

**AUTOMATED TIMETABLE SCHEDULING SYSTEM USING  
BACKTRACKING ALGORITHM**

An Undergraduate Thesis  
Submitted to the Faculty of the  
Department of Computer Studies  
Cavite State University-Cavite College of Arts and Trade Campus  
Rosario, Cavite

In partial fulfillment  
Of the requirements for the degree  
Bachelor of Science in Computer Science

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July 2023

## **APPROVAL SHEET**

## **BIOGRAPHICAL DATA**

Hernando Jr. J. Costelo, the youngest among three siblings, was born on November 17, 1999, in Tejeros Convention, Rosario, Cavite. He demonstrated exceptional dedication and industriousness during his Elementary years, earning recognition as the most hardworking student in his batch.

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In his Tertiary Education, he pursued a Bachelor of Science in Computer Science at Cavite State University CCAT Campus last 2018. He completed his degree in 2023.

## **BIOGRAPHICAL DATA**

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For his tertiary education, he chose to pursue a Bachelor of Science degree in Computer Science at Cavite State University CCAT Campus. He successfully completed his degree in 2023.

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We are extremely thankful to our families and friends for their exceptional kindness. Their support has helped us overcome challenges in our research and has

greatly influenced our personal and professional growth. Their unwavering faith in our capabilities has been a constant source of motivation, enabling us to pursue our goals tirelessly and make our dreams come true. We feel incredibly lucky to have such remarkable people in our lives, and we will always treasure their limitless love and unwavering support.

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We extend our heartfelt appreciation to all the students and IT experts who participated in the evaluation process and provided us with their honest assessments of our system. Your valuable feedback has been instrumental in shaping the development and improvement of our system. Thank you for your time, insights, and contributions.

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## ABSTRACT

**COSTELO, HERNANDO JR J., GAETOS, MICHELLE EMMANUEL S., JAVIER, JOHNUEL M., LAVILLA, REN RUSSEL E., QUIJANO, LESTER Automated Timetable Scheduling System using Backtracking Algorithm**  
Undergraduate Thesis. Department of Computer Studies Cavite State University-Cavite College of Arts and Trades Campus, Rosario, Cavite. June 2023. Adviser: Mr. Karlo Jose E. Nabablit

The research entitled "Automated Timetable Scheduling System using Backtracking Algorithm" was conducted from May 2022 to May 2023. The objectives of the study were as follows: 1) document and analyze the existing process of scheduling classes, 2) design and develop a web application that automates the generation of class schedules. 3) test the reliability of generated schedules based on testing conditions and the functionality of system modules. b) Evaluate the system using modified ISO-IEC 25010.

ATS System showcased its effectiveness and high satisfaction among IT Experts and end users. The system successfully achieved its objectives of automating class schedule generation and enhancing the scheduling process in educational institutions. It demonstrated reliability, functionality, and compliance with ISO-IEC 25010 standards. The positive evaluations from both experts and users highlight its value and efficiency.

By offering an efficient and user-friendly solution, the system improves productivity, streamlines scheduling processes, and enhances overall satisfaction in educational institutions. Its successful evaluation establishes it as a dependable tool for optimizing class scheduling and supporting institutions in effectively achieving their scheduling goals.

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**Hernando Jr. J. Costelo  
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An undergraduate thesis presented to the faculty of the Department of Computer Studies Cavite State University-Cavite College of Arts and Trades Campus, Rosario, Cavite in partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Science with Contribution No. CS-2023-02-010. Prepared under the supervision of Mr. Karlo Jose E. Nabablit.

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## **INTRODUCTION**

Despite ongoing advancements in technology that have led to the computerization and automation of various aspects of university organization work, the process of creating course timetables still remains a manual and challenging task. The preparation, of course, timetables had a significant time constraint for academic colleges. It involves addressing multiple constraints and issues, such as classroom availability, teachers' subject preferences, the number of available teachers and classroom capacities, potential conflicts between rooms and courses, and scheduling conflicts between courses and instructors. Generally, course timetabling in many universities is prepared manually, and the scheduling committee should consider all available facilities and resources, such as courses, instructors, rooms, and laboratories. Moreover, the instructors, course, and section time were important constraints to handle. Therefore, based on all the mentioned constraints, course timetabling is a very exhaustive and time-consuming task. (Al-Jarrah et al, 2017).

Cavite State University CCAT Campus offers nine courses, including BS Electrical Engineering, BS Computer Engineering, BS Computer Science, BS Information Technology, BS Hotel Management, BS Business Management, BS Technical-Vocational Teacher Education, BS Education with two different Majors, and BS Industrial Technology with nine different Majors. As the campus continued to grow, the number of students increased, making the manual creation of course timetables a complex task to accomplish. In CVSU CCAT, the creation of class schedules was manually done by the faculty head or scheduling committee of each department. The manual scheduling process consumes more time as the plotting, revising, and arranging of schedules were done separately for each department. Each course had minor and major subjects, and the scheduling committee of each department had to wait for the major subjects to be plotted in the timetable before plotting the minor subjects.

Furthermore, the developers came up with an idea and proposed the development of a web-based Automated Timetable Scheduling System to reduce the difficult work of the faculty head or scheduling committee in creating schedules and to save time in the scheduling process. The web application aimed to generate an optimal class schedule for Cavite State CCAT-Campus within a short period of time.

### **Objective of the Study**

The main objective of the study was to create a dynamic web-based scheduling system capable of generating conflict-free class schedules.

Specifically, the study aimed to:

- 1 document and analyze the existing process of scheduling classes in Cavite State University – CCAT;
- 2 design and develop a web application that automates the generation of class schedules;

- 3 test the reliability of generated schedules based on testing conditions and the functionality of system modules; and
- 4 evaluate the system using a modified ISO-IEC 25101 software evaluation instrument;

### **Significance of the Study**

By utilizing a backtracking algorithm, the developed system significantly improves the efficiency of generating conflict-free class schedules. This implementation could effectively reduce the time required and minimizes the occurrence of human errors during the scheduling process. As a result, Cavite State University CCAT-Campus would be able to attain an optimal class schedule. Furthermore, the system may prove beneficial for the scheduling committee as it simplifies tasks such as adding, deleting, and updating critical information for the faculty loading process.

### **Scope and Limitation of the Study**

The study was focused on the development of a web-based Automated Scheduling System for Cavite State University - CCAT Campus. The system was designed with features that allowed users to automate the generation of class schedules using a backtracking algorithm.

The Web-Based System was designed for the scheduling committee as the primary target user. The system is specifically intended to generate automated schedules for the Department of Computer Science. The system provides separate view pages for teachers, course year, sections, and rooms in the generated schedules. It generates schedules for full-time teachers and regular students. The output can be generated in PDF format for printing.

The Web-Based System does not support multiple users; it was not designed to accommodate simultaneous access from multiple individuals.

The generated schedules cannot be updated directly due to the potential conflicts that may arise. Any changes to the faculty loading data require regenerating the schedule to ensure an optimal and conflict-free timetable.

Web-Based System does not consider irregular students and course schedules, limiting its applicability to regular students and full-time teachers only.

### **Time and Place of the Study**

The study was conducted from May 2022 to May 2023 at the Cavite State University-CCAT Campus.

## **REVIEW OF RELATED LITERATURE**

In this chapter, the developers review studies, articles, software, and case studies related to the development of the Automated Scheduling System. It also shows the relevant system, its features, and its method prior to the development of the automated scheduling system.

### **Related Literature**

The developers extensively review various studies, articles, software, and case studies that are relevant to the development of the Automated Scheduling System. Their objective is to gain valuable insights and knowledge from these sources to inform and advance the development process of the Automated Scheduling System.

### **Importance of using web application**

Web based application offers a wide variety of advantages compared to desktop application. Instead of installing the application or software to each of every computer your company or school has, it could be easily accessed through the use of internet. Maintaining a web application is a simple process since the host server could easily add or update data without the need to upgrade in every computer. (Khamooshi, 2019)

According to Souvik (2022), web application increase efficiency and reduce costs by automating the processes and task and reduce costs by allowing the user to add and update data through online, thus, it eliminates paper based manual data entry.

### **Course Timetabling**

Course timetabling main objective is to assign a course to a specific time or set of time without conflicts to another course allotted time. It is also one of the university timetabling problems, it is resolved by meeting the specific constraints. This constraint is divided into two parts, the former is the hard constraints, and the latter is the soft

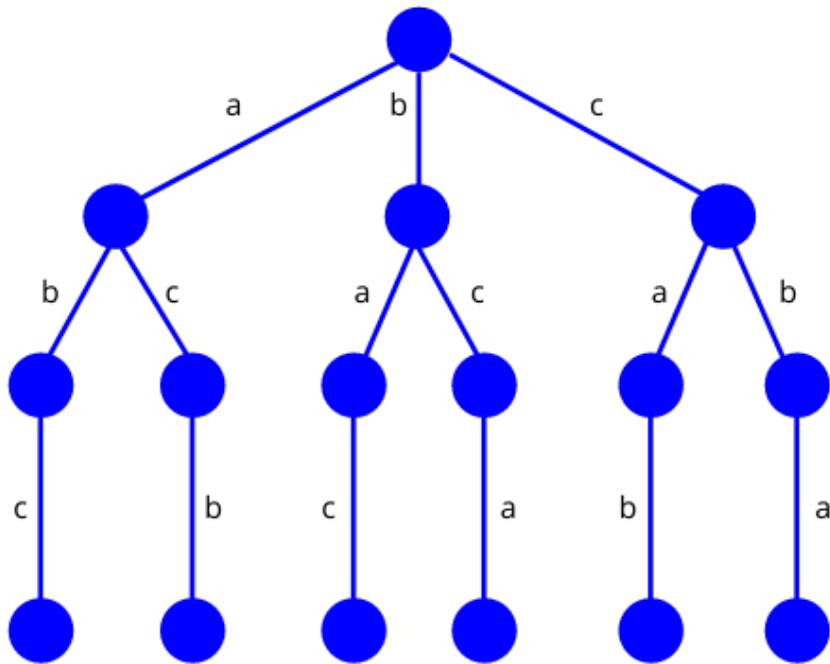
constraints. (Burke and Petrovic, 2002). Hard constraints are the problems that must be satisfied and solved to generate a great timetable, while soft constraints are desirable problems but not essential to be solved. (Houhandi et. al, 2019). According to Ben Moreland (2015), these are examples of hard and soft constraints. For hard constraints, Room capacity, which means the number of students assigned to the room, must best equal the seating capacity of the room. For soft constraints, A preferred teaching week means the teacher could choose when to teach the subject at a specific time and day.

### **Introduction to Backtracking Algorithm**

Backtracking is an algorithmic technique that solves problems through a recursive approach. It involves constructing a solution incrementally, discarding any choices that violate the problem's constraints at each step. It can be considered an improvement over the brute force method. The fundamental concept behind backtracking is to systematically search for a solution among the available options. Initially, we begin with one possible option and check if the problem can be solved using that choice. If a solution is found, it is returned. Otherwise, we backtrack and explore another option from the remaining choices. In some cases, none of the options may lead to a solution, indicating that backtracking cannot provide a solution for that specific problem. Backtracking can be viewed as a form of recursion, as the process of searching for a solution from the available options is repeated recursively until a solution is found or the final state is reached. In essence, backtracking eliminates choices at each step that cannot lead to a solution, continuing towards choices that have the potential to lead to the desired solution. There are three types of problems in backtracking decisions, optimization and enumeration (Upadhyay, 2023).

### Backtracking: Non-Adjacent 'c' Placement in 'abc' Arrangement

In backtracking, the initial step involves constructing a state-space tree. Subsequently, we explore all potential solutions and verify them against the provided constraint. Only the solutions that meet the given constraint are retained.



*Source <https://www.baeldung.com/cs/backtracking-algorithmsGenerator>*  
 Figure 1. Adjacent Placement of ‘c’ in “abc” Arrangement.

In backtracking, the initial step involves constructing a state-space tree. Subsequently, we explore all potential solutions and verify them against the provided constraint. We retain only the solutions that meet the given constraint: For instance, considering the problem at hand, the possible solutions are: (a,b,c), (a,c,b), (b,a,c), (b,c,a), (c,a,b), (c,b,a). However, only the valid solutions that satisfy the constraint are included in the final solution set. In this case, the final solutions would be limited to (a,b,c) and (c,b,a) (Datta 2022).

## **When to use backtracking algorithm?**

Backtracking finds applications in diverse problem-solving scenarios. For instance, it can be utilized to discover a viable solution for a decision problem. Additionally, backtracking algorithms have proven to be highly effective in solving optimization problems. In certain cases, it can be employed to identify all feasible solutions for an enumeration problem. However, it's important to note that backtracking is not considered an optimal problem-solving technique. Its utility lies in situations where time constraints are not imposed on finding a solution. (Upadhyay, 2023).

## **Recursive Backtracking and Optimization**

Recursive backtracking is a technique used to solve challenging problems by exploring all possible solutions. According to Stanford University (2017), Backtracking algorithm can be applied to generate and count solutions, find specific solutions, or determine the best solution. Specific problems that can be tackled include generating permutations, subsets, combinations, and more. Backtracking can be effectively employed in three main scenarios:

1. Enumeration: Backtracking can generate and count all possible solutions to a problem. This involves systematically exploring different paths and choices to exhaustively generate all valid solutions.
2. Existence and search: Backtracking can be used to find a specific solution to a problem or prove its existence. By systematically exploring different paths and choices, it can determine if a valid solution exists and locate it.
3. Optimization: Backtracking can assist in finding the best possible solution to a given problem. It explores different paths and evaluates their quality, making informed decisions to optimize the solution based on defined criteria.

## Related System

This chapter entails a comprehensive examination by the developers of the related system, aiming to enhance their understanding of the automated scheduling system's development. Their primary focus is on the distinct features of the system and the methodology that was utilized before its creation.

### Automated College Timetable Generator

This related system is a web-based automated college timetable generator employing a genetic algorithm to automate the creation of college timetables. This dynamic system empowers users to conveniently update data, such as adding courses, teachers, and rooms, while effortlessly generating timetables.

The related web application serves as an invaluable reference for the developers, offering valuable insights into the system's process flow, including the utilization of CRUD functionality during the automation of the class schedule.

Slot	Monday	Tuesday	Wednesday	Thursday	Friday
1	Sub3-teach3	Sub5-teach5	Sub1-teach1	Sub4-teach4	Sub4-teach4
2	Sub5-teach5	Sub3-teach3	Sub6-teach6	Sub1-teach1	Sub1-teach1
3	Sub1-teach1	Sub4-teach4	Sub3-teach3	Sub6-teach6	Sub6-teach6
4	Sub2-teach2	Sub1-teach1	Sub2-teach2	Sub3-teach3	Sub5-teach5
5	Sub6-teach6	Sub6-teach6	Sub5-teach5	Sub5-teach5	Sub3-teach3

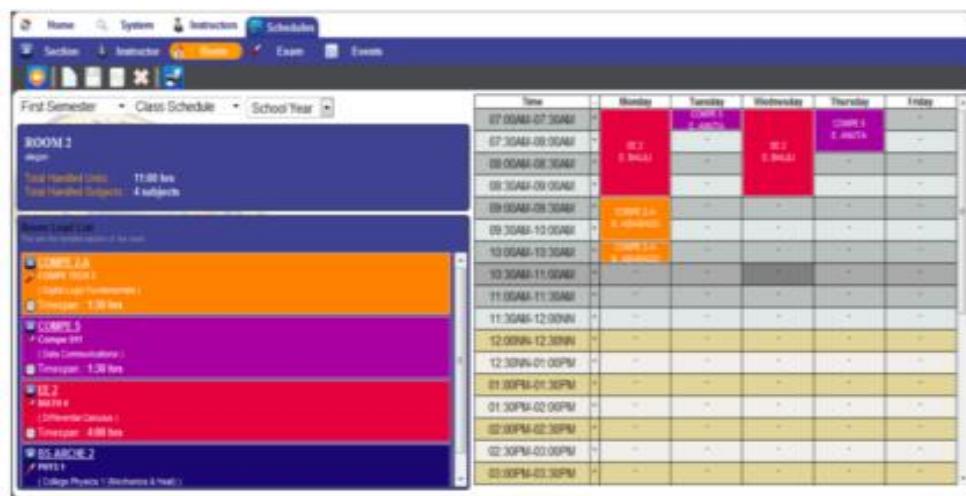
Source: <https://Automated College Timetable Generator>

Figure 2. Automated College Timetable Generator

## Bohol State Island University Automated Scheduling System Capstone Project

This study designed an automated class scheduling system for Bohol State Island University and tested its functionality in terms of speed, accuracy, data handling, security, stability, and adaptability in making class schedules. This system is dynamic because the admin /user could update the data in the database like adding teachers, adding buildings, adding course and adding new user.

The developers regarded the related system as a valuable resource, enabling them to acquire valuable insights into testing methodologies for the automated scheduling system. This facilitated their understanding of effective approaches to assess the functionality, performance, and reliability of their own automated scheduling system. Additionally, it provided them with valuable insights on how to enhance the functionality for generated schedules through updates and improvements.



Source: <https://Automated Scheduling System Capstone Project>

Figure 3. BSIU Automated Scheduling System

## Web based Course Scheduling System using Greedy Algorithm

In this study, a web-based system is introduced, specifically tailored for course scheduling in the College of Computer Studies at FEU Institute of Technology in

Manila, Philippines. This system successfully handles course schedules and faculty assignments by utilizing a greedy algorithm.

By leveraging insights from the related system, the developers are able to enhance their own management functionality concerning the data utilized for automating class schedules. These valuable insights enabled them to identify areas for improvement and optimize their own system accordingly.



*Source: <https://ijssst.info/Vol-20/No-S2/paper14.pdf>*

Figure 4. Web based Course Scheduling System

### **Intelligent Timetable Generator using Genetic Algorithm**

The related web application incorporates a genetic algorithm to generate university timetables, taking into account both hard and soft constraints. The primary objective of the project's development is to successfully address and integrate these constraints.

The developers relied on this related system to acquire valuable insights into solving the challenges posed by soft and hard constraints. Through studying and analyzing the related system, they aim to enhance their understanding and approach to effectively manage these constraints within their own system.

The screenshot shows a web application titled "ADROIT\_SCHEDULER" with a sub-header "Smart Ai makes this \*Magic happen". The main content area has a teal header bar with "Add Course" and "Edit Courses" tabs. Below this, there are four input fields: "Course number:" (with placeholder "I"), "Course name:" (empty), "Max numb students:" (empty), and "Instructors:" (a dropdown menu listing T3, T4, T5, and T6). A "Submit" button is at the bottom.

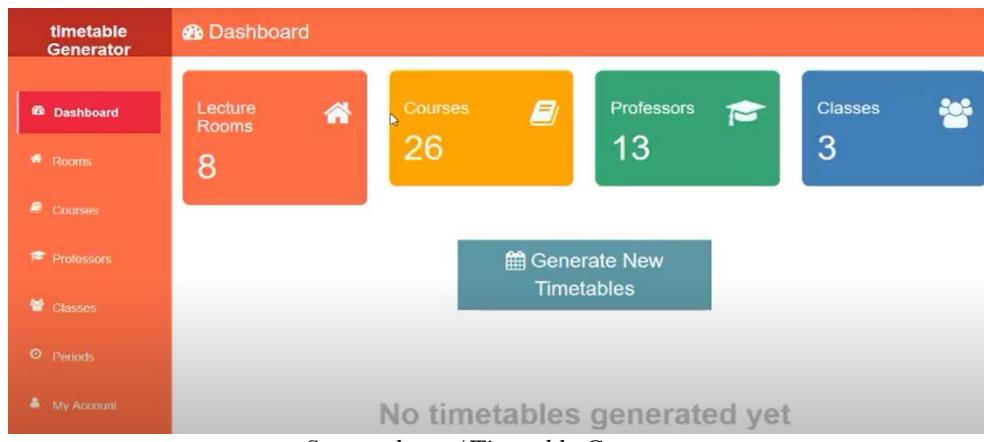
Source: <http://abhik.pythonanywhere.com>

Figure 5. Androit Scheduler

### **Timetable Generator using Genetic algorithm**

The Timetable Generator, a related system, utilizes a genetic algorithm to automate the generation of university timetables. The developers of this web application have opted for PHP as their programming language and have utilized the Laravel web framework.

The developers considered the related system as a valuable reference for their own system development, specifically in the context of using PHP. By thoroughly studying and analyzing the related system, they enhance their understanding and expertise in leveraging PHP to construct and enhance their web application for automated timetable generation.



Source: <https://Timetable Generator>

Figure 6. Timetable Generator

### Synthesis and Justification

The review of related literature proved to be an invaluable resource for the developers, offering valuable insights into the backtracking algorithm and genetic algorithm. By thoroughly examining existing literature on these topics, the developers gained a comprehensive understanding of the various stages and processes involved in both algorithms. This understanding played a crucial role in their decision-making process, as they needed to select the most suitable method for system development.

Furthermore, the review of related literature played a vital role in identifying the constraints associated with the existing scheduling process at Cavite State University CCAT Campus. This knowledge was pivotal for the developers, as it allowed them to effectively design the process flow of the system. By recognizing the limitations and challenges present in the current scheduling process, the developers were able to devise a more efficient and streamlined solution.

In summary, the insights derived from the review of related literature provided the developers with a solid foundation of knowledge. It equipped them with the necessary understanding of backtracking and genetic algorithms, aiding them in the selection of the most appropriate approach for system development. Additionally, it

allowed the developers to identify and address the constraints of the existing scheduling process, ultimately contributing to the effective design of the system's process flow.

### Table of Comparison

The researcher compared the features of the proposed system to the other related system, as shown below:

Features	Automated College Timetable Generator	Bohol State Island University Automated Scheduling System	Web based Course Scheduling System using Greedy Algorithm	Intelligent Timetable Generator using Genetic Algorithm	Timetable Generator using Genetic algorithm .	Automated Timetable Scheduling System using Backtracking g Algorithm
1. Generation of Reports	✓	✓	✓	✓	✓	✓
2. Faculty loading	✗	✗	✗	✗	✗	✓
3. Admin Dashboard	✗	✗	✓	✗	✓	✓
4. View Page for generated schedule	✗	✗	✗	✗	✗	✓
5. Manual Schedule Integration	✗	✗	✗	✗	✗	✓
6. Convert Output to a PDF file	✗	✗	✗	✗	✗	✓

Figure 7. Table of Comparison

## METHODOLOGY

In this section, the study defined the research method used to conduct the research, which was categorized into three main categories: Conceptual Framework, System Analysis and Design, and the Principle of Operations.

### Conceptual Framework

The conceptual framework is an essential framework employed by developers to conduct research and analysis. It consists of three core elements: input, process, and output. The input represents the initial data or variables that are considered in the study. The process encompasses the methodologies and procedures used to analyze and examine the input. Lastly, the output refers to the outcomes.

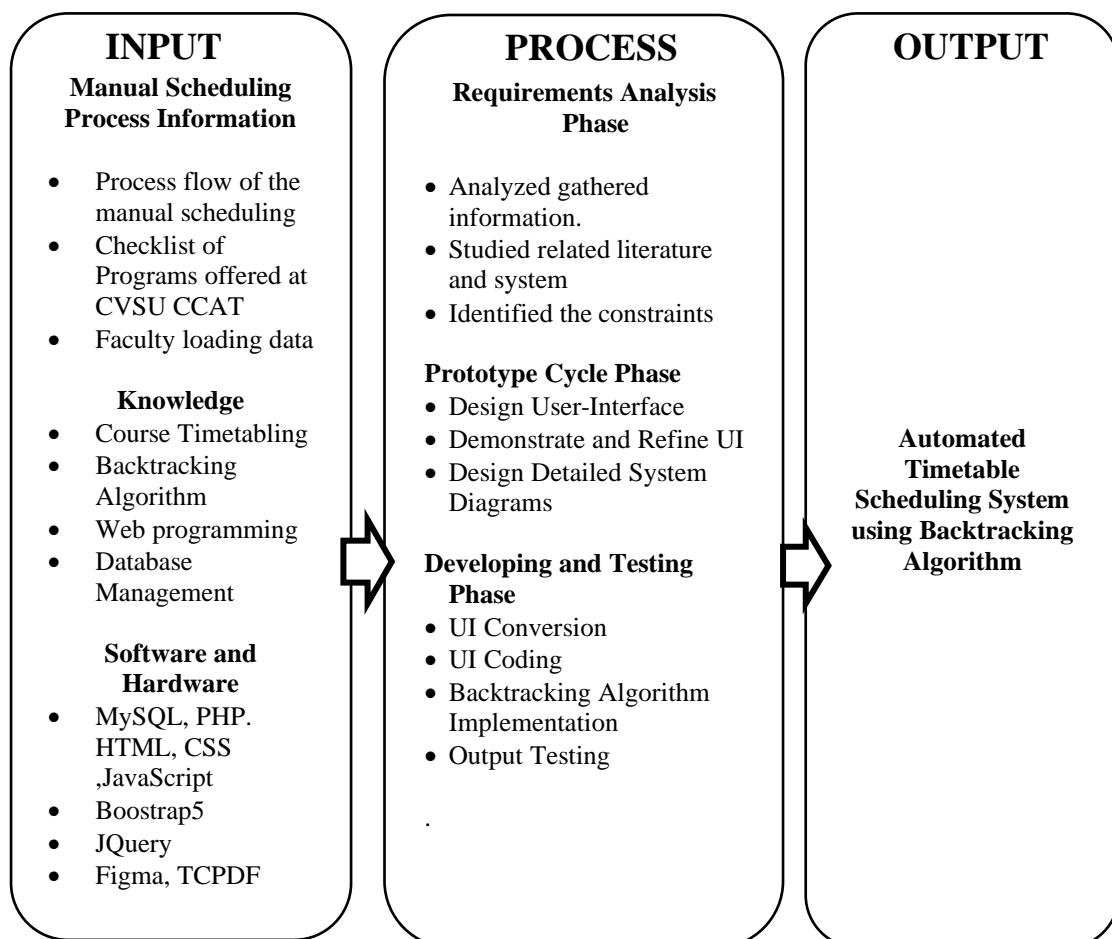


Figure 8. Conceptual Framework

In the gathering phase, the developers collected relevant information about the existing manual scheduling process at Cavite State University CCAT Campus. This information served as a valuable reference and guide for the development of the WEB-BASED SYSTEM. Additionally, the developers compiled a comprehensive list of the system's essential requirements, as depicted in figure eight.

