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## S4A - Scratch for Arduino Workshop Content



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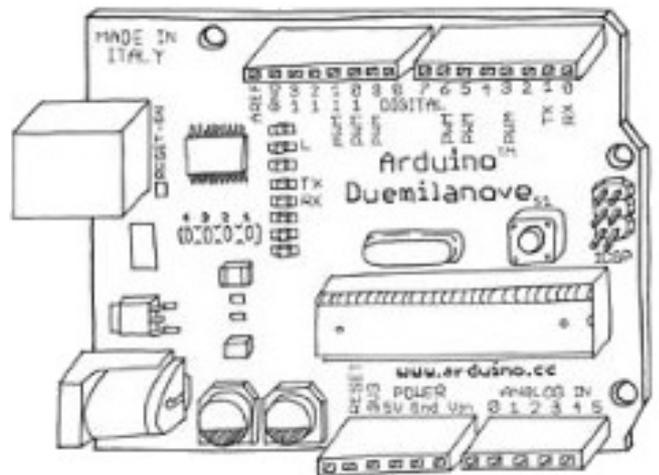
This workshop covers a further implementation of Scratch using the software “S4A” (Scratch for Arduino), which is based on the MIT Media Lab creation. The software offers the same initial basic code blocks, with additional blocks to provide a variety of capabilities in order to give a connected Arduino board functionality. This could be as basic as getting an LED to flash, or even creating your own moving robot!

This workshop can lead to the development of any kind of Arduino project. Basic, intermediate or advanced, the use of S4A is open to users of a variety of experiences. The workshop provides a fantastic first step into the development industry without the need to dive head first into often confusing and complex programming languages. During this workshop, the participants will be combining an Arduino Uno kit and several other electronic components, with the popular “Scratch” interface.

## S4A

Scratch for Arduino is a modification of the popular educational MIT software “Scratch”. It offers new blocks to control and send/retrieve information from sensors and actuators connected to an Arduino board. It has been developed at “Citilab” by the Edutec Research Group.

An Arduino is a small computer you can use to receive and send messages to other electrical components. It is a micro-controller, used similar to a motherboard inside your computer - you can connect various components and build your electrical circuits from these. Arduinos can also be programmed using a language called C. It is a language commonly used throughout the industry, in fact it is one of the most commonly used Programming languages. To program the Arduino you usually need to download the open-source Arduino IDE (Integrated Development Environment) onto your computer (Windows, Mac or Linux). Although, participants for this workshop will be using a simple drag and drop programming environment that is perfect for beginners, S4A.

