

IOT BASED SMART ATTENDENCE IMPARTING SYSTEM

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ABSTRACT: The current age requires data every now and then. The utilization of innovation has been expanding step by step. In this way, we are anticipating the blend of the current innovation with the necessity of data transmission, we made arrangements for the imaginative methodology of developing a device that is capable of providing information regarding the attendance of the students to their parents. We are using a fingerprint sensor for the unique identification of students. When a student enters the bus drops their fingerprints on the sensor, immediately a message is sent to their parents as "your child entered the bus" We use GSM for data transmission. Similarly, we can use it near the classrooms

Key words: Fingerprint sensor, GSM, ARDUINO UNO, GSM, RASBERRYPI

Real time attendance status to school management and parents. Attendance marked via student's finger print. Automatic bus and class attendance collection and reports. If students miss the school bus, immediate SMS alert is sent to their parents. Daily, monthly, yearly or customized attendance report. Parents get alert before bus reaches the bus pickup and drop points. Parents get alert on mobile application as well immediate SMS if the bus leaves the stop without picking up the child.

Better student attendance management. Help improve student's attendance and safety by engaging parents in real-time. Less administration work of manual reporting hence increases in productivity

1. INTRODUCTION

An implanted framework is one sort of a PC framework chiefly intended to play out a few undertakings like to access, procedure, and store and furthermore control the information in different gadgets based frameworks. Installed frameworks are a blend of equipment and programming where programming is generally known as firmware that is inserted into the equipment. Security of youngsters is the first prerequisite for any school and parent, imaginative school transport data framework gives the solace and control of an all around structured framework which gives total highlights to shipping understudies from to school and back.

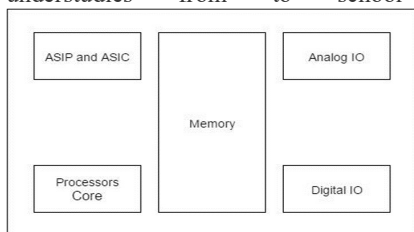


Fig .1.Simple overview of Design

This framework offers certainty to guardians by giving ongoing participation status. It additionally sends programmed alert (SMS) to the doled out portable number if there should be an occurrence of understudy nonattendance.

It has the following important features & benefits

2. LITERATURE SURVEY

Aswin G.Krishanan, Ashwin Sushil Kumar, Bhadra Madhu, Manogana KVS proposed the "GSM Based continuous Bus Arrival System" in 2014. This structure contains transport module and station module. The vehicle module presented in the vehicle which basically involves UI for the driver, a control unit and a GSM module. The UI contains the trading framework which is used to offer reason high hint to control unit. The driver is required to use this turning framework on appearance of each transport stop as such hailing the control circuit that the station has been reached. The control unit includes RPI equipment which frames the customer contribution to along these lines finding the current cooperation of the understudies. Station module is presented inside each transport stop and involves GSM module and RPI and LCD appear. The "SMS Based Bus Attendance Information utilizing unique finger impression sensor". This gadget gets the data from the unique finger impression sensor and sends the data to the guardians with respect to participation. GSM sends the data to predefined portable number.

BLOCK DIAGRAM

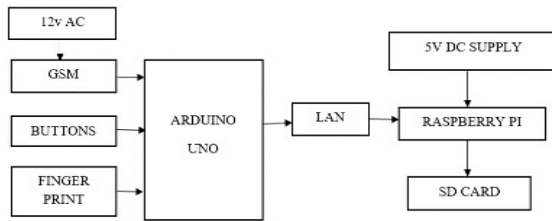


Fig. 2. Block diagram of the prototype

A block diagram is a chart of a framework wherein the chief parts or capacities are spoken to by squares associated by lines that show the connections between the squares. They are intensely utilized in building in equipment plan, electronic structure, programming plan and procedure stream outlines.

Block diagram is ordinarily utilized for more significant level, less point by point portrayals that are expected to explain generally ideas without worry for the subtleties of execution. Balance this with the schematic outlines and format charts utilized in electrical designing, which show the execution subtleties of electrical segments and physical development.

