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REAL TIME TRACKING AND ANALYSIS OF STUDENT LEARNING'S OUTCOMES AND THEIR ACADEMIC PROGRESS USING REGRESSION AND CLASSIFICATION

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Abstract -This website facilitates registration of schools using their UDISE code and login will be made available to school admin, teachers, and students. Admin of a school has the privileges of enrolling teachers, providing school's operational structure including details. Teachers have the privileges of enrolling students, updating marks and attendance, giving homework, remarks (if any). Students/parents can access the website to monitor students progress, attendance and track assigned home works every day. Reports will be generated by the system based on the students overall performance. Student Management System is software which is helpful for students as well as the school authorities. In the current system all the activities are done manually. It is very time consuming and costly. Our Student Management System deals with the various activities related to the students. In the Software we can register as a user and user has of two types, student and administrator. Administrator has the power to add new user and can edit and delete a user. A student can register as user and can add edit and delete his profile. The administrator can add edit and delete marks for the student. All the users can see the marks.

Key Words: UDISE, Administrator, Performance, Progress, Attendance

1.INTRODUCTION

Currently in schools teachers perform manual work to prepare and track students learning's outcome through report cards. This is the standard procedure done manually throughout the country. Often it is observed that students are also good in co-curricular activities and being good in academics is not the only way ahead. In current situation it is not possible for a teacher to pay attention to every student and find out the best in a child. Hence there is a need to develop solutions to track all activities of a student including the academic progress in real-time. Innovation in this domain will be appreciated to develop systems which automatically reads the students progress and generates feedback. This system saves the time of the student and of the administrator. It includes processes like registration of the student's details, assigning the department based on their course, and maintenance of the record. This system reduces the cost and workforce required for this job. As the system is online the information is globally present to everyone.

Objectives:

In our proposed system we have the provision for adding the details of the students by themselves. So the overhead of the school authorities and the teachers is become less. Another objective of the system is that it is very easy to edit the details of the student and delete a student when it found unnecessary. The marks of the student are added in the database and so students can also view the marks whenever they want.

- To reduce manual work.
- Students can view their Attendance, Homework, Real time progress and non-academics activities conducted by their school.
- The system identifies his/her strengths and bring it to the notice of both faculty and parents.
- To reduce the time while taking attendance.
- To reduce errors.

2. REQUIREMENTS COLLECTIONS

Requirements analysis focuses on the tasks that determine the needs or conditions to meet the new or altered product or project, taking account of the possibly conflicting requirements of the various stakeholders, analyzing, documenting, validating, and managing software or system requirements. In proposed, website collected requirements which are collected from users are:

- Website must contain the criteria-wise records of the students i.e. students' attendance percentage and other filters.
- Website should not be too much time-consuming.
- Admin can upload data offline until getting an internet data connection.

A. Hardware Requirements:

The development of this application needs some specific hardware requirements given below:

- Operating System: Windows, Linux, Mac.
- RAM: 4GB or more recommended.
- Processor: Intel i3/AMD Ryzen 3000 or above
- HDD/SDD: SSD preferred
- Tools: VS Code
- Running Device: Laptop

B. Software Requirements:

The Website is reactive as very compatible with every search engine which compatible with Windows and more versions. These requirements or prerequisites are generally included in the software installation package and

need to be visited separately before the software is installed.

- Programming language used: Python
- Miscellaneous Technologies used: XML
- Framework used: Node Javascript
- Database used: MySQLITE

C. Functional requirements:

Functional requirements along with requirement analysis help identify missing requirements. They help clearly define the expected system service and behavior.

Functional requirements are as follows:

1. The working in the organization will be well planned and organized. The data will be stored properly in the database, which will help in the retrieval of information as well as its storage.
2. Mac address required without connecting the wifi using only SSID.
3. In a manual system, there are many problems with storing a large amount of data.
4. The API should work properly while CRUD operations.
5. The main objective of the proposed system is to provide for quick and efficient retrieval of information.

