

# Real Time Tracking of Students Learning Outcome and their Academic Progress across Schools

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**Abstract:** *Tracking of students learning's outcomes and their academic progress platform, is use full to track the student learning because to improve the learning process. and also we can track the individual person with the help of register number , we can view all data like CGP arrears to be completed , assignment , courses completed and courses to be completed with the text format and also with analytics like bar graph , pie chart. Adding students data to the database will be essential thing .Retrieve the data the help of querys, implementing the data mining techniques like cleaning, sorting, exploratory data analysis to display the quality data to the corresponding search result. In this part the advance test case tools will be used. Monitoring the data students learning with the help on machine learning bots.*

**Keywords:** Web Application, React js chart js, Firestore, node js, database, react-router-dom, material ui

## I. INTRODUCTION

An online student tracking system software is an edTech tool or software that offers provisions like online student attendance management, assignments upload & sharing, e-learning, online examination management & proctoring, and much more to keep a tab on daily students' activities & their performance. It can be integrated with the web as well as mobile to enable students to learn from anywhere and at any time with convenience. Tracking of students learning's outcomes and their academic progress platform, is use full to track the student learning because to improve the learning process. and also we can track the individual person with the help of register number, we can view all data like CGP arrears to be completed, assignment, courses completed and courses to be completed with the text format and also with analytics like bar graph, pie chart.

## II. LITERATURE SURVEY

**1. Hengyu Liu & et al., (2005)<sup>[1]</sup>:** 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.

**2.. Jie Xu & et al., (2012)<sup>[2]</sup>:** Based on their ongoing academic records is crucial for effectively carrying out necessary pedagogical interventions to ensure students' on-time and satisfactory graduation. Although there is a rich literature on predicting student performance when solving problems or studying for courses using data-driven approaches, predicting student performance in completing degrees (e.g., college programs) is much less studied and faces new challenges: (1) Students differ tremendously in terms of backgrounds and selected courses; (2) courses are not equally informative for making accurate predictions; and (3) students' evolving progress needs to be incorporated into the prediction. In this paper, we develop a novel machine learning method for predicting student performance in degree programs that is able to address these key challenges.

**3. Adnam Rafique & et al., (2016)<sup>[3]</sup>:** 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. Fredys Alberto Simanca Herrera & et al., (2013)**<sup>[4]</sup> : 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.

**5. Antoine Cully & et al., (2003)**<sup>[5]</sup> : Intelligent Tutoring Systems are promising tools for delivering optimal and personalized learning experiences to students. A key component for their personalization is the student model, which infers the knowledge level of the students to balance the difficulty of the exercises. While important advances have been achieved, several challenges remain. In particular, the models should be able to track in real-time the evolution of the students' knowledge levels. These evolutions are likely to follow different profiles for each student, while measuring the exact knowledge level remains difficult given the limited and noisy information provided by the interactions.

### III. EXISTING SYSTEM

Maintaining the application is complex task Securing the student data in database is difficult The user must have the knowledge about the application and student data Updating the student data accordingly or continuously to the database is complex task to data admin department in the application.

### IV. PROPOSED SYSTEM

Tracking the student progress and learnings we Can visualize the student academic history of the data. It is useful to present the student learning and progress to their parents. It reduces the workload for teachers and academic

### V. METHODOLOGY

#### 5.1 Student Module

The authentication module allows the user to login or register so that they can make use of the features provided by the quiz application. The users are asked to register with username, email, phone number and their designation. These data are verified by firebase authentication. After verification firebase provides a unique user-ID called u-id. U-id along with other user data is stored in the Cloud Firestore. The stored data can be fetched and send to dashboard during login process. The data can view in the data visualization.

