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AI-Based Attendance Management System for Android Mobile Devices

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Abstract
Now-a-days, Institutions are monitoring the attendance using registers and then storing them to web-portals where it consumes lot of paper work and time. So, to minimize the effort in this project we had developed an android mobile application with a special add-on AI assisted voice assistant and chatbot. It is useful for faculty to take student attendance with their mobile devices directly through the app. It is an automated attendance system that consists of an android based application with integration of AI voice assistant system to record the attendance. On successful logging in with some authentication, the fraternity can use some voice commands to the AI voice assistant or they can chat with it to store the attendance into the database. Faculty can take the attendance in two ways. One way is to type all the present list of students in the chatbot. Another way is to give the roll numbers through some voice commands of students by their voice. This attendance is stored securely in the cloud and the option of report generating is also available. Thus, the application is useful in checking the attendance by students and also by the fraternity.

1.Introduction

An Android application (also known as an Android app) is a software program designed to run on the Android operating system, which is used on mobile devices such as smartphones, tablets, and smartwatches. Android apps can be downloaded from the Google Play Store or other app marketplaces, and can be used for a wide variety of purposes, including entertainment, productivity, communication, and more.

Android apps are typically written in Java or Kotlin programming languages, and use the Android Software Development Kit (SDK) to access the device's hardware, sensors, and other features. Developers can create apps for Android using a variety of development tools and frameworks, including Android Studio, Eclipse, and Unity.

Some popular Android apps include social media apps like Facebook and Instagram, messaging apps like WhatsApp and Telegram, entertainment apps like Netflix and Spotify, and productivity apps like Google Drive and Microsoft Office. Android applications are software applications designed to run on the Android operating system, which is used in many smartphones, tablets, and other mobile devices. Android applications can be downloaded from the Google Play Store or other third-party app stores and can provide a wide range of functionality, from basic utilities to complex multimedia applications.

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Android applications are typically developed using the Java programming language and the Android Software Development Kit (SDK), which provides a set of tools and libraries for developing, testing, and deploying Android applications. Android applications are developed using the Model-View-Controller (MVC) architecture, which separates the user interface, application logic, and data management components of the application. Android applications can also be developed using other architectural patterns, such as Model-View-Presenter (MVP) or Model-View-View Model (MVVM).

Android applications can access a wide range of device features and services, including the camera, GPS, sensors, and other hardware components. They can also access external data sources, such as cloud-based storage or web services, through APIs and other networking protocols. The Android operating system provides a number of security features to protect user data and prevent unauthorized access to the device or applications. Android applications must be reviewed and approved by Google before they can be made available on the Google Play Store, which provides an additional layer of security and quality control.

Existing System

This system will reduce manual work and avoid redundant data. By maintaining the attendance manually, then efficient reports cannot be generated. The system can generate an efficient weekly, consolidated report based on the attendance. As the attendances are maintained in registers it has been a tough task for admin and staff to maintain for a long time. Instead, the software can keep long and retrieve the information when needed.

The problem occurred before having computerized system includes:

• **File lost:** When a computerized system is not implemented, the file is always lost because of the human environment. Sometimes due to some human error there may be a loss of records.

• **File damaged:** When a computerized system is not there, file is always lost due to some accident like spilling of water by some member on file accidentally.

• **Difficult to search records:** When there is no computerized system there is always a difficulty in searching for attendance of the students by name or roll if the attendance records are large in number.

• **Space consuming:** After the number of records becomes large the space for physical storage of file and records also increases if no computerized system is implemented.

• **Cost consuming:** As there is no computerized system the to add each record paper will be needed which will increase the cost for the management of Attendance system.

• **Lack of Security:** The data of the manual attendance were not secured with respect to the confidentiality of reports and documents of the attendance system.

• **Buddy-Punch:** Manual attendance systems are plagued by buddy-punching and time-theft. Since the data is entered manually, it can easily be manipulated. The employee may provide inaccurate information for extra income,

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resulting in less productivity and increased costs.

Proposed System

Our project aims in implementing software that will help lecturers to take the attendance of students using mobile/Smartphone. Lecturers will login to the phone application and get connected to the server. After login, they will take attendance using their mobile phone. After taking the attendance on the mobile, the lecturer will send it over to the server using GPRS. Lecturers will be able to edit attendance by login to the website and students will check their attendance using a website.

The complete Modules of AI-Based Attendance Management System for Android Mobile Devices are:

• User Module:

The main purpose of the user module is to provide security. This module is specially designed for staff, which use mobile phones to take attendance. Each staff member enters a username and password before entering the attendance list. If username and password cannot match, he/she can enter into the attendance page.

