ARDUINO

- **Educational software -**

Student: Onu Rareş Andrei

"Gheorghe Cartianu" Technical College

Piatra Neamt

2022

content

Argument 3

1. **Presentation of the application** 4
2. **Installation on mobile devices** 10
3. **Administration module** 13
4. **Application architecture** 16

BIBLIOGRAPHY 17

ARGUMENT

Talking to our colleagues and friends, we found that a lot of people are interested in technology, they would like to be able to make their own applications, but they don't know where and how to start learning.

We set out to create an educational software after completing which a person can create from simple projects such as the traffic light or the distance sensor, to more complicated projects.

Arduino platform is very versatile and offers a lot of options to users. The best way to learn is to try some sample projects. Entry-level projects will allow you to familiarize yourself with the platform and programming language. These project ideas should provide some indication of what the Arduino platform is capable of , requiring only a basic understanding of the technology.

Studying the **Arduino educational software** you will learn:

- what is Arduino ?

- how to connect

- how to install

- how the sensors are used

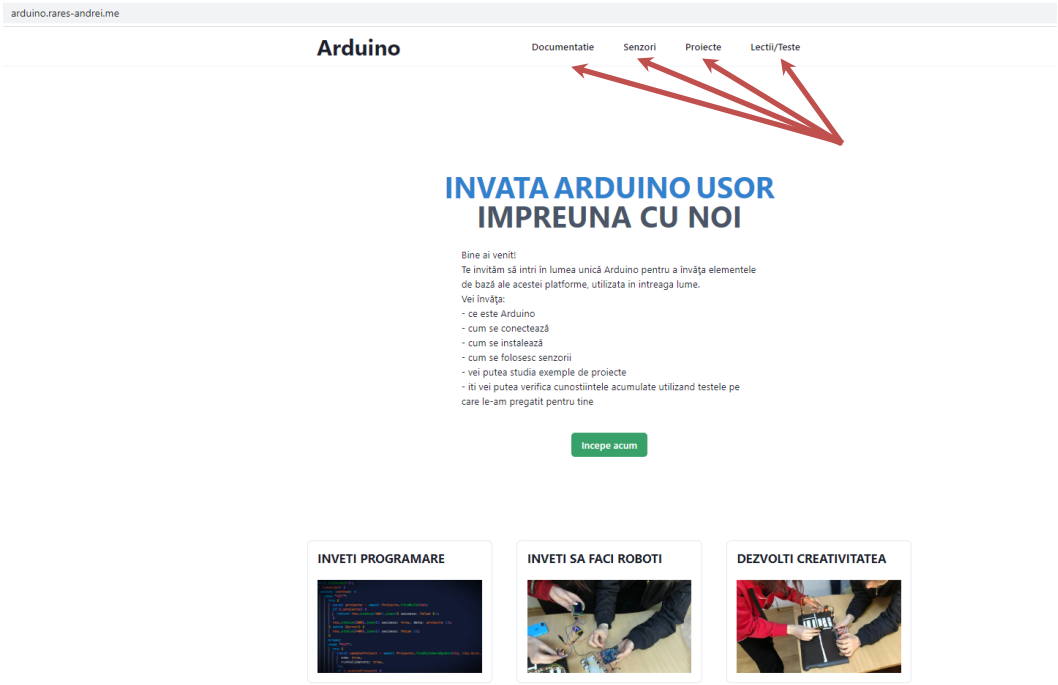
- you will be able to study examples of projects

As a cutting edge technology, Arduino is constantly evolving and developing. We will continue to expand this educational software to reach as many interesting projects as possible and to provide a picture of the impact that Arduino has on the technological world.

Arduino represents a technology that could form the basis of important devices of the future

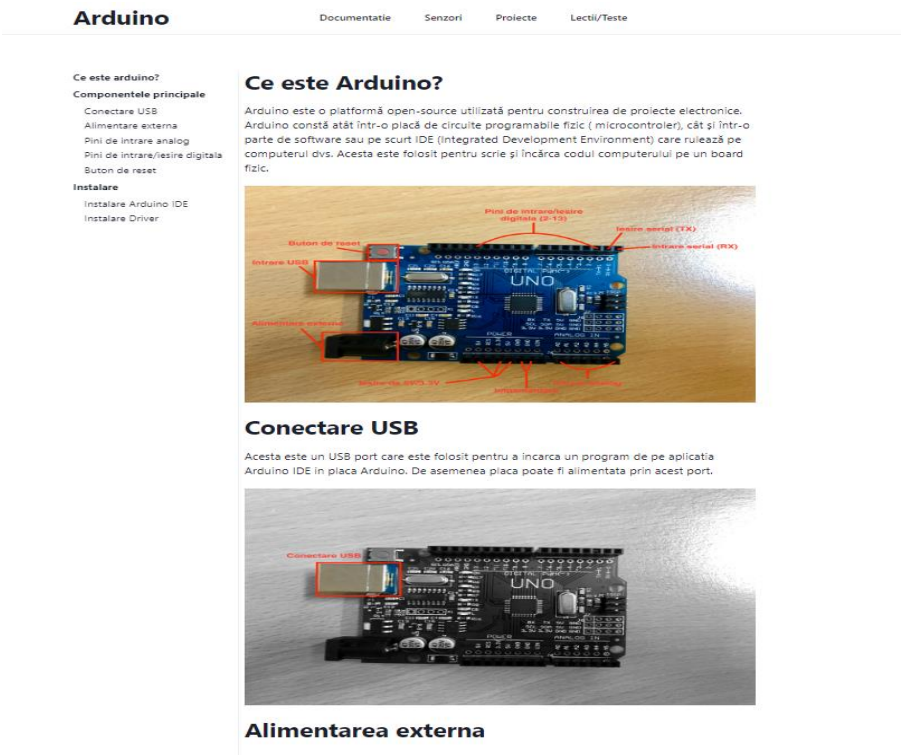
1. Presentation of the application

To use the Arduino educational software, often visit the web https://arduino.rares-andrei.me/