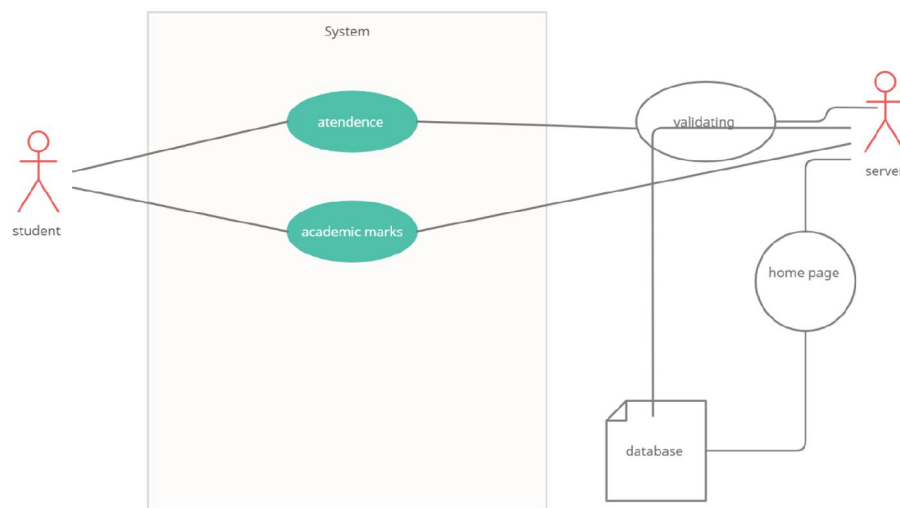


Fig 3.2 Usecase diagram for student module

**B. Coordinate Module**

The coordinate are asked to register with username, email, phone number and their designation. These data are verified by firebase authentication. After verification firebase provides a unique user-ID called u-id. U-id along with other user data is stored in the Cloud Firestore. The stored data can be fetched and send to dashboard during login process. The coordinate can update the data and modify the data to student and but they cant change the attendance of the student.

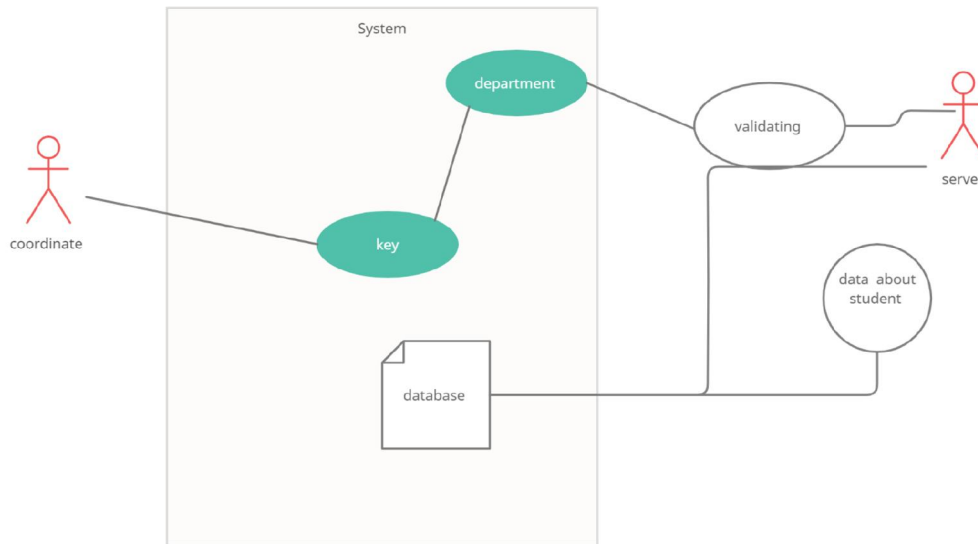


Fig 3.3 Usecase diagram for coordinate module

**C. Admin Module**

The admin can add the data and delete the user according to the requirement, admin is responsible for data of student, The authentication module allows the user to login or register so that they can make use of the features provided by the quiz application. The users are asked to register with username, email, phone number and their designation. These data are verified by firebase authentication. After verification firebase provides a unique user-ID called u-id. U-id along with other user data is stored in the Cloud Firestore. The stored data can be fetched and send to dashboard during login process.