3. LITERATURE SURVEY

1. Fredys Alberto Simanca Herrera & et al., (2013) [4] : Learning Analytics (LA) has a significant impact in learning and teaching processes. These processes can be improved using the available data retrieved from students' activity inside the virtual classrooms of a (LMS). This process requires the development of a tool that allows one to handle the retrieved information properly. This paper presents a solution to this need, in the form of a development model and actual implementation of an LA tool. Four phases (Explanation, Diagnosis, Prediction and Prescription) are implemented in the tool, allowing a teacher to track students' activity in a virtual classroom via the Sakai LMS.
2. Hengyu Liu & et al., (2005)[1] :In online intelligent education systems, to offer for the proactive studying services to students (e.g., learning path recommendation), a crucial demand is to track students' knowledge mastery levels over time. However, existing works ignore the impact of learning transfer on knowledge tracing and only track knowledge proficiency. Knowledge proficiency alone cannot fully reflect students' knowledge mastery levels. A student's knowledge structure (the similarities and differences within knowledge concepts) and abstract principle mastery level (common attributes among knowledge concepts, such as learning methods) also need to be tracked.
3. 3. Adnam Rafique & et al., (2016) [3] : Big data analytics has shown tremendous success in several fields such as businesses, agriculture, health, and meteorology, and education is no exception. Concerning its role in education, it is used to boost students' learning process by predicting their performance in advance and adapting the relevant instructional design strategies. This study primarily intends to develop a system that can predict students' performance and help teachers to timely introduce corrective interventions to uplift the performance of low-performing students. As a secondary part of this research, it also explores the potential of collaborative learning as an intervention to act in combination with the prediction system to improve the performance of students.

4. SYSTEM ARCHITECTURE

An architecture description is a formal description and representation of a system, organize in a way that supports reasoning about the structures and behaviors of the system. It can consist of system components and the subsystems developed, that will work together to implement the overall system. This part of the paper illustrates the approach and architecture of the student management sysytem i.e. shows the steps and flow of the data into the system, and how data will be updated in the database and retrieved from the database.

1.User register and log in.
2.Student/ staff receives notification and session details.
3.Attendance data updated by the admin in the database.

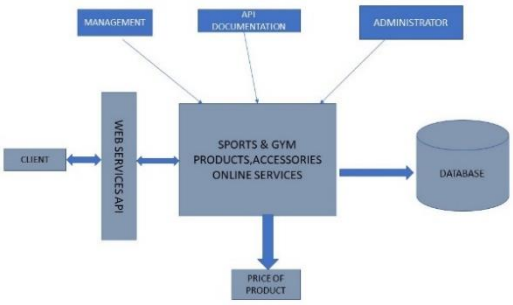


Fig. System Architecture

5. DATAFLOW DIAGRAMS

A data flow diagram (DFD) is a graphical representation of the 'flow' of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system, which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design).

A DFD shows what kind of information will be input into and output from the system, where the data will come from and go to, and where the data will be stored.

1. Level 0 Data Flow Diagram

At level 0, shown the short introduction about how data will flow in the website.

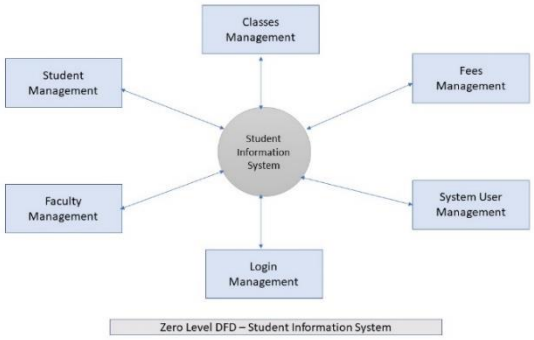


Fig. Level 0 Data Flow Diagram

2. Level 1 Data Flow Diagram

At level 1, the diagram elaborates on how the process will be carried out in the application while flowing data.

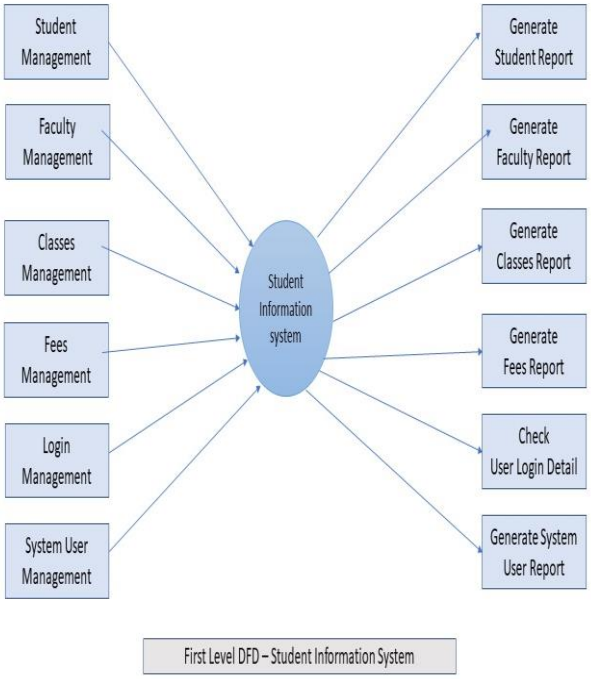


Fig. Level 1 Data Flow Diagram

6. USE CASE DIAGRAM

Use case diagrams consist of actors, use cases, and their relationships. The diagram is used to model the system/subsystem of the website. A single-use case diagram captures a particular functionality of a system. Hence to model the entire system, a number of use case diagrams are used.