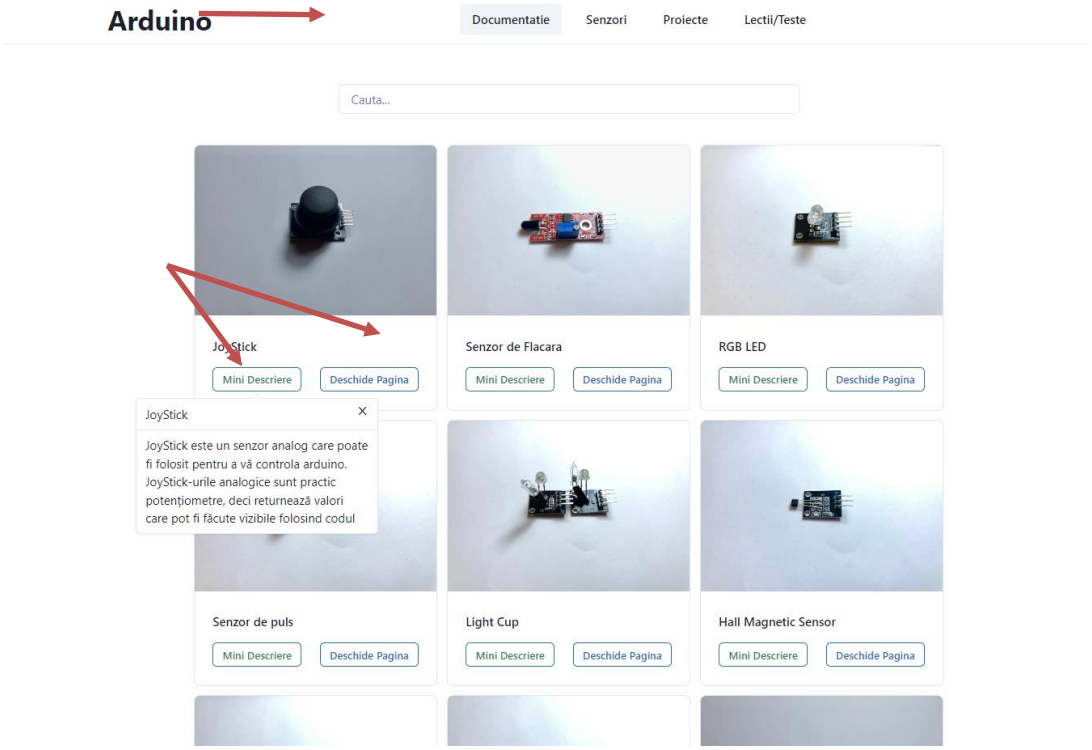
From the start window you can reach the 4 sections of the software ***Documentation*** , ***Sensors*** , ***Projects*** and ***Lessons/Tests*** .

- ***Documentation*** *page*

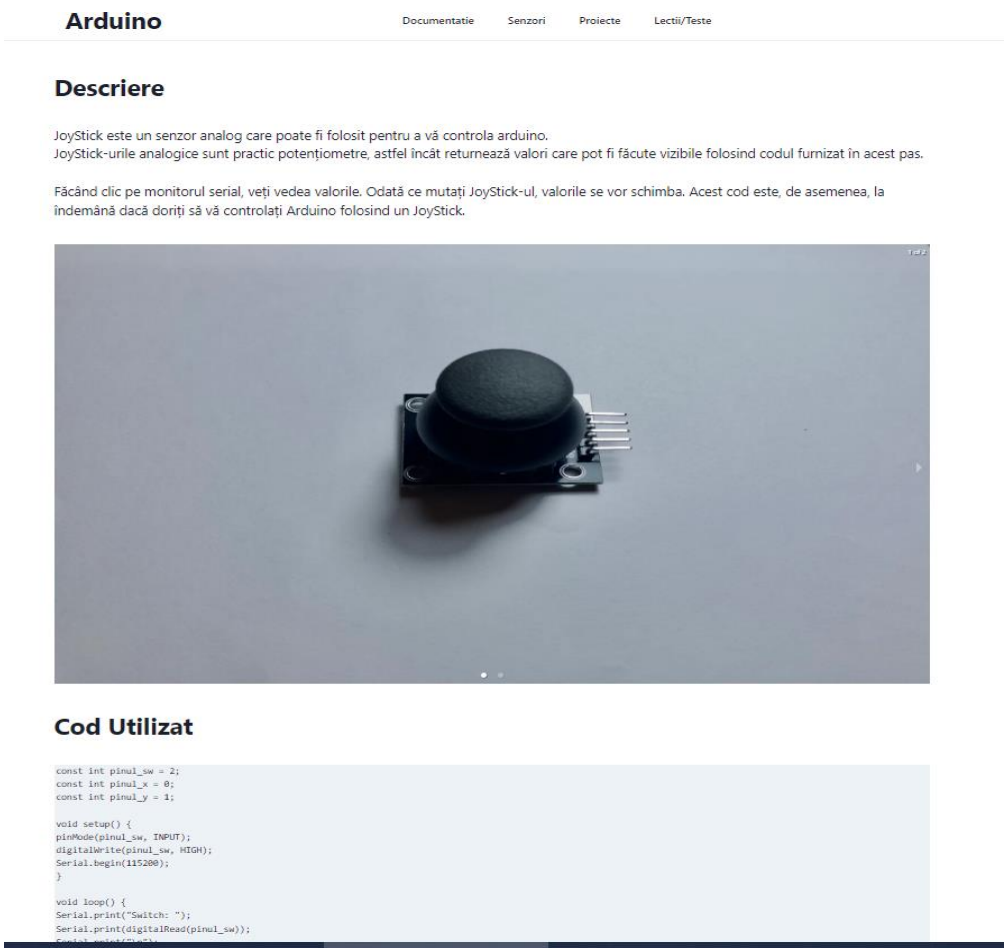


Arduino board is , how to connect it to the computer, details about analog input pins, digital input/output pins, Arduino IDE installation and Arduino clone driver installation .

