

TIME TABLE MANAGEMENT SYSTEM USING RASPBERRY PI AND RFID

P.Kanvitha¹, M.Sirisha², M.Kalpana Chowdary³

¹ M.Tech Scholar, ECE Department, CIET, Guntur, Andhra Pradesh, India ²,³Assistant, Professor, ECE Department, CIET, Guntur, Andhra Pradesh, India _____***____

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 transmiting 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

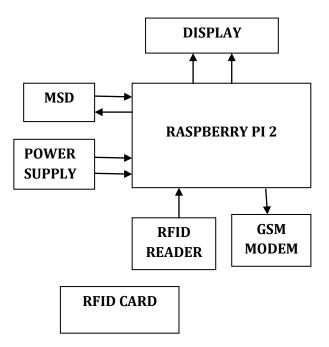


Figure 1 : Block Diagram for Time Table Management System using Raspberry Pi and RFID.

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.SIM900can fit almost all the space requirement in your application, such as Smart phone, PDA phone and other mobile device. TheSIM900is 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

© 2017, IRJET

Impact Factor value: 5.181

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)	
Туре	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.



Volume: 04 Issue: 09 | Sep -2017

www.irjet.net

5.3 TRANSPONDER TK 5530

The TK5530 is a complete transponder, which implements all important functions for immobilizer and identification systems.

Features:

IRIET

- Identification Transponder in Plastic Cube.
- Basic Component: e5530 IDIC
- Includes Coil and Capacitor for Tuned Circuit Antenna
- Carrier Frequency: 125 kHz

It consists of a plastic cube which accommodates:

- The read-only IDentification Integral Circuit (IDIC) e5530
- The antenna is realized by a LC-circuit.

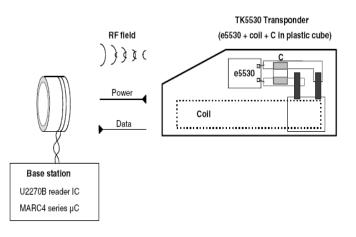


Figure 4 : Transponder TK 5530

Antenna:

The antenna consists of a coil and a capacitor for tuning the circuit to the nominal carrier frequency of 125 kHz. The coil has a ferrite-core for improving the readout distance.

5.4 PYTHON IDLE

IDLE is Python's Integrated Development and Learning Environment.

IDLE has the following features:

- coded in 100% pure Python, using the tkinter GUI tool kit.
- cross-platform: works mostly the same on Windows, Unix, and Mac OS X.
- Python shell window (interactive interpreter) with colorizing of code input, output, and error messages.
 - multi-window text editor with multiple undo, Python colorizing, smart indent, call tips, auto completion, and other features.

- search within any window, replace within editor windows, and search through multiple files (grep).
- debugger with persistent breakpoints, stepping, viewing of global and local namespaces.
- configuration, browsers and other dialogs.