The conceptual framework process was divided into three distinct phases: requirement analysis, prototype cycle phase, and development and testing phase. These phases were essential in ensuring the successful development of the class scheduling system and to expedite the process and achieve quicker results, they employed the Rapid Application Development Model. This methodology emphasized prototyping as a means to swiftly introduce the product, rather than dedicating excessive time to planning.

During the requirement analysis phase, the developers focused on understanding the existing manual class scheduling process. They thoroughly examined related literature and studied various existing systems to gather insights and identify key constraints. This phase served as the foundation for the subsequent phases and helped establish the necessary parameters for the system's development.

Moving on to the prototype cycle phase, the developers took the requirements gathered during the analysis phase and began designing the user interface. They created a prototype of the system, which they presented to a technical critic for feedback and improvement. Incorporating the received input, the developers refined the user interface design, ensuring its usability and effectiveness. Additionally, they created the required diagrams that would guide the system's development, providing a visual representation of the scheduling process.

In the final phase, the development and testing phase, the developers transformed the prototype into a fully functional web application. They utilized software tools and technologies to convert the design into an interactive and practical system. As part of this phase, the developers implemented a backtracking algorithm to establish the necessary constraints for generating conflict-free schedules. Rigorous testing was conducted to ensure the reliability and functionality of the system, including the accuracy of the generated class schedules and the proper operation of the system modules.

By dividing the process into these three phases, the developers and developers were able to systematically analyze requirements, design a prototype, and ultimately develop and test a fully functional automated class scheduling system. This structured approach ensured that each phase built upon the previous one, leading to the successful achievement of their goal.

To ensure the reliability and functionality of the developed system, the developers conducted extensive testing. They meticulously assessed the generated class schedules for their reliability and checked the various system modules to ensure they operated as intended. This thorough testing phase was crucial in validating the system's generated output reliability and functionality of each module.

As a result of this comprehensive process, the output phase yielded significant achievements. The system effectively produced conflict-free schedules by incorporating the assigned constraints. This success was made possible by transforming the initial prototype into a fully functional web application, integrating the powerful backtracking algorithm, and conducting comprehensive testing. The developers were able to accomplish their goal of creating a reliable and efficient automated timetable

scheduling system, offering a practical solution to simplify the scheduling process and enhance overall efficiency.

## System Analysis and Design

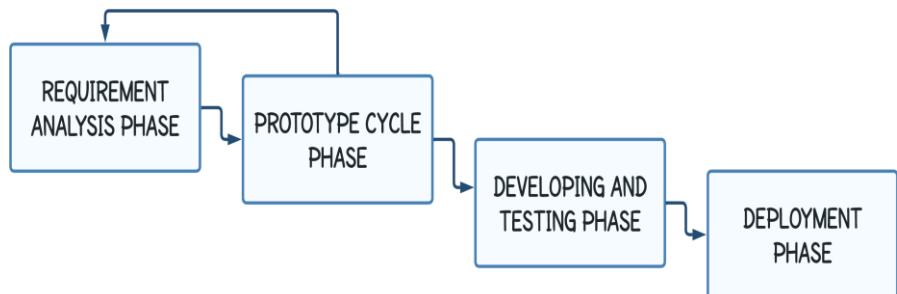


Figure 9. Research Framework

### Requirements Analysis phase

During the Requirements Analysis phase, the developers sent a formal request letter to the registrar to obtain a digital copy of the CVSU CCAT Campus Checklist, which includes information about the courses offered at the university and the subjects available in each course. Subsequently, the developers received an email containing the requested checklist. (*See Appendix Figure 1 for the screenshot of the email with the attached checklist of programs offered in the University and See Appendix Figure 2 to 5 for BSCS and BSInfoTech subject offerings*) To gain a deeper understanding of the checklist and the faculty loading process, the developers conducted an online audio call interview with the scheduling committee of the Department of Computer Studies. After comprehending the manual scheduling process, the developers delved into an in-depth examination of related literature and thoroughly studied various existing systems. The purpose was to gather insights and identify key constraints. This phase laid the groundwork for subsequent stages and helped establish the essential parameters for the development of the system.

## **Web-Based System Requirements**

In this phase, the developers described the software and hardware requirements for the web app, as well as the developmental tool used during the development phase.

### ***Hardware***

In system development, the developers used an HP Laptop with the following specifications: 8 GB DDR4-3200 MHz RAM, AMD Ryzen 5 5500U with Radeon Graphics operating at a speed of 2100 megahertz, and 512 GB PCIe storage, running on a 64-bit Windows 11 operating system.

### ***Software***

The developers considered the following software requirements for the development of the Automated Timetable Scheduling System (ATS).

#### **Front-end:**

- The developers considered the following software requirements for the development of the Automated Timetable Scheduling System (ATS).

For tasks such as DOM manipulation, event handling, AJAX requests, and animations, making it easier to implement dynamic and responsive elements in the system.

#### **Back-end:**

- **PHP** - is a widely-used server-side scripting language specifically designed for web development. It is embedded within HTML code and executed on the server to generate dynamic web pages. PHP offers a wide range of functionalities and is popular for building dynamic websites, web applications, and handling server-side tasks. It can interact with databases, handle form data, and generate dynamic content. PHP is

known for its simplicity, flexibility, and strong community support, making it a popular choice for web development.

- **MySQL** – is a relational database management system that is used for storing or handling data using Structure Query Language.
- **XAMPP** – It is a software package that provides a local development environment for building and testing web applications. It stands for "Cross-Platform, Apache, MySQL. XAMPP is a bundled software solution that includes several components necessary for web development, such as the Apache web server, MySQL database server, PHP programming language
- **TCPDF** - TCPDF is a PHP library used for generating PDF documents. It stands for "TCPDF - PHP class for PDF". TCPDF provides various functions and methods to create PDF files dynamically, allowing developers to generate PDFs from scratch or based on templates.

### ***Developmental Tools***

During the development of the Automated Timetable Scheduling System (ATS), the developers utilized a variety of developmental tools that serve multiple purposes, including storage management, facilitating meetings, creating UI designs, generating diagrams, and editing pictures and logos.

- **Google Drive** - Google Drive is a file storage, it is used to store research paper, images, diagrams, UI Design and Wireframes
- **One Drive** – It is a cloud storage that allow you to edit and synchronize file.
- **Microsoft Teams** – it is used to communicate with one another and schedule a meeting twice a week to report the progress of their task.

- **Figma** – is an online collaboration tool used for creating digital products. It is used to design user interface of the system.
- **Lucid Chart** – is a diagramming tool web application, it is used for creating diagrams (e.g., flowcharts, Site map).
- **Visual Studio Code** – is a code editor and its supports different programming language like Python.
- **Adobe Photoshop CS6** – is photo editing software, it is used for the design and image of the website.
- **GitHub** - GitHub is a web-based platform that serves as a version control repository for developers. It provides a centralized location where developers can store, manage, and collaborate on their code projects. The platform uses Git, a distributed version control system, to track changes to files and facilitate collaboration among team members.

### **Prototype Cycle Phase**

During the Prototype Cycle Phase, the developers utilized the collected information to create a wireframe prototype using Figma. After designing the prototype, the developers presented it to their technical critic for feedback and refinement before proceeding to the development phase. The prototype was refined based on the critic's input until it reached a stage where it was deemed ready for development. In addition, the developers utilized the gathered information and the final prototype to design various research diagrams, including System Flowcharts, Use Case Diagrams, Database Schemes, and Entity Relationship Diagram (ERD). (*See Appendix Figures 7 to 12 for system flowcharts, See Appendix Figure 13 for use case diagram and See Appendix Figures 14 and 15 for Database Scheme and ERD*).

These diagrams were created to visually represent and illustrate the system's functionalities, interactions, and data relationships.

### **Developing and Testing Phase**

During the Development and Testing Phase, the developers utilized all the gathered information, the final prototype, and the diagrams to develop an Automated Timetable Scheduling System (ATS). These resources served as valuable references and guides throughout the development process, ensuring that the web-based system was implemented in accordance with the defined functionalities, user requirements, and system architecture.

### **Implementation of the Backtracking Algorithm in the System**

The developers utilized a backtracking algorithm to assign unique and conflict-free class schedules to each course. This algorithm facilitated a systematic exploration of potential assignments while efficiently backtracking and adjusting schedules when conflicts or duplications were encountered. By employing the backtracking algorithm, the developers ensured that every course was allocated a distinct and non-conflicting class schedule within the specified context. Please see Figure 10 for the flowchart of the backtracking algorithm implementation. Please refer to Figure 10 to view the flowchart depicting the implementation of the backtracking algorithm.

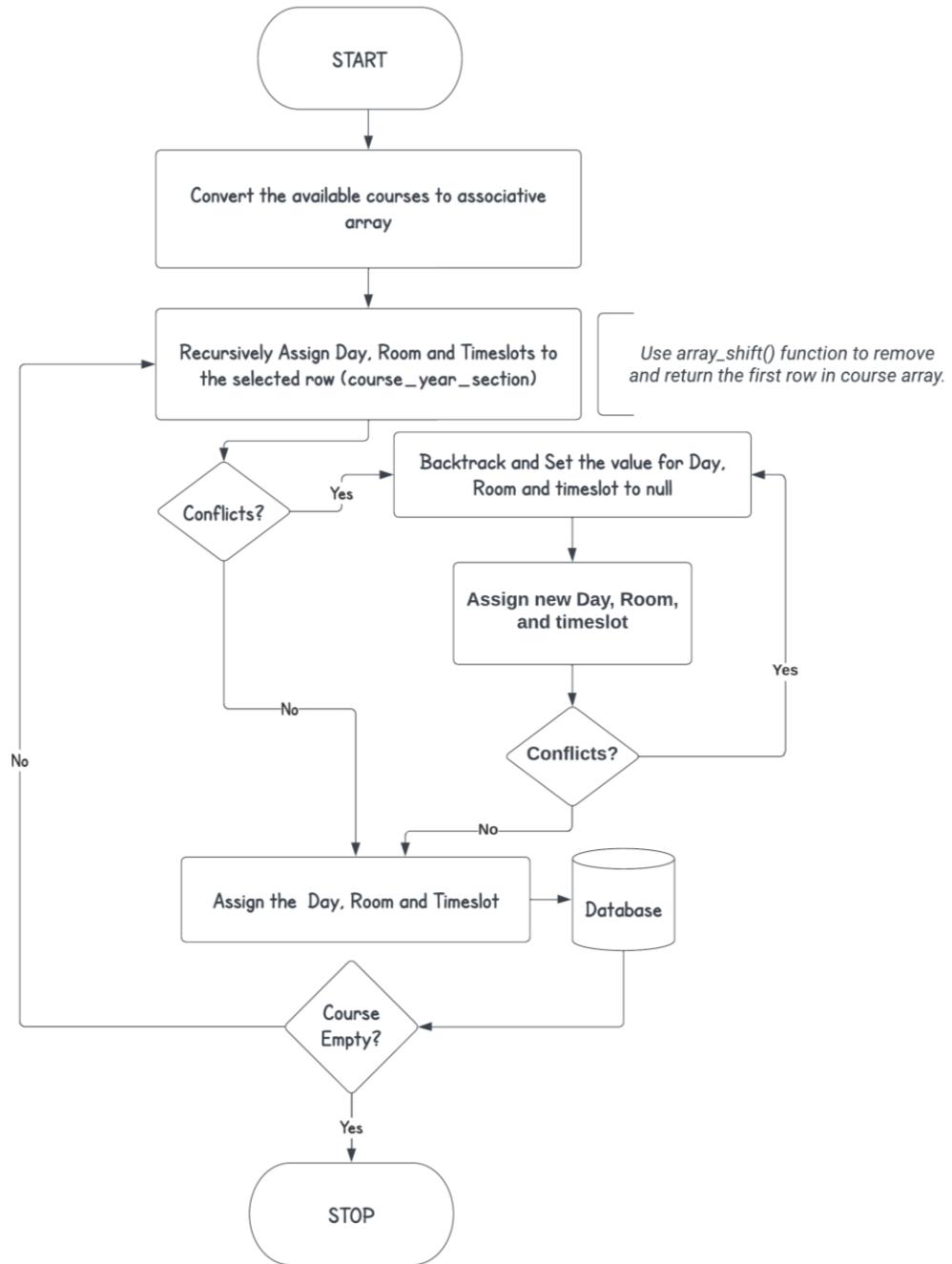


Figure 10. Backtracking Algorithm Implementation Flowchart

In Figure 10, the implementation of the backtracking algorithm in the web-based system is demonstrated. The developers followed a series of steps to implement the algorithm. They began by converting all available courses from the database into an associative array. Subsequently, the backtracking algorithm recursively assigned a unique timeslot to each selected course. Before inserting the assigned timeslots, a helper

function was utilized to check for conflicts. In cases where overlaps occurred with other schedules, the algorithm backtracked, set the value to null, and attempted a different timeslot until a non-overlapping one was found. The algorithm continued this process recursively until all courses in the array were assigned a timeslot.

### **Principles of Operation**

The developers developed an Automated Timetable Scheduling System for Cavite State University CCAT Campus, specially designed for the Department of Computer Studies. The scheduling committees or teachers had to register an account first to log in to the web-based system. After successfully logging in, the user needed to add data for faculty loading to assign a subject to a specific teacher. After all the data was added to the faculty loading, the user needed to choose between Automated or Manual creation of the schedule. Then, the user had to wait approximately one to two minutes for automated generation. On the other hand, in the manual creation of the schedule, the user could assign specific days, timeslots, and rooms to the teachers listed in the faculty loading table. However, as of now, the manually generated schedule cannot check if it conflicts with the automated schedules. Lastly, the web-based system had a specific view page for room, teacher, and course schedules. Each teacher, room, and course had separate tables displaying their respective schedules. The generated schedule can be converted into pdf format for printing purposes. (*See Appendix Figure 8 to 11 for the whole system flowchart*).

### **Testing and Evaluation**

#### **Testing**

During the testing phase, three categories were employed to thoroughly test the system. Realistic data, specifically the current faculty loading, was utilized to comprehensively test functionality, reliability, and performance (*See Appendix 15 to*

17). The developers utilized a Test Case Form to test system modules' functionality, while Testing Conditions were implemented to ensure the reliability of system outputs. These categories collectively contributed to a robust testing process before system implementation.

### **Test Case Form**

In the testing process, several key elements were used to document and track the test cases. These elements include:

TEST CASE ID	FUNCTION	EXPECTED RESULTS	ACTUAL RESULTS	STATUS
				Pass/Fail

Figure 11. Test Case Form

- **Test Case ID:** This is a unique identification number assigned to each test case. It helps in identifying and organizing the individual test cases.
- **Function:** This describes the primary objective or goal of the specific test case. It provides information about what aspect or functionality of the system is being tested.
- **Expected Results:** These are the anticipated outcomes or results that are expected when the test case is executed. They serve as a benchmark for evaluating the actual results.
- **Actual Results:** This refers to the real outcome or result obtained when the test case is executed. It provides information about what actually happened during the testing process.

- **Status:** The status indicates the outcome of the testing. It determines whether the test case has passed or failed based on a comparison between the expected and actual results. This helps in tracking the progress of testing and identifying any issues or discrepancies.

These elements collectively assist in documenting, tracking, and evaluating the test cases, ensuring that the system's functionality and behavior are thoroughly assessed.

#### A. Reliability

The developers tested the reliability of generated class schedule with the specified testing conditions in figure 12, aiming to verify the system's reliability and ensure conflict-free generated schedules.

Reliability, in this context, pertains to the system's ability to consistently generate accurate and conflict-free class schedules in a dependable manner. The developers conducted 10 manual tests to evaluate the reliability of the generated class schedules based on testing conditions shown in figure 12. During these tests, they meticulously reviewed the schedules for teachers, courses, and rooms, comparing them to identify any conflicts or issues that may have arisen (*See Appendix Figure 18 to 20*). This thorough examination allowed them to ensure that the generated schedules were reliable and free from conflicts.

Table 1. Testing Conditions

<b>TESTING CONDITION</b>	<b>REMARK</b>
1. Teachers, Students and Rooms must have a conflict-free generated schedules.	Passed/Failed
2. The timeslot duration must align with the subject hours.	Passed/Failed
3. The generated output should be free of conflicts.	Passed/Failed
4. The Manual added schedule should not overlap with the existing schedules.	Passed/Failed
5. The room type should be corresponded to the subject type.	Passed/Failed

## B. Functionality

Functionality refers to the specific capabilities and features of the modules within an automated scheduling system (ATS). Testing the functionality of each module involves assessing whether it performs its intended tasks and operations effectively within the context of the scheduling system.

Table 2. Compilation of functions requiring testing

<b>TEST CASE ID</b>	<b>FUNCTION</b>	<b>EXPECTED RESULT</b>	<b>ACTUAL RESULT</b>	<b>STATUS</b>
T-001	Test the login module	The system must not allow to login the unregistered user, If the user registers a new account with a same email, The system must not allow the registration of the account,		Pass/Fail
T-002	Test the register module			Pass/Fail
T-003	Test the CRUD functionality for Semester	Users should be able to create, view, update, and delete semesters.		Pass/Fail

Table 2. Continued

<b>TEST CASE ID</b>	<b>FUNCTION</b>	<b>EXPECTED RESULT</b>	<b>ACTUAL RESULT</b>	<b>STATUS</b>
T-004	Test the CRUD functionality for Day	Users should be able to create, view, update, and delete Day.		Pass/Fail
T-005	Test the CRUD functionality for Teacher	Users should be able to create, view, update, and delete teacher.		Pass/Fail
T-006	Test the CRUD functionality for Course	Users should be able to create, view, update, and delete course.		Pass/Fail
T-007	Test the CRUD functionality for Section	Users should be able to create, view, update, and delete section.		Pass/Fail
T-008	Test the CRUD functionality for Subject	Users should be able to create, view, update, and delete subject.		Pass/Fail
T-009	Test the CRUD functionality for Room	Users should be able to create, view, update, and delete room.		Pass/Fail
T-010	Test faculty loading module	The same teacher should not have a same assigned subject with same sections.		Pass/Fail

In order to test the functionality of the modules described in table 2, the developers conducted alpha testing and employed the test case presented in figure 11 to test the module listed below.

- User Authentication Module
- Faculty Loading Module

## Evaluation

After successfully completing the testing phase, where all the system modules met all the criteria, and the generated class schedules passed all testing conditions, the developers proceeded to evaluate their system using a modified ISO-IEC 25101 software evaluation instrument. This evaluation provided a comprehensive assessment of the system's performance, allowing the developers to validate the effectiveness of their system and identify any areas for improvement.

The evaluation form was evaluated by 40 respondents, including 10 IT Experts and 30 End-Users, who utilized two different evaluation forms, enabling a comprehensive assessment of the system from both technical and user experience viewpoints. (See Appendix Figures 21 to 22).

Among the respondents, the IT Experts consisted of 10 teachers who possessed expertise in the relevant technology and had a deep understanding of the system's functionalities and requirements. On the other hand, the End-Users comprised 30 students, specifically those pursuing Bachelor of Science in Computer Science (BSCS) and Information Technology (IT) degrees from Cavite State University CCAT Campus. These students, being the primary users of the system, provided valuable insights and feedback based on their firsthand experience and perspective. The inclusion of both IT Experts and End-Users ensured a comprehensive evaluation process, encompassing technical expertise and user-centric viewpoints.

## Data Analysis

The developers computed the evaluation results by getting the total of each criterion, then divided it by the total evaluators and interpreted the total score using the table below:

**Table 3. Descriptive Interpretation of total score**

<b>SCORE</b>	<b>INTERPRETATION</b>
4.51 -5.00	Excellent
3.51 - 4.50	Very Satisfactory
2.51 - 2.50	Satisfactory
1.51 - 2.50	Unsatisfactory
1.00 - 1.50	Needs Improvement

## RESULTS AND DISCUSSION

In this chapter, the findings and discussions of the study are presented. The chapter encompasses The Web App Design, Outcomes of the testing and evaluation, offering a comprehensive analysis and interpretation of the data collected.

### Web-Based System Design

Automated Timetable Scheduling System is a web application that generates class schedules without conflicts. It encompasses crucial functionalities such as CRUD operations for managing data required for schedule generation, faculty loading to assign subjects, and schedule generation for teachers, students, and rooms. Furthermore, the system allows for manual updates to the schedules. The developers use PHP as their programming language to employ a dependable backtracking algorithm to ensure conflict-free scheduling.

Figure 12 shows the register page, where the user can register an account to login in the web-based system. The user needs to add a unique email, name, and password.

The image shows a registration form titled "REGISTER" in large yellow capital letters at the top. The form consists of four input fields: "Name:", "Email address:", "Password:", and "Confirm Password:". Below these fields is a green "Register" button. At the bottom of the form, there is a link "Already have an account? [Login here](#)".

Figure 12. Register Page

Figure 13 shows the login page where the user needs to input the data, they used in the registration page.

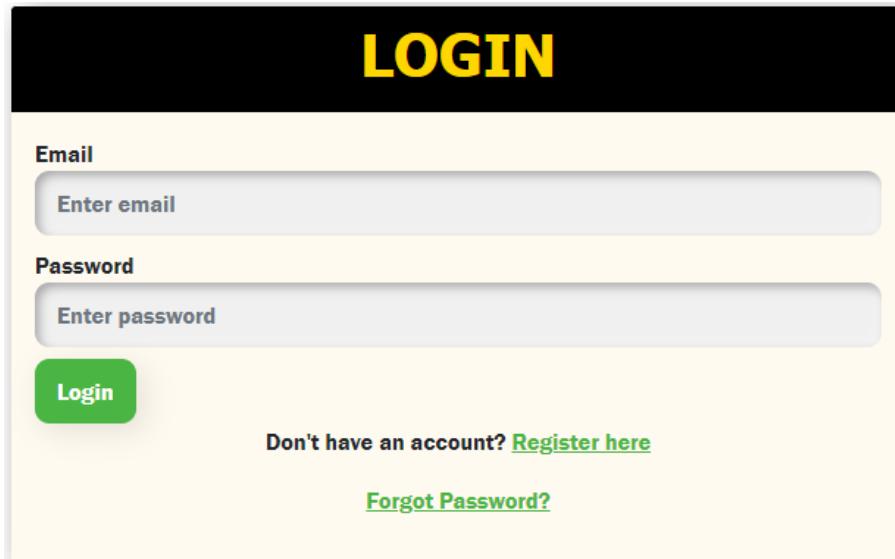


Figure 13. Log in Page

Figure 14 shows that the user has already logged in and redirected to the dashboard that displays the frequency of all data in the web-based system.

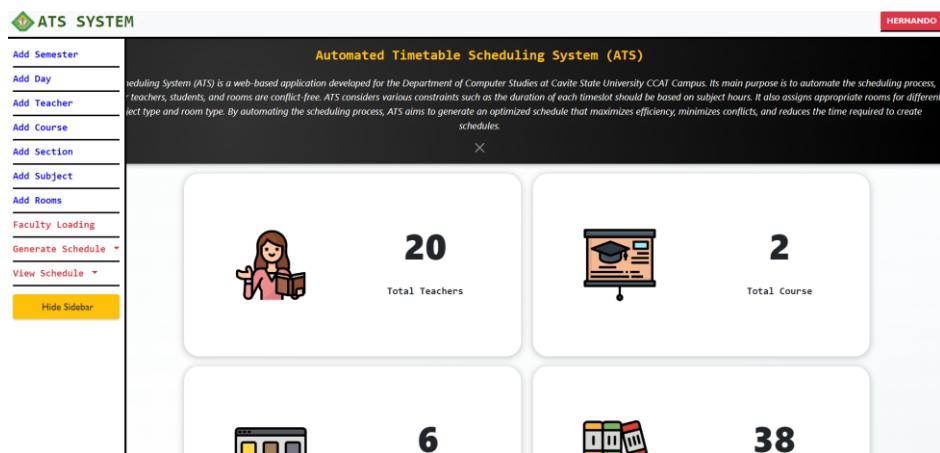


Figure 14. Admin Dashboard

Figure 15 shows the list of semesters, the user can add another semester by clicking the add semester button, and the current semester can be updated and deleted.

