Power Of DIGItalization in fighting against climate change

Work package n°3 | 3° LTT's

Agrinio (Greece) | 10/16 December 2023

Italy

Istituto Comprensivo Lodi 2° "Giovanni Spezzaferri"

Co-funded by the European Union

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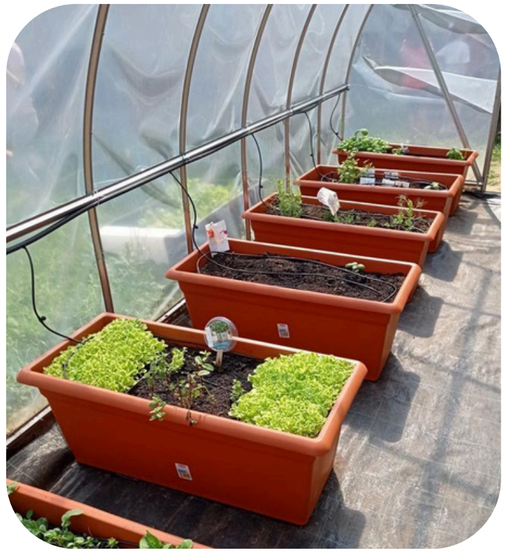
We are students of a Comprehensive school in Lodi, a town close to Milan.

We attend the third year of our Secondary school and we are 13 years old.

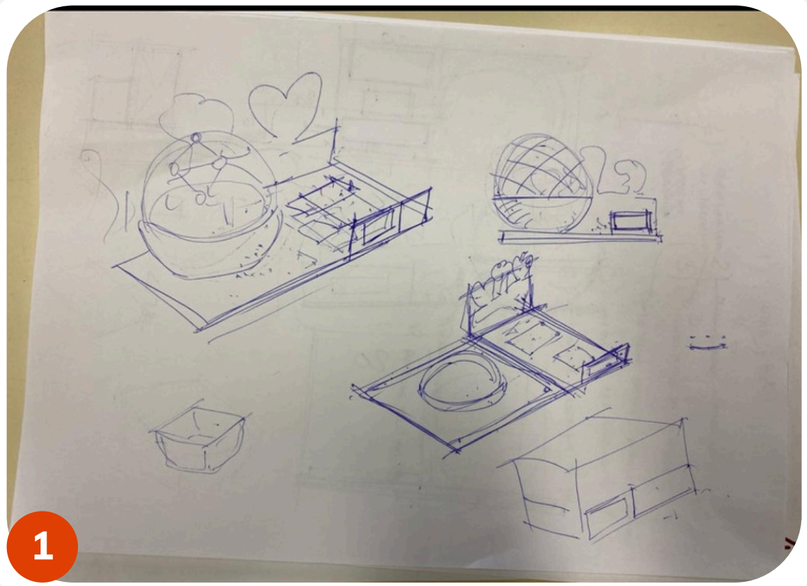
We created a system that helps in fighting against climate changing

Our project

We took inspiration from the greenhouse of our primary school G. Pascoli it was impossible to us to bring it to Agrinio so we have reproduced it on small scale and we automated it using Arduino and we reproduced it with the 3D printer



Process



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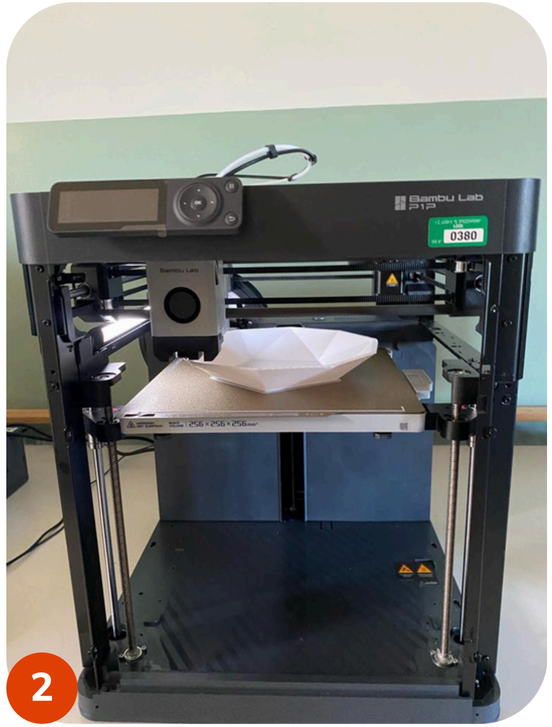

