

Edupal

Student Grade and Mental Health Tracker

Team Name: Nova Squad

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Abstract - Being a student can be really stressful, with so much going on at once. It's hard to keep track of grades, find help when we need it, and still take care of our mental health, all at once. That's where EduPal comes in. EduPal is a simple tool designed to help students stay on top of their academics while also reminding them to take care of themselves.

With EduPal, students can easily check their grades and see how they're doing. They can set goals for themselves (thresholds) and get alerts if their grades start slipping. When they need help, EduPal connects them to useful resources like lecture recordings and study tips, so they don't waste time searching. EduPal also supports mental health by giving private self-care reminders, motivational tips, and suggestions for fun campus activities to help students relax and recharge.

We built EduPal using ideas we learned in CSYE 6200. For example, we used JavaFX to make a simple and easy-to-use interface. We also used concepts like inheritance, polymorphism, and interfaces to make the program organized and flexible. Things like lists, stacks, sets, and maps help keep the data neat and easy to manage.

The goal of EduPal is to make life a little easier for students. It's not just about grades—it's about helping students feel supported, stay balanced, and enjoy their college experience.

Keywords - academic tracking, mental health, student wellness, grade management, JavaFX, object-oriented programming, inheritance, polymorphism, self-care reminders, personalized support, study resources, campus activities, balanced student life.

I. PROBLEM DESCRIPTION

Being a student can be overwhelming. With classes, assignments, exams, and everything else going on, it's hard to keep up. Many students struggle to stay on top of their grades, find help when they need it, and manage their mental health at the same time.

One big problem is not knowing exactly how you're doing in your courses. Without clear tracking, it's tough to figure out where you're falling behind or what to work on. And when you do realize you need help, finding the right resources—like study guides or lecture recordings—can be confusing and time-consuming.

On top of that, mental health often takes a back seat. The pressure of deadlines and constant studying can lead to stress and burnout. Many students don't know where to turn for support or feel hesitant to ask for help. It's also easy to forget about taking breaks, socializing, or enjoying campus life, which can make the whole experience feel more like a grind than a journey.

That's where **EduPal** comes in. It's designed to help students keep track of their academics while also taking care of their well-being. With EduPal, you can monitor your grades, set goals, and get alerts if things start slipping. If you need help, it points you toward the right resources, like lecture recordings or extra study materials.

EduPal doesn't stop at academics. It also supports your mental health with reminders to take care of yourself, motivation when you need it, and ideas for fun events on campus. By helping you find a balance between studying and self-care, EduPal makes college life feel less stressful and more manageable.

This project uses simple design and solid programming concepts to create a tool that's easy to use, practical, and helpful for students everywhere.

II. ANALYSIS (RELATED WORK)

Research has shown that mental health plays a critical role in academic performance. According to the National Association of School Psychologists (NASP), both internalizing and externalizing mental health issues can significantly hinder academic success. Issues such as anxiety and depression often affect concentration, memory, and social relationships, leading to a decline in academic performance. The relationship between mental health and academic success highlights the need for holistic student support systems that address emotional well-being alongside academic development [1].

Moreover, research from EdTech Magazine indicates that digital mental health platforms can improve student well-being and academic performance by offering tools to manage stress, promote emotional resilience, and provide access to mental health services. These platforms help students navigate challenges that often interfere with their studies, thereby enhancing overall academic outcomes [1].

Furthermore, initiatives like the "YOU at College" platform provide a comprehensive approach to student wellness by offering privacy and resources for students dealing with mental health struggles. These platforms are particularly effective in offering discreet support and providing students with the tools they need to thrive both academically and personally [2].

The integration of mental health and academic support systems is essential for addressing the full spectrum of challenges students face. By combining academic and emotional well-being support, platforms like EduPal can potentially fill this gap, ensuring that students are not only excelling academically but are also supported in their mental health journey [1] [2].