3. HARDWARE DISRIPTION

3.1.USB CABLE

The most straightforward approach to associate PC peripherals is through a Universal Serial Bus. The USB is an attachment and play interface among pc and peripherals. The principle favourable position of USB is that the gadget can be connected or stopped out without the need of restarting the PC

3.2Finger print sensor

Unique mark checking security frameworks lessen the chance of data fraud through another representative utilizing an associates RFID identification or another type of distinguishing proof to get to make sure about territories. At the point when a representative shows up busy working, they should simply swipe their finger over a cushion and the product coordinates their character to a worker list. Biometric unique finger impression frameworks improve the security and adequacy of an organization.



Fig. 3. Finger print sensor

According to the project the fingerprint sensor is used for scanning purpose of the students. Those who attended the class as well as who entered the bus. Then the organization immediately sends the message to their parents regarding attendance.

3.2.1Advantages of finger print sensor

Reliability

Unique finger impression examining frameworks give a solid method to follow understudies and you don't have to stress over putting away additional information, since the framework just requires a finger impression. With a unique mark based framework, understudies don't have to stress over guarding cards or passwords. Unique finger impression based frameworks give the capacity to distinguish a person out of a large number of fingerprints precisely.

3.3ARDUINO:

Arduino is an open source microcontroller which can be effortlessly modified, eradicated and reconstructed at any moment of time. Presented in 2005 the Arduino stage was intended to give a cheap and simple path for specialists, understudies and experts to make gadgets that communicate with their condition utilizing sensors and actuators. In view of straightforward microcontroller sheets, it is an open source figuring stage that is utilized for developing and programming electronic gadgets. It is additionally fit for going about as a smaller than usual PC simply like different microcontrollers by taking information sources and controlling the yields for an assortment of hardware gadgets. It is additionally fit for accepting and sending data over the web with the assistance of different Arduino shields, which are examined in this paper. Arduino utilizes an equipment known as the Arduino advancement board and programming for building up the code known as the Arduino IDE (Integrated Development Environment). Developed with the 8-piece Atmel AVR microcontroller's that are fabricated by Atmel or a 32-piece Atmel ARM, these microcontrollers can be modified effectively utilizing the C or C++ language in the Arduino IDE. Not at all like the other microcontroller sheets in India, the Arduino sheets entered the electronic market just two or three years prior, and were limited to little scope extends as it were. Individuals related with gadgets are currently steadily coming up and tolerating the job of Arduino for their own tasks. This improvement board can likewise be utilized to consume (transfer) another code to the board by basically utilizing a USB link to transfer. The Arduino IDE gives an improved coordinated stage which can run on customary PCs and permits clients to compose programs for Arduino utilizing C or C++.

The Arduino is a group of microcontroller sheets to improve electronic plan, prototyping and testing for specialists, programmers, specialists, yet additionally

numerous experts. Individuals use it as minds for their robots, to fabricate new computerized music instruments, or to construct a framework that lets your home plants tweet you when they're dry. Arduino (we utilize the standard Arduino Uno) are worked around an ATMEGA microcontroller basically a total PC with CPU, RAM, Flash memory, and information/yield sticks, all on a solitary chip. In contrast to, state, a Raspberry Pi, it's intended to append a wide range of sensors, LEDs, little engines and speakers, servos, and so forth straightforwardly to these pins, which can peruse in or yield computerized or simple voltages somewhere in the range of 0 and 5volts. The Arduino interfaces with your PC by means of USB, where you program it in a straightforward language (C/C++, like Java) from inside the free Arduino IDE by transferring your gathered code to the board. Once customized, the Arduino can run with the USB interface back to your PC, or independent without it no console or screen required, simply power.

