

SMS BASED SMART NOTICE BOARD

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Abstract -: *This project aims to digitalize the primitive notice board system by developing an SMS-based notice board system that utilizes GSM technology. The system, built using Arduino Uno, SIM900A GSM module, P10 display module, RTC sensor, aims to provide a convenient and efficient way to display notices without relying on internet connectivity. Real-time information such as time, temperature is also displayed on the notice board. A specific pattern verification process is implemented to ensure that only authorized messages are displayed, enhancing security. By combining GSM technology with a versatile notice board interface, this project offers a reliable and accessible solution for disseminating information in diverse settings.*

Key Words: Arduino board, SMD Display, Temperature, RTC sensor.

Introduction: -

Traditional notice board systems have long been a staple in various environments, including schools, offices, and public spaces. However, these systems are often cumbersome to maintain, requiring manual effort for updating notices and lacking the ability to display real-time information. In response to these limitations, this project proposes the development of an SMS-based notice board system that leverages

GSM technology to provide a more efficient and versatile solution. By digitalizing the notice board system, we aim to streamline the process of displaying notices while enhancing its functionality with real-time information display.

Problem Statement:

The traditional notice board system is characterized by its reliance on manual effort for updating notices, often involving printing notices and using adhesive materials to affix them to the board. This process can be labour-intensive and prone to errors. Additionally, traditional notice boards lack the ability to display real-time information such as time, temperature, limiting their relevance in dynamic environments. The need for a more efficient and versatile notice board system has led to the development of the SMS-based notice board project. By addressing these limitations, the SMS-based notice board system aims to revolutionize the way information is disseminated in various settings.

Objectives:

- I. Develop an SMS-based notice board system using Arduino Uno and GSM

technology to eliminate the manual effort required for updating notices.

- II. Provide real-time information display including time, temperature to enhance the utility of the notice board.
- III. Implement security measures to ensure only authorized messages are displayed, thereby safeguarding the integrity of the system.

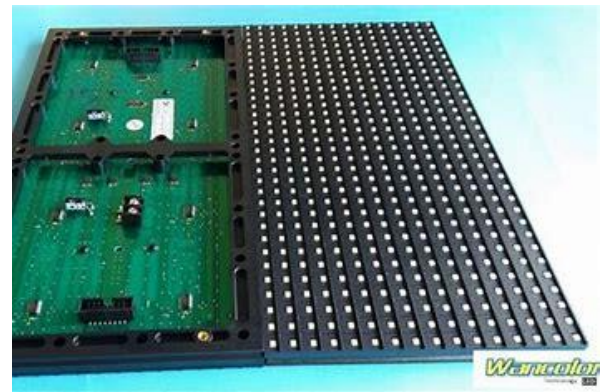


Fig 2: P10 SMD Display Module

Methodology:

The SMS-based notice board system is built using Arduino Uno as the main controller, SIM900A GSM module for receiving SMS messages, P10 display module for displaying notices, RTC sensor for detecting real-time clock. These devices are connected according to the circuit diagram (refer to Fig 7) and programmed to work together seamlessly. The GSM module is configured to receive SMS messages, which are then processed and displayed on the notice board in real-time. The RTC sensor ensures accurate time display, and temperature readings. Security measures are implemented to verify the authenticity of received messages before displaying them on the notice board, thereby preventing unauthorized access.

