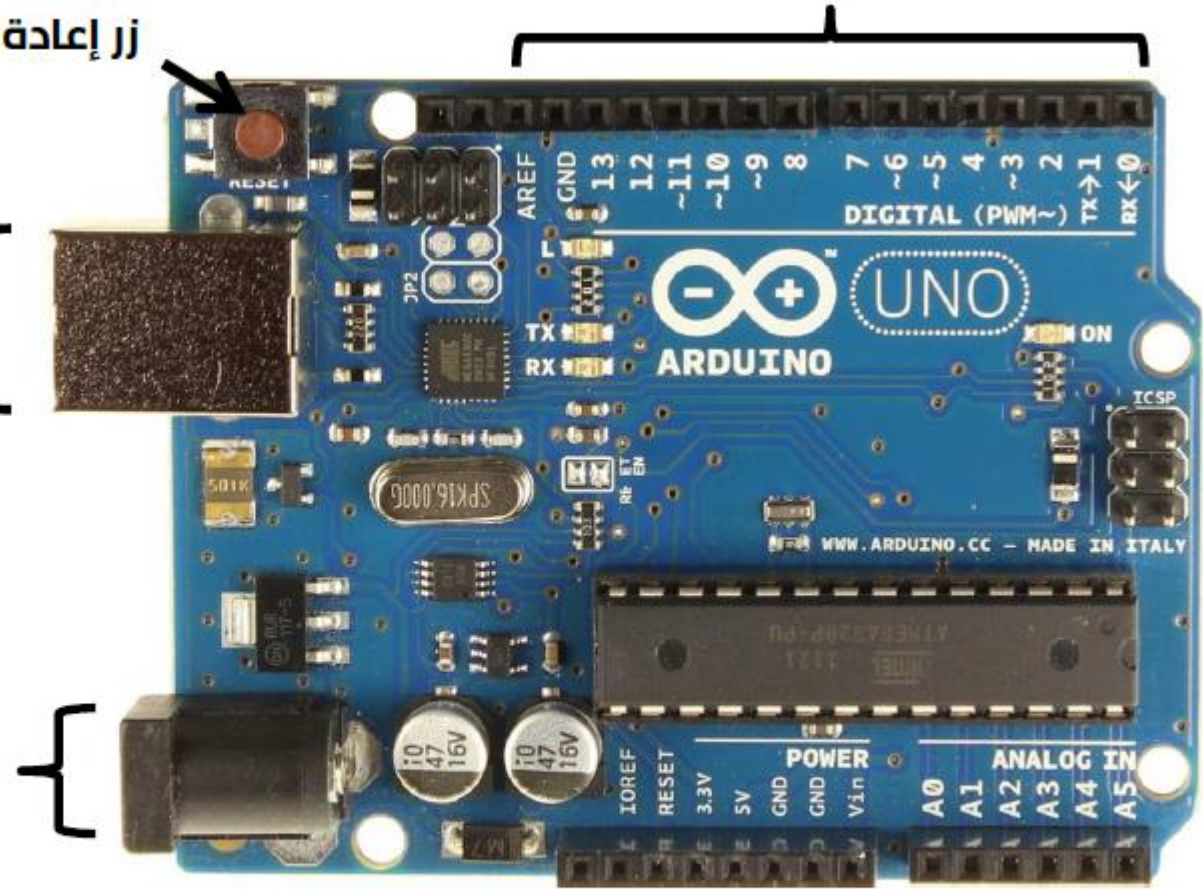
(12V)

