WIRELESS SMART COUNTING SYSTEM WITH RFID VERIFICATION

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ABSTRACT- **A smart counter is a device that enables us to monitor the no.of humans entering or leaving a room. This system includes sensor for counting and an informer to report it to the authority using zigbee communication. The existing systems which are available needs user input. This project is proposed to design an intelligent system to control the whole operation automatically. It can sense the presence of human beings and it can automatically control the count. The human presence can be sensed by employing a motion-detecting unit placed at the entry or exit point of a room. The motion detection unit uses a LASER and a LDR.A RFID tag and a RFID scanner is employed for the verification process. Based on the output of the motion detection unit and the RFID scanner, the microcontroller intelligently decides upon when to increase or decrease the count.**

I. INTRODUCTION

A smart counter is a device that enables us to monitor the no.of humans entering or leaving a room. This system includes sensor for counting and an informer to report it to the authority using zigbee communication.

1. EXISTING SYSTEM

The existing systems which are available needs user input. This project is proposed to design an intelligent system to control the whole operation automatically. It can sense the presence of human beings and it can automatically control the count.

2. PROPOSED SYSTEM

The human presence can be sensed by employing a motion-detecting unit placed at the entry or exit point of a room. The motion detection unit uses a LASER and a LDR.A RFID tag and a RFID scanner is employed for the verification process. Based on the output of the motion detection unit and the RFID scanner, the microcontroller intelligently decides upon when to increase or decrease the count.
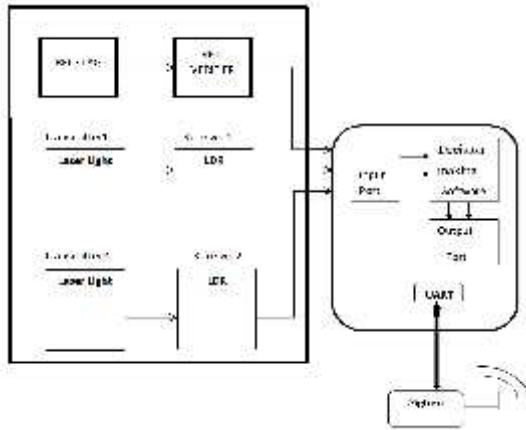
3. BLOCK DIAGRAM
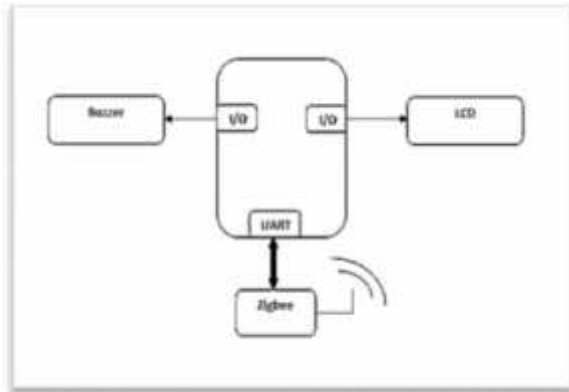

Fig.1 Block Diagram of control unit

Fig.2 Block Diagram of Monitoring unit

II SYSTEM WORKING PROCESS

1. Control Unit:

- The control unit consist of a motion detection unit, RFID scanner, microcontroller and a zigbee.

- The motion detection unit consist of a couple of LASER and LDR.

- The motion detecting unit is connected to the microcontroller through the ADC port.

- The RFID scanner and the zigbee is also connected with the microcontroller.

2. Motion Detection Unit:

- The motion detection unit consists of a couple of LASER and LDR placed opposite to each other.

- The LASER and the LDR will be having a continuous contact with each other.

- The current passing through the LDR will vary according to the intensity of the light incident on the LDR.

- The current variation from the LDR enables the microcontroller to detect any interruption between the LASER and the LDR.

3. Radio Frequency Identification Device (RFID)

- RFID is Radio Frequency Identification Device. It is a fast, affordable and automatic identification technology that uses radio frequency (RF) to transfer data between a RFID reader and a RFID tag.