Equipment Required:

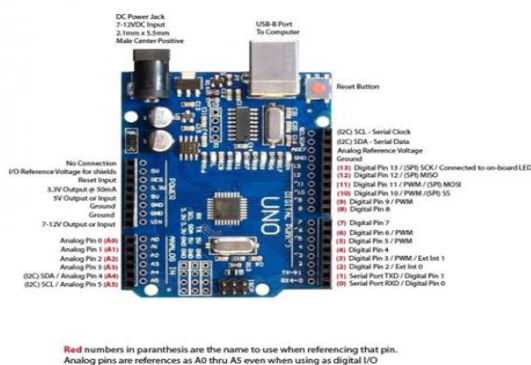


Fig 1: Arduino Uno ATmega328P



Fig 3: SIM900A GSM Module



Fig 4: RTC-DS3231

Implementation:

As shown in Fig 5, the hardware components are interconnected according to the project specifications, with the Arduino Uno serving as the central control unit. The GSM module is equipped with a SIM card to establish a connection to the cellular network, enabling it to receive SMS messages. The P10 display module is powered and configured to display messages received from the GSM module. The RTC sensor is connected to provide real-time clock and temperature readings, respectively. The Arduino Uno is programmed to handle data input and output, receive data from the sensors and GSM module, and display messages on the P10 display module. The connection setup for the project is given in

Fig 6.

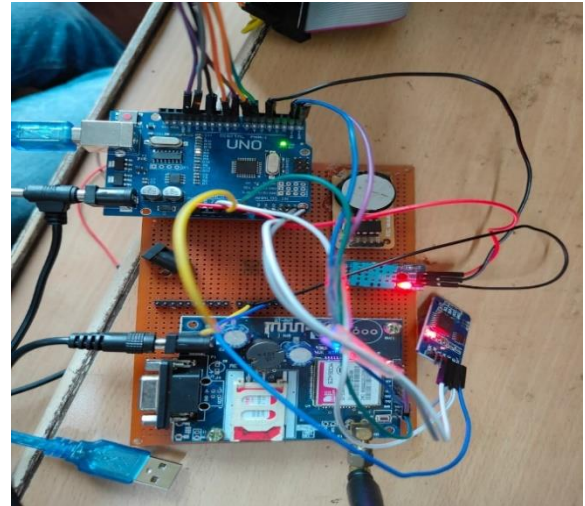


Fig 6: Connection Setup

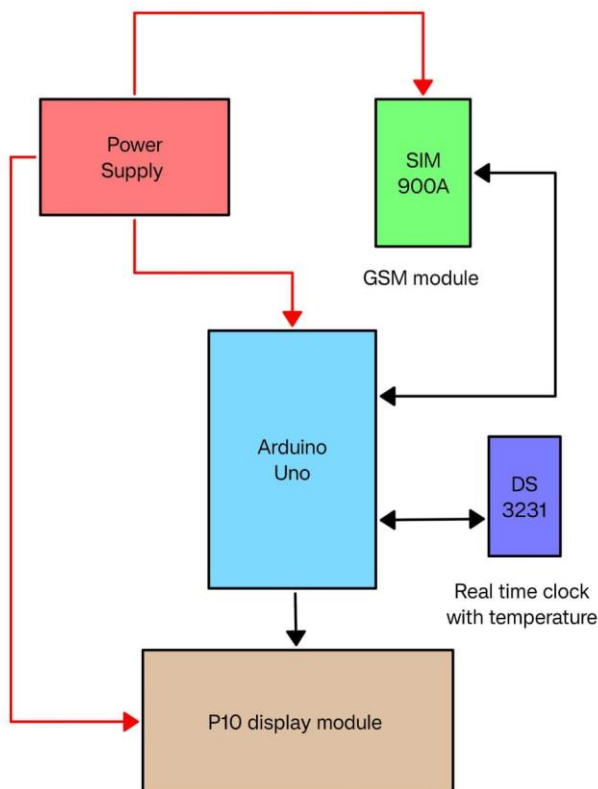


Fig 5: Block Diagram of Smart Notice Board

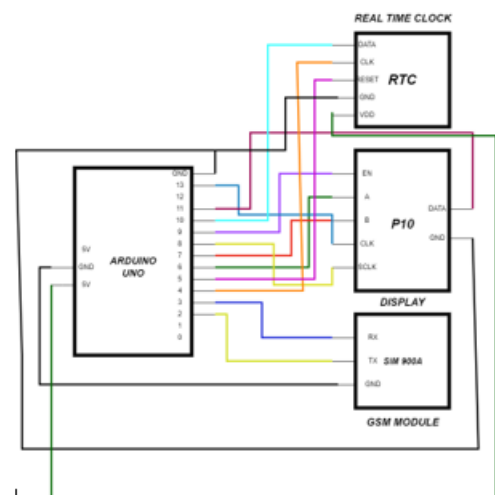


Fig 7: Circuit Diagram

Additionally, to simplify the process of sending messages to the notice board, a simple mobile