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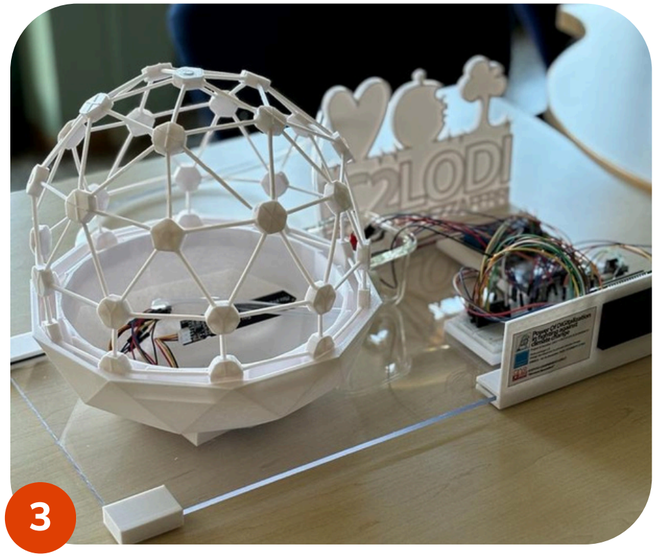
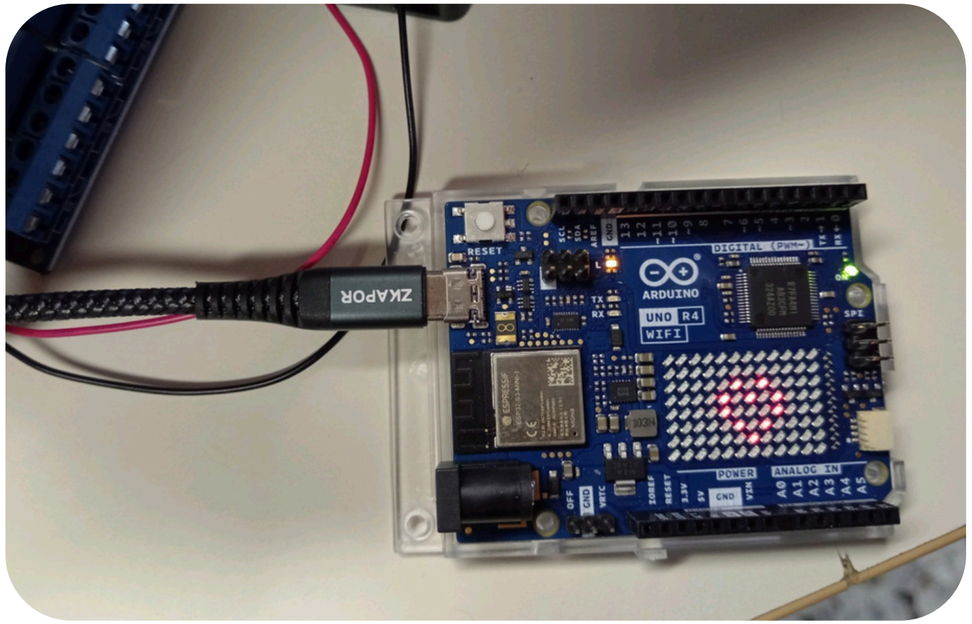


3

Arduino

It's an italian project born in 2005 in Ivrea, a city in Piedmont in province of Turin, in the Arduino bar (from where it took its name).
It was invented by Massimo Banzi. He, wanted to create something to permit the students to program without spending much money