No.	Semester Name	Start Year	End Year	Action
1	1st SEM	2023	2024	<a href="#">Update</a> <a href="#">Delete</a>

Figure 15. Semester List

Figure 16 shows the add semester page where the user must input semester id, semester name, start year, and end year and then click the create button to save it to the database.

Figure 16. Adding Semester Page

Figure 17 shows the day list page where the user can see the available days for the current semester, and the user can add, update and delete data.

No.	Day	Action
1	Thursday	<a href="#">Delete</a>
2	Friday	<a href="#">Delete</a>
3	Monday	<a href="#">Delete</a>
4	Tuesday	<a href="#">Delete</a>
5	Wednesday	<a href="#">Delete</a>

Figure 17. Day List

Figure 18 shows the page for adding a new day. The user needs to select a day between Monday to Friday, but if the day already exists, the system will not allow adding the day.

Figure 18. Adding Day Page

Figure 19 shows the list of available teachers for faculty loading. The user can add, update and delete teachers' data, but if the teacher already exists in the list, the system will not allow adding a new teacher.

No.	Teacher ID	Lastname	Firstname	Action
1	7	Abad	Jenerry	<button>Update</button> <button>Delete</button>
2	4	Bautista	Renato	<button>Update</button> <button>Delete</button>
3	8	Cabarles	Axel	<button>Update</button> <button>Delete</button>
4	9	Camingawan	Princess Garvie	<button>Update</button> <button>Delete</button>
5	10	Clarito	Angela	<button>Update</button> <button>Delete</button>
6	11	Cruz	Janessa Marielle	<button>Update</button> <button>Delete</button>
7	17	Dela Cruz	Mary Grace	<button>Update</button> <button>Delete</button>

Figure 19. Teacher List

Figure 20 shows the page for adding a new teacher. The user needs to input a unique teacher id and the teacher's name, but if the teacher id already exists, the system will not allow the insertion of the new teacher.

**ADD TEACHER**

Teacher ID:  
Enter teacher id

Firstname  
Enter firstname

Lastname  
Enter lastname

Create Back

Figure 20. Adding Teacher Page

Figure 21 shows the list of available courses for the semester. The user can add new courses to the list or update and delete the existing courses.

**COURSE LIST**

No.	Course Name	Slots	Action
1	BSCS	123	<a href="#">Update</a> <a href="#">Delete</a>
2	BSINFOTECH	123	<a href="#">Update</a> <a href="#">Delete</a>

Figure 21. Course List

Figure 22 shows the page for adding courses. The user needs to add a course name, slots, and a unique id, but if the course id is existing it will block by the system.

**ADD COURSE**

Course Name  
Enter Course name

Slots  
Slots

Create Back

Figure 22. Adding Course Page

Figure 23 shows the list of available sections for the semester. The user can add a new section to the list or update and delete the existing sections.

No.	Section Name	Action
1	A	<button>update</button> <button>Delete</button>
2	B	<button>update</button> <button>Delete</button>
3	C	<button>update</button> <button>Delete</button>
4	D	<button>update</button> <button>Delete</button>
5	E	<button>update</button> <button>Delete</button>
6	F	<button>update</button> <button>Delete</button>

Figure 23. Section List

Figure 24 shows the page for adding sections. The user needs to add a section name and a unique id, but if the section id exists, the system will prompt the already existing section.

Figure 24. Adding Section Page

Figure 25 shows the list of available subjects for the semester. The user can add new subjects to the list or update and delete the existing subjects.

No.	Subject Code	Subject Title	Subject Type	Units	Contact hours	Action
1	DCIT 26	App Development & Emerging Tech (LAB)	Lab	1	3	<a href="#">Update</a> <a href="#">Delete</a>
2	DCIT 26	App Development & Emerging Tech (LEC)	Lec	2	2	<a href="#">Update</a> <a href="#">Delete</a>
3	DCIT 23	Computer Programming II (LEC)	Lec	1	1	<a href="#">Update</a> <a href="#">Delete</a>
4	DCIT 23	Computer Programming II (LAB)	Lab	1	3	<a href="#">Update</a> <a href="#">Delete</a>
5	COSC 65	Architecture and Organization (LEC)	Lec	2	2	<a href="#">Update</a> <a href="#">Delete</a>
6	ITLC 85	Information Assurance and Security (LAB)	Lab	1	3	<a href="#">Update</a> <a href="#">Delete</a>
7	ITFC 80	Introduction to Human Computer Interaction I (LAB)	Lab	1	3	<a href="#">Update</a> <a href="#">Delete</a>

Figure 25. Subject List

Figure 26 shows the page for adding a subject. The user needs to add the subject name, subject title, subject type, units, and subject hours but if the subject exists, the system will prompt the subject already exists.

Subject Code  
Enter Subject Code

Subject Title  
Enter Subject Description

Subject Type  
Select

Units  
Enter number of Units

Subject Hours  
Select

[Create](#) [Back](#)

Figure 26. Adding Subject Page

Figure 27 shows the list of available rooms for the semester. The user can add new rooms to the list or update and delete the existing rooms.

No.	Room Name	Room Type	Capacity	Action
1	DCS-1	Lec	30	<a href="#">Update</a> <a href="#">Delete</a>
2	DCS-2	Lec	25	<a href="#">Update</a> <a href="#">Delete</a>
3	DCS-3	Lec	100	<a href="#">Update</a> <a href="#">Delete</a>
4	DCS-4	Lec	30	<a href="#">Update</a> <a href="#">Delete</a>
5	DCS-5	Lec	50	<a href="#">Update</a> <a href="#">Delete</a>
6	DCS-6	Lec	50	<a href="#">Update</a> <a href="#">Delete</a>
7	DCS-7	Lec	20	<a href="#">Update</a> <a href="#">Delete</a>

Figure 27. Room List

Figure 28 shows the page for adding rooms. The user needs to add room name, room type, and capacity, but if the room exists, the system will prompt room already exists.

Figure 28. Adding Room Page

Figure 29 shows the list of assigned subjects to the teacher on the faculty loading page. The user can add, assign new subjects or update and delete the existing data.

No.	Sched Code	Teacher Name	Subject Code	Subject Title	Subject Type	Contact Hours	Units	Year & Section	Action
1	20230001	Jenerry Abad	DCIT 26	App Development & Emerging Tech (LAB)	Lab	3	1	BSCS 301-A	<button>Update</button> <button>Delete</button>
2	20230002	Jenerry Abad	DCIT 26	App Development & Emerging Tech (LAB)	Lab	3	1	BSCS 301-B	<button>Update</button> <button>Delete</button>

Figure 29. Faculty Loading List

Figure 30 shows the page for assigning a subject to a teacher. If the selected subject was already assigned, the system will not allow the user to assign that subject.

ATS SYSTEM

HERNANDO ▾

**ASSIGN SUBJECT TO TEACHER**

Teacher  
Ana Marie Obon

Course  
BSCS

Subject Description  
App Development & Emerging Tech (LAB)

Section  
A

Year  
1st

**Create** **Back**

Figure 30. Adding Faculty Loading Page

Figure 31 shows the page for the automated generation page, where the user will click the generate button and wait approximately one to five minutes to generate the schedules.

ATS SYSTEM

HERNANDO ▾

**AUTOMATED SCHEDULING**

**Generate** **Delete Generated Schedule**

Time	Monday	Tuesday	Wednesday	Thursday	Friday
07:00 AM - 07:30 AM					
07:30 AM - 08:00 AM					
08:00 AM - 08:30 AM					
08:30 AM - 09:00 AM					
09:00 AM - 09:30 AM					
09:30 AM - 10:00 AM					
10:00 AM - 10:30 AM					
10:30 AM - 11:00 AM					
11:00 AM - 11:30 AM					
11:30 AM - 12:00 PM					
12:00 PM - 12:30 PM					
12:30 PM - 01:00 PM					
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02:30 PM - 03:00 PM					
03:00 PM - 03:30 PM					
03:30 PM - 04:00 PM					
04:00 PM - 04:30 PM					
04:30 PM - 05:00 PM					
05:00 PM - 05:30 PM					
05:30 PM - 06:00 PM					
06:00 PM - 06:30 PM					
06:30 PM - 07:00 PM					

Figure 31. Automated Timetable Page

Figure 32 shows the generated schedules, the user can regenerate the schedules by clicking the regenerate button, and the user can also delete the generated schedules using the delete button.

AUTOMATED SCHEDULING						
	Monday	Tuesday	Wednesday	Thursday	Friday	
	Jenerry Abad DCIT 26 BSCS 301-A CCL-2	Jenerry Abad DCIT 26 BSCS 201-B DCS-5	Axel Cabarles ITEC 85 BSINFOTECH 301-C CCL-1	Princess Garvie Camingawan ITEC 80 BSCS 201-A DCS-1	Jenerry Abad DCIT 26 BSCS 401-A CCL-1	Jenerry Abad DCIT 26 BSCS 201-A DCS-3
07:00 AM - 07:30 AM	Princess Garvie Camingawan ITEC 80 BSCS 201-E DCS-4	Princess Garvie Camingawan ITEC 80 BSINFOTECH 201-C DCS-1	Angela Clarito ITEC 65 BSINFOTECH 201-E DCS-4	Mary Grace Dela Cruz DCIT 25 BSINFOTECH 201-B DCS-7	Princess Garvie Camingawan ITEC 80 BSCS 201-D DCS-2	Axel Cabarles ITEC 85 BSINFOTECH 301-B CCL-3
	Angela Clarito ITEC 65 BSINFOTECH 201-E DCS-4	Angela Clarito ITEC 65 BSINFOTECH 201-D DCS-4	Janessa Marielle Cruz DCIT 55 BSINFOTECH 301-A DCS-3	Janessa Marielle Cruz DCIT 55 BSINFOTECH 201-A DCS-6	Princess Garvie Camingawan ITEC 80 BSCS 201-E DCS-7	Angela Clarito ITEC 65 BSINFOTECH 201-C DCS-6
	Mary Grace Dela Cruz DCIT 25 BSINFOTECH 201-B DCS-7	Janessa Marielle Cruz DCIT 55	Mary Grace Dela Cruz DCIT 25	Janessa Marielle Cruz DCIT 55 BSINFOTECH 301-E DCS-1	Princess Garvie Camingawan ITEC 80 BSCS 201-B DCS-3	Janessa Marielle Cruz DCIT 55

Figure 32. Automated Timetable Page with Generated Schedule

Figure 33 shows the page for adding a manual schedule to the generated schedules. The user must manually check if the teacher, subject, course, year and section, day, start time, and end time is not overlap with the generated schedules. If the user adds a timeslot that was already assigned, the system will not allow the schedule to be added to the generated schedules.

ADD MANUAL SCHEDULE					
Teacher	<input type="text" value="Ana Marie Obon"/>				
Course	<input type="text" value="BSCS"/>				
Subject Description	<input type="text" value="App Development &amp; Emerging Tech (LAB)"/>				
Section	<input type="text" value="A"/>				
Year	<input type="text" value="1st"/>				
Day	<input type="text" value="Thursday"/>				
Room	<input type="text" value="DCS-1"/>				
Start Time	<input type="text" value="07:00 AM"/>				
End Time	<input type="text" value="09:00 AM"/>				
	<input type="button" value="Create"/>	<input type="button" value="Back"/>			

Figure 33. Adding of Manual Schedule

Figure 34 shows the generated room schedule. The user can see the separated schedules for rooms in table format.

**ROOM SCHEDULES**  
**1st SEM**  
A.Y: 2023-2024

Room	Day	Subject Code	Subject Title	Subject Type	Teacher	Course Year & Section	Start_Time	End_Time
CCL-1	Monday	ITEC 85	Information Assurance and Security (LAB)	Lab	Axel Cabarles	BSINFOTECH 301-C	07:00 AM	10:00 AM
	Tuesday	DCIT 55 ITECT 75	Advance Database System (LAB) System Integration and Architecture (LAB)	Lab	Janessa Marielle Cruz Chrissa Mae Turla	BSCS 301-C BSINFOTECH 301-A	09:00 AM 01:00 PM	12:00 PM 04:00 PM
	Wednesday	ITEC 90	Networks Fundamentals (LAB)	Lab	Jenerry Abad	BSCS 401-A	07:00 AM	10:00 AM
	Thursday	ITEC 80	Introduction to Human Computer Interaction I (LAB)	Lab	Lester Villanueva	BSINFOTECH 301-C	01:00 PM	04:00 PM
	Friday	ITEC 80 ITEC 90	Introduction to Human Computer Interaction I (LAB) Networks Fundamentals (LAB)	Lab	Princess Garvie Camingawan Lester Villanueva	BSINFOTECH 301-C BSINFOTECH 301-A	09:00 AM 01:00 PM	12:00 PM 04:00 PM

Figure 34. Generated Room Schedules

Figure 35 shows the pdf format of the generated schedule. The user needs to click the CTR+P to print the PDF generated schedules.

ROOM SCHEDULES							
Room	Day	Subject Code	Subject Title	Teacher	Course Year & Section	Start_Time	End_Time
CCL-1	Monday	ITEC 85	Information Assurance and Security (LAB)	Axel Cabarles	BSINFOTECH 301-C	07:00 AM	10:00 AM
	Tuesday	DCIT 55	Advance Database System (LAB)	Janessa Marielle Cruz	BSCS 301-C	09:00 AM	12:00 PM
		ITECT 75	System Integration and Architecture (LAB)	Chrissa Mae Turla	BSINFOTECH 301-A	01:00 PM	04:00 PM
	Wednesday	ITEC 90	Networks Fundamentals (LAB)	Jenerry Abad	BSCS 401-A	07:00 AM	10:00 AM
		ITEC 80	Introduction to Human Computer Interaction I (LAB)	Lester Villanueva	BSINFOTECH 301-C	01:00 PM	04:00 PM
	Thursday	ITEC 80	Introduction to Human Computer Interaction I (LAB)	Princess Garvie Camingawan	BSINFOTECH 301-A	09:00 AM	12:00 PM
		ITEC 90	Networks Fundamentals (LAB)	Lester Villanueva	BSINFOTECH 301-C	01:00 PM	04:00 PM
	Friday	ITEC 80	Introduction to Human Computer Interaction I (LAB)	Princess Garvie Camingawan	BSINFOTECH 301-C	09:00 AM	12:00 PM
		ITEC 90	Networks Fundamentals (LAB)	Lester Villanueva	BSINFOTECH 301-A	01:00 PM	04:00 PM

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Figure 35. PDF Schedule for Room

Figure 36 shows the generated teacher schedules in separate tables. The user can convert the generated schedule into pdf format by clicking CTRL + P.

The screenshot shows the ATS SYSTEM interface. On the left, there is a sidebar with various menu options: Add Semester, Add Day, Add Teacher, Add Course, Add Section, Add Subject, Add Rooms, Faculty Loading, Generate Schedule, View Schedule, and Hide Sidebar. The main area is titled "TEACHER SCHEDULES" and "1st SEM". It displays two tables of teacher schedules for different teachers.

Teacher	Day	Subject Code	Subject Title	Subject Type	Room	Course Year & Section	Start_Time	End_Time
Ana Marie Obon	Monday	DCIT 25	Data Structures and Algorithm (LEC)	Lec	DCS-1	BSCS 301-B	10:00 AM	12:00 PM
		DCIT 25	Data Structures and Algorithm (LAB)	Lab	CCL-7	BSCS 301-A	01:00 PM	04:00 PM
	Tuesday	DCIT 25	Data Structures and Algorithm (LAB)	Lab	CCL-4	BSCS 301-B	01:00 PM	04:00 PM
	Wednesday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	CCL-6	BSCS 101-A	01:00 PM	04:00 PM
	Thursday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	CCL-7	BSCS 101-A	01:00 PM	04:00 PM
Friday	DCIT 25	Data Structures and Algorithm (LEC)	Lec	DCS-4	BSCS 301-A	09:00 AM	11:00 AM	
	DCIT 23	Computer Programming II (LAB)	Lab	CCL-3	BSCS 401-A	01:00 PM	04:00 PM	

Teacher	Day	Subject Code	Subject Title	Subject Type	Room	Course Year & Section	Start_Time	End_Time
	Monday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-4	BSINFOTECH 201-E	07:00 AM	09:00 AM
		ITEC 85	Information Assurance and Security (LEC)	Lec	DCS-2	BSCS 201-A	09:00 AM	11:00 AM
	Tuesday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-4	BSINFOTECH 201-D	07:00 AM	09:00 AM
		DCIT 24	Information Management (LAB)	Lab	CCL-3	BSCS 301-B	09:00 AM	12:00 PM

Figure 36. Generated Teachers Schedule

Figure 37 shows the pdf format of the generated schedules for teachers. The user can print the generated pdf schedules.

The PDF document contains a title "TEACHER SCHEDULES" at the top. Below it is a table of teacher schedules for Ana Marie Obon across five days of the week.

Teacher	Day	Subject Code	Subject Title	Course Year & Section	Room	Start_Time	End_Time
Ana Marie Obon	Monday	DCIT 25	Data Structures and Algorithm (LEC)	BSCS 301-B	DCS-1	10:00 AM	12:00 PM
		DCIT 25	Data Structures and Algorithm (LAB)	BSCS 301-A	CCL-7	01:00 PM	04:00 PM
	Tuesday	DCIT 25	Data Structures and Algorithm (LAB)	BSCS 301-B	CCL-4	01:00 PM	04:00 PM
		DCIT 26	App Development & Emerging Tech (LAB)	BSCS 101-A	CCL-6	01:00 PM	04:00 PM
	Wednesday	DCIT 26	App Development & Emerging Tech (LAB)	BSCS 101-A	CCL-7	01:00 PM	04:00 PM
		DCIT 25	Data Structures and Algorithm (LEC)	BSCS 301-A	DCS-4	09:00 AM	11:00 AM
	Thursday	DCIT 25	Data Structures and Algorithm (LEC)	BSCS 301-A	CCL-3	01:00 PM	04:00 PM
		DCIT 23	Computer Programming II (LAB)	BSCS 401-A	CCL-3	01:00 PM	04:00 PM

Figure 37. PDF Teachers Schedule

Figure 38 shows the course-generated schedules in a separate table. The user can also convert it into pdf format.

COURSE SCHEDULES								
1st SEM								
A.Y: 2023-2024								
Course Year & Section	Day	Subject Code	Subject Title	Subject Type	Teacher	Room	Start_Time	End_Time
BSCS 101-A	Monday	ITEC 50	Web System and Technologies II (LEC)	Lec	Girlie Meliante	DCS-6	08:30 AM	10:30 AM
	Wednesday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	Ana Marie Obon	CCL-6	01:00 PM	04:00 PM
	Thursday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	Ana Marie Obon	CCL-7	01:00 PM	04:00 PM
Course Year & Section	Day	Subject Code	Subject Title	Subject Type	Teacher	Room	Start_Time	End_Time
BSCS 101-B	Friday	ITEC 50	Web System and Technologies II (LEC)	Lec	Girlie Meliante	DCS-3	09:00 AM	11:00 AM
	Monday	ITEC 80	Introduction to Human Computer Interaction (LEC)	Lec	Princess Garvie Camingawan	DCS-1	07:00 AM	09:00 AM
	Tuesday	ITEC 85	Information Assurance and Security (LEC)	Lec	Angela Clarito	DCS-2	09:00 AM	11:00 AM
BSCS 201-A	Wednesday	COSC 70	Software Engineering I (LEC)	Lab	Girlie Meliante	CCL-2	07:00 AM	10:00 AM
	Monday	COSC 65	Architecture and Organization (LEC)	Lec	Axel Cabarles	DCS-1	07:00 AM	09:00 AM
	Tuesday	COSC 85	Networks and Communication (LEC)	Lec	Marie Angelie Gerios	DCS-7	09:00 AM	11:00 AM
	Thursday	DCIT 26	App Development & Emerging Tech (LEC)	Lec	Jenerry Abad	DCS-3	07:00 AM	09:00 AM
		COSC 90	Design Analysis of Algorithm (LEC)	Lec	Mary Grace Dela Cruz	DCS-3	09:00 AM	11:00 AM

Figure 38. Generated Course Schedule

Figure 39 shows the converted PDF format of course-generated schedules. It was used for printing purposes.

Course Year & Section	Day	Subject Code	Subject Title	Teacher	Room	Start_Time	End_Time
BSCS 101-A	Monday	ITEC 50	Web System and Technologies II (LEC)	Girlie Meliante	DCS-6	08:30 AM	10:30 AM
	Wednesday	DCIT 26	App Development & Emerging Tech (LAB)	Ana Marie Obon	CCL-6	01:00 PM	04:00 PM
	Thursday	DCIT 26	App Development & Emerging Tech (LAB)	Ana Marie Obon	CCL-7	01:00 PM	04:00 PM

Figure 39. PDF Schedule for Course

## Testing Results

In this section, the testing results for both the reliability of the generated schedules and the functionality of the system modules are presented and discussed. These results provide insights into the dependability and consistency of the generated

schedules as well as the effectiveness of the individual system modules in performing their intended tasks.

### **Reliability**

The developers performed tests to verify the reliability of the generated class schedules, ensuring that criteria such as conflict-free schedules for teachers, rooms, and courses were met. These tests were conducted based on specific testing conditions.

Developers performed ten tests for each testing condition to thoroughly evaluate the reliability of the generated class schedules. This iterative testing approach was undertaken to ensure that the schedules consistently adhered to the specified criteria. The developers test the reliability of generated schedules based on the testing conditions (See Appendix Table 2). Table 4 summarizes the test results for the reliability assessment.

**Table 4. Summary of Testing Results for Reliability**

<b>TESTING CONDITION</b>	<b>REMARK</b>
1. Teachers, Students and Rooms must have a conflict-free generated schedules.	Passed
2. The timeslot duration must align with the subject hours.	Passed
3. The generated output should be free of conflicts.	Passed
4. The Manual added schedule should not overlap with the existing schedules.	Passed
5. The room type should be corresponded to the subject type.	Passed

## **Functionality**

To ensure the functionality of each module, the system incorporates essential security measures and features, including unique email restriction, account blocking for failed login attempts, and password reset functionality. Additionally, it provides CRUD functionality for efficient data management, while enforcing restrictions on duplicate entries to uphold data integrity as shown in Table 5. These measures collectively contribute to the overall effectiveness and reliability of the system. (*See Appendix Tables 2 to 3 for specific detailed test case for each module*).

**Table 5. Summary of Testing Results for Functionality**

<b>TEST CASE ID</b>	<b>FUNCTION</b>	<b>EXPECTED RESULT</b>	<b>ACTUAL RESULT</b>	<b>STATUS</b>
T-001	Test the login module	Web-based system should block unregistered users and it should not allow new user to register same email address.	Unregistered users were denied access by web-based system, and the registration process for the same email address was restricted. CRUD functionality is functioning effectively, ensuring that duplicate data is prevented and users are unable to enter redundant information.	Passed
T-002	Test Faculty Loading Module	CRUD Functionality and Duplicate Data Restriction		Passed

## **Evaluation Results**

The system's performance was assessed using the modified ISO-IEC 25010. evaluation criteria, encompassing functional suitability, performance efficiency, usability, security, maintainability, and portability. A total of 40 individuals participated in the evaluation process, including 10 IT experts and 30 end-users.

***Narrative Discussion of the Performance Evaluation of the System based on IT Experts***

Table 6 reflects the assessment of the IT expert respondents in the functional sustainability of the system when it comes to Functional Completeness, Functional Correctness, and Functional Appropriateness. The indicator was rated as follows; Functional Completeness received, 4.10; Functional Correctness, 4.30 and Functional Appropriateness, 4.50. The mean of 4.30 indicates that the system functions well, provides correct results with precision, and facilitates the accomplishment of the tasks and objectives.

**Table 6. Perception of IT Experts in the functional suitability of the system**

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Functional Completeness	4.10	Satisfactory
2. Functional Correctness	4.30	Very Satisfactory
3. Functional Appropriateness	4.50	Excellent
<b>Average Mean</b>	<b>4.30</b>	<b>Very Satisfactory</b>

Table 7 reflects the assessment of the IT expert respondents in the performance efficiency of the system when it comes to Time Behavior, resource utilization, and capacity. The indicator was rated as follows; Time behavior received, 4.50; Resource Utilization, 4.60 and Capacity, 4.60. The mean of 4.56 indicates that the system performed well as it met the specified requirements of the system.

**Table 7. Perception of IT Experts in the Performance Efficiency of the system**

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Time behavior	4.50	Excellent
2. Resource utilization	4.60	Excellent
3. Capacity	4.60	Excellent
<b>Average Mean</b>	<b>4.56</b>	<b>Excellent</b>

Table 8 reflects the assessment of the IT Expert respondents in the Appropriateness Recognizability, Learnability, Operability, User Error Protection, and User Interface Aesthetics of the system. Appropriateness Recognizability received 4.50, Learnability received 4.50, Operability received 4.50, User Error Protection received 4.40, User Interface Aesthetics received 3.80, and Accessibility received 4.40. This result indicates that the system is Very Satisfactory in exchanging information and making use of information.

