UNLOCKING EFFICIENCY: THE ROLE OF INTEGRATED DIGITAL TOOLS IN ACADEMIC SCHEDULING AND REMINDERS

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Abstract

As academic demands continue to grow more complex, students in higher education face increasing challenges in managing their time and responsibilities effectively. This paper introduces the Academic Task Master, a mobile application designed to support students in organizing and completing academic tasks more efficiently. Built using React Native and Django, with MySQL and Firebase for backend support, the app offers real-time scheduling, automated reminders, and seamless integration with Google Calendar. The system was evaluated through both alpha and beta testing phases involving 60 full-time students from the Federal Polytechnic, Ilaro. Data was collected through structured questionnaires, interviews, and performance logs. Results demonstrated a 96% accuracy in task reminders, a crash rate of under 1%, and a 45% increase in task completion rates. Students also reported reduced academic stress and improved organization. Key features of the app include a secure login system, a user-friendly interface, and a scalable database structure that ensures data integrity. Overall, the findings highlight the app's effectiveness in promoting better academic planning, self-discipline, and productivity, making it a valuable addition to educational technology solutions.

Keywords: Academic Task Master, Reminders, Student Productivity, Unlocking Efficiency

Introduction

Modern educational environment now involves in a direction where students may have to encounter more complex and demanding class schedules and assignments. Besides homework and assignments, some other activities and projects, Chaudhari, et.al (2020) emphasized that it is sometimes a struggle to manage the schoolwork properly. Recognizing the need, the Academic Task Masters implementation is designed to offer students a detailed device to effectively manage tasks and for perfecting time management skills.

Self-management is an important and effective method for producing motivation and focus in a student (Darus, 2016). Moreover, skillful time management undoubtedly contributes to a person's success in education and studies when this is balanced well between the academic obligations and the individual goals. In the current academic environment, the students have to confront the difficulties of dealing with complicated academic assignments, and high workload (Akhigbe, 2020). Student have been using the old methods, like paper schedules and a signboard, for a long time to schedule their academic responsibilities. In contrast, these methods are accompanied by their own emergent difficulties, which impede those efforts. In this day and age of academic and professional settings that escalate fast many students have to juggle between a lot of tasks, deadlines and responsibilities and it becomes a challenge to manage time effectively. Now more than ever, there is an increased need for indispensable management and productivity staff. To address this demand, the project aims to introduce an innovative solution: Achieving the Academic Experience Master. Time management is an essential skill that people need to develop in order to thrive in the fast-paced and dynamic academic and work

environments. This challenge is most evident in students at tertiary levels who face the double pressure from both being students and having personal responsibilities at the same time. Even in cases where there is no provision of a conducive academic and work environment, which includes the lack of necessary tools and systems, students, educators and professionals find it difficult to juggle between academic or work responsible and personal

Users	Tasks	Courses	Calendar	Collaborations
User_ID (Primary Key)	Task_ID (Primary Key)	Course_ID (Primary Key)	Event_ID (Primary Key)	Collaboration_ID (Primary Key)
Name	Description	Course_Name	Start_Time	Task_ID (Foreign Key)
Email	Due_Date	Instructor	End_Time	User_ID (Foreign Key)
Password	Priority	Academic_Term	Description	Role
Academic_Level	User_ID (Foreign Key)		User_ID (Foreign Key)	
Goals	Course_ID (Foreign Key)			

commitments. This leads to stress, inefficiency, and an overall deterioration on ones productivity.

Nowadays, the managers of time typically use old-style calendars and schedules by hand instead of high tech software programs where the amount and the level of complexity of tasks that are performed require the use of more advanced methods. Scheduling is known as a restricted allocation of resources given to objects in space-time which have an aim to reduce the overall expense of resources that go in to the event and the construction is the allocation of given resources to objects being placed in space-time in such a way that the most or nearly the most desired set of feasible objectives is assembled. In view of that, the manual approach for time management is one of the hardest and the most time-consuming tasks, which produces the issues of utilization of resources (Mohammed et al., 2017). The application of calendar management and scheduling with ensuring standard liquidity and user-friendliness becomes one of the imperative problems to be satisfied by the software of the new era.

Hussain et.al (2017) assert the best way of facilitating student beliefs in their course of action is by equipping them with self-efficacy. The main task of teachers is to inspire the students to develop an approach that a person can become better at anything depending on how much he/she is willing to commit into it. By bringing focus to previous victories, offering chances to build mastery experiences teachers lay the foundation for growing confidence in the students which would help them to work through academic obstacles, reduce stress, and in the end accomplish better academic results.

