Modern Attendance System

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Abstract: Now in recent era of attendance system, so many manual attendances provides for schools and collages. Likewise private as well as government school and collages trying to improve their attendance system day by day, Mostly of the student are absent or bunk the lectures, Now in this case message are not given to parents , because of some manual reason so the attendance is not properly, after some days RFID based student attendance system are invented. In previous system RFID technology provides automatic wireless identification using electronic passive and active tags with suitable reader, an attempt is made to solve previous attendance monitoring problems in schools and collages using RFID technology, hence we prepared the GSM module and Arduino for our project. Our project is modern attendance system using GSM, GSM stands for global system for mobile communication , using GSM module message will send to respective absent student parents and by using wi-fi module message is send to the respective staffs computer.

Keywords: GSM module, RFID technology, Arduino.

I. INTRODUCTION

Every education organization wants to provide the proper attendance, there are so many previous attendance system by using RFID which have already provided the different types of attendance which have some limitations such as attendance is not working properly as per then system and implementation complexity. In some cases message are not given to parents because of manual reason we must have the system which overcome the limitations which existing system provide proper attendance, such as attendance system using new technology will definitely work properly. The advance attendance system must have using Arduino will check presence of student by predefine lecture time and send message to parents of respective absent student and also Arduino will send the report to the computer over wi-fi module for repat data analysis using internet of things(IOT). The NFC system can also be introduced to improve the system efficiency [5]. The presented paper is organise in five important chapters where chapter one gives an introduction of system followed by literature review in second part. The third chapter contains the brief idea about the implemented system followed by system experimentation and practical implementation. In last but not the list the result of system has been discussed and paper concluded with the conclusion. Contain in this paper has some reference base which has been clearly mention in reference section.

II. LITERATURE REVIEW

Pushpa S. Gagare has published a paper with title "Smart Attendance System" in which author has given an idea about attendance system based on RFID. The work has been published international Journal on recent and innovation trends in computing and communication ISSN: 232-8169 volume: 2 Issue: 1(IJRITCC). January 2014. But unfortunately the design system has drawback that it is not capable for sending messages to parents on their mobile phones. [1]. Arulogun O. T., Olatunbosun, A., Fakolujo O. A., and Olaniyi, , has published a paper with title "RFID-Based Students Attendance Management System*"* in which author has given an idea about Attendance system based on RFID. The work has been published in International Journal of Advanced International Journal of Scientific & Engineering Research Volume 4, Issue 2, ISSN 2229-5518I in February- 2013. But the design system has some limitation such as the RFID is costly. This is only with the help of Internet of Thinks that is we introduced in our system.[2]. Swapnil R. Kurkute, Dipali Gosavi, Aishwarya Thenge, Shivani Hirve, Diksha Gosavi, has bublished a paper with title "COMPARATIVE STUDY OF ADVANCE PROCESSORS A Technical Review on Node MCU", in which author has given an detail comparison between advance processors and detaisls about the instruction and applications. The paper has been published in Journal of Emerging Technologies and Innovative Research (JETIR), with ISSN-2349-5162, and Volume 5, Issue 4, April 2018, PP-95-98. From this paper we have chosen an appropriate processor for our system while implementation. [3]

III. SYSTEM DEVELOPMENT

With the brief literature review we found that the new advance system must overcome the stated limitation also system must Provide attendance of the student. In that case so many problems in attendance is coming in front of us for that we

develop System which enables new technology "Internet of Things" has tied closely with mobile application. If any student is absent in school or colleges. There is a GSM module which takes quickly send message to parents. Also this all information is provided through the web server with the help of IoT platform to the parents as well as school teacher, and this information contain real time attendance and absent status of student from their respective parent's as well respective staff. Our System initiates the new Technology which is offered the applications over internet for the special purpose like we provide attendance for School or college. Some of the advantage of internet of things is given below.

1. The amount of time saved in monitoring system.
2. The financial aspect is the best advantage. This technology could replace humans who are in charge of monitoring and maintaining supplies.
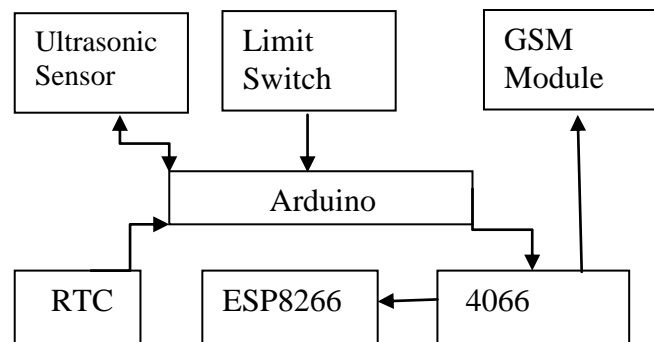3. IOT can help individuals, businesses, and society on a daily basis.

