

Organisation Automation using Android Mobile Application

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Abstract- This research recollects about the researches and recommendations on elements which affect automated office and Institute design. As the technology is advancing, we are witnessing automation in various field. People often think or wish to have automatic control over the various electrical appliances like fan, light, computer, etc. So, this proposed work "Organization Automation Using Android Mobile Application" present a solution which helps in accomplishing the task successfully. The proposed work is divided into two sections. The first part i.e. hardware part includes automation using Arduino Mega ATMEL, microcontrollers, etc. Also, the second part i.e. software part contains android application for automatic attendance manager system, file transfer etc.

Key Words: IOT, Arduino Mega NodeMCU, Android Studio, Automation, Faster Data Transfer, Chat Box.

1. INTRODUCTION.

The swing of technology is expansive over the whole world and has changed how things are done. One area that has affected by this growth is office environment. However, office automation is a process that uses technology to automate information gathering, communication, presentation and calculation. Essentially, office automation is a system that helps with storing and processing of data in all its many forms. In this project it will have three versions depending on application, need and the office environment. It will be in two parts where first will be app (software) based and second consist of hardware which will be interfaced together to give the desired output. The first area within office automation is information storage which is usually considered to include office records and other primary office forms so, cryptographic lockers are used. The software part consists of app where all entities are interconnected.

2. LITERATURE SURVEY.

A literature survey or a review on literature in a very project report is that part that depicts the assorted analysis created within the field of your attentiveness. A literature review is that effective analysis of depute

documents on hunt subject-matter. [1] Employment, skill and quality of working life, Karen D. Hughes

The author argues that the reliance on the deterministic research models has produced excessively gloomy forecast about the impact of new offices technologies. Research on office automation is necessary for improving Canadian office environment. [3] The automated office – An Environment for Productive Work, or an Information Factory? ,Arthur Rubin This report summarises research that produced findings and recommendation on elements which impact automated office design. [4]: Smart Office Automation for Energy Saving, Kannapiran Selvaraj, Arvind Chakrapani .The main focus of this paper is to save electricity when peoples are leaving the room. In this article the light and fans are switched on when people enter the room while it will be turn off when peoples leave the room and this is executed by using various components like (PIR) sensor, logic gates, voltage comparator and electromagnetic relay

3. OBJECTIVES.

1. Replacing human operators in tasks that involves hard physical or monotonous work. By using mobile apps, the labour work such as file exchange, manual control of appliances, connectivity among people is been improved.
2. To provide safer data storage, data management, data exchange and accuracy the help of virtual data base.
3. To execute task at faster rates and make the resources available spontaneously. Since major tasks will be performed on mobile application execution speed increases.
4. Replacing human in tasks done in dangerous environment (i.e. fire, space, volcanoes, nuclear facilities, underwater, etc.) using humidity and temperature sensor.
5. To improve productivity of business organization.

4. PROPOSED METHODOLOGY.

The office automation system work by combining the hardware and software part. The combination of both

gives the suitable output. The hardware part mainly consists of three parts Arduino Mega Wi-Fi model, Arduino Nano and ESP8266. The software part consists of two apps one for the handling purpose while the another for the scanning purpose for lockers. The complete description of proposed system is as shown in fig below.

4.1 SOFTWARE CONCEPT.

Basically, we have developed an application which has various features and by which many things can be handled by one application. The application consists of three user type CEO, MANAGER & STAFF MEMBERS. Apart from these there is another application for cryptographic lockers for scanning purpose, simply works by generating barcode on one application and scanning it by another app attached at locker. The barcodes will last for 10secs so there is no theft of getting information or other confidential stuff getting leak. Other features rather than cryptographic lockers are the attendance where every entities entry (IN and OUT) time will be noted and stored for this you just need to enter it manually as included in the application. The other feature is the Today's task where the everyday working task will be available as provided by the higher entities. The other feature is Queries where each user type can present their issues or any real time problems which will be solved by the particular user type. Other than this Appliances, Cabin, conference room and sharing via WhatsApp are the features which can be handled by this application. The following fig gives complete description of software part used in proposed work.



Fig 1 Software (app) concept.

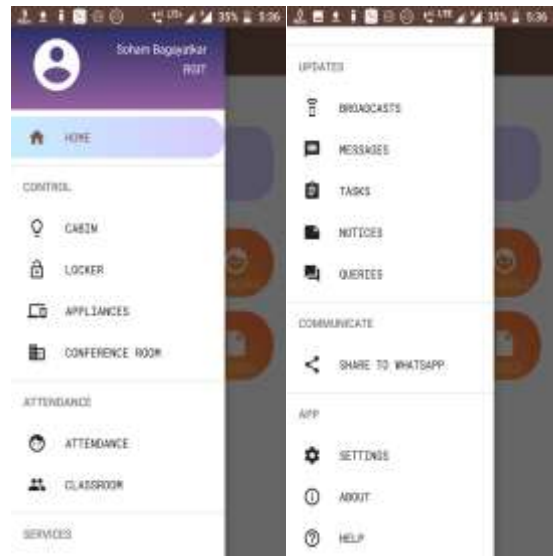


Fig 2 Features of Developed Mobile Application.