Student Mental Health Reports

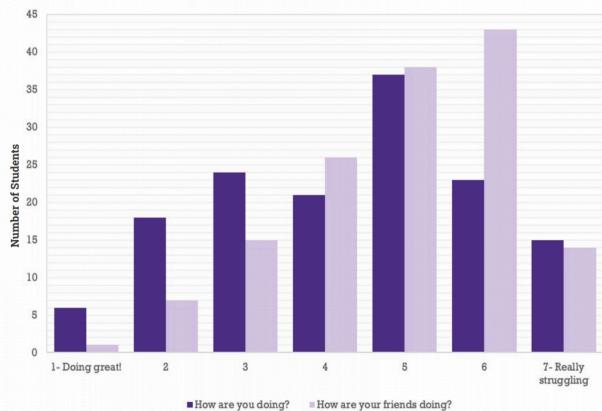


Figure a. Mental Health Surveys conducted in schools

III. SYSTEM DESIGN

A. Architecture

EduPal has four main parts:

1. User Interface (UI):

- Built with JavaFX, it's simple and easy to use.
- It has pages like login, dashboard, grade tracker, and mental health resources.

2. Core Features:

- **Grade Manager:** Helps students update their grades and shows if any grades are low.
- **Notification System:** Alerts students if their grades are below a certain level.
- **Resource Manager:** Shares helpful study tips and mental health advice.

3. Data Management:

- Uses lists, stacks, and maps to store and retrieve data like student records and undo actions.

4. External Tools:

- Can open external files like PDFs using Java's built-in tools.

B. UI Design

EduPal's user interface is clean and easy to use, with these main parts:

1. Login Page:

- Students can log in securely.

2. Dashboard:

- Shows grades and important alerts.
- Includes bar and pie charts to make information easy to understand.
- Quick access to notifications and resources.

3. Grade Tracker:

- Students can add, edit, or remove grades.

4. Mental Health Page:

- Offers self-care tips and activities.

C. UML Class Diagram

The following are EduPal's main classes and how they connect:

1. Main Classes:

- **Student:** Handles student information.
- **Subject:** Tracks grades for each subject.
- **GradeNotification:** Sends alerts for low grades.
- **MentalHealthResources:** Shares tips and resources for students.

2. Relationships:

- Each student is linked to several subjects.
- Notifications and resources inherit shared functionality from a base class.

D. Object-Oriented Design Principles

EduPal is built using object-oriented programming to make the system easy to maintain and expand:

1. Encapsulation:

- Important data, like grades, is private and can only be accessed through methods.

2. Inheritance:

- Shared features are reused across notification and resource classes.

3. Polymorphism:

- Allows handling different types of notifications or resources in flexible ways.

4. Abstraction:

- Simplifies complex code by using interfaces and abstract classes.

E. Data Structures

EduPal uses the following data structures:

- **Lists:** To store subjects for each student.
- **Stacks:** To allow undo actions.
- **Maps:** To link students to their subjects and track undo history.

F. User Journey

Here's how EduPal helps students:

1. **Login:** Securely log in to access your account.
2. **Dashboard:** See grades, notifications, and helpful resources.
3. **Grade Tracking:** Add, remove, or update grades.
4. **Notifications:** Get alerts when grades drop.
5. **Resources:** Access tips for studying and mental health.
6. **Undo:** Revert changes if needed.

G. Visuals and Charts

EduPal includes the following visuals:

1. **System Diagram:** Shows the overall design.
2. **Class Diagram:** Explains the connection between classes.
3. **UI Mockups:** Displays how the login page, dashboard, and grade tracker look.

IV. IMPLEMENTATION

A. Core Functionalities

The EduPal system dynamically manages student grades and subjects while offering tools for academic visualization and mental health support. The system allows students to add or remove subjects, input grades, and set thresholds to monitor academic performance. The Undo Functionality, implemented using stacks, enables users to reverse recent actions such as adding or removing subjects, ensuring data integrity and flexibility. Visualization tools, including bar graphs and pie

1. Main Classes:

charts, dynamically represent academic performance, providing users with insights into their grades and thresholds. These charts are built using JavaFX, making the data interpretation intuitive and visually appealing. Additionally, the system generates notifications through the GradeNotification class, which alerts users when their grades fall below the defined threshold. This proactive feature encourages students to address areas of improvement. To further support academic and personal growth, links to external resources such as Improve Grade and Mental Health Resources are integrated, providing easy access to helpful materials.

user insights. Additionally, notifications are generated through the GradeNotification class, alerting students if their grades fall below the defined threshold, thereby encouraging proactive improvements. Links to external PDF resources, such as Improve Grade and Mental Health Resources, further support users' academic and personal growth.

