

TIME TABLE MANAGEMENT SYSTEM USING RASPBERRY PI AND RFID

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Abstract - The main aim of this project is to intimate staff about their class. In this class technology, which shows the improvement in technology in a right way's .GSM (global system for mobile communication) normally the data required is been loaded in microcontroller's ram and the total schedule of the college is considered here. This is an emerging technology which is regularly in use Here we design TIME TABLE MANAGEMENT SYSTEM by using GSM technology for class room display and to inform faculty with timetable. We are using the GSM module for transmitting the message; the message received is send to the microcontroller to display the information on display board and message will sent to the faculty for noticing his schedule.

Key Words: Raspberry Pi 2, RFID, GSM board, timetable, display, classroom

1.INTRODUCTION

The main aim of this project is to intimate staff about their class. In this system we use GSM modem to communicate the staff. This is a wireless technology, which shows the improvement in technology in a right way's .GSM (global system for mobile communication) normally the data required is been loaded in microcontroller's ram and the total schedule of the college is considered here. This is an emerging technology which is regularly in use, but data must be loaded. normally staff check's the time table for every class, by using these system we can over come these types of problems. Normally these are placed near HEAD OF THE DEPARTMENT or any person who assign time table. By this system, staff - no need to check the time tables every time. Simply they are been intimated through sms before 10 minutes . In case faculty will not attend for the class automatically after 10 minutes message will be sent to the HEAD OF THE DEPARTMENT, then he will take care of the issue.

1.1 Advantages

- Reduce Paper Work.
- Saves the time with mobile.

1.2 Disadvantages

- In case of GSM, SIM cards, individual authentication keys users are stored in the authentication centers.

- If the SIM gets lost, one can lose all the data, if the same is not saved in the phone.

2. BLOCK DIAGRAM

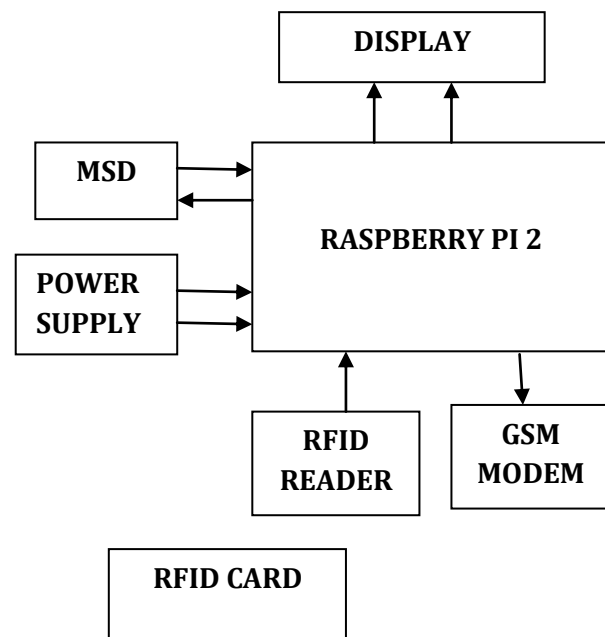


Figure 1 : Block Diagram for Time Table Management System using Raspberry Pi and RFID.

The above Figure 1 shows that it can be used to know that whether the faculty member has come to class or not. If the faculty member doesn't come to class & swipe in time, the RFID Reader will sent a message to that particular faculty & HOD that particular faculty didn't come to class through RPI and sends information through RFID Reader. and send the messages to faculty before 5 minutes using GSM and Raspberry Pi.

3. HARDWARE GSM MODULE



Figure 2 : Hardware GSM Module

GSM stands for Global System for Mobile Communication and is an open, digital cellular technology used for transmitting mobile voice and data services. It uses narrowband Time Division Multiple Access (TDMA) technique for transmitting signals [1]. TDMA is a technique in which several . different calls may share the same carrier. Each call is assigned a particular time slot. A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. GSM Modem allows the capability to send and receive SMS to and from the system. The communication with the system takes place via RS232 serial port [2]. It works in frequency band 900MHZ or I800 MHZ, power voltage 3.4V to 4.5V and baud rate is 300 bps to 115 kbps, where between 1200 to 115 kbps is automatically configured [3]. With a tiny configuration of 40mm x 33mm x 2.85 mm, SIM900 can fit almost all the space requirement in your application, such as Smart phone, PDA phone and other mobile device. The SIM900 is designed with power saving technique, the current consumption to as low as 2.5mA in SLEEP mode.

4. RASPBERRY PI



Figure 3 : Hardware Raspberry Pi

4.1 Specifications

Table 1 : Specifications of Raspberry Pi

Audio Type	3.5 mm Jack, HDMI USB 4 x USB, 2.0 Connector
Brand/Series	Raspberry Pi 2Series
Card Slot	Push/Pull Micro SDIO
Dimensions	85 x 56 x 17 mm
Interface	USB, Bluetooth 4.0, HDMI
Memory	LPDDR2
Operating System	Boots from Micro SD Card, running a Version of Linux or Windows 10 IoT
Power	MicroUSB Socket 5V1,2.5 A
Processor Speed	1.2 GHz
Processor Type	Quad-Core ARM Cortex-A53
RAM Size	1GB
Special Features	802.11 b/g/n Wireless LAN and Bluetooth 4.1(Bluetooth Classic and LE)
Video Output	HDMI, Composite RCA (PAL and NTSC)
Type	Single Board Computer (Open Frame)

5. Overview

5.1 RaspberryPi2ModelB

The Raspberry Pi 2Model B is the third generation Raspberry Pi. More than 10x faster than the original Raspberry Pi B. Wireless LAN & Bluetooth have been added to this powerful credit-card sized single board computer which makes this ideal for connected & IoT applications . Same footprint & connections allow easy migration. The new 5V1 2.5A power supply is required as well as the NOOBS software rev.1.5m for the RaspberryPi2 ModelB.

5.2 RFID

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification using radio waves. Some tags can be read f Radio Frequency Identification (RFID) involves contactless reading and writing of data into an RFID tag's nonvolatile memory through an RF signal. An RFID system consists of an RFID reader and an RFID tag. The reader emits an RF signal and data is exchanged when the tag comes in proximity to the reader signal. The RFID tag derives its power from the RF reader signal and does not require a battery or external power source.

7. CONCLUSIONS

By implementing this method, we can eliminate manual work that means staff member need not check their time table every time for next class. Here, we are using Raspberry Pi, so that we can have many advantages over other boards like Arduino, Micro Controller etc. Raspberry Pi has many advantages and features. GSM is used to send the messages and through RFID Reader we can know whether the faculty member attend the class in time or not with man. And Raspberry Pi can operate at low powers i.e 5v. It has 4 USB Ports where as arduino has only one USB Port. We can store information through SD card. It has audio and video ports where as arduino does not have these type of facilities. Cost of all the components used in this project is less where as result is high.

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BIOGRAPHIES



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