“ARDUINO IS AN OPEN-SOURCE ELECTRONICS PROTOTYPING PLATFORM BASED ON FLEXIBLE, EASY-TO-USE HARDWARE AND SOFTWARE. IT'S INTENDED FOR ARTISTS, DESIGNERS, HOBBYISTS AND ANYONE INTERESTED IN CREATING INTERACTIVE OBJECTS OR ENVIRONMENTS” Since Arduino is Open Source, the CAD and PCB configuration is uninhibitedly accessible. Everybody can purchase a pre-gathered unique Arduino board or a cloned board from another organization. You can likewise fabricate an Arduino for yourself or for selling. In spite of the fact that it is permitted to assemble and sell cloned Arduino sheets, it's not permitted to utilize the name Arduino and the comparing logo. Most sheets are structured around the Atmel Atmega328. 2.1. Famous Arduino sheets. There are a few diverse Arduino sheets available (both unique and cloned).

3.4 Arduino UNO:

- i. Most famous board. Perfect first of all.
- ii. Standard USB for information and force and programming.
- iii. Power Input connector. o female headers.
- iv. 14 computerized I/O ports (of which 6 PWM).
- v. 6 simple info ports. o 1 equipment sequential port (UART).

3.4.1 TYPE OF ARDUINO BOARDS:

Arduino TABLE 1 . ARDUINO TYPES

3.4.2 Schematic diagram of Arduino Uno:

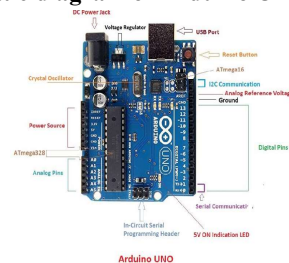


Fig .4. Schematic diagram of Arduino Uno

Advantages and Applications of Arduino Technology

It accompanies an open gracefully equipment include that grants clients to build up their own pack

The programming of the Arduino is appropriate with a wide range of in activity frameworks like Linux, Windows, and Macintosh, and so forth.

It likewise accompanies open flexibly programming framework include that grants intense programming framework designers to utilize the Arduino code to converge with the common programming language libraries and might be broadened and changed. It is cheap.

The Obstacle Avoidance Robot Operated with Arduino.

5. Traffic Light Count Down Timer
6. Parking Lot Counter
7. Weighing Machine
8. Medical Instrument
9. Emergency Light for Railways

Along with audino we will use 16*2 LCD

3.4.3 Raspberry Pi

March 14 is known as Pi Day on the grounds that the date speaks to the initial three numbers in the numerical consistent π (3.14). We're celebrating with our inclusion of everything Raspberry Pi related. In the event that you've never at any point thought of what HTML implies, you can at present make stunning contraptions utilizing Raspberry Pi and a touch of creative mind.

What is the Raspberry Pi?



Fig .5. Hardware part of Raspberry Pi

The Raspberry Pi is a smaller than expected PC that was explicitly made to make tech learning simpler. It has a great deal of segments for PC based ventures, as USB ports, an ethernet port, a SD card opening, Wi-Fi receiving wire ports, and that's only the tip of the iceberg. It doesn't accompany peripherals, similar to links, a console, a mouse, or a screen. It is incredible for learning program dialects, similar to Python, Scratch and Wolfram. Most Raspberry Pi fan resembles making single-process works to flaunt their do-it-without anyone else's help abilities.

3.5 Global System for Mobile Communication (GSM)

3.5.1 Definition:

Overall system for versatile correspondence (GSM) is a generally recognized standard for electronic cell correspondence. GSM is the name of a standardization pack developed in 1982 to make a common European wireless standard that would characterize subtleties for a holder European adaptable cell radio system working at 900 MHz. A GSM modem is a remote modem that works with a GSM remote framework. A remote modem acts like a dial-up modem. The crucial qualification between them is that a dial-up modem sends and gets data through a fixed telephone line while a remote modem sends and gets data through radio waves. A GSM modem can be an outside device or a PC Card/PCMCIA Card. Commonly, an outside GSM modem is related with a PC through a consecutive connection or a USB interface. A GSM modem as a PC Card/PCMCIA Card is expected for use with a PC. It should be inserted into one of the PC Card/PCMCIA Card spaces of a PC. Like a GSM mobile phone, a GSM modem requires a SIM card from a remote transporter in order to work. As referenced in before territories of this SMS instructional exercise, PCs use AT requests to control modems. Both GSM modems and dial-up modems support a normal game plan of standard AT orders. You can use a GSM modem basically like a dial-up modem. Despite the standard AT orders, GSM modems reinforce a comprehensive plan of AT orders. These connected AT orders are portrayed in the GSM standards. With the loosened up AT orders, you can do things like: Reading, composing and erasing SMS messages.