B. Object-Oriented Programming Techniques

EduPal employs robust object-oriented principles to create a modular and scalable system. The Student and Subject classes encapsulate academic tracking data and functionality. The use of inheritance is exemplified by the GradeNotification class, which extends the abstract Notification class, enabling customizable alerts while maintaining a reusable structure. Polymorphism is implemented to allow dynamic behavior, such as the ability to provide different types of notifications or resources depending on user needs. For instance, the MentalHealthResources class implements the Resource interface, ensuring consistency in resource provisioning while allowing flexibility for integrating additional resource types in the future. These principles ensure the system remains adaptable and maintainable, supporting the integration of future enhancements.

C. Data Structures

EduPal extensively uses efficient data structures to manage student data and actions. Lists are employed to store subjects associated with students, enabling dynamic updates and retrieval. Stacks play a crucial role in implementing the Undo Functionality, tracking user actions in a Last-In-First-Out (LIFO) manner, allowing seamless reversal of recent changes. Maps are used to associate student names with their respective subjects and undo actions, ensuring quick lookups and organized data storage. For example, Map<String, List<Subject>> links a student's name to their enrolled subjects and grades, while Map<String, Stack<Subject>> tracks changes for each student, ensuring efficient management of undo operations. This structured data handling enhances the system's performance and usability.

D. Tools and Libraries

The user interface of EduPal is powered by JavaFX, providing an interactive and visually engaging platform. JavaFX is utilized to create forms, dashboards, and visualization components such as bar charts and pie charts, offering users a streamlined experience. External resources are integrated using Java's Desktop class, enabling users to open files like Improve Grade and Mental Health Resources directly from the application. Additionally, custom stylesheets are incorporated to maintain a consistent and professional aesthetic across the application. These tools ensure that the system not only performs well but also delivers a polished and user-friendly interface.

V. RESULTS (AND EVALUATIONS)

The EduPal project was tested by entering data for four students—Sreeja, Vikas, Narasimha, and Shravan—to analyze and demonstrate all functionalities. The login page ensured secure authentication, while the dashboard displayed academic progress and provided access to mental health and academic resources. Features like View All Students, Add Subject, and Remove Subject worked seamlessly, allowing effective management of student records. The Undo Functionality successfully reversed recent actions, and visualizations such as bar graphs and pie charts provided meaningful insights into performance. Screenshots showcase the successful implementation and functionality of the system.

Application Flow:

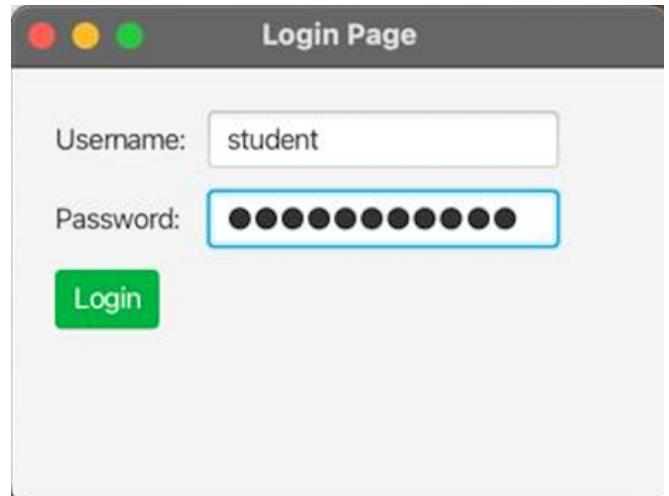


Figure 1. Login Page

Figure 2. Dashboard

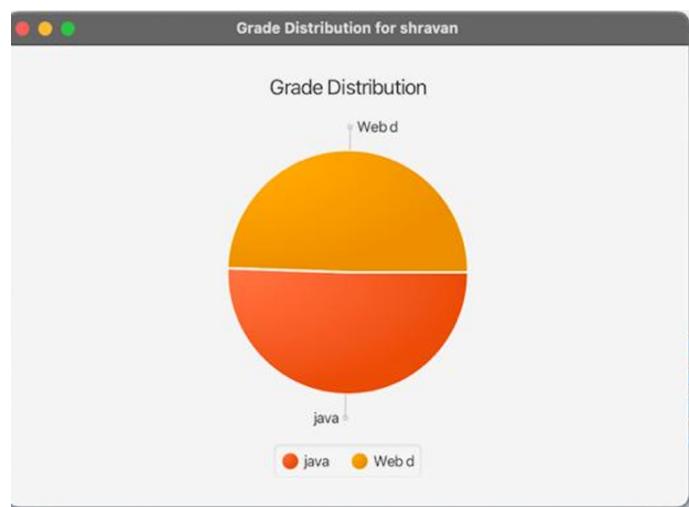


Figure 5. Pie Chart Distribution

Figure 3. Data Entries of Students

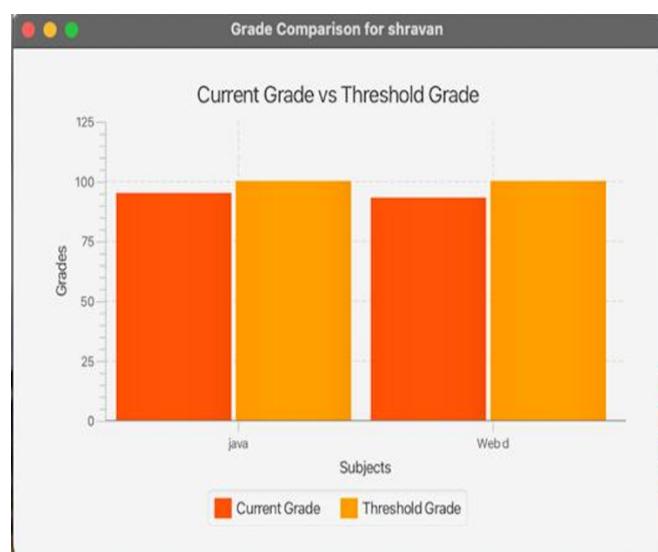


Figure 6. Bar Graph

Figure 4. View Subjects

Figure 7. Remove Subject

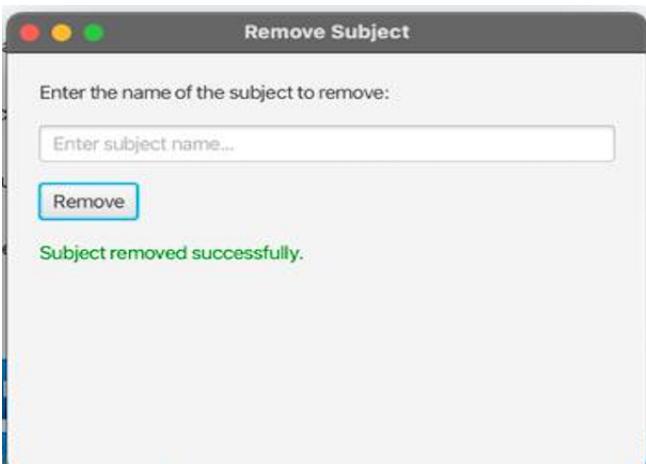


Figure 8. Subject Removed Successfully

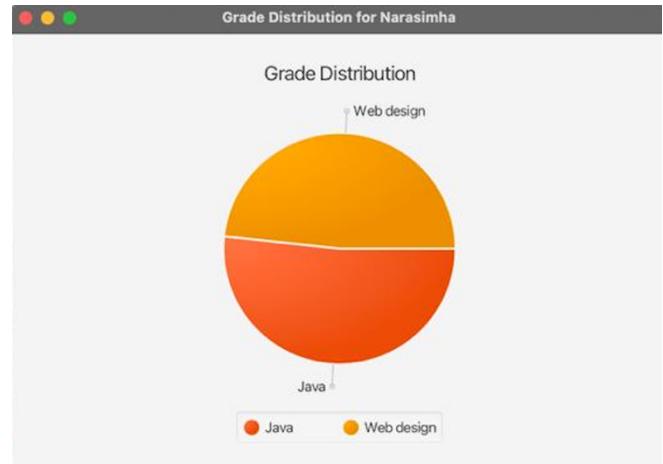


Figure 11.Pie chart Distribution



Figure 9. Grade Report

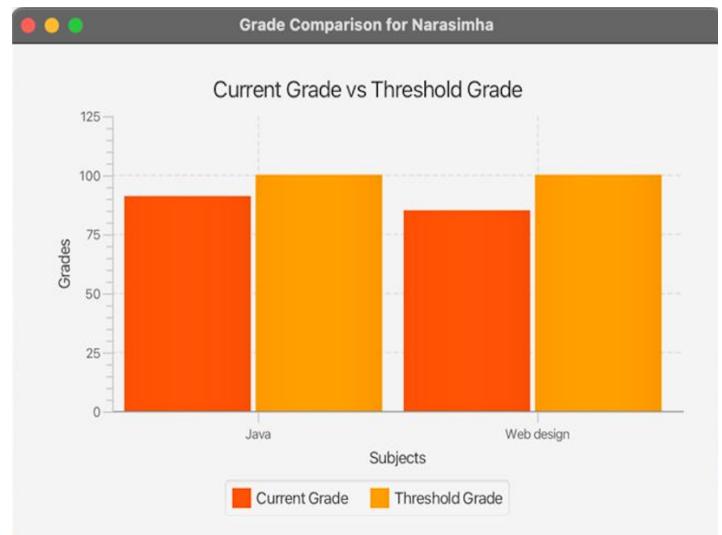


Figure 12. Bar Chart



Figure 10. View Subjects

