E-Notice Board With Timetable Display in Class Room using GSM Technology

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Abstract - **Here we design AN EFFECTIVE E-NOTICE BOARD by using GSM technology for class room display with timetable. We are using the GSM module for receiving the message; the message received is send to the microcontroller to display the information on display board. As the SMS received by the GSM module, the message will be displayed in the class room by RF TRANSMITTER and RECEIVER. For this we are using 3 modules, 1 main module and 2 sub modules. Main module consists of RF TRANSMITTER, LCD module and GSM module which are interfaced with AT89S52 microcontroller. And the 2 Sub modules consist of RF RECEIVER, LCD module and BUZZER which are also interfaced with AT89S52 microcontroller. The wireless network is designed with idea of a SMS, as the SMS send to the GSM module which is present in Main module; the message will be displayed in the LCD display in same module and transmits the information to the Sub modules by a RF TRANSMITTER. The Sub module receives the message by RF RECEIVER and will display on the LCD display. In the mean time the Sub module displays lecturer's name, subject name and it can also used as a college bell. For this we are using a pc with a GUI developed in .NET to set the periods.**
Key words: **Main module, Sub modules, GSM, RF Transmitter, Rf Receiver, .NET**

I. INTRODUCTION

The paper will explain embedded systems and wireless networks. Wireless communication has announced its arrival on big stage and the world is going mobile. The remote control of appliances is possible through embedded systems. The use of embedded system in communication has given rise to many interesting applications that ensures comfort and safety to human life. Looking into current trend of information transfer in the campus, it is seen that important information takes time to be displayed on the notice boards.
This latency is not expected in most of the cases and must be avoided. Automated lighting controls enable recall and selection of requirements with the press of a button, instantly customizing the lighting to accommodate different preferences and different uses of the space. Automated lighting, fan and projector control—programmable on-off control—can lead to low power consumption in home, class rooms etc… with declining costs and complexity, these systems are no longer exclusively the province of power saving units.

The proposed methodology presents a feasible class room notice board/circular display and time table display system based on mobile technology and microcontroller architecture, rather than devices interconnected by an expensive commercial bus. The means used for data communication is GSM modem, so that the system doesn't require placing cables in addition to standard electrical facilities. Project is aimed to save the time wastage in schools and colleges by sending a simple SMS, by using RF Tx and RF Rx the information will be displayed on the display boards.

System also employs auto controlled time table display system and also works as college bell. GSM system provides wireless communication between control system and user that reduces time, also result in less complex, reliable system. The GSM is mainly used to initialize and terminate the system, further controlling and monitoring is done by the microcontroller. The electronic displays which currently used are programmable displays which need to be reprogrammed each time.

This makes it inefficient for immediate information transfer, and thus the display board loses its importance. Hence the GSM based display can be used as an add-on to these display boards and make it truly wireless. The display board programs itself with the help of the incoming SMS with proper validation. Such a system proves to be helpful for immediate information transfer. The paper is also aiming to design a SMS driven display system also a display board.

This can replace the currently used programmable electronic display. It is proposed to design receive cum display which can be programmed from an authorized mobile phone. The message to be displayed is sent through a SMS from an authorized transmitter. The system receives the SMS, validates the sending mobile identification number (min) and displays the desired information after necessary code conversion.

II. EXISTING MODEL

In many existing systems we observed electronic display systems which are reprogrammed every time for the new message to be displayed. For this a operator is needed. By this we have many disadvantages. In many colleges it is high time to conduct the class work as per the time table. One need to search for time table which class is next, and if the head of the department/Institution wants to monitor what's happening in class they need to go for a time table which is displayed on the notice board.

III. PRAPOSED SYSTEM

Here we are proposing the wireless network concept to display the information in the class without wastage of time by a simple SMS using GSM technology and RF. And to display the time table like lecturer's name, subject name. In our concept we also implemented for a bell after a period completes. To set the periods we developed a GUI in .NET which is interfaced with microcontroller. By using this system we can save man power and time. By this we can observe smooth conduction of class work with information to the head of the department/Institution.

