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Progress Tracker: A Web Application for Streamlined Student Performance Management

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ABSTRACT: This paper proposes the idea to create a streamlined web-based platform for monitoring progress reports that will offer a comprehensive evaluation of the students' progress going beyond traditional academic grades, covering both academic and non-academic aspects such as attendance, behaviour, and participation in extracurricular activities. The website will identify and nurture potential in various fields, enabling efficient monitoring through its database to store student performance data. Customizable templates will generate personalized progress reports for each student, promoting transparency and accountability in the educational process, and providing accurate and timely feedback to students and parents. An NGO undertaken Siragu Montessori School, assists underprivileged children from low-income and impoverished families. In order to support Siragu Montessori School's progress report tracking methodology, we are currently adapting this journal paper into a real-time web application. This aligns with our paper's goal, which will benefit the students enrolled in that school. Levitz's 2014 study emphasizes the crucial role of websites in providing information to students, parents, and staff. Thus, this website aims to optimize its utility and provide a comprehensive experience to visitors, including potential donors, and to enhance the educational experience of children.

KEYWORDS: WebApplication, Progress Report, Monitoring, Comprehensive Evaluation.

I. INTRODUCTION

Web applications are crucial for managing school data as they streamline administrative processes, improve accessibility and security, enable data analytics, and enhance the overall performance of the education system. Especially managing progress reports of students is important digitally as it provides valuable insights into their academic and other performances to help identify areas for improvement.

This system of evaluating the progress report will be conducted under several constraints, including both academic and non-academic structures like attendance, behaviour, sports and involvement in other extracurricular activities. The major objective of this progress tracking system is to assist pupils recognize and maximize their potential by developing their area of interest. Teachers will also get access to editable templates with detailed analyses of each student's performance for a better understanding of the student's strengths and limitations. This will enable them to modify their teaching methods and assist the general growth of the pupil. The ability to obtain their progress reports and monitor their own development throughout the academic year will give students the chance to take control of their own learning through this progress tracking system. This will enable them to set goals for themselves and pinpoint areas that require improvement. We plan to implement this Progress Management System at Siragu Montessori School, which provides educational assistance to children from low-income households who are underprivileged rather choosing elite schools. Since education is a universal right, this system aims to track the progress of each student at Siragu Montessori School and improve their standard of education.

This paper is organized as follows. Section II describes the automated progress or result management web applications following traditional operations, connected component analysis, and other comprehensive factors. The flow diagram represents the workflow of the application. The technology stack involved are discussed with their advantages in Section III. Section IV presents the basic design of the application to be built. Finally, Section V presents conclusion.



II. RELATED WORK

The aim of this study was to create a model which describes the main elements for improving schools with digital technology and helps to reveal differences between schools and identify their best practices and challenges. Studies about school improvement have indicated how schools have benefited from restructuring their common practices, such as teachers' tasks, activities and learning practices, leadership practices and the ways pedagogical methods are organised, in order to meet the developmental challenges (Crook et al. 2010; Harris 2002b; OECD 2015)[8].

One approach published in the Journal of Multidisciplinary Engineering Science and Technology (JMEST) has the traditional method of evaluating only the academic scores of each individual and show the result in the interface [1]. This approach makes use of HTML, CSS, JavaScript for the client-side and PHP for server-side and MySQL for database. Although this system can use this technological stack, the server-side code has many lines.

With a similar methodology as the journal, another study that had been published in the Journal of Emerging Technologies and Innovative Research (JETIR) was examined. This website has confusing layout and slow loading times make for a frustrating user experience, resulting in a poor user interface and overall user experience [2].

To obtain detailed information about the area to be designed, a comprehensive investigation was conducted on the current manual system. Various effective methods of data collection and information gathering were employed, including interviewing the chief examination officers of Siragu Montessori School, discussing with relevant stakeholders such as the principal and teachers, and evaluating and inspecting pertinent documents such as result reporting sheets, raw score samples, and transcript formats.