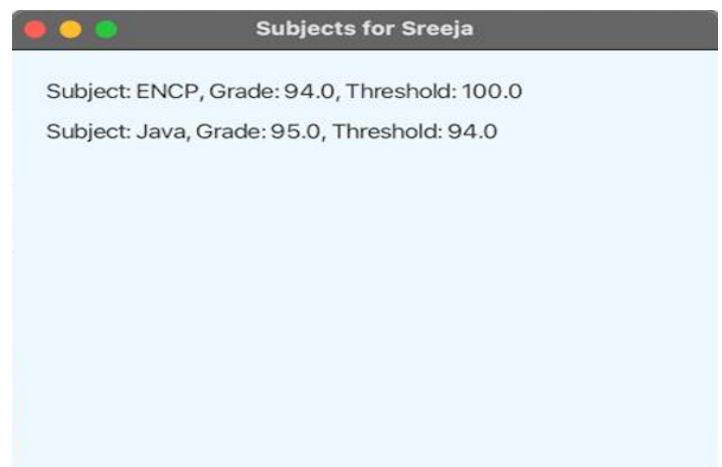


Figure 13. View Subjects

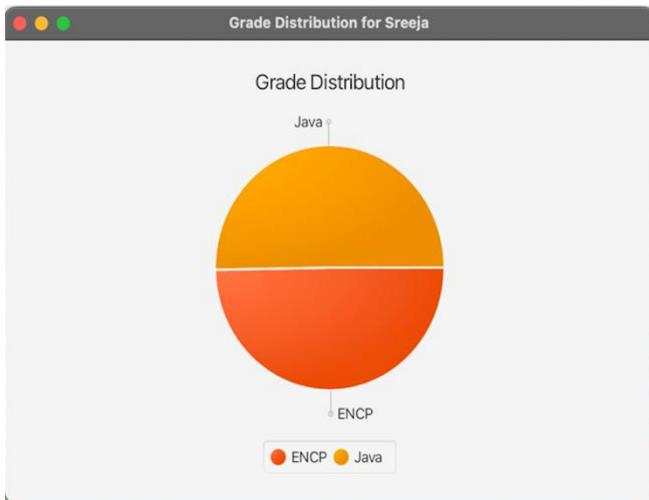


Figure 14. Pie chart Distribution

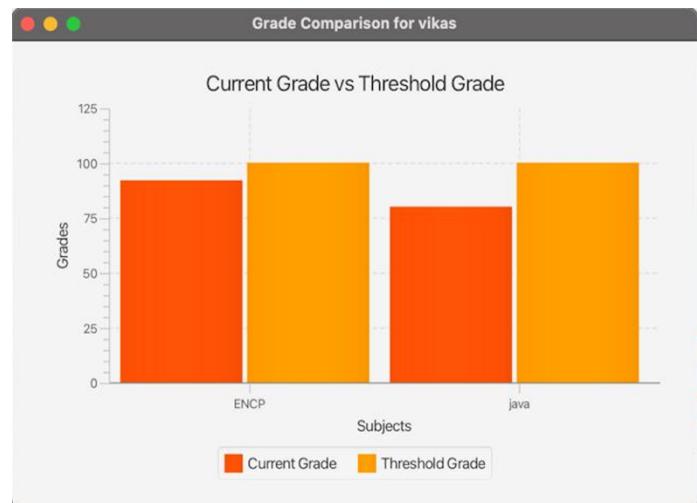


Figure 17. Bar Graph

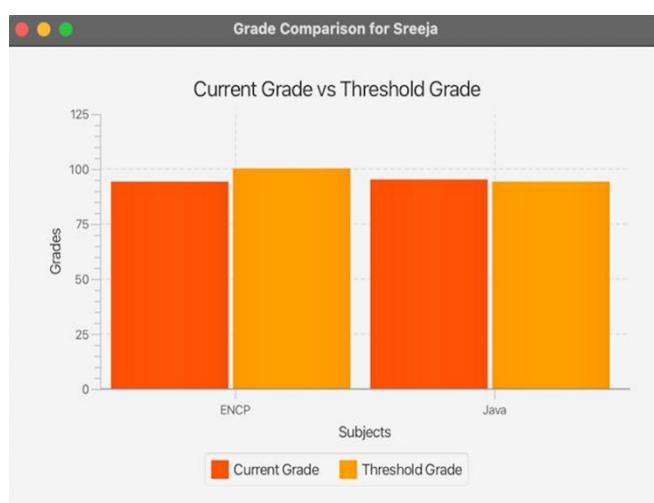


Figure 15. Bar Chart

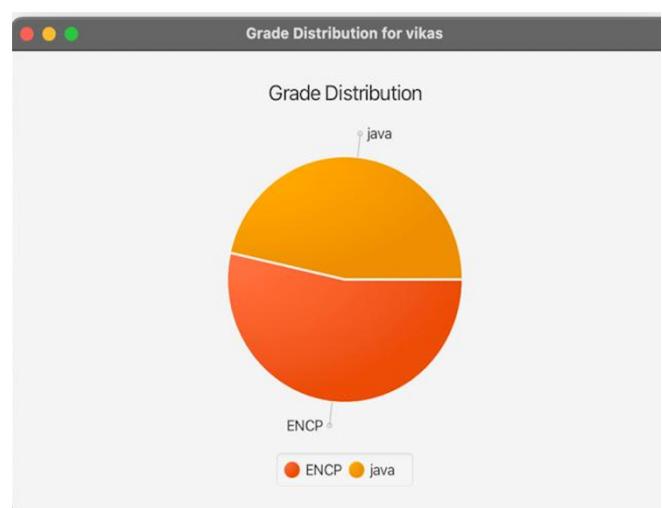


Figure 18. Pie Chart Distribution



Figure 16. View Subjects



Figure 19.All Students with Subjects

VI. Discussion (Reflections)

The EduPal project stands out for its intuitive interface and effective combination of tools for academic tracking and mental health support, offering a balanced solution to address students' needs. Its user-friendly design enables students to monitor their progress while accessing reminders and resources to support their well-being, making it a valuable tool for enhancing student life. However, challenges arose during development, such as implementing real-time feedback mechanisms to ensure timely and accurate reminders and creating tailored notifications to meet individual user needs. Scalability was another hurdle, as the system needs to handle an increasing number of users and interactions without affecting performance.

