

Smart Home Project



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Embedded Systems
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Introduction

This report explains smart home project & how we converting simple light function from physical function to be a smart function, also we add some features in this program (fire sensor detection, gas sensor detection).

The project programing based in layered architecture & we build a standalone driver for each module, also we apply our project in proteus simulation with two ways test:

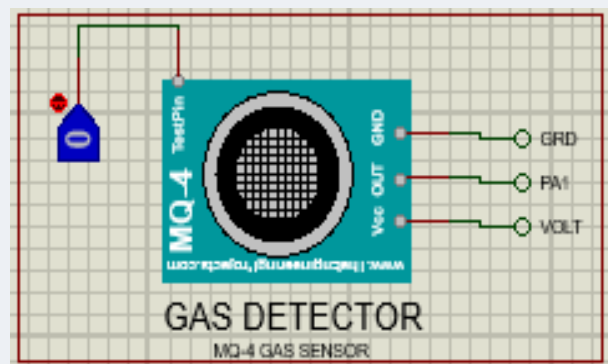
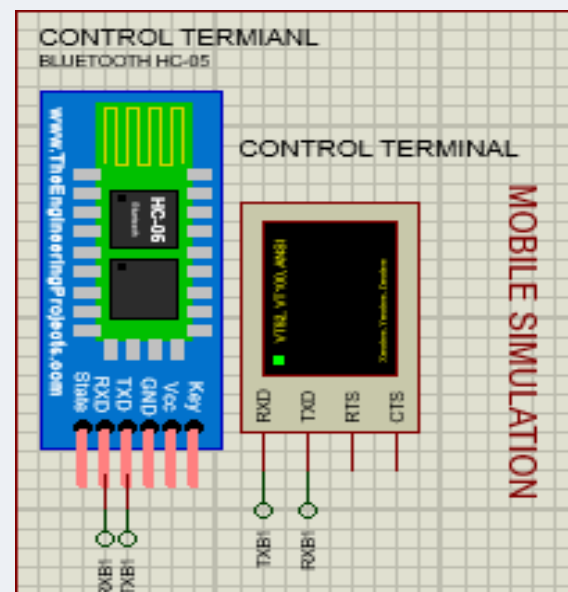
- 1- Using terminal with 2 Bluetooth modules in proteus.*
- 2- Using mobile App & 1 Bluetooth module.*

In the following report we will find a flow chart explain the complete function of our program & operation instructions.

Also, you will find a complete simulation attached with report.

Notice: This simulation needs the following drivers in your proteus to work efficiently:

- 1- Bluetooth module (HC-05)*
- 2- Gas sensor module (MQ-4)*
 - Don't forget to apply hex file of gas sensor after you adding the module to your proteus.*



Project components content:

1- Micro Controller Atmega 32 TX:

We using this micro to receiving the data from Bluetooth module using UART communication & sending this data with SPI communications to another micro controller RX.

2- Micro Controller Atmega 32 RX:

We using this micro to receiving user data from TX micro using SPI & using data to control rooms light, also we add a fire alarm using external interrupt & gas sensor using ADC interrupt.

3- Bluetooth module:

To receive data from mobile.

4- Virtual Terminal:

To Check the received data

5- LCD:

To print the program status.

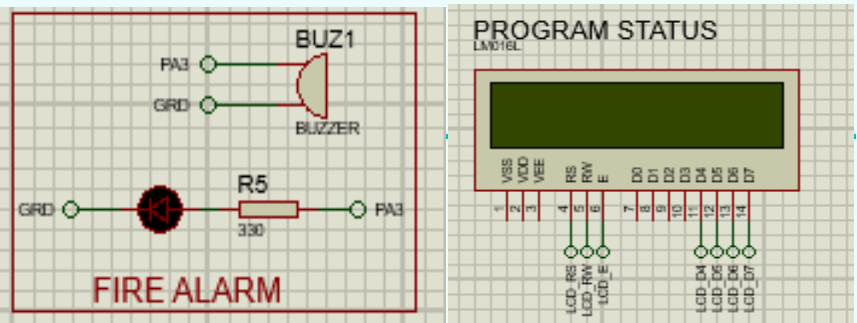
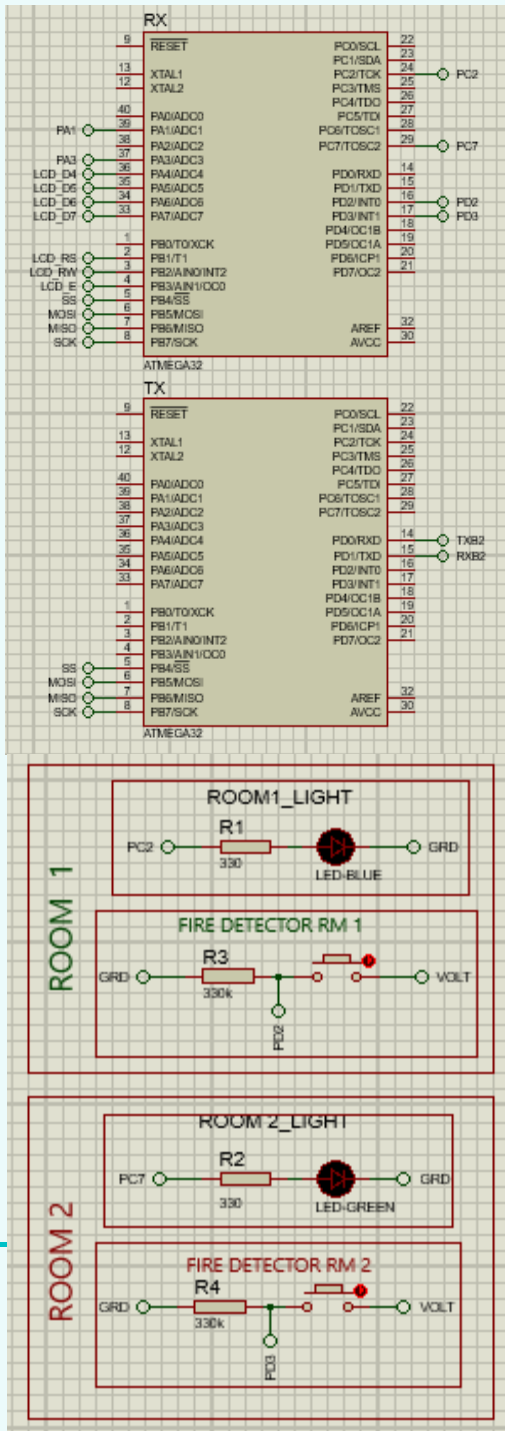
6- Push button:

Simulation for fire alarm sensor

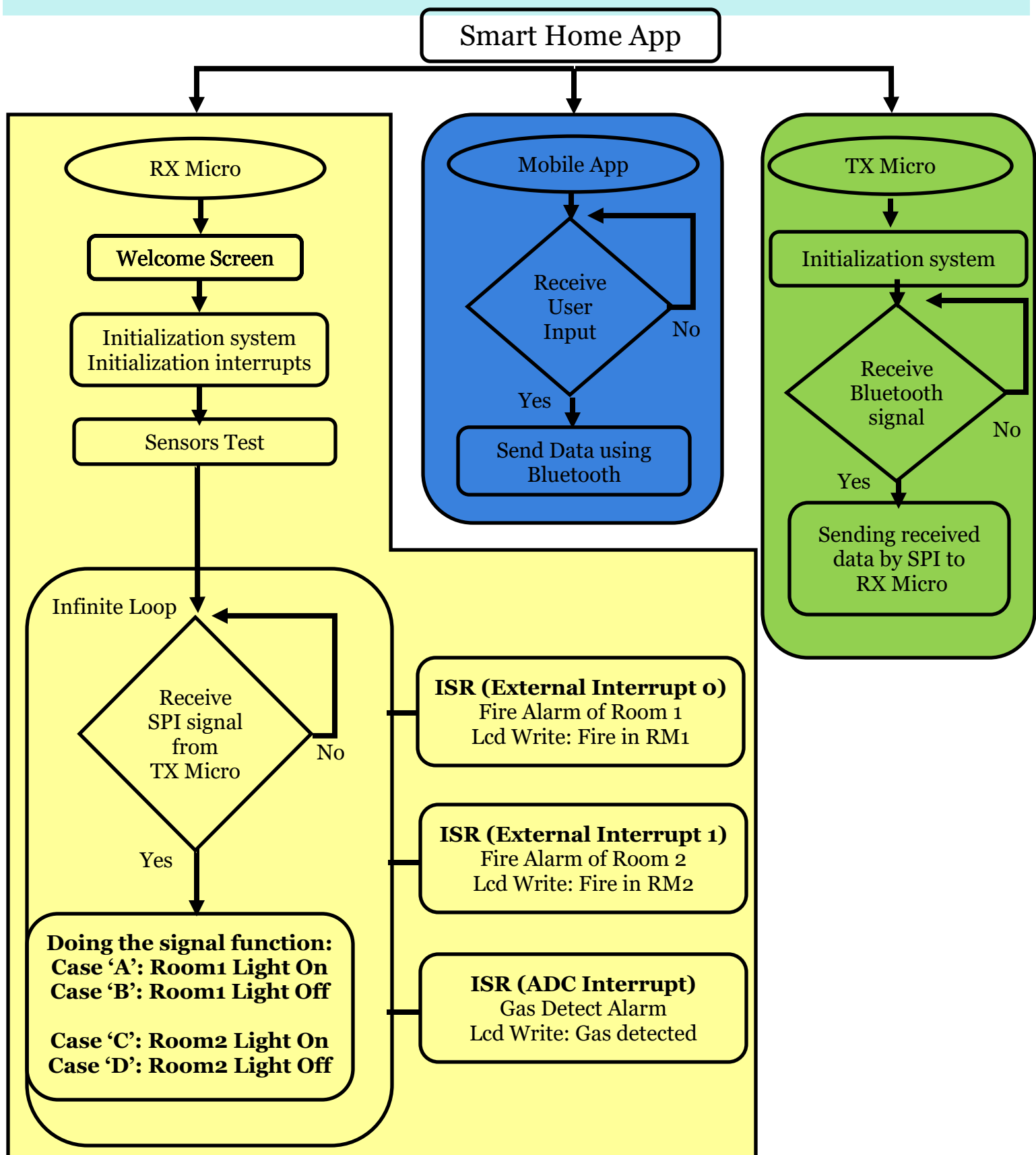
7- Buzzer:

Simulation as a fire alarm

8- Gas detector.



Flow Chart





Thank You