


**WEB-BASED STUDY PLANNER FOR IRREGULAR STUDENTS AT
TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES –
MANILA**

A Thesis
Presented to the Faculty of the
Computer Studies Department
College of Science
Technological University of the Philippines
Ayala Boulevard, Ermita, Manila

In Partial Fulfillment of the
Requirements for the Degree
Bachelor of Science in Computer Science

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JUNE 2024

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		Revision No.	00
	THESIS APPROVAL SHEET FOR THE UNDERGRADUATE PROGRAMS OF THE COS	Date	07012022
		Page	1 / 1

This thesis hereto entitled:


**WEB-BASED STUDY PLANNER FOR IRREGULAR
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OF THE PHILIPPINES**

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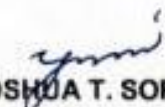

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Transaction ID	TUPM-COS-TAU-ELS-07012022 -0258PM
Signature	

Transaction ID Legend: TUPX-AAA (Office Code)-BBB (Type of Transaction)-CCC (Initial of employee)-MMDDYYYY (month day year)-HHMMAM/PM (hour/minutes/AM/PM)

ACKNOWLEDGMENT

We would like to extend our deepest gratitude to everyone who contributed to the completion of this thesis.

First and foremost, we are sincerely grateful to our thesis adviser, Prof. Dolores L. Montesines, for their unwavering support, guidance, and insightful feedback throughout the development of this project.

We also would like to extend our gratitude to the members of the defense panel, Prof. Edward N. Cruz, and Prof. Ariel L. Tomagan, for their insightful comments, feedback, and suggestions that have greatly improved the quality of this work.

Our heartfelt thanks go to our families and friends for their constant encouragement, patience, and understanding during this challenging journey. Their emotional and moral support was a cornerstone of our motivation and perseverance.

We would also like to express our appreciation to our peers and classmates, especially those who participated in the surveys and testing phases of our study. Their feedback and cooperation were vital in refining our web-based study planner.

Lastly, we extend our gratitude to all those who, directly or indirectly, contributed to the successful completion of this project. Your support has been invaluable, and we are deeply thankful for your contributions.

ABSTRACT

This thesis aims to develop a web-based study planner specifically designed to address the challenges faced by irregular students at the Technological University of the Philippines - Manila. The primary goal is to simplify and optimize academic scheduling for these students, who often juggle complex timetables, part-time jobs, and diverse course loads. Created with Java, the study planner serves as a versatile and robust tool tailored to meet individual academic needs and preferences. By offering a digital alternative to traditional paper planners, it enhances efficiency in managing coursework, assignments, and study plans through its user-friendly features. This project aligns with the university's mission to promote a valuable educational environment by equipping irregular students with a tool that helps them manage their academic responsibilities more effectively.

KEYWORDS: Web-Based Study Planner, Irregular Students, Personalized Study Plan, User-Friendly, Continuous Improvement, Academic Data

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Chapter 1

THE PROBLEM AND ITS SETTINGS

Introduction

The typical undergraduate journey proves to be a pivotal chapter of a student's professional development as it not only contributes to their intellectual evolution, but it also provides massive influence on their own personal growth. For this reason, the path of higher education in general should not be exclusive or in any way discriminating to any yearning students. Despite its stated level of necessity, College journey does have its fair share of complexities which ranges from financial difficulties to the institution's admitting capacity, which all results in a narrower and more selective approach in providing opportunities for incoming individuals that aspire to tackle the professional track. Another College Complexities include handling of selective students known as "irregular students" which stems from academic setbacks such as failed subjects which then holds a student back from having the efficiency of navigating through available subjects within their curriculum while contending with factors such as prerequisites and student slot limitations that summons extended periods of time for studying from their anticipated years of study.

This research aims to propose an innovative system which aids such students to be provided an optimal course sequence along with the consideration of subject priorities, prerequisites and interlinking of the course subjects within the colleges Technological University of the Philippines. The Irregular students, who are distinguished by their distinctive and frequently diverse living circumstances, constitute an important element of

the student population. These students frequently experience substantial difficulty in efficiently balancing their academic commitments with part-time work, familial duties, or previous academic disappointments. This project is about creating a web-based study planner for irregular students at the Technological University of the Philippines - Manila. It is in line with the university's aim of inclusive education. The project's goal is to produce a tool that will assist the entire university in providing automated service for their irregular students.

Background of the Study

The landscape of student planners has transformed in the era of online learning, shifting from physical notebooks to digital tools. With laptops and tablets becoming the primary medium for coursework, the need for a sophisticated digital study planner has emerged. While digital planners reflect the organizational structure of their physical counterparts, they must also offer customization features to meet the diverse needs of students in this digital age. An outstanding study planner should not only align with modern educational practices but also enhance productivity and the overall learning experience.

This project proposes the development of a web-based study planner. Irregular students, characterized by diverse circumstances and academic setbacks, struggle to efficiently navigate their academic commitments, often juggling part-time work, familial duties, and past disappointments. The study planner aims to provide tailored solutions, offering individualized schedules and resources that empower irregular students to succeed. This initiative aligns with the university's commitment to inclusive education,

intending to automate services to better support this student demographic.

The application uses the specified technologies involves integrating Laravel as the backend framework, Inertia.js to bridge Laravel and React.js, React.js for the frontend, and SQLite as the database, with this setup it allows us to build a modern application with a Laravel backend and a React frontend, connected seamlessly using Inertia.js with SQLite that serves as a lightweight database solution, suitable for development and smaller applications.

Objectives of the Study

This study aims to develop a web-based Study Planner that offers a comprehensive database, scheduling tools, and management solutions for pre/corequisite subjects, tailored to the diverse academic needs of irregular students at the TUP - Manila. The specific objectives of the study are to:

1. To utilize the following features in our Web-Based Study Planner:
 - Implement a framework, possibly utilizing classical AI optimization algorithms such as backtracking, breadth-first search (BFS), or depth-first search (DFS), to address the complex constraints inherent in academic planning for irregular students in College of Science in TUP – Manila.
2. Create a Comprehensive Database:

- Develop a database structure incorporating user tables for Student and College Head login functionalities.
 - Implement CRUD (Create, Read, Update, Delete) operations to facilitate the management of data related to students, courses, schedules, and academic programs.
3. Student Progress Tracking and Planner Generation:
- To enable irregular students to track their project progress by indicating whether tasks are completed, pending, or in progress.
 - To enable College Heads to create, read, update, and delete student lists, schedules, courses and even modify programs. They will also have the ability to adjust the maximum units of a student including the assigning of professors to their classes and room scheduling.
 - A user-friendly web-based study planner and personalized study plans tailored to meet the academic requirements of irregular students fostering their academic success and progression.
4. Develop the Web-based Study Planner:
- Laravel (an open-source PHP-based web framework designed for constructing high-end web applications)
 - Inertia.js (It allows for the development of entirely client-side rendered single-page applications)
 - React.js (a JavaScript library utilized for constructing user interfaces)

- Backend Database using SQLite (database engine written in C language)
5. Evaluate Website Performance and User Experience:
- Evaluate how website performance influences the overall user experience for non-traditional students at the TUP - Manila.
 - Collect input on the usability, efficiency, and effectiveness of the Study Planner to continually improve its features and meet user requirements.
 - Offer valuable support to the school community by aiding students in organizing their study schedules and assisting advisors in managing their calendars efficiently, thus fostering better academic results and institutional effectiveness.

Scope and Limitations of the Study

Our study aims to develop a study planner designed precisely to the educational needs and schedules of irregular students in the College of Science at the Technological University of the Philippines - Manila. The scope of this research includes the following key aspects:

1. The main objective of this research is to develop and implement a web-based study planner suited to the needs of irregular students. The study planner will help the students to catch up with their subjects as fast as possible.
2. The study is aimed at irregular students, characterized by varying course loads, non-

standard schedules, part-time work, and family commitments, who often need help managing their studies efficiently.

3. This study will evaluate the feasibility of adopting the study planner while keeping technological constraints in mind. It will also undertake testing to verify the planner is easy and effective for the irregular student population.

While the study attempts to meet the objectives, it is necessary to define and limit the scope to present a clear picture of what is not addressed, as indicated below:

1. The study will primarily concentrate on the specific educational needs and preferences of irregular students in the TUP - Manila. The findings may not apply and might necessitate adaptations for different educational systems.

Significance of the Study

The proposed Web-Based Study Planner is promoting academic success, inclusivity, and institutional excellence within the Technological University of the Philippines - Manila. This section highlights the importance of the study for benefit groups, including:

Irregular Students. They are the ultimate beneficiaries of our study since the Study Planner is focused on assisting irregular students in optimizing their course sequence, considering subject priorities, prerequisites, and interlinking within the college curriculum.

Technological University of the Philippines – Manila. The proposed Web-Based Study Planner contributes to the automation of services, streamlining academic processes and

supporting the university's goal of efficient service delivery.

Faculty and Administrators. The Web-Based Study Planner aids faculty and administrators in managing irregular students more effectively, ensuring a smoother academic experience for both students and educators.

Future Researchers. The Web-Based Study Planner's findings provide a roadmap for future research, guiding efforts to refine and adapt similar tools in diverse educational settings. Additionally, its replicability and adaptability make it a valuable resource for researchers aiming to contribute to the advancement of inclusive education and innovative student support systems in higher education.

Chapter 2

CONCEPTUAL FRAMEWORK

Review of Related Literature

This chapter presents a review of relevant literature and studies, the conceptual framework of the research, and the operational definitions of key terms pertinent to this study. This outlines the flow of information and processes within our web-based Study Planner, emphasizing the integration of technologies, adherence to ISO standards, continuous improvement, and the ultimate outcomes for Irregular Students at Technological University of the Philippines. It serves as a guide for understanding how the components of our thesis interact and contribute to the overall objectives.

Tertiary Education Study Management

A commonly undermined factor in the journey of professional exploration known as college, is the multitude of ways students could enhance and encourage themselves to push through their years of study within themselves and among others. One of this said ways is by allowing themselves to micromanage their schedules in a form of a study planner, which is proven to be advisable as student's learning process assist them in evaluate and reflect in their learning process hence cause them to be more focused (Nasution et al., 2016). With the addition of the factor of limited class contact time in TUP COS, which is the result of multiple factors like lack of classroom. Students are required to cope with the limited support mechanisms they're provided with, ultimately resulting in them having more difficulty as to what they're supposed to have (Waldock, 2016).

The research delves into the subjective aspects of time and the patterns of schoolwork among 2nd year students at a Canadian research university. It highlights the importance of students' interpretation of chronological sequences and the rhythms of their academic and work life. Although not directly mentioning a study planner, the abstract underscores the students' forward-thinking attitude and their involvement in term-time work as preparation for their future careers. This preparation entails aligning their bodies with the temporal structures and routines of university studies and professional environments. The paper argues that comprehending these dynamics is essential for envisioning higher education systems that better promote human flourishing (Taylor, 2022).

Course planners go way beyond time to primarily help faculty members of school staff to help these individuals lessen their decision-making processes and find multiple differences in their planning around their students and their discipline. This was later found that due to the 21st century's economic knowledge, the need of creative and engineering mindsets is on the rise, which paved the way for the implementation of flexible curriculum course planner in the attempt to form new types of curricula for incoming students (Li et al., 2012). This is further reinforced for students who had failing grades in their past years, turning them into what is called irregular students.

In the research study titled "Web-based Study Planner for Irregular Students," the investigation draws insights from the related study conducted by Afify and Nasr (2017) titled "A Proposed Model for a Web-Based Academic Advising System." This study innovates an automated mechanism for academic advising, transitioning from traditional approaches to a web-based application. The proposed model facilitates staff and advisor access for monitoring student complaints and suggestions, allowing registered students to provide feedback. The system also enables department heads to receive key performance indicators (KPIs) reports for departmental oversight. Developed and implemented using "Ruby on Rails" as a web framework and "PostgreSQL" as a Database Engine, the e-Academic Advising System serves as a valuable reference for designing the Web-based Study Planner for Irregular Students. According to the study's data, structured peer support, structured advice.

Web-based Study Planner

As people of the current generation grows their affinity in the usage of internet platforms and applications it is an obvious choice as to how the project ended up as a web-based one, for it to have the flexibility needed along with seamless interaction with between students and school staff whilst still providing a unique and personal output for their usage. (Alexandrova et al., 2019). The study planner is then deployed as a web- based application to provide accessibility for irregular students wherever they possibly need it as unlike traditional methods any device with an internet connection is allowed to access given the permission. Along with accessibility comes easier maintenance, staff would only be inclined to provide additional curricula to the system which would automatically apply for students that are coming within the specific year.

Operability is a factor that hinders many developers of the old, as one or a group should require a private web server/domain to implement their project's application. This, however, was now solved by having web servers manage multiple requests from clients while the application server completes the requested task allowing it to store as if it's an actual database (Web Application, 2023). Advantages such as this only prove that integration of a minor system within an existing operation are all more feasible when employed in a web-based environment.

In the research paper titled "The Effects of a Brief Organization, Time Management, and Planning Intervention for At-Risk College Freshmen" by Stevens et al. (2018), the focus is on tackling the issues encountered by risk of college freshmen, especially those in danger of failing or leaving school before earning a bachelor's degree. This research highlights the unique occupational, economic, and social challenges faced by academically underprepared students, who are statistically six times more likely to drop out during their first year of college. The study evaluates the effectiveness of an intervention designed to improve Organization, Time Management, and Planning (OTMP) skills among freshmen identified as at-risk. Participants included freshmen who were conditionally admitted to the university and enrolled in a first-year seminar focused on enhancing academic success and retention. Using online surveys to measure impairment, OTMP skill usage, inattention symptoms, and executive functioning, the research found that students who participated in three lectures and completed take-home exercises aimed at teaching OTMP skills showed significant improvements compared to the control group. These improvements, which covered various aspects of impairment and inattention, demonstrated medium to large effects. The findings suggest that incorporating web-based study planner tools into an OTMP intervention package could help at-risk students adjust better, potentially leading to higher academic success and retention rates.

