AN ANDROID APPLICATION FOR CAMPUS INFORMATION SYSTEM

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Abstract - *Mobile technology is one of the vast technologies spread between people. The main motivation behind mobile technology is to connect people with each other. Mobile technology has introduced new environments among students and teachers that can be used to improve today's learning system. Taking into consideration this promising setting, a study was undertaken to realize the impact of such an environment, made possible by the android platform, on the learning process among students.*

The system is an internet-based application that can be accessed throughout the institution or a specified department. This system may be used for monitoring attendance for the college. Students as well as staff logging in may also access or can search any of the information regarding college. Attendance of the staff and students as well as marks of the students will be updated by the staff. This system is being developed for an engineering college to maintain and facilitate easy access to information. For this, the users must be registered with the system after which they can access as well as modify data as per the permissions given to them.

Key Words: Mobile Technology, Android Platform, Firebase, Arduino, Smart Campus.

1. INTRODUCTION

The system was created with the purpose of offering services in colleges and institutes. The user interface will replace the current paper records and the system will offer an extensive student information system. Using android devices and a secure internet interface, college staff uploads attendance, results, and notifications. Before any record alteration really happens, all data is carefully examined and verified on the server. The system is designed with a student user interface so that students can access advice from their seniors. The college administrator's firebase server, which is used to store all data securely, is used. With the help of the system, accessing student records takes less time and paper effort.

For this endeavour, the college had previously depended mainly on paper records, which had their own drawbacks. This system offers a straightforward user interface for the upkeep of student data. It can be used by colleges or educational institutions to easily maintain student records. Even returning students, guests, and teachers have trouble finding buildings, amenities, and services on a vast campus with many buildings, making it difficult to move between them. Thankfully, this software comes with a potent search engine and maps that work on any device, giving precise campus navigation. In addition to searching for and finding rooms, buildings, amenities, and everything in between, staff and students can also acquire detailed instructions to their desired location. Students can view a better plan for their study thanks to the online campus information system. It aids in the management of strategic and well-managed information collages for the university and other institutions. For students and employees (both technical and non-technical), the system administrator creates login IDs and passwords so they can upload and retrieve certain data from the database. Any institutions, colleges, or businesses can use this system as an information management system.

1.1 Problem Statement

Providing comprehensive information about the college campus is the issue. wherein college employees and students can access the information and become acquainted with the campus of the college.

1.2 Objective

The major goals of this project are to simplify information and benefit the big campus. The primary goal in creating the app was to combine many functions for students, instructors, and other staff members of a school.

2. Literature Survey

There are various existing applications for the management of campus activities. Every application has its characteristics, disadvantages, and advantages. These applications (apps) are made by taking into consideration the needs of a particular institute. These apps provide a single purpose only, and we necessitate different apps for diverse institutional activities. Android Based Campus Solutions help in the accomplishment of almost all institutional activities using mobile phones.[1]

Nethaji et al. described the proposed work of the Android Based Campus Solution app. Bhattacharya et al. described the idea and implementation of the MOBILE-CAMPUS application. Using this system Administrator creates login id and password for students and staff (Technical and Non-technical) for uploading and downloading some information from the database. The online campus information system enables the students to get a better layout of education planning. This system can be used as a information management system for any institutes , colleges or anyother companies.[2]

Ghandi et al. presented the various approaches, guidelines, and standards followed while developing an application also listed in the "Mobile application development –a practical approach." Xhafa et al. described and analyzed the learning methods using mobile phones from both learning and technological perspectives. Li et al. introduced the client terminal's design.[3]

Chou et al. described the essentiality and need for mobile gadgets technology in our daily life. Malhotra et al. described construction and design of a device obstacle detection. Cardei defined the advancement of technology in mobile and sensors field. One researcher described the "Smart Campus" application that providing on-campus registration.[4]

Following states the survey table:

Table 1.1

Sr No	Author	Proposed Method	Software Method	Accuracy	Year
1	Nethaji	Described the proposed work of the Android Based Campus Solution App[1]	App	95%	2019
2	Bhattacharya	Described the idea and implementation of the mobile campus application [2]	App	96%	2020
3	Ghandi	Presented the various approaches, guidelines and standards followed while developing an application also listed in the mobile application development-a practical approach.[3]	Website	92%	2016
4	Chou & Malhotra	Described the essentiality and need for mobile gadgets technology in our daily life [4]	App	94%	2017

3. SOFTWARE/HARDWARE REQUIREMENTS

3.1 FIREBASE

Developers can create iOS, Android, and Web apps using the Google-sponsored application development platform known as Firebase. Tools are available from Firebase for monitoring analytics, reporting and resolving app errors, as well as developing marketingand product experiments. Many services are provided by Firebase, including:

- Analytics
- Authentication
- Cloud Messaging
- Realtime database
- Performance
- Test lab

3.2 ANDROID

Google created the Android mobile operating system, which is based on the Linux kernel and is primarily intended for touchscreen mobile devices like smartphones and tablets. The process through which new applications are developed for the Android operating system is known as Android software development. The Android software development kit is integrated with Android Studio and is typically usedto create applications in the Java programming language.

3.3 ARDUINO IDE

The Arduino software (IDE), developed by arduino.cc, is an integrated development environment that is open source and used to programme the Arduino boards. Permit programming and uploading to Arduino boards. Also, it included numerous libraries and a number of miniature project examples. The C/C++ programming language and many operating systems (Windows, Linux, Mac OS X) are supported by the Arduino software (IDE). Beginners and more experienced users can both easily utilise the Arduino software. It is used to create interactive prototypes and get started with robotics and electronics programming.

