DIGITAL DISPLAY BOARD USING CLOUD

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ABSTRACT

Many forefront universities in the world are dependent on wooden notice board hanging on the wall to display notices. As many problems are encountered the overreliance of this practice in a university is still not enough to pass relevant information around. This system provides the access to notices and articles quickly not only within the college premises, also wherever and whenever they need to know. The major strength of the Electronic Notice Board developed, which is a mobile application is that, its usability is fully capable of passing relevant notice. The paper deals with such an android application made for academic aid of students, teachers and staff of educational institution. Its important features are proving class and laboratory schedule, notice board, teacher's updates. For making communication easier and for faster access of information, the main aim of our project deals with the assistance in academic works. To have extended version for wider range of users and to include more assisting function, this application has all kinds of potential flexibility. As of now, the wooden notice boards or the electronic notice boards using GSM are used in many of the places like offices, banks, railway stations, airports etc. So in the same way, digital display boards can be used in all these public places in more reliable, accessible and efficient manner as the notices will be send to the users on time without irrespective of their location.

Keyword: - *Parse Cloud, LCD Display, Android Phone and Bluetooth*

1. INTRODUCTION

The inclination of making the manually controlled things automatic has become a common practice these days. The process of making the things automatic is being exploited in almost all the major fields of life. [10] Mobile software programs which serve various purposes of the users powered by Android platform are called Android Applications, commonly known as 'apps'. Recently there have been various attempts to design android apps that come in aid of students and teachers like taking attendance of students using mobile phone [2], practicing and learning software development through virtual world [4], virtualized lab Infrastructure for various computing and engineering courses [3] etc. For the day to day academic works, Android app can also be used to help students, teachers, and staffs of an institution. The teachers need to know their schedule for lectures, labs , project works etc. that they need to supervise. Also the students from different classes/ levels/terms/semesters need to check their daily academic routine to get prepared for their classes, assignments, laboratory work etc. Academic notices are published for students and teachers as well as the faculty members. Office staffs have to organize their work according to the routine and upcoming events. Exam routines, results, announcements, news related to upcoming events and programs are published on notice board. Some urgent changes can be made in schedule or there may be some important news that members of department should know in time. To keep log of all these things as hard copies is a cumbrous process. To publish a new notice when people are away from the campus is not at all possible. Someone can miss an important notice or announcements which are made in the department or campus or offices. This problem can be totally avoided if there is an android app installed in their mobile phones which can receive those notices in the form of notifications about the routine, schedule, notice, announcements, updates etc. If there comes any need to publish an urgent notice, administrators can simply post it in the 'notice board' option so that anyone can see it sitting in their homes. Teachers can add any updates about their classes or exams using this application and students can be aware of it just by checking the update window. And the administrators android app also contains different options

of to whom the notices need to be send. This makes any kind of information easily accessible to all, and the changes to be made with little effort and time. It also saves lots of paper that would be required if these procedures depend on hardcopies only. It can be further enhanced by including more services to provide if new need arises with time. Commercial organizations have been utilizing android apps for Electronic Health Record (EHR) and Utility Billing Application [5] and much more. With some edition, this app also can be utilized within commercial organizations for official purposes.

1.1 Programming Codes

JAVA programming codes [6,7,8,9] for building the application, user interface have been used for dynamic access

1.2 Tools For Development

To develop the application, Android development tool with integrated Eclipse IDE (Integrated development environment) software and phone emulator has been used [13]. Java development kit (JDK) of version higher than is required for providing a runtime environment [14].

2. DESCRIPTION

Notice Boards are a common occurrence in variety of institutions which we come across daily basis. In the current scenario, the notice or advertisement boards are being managed manually. [12]In our case study of the actual history, there is a manual method of passing information around as they are pinned on notice boards placed in strategic positions around the university campus. This wastes a lot of resources like paper, printer ink, man power and also brings about loss of time. Notice boards are often made of a material such as cork to facilitate addition and removal of paper messages or it can be placed on digital devices such as computers, phones so people can leave and erase messages for other people to read and see. Then came the research work in which the information dissemination became much easier in a paperless community as the world tended to graduate into the line of intersection.[11] This research work generally intended to act as a support system for the wooden notice boards by which the notices were being posted in the university environment. The electronic notice boards had the capability to disseminate notices in a simple and well organized manner compared to the wooden notice boards system. With the use of Electronic notice boards, human traffic is reduced at wooden notice board location since information on notice boards can be accessed digitally on any Electronic Notice Boards. Electronic Display Board using GSM in which the notices are published in the E-Notice Board. It is then intimated to the cell phones through a SMS. Respective viewer will make best use out of it. If the user wants to know more about the message received, they can open the link which is provided within the message.The problems faced by electronic notice board using GSM could be well resolved by the implementation of the Digital Display Board using Cloud, as it contains a mobile application that brings an advanced means of passing notices not only around in the college or office campus but to the students or the users as notifications in their mobile phones. And this can be done in a much easier and efficient way.