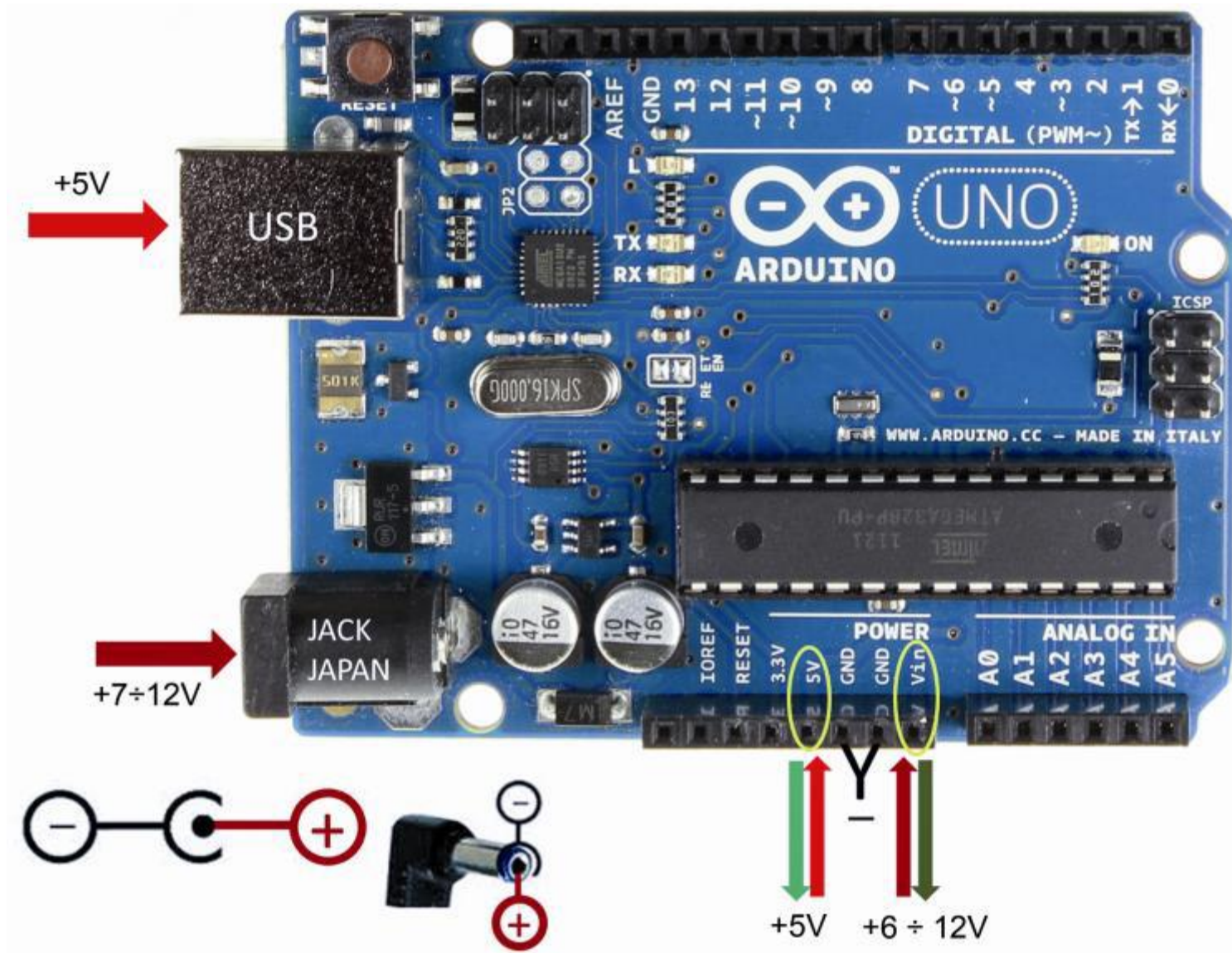
مداخل ومخارج

الطاقة

مداخل تماثلية

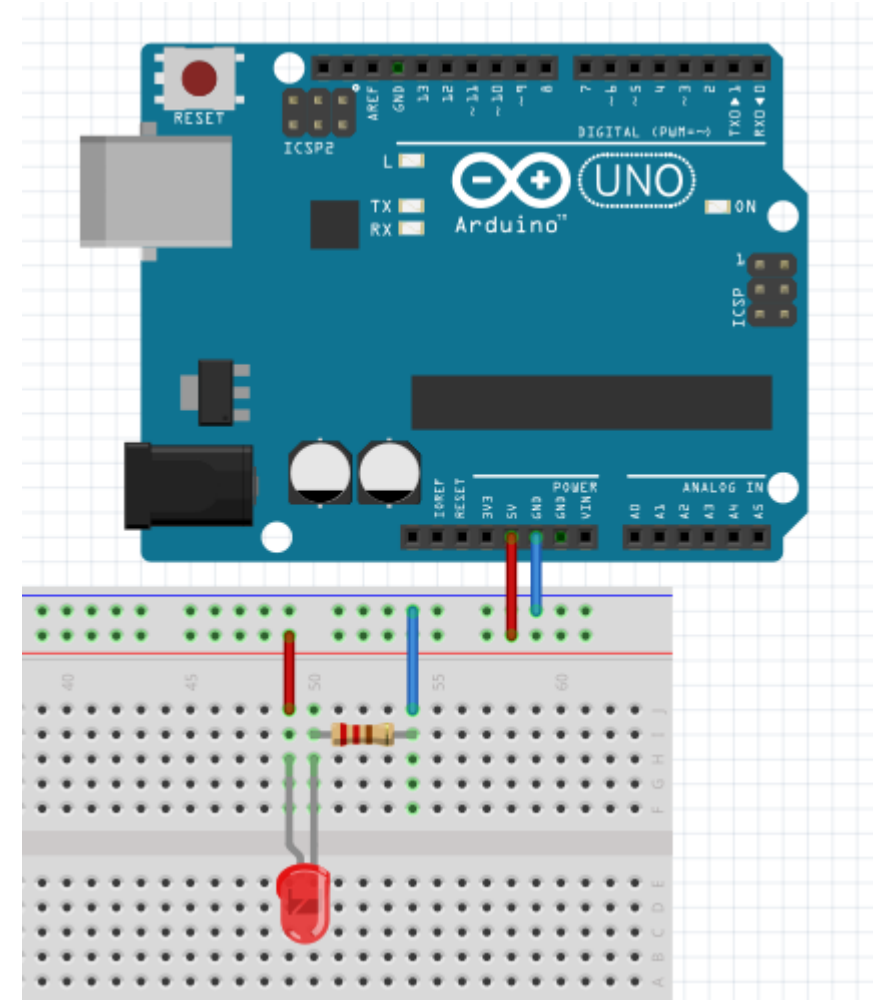
Analog Inputs





