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Digital Data Displaying Board Using GSM

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ABSTRACT: Notice board plays a major role in human's day to day life. It is mostly used in any institution or organization or public sectors like bus stops, railway stations, shops etc. In early times, lots of papers are used to communicate others. The proposed technology of notice board using GSM will reduce the wastage of papers. Smart phones are mostly used by everyone. The messages are texted through mobiles likewise, SMS based notice board using GSM Modem, displays the messages on notice boards by using mobile phone. Modem is being connected directly to PC or to any Microcontrollers. It is used for data logging and control. The SIM is used for our convenience where it is inserted in a slot available on GSM Modem. Monitor is used to display the message that sent from our mobile phone to the notice board. In this Raspberry pi is used as the main Controller. One of the most exciting things about the Raspberry Pi is that it comes equipped with a HDMI connector, meaning that anyone with a HDMI-compatible monitor can easily connect the device. Along with the SD card and power supply, the HDMI cable is one of the most important pieces of equipment that can be used with Raspberry Pi, which means that can connect it to a wide selection modern desktop computer monitors.

KEY TERMS: Raspberry Pi, GSM Modem and MAX 232 level converter, LCD Display, Embedded C, C Python.

I. INTRODUCTION

Notice Board is used in various institutes to display notices and these boards are managed manually. It is a long process to put up notices on the notice board. This wastes a lot of resources like paper, printer ink, man power and also loss of time. In this paper we have proposed a system which will enable people to wirelessly transmit notices on notice board. The project aims at designing a LCD Monitor based message display controlled from a mobile phone. The proposed system makes use of wireless technology to communicate from Mobile phone to **Raspberry Pi** display board. The system has a provision for giving message through text. This project makes use of an on board computer, which is commonly termed as **Raspberry Pi** processor. It acts as heart of the project. This onboard computer can efficiently communicate with the output and input modules which are being used. The **Raspberry Pi** is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation. The **Raspberry Pi** does not include a built-in hard disk or solid-state drive, but uses an SD card for booting and long-term storage. The main controlling device of the whole system is a **Raspberry Pi** processor. GSM modem is interfaced to **Raspberry Pi** processor. The message sent through predefined application from user mobile phone is received by the GSM modem. GSM modem feeds this information to Raspberry Pi processor which process it and displays it on the LCD display. Also, the Raspberry Pi processor horns a buzzer for every new message

II. DESIGN LAYOUT

The block diagram For Wireless GSM based electronic notice display is shown in figure 1.

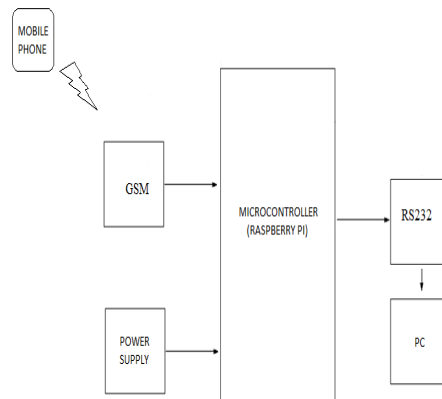


Figure. 1

In proposed system consists of two section 1. Transmitting section, 2. Receiving section. Transmitting section consists of just a mobile. Any type of user (SIM number) can be used, as users are assigned password for accessing the system. Authorized users send the message that they want to display on the notice board to the receiving section's mobile number and the message will be displayed only if the users have the authentication password. Receiving section on the other hand consists of a GSM modem to receive message. Received SMS is then extracted by PC. SMS is then sent to microcontroller (Raspberry Pi) using MAX232 IC and PC's serial port. Microcontrollers (Raspberry pi) finally display it on the LCD board.

III. HARDWARE DESCRIPTION

In proposed system consists of four units

1. Controller module
2. GSM module
3. Wi-Fi module
4. User module

1. CONTROLLER MODULE

Microcontroller is a small computer on a single integrated circuit containing a processor core, memory and programmable I/O peripherals. It is single motherboard, without housing, power supply, keyboard, mouse and screen. In this module the controller can be interfaced with monitor and the mobile number can be stored in the controller it act as a main part of the wireless notice board.

2. GSM MODULE

The GSM modem is interfaced through level shifter IC for establishing RS232 communication protocol to the microcontroller. The message so received is thus sent to the microcontroller that further displays it on electronic notice board which is equipped with a monitor display interfaced to a microcontroller powered by a regulated power supply from mains supply of 230 volt ac.



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3. WI-FI MODULE

Wi-Fi module is act as a receiver. Wi-Fi uses the latest 802.11n wireless technology, and can support data rates up to 150Mb/s, compared with the older 54Mb/s 11g products.

4. USER MODULE

The user module consists of mobile with SIM (Subscriber Identity Module). It is a chip-on small card consisting of user's information as well as phone book. The mobile number has been stored in the microcontroller. It acts as a transmitter for wireless electronic notice board.