**Table 8. Perception of IT Experts in the Usability of the system**

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Appropriateness Recognizability	4.50	Excellent
2. Learnability	4.50	Excellent
3. Operability	4.50	Excellent
4. User Error Protection	4.40	Satisfactory
5. User Interface Aesthetics	3.80	Very Satisfactory
6. Accessibility	4.40	Very Satisfactory
<b>Average Mean</b>	<b>4.35</b>	<b>Very Satisfactory</b>

Table 9 reflects the assessment of the IT Expert respondents regarding the security of the system when it comes to confidentiality and integrity. The indicator was rated as follows, confidentiality received 4.20, and integrity received 3.90. The mean of 4.05 indicates very satisfactory, and the system can provide strong security for the user.

**Table 9. Perception of IT Experts in the Security of the system**

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Confidentiality	4.20	Very Satisfactory
2. Integrity	3.90	Satisfactory
<b>Average Mean</b>	<b>4.05</b>	<b>Very Satisfactory</b>

Table 10 shows system maintainability evaluation results with ratings for each indicator: modularity 4.30, reusability 4.40, analyzability 4.20, modifiability 4.30, and

testability 4.00. The mean average of 4.24 indicates high user satisfaction and ease of modification and maintenance.

Table 10. Perception of IT Experts in the Maintainability of the system

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Modularity	4.30	Very Satisfactory
2. Reusability	4.40	Very Satisfactory
3. Analyzability	4.20	Very Satisfactory
4. Modifiability	4.30	Very Satisfactory
5. Testability	4.00	Very Satisfactory
<b>Average Mean</b>	<b>4.24</b>	<b>Very Satisfactory</b>

Table 11 reflects the assessment of the IT Expert respondents on the portability of the system when it comes to Adaptability. The indicator was rated as follows. Adaptability received 3.60. The mean of 3.60 indicates satisfactory, and the system can provide enough portability for the user.

Table 11. Perception of IT Experts in the Portability of the system

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Adaptability	3.60	Satisfactory
<b>Average Mean</b>	<b>3.60</b>	<b>Satisfactory</b>

The summary of assessments provided by the IT Experts is presented in Table 12, showcasing the ratings for various aspects. Functional Suitability achieved a score of 4.16, Performance Efficiency received 4.56, Usability obtained a 4.35, Security received 4.05, Maintainability achieved 4.24, and lastly, the portability of the system received a rating of 3.60. The average mean of these scores is 4.16, indicating a Very Satisfactory performance overall. (*See Appendix Figures 23 to 26 for detailed evaluation form of IT Experts*).

**Table 12. Summary of Evaluation Results for IT Experts**

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Functional Suitability	4.16	Very Satisfactory
2. Performance Efficiency	4.56	Very Satisfactory
3. Usability	4.35	Very Satisfactory
4. Security	4.05	Very Satisfactory
5. Maintainability	4.24	Very Satisfactory
6. Portability	3.60	Satisfactory
<b>Average Mean</b>	<b>4.16</b>	<b>Very Satisfactory</b>

***Narrative Discussion of the Performance Evaluation of the System based on End Users***

The evaluation of the system involved 30 participants, comprising students from the Department of Computer Studies. These respondents assessed the system's usability, effectiveness, efficiency, satisfaction, and coverage of relevant contexts.

Table 13 reflects the assessment of the end user respondents regarding the usability of the system when it comes to the appropriateness, recognizability, learnability, operability, user error protection, and user interface aesthetics. The indicator was rated as follows; appropriateness recognizability received, 4.70; learnability, 4.60; operability, 4.70; user error protection, 4.40; and User Interface Aesthetics, 4.50. The mean of 4.58 indicates that the system is significantly user-friendly.

**Table 13. Perception of End-users in the Usability of the system**

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Appropriateness Recognizability	4.70	Excellent
2. Learnability	4.60	Excellent
3. Operability	4.70	Excellent
4. User Error Protection	4.40	Very Satisfactory
5. User Interface Aesthetics	4.50	Very Satisfactory
<b>Average Mean</b>	<b>4.58</b>	<b>Excellent</b>

Table 14 reflects the assessment of the end user respondents in terms of the effectiveness of the system. The indicator was rated as follows; Effectiveness, 4.80. This result indicates that the system is significantly effective in terms of achieving specified goals when used in specified contexts.

Table 14. Perception of End-users in the Effectiveness of the system

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Effectiveness	4.80	Excellent
<b>Average Mean</b>	<b>4.80</b>	<b>Excellent</b>

Table 15 reflects the assessment of the end user respondents in terms of the efficiency of the system. The indicator was rated as follows; Efficiency, 4.70. This result suggests that the system demonstrates a commendable level of efficiency by effectively utilizing resources to assist users in achieving their objectives accurately and comprehensively.

Table 15. Perception of End-users in the Efficiency of the system

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Efficiency	4.70	Very Satisfactory
<b>Average Mean</b>	<b>4.70</b>	<b>Very Satisfactory</b>

Table 16 reflects the assessment of the end user respondents in terms of user satisfaction with the system. The indicator was rated as follows; Usefulness, 4.80; Trust, 4.70; Pleasure, 4.60, and Comfort, 4.70. The mean of 4.70 indicates that the system relevantly satisfied the user in terms of trust, pleasure, comfort, and usefulness.

Table 16. Perception of End-users in the Satisfaction of the system

Table 16. Perception of End-users in the Context Coverage of the system

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Usefulness	4.80	Excellent
2. Trust	4.70	Excellent
3. Pleasure	4.60	Excellent
4. Comfort	4.70	Excellent
<b>Average Mean</b>	<b>4.70</b>	<b>Excellent</b>

Table 17 reflects the assessment of the end user respondents in terms of context coverage of the system. The indicator was rated as follows; Content Completeness, 4.70; and Flexibility, 4.80. The mean of 4.75 indicates that the system is significantly complete and flexible in order for the users to achieve specified goals effectively, efficiently, and satisfactorily through different complexity.

Table 17. Perception of End-users in the Context Coverage of the system

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Content Completeness	4.70	Excellent
2. Flexibility	4.80	Excellent
<b>Average Mean</b>	<b>4.75</b>	<b>Excellent</b>

Based on the feedback from end-users table 18 shows that the system has received exceptional evaluations in terms of usability, effectiveness, efficiency, satisfaction, and context coverage. The average mean score of 4.70 reflects the system's remarkable performance across these dimensions, highlighting its ability to meet the needs and expectations of the users. The positive ratings signify that the system is user-friendly, efficient, and effective in achieving its intended purposes, ultimately resulting in high user satisfaction (*See Appendix Tables 26 to 28 for end-user detailed evaluation form*).

Table 18. Summary of Evaluation results for End-user

<b>CHARACTERISTICS</b>	<b>AVERAGE SCORE</b>	<b>DESCRIPTIVE INTERPRETATION</b>
1. Usability	4.58	Excellent
2. Effectiveness	4.80	Excellent
3. Efficiency	4.70	Excellent
4. Satisfaction	4.70	Excellent
5. Context Coverage	4.75	Excellent
<b>Average Mean</b>	<b>4.70</b>	<b>Excellent</b>

## **SUMMARY, CONCLUSIONS AND RECOMMENDATION**

### **Summary**

The research project entitled "Automated Timetable Scheduling System using Backtracking Algorithm" was conducted from May 2022 to May 2023. The objectives of the study were as follows: 1) document and analyze the existing process of scheduling classes, 2) design and develop a web application that automate the generation of class schedules. 3) test the reliability of generated schedules based on testing conditions and the functionality of system modules. b) Evaluate the system using modified ISO-IEC 25010. During the study, the developers adopted the Rapid Application Development (RAD) methodology, which involved four phases: Requirement Analysis Phase, Prototype Cycle Phase, Developing and Testing Phase, and Deployment Phase.

During the Requirement analysis phase, the developers collected and analyzed information about the existing scheduling process, as well as studied related articles, books, studies, and systems to identify the criteria for assigning timeslots and rooms. Once the requirements and necessary data were gathered, the developers created flow charts and prototypes (or wireframes) for the proposed system. Subsequently, the prototype was transformed into a functioning system, which underwent refinements whenever errors or bugs were identified.

### **Conclusion**

The following conclusions were made based on the results of the study:

1. The developers were able to develop a dynamic web-based system to automate the generation of schedules using a backtracking algorithm.

2. The developers were able to document and analyzed the current scheduling process at Cavite State University CCAT Campus and used it for designing the prototype or wireframes.
3. The developers were able to test the reliability of generated outputs based on the testing conditions. The generated output passed all the testing conditions, which means that the generated schedules were free of conflict. The developers were also able to test the functionality of each system modules using the test cases provided in the manuscript.
4. The developers were able to use the modified ISO-IEC 25101 for evaluation. Collectively, these evaluation results highlight the exceptional performance and characteristics of our developed system, demonstrating its effectiveness, efficiency, usability, security, maintainability, and contextual coverage. The positive ratings from both IT experts and end users affirm its high quality and ability to meet user requirements, making it a highly satisfactory and excellent system overall.

## **Recommendation**

Based on the results the following recommendation was made:

1. Printing Specific Schedules: Allow users to easily print specific schedules directly from the system.
2. User and Teacher Management: Introduce a user management system that enables administrators to add and manage user accounts. Additionally, provide teachers with access to view schedules online.
3. Loading Screen Animation: Add a loading screen so the user knows what is happening during the generation of schedules.

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## **APPENDICES**

A screenshot of an email inbox with several attachments from "HernandoCostelo". The attachments are titled "BSIT NEW CHECK...", "BSE-MATH NEW ...", "BSE-ENGLISH Ch...", "BSBM-MM NEW ...", "BSIT COURSE...", "BSCS-COURSE...", "BSE-CURRICULUM...", "BSIT NEW CHECK...", "cpe\_2017\_March...", "cpe\_2017\_June...", and "Checklist". The "Checklist" attachment is highlighted with a yellow box.

Appendix Figure 1. Email with attached



Republic of the Philippines  
**CAVITE STATE UNIVERSITY-CCAT**  
Rosario, Cavite

1X1 pic.

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE (BSCS)**

(based on CMO 25, s. 2015)

AY 2018-2019

Name		Nationality	
Address		Date of Birth	
Date of Entrance		Date of Graduation	
Degree	BS Computer Science	Major	
Sr. High School		Address	

Course Code	Course Title	Credit		Contact Hours		Pre Requisite	Instructor/ Professor	Final Grade	Remarks
		Lec	Lab	Lec	Lab				

<b>FIRST YEAR</b>									
<b>First Semester</b>									
GNED 02	Ethics	3		3			none		
GNED 05	Purposive Communication	3		3			none		
GNED 10	Kontekstwalisadong Komunikasyon sa Filipino	3		3			none		
COSC 50	Discrete Structures I	3		3			none		
DCIT 21	Introduction to Computing	2	1	2	3		none		
DCIT 22	Computer Programming 1	1	2	1	6		none		
FITT 1	Movement Enhancement	2		2			none		
NSTP 1	CWTS/ROTC/LTS	(3)		3			none		
CvSU 101	Institutional Orientation (non-credit)	(1)		1			none		
		17	3	21	9				

<b>Second Semester</b>									
GNED 01	Arts Appreciation	3		3			none		
GNED 06	Science, Technology, and Society	3		3			none		
GNED 12	Dalumat Ng/Sa Filipino	3		3			GNED 10		
GNED 03	Mathematics in the Modern World	3		3			none		
DCIT 23	Computer Programming 2	1	2	1	6		DCIT 22		
ITEC 50	Web System and Technologies 1	2	1	2	3		DCIT 21		
FITT 2	Fitness Exercise	2		2			FITT 1		
NSTP 2	CWTS/ROTC/LTS	(3)		3			NSTP 1		
		17	3	20	9				

<b>SECOND YEAR</b>									
<b>First Semester</b>									
GNED 04	Mga Babasahin Hinggil sa Kasaysayan ng Pilipinas	3		3			None		
MATH 1	Analytic Geometry	3		3			GNED 03		
COSC 55	Discrete Structures II	3		3			COSC 50		
COSC 60	Digital Logic Design	2	1	2	3		COSC 50, DCIT 23		
DCIT 50	Object Oriented Programming	2	1	2	3		DCIT 23		
DCIT 24	Information Management	2	1	2	3		DCIT 23		
INSY 50	Fundamentals of Information Systems	3		3			DCIT 21		
FITT 3	Physical Activities towards Health and Fitness 1	2		2			FITT 1		
		20	3	20	9				

<b>Second Semester</b>									
GNED 08	Understanding the Self	3		3			None		
GNED 14	Panitikang Panlipunan	3		3			None		
MATH 2	Calculus	3		3			MATH 1		
COSC 65	Architecture and Organization	2	1	2	3		COSC 60		
COSC 70	Software Engineering I	3		3			24		
DCIT 25	Data Structures and Algorithms	2	1	2	3		DCIT 23		
DCIT 55	Advanced Database Management System	2	1	2	3		DCIT 24		
FITT 4	Physical Activities towards Health and Fitness 2	2		2			FITT 1		
		20	3	20	9				

**Appendix Figure 2. Subject Offerings (BSCS)**

Course Code	Course Title	Credit		Contact Hours		Pre Requisite	Instructor/ Professor	Final Grade	Remarks					
		Lec	Lab	Lec	Lab									
<b>THIRD YEAR</b>														
<b>First Semester</b>														
MATH 3	Linear Algebra	3		3		MATH 2								
COSC 75	Software Engineering II	2	1	2	3	COSC 70								
COSC 80	Operating Systems	2	1	2	3	DCIT 25								
COSC 85	Networks and Communication	2	1	2	3	ITEC 50								
COSC 101	Computer Graphics and Visual Computing	2	1	2	3	DCIT 23								
DCIT 26	Applications Development and Emerging Technologies	2	1	2	3	ITEC 50								
DCIT 65	Social and Professional Issues	3		3		None								
		<b>16</b>	<b>5</b>	<b>16</b>	<b>15</b>									
<b>Second Semester</b>														
GNED 09	Life and Works of Rizal	3		3		GNED 04								
MATH 4	Experimental Statistics	2	1	2	3	MATH 2								
COSC 90	Design and Analysis of Algorithm	3		3		DCIT 25								
COSC 95	Programming Languages	3		3		DCIT 25								
COSC 106	Introduction to Game Development	2	1	2	3	MATH 3, COSC 101								
DCIT 60	Methods of Research	3		3		3rd yr. Standing								
ITEC 85	Information Assurance and Security	2		2		DCIT 24								
		<b>18</b>	<b>2</b>	<b>18</b>	<b>6</b>									
<b>Mid Year Class</b>														
COSC 199	Practicum (200 hrs.)	3		3		3rd. Year Standing								
		<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>									
<b>FOURTH YEAR</b>														
<b>First Semester</b>														
ITEC 80	Human Computer Interaction	1		1		ITEC 85								
COSC 100	Automata Theory and Formal Languages	3		3		COSC 90								
COSC 105	Intelligent Systems	2	1	2	3	MATH 4, COSC 55, DCIT 50								
COSC 111	Internet of Things	2	1	2	3	COSC 60								
COSC 200A	Undergraduate Thesis I	3		1		4th year Standing								
		<b>11</b>	<b>2</b>	<b>9</b>	<b>6</b>									
<b>Second Semester</b>														
GNED 07	The Contemporary World	3		3		None								
GNED 10	Gender and Society	3		3		None								
COSC 110	Numerical and Symbolic Computation	2	1	2	3	COSC 60								
COSC 200B	Undergraduate Thesis II	3		1		COSC 200A								
		<b>11</b>	<b>1</b>	<b>9</b>	<b>3</b>									
<b>Summary</b>														
A. General Education		39							<i>Total Lecture: 139 Total Laboratory: 23</i>					
B. Common Courses		18												
C. Professional Courses		69												
D. Professional Electives		9												
E. Additional Math Requirement		12												
F. Physical Education		8												
G. National Service Training Program		6												
H. Institutional Orientation		1												
<b>TOTAL UNITS</b> <u>162</u>														

Appendix Figure 3. Subject Offerings (BSCS) 2



Republic of the Philippines  
**CAVITE STATE UNIVERSITY-CCAT**  
Rosario, Cavite

1 X 1 pic.

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BS InfoTech.)**

(based on CMO 25, s. 2015)

AY 2018-2019

Name			Nationality	Filipino	
Address			Date of Birth		
Date of Entrance			Date of Graduation		
Degree			Major		
High School			Address		

Course Code	Course Title	Credit		Contact Hours		Pre Requisite	Instructor/ Professor	Final Grade	Remarks
		Lec	Lab	Lec	Lab				

<b>FIRST YEAR</b>						
<b>First Semester</b>						
GNED 02	Ethics	3		3		none
GNED 05	Purposive Communication	3		3		none
GNED 10	Kontekstwalisadong Komunikasyon sa Filipino	3		3		none
COSC 50	Discrete Structure	3		3		none
DCIT 21	Introduction to Computing	2	1	2	3	none
DCIT 22	Computer Programming 1	1	2	1	6	none
FITT 1	Movement Enhancement	2		2		none
NSTP 1	National Service Training Program 1	(3)		3		none
CvSU 101	Institutional Orientation (non-credit)	(1)				none
		17	3	20	9	

<b>Second Semester</b>						
GNED 01	Arts Appreciation	3		3		none
GNED 06	Science, Technology, and Society	3		3		none
GNED 12	Dalumat Ng/Sa Filipino	3		3		GNED 10
GNED 03	Mathematics in the Modern World	3		3		none
DCIT 23	Computer Programming 2	1	2	1	6	DCIT 22
ITEC 50	Web System and Technologies 1	2	1	2	3	DCIT 21
FITT 2	Fitness Exercise	2		2		FITT 1
NSTP 2	National Service Training Program 2	(3)		3		NSTP 1
		17	3	20	9	

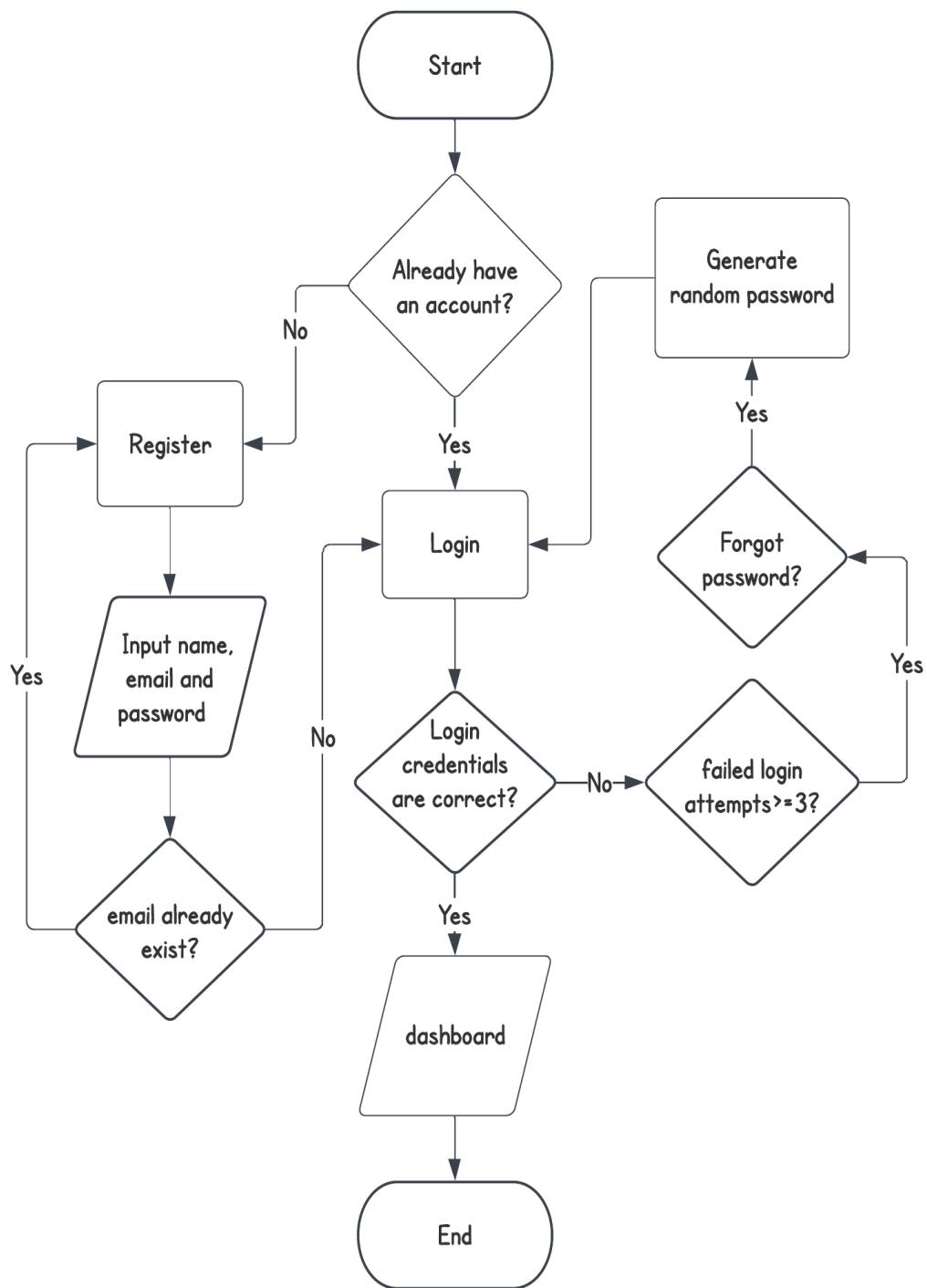
<b>SECOND YEAR</b>						
<b>First Semester</b>						
GNED 04	Mga Babasahin Hinggil sa Kasaysayan ng Pilipinas	3		3		none
GNED 07	The Contemporary World	3		3		none
GNED 12	Gender and Society	3		3		none
GNED 14	Panitikang Panlipunan	3		3		GNED 10
ITEC 55	Platform Technologies	2	1	2	3	DCIT 23
DCIT 24	Information Management	2	1	2	3	DCIT 23
DCIT 50	Object Oriented Programming	2	1	2	3	DCIT 23
FITT 3	Physical Activities towards Health and Fitness I	2		2		FITT 1
		20	3	20	9	

<b>Second Semester</b>						
GNED 08	Understanding the Self	3		3		
DCIT 25	Data Structures and Algorithms	2	1	2	3	DCIT 50
ITEC 60	Integrated Programming and Technologies 1	2	1	2	3	DCIT 50, ITEC 55
ITEC 65	Open Source Technology	2	1	2	3	2nd Year Standing
DCIT 55	Advanced Database System	2	1	2	3	DCIT 24
ITEC 70	Multimedia Systems	2	1	2	3	2nd Year Standing
FITT 4	Physical Activities towards Health and Fitness II	2		2		FITT 1
		15	5	15	15	

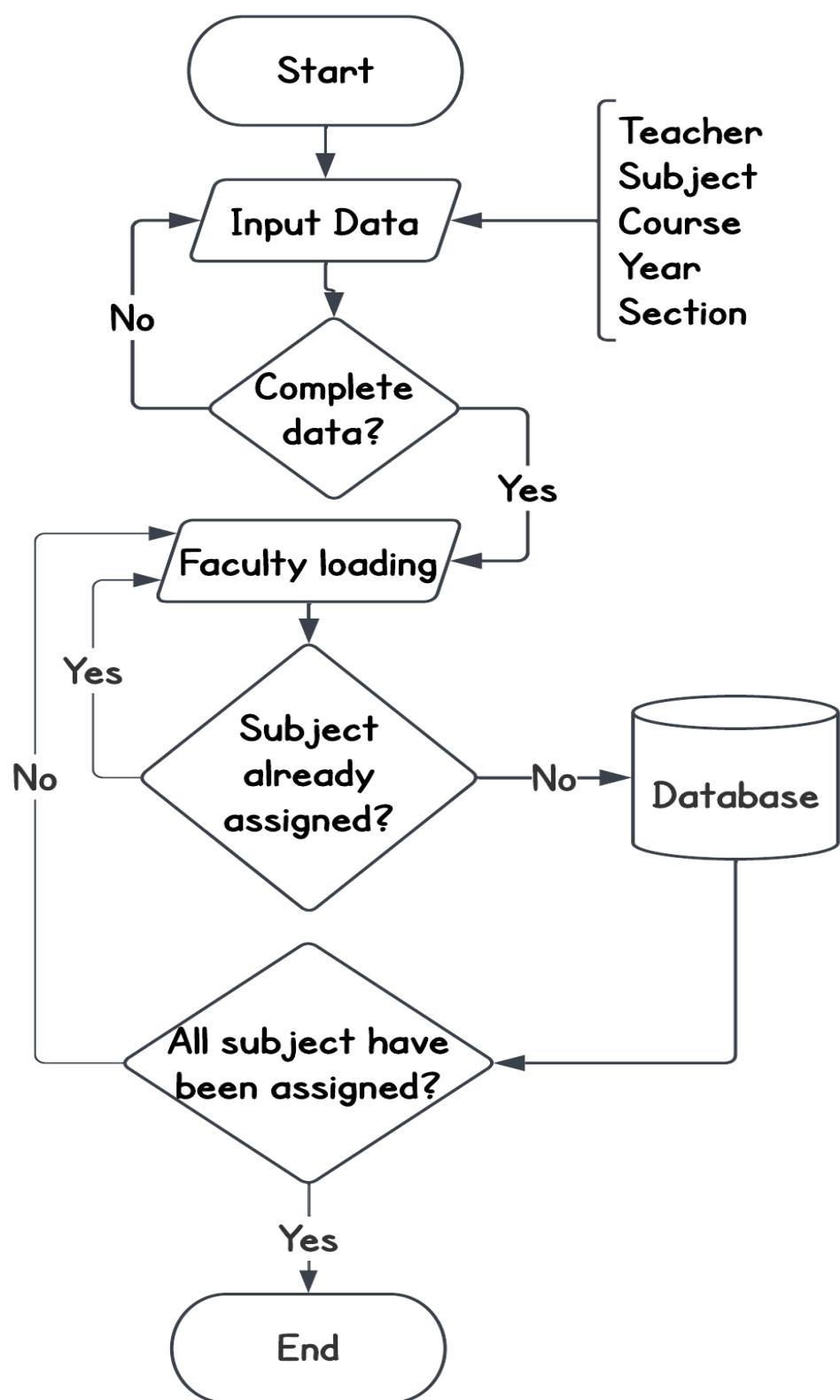
**Appendix Figure 4. Subject Offerings (BSInfoTech)**