6.Experimental Results

Pyth	on 2.7.9 Shell*	
pis get Shel Bebog Betons Mondows Help		
1962 4 5-31 on Sinned		
Present system date & time is: 2017-07-15 10:31:58.282883		
Do you want to adjust system date & time.r[T=Tes]: y Enter date and time using examples:		
Enter Day[Eg:- Non = Honday]: Hon Enter Honth[Eg:- Jan = January]: Jul		
Enter Date Only[Eg:- 12]: 31 Enter Time[Eg:- 07:32:16 = 7 hours 32 minutes 16 seconds](24hr Format) Enter Time[Eg:- 07:32:16 = 7 hours 32 minutes 16 seconds](24hr Format)): 08:54:00	
Enter Timezone[Eg]: IST = Indian Standard (Immzone); Enter Year Only[Eg:- 2017]: 2017		
Time and date adjusted successory. At present the timings for periods are		
Period-1: 9:00:00, Period-2: 10:00:00,		
Period-s: 11:00:00, Period-4: 12:00:00, 5: 14:00:00,		
eriod-5: 14:00:00, heriod-6: 15:00:00, heriod-7: 16:00:00		
D you want to adjust these timings.?[Y=Yes]: n Class-1 Starts: 2017-07-31 09:00:00 ends: 2017-07-31 09:59:59	alert: 2017-07-31 08:55:00	intimation: 2017-07-31 09:05:00
Class-2 Starts: 2017-07-31 10:00:00 ends: 2017-07-31 10:59:59 Class-3 Starts: 2017-07-31 11:00:00 ends: 2017-07-31 11:59:59	alert: 2017-07-31 09:55:00 alert: 2017-07-31 10:55:00	intimation: 2017-07-31 10:05:00 intimation: 2017-07-31 11:05:00
Class-4 Starts: 2017-07-31 12:00:00 ends: 2017-07-31 12:09:09 Class-5 Starts: 2017-07-31 14:00:00 ends: 2017-07-31 14:59:59	alert: 2017-07-31 11:55:00 alert: 2017-07-31 13:55:00	intimation: 2017-07-31 09:05:00 intimation: 2017-07-31 10:05:00 intimation: 2017-07-31 11:05:00 intimation: 2017-07-31 12:05:00 intimation: 2017-07-31 12:05:00 intimation: 2017-07-31 15:05:00
Class-6 Starts: 2017-07-31 15:00:00 ends: 2017-07-31 15:05:59 Class-7 Starts: 2017-07-31 16:00:00 ends: 2017-07-31 16:59:59	alert: 2017-07-31 14:55:00 alert: 2017-07-31 15:55:00	intimation: 2017-07-31 15:05:00 intimation: 2017-07-31 16:05:00
Starting of the Day 2017-07-31 08:54:00		
2017-07-31 08:54:00 2017-07-31 08:54:00		
2017-07-31 00:54:00 2017-07-31 08:54:00		
2017-07-31 08:54:00 3017-07-31 08:54:00		
2017-07-31 08:54:00 2017-07-31 08:54:00		
2017-07-31 08:55:00 Sending: "You have mext class(WSN) at 2017-07-31 09:00:00`0 Clock in ·	room-305." to number: 7997990616	
Sending SMS to respective mobile number.		
SMS sent sucessfully 2017-07-31 00:55:00		
2017-07-31 08:55:00		10
👅 🌐 🛅 🗾 [pi@raspberrypi:~/D. 🗼 table_final py - /ho. 📝 *Python 2.7.9 Shall*		jn:
Se (18 Ded Debug Splans Windows (14)		
60 data received 2017-07-31 11:04:00 3500416C2941		
d matched, stopping intimation to MoD. Card swiping timeout occurred.		
550015C2541 (d matched, stopping intimation to HoD, Lass) Lass) Bow the class is: SC 2017-07-31 Line5:00 2017-07-31 Line7:00		
2017-07-31 11:00:00 2017-07-31 11:07:00		
RESTART		
Present system date & time is: 2017-07-31 11:07:39.194067 Do you want to adjust system date & time.?[Y=Yes]: RESTART	I	
RESTART		
Present system date & time is: 2017-07-31 11:07:47.407916		
Do you want to adjust system date & time.r[r=res]: y Enter date and time using examples:		
Enter Day[Eg:- Mon = Monday]: Mon Enter Month[Eg:- Jan = January]: Jul		
Enter Date Only[Eg:- 12]: 31 Enter Time[Eg:- 07:32:16 = 7 hours 32 minutes 16 seconds](24hr Fermat): 10:59:00	
Enter Year Only[Eg:- 15: = 10120 Standard (Instant): 15: Enter Year Only[Eg:- 2017]: 2017		
by now were to any post system bark a right [[res]]: ***********************************		
Period-2: 10:00:00, Period-2: 10:00:00,		
Period-3: 11:00:00, Period-4: 12:00:00,		
Period-5: 14:00:00, Period-6: 15:00:00,		
Do you want to adjust these timings.?[Y=Yes]: n [laws.1 Starts: 2017.07.31 09:00:00 ends: 2017.07.31 09:59:59	alert: 2017-07-31 08:55:00	intimation: 2017-07-21 00:05:00