توصيل الأردوينو بمصادر الطاقة





استعمال الأردوينو كمصدر طاقة

# برمجة الأردوينو

Mixly



Google Blockly



Blocks

Arduino IDE

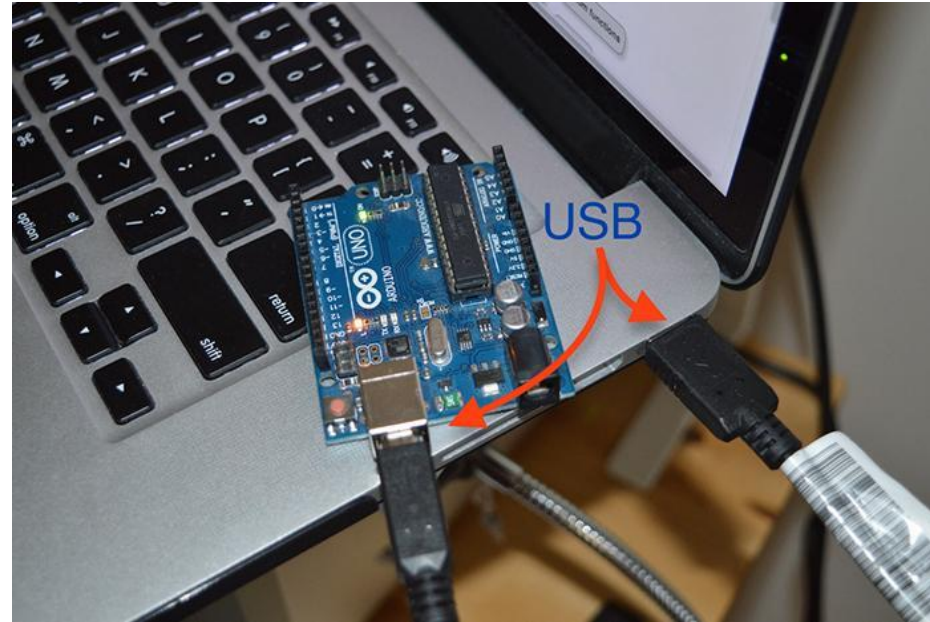