IV. SOFTWARE DESCRIPTION

Python is a widely used high-level, general-purpose, interpreted, dynamic programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than possible in languages such as C++ or Java. The language provides constructs intended to enable writing clear programs on both a small and large scale. Python supports multiple programming paradigms, including object-oriented, imperative and functional programming or procedural styles. It features a dynamic type system and automatic memory management and has a large and comprehensive standard library. Python interpreters are available for many operating systems, allowing Python code to run on a wide variety of systems. Using third-party tools, such as Py2exe or Pyinstaller, Python code can be packaged into stand-alone executable programs for some of the most popular operating systems, so Python-based software can be distributed to, and used on, those environments with no need to install a Python interpreter. C Python, the reference implementation of Python, is free and open-source software and has a community-based development model, as do nearly all of its variant implementations. C Python is managed by the non-profit Python Software Foundation.

V. ALGORITHM OF THE SYSTEM

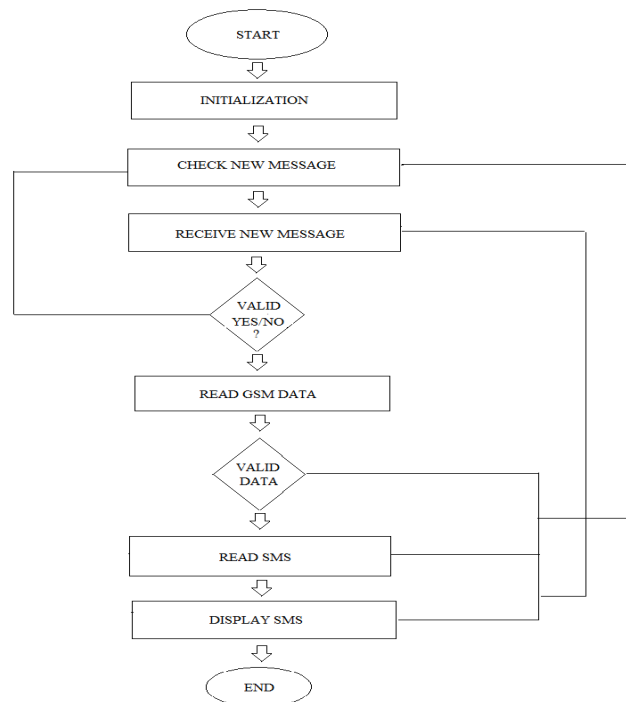


Figure. 2

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VI. OUTPUT

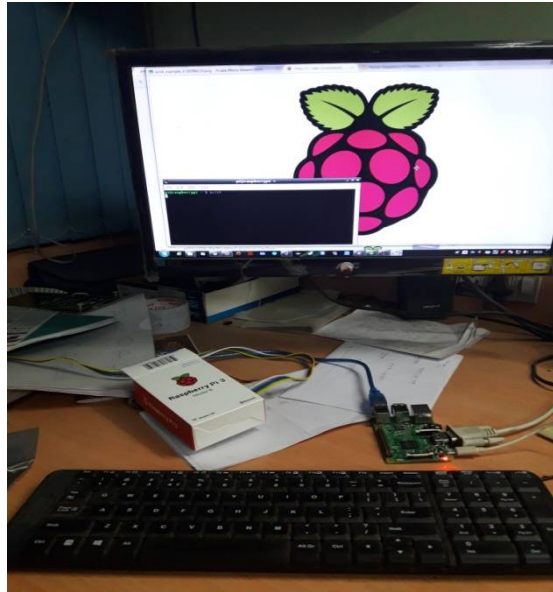


Figure. 3

Raspberry pi is interfaced with LCD (figure. 3) to display messages in both Tamil and English font.

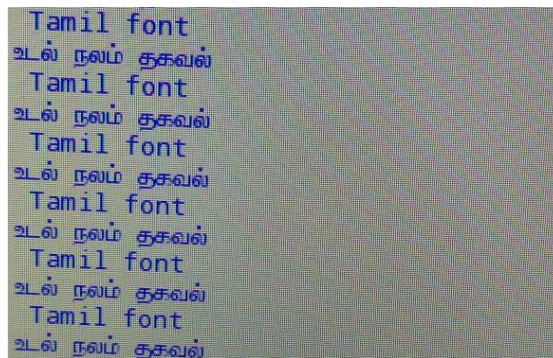


Figure. 4

Messages displayed in Tamil font (figure. 4).

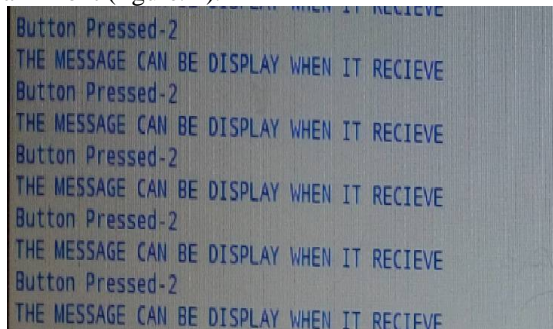


Figure. 5



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Messages displayed in English font (figure. 5).

VII. CONCLUSION

This helps to display the message continuously in both Tamil and English font. It is done by using Raspberry pi where the messages are stored and which is interfaced with LCD notice board where the message is displayed. The message is send through GSM Modem by authorized user. It reduces the usage of paper. It helps to reduce the wastage of time.

VIII. FUTURE WORK

In future, the system will also help to display the audio, video, and picture messages which will store in Raspberry pi and it would be the password protected.

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