

system

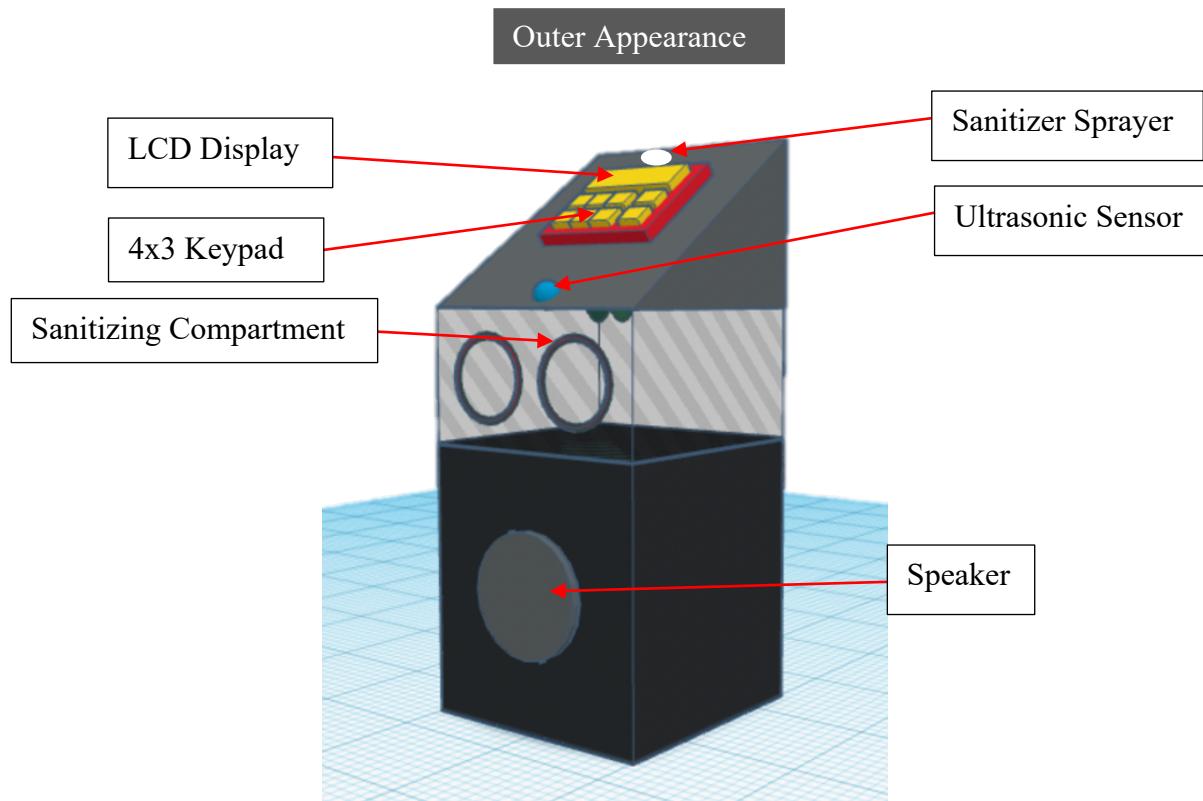


Figure 1

Inside the Sanitizing Compartment

