

# A SURVEY ON ANDROID BASED STUDENT INFORMATION SYSTEM FOR EDUCATIONAL INSTITUTE

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**Abstract:** In today's digital World, the management systems are becoming an essential need for the organizations and departments. Also, the lot of preference is given to the portability of system. The educational organizations have huge data of students which could make a heavy task to manage it all. So, we introduced an advanced management system which will help to manage this bulk data. This system contains a web based panel for department to manage data and a mobile app for students. The system makes it possible to maintain students' data like daily attendance reports, test mark reports, the fee details, mobile number, email, etc. The panel can be used by one or more authenticated staff members through their separate personal logins. The system introduces various options for admin like uploading number of records directly using csv files, which helps to reduce the time consumption, notifying students about the various events in department and also notifying students about low attendance or low performance in exams. The students can use an android application to see the notices, managing their attendance, performance and they can update their personal details. They can also ask their queries about academics directly from the app and get the resolution. Thus, this application definitely helps to reduce the paperwork and increase the transparency between students and the department.

**IndexTerms -** management systems, mobile application, department, REST api, digital portable systems.

## I. INTRODUCTION

The smart phones evolution has changed the lives of people in today's digital world. They are portable, convenient to use, faster and smarter. They help to keep maintain the records of various things. It will be great if we use this power of smartphones for our educational departments. The department has lots of students' data which needs to be stored, documented and needs to be retrieved if required. Thought this data is sorted, managing the bulk of data will consume much time of human. Also, there may be large chances of human errors in managing this data. So, the digital management systems can help to reduce errors, keep data safe and also reduces the time consumption in managing this data. Our system works over the Internet, so the data can be accessed by any device having internet connectivity. Also, it will not consume the local storage. The system also allows the web admin panel to be accessed by more than one authenticated persons so that if the data is becoming bulky, then also users can distribute the work amongst them. Each staff member will have a unique credentials using which they can log in to the system and can update the students' data. It's also possible to manage the admin's own data like profile personalization by updating his/her photo, name, email address and other details. The admin can perform various tasks like adding a new student, managing its daily attendance reports, displaying the data of tests conducted by department, displaying the various notices to students, etc. Other from this, admin can also have rights to change his name, photo and password. The password are encrypted with the hash technique so that their security is maintained. In the case the admin forgot his/her password, then the system also provides the 'forgot password' functionality from which the admin can recover his/her account.

On the other side, an android app is available to students to gain access to all the related data. The app is designed for android OS considering the large amount of devices running android OS. The app shows the daily attendance records by specific color notations for student's present, absent and holiday. The students can check the results of test conducted in the class, directly in the app. The students will be notified whenever a staff member publishes a new notice for students. There will also be a personal note to a student from which staff can tell students about less present or low performance. The personal notice will be different for all students which can be customizable for every student.

## II. LITERATURE REVIEW

We have studied the current requirements to manage the educational data. The below papers helped us to understand the previous work on this topic:

- i. i.M.Amir Abas, Auji, M. Dahlui proposed a system in which Two different approaches of implementing Fast track analysis for attendance management system has been designed and analyzed. The first design is applying data access through card reader and the data is being saved in the memory card. All the data which are representing Student ID are processed by attendance management system for monitoring the attendance student performance [1].
- ii. Mohamed LACHGAR, Hanane BENOUDA, Selwa ELFIRDOUSSI, had a research with respect of REST client libraries that developers use to speed up development. Here, they compare the Volley Library with a Retrofit. The REST (Representational State Transfer) has become the most commonly used way for creating, publishing, and consuming Web services, exploiting JavaScript Object Notation (JSON) as a data exchange format [2].
- iii. Mekshyam Z. Lanjewar, Sham B. Mehar, Pujja K. Chavhan created a survey of online android attendance application. The aim of project is to optimize the work of faculty member through the application. So the development of online attendance management application became a need. This is installed in android phone and they used user id and password for the security purpose. Online attendance management app provides many benefits to colleges and organizations [5].

- iv. Chandrakala G C, Geeta Kalshty, Suma Paddki, Anuradha T proposed a system same as Najim Sheikh [2] with slight modifications. It has different modules which provides different access rights to different users according to their designation. The project was developed in Eclipse IDE, Android SDK and run on Android Emulator. The initial screen provides login for both staff and student where they can login and carry out the further tasks. As usual, the staff members has add, update and delete permissions for students' data and students have read only permission of data [8].
- v. Krithi P, Dr M Ramakrishna presented a survey about student management systems which are currently being used in market. Student Management System manages several student details like USN, student attendance, internal assessment marks, parent name, phone number, email-id, date-of-birth, class, sex etc. The goal of evolving this application is to induce the report regarding attendance at the completion of the conclave or at the middle of the conclave [10].

