

Arducurity



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Sprint 1 - Research and Preparation

Project proposal

Company Name: Arducurity

Description: Arducurity is a company specializing in the development of intelligent security and surveillance systems using Arduino technology and a wide range of sensors. We focus on providing innovative and accessible solutions for the protection of homes and businesses by integrating electronic devices and sensors that offer surveillance, intrusion detection and access control functionalities.

Business idea: Arducurity offers a modern and efficient alternative to traditional security systems, incorporating emerging technologies such as Arduino to create monitoring and control devices that are more accessible, customizable and easy to install. By using sensors for motion, light, sound and other variables, our products offer advanced protection and immediate response to dangerous situations.

Specific and well-defined objectives:

1. Develop a range of innovative and reliable security and surveillance products using Arduino technology and state-of-the-art sensors.
2. Offer customized security solutions that fit the specific needs of customers, from video surveillance systems to advanced access controls.
3. Provide exceptional customer service, including installation, configuration and after-sales support to ensure our customers' satisfaction.
4. Establish strategic alliances with companies in the technology and security sector to keep up with the latest market trends and innovations.
5. Promote awareness of the importance of security and smart surveillance in our residential and commercial environments through public awareness and education campaigns.

Brand and logo

We selected this logo with a specific color palette, including orange, white and black, with the aim of reflecting a futuristic and modern style. This color combination seeks to capture attention and create an attractive visual impact for viewers. We strongly believe that this design stands out in a competitive environment and conveys an image of modernity and innovation that fits perfectly with our vision of the future.

As for our slogan "security before everything", this reinforces our commitment to the protection and safety of our customers as an absolute priority. This phrase conveys our dedication to providing effective and reliable security solutions that protect our customers at all times. It's a constant reminder of our focus on safety and security in everything we do.



Materials to use & incial budget

ESP32 module: Provides Wi-Fi and Bluetooth connectivity for wireless communication.

Arduino board: Base for project development, with wide input/output capabilities.

Motion Sensors: Detect movement to activate automatic actions.

Temperature and Humidity Sensor: Monitors environmental conditions to optimize comfort and air quality.

Light Sensor: Regulates the lighting according to the ambient light to save energy.

LCD screen: Provides a visual interface to display system information and status.

Jumper Cable Kit: Facilitates the connections between the different components of the project.

Ultrasonic Sensor: Measures distances without contact for various applications.

Relay Module: Controls high voltage or current devices.

Stepper Motor: Provides precise motion for various applications.

IR Remote Control: Integrates the remote control of infrared devices in the system.

Linear Actuator: Provides controlled linear motion for various applications.

Item:	Amount	Price:	Purchase link:
ESP32 module:	x1	11,99€	link
Arduino board:	x1	29,04€	link
Motion sensors	x1	2,80€	link
Temperature and humidity sensor	x1	33,99€	link
Light sensor	x1	6,49€	link
LCD screen	x1	10,99€	link
Jumper cable kit	x1	5,99€	link
Ultrasound sensor	x2	11,99€	link
Relay module	x5	9,99€	link
Stepper engine	x2	15,99€	link
Remote Control IR	x1	4,99€	link
Linear actuator	x1	20,00€	link
Total budget		164,25€	

Decide which sensors and devices to use

Motion sensors:

They detect changes in the position or movement of objects near them. They can use various methods such as infrared or microwaves to detect changes and send a signal when movement occurs.



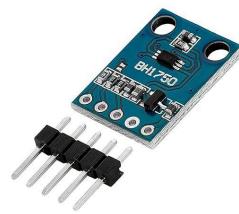
Temperature and humidity sensor:

It measures the temperature and humidity of the environment where it is located. This makes it possible to monitor the climatic conditions in a particular place and make decisions based on this data.



Light Sensor:

Detects the intensity of light in a certain environment. It can use photoresistors or other technologies to measure the amount of light present and adjust devices or systems based on that information.



Ultrasonic sensor:

It uses high-frequency sound waves to measure the distance between the sensor and an object. This type of sensor is useful for the detection of objects or for the control of equipment that needs to know its proximity to other objects.



Review of rules and regulations

European regulations:

The European Commission establishes guidelines and regulations that affect the field of home automation. Some of them are:

CE Directive 2006/95/CE Low Voltage.

CE Directive 89/336/EEC on Electromagnetic Compatibility, repealed in 2009 by 2004/108/CE.

Spanish regulations:

In Spain, these guidelines are adapted through different laws and regulations, such as:

Technical Building Code.

Regulation of Common Telecommunications Infrastructures (Royal Decree 346/2011).

Low Voltage Electrotechnical Regulation (Royal Decree 842/2002).

Relevant Technical Standards:

In addition to laws, there are technical regulations that set standards for home automation, such as:

EN 50090: Konnex protocol for home and building electronic systems.

EN/ISO 16484: International standard for building automation and control systems (BACS).

Norms UNE-EN 50491: General requirements for electronic systems in homes and buildings.

National Regulations:

In Spain, EA 0026 of AENOR establishes general prescriptions for the installation and evaluation of home automation systems.

Research of home automation system requirements

Identify potential users: First, we need to know who could use our home automation systems. This includes people who own homes, business managers or property managers.

Conduct interviews and surveys: Talk to these people to understand what is most important to them in terms of security and surveillance in their homes or businesses. We want to know what features they want in a home automation system.

Analyze the competition: We also research what other companies are offering in terms of home and business security. We want to see what they do well and how we can do it even better.

Evaluate new technologies: We will keep up with the latest innovations in home automation and security technology. This will help us find ways to improve our services.

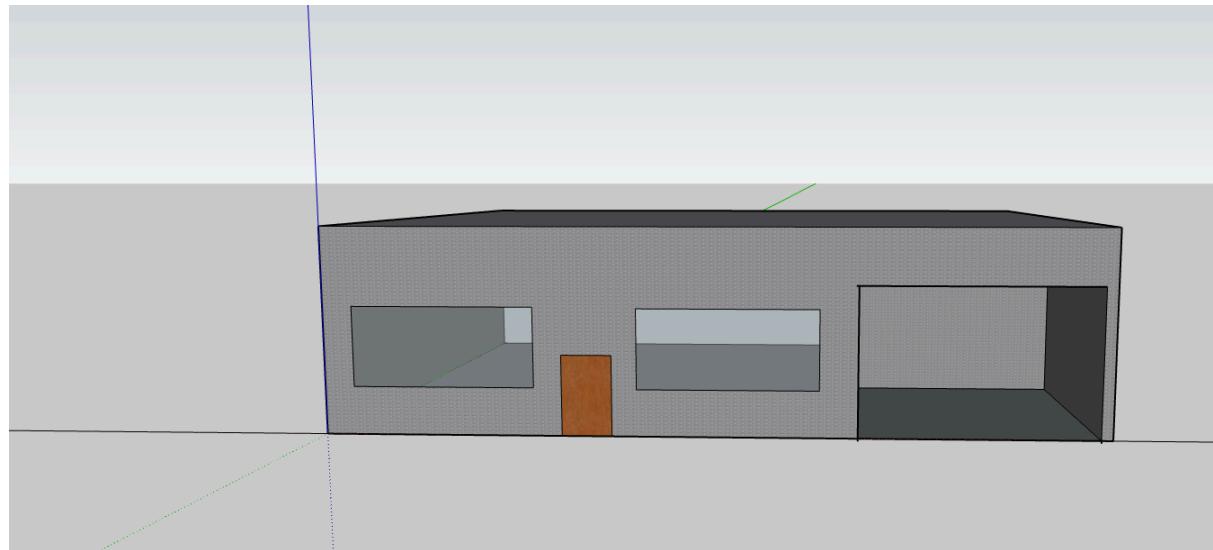
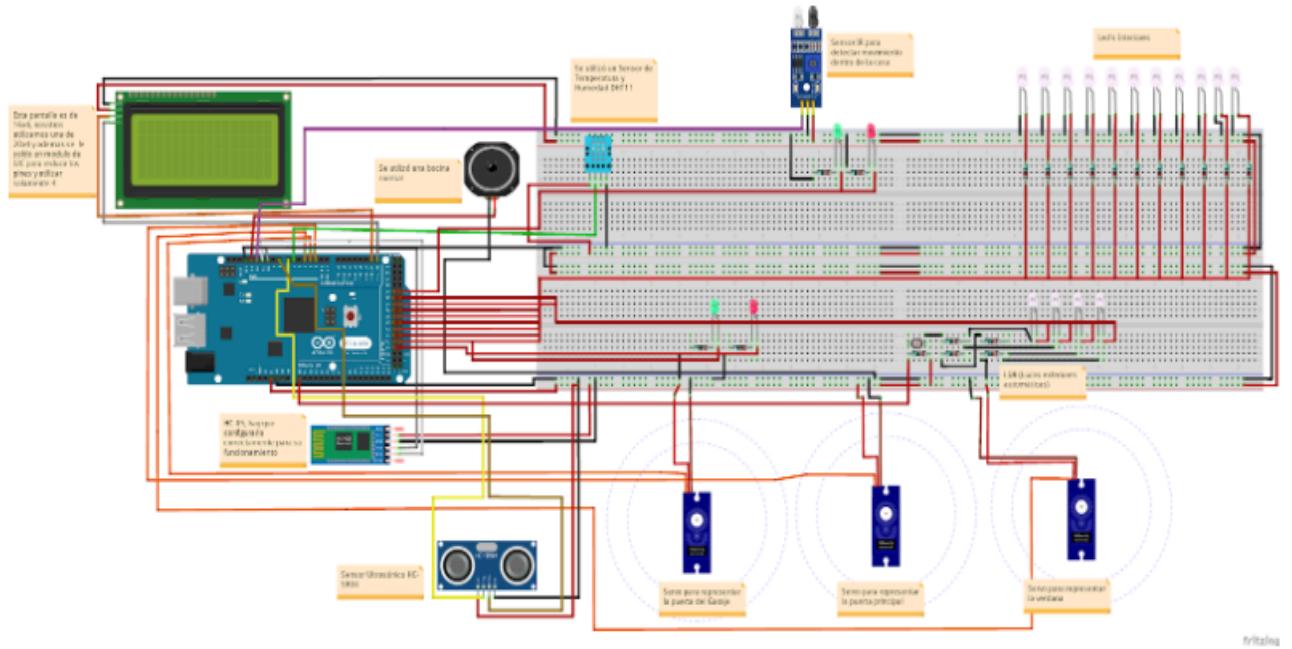
Consider laws and regulations: It is very important to ensure that we comply with all data security and privacy laws. This includes things like rules about using security cameras.

Prioritize what matters: After talking to people and seeing what the competition is doing, we'll decide which features are most important to our customers.

Document everything: Once we know what we want to do, we will put everything in writing. This will help us follow a clear plan to develop our home automation system.