2.1 Requirements

To run this application, the android one should be of version minimum 4.2. Memory space of 2MB is required on the android device. The device must have internet connection settings. To avoid complexity, and to gain proper benefit out of limited hardware and memory storage android application often employ server based intra-enterprise group [15] communication. Android can be used efficiently as a server platform [1]. In a similar manner, this application uses a web server to hold the required data for processing.

2.2 Operation

This application can be used for two purposes, one is to read data from the database, and another is to add, delete, and edit data from the database. So operation can be viewed in two ways-

While reading data from database:
When user opens the application window, he is given the list of option he can use depending on his requirements. When he/she picks an option, say routine, teachers' update, notice board, about the app or developers etc, internet connection with the server is established using the existing internet service settings on the phone. It can use GPRS, EDGE, 3G, 4G etc. Using JAVA programming code, it has been programmed to redirect the user to the page with

his required information after checking the option which he has picked. For example, if he has picked notice board, he will be redirected to the HTML page containing notice, if he has asked for teachers' update, he will be redirected to 'teachers' update' page and so on. He can leave the page when his purpose has been served just by selecting 'back' or 'quit'. Internet connection will be discarded as soon as he leaves the page.

While manipulating data in the database:
Operations like adding new updates, posting a notice, editing the routine etc. are open for authorized users like head of department or the manager of an office only. In case of authorized users if we take the example of the head of department, when he opens the application and chooses the option named "HOD", he is directed to the page where he is asked to type username and password. If the server finds that the username and password typed by the HOD is same as those stored in the program, it gives the HOD access to the database where he can type the notice and upload. Then he is directed to a page where he is asked to choose the option of which users the notices are to be sent. So these options can be used by "HOD" only when they pick the "HOD" option. Similarly in case of users, when user picks the option named "USER", he is asked to enter the username and password. If server finds that the username and password typed by the user is same as those stored in the program, it gives the user access to the database where he can make changes, after doing so, changes are saved. When user leaves the page, internet connection is discarded. To edit again, user has to reenter with the username and password.

2.3 Security Issues

To ensure the security of the process, the password is kept known only to the administrators so that no one except the teachers is able to make any changes or add any updates. If required, each teacher can have their individual unique passwords to access their database.

3. ARCHITECTURE

This is the architecture of Digital Display Board using cloud. This system is mainly divided into three types named input, systemand output. The input consists of android phone of the admin; the actual system consists of Bluetooth, Arduino Board and cloud whereas the output consists of LCD Display and Android Phone of the users. First of all, the android admin uses the mobile application to send the notice both to Arduino Board via Bluetooth and cloud simultaneously. The Arduino Board is responsible for receiving the notice through its receiver pin via a wireless connection Bluetooth connecting Android Phone to the Arduino Board. Then the Arduino Board reads the notice through a program already installed in it and then sends the notice by using its display pins to the 16 * 2 LCD display. Then the LCD Display displays the notice on its LCD Screen. And as already said, Android Admin simultaneously sends the notice to the cloud. The cloud already contains all the user related data in it. And then this cloud works as parse cloud and sends the notice in the form of notifications to all the users. And at last all the users are able to read the particular notice on their cell phones irrespective of their location provided with the fact that all the users should have installed the required mobile application on their Android Phones.

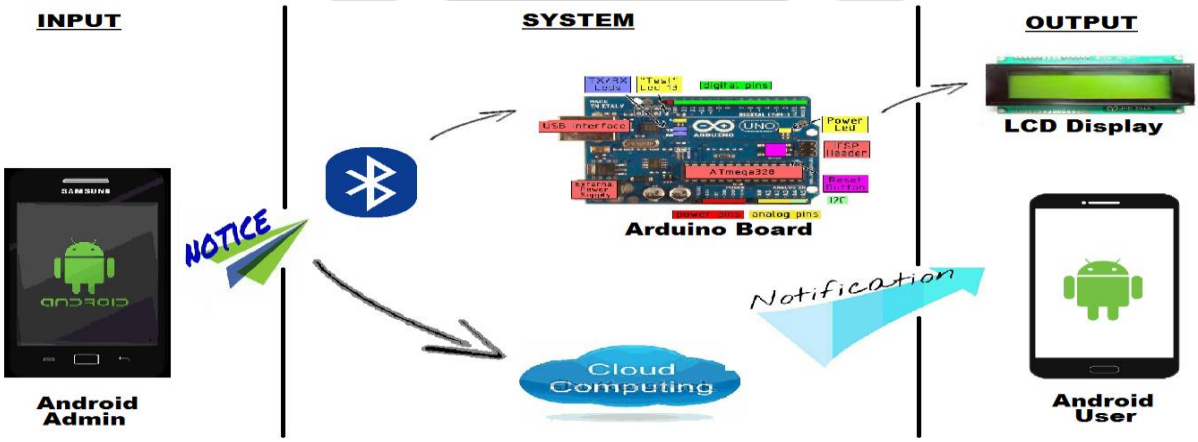

Fig-1: Architecture of Digital Display Board Using Cloud

3.1 Example

Consider a user A who is an employee of an organization which is using this application. So this user A first need to download the application and then install it in his/her smart phone.
After installing, the user needs to register into the system. For registration, the following window opens.