Course Code	Course Title	Credit		Contact Hours		Pre Requisite	Instructor/ Professor	Final Grade	Remarks
		Lec	Lab	Lec	Lab				
<b>Mid Year Class</b>									
STAT 2	Applied Statistics	3		3		2nd Year Standing			
ITEC 75	System Integration and Architecture 1	2	1	2	3	ITEC 60			
		5	1	5	3				
<b>THIRD YEAR</b>									
<b>First Semester</b>									
ITEC 80	Introduction to Human Computer Interaction	2	1	2	3	3rd Year Standing			
ITEC 85	Information Assurance and Security 1	2	1	2	3	ITEC 75			
ITEC 90	Network Fundamentals	2	1	2	3	ITEC 55			
INSY 55	System Analysis and Design	2	1	2	3	3rd Year Standing			
DCIT 26	Application Development and Emerging Technologies	2	1	2	3	DCIT 55			
DCIT 60	Methods of Research			3		3rd Year Standing			
		13	5	13	15				
<b>Second Semester</b>									
GNED 09	Rizal: Life, Works, and Writings	3		3		GNED 4			
ITEC 95	Quantitative Methods (Modeling & Simulation)	3		3		COSC 50, STAT 2			
ITEC 101	Human Computer Interaction 2	2	1	2	3	ITEC 80			
ITEC 106	Web System and Technologies 2	2	1	2	3	ITEC 50			
ITEC 100	Information Assurance and Security 2	2	1	2	3	ITEC 85			
ITEC 105	Network Management	2	1	2	3	ITEC 90			
ITEC 200A	Capstone Project and Research 1			3		3rd Year Standing			
		17	4	14	12				
<b>FOURTH YEAR</b>									
<b>First Semester</b>									
DCIT 65	Social and Professional Issues	3		3		4th Year Standing			
ITEC 111	Integrated Programming and Technologies 2	2	1	2	3	ITEC 60			
ITEC 116	Systems Integration and Architecture 2	2	1	2	3	ITEC 75			
ITEC 110	Systems Administration and Maintenance	2	1	2	3	ITEC 100			
ITEC 200B	Capstone Project and Research 2			3		ITEC 200A			
		12	3	9	9				
<b>Second Semester</b>									
ITEC 199	Practicum (minimum 486 hours)	6				4th Year Standing			
		6	0	0	0				
Summary									
A. General Education	39	<i>Total Lecture: 129</i>							
B. Common Courses	18	<i>Total Laboratory: 27</i>							
C. Professional Courses	69								
D. Professional Electives	12								
E. Additional Math Requirement	3								
F. Physical Education	8								
G. National Service Training Program	6								
H. Institutional Orientation	1								
TOTAL UNITS <u><u>156</u></u>									

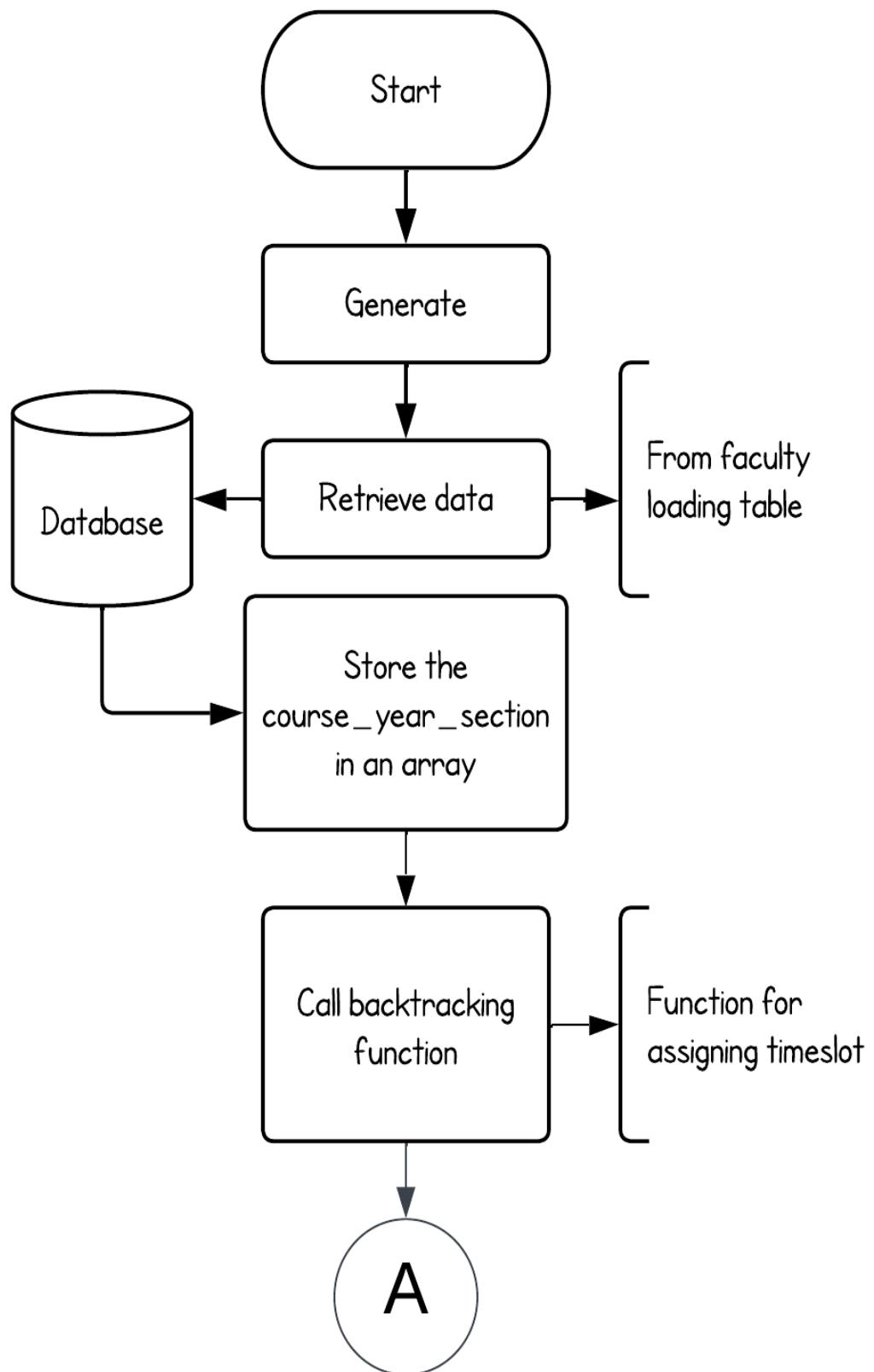
Appendix Figure 5. Subject Offerings (BSInfoTech) 2



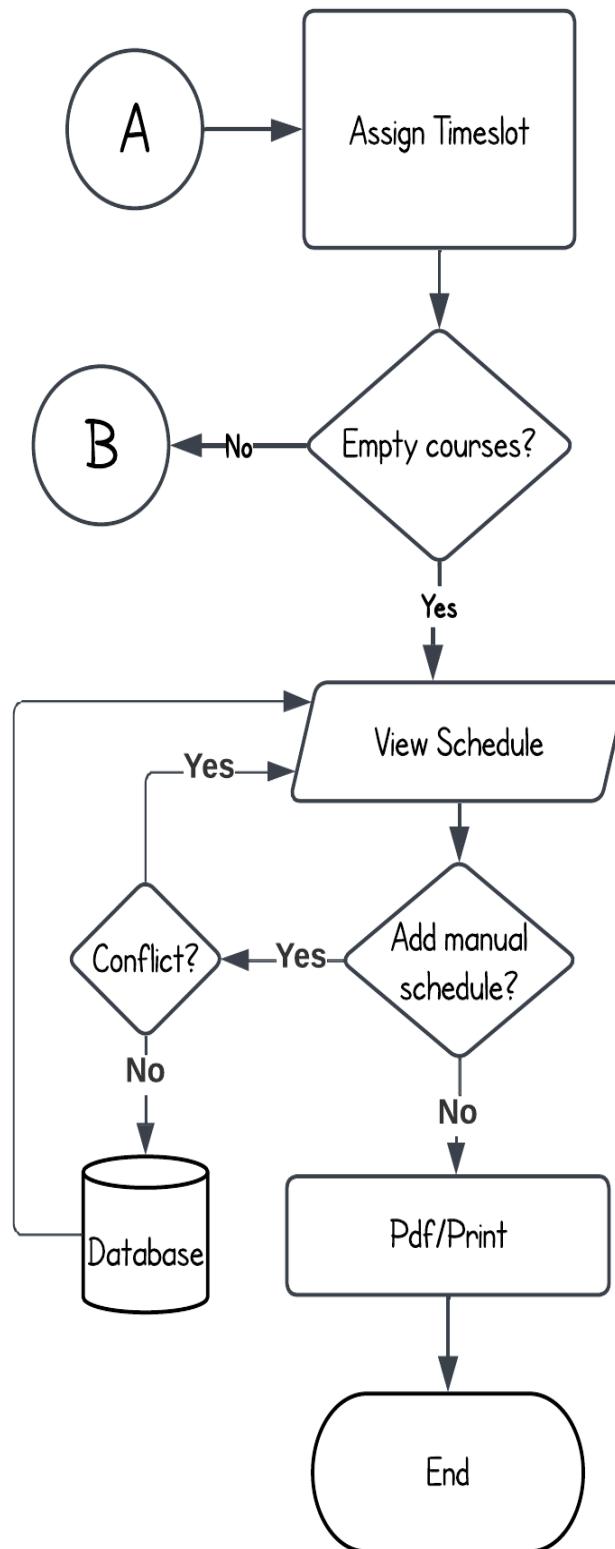
Appendix Figure 6. Login Flowchart



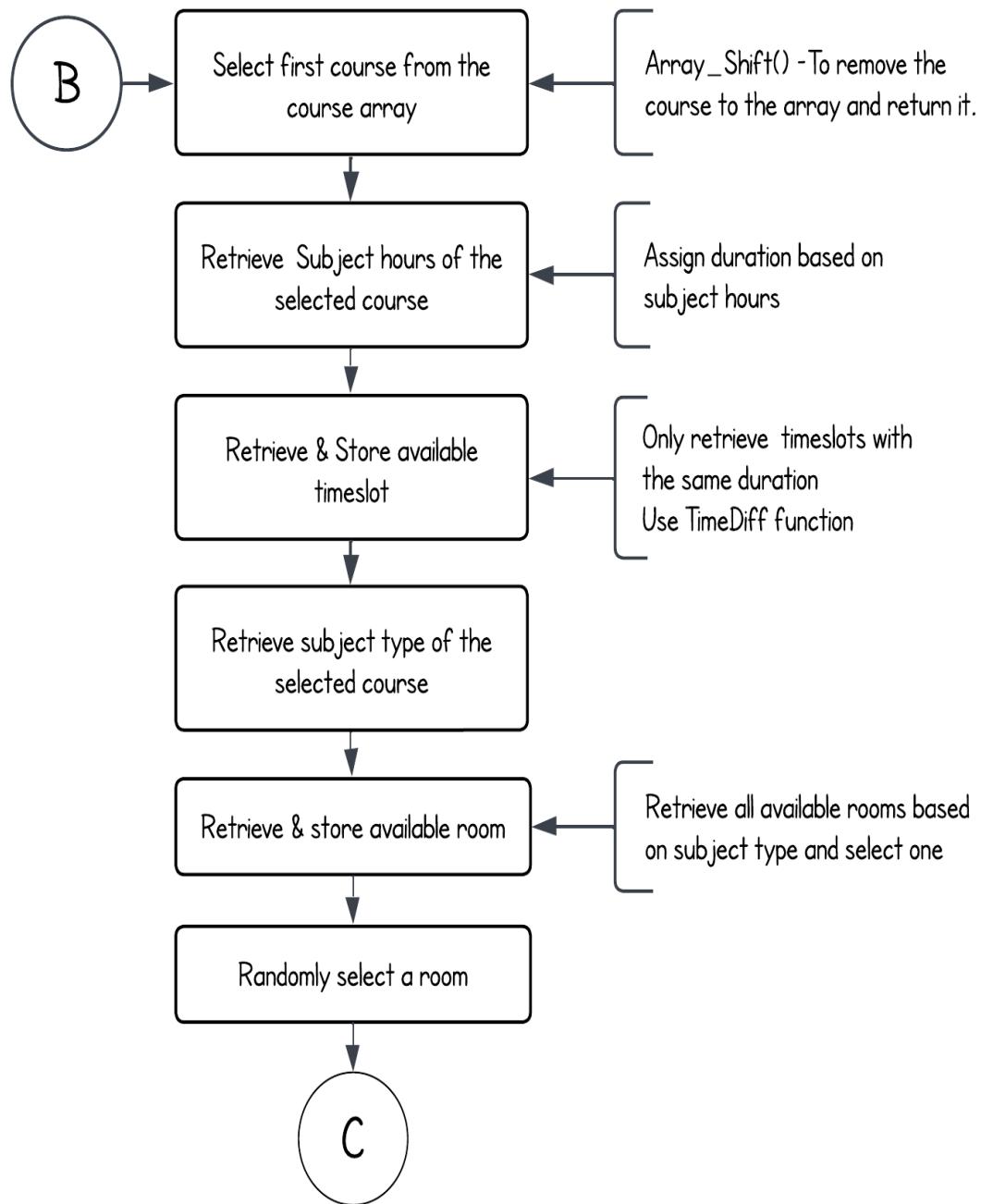
Appendix Figure 7. Faculty loading Flowchart



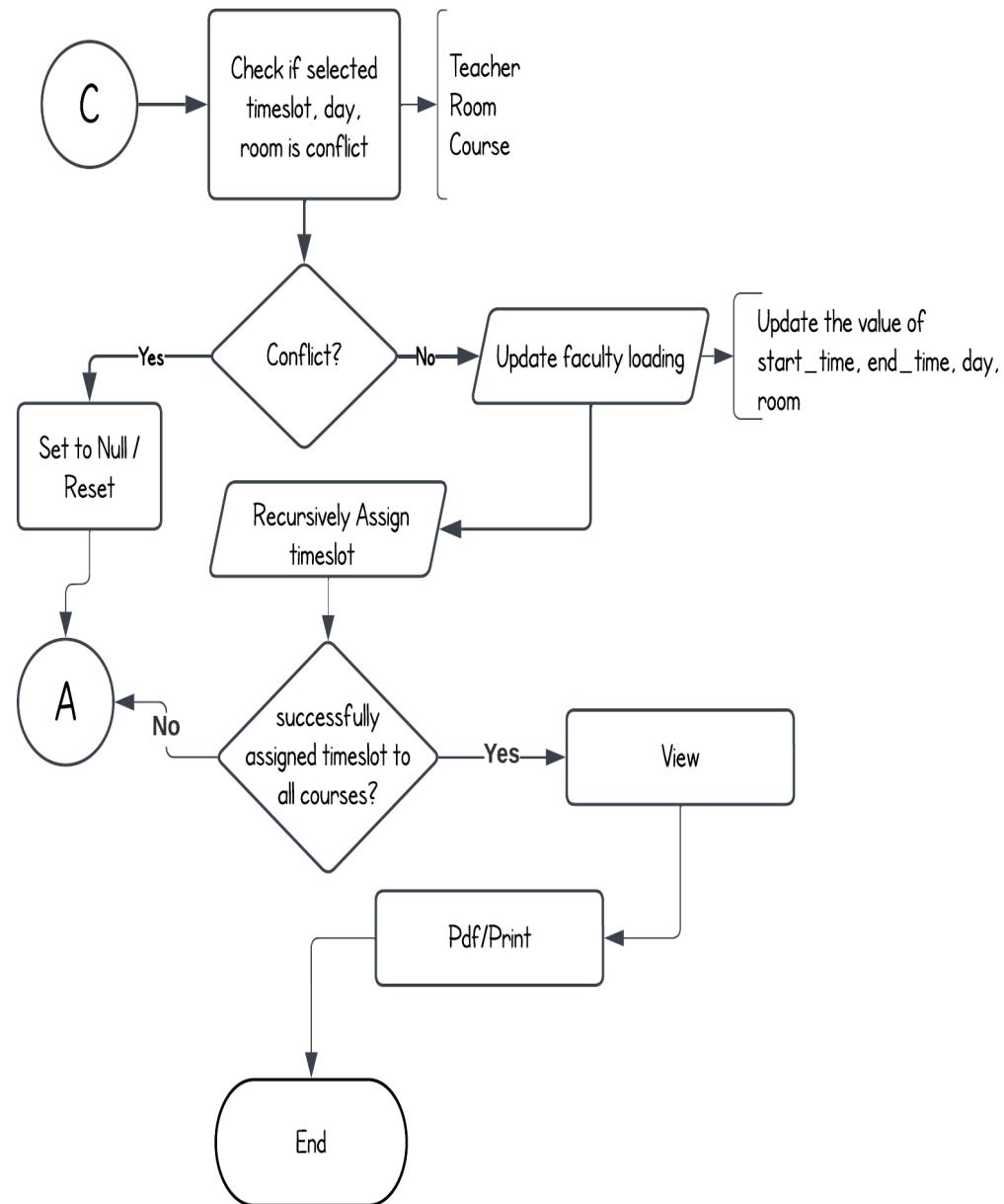
Appendix Figure 8. Automated Scheduling Flowchart



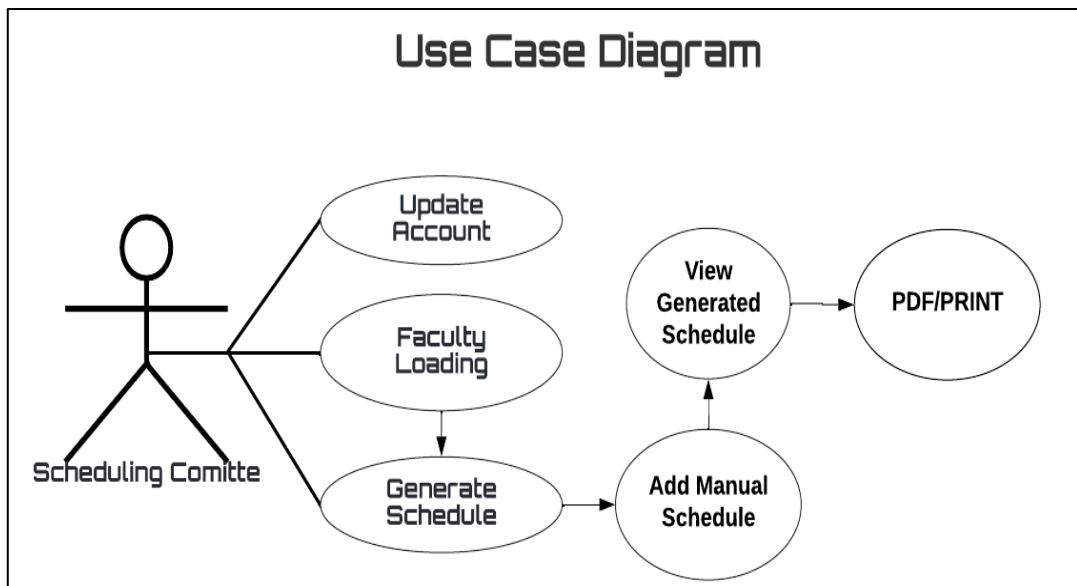
Appendix Figure 9. Automated Scheduling Flowchart Pt.2



Appendix Figure 10. Automated Scheduling Flowchart Pt.3



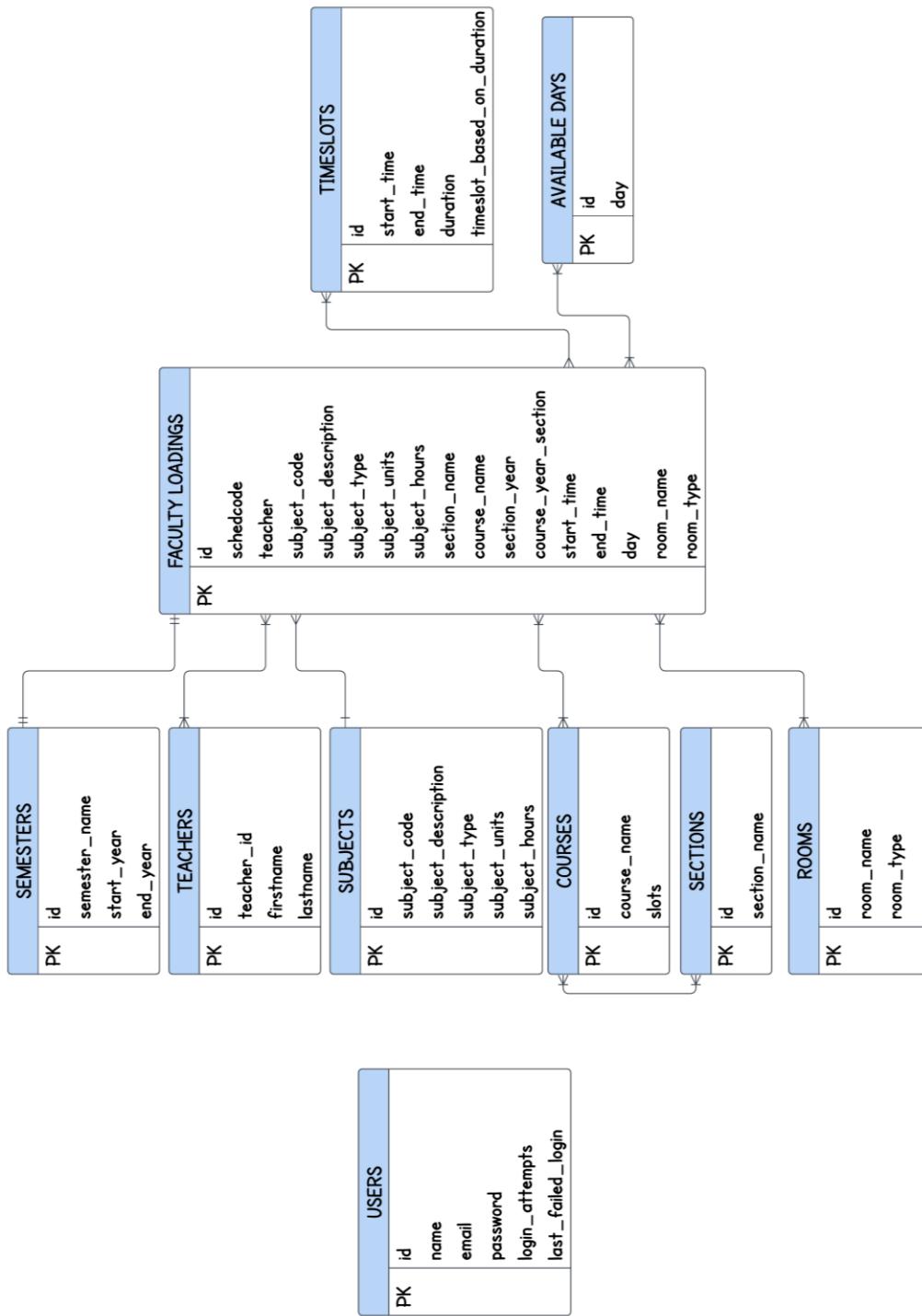
Appendix Figure 11. Automated Scheduling Flowchart Pt.4



Appendix Figure 12. Use Case Diagram



Appendix Figure 13. ATS Database Scheme



Appendix Figure 14. ATS Entity

**CAVITE STATE UNIVERSITY-CCAT**  
 Republic of the Philippines  
 Rosario, Cavite  
 ☎ (046) 437-5050 / ☎ (046) 437-6659  
 cvsu.rosario@gmail.com  
 www.cvsu-rosario.edu.ph