Sprint 2 - Arduino Configuration and Basic Web Development

Make a sketch of the model



Start configuring/programming the Arduino + ESP32

```
#include <SoftwareSerial.h>

SoftwareSerial SIM900(10, 11); // Configurar el port en sèrie per al SIM900

const int switchPin = 2; // Pin del sensor magnètic
const int ledPin = 8; // Pin per encendre el LED

bool enviat = false; // Variable per controlar si s'ha enviat el missatge

void setup() {
    SIM900.begin(19200); // Configurar velocitat i sèrie per al SIM900
    delay(5000); // Retard per trobar una Xarxa
    Serial.begin(19200); // Configurar velocitat de sèrie per a l'Arduino
    Serial.println("OK"); // Missatge OK a l'Arduino per saber que tot va bé.

    pinMode(switchPin, INPUT); // Establir pin del sensor com a entrada
    pinMode(ledPin, OUTPUT); // Establir pin del LED com a sortida
    digitalWrite(switchPin, HIGH); // Establir pin digital en alt per al sensor
}

void loop() {
    // Si el sensor està tancat, posem enviat a fals i apaguem el LED
    if (digitalRead(switchPin) == LOW) {
        digitalWrite(ledPin, LOW);
        enviat = false;
    }
    else {
        // Si la porta està oberta, encenem el LED
        digitalWrite(ledPin, HIGH); // LED encès

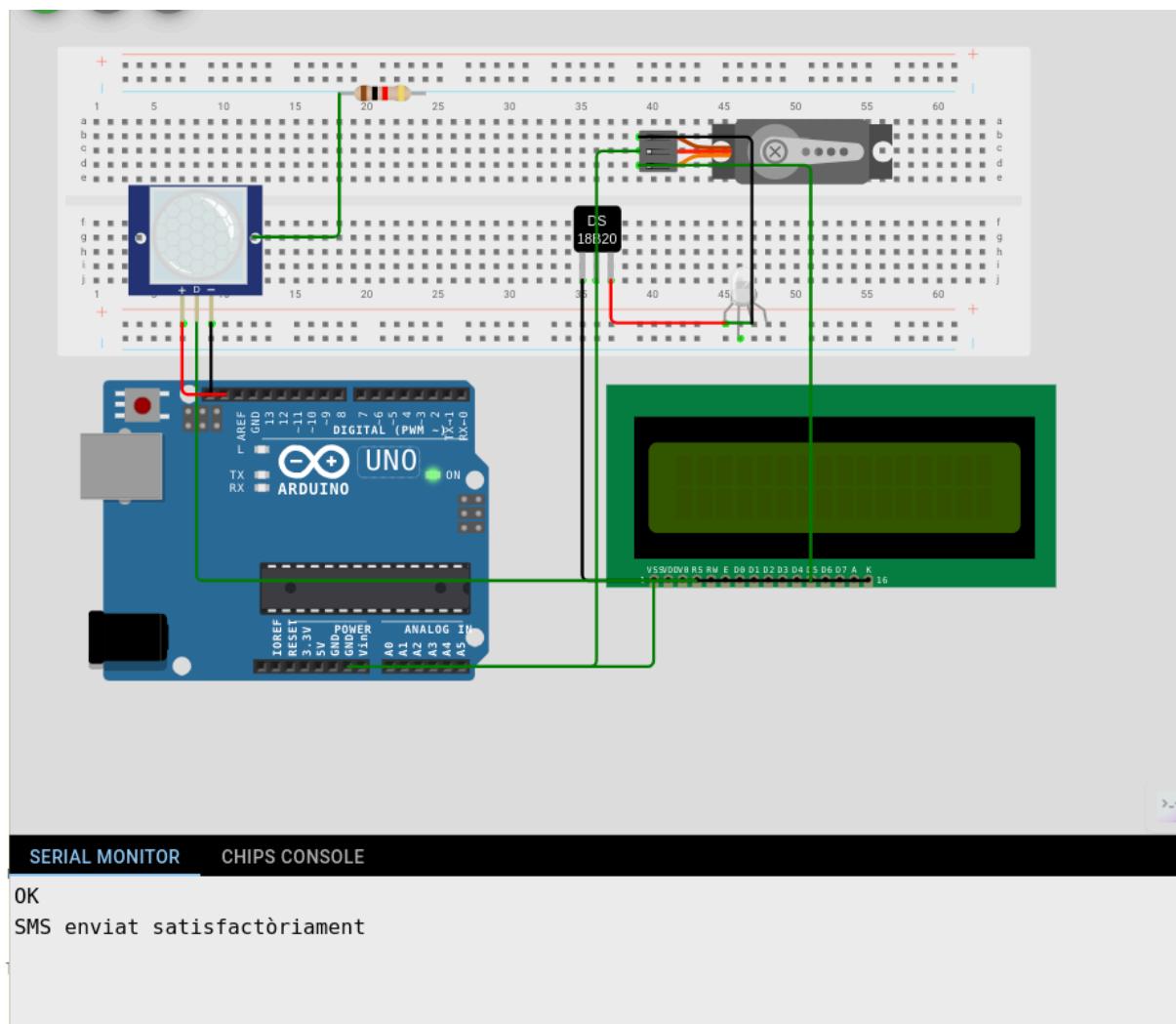
        // Si enviat és fals, significa que encara no s'ha enviat el missatge, així que
        // l'enviem i el marquem com enviat
        if (!enviat) {
```

```
mensaje_sms();
enviat = true;
// A partir d'aquest punt, encara que la porta continuï oberta, el missatge ja s'ha
enviat, pel que no es remetrà de nou fins que es tanqui i torni a obrir-se.
}

}

}

void mensaje_sms() {
SIM900.println("AT+CMGF=1"); // Configurar mode de text per als missatges SMS
delay(100);
SIM900.println("AT+CMGS=\"+3433333\""); // Número al qual s'enviarà l'SMS
(assegura't de tenir el format correcte!)
delay(100);
SIM900.print("ALERTA: Ingresso a Sitio: Ch1 ID: 2014"); // Missatge que s'enviarà
delay(100);
SIM900.write(0x1A); // Enviar caràcter CTRL-Z (codi ASCII 26) per finalitzar el
missatge
delay(100);
SIM900.println();
delay(1000); // Esperar un segon per assegurar-se que el missatge s'envii
correctament
Serial.println("SMS enviat satisfòriament");
}
```



Install and test the LCD screen

```
#include <LiquidCrystal.h>
#include <SoftwareSerial.h>

// LCD pin configuration
const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

// GSM module pin configuration
SoftwareSerial SIM900(10, 11); // RX, TX

// Switch and LED pin configuration
const int switchPin = 2;
const int ledPin = 8;
bool messageSent = false;

void setup() {
    // Initialize LCD
    lcd.begin(16, 2);
    lcd.print("Initializing...");

    // Initialize GSM module
    SIM900.begin(19200);
    delay(5000);
    Serial.begin(19200);
    Serial.println("GSM module initialized");

    // Initialize switch and LED pins
    pinMode(switchPin, INPUT);
    pinMode(ledPin, OUTPUT);
    digitalWrite(switchPin, HIGH); // Enable pull-up resistor
}

void loop() {
    // Read switch state
    if (digitalRead(switchPin) == LOW) {
        digitalWrite(ledPin, LOW);
        messageSent = false;
    } else {
        digitalWrite(ledPin, HIGH);
    }
}
```

```

if (!messageSent) {
    sendSMS();
    messageSent = true;
}
}

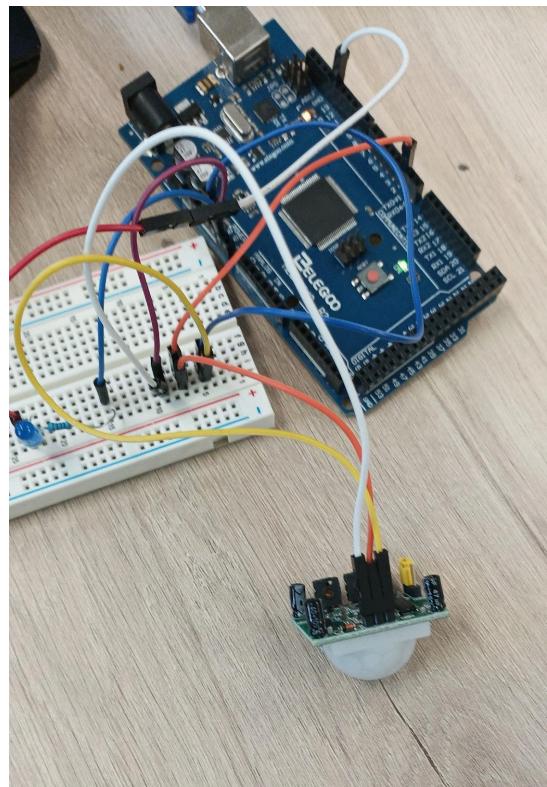
// Display elapsed time on LCD
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("Time: ");
lcd.print(millis() / 1000);
delay(1000);
}

void sendSMS() {
    // Configure GSM module for SMS
    SIM900.println("AT+CMGF=1");
    delay(100);
    // Set recipient number (ensure correct format)
    SIM900.println("AT+CMGS=\\"+3433333\\\"");
    delay(100);
    // Send message
    SIM900.print("ALERT: Intrusion detected!");
    delay(100);
    // Send CTRL-Z to end message
    SIM900.write(0x1A);
    delay(100);
    // New line
    SIM900.println();
    delay(1000);
    Serial.println("SMS sent successfully");
}

```

Motion, temperature, humidity, light, ultrasonic sensors

Have the materials (sensors and Arduino) under control



Install and configure LAMP

```
administrator@SER-Arducurity:~$ sudo apt install apache2
[sudo] password for administrator:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  ethtool libmspack0 libwpe-1.0-1 libwpebackend-fdo-1.0-1 libxmlsec1-openssl open-vm-tools
Use 'sudo apt autoremove' to remove them
```

```
administrator@SER-Arducurity:~$ sudo systemctl start apache2
administrator@SER-Arducurity:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
administrator@SER-Arducurity:~$ sudo apt install mariadb-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
```

```
administrator@SER-Arducurity:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

```
administrator@SER-Arducurity:~$ sudo systemctl restart apache2
administrator@SER-Arducurity:~$ sudo systemctl status mysql
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2024-04-18 15:47:43 CEST; 1min 33s ago
     Main PID: 2342 (mysqld)
       Status: "Server is operational"
      Tasks: 37 (limit: 4598)
     Memory: 369.9M
        CPU: 1.412s
       CGroup: /system.slice/mysql.service
               └─2342 /usr/sbin/mysqld
```

```
administrator@SER-Arducurity:~$ sudo mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.36-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE USER 'administrator'@'%' IDENTIFIED BY '1234';
Query OK, 0 rows affected (0,47 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'administrator'@'%';
Query OK, 0 rows affected (0,61 sec)