III.METHODOLOGY

The tools used for the application design are: Unified Modelling Language (UML) diagrams for description of the class diagram, and Entity-Relationship Diagrams (ERD) used for the design of the database table structures. The logical and structural designs of the database are covered in the description. The entire web-based program is designed and developed with JavaScript Frameworks (React, Node, Express). This application is categorized into three modules: Student Module, Staff Module and Admin Module.

a. Admin Module:

The admin will receive a service in this module that allows them to add or remove new staff or students, as appropriate. As soon as the administrator completes a new entry's details, the database is updated. If the new entry is a staff member, they have access to Staff Services; if a student, they can read their performance report through student login.

b. Student Module:

In this module, the students will obtain a service that enables them to view their performance report graded by the faculty. They will be able to log in once the administrator has added their information to the database and will be able to access the report once it has been graded.

c. Staff Module:

In this module, the Staff will receive a service that enables them to view and, as necessary, grade the students' performance. They will be able to login once the admin adds their information in the database.

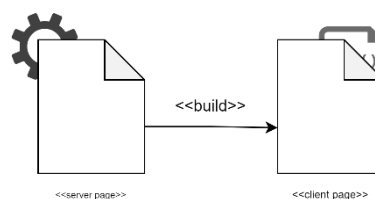


Fig 1. Server Pages build client pages

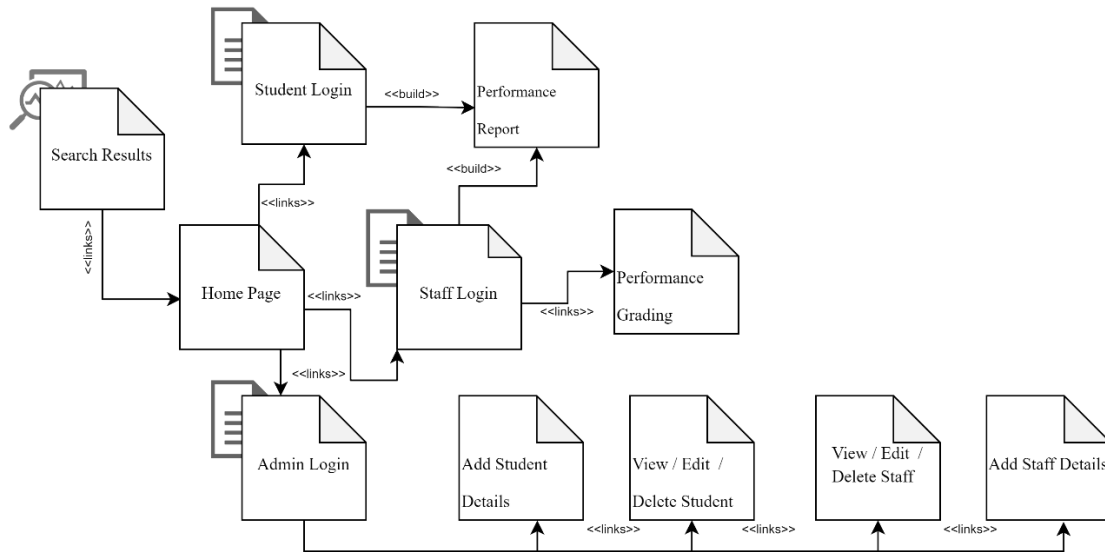


Fig 2. Using Hyperlink parameters

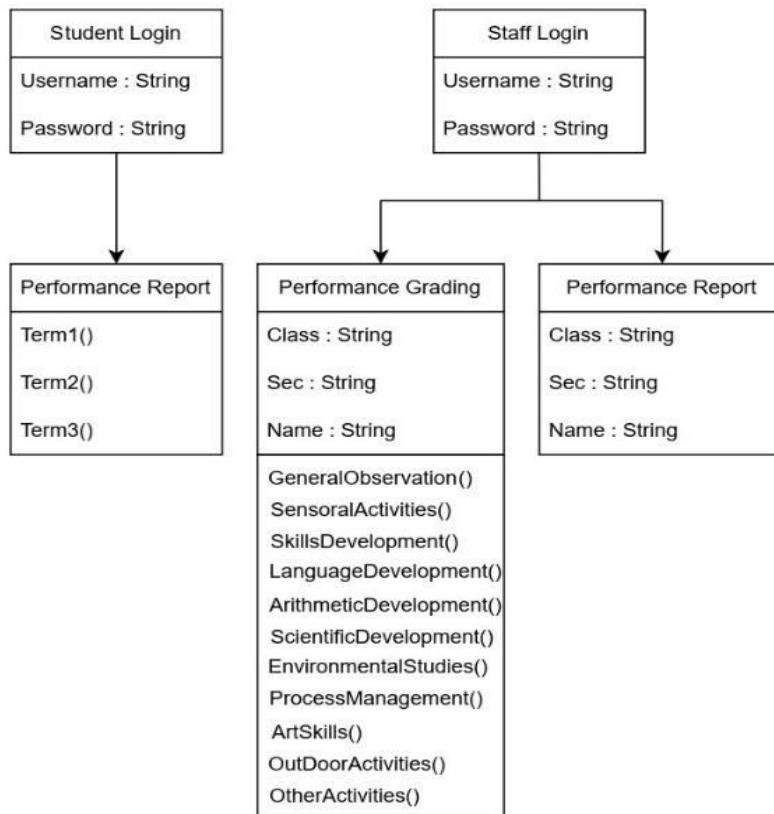


Fig 3. Client Collaborations

Fig (3), The class diagram shown above was created to show the client-side features that the user can view while carrying out the task.

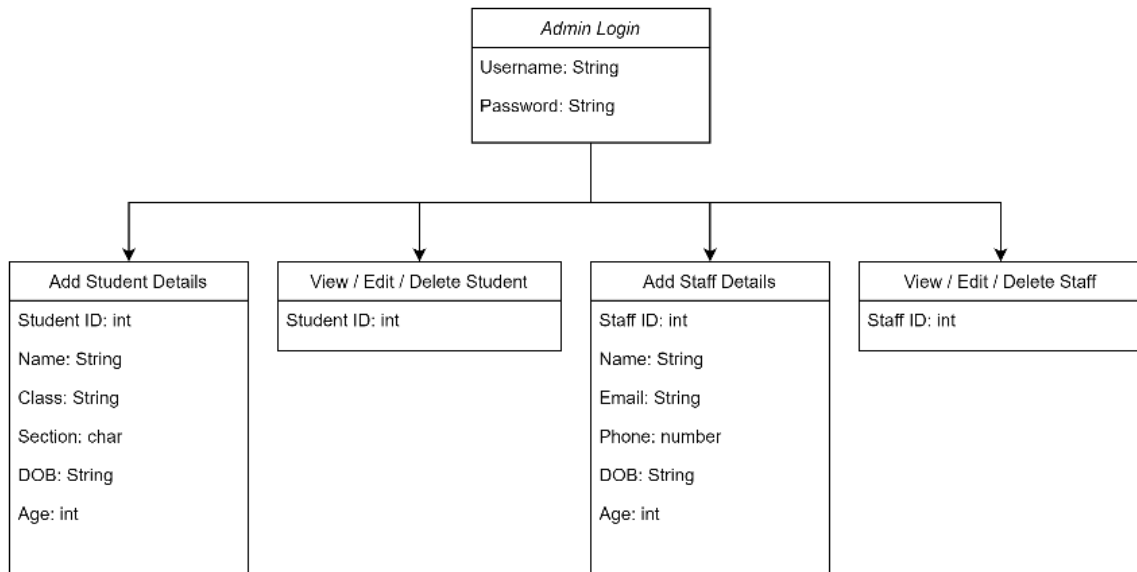


Fig 4. Server Collaborations

Fig (4), The class diagram shown above was created to show the server-side features that the user(admin) can view while carrying out the task. Fig (5) As the fields in the existing tracking system are quite vast, a basic database design(schema) is shown below along with the attributes that are considered in this system to track students' development.