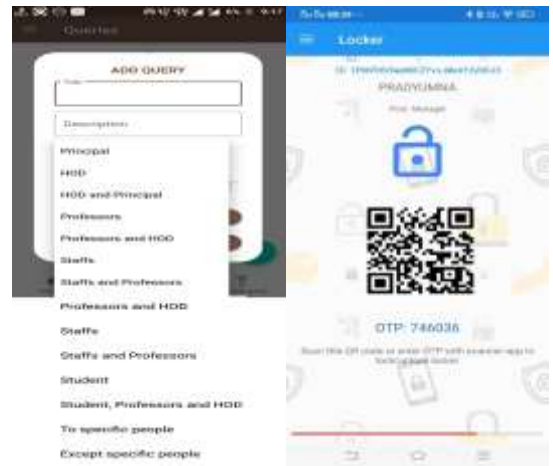


Fig 3 Preference wise task allocation.

Fig 4 Cryptographic Barcode Locker.

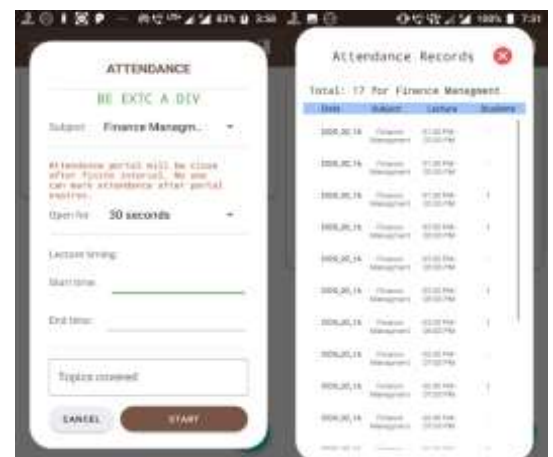


Fig 5 Student Lecture Details.

Fig 6 Student Lecture Records.

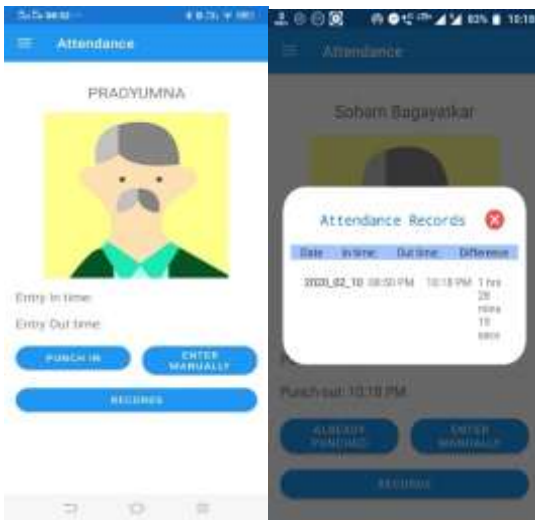


Fig 7 Employee Attendance Panel.

Fig 8 Employee Attendance Record.

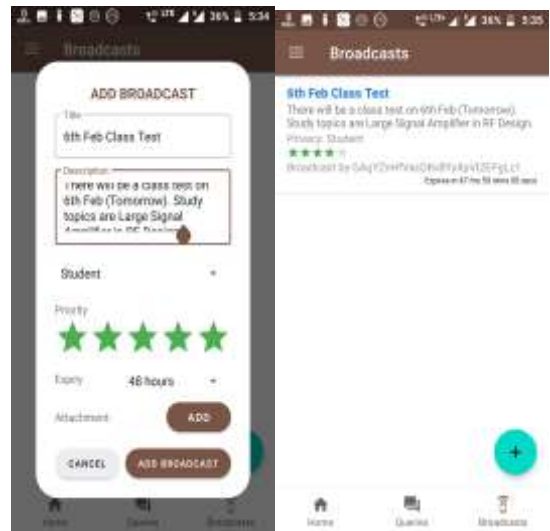


Fig 13 Broadcast feed box.

Fig 14 Broadcast Display.