Class-2 Starts: 2017-07-31 10:00:00 ends: 2017-07-31 10:59:59	alert: 2017-07-31 08:55:00 alert: 2017-07-31 09:55:00 alert: 2017-07-31 09:55:00 alert: 2017-07-31 11:55:00 alert: 2017-07-31 13:55:00 alert: 2017-07-31 13:55:00 alert: 2017-07-31 15:55:00	intimation: 2017-07-31 09:05:00 intimation: 2017-07-31 10:05:00 intimation: 2017-07-31 11:05:00 intimation: 2017-07-31 12:05:00 intimation: 2017-07-31 14:05:00 intimation: 2017-07-31 15:05:00
Class-4 Starts: 2017-07-31 12:00:00 ends: 2017-07-31 12:59:59	alert: 2017-07-31 11:55:00 alert: 2017-07-31 13:55:00	intimation: 2017-07-31 11:05:00 intimation: 2017-07-31 12:05:00
Class-6 Starts: 2017-07-31 15:00:00 ends: 2017-07-31 15:59:59	alert: 2017-07-31 14:55:00 alert: 2017-07-31 15:55:00	intimation: 2017-07-31 14:05:00
Class-7 Starts: 2017-01-01 10:00:00 Ends: 2017-01-01 10:00:00		Inclinicion: 2017-07-31 10:03:00
7900843833F6 Invalid Id-card swiped, Please check your timetable. 2017-07-31 10:59:00		
1 A Par Participante - 13 1 States 778 State a state featry . An		× · · · · · · · · · ·
a Life Shed Debug Sylams Medices 1940		a state of the second second second
917-07-31 11:06:00 917-07-31 11:07:00		
RESTART		
resent system date & time is: 2017-07-31 11:07:39.194067 o you want to adjust system date & Array [f=res]: RESTART		
s you want to adjust system date & time.?[Y=Yes]: RESTART		
resent system date & time is: 2017-07-31 11:07:47.407916		
o you want to adjust system date & time.?[Y=Yes]: y nter date and time using examples:	121	
nter Day[Eg:- Hon = Monday]; Men nter Month[Eg:- Jan = January]; Jul	I	
nter Date Only[Eg:- 12]: 31 nter Time[Eg:- 07:32:16 = 7 hours 32 minutes 16 seconds](24hr Format	10:59:00	
nter Timezone[Eg: IST = Indian Standard Timezone]: IST nter Year Golv[Eg: 2017] 2017	1. 10.39.00	
ime and date adjusted successully.		
eriod 1 9:00:00		
wriad 3 11:00:00,		
eriod 4: 12:00:00, wriod 5: 14:00:00,		
eriod 6 15:00:00, wriod 7 16:00:00		
o you want to adjust these timings.7[Y=Yes]: n Lass 1 Starts: 2017-07-31 09:00:00 ends: 2017-07-31 09:59:59	alert: 2017-07-31 08:55:00	intimation: 2017-07-31 09:05:00
Lass 2 Starts 2017 07 31 10 00 00 ends: 2017-07 31 10 59 59 Lass 3 Starts 2017 07 31 11 00 00 ends: 2017-07 31 11 59 59	alert: 2017-07-31 09:55:00 alert: 2017-07-31 10:55:00	intimation: 2017-07-31 10:05:00 intimation: 2017-07-31 11:05:00
Lass 4 Starts 2017 07 31 12 00 00 erds: 2017-07-31 12:59:59 Jass 5 Starts 2017 07 31 14 00 00 erds: 2017-07-31 14:59:59		
	alert: 2017-07-31 11:55:00 alert: 2017-07-31 13:55:00	intimation: 2017-07-31 12:05:00
Lass 6 Starts 2017-07-31 15:00:00 ends: 2017-07-31 15:59:59 Lass 7 Starts 2017-07-31 16:00:00 ends: 2017-07-31 16:59:59	alert: 2017-07-31 11:55:00 alert: 2017-07-31 13:55:00 alert: 2017-07-31 14:55:00 alert: 2017-07-31 15:55:00	Intimation: 2017.07-31 12:05:00 Intimation: 2017.07-31 14:05:00 Intimation: 2017.07-31 15:05:00
m own the adjust system date 4 time. [[[f+req]]: → <t< td=""><td>alert: 2017-07-31 08:55:00 alert: 2017-07-31 09:55:00 alert: 2017-07-31 05:55:00 alert: 2017-07-31 11:55:00 alert: 2017-07-31 11:55:00 alert: 2017-07-31 14:55:00 alert: 2017-07-31 15:55:00</td><td>intimation: 2017-07-31 09:05:00 intimation: 2017-07-31 10:05:00 intimation: 2017-07-31 11:05:00 intimation: 2017-07-31 12:05:00 intimation: 2017-07-31 14:05:00 intimation: 2017-07-31 15:05:00</td></t<>	alert: 2017-07-31 08:55:00 alert: 2017-07-31 09:55:00 alert: 2017-07-31 05:55:00 alert: 2017-07-31 11:55:00 alert: 2017-07-31 11:55:00 alert: 2017-07-31 14:55:00 alert: 2017-07-31 15:55:00	intimation: 2017-07-31 09:05:00 intimation: 2017-07-31 10:05:00 intimation: 2017-07-31 11:05:00 intimation: 2017-07-31 12:05:00 intimation: 2017-07-31 14:05:00 intimation: 2017-07-31 15:05:00