3.4 WIFI ESP8266

A self-contained SOC called the WIFI Module, which includes an integrated TCP/IP protocol stack, can grant any microcontroller access to your WiFi network. It has the ability to offload all WiFi networking tasks to another application processor or host an application. The module is a very affordable message board with a sizable, constantly expanding community. With its GPIOs, this module may be coupled with sensors and other application-specific devices with a minimum of upfront development and runtime loading because to its robust onboard processing and storage capabilities. Because of its high level of on-chip integration, it only requires a small amount of external circuitry, and even the front-end module is made to take up little space on the PCB. In addition to supporting APSD for VoIP applications and Bluetooth co-existence interfaces, the module has an internal self-calibrated RF that enables it to function in all operating environments without the need for external RF components.


3.5 LCD DISPLAY

LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation. LEDs have a large and varying set of use cases for consumers and businesses, as they can be commonly found in smartphones, televisions, computer monitors and instrument panels. LCDs were a big leap in terms of the technology they replaced, which include light-emitting diode (LED) and gasplasma displays. LCDs allowed displays to be much thinner than cathode ray tube (CRT) technology. LCDsconsume much less power than LED and gasdisplay displays because they work on the principle of blocking light rather than emitting it. Where an LED emits light, the liquid crystals in an LCD produces an image using a backlight.

4. BLOCK DIAGRAM/FLOW CHART
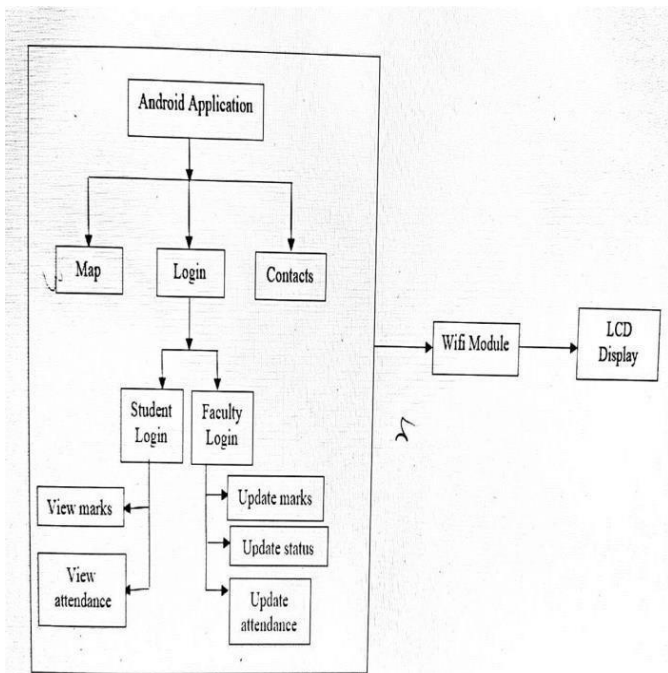
The home page of this application has a map, a login, and contacts. Student login information and teacher login information are also available to students and employees. The status, attendance, and grades of students can all be simply updated by staff. Students can also view their grades and attendance.

5. RESULT
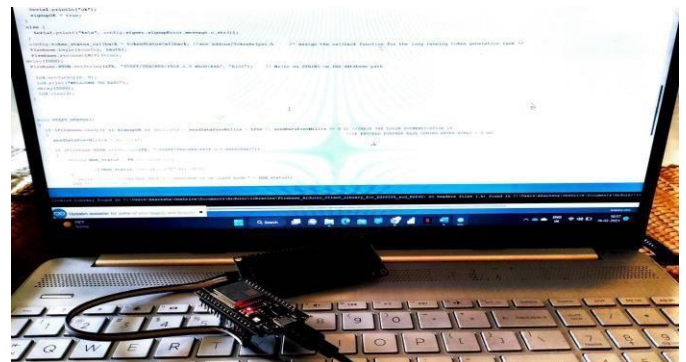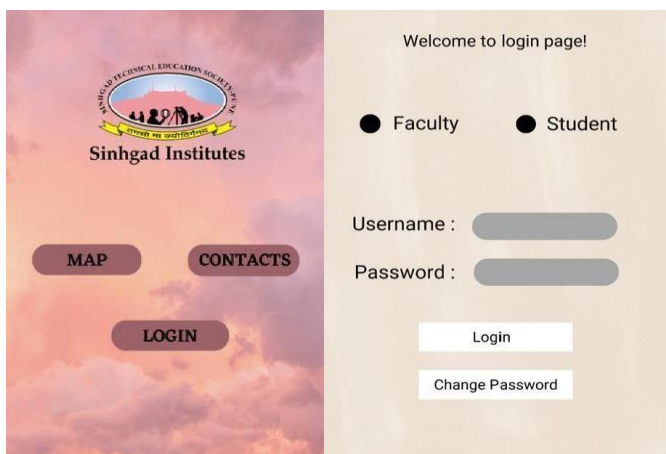
6. CONCLUSION

The primary goal in creating the app was to combine many functions for students, instructors, and other staff members of a school. It is advantageous for students to review the staff information. Whether they are occupied or attending a lecture, staff can readily update their job status. Locating the campus is helpful for parents, guardians, and newcomers.

7. FUTURE SCOPE

• Because the proposed application is practical, user-friendly, and simple to use, it can be used in a variety of contexts.

• Additional features can increase the demand from users and apps. Reusability is also possible because of the application's different characteristics, and all of its modules offer flexibility and simplicity of use.

• Students can comment on the college, the staff, or another student.

• Can view various system functions with help by selecting the help option.

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