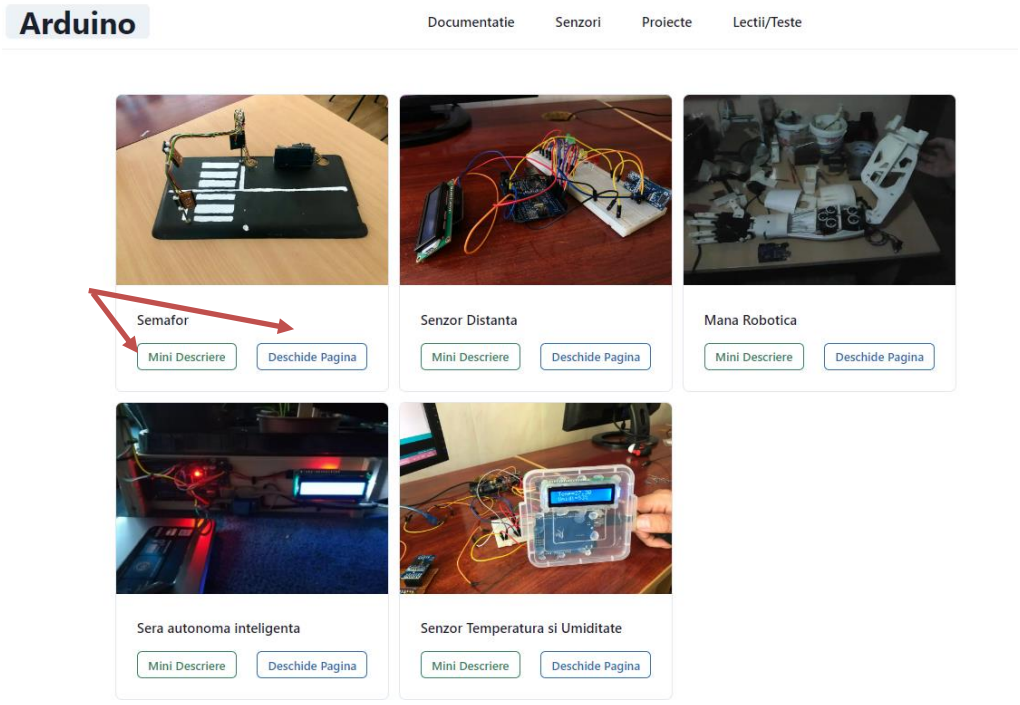
- *page* **–** contains a list of the most used sensors that can be attached to the Arduino board . There is a ***Search*** section on the page – for easy navigation. Under each sensor there are 2 buttons: the ***Mini Description*** button - opens a window containing a brief description of the respective sensor and the ***Open Page button*** - will open the page of the respective sensor



The descriptive page of a sensor – includes the presentation of the chosen sensor and the source code used

