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SMS Notifications using Raspberry pi

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ABSTRACT: This paper explains a raspberry pi controlled sms –update –notification(**sun**) system ,raspberry pi is a credit card sized single board computer with Arm11 microprocessor short message service (**sms**) is one of the cheapest and best way for sending a message from mobile .The basic idea of sun system is to notify updates to the people in a working environment from authorized persons at any where just by sms. This task is accomplished by conjunction of GSM module with raspberry pi. The working procedure of this sun system is only the authorized person can send sms from anywhere to the sim in GSM module. This message will be read and displayed through a website on monitor by raspberry pi

KEYWORDS: Raspberry pi, SMS, Internet of things, Mobile message, GSM Module.

I. INTRODUCTION

In 21st century the people want the world on their hands. It outlets the revolutions of computing and smart environment. Some technologies like Ubiquitous/pervasive and ambient intelligence satisfy the maximum need of smart world but these technologies are not tightly coupled with internet, so the people need another technology extension. Internet of Things (IoT) is an ideal emerging technology to influence the internet and communication technologies. Simply “Internet of Things” connects living and non living things” through „internet“. Traditionally in the object oriented paradigm everything in the world is considered as an object, but in the IoT paradigm everything in the world is considered as a smart object, and allows them to communicate each other through the internet technologies by physically or virtually. IoT allows people and things to be connected Anytime, Anyplace, with Anything and Anyone, by using ideally in Any path/network and Any service. At present, notification systems are using either microprocessors or computers to display the messages. Using microprocessors / microcontrollers notifications can be displayed on led displays. But to interface a monitor/ screen using micro-controller is complex. Microcontroller cannot run multiple programs at a time. To overcome these problems, computer can be used to display notices on many monitors at a time. But, using a computer for this purpose is very expensive. Raspberry being a single board computer can be used here to solve these problems. Using Raspberry Pi multiple programs can be run at a time. Comparing to a computer, this is cost effective and very less power consuming. As this board is having inbuilt HDMI port interfacing with all kinds of monitors is simple. With this board, external devices can be interfaced using USB ports. Raspberry Pi can be used for multiple purposes according to our requirement. SUN system is a new type of notification system where Short Message Service (SMS) is used to send the notification to be displayed. Allowed authority will send SMS from their mobile this will be updated on the monitor as a new notification.

To display a new notification in a website, one way is to directly update it in the server system where all database is maintained. Another way of doing this is to login as admin in another computer in to the website. But every time admin may not be at the server system / may not be in access with a computer. This problem can be solved by applying this SUN system. Web server may be any computer at any far away distance, if we connect a GSM module to the server system and use SUN system algorithm and coding used earlier we can directly insert a message into the website without using another computer / internet.

II. EXISTING SYSTEM

A mobile phone is a portable telephone that can make sending messages and receiving message over a radio frequency link while the user is moving within a telephone service area. Number of user can send messages and receive messages. In, existing system a user who can send message in one mobile phone and other user can view that message in only mobile phone.

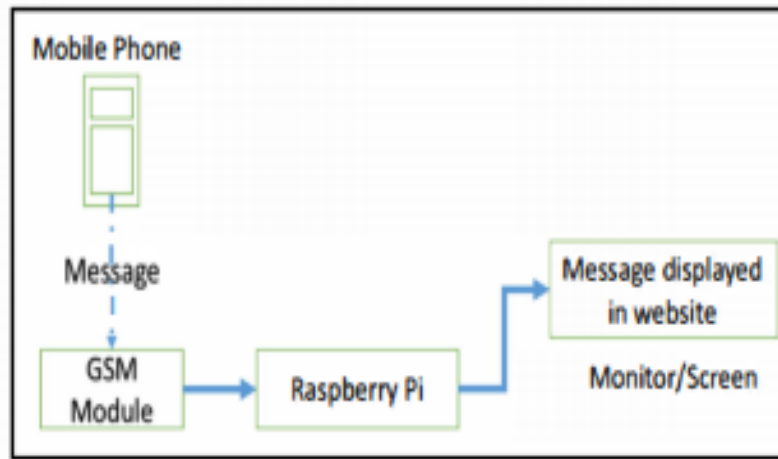
Mobile1 Mobile2

**Figure 2.3: Block Diagram of Existing system****A. DRAW BACKS OF EXISTING SYSTEM:**

1. Without using mobile phone we cannot read the message

III. PROPOSED METHOD

The basic aim of this system design is that the allowed user will send SMS from his mobile phone to GSM module, this message is the notification to be inserted in the website database which is displayed on the monitor. To receive the message a SIM card is placed in GSM module and this is connected to Raspberry Pi through RS232 serial port . A website is created to display the message received on monitor. The web server will run itself on Raspberry Pi. A program is written for reading the messages from GSM module and to insert them in to website database. Raspberry Pi will use this program to read the messages using GSM module only from allowed users. And it inserts them to database of the website which will be displayed on the monitor connected through HDMI port. Thus, Raspberry Pi will act as central authority of the whole system controlling the website and the GSM module as well. By using HDMI port LCD / LED monitors can be connected. By using a HDMI extension switch, message can be displayed on several monitors at a time. This system is applicable to display messages / notices that need to be regularly updated in industrial areas / college notice boards.