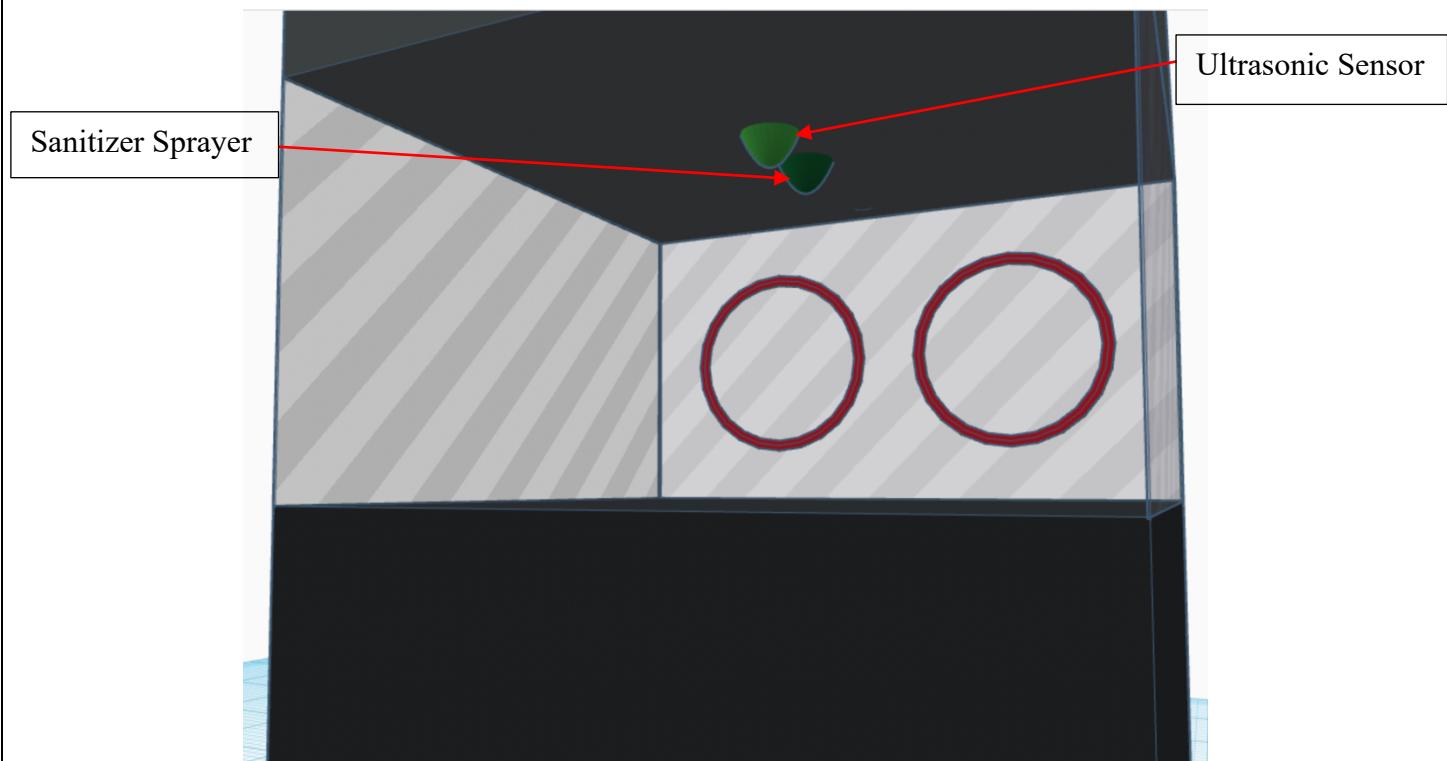
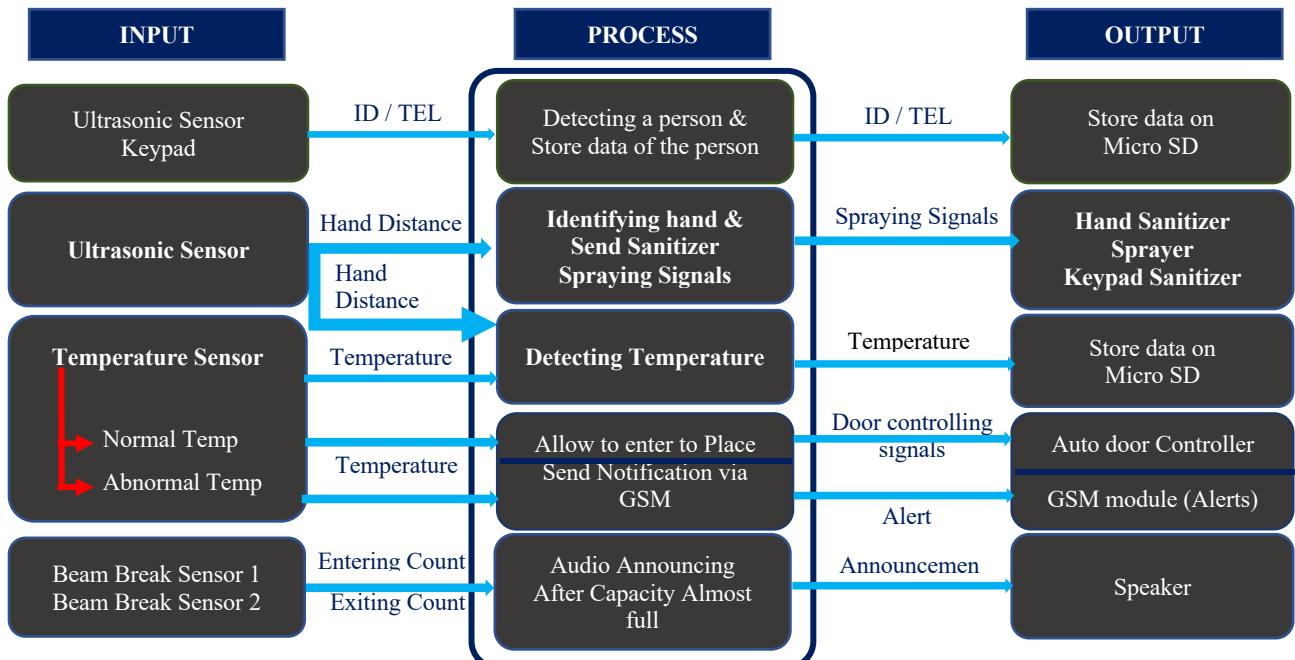


