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An Android Based Academic Performance Monitoring System For Parents/Guardians

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Abstract: Academic feedback is essential in secondary schools to keep a rap-Port between students, teachers, and parents and guardians. There Are three main factors that contribute towards a student's progress: Attitude, attendance and aptitude. Monitoring their progress is key. To a student's development in school and allows both teachers and Parents or guardians to support them to a greater extent. AnnualReports are sent to a student's home to summarise their performance Over the academic year, following set criterion from the government. One aspect of a student's report is the teacher's written comment, Providing more details on a student's attitude towards their learning. However, families whose primary language is not English may Struggle to interpret this information. Working in schools has demonstrated the diversity of students and their wide range of backgrounds, Including– but not limited to– language barriers. This work pro-Poses a system called SENSE (Student performance quantifier using Sentiment analysis) for improving the information conveyed in Secondary school reports through means of natural language processing. By combining the three key features which contribute to-Wards a student's progress, a numerical representation is produced for an easier interpretation. This reduces the likelihood of a tarnished relationship between home and schools through better means of conveying information and maintains communication between students, teachers and parents or guardians.

Index Terms - Student Monitoring, Parents, Academic Result, Android, Performance

I. INTRODUCTION

Academic Performance monitoring involves assessments which serve a vital role in providing information that is geared to help students, teachers, administrators, and policy makers take decisions. The changing factors in contemporary education has led to the quest to effectively and efficiently monitor student performance in educational institutions, which is now moving away from the traditional measurement and evaluation techniques to the use of Mobile Monitoring Application which employs various intrusive data penetration and investigation methods to isolate vital implicit or hidden information. Due to the fact that several new technologies have contributed and generated huge explicit knowledge, causing implicit knowledge to be unobserved and stacked away within huge amounts of data. The main objective of the Mobile Monitoring Application is to provide accurate performance result to both the teachers and parents alike thereby contributing to predicting trends of outcomes by profiling performance attributes that supports effective decisions making. This paper deploys theory and practice of mobile based academic performance monitoring system as it relates to student performance and monitoring in a federal polytechnic in Nigeria.

II. Problem Statement:

Problem Statement for the Android-Based Academic Performanc Monitoring System for Parents/Guardians:In today's educational environment, parental involvement plays a crucial role in Student's academic success. However, many parents struggle to stay informed about Their child's progress, due to the lack of effective communication channels between Home and school. This disconnect can lead to missed opportunities for timely intervention, resulting in academic setbacks, disengagement, and lack of motivation in Students.Despite the increasing use of digital tools in education, there remains a gap- In the availability of user-friendly, real-time academic monitoring systems that empower parents to be active participants in their child's educational journey. Traditional methods of communication, such as school reports or parent-teacher meetings,Often lack the immediacy and convenience necessary to provide parents with timely Feedback on their child's academic performance, attendance, behavior, and engagement Furthermore, students, particularly those struggling academically or in need Of emotional and motivational support, can feel disconnected from their educational Goals, resulting in a lack of motivation, declining grades, and disengagement. The Absence of positive reinforcement and goal-setting features in many traditional systems makes it difficult for students to visualize their progress and stay motivate

III. RELATED WORK

a. Existing Android-Based Academic Monitoring Applications

- School Management Systems with Parent-Teacher Communication:
  - o Edu Link and Parent App: These apps allow for real-time updates on grades, attendance, homework assignments, and even school events.
  - o Discussion: Highlight the features, usability, and limitations of such applications.
- Student Performance Dashboards:
  - o Example: Some mobile applications allow parents to track their child's performance across various subjects using dashboards that aggregate grades, test scores, and assignments.
  - o Discussion: Review how data visualization techniques (e.g., graphs, charts) are used to present academic data effect.

- SMS -Based Systems:
  - o Example: Before mobile apps became common, some school systems implemented SMS-based systems for sending grades and updates to parents. Apps like My School App have extended this functionality to smartphones.
  - o Discussion: Compare SMS- based systems with mobile apps in terms of real-time updates, user experience, and Interactive features.

b. Parent-Teacher Communication in Mobile Apps

- •Direct Communication Channels: Apps like Class Dojo and Remind allow direct messaging between parents and teachers, ensuring real-time communication about a child's performance, behavior, and progress.
- • Data Sharing and Feedback: Discuss the importance of providing parents not just with academic data, but also qualitative feedback about their child's behavior and participation in school activities.

c. Technological Approaches and Frameworks

- • Cloud-Based Architecture: Many monitoring systems use cloud storage to store academic data, allowing for secure and scalable access.
  - o Example: Cloud-backed systems like Google Classroom enable students, teachers, and parents to access documents, grades, and feedback on any device.
- • Push Notifications: Some systems incorporate push notifications to alert parents about important updates (e.g., new grades, upcoming parent-teacher meetings).
- • Integration with Learning Management Systems (LMS): Discuss how mobile apps integrate with school databases and LMS platforms such as Moodle or Blackboard to fetch real-time academic data.