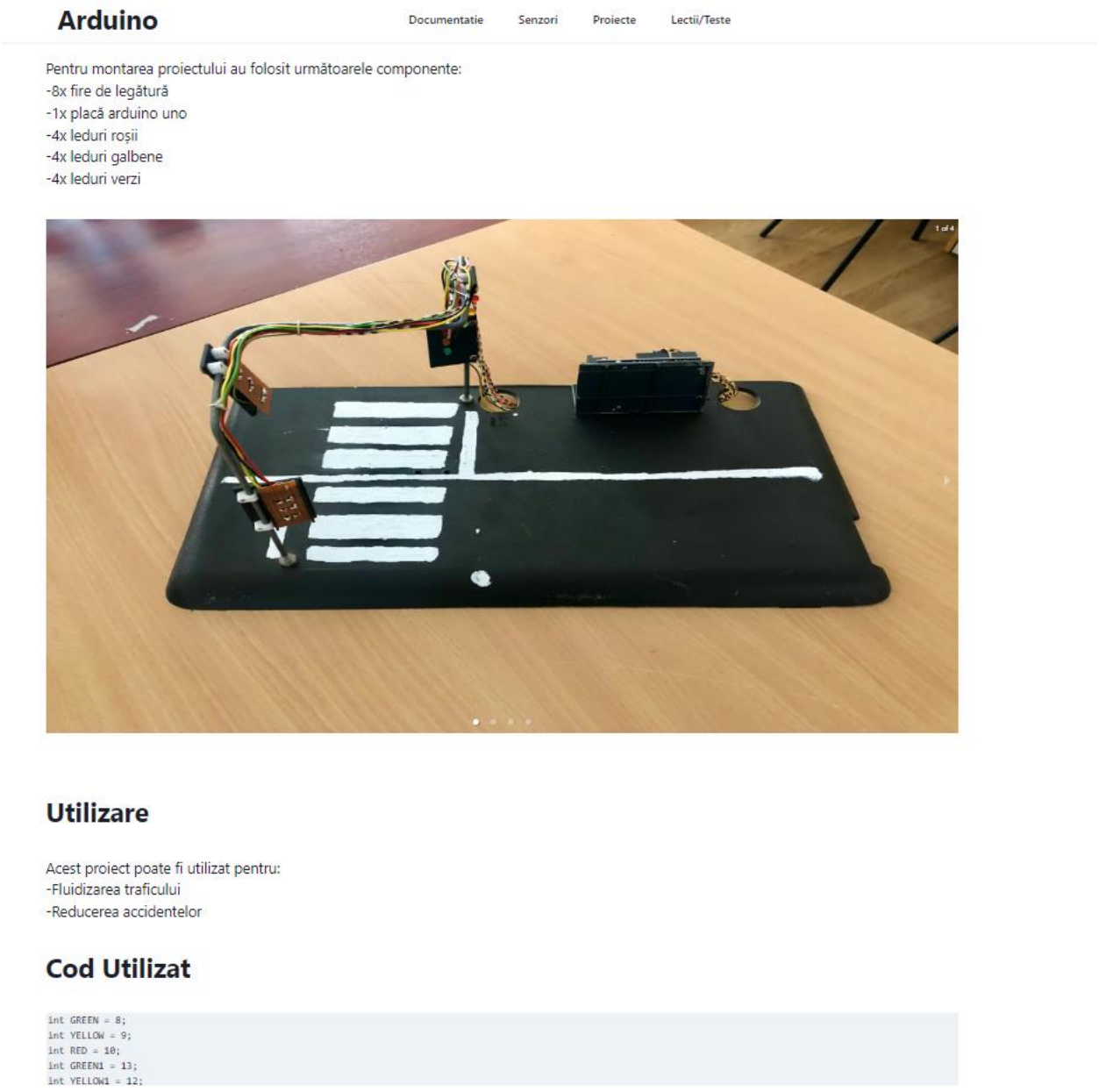


- ***Projects*** *page*



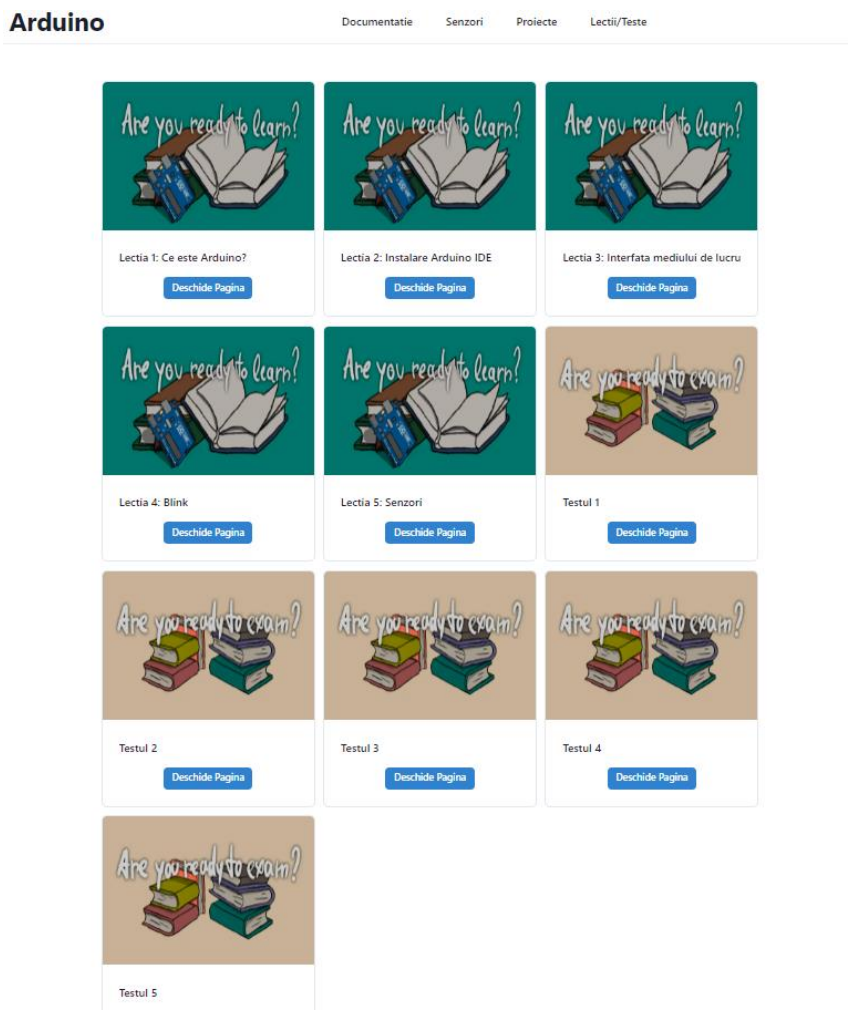
This page contains a list of starter projects such as Distance Sensor, Temperature and Humidity Sensor, Traffic Light, but also complex applications such as

Smart Autonomous Greenhouse and Robotic Hand. Each project has a ***Mini Description*** button on this page – opens a window with a brief description of the project and the ***Open Page button*** – opens the page related to the chosen project.