Figure 2

## Overall Diagram

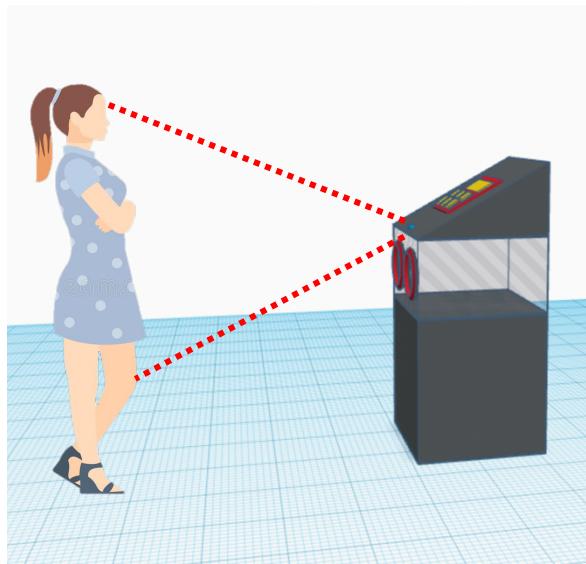


*Diagram 1*

The “Smart Door Entrance Allower” system has 5 major modules.

### Module 1

There is an ultrasonic sensor to identify if there is any person Infront of the system or not. (*Figure 3*)