IV. IMPLEMENTATION

A) System Model

Here we implemented with two class room modules and one Main module. The two class room modules indicate the classroom and the Main moduleindicate the head of the department/institution room. The message which is displayed in the classroom is also displayed in the hod's room. In Fig 1 we can observe the Main moduleand in Fig 2 we can observe Class room module
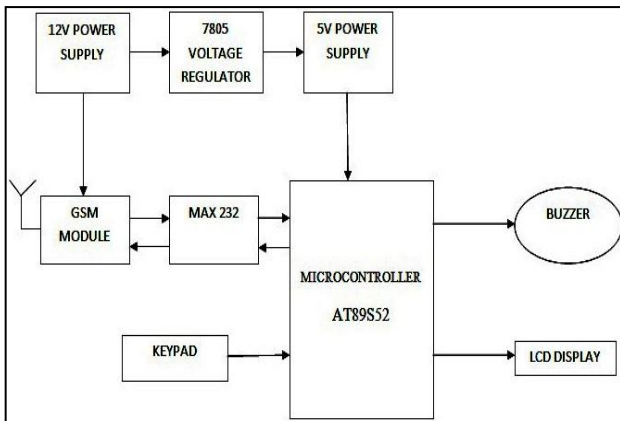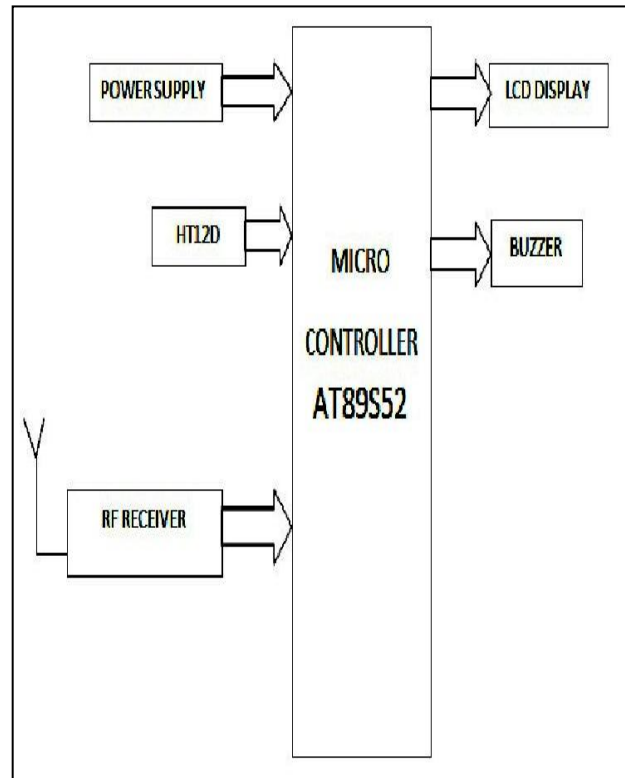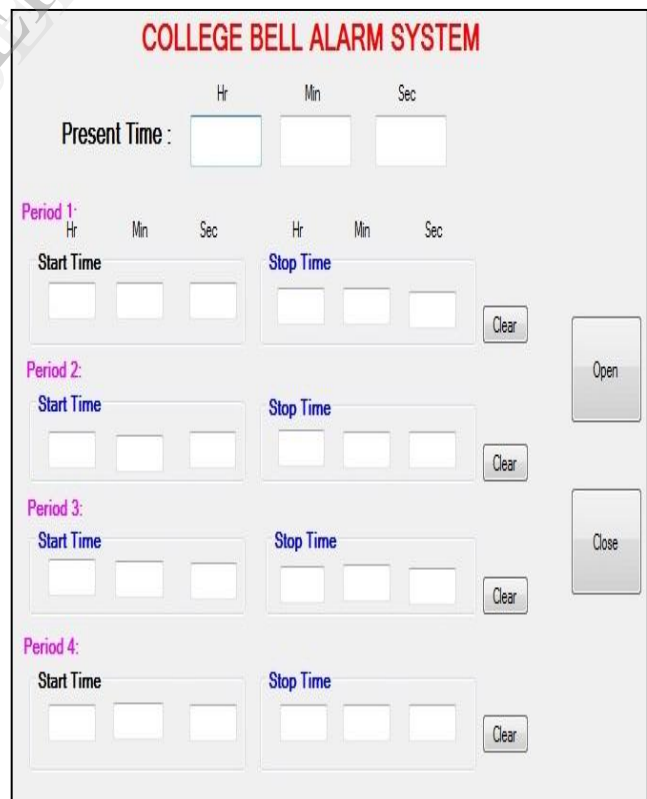