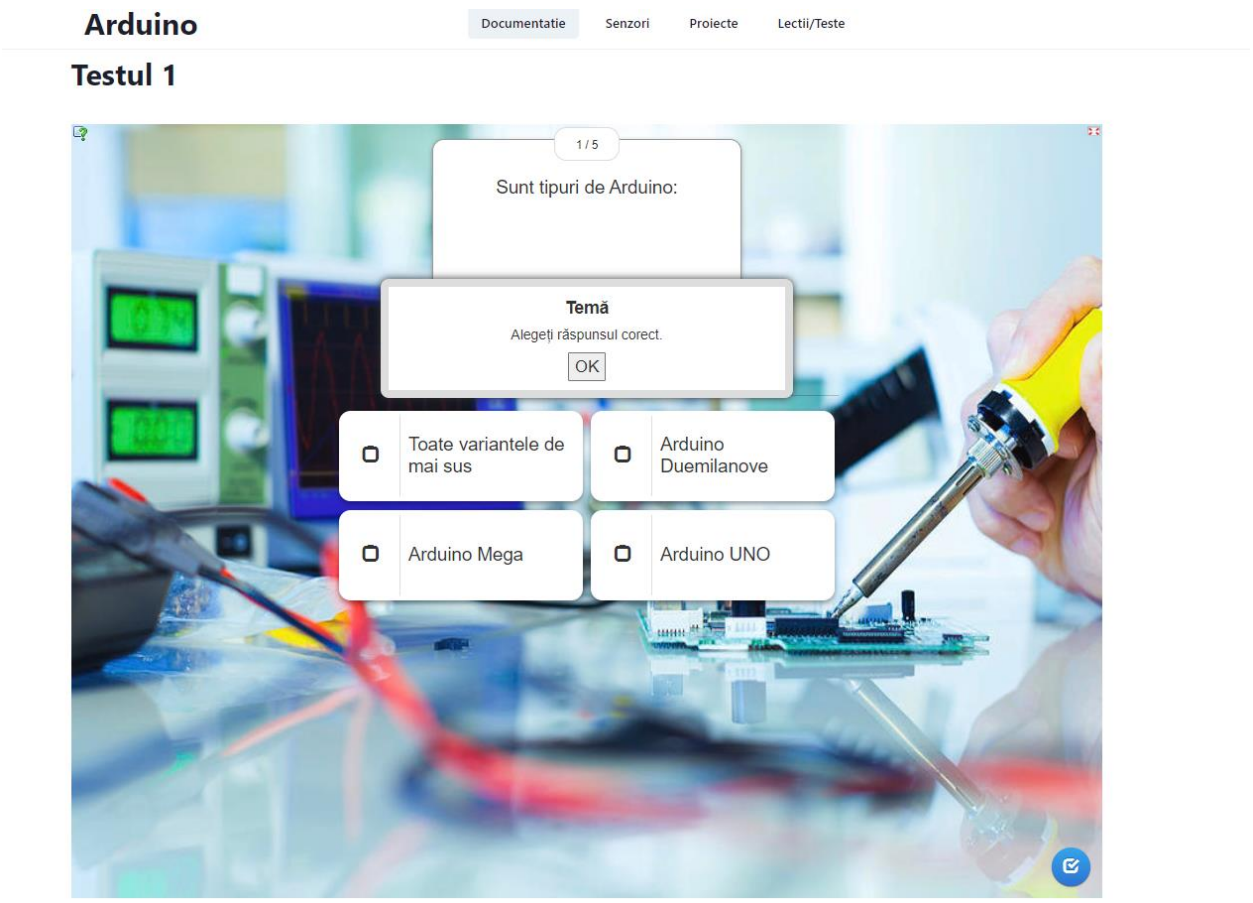
The descriptive page of a project – includes the description of the chosen project, areas of use, the list of components required for its implementation, and the source code used.

- ***Lessons/Tests*** Page – make available to the user 5 lessons with theoretical notions related to Arduino and sensors and 5 evaluation tests,



A lesson page:

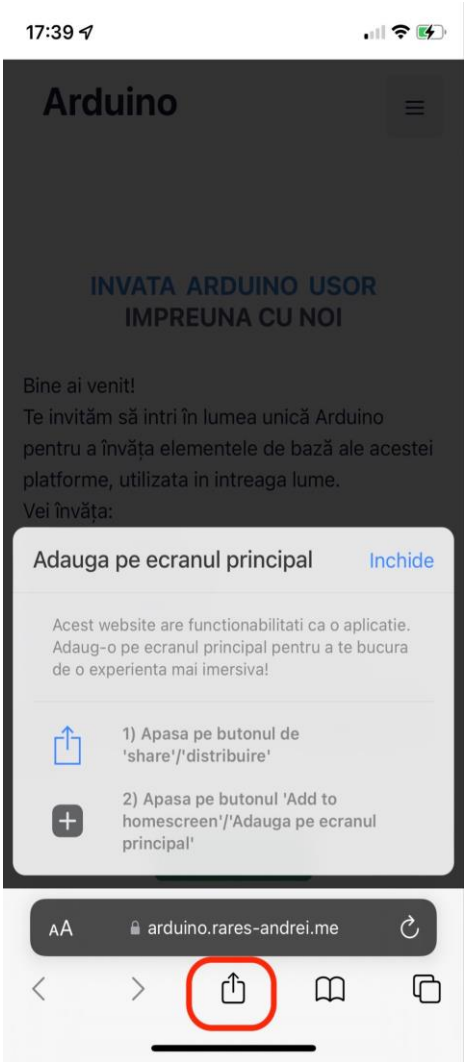
Example test:



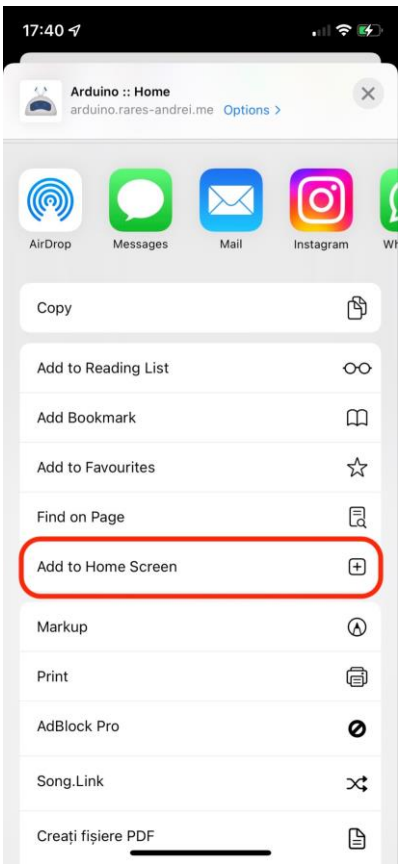
2. Installation on mobile devices

Installation For iOS :