• Administrator Login:

The admin login requires the main access to the system and secure every information, edit and add any details in the system.

• Add Student:

Add student module requires the student's details like branch, year, roll and added into the system.

• Add Attendance:

The system saves the details info of the students and then attendance added by the admin. These records are updatable when the admin needs it.

Methodology

Android Development

Android Studio is a powerful Integrated Development Environment (IDE) for creating Android applications. It is designed specifically for developing Android apps, and provides a range of features to make the app development process faster and more efficient.

Some key features of Android Studio include:
Code editor: Android Studio includes a powerful code editor with features such as syntax highlighting, auto-completion, and code refactoring. It also supports a wide range of programming languages, including Java, Kotlin, and C++.

Visual Layout Editor: Android Studio includes a visual editor for creating app layouts. The Layout Editor allows developers to drag and drop UI components onto a canvas, and provides tools for customizing the look and feel of the app.

Gradle Build System: Android Studio uses the Gradle build system, which allows developers to automate build processes and manage

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dependencies more efficiently. Gradle also provides support for building multi-module apps and custom build logic.

Performance Profiling: Android Studio includes a range of performance profiling tools to help developers identify and fix performance issues in their apps. The tools include CPU, memory, and network profiling, as well as a range of other diagnostic tool.

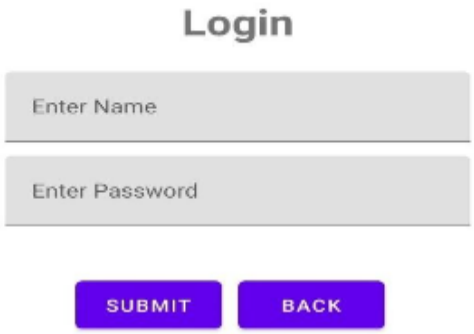
Screens And Reports

This is our landing page where faculty and students divided into their respective login pages to enter into their dashboard.

These buttons in the android app are used to navigate into their respective login modules where they enter their credentials to login into their dashboard.

Faculty Login

This is the login page of the faculty, where they login by using their credentials and take their attendance here.



Student Login

This is the login page of the students, where they login by using their credentials And check their attendance here.