C++

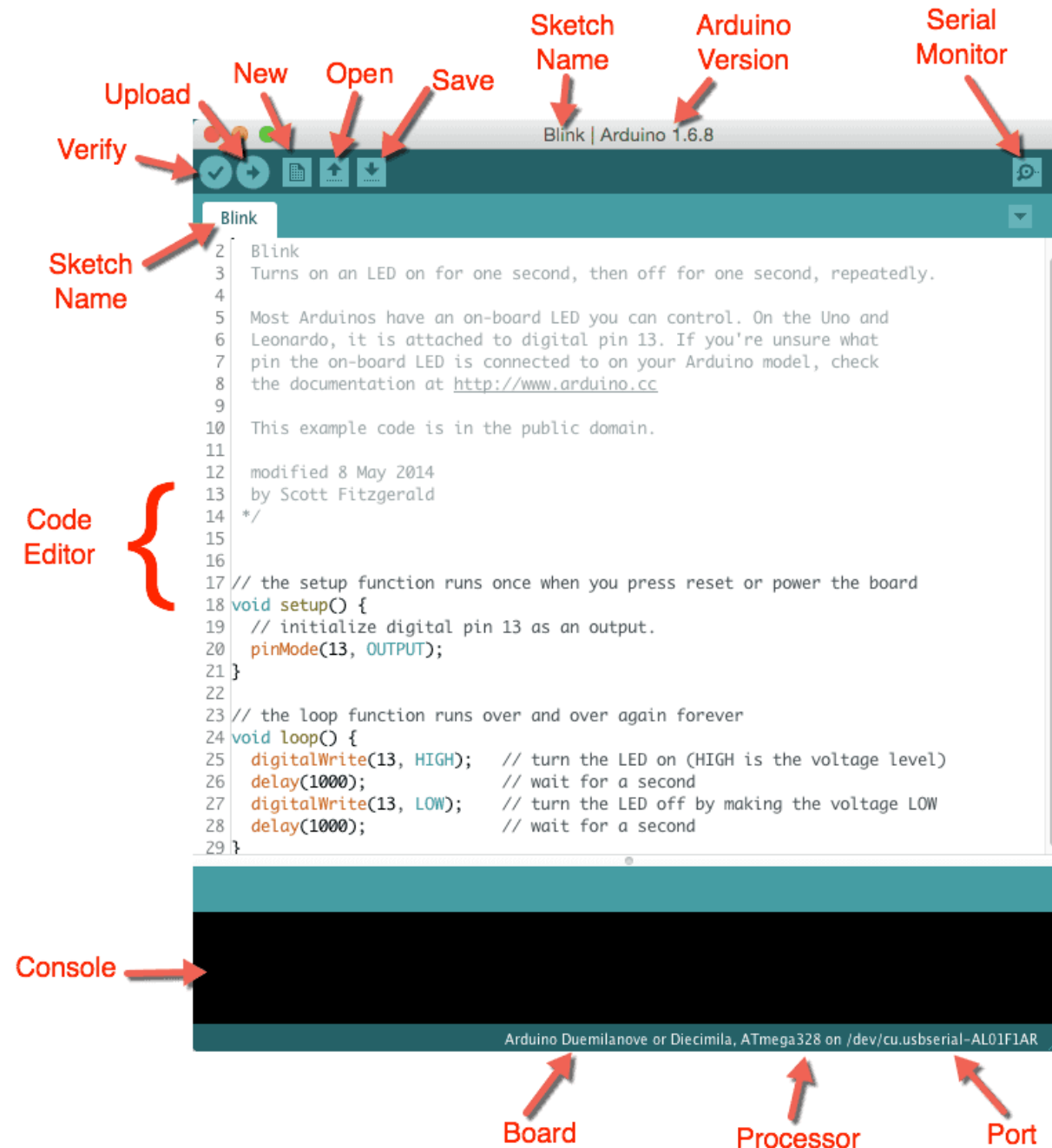
# 1- Arduino IDE

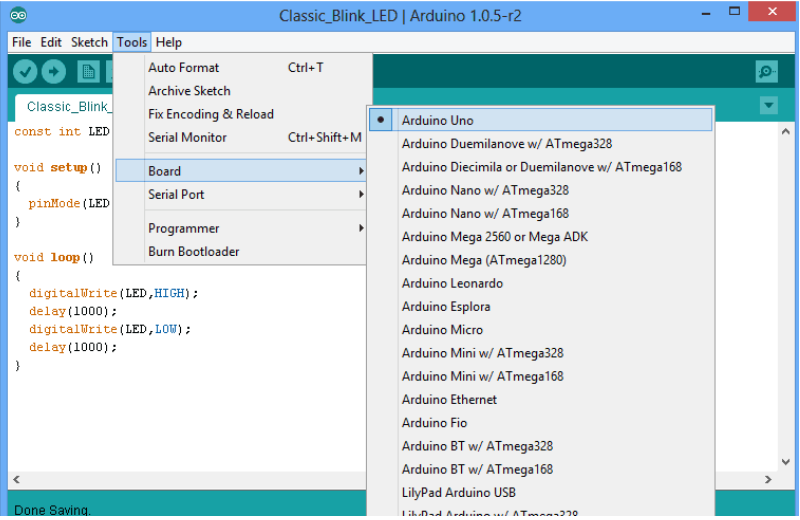
<https://www.arduino.cc/en/Main/Software>