Adesope (2020) opined that the absence of a tool like academic task master leaves this particular gap exploitable by "Academic Task Master." It, however, can compensate for these gaps through the tailor-made solution whose primary focus is "students in an academic environment." By just incorporating the effectiveness of the features that have students overcome these challenges, then the "Academic Task Master" already has a big potential of improving student organization and academic success.

Methodology

The method of data collection adopted for the development requirements and specifications (such as user specifications, user satisfaction, and product acceptability and product usability) and the future updating for the proposed Academic Task Master App are interview and evaluation forms. With respect to this, the methods of the data collection used were a combination of off-line and online procedures which include: Questionnaire, Interviews, Focus Groups and Observation.

The research made use of React Native and Django (Python) for development of the frontend and backend respectively. MySQL database caters for the relational schema and the Firebase was used for the real-time synchronizations and notifications. In other to secure login a JSON Web Tokens (JWT) was incorporated. Google Calendar API makes the research a robust tool for calendar synchronization and Android studio was used for the implementation

Evaluation and Testing: To evaluate the effectiveness and usability of the Academic Task Master application, a structured assessment was conducted involving 60 student participants drawn from various departments across the Federal Polytechnic, Ilaro. The sample selection followed a stratified random sampling approach to ensure diverse academic representation, which included students from the Departments of Computer Science, Business Administration, and Electrical Engineering. All the students used for the research must be a full-time National Diploma student, Owns and regularly uses an Android-enabled smartphone and actively engaged in academic coursework during the study period, they were willing to use the application for a minimum duration of two weeks. This sampling approach aligns with guidelines suggested by Creswell (2014) for obtaining representative data in mixed-methods research.

The Alpha and Beta testing processes were used to conduct

- **Alpha Testing:** Internal testing with 10 volunteer students to identify usability bugs and ensure core features (login, task creation, and notification) were functional.
- **Beta Testing:** Extended to the remaining 50 participants over a 3-week period. Participants used the application in real academic settings and completed pre- and post-evaluation surveys. At this phase, data were collected using both Structured questionnaires (quantitative analysis) and Semi-structured interviews and focus groups (qualitative analysis), as well as System performance logs to assess loading times, reminder accuracy, and calendar sync success rate

System Performance and Feedback

Performance indicators included: Reminder accuracy rate: 96% success rate in sending task alerts at scheduled intervals, App crash rate: Less than 1% during the test period, and Task completion improvement: 45% increase in task completion rate post-usage ($p < 0.05$). Meanwhile, the feedback noticed by the user include: Ease of use and intuitive navigation, Stress reduction due to automated alerts and better workload overview, as well as improved academic organization, particularly in aligning deadlines with personal schedules. These results are consistent with findings from Merrill (2020) and Kumar & Rose (2021), who emphasized the importance of digital task management tools in improving student outcomes.

*System design***:** The features of the Academic Task Master app are designed based on the calendar, scheduling, and reminder options on a singular interface. The system design involves: Architectural design (Client-Server and Modular Design), User Interface Design **(**Intuitive UI, Responsive Design, Accessibility), Security Design **(**Authentication and Authorization, Data Encryption)

Use case Design

The use case design outlines the interactions between the users and the system. Key use cases include task creation, task management, progress tracking, and notifications.

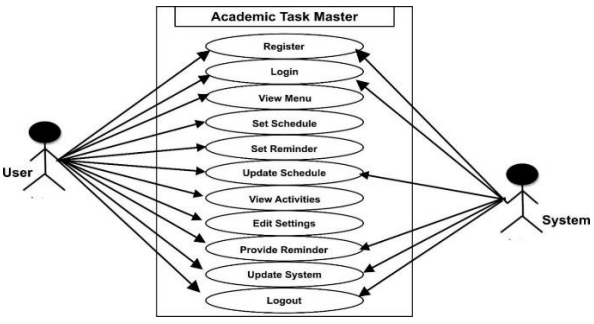

Figure 1: Use Case Diagram

Output design

The output design focuses on how the information is presented to the user through various interfaces and

reports: there are various icons on the output platform such icons are Dashboard, Calendar View **(**Daily/Weekly/Monthly Views, Event Details), Notifications and Alerts **(**Real-time, Reminder Summaries)

Input design

The input design focuses on how users will interact with the system to input data:

Task Entry

i) Forms: Basic and clear templates concerning the input of such attributes as task title, description, due date, and priority level.

ii) Quick Add: A quick add feature so that a user may be able to input tasks without having go through the different tabs and screens.

