

AUTOMATED ATTENDANCE MANAGEMENT SYSTEM

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Abstract - Time is gold as the famous line goes, time is a very precious thing in today's fast changing, fast developing environment, through the different stages of civilizations man always tried to look for ways to make his work easier. Man was never satisfied, so the concept of automation came into existence. In recent times educational institutes/universities as well as students are very much concerned about their attendance. But the traditional attendance system is very tedious/inefficient, because it is done sequentially rather than doing at once and later faculty has to update it on the database regularly. If seen, the time taken to take attendance in one class is 5 mins, which itself isn't a huge number but consider the same for 40 classes during the entire semester, it sums to 3 extra classes. Above that the teacher has to update the database. Our project focuses on automating the attendance system through various web applications and storing it in a database. Where once the data is stored, it can be further processed using hardware. In the era of automation, we are trying to replace manual attendance with an automatic attendance system which has captured a very smart position in the modern era. It brings the convenience of accessibility at any time. This would help in saving a great deal of paperwork, managing the records and the classic "PROXY" can be eliminated from the attendance scheme.

they were more time consuming. Nevertheless, the academic performance is influenced by the student's presentation. So, there is a need to manage the student attendance records automatically by using information technology management systems in a faculty to assist in maintaining the attendance[2]. Hence, the attendance system can be useful to reduce administrative complexity and cost rather than increase the efficiency of the education. Excel will be used to record the responses of the students. The security of not letting some crypt-analyst to misuse our form will be achieved by various methods of encrypting/hiding our attendance link. Our attendance system is based on QR codes. [3] There are two types of QR codes. Static and Dynamic. As the name says static won't change for a data 'x'. In our case 'x' is our attendance link. Dynamic is one when the QR code changes even if data is the same. Two different QR codes which are encoded in such a manner that, even though the data contained is different but will redirect to our desired attendance link[3]. The link will enable the user to record their attendance on our database via Microsoft excel..

2.SCOPE

[4] Students can successfully mark their attendance and teachers can access and alter the attendance, and based on attendance text messages can be generated, hence successfully implementing[4].

We will have a fully automated attendance system. Also it will help to overcome the problem encountered in the traditional attendance system. It will help to develop a very cost effective but very efficient system and also [5] To reduce time inefficiency. Extra load of paperwork will be minimized. A solid database is created to store student's data.

Proper record of student's attendance is maintained. Automated texting based on attendance is done. Efficient use of time and reduces faculties work. It also Eliminates duplicate data entry (proxy). And also Increased security and confidentiality of attendance will be maintained.[5]

Keywords: Encryption, Automation, Decryption, web application, authorization, QR code.

1.INTRODUCTION

In today's world we see everything getting automated from cars to space ships, home to offices. Then why not automate attendance which will be helpful for the institute specially, educational institute. Information Technology (IT) has played a significant role in developing several aspects in academic sectors and domains such as student monitoring and management systems. [1] Therefore, it is a critical subject to tracking and managing student's attendance in school, college, and university environments. Since it can be helped to urge students to attend on time, amend the efficiency of the learning, increase the learning grade, and finally boost and improve the education level[1]. [2] Calling a student's name or taking a student's signature are two traditional methods for tracking the attendance of the students in the classroom and

3.REQUIREMENTS

3.1 Android studio

Android studio is a framework based on core JAVA and XML to develop android applications. It is developed by google and with the latest version of 3.6 as of now is one of the most powerful tools to develop android applications. The framework lets one write the code in either of the two JAVA or KOTLIN and to develop the UI XML schema is used. It lets easy database integration, different SDK to use in the application and lot many such features which can be used to develop any kind of application.

3.2 GSM Module (Global System for Mobile Communications, originally Groupe Special Mobile)

It is a standard developed by the European Telecommunications Standards Institute (ETSI). A. GSM became created to describe the protocols for second-generation (2G) digital cellular networks which become used by using cellular telephones and is now the default global widespread for cell communications with over 90% marketplace share, running in over 219 countries and territories. It is used to Read, write and delete SMS messages. It is likewise used to Send SMS messages. Charging status and rate degree of the battery can also be monitored.

3.3 Breadboard

A solderless tool for transient prototypes with electronics and taking a look at circuit designs is known as a breadboard. In maximum digital circuits the electric components may be interconnected by means of putting their leads or terminals into the holes and then making connections thru wires where appropriate. The breadboard contains strips of metal underneath the board and joins the holes on the top of the board.

3.4 PLX-DAQ (Parallax Data Acquisition Tool)

It is a Macros in excel sheet to let microcontroller sync with the excel sheets to retrieve data from excel and vice versa. This tool is basically developed using VBA and is a very powerful tool as apart from connecting to the microcontroller it also acts as a serial monitor of microcontroller.

