RFID -GSM Based Vehicle Authentication System

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Abstract—**Now a days, especially in India, we face the problem of traffic, & a huge rush, because the use of increase in automobiles and in which many of the automobiles or vehicles are not registered with their insurance, license etc . And because of this , traffic police officers have to stop and check public's legal documents regarding their vehicles and because of this the time of public or the traffic controller gets waste. To avoid this irresponsible behavior of the public, we are trying to implement a device called RFIDGSM based vehicle authentication system.**

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iNTRODUCTION

We are using most of the communication devices that are commonly known and used . Such as RFID, GSM modem, Zigbee etc. RFID is wireless communication technology that uses radio waves. The RFID system consist of a reader, tags as well as a antenna. The main function of RFID reader is to catch the signal which is send by RFID tag. The RFID tag is mounted on a vehicle which generates all the information of the vehicles . Which is then send to the RFID reader in the form of radio wave signals. RFID reader act as a transponder, because RFID sends radio waves to the tag and the tag then operates on the power of RFID reader.

Then the signal which is received by the RFID reader is send to the server through a zigbee . Zigbee is a specification for high level communication protocols, using small, low power digital radios based on the IEEE 802.15.4 2003 standard for low rate wireless personal area networks (LR-WPANs), such as wireless light speeches with lamps, etc. At the receiver end which is basically a server design to check the information related to the customers vehicle which is saved on data based. To receive the information at the receiver we are using another Zigbee.

After the reception of all the information related to the vehicle is now checked on the server, which is simply a database. We are creating a application software in which all the information can be saved an updated. We are creating this software with the help of C- sharp.NET and Microsoft visual studio 2008. And the data is saved on Microsoft access.

GSM is used for notifying the customers that his vehicle is insured , registered or not. And if he breaks the law he will be charged some fine. This kind of message will be send to their registered mobile number. The transfer of data through RFID , Zigbee and GSM notification will be executed simultaneously.

RFID AND RFID TAGS

Radio frequency identification (RFID) device which consist of tags and readers that helps in tracking of vehicles. Tags are the components like chip that give the identity to the vehicle and work like wireless name. Reader's pickup the signals transmitted by the RFID tags and will transmit them to centralized data server from where the information can be viewed or can be helped to provide the information which is proposed in this project. We are using RFID reader and RFID tags at the transmitting part which consists of a handheld device which contains RFID reader, LCD display, Zigbee.

1.1:RFID TAG

RFID tags will be mounted on the vehicle. When the tag gets detected by the RFID reader, the readed signal is sent to the server to check the tag's information saved on the database and thereceiver section acknowledges and sent the information on the handheld device on LCD display. We are using passive vehicle tags. Vehicles are affixed with RFID

tags read range: 5-10m helps in giving identification to vehicles.

ZIGBEEMODULE

In this project for transmission and reception Zigbee module is used. We have seen very fast growth in wireless technologies from several past 20 years. Nowadays in wireless communication, the main approach is focused on high speed wireless networks which are based on IEEE standards. Zigbee provides low cost; power is low and can be use for long range transmission. The low cost provides widely usage of the device where it can be employed at bigger nation. The low power gives long life for the device and thebatteries. Zigbee can be installed in loop form which helps in communicating on hectic routes. Its switching time can be less than 30ms. Because of this most of the time zigbee can sleep and conserve power, average power consumption can be very low, provides very long life.

General Chacteristics of Zigbees are:

- Data rates of 21kbps and up to 253kbps.
- Star or peer-to-peer network topologies.
- CSMA-CA channel access.
- Handshaking.
- Low power usage consumption. • Three frequency bands with 26 channels.
- Extremely low duty cycle (<0.123%).

1.2:Zigbee module

GSM MODEM

GSM stands for Global System for Mobile Communications . This system is developed by the European countries. . We are using USB port to communicate with the computer. Which will notify the regeistereed customers about their vehicle information that

it is legal or no ,etc.
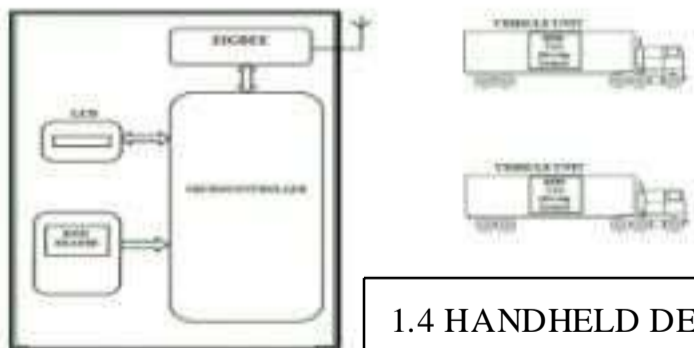
1.4 HANDHELD DEVICE