History of Study Planner

The history of study planners traces the evolution of academic organization tools

from traditional handwritten methods to sophisticated digital solutions. In the early stages of formal education, students relied on handwritten notes and personal diaries to manage their study schedules, assignments, and important dates. As educational systems became more organized, the need for a structured approach to academic planning became apparent (Soepeno, 2018).

The concept of a formal study planner gained momentum with the introduction of paper-based planners. These physical tools, often designed as calendars or notebooks, provided students with dedicated spaces to record their daily or weekly study plans. Academic agendas and organizers, distributed by educational institutions, became commonplace, offering pre-structured sections for class schedules, assignment due dates, and noteworthy events. Software applications and platforms emerged, allowing students to manage their academic schedules on personal computers. With the internet's rise, study planners transitioned into web-based formats, providing students with the flexibility to access their plans from any device with an internet connection (Sumardi, 2018).

The advent of smartphones further transformed study planners, with mobile applications enabling students to carry their academic plans on the go. Mobile apps introduced features like notifications for upcoming tasks, creating a seamless and portable organizational tool. Modern study planners are now deeply integrated into the educational landscape. Some applications synchronize with institutional learning management systems, allowing students to merge their study schedules with class timetables and access course

materials seamlessly. Moreover, recent advancements include the incorporation of artificial intelligence (AI) into study planners. AI algorithms analyze individual learning patterns, preferences, and academic goals to generate optimized study schedules for users (Agusningrum, 2018). Even in the medical areas of society, web-based planners are being used to efficiently help with their patients' needs. The goal of educational planners is to pinpoint the indicators that are managed by their educational authority (at the federal, state, or local district level) and that affect the academic performance of students. Student accomplishment in this study was measured in terms of reading literacy. Strategies such as the use of study planners greatly help teachers and school authorities in sorting out their management with time, (Merritt, 2016).

Concerns and Challenges of a Web-Based Study Planner

In developing an interdisciplinary curriculum for college students, educators must take into account the distinct characteristics of adult learners. Adults bring diverse prior learning experiences, interests, and knowledge types to the classroom. They value autonomy in their learning, preferring involvement in decision-making processes, options for choice, and recognition of their ideas. Adult learners are motivated by identifying specific and relevant learning needs, often driven by societal or professional pressures, as they dislike wasting time. The decision process of students regarding their educational pursuits is multifaceted. On average, students search for information for less than three months, while a significant portion spends more than three months gathering study-related

information. Usability is a critical aspect of any user interface, measuring its ease of use. Usability not only assesses website quality but also provides valuable insights for managers into potential problem areas.

Work commitments are a significant consideration for irregular students. Working while studying is primarily driven by financial necessity, providing students with a sense of financial independence and fostering skills in financial management (Abenoja R. et al, 2019). According to a study by Endsleigh (2015), eight out of ten students work part-time to support their financial needs. Learning to manage stress associated with being a working undergraduate and ensuring time off can significantly reduce stress levels (Mitchell, 2016).

Gaps in Current Research

The current research landscape concerning irregular students in higher education presents several discernible gaps that require thorough investigation to comprehensively address the challenges faced by this student cohort. Existing studies, such as Khanal (2019), establish a correlation between irregular attendance and academic performance, yet the underlying mechanisms and specific interventions to mitigate its impact remain inadequately explored. Additionally, the scarcity of research on tailored web portals designed to cater to the unique needs of irregular students (Hamzah et al., 2021) highlights a crucial area for examination, specifically in evaluating the development and impact of such platforms. Factors like academic self-efficacy and social support have been identified

as pivotal in facilitating academic engagement, particularly in online learning contexts (Suryaratri et al., 2022), urging a deeper exploration into how these elements interact with irregular attendance and influence academic success. Furthermore, the potential benefits of study planners in enhancing project-based learning for irregular students have received limited attention (Wang et al., 2018), necessitating an investigation into the effectiveness of study planners in mitigating challenges faced by this specific student group. Moreover, the shift to online education during and post-COVID-19 has unearthed various challenges, especially for irregular students (Paudel, 2020), urging the need to identify and address these obstacles for a more equitable educational experience. Understanding the dilemmas faced by educators and identifying effective strategies to engage and support irregular students (Scager et al., 2016) remains an essential yet underexplored area.

Grant (2023) in “Study Planner Project” addresses the significant challenge of time management for students, recognizing the impact on academic outcomes when adequate tools or support are lacking. The "Student Planner App" project aims to overcome barriers associated with existing mobile time management apps by introducing a user-friendly solution. The app features a calendar-based heat map to visually represent a student's workload, offering an intuitive visualization of time management across courses. This visualization provides proactive opportunities for time management, addressing issues such as procrastination and missed deadlines

These gaps in the current research call for further investigation to address the

specific needs of irregular students in higher education. Future studies should focus web-based study planner that caters to the challenges faced by irregular students, such as irregular attendance, and incorporates features to enhance academic self-efficacy and provide social support. Additionally, exploring the impact of such study planners on project-based learning and addressing the challenges and strategies in online education for irregular students should be a priority.

Developmental Tools

Creating an efficient web-based study planner for irregular students involves a combination of cutting-edge developmental tools and approaches that suit their unique needs and study habits. To develop the proposed study planner system using Inertia.js, Laravel, React, and SQLite, several key dependencies and tools need to be considered. Laravel is a popular PHP framework known for its ease of use and robust features for web application development (Laaziri et al., 2019). It supports multiple databases including SQLite, making it a suitable choice for this project (John & Sam, 2018). React, a JavaScript library, is widely used for interactive user interfaces, complementing Laravel's backend functionalities. Integrating Inertia.js and Laravel as development tools can enhance the system's functionality and user experience. Leveraging Laravel's robust MVC architecture can provide a solid foundation for the system's backend, ensuring scalability and maintainability. Additionally, incorporating Inertia.js can streamline the development process by allowing for single-page applications with server-side routing, enhancing the

system's interactivity and responsiveness (Purnomo 2024).

In the development process, modeling and defining the main concepts of the system are crucial (Rahmouni et al., 2023). Additionally, separating the database system from the application domain and encrypting the database can enhance security and protect sensitive information (Alomari et al., 2023).

Furthermore, the choice of tools and frameworks can significantly impact the project's success. Laravel's fast development capabilities and support for various databases make it a versatile option for web programmers (Laaziri et al., 2019). The integration of Laravel with VueJS for independent learning systems showcases its adaptability and effectiveness in educational applications (Aini et al., 2021). Moreover, Laravel's features such as routing, controllers, and views are essential for building full-stack applications like online learning services (Kurnia, 2022).

In conclusion, by leveraging the strengths of InertiaJS, Laravel, ReactJS, and SQLite, developers in this research can create a robust and efficient study planner system. The combination of these technologies provides for building a user-friendly, secure, and feature-rich application.

Evaluation System

ISO 205010

The ISO 25010 standard is internationally recognized as a yardstick for evaluating software and systems quality, having undergone significant revisions in 2007, 2011, and 2017. Also known as the Systems and Software Quality Requirements and Evaluation (SQuaRE) model. According to Peters (2019), ISO 25010 evolved from a revision of the ISO 9126 framework, which comprises six primary factors and twenty-one subordinate factors. The ISO 25010 standard introduced two additional factors, "security" and "compatibility," along with their respective sub-factors, through a direct comparison with the ISO 9126 model. ISO 25010 delineates two primary dimensions: Product Quality and Quality-in-use (QinU). Product Quality includes eight distinct quality characteristics: Functional Suitability, Efficiency Performance, Compatibility, Usability, Reliability, Security, Maintainability, and Portability (Izzatillah, 2019). evaluates how well a product or system meets specified and implied requirements under defined conditions. Efficiency Performance evaluates performance relative to resource usage. Reliability guarantees that a system executes functions within specific conditions and for a designated period. Compatibility gauges a product's ability to exchange information and perform functions within a shared hardware or software environment. Portability measures the effectiveness of transferring a system to different operational environments. Security assesses data protection and access control. Usability evaluates user effectiveness, efficiency, and satisfaction in achieving goals. Maintainability assesses a product's adaptability to changes.

These criteria encompass all previously mentioned characteristics, providing a comprehensive framework for software and systems evaluation.

ISO/IEC 27701

Privacy Information Management System (PIMS) is important for managing personal information and privacy in organizations. Privacy Compliance ISO/IEC 27701 provides a structured to comply with privacy laws and regulations. This is crucial in an era where data protection and privacy regulations are becoming increasingly stringent worldwide. This is especially important in systems that handle sensitive data, such as the personal and academic information of students. Trust and Credibility adhering to ISO/IEC 27701 principles enhances an organization's credibility by demonstrating a commitment to protecting individuals' privacy. This can build trust among users, stakeholders, and customers, which is vital for the success and reputation of an organization. Risk Management ISO/IEC 27701 assists in identifying and managing risks related to privacy. By incorporating risk management practices, organizations can proactively address potential privacy issues and mitigate risks associated with the handling of personal information. Data Subject Rights the standard emphasizes the importance of respecting the rights of data subjects. This includes transparency about data processing activities, providing individuals with control over their data, and ensuring the lawful and fair treatment of personal information. holds international acclaim as a widely accepted standard, offering a globally recognized framework for managing privacy. This is

especially beneficial for organizations with operations spanning multiple jurisdictions, facilitating consistency and compliance amid varied regulatory environments.

ISO/IEC 27001

The development and implementation of a web-based study planner necessitate the establishment of an Information Security Management System (ISMS) to safeguard sensitive data. ISMS plays a pivotal role in ensuring the security, confidentiality, and integrity of the academic and personal information handled by the study planner. At the core of ISMS lies the assurance of data security. Given the magnitude of data involved, particularly academic records and personal details of students, adherence to ISO/IEC 27001 standards becomes imperative. Robust measures must be employed to safeguard this data against unauthorized access, breaches, and other security risks. Confidentiality is another crucial aspect ensured by ISMS. By adhering to ISO/IEC 27001 standards, the study planner establishes protocols to maintain the confidentiality of sensitive information. This not only upholds user trust but also ensures compliance with privacy regulations governing the handling of such data. ISMS aids in identifying, assessing, and managing information security risks. Through proactive risk management practices, the study planner can mitigate potential security threats and vulnerabilities. This approach ensures the integrity and availability of data, mitigating risks associated with data breaches and cyber-attacks.

Compliance with legal and regulatory requirements is paramount in handling sensitive data. ISMS ensure adherence to data protection laws and regulations, particularly concerning student information. By aligning with ISO/IEC 27001 standards, the study planner demonstrates its commitment to legal and regulatory compliance, thus avoiding potential legal repercussions. Adherence to ISO/IEC 27001 principles enhances the trustworthiness and reputation of the study planner. Users require assurance that their information is secure and handled responsibly. By implementing ISMS, the study planner not only safeguards sensitive data but also instills confidence in its users, thereby enhancing its reputation in the academic community. ISMS promotes a cycle of continuous improvement in information security management. This iterative approach ensures that security measures evolve to address emerging threats. In the dynamic landscape of cybersecurity, continuous improvement is essential to stay ahead of evolving security risks and vulnerabilities. In conclusion, ISMS is indispensable in ensuring the security, confidentiality, and integrity of sensitive data handled by the study planner. By adhering to ISO/IEC 27001 standards and implementing robust security measures, the study planner can mitigate risks, comply with legal and regulatory requirements, and enhance user trust and reputation. In the ever-evolving landscape of cybersecurity, ISMS provides a framework for continuous improvement, enabling the study planner to adapt and respond to emerging security challenges effectively.

Related Studies

InertiaJS

With Inertia.js, development is completed much more quickly. React components allow developers to create dynamic web applications, while Laravel's well-known routing and controllers make this possible. Faster development cycles and less boilerplate code result from this. Combining Inertia.js with Laravel and React is a great way to improve user experiences, expedite development, and make it easier to integrate front-end and back-end technologies. It's an appealing option for contemporary web development projects, with a burgeoning community and a variety of useful applications (Sidoroska, 2023.) Search engines can more easily index your page and your initial load time will be much reduced with Inertia's excellent support for server-side rendering. Using Inertia greatly improves performance. Because you are developing a standard Laravel application using JavaScript rather than Blade, Inertia solves all these issues and more. You can obtain form requests and redirects without requiring API endpoints, and you can obtain sessions without requiring authentication credentials (Davis, 2024).

Laravel Framework PHP-based

Laravel has been utilized in various academic projects and systems. For example, in the development of a web-based laboratory inventory application for telecommunication engineering laboratories, the Laravel framework was employed, demonstrating its utility in creating efficient and functional systems (Rabiah et al. 2022). Furthermore, a

comparative study between Laravel and Slim frameworks in a freelancer project monitoring system highlighted the advantages of Laravel's MVC architecture in enhancing system quality and efficiency (Sunardi & Suharjito, 2019). Additionally, the Smart Final Year Project Archive System (SFYPAS) utilized the Laravel framework, emphasizing its role in facilitating project management and communication through features like email notifications (MatTaib et al., 2020).

ReactJS Front End User Interface JavaScript Library

For front-end interface without the actual JavaScript codes whilst still being a dynamic web editor by allowing only draw-state transition diagrams which are graphically developed in graphical editor (Naiki et al., 2018). React.js proves to be a just fit as optimizing front-end performance is massively important in building web applications such as the study planner, albeit its common comparison with Vue.JS, tests about its specific functionality that ranges from hook functionality, all the way to its CRD and API functionality shows that React's hooks functionality performed slightly better for API request and managing states on the web application (Sianandar & Kerthyayana Manuaba, 2022).

SQLite Database

SQLite is most used as a traditional table-oriented relational database, which is an obvious use case. Because SQLite supports atomic behaviors and transactions, your database won't become corrupted in the event. Higher-end databases provide features like

full-text indexing and support for JSON data, which are also present in SQLite. SQLite tables are a useful tool for storing application data that is usually crammed into semi-structured formats like YAML or XML. This makes the data easier to obtain and faster to process (Yegulalp, 2019). One particularly distinctive aspect of the SQL-based database SQLite is that all the data is contained in a single file. Many have traditionally viewed it as a simplistic database for simple use cases, mostly because of this. But SQLite has been developing and getting a lot of attention lately, so it's now a basic database for even more sophisticated use cases (Dodds, 2024).