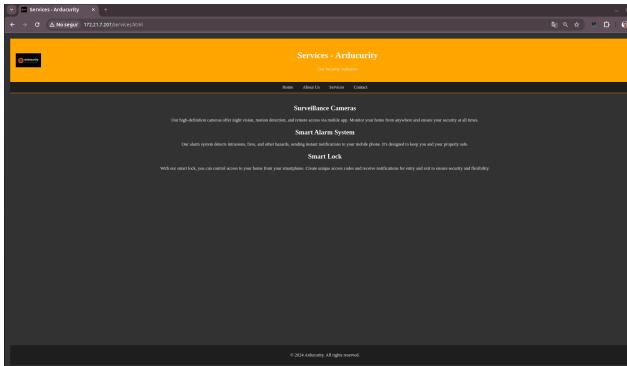
mysql>
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0,18 sec)

mysql>
mysql> EXIT;
Bye
administrator@SER-Arducurity:~$
```

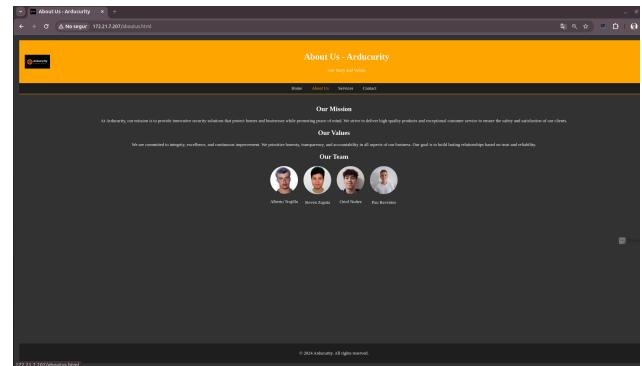
Design the web

<https://172.21.7.33>

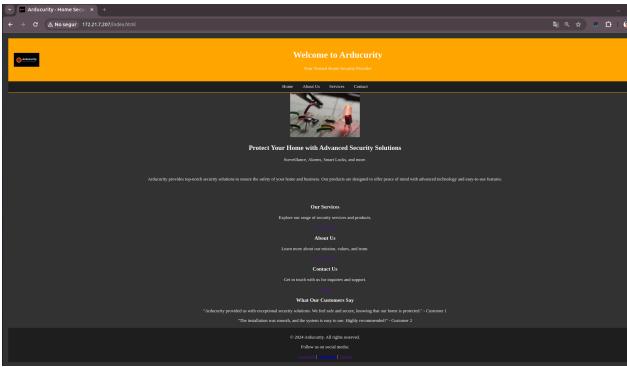
Home:



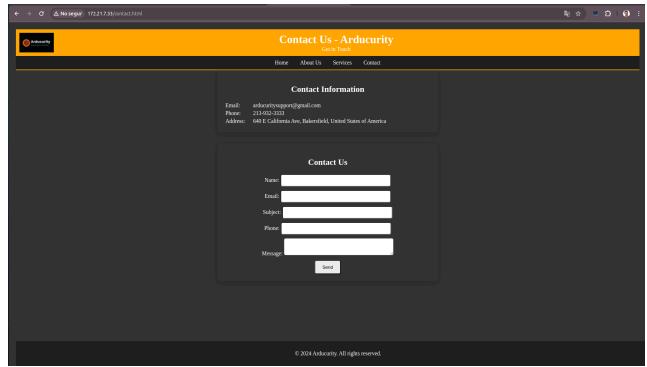
About us:



Services:



Contact:



Sprint 3 - Model Development and Advanced Programming

Program the Arduino

Código del Garaje:

```
#include <Servo.h>

Servo motor;
int pirPin = 2; // Pin del sensor de movimiento
int abierto = 0; // Variable para rastrear si la puerta está abierta o cerrada
unsigned long tiempoUltimoMovimiento = 0; // Variable para almacenar el tiempo del último movimiento
const unsigned long tiempoEsperaCerrar = 6000; // Tiempo de espera para cerrar la puerta después de dejar de detectar movimiento (en milisegundos)
int redLed = 5; // Pin del LED rojo
int greenLed = 4; // Pin del LED verde

void setup() {
    pinMode(pirPin, INPUT); // Configura el pin del sensor de movimiento como entrada
    pinMode(redLed, OUTPUT); // Configura el pin del LED rojo como salida
    pinMode(greenLed, OUTPUT); // Configura el pin del LED verde como salida
}

void loop() {
    motor.attach(3); // Adjunta el motor al pin 3 cada vez que se ejecuta el loop
    if (detectarMovimiento()) {
        if (abierto == 0) { // Si la puerta está cerrada, ábrela
            abrirPuerta();
            abierto = 1; // Marcar que la puerta está abierta
        }
        tiempoUltimoMovimiento = millis(); // Actualiza el tiempo del último movimiento
    } else {
        // Si no hay movimiento y la puerta está abierta, espera y luego cierra la puerta
        if (abierto == 1 && millis() - tiempoUltimoMovimiento > tiempoEsperaCerrar) {
            cerrarPuerta();
            abierto = 0; // Marcar que la puerta está cerrada
        }
    }
}

bool detectarMovimiento() {
    return digitalRead(pirPin) == HIGH; // Devuelve true si se detecta movimiento
}

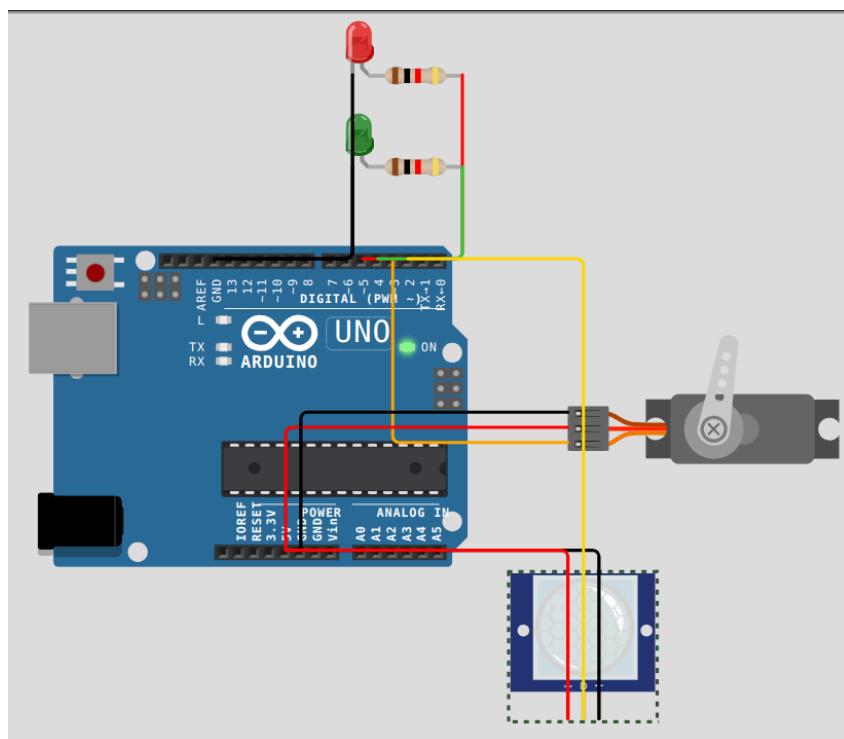
void abrirPuerta() {
    digitalWrite(4, LOW);
    digitalWrite(5, HIGH);
    digitalWrite(redLed, LOW); // Apagar LED rojo
    digitalWrite(greenLed, HIGH); // Encender LED verde
}
```

```

for (int angulo = 9; angulo <= 130; angulo += 10) {
    motor.write(angulo);
    delay(500);
}
digitalWrite(4, HIGH);
digitalWrite(5, LOW);
motor.detach(); // Desconecta el motor después de abrir la puerta
}