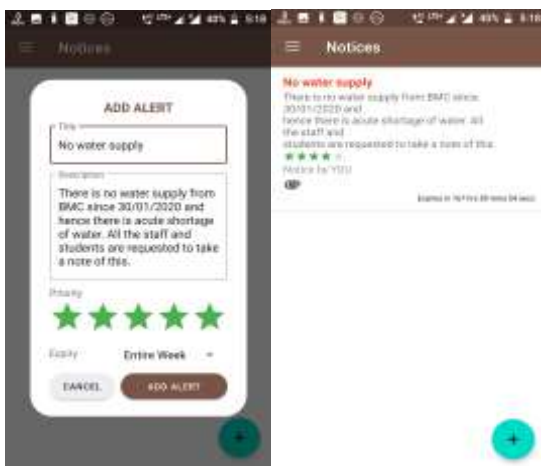


Fig 9 Alert feed box. Fig 10 Alert Display.

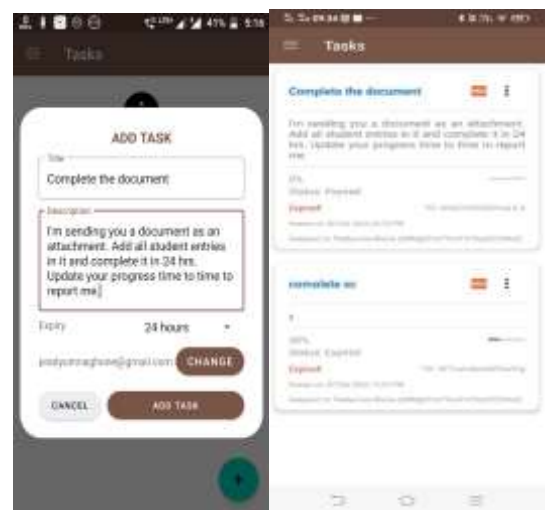


Fig 15 Task feed box. Fig 16 Task Display.

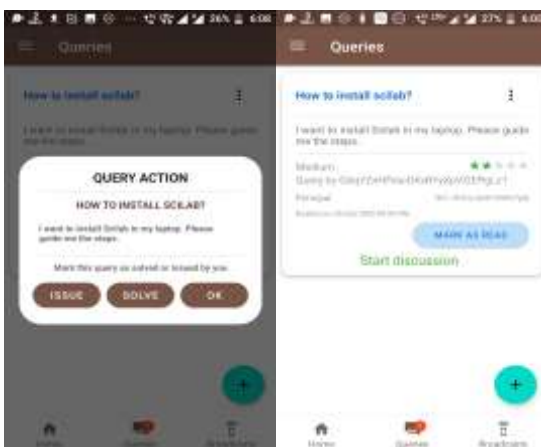


Fig 11 Query feed box. Fig 12 Query Display.

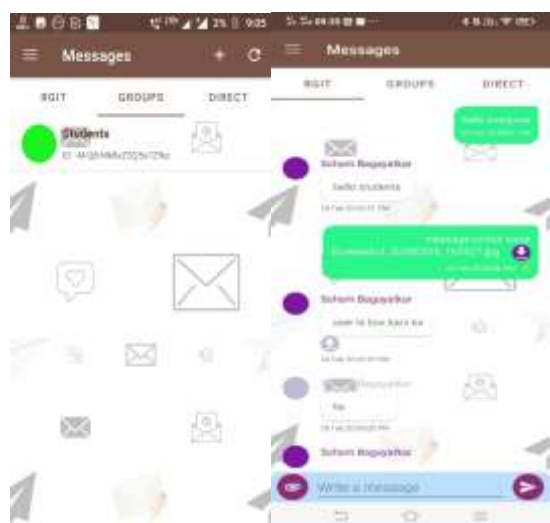


Fig 17 Messenger's Display. Fig 18 Chat Box.

4.2 HARDWARE CONCEPT.

In hardware part the main components are Arduino-Mega Wi-Fi Model, Arduino Nano. So firstly, to control the appliances it will be done by two applications voice control and motion control. For this we first connect Arduino-Mega Wi-Fi model to Arduino Nano where the electrical appliances and the PIR sensors are connected to the Arduino Nano. ESP here is used as DOT and which is wireless and voice control is possible. While the motion control is based on PIR sensor and program is uploaded in ESP for voice commands. The flow of the hardware concept is shown in following fig.

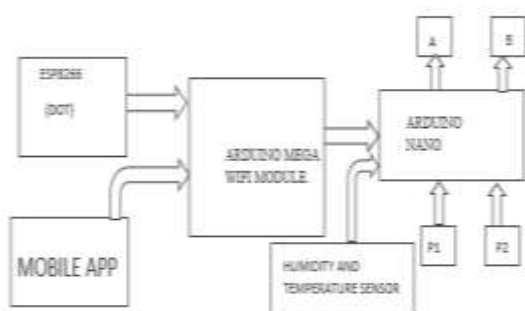


Fig 19 Hardware concept Block diagram.