4. RFID SCANNER
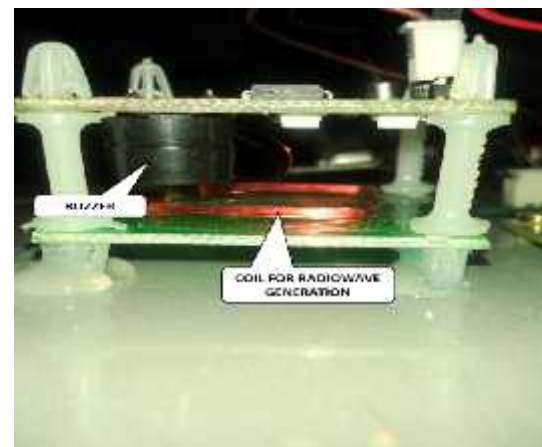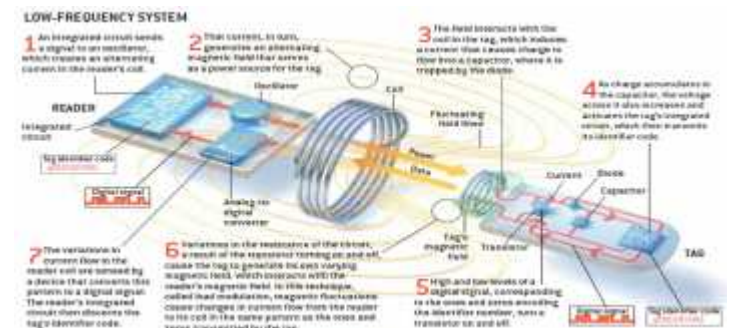
The RFID scanner continuously scans for any RFID tag near to it. If it detects any RFID tag, then it scans the tag and it reads the data from it and it will be sent to the microcontroller

5. RFID TAG

Fig 1.23 RFID Tag

Each RFID tag has a unique code where it will be stored inside the RFID tag. When a RFID scanner scans for any RFID tag the RFID tag sends the unique code stored in it to the RFID scanner
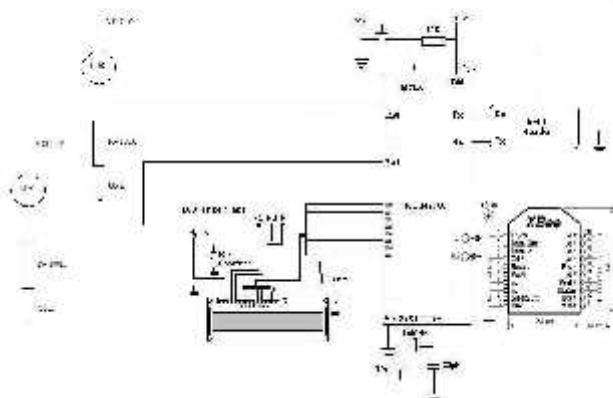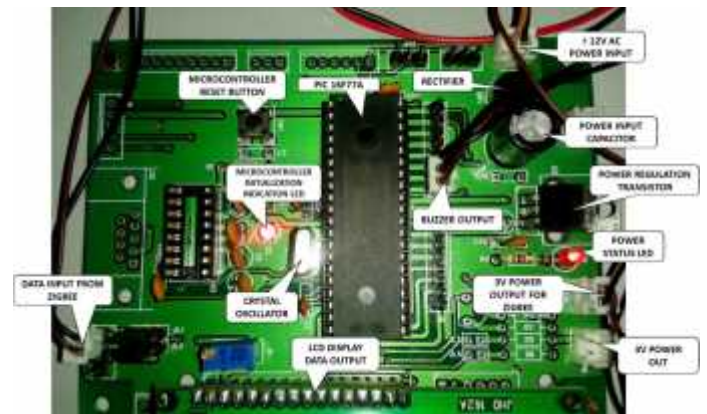
6. CONTROL UNIT– CIRCUIT DIAGRAM
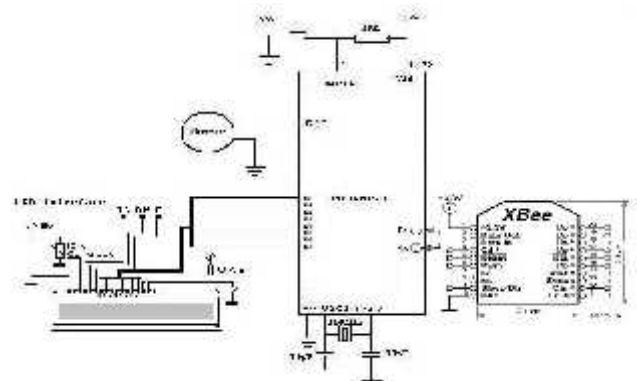