Т



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.

REFERENCES

[1] Zatin Singhal, Rajneesh Kumar Gujral "Anytime Anywhere- Remote Monitoring of Attendance System based on RFID using GSM Network" International Journal of Computer Applications, February 2012.

[2] Tomas Zitta, Marek Neruda, Lukas Vojtech "The security of RFID readers with IDS/IPS solution using Raspberry Pi" Carpathian Control Conference (ICCC), 2017 18th International.

[3]V. Surendar Goud, Dhiraj Sunehra "Attendance recording and consolidation system using Arduino and Raspberry Pi" Signal Processing, Communication, Power and Embedded System (SCOPES), 2016.

[4] Vamsikrishna Patchava, Hari Babu Kandala, P. Ravi Babu "A Smart Home Automation technique with Raspberry Pi using IoT" Smart Sensors and Systems (IC-SSS) 2015.

[5] Anush Prasad, Aparna Ghenge, Sonali Zende "Smart ration card using RFID, biometrics and SMS gateway" Inventive Communication and Computational Technologies (ICICCT), 2017.

[6] Jihong Yuh, Jiangchuan Liu, Lie Chen Yifei Zhu "Efficient group labeling for multi-group RFID systems" Quality of Service (IWQoS), 2017.

[7] S. Madhura, Ragumala, M. Poojalakshmi, S. Shreeyas Pravin "GSM based annunciation system" Innovative Mechanisms for Industry Applications (ICIMIA), 2017.

[8] Ch. Vijaya Lakshmi, L. Lavanya, P.A Lovina "Remote controlled automatic food processing system with GSM module" Signal Processing, Communication, Power and Embedded System (SCOPES), 2016.

[9] Dhiraj Sunhera, Vemula Tejaswi "Implementation of speech based home automation system using Bluetooth and

GSM" Signal Processing, Communication, Power and Embedded System (SCOPES), 2016.

BIOGRAPHIES



P.Kanvitha has received her Master of Technology (M.Tech) Degree from Chalapathi Institute of Engineering and Technology in VLSI and Embedded Systems in the year 2017. She has received her Bachelor of Technology (B.Tech) Degree from Chalapathi Institute of Engineering and Technology in Electronics and Communication Engineering in year 2015. Her area of the interest includes Signal processing.