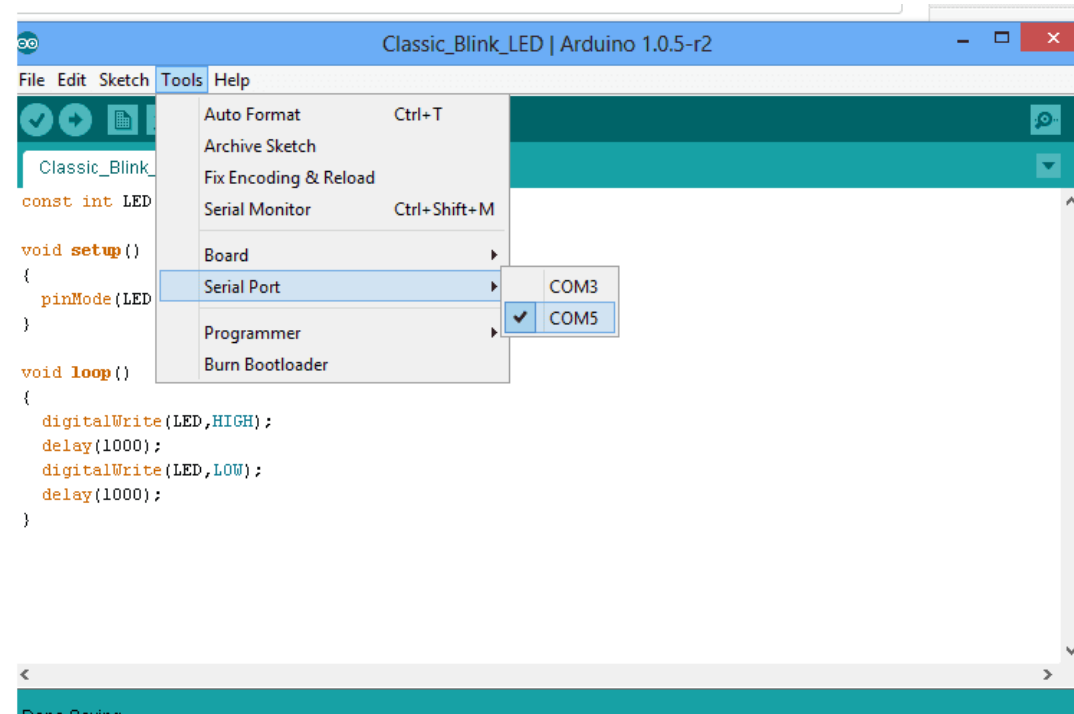


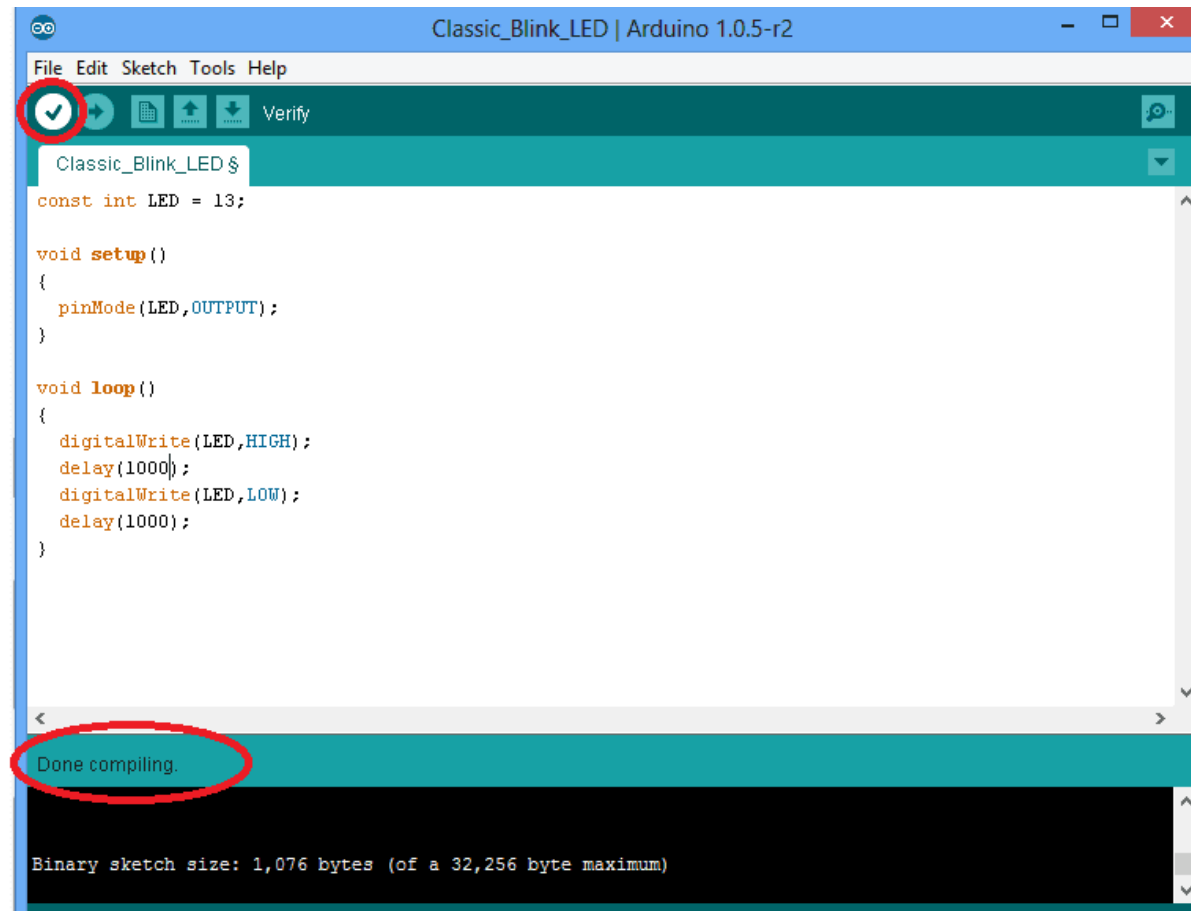




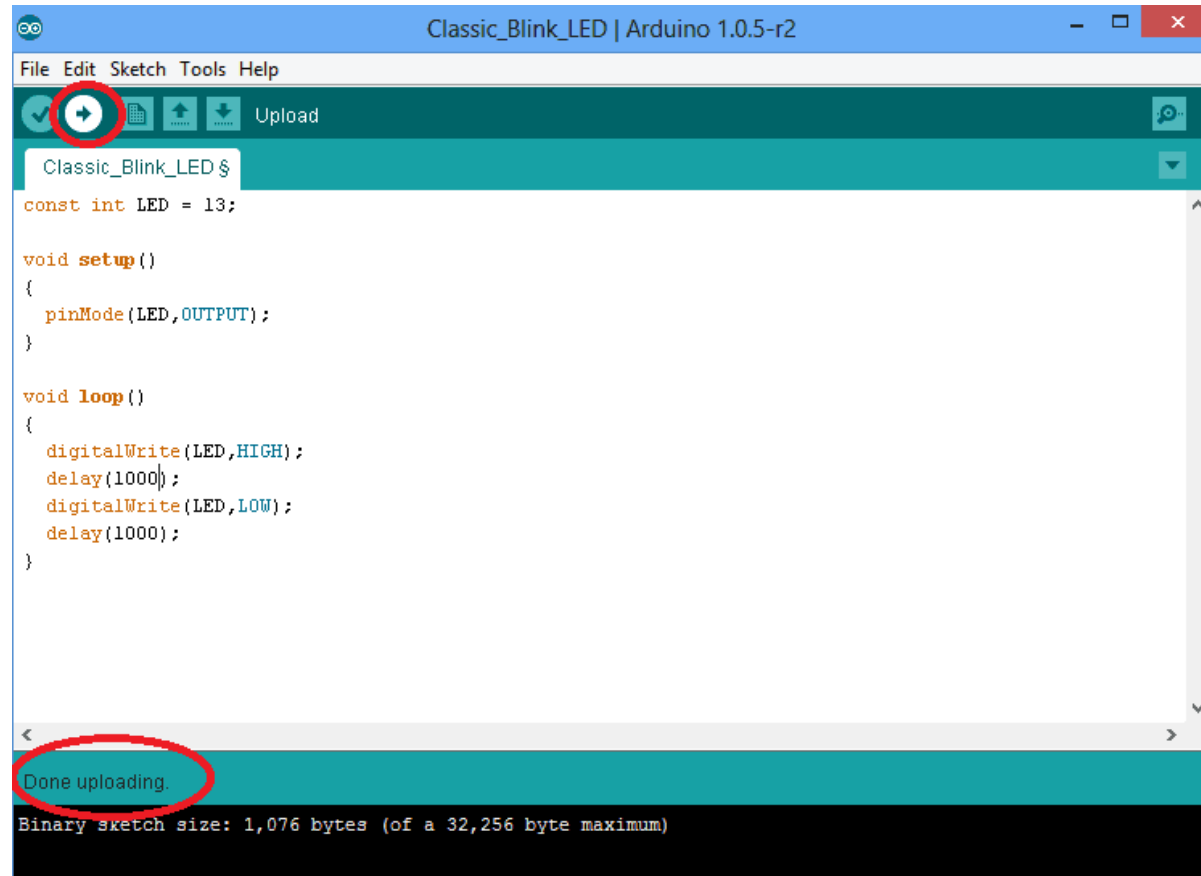


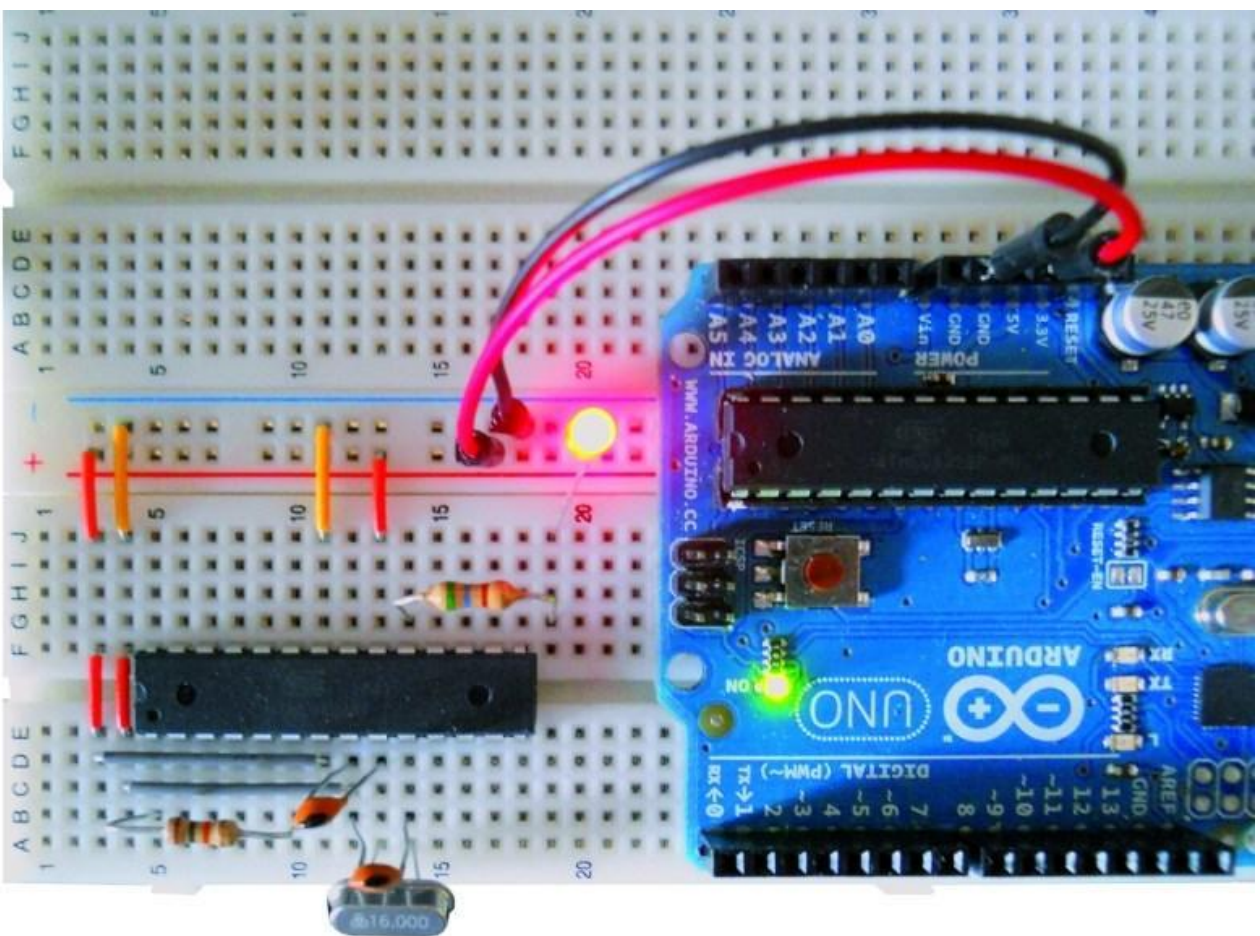


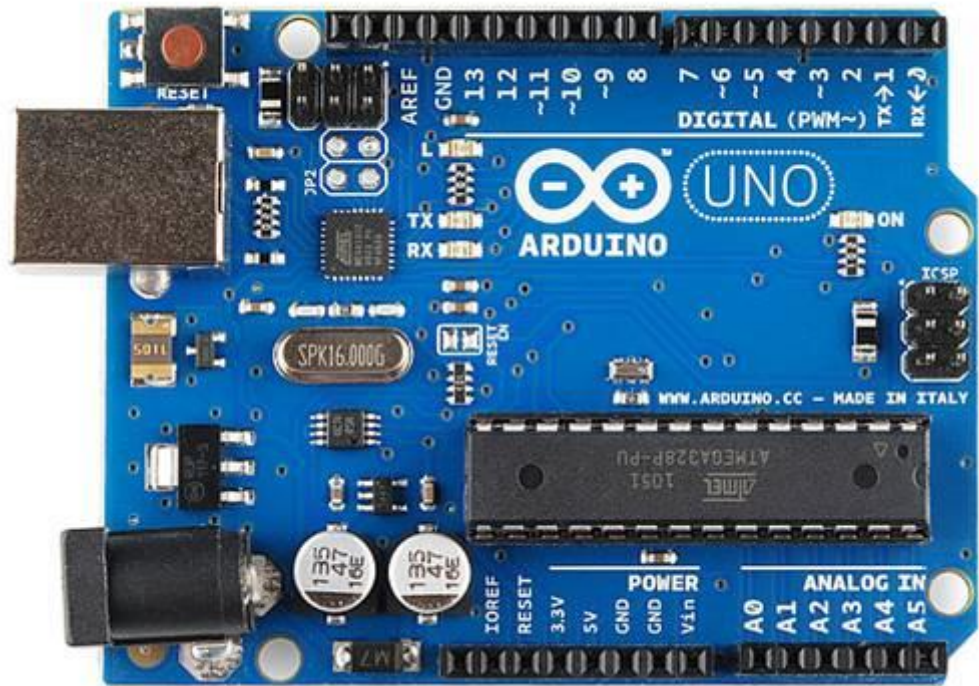




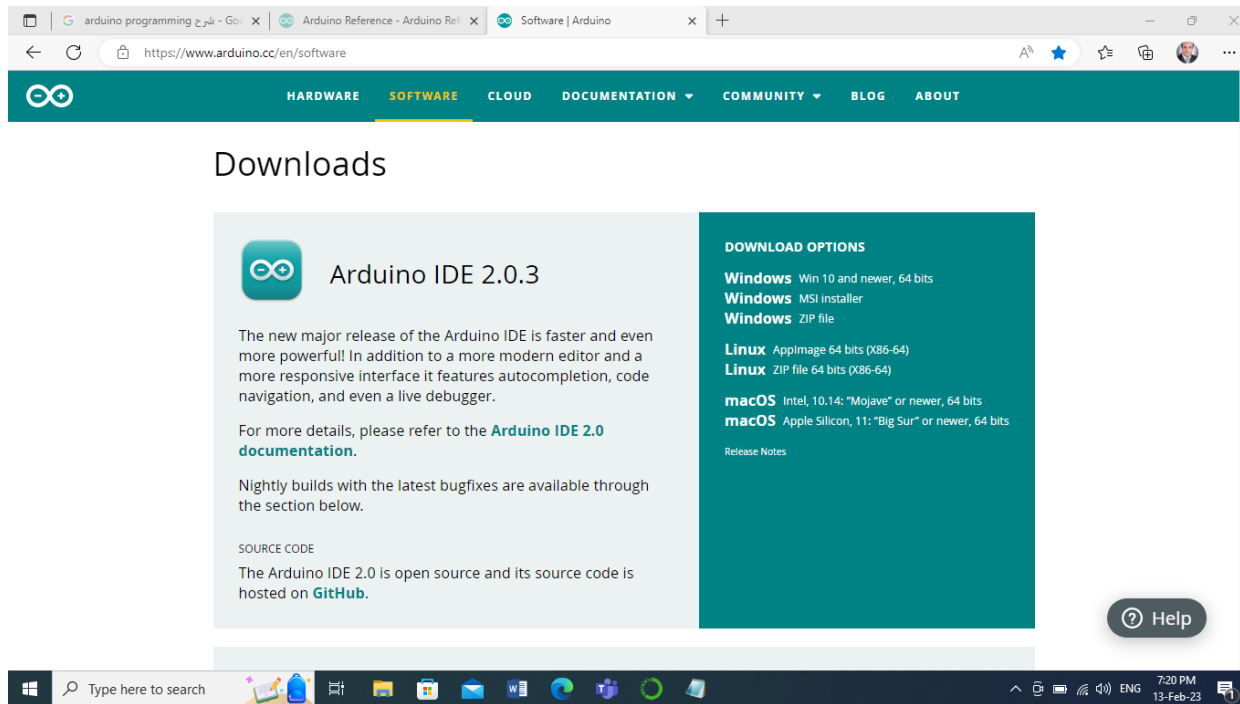








<https://www.arduino.cc/en/software>

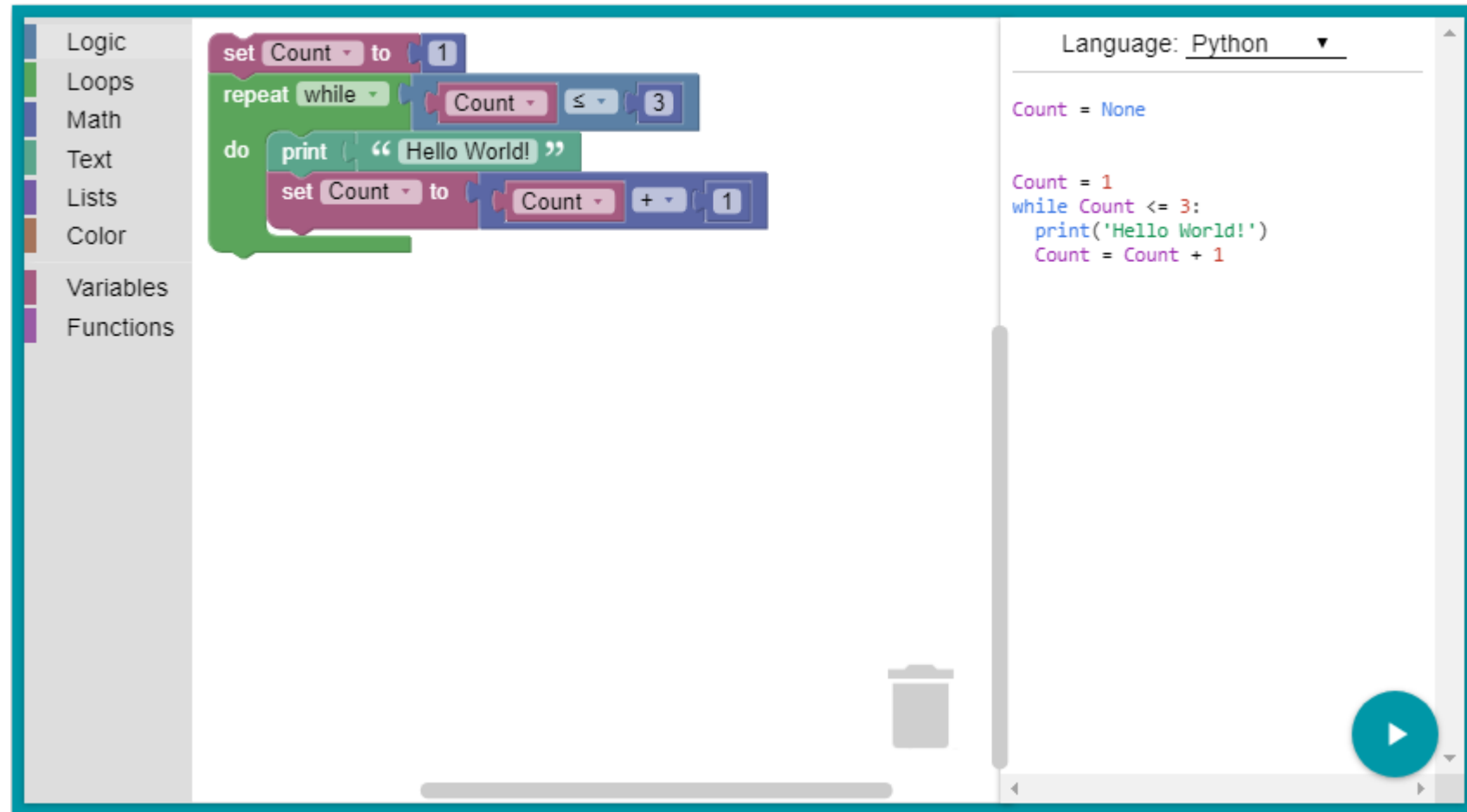




## 2- Blocks Programming

Google Blockly

<https://developers.google.com/blockly>



## 2- Blocks Programming

Mixly