ISO/IEC 25010: Systems and Software Quality Requirements and Evaluation (SQuaRE)S

The ISO/IEC 25010 standard is widely used as a quality model for web-based systems. Studies have applied this standard to measure functional suitability and usability in various information systems (Puspaningrum et al., 2017; Ariyani et al., 2021). Additionally, the standard has been utilized for multi-attribute quality score computation in Internet of Things (IoT) applications (Temkar et al., 2022). Furthermore, the ISO/IEC 25010 standard has been recognized for its role in identifying relevant product quality characteristics in small organizations (García-Mireles, 2016). It has also been associated with the quality implication for success in web applications (Bibi et al., 2016). Moreover, experiences have been reported on the establishment of a quality model for systems-of-systems based on this standard (Santos et al., 2015). These studies collectively demonstrate the widespread applicability and relevance of the ISO/IEC 25010 evaluating and ensuring

the quality of web-based systems across various domains and applications. Overall, the ISO/IEC 25010 standard serves as a comprehensive and flexible framework for evaluating and enhancing the effectiveness of web-based systems encompasses various elements, including ensuring that system features meet user needs, assessing user-friendliness, considering multiple quality factors simultaneously, and evaluating key product quality attributes.

ISO/IEC 27701: Privacy Information Management System (PIMS)

To develop a web-based study planner using ISO/IEC 27701: Privacy Information Management System (PIMS), it is essential to consider privacy management theories and frameworks (Petronio, 2010). This theory can provide valuable insights into privacy management within the web-based study planner (Petronio, 2010). Furthermore, Ortiz & Karapetrovic (2022) discuss the application of ISO/IEC 27701 in conjunction with other standards, emphasizing the importance of integrating privacy codes in specific domains such as healthcare. This highlights the relevance of ISO/IEC 27701 in managing privacy within specialized contexts, which can be applied to the development of a web-based study planner (Ortiz & Karapetrovic, 2022). Additionally, Tožička et al. (2015) present a study on privacy-concerned multiagent planning, demonstrating the applicability of privacy settings in planning systems. This study provides insights into the practical implementation of privacy concerns within planning frameworks, which can be valuable when designing the study planner to adhere to privacy standards (Tožička et al., 2015). This study provides a basis for understanding privacy policy evaluation, which is crucial when

developing the privacy framework for the study planner (Carrion et al., 2015).

ISO/IEC 27001: Information Security Management System (ISMS)

To create a web-based study planner incorporating it's crucial to draw insights from existing literature on ISMS, information security, and web-based technologies. Various studies offer valuable perspectives on the adoption, implementation, and effects of ISO/IEC 27001, as well as the design and assessment of information security management systems. Mirtsch et al. (2021) stressed the importance of understanding the motivations for ISO/IEC 27001 adoption and its impact on management systems. This study underscores the significance of integrating ISO/IEC 27001. Tanaamah & Indira (2021) analyzed Information Technology Security Management using ISO/IEC 27001:2013, identifying numerous security risks. Their insights into risk management within ISMS are invaluable for developing a comprehensive study planner that addresses information security risks. Moreover, Petrov et al. (2022) focused on the digitalization of educational services regarding information security policy, emphasizing the management of risks associated with information systems. This study guides the integration of ISMS into educational settings, shaping the development of a tailored web-based study planner.

Efficient Academic Planning and Improved Academic Performance

The development of a web-based study planner aimed at enhancing academic planning and improving academic performance. González et al. (2020) examined the influence of the COVID- 19 confinement on students' performance in higher education,

shedding light on the challenges and changes in academic workload and educational measurement during the pandemic. Similarly, Aguilera-Hermida (2020) explored college students' use and acceptance of emergency online learning due to COVID-19, providing insights into the preferences and experiences of students in transitioning to online learning. These studies are relevant as they highlight the impact of abrupt changes in learning environments on student performance and can inform the design of a web-based study planner that addresses the specific needs arising from such transitions. Kibble (2007) study offers valuable insights into formative assessment strategies that can be integrated into a web-based study planner to enhance student engagement and academic planning. Salimi et al. (2022) examined the impact of online social capital on academic performance, emphasizing the implications of online knowledge sharing for students' academic success. This study provides role of online interactions and knowledge sharing in academic performance, which can inform the development of features promoting collaborative learning within the web-based study planner. Moreover, Xhomara (2021) aimed to examine the influence of online learning on academic performance and students' satisfaction, providing insights into the potential benefits of online learning approaches for improving academic performance. Additionally, Rajabalee et al. (2019) studied the relationship between students' engagement and their academic performances in an eLearning environment, offering insights into the importance of student engagement for academic success in online settings.

In a study named “Does personalized goal setting and study planning improve

academic performance and perception of learning experience in a developing setting?”, Yusuff (2018). Conducted at the College of Clinical Pharmacy, King Faisal University, KSA, the study adopts a prospective cohort study design focusing on a mandatory 4th-year course in Pharmacy Management. The intervention group, which received instruction on goal setting and study planning, is compared to a control group undergoing standard teaching and learning practices. The outcomes indicate substantial enhancements in academic achievement, evidenced by higher scores in quizzes, midterm, and final exams, as well as a greater percentage of course objectives achieved by the intervention group. The findings reveal a comprehensive exploration of nurses' hurdles during the initial weeks of web-based learning, from technological challenges to reframing views on teaching. The study also highlights the subsequent period where nurses established meaningful relationships with instructors and peers, contributing to a positive learning experience and preventing attrition. Nurses reported the convenience of web-based courses, expressed interest in future technology-based learning, and, six weeks post-completion, identified improvements in their clinical practice as a result of the course. The conclusion underscores the initial challenges for novice Internet users but emphasizes the positive experiences reported by most nurses who completed the web-based course. The implications of this study are relevant for designing effective web-based study planners, particularly for irregular students, by considering computer skills, access, and the learning environment.

Conceptual Definition of Terms

This Conceptual Framework section provides a more detailed exploration of the input, process, and output components, incorporating additional elements for a comprehensive understanding of the study are represented.

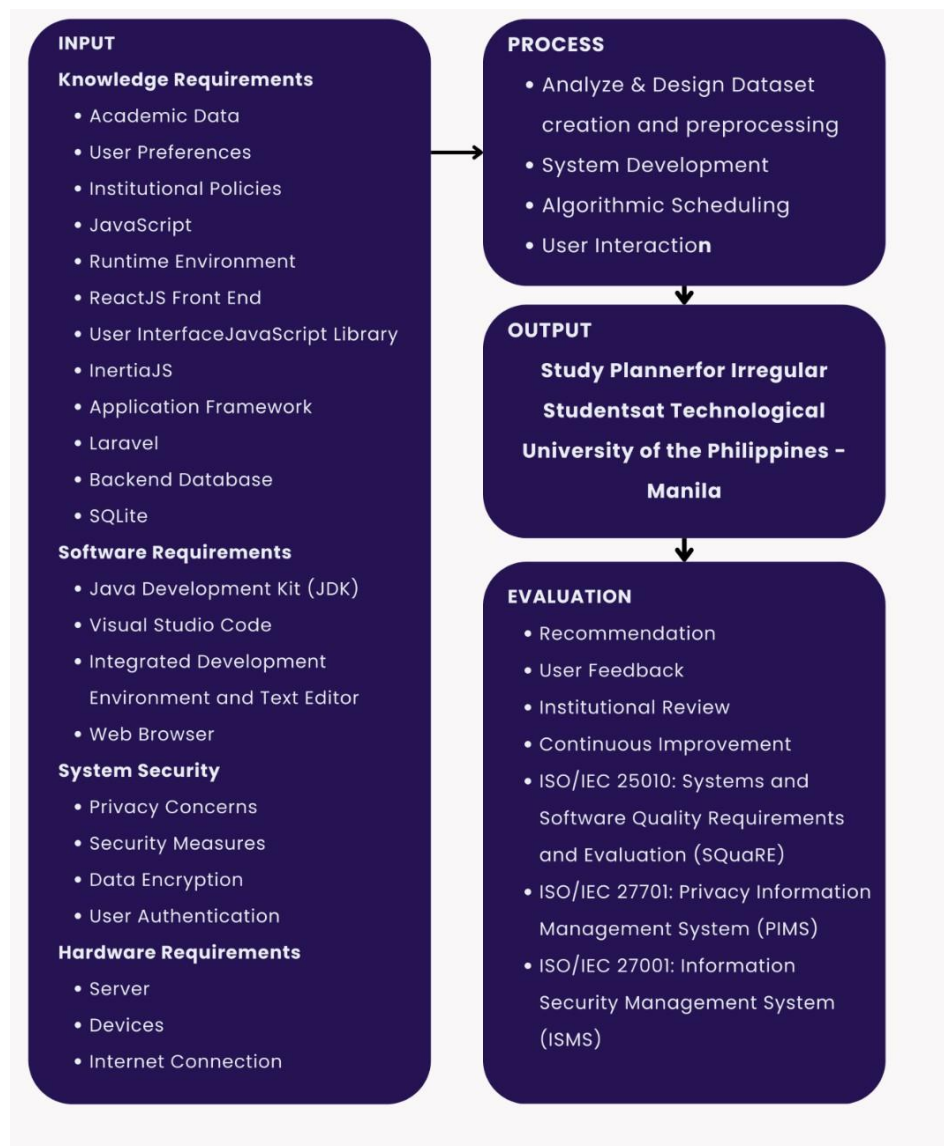


Figure 1. Conceptual Model of the Study

Input

The input involves knowledge, software, system security, and hardware requirements needed to develop a Study Planner for Irregular Students at the Technological University of the Philippines - Manila.

Knowledge Requirements

Academic Data. Finished Subjects coursework completed successfully by the irregular student. Failed Subjects coursework that the student was unable to pass. Current Course Load information on the subjects the student is currently enrolled in. Academic Standing the overall academic performance of the student. *User Preferences.* Study Habits information on the preferred study times, environments, and study techniques of the irregular student. Scheduling Preferences preferences regarding the timing and distribution of classes throughout the week. *Institutional Policies.* Academic Regulations policies regarding course prerequisites, corequisites, and other academic requirements. Scheduling Guidelines institutional guidelines related to the scheduling and duration of classes. *Inertia JS Inertia.js* can serve as a bridge that connects itself and the use of Laravel. Inertia handles the state and props passing between Laravel and React, simplifying the data flow. By leveraging Inertia.js, the study planner can achieve. *React JS* react.js can be employed for developing the frontend user interface of the Study Planner. Its ability to create interactive and reusable UI components is beneficial for providing irregular students with an intuitive and responsive platform to input their preferences and view their personalized study plans. SQLite can be used to store academic data for irregular students efficiently. The *SQLite*

database allows for a great deal of accessibility. It will also serve as a database to store information. User Training. Orientation Sessions irregular students need basic training on using the Study Planner interface, inputting data, and navigating the system. Feedback Mechanism users should understand how to provide feedback effectively to contribute to continuous improvement.

Software Requirements

Laravel Framework is mentioned in the context of backend development. In the development of the Study Planner, the Laravel framework can be utilized for building the backend server logic. This includes algorithms for analyzing academic data, generating personalized study plans, and managing user accounts. Laravel is an essential tool. Its rapid prototyping speeds up testing and feedback, while its MVC architecture and middleware ensure scalability and security. Using Laravel, the Study Planner for irregular students becomes not just a practical solution but a symbol of innovation. By combining Laravel's strengths with the unique needs of irregular students, this research aims to improve academic planning, promoting success and empowerment.

Visual Studio Code is an integrated development environment (IDE) that can enhance the efficiency of your development team. Developers can use VS Code for writing, testing, and debugging code related to the Study Planner. It ensures a consistent and efficient development process by providing tools for coding, debugging, and version control. Since the Study Planner is a web-based application, it is accessed through web browsers. Irregular students will use web browsers to input their academic data,

preferences, and view their personalized study plans through a user-friendly frontend developed using React.js and other web technologies.

System Security

Privacy Concerns. Confidentiality academic data is sensitive, and strict measures are in place to ensure that individual student information remains confidential. *Security Measures.* Access Controls restricting access to academic data to authorized personnel only, ensuring data integrity and security. *Data Encryption* implementing encryption protocols for the transmission and storage of academic data to protect against unauthorized access. *User Authentication:* secure login mechanisms to protect user accounts and data.

Hardware Requirements

Server. Processor multi-core processor for efficient handling of concurrent user requests. RAM adequate RAM to ensure smooth data processing. Storage sufficient storage space to accommodate the application files and database. *Devices.* Desktops/Laptops/Mobile Phones irregular students should have access to standard desktops/laptops/mobile phones for optimal system interaction. *Internet Connection* a stable internet connection for accessing the web-based Study Planner.

Process

The analysis phase this thesis involves understanding the challenges and academic requirements of irregular students. This phase sets the foundation for developing a Study

Planner that caters to the diverse needs of irregular students. **Design** in the design phase, we plan the structure and **Analyzing** features of the Study Planner. Creating the database schema to store academic data efficiently, and outlining the overall system architecture. **Dataset Creation and Preprocessing** as part of the dataset creation and preprocessing phase, we gather academic data from irregular students. This data includes finished subjects, failed subjects, current course loads, and other relevant information. Preprocessing involves cleaning and organizing this data for effective use in the Study Planner. **System Development** is the core phase of our thesis where the actual Study Planner is built. This involves using technologies like Java for the backend, React.js for the frontend, and Inertia.js for web application logic as well as the use of the Laravel framework for the system. SQLite can be used to store and retrieve academic data efficiently. **Algorithmic Scheduling** algorithm scheduling is a critical aspect of the Study Planner. This phase involves implementing algorithms that analyze academic data and user preferences to generate optimal study plans. It ensures that the Study Planner suggests courses in a sequence that aligns with prerequisites, corequisites, and user preferences. **User Interaction** is fundamental to our thesis, as irregular students will interact with the Study Planner to input their academic data, preferences, and view personalized study plans. This phase includes designing intuitive interfaces, input mechanisms, and feedback channels for users. **Develop, Debug & Test** involves coding the Study Planner using tools like Visual Studio Code. This phase ensures that the codebase is free of errors and aligns with the design specifications. It is crucial for maintaining a reliable and robust application. Test is a critical aspect of the Study Planner development. It involves conducting usability

testing, performance testing, and ensuring that the Study Planner functions correctly under various scenarios. Testing helps identify and rectify any issues before the system is deployed.