A Use Case diagram shows the interaction between the system and entities external to the system. These entities are called actors which have a specific role in the system. The figure shows the use case diagram for the proposed system. The purpose of a Use Case Diagram is to know or show the functionality of the system.

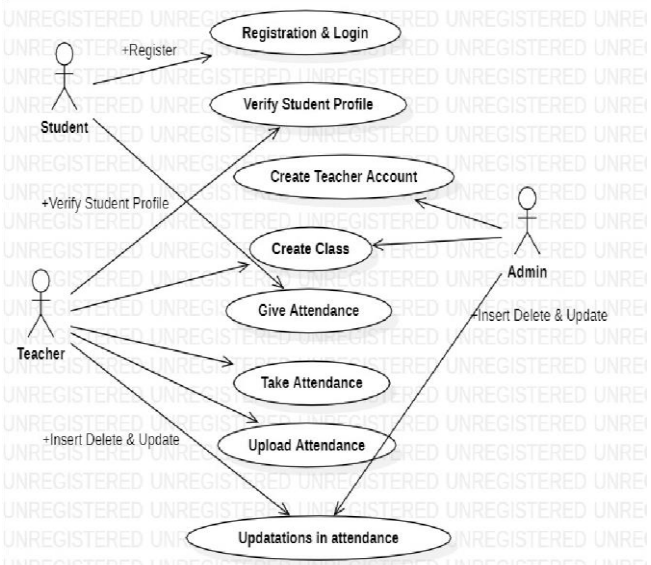
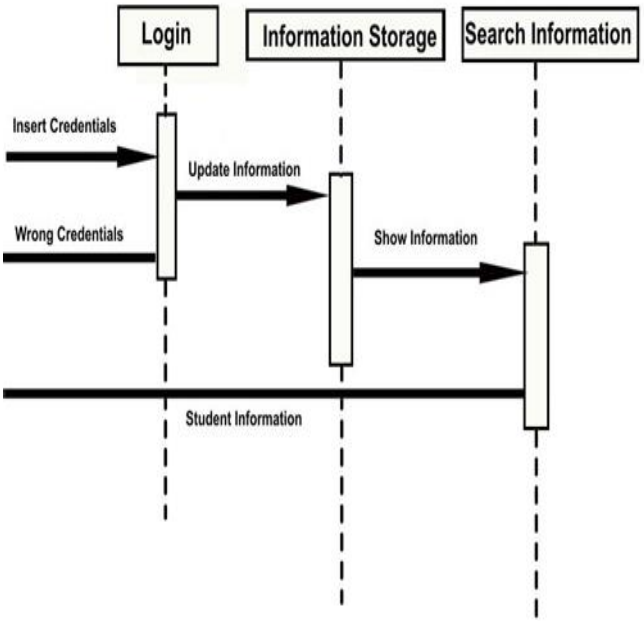


Fig. Use Case Diagram

7. SEQUENCE DIAGRAM

A diagram that shows the existence of Objects over time, and the Messages that pass between those Objects over time to carry out some behavior. A sequence diagram simply depicts the interaction between objects in sequential order i.e. the order in which these interactions take place. We can also use the terms event diagrams or event scenarios to refer to a sequence diagram.



8. CONCLUSION

Student Management System can be used by educational institutions to maintain their student records easily. Achieving this objective is difficult using the manual system as the information is scattered, can be redundant, and collecting relevant information may be very time consuming. All these problems are solved by this project. This system helps in maintaining the information of pupils of the organization. It can be easily accessed by the manager and kept safe for a long period of time without any changes.

A conclusion, this application is useful for schools to maintain the student Data and track the student based on the student (department) key, the coordinate member will login to the application by using the key given by admin, the coordinate can access the individual student data and the coordinate can't delete the data, but admin can delete the data. coordinate can view the data in bar, pie, scatter chart.

9. FUTURE SCOPE

We are scaling the website to the next level that is we can predict the result and their academic progress, that means n number students and coordinate can access the application at the same time implementing the algorithms to maintain the application of performance Scaling the database to the next level, to store and get the data. big data is implemented to store the large amount of data.

10. REFERENCES

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4. Fredys Alberto Simanca Herrera; Rub´en Gonz´alez Crespo "A Solution to Manage the Full Life Cycle of Learning Analytics in a Learning Management System: AnalyTIC " DOI NUMBER:10.1109/RITA.2019.2950148

Web Resources :
1. W3 Schools - https://www.w3schools.com/Css/
2. GeeksforGeeks - https://www.geeksforgeeks.org/html/?ref=ghm [2]

Book :
Pankaj Jalote's Software Engineering