The screenshot displays the Mixly 0.997 web interface. The top bar includes the title 'Mixly 0.997', a 'Code' tab, a copyright notice 'Copyright © Mixly Team@BNU HTTP://MIXLY.ORG', and buttons for 'Normal' and 'Advanced' views. A language dropdown is set to 'English'. The left sidebar lists various programming blocks: In/Out, Control, Math, Text, Lists, Logic, SerialPort, Communicate, Sensor, Actuator, Monitor, Variables, Functions, and CarControl. The main workspace contains several red text annotations: 'اضغط لرؤية الكود بلغة C++' (Click to see the code in C++), 'الوضع العادي أو المتقدم' (Normal or Advanced mode), 'تبديل اللغة' (Switch language), 'افتح الكود النصي جانباً' (Open the code text on the side), 'تكبير, تصغير وتنصيب الكود' (Zoom in, zoom out, and install code), 'هنا يتم رمي العنصر للحذف' (Here the element is thrown for deletion), 'نقل الكود إلى الأردوينو' (Move code to Arduino), and 'ترجمة اللوغو وفحص الأخطاء' (Translate logo and check errors). The bottom toolbar features buttons for 'New', 'Open', 'Save', 'Save as', 'Export', 'Import', 'Manager', 'Compile', 'Upload', a device dropdown (currently 'Arduino/Genuino Uno'), a port dropdown (currently 'COM22'), a 'Monitor' button, and a slider. At the very bottom, there are four red text annotations: 'فتح كود جديد' (Open new code), 'فتح كود قديم' (Open old code), 'حفظ الكود الحالي' (Save current code), and 'اختيار نوع الجهاز (الأردوينو)' (Select device type (Arduino)).