Fig.1.Systems basic block diagram

A. GSM

GSM stand for global system for mobile communication. This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily [7], [15]. The modem can either be connected to PC serial port directly or to any microcontroller. It can be used to send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode you can also connect to any remote FTP server and upload files for data logging. This GSM modem is a highly flexible plug and play quad band GSM modem for direct and easy integration to RS232 applications. Supports features like Voice, SMS, Data/Fax, GPRS and integrated TCP/IP stack.[15]

Fig.2. GSM Module

B. Arduino Mega2560:

The Arduino Mega 2560 is microcontroller board placed on the AT mega 2560. It contains everything to support microcontroller it simply connect computer with USB cable. Arduino Mega 2560 is an open-source platform. It can receive and send information to most devices which is used for constructing and programming of electronics, it also uses internet to send commands to the specific electronic devices. It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC to- DC adapter or battery to get started. The Mega is compatible with most shields designed for the Arduino Duemilanove or Diecimila.[18].

C. WIFI Module ESP 8266:

The ESP8266 is a low-cost Wi-Fi microchip with pull TCP/IP stack and microcontroller. Complete self contained WiFi networking solution is offered by ESP8266 module which host application or offload all functions of WiFi networking
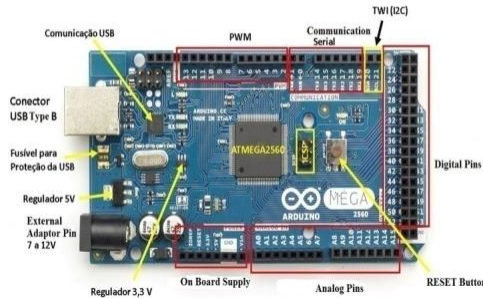
Arduino Mega 2560

Fig.3. Arduino Mega 2560

from another application processor. When ESP8266 host to the application processor it is bootup directly from the external flash.[18].
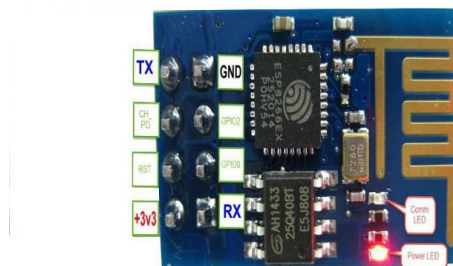

Fig.4. WIFI Module ESP 8266

The ESP8266 is the name of a micro controller designed by Espressif Systems. The ESP8266 it self is a self-contained Wi-Fi networking solution offering as a bridge from existing micro controller to Wi-Fi and is also capable of running self-contained applications. This module comes with a built in USB connector and a rich assortment of pin-outs. With a micro USB cable, you can connect Node MCU developing kit to your laptop and flash it without any trouble, just like Arduino [18].

D. Limit switch:
In electrical engineering a limit switch is a switch operated by the motion of a machine part of presence of an object. They are use for controlling machinery as part of control system as a safety interlocks, or to count objects passing a point. A limit switch is as electromechanical device that consist of asn actuator mechanically linked to set of contacts.

Fig.5. Limit Switch

E. ULTRASONIC SENSOR:
Ultrasonic ranging module HC – SR04 provides 2cm – 400cm non-contact measurement function, the ranging accuracy can reach to 3mm.

- 5V Supply
- Trigger pulse input
- Echo pulse output
- 0V Ground

Fig.6. Ultrasonic Sensor

IV. SYSTEM EXPERIMENTATION AND PRACTICAL IMPLEMENTATION

The discussed system is implemented on small size PCB and proper mechanical modelling is under process for systematic representation of model. Basics implemented system is as shown in figure 7 bellow. The all ultrasonic sensors, Arduino board along with the GSM modal is interface with each other. While designing and developing PCS all the necessary precautions has been taken as explain in [11].

Fig.8. Implemented System hardware

V. RESULT DISCUSSION

In this section the result has been discussed. The figure 8 shows the sample SMS which will be send to parent's mobile number using GSM system. Contains in SMS format will be same for all absent except the name of student. This type of modern attendance system will be definitely useful for monitoring the attendance in class.
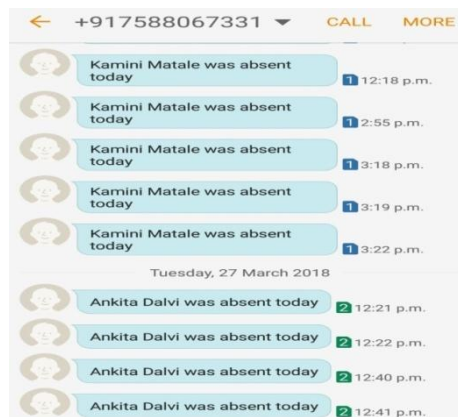

Fig.8. Attendance Monitoring through SMS

VI. CONCLUSION

In this paper an advance method for attendance monitoring is explain with title as Modern attendance system. This system takes the attendance for the schools/collages student in daily life. This system uses ultrasonic sensor and limit switch for detecting the student is absent or not, if the student is absent then the message will send to parent's mobile phone and simultaneously to the respective staffs computer. Although there are different methods of detect student but our system is very easy to handle and very convenient for college/university level, we also used IOT technology which will give lot of scope for further modernization of such system with advance tools.

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