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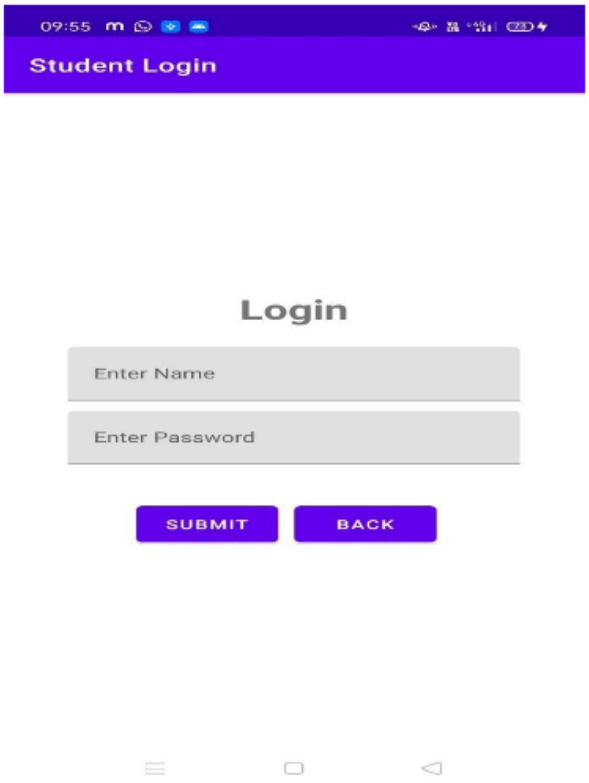
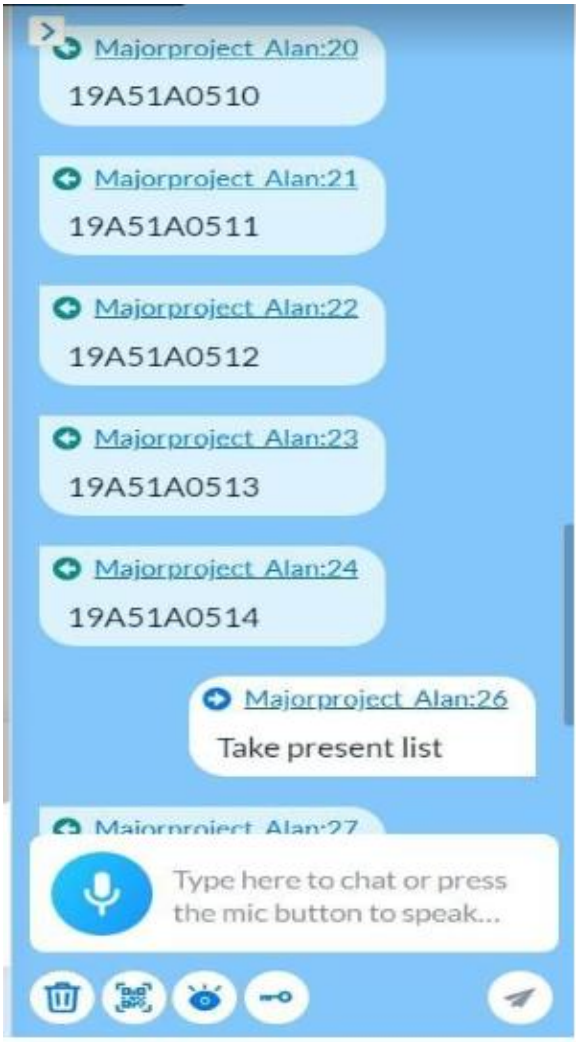
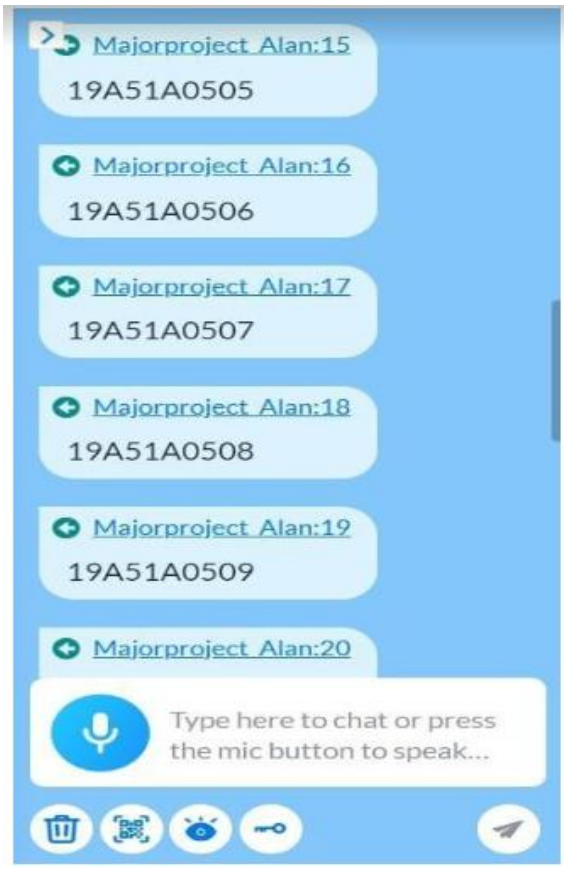
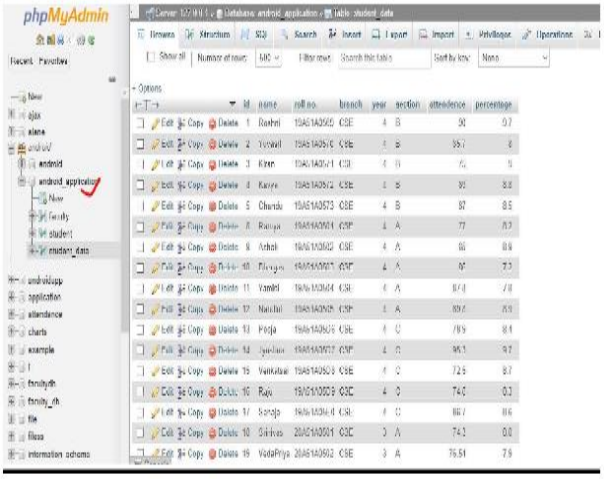




Alan Voice Commands Data



Database:



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Conclusion

During the development of the Android-based NIST Attendance System, we encountered a lot of problems, most especially in attaining the objectives that we have situated in our proposal. Our systems have features that need full attention and should be deeply scrutinized. To conclude, Project Data Grid works like a component which can access all the databases and picks up different functions. It overcomes the many limitations incorporated in the attendance. Easy implementation Environment Generate report Flexibly.

This AI-Based Attendance System has been computed successfully and was also tested successfully by taking "test cases". It is user friendly, and has required options, which can be utilized by the user to perform the desired operations.

This project will help the lecturers to reduce their workload by reducing the time and calculations required to update the attendance manually. Students and their parents will also view the attendance and curriculum details using the website.

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