### III. PROPOSED SYSTEM

The proposed system helps to manage the bulk data of educational institute in an efficient way. The system works in two separate modules, one is for staff, which is a web based module and another is for student, which is an android phone base application. They are elaborated as follows:

#### i. Admin Module (Web based):

The system has a web-based admin panel from which staff member can add, modify and delete every student's data. The admin panel has a login security in which only authorized staff member can gain access. There may be one or more staff members available for single admin panel. The admins can set the student's daily attendance details, test records and various types of notices. The admin can set a data as an individual record, or if they have hundreds of records to manipulate, they can use a system feature as 'bulk upload'. Through this feature, the system allows to add, manipulate or delete multiple records with uploading csv record files. To use this feature, the admin needs to add records in csv file according to the defined columns. After done, the file only will be uploaded and all the included records in it are directly uploaded in the system.

#### ii. Student Module (Android app):

As soon as the Admin creates the record of student in the system, the student can login to the app by using his/her roll number and password. The student can access his/ her data as follows:

**Personal Data:** Name, gender, roll number, personal notice, year, email, etc.

**Attendance Records:** The attendance is updated by the staff member and can be seen by the student. The app shows a table of dates in a month and sets a background color as present/ absent or holiday according to the input provided.

**Test Records:** The tests which are held in the class, the results can be declared online and can be seen through the app by the student.

**Notices:** The student will be informed of various notices which are sent by the department and are expected to be read by the student.

The data is stored on the remote centralized database and it is shared by both android app and web admin panel.

#### iii. REST API:

The android app uses a JSON object to parse the data. However, as the app cannot directly access the database. So, the REST API is used. Representational State Transfer (REST) is a Software architecture style that defines a set of constraints to be used for creating Web service. It is built using a PHP language and acts as an intermediate in the communication between app and database. In our RESTful Web service, requests made to a resource's url will elicit a response with formatted in HTML and JSON.

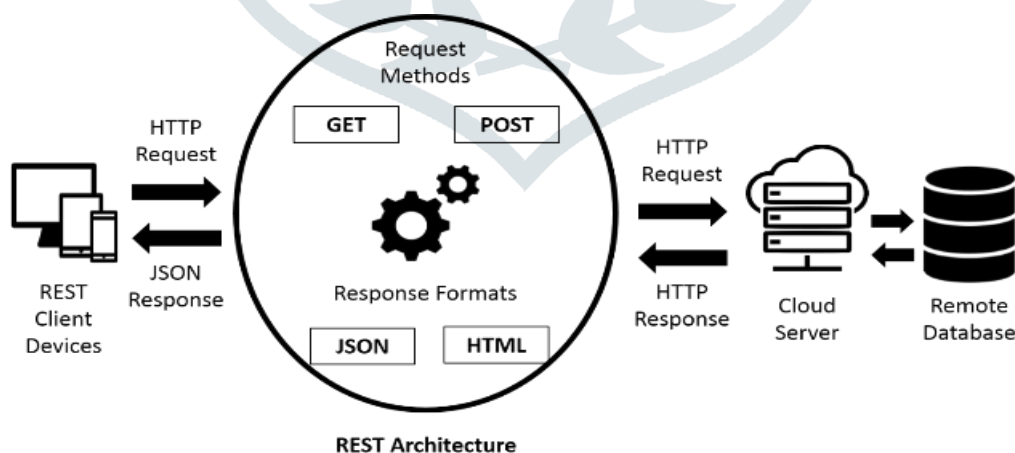


Fig 1. REST API Architecture

Above figure shows REST web service architecture. We use HTTP requests to make an api call from client devices with GET or POST methods. The POST method may contain a user's confidential data. The request comes to REST. It processes on it and send a request to further to Cloud server. The server then fetches the required data and sends the response data again to the REST web service. The web service then converts the data in the required format like HTML, JSON or XML and the response is sent back to the client device. The android app parses the data from the JSON data and the web client parses the HTML data.

#### iv. Work flow of System:

The following figure demonstrates the flow of execution of the system. The staff/admin can login to the system and can add, update records or perform other operations in the system. If the admin has forgotten the password, then he/she can reset the

password by entering the registered email id. The link to reset the password will be sent to the admin to the email address from which he/she can reset the password. Then again, the control goes towards the login step. The admin tries logging in to the web panel. After successful login, an admin gains access to the admin panel and can add new record, update existing records, update daily attendance, test marks and send important notices, messages to the students. The system also allows the admin to send the messages to the absent students, generate test and attendance reports, and many other functions.