void cerrarPuerta() {
    digitalWrite(4, LOW);
    digitalWrite(5, HIGH);
    digitalWrite(redLed, HIGH); // Encender LED rojo
    digitalWrite(greenLed, LOW); // Apagar LED verde
    for (int angulo = 130; angulo >= 9; angulo -= 10) {
        motor.write(angulo);
        delay(500);
    }
    digitalWrite(4, LOW);
    digitalWrite(5, HIGH);
    motor.detach(); // Desconecta el motor después de cerrar la puerta
}

```



Código de las persianas:

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

// Inicializar objetos LCD y Servo
LiquidCrystal_I2C lcd(0x27, 16, 2);
Servo myServo;

// Definir asignaciones de pines
int ldrPin = A0;
int ledPin1 = 3;
int ledPin2 = 5;
int ledPin3 = 6;
int potPin = A1;

// Constantes para cálculos
const float GAMMA = 0.7;
const float RL10 = 50;

void setup() {
    // Inicializar LCD y Servo
    lcd.begin(16, 2);
    myServo.attach(9);

    // Configurar pines de LED como salidas
    pinMode(ledPin1, OUTPUT);
    pinMode(ledPin2, OUTPUT);
    pinMode(ledPin3, OUTPUT);
}

void loop() {
    // Leer valor del sensor LDR
    int luz = analogRead(ldrPin);

    // Calcular voltaje, resistencia y lux basándose en la lectura del LDR
    float voltage = luz / 1024.0 * 5;
    float resistance = 2000 * voltage / (1 - voltage / 5);
    float lux = pow(RL10 * 1e3 * pow(10, GAMMA) / resistance, (1 / GAMMA));

    // Mostrar lux en el LCD
    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("Luz:");
    lcd.print(lux);

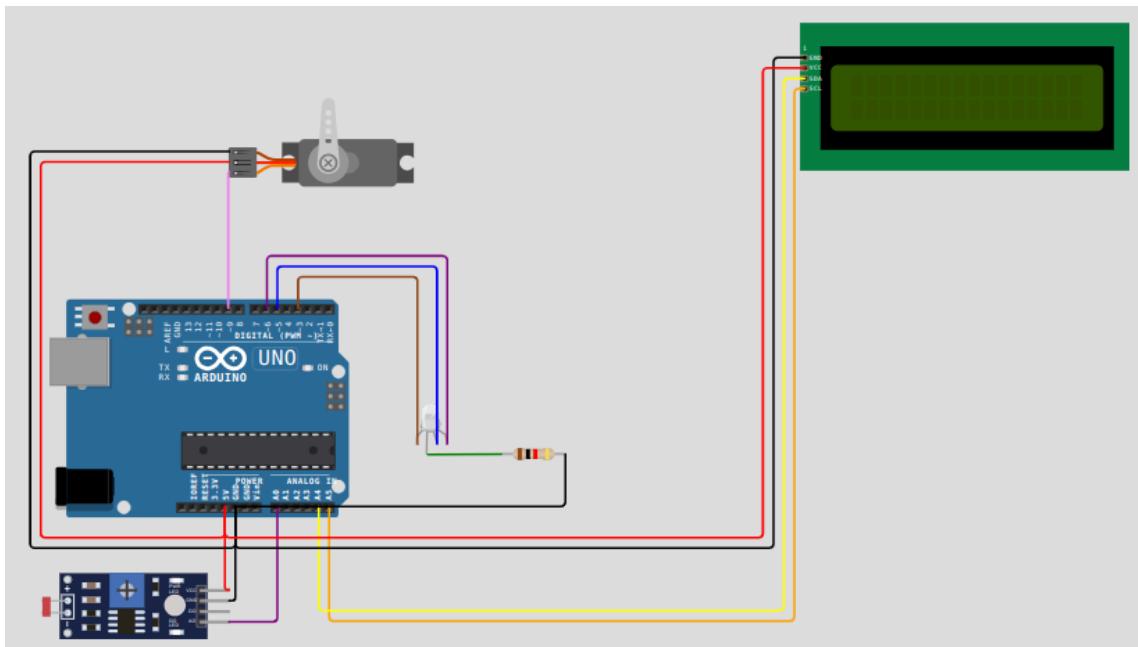
    // Controlar LEDs, servo y mostrar en función del nivel de lux
    int servoAngle;
    if (lux < 170) {
        digitalWrite(ledPin1, LOW);
        digitalWrite(ledPin2, LOW);
        digitalWrite(ledPin3, HIGH);
    }
}
```

```

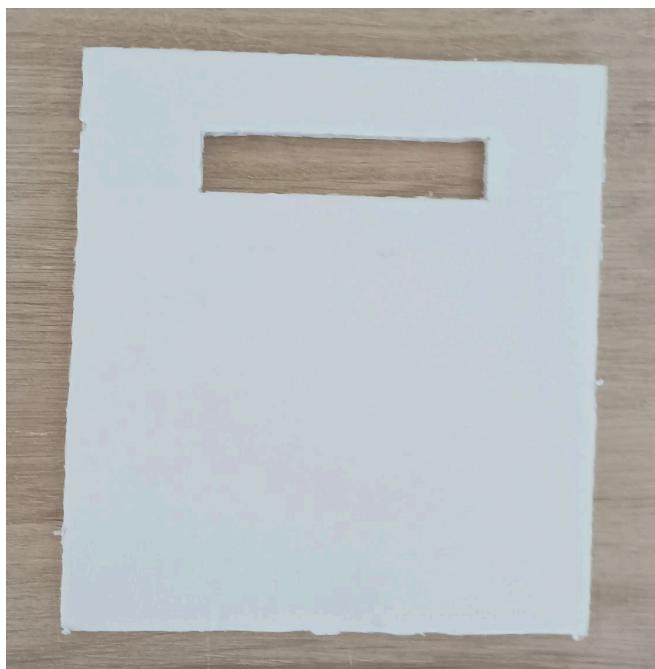
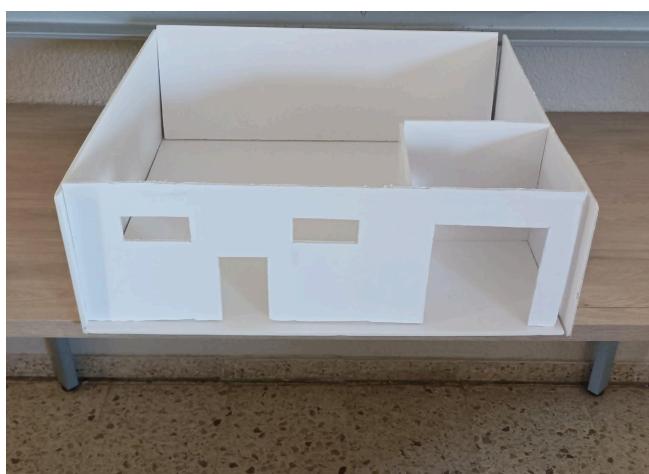
servoAngle = 0;
lcd.setCursor(0, 1);
lcd.print("Noche");
} else if (lux >= 170 && lux < 633) {
  digitalWrite(ledPin1, LOW);
  digitalWrite(ledPin2, HIGH);
  digitalWrite(ledPin3, LOW);
  servoAngle = 120;
  lcd.setCursor(0, 1);
  lcd.print("Tarde");
} else {
  digitalWrite(ledPin1, HIGH);
  digitalWrite(ledPin2, LOW);
  digitalWrite(ledPin3, LOW);
  servoAngle = 180;
  lcd.setCursor(0, 1);
  lcd.print("Dia");
}

// Establecer ángulo del servo e introducir un retraso
myServo.write(servoAngle);
delay(1000);
}

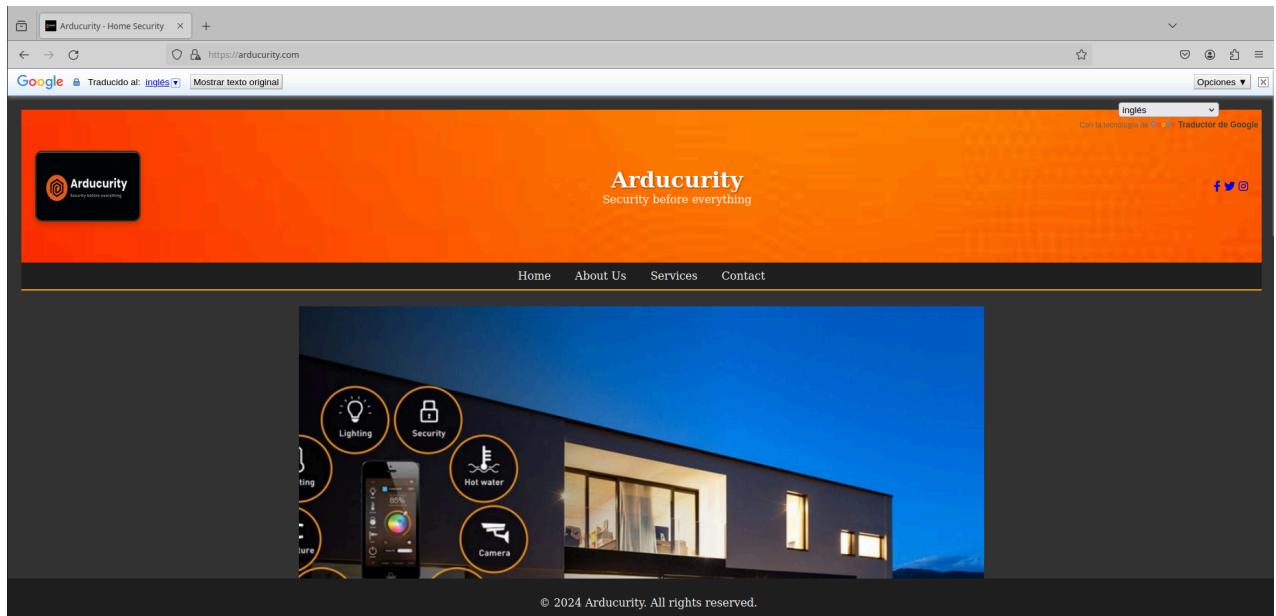
```



Finish making the pieces of the model



Develop the web page in HTML



<https://arducurity.info/>

web code folder:

<https://drive.google.com/file/d/1IRGNLwmGDGoHkGHZp8SCSce1jO-9IXPG/view?usp=sharing>

Domain configuration:

A screenshot of the Nominalia domain configuration interface. The top bar shows "Configuración actual de DNS". Below it are tabs for "Gestión guada" (selected) and "Gestión avanzada". A note says: "Te recordamos que, para poder disfrutar de nuestros servicios adicionales, deberás asociar a tu dominio los DNS establecidos por defecto." There are three buttons: "+ AÑADIR REGISTRO A", "+ AÑADIR CNAME", and "+ AÑADIR REGISTRO MX". The main section is titled "Listado de DNS" and contains a table of current DNS records. The table has columns: Nombre, Tipo, Valor, and Cancelar. The records listed are:

Nombre	Tipo	Valor	Cancelar
arducurity.info	A	172.21.7.33	Cancelar
autoconfig.arducurity.info	CNAME	tb-es.securemail.pro	Cancelar
ftp.arducurity.info	CNAME	arducurity.info	Cancelar
pop.arducurity.info	CNAME	mail.nominalia.com	Cancelar
www.arducurity.info	CNAME	arducurity.info	Cancelar
arducurity.info	MX 10	mail.nominalia.com	Cancelar

At the bottom, there are buttons "+ AÑADIR REGISTRO A", "+ AÑADIR CNAME", and "+ AÑADIR REGISTRO MX". A note says: "La restauración de la configuración restablecerá los DNS originares del dominio. Procede solo si estás seguro de que son correctos." Another note says: "Recuerda que para poder disfrutar de los servicios de Nominalia, deberás dejar configurados los DNS establecidos por defecto." A "RESTAURAR LA CONFIGURACIÓN INICIAL" button is at the bottom.

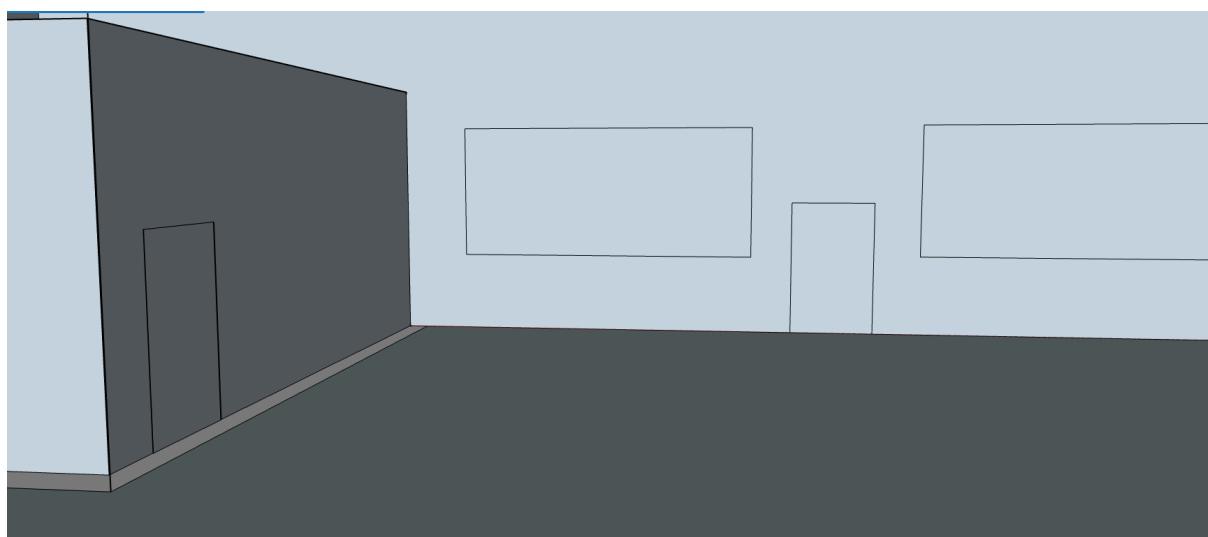
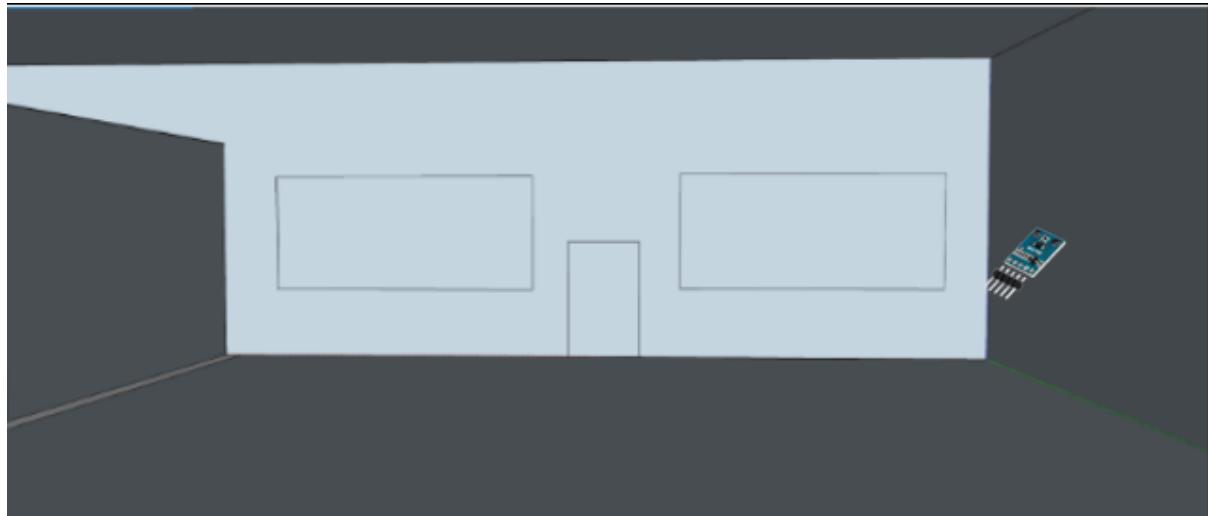
How to implement the sensors/Location in the model