Fig 2: SUB MODULE

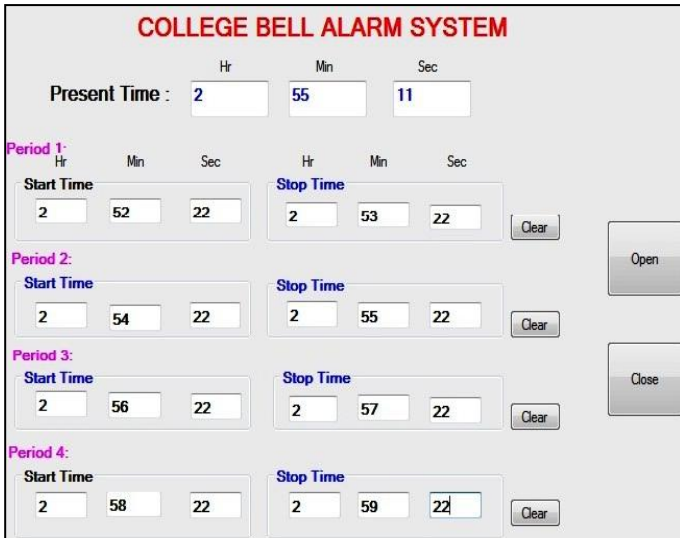

Fig 1: MAIN MODULE

Fig 3: GUI with empty time slots

Fig 4: GUI with filled up time slots

Fig 3 shows the empty time slots, which is developed in .NET in fig 4 we have given time slots with less time for observation. Here we need to enter the present time, with respect to the present time the period time slots are filled as per our requirement. After filling the time slots we press the open button to get interface with microcontroller.

B) Modules

1) The Main module consists of RF TRANSMITTER, LCD module and GSM module and buzzer which are interfaced with AT89S52 microcontroller.

2) The Sub module consists of RF RECEIVER, LCD module and BUZZER which are also interfaced with AT89S52 microcontroller.

3) The pc which is interfaced with Main moduleto control the timings. We are using this because we can change the timings as per our schedule of time table in the GUI.

C) Module Description

1. Main module: This module is kept in head of the department/institution room as they are one who gives information to the students. The person need to sends the information by a simple SMS to the GSM module which consists of a SIM. The module receives the message and displays on the LCD display and transmits the data using RF transmitter. The Main modulein the mean time displays the timetable, this timetable also transmitted. The buzzer acts as a bell and it will rang according to the timings set in our GUI.

2. **Sub module:** This module receives the information sent by the Main moduleby RF receiver and displays the information on LCD display. It acts as per the instructions of Main module.