Output

Study Planner for Irregular Students at Technological University of the Philippine-Manila outcome in relation to the inputs and process. Personalized Study Plans. Optimal Course Sequence a recommended sequence of courses based on prerequisites, corequisites, and academic performance. Efficient Schedules individualized schedules that optimize user preferences and efficient course completion. Capabilities for Advisors study planner will equip advisors with tools to efficiently manage their advisory responsibilities and system will allow advisors to track the progress of their advisors, identifying potential issues early and intervening when necessary. Administrative Functions for College Heads this account will have additional administrative and oversight capabilities to ensure the effective management of academic programs and to identify trends and areas needing improvement.

Evaluation

Recommendations. Implementation Guidelines suggestions for the effective implementation of the Study Planner in an institutional context. Improvement Strategies recommendations for ongoing improvements and updates to enhance the Study Planner's effectiveness. *User Feedback.* Usability Feedback input from users regarding the ease of

use and navigability of the Study Planner. Satisfaction Reports feedback on user satisfaction levels and perceived impact on academic life. *Institutional Review*. Policy Analysis evaluating the Study Planner's alignment with institutional policies. Administrative Feedback seeking input from university administrators regarding the system's compliance and effectiveness. *Continuous Improvement* is an iterative process in your thesis. It involves collecting user feedback, analyzing system performance, and making enhancements to the Study Planner. This phase ensures that the Study Planner evolves to meet the changing needs of irregular students. *ISO/IEC 25010: Systems and Software Quality Requirements and Evaluation (SQuaRE)* characteristics and sub-characteristics for evaluating the Study Planner. *ISO/IEC 27701: Privacy Information Management System (PIMS)* focuses on privacy management, ensuring that the personal information of students is handled in accordance with privacy requirements. *ISO/IEC 27001: Information Security Management System (ISMS)* ensures the security of information and data within the Study Planner.

Operational Definition of Terms

The terms clarify the specific meanings attributed to key terms in the context of our thesis, providing a shared understanding for readers and researchers.

InertiaJS - It enables the creation of fully client-side rendered, single-page applications (SPAs) without the complexity often associated with modern SPAs. This is achieved by utilizing familiar server-side patterns that developers already appreciate and understand.

Web-Based Study Planner - A digital platform accessible via web browsers designed to assist irregular students at the TUP - Manila in creating and managing personalized academic study plans. It includes features for subject selection, scheduling, and notifications.

Irregular Students - Students characterized by non-standard academic trajectories, often facing challenges such as failed subjects, part-time work, familial duties, or other factors that may extend their anticipated years of study.

ISO Standards - are a set of globally recognized guidelines and specifications ensuring the quality, efficiency, and security of systems and processes. In the context of this thesis, ISO standards relate to implementing security protocols for user information and privacy.

Laravel Framework - A PHP web application framework with an elegant syntax and extensive feature set, suitable for building robust backend server logic. In this thesis, Laravel Framework is utilized for developing the backend of the web-based Study Planner. It includes handling algorithms for analyzing academic data, generating personalized study plans, and managing user accounts.

ReactJS - A front-end JavaScript library, employs a component-based architecture for constructing user interfaces. It's utilized in our Study Planner to develop dynamic and interactive interfaces, thereby improving the overall user experience.

SQLite - It operates without any configuration and doesn't need installation. SQLite is utilized as the database solution for effectively handling and accessing various academic and user-related data.

Personalized Study Plan - A customized academic plan generated for irregular students

based on their academic history, preferences, and scheduling constraints. It aims to optimize course sequences, considering prerequisites and individual circumstances.

User-Friendly - Describes the ease of users, specifically irregular students of TUP Manila who can navigate, interact, and effectively utilize the features of the web-based Study Planner without encountering unnecessary complexities.

Continuous Improvement - A systematic process of refining and enhancing the web-based Study Planner over time. This includes the incorporation of user feedback, iterative updates, and adjustments to improve usability, functionality, and overall user satisfaction.

Chapter 3

METHODOLOGY

Project Design

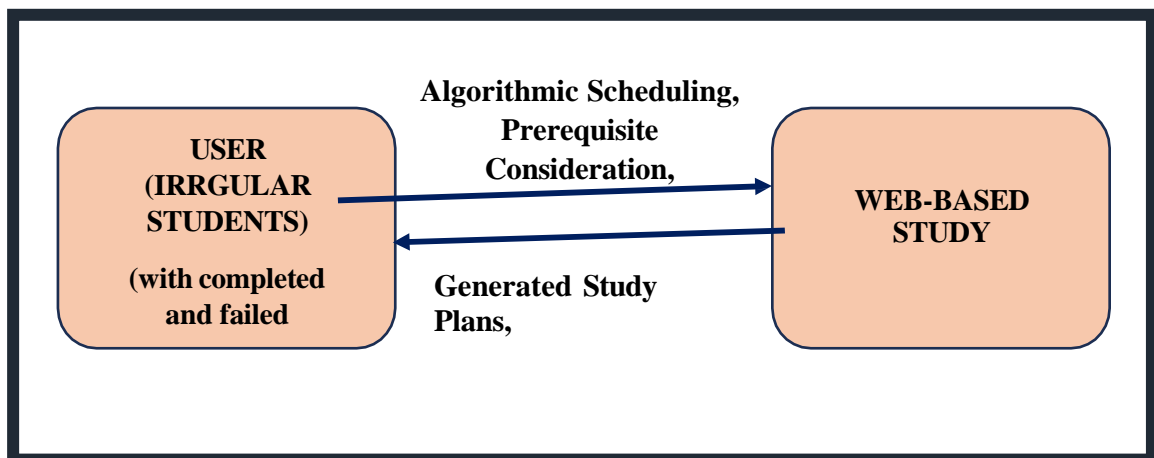


Figure 2. Context Diagram for Web-Based Study Planner

The aim of the project's design is to develop a robust online study planner tailored to meet the specific needs of irregular students at the Technical University of the Philippines - Manila. The primary goal is to provide a comprehensive solution addressing the challenges faced by irregular students such as managing rigorous course schedules, navigating prerequisite requirements, and maintaining a balance between extracurricular commitments and academic responsibilities. The project involves developing an intuitive platform that enables students to register, choose courses according to their interests and past academic performance, and create customized study schedules. The integration of automated notifications and reminders into the system will improve students' capacity to maintain organization and fulfill academic obligations. Additionally, the Study Planner will follow pertinent ISO standards, guaranteeing strong security protocols to safeguard user information and privacy. With a feedback system and a schedule for iterative updates to improve usability and functionality, the project design places a strong emphasis on continuous improvement. With this program, the project hopes to support the university's inclusive education mission by giving irregular students a tool that will enable them to successfully navigate their academic journey.

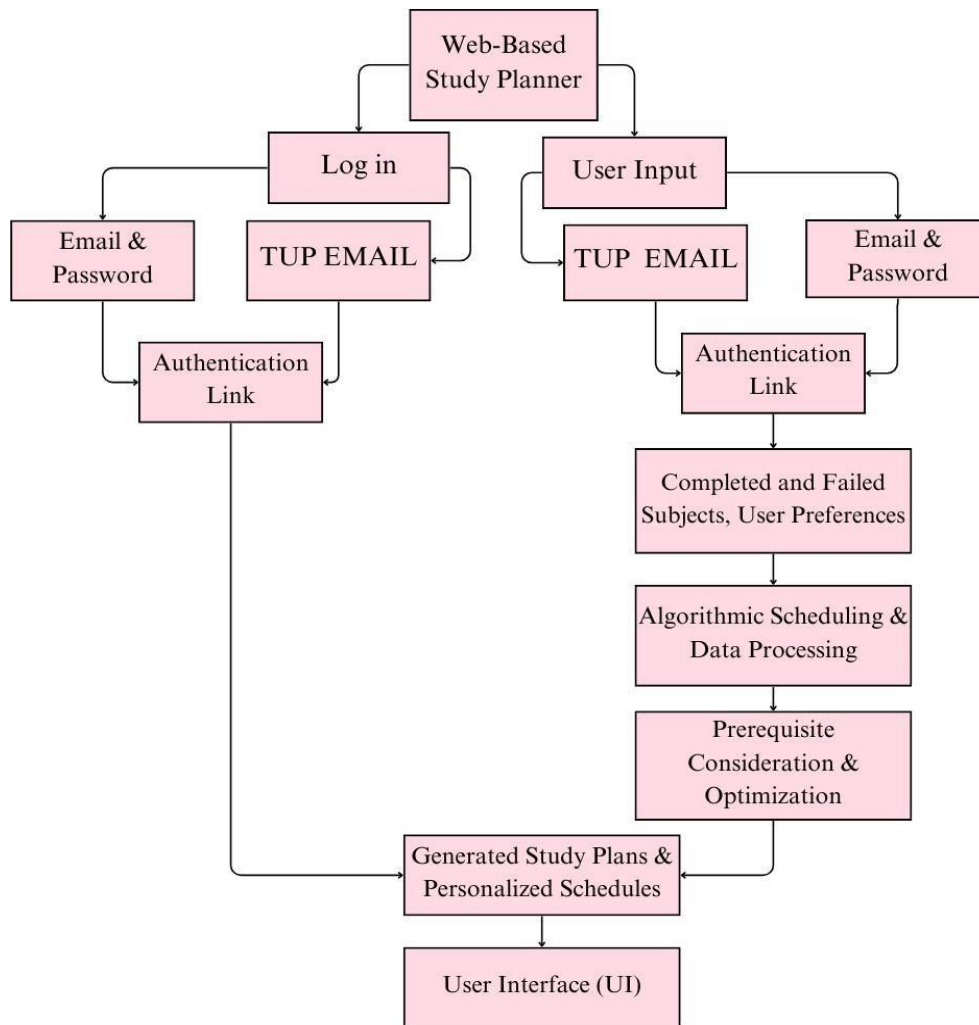


Figure 3. Block Diagram Flow for Web-Based Study Planner

User Input - Users provide initial data, including completed and failed subjects, user preferences, TUP email, and email and password for authentication.

Login and Authentication Link - The TUP email and email with a password are used for user authentication. This step ensures that users logging in are legitimate and authorized. This step involves the process of verifying the user's TUP email and email with a password

through an authentication link. The link serves as a secure way to validate user identity.

User Preferences, Completed and Failed Subjects - Once authenticated, the system proceeds to gather detailed input from the user, including information about completed and failed subjects and user preferences.

Algorithmic Scheduling & Data Processing - The collected data undergoes algorithmic scheduling and data processing. This involves the optimization of course sequences, considering prerequisites and other relevant factors.

Prerequisite Consideration & Optimization - Further refinement of the study plan occurs through prerequisite consideration and optimization. The system ensures that the proposed plan aligns with the user's academic requirements.

Generated Study Plans & Personalized Schedules - The outcome of the algorithmic processes results in the generation of personalized study plans and schedules. These plans are customized to the user's input, providing an optimized academic roadmap and customizable semester weekly subject schedules.

User Interface - The final personalized study plans and schedules are presented through the user interface. This interface serves as the platform through which users can view, interact with, and navigate their study plans.

Project Development

The researchers will follow an agile development process due to our time limitations; it is ideal to follow this model as it reduces the risk of scrupulous amounts of time on the development in the early phase of its development. The agile methodology allows teams to coordinate with the end-user to understand the goals and provide solutions in a quick and incremental manner.

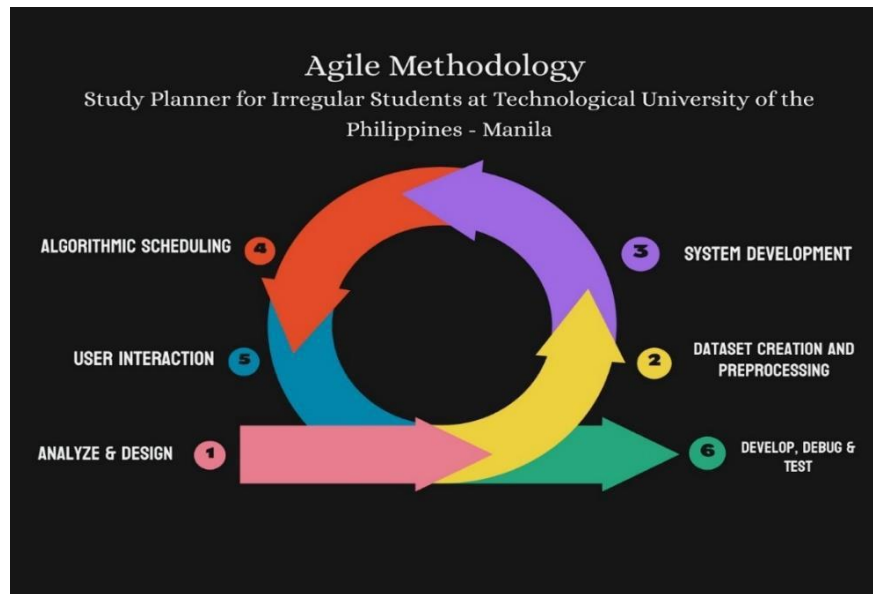


Figure 4. Agile Methodology

First Phase, Analyze and Design. Conduct a thorough analysis of challenges faced by irregular students. Identify academic requirements and constraints across different colleges. Define the scope, goals, and deliverables of the Study Planner. Design the user interface for the Study Planner. Create a database schema for storing academic data.

Outline the overall system architecture. **Second Phase**, Dataset Creation and Preprocessing. Gather academic data from irregular students. Preprocess and clean the dataset for effective use. Develop a mechanism for collecting academic data, considering privacy and consent. Retrieve historical academic data from the university database. **Third Phase**, System Development. Write server-side logic to handle requests and interact with the database. Build a functional Study Planner Web Application and user interfaces for input, feedback, and study plan display. Connect the application to SQLite to store and retrieve academic data. **Fourth Phase**, Algorithmic Scheduling. Develop algorithms that consider prerequisites and corequisites for course sequencing. Design logic to generate personalized study plans based on individual preferences and constraints. The module is responsible for optimal course sequencing and scheduling. Detailed documentation of the algorithms and logic implemented. **Fifth Phase**, User Interaction. Create forms and interfaces for users to input their academic information and preferences. Develop mechanisms for users to provide feedback on the Study Planner. **Last Phase Last Phase**, Develop, Debug & Test. Write, modify, and debug code using the selected integrated development environment.