El sensor de movimiento lo pondremos dentro del garaje y servirá para que el coche salga del garaje. Cuando el sensor de movimiento detecte el movimiento del coche, la puerta se abrirá y podrá salir el coche.

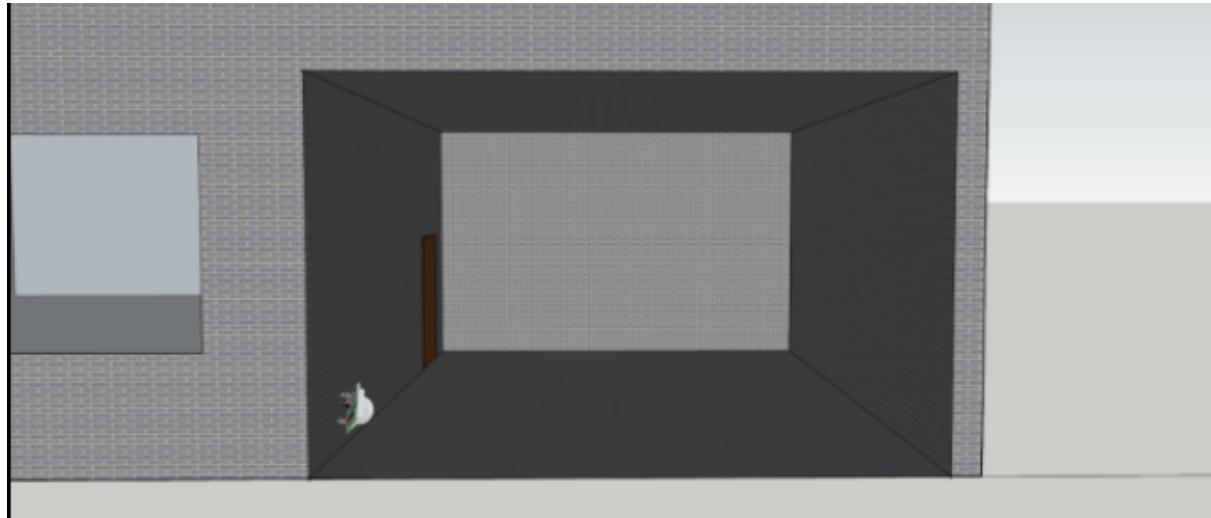
El sensor de luz lo pondremos en la ventana para que detecte cuando sale o cuando se va el sol para subir o bajar las persianas

El sensor de ultrasonido lo pondremos cerca de ventanas/puertas, ya que al ser una alarma puede detectar mejor a las personas

El sensor de temperatura y humedad lo pondremos lejos de cualquier tipo de fuente de frío/calor y lejos de puertas y ventanas para que vaya con mayor precisión

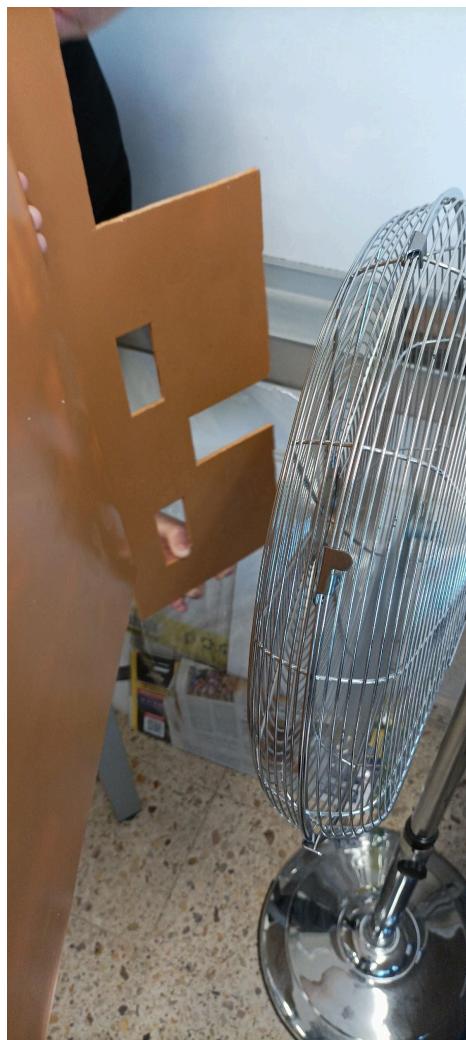


Alberto Trujillo, Steven Zapata and Oriol Núñez



Alberto Trujillo, Steven Zapata and Oriol Núñez

Decorate the model



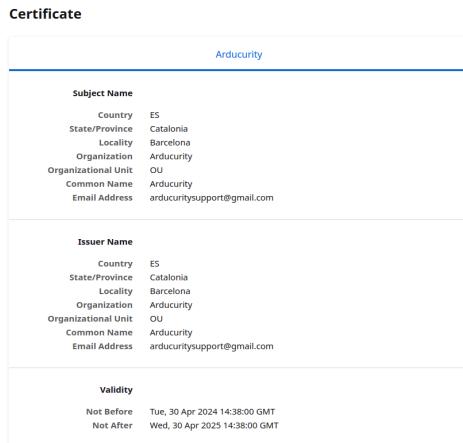
Alberto Trujillo, Steven Zapata and Oriol Núñez



Alberto Trujillo, Steven Zapata and Oriol Núñez

Website functionality tests and corrections

HTTPS certificate:



Form send data to MySQL db :

The screenshot shows a contact form submission and its corresponding MySQL database logs. The contact form has fields for Name, Email, Phone, Subject, and Message. The message content is "hola dia". The MySQL logs show the creation of a table named 'contact' and several insertions into it, with the last few entries matching the submitted data.

```
mysql> show tables;
+-----+
| Tables_in_contact_db |
+-----+
| contact |
| contacts |
+-----+
2 rows in set (0,00 sec)

mysql> SELECT * FROM contact;
+----+-----+-----+-----+-----+-----+
| id | name | email | subject | phone | message |
+----+-----+-----+-----+-----+-----+
| 1  | Alberto Trujillo Mingorance | alberto.trujillo.7e6@ib.cat | 2323 | 3333333 | hola dia |
| 2  | Alberto Trujillo Mingorance | alberto.trujillo.7e6@ib.cat | 2323 | 3333333 | hola dia |
| 3  | Alberto Trujillo Mingorance | alberto.trujillo.7e6@ib.cat | 2323 | 3333333 | hola dia |
| 4  | 3p | asdasdad | 2323 | 00 | 2024-04-26 17:25:40 |
| 5  | Alberto Trujillo Mingorance | asbasas | 2323 | 2323 | 00 |
| 6  | Alberto Trujillo Mingorance | asbasas | 2323 | 00 | 2024-04-30 10:49:22 |
| 7  | Alberto Trujillo Mingorance | alberto.trujillo.7e6@ib.cat | 2323 | 3333333 | bon dia |
| 8  | Alberto Trujillo Mingorance | alberto.trujillo.7e6@ib.cat | 2323 | 3333333 | bon dia |
+----+-----+-----+-----+-----+-----+
8 rows in set (0,00 sec)

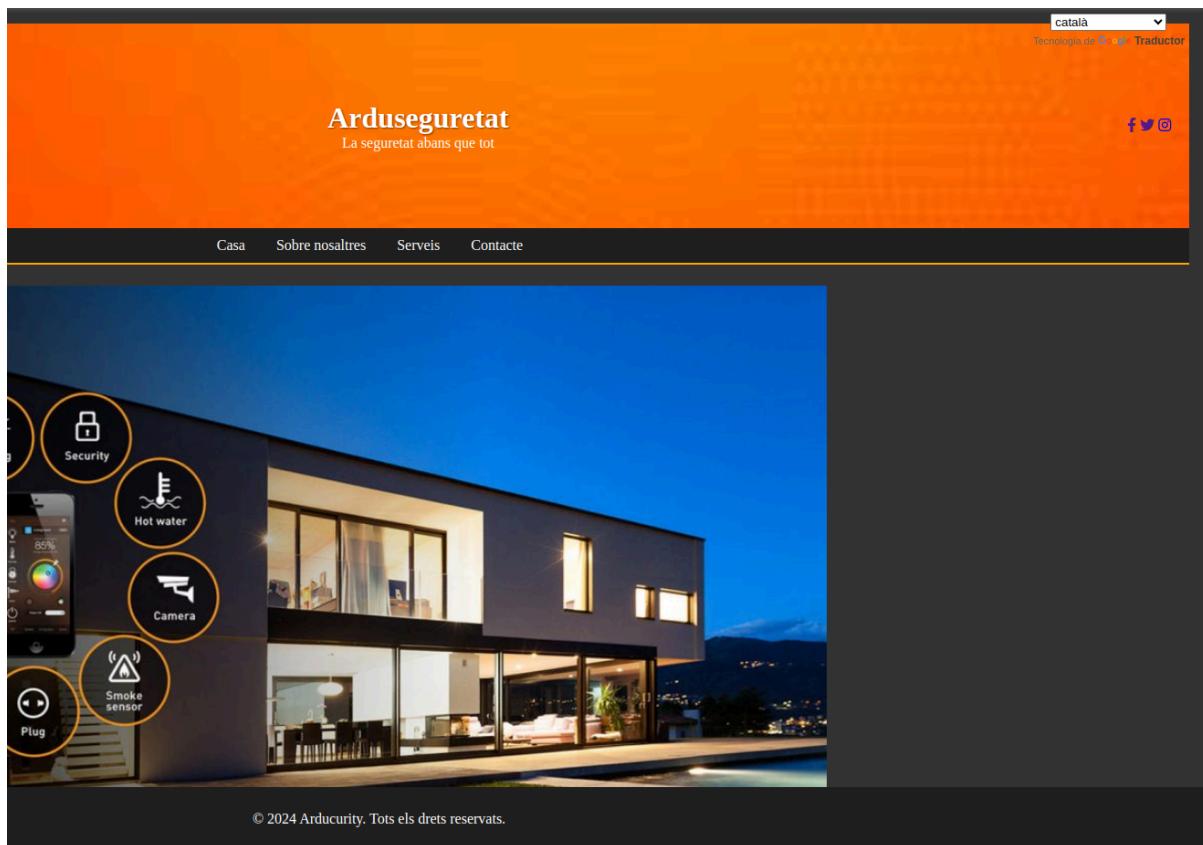
mysql>
```