1. Sending SMS messages.
2. Monitoring the sign quality.
3. Monitoring the charging status and charge level of the battery.
4. Reading, composing and looking through telephone directory sections.

The quantity of SMS messages that can be prepared by a GSM modem for each moment is extremely low - just around six to ten SMS messages for every moment

4.SOFTWARE USED

4.1 Python

Python is a deciphered raised level programming language for generally helpful programming. Made by Guido van Rossum and first released in 1991, Python has a structure thinking that anxieties code intelligibility, strikingly using colossal whitespace. It gives builds up that enable clear programming on both little and immense extensions. Python incorporates an incredible kind structure and modified memory the board. It supports different programming perfect models, including object-organized, fundamental, down to earth and procedural, and has a tremendous and comprehensive standard library.

5. Working principle

This project will be useful for employees attendance monitoring by employer and also in education systems for students attendance. In this paper explaining my prototype for students attendance monitoring. Step1:when ever the student get in to the bus he has to give his fingerprint which is fixed at the bus entrance door then due to the GSM module his/her parent receive message about their child entered in the bus at their stop.Step2:after the bus reaching the college while he/her get down the bus once again he has to give his fingerprint again parents receive the message then arents identified their child is reached the college.Step3:Repeat step1 and step2 for entrance in the class room as well as leaving the classroom.

6. Results

Fig 6 and Fig 7 Represents the results of prototype. Fig 6 explains once the student give his/her finger print immediately it will display at the transmitter side LCD with place name and time.Fig 7 Represents the message received to parents through phone.

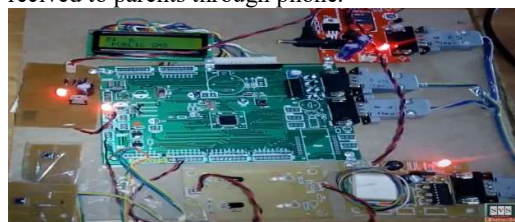


Fig .6. Output1

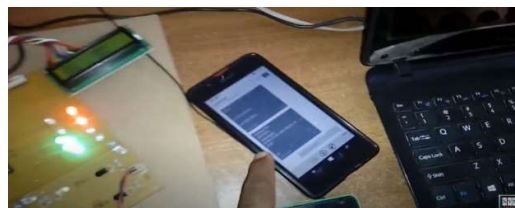


Fig.7. Output2

7. Application and advantages

7.1 Applications

- It can be used for class room attendance purpose.
- With the addition of GPS to the system it helps parents to track the bus.

7.2 Advantages

- Better student attendance management.
- Parents get alert before bus reaches the bus pickup and drop points.
- Parents get alert on mobile in the form of a message immediately.
- Campus entry and exit control.

8. Conclusion

Initially we aimed at using the latest technology for security of the students and to provide the student attendance to their parents and develop a device which can be placed in the college bus so when student enters the bus an immediate message could be delivered to their parents. During the process of developing the device we observed that the same device can used at the entrance of class so a message can be delivered to parents when the student enters the class. We learnt python programming for the software development of the project and also learnt programming of raspberry pi. We also understood the concepts of gsm, fingerprint sensor and Arduino during the designing of hardware required for our project. Finally, in our project we successfully developed the device which we aimed.

9.Future scope:

In our project we are using gsm to send message to parents we can also add gps module to project this could help parents in tracking the route of bus and could be an extension to our project. We can include the fingerprint of students of entire college into same fingerprint module so that if student miss one bus and he/she enters another bus their parents could still receive a message regarding their children. This can be achieved by using a Fingerprint sensor with more storage capability.

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