Conduct thorough testing and debugging to eliminate errors and ensure stability. Invite users to interact with the Study Planner and provide feedback. Testing is essential to ensure a reliable, secure, and user-friendly system for irregular students at the TUP - Manila.

Operational and Testing Procedure

This operational and testing procedure guides students with clear instructions on how to navigate and use the web-based Study Planner. The specific features and user interface design of our system. The expected output and benefits described above highlight the tangible and intangible advantages that the web-based Study Planner can bring to the academic experience of Irregular Students at the TUP - Manila.

System Function	Procedure	Expected Output
1. Functional Web-Based Study Planner Link	<ul style="list-style-type: none">- Open your web browser and navigate to the Study Planner website.	1. Web-Based Study Planner Platform The primary output is a fully functional web-based Study Planner platform tailored to the needs of irregular students at the Technological University of the Philippines - Manila.
2. Account Verification	<ul style="list-style-type: none">- Look for the homepage. Provide the required information, use a TUP email address.- Check your email for an authentication link. Click on the link to verify your account for security purposes	2. Personalized Study Plans and Enhanced User Experience An intuitive module for subject selection, considering prerequisites and enabling students to generate optimal study plans and semester weekly schedules based on their

3. User Input/ Exploring Subjects	<ul style="list-style-type: none"> - Look for a section or tab labeled "Subjects" or "Courses." Explore the list of available subjects. - Choose the subjects you want to study. Click on an "Add to Plan" or similar button. Explore your Study Planner 	<p>preferences.</p> <p>3. Security and Privacy Assurance</p> <p>Implementation of security measures to safeguard user data, ensuring compliance with relevant ISO standards and university policies.</p> <p>4. Efficient Academic Planning and Improved Academic Performance</p> <p>The Study Planner facilitates better academic performance by assisting students in organizing their coursework and meeting prerequisite requirements.</p> <p>5. Contribution to University's Mission and Inclusive Academic Environment</p> <p>The Study Planner aligns with the university's mission of providing inclusive education, contributing to the overall success and satisfaction of the student body. The Study Planner supports the university's commitment to inclusivity by addressing the unique needs of irregular students, creating a more supportive and equitable academic environment.</p>
4. Generating Schedule	<ul style="list-style-type: none"> - Find a feature like "Generate Schedule" and "Create Timetable." Input any preferences you have, such as preferred study times or breaks. 	
5. Providing Feedback	<ul style="list-style-type: none"> - Find a section labeled "Feedback" or a similar term. Use this section to provide feedback on the system Share your thoughts on the Study Planner. Report any issues or suggest improvements. 	
6. Logging Out Option	<ul style="list-style-type: none"> - When finished, go to the "Logout" or "Sign Out" option. 	

Table 1. Testing and Operating Procedure of Web-Based Study Planner

Evaluation Procedure

1. *ISO/IEC 27001* ensures the security of information and data within the Study Planner, protecting against unauthorized access and data breaches. Given that the Study Planner deals with student information, security is paramount.

2. *ISO/IEC 27701* focuses on privacy management, ensuring that personal information of students is handled in accordance with privacy requirements. This is especially crucial considering the sensitive nature of academic data.

3. *ISO/IEC 25010* defines quality characteristics and sub-characteristics for evaluating the Study Planner. This includes aspects such as ensuring a high-quality software system, functional suitability, performance efficiency, compatibility usability, reliability security, and maintainability portability.

To determine the acceptability of the developed web application the following procedures will be followed:

1. Thirty carefully selected participants will be solicited, comprising 15 students from the TUP - Manila and 15 professionals from diverse technical fields.
2. The researchers will then demonstrate to the respondents how to use the web application.
3. The respondents will now use the web application as they see fit.
4. The respondents will then be asked to evaluate the web application using the evaluation form shown in table 1. The evaluation form lists all the characteristics

specified in the ISO/IEC 25010 and the respondents need to evaluate each characteristic using a 3-point Likert's scale shown in table 2.

5. The finished evaluation form will summarize findings from user satisfaction and usability testing and process the results. We will review documentation related to ISO standards compliance.

ISO/IEC 25010 Characteristics	1	2	3	4	5
Functional Suitability					
Performance Efficiency					
Compatibility					
Reliability					
Maintainability					

Table 2. Evaluation Form

Scale	Adjectival/Descriptive Rating	Range
1	High Acceptable	4.21 - 5.00
2	Acceptable	3.41 - 4.20
3	Neutral	2.61 - 3.40
4	Unacceptable	1.81 - 2.60
5	Not Acceptable	1.00 - 1.80

Table 3. 5-Point Likert's Scale

Chapter 4

RESULTS AND DISCUSSION

This chapter provides into several key aspects, including the product description, project structure, capabilities, limitations, and evaluation. It enhances the comprehension of the paper by elaborating on additional materials that contribute to a more comprehensive understanding of the research.

Project Description

Conducted study on the development of a web-based study planner designed for irregular students at the TUP – Manila. The project aimed to create a digital tool to assist irregular students, who often face regular challenges in managing their academic schedules due to varying course completions, prerequisites, and irregular enrolment patterns. The web-based study planner was developed using a combination of multiple web development tools such as Laravel for the server-side framework with the reasoning that web development for the longest time has worked fantastically with php language. For runtime environment, InertiaJS was chosen for its seamless integration, ReactJS for the front-end development, and lastly, SQLite for database management as SQLite proves to be a better choice for lightweight database management such as small- scale web applications such as ours. These technologies were chosen to ensure that the application is robust, scalable, and user-friendly.

The researchers developed a web-based study planner to provide personalized and optimized academic schedules for irregular students with the goal of reducing the additional years they be originally held back with, This personalization is achieved by analyzing each student's academic history, inputting their current year and semester to attend to, which also includes completed course along with their failed subjects, that would prove to be the deciding factor for their planned scheduler since all information like prerequisites and corequisites are included in the subjects details. Key findings from the implementation of the study planner indicate significant improvements in academic management for irregular students. User feedback has been moderately positive, with students reporting a high level of usability along with satisfaction with its user friendliness.

Project Structure

Figure 5. Sign Up

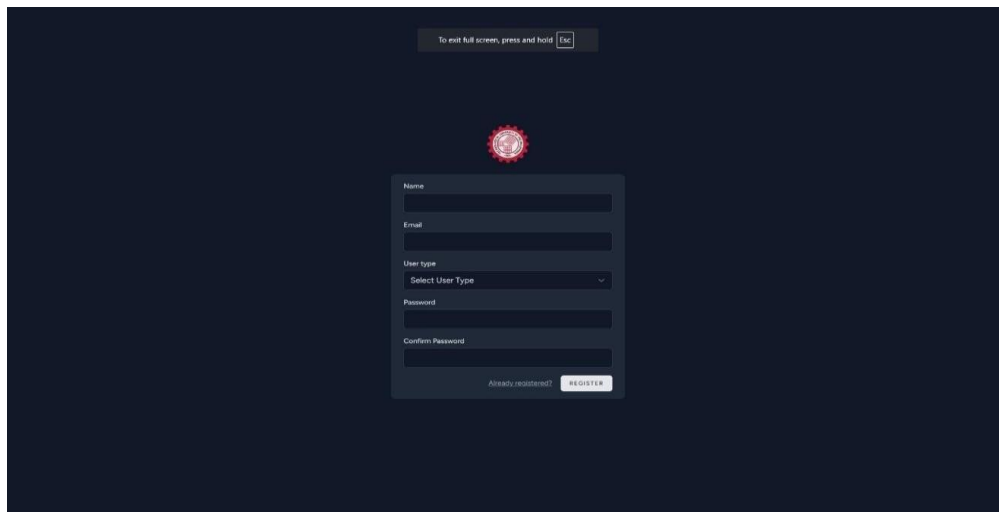
The image shows a dark-themed web interface for a sign-up process. At the top, there is a small instruction box that says "To exit full screen, press and hold Esc". Below this is a red circular icon with a white question mark. The main form is a light gray rectangle with the following fields: "Name" (text input), "Email" (text input), "User Type" (a dropdown menu with "Select User Type" as the placeholder), "Password" (text input), and "Confirm Password" (text input). At the bottom of the form, there is a link that says "Already registered?" and a button labeled "REGISTER".

Figure 5 shows the Sign-Up screen of the system where users are able to create their account. Users are required to input their name, email address, user type, and

password.

Figure 6. Sign In

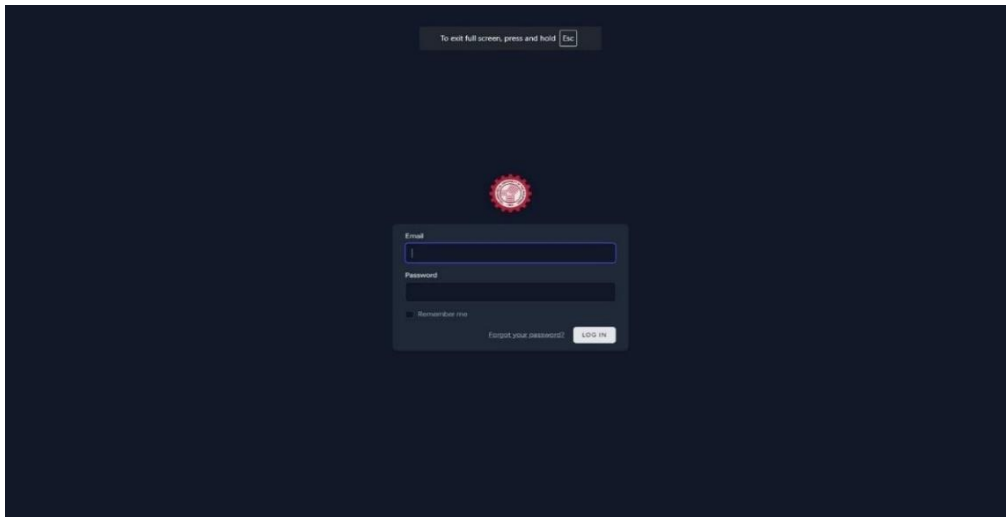


Figure 6 is the Sign In screen. After making an account, users can now enter their email address and password to proceed with the log in.

Figure 7. Authentication

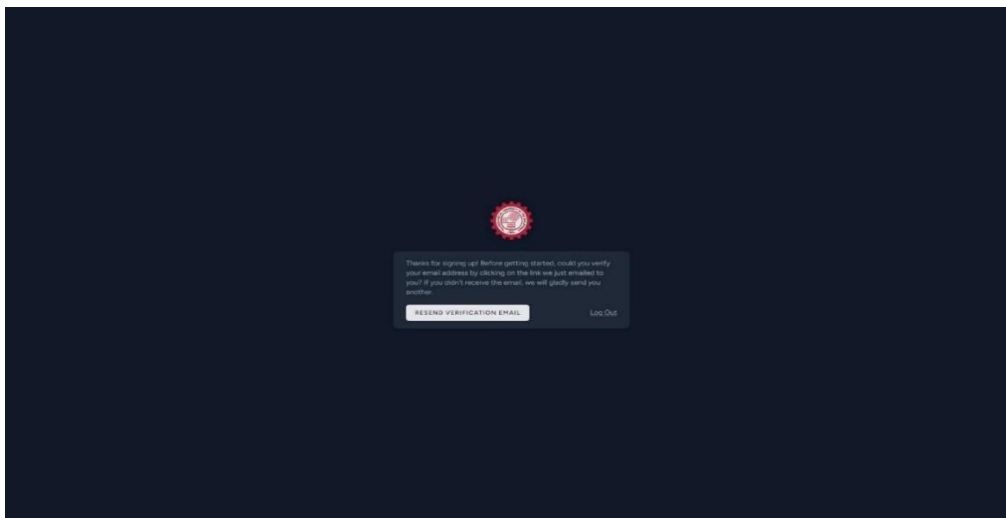
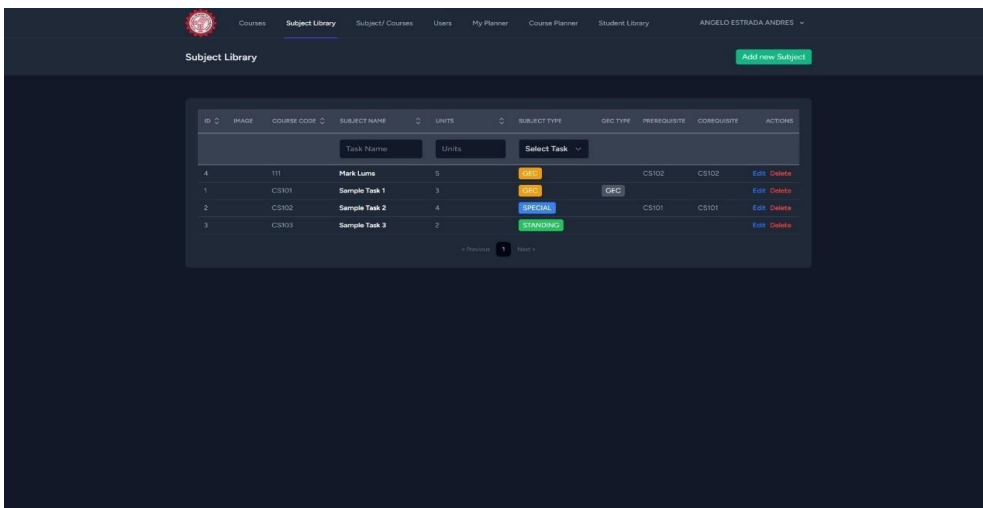
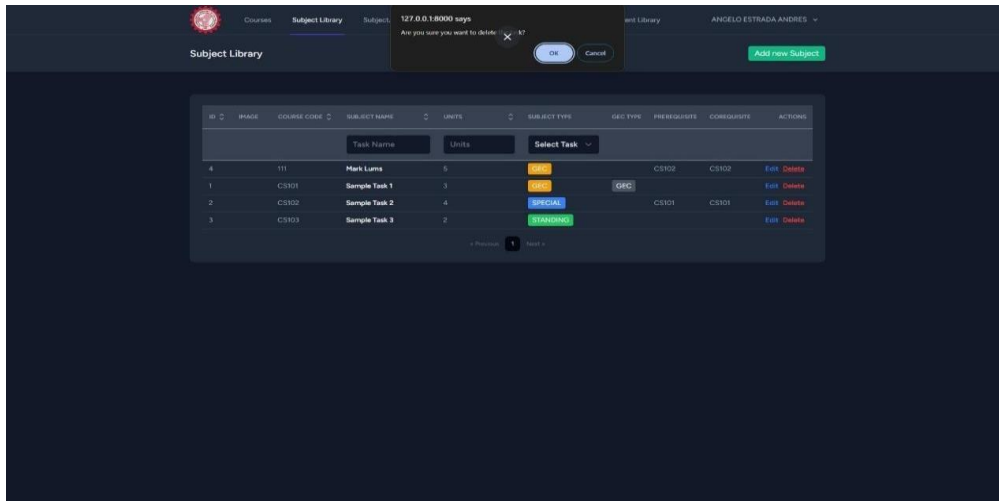


Figure 7 is the Authentication screen. After making an account, users can now proceed in verifying their email address.