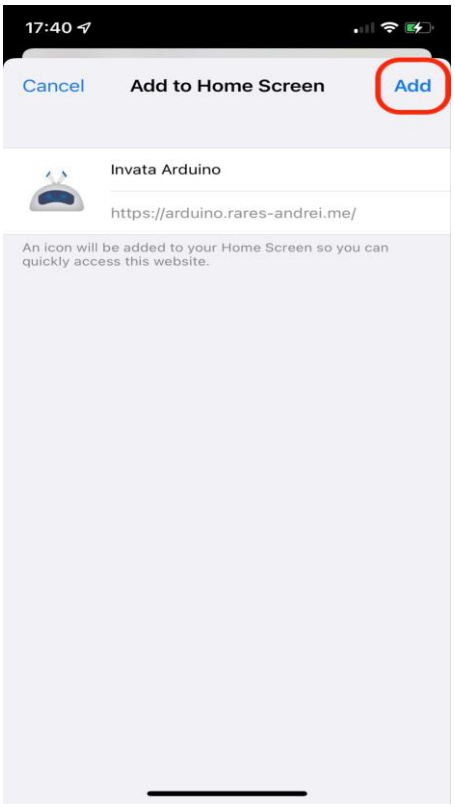
We access the web address https://arduino.rares-andrei.me/ and press the ***Share button***



Add button ***to man screen / add to the main screen:***

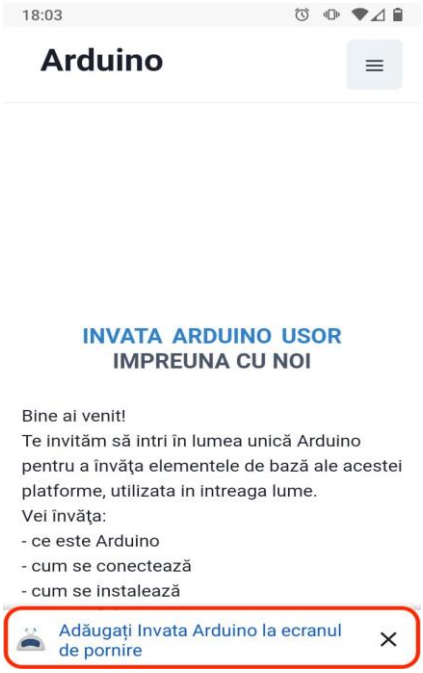


Then click the ***Add button :***

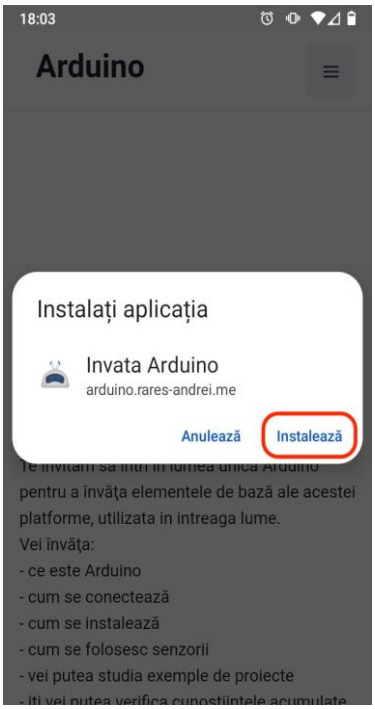


Installation for Android:

We access the web address https://arduino.rares-andrei.me/ and press the ***Add button Learn Arduino to your man screen / Add Learn Arduino*** at home screen:

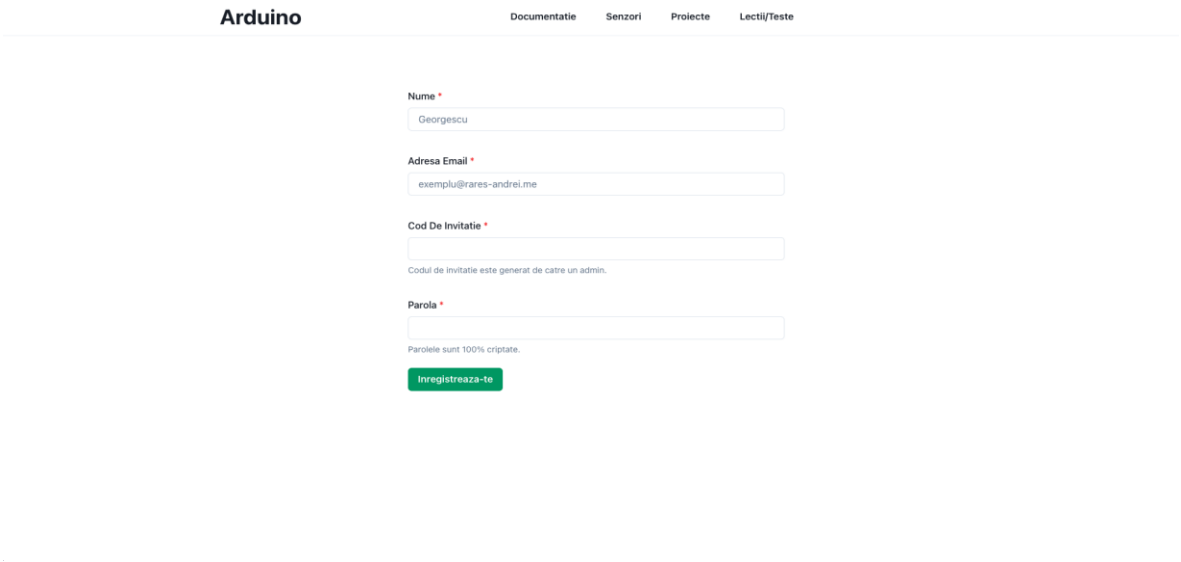


Click on the ***Install button***

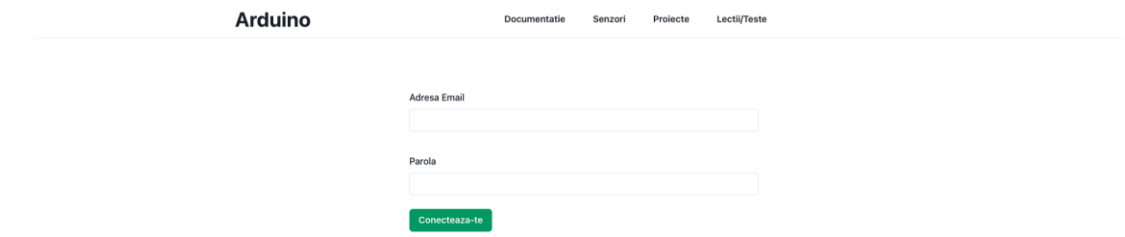


3. Administration module

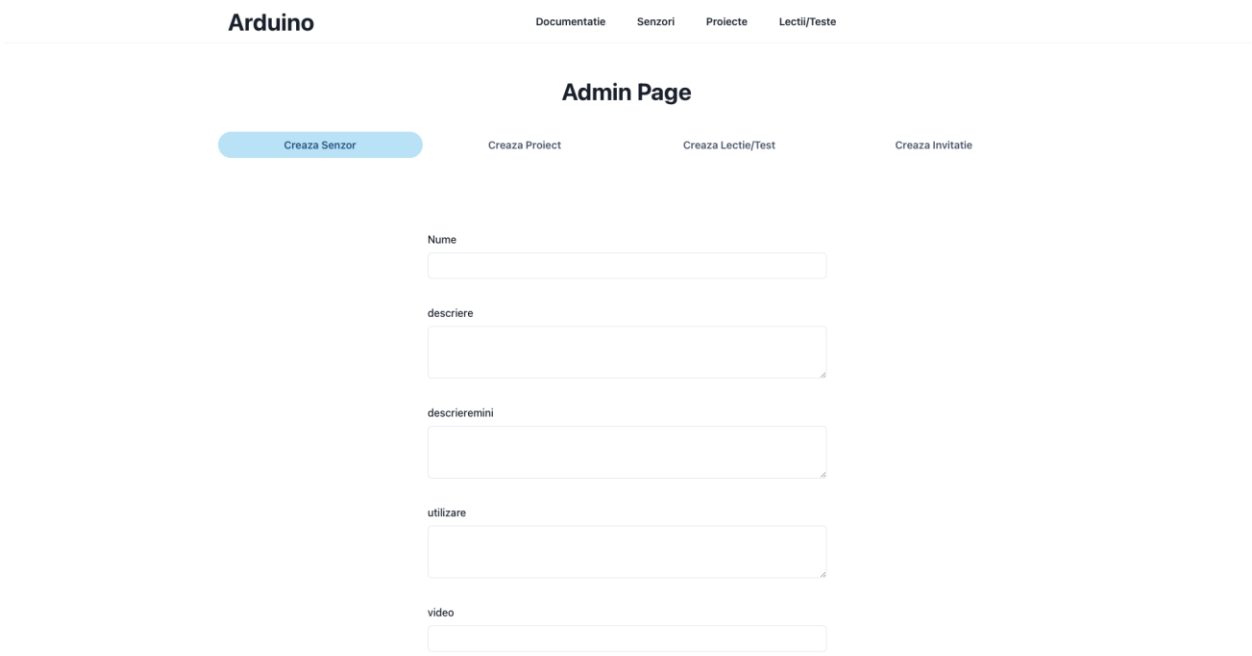
To access the administrators page we need an account. To create an account we must access the web address https://arduino.rares-andrei.me/register where we fill in the fields with the name, email address, invitation code generated by another administrator and a password



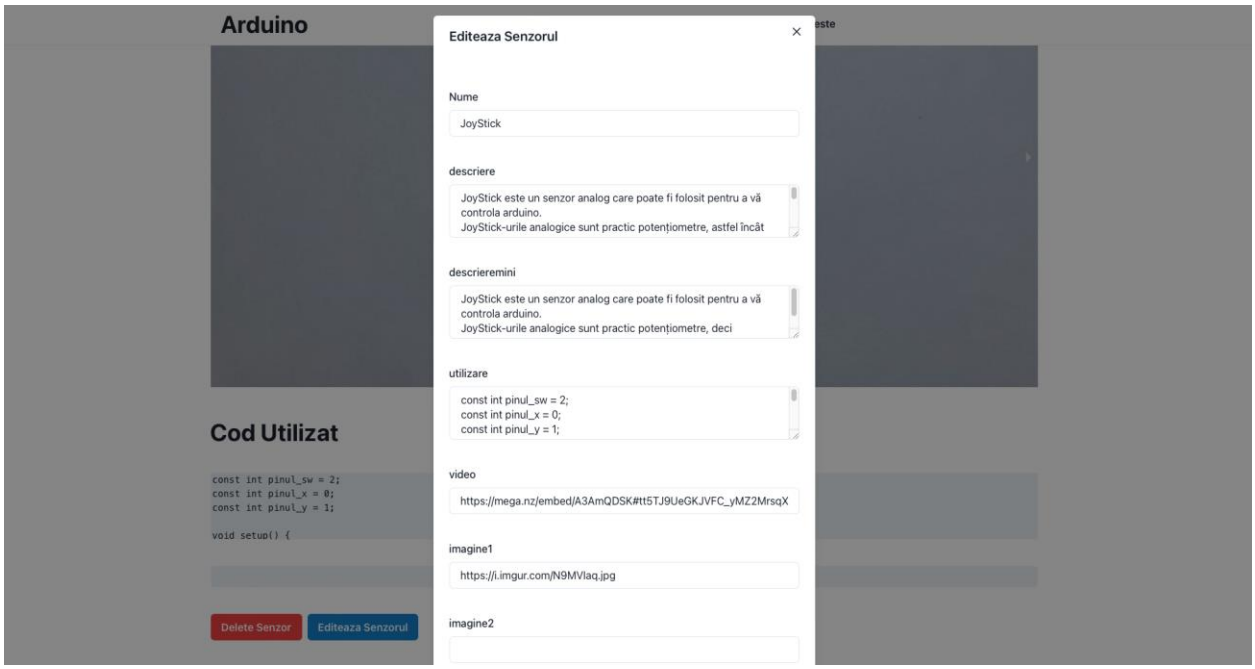
To connect to the account, we must access the web address https://arduino.rares-andrei.me/admin