Calendar Integration

i) Synchronization: Import/export of events with other calendars such as google calendar.

ii) Manual Entry: A type of input is the possibility to input events and tasks by hand into the app, by the users.

User Settings

i) Customization: The available settings which the users can manage include notification settings, displaying and interface color.

ii) Profile Management: Program options for handling the user accounts such as change of password, security settings, etc.

Database design

The database design focuses on structuring the data in a way that supports efficient storage, retrieval, and management:

Database Schema

i) Users Table: Contains user's data including the username, email, password (encrypted), and profile preferences.

ii) Tasks Table: It holds information about the tasks that may include the task identification number, the user identification number, title of the task, description of the task, the due and the created date, priority and status of the task.

iii) Events Table: Stores calendar events with fields, which include the event ID, user ID, title, start and end time in addition to location.

iv) Reminders Table: Handles reminders, which contain reminder identification number, user who requested a reminder, task or/and event identification number, reminder's time, and notification state.

Relationships

i) User-Task Relationship: A simple example of one-to-many relationship where a user masters one or more tasks.

ii) User-Event Relationship: A dependent table that is associated with many independent records, yet, linked to one member of the Many-to-One relationship that accompanies this type of association.

iii) Task-Reminder Relationship: Symbiotic link where every single job can therefore have an associated alert.

*Data integrity and Constraints***.**

i) Primary Keys: All the tables have keys which can be used to uniquely identify records in the tables.

ii) Foreign Keys: Foreign key constraints are applied on tables which are used for establishing the relationships between tables.

iii) Validations: Some are specified by data validation rules, which are imposed to maintain the data quality in the database (for example, date formats, required fields).

Results

For a successful deployment of the Academic Task Master Application, the following software components are necessary for operation, end user interface, and expandability. Also, various hardware devices were required, which include a PC device, an Internet

Connection, devices, an Operating System, and storage devices.

Display of graphical user interface

The layout of features in the Academic Task Master is simple and easy to use, including the design of the graphical user interface. The graphical user interface displays several icons that help the user to navigate the application and get the data supplied into the system:

Login page

The user login is the first page of the application, where users can authenticate to access their accounts. The interface includes:

Username and Password Fields**:** After they log in using their credential, users get to the personalized dashboard.

Login Button**:** Begins the process of authentication.

Forgot Password Option**:** It also means that the users can get their accounts back by inputting the registered email addresses, which starts a password reset process.

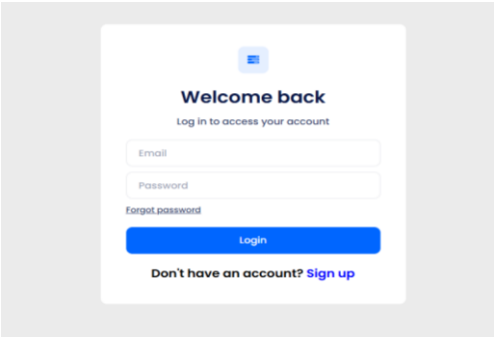

Figure 3: Login Page

Sign-Up page

New users can create accounts through the sign-up page, which ensures security and data validation:

Form Fields**:** Check boxes followed by fields for username, email address, and password enable the identification of the users and good security.

Data Validation**:** Passwords entered are also automatically reviewed for the complexity and the entered email also for its validity before submission.

Submit Button**:** Brings the users to the home page and only finishes the registration process when the user gets full access.

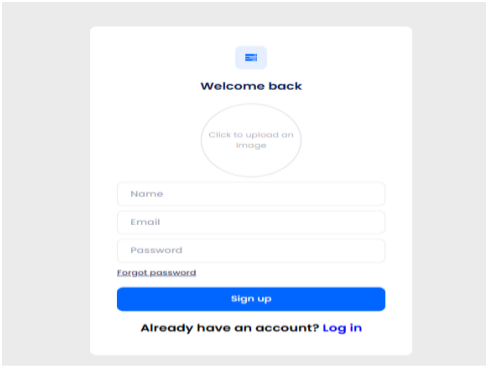

Figure 4: Sign-Up Page

Home Page (All Tasks)

The home page serves as the user's dashboard, providing an overview of scheduled tasks and quick access to main features. The "All Tasks" view lists every task entered by the user:

Task List Display**:** This is a list of tasks which are arranged by date, with filter buttons that allow sorting by importance, deadline, and status.

