



# Garage Automation System

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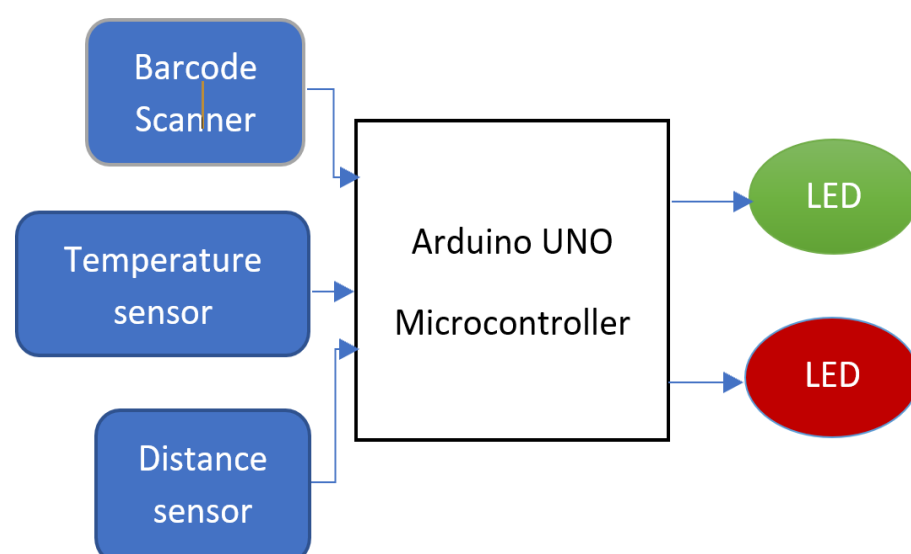


## BACKGROUND

- Over 87% garage system use remote control to open/close. Average cost of remote control is \$35
- Automobile manufacturer starts add garage door opener on their product with high price
- At the same time, 67% of vehicle on market have keyless entering system.(keyless system allows drive start their car without plug in their key) Drivers must have the remote control ready when leaving/entering garage.
- Automation is becoming a trend in the manufacturing industry.

## PROPOSED SOLUTION

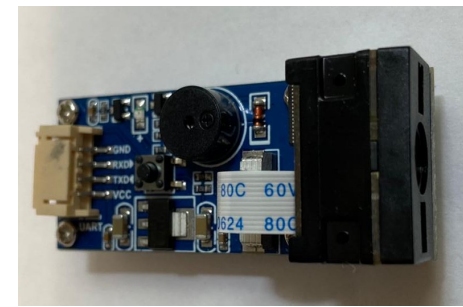
- The proposed solution provides a more efficient control of the garage system using components such as the barcode scanner and sensors.
- The program embedded establishes secure monitoring of garage entry/exit through closed coding granting access to specific plates.
- The system design allows the possibility of a large group of multiple users operating the garage system
- The semantics of this new relationship between components provides the consumer multiple options of system control
- The approach to framework design is based to allow user modifications and configuration to operate at one's specifics