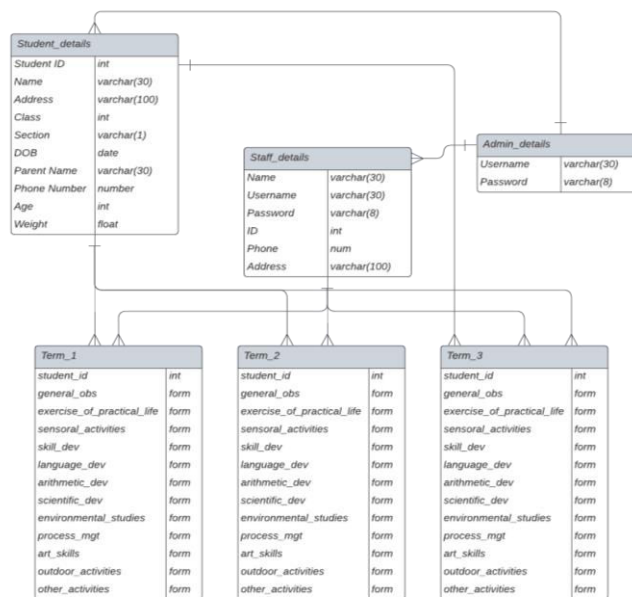


Fig 5. Generalized Database Schema

IV. EXPERIMENTAL RESULTS

The result is presented as a software application meant to automate the processing of students results following standard statutes and guidelines. The application will be successfully developed, tested, and found to be working as expected. The Progress Tracker System was developed using MERN (MongoDB, Express, React, Node) Stack and the look is as fig (6.1) – fig (6.9).

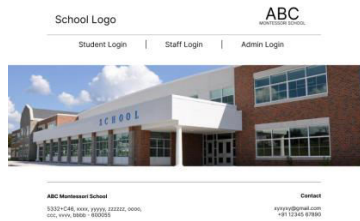


Fig 6.1. Landing Page

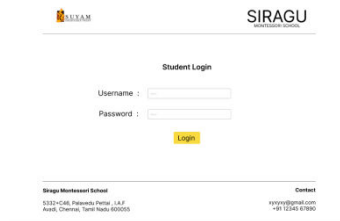


Fig 6.2. Student Login Page



Fig 6.3. Student view Page



Fig 6.4. Staff Login Page



Fig 6.5. Staff Services Page

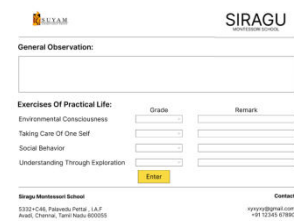


Fig 6.6. Performance grading Page



Fig 6.7. Admin Login Page



Fig 6.8. Admin Services Page



Fig 6.9. Add Student Page

V. CONCLUSION AND FUTURE WORK

We have created a web application to track and monitor a students' progress in school, not just based on academic performance but also across all other extracurricular pursuits. Any school or even a college may use this application at their institution in the future because of its simple and effective user interface for tracking students' activity. In near future attendance using biometrics for both students and staff can also be incorporated along with this application to avoid manual tracking of attendance.

REFERENCES

- [1] Nation, Maury & Christens, Brian & Bess, Kimberly & Shinn, Marybeth & Perkins, Douglas & Speer, Paul. (2020). Addressing the problems of urban education: An ecological systems perspective. *Journal of Urban Affairs*. 42. 1-16. 10.1080/07352166.2019.1705847.
- [2] Clark, M. A., Gleason, P. M., Tuttle, C. C., & Silverberg, M. K. (2015). Do Charter Schools Improve Student Achievement? *Educational Evaluation and Policy Analysis*, 37(4), 419–436. <https://doi.org/10.3102/0162373714558292>.
- [3] Bifulco R., Ladd H. F. (2006). The impact of charter schools on student achievement: Evidence from North Carolina. *Education Finance and Policy*, 1, 50–90.
- [4] Ballou D., Teasley B., Zeidner T. (2008). Charter schools in Idaho. In Berends M., Springer M. G., Walberg H. J. (Eds.), *Charter school outcomes* (pp. 221–241). New York: Lawrence Erlbaum.