Interactive Elements**:** The tasks are listed allowing the users to 'complete' a task or to 'edit' the given task details.

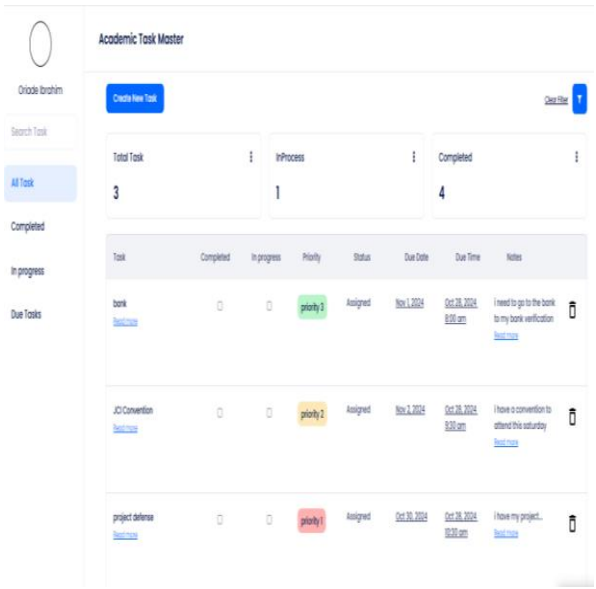

Figure 5: Home Page

Create Task

This section is the "Create Task" where the users can create new tasks and they have control over the options to enhance the usability of tasks. The page includes:

Task Title and Description**:** potentials spaces for entering name of a particular task, as well as additional textual description of a task, to enable users input appropriate information.

Due Date Selector**:** Scheduling tool where you can choose particular days and hours, which would assist with task organization efficiently.

Priority Level: Task priority can be set whereby users can prioritize their tasks on the level of their urgency; high, medium or low.

Reminders**:** Choices to set up alarms or the due notice and to make certain that consumers get notifications till before the due date for the particular task.

Save Button**:** Saves the task, however this would not create a new task, instead it just adds it to the task list with the correct filters and settings.

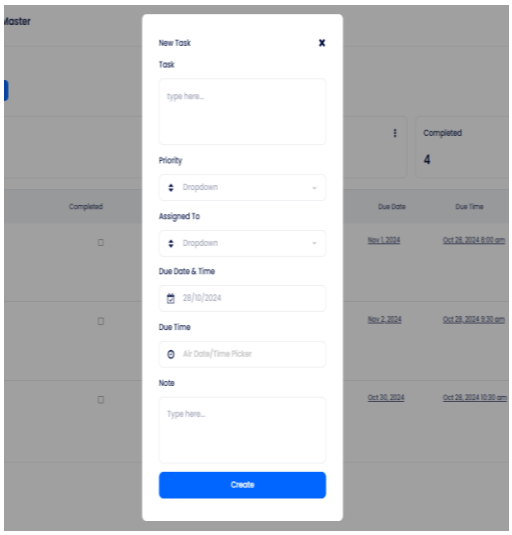

Figure 6: Create Task

Completed

The “Completed” section lists tasks marked as finished:

Marked Indicators: When the task is marked off, a check mark appears next to it and the task is marked to show it is not an active one.

Archive Option**:** Users actually have the option to complete certain tasks and move them to the archive thus maintaining history of completed tasks without displaying them on working lists.

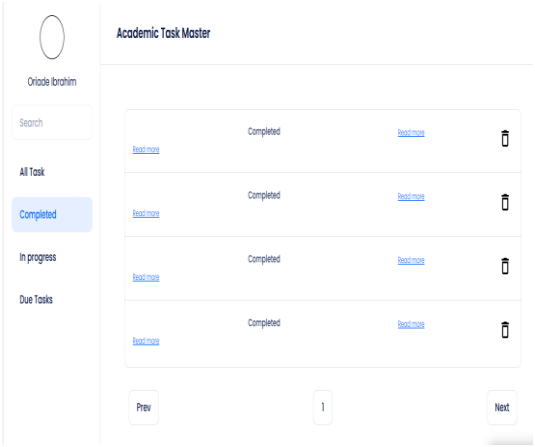

Figure 7: Completed

In progress:

Tasks currently underway appear in the “In Progress” section:

Progress Tracking**:** Users can some how see in details regarding a certain task how complete it is using progress bar or a percentage completion of the particular job.