Fig.3 Control Unit Circuit Diagram

CONTROL UNIT – CIRCUIT

The control unit continuously monitors for any interruption in the LDR and LASER units. If any interruption occurs between the LDR and LASER couples then the microcontroller detects it and it decides upon whether to increase or decrease the count.

Also the microcontroller gets input from the RFID scanner. If the RFID scanner sends any RFID tag data then the microcontroller will send also the name of the corresponding tag to the receiver unit. If no RFID tag is detected then the microcontroller will send no input. If the above case is true then the microcontroller will send the tag name as UNKNOWN to the receiving unit.

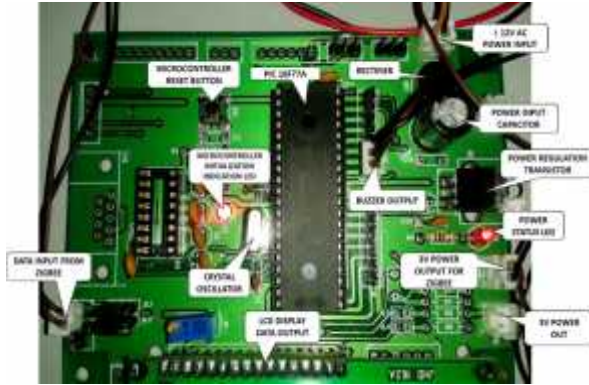## 7. MONITORING SYSTEM - CIRCUIT DIAGRAM

Fig.4 monitoring unit Circuit Diagram

The monitoring system continuously monitors for any transmission from the control unit. If there is any transmission from the control unit then the monitoring unit receives the data and it will decide upon to set the LCD display according to the output from the control unit
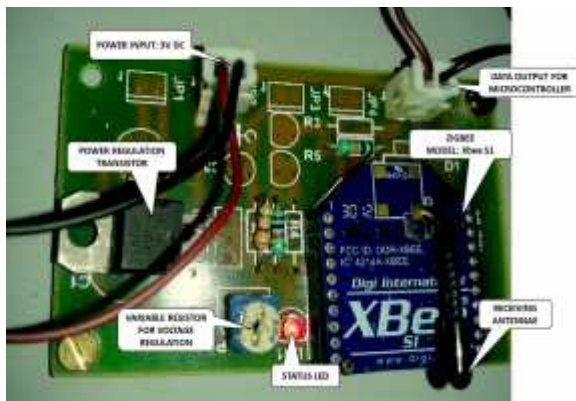
8. ZIGBEE – CIRCUIT

Fig.5 Zigbee Circuit

The Zigbee circuit sends and receives the data from the control and the monitoring units. It has a antennae that helps it to receive and transmit the data. The data from the control unit's microcontroller is sent to the Zigbee unit for transmitting it to the monitoring unit. The zigbee unit in the monitoring unit receive the transmitted data from the zigbee unit from the control unit. Then it sends the data to the monitoring unit's microcontroller.

III. SOFTWARE REQUIREMENTS

MPLAB IDE – For controller programming
Or CAD – For circuit design
Embedded C-For Compiling and Burning the code

IV. RESULT

1. The power source circuit is used for this project is totally RENWAL type power source.
2. This project is giving Digital Data concern to the student on LCD.
3. Digital Data is displayed on LCD.
4. The first and foremost advantage being the use of no wires
5. Time consumption is reduced
6. There is no loss of information sent
7. Information can be conveyed to everyone without manual movement.
8. Easy to implement.
9. More reliable

V. APPLICATIONS

This system can be used in:
Cities, Malls, Theaters.
In Industrial Buildings.
In schools, colleges, etc. for the attendance purpose.
In Many Institutions for Information Purposes.

VI. REFERENCES

www.zigbee.org
www.microchip.com
www.ti.com

www.zen22142.zen.co.uk