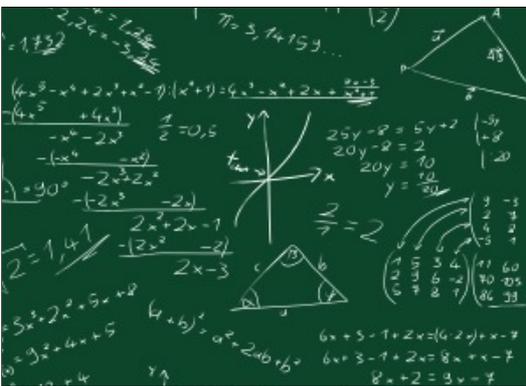
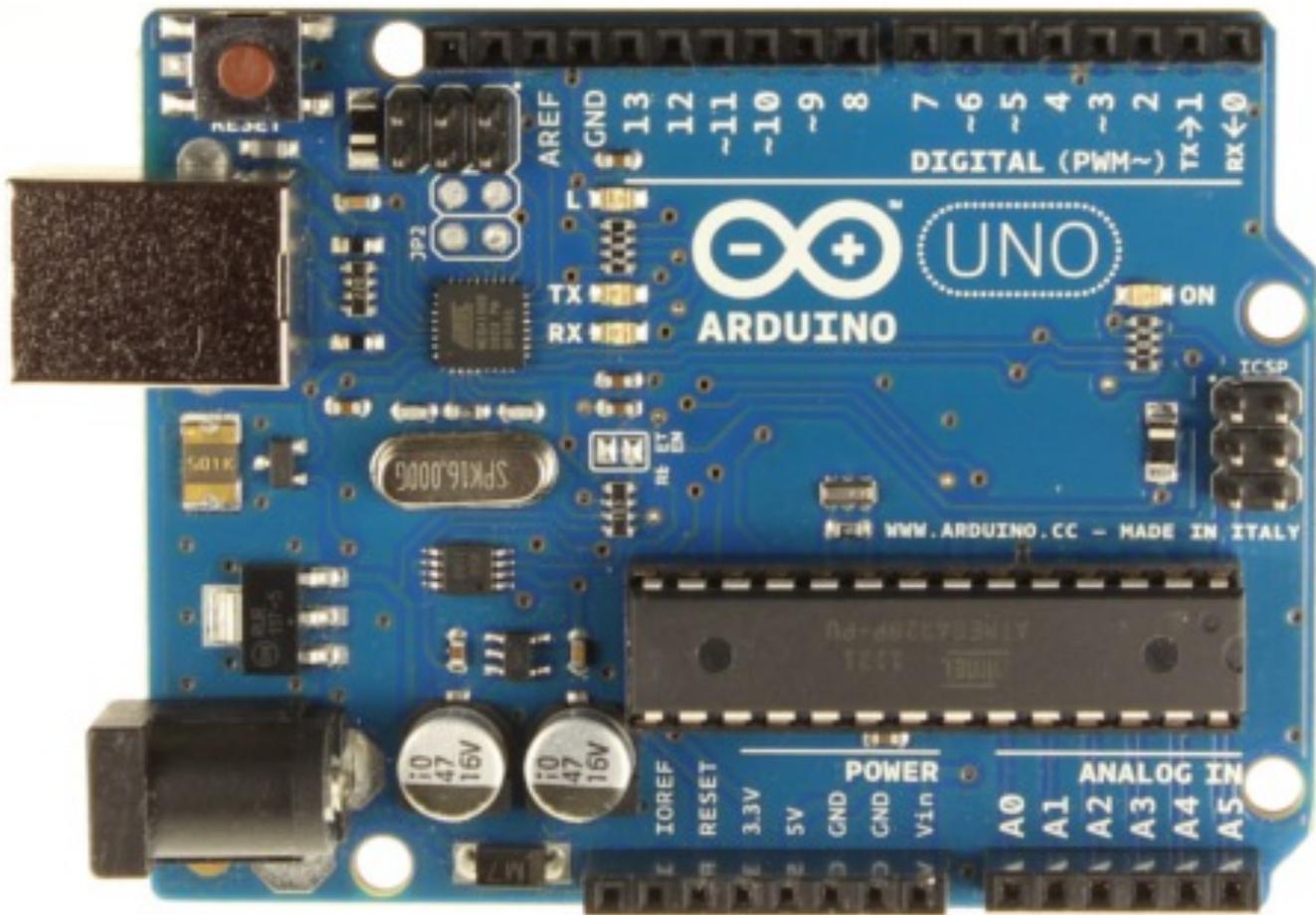


# S4A - Scratch for Arduino

To begin, the participants will be introduced to the S<sub>4</sub>A interface. Those that have not used “Scratch” before will begin implementing basic code and becoming familiar with the interface. If participants do have a familiarity with “Scratch” already, then the differences can be introduced to the group, with an explanation of the uses for each of the new code blocks.

Following the introductory stage, the groups will be given several kits to look at and will be progressively building up their own code on S<sub>4</sub>A, commanding the Arduino electronic kits to do certain tasks. At first it will be as basic as flashing an LED, then using a switch (button) to control the LED flashes. Next, using the chassis and motor controllers, the groups will be able to get their own robot to move around. The groups should be able to confidently recognise components and understand their purpose as well as the impact they have on the electronic circuit, in addition to the required code blocks to get the Arduino to do as you want it to.





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