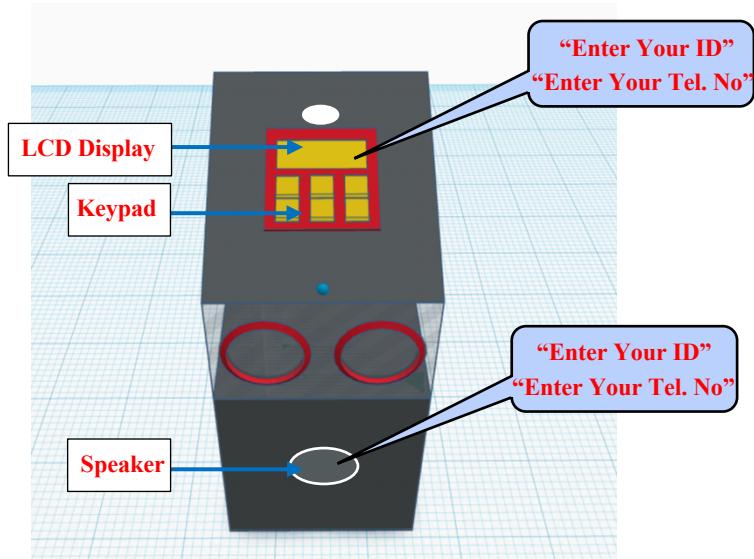


*Figure 3*

If there is a person Infront of the system, the system identify that the person wants to enter to the shop.

And after that the system direct the person to enter his/her details to the system.

To guide the person, instructions display on the LCD display. And instructions play by the speaker as audio. (*Figure 4*)

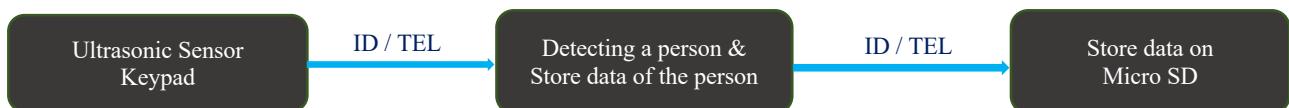


*Figure 4*

After entering data by the person, the system checks the validity of data (length check).

After verifying the validity of the data, the data will be stored.  
(ID No | Tel. no | Time | Gender – get by ID no)

For storing the data, the system uses a Micro SD card. The validated data stored on the Micro SD card through Micro SD module.



## Module 2

There is a special sanitizing compartment in the system. After storing validated data, the sanitizing compartment will open automatically.

After opening it, the person can insert his/her hands in to the compartment.

There is an ultrasonic sensor in the compartment. After inserting hands in to the compartment the sensor detects it.

If it detects hands, the sprayer spray sanitizer on the hands. (*Figure 6*)

At the same time the keypad also sanitizing by another sprayer. (*Figure 7*)

