Visitor counter for shops

INFO-2055: Embedded systems project

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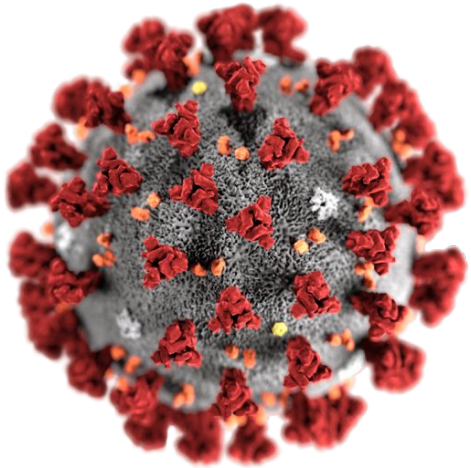
Context

The current pandemic has put some restrictions on shops.

They can’t allow more than a given number of customers at the same time inside the shop.

Currently, shop managers:

- restrict the number of carts
- put an employee at the entrance to regulate the flow of people in the shop



Modern problems require modern solutions

Our project will solve this issue in a more modern way.

We want to create 2 devices that will communicate with each other to regulate the number of people inside a shop.

Entrance of the shop

PIC microcontroller that will keep track of the number of people inside the shop:

- *Laser* with a *photoresistor* to detect people entering the shop
- 7 segments to display the number of customers that can enter
  - Will also be used to set the maximum number of clients by the manager
- *Communicate* over *Bluetooth* with the device at the exit of the shop to know if a customer has left the shop so another one can enter
- Possibility to save data on a *SD card* for statistical analysis
- Blinking *red LED* to indicate if the battery is low

Exit of the shop

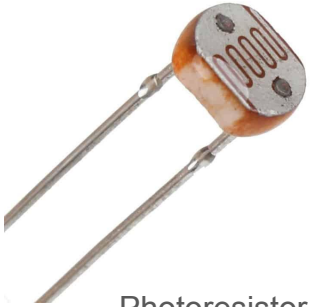
PIC microcontroller to detect if a customer has left the shop:

- *Laser* with a *photoresistor* to detect people exiting the shop
- *Communicate* over *Bluetooth* with the device at the entrance of the shop to indicate that a customer has left the shop

Required components (not exhaustive)

- PIC16LF1789 & PIC16F1789
- 2 HC-05 Bluetooth modules
- 7 segments
- SD card reader
- Lasers
- Photoresistors

PIC16F1789


Photoresistor


HC-05


Laser


SD card reader

Difficulties

- Making the PICs communicate over Bluetooth
  - Using USART for communication between PIC & Bluetooth module

- Writing data on the SD card using SPI