3.5 Arduino Mega

A microcontroller which consists of Atmega 328 is Arduino uno. The operating requirements for the microcontroller consists of a board. The requirements include the oscillation circuit, the operating power, , and the connection pins of the external circuits. It operates at 5V with 14 and 6 digital and analog input/output pins. One of the most important features of the Arduino board is that it contains a universal serial port that is USB. The Arduino Mega 2560 is a microcontroller

board based on the ATmega2560. It has 54 virtual input/output pins (of which 14 may be used as PWM outputs), sixteen analog inputs, four UARTs (hardware serial ports), a sixteen MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button

3.6 LCD

LCD or Liquid Crystal Display is a type of flat panel display which uses liquid crystals in its primary form of operation . Since they could be typically determined in smartphones, televisions, computer monitors and device panels in order that they have a huge and ranging set of use instances for purchasers in addition to businesses.

3.7 Buzzer

The buzzer consists of an out of doors case with two pins to connect it to power and ground. ... When current is applied to the buzzer it causes the ceramic disk to agreement or expand. Changing This then reasons the encompassing disc to vibrate. That's the sound which you hear.

3.7 XML

Extensible Markup Language (XML) is a markup language that defines a fixed set of guidelines for encoding files in a format that is both human-readable and machine-readable. it's also used to describe facts. To create statistics formats and electronically percentage structured facts through the public Internet, as well as through corporate networks, the most bendy way is XML.

3.9 LED (LIGHT EMITTING DIODE)

A semiconductor device that emits visible mild when an electric modern passes through it is called Light Emitting Diode or LED. The light may not be specifically bright, but in most LEDs it is monochromatic, occurring at a single wavelength. The output from an LED can vary from purple to blue-violet ranging from (at a wavelength of about seven hundred nanometers to about four hundred nanometers). Some LEDs emit infrared (IR) energy (830 nanometers or longer); such a device is called an infrared-emitting diode (IRED).

4.IMPLEMENTATION

The foregoing's security is completely based on the access to google forms. We will secure our forms by encrypting the URL. For all the process we will develop an application for

mobile platform using android studio. The app will be designed in such a manner that as soon as the app is launched, it will ask to scan QR code. The QR code which will be displayed and has to be scanned will contain 10-digit numerical values. On scanning the QR code, the 10-digit value will be processed inside our app. The app will be coded in such a way that the received 10-digit value will be checked from the database, if the value received and the value stored in the database matches then a new intent will pop-up, the pop-up will be nothing but the forms which will record responses. Authenticators like biometrics, example fingerprint, face detection can be used to check for the student's presence. All these can be achieved by integrating SDK (software development key) to our software i.e. the codes in our phone application. All the students will scan the QR code using the app. Once the QR code is scanned it will pass the data that is stored in QR code. We will encode a random data, example a 10-digit number and store that number on QR code. When QR code will be scanned then the number will be checked in our program. If the number equals the stored number in the program then it will redirect to our attendance link. If not then, the user will be sent to scan the QR code page again. Once the user accesses the attendance link the user will have to select his/her name and enter a Unique ID, which will be validated and then attendance will be recorded. This data will be stored in the database of Google. Later this data can be obtained in form of a spreadsheet (excel sheet version of Google). This data can later be manipulated using some basics codes in spreadsheet which are very similar to the codes used in MS excel

5.CONCLUSION

The working model is in its initial stage, but still the system is good enough that it can be implemented in the classroom. Students can successfully mark their attendance and teacher can access and alter the attendance, and based on attendance text messages can be generated, hence successfully implementing

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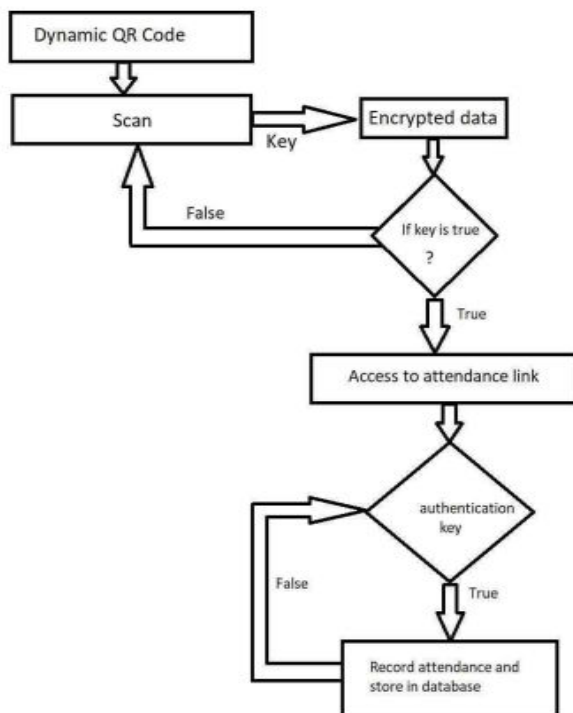


FIG 4.1 Flowchart of android application working