Integrated translator for the users

```
<script type="text/javascript">

    function googleTranslateElementInit() {
        new google.translate.TranslateElement({pageLanguage: 'en'},
'google_translate_element');
    }

</script>
<script type="text/javascript"
src="//translate.google.com/translate_a/element.js?cb=googleTranslateElementInit"></script>
</head>
<body>
    <div id="google_translate_element" style="position: absolute; top: 10px; right: 10px;"></div>
```



Reviews form:

```
mysql> USE review_db;
Database changed
mysql> CREATE TABLE reviews (
    ->     id INT AUTO_INCREMENT PRIMARY KEY,
    ->     username VARCHAR(255),
    ->     rating INT,
    ->     comment TEXT,
    ->     date DATETIME DEFAULT CURRENT_TIMESTAMP
    -> );
Query OK, 0 rows affected (3,94 sec)

mysql>
mysql> █
```

Submit a Review

Name:

Rating (1-5):

Comment:

I agree to the [Privacy Policy](#)

Submit Review



```
administrator@SER-Arducurity:/$ mysql -u administrator -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 101
Server version: 8.0.36-Ubuntu0.22.04.1 (Ubuntu)

Copyright (c) 2000, 2024, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+-----+
| Database |
+-----+
| arduino_security |
| contact_db |
| information_schema |
| mysql |
| performance_schema |
| review_db |
| sys |
| wordpress |
+-----+
8 rows in set (0,02 sec)

mysql> USE review_db;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SELECT * FROM reviews;
+---+-----+---+-----+-----+
| id | username | rating | comment | date |
+---+-----+---+-----+-----+
| 10 | alberto.trujillo.7e6@itb.cat | 4 | prova | 2024-05-07 19:21:31 |
| 11 | alberto.trujillo.7e6@itb.cat | 3 | prova2 | 2024-05-08 16:02:47 |
| 12 | alberto.trujillo.7e6@itb.cat | 2 | prova33 | 2024-05-08 16:06:01 |
| 13 | Alberto | 5 | Prova de funcionament | 2024-05-08 16:19:30 |
+---+-----+---+-----+-----+
4 rows in set (0,00 sec)

mysql> █
```

reservation form:

The screenshot shows a web page with an orange header containing the text "Our Security Solutions". Below the header, there is a navigation bar with links for Home, About Us, Services, and Contact. The main content area features a dark background with white text. On the left side, there are two columns of text: "Monitor your home from anywhere" and "phone. It's designed to keep you safe and receive notifications for". On the right side, there is a "Reservation Form" section with fields for Name, Email, and Product. Below it is a "Payment Information" section with a Payment Method dropdown set to "PayPal" and a PayPal Email field containing "333333333333@gmail.com". A "Reserve Now" button is at the bottom.

172.21.7.33 diu

Reservation successful!

D'accord

Our Security Solutions

Home About Us Services Contact

Monitor your home from anywhere

phone. It's designed to keep you safe and receive notifications for

Reservation Form

Fill out the form to reserve a product.

Name:

Email:

Product:

Payment Information

Payment Method:

PayPal Email:

Reserve Now

```
mysql> SELECT * FROM reservations;
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| id | name           | email          | product        | payment_method | card_number | expiration_date | cvv   | paypal_email      | reservation_date |
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1  | Alberto Trujillo Mingorance | alberto.trujillo.7e6@itb.cat | surveillance-camera | paypal       | NULL        | NULL            | NULL | 3333333333333333@gmail.com | 2024-05-08 19:54:37 |
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0,00 sec)

mysql>
```

login and signup

Log in

Username:

Password:

Maintain Session for 90 days:

Log in

Check in

Username:

Password:

Check in

Login **Sign Up**



Arducurity
Security before everything

MySQL stores web users:

```
mysql> SELECT * FROM users;
+----+-----+-----+-----+-----+
| id | username          | password_hash           | comment | date
+----+-----+-----+-----+-----+
| 4  | alberto.trujillo.7e6@itb.cat | $2y$10$20HYmJx9EbLW4rPb2jIJ0c9EsTMs mh2SPCIT6zfBjagapEIr mQpC | NULL    | 2024-05-09 16:38:59 |
| 5  | Alberto             | $2y$10$4tFY5vSV4X7bI8oskZhdBoakrf0ZSV Dzfjm328z8QbXCIw.5svQuS | NULL    | 2024-05-09 17:14:39 |
+----+-----+-----+-----+-----+
2 rows in set (0,00 sec)

mysql>
```

Sprint 4 - Web integration and settings

Finish programming the last sensors

```
#include <Servo.h>
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

// Objetos para los servos
Servo motorGaraje;
Servo myServo;

// Inicializar objeto LCD
LiquidCrystal_I2C lcd(0x27, 16, 2);

// Definir asignaciones de pines
int pirPin = 2; // Pin del sensor de movimiento
int redLed = 5; // Pin del LED rojo
int greenLed = 4; // Pin del LED verde
int ldrPin = A0; // Pin del sensor LDR
int ledPin1 = 6;
int ledPin2 = 7;
int ledPin3 = 8;

// Variables para el sensor de movimiento y control de la puerta del garaje
int abierto = 0; // Variable para rastrear si la puerta está abierta o cerrada
unsigned long tiempoUltimoMovimiento = 0; // Variable para almacenar el tiempo del último
movimiento
const unsigned long tiempoEsperaCerrar = 6000; // Tiempo de espera para cerrar la puerta
después de dejar de detectar movimiento (en milisegundos)

// Constantes para cálculos del LDR
const float GAMMA = 0.7;
const float RL10 = 50;#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>
```

```

// Inicializar objetos LCD y Servo
LiquidCrystal_I2C lcd(0x27, 16, 2);
Servo myServo;

... // Establecer ángulo del servo e introducir un retraso
myServo.write(servoAngle);
delay(1000);
}

void setup() {
// Configurar pines del sensor de movimiento y LEDs del garaje
pinMode(pirPin, INPUT);
pinMode(redLed, OUTPUT);
pinMode(greenLed, OUTPUT);
// Inicializar LCD y Servo de las persianas
lcd.begin(16, 2);
myServo.attach(9);
// Configurar pines de LED de las persianas como salidas
pinMode(ledPin1, OUTPUT);
pinMode(ledPin2, OUTPUT);
pinMode(ledPin3, OUTPUT);#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

// Inicializar objetos LCD y Servo
LiquidCrystal_I2C lcd(0x27, 16, 2);
Servo myServo;

... // Establecer ángulo del servo e introducir un retraso
myServo.write(servoAngle);
delay(1000);
}

void loop() {

```

```

// Operaciones del sensor de movimiento y control de la puerta del garaje
motorGaraje.attach(3); // Adjunta el motor al pin 3 cada vez que se ejecuta el loop
if (detectarMovimiento()) {
    if (abierto == 0) { // Si la puerta está cerrada, ábrela
        abrirPuerta();#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

// Inicializar objetos LCD y Servo
LiquidCrystal_I2C lcd(0x27, 16, 2);
Servo myServo;

... // Establecer ángulo del servo e introducir un retraso
myServo.write(servoAngle);
delay(1000);
}

// Inicializar objetos LCD y Servo
LiquidCrystal_I2C lcd(0x27, 16, 2);
Servo myServo;

... // Establecer ángulo del servo e introducir un retraso
myServo.write(servoAngle);
delay(1000);
}

abierto = 1; // Marcar que la puerta está abierta
}
tiempoUltimoMovimiento = millis(); // Actualiza el tiempo del último movimiento
} else {
// Si no hay movimiento y la puerta está abierta, espera y luego cierra la puerta
if (abierto == 1 && millis() - tiempoUltimoMovimiento > tiempoEsperaCerrar) {
    cerrarPuerta();
}

```

```

    abierto = 0; // Marcar que la puerta está cerrada
}
}

// Operaciones del sensor de luz y control de las persianas
int luz = analogRead(ldrPin);
float voltage = luz / 1024.0 * 5;
float resistance = 2000 * voltage / (1 - voltage / 5);
float lux = pow(RL10 * 1e3 * pow(10, GAMMA) / resistance, (1 / GAMMA));

// Mostrar lux en el LCD
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("Luz:");
lcd.print(lux);

// Controlar LEDs, servo y mostrar en función del nivel de lux
int servoAngle;
if (lux < 170) {
    digitalWrite(ledPin1, LOW);
    digitalWrite(ledPin2, LOW);
    digitalWrite(ledPin3, HIGH);
    servoAngle = 0;
    lcd.setCursor(0, 1);
    lcd.print("Noche");
} else if (lux >= 170 && lux < 633) {
    digitalWrite(ledPin1, LOW);
    digitalWrite(ledPin2, HIGH);
    digitalWrite(ledPin3, LOW);
    servoAngle = 120;
    lcd.setCursor(0, 1);
    lcd.print("Tarde");
} else {
    digitalWrite(ledPin1, HIGH);
    digitalWrite(ledPin2, LOW);
    digitalWrite(ledPin3, LOW);
    servoAngle = 180;
    lcd.setCursor(0, 1);
    lcd.print("Dia");
}
}

