RFID Based Student Bus Fee Status Checking At Real Time Using Zigbee

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Abstract: - An advanced ARM based student bus fee status checking at real time using ZIGBEE and RFID technology is designed and implemented for monitoring the student's bus fee status details for school/college management requirement. The advanced system makes good use of new technology that is based on ARM7, RFID and ZIGBEE technologies. The proposed system consists of two main units; administration unit and bus unit. The administration unit acts as a transmitter and used to send the student fee status to the bus unit. The bus unit acts as a receiver and used to display the student bus fee status on the LCD at real time. The proposed system is placed inside the vehicle. And communication between the proposed system and administration server can be done using ZIGBEE technology. When student enters the bus RFID reader reads the card details and displays student bus fee status on LCD.

Keywords- ARM, ZIGBEE, RFID

I. INTRODUCTION

As the world enters the 21st century, the quality of education continues to a major factor in a nation's ability to succeed and excel. Transportation facilities are essential for students in educational institutions. Now a day's many schools and colleges are away from cities. Safety of children's is utmost important to their parents. So students and their parents mostly prefer school or college which has bus transportation.

To maintain bus transportation perfectly school and college management generally appoints bus supervisor to check whether the students pay the fee or not. This type of method is somewhat difficult to maintain and also time consuming. So management can implement this proposed system for easy maintenance. This proposed system can display

Students bus fee status at real time. The proposed system consists of two main units; administration unit and bus unit. The administration unit acts as a transmitter means it used to send the students bus fee status to the bus unit. And the bus unit acts as a receiver means it used to display the received student bus fee status on the LCD. The administration unit and bus unit in the proposed system can communicate by using ZIGBEE technology. Operation of the proposed system can be done by the integration of RFID with ZIGBEE. Proposed system

is a cost effective idea when compared with RFID and other technologies because of integration of RFID with ZIGBEE. The proposed system gives more reliable cost effective and fast means of long distances objects identification.

II. PROPOSED SYSTEM

A. Block Diagram

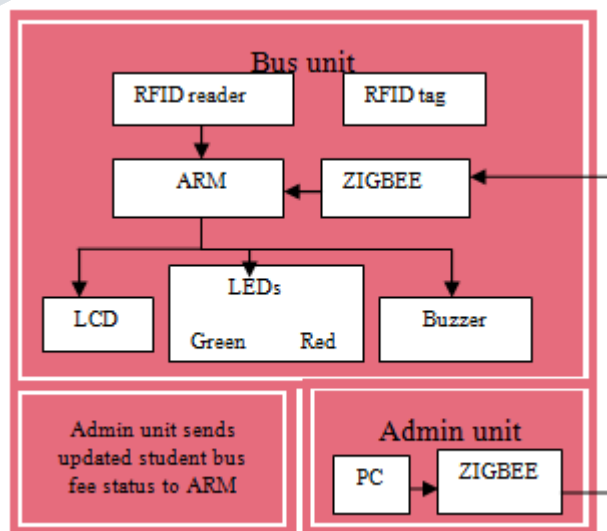The below figure 1.1 shows the proposed System architecture.

Fig 1: Block diagram of Proposed System

The proposed system would get controlled with the help of ARM microcontroller which is placed inside the Bus. Means ARM is the central controlling device of all other components such as ZIGBEE, RFID reader, LCD, LEDs and Buzzer.

The system is divided into two main units .Admin unit located inside the administration and Bus unit located inside the bus. The communication between Admin unit and Bus unit can be done using ZIGBEE. The operation of our project can be done by the integration of ZIGBEE and RFID technology. Admin unit send the updated student bus fee status to ARM which is placed inside the vehicle by using ZIGBEE wireless communication. ARM can receive the fee status by using ZIGBEE. Bus unit mainly used to display the student fee status at real time. This can be achieved by using RFID technology. This RFID system consists of Reader and tags. RFID reader can be placed inside the school bus by the entrance. When the students enter the bus, RFID reader reads the card details and sends to the ARM. Based on the card details and already received updated fee status ARM can send the fee status of the particular student on the LCD. And ARM can also give instructions to the LED's and buzzer. If student paid means green LED glows, if not means red LED glows and at the same time buzzer will on.
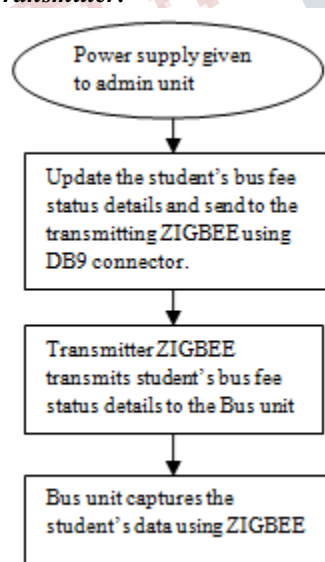
B. Flow chart
Flow chart of Transmitter:

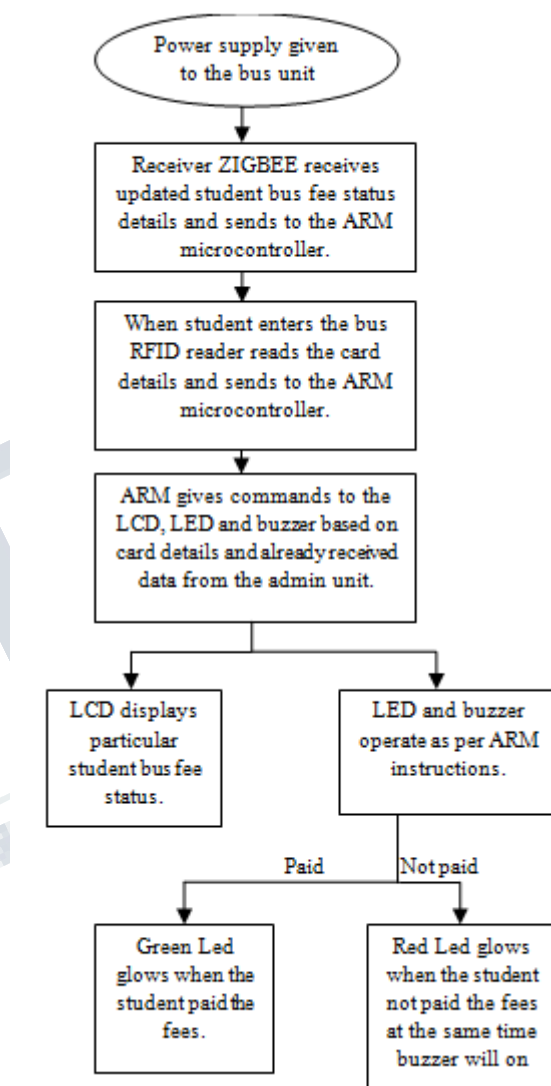*Fig 2: Flow Chart of Transmitter Section*

Flow chart of receiver:

Fig 3: Flow Chart of Receiver Section

C. Applications:
➢ *Educational institutional*
  ❖ Low level educational institutions
  ❖ High level educational institutions

D. Advantages
  ❖ Educational institution can easily manage the bus transportation.

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- ❖ The deployment cost is reasonable.
- ❖ The system is automatic and user friendly.
- ❖ Security.
- ❖ Safety.

III. RESULTS
STEP WISE KIT EXPLAINATION
RECEIVER:

Fig 4: Kit diagram of receiver

Power Supply given to the receiver which consists of ARM7, RFID Reader, LCD, LEDs, ZIGBEE and buzzer.

Transmitter

Fig 5: Kit Diagram of the Transmitter

Power supply given to the transmitter which consists of Personal Computer and Transmitting ZIGBEE which are communicated by using DB9 connector.
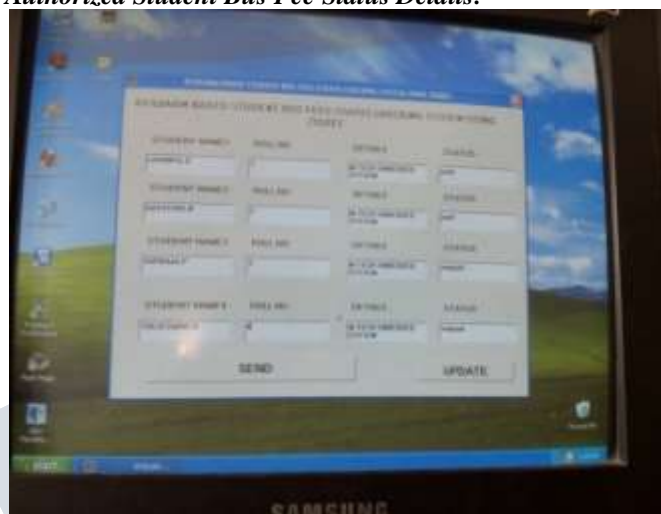
Authorized Student Bus Fee Status Details:

Fig 6: Updated Student fee Status Details in PC

Authorized student bus fee status details can store by using application software. Transmitter ZIGBEE can transmit updated student bus fee status details to the bus unit.

Student Bus Fee Status Updated Successfully:

Fig 7: LCD status as data updated successfully

To receive the student bus fee status information from transmitter through ZIGBEE can be updated successfully.

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Intialized Text

Fig 8: LCD status for initialization purpose

To initialize the bus unit LCD automatically displays the above text as shown in figure after updating.
Fee details

Fig 9: Checking Fee status of student 1

In receiver section when student is paid bus fee at the time LCD displays status as paid and also green LED glows.

Fig 10: Checking Fee status of student 3

Receiver section when student is not paid bus fee at the time LCD displays status as not paid and also red LED glows, at the same time buzzer will ON.

IV. CONCLUSION

The RFID and ZIGBEE are emergent technologies which are used in wide range of applications. This project generates an effective solution called checking student bus fee status at real time by integrating both RFID and ZIGBEE. This system has given the reliable and low cost results when compared with other technologies. The design, implementation and maintenance of this system is very easy because of less hardware complexity.

V. FUTURE SCOPE

In future the entire system will be automated based on GSM technology that can give more effective results. For future enhancement we can implement Automatic Door Locking System based on student bus fee status.

VI. ACKNOWLEDGEMENT

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