2nd SEMESTER 2022-2023 FACULTY LOADING



NAME OF FACULTY	COURSE CODE	COURSE DESCRIPTION			Credit Units	Contact Hours	Sections	No. of Prep.	No. of Sec.	TOTAL CONTACT HOURS
		Lec	Lab	Lab						
ABAD, JENERRY Y.	DCIT 26	App Development & Emerging Tech (LAB)	0	1	0	3	BSCS 302 A-B	1	2	6
	DCIT 26	App Development & Emerging Tech (LEC)	2	0	2	0	BSCS 202 A-B	1	2	4
	DCIT 26	App Development & Emerging Tech (LAB)	0	1	0	3	BSCS 402 A-B		2	6
BAUTISTA, RENATO A.	DCIT 23	Computer Programming II (LEC & LAB)	1	2	1	6	BSINFO TECH 301 A-E	2	6	16
CABARLES, AXEL G.	TLEP 03	Teaching Common Competencies in ICT	3	0	3	0	BT/TED 202 A-B	1	2	6
	COSC 65	Architecture and Organization (LEC)	2	0	2	0	BSCS 202 A-B	1	2	4
	ITEC 85	Information Assurance and Security I (LAB)	0	1	0	3	BSINFO TECH 302 A-E	1	5	15
CAMINGAWAN, PRINCESS GARYE I.	ITEC 80	Introduction to Human Computer Interaction (LAB)	0	1	0	3	BSINFO TECH 302 A-E	3	9	25
	ITEC 80	Introduction to Human Computer Interaction (LEC)	2	0	2	0	BSINFO TECH 202 A-E	1	5	15
CLARITO, ANGELA C.	ITEC 65	Open-source Technologies (LEC)	2	0	2	0	BSINFO TECH 202 A-E	2	10	25
	ITEC 85	Information Assurance and Security I (LEC)	2	0	3	0	BSCS 202 A-B	1	5	10
	ITEC 110	System Administration and Maintenance (LEC)	2	0	2	0	BSINFO TECH 402 A-D (2019)	1	4	8
CRUZ, JANESSA MARIELLE S.	DCIT 24	Information Management (LAB)	0	1	0	3	BSCS 302 A-B	1	2	6
	ITEC 199	Practicum (486 Hours)	6	0	6	0	BSINFO TECH 402 D (2018)	1	1	6
CRUZ, JANESSA MARIELLE S.	DCIT 55	Advanced Database System (LEC & LAB)	2	1	2	3	BSINFO TECH 302 A-E	1	5	25
	ITEC 106	Web System and Technologies II (LAB)	0	1	0	3	BSINFO TECH 402 A-D (2019)	1	4	12
								2	9	37

Appendix Figure 15. Faculty Loading Test

NAME OF FACULTY	COURSE CODE	COURSE DESCRIPTION	Credit Units			Contact Hours	Sections	No. of Prep.	No. of Sec.	TOTAL CONTACT HOURS
			Lec	Lab	Sec					
DELA CRUZ, MARY GRACE P.	DCIT 25	Data Structures and Algorithm (LEC)	2	0	2	0	BSINFO TECH 202 A-E	1	5	10
	COSC 90	Design and Analysis of Algorithm (LEC)	2	0	2	0	BSCS 202 A-B	1	2	4
	ITEC 60	Integrated Programming and Technologies I (LEC)	2	0	2	0	BSINFO TECH 202 A-E	1	5	10
	ITEC 199	Practicum (486 Hours)	6	0	6	0	BSINFO TECH 402 A (2018)	1	1	6
DRIZA, RENJIE G.	TLE 4	ICT Skills Development (Visual Basic Programming)	4	0	4	0	GRADE 10	4	13	30
	DCIT 50	Object Oriented Programming (LEC & LAB)	2	1	2	3	BSCS 302 A-B	1	2	10
	DCIT 55	Advanced Database Systems (LEC & LAB)	2	1	2	3	BSCS 402 A-B	1	2	10
		Advanced Database Systems (LAB)	0	1	0	3	BSINFO TECH 402 A-D (2019)	1	4	12
ESTONILO, CHRISTOPHER G.								4	9	36
	DCIT 60	Methods of Research	3	0	3	0	BSINFO TECH 302 A-E	1	5	15
	INSY 55	System Analysis and Design (LAB)	0	1	0	3	BSINFO TECH 302 A-C	1	3	9
	ITEC 200B	Capstone Project and Research 2	3	0	3	0	BSINFO TECH 402 C-D (2019)	1	2	6
GELERA, ARIES M.								2	5	15
	ITEC 90	Networks Fundamentals (LEC)	2	0	2	0	BSINFO TECH 202 A-E	1	5	10
	COSC 85	Networks and Communications (LEC)	2	0	2	0	BSCS 202 A-B	1	2	4
	ITEC 111	Integrated Programming and Technologies II (LAB)	0	1	0	3	BSINFO TECH 402 A-D (2019)	1	4	12
GERIOS, MARIE ANGELIE B.	TLE 3	ICT Skills Development (Visual Basic Programming)	4	0	4	0	Grade 9	1	1	4
	ITEC 199	Practicum (486 Hours)	6	0	6	0	BSINFO TECH 402 E (2018)	1	1	6
								5	13	36
							STUDY LEAVE			
IGNACCO, MARY ANN E.										
	COSC 70	Software Engineering I (LEC)	3	0	3	0	BSCS 202 A-B	1	2	6
	ITEC 50	Web System and Technologies (LEC)	2	0	2	0	BSCS 102 A-D	1	4	8
		Web System and Technologies (LEC)	2	0	2	0	BSINFO TECH 102 A-E	5	10	
MELITANTE, GIRLIE P.	INSY 55	System Analysis and Design (LEC)	2	0	2	0	BSINFO TECH 202 A-E	1	5	10
		Introduction to Game Development	2	1	2	3	BSCS 402 A-B	3	16	34
	COSC 106	Introduction to Game Development	2	1	2	3	BSCS 402 A-B	1	2	10
								1	2	10

Appendix Figure 16. Faculty Loading Test

DEPARTMENT OF COMPUTER STUDIES										TOTAL CONTACT HOURS			
NAME OF FACULTY	COURSE CODE	COURSE DESCRIPTION		Credit Units			Contact Hours		Sections		No. of Prep. Sec.	No. of of Sec.	
		Lec	Lab	Lec	Lab	Lec	Lab	Lec	Lab	No. of Sections			
NABASUT, KARLO JOSE E.	DCIT 23	Computer Programming II (LEC & LAB)	1	2	1	6	BSCS 302 A-B		1	2	14	6	
	COSC 20A	Undergraduate Thesis 1	3	0	3	0	BSCS 402 A-B		1	2	6		
NOCON, YVANA JARDINE R.	INSY 55	System Analysis and Design (LAB)	0	1	0	3	BSINFOOTECH 402 A-D (2019)		1	4	12	6	
	ITEC 20B	Capstone Project and Research 2	3	0	3	0	BSINFOOTECH 402 A-B (2019)		1	2	6		
NOLLEDO, MARK EDRIANE F.	COSC 65	Architecture and Organization (LAB)	0	1	0	3	BSCS 302 A-B		2	4	20	6	
		Architecture and Organization (LAB)	0	1	0	3	BSCS 402 A-B		2	4	18		
OBON, ANA MARIE C.	DCIT 25	Data Structures and Algorithm (LEC & LAB)	2	1	2	3	BSCS 302 A-B		1	2	6	6	
	ITEC 101	Human Computer Interaction II (LAB)	0	1	0	3	BSINFOOTECH 402 D (2019)		1	4	12		
TURLA, CHRISAA MAE S.	CPEN 21	Programming Logic and Design	0	2	0	6	BSIT 102 - AUTO B		1	1	6	6	
	ITEC 116	System Integration and Architecture II (LAB)	0	1	0	3	BSINFOOTECH 402 A-D (2019)		1	4	12		
VILLANUEVA, LESTER D.	ITEC 75	System Integration and Architecture I (LAB)	0	1	0	3	BSINFOOTECH 402 A-D (2019)		1	2	10	6	
		System Integration and Architecture I (LAB)	0	1	0	3	BSINFOOTECH 302 A-E		5	5	15		
	ITEC 90	System Integration and Architecture I (LEC)	2	0	2	0	BSINFOOTECH 202 A-E		1	5	10	6	
		Networks Fundamentals (LAB)	0	1	0	3	BSINFOOTECH 302 A-E		1	5	15		
	ITEC 90	Networks Fundamentals (LAB)	0	1	0	3	BSINFOOTECH 402 A-D (2019)		4	12	37	6	
	COSC 80	Operating Systems (LAB)	0	1	0	3	BSCS 402 A-B		1	2	6		
PART-TIMERS										2	11	37	
CATALAN, RACQUEL A.	CPEN 21	Programming Logic and Design	0	2	0	6	BSIT 102 - ELEX A-B		1	2	12		
TOLEDO, IVANN N.	CPEN 21	Programming Logic and Design	0	2	0	6	BSIT 102 - ELEC B		1	1	6		
WAFFER, KYLE	CPEN 21	Programming Logic and Design	0	2	0	6	BSIT 102 - ELECA		1	1	6		

Appendix Figure 17. Faculty Loading Test

Teacher	Day	Subject Code	Subject Title	Subject Type	Room	Course Year & Section	Start_Time	End_Time
<b>Ana Marie Obon</b>	<b>Monday</b>	DCIT 26	App Development & Emerging Tech (LAB)	Lab	CCL-2	BSCS 101-A	07:00 AM	10:00 AM
	<b>Tuesday</b>	DCIT 25	Data Structures and Algorithm (LEC)	Lec	DCS-3	BSCS 301-A	09:00 AM	11:00 AM
	<b>Wednesday</b>	DCIT 26	App Development & Emerging Tech (LAB)	Lab	CCL-2	BSCS 101-A	07:00 AM	10:00 AM
		DCIT 25	Data Structures and Algorithm (LEC)	Lec	DCS-1	BSCS 301-B	10:00 AM	12:00 PM
	<b>Thursday</b>	DCIT 25	Data Structures and Algorithm (LAB)	Lab	CCL-4	BSCS 301-A	07:00 AM	10:00 AM
	<b>Friday</b>	DCIT 23	Computer Programming II (LAB)	Lab	CCL-1	BSCS 401-A	01:00 PM	04:00 PM
		DCIT 25	Data Structures and Algorithm (LAB)	Lab	CCL-7	BSCS 301-B	07:00 AM	10:00 AM
Teacher	Day	Subject Code	Subject Title	Subject Type	Room	Course Year & Section	Start_Time	End_Time
<b>Angela Clarito</b>	<b>Monday</b>	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-3	BSINFOTECH 201-D	07:00 AM	09:00 AM
	<b>Tuesday</b>	DCIT 24	Information Management (LAB)	Lab	CCL-5	BSCS 301-B	07:00 AM	10:00 AM
	<b>Wednesday</b>	ITEC 85	Information Assurance and Security (LEC)	Lec	DCS-1	BSCS 201-A	07:00 AM	09:00 AM
		ITEC 85	Information Assurance and Security (LEC)	Lec	DCS-7	BSCS 201-B	01:00 PM	03:00 PM
	<b>Thursday</b>	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-4	BSINFOTECH 201-E	07:00 AM	09:00 AM
		ITEC 85	Information Assurance and Security (LAB)	Lab	CCL-4	BSCS 301-A	01:00 PM	04:00 PM
	<b>Friday</b>	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-6	BSINFOTECH 201-B	07:00 AM	09:00 AM
		ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-7	BSINFOTECH 201-C	09:00 AM	11:00 AM
		ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-5	BSINFOTECH 201-A	01:00 PM	03:00 PM

Appendix Figure 18. Generated Schedule for Teacher

Course Year & Section	Day	Subject Code	Subject Title	Subject Type	Teacher	Room	Start_Time	End_Time
BSCS 101-A	Monday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	Ana Marie Obon	CCL-2	07:00 AM	10:00 AM
	Wednesday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	Ana Marie Obon	CCL-2	07:00 AM	10:00 AM
	Thursday	ITEC 50	Web System and Technologies II (LEC)	Lec	Girlie Meliante	DCS-6	07:00 AM	09:00 AM
Course Year & Section	Day	Subject Code	Subject Title	Subject Type	Teacher	Room	Start_Time	End_Time
BSCS 101-B	Tuesday	ITEC 50	Web System and Technologies II (LEC)	Lec	Girlie Meliante	DCS-2	07:00 AM	09:00 AM
Course Year & Section	Day	Subject Code	Subject Title	Subject Type	Teacher	Room	Start_Time	End_Time
BSCS 201-A	Monday	COSC 85	Networks and Communication (LEC)	Lec	Marie Angelie Gerios	DCS-6	07:00 AM	09:00 AM
	Tuesday	DCIT 26	App Development & Emerging Tech (LEC)	Lec	Jenerry Abad	DCS-7	09:00 AM	11:00 AM
	Wednesday	COSC 70	Software Engineering I (LEC)	Lab	Girlie Meliante	CCL-4	05:00 PM	08:00 PM
	Thursday	ITEC 85	Information Assurance and Security (LEC)	Lec	Angela Clarito	DCS-1	07:00 AM	09:00 AM
	Friday	COSC 90	Design Analysis of Algorithm (LEC)	Lec	Mary Grace Dela Cruz	DCS-1	07:00 AM	09:00 AM
BSCS 201-B	Monday	COSC 65	Architecture and Organization (LEC)	Lec	Axel Cabarles	DCS-7	10:00 AM	12:00 PM
	Tuesday	ITEC 80	Introduction to Human Computer Interaction (LEC)	Lec	Princess Garvie Camingawan	DCS-6	01:00 PM	03:00 PM
	Wednesday	COSC 90	Design Analysis of Algorithm (LEC)	Lec	Mary Grace Dela Cruz	DCS-5	09:00 AM	11:00 AM
	Thursday	COSC 70	Architecture and Organization (LEC)	Lec	Axel Cabarles	DCS-7	07:00 AM	09:00 AM
	Friday	ITEC 85	Information Assurance and Security (LEC)	Lec	Angela Clarito	DCS-7	01:00 PM	03:00 PM

Appendix Figure 19. Generated Schedule for Course

Room	Day	Subject Code	Subject Title	Subject Type	Teacher	Course Year & Section	Start Time	End Time
CCL-1	Monday	DCIT 55	Advance Database System (LAB)	Lab	Renjie Driza	BSCS 401-B	07:00 AM	10:00 AM
		DCIT 26	App Development & Emerging Tech (LAB)	Lab	Jenerry Abad	BSCS 401-A	01:00 PM	04:00 PM
		ITEC 80	Introduction to Human Computer Interaction I (LAB)	Lab	Princess Garvie Camingawan	BSINFOTECH 301-B	04:00 PM	07:00 PM
	Tuesday	ITEC 90	Networks Fundamentals (LAB)	Lab	Lester Villanueva	BSINFOTECH 301-C	07:00 AM	10:00 AM
		ITEC 85	Information Assurance and Security (LAB)	Lab	Axel Cabarles	BSINFOTECH 301-C	01:00 PM	04:00 PM
	Wednesday	ITEC 85	Information Assurance and Security (LAB)	Lab	Axel Cabarles	BSINFOTECH 301-D	08:30 AM	11:30 AM
	Thursday	DCIT 23	Computer Programming II (LAB)	Lab	Ana Marie Obon	BSCS 401-A	01:00 PM	04:00 PM
Friday	Friday	COSC 65	Architecture and Organization (LAB)	Lab	Karlo Jose Nabablit	BSCS 401-B	07:00 AM	10:00 AM
		DCIT 23	Computer Programming II (LAB)	Lab	Renato Bautista	BSINFOTECH 301-A	01:00 PM	04:00 PM

Room	Day	Subject Code	Subject Title	Subject Type	Teacher	Course Year & Section	Start Time	End Time
CCL-2	Monday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	Ana Marie Obon	BSCS 101-A	07:00 AM	10:00 AM
		ITECT 75	System Integration and Architecture (LAB)	Lab	Chrissa Mae Turla	BSINFOTECH 301-B	01:00 PM	04:00 PM
	Tuesday	DCIT 55	Advance Database System (LAB)	Lab	Janessa Marielle Cruz	BSCS 301-D	07:00 AM	10:00 AM
	Wednesday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	Ana Marie Obon	BSCS 101-A	07:00 AM	10:00 AM
	Thursday	ITEC 90	Networks Fundamentals (LAB)	Lab	Lester Villanueva	BSINFOTECH 301-A	07:00 AM	10:00 AM
		DCIT 50	Object Oriented Programming (LAB)	Lab	Renjie Driza	BSCS 301-A	04:00 PM	07:00 PM
	Friday	INSY 55	System Analysis and Design (LAB)	Lab	Aries Gelera	BSINFOTECH 301-A	07:00 AM	10:00 AM
	Friday	ITECT 75	System Integration and Architecture (LAB)	Lab	Chrissa Mae Turla	BSINFOTECH 301-E	01:00 PM	04:00 PM

Appendix Figure 20. Generated Schedule for Rooms

ID	TASK	2022-2023							
		MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	Requirements Analysis and Design phase								
2	Prototype Cycle Phase								
3	Developing and Testing Phase								
4	Deployment Phase								

Appendix Figure 21. Gantt Chart

Appendix Table 1. Test Table for Reliability

<b>TESTING CONDITIONS</b>	<b>REMARKS</b>
1. Teachers, Students and Rooms must have a conflict-free generated schedules.	Passed
2. The timeslot duration must align with the subject hours.	Passed
3. The generated output should be free of conflicts.	Passed
4. The Manual added schedule should not overlap with the existing schedules.	Passed
5. The room type should be corresponded to the subject type.	Passed

**Appendix Table 2. Test Case for Login Module**

<b>TEST CASE ID</b>	<b>FUNCTION</b>	<b>EXPECTED RESULT</b>	<b>ACTUAL RESULT</b>	<b>STATUS</b>
T-001	Test the login module	The system must not allow to login the unregistered user.  If the user registers a new account with a same email, The system must not allow the registration of the account.	Unregistered login was blocked the system.	PASSED
T-002	Test the register module		Same email used in registration process was blocked by the system.	PASSED

**Appendix Table 3. Test Case for Faculty Loading**

<b>TEST CASE ID</b>	<b>FUNCTION</b>	<b>EXPECTED RESULT</b>	<b>ACTUAL RESULT</b>	<b>STATUS</b>
T-003	Test the CRUD functionality for Semester	Users should be able to create, view, update, and delete semesters.	Users have successfully handled semester management, including creation, viewing, updating, and deletion.	PASSED
T-004	Test the CRUD functionality for Day	Users should be able to create, view, update, and delete Day.	Users have effectively performed day management tasks, which encompassed creating, viewing, updating, and deleting operations.	PASSED
T-005	Test the CRUD functionality for Teacher	Users should be able to create, view, update, and delete teacher.	Users have successfully managed teachers' details including creation, viewing, updating, and deletion.	PASSED
T-006	Test the CRUD functionality for Course	Users should be able to create, view, update, and delete course.	Users have successfully handled course management, including creation, viewing, updating, and deletion.	PASSED
T-007	Test the CRUD functionality for Section	Users should be able to create, view, update, and delete section.	Users have successfully handled section management, including creation, viewing, updating, and deletion.	PASSED
T-008	Test the CRUD functionality for Subject	Users should be able to create, view, update, and delete subject.	Users have successfully handled subject management, including creation, viewing, updating, and deletion.	PASSED
T-009	Test the CRUD functionality for Room	Users should be able to create, view, update, and delete room.	Users efficiently managed room operations, covering creation, viewing, updating, and deletion.	PASSED
T-010	Test faculty loading module	The same teacher should not have a same assigned subject with same sections.	The system prompts a message “The subject was already assigned with the same teacher!”	PASSED

**APPENDIX A  
ROUTING SLIP**

**APPENDIX B**  
**CERTIFICATE OF ENGLISH CRITIC**

**APPENDIX C**  
**LETTER OF REQUEST FOR ORAL OUTLINE REVIEW**



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**DEPARTMENT OF COMPUTER STUDIES**

December 02, 2022

**ARIES M. GELERA**  
 Chairperson  
 Department of Computer Studies

Sir:

We wish to apply for an oral review of our thesis outline entitled **Automated Timetable Scheduling System using Backtracking Algorithm** on December 02, 2022 at the Audio-visual Room of the Department of Computer Studies.

Thank you.

Sincerely yours,

**HERNANDO JR. J. COSTELO**  
**MICHELLE EMMANUEL S. GAETOS**  
**JOHNUEL M. JAVIER**  
**REN RUSSEL E. LAVILLA**  
**LESTER D. QUIJANO**

Recommending Approval:

KARLO JOSE E. NABABLIT, MSICT  
 Adviser

1-22-22  
 Date

RAVEN M. TOPACIO  
 Technical Critic

1-22-22  
 Date

Noted:

KARLO JOSE E. NABABLIT, MSICT  
 Unit Research Coordinator

1-22-22  
 Date

Approved by:

ARIES M. GELERA, MSICT  
 Department Chairperson

1-22-22  
 Date

Form No.	Revision Date	Effectivity Date
CvSU-CCAT SR Form No. 3	13 August 2018	10 October 2018

**APPENDIX D**  
**LETTER OF REQUEST FOR FINAL DEFENSE**



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**DEPARTMENT OF COMPUTER STUDIES**

May 26, 2023

**DR. LAURO B. PASCUA**  
Campus Administrator  
This Campus

Sir:

We wish to apply for a final review of our thesis manuscript entitled **Automated Timetable Scheduling System using Backtracking Algorithm** on May 26, 2023 at the Audio-visual Room of the Department of Computer Studies.

Thank you.

Sincerely yours,

HERNANDO JR. J. COSTELO *[Signature]*  
MICHELLE EMMANUEL S. GAETOS *[Signature]*  
REN RUSSEL E. LAVILLA *[Signature]*  
JOHNUEL M. JAVIER *[Signature]*  
LESTER D. QUIJANO *[Signature]*

Recommending Approval:

KARLO JOSE E. NABABLIT, MSICT  
Adviser

*[Signature]* 05-25-23  
Date

RAVEN M. TOPACIO  
Technical Critic

*[Signature]* 05-25-23  
Date

KARLO JOSE E. NABABLIT, MSICT  
Unit Research Coordinator

*[Signature]* 05-25-23  
Date

ARIES M. CELERA, MSICT  
Department Chairperson

*[Signature]* 05-25-23  
Date

ARIEL G. SANTOS, EdD  
Director, Instructions

*[Signature]* 05-25-23  
Date

Approved:

LAURO B. PASCUA, EdD  
Campus Administrator

*[Signature]* 05-25-23  
Date

Form No.	Revision Date	Effectivity Date
CvSU-CCAT SR Form No.6	13 August 2018	10 October 2018

**APPENDIX E**  
**LETTER OF REQUEST FOR ADVISER AND TECHNICAL CRITIC**



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**DEPARTMENT OF COMPUTER STUDIES**

**REQUEST FOR ADVISER AND TECHNICAL CRITIC**

Name: : **HERNANDO JR. J. COSTELO**  
**MICHELLE EMMANUEL S. GAETOS**  
**JOHNUEL M. JAVIER**  
**REN RUSSEL E. LAVILLA**  
**LESTER D. QUIJANO**

Degree//Specialization : **BS in COMPUTER SCIENCE**

Study Title: : **AUTOMATED TIMETABLE SCHEDULING SYSTEM  
USING BACKTRACKING ALGORITHM**

Conforme:

**KARLO JOSE E. NABABLIT, MSICT**  
 Adviser

\_\_\_\_\_  
 Date

**RAVEN M. TOPACIO**  
 Technical Critic

\_\_\_\_\_  
 Date

Approved:

**KARLO JOSE E. NABABLIT, MSICT**  
 Adviser

\_\_\_\_\_  
 Date

**ARIES M. GELERA, MSICT**  
 Department Chairperson

\_\_\_\_\_  
 Date

Form No.	Revision Date	Effectivity Date
CvSU-CCAT SR Form No. 1A	13 August 2018	10 October 2018

## APPENDIX F DEFINITION OF TERMS

### **Definition of terms**

The following definitions were established for the following terms, aligning their meanings with how they were specifically utilized in the research.

**ATS** stands for “Automated Timetable Scheduling System”.

**Backtracking Algorithm** used to automate the schedules. The backtracking algorithm is a technique used to systematically search for solutions to a problem by incrementally building a solution and then undoing or "backtracking" when a dead-end was reached. This algorithm was used to recursively generate timeslots, rooms, days to a course.

**Backtrack** when automating the schedules and conflicts occurs, the algorithm goes back to the previous state to explore other possibilities to find timeslots without conflicts and this is known as backtracking.

**Constraints** are the conditions or rules that must be satisfied by a valid solution. They help prune the search space and guide the backtracking process.

**Course Timetabling** is the assigning of class schedules to a specific course including teachers, rooms, timeslot, and subjects.

**Recursive Backtracking** is the type of backtracking algorithm used by the developers to automated the assigning of timeslots to different courses.

**Solution space** represents all the potential solution or potential valid schedules that are free of conflicts.

**TCPDF** stands for "The PHP PDF Creation Library," which is a robust tool used for converting tables into PDF format. Its purpose in ATS SYSTEM was to enable the printing of the generated schedules in a visually pleasing and easily shareable format.

## APPENDIX G

### EVALUATION FORM FOR END-USER

DCS-SEI Form No. 2



Republic of the Philippines  
**CAVITE STATE UNIVERSITY**  
 Cavite College of Arts and Trades  
 CvSU-CCAT Campus  
 Rosario, Cavite

**SOFTWARE EVALUATION INSTRUMENT FOR  
 <AUTOMATED TIMETABLE SCHEDULING SYSTEM USING  
 BACKTRACKING ALGORITHM>\***

(For End-users)

*To the respondents,*

The primary objective of this software evaluation is to assess your perception on the different technical and non-technical characteristics of the software material. As a participant, your responses to this instrument shall signify for your consent to disclose your opinions and other information relevant to the requirements of the instrument, and the evaluation in general. Rest assured that as a participant, you will be given the highest level of anonymity and any personal information that will be disclosed will be treated with confidentiality. All the information to be gathered shall solely serve educational purposes.