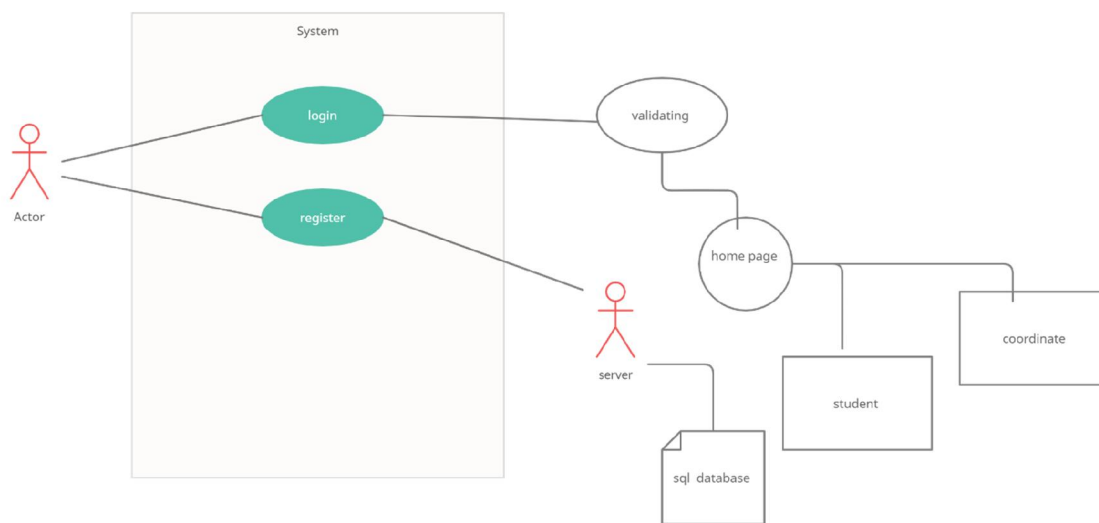


Fig 3.4 Usecase diagram for admin module

## **VI. IMPLEMENTATION**

### **Modules**

#### **A. Student**

The authentication module allows the user to login or register so that they can make use of the features provided by the quiz application. The users are asked to register with username, email, phone number and their designation. These data are verified by firebase authentication. After verification firebase provides a unique user-ID called u-id. U-id along with other user data is stored in the Cloud Firestore.

#### **B. Coordinate**

The stored data can be fetched and send to dashboard during login process. The users are asked to register with username, email, phone number and their designation. These data are verified by firebase authentication. After verification firebase provides a unique user-ID called u-id. U-id along with other user data is stored in the Cloud Firestore.

#### **C. Admin**

The stored data can be fetched and send to dashboard during login process. The authentication module allows the user to login or register so that they can make use of the features provided by the quiz application. The users are asked to register with username, email, phone number and their designation. These data are verified by firebase authentication. After verification firebase provides a unique user-ID called u-id. U-id along with other user data is stored in the Cloud Firestore. The stored data can be fetched and send to dashboard during login process.

## **VII. CONCLUSION**

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. The student can view the data but they can't modify it. the student work is to submit the assignment on time, courses can be also submitted on the time.

### **A. Future Work**

Scaling the application to the next level, 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 (Hadoop).

## **REFERENCES**

- [1]. Hengyu Liu, Tiancheng Zhang, Fan Li, Yu Gu, Ge Yu "Tracking Knowledge Structures and Proficiencies of Students With Learning Transfer" DOI NUMBER: : 10.1109/ACCESS.2020.3032141  
**Weblink** -<https://www.researchgate.net/publication/346359074>
- [2]. Jie Xu; Kyeong Ho Moon; Mihaela van der Schaar "A Machine Learning Approach for Tracking and Predicting Student Performance in Degree Programs" DOI NUMBER: 10.1109/JSTSP.2017.2692560  
**Weblink** - <https://sci-hub.se/10.1109/JSTSP.2017.2692560>
- [3]. Adnan Rafique; Muhammad Salman Khan "Integrating Learning Analytics and Collaborative Learning for Improving Student's Academic Performance" DOI NUMBER: 10.1109/ACCESS.2021.3135309  
**Weblink** - <https://ieeexplore.ieee.org/document/8894865>
- [4]. Fredys Alberto Simanca Herrera; Rubén González 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  
**Weblink** -<https://ieeexplore.ieee.org/document/9673551>  
IEEE XPLORE - <https://ieeexplore.ieee.org/>
- [5]. W3 Schools - <https://www.w3schools.com/Css/>
- [6]. GeeksforGeeks - <https://www.geeksforgeeks.org/html/?ref=ghm>

- [7]. Tutorials Point - <https://www.tutorialspoint.com/css/index.ht>
- [8]. Youtube - Clever programmer
- [9]. Javapoint - Tutorials List – Javatpoint
- [10]. Krish naik - <https://www.youtube.com/user/krishnaik06>
- [11]. React - <https://reactjs.org>
- [12]. React-router-dom - <https://www.npmjs.com/package/react-router-dom>
- [13]. Npm - <https://www.npmjs.com>
- [14]. Sass-Document - <https://sass-lang.com/documentation>
- [15]. Fireship - <https://www.youtube.com/c/Fireship>
- [16]. Novi - <https://nivo.rocks/>
- [17]. Traversy media - <https://www.youtube.com/c/TraversyMedia>