3. PC: Here we developed a GUI and interfacing with the Main module. This is developed for our convenience to set the period timings as required.
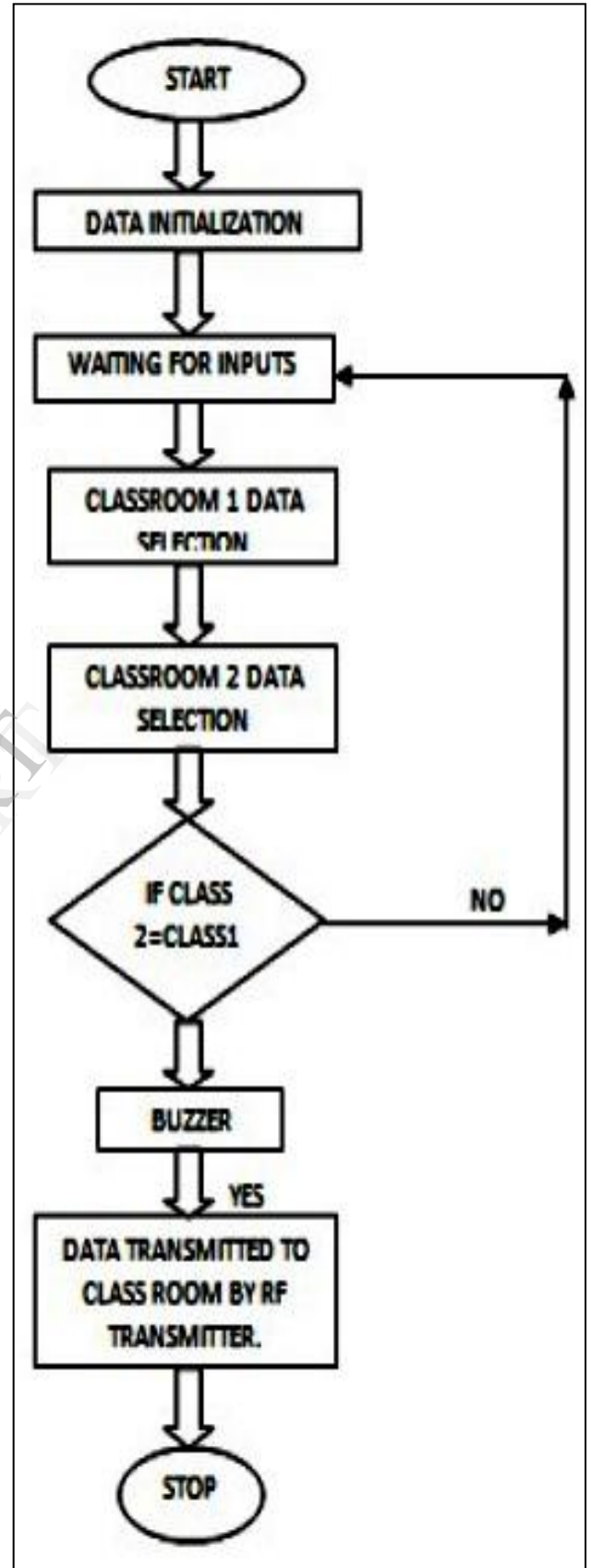
V. DESIGN FLOW CHART
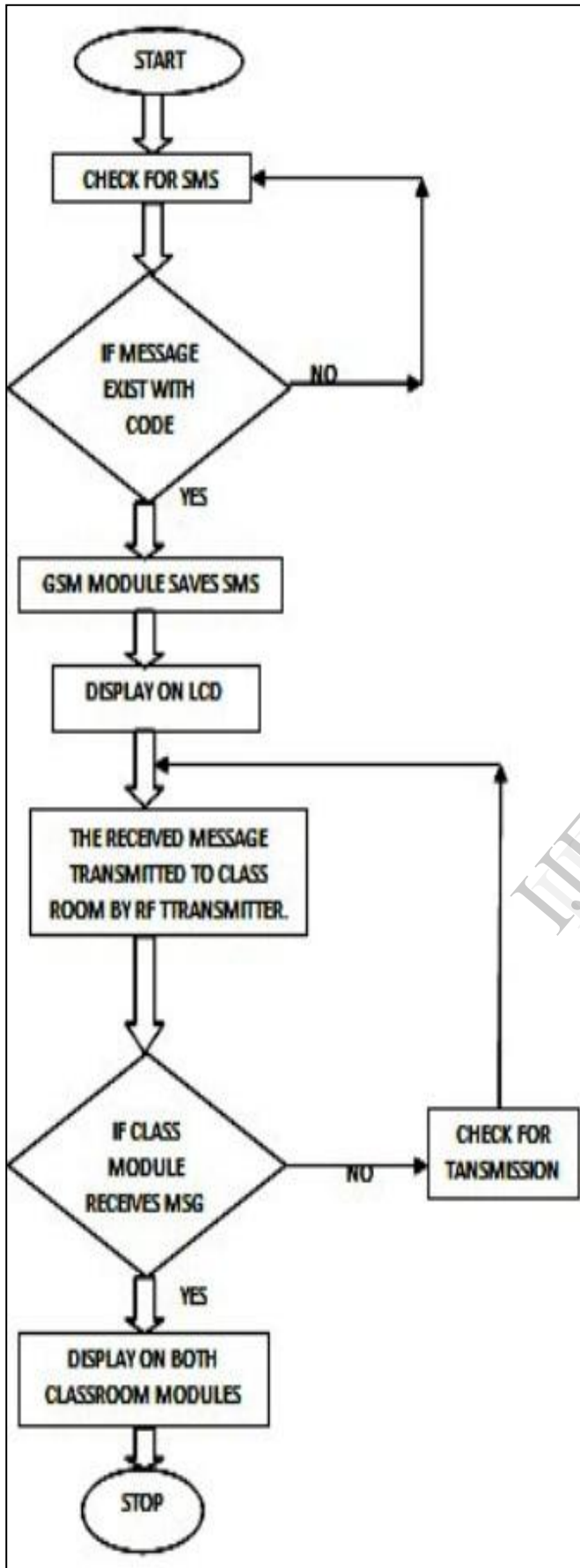