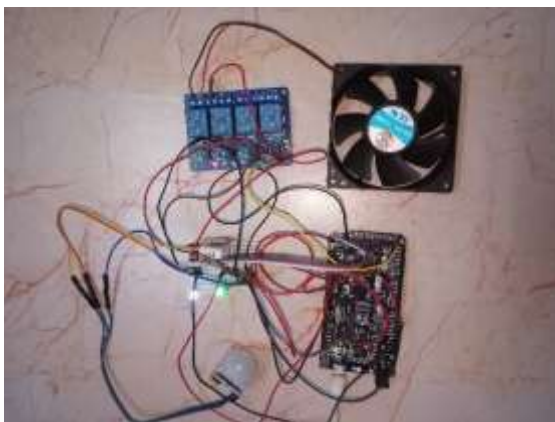


Fig 20 Complete circuit diagram.

5. IMPLEMENTATION.

As mentioned above both hardware and software terms are explained.

5.1 SOFTWARE SETUP (server).

We have developed novel algorithm for software control and it is as follows.

Algorithm:

- 1). Login with valid username.
- 2) Select user type i.e. CEO, MANAGER or STAFF-MEMBER.

3) Each user type gets unique id at the time of registration.

4) CEO, MANAGER can modify the data. But the STAFF-MEMBER can only view the data.

5) There is priority level through which problems/issues can be solved according to urgency.

6) CEO can view entry and exit time of STAFF-MEMBERS and employee's other details.

7) MANAGER simply is a link which connects the CEO to STAFF-MEMBERS or vice-versa.

8) STAFF-MEMBERS gets different updates from CEO as well as MANGER and even can QUERY to both.

9) There are other features which are not mentioned above these are NEWS, WEATHER FORECAST, STORAGE CLOUD, CRYPTOGRAPHIC LOCKERS, etc. can be viewed by everyone (each user type).

10) The Appliances can be handled by means of application by both switches and the voice commands.

11) Alerts, every day task and Sharing data via chats is the new key feature can by be handled by each user type.

12) Logout from the application.

5.2 HARDWARE SETUP.

In Hardware to operate automated appliances each electrical appliance must be connected to the particular relay. To control the appliances there are three ways i.e. voice, motion and through mobile app. Arduino-Mega Wi-Fi model is the main or the celebrity of the proposed work so it should have good internet. Android app is to be installed in mobile devices and the basic requirement for the app to run is internet connectivity, mobile front camera, at least 2GB RAM and memory up to 7MB. The following figure depicts the working of hardware.

Fig: Working using hardware parts.

6. APPLIANCES IMPLEMENTED.

This section discusses the various appliances where the testing of the proposed work is implemented to make a complete automation system using novel mobile application. This is merely classified as-

6.1 OFFICE AUTOMATION.

This section comprises of features such as QR code lockers, conference call, Attendance manager (facial and manual), Email, Weather report, Real Time News, Today's Task Manager, Alerts, Queries and three-way controlling appliances.

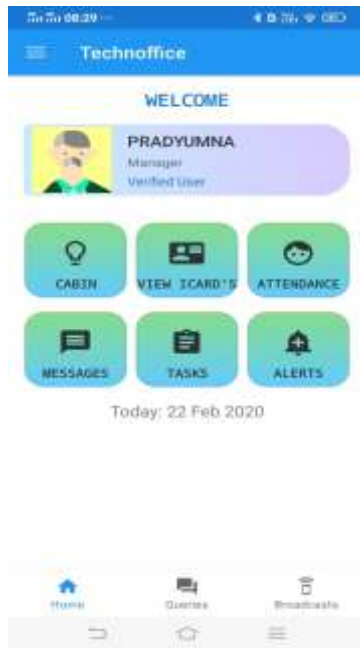


Fig 21 Office Automation Home Screen.

6.2 INSTITUTE AUTOMATION.

This section is upgraded version of office automation. Basic difference is here CEO, Manager and Staff is been replaced by Principal, Professors and Students respectively. Additional features comprise of conducting test using google classroom API and performance records. Separate OTP attendance system is been created for students where portal is open for specific time period for particular lecture.



Fig 22 Institute Automation Home Screen.

7. CONCLUSION.

The proposed project satisfies major problems in office as well as in institute environment. Faster data transfer can be implemented in both organization as well as more features which may be required as per problems can be added in project. Major issue of student attendance in face detection attendance system (High cost infrastructure and Image detection errors) is been solved by changing to OTP attendance system.

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