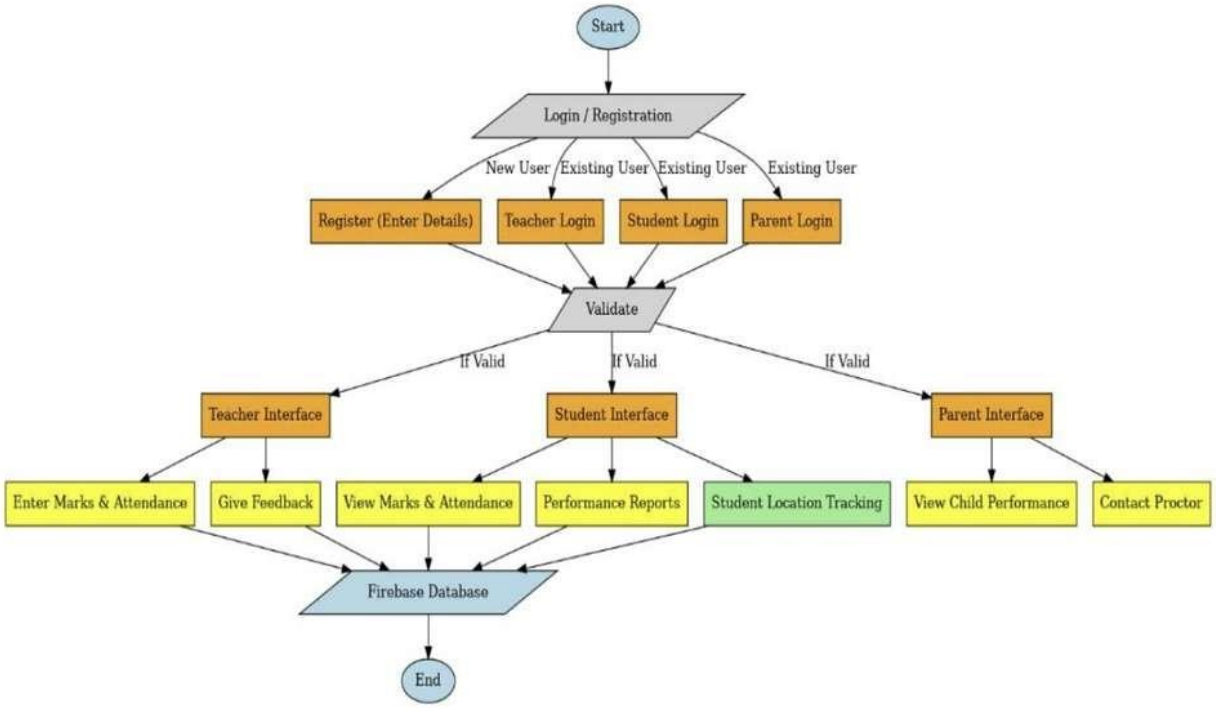
d. Machine Learning and Analytics for Predictive Monitoring

- • Predictive Analytics: Some advanced systems use machine learning to predict student performance, flagging at-risk students before they fall too far behind.

• Example: Using historical academic data to predict future grades, attendance, or behavioral issues. This predictive approach can allow for proactive parental intervention.

IV. SYSTEM ARCHITECTURE AND PROPOSED SYSTEM

This diagram illustrates a Proposed Student Monitoring System that integrates various user interfaces (for students,
teachers, and parents) with a centralized Firebase Database to enable real-time academic tracking, feedback, and
communication. Here's a breakdown for your research paper.
The proposed system is a comprehensive, role-based academic monitoring and communication platform designed to streamline interactions between students, teachers, and parents. The process initiates with a central login or registration interface. New users are prompted to register by providing personal and institutional details, while existing users can directly proceed to their respective login options. The system accommodates three primary roles: teacher, student, and parent. Depending on the user's role, the system routes the login attempt through different pathways. Upon entering the required credentials, the system performs validation to ensure that only authorized users gain access to their respective portals.
Once validated, users are redirected to role-specific interfaces. Teachers are provided with a dedicated interface where they can enter students' marks and attendance records. Additionally, they have the capability to offer qualitative feedback on student performance. These features not only simplify the evaluation process but also help in maintaining a transparent and accessible academic history for each student. The input from the teachers is immediately synced with a real-time database using Firebase, which acts as the system's backend. This ensures that all academic data is securely stored, easily accessible, and continuously updated.
Students, upon successful login, are directed to a student-specific interface where they can monitor their academic records, including marks and attendance. In addition to viewing this data, students can generate and access performance reports that provide insights into their academic progress over time. Another crucial feature accessible to students is location tracking, which may be used in scenarios such as on-campus monitoring or travel during institutional activities.
The availability of this data enhances accountability and allows students to stay informed about their own academic and behavioral patterns.