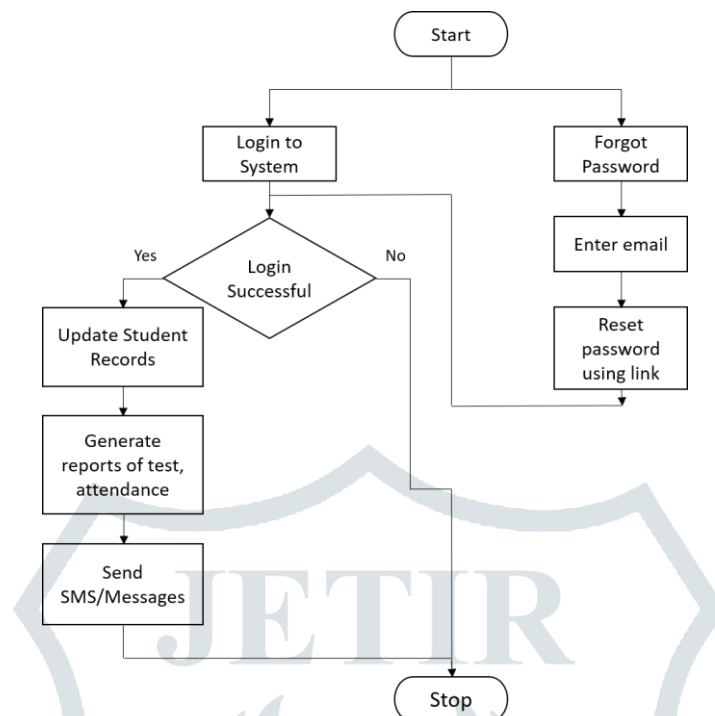


Fig 2. Flowchart of web based module

The following flowchart shows the execution of client android app module. The student can log in to the app using his/her credentials and again access to his/her account where the daily attendance details, test marks, various notices and other things can be accessed. The student can update his/her personal details such as name, email address and password. Also, if the student has forgotten his/her password, then the password reset functionality is available. The student has to enter the registered email address, and OTP is sent via email, which the student can use to reset the password.

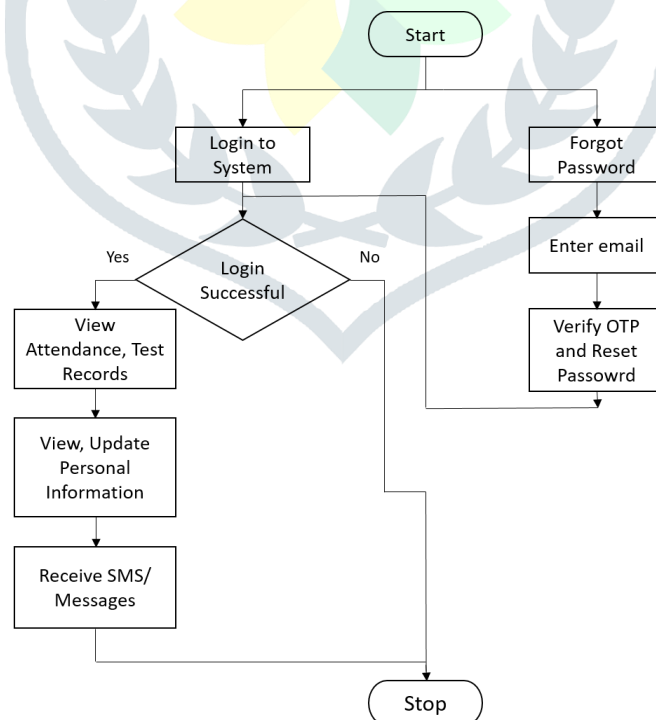


Fig 3. Flowchart of app module

**IV. CONCLUSION**

This project put a quote the requirements of digital portable systems in a day to day life. Thus, we can conclude that the portability plays a vital role in today’s world and there is a need of digital systems to keep track of huge data to keep it sorted, convenient and easily accessible when required. This system fulfills this need of changing world and extends further the research

of existing systems. The system makes it possible to keep a transparency in the educational system by providing access to the daily attendance, test records and performance reports of students. This keeps the data sorted and reduces the time consumption. The system is also expected to fulfill requirements of next few years and if required, the system can be further modified and new features can be added to the system to make it more valuable and useful for future changing requirements.

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