**Figure 3.1. Block diagram of proposed system**

IV. HARDWARE COMPONENTS

A. RASPBERRY PI BOARD: The Raspberry Pi is a credit-card sized Board that plugs into your TV and a keyboard. It is capable of a small computer which can be used in controlling and electronics projects and for many of other things i.e., desktop PC does, like spreadsheets, games. The Raspberry Pi is manufactured in three board configurations through licensed manufacturing deals with Premier Farnell, RS Components & Egoman. These companies sell the Raspberry Pi Board in online. The Raspberry Pi has a BCM2835 system on a chip (SoC), which includes an ARM1176JZFS 700 MHz processor, Video Core IV General Processing Unit, and was originally shipped with 256 megabytes of RAM & later upgraded (Model B & Model B+) to 512 MB. It does not include a built in hard disk, but it uses an Storage Device card for booting and persistent storage.

**Figure 4.1 Raspberry Pi Board**

Model B is the higher-specific variant of the Raspberry Pi, with 512 MB of RAM, two USB ports and a 100mb Ethernet port. It is the most useful and popular model you can use it to learn about computing and also mostly used in real-world projects (like home breweries, arcade machines & musical root vegetables and robot tanks and much more); as a web server; a bit coin miner; or you can just use it to play mine craft.

B. FEATURES

- Raspberry pi(model B+) features: ARM1176JFS cpu (based on arm v6 core)
- Core frequency set to 700 MHZ

- Video core 1v GPU(integrated in to BCM2835 SoC) with HDMI and composite output
- USB 2.0 host controller
- Ability to boot from a SD card

C. GSM Module: GSM Modem with Sim900 module is built with Dual band GSM/GPRS. It works on frequencies 900 1 1800MHz. It has a variable baud rate with range from 9600 to115200. Baud rate can be configurable using AT commands. It operates on 12V regulated power supply. It has a SIM card slot to insert SIM and a receiving antenna It has RS232 interface which allows it to connect devices like PC, Raspberry Pi, microcontroller etc. This module can perform the basic functions of a mobile phone like receiving and sending SMS, voice calls, and TCP/IP communication over GPRS based on various AT commands. A T commands can be sent via the serial port on Raspberry Pi, thus functions such as dialling and answering calls, sending and receiving messages and surfing online can be realized.

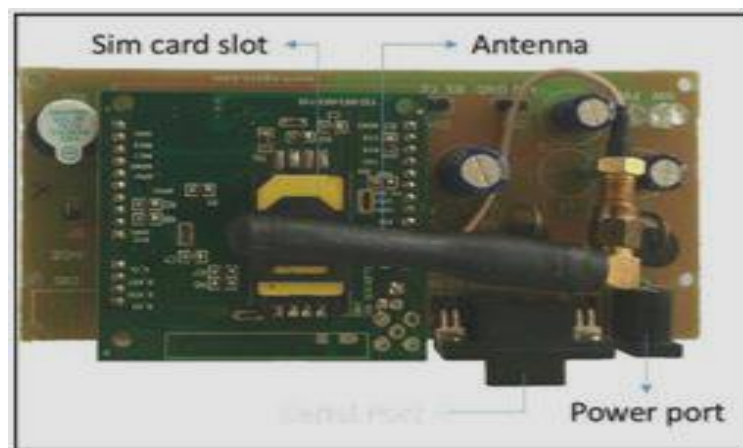
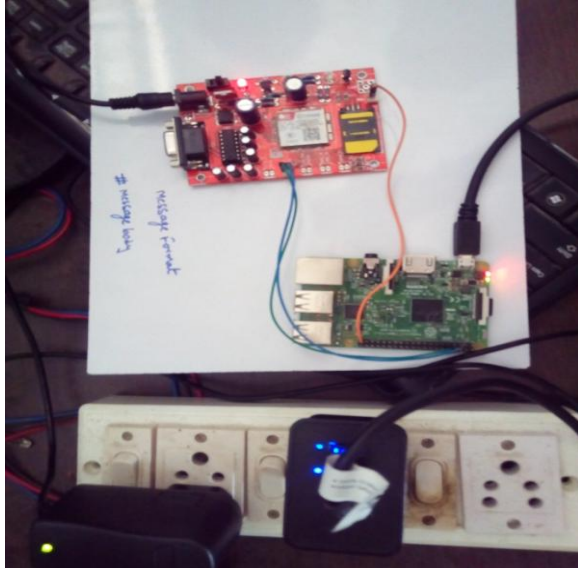


Figure 4.2: GSM MODULE

V.CONCLUSION

This SUN system can be used in wide areas like industries & colleges. A direct application of SUN system i.e., maintenance of local websites is explained in the application section. This SUN system highlights one of the applications by using just a few features of Raspberry Pi. Raspberry Pi with its wide features can be used for multi purposes and have much scope for future work. This work can be extended in future for advertising in public places not just limiting to notification systems. To display a new notification in a website, one way is to directly update it in the server system where all database is maintained. Another way of doing this is to login as admin in another computer in to the website. But every time admin may not be at the server system / may not be in access with a computer. This problem can be solved by applying this SUN system. Web server may be any computer at any far away distance, if we connect a GSM module to the server system and use SUN system algorithm and coding used earlier we can directly insert a message into the website without using another computer / internet. Here instead of Raspberry Pi acting as a server system, a normal computer will be acting as a server to accommodate all server features like user login, databases etc. Except this change, program coding and system design remains same. Admin will send a message from his mobile phone to GSM module, which is connected to the server system. Server computer will read the message using the program based on SUN system algorithm and inserts the message in to website database and displays it on the website as a new notification.

VI. RESULT ANALYSIS**REFERENCES**

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