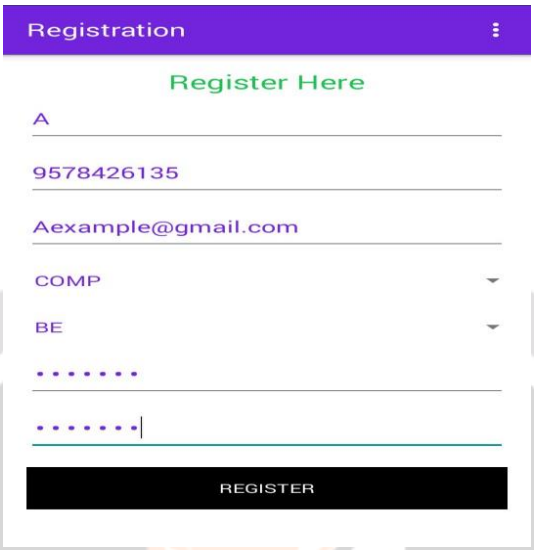

Fig -2: Registration

In this registration process, the user needs to register with his name, mobile no. , his email ID etc as shown in the above fig.

After this registration process, the user is called registered user. The user then needs to login to the system using his/her user mobile no. and password as shown in the fig. below.

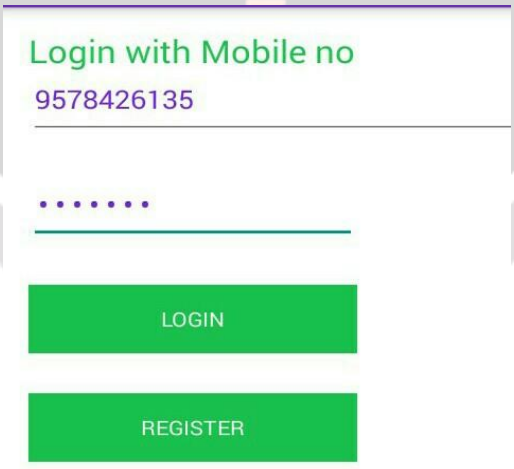

Fig -3: Login

The admin can send the notices or information by using the following window. The admin needs to type the subject of the notice and the actual contents of the notice.

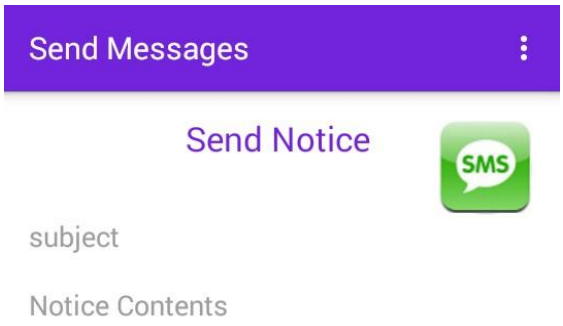

Fig -4: Send Notice By Admin

The notice is then sent to the display board and the registered users simultaneously. This process is shown by using the following figures.

Fig -5: Notice Displayed On the Notice Board

And at the same time the notice is being sent to the registerd user and is shown in the following fig.

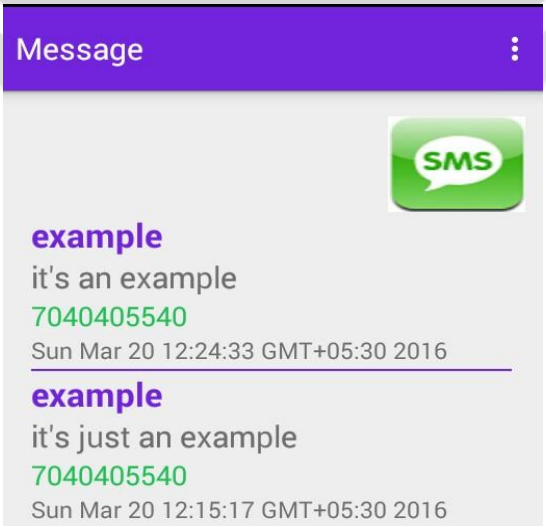

Fig -5: Notice Sent to Registered User

4. CONCLUSIONS

This application was designed for one specific department. But there are several ways in which it can be utilized with a little more addition and editing. Thinking strictly for academic purpose, it can be extended to a larger system keeping log of routines, results, notice and schedules for different departments and respective teachers and students. For that a server with much capacity and more memory space will be needed to run the application. There would be separate administrator panels for separate departments. These can work under a central administration panel of university authority. A central notice board can be added containing updates about the whole university and not only a department. It can be even extended to include more assisting options permanently or temporarily as per requirement. If necessary, android assistant can function as an assistant not only for academic purposes, but also for business and official purposes. It can be used in a similar manner within a commercial organization for keeping together all their schedules. Company decisions and circulars can be published through web using this kind of app. Members and staffs can be notified about their meetings, view their work schedules, salary and much more information. Institutions that depend on e-commerce can use similar app to keep account of their cleared and pending payments, current stocks and share in market which can come to use of any official at any time even when they are away from work place. Thus academic assistant can be converted into "Official Assistant", "Business Assistant" etc. Assisting options are never limited so it is always possible to mould assistant into any form according to user's need.

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