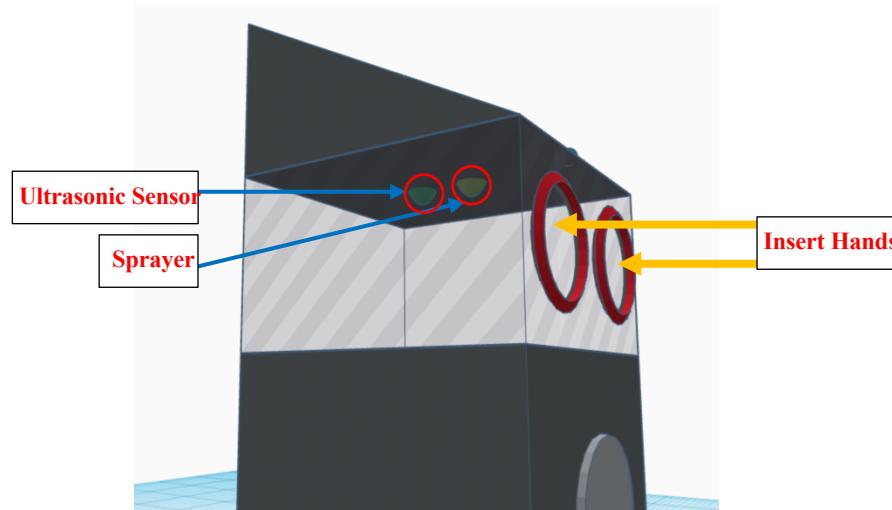


Figure 6

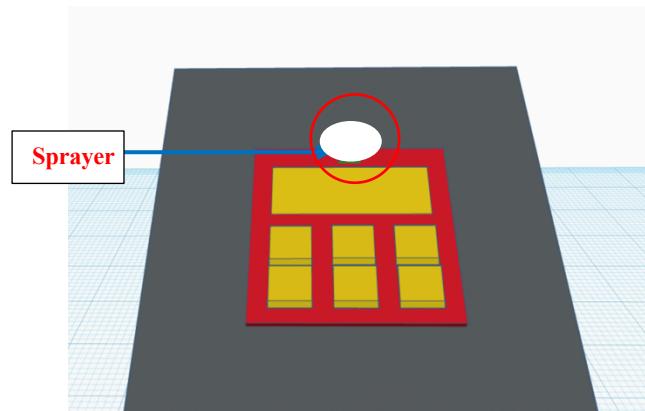


Figure 7



## Module 3

This module happens when the person's hands in the compartment. There is a contactless temperature sensor in the frame of the sanitizing compartment. This sensor detects the temperature of the person's body. (Figure 8)

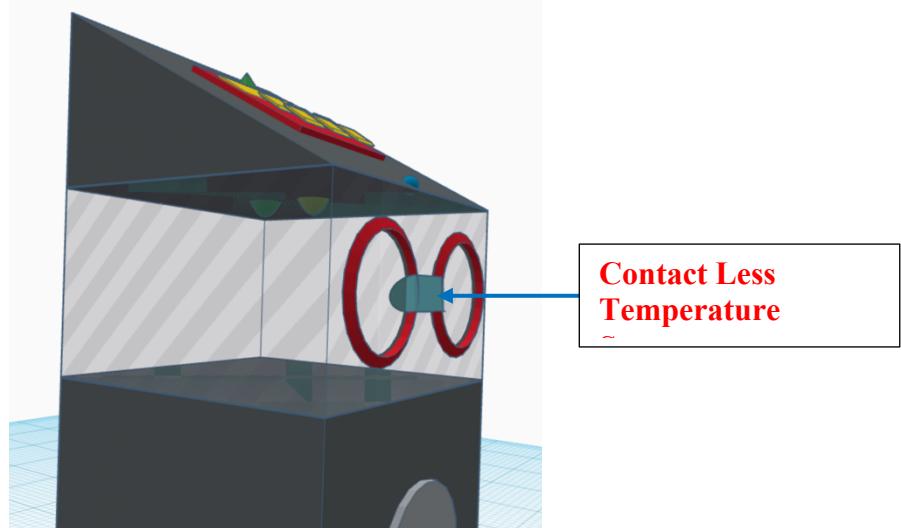


Figure 8

The temperature that detected by the temperature sensor is stored in the micro-SD card.

If the body temperature is greater than or equal to 100 °F the system identifies it as an abnormal health condition. (temp.  $\geq 100$  °F)

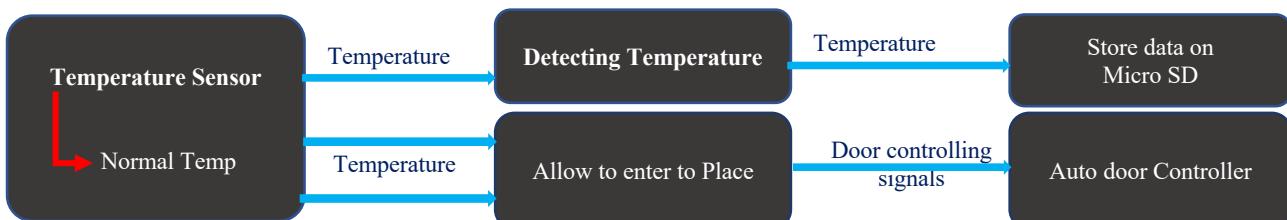
If the body temperature less than 100 °F the system identifies it as a normal health condition. (temp.  $< 100$  °F)

If identify a normal health condition,

- The auto door will open automatically using door controlling unit.

If identify an abnormal health condition,

- Starting the 4th module.