To overcome these limitations and enhance functionality, future improvements could include the development of a mobile version, which would allow students to access the platform on the go, improving convenience and accessibility. Additionally, integrating AI-driven features could take the platform to the next level by offering personalized study recommendations based on individual performance and learning patterns. These enhancements could significantly improve the user experience, making EduPal a more comprehensive and effective tool for supporting students academically and personally. Overall, EduPal successfully meets its core objectives while leaving room for growth and innovation.

VII. CONCLUSIONS AND FUTURE WORK

1. Did we finish the project?

As beginners, we were able to create a basic version of EduPal that successfully tracks grades, sets goals, and offers academic resources. While the project is functional, we recognize that there's a lot of room for improvement, particularly in the user interface and providing more personalized support. Since we are still learning, we're proud of the foundation we've built, but the app is far from complete.

2. What are the advantages or benefits of using your solution?

EduPal offers students a simple way to monitor their academic progress, set goals, and receive alerts if they start to fall behind. It also connects students to helpful resources like lecture recordings and study tips, saving them time. Furthermore, the app promotes mental health by offering self-care reminders and information about campus events. This blend of academic and mental health support sets EduPal apart as a balanced solution for students who juggle many responsibilities.

3. What are the problems found during development but not yet explored in this project?

While we've made good progress, some problems still need to be addressed. The biggest challenge was refining the user interface, which could be made more intuitive and visually appealing. Additionally, we've only scratched the surface in terms of offering personalized academic support, such as AI-driven recommendations. We also want to add features for more direct mental health support, such as in-app counselling or mindfulness programs.

4. If your team had more time, what would you improve?

If we had more time, we would focus on enhancing the user interface to make it more engaging and easy to navigate. We'd also integrate more personalized resources, like AI-based study recommendations tailored to individual needs. Adding a mobile version of EduPal would make it more accessible, and we could extend the mental health features to include tools for stress management and wellness tracking. These improvements would create a more comprehensive and supportive tool for students.

VIII. JOB ASSIGNMENT

Member 1: Narasimha Reddy Valam

Narasimha was instrumental in establishing the system's core structure and applying advanced programming techniques. He developed foundational classes that supported the system's functionality and used abstract classes to create reusable templates for essential features like notifications and grade tracking. Narasimha applied inheritance to design a hierarchical structure for components such as Student and Subject, promoting scalability and reusability. Additionally, he implemented the View Subjects feature to display detailed subject information and the Add Subjects functionality, enabling users to expand their academic tracking seamlessly and efficiently.

Member 2: Sreeja Pulaparty

Sreeja played a key role in developing foundational system features and ensuring a flexible architecture. She designed and implemented the Login Page, incorporating validation for secure user authentication and error handling to manage invalid login attempts. Sreeja added functionality to provide users with direct access to Improve Grade and Mental Health Resources, integrating these materials into the system for easy access. She also implemented the Submit Functionality, enabling users to add or update academic and subject details. By applying polymorphism and developing interfaces, Sreeja ensured the system was modular, scalable, and adaptable for future enhancements.

Member 3: Vikas Meneni

Vikas focused on implementing key functionalities and creating dynamic visual elements for the system. He developed the Undo Functionality using stacks, enabling users to efficiently reverse recent actions and maintain consistency across the application. Vikas also designed and integrated bar graphs and pie charts, providing clear and interactive visual representations of student performance and resource utilization. These visualizations were seamlessly incorporated into the dashboard, improving user engagement and delivering meaningful insights. His contributions ensured the system offered both robust functionality and an enhanced user experience.

Member 4: Sai Shravan Neelamsetty

Shravan made significant contributions to data management and user interface improvements. He utilized lists and maps to organize and manage student and subject data effectively, ensuring seamless integration with other system components. Shravan developed the View All Students feature, which displayed detailed student information in an organized and user-friendly format. Additionally, he implemented the Remove Subject functionality, allowing users to delete subjects from their tracking system with proper error handling for invalid inputs. Shravan also enhanced the system's visual appeal by working on the styling of buttons and other interface elements, ensuring a polished and professional user interface.

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