- [5] Dobbie W., Fryer R. G.Jr. (2011). Are high-quality schools enough to increase achievement among the poor? Evidence from the Harlem children's zone. *American Economic Journal: Applied Economics*, 3, 158–187.
- [6] Dobbie W., Fryer R. G.Jr. (2013, July). *The medium-term impact of high-achieving charter schools on non-test score outcomes* (NBER Working Paper No. 19581). Cambridge, MA: National Bureau of Economic Research.
- [7] Gleason P., Clark M., Tuttle C. C., Dwoyer E. (2010, June). *The evaluation of charter school impacts: Final report* (NCEE 2010-4029). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- [8] Ilomäki, L., & Lakkala, M. (2018). Digital technology and practices for school improvement: Innovative digital school model. *Research and Practice in Technology Enhanced Learning*, 13(1), 1-32. <https://doi.org/10.1186/s41039-018-0094-8>
- [9] Fogg, B., Soohoo, C., Danielson, D., Marable, L., Standord, J., & Tauber, E. (2003). How do users evaluate the credibility of Web sites? A study with over 2,500 participants. Retrieved from <http://htlab.psy.unipd.it/uploads/Pdf/lectures/captology/p1-fogg.pdf>
- [10] Fatemeh Bordbar, (2016). The Effectiveness of Website Design in Higher Education Recruitment. A study on effectiveness of visual elements and aesthetics in university websites for recruiting prospective students. Retrieved from <https://www.suu.edu/hss/comm/masters/capstone/project/f-bordbar.pdf>.
- [11] Willis, D. (1999). Effects of Using Enhancing Visual Elements in Web Site Design. *American Communication Journal*, 3(1), 1.
- [12] Ali Hamsa, (2018). Complex for underprivileged children. A study on social class difference resulting on underprivileged children. Retrieved from https://www.academia.edu/37138911/Complex_for_underprivileged_children
- [13] Safanova, Angelica Jimenez. New Jersey City University ProQuest Dissertations Publishing, 2017. 10745088. Retrieved from <https://www.proquest.com/openview/6013e514cc924a1980d4cf1812b06dec/1?pq-origsite=gscholar&cbl=18750>.
- [14] Reddy, Mukthapuram. (2021). Analysis of Component Libraries for React JS. *IARJSET*. 8. 43-46. 10.17148/IARJSET.2021.8607.
- [15] ReactJS.org, "ReactJS official". [Online]. Available <https://react.dev/>
- [16] Figma.com, "Figma Official documentation". [Online]. Available <https://www.figma.com>.
- [17] C. Györödi, R. Györödi, G. Pecherle and A. Olah, "A comparative study: MongoDB vs. MySQL," 2015 13th International Conference on Engineering of Modern Electric Systems (EMES), Oradea, Romania, 2015, pp. 1-6, doi: 10.1109/EMES.2015.7158433.
- [18] M. M. Patil, A. Hanni, C. H. Tejeshwar and P. Patil, "A qualitative analysis of the performance of MongoDB vs MySQL database based on insertion and retrieval operations using a web/android application to explore load balancing — Sharding in MongoDB and its advantages," 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), Palladam, India, 2017, pp. 325-330, doi: 10.1109/I-SMAC.2017.8058365.
- [19] A. Sterling, "NodeJS and Angular Tools for JSON-LD," 2019 IEEE 13th International Conference on Semantic Computing (ICSC), Newport Beach, CA, USA, 2019, pp. 392-395, doi: 10.1109/ICOSC.2019.8665625.



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