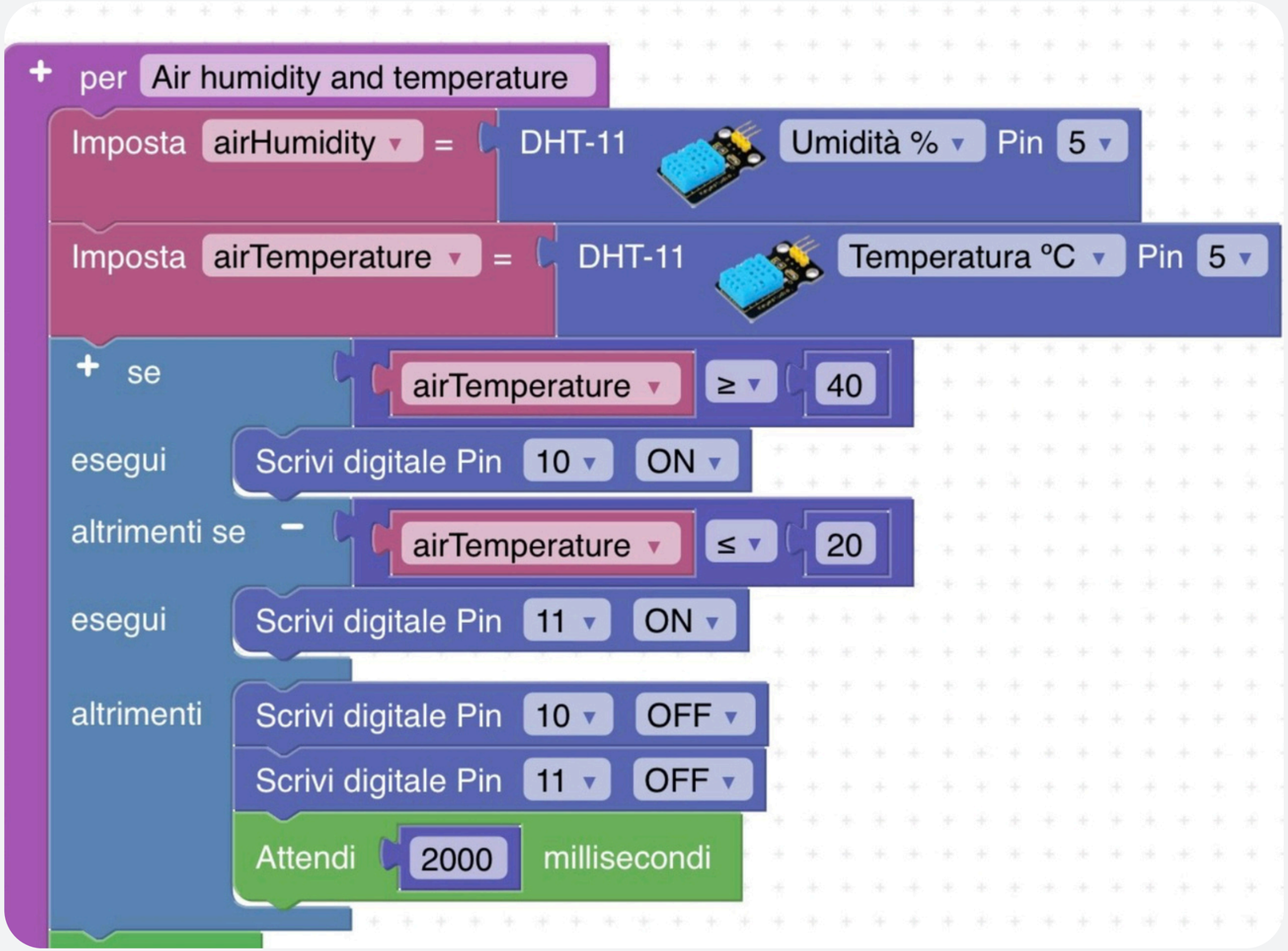


Arduino
functions

Arduino is a hardware platform that can be applied in many areas like: home automation, drone programming , 3D printers and a lot of other areas.