```

```

// Establecer ángulo del servo e introducir un retraso
myServo.write(servoAngle);
delay(1000);
}

bool detectarMovimiento() {
    return digitalRead(pirPin) == HIGH; // Devuelve true si se detecta movimiento
}

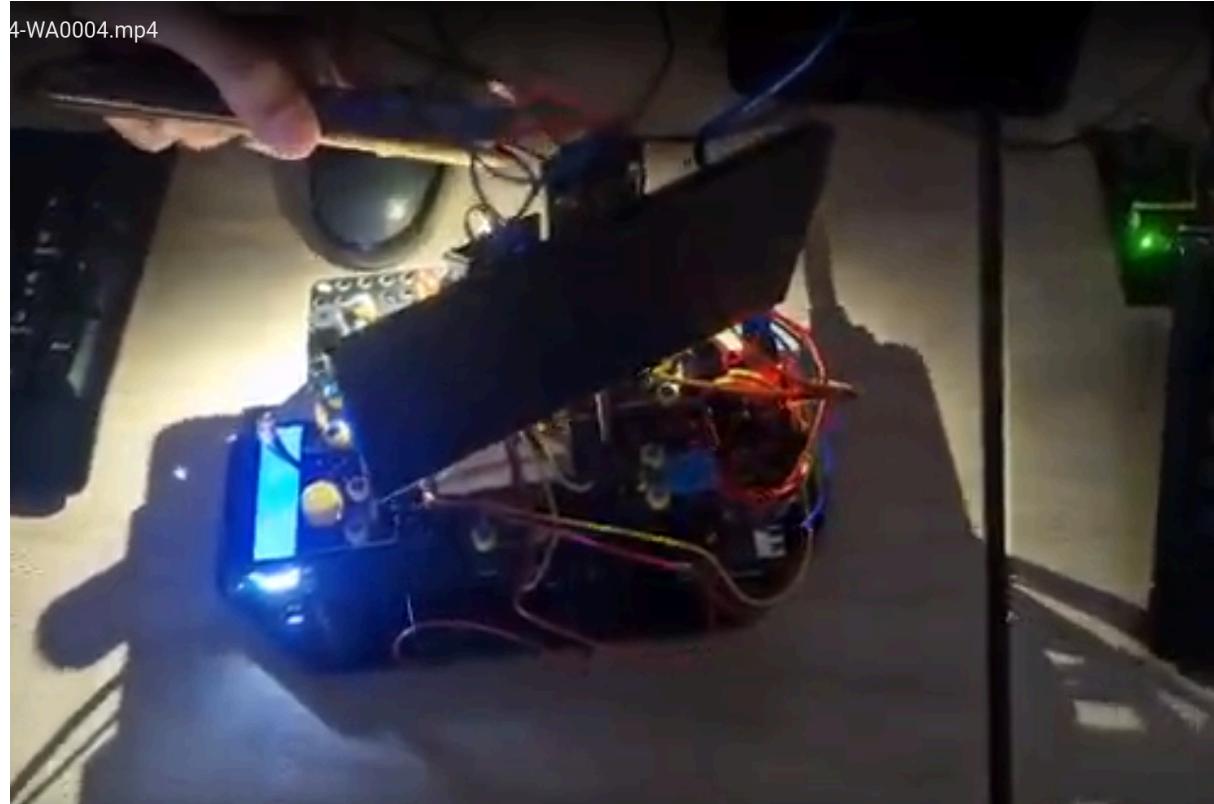
void abrirPuerta() {
    digitalWrite(4, LOW);
    digitalWrite(5, HIGH);
    digitalWrite(redLed, LOW); // Apagar LED rojo
    digitalWrite(greenLed, HIGH); // Encender LED verde
    for (int angulo = 9; angulo <= 130; angulo += 10) {
        motorGaraje.write(angulo);
        delay(500);
    }
    digitalWrite(4, HIGH);
    digitalWrite(5, LOW);
    motorGaraje.detach(); // Desconecta el motor después de abrir la puerta
}

void cerrarPuerta() {
    digitalWrite(4, LOW);
    digitalWrite(5, HIGH);
    digitalWrite(redLed, HIGH); // Encender LED rojo
    digitalWrite(greenLed, LOW); // Apagar LED verde
    for (int angulo = 130; angulo >= 9; angulo -= 10) {
        motorGaraje.write(angulo);
        delay(500);
    }
    digitalWrite(4, LOW);
    digitalWrite(5, HIGH);
    motorGaraje.detach(); // Desconecta el motor después de cerrar la puerta
}

```

Solar panel

VID-20240514-WA0004.mp4

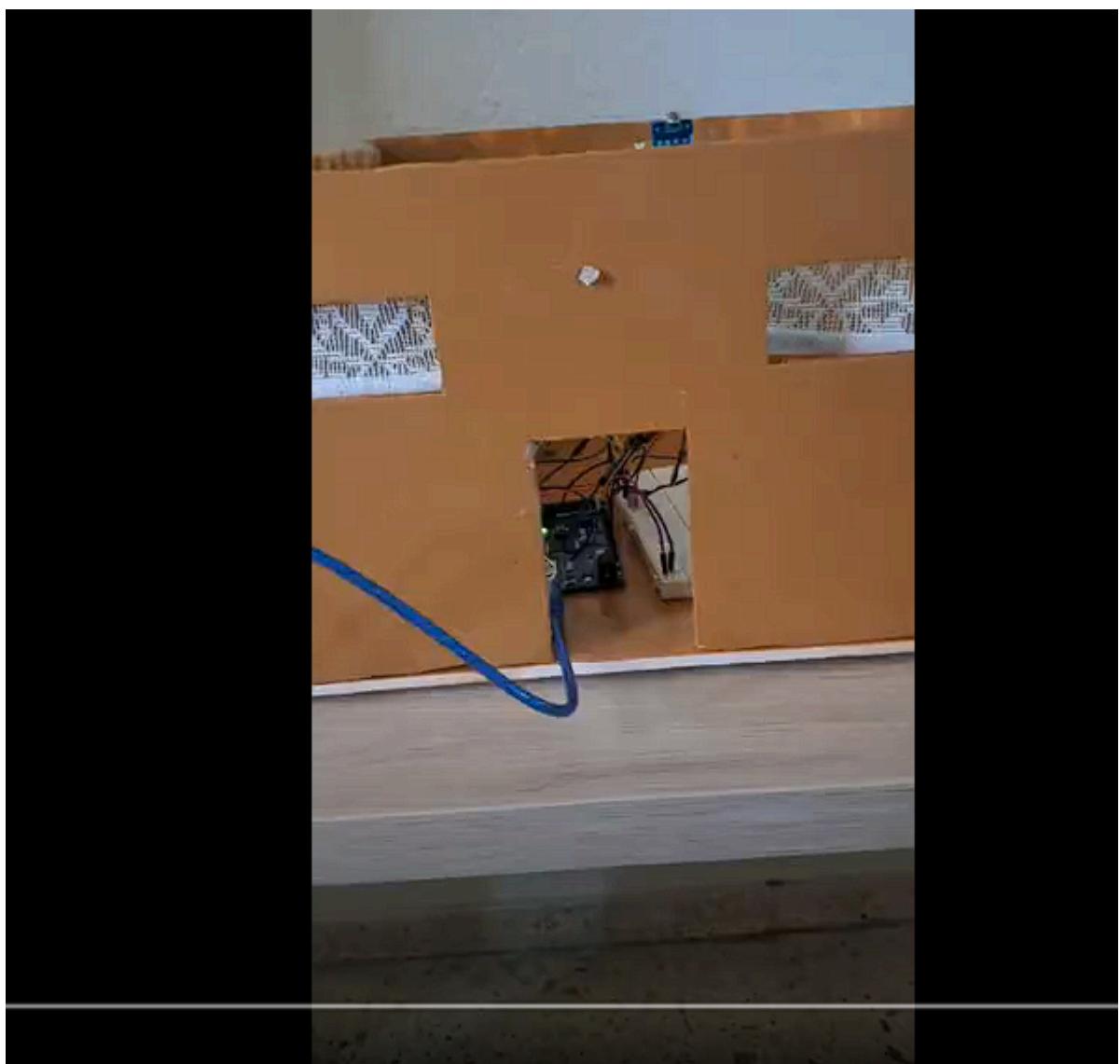


Attach all the pieces of the model



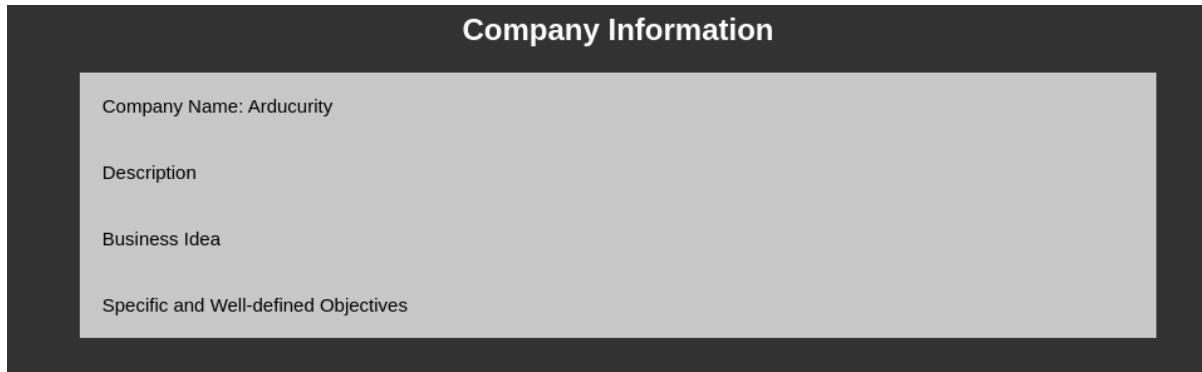
Put the Arduino circuit on the model

VID-20240524-WA0007.mp4



Website functionality tests and corrections

1. Accordion for Company Information



The screenshot shows a dark-themed user interface element. At the top, a dark bar contains the text "Company Information" in white. Below this is a light gray rectangular area containing four items, each with a small icon and text: "Company Name: Arducurity" (with a location pin icon), "Description" (with a text icon), "Business Idea" (with a gear icon), and "Specific and Well-defined Objectives" (with a target icon). All four items are currently collapsed.

The accordion functionality is implemented using JavaScript. Each accordion item can be expanded or collapsed to show or hide the content.

Script:

```
<script>
    var accordions =
document.getElementsByClassName("accordion");

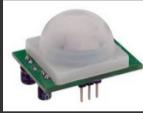
    for (var i = 0; i < accordions.length; i++) {
        accordions[i].addEventListener("click", function() {
            this.classList.toggle("active");
            var panel = this.nextElementSibling;
            if (panel.style.maxHeight) {
                panel.style.maxHeight = null;
            } else {
                panel.style.maxHeight = panel.scrollHeight +
"px";
            }
        });
    }
</script>
```

2. Visual Description of Sensors with More Button

Each product (sensor) is displayed with a title, image, and a "More" button. When the "More" button is clicked, additional details about the product are revealed.

Our Home Automation Sensors

Discover our state-of-the-art sensors for a smart home.