Figure 8. Subject CRUD



Course Library | Subject Library | Subject/ Courses | Units | My Planner | Course Planner | Student Library | ANGELO ESTRADA ANDRES

Create new Subject

Subject Name

Units

Assigned Prerequisite

Assigned Corequisite

Task Type

Course Code

Figure 8 contains the subject library which pertains to the wide collection of subjects available in TUP.

Figure 9. Courses

Course Library | Subject Library | Subject/ Courses | Units | My Planner | Course Planner | Student Library | ANGELO ESTRADA ANDRES

Courses

ID	NAME	STATUS	CREATE DATE	ACTIONS
5	Markus	In Progress	2024-08-06	Edit Delete
4	sample	In Progress	2024-08-06	Edit Delete
3	comad	Completed	2024-08-05	Edit Delete
2	sample project 1	In Progress	2024-08-05	Edit Delete
1	sample project	Completed	2024-08-05	Edit Delete

2 Records 1 Page 1

Figure 9 contains the course library which pertains to the wide collection of course program with subjects available in TUP.

Figure 10. Student Management

Student Assigning

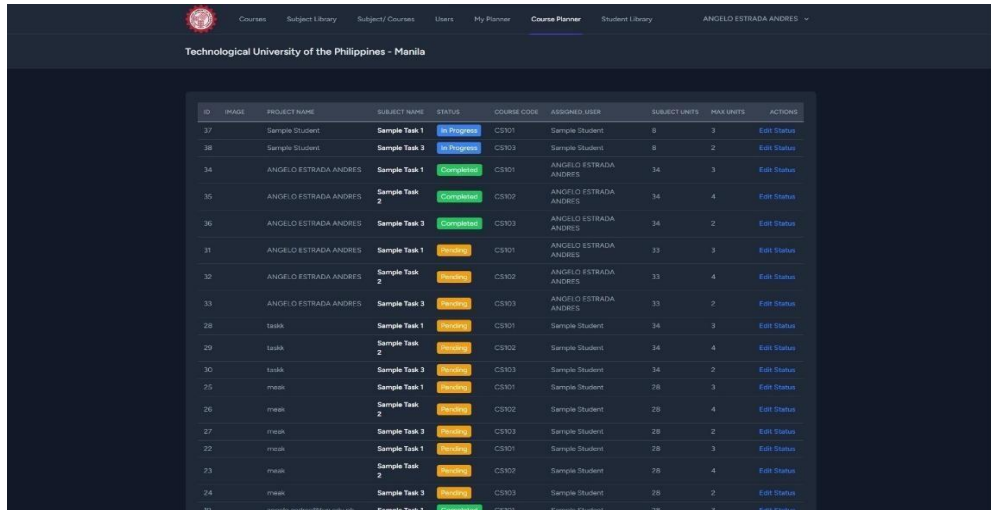
ID	IMAGE	COURSE CODE	NAME	STATUS	CREATE DATE	DUE DATE	CREATED BY	ACTIONS
11		CS101	Sample Task 1	ON	GFC			Edit Delete
12		CS103	Sample Task 3	STANDING			2	Edit Delete
10		CS101	Sample Task 1	ON	GFC			Edit Delete
8		CS101	Sample Task 1	ON	GFC			Edit Delete
9		CS103	Sample Task 3	STANDING			2	Edit Delete
4		CS101	Sample Task 1	ON	GFC			Edit Delete
5		CS102	Sample Task 2	SPECIAL			1	Edit Delete
6		CS103	Sample Task 3	STANDING			2	Edit Delete
1		CS101	Sample Task 1	ON	GFC			Edit Delete
2		CS102	Sample Task 2	SPECIAL			1	Edit Delete

Student Library

ID	NAME	STATUS	CREATE DATE	ACTIONS
20	Sample Student	IN Progress	2024-06-08T06:19:28.000000Z	Delete
19	ANGELO ESTRADA ANDRES	Completed	2024-06-08T21:21:36.000000Z	Delete
18	ANGELO ESTRADA ANDRES	Completed	2024-06-08T18:21:45.000000Z	Delete
17	Sample Student	IN Progress	2024-06-08T18:12:14.000000Z	Delete
16	Sample Student	Completed	2024-06-08T18:08:55.000000Z	Delete
15	Sample Student	Completed	2024-06-08T18:08:54.000000Z	Delete
14	Sample Student	Completed	2024-06-08T18:08:51.000000Z	Delete
13	Sample Student	Completed	2024-06-08T18:05:54.000000Z	Delete
12	Sample Student	IN Progress	2024-06-08T17:39:37.000000Z	Delete
11	Sample Student	IN Progress	2024-06-08T17:38:56.000000Z	Delete

Figure 10 which is Student Management contains the list of student together with its designated program.


Figure 11. Course Planner



ID	IMAGE	PROJECT NAME	SUBJECT NAME	STATUS	COURSE CODE	ASSIGNED USER	SUBJECT UNITS	MAX UNITS	ACTIONS
37		Sample Student	Sample Task 1	In Progress	CS101	Sample Student	8	3	Edit Status
38		Sample Student	Sample Task 3	In Progress	CS103	Sample Student	8	2	Edit Status
34		ANGELO ESTRADA ANDRES	Sample Task 1	Completed	CS101	ANGELO ESTRADA ANDRES	34	3	Edit Status
35		ANGELO ESTRADA ANDRES	Sample Task 2	Completed	CS102	ANGELO ESTRADA ANDRES	34	4	Edit Status
36		ANGELO ESTRADA ANDRES	Sample Task 3	Completed	CS103	ANGELO ESTRADA ANDRES	34	2	Edit Status
31		ANGELO ESTRADA ANDRES	Sample Task 1	Pending	CS101	ANGELO ESTRADA ANDRES	33	3	Edit Status
32		ANGELO ESTRADA ANDRES	Sample Task 2	Pending	CS102	ANGELO ESTRADA ANDRES	33	4	Edit Status
33		ANGELO ESTRADA ANDRES	Sample Task 3	Pending	CS103	ANGELO ESTRADA ANDRES	33	2	Edit Status
28		taskA	Sample Task 1	Pending	CS101	Sample Student	34	3	Edit Status
29		taskA	Sample Task 2	Pending	CS102	Sample Student	34	4	Edit Status
30		taskA	Sample Task 3	Pending	CS103	Sample Student	34	2	Edit Status
25		taskA	Sample Task 1	Pending	CS101	Sample Student	28	3	Edit Status
26		taskA	Sample Task 2	Pending	CS102	Sample Student	28	4	Edit Status
27		taskA	Sample Task 3	Pending	CS103	Sample Student	28	2	Edit Status
22		taskA	Sample Task 1	Pending	CS101	Sample Student	28	3	Edit Status
23		taskA	Sample Task 2	Pending	CS102	Sample Student	28	4	Edit Status
24		taskA	Sample Task 3	Pending	CS103	Sample Student	28	2	Edit Status

Figure 11 which is Course Planner contains the list of all assigned planners for each specific student.

Figure 12. My Planner



Courses

Subject Library

Subject / Courses

Users

My Planner

Courses Planner

Student Library

ANGELO ESTRADA ANDRES ▾

Hi | Welcome

ID	IMAGE	PROJECT NAME	SUBJECT NAME	STATUS	CREATE DATE	ASSIGNED USER	CREATED BY	ACTIONS			
31		ANGELO ESTRADA ANDRES	Sample Task 1	<div>Pending</div>	CS101	ANGELO ESTRADA ANDRES	33	3	gen	gen	<div>Edit Status</div>
32		ANGELO ESTRADA ANDRES	Sample Task 2	<div>Pending</div>	CS102	ANGELO ESTRADA ANDRES	33	4	special	1	<div>Edit Status</div>
33		ANGELO ESTRADA ANDRES	Sample Task 3	<div>Pending</div>	CS103	ANGELO ESTRADA ANDRES	33	2	standing	2	<div>Edit Status</div>
16		32/32/32	Sample Task 1	<div>Pending</div>	CS101	ANGELO ESTRADA ANDRES	32	3	gen	gen	<div>Edit Status</div>
17		32/32/32	Sample Task 2	<div>Pending</div>	CS102	ANGELO ESTRADA ANDRES	32	4	special	1	<div>Edit Status</div>
18		32/32/32	Sample Task 3	<div>Pending</div>	CS103	ANGELO ESTRADA ANDRES	32	2	standing	2	<div>Edit Status</div>
4		taskA/taskA/duv	Sample Task 1	<div>Pending</div>		ANGELO ESTRADA ANDRES	34	3	gen	gen	<div>Edit Status</div>
5		taskA/taskA/duv	Sample Task 2	<div>Pending</div>		ANGELO ESTRADA ANDRES	34	4	special	1	<div>Edit Status</div>
6		taskA/taskA/duv	Sample Task 3	<div>Pending</div>		ANGELO ESTRADA ANDRES	34	2	standing	2	<div>Edit Status</div>
1		sample	Sample Task 1	<div>Pending</div>		ANGELO ESTRADA ANDRES	34	3	gen	gen	<div>Edit Status</div>
2		sample	Sample Task 2	<div>Pending</div>		ANGELO ESTRADA ANDRES	34	4	special	1	<div>Edit Status</div>

Figure 12, My planner, on the other hand pertains to unique planner for the student that has logged on.

Project Capabilities and Limitations

The following below are the functionalities and abilities of the developed system:

1. The web-based study planner provides personalized schedules for irregular students by considering their completed courses, current academic standing, and required
2. prerequisites and corequisites.
3. The planner includes tools for students to track their academic progress, set goals, and monitor their achievements. This feature helps students stay on track and motivated throughout their academic journey.
4. The system makes it basic for students to navigate the planner and utilize the available features effectively.
5. The system can compromise student information and the integrity of the system if there are any breaches or lapses in data protection.

Just like any other systems, the system has the following limitations:

1. The system effectiveness relies heavily on the accuracy and completeness of the input data.
2. The system requires users to have reliable internet access and modern web browsers to function effectively.
3. The system requires regular maintenance and updates to remain functional and secure.
4. The system needs to address any bugs, update software components, and enhance features based on user feedback.
5. The system, despite its user-friendly interface, may have an initial learning curve

for some users, particularly those less familiar with web-based applications.

Project Evaluation

The Evaluation of Functional Suitability of the system was carried out by 30 evaluators, including 15 students from the TUP - Manila and 15 professional technical respondents from the industry. The results indicate a generally positive reception. For the "Response Time" criterion, 66.7% of evaluators rated it as acceptable, while 23.3% were neutral, and 10% found it highly acceptable. "Throughput" was considered acceptable by 46.7% of respondents, with a substantial 40% remaining neutral and 13.3% rating it highly acceptable. Similarly, "Resource Utilization" received 50% acceptable and 40% neutral ratings. "Scalability" was positively rated, with 53.3% finding it acceptable and 46.7% neutral. The system's "Efficiency in Handling Complex Operations" garnered a 60% acceptable rating and 40% neutral. "Error Handling and Recovery" was rated acceptable by 50% of respondents, with 43.3% neutral and a small 6.7% rating it highly acceptable. Finally, "Network Efficiency" saw 56.7% rating it acceptable, 30% neutral, and 13.3% highly acceptable. Overall, the system shows a majority of acceptable ratings across various functional aspects, highlighting areas for potential improvement but indicating general effectiveness.

CRITERIA	1 - High Acceptable	2 - Acceptable	3 – Neutral	4 - Unacceptable	5 – Not Acceptable
Accuracy of Study Plans	0 0	8 26.7%	22 73.3%	0	0
Completeness of Features	5 16.7%	16 53.3%	9 30%	0	0
Appropriateness for Task	2 6.7%	13 43.3%	14 46.7%	0	0
Security and Privacy Compliance	1 3.3%	15 50%	14 46.7%	0	0
Integration Capabilities	1 3.3%	9 30%	20 66.7%	0	0
Ease for use of Irregular students	1 3.3%	9 30%	20 66.7%	0	0
Overall Mean Percentage	2 6.7%	11 38.32%	17 55.02%	0	0

Table 4. Response to Functional Suitability

The Evaluation of Performance Efficiency of the system was also evaluated, showing a mixed yet predominantly positive response. For "Response Time," 66.7% of evaluators rated it as neutral, with 23.3% finding it acceptable and 10% highly acceptable. "Throughput" received a balanced response with 46.7% neutral and 40% acceptable ratings, and 13.3% highly acceptable. "Resource Utilization" showed similar trends, with 50% neutral and 40% acceptable ratings, and 10% highly acceptable. The "Scalability"

criterion was seen as acceptable by 53.3% and neutral by 46.7%. For "Efficiency in Handling Complex Operations," 60% of evaluators rated it as acceptable, and 40% as neutral. "Error Handling and Recovery" received a 50% neutral rating, 43.3% acceptable, and 6.7% highly acceptable. Lastly, "Network Efficiency" had 56.7% neutral ratings, 30% acceptable, and 13.3% highly acceptable. These results suggest that while the system performs efficiently, there are significant areas marked as neutral which could be enhanced to improve overall performance efficiency.