Name of Respondent: \_\_\_\_\_ Age: \_\_\_\_\_ Gender:  M  F  
 Profession/Occupation: \_\_\_\_\_ Affiliation: \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

**Rating Scale**

NUMERICAL RATING	DESCRIPTION
5	Excellent
4	Very Satisfactory
3	Satisfactory
2	Unsatisfactory
1	Needs Improvement

INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs					
2. Learnability - degree to which the website provides self-explanatory user-interface; entry fields contain default placeholder texts; and error messages provided are understandable					

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

DCS-SEI Form No. 2

INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
3. Operability - degree to which the website is easy to operate, control, and can be used appropriately					
4. User error protection - the website is able to perform user entry validation and allows the user to recover from errors					
5. User interface aesthetics - degree to which the user interface enables pleasing and satisfying interaction with the user					
<b>B. Effectiveness</b>					
1. The website allows the users to achieve specified goals when used in specified contexts					
<b>C. Efficiency</b>					
1. The degree to which resources are consumed with accuracy and completeness of helping users achieve the goals					
<b>D. Satisfaction</b>					
1. Usefulness - degree to which the user is satisfied on perceived achievement of pragmatic goals including the results and consequences of using the website					
2. Trust - degree to which a user or other stakeholders are confident that the website will behave as it is intended					
3. Pleasure - degree to which a user gains pleasure upon fulfillment of personal needs					
4. Comfort - degree to which the user is satisfied with physical comfort					
<b>E. Context Coverage</b>					
1. Content completeness - degree to which the website can be used effectively, efficiently, and satisfactorily in all specified contexts of use					
2. Flexibility - degree to which the website can be used effectively, efficiently, and satisfactorily in contexts beyond those initially specified in the requirements					

**Remarks:**


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*Certified true and correct:*

Signature over printed name of evaluator

Date

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

## APPENDIX H

### EVALUATION FORM FOR WEB-DEVELOPERS

DCS-SEI Form No. 1



Republic of the Philippines  
**CAVITE STATE UNIVERSITY**  
 Cavite College of Arts and Trades  
 CvSU-CCAT Campus  
 Rosario, Cavite

**SOFTWARE EVALUATION INSTRUMENT FOR**  
**<AUTOMATED TIMETABLE SCHEDULING SYSTEM USING**  
**BACKTRACKING ALGORITHM>\***  
 (For Web Developers)

*To the respondents,*

The primary objective of this software evaluation is to assess your perception on the different technical and non-technical characteristics of the software material. As a participant, your responses to this instrument shall signify for your consent to disclose your opinions and other information relevant to the requirements of the instrument, and the evaluation in general. Rest assured that as a participant, you will be given the highest level of anonymity and any personal information that will be disclosed will be treated with confidentiality. All the information to be gathered shall solely serve educational purposes.

**Name of Respondent:** \_\_\_\_\_ **Age:** \_\_\_\_\_ **Gender:** ( ) M ( ) F  
**Profession/Occupation:** \_\_\_\_\_ **Affiliation:** \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

**Rating Scale**

NUMERICAL RATING	DESCRIPTION
5	Excellent
4	Very Satisfactory
3	Satisfactory
2	Unsatisfactory
1	Needs Improvement

INDICATOR	5	4	3	2	1
<b>A. Functional Suitability</b>					
1. Functional completeness - degree to which the set of functions covers all the specified tasks and user objectives					
2. Functional correctness - degree to which the functions provide the correct results with precision					
3. Functional appropriateness - degree to which the functions					

*\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.*

DCS-SEI Form No. 1

facilitate the accomplishment of specified tasks and objectives					
<b>INDICATOR</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>B. Performance Efficiency</b>					
1. Time behavior - degree to which the responses, processing times, and throughput rates of the website meet the requirements when performing its functions					
2. Resource utilization - degree to which the amounts and the types of resources used by the website meet the requirements when performing its functions					
3. Capacity - degree to which the maximum limitations of the website or its components meet the requirements					
<b>C. Usability</b>					
1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs					
2. Learnability - degree to which the website enables the user to learn how to use the software effectively					
3. Operability - degree to which the website is easy to operate, control, and be used appropriately					
4. User error protection - degree to which the website protects the user from making errors					
5. User interface aesthetics - degree to which the user interface enables pleasing and satisfying interaction with the user					
6. Accessibility - degree to which the website can be used in a specific context with the widest range of characteristics and capabilities to achieve a specific goal					
<b>D. Security</b>					
1. Confidentiality - degree to which the website ensures that the data are only accessible by those who have authorized access					
2. Integrity - degree to which the website prevents unauthorized access to and or modifications of computer programs or data					
<b>E. Maintainability</b>					
1. Modularity - degree to which the website consists of discrete components so that a change on one component pose minimal impact to other components					
2. Reusability - degree to which an asset can be used in more than one system or in building other assets					
3. Analyzability - degree of effectiveness and efficiency on possibly assessing the impact of an intended change to one or more parts of the website; diagnosing deficiencies or causes of failures; and or identifying parts of the website to be modified					
<b>INDICATOR</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>E. Maintainability</b>					
4. Modifiability - degree to which the website can be effectively and					

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

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efficiently modified without introducing defects or degrading existing quality				
5. Testability - degree in which test criteria can be efficiently and effectively established and the software or components can be tested to determine whether test criteria were met				
<b>F. Portability</b>				
1. Adaptability - degree to which the website can be effectively and efficiently adapted for different or evolving hardware, software, or other operational or usage environments.				

**Remarks:**


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*Certified true and correct:*

Signature over printed name of evaluator

Date

*\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.*

**APPENDIX I**  
**SAMPLE ACCOMPLISHED EVALUATION TOOL**  
**FOR END-USER**

<p>DUS-SEI Form No. 2</p> <p style="text-align: center;">           Republic of the Philippines  <b>CAVITE STATE UNIVERSITY</b>          Cavite College of Arts and Trades          CvSU-CCAT Campus          Rosario, Cavite       </p> <p style="text-align: center;"><b>SOFTWARE EVALUATION INSTRUMENT FOR</b>  <b>&lt;AUTOMATED TIMETABLE SCHEDULING SYSTEM USING</b>  <b>BACKTRACKING ALGORITHM&gt;*</b>          (For End-users)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><i>To the respondents,</i></p> <p>The primary objective of this software evaluation is to assess your perception on the different technical and non-technical characteristics of the software material. As a participant, your responses to this instrument shall signify for your consent to disclose your opinions and other information relevant to the requirements of the instrument, and the evaluation in general. Rest assured that as a participant, you will be given the highest level of anonymity and any personal information that will be disclosed will be treated with confidentiality. All the information to be gathered shall solely serve educational purposes.</p> </div> <p>Name of Respondent: <u>KEITH RONQUILLO</u> Age: <u>20</u> Gender: <u>(M) F</u>    Profession/Occupation: <u>STUDENT</u> Affiliation: _____</p> <p><i>General Instruction:</i> Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.</p> <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: left;">Rating Scale</th> </tr> <tr> <th style="text-align: center;">NUMERICAL RATING</th> <th style="text-align: center;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">5</td> <td>Excellent</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Very Satisfactory</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Satisfactory</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Unsatisfactory</td> </tr> <tr> <td style="text-align: center;">1</td> <td>Needs Improvement</td> </tr> </tbody> </table> <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th style="text-align: center;">INDICATOR</th> <th style="text-align: center;">5</th> <th style="text-align: center;">4</th> <th style="text-align: center;">3</th> <th style="text-align: center;">2</th> <th style="text-align: center;">1</th> </tr> </thead> <tbody> <tr> <td colspan="6"><b>A. Usability</b></td> </tr> <tr> <td>1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs</td> <td style="text-align: center;">✓</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td>2. Learnability - degree to which the website provides self-explanatory user-interface; entry fields contain default placeholder texts; and error messages provided are understandable</td> <td style="text-align: center;">✓</td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> </tbody> </table>	Rating Scale		NUMERICAL RATING	DESCRIPTION	5	Excellent	4	Very Satisfactory	3	Satisfactory	2	Unsatisfactory	1	Needs Improvement	INDICATOR	5	4	3	2	1	<b>A. Usability</b>						1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs	✓					2. Learnability - degree to which the website provides self-explanatory user-interface; entry fields contain default placeholder texts; and error messages provided are understandable	✓				
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\*Adopted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

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INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
3. Operability - degree to which the website is easy to operate, control, and can be used appropriately	/				
4. User error protection - the website is able to perform user entry validation and allows the user to recover from errors	/				
5. User interface aesthetics - degree to which the user interface enables pleasing and satisfying interaction with the user	/				
<b>B. Effectiveness</b>					
1. The website allows the users to achieve specified goals when used in specified contexts	/				
<b>C. Efficiency</b>					
1. The degree to which resources are consumed with accuracy and completeness of helping users achieve the goals	/				
<b>D. Satisfaction</b>					
1. Usefulness - degree to which the user is satisfied on perceived achievement of pragmatic goals including the results and consequences of using the website	/				
2. Trust - degree to which a user or other stakeholders are confident that the website will behave as it is intended	/				
3. Pleasure - degree to which a user gains pleasure upon fulfillment of personal needs	/				
4. Comfort - degree to which the user is satisfied with physical comfort	/				
<b>E. Context Coverage</b>					
1. Content completeness - degree to which the website can be used effectively, efficiently, and satisfactorily in all specified contexts of use	/				
2. Flexibility - degree to which the website can be used effectively, efficiently, and satisfactorily in contexts beyond those initially specified in the requirements	/				

Remarks:

ALL GOODES ✓✓✓

Certified true and correct:

  
 KEITH RONQUILLO  
 Signature over printed name of evaluator

MAY 24, 2023  
 Date

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

DCS-SEI Form No. 2


**Republic of the Philippines  
CAVITE STATE UNIVERSITY**  
 Cavite College of Arts and Trades  
 CvSU-CCAT Campus  
 Rosario, Cavite

**SOFTWARE EVALUATION INSTRUMENT FOR  
<AUTOMATED TIMETABLE SCHEDULING SYSTEM USING  
BACKTRACKING ALGORITHM>\***  
 (For End-users)

*To the respondents,*

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Name of Respondent: Alwyn Alvin G. Larin Age: 21 Gender:  M  F  
 Profession/Occupation: Student Affiliation: \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

Rating Scale						
NUMERICAL RATING	DESCRIPTION					
5	Excellent					
4	Very Satisfactory					
3	Satisfactory					
2	Unsatisfactory					
1	Needs Improvement					

INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs	/				
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INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
3. Operability - degree to which the website is easy to operate, control, and can be used appropriately	/				
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<b>B. Effectiveness</b>					
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<b>C. Efficiency</b>					
1. The degree to which resources are consumed with accuracy and completeness of helping users achieve the goals	/				
<b>D. Satisfaction</b>					
1. Usefulness - degree to which the user is satisfied on perceived achievement of pragmatic goals including the results and consequences of using the website		/			
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4. Comfort - degree to which the user is satisfied with physical comfort	/				
<b>E. Context Coverage</b>					
1. Content completeness - degree to which the website can be used effectively, efficiently, and satisfactorily in all specified contexts of use		/			
2. Flexibility - degree to which the website can be used effectively, efficiently, and satisfactorily in contexts beyond those initially specified in the requirements		/			

**Remarks:**

*Aesthetics could work on a more modern website but it doesn't affect the overall algorithm*

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*Certified true and correct:*

*[Signature]*  
\_\_\_\_\_  
Signature over printed name of evaluator

*May 20, 2022*  
Date

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

DCS-SEI Form No. 2



Republic of the Philippines  
**CAVITE STATE UNIVERSITY**  
 Cavite College of Arts and Trades  
 CvSU-CCAT Campus  
 Rosario, Cavite

**SOFTWARE EVALUATION INSTRUMENT FOR**  
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 (For End-users)

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Name of Respondent: Jhay-an Rhendlyn Elenino Age: 21 Gender:  M  F  
 Profession/Occupation: Student Affiliation: \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

*Rating Scale*

NUMERICAL RATING	DESCRIPTION
5	Excellent
4	Very Satisfactory
3	Satisfactory
2	Unsatisfactory
1	Needs Improvement

INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs	/				
2. Learnability - degree to which the website provides self-explanatory user-interface; entry fields contain default/placeholder texts; and error messages provided are understandable		/			

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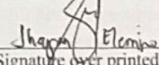
DCS-SEI Form No. 2

INDICATOR	5	4	3	2	1
<b>A. Usability</b>					
3. Operability - degree to which the website is easy to operate, control, and can be used appropriately	/				
4. User error protection - the website is able to perform user entry validation and allows the user to recover from errors		/			
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<b>B. Effectiveness</b>					
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<b>C. Efficiency</b>					
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<b>E. Context Coverage</b>					
1. Content completeness - degree to which the website can be used effectively, efficiently, and satisfactorily in all specified contexts of use	/				
2. Flexibility - degree to which the website can be used effectively, efficiently, and satisfactorily in contexts beyond those initially specified in the requirements	/				

## Remarks:

Font / nav-side bar , so small and the text is blur . I  
feel like it's contradicting the background color. 1

Certified true and correct:

  
 Signature over printed name of evaluator

 05-24-23  
 Date

\*Adopted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

**APPENDIX J**  
**SAMPLE ACCOMPLISHED EVALUATION TOOL**  
**FOR IT EXPERTS**

DCS-SEI Form No. 1



Republic of the Philippines  
**CAVITE STATE UNIVERSITY**  
Cavite College of Arts and Trades  
CvSU-CCAT Campus  
Rosario, Cavite

**SOFTWARE EVALUATION INSTRUMENT FOR**  
**<AUTOMATED TIMETABLE SCHEDULING SYSTEM USING**  
**BACKTRACKING ALGORITHM>\***  
(For Web Developers)

*To the respondents,*

The primary objective of this software evaluation is to assess your perception on the different technical and non-technical characteristics of the software material. As a participant, your responses to this instrument shall signify for your consent to disclose your opinions and other information relevant to the requirements of the instrument, and the evaluation in general. Rest assured that as a participant, you will be given the highest level of anonymity and any personal information that will be disclosed will be treated with confidentiality. All the information to be gathered shall solely serve educational purposes.

Name of Respondent: M. NOLLEDO Age: 31 Gender: M ( ) F  
Profession/Occupation WEB Programmer Affiliation: \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

*Rating Scale*

NUMERICAL RATING	DESCRIPTION
5	Excellent
4	Very Satisfactory
3	Satisfactory
2	Unsatisfactory
1	Needs Improvement

INDICATOR	5	4	3	2	1
<b>A. Functional Suitability</b>					
1. Functional completeness - degree to which the set of functions covers all the specified tasks and user objectives	✓				
2. Functional correctness - degree to which the functions provide the correct results with precision	✓				
3. Functional appropriateness - degree to which the functions facilitate the accomplishment of specified tasks and objectives	✓				

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INDICATOR	5	4	3	2	1
<b>B. Performance Efficiency</b>					
1. Time behavior - degree to which the responses, processing times, and throughput rates of the website meet the requirements when performing its functions	/				
2. Resource utilization - degree to which the amounts and the types of resources used by the website meet the requirements when performing its functions	/				
3. Capacity - degree to which the maximum limitations of the website or its components meet the requirements	/				
<b>C. Usability</b>					
1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs	/				
2. Learnability - degree to which the website enables the user to learn how to use the software effectively	/				
3. Operability - degree to which the website is easy to operate, control, and be used appropriately	/				
4. User error protection - degree to which the website protects the user from making errors	/				
5. User interface aesthetics - degree to which the user interface enables pleasing and satisfying interaction with the user	/				
6. Accessibility - degree to which the website can be used in a specific context with the widest range of characteristics and capabilities to achieve a specific goal		/			
<b>D. Security</b>					
1. Confidentiality - degree to which the website ensures that the data are only accessible by those who have authorized access	/				
2. Integrity - degree to which the website prevents unauthorized access to and or modifications of computer programs or data	/				
<b>E. Maintainability</b>					
1. Modularity - degree to which the website consists of discrete components so that a change on one component pose minimal impact to other components	/				
2. Reusability - degree to which an asset can be used in more than one system or in building other assets	/				
3. Analyzability - degree of effectiveness and efficiency on possibly assessing the impact of an intended change to one or more parts of the website; diagnosing deficiencies or causes of failures; and or identifying parts of the website to be modified		/			
INDICATOR	5	4	3	2	1
<b>E. Maintainability</b>					
4. Modifiability - degree to which the website can be effectively and efficiently modified without introducing defects or degrading existing quality	/				
5. Testability - degree in which test criteria can be efficiently and effectively established and the software or components can be tested to determine whether test criteria were met		/			

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

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<b>F. Portability</b>	
1. Adaptability - degree to which the website can be effectively and efficiently adapted for different or evolving hardware, software, or other operational or usage environments.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**Remarks:**

- NO VISUAL CUES WHEN BACKGROUND ACTIVITIES ARE RUNNING

*[Handwritten signature]*  
Signature over printed name of evaluator

*6/24/2023*  
Date

*\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.*

DCS-SEI Form No. 1



Republic of the Philippines  
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 Cavite College of Arts and Trades  
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Name of Respondent: Janessa Marcellle S. Cruz Age: 25 Gender:  M  F  
 Profession/Occupation Instructor Affiliation: \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

*Rating Scale*

NUMERICAL RATING	DESCRIPTION
5	Excellent
4	Very Satisfactory
3	Satisfactory
2	Unsatisfactory
1	Needs Improvement

A. Functional Suitability	INDICATOR	5	4	3	2	1
1. Functional completeness - degree to which the set of functions covers all the specified tasks and user objectives		/				
2. Functional correctness - degree to which the functions provide the correct results with precision		/				
3. Functional appropriateness - degree to which the functions facilitate the accomplishment of specified tasks and objectives		/				

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INDICATOR	5	4	3	2	1
<b>B. Performance Efficiency</b>					
1. Time behavior - degree to which the responses, processing times, and throughput rates of the website meet the requirements when performing its functions	/				
2. Resource utilization - degree to which the amounts and the types of resources used by the website meet the requirements when performing its functions	/				
3. Capacity - degree to which the maximum limitations of the website or its components meet the requirements	/				
<b>C. Usability</b>					
1. Appropriateness recognizability - degree to which users recognize the appropriateness of the website based on their needs	/				
2. Learnability - degree to which the website enables the user to learn how to use the software effectively	/				
3. Operability - degree to which the website is easy to operate, control, and be used appropriately	/				
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<b>D. Security</b>					
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2. Integrity - degree to which the website prevents unauthorized access to and or modifications of computer programs or data	/				
<b>E. Maintainability</b>					
1. Modularity - degree to which the website consists of discrete components so that a change on one component pose minimal impact to other components	/				
2. Reusability - degree to which an asset can be used in more than one system or in building other assets	/				
3. Analyzability - degree of effectiveness and efficiency on possibly assessing the impact of an intended change to one or more parts of the website; diagnosing deficiencies or causes of failures; and or identifying parts of the website to be modified	/				
INDICATOR	5	4	3	2	1
<b>E. Maintainability</b>					
4. Modifiability - degree to which the website can be effectively and efficiently modified without introducing defects or degrading existing quality	/				
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**F. Portability**

1. Adaptability - degree to which the website can be effectively and efficiently adapted for different or evolving hardware, software, or other operational or usage environments.

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**Remarks:**

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*Certified true and correct:*

JANESA MARIELE R. CRUZ  
Signature over printed name of evaluator

Date

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

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Name of Respondent: Jeffrid P. Loxamna Age: 24 Gender: (M) F  
 Profession/Occupation: Computer Operator Affiliation: \_\_\_\_\_

**General Instruction:** Evaluate the characteristics of the web application using the rating scale below. Place a checkmark (✓) on the corresponding numerical rating.

**Rating Scale**

NUMERICAL RATING	DESCRIPTION
5	Excellent
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A. Functional Suitability	INDICATOR	5	4	3	2	1
	1. Functional completeness - degree to which the set of functions covers all the specified tasks and user objectives	/				
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INDICATOR	5	4	3	2	1
<b>B. Performance Efficiency</b>					
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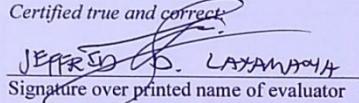
/						
---	--	--	--	--	--	--

**Remarks:**

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*Certified true and correct*  
Signature over printed name of evaluator06/23/2023

Date

\*Adapted with modification from the International Organization for Standardization and International Electro-technical Commission (ISO-IEC) 25010.

## **APPENDIX K**

### **USERS MANUAL**

#### **Introduction**

The Automated Timetable Scheduling System is a web-based application designed to generate conflict-free class schedules automatically.

This user manual provides step-by-step instructions on how to effectively utilize the web-based system.

## System Requirements

### *Hardware*

To ensure optimal performance while using the web-based system, it is recommended to meet the following system requirements:

- A minimum of 8 GB RAM.
- An AMD Ryzen 5 processor or a higher specification CPU.
- An operating system of either 64-bit Windows 11 or Windows 10.

Meeting these system requirements will help ensure smooth operation and a satisfactory user experience while using the web-based system.

### *Software*

For optimal performance and offline access to the web-based system, it is important to meet the following system requirements:

- **Browser:** Use either Google Chrome or Microsoft Edge as your preferred web browser. These browsers are recommended for compatibility and optimal performance with the web-based system.
- **XAMPP:** Install XAMPP version 3.3.0 or the latest available version. XAMPP is a software package that provides a local server environment for hosting web applications on your computer. It allows you to access and run the web-based system offline, providing a convenient way to work without an internet connection.

By ensuring you have the specified browser and XAMPP installed, you can experience optimal performance and utilize the web-based system even when offline.

## The Web-based System

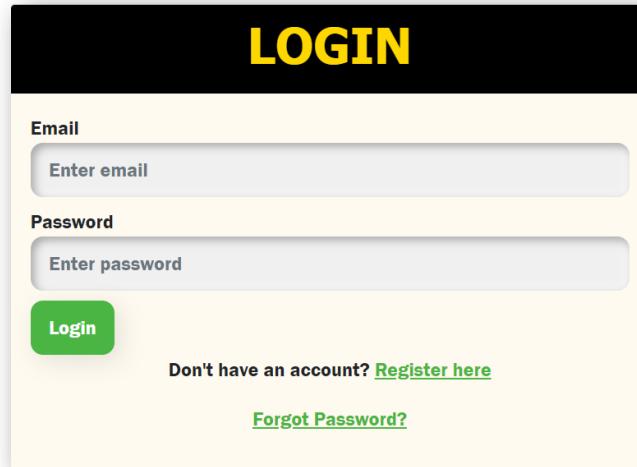
The web-based system is called “ATS or Automated Timetable Scheduling System” that can generate automated class schedules for teachers, students, and rooms.

To utilize the web-based system offline, please follow these steps:

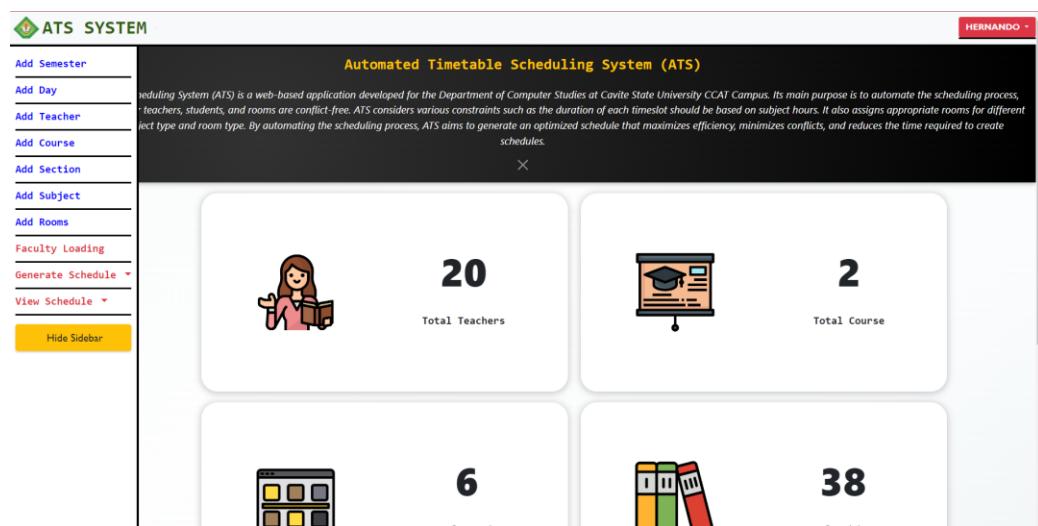
- 1 Install XAMPP: Download and install XAMPP from the official website. Follow the installation instructions provided.
- 2 Extract ATS-SYSTEM PHP files: Once XAMPP is installed, locate the htdocs folder within the XAMPP installation directory. Extract the PHP files of the web-based system into this folder. Ensure that the file structure is maintained.
- 3 Start XAMPP: Launch the XAMPP control panel and start the Apache web server. This will enable you to access the web-based system locally on your computer.
- 4 Access the web-based system: Open your preferred browser, such as Google Chrome or Microsoft Edge. In the address bar, type "<http://localhost/ats-system/login.php>" and hit Enter. This will take you to the login page of the web-based system.
- 5 Login and use the system: Enter your credentials (if applicable) on the login page or Register an account using your email.