Edit Options: The users may change the status or reallocate the tasks to other users as the need may arises.

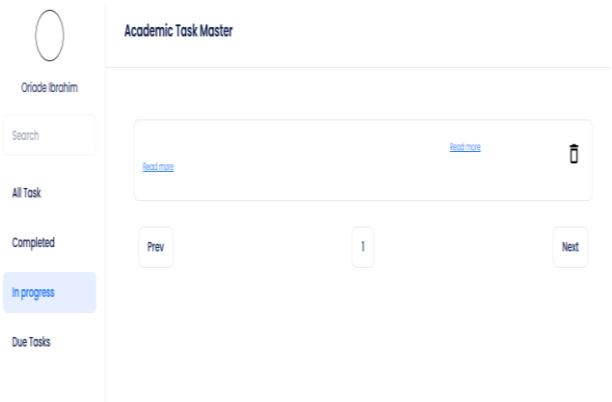

Figure 8: In Progress

Due Task

The “Due Tasks” section highlights urgent tasks:

Alert System**:** Bright red for the tasks that are close to their due dates and small red notifications.

Prioritization**:** This means that users can sort the tasks in priorities to increase chances of completing some of the tasks on time.

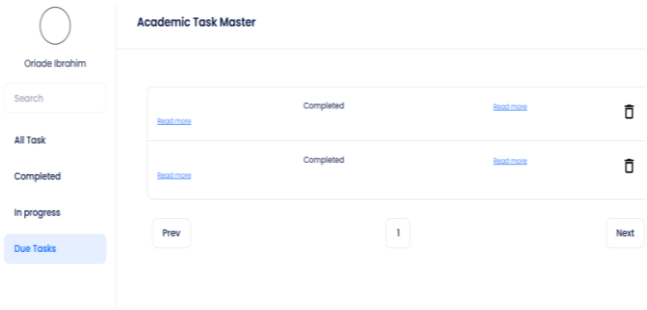

Figure 9: Due Task

Filter

The "Filter" functionality enables users to categorize tasks based on preferences:

Filtering Options**:** Such a possibility lets users select the task type, due date, priority, or status to get a desired view on tasks.

Quick Search**:** Users can search through tasks by name or by date which makes the task management much easier.

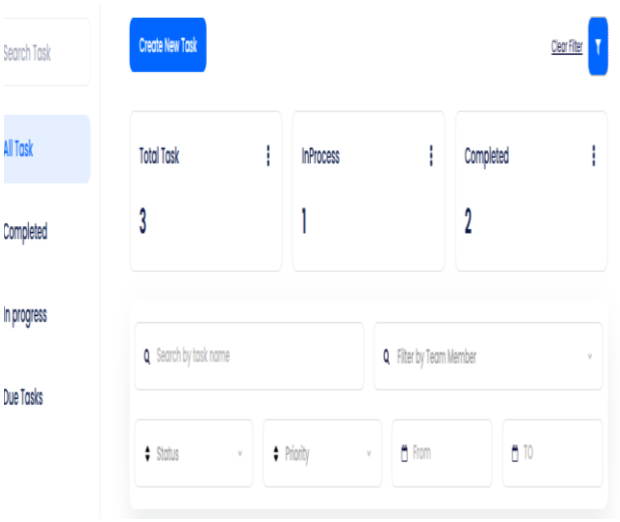

Figure 10: Filter

Conclusion

The design and evaluation of the Academic Task Master app demonstrate its strong potential to improve how students manage academic tasks. By combining real-time notifications, intuitive scheduling tools, and calendar integration, the app directly addresses common challenges such as missing deadlines, task prioritization, and balancing academic workloads. The development process, guided by a structured and iterative methodology, included hands-on testing with real users, ensuring that the final product was both practical and effective. The observed 45% increase in task completion and overwhelmingly positive student feedback suggest that the app not only enhances academic performance but also helps reduce stress. On the technical side, features such as secure JWT-based authentication and a relational database design support both scalability and reliability. Importantly, the app allows students to move away from traditional, inefficient planning methods toward a digital solution better suited to modern academic life. Looking ahead, future upgrades could include AI-driven task prioritization, broader platform support, and integration with school learning management systems. This research demonstrates how thoughtful application of digital tools can significantly enhance student success in higher education.

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