CRITERIA	1 - High Acceptable	2 - Acceptable	3 – Neutral	4 - Unacceptable	5 – Not Acceptable
Response Time	3 10%	7 23.3%	20 66.7%	0	0
Throughput	4 13.3%	12 40%	14 46.7%	0	0
Resource Utilization	3 10%	12 40%	15 50%	0	0
Scalability	0	14 46.7%	16 53.3%	0	0
Efficiency in Handling Complex Operations	0	12 40%	18 60%	0	0

Error Handling and Recovery	2 6.7%	13 43.3%	15 50%	0	0
Network Efficiency	4 13.3%	9 30%	17 56.7%	0	0
Overall Mean Percentage	3 7.62%	11 37.61%	16 54.77%	0	0

Table 5. Response to Performance Efficiency

The Evaluation of Compatibility of the system, responses indicated a general acceptability. "Cross-Browser Compatibility" was rated acceptable by 73.3% of evaluators, with 13.3% each rating it as highly acceptable and neutral. For "Operating System Compatibility," 60% found it acceptable, 33.3% neutral, and 6.7% highly acceptable. "Standard Compliance" saw 56.7% acceptable ratings, 36.7% neutral, and 6.7% highly acceptable. These evaluations demonstrate that the system is broadly compatible across different browsers and operating systems, though there remains a significant portion of neutral feedback suggesting potential areas for further refinement.

CRITERIA	1 - High Acceptable	2 - Acceptable	3 – Neutral	4 - Unacceptable	5 – Not Acceptable
Cross-Browser Compatibility	4 13.3%	22 73.3%	4 13.3%	0	0

Operating System Compatibility	2 6.7%	18 60%	10 33.3%	0	0
Standard Compliance	2 6.7%	17 56.7%	11 36.7%	0	0
Integration with Academic Platforms	3 10%	16 53.3%	11 36.7%	0	0
Overall Mean Percentage	9 9.175%	18 60.825%	3 30%	0	0

Table 6. Response to Compatibility

The Evaluation of Reliability of the system reflecting generally positive outcomes. "Maturity" was rated acceptable by 60% of respondents, with 33.3% neutral and 6.7% highly acceptable. The "Availability" criterion showed 56.7% acceptable and 30% neutral ratings, and 13.3% highly acceptable. For "Fault Tolerance," 50% found it acceptable, 43.3% neutral, and 6.7% highly acceptable. The "Recoverability" aspect received 53.3% acceptable, 40% neutral, and 6.7% highly acceptable. Overall, the reliability of the system is well-regarded, with most responses into the acceptable category, indicating dependable performance with room for enhancement in fault tolerance and recoverability.

CRITERIA	1 - High Acceptable	2 - Acceptable	3 – Neutral	4 - Unacceptable	5 – Not Acceptable
Error Handling	1 3.4%	13 43.3%	16 53.3%	0	0
Data Integrity	2 6.7%	13 43.3%	15 50%	0	0
Consistent Mean Performance	2 6.6%	11 36.7%	17 56.7%	0	0
Backup and Recovery	4 13.3%	8 26.7%	18 60%	0	0
Compliance with Standards	0	13 43.3%	17 56.7%	0	0
Overall Mean Percentage	2 7%	11 37.66%	17 55.34%	0	0

Table 7. Response to Reliability

The Evaluation of Maintainability of the system was rated, with 60% of evaluators finding the system's design allows for easy maintenance and troubleshooting acceptable, while 33.3% rated it as neutral and 6.7% highly acceptable. These results suggest that the system is generally easy to maintain, although a significant portion of neutral responses indicates potential improvements in making maintenance even more user-friendly. This

neutral feedback highlights a significant area for potential improvement, where the system could be further optimized to enhance maintainability. Such improvements might include more comprehensive documentation, better modularity, or more intuitive interfaces for maintenance tasks.

CRITERIA	1 - High Acceptable	2 - Acceptable	3 – Neutral	4 - Unacceptabl e	5 – Not Acceptable
The study planner system is easy to update with new features or improvements.	0	23 76.7%	7 23.3%	0	0
Issues and bugs in the system are addressed and resolved promptly.	3 10%	17 56.7%	10 33.3%	0	0
The system's design allows for easy maintenance and troubleshooting.	2 6.7%	18 60%	10 33.3%	0	0
Overall Mean Percentage	2 5.66%	19 64.37%	9 29.97%	0	0

Table 8. Response to Maintainability

Evaluation Results

The evaluation of the Study Planner system entails a thorough examination across various dimensions, including functional suitability, performance efficiency, compatibility, usability, and maintainability. Each facet was rigorously evaluated through user feedback, employing a systematic approach to gather insights into the system's performance and user experience. The data gathered from these evaluations offer a comprehensive understanding of the system's effectiveness in meeting user requirements, its performance across different scenarios, its compatibility with existing technologies, and its support for user interactions and maintenance. This introduction lays the groundwork for a more in-depth exploration of the results, emphasizing significant discoveries and pinpointing areas of strength as well as opportunities for enhancement.

	Mean (Professional)	Mean (Students)	Interpretation (Professional)	Interpretation (Students)
Functional Suitability	65.32	49.34	Neutral	Acceptable
Performance Efficiency	61.90	47.61	Neutral	Acceptable
Compatibility	70.03	51.68	Neutral	Acceptable
Reliability	63.33	48.90	Acceptable	Neutral
Maintainability	66.68	56.65	Highly Acceptable	Highly Acceptable

Table 9. Evaluation Results

Students rated the system's functional suitability as "Acceptable" with a mean of 65.32, while professionals rated it as "Neutral" with a mean of 49.34, suggesting that students find the system's features more satisfactory in meeting their needs compared to professionals. For performance efficiency, students again rated it as "Acceptable" with a mean of 61.90, whereas professionals found it "Neutral" with a mean of 47.61, indicating a similar trend where students are more satisfied with the system's performance efficiency than professionals. In terms of compatibility, students rated it "Acceptable" with a mean of 70.03, while professionals rated it "Neutral" with a mean of 51.68, showing that students found the system more compatible with various environments compared to professionals. Regarding usability, professionals found it to be "Acceptable" with a mean score of 63.33, whereas students rated it as "Neutral" with a mean of 48.90, suggesting that professionals find the system easier to use than students do. Finally, both groups rated the maintainability criterion as "Highly Acceptable," with professionals giving a mean of 66.68 and students a mean of 56.65, indicating strong agreement that the system is easy to maintain and update.

Chapter 5

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations based on the testing and evaluation results of the developed system.

Summary of Findings

Based on the findings, it appears that while the system has made progress towards its objectives, it has not fully accomplished them. The user evaluation for the system received a favorable response from TUP Students and Professionals. However, it still has room for improvement for more efficient use.

Conclusions

The researchers of the study conclude that the “Web-Based Study Planner for Irregular Students at Technological University of the Philippines – Manila” is well-received in aspects of Functional Suitability, Performance Efficiency, and Reliability following the ISO 25010 standards. After evaluation, the researchers concluded that:

1. The system was developed with the following components:
 - a. Web Application as the interface to support the following features:
 - i. Allow users to input their own identification through a completely

working user account authentication, with complete CRUD (Create, Read, Update, Delete) functionality.

- ii. Allow users to freely check all subjects available per each course in each department.
- iii. Allow users to input their current year standing and their failed subjects as input for creating or updating their semestrial change to their course planner.
- iv. Seamless data collection and management that would provide manageable changes whenever a curriculum change is to happen.
- v. Usage of algorithmic logic in filtering and selection of suggested subjects for each student specific course plan.

2. The system was successfully developed using programming tools and libraries for frontend, backend, and database functionalities as listed below:

a. Front-end Tools and Framework

- i. JavaScript
- ii. ReactJS
- iii. HTML
- iv. CSS

b. Back-end Tools and Frameworks

- i. Laravel
- ii. Database Management System(s)
- iii. SQLite

3. The system was tested successfully using different techniques such as Functional Testing and Non-functional Testing.
4. The system was evaluated successfully based on ISO/IEC 25010 in terms of:
 - a. Functional Suitability
 - b. Performance Efficiency
 - c. Compatibility
 - d. Reliability
 - e. Maintainability

Recommendation

As the study's main purpose is to wholly integrate itself as a part of enrollment of the targeted Irregular students, the following suggestions would surely improve in the system's overall potential:

Future developers. Future developers might add features that would encompass enrollment for regular students with little to no management from the administration/faculty side.

Future Researchers. Future Researchers might work on the possibility of creating such algorithms that would directly proceed to the creation of a full fledged scheduling, that would provide real-time alterations as flexibility from the inputs of faculty professors.

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APPENDIX A

SURVEY QUESTIONNAIRE FORM

Web-Based Study Planner for Irregular Students at Technological University of the Philippines – Manila

Your opinion matters! Help us improve **Web-Based Study Planner for Irregular Students**. We're inviting you to participate in a brief survey to gain valuable insights on Web-Based Study Planner for Irregular Students. Your feedback will help us improve our system and help greatly with our research.

The survey should only take a small amount of your time to complete. All your responses will be kept confidential.

The objective of this study is to develop a web-based Study Planner designed to provide a database and a study planner as well as optimal scheduling and pre/corequisite subject management solutions that cater to the diverse academic needs of irregular students within the Technological University of the Philippines - Manila.

DATA PRIVACY AGREEMENT


The Technological University of the Philippines Manila prioritizes the privacy and security of personal data entrusted by its participants for legitimate purposes.

We are committed to complying with the Data Privacy Act of 2012 (DPA) and cooperating fully with the National Privacy Commission (NPC). We value your privacy highly and strive to balance your personal privacy with our genuine and legitimate interests as an educational institution, ensuring we fulfill our responsibilities effectively.

All information will be managed in compliance with the legal requirements for proportionality, transparency, and legitimate purpose, and will only be used for those purposes. If you would like to review and understand this agreement better, please refer to the document attached here. [Read More](#)

This survey is divided into several key areas such as **Functional suitability, Performance Efficiency, Compatibility, Usability, Reliability and Maintainability**.

angelosoreta12.as@gmail.com [Switch account](#)

 Not shared

* Indicates required question

Name (optional)

Your answer

Email Address *

Your answer

Choose between the categories below that best describes you *

- ☐ Professional
- ☐ Irregular Student
- ☐ Regular Student

Next

Clear form

Functional Suitability

Functional suitability refers to how well the study planner system meets the specified requirements and provides the necessary functionalities for the users.

Accuracy of Study Plans *

1. The system generates personalized study plans based on the user's subject selections and preferences, ensuring that the suggested schedules align with the user's academic needs and goals.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Acceptable

Completeness of Features*

2. It helps users organize their coursework effectively, taking into account prerequisites and co-requisites, thereby optimizing their study schedule and improving academic performance.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Acceptable

Appropriateness for Task*

3. The study planner provides an intuitive and user-friendly interface, making it easy for students to select subjects, generate schedules, and navigate through the system.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral

Ease of Use for Irregular Students*

6. The system consistently provides reliable and accurate study plans without errors or failures.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Acceptable

[Back](#)[Next](#)[Clear form](#)

- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Acceptable

Integration Capabilities*

5. The study planner has the potential for seamless integration with academic platforms, minimizing user effort and maximizing effectiveness.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Acceptable

Performance Efficiency

Performance efficiency evaluates how well the system performs in terms of speed, responsiveness, and resource usage.

Response Time*

1. The system quickly responds to user inputs and actions, ensuring minimal waiting time for operations such as loading pages, generating schedules, and navigating between sections.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Throughput*

2. The system can handle a high number of concurrent users and large volumes of data without significant performance degradation, ensuring smooth operation during peak usage times.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Resource Utilization*

3. The system efficiently uses computing resources such as CPU, memory, and bandwidth, maintaining optimal performance without overloading the user's device or network.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Scalability*

*

4. The system can scale up to accommodate an increasing number of users and data volume, maintaining consistent performance as demand grows.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Efficiency in Handling Complex Operations*

*

5. The system efficiently performs complex operations, such as generating personalized study plans and processing academic data, without significant delays.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Error Handling and Recovery *

*

6. The system efficiently handles errors and recovers quickly from failures, minimizing disruption to the user experience.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Network Efficiency*

Reliability

Reliability refers to the system's ability to perform consistently without failures.

Error Handling*

1. The system effectively handles errors and exceptions without crashing, ensuring users can continue their tasks with minimal disruption.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Data Integrity*

2. The system maintains the accuracy and consistency of data over its lifecycle, preventing data corruption and loss.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Consistent Performance*

3. The system consistently delivers the same level of performance under similar conditions, ensuring users can rely on predictable outcomes.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Compatibility

Compatibility assesses how well the study planner system works across different devices, browsers, and operating systems.

Cross-Browser Compatibility *

1. The system functions seamlessly across all major web browsers, ensuring a consistent user experience regardless of the browser used.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Operating System Compatibility *

2. The system operates effectively on multiple operating systems, including Windows, macOS, and Linux.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Standard Compliance*

3. The system adheres to relevant web standards and protocols, ensuring interoperability with other compliant systems.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Integration with Academic Platforms*

4. The system integrates smoothly with existing academic platforms and databases, allowing for easy import and export of academic data.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Back

Next

Clear form

Backup and Recovery*

4. The system includes robust backup and recovery mechanisms to protect against data loss and ensure quick restoration in case of failures.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Compliance with Standards*

5. The system adheres to relevant industry standards and best practices, ensuring reliability and trustworthiness.

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

[Back](#)[Next](#)[Clear form](#)

Maintainability

Maintainability assesses how easy it is to update, maintain, and fix issues in the study planner system.