## Module 4

If the body temperature that detected by the contactless temperature sensor is abnormal this module will be start.

There is a GSM module in this system.

- The GSM module send a SMS alert to special officer in the shop as,

“There is a person trying to enter the shop and he/she has abnormal health condition”

- At the same time GSM module send a SMS alert to particular person as,

“You can't enter to this shop. Because your body temperature is abnormal. (Figure 9)

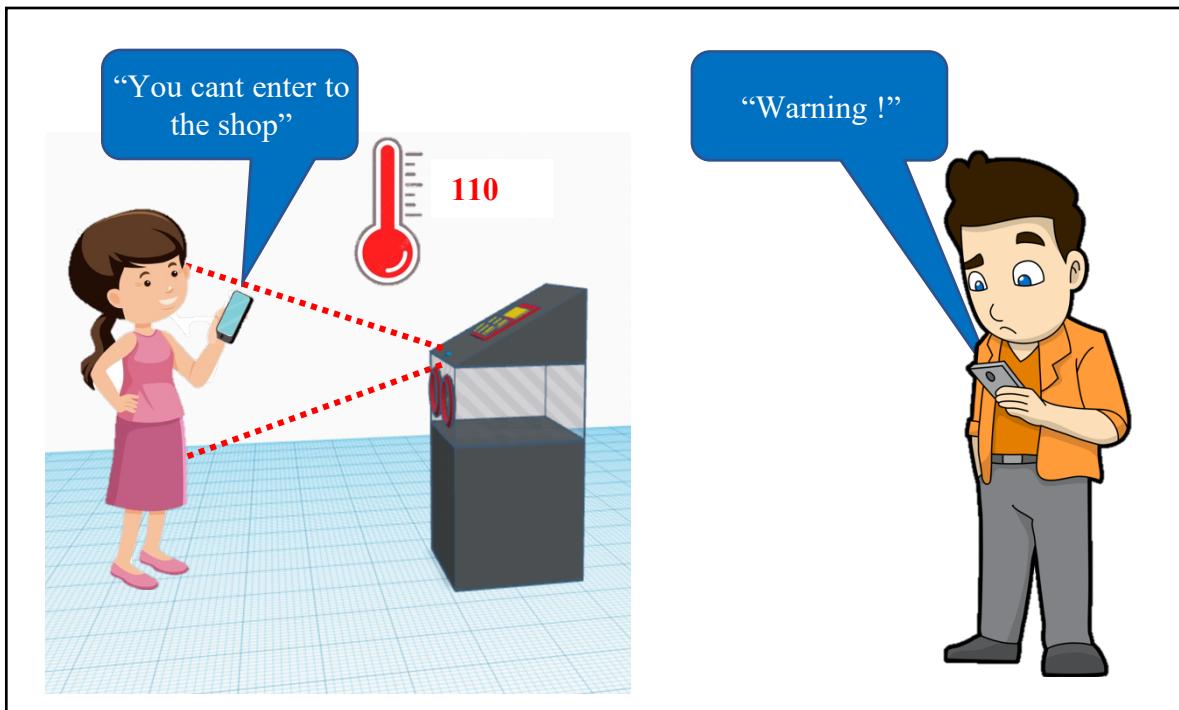
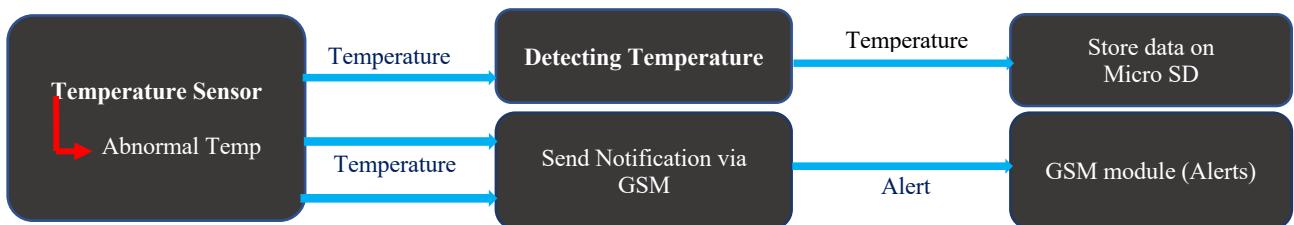


Figure 9



## Module 5

There are two beam break sensors in the system. One of them is placed in the entrance door of the shop and the other one is places in the exit door of the shop. By using the output data from these sensors, system get the count of peoples who entering and exiting.