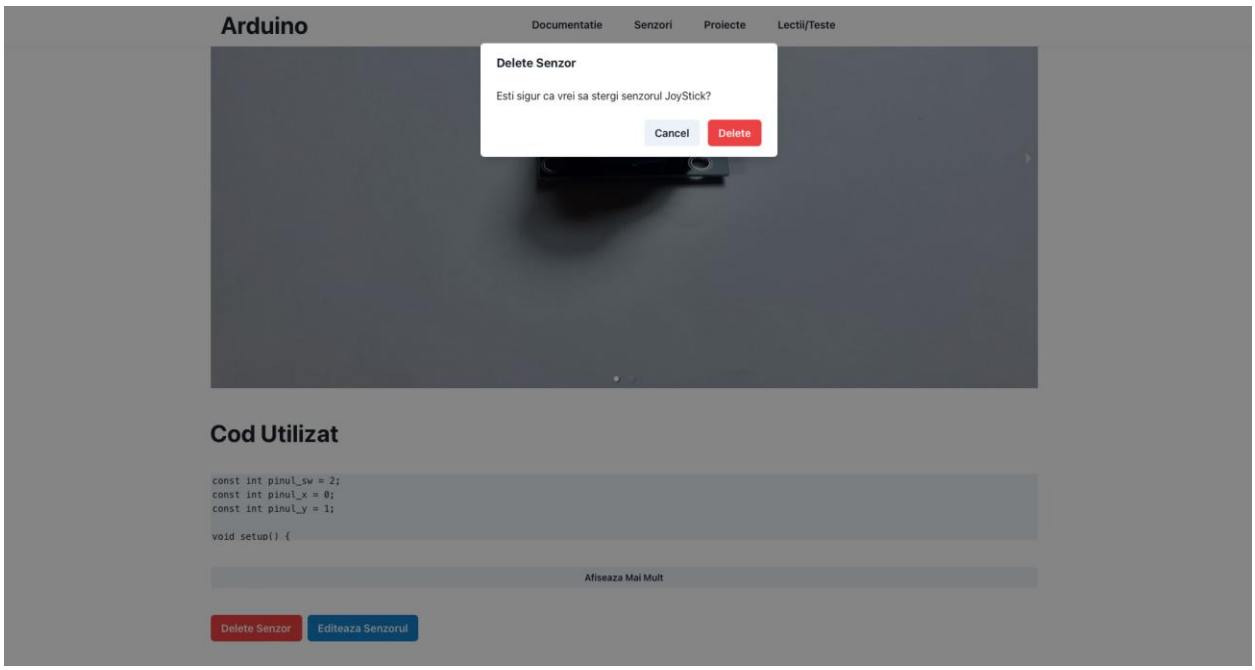


After connecting we can add sensors, projects, lessons, tests and generate invitations



Being logged into the account we can edit or delete each sensor, project, lesson or test using the buttons at the bottom of the page




Arduino
Documentatie
Senzori
Proiecte
Lectii/Teste
Delete Senzor
Esti sigur ca vrei sa stergi senzorul JoyStick?
Cancel
Delete
Cod Utilizat
const int pinul_sw = 2;
const int pinul_x = 0;
const int pinul_y = 1;
void setup() {
Afiseaza Mai Mult
Delete Senzor
Editeaza Senzorul

4. Application architecture

The javascript library is React.js supported by the framework Next.js

component library is called Chakra Oops

The carousel for pictures and videos was created with react responsive carousel

The icons and images from ' lessons /tests' were created by Cerbu Ionut

The images are uploaded to Imgur

The tests are done with the help of the Learning platform Apps

The lessons are uploaded to Google Docs

The ODM is Mongoose which uses the MongoDB database

For authentication and registration administrators we used Next-Auth

Passwords are encrypted using Bcryptjs

The session generated after authentication is made with the help of JsonWebToken (JWT)

Progressive webapp (PWA) was built with next-pwa

BIBLIOGRAPHY

1. https://sites.google.com/site/arduinoelectronicasiprogramare/prima-lectie/5-introducere-in-arduino
2. https://www.tme.eu/ro/news/library-articles/page/42541/Arduino-sau-microcontrolere-pentru-fiecare/
3. https://www.arduino.cc/en/software
4. https://accuraterp.ru/ro/laptops/yazyk-programmirovaniya-arduino-samouchitel-vvedenie-v-yazyk-programmirovaniya.html
5. https://learningapps.org/