1.3 GSM MODEM

V.THE PROJECT

A. TRANSMISSION PART

We are using handheld device at the transmitter part which contains RFID reader,zigbee,LCD display,PIC IC,etc. Which is going to work on a battery. The RFID reader will raed the tags information which is mounted on the vehicle. As soon as the tag is detected by the RFID reader module the zigbee will the information to the receiver side which is basically a centralized server. After that the information about the vehicle is checked on the server and server automatically resends the information about the vehicle registration to the handheld device on the LCD display. Receiver also has zigbee to send the information. The information is received by handheld zigbee and then given to the PIC IC which is already interfaced with the LCD display ,because of this whatever information is required is available on the LCD display. The handheld device will be in thehands of traffic controller officer .

B.RECEPTION PART When the signal is received by the receiver zigbee, the receiver zigbee is interfaced with MAX 232 IC for interfacing with the computer. Receiver consist of a computer ,RS232 cable,zigbee,MAX232 IC and power supply. After the reception of signal the information is checked in the database server. When the server checks all the information regarding the tag ,it sends theinformation to the handheld device on the LCD display. By this the legal or true information is achieved by the traffic officer and the officer will fine the charge if the customer is guilty. If he/she is guilty ,and he ran's away the notification regarding the legal information is sent to the customer on their mobile number which registered. For efficient implementation of the phenomena, the device installation must be done into mesh on every square of the city where the traffic signal is situated.

Are best served by which typeof generator.

VI .SOFTWARE AND DATABASE

We are using C-sharp.NET,Microsoft visual studio 2008 and Microsoft access to create the application software to make the database regarding the public's information. Registration has to be done by all the peopleto avail this facility and it will be mandatory if it is implemented by the

GOVERNMENT.

VII. APPLICATIONS

- It can be used in traffic control, document checking of vehicledrivers.
- Toll tax.
- Vehicle authentication in automation industries,etc.
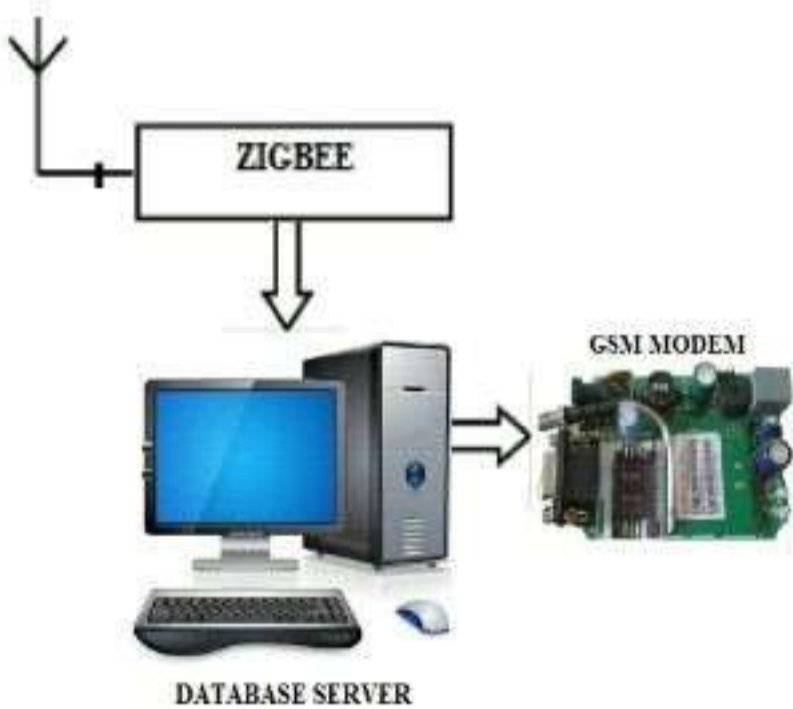
Fig 1.4 **RECEIVER SECTION**

Fig1.6 REGISTRATION AND ALERT APPLICATION

CONCLUSION

We designed hardware part as transmitter handheld device and receiver for interfacing with PC . Software is developed is project is working.

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