- Motion Sensor**

[More](#)
- Luminosity Sensor**

[More](#)
- Ultrasonic Sensor**

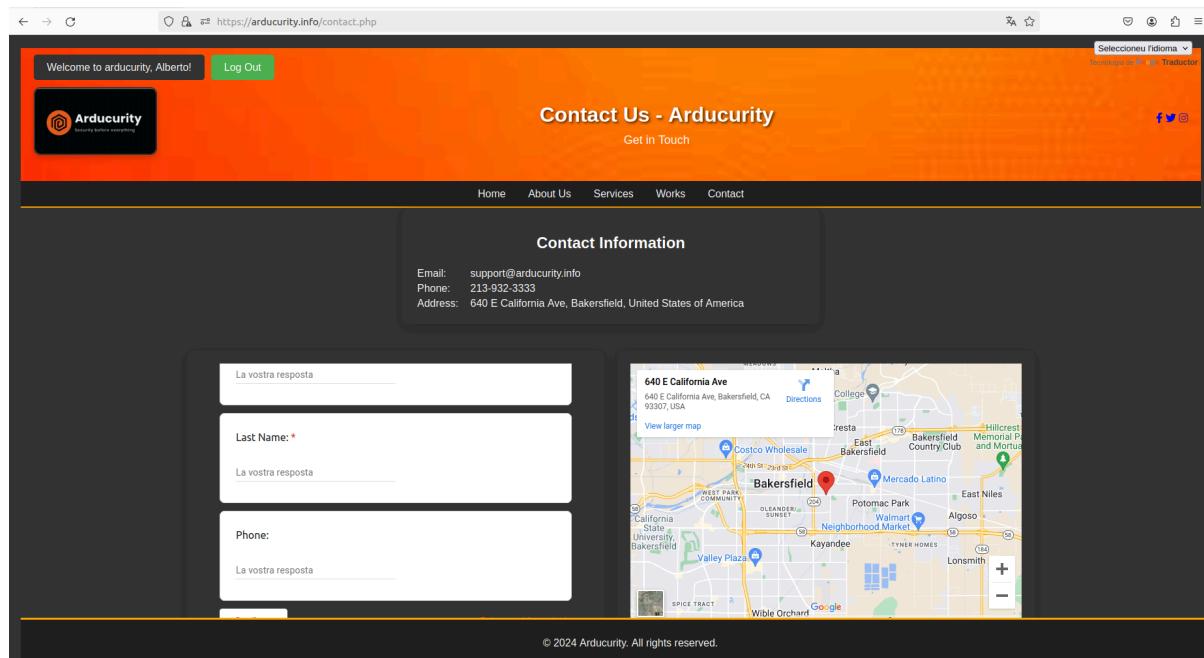
[More](#)
- Humidity Sensor**

[More](#)

```
<div class="product">
<h3>Motion Sensor</h3>
    
    <button class="show-details">More</button>
    <div class="product-details" style="display: none;">
        <p>Our motion sensor detects changes in the environment and alerts you to potential intrusions or unwanted activity.</p>
        <p>Maintain full control over your home's security with this advanced sensor. <strong>Price:</strong> 29,99€</strong></p>
    </div>
</div>
```

3. Arducurity Location Integrated on the Web

We have integrated a map with our location on the website by putting a src=link of the map and we have left it next to the contact form to improve the aesthetics



The screenshot shows a web browser displaying the Arducurity contact page. The header is orange with the Arducurity logo and navigation links for Home, About Us, Services, Works, and Contact. The main content area has a dark background. On the left, there is a contact form with fields for Name, Last Name, and Phone, each containing placeholder text "La vostra risposta". To the right of the form is a Google Map showing the location of Arducurity at 640 E California Ave, Bakersfield, CA 93307, USA. The map includes surrounding landmarks like Costco Wholesale, Walmart, and various parks.

Code map + form container :

```
<div class="flex-container">
  <div class="flex-item">
    <iframe
      src="https://docs.google.com/forms/d/e/1FAIpQLSf5oO_eLyEISQxRAK8At4zoAT
      O9EJU7Qes8w9XKQwfH3pZVTA/viewform?embedded=true" width="600"
      height="500" frameborder="0" marginheight="0"
      marginwidth="0">Loading...</iframe>
  </div>
  <div class="flex-item">
    <iframe
      width="600"
      height="400"
      frameborder="0"
      scrolling="no"
      marginheight="0"
      marginwidth="0"
      id="gmap_canvas"
      src="https://maps.google.com/maps?width=600& height=400&hl=en&
      p;q=640%20E%20California%20Ave,%20Bakersfield,%20United%20States%20of%2
      0America%20Bakersfield+(Arducurity%20Location) &t=&t;z=12&ie=UTF8&
      iwloc=B&output=embed">
    </iframe>
  </div>
</div>
```

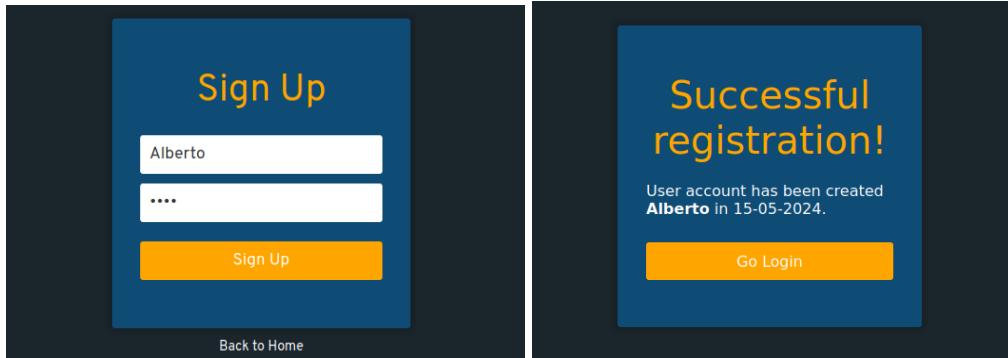
Development of additional functionalities for the website

1. User Authentication Features

Sign Up, Login, and Logout

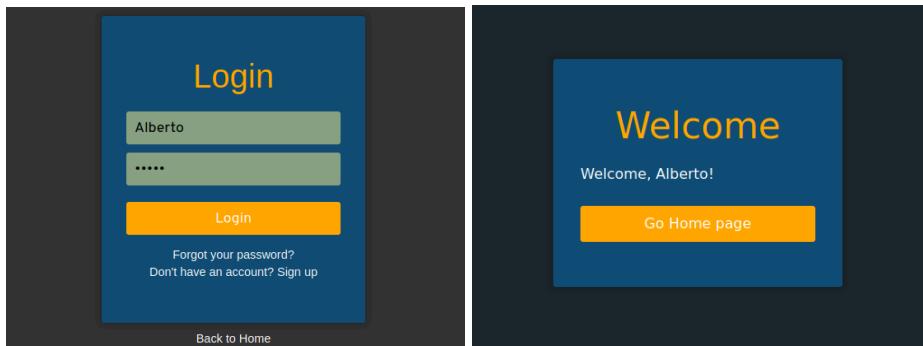
Functionalities for user sign-up, login, and logout are integrated into the website to manage user sessions.

Sign Up



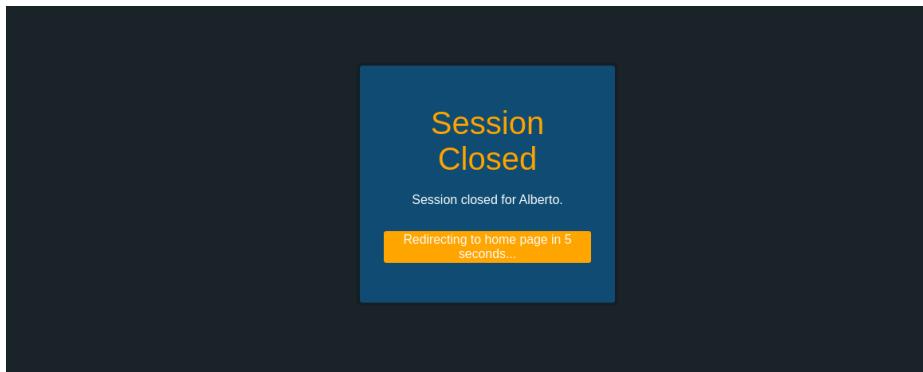
The image shows two side-by-side web pages. The left page is titled "Sign Up" and contains input fields for "username" (Alberto) and "password" (****), along with a "Sign Up" button. The right page is titled "Successful registration!" and displays a success message: "User account has been created Alberto in 15-05-2024." It also features a "Go Login" button.

Login



The image shows two side-by-side web pages. The left page is titled "Login" and contains input fields for "username" (Alberto) and "password" (****), along with a "Login" button. Below the buttons are links for "Forgot your password?" and "Don't have an account? Sign up". The right page is titled "Welcome" and displays the message "Welcome, Alberto!". It also features a "Go Home page" button.

Log out



Users database

```
mysql> SELECT * FROM users;
+---+-----+-----+-----+-----+
| id | username | password_hash | comment | date |
+---+-----+-----+-----+-----+
| 59 | Alberto | $2y$10$/wAer2zCold87g..23XPBYuSliKWczgpVC8/ojqkUuzyT6R4Z0Y2mK | NULL | 2024-05-15 18:45:15 |
+---+-----+-----+-----+-----+
1 row in set (0,00 sec)

mysql>
```

Domain Configuration

Current DNS settings

Guided management Advanced management DNSSEC

We remind you that, in order to enjoy our additional services, you must associate the default DNS with your domain.

+ ADD RECORD A + ADD CNAME + ADD MX RECORD

DNS Listing

Name	Guy	Worth	Cancel
arducurity.com	TO	172.21.7.33	Cancel
autoconfig.arducurity.com	CNAME	tb-es.securemail.pro	Cancel
ftp.arducurity.com	CNAME	arducurity.com	Cancel
pop.arducurity.com	CNAME	mail.nominalia.com	Cancel
arducurity.com	MX 10	mail.nominalia.com	Cancel

+ ADD RECORD A + ADD CNAME + ADD MX RECORD

Restoring the configuration will reset the domain's originating DNS. Proceed only if you are sure they are correct.

Remember that in order to enjoy Nominalia services, you must leave the default DNS configured.

RESTORE INITIAL SETTINGS

arducurity.com to the web server IP (172.21.7.33)

Displaying the Username at the Top Left of the Page

The username of the logged-in user is displayed at the top left of the page. If no user is logged in, "Guest" is displayed.

Welcome to arducurity, Alberto!

Log Out

PHP Script to Get Username (get_username.php)

```
<?php  
session_start();  
  
if (isset($_SESSION["username"])) {  
    $username = $_SESSION["username"];  
} else {  
    $username = "Guest";  
}  
?>
```

Integration of PHP in HTML

```
<div class="user-info" style="position: absolute; top: 10px; left: 20px; display: flex; align-items: center;">
    <div class="welcome-message">
        <?php echo "Welcome to arducurity, $username!"; ?>
    </div>
    <div class="auth-buttons">
        <a href="logout.php?username=<?php echo $username; ?>">Log Out</a>
    </div>
</div>
```

final code: [arducurity_web_final.zip](#)