application has been developed whose interfacing has been shown in fig 11. This application allows users to input the desired message, along with information such as the recipient's phone number, date, and time until which the message should be displayed. Upon submission, the application formats this information into the required pattern and sends it as an SMS to the designated SIM card inserted in the GSM module. This streamlined approach enhances user experience and facilitates the dissemination of information to the notice board.

With this addition, the implementation section now covers the development of both the hardware and software aspects of the project, providing a more comprehensive understanding of how the SMS-based notice board system operates.

Results:

Testing of the SMS-based notice board system demonstrates its functionality in displaying messages, real-time information, and security verification. The system successfully receives SMS messages and displays them on the notice board in real-time, eliminating the need for manual intervention. RTC DS3231 is capable of displaying the time and temperature enhancing the utility of the notice board in various environments. The display of the time, temperature, day and date have been shown in Fig 8, 9 and 10 respectively. The security verification process ensures that only messages with the specified pattern are displayed, preventing unauthorized access and maintaining the integrity of the system



Fig 9: Display of Date



Fig 10: Display of day

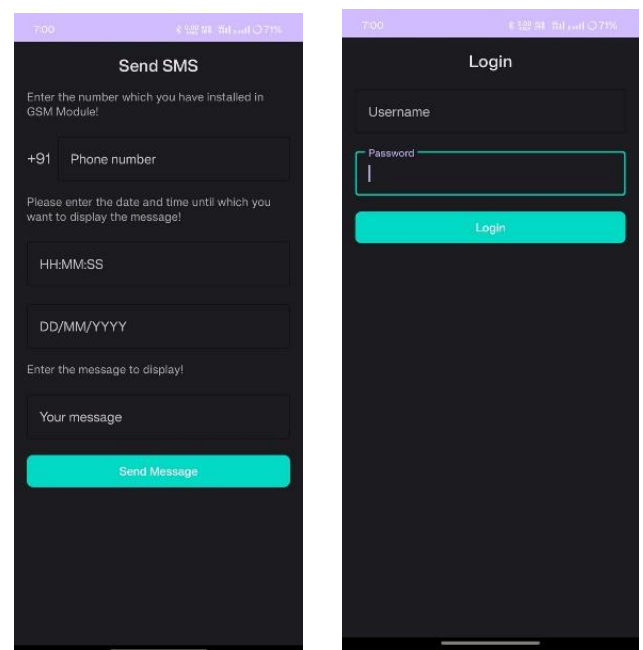


Fig 11: Interface of the Application



Fig 8: Display of time and temperature

Discussion:

The SMS-based notice board system represents a significant improvement over traditional notice board systems by offering increased efficiency, versatility, and functionality. By leveraging GSM technology, the system provides universal accessibility without relying on internet connectivity, making it suitable for deployment in diverse settings. Real-time information display enhances the relevance of the notice board, while security measures ensure the integrity of displayed messages. Further enhancements could include the integration of additional sensors for monitoring environmental parameters or the development of a user-friendly interface for message input, thereby increasing the system's usability and appeal.

Conclusion:

In conclusion, the SMS-based notice board project has successfully digitalized the primitive notice board system by leveraging GSM technology and Arduino-based hardware. The system offers a convenient and efficient way to display notices while providing real-time information and security features. With further refinement and development, the SMS-based notice board system has the potential to revolutionize information dissemination in diverse settings, contributing to increased efficiency and effectiveness.

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