Fig 5: DESIGN FLOW TO DISPLAY TIMETABLE

Fig 6: DESIGN FLOW TO DISPLAY RECEIVED DATA.

In fig 6 the design flow is for the timetable display as in stand by the Sub modules displays it. By pressing the required buttons from the keyboard given information is displayed. In fig 6 we can see the design flow for the message received from the mobile to GSM module and the message is displayed in the Sub module by RF transmitter and receiver.

VI. EXPERIMENTAL RESULTS

By the work done we kept all the setup in ready, as soon as the kit is on the display displays the timetable and as per our instructions in the GUI the buzzer will rang. When we send the SMS to the GSM module with SIM in the kit as "GOOD MORNING" the Main moduleshows the message and the same message is displayed in two Sub modules by interrupting the timetable after few seconds again the timetable is displayed. These we can observe in the following figures.
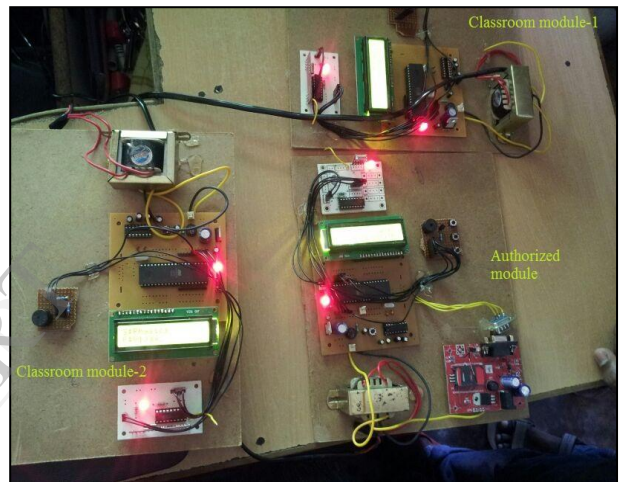

FIG 5: When the kit is on

Fig 6: Displaying the results.

VII. CONCLUSION

This paper has facilities to integrate GSM module with a LCD display using RF, thus making it really wireless. This system accepts the SMS, stores it, validates it and then displays it on the LCD display. The validation depends upon the stored numbers which are compared with the incoming number. By this project we can say that it reduces the time in giving the information to the students and also reduces the man power. The total application is developed on the wireless networks. In future we can enhance the project with many numbers of modules in real time. This can be used in many numbers of applications.

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