## SYSTEM DESIGN

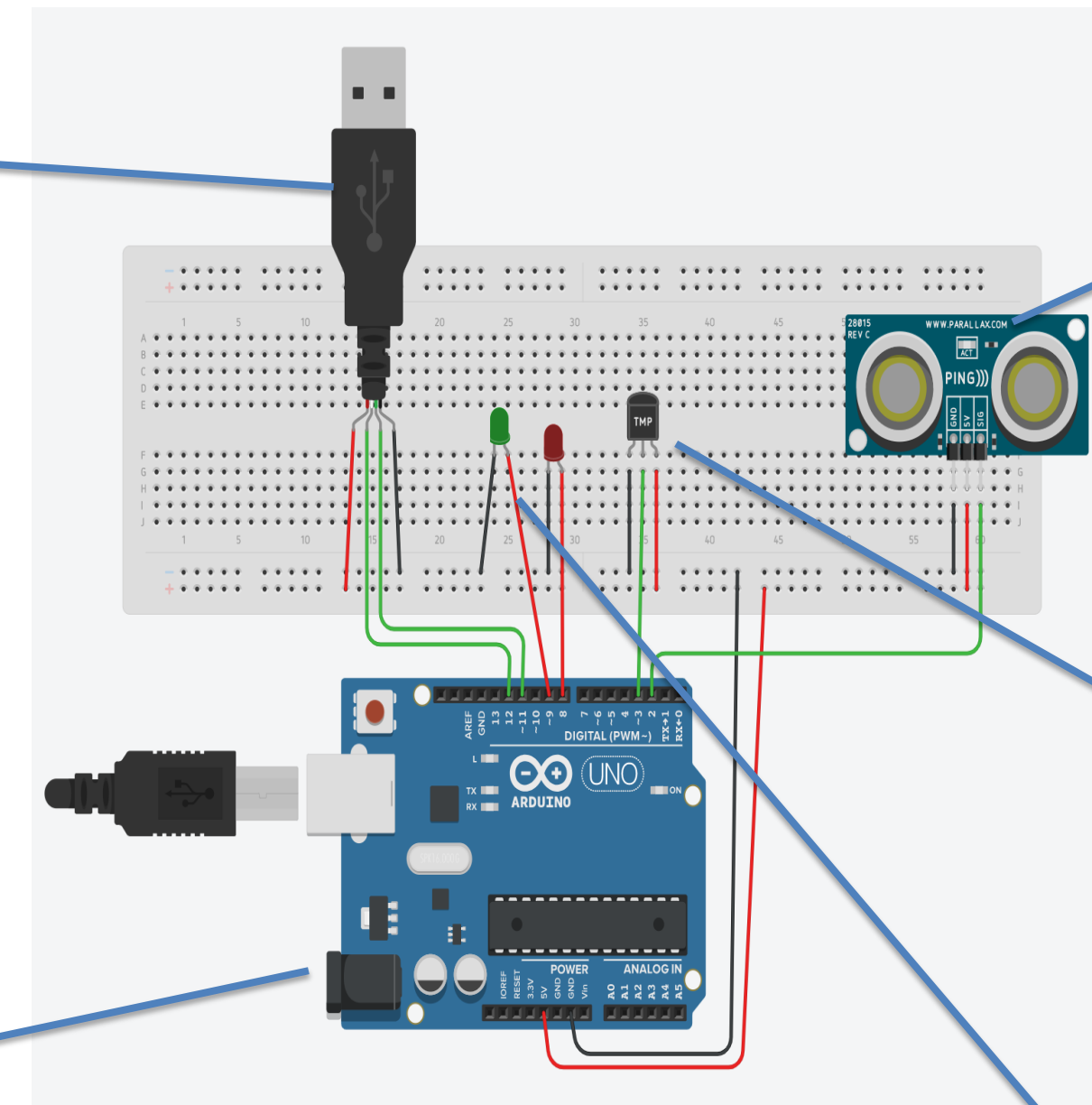
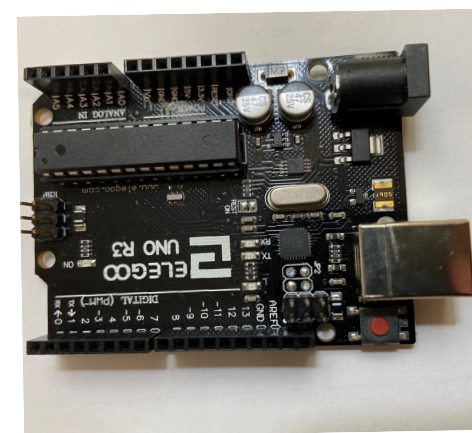
### Barcode scanner module

By reading the barcode on the license plate, the barcode scanner will grant access to the garage. It will be placed outside of the garage .



### Arduino Uno Microcontroller

The microcontroller used is the Arduino Uno. The Arduino Uno simplifies the implementation of all the components. Its multitude of libraries make it easy to program.



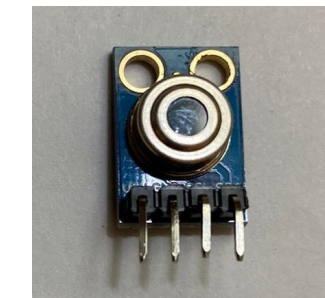
### Ultrasonic distance sensor

The ultrasonic distance sensor will be used as the trigger of the opening process. It will be placed inside the garage.



### Temperature sensor

The temperature sensor will be used for the opening process. It will be placed inside the garage.



### LEDS

We are using the green and red LEDs .The LEDs are indicators of the opening and closing processing.



## FUTURE DIRECTION

- So far, we can only recognize barcode on license plate, in the future, we will add facial recognition to enhance safety level of our product.
- We will add a voice command when leaving/entering the garage in the future.

## REFERENCES

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