The study planner system is easy to update with new features or improvements. *

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

Issues and bugs in the system are addressed and resolved promptly. *

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

The system's design allows for easy maintenance and troubleshooting. *

- ☐ Highly Acceptable
- ☐ Acceptable
- ☐ Neutral
- ☐ Unacceptable
- ☐ Not Unacceptable

[Back](#)[Next](#)[Clear form](#)

APPENDIX B

BREADTH – FIRST SEARCH (BFS) ALGORITHM

```
const chunkTables = [];

let currentChunkInProgress = [];
let currentChunkPending = [];
let currentChunk = currentChunkInProgress;
let currentUnits = 0;
let maxUnits = assignedTasks.data.length > 0 ? assignedTasks.data[0].max_units : 0;

// Separate tasks into in_progress and pending chunks
assignedTasks.data.forEach((task) => {

  task.prerequisites = task.prerequisites || []; // Ensure prerequisites field exists
  task.corequisites = task.corequisites || []; // Ensure corequisites field exists

  if (task.status === "in_progress") {
    currentChunkInProgress.push(task);
  } else if (task.status === "pending") {
    currentChunkPending.push(task);
  } else {

    // Ignore completed tasks
```

```

    return;

  }

});

// Fetch prerequisite and corequisite names from assignedTasks library

const fetchPrerequisiteAndCorequisiteNames = (task) => {

  task.prerequisiteNames = task.prerequisites.map(prereqId => allTasks.find(t => t.id ===
prereqId)?.name);

  task.corequisiteNames = task.corequisites.map(coreqId => allTasks.find(t => t.id ===
coreqId)?.name);

};

currentChunkInProgress.forEach(fetchPrerequisiteAndCorequisiteNames);

currentChunkPending.forEach(fetchPrerequisiteAndCorequisiteNames);

// Push in_progress tasks as the first chunk

if (currentChunkInProgress.length > 0) {

  chunkTables.push(currentChunkInProgress);

}

// Sort tasks based on dependencies

const sortTasksByDependencies = (tasks) => {

```

```
const taskMap = {};  
tasks.forEach(task => taskMap[task.id] = task);  
  
const sortedTasks = [];  
const visited = new Set();  
  
const visit = (task) => {  
  if (visited.has(task.id)) return;  
  visited.add(task.id);  
  
  task.prerequisites.forEach(prereqId => {  
    if (taskMap[prereqId]) visit(taskMap[prereqId]);  
  });  
  
  sortedTasks.push(task);  
};  
  
tasks.forEach(task => visit(task));  
  
return sortedTasks;  
};
```

```

currentChunkPending = sortTasksByDependencies(currentChunkPending);

// Apply task_type and gec_type constraints within max_units slicing
const taskTypeSequences = ['gec->elective', 'gec->gec', 'special'];
let currentTaskTypeSequenceIndex = 0;
let taskTypeQueues = { };

// Initialize queues for each task type and gec type combination
taskTypeSequences.forEach((type) => {
  if (type.startsWith('gec->')) {
    const gecType = type.split('->')[1];
    taskTypeQueues[type] = currentChunkPending.filter((task) => task.task_type === 'gec'
    && task.gec_type === gecType);
  } else {
    taskTypeQueues[type] = currentChunkPending.filter((task) => task.task_type ===
type);
  }
});

// Function to get the next task based on the task type and gec type in a round-robin fashion
const getNextPendingTask = () => {
  let initialTaskTypeSequenceIndex = currentTaskTypeSequenceIndex;

```

```

// Try to find a non-empty queue

do {

  const type = taskTypeSequences[currentTaskTypeSequenceIndex];

  if (taskTypeQueues[type] && taskTypeQueues[type].length > 0) {

    const task = taskTypeQueues[type].shift();


    // Ensure prerequisites are met

    const prereqsMet = task.prerequisites.every(prereqId => assignedTasks.data.some(t =>
t.id === prereqId && t.status === 'completed'));


    // Ensure corequisites are included in the same chunk

    const coreqsIncluded = task.corequisites.every(coreqId => currentChunk.some(t =>
t.id === coreqId));


    if (prereqsMet && coreqsIncluded) {

      currentTaskTypeSequenceIndex = (currentTaskTypeSequenceIndex + 1) %
taskTypeSequences.length;

      return task;

    } else {

      // If prerequisites or corequisites are not met, put the task back in the queue

      taskTypeQueues[type].push(task);

```

```

    }
}

currentTaskTypeSequenceIndex = (currentTaskTypeSequenceIndex + 1) %
taskTypeSequences.length;

} while (currentTaskTypeSequenceIndex !== initialTaskTypeSequenceIndex);

return null; // Return null if no more tasks are found

};

// Function to get the maximum allowed gec->gec tasks based on chunk count
const getMaxGecGecForCurrentChunk = () => {
    if (chunkTables.length <= 1) return 3; // Semesters 1 & 2
    if (chunkTables.length <= 3) return 2; // Semesters 3 & 4
    return 1; // Semester 5 and above
};

// Process pending tasks based on task_type and gec_type
currentChunk = [];
currentUnits = 0;
let task = getNextPendingTask();
let gecGecCount = 0;

```

```

while (task) {

  if (task.task_type === 'gec' && task.gec_type === 'gec') {

    if (gecGecCount >= getMaxGecGecForCurrentChunk()) {

      // If max gec->gec limit is reached, skip to the next task

      task = getNextPendingTask();

      continue;

    }

    gecGecCount += 1;

  }

  currentChunk.push(task);

  currentUnits += task.units;

  // Handle corequisites: ensure all corequisites are in the same chunk

  task.corequisites.forEach(coreqId => {

    const coreqTask = assignedTasks.data.find(t => t.id === coreqId && t.status ===
'pending');

    if (coreqTask) {

      currentChunk.push(coreqTask);

      currentUnits += coreqTask.units;

      assignedTasks.data = assignedTasks.data.filter(t => t.id !== coreqId);

    }

  })
}

```



```

});

// If max_units reached, push the chunk and reset counters
if (currentUnits >= maxUnits) {
  chunkTables.push(currentChunk);

  currentChunk = [];

  currentUnits = 0;

  gecGecCount = 0; // Reset gec->gec count for the next chunk
}

// Get the next task based on task_type and gec_type in a round-robin fashion
task = getNextPendingTask();
}

// Push the remaining tasks, if any
if (currentChunk.length > 0) {
  chunkTables.push(currentChunk);
}

// Separate remaining tasks (standing, gec->gee) into the last table chunk
const remainingTasks = currentChunkPending.filter((task) => {
  return !((task.task_type === 'gec' && (task.gec_type === 'elective' || task.gec_type ===

```

```
'gec')) || task.task_type === 'special');  
});
```

```
if (remainingTasks.length > 0) {  
  chunkTables.push(remainingTasks);  
}
```

Reference project management variables:

```
$table->id();
$table->string('name');
$table->longText('description')->nullable();
$table->timestamp('due_date')->nullable();
$table->string('status');
$table->string('image_path')->nullable();
$table->foreignId('created_by')->constrained('users');
$table->foreignId('updated_by')->constrained('users');
$table->timestamps();
```

Reference Tasks Management variable:

```
$table->id();
$table->string('name');
$table->longText('description')->nullable();
$table->string('image_path')->nullable();
$table->string('status');
$table->string('priority');
$table->string('due_date')->nullable();
$table->foreignId('assigned_user_id')->constrained('users');
$table->foreignId('created_by')->constrained('users');
$table->foreignId('updated_by')->constrained('users');
$table->foreignId('project_id')->constrained('projects');
$table->timestamps();
```

Student Planner College Program variables (create_projects_table):

```
$table->id();
$table->string('name');
$table->string('status');
$table->foreignId('created_by')->constrained('users');
$table->foreignId('updated_by')->constrained('users');
$table->timestamps();
```

Student Planner Subjects variables (create_tasks_table):

```
*** subjects to change ***
$table->id();
$table->string('name');
$table->string('course_code')->nullable();
$table->longText('description')->nullable();
$table->string('image_path')->nullable();
$table->string('status');
$table->string('priority');
$table->foreignId('project_id')->constrained('projects');
$table->foreignId('prerequisite_id')->nullable()->constrained('tasks');
$table->foreignId('corequisite_id')->nullable()->constrained('tasks');
$table->timestamps();
```

Student Planner AllTasks variables:

```
$table->id();
```

```

$Table->string('name');
$Table->string('coursecode');
$Table->longText('description')->nullable();
$Table->string('image_path')->nullable();
$Table->string('status');
$Table->string('prerequisite')->constrained('subjects');
$Table->string('corequisite')->constrained('subjects');
$Table->string('priority');
$Table->foreignId('prerequisite_id')->nullable()-
>constrained('all_tasks');
$Table->foreignId('corequisite_id')->nullable()-
>constrained('all_tasks');
$Table->timestamps();

Student Planner AssignedTasks variables:

Student Planner TimeTable variables:

$Table->id();
$Table->string('name');
$Table->string('course_code')->nullable();
$Table->longText('description')->nullable();
$Table->string('image_path')->nullable();
$Table->timestamps();

list:

migration
Factories
resource
components: create, edit, index, show, taskstable
controller
request
model
update _ request

structure:
USER DATABASE - student/college heads
TASK DATABASE - for prof, room #, and time/date
ASSIGNED USER TASK DATABASE - for students, (pending, in progress,
completed), max units
ALLTASKS DATABASE - GEs/requisites/required/last year standing

goal posts:
instantiate the assignedTask database
instantiate the taskList database
separate the role of TaskList and assignedTask:

AllTasks -
all college_head access
3 types of subjects: General, Specialized, last year standing
General: GEC, electives, GEE

```

Specialized: prereq, corereq

project/task -
 createdby assignment (college_head account constraint) schema added
 scheduling(prof_name. room#, starttime. endtime) schema added
 will be the course program
 fetch taskList, do a checklist radio button, learn to spam create
 function to db

assignedTask -
 college_head assigns to student list the program
 duplicate the set of project/task to now under the name of student but
 now with statuses (completed, in progress, pending)
 student can choose their scheduling options
 college_head impose max units

do the generate function (in progress, pending) BFS, table

database seeding + styling

next to do:
 project create's alignment of task variables in the ...task, CHECK

algo

search algo: BFS
 logic trail -

will remove completed subjects from the pool
 will prioritize: in progress subjects in one sem, then next pending

1st year: 3 electives slot, 3 GEC slot, to max_units specialized
 {elec, GEC, CC} x 3

2nd year: 2 slots, elec & GEC, to max_units specialized
 {elec, GEC, CC} x 2 + CC ...

3rd year: 1 slots, elec & GEC, to max_units specialized
 {elec, GEC, CC} x 1 + CC ...

DEFINITION:


first will ask input: what semester class will the student start: 1,2
 matters 3,4 matters

every 2 sem, minus 1 slot elec GEC; to max_units specialized

last year:
 1st sem (Remaining elec, remaining GEC, remaining CC, + all GEE)
 if (nothing to find in all of elec, GEC, CC && max_units left > all GEE)
 == will trigger last year

APPENDIX C

Certificate of Similarity Index Using Turnitin

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APPENDIX D

Thesis Grammarian Certificate

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Mesina, Brigitte P.
Soreta, Michael Angelo S.

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for whatever purposes it may serve them.


MS. FRANZE NAVARRO OROCEO
Grammarian

Technological University of the Philippines

June 13, 2024

Transaction ID	
Signature	

APPENDIX E

RESEARCHERS PROFILE



Name: Andres, Angelo E.

Age: 21yrs old

Date of Birth: 05/21/2002

Address: 26 Gladiola St. Brgy. 184, Pasay City METRO MANILA

Parents: Erwin & Maria Cecilia Andres

EDUCATIONAL ATTAINMENT

	School	Year
Elementary Education	Marick Elementary School	2008-2014
Secondary Education		
Junior High School	Gr. 7 – Francisco P. Felix Memorial National Highschool	2014-2018
Senior High School	Gr.8 to Gr 12 – Pasay City South Highschool (STEM)	2014-2018
Tertiary Education	Technological University of the Philippines (COS – BSCS)	2018-2020



Name: Joshua A. Garcia

Age: 21yrs old

Date of Birth: January 24, 2002

Address: Block 3 Lot 25 Tag apo, Santa Rosa, Laguna

Parents: Vienna A. Garcia

EDUCATIONAL ATTAINMENT

	School	Year
Elementary Education	St Judiel Elementary School	2008-2014
Secondary Education		
Junior High School	Santa Rosa Science and Technology High School	2014-2018
Senior High School	Santa Rosa Science and Technology High School (STEM)	2014-2018
Tertiary Education	Technological University of the Philippines (COS – BSCS)	2018-2020



Name: King Joshua Hamsilani

Age: 23yrs old

Date of Birth: June 11, 2000

Address: 203-C4, Isabelle Garden Hotel & Suites, E. Rodriguez, Moonwalk,
Paranaque City

Parents: Salvie O. Hamsilani, Israel Hamsilani

EDUCATIONAL ATTAINMENT

	School	Year
Elementary Education	Griffiths Primary School	2008-2014
Secondary Education		
Junior High School	Philippine Christian School of Tomorrow, Christian Faith Academy	2014-2018
Senior High School	Olivarez College	2014-2018
Tertiary Education	Technological University of the Philippines (COS – BSCS)	2018-2020



Name: Brigitte P. Mesina

Age: 21yrs old

Date of Birth: February 16, 2002

Address: 1 Rosal St. Vergonville Subdivision, Las Pinas City

Parents: Geralyn P. Mesina, Ildebrando T. Mesina

EDUCATIONAL ATTAINMENT

	School	Year
Elementary Education	Dona Manuela Elementary School	2008-2014
Secondary Education		
Junior High School	Las Pinas North National High School	2014-2018
Senior High School	STI Academic Center	2014-2018
Tertiary Education	Technological University of the Philippines (COS – BSCS)	2018-2020



Name: Michael Angelo Salcedo Soreta

Age: 21yrs old

Date of Birth: June 12, 2002

Address: Blk 3 Lot 88 Lakeville 2 Subd. Barangay Market Area, City of Santa

Rosa Laguna Parents: Melinda S. Soreta, Manuel C. Soreta

EDUCATIONAL ATTAINMENT

	School	Year
Elementary Education	Santa Rosa Elementary SchoolCentral-1	2008-2014
Secondary Education		
Junior High School	Santa Rosa Science and Technology High School	2014-2018
Senior High School	Santa Rosa Science and Technology High School (STEM)	2014-2018
Tertiary Education	Technological University of the Philippines (COS – BSCS)	2018-2020