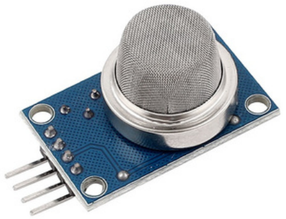
Programming

To program Arduino, we used arduino blocks, a simple and intuitive program that uses blocks instead of computer language in code



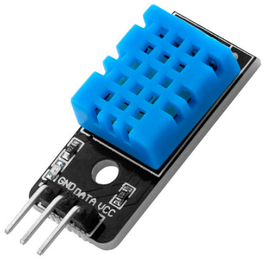
Sensors

GAS SENSOR (MQ135)



WATER SENSOR

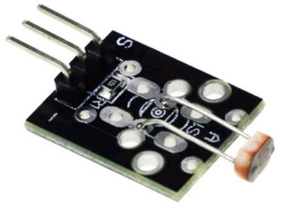
DHT11



Sensors

SOIL HUMIDITY SENSOR

PHOTORESISTENCE



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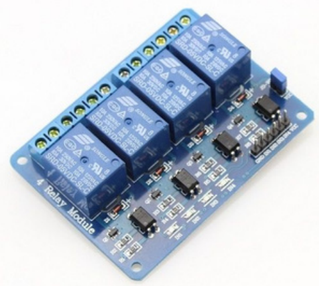


Components

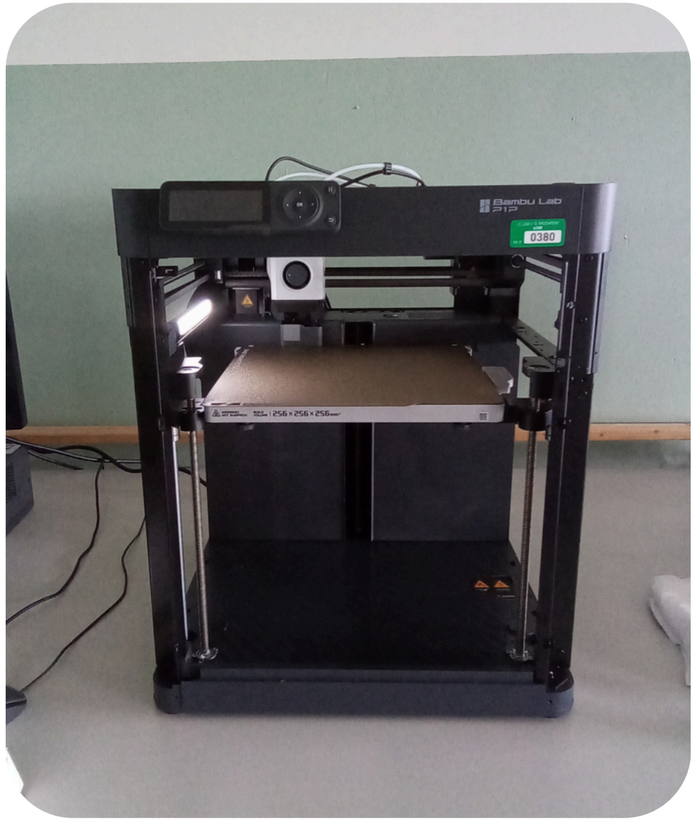
LCD DSPLAY

FAN

WATER PUMP

Our 3D printer

Our BAMBU LAB P1P printer is very fast, but to make the base of the greenhouse it took 6 hours. In addition, our greenhouse is formed by detachable parts that when assembled form an icosahedron



Greenhouse organization

The greenhouse is equipped with the sensors listed above.
It is able to completely dress itself: from rainwater storage to automatic management of air temperature and humidity to lighting and irrigation.
Doing so reduces water consumption (with drip irrigation system) and creates an ideal environment for a certain plant species.

Our project

To make the greenhouse, we 3D printed the various elements and assembled them, then added components to ensure stability and a comfortable environment for the plants

NOW WE'LL SHOW YOU THE GREENHOUSE'S FUNCTIONING

ADOBE ILLUSTRATOR