Parents, on the other hand, have access to a tailored interface that helps them stay involved in their child's academic journey. From this portal, parents can view the academic performance of their child, including marks, attendance records, and feedback provided by teachers. Furthermore, the system enables direct communication between parents and proctors or mentors, facilitating immediate resolution of concerns and strengthening the parent-institute relationship. This feature ensures that parents are not just passive observers but active participants in their child's education.

The core of the system is built on Firebase, which provides robust features for user authentication, real-time data management, and cloud-based storage. This allows the system to maintain data consistency and security while ensuring that changes made by one user are instantly reflected across the platform for other stakeholders. The system concludes its process with a secure termination point, ensuring that data is properly saved and the session is safely closed.

In conclusion, the proposed system is a robust, scalable, and user-friendly platform that enhances transparency, accountability, and communication among students, teachers, and parents. By integrating real-time data updates and providing user-specific functionalities, it aims to create a more interactive and supportive academic environment. This system is particularly useful for institutions looking to modernize their student information systems with cloud-based technologies and improve stakeholder engagement in the educational process.

V. ADVANTAGES AND DISADVANTAGES

Advantages

1. Real-Time Data Synchronization
2. Role-Based Access and Data Security
3. Streamlined Academic Management
4. Enhanced Parent-Teacher-Student Communication
5. Personalized Learning and Academic Support
6. Simplified Access to Learning Resources
7. Increased Transparency and Accountability
8. Enhanced Efficiency and Reduced Administrative Load
9. Cost-Effectiveness and Scalability

10. Promotes Student Independence and Accountability
11. Emergency and Safety Features
12. Support for Extracurricular Activities and Holistic Development

Disadvantages
1. Dependency on Internet Connectivity
2. Data Privacy and Security Concerns
3. Technical Challenges and Maintenance

VI APPLICATION

The proposed Educational Management Application is designed to improve communication, data management,
and overall efficiency within academic institutions such as schools and colleges. Here's how each group of users
can benefit from the application and use its features effectively:
Faculty (Teachers and Heads of Departments)
• Efficient Academic Management: Faculty members can easily enter, update, and review students' marks, attendance, and assignments, all in one place.
• Resource Sharing: Teachers can upload study materials, assignments, and additional resources, allowing students
to access these materials anytime.
• Student Performance Monitoring: Faculty can monitor each student's academic progress, helping them provide
timely support to those who need it.
• Seamless Communication with Parents: The app allows teachers to communicate directly with parents through
notifications, messages, and progress reports.
Students
• Instant Access to Academic Records: Students can view their grades, attendance, and feedback in real time, helping them stay informed and take charge of their academic performance.
• Easy Access to Resources: The app provides students with quick access to assignments, lecture notes, and other
study materials uploaded by their teachers.
• Self-Tracking and Improvement: With a clear view of their academic progress, students can identify areas for
improvement and set personal goals.
• Schedules and Deadlines: Students can view their class schedules, exam dates, and assignment deadlines to stay
organized and prepared.
Parents
• Transparency in Academic Performance: Parents can monitor their child's grades, attendance, and academic progress with a few taps.
• Real-Time Alerts: Parents receive notifications about low attendance, missed assignments, and other important
updates, keeping them informed and engaged.
• Direct Communication with Faculty: The app makes it easy for parents to connect with teachers, attend virtual
meetings, and stay involved in their child's education.
• Location Tracking (Optional): If integrated, parents can track their child's location within the school for added
safety and peace of mind.
Administrators
• Centralized Data Management: Administrators have a centralized view of all school data, including academic

records, attendance, and fee status, making it easier to oversee and manage school operations.
digital world.

VII. CONCLUSION

This system empowers faculty to manage academic records effectively, allows students to take responsibility for their
learning, and provides parents with real-time insights into their child's progress. For administrators, it simplifies data
management and decision-making, contributing to a well-organized and secure academic environment.
In conclusion, this application not only improves daily operations within an educational institution but also fosters a
collaborative and supportive learning atmosphere. It represents a significant step towards modernizing the educational
experience, ensuring that schools and colleges can meet the evolving needs of students, families, and staff in an increasingly
digital world.

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