By analysing these data, the system gets the no. of persons in the shop or premise. (*Figure 10*)

If the capacity of the shop is full, play an audio using speaker as,

“The capacity of the place / premise is full and please wait”

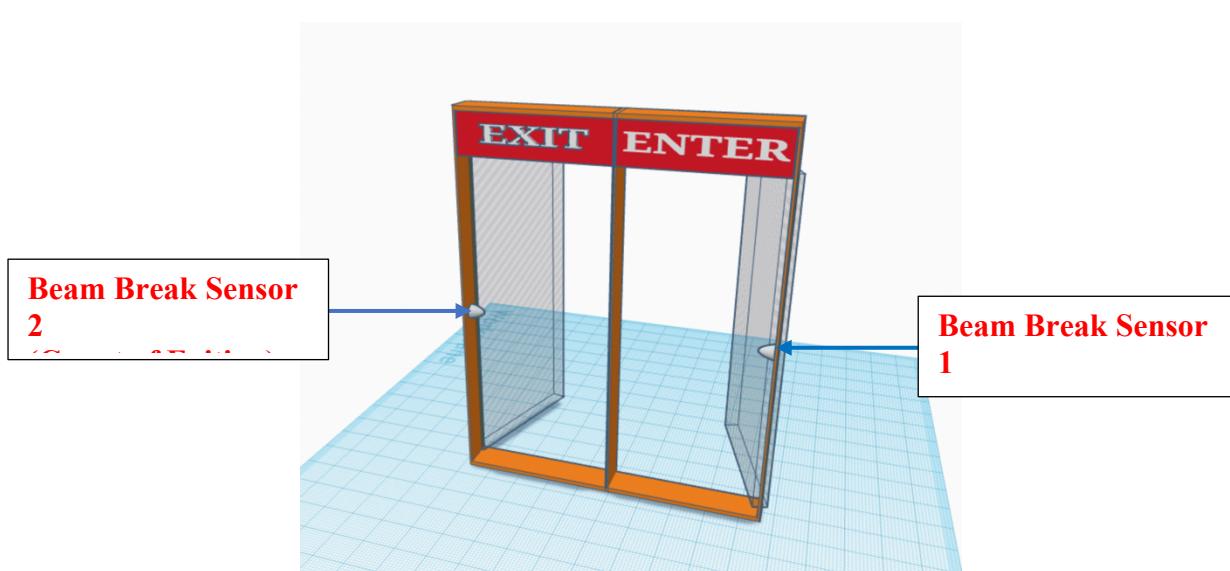


Figure 10



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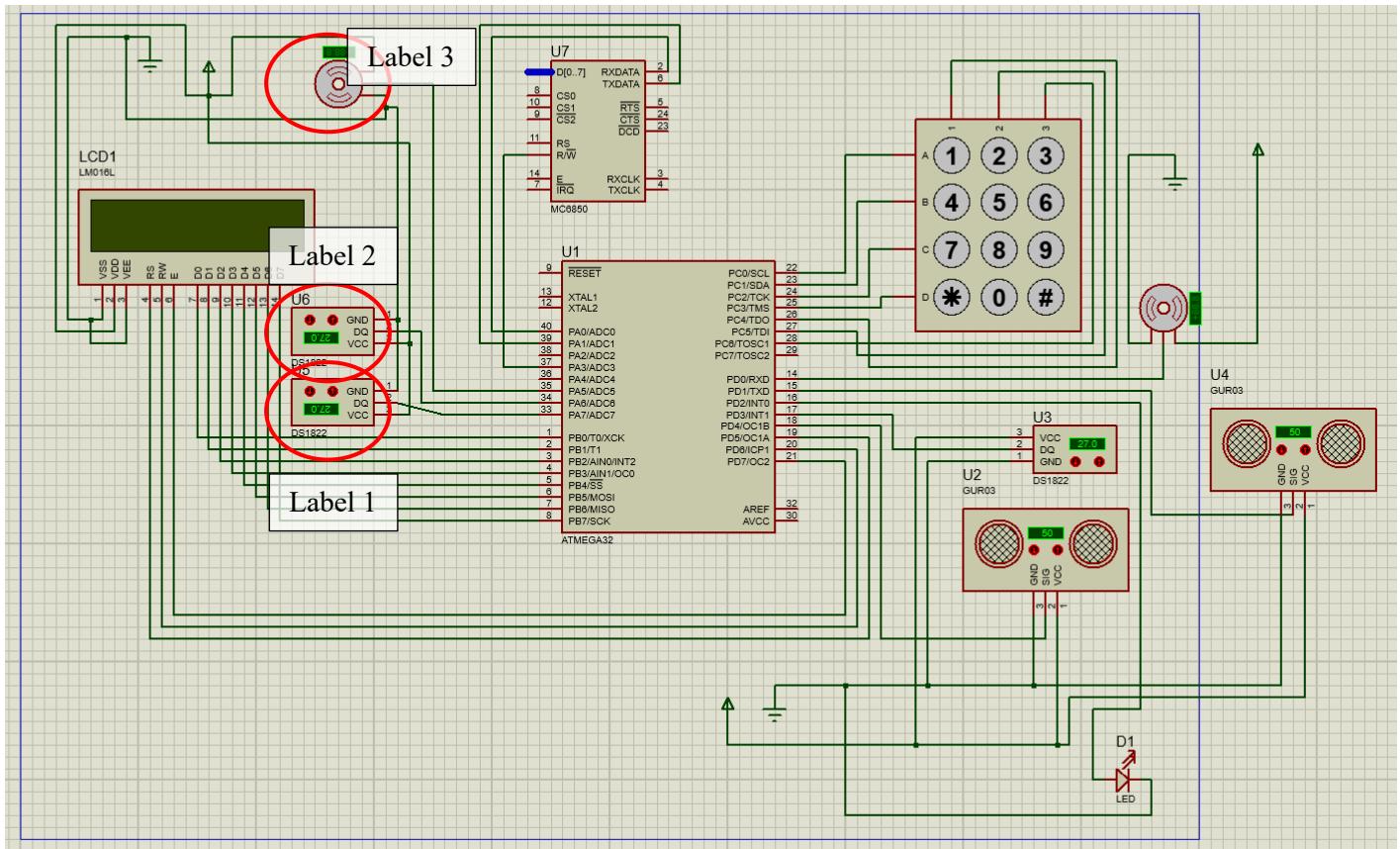


Figure 13

#### Special Note

- The sanitizer sprayer unit represent as a LED bulb since, there is no sprayer device in the software “proteus”.
- The two beam break sensors (IR sensors) Represent as two temperature sensors since, there is no beam break sensor(IR sensor) in the software “proteus”. (label 1 and label 2)
- The auto door controlling unit represents as servo motor. (label 3)

## **Resource Requirement**

### **Hardware**

1. Micro Controller & Modules
  - Atmega 32
  - GSM module
  - Micro SD Module
  -
2. Sensors & Inputs, outputs
  - Temperature Sensor
  - Ultrasonic Sensor x2
  - Beam break sensor x2
  - Keypad
  - LCD display
3. Motors and Others
  - Servo motor x2
  - Speaker
  - Electric Solenoid Valve

### **Software**

1. Atmel Studio