## Getting Started

After successful installation of xampp and extracting php files, you can now use the web-based system. First, you need to log in to your registered credential or register a new account on the web-based system login module, as shown below.



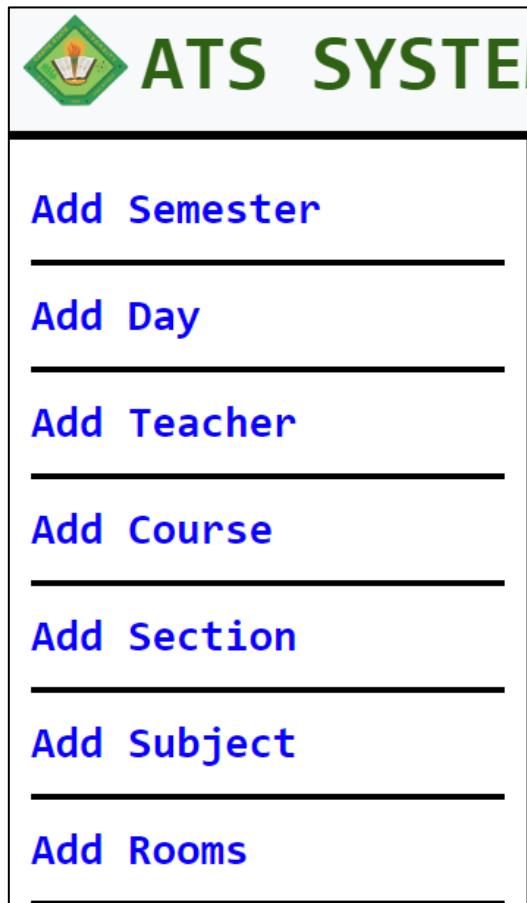
After successful login, you will proceed to the dashboard as shown below:



The dashboard of the web-based system features a sidebar menu with three main modules:

## 1 Data Adding Module

This module allows you to add and manage various data needed for the generation of class schedules. The following data section is shown and explained below.



- Semester: Add or manage semesters.
- Day: Add or manage the days of the week.
- Teacher: Add or manage teacher information
- Course: Add or manage different courses
- Section: Add or manage sections.
- Subject: Add or manage individual subjects within courses.
- Rooms: Add or manage classroom information

After clicking one on the sidebar menu, for example, if you click the Add Teacher menu, you will redirect to the adding of teacher page as shown below. On that page, you can search for specific teachers and add, update, and delete teacher information.

TEACHER LIST					
<input type="text" value="Search by firstname or lastname or id"/> <input type="button" value="Search"/>					
No.	Teacher ID	Lastname	Firstname	Action	
1	7	Abad	Jenerry	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
2	4	Bautista	Renato	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
3	8	Cabarles	Axel	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

## 2 Faculty Loading Module

FACULTY LOADING										
<input type="text" value="Search by Teacher ID/Name"/> <input type="button" value="Search"/>										
<b>1st SEM</b> A.Y: 2023-2024										
<input type="button" value="Assign subject"/> <input type="button" value="Delete All Data"/>										
No.	Sched Code	Teacher Name	Subject Code	Subject Title	Subject Type	Contact Hours	Units	Year & Section	Action	
1	20230001	Jenerry Abad	DCIT 26	App Development & Emerging Tech (LAB)	Lab	3	1	BSCS 301-A	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
2	20230002	Jenerry Abad	DCIT 26	App Development & Emerging Tech (LAB)	Lab	3	1	BSCS 301-B	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
3	20230003	Jenerry Abad	DCIT 26	App Development & Emerging Tech (LEC)	Lec	2	2	BSCS 201-A	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

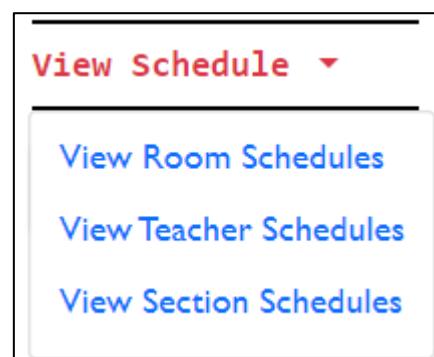
This module is designed to handle the faculty loading process. It likely includes features such as assigning teachers to specific courses or subjects, managing their workload.

### 3 Generate Module

AUTOMATED SCHEDULING					
Time	Monday	Tuesday	Wednesday	Thursday	Friday
07:00 AM - 07:30 AM					
07:30 AM - 08:00 AM					
08:00 AM - 08:30 AM					
08:30 AM - 09:00 AM					
09:00 AM - 09:30 AM					
09:30 AM - 10:00 AM					
10:00 AM - 10:30 AM					
10:30 AM - 11:00 AM					
11:00 AM - 11:30 AM					
11:30 AM - 12:00 PM					
12:00 PM - 12:30 PM					
12:30 PM - 01:00 PM					
01:00 PM - 01:30 PM					
01:30 PM - 02:00 PM					
02:00 PM - 02:30 PM					
02:30 PM - 03:00 PM					
03:00 PM - 03:30 PM					
03:30 PM - 04:00 PM					
04:00 PM - 04:30 PM					
04:30 PM - 05:00 PM					
05:00 PM - 05:30 PM					
05:30 PM - 06:00 PM					
06:00 PM - 06:30 PM					
06:30 PM - 07:00 PM					

After adding all the data needed, you can now proceed to the generated module. This module is responsible for generating the class schedule based on the provided data. It utilizes the information from the faculty loading module and uses a backtracking algorithm to automatically generate a conflict-free class schedule. To generate a schedule, you just need to click the generate button and wait for approximately one to three minutes, and the class schedule will be generated.

### 4 View Module



View module allows you to view the generated schedule separately in tables. You can view class schedule for teacher, students and room respectively and convert it in pdf format for printing purposes.

After the generation process can now view your generated schedule just click the view schedule menu and choose what schedule you want to see for example you clicked the teacher schedule you will redirect to the web page shown in the image below.

<b>TEACHER SCHEDULES</b>								
<b>1st SEM</b>								
A.Y: 2023-2024								
Teacher	Day	Subject Code	Subject Title	Subject Type	Room	Course Year & Section	Start_Time	End_Time
Ana Marie Obon	Monday	DCIT 25	Data Structures and Algorithm (LEC)	Lec	DCS-3	BSCS 301-A	10:00 AM	12:00 PM
		DCIT 26	App Development & Emerging Tech (LAB)	Lab	CCL-7	BSCS 101-A	01:00 PM	04:00 PM
	Tuesday	DCIT 26	App Development & Emerging Tech (LAB)	Lab	CCL-5	BSCS 101-A	01:00 PM	04:00 PM
	Wednesday	DCIT 25	Data Structures and Algorithm (LAB)	Lab	CCL-7	BSCS 301-B	01:00 PM	04:00 PM
	Thursday	DCIT 25	Data Structures and Algorithm (LAB)	Lab	CCL-1	BSCS 301-A	01:00 PM	04:00 PM
	Friday	DCIT 25	Data Structures and Algorithm (LEC)	Lec	DCS-6	BSCS 301-B	10:00 AM	12:00 PM
		DCIT 23	Computer Programming II (LAB)	Lab	CCL-1	BSCS 401-A	01:00 PM	04:00 PM
Teacher	Day	Subject Code	Subject Title	Subject Type	Room	Course Year & Section	Start_Time	End_Time
Angela Clarito	Monday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-6	BSINFOTECH 201-E	07:00 AM	09:00 AM
		ITEC 85	Information Assurance and Security (LEC)	Lec	DCS-6	BSCS 201-B	09:00 AM	11:00 AM
	Tuesday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-6	BSINFOTECH 201-A	07:00 AM	09:00 AM
		ITEC 85	Information Assurance and Security (LEC)	Lec	DCS-4	BSCS 201-A	09:00 AM	11:00 AM
	Wednesday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-7	BSINFOTECH 201-C	07:00 AM	09:00 AM
	Thursday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-2	BSINFOTECH 201-B	07:00 AM	09:00 AM
		DCIT 24	Information Management (LAB)	Lab	CCL-6	BSCS 301-B	09:00 AM	12:00 PM
	Friday	ITEC 65	Open-Source Technologies (LEC)	Lec	DCS-2	BSINFOTECH 201-D	07:00 AM	09:00 AM
		ITEC 85	Information Assurance and Security (LAB)	Lab	CCL-6	BSCS 301-A	09:00 AM	12:00 PM

If you are finished viewing your schedules, you can convert them into PDF Format. Just type CTRL + P, and it will be converted to PDF format as shown below.

## TEACHER SCHEDULES

Teacher	Day	Subject Code	Subject Title	Course Year & Section	Room	Start_Time	End_Time
Ana Marie Obon	Monday	DCIT 25	Data Structures and Algorithm (LEC)	BSCS 301-A	DCS-3	10:00 AM	12:00 PM
		DCIT 26	App Development & Emerging Tech (LAB)	BSCS 101-A	CCL-7	01:00 PM	04:00 PM
	Tuesday	DCIT 26	App Development & Emerging Tech (LAB)	BSCS 101-A	CCL-5	01:00 PM	04:00 PM
	Wednesday	DCIT 25	Data Structures and Algorithm (LAB)	BSCS 301-B	CCL-7	01:00 PM	04:00 PM
	Thursday	DCIT 25	Data Structures and Algorithm (LAB)	BSCS 301-A	CCL-1	01:00 PM	04:00 PM
	Friday	DCIT 25	Data Structures and Algorithm (LEC)	BSCS 301-B	DCS-6	10:00 AM	12:00 PM
		DCIT 23	Computer Programming II (LAB)	BSCS 401-A	CCL-1	01:00 PM	04:00 PM

Lastly, if the generated schedules are in PDF format, you can now print them. Click CTRL + P again, and it will be printed using your printer.

## APPENDIX L

### SOURCE CODE

#### CSS FILES

##### DASHBOARD.CSS

```
.logo {
    width: 150px;
    height: 150px;
}

.dashboard {
    margin-top: 20px;
    padding: 100px;
    border-radius: 30px;
    box-shadow: 0px 2px 12px 2px
        rgba(0, 0, 0, 0.2);
    display: flex;
    justify-content: space-between;
    align-items: center;
    background-color:rgb(255, 255, 255);
}

.metric {
    text-align: center;
}

.metric .value {
    font-size: 1rem;
    font-weight: bold;
    margin-bottom: 20px;
}
```

```
.metric .label {
    font-size: 20px;
    font-family: consolas;
    font-weight: bold;
    background-color: rgb(255, 255,
255);}
```

##### INDEX.CSS

```
.navbar-brand img {
    max-width: 3em;
    height: auto;
}
```

```
.navbar-nav {
    display: flex;
    flex-wrap: wrap;
    font-size: 20px;
    font-family: "Gill Sans", "Gill Sans
    MT", Calibri, "Trebuchet MS", sans-
    serif;
}

.navbar {
    height: 65px;
    border-bottom: 4px solid #000000;
}

.sidebar {
    position: fixed;
    top: 64px;
    bottom: 0;
    left: 0;
    overflow-x: hidden;
    transition: 0.5s;
    padding: 10px;
    border-right: 4px solid #000000;
    background-color: rgb(255, 255,
255);
}

.nav-item {
    border-bottom: 3px solid #000000;
    margin: 0;
    text-align: left;
}

.nav-link {
    font-weight: bold;
    font-family: Consolas, monospace;
    color: rgb(8, 0, 255) !important;
    background-color:rgb(255, 255, 255);
}

.navbar-brand-label {
```

}

```
}
```

```
.navbar-brand {
```

```
    display: flex;
```

```
    align-items: center;
```

```
}
```

```
.hover-color:hover {
```

```
    background-color: rgb(186, 186,
```

```
186); /* Change the color to your
```

```
desired hover color */
```

```
}
```

```
.btn-success {
```

```
    background-color: #4bb543;
```

```
    border: none;
```

```
    border-radius: 10px;
```

```
    box-shadow: 5px 5px 20px rgba(0, 0,
```

```
0, 0.1);
```

```
    padding: 10px 15px;
```

```
}
```

## LOGIN.CSS

```
body {
```

```
    background-repeat: repeat;
```

```
    background-position: center;
```

```
}
```

```
.text-shadow {
```

```
    text-shadow: 2px 2px 4px rgba(3,
```

```
0, 2, 0.1);
```

```
}
```

## PHP FILES

automated\_schedule.php

```

<?php
include 'database_connection.php';
include 'index.php';

// Check the number of rows in the
// rooms table, course table, and
available_days table
$sql = "SELECT COUNT(*) AS
room_count FROM rooms";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$roomCount = $row['room_count'];

$sql = "SELECT COUNT(*) AS
courses_count FROM courses";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$courses_count =
$row['courses_count'];

$sql = "SELECT COUNT(*) AS
day_count FROM available_days";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$day_count = $row['day_count'];

if ($roomCount < 10 || $courses_count
<= 1 || $day_count < 4) {
    if ($courses_count <= 1) {
        echo '<script>alert("Required
number of courses is 2");</script>';
        echo
"<script>window.location.href =
'course_list.php';</script>";
    } elseif ($day_count < 4) {
        echo '<script>alert("Required
number of days is 4");</script>';
        echo
"<script>window.location.href =
'dashboard.php';</script>";
    } else {
        echo '<script>alert("[Required
Course = 2\n|Required Rooms =
10]\n[Required Days = 4]");</script>';
    }
}

```

```

echo
"<script>window.location.href =
'dashboard.php';</script>";
}

} else {
    // Function to check if a teacher is
available at the given day and time
    function
isTeacherAvailable($teacher, $day,
$start_time, $end_time)
{
    global $conn;

    $sql = "SELECT * FROM
faculty_loadings WHERE teacher =
'$teacher' AND day = '$day' AND
(start_time < '$end_time' AND
end_time > '$start_time')";
    $result = mysqli_query($conn,
$sql);

    return mysqli_num_rows($result)
== 0;
}

// Function to check if a room is
available at the given day and time
function
isRoomAvailable($room_name, $day,
$start_time, $end_time)
{
    global $conn;

    $sql = "SELECT * FROM
faculty_loadings WHERE room_name =
'$room_name' AND day = '$day'
AND (start_time < '$end_time' AND
end_time > '$start_time')";
    $result = mysqli_query($conn,
$sql);

    return mysqli_num_rows($result)
== 0;
}

// Function to check if there is a
conflict in course_year_section
function
isCourseYearSectionConflict($course_

```

```

year_section, $day, $start_time,
$end_time)
{
    global $conn;

    $sql = "SELECT * FROM
faculty_loadings WHERE
course_year_section =
'$course_year_section' AND day =
'$day' AND (start_time < '$end_time'
AND end_time > '$start_time')";
    $result = mysqli_query($conn,
$sql);

    return mysqli_num_rows($result)
> 0;
}

// Function to assign timeslots to
courses using backtracking
function assignTimeslots($courses)
{
    global $conn;

    // Base case: If all courses have
been assigned timeslots, return true
    if (empty($courses)) {
        return true;
    }

    // Select the first course from the
list and remove it from the array
    $course = array_shift($courses);
    $subjectHours =
$course['subject_hours'];

    // Retrieve a timeslot with the
corresponding duration
    $duration = "";
    if ($subjectHours == 1) {
        $duration = "01:00:00";
    } elseif ($subjectHours == 1.5) {
        $duration = "01:30:00";
    } elseif ($subjectHours == 2) {
        $duration = "02:00:00";
    } elseif ($subjectHours == 3) {
        $duration = "03:00:00";
    }

    // Retrieve available timeslots
with the same duration
    $timeslot_sql = "SELECT *
FROM timeslots WHERE
TIMEDIFF(end_time, start_time) =
'$duration'";
    $timeslot_result =
mysqli_query($conn, $timeslot_sql);

    // Check for SQL query error
    if (!$timeslot_result) {
        die('Error retrieving timeslots: '
. mysqli_error($conn));
    }

    while ($timeslot_row =
mysqli_fetch_assoc($timeslot_result))
{
        // Retrieve the subject type of
the course
        $subject_type =
$course['subject_type'];

        // Retrieve an available room
with the same room type and subject
type
        $room_sql = "SELECT
room_name FROM rooms WHERE
room_type = '$subject_type' ORDER
BY RAND()";
        $room_result =
mysqli_query($conn, $room_sql);

        // Check for SQL query error
        if (!$room_result) {
            die('Error retrieving rooms: '
. mysqli_error($conn));
        }

        // Loop through each available
room
        while ($room_row =
mysqli_fetch_assoc($room_result)) {
            $room_name =
$room_row['room_name'];

            // Randomly select a day
from available_days
        }
    }
}

```



```

$result_start_time =
mysqli_query($conn, $sql_start_time);
$button_disabled = "";
if ($count == 0) {
    // The faculty_loadings table is
empty
    $button_disabled = "disabled";
    $button_text = "Generate";
} elseif ($result_start_time-
>num_rows > 0) {
    // The start_time column is empty
for some rows
    while ($row =
mysqli_fetch_assoc($result_start_time)
) {
        // Process each row of data
        $columnValue =
$row["start_time"];

        // Retrieve the updated value
from the database
        $select_sql = "SELECT
start_time FROM faculty_loadings
WHERE id = " . $row["id"];
        $result_updated_start_time =
mysqli_query($conn, $select_sql);
        $updated_start_time =
mysqli_fetch_assoc($result_updated_st
art_time)["start_time"];

        // Check if the start_time value
is not null
        if ($updated_start_time !==
null) {
            // Additional processing or
output
            $button_text = "Regenerate";
        } else {
            $button_text = "Generate";
        }
    }
} else {
    // The start_time column is not
empty for any rows
    $button_text = "Regenerate";
}

// Check if the button was clicked
if
(isset($_POST['assign_timeslots'])) {

    // Retrieve the data from the
faculty_loading table
    $sql = "SELECT * FROM
faculty_loadings";
    $result = mysqli_query($conn,
$sql);

    // Check for SQL query error
    if ($result) {
        // Store the courses in an array
        $courses = array();
        while ($row =
mysqli_fetch_assoc($result)) {
            $courses[] = $row;
        }

        // Call the backtrack function to
assign timeslots to the courses
        $success =
assignTimeslots($courses);

        if ($success) {
            echo '<script
type="text/javascript">';
            echo ' alert("Schedule is
Generated Successfully without
conflicts!");';
            echo '</script>';
        } else {
            echo '<script
type="text/javascript">';
            echo ' alert("Unable to assign
timeslots without conflicts.");';
            echo '</script>';
        }
    } else {
        die('Error retrieving
faculty_loadings data: ' .
mysqli_error($conn));
    }
}

// Check if the faculty_loading table
is not empty
if ($count > 0) {

```

```

// Display the timetable
echo '
<!DOCTYPE html>
<html>
<head>

    <title>Faculty Loading
System</title>
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">

<style>
.table-bordered {
    border:.2rem solid;
    text-align:center;
    vertical-align:middle;
}

@media print {
    body {
        visibility: hidden;
    }

    .print-page {
        visibility: visible;
        width: 210mm;
        height: 297mm;
        margin: 0 auto;
        padding: 20mm;
        box-sizing: border-box;
        page-break-after: always;
    }
}
</style>
</head>

<body>
<div class="container print-page ">

    <h1 style=" text-shadow: 4px 2px
3px rgba(0, .5, 0, .80); " class="fw-
bolder text-center text-warning mt-3
text-outline">AUTOMATED
SCHEDULING</h1>

    <div class="container-fluid text-
center "><form method="post">

        <button type="submit"
name="assign_timeslots"
id="buttonGenerate" class="btn btn-
primary mt-4 ' . $button_disabled . '>
. $button_text . '</button>
        <button type="button" class=" mt-4
btn btn-danger" id="truncate">Delete
Generated Schedule</button>
    </form></div>

    <table class="table mt-4 print-table
table-bordered table table-hover table-
sm">

        <thead class="thead-dark bg-
success text-light fw-bolder text-
light">
            <tr>
                <th>Time</th>; // Empty cell
for spacing

            // Loop through the days (Monday
to Friday)
            $days = array('Monday',
'Tuesday', 'Wednesday',
'Thursday', 'Friday');

            foreach ($days as $day) {
                echo "<th>{$day}</th>";
            }

            echo '</tr>
                </thead>
                <tbody style="font-
size:1rem;">';

        // Loop through the time slots
        MODIFY THIS IF YOU WANT TO
        ADD TIME RANGE
        $start_time =
        strtotime('07:00:00');
        $end_time = strtotime('19:00:00');

        while ($start_time < $end_time) {
            $end_time_formatted =
            date('h:i A', strtotime('+30 minutes',
            $start_time));
            echo "<tr>";

```

```

        echo "<th>" . date('h:i A',
$start_time) . " - " .
$end_time_formatted . "</th>";

        // Loop through the days
(Monday to Friday)
        foreach ($days as $day) {
            echo '<td>';

            // Retrieve the data from the
faculty_loading table for the current
day and time interval
            $sql = "SELECT * FROM
faculty_loadings WHERE day = '$day'
AND start_time <= " . date('H:i:s',
$start_time) . " AND end_time > " .
date('H:i:s', $start_time) . "";
            $result =
mysqli_query($conn, $sql);

            // Check for SQL query error
            if ($result) {
                $combined_data = "";
                while ($row =
mysqli_fetch_assoc($result)) {
                    $combined_data .=
'<div class="text-center">' .
$row['teacher'] . '<br>' .
$row['subject_code'] . '<br>' .
$row['course_year_section'] . '<br>' .
$row['room_name'] .
'<br><br></div>';
                }
                echo $combined_data;
            } else {
                die('Error retrieving
faculty_loadings data: ' .
mysqli_error($conn));
            }
            echo '</td>';
        }

        echo '</tr>';

        $start_time = strtotime('+30
minutes', $start_time);
    }

    echo '</tbody>

        </table>
<div>
    </body>
</html>';
} else {

    echo "<script>alert('No data
available!\\nPlease add data to the
faculty_loadings table.');//</script>";
    echo
"<script>window.location.href =
'faculty_loading_list.php';</script>";
}
}

?>

<!-- DELETE SCHED AJAX -->

<script>
$(document).ready(function () {
    $('#truncate').click(function () {
        if (confirm("Are you sure
you want to delete the generated
schedule?")) {
            $.ajax({
                url:
"delete_generated_sched.php", // the
PHP script that truncates the table
                success: function
(response) {
                    alert(response); //
show the response message from the
PHP script
                    location.reload(); //
reload the page
                }
            });
        }
    });
});

</script>

<script>
$(document).ready(function () {
    $('#buttonGenerate').click(function
() {
        if (confirm("Are you sure you
want to generate the schedule?")) {
            $.ajax({

```

```

url: "automated_schedule.php",
success: function () {
    alert("Please wait for
approximately 1 to 3 minutes while the
schedule is being generated.");
    location.reload();
},
error: function (xhr, status,
error) {
    alert("An error occurred while
generating the schedule. Please try
again later.");
    console.log(xhr.responseText);
}
});
}
});
});

</script>

course_create.php

<?php
//include the db connection php file.
include 'database_connection.php';
include 'index.php';

// Check if user is not logged in
if (!isset($_SESSION['user_id'])) {
    header("Location: login.php");
    exit;
}

// Inserting data for courses table
if (isset($_POST['submit'])) {
    $course_name =
    mysqli_real_escape_string($conn,$_P
OST['course_name']);
    $slots = mysqli_real_escape_string
    ($conn,$_POST['slots']);
    // Check if data already exists in the
    database
    $sql = "SELECT * FROM courses
    WHERE course_name =
    '$course_name'";
    $result = mysqli_query($conn,
    $sql);
    if (mysqli_num_rows($result) > 0) {
        // Data already exists in the
        database, display an error message
        echo '<script
type="text/javascript">';
        echo ' alert("Course already
exists!");';
        echo '</script>';
    } else {
        // Data does not exist in the
        database, insert the data into the table
        $sql = "INSERT INTO courses
        (course_name, slots) VALUES
        ('$course_name', '$slots')";

        if (mysqli_query($conn, $sql)) {
            echo '<script
type="text/javascript">';
            echo ' alert("New record added
successfully!");';
            echo ' window.location.href =
            "course_list.php";';
            echo '</script>';
            exit; // Make sure to exit after
            the redirect
        } else {
            echo "Error: " . $sql . "<br>" .
            mysqli_error($conn);
        }
    }
}
?>
<!doctype html>
<html lang="en">

<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
    content="width=device-width, initial-
    scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
    href="https://cdn.jsdelivr.net/npm/boot

```

```

strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
    integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/dashboard.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
    integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
    integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLABB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
    integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>
</head>

<body>
    <title>Add Course</title>
    <div class="container mt-3" >
        <h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">ADD COURSE</H1>
<form method="post" class="fw-
bolder">

    <div class="mb-3 mt-3">
        <label for="course_name"
class="form-label">Course
Name</label>
        <input type="text"
class="form-control"
id="course_name" placeholder="Enter
Course name"
            name="course_name"
required>
    </div>

    <div class="mb-3">
        <label for="slots"
class="form-label">Slots</label>
        <input type="number"
class="form-control" id="slots"
placeholder="Slots"
            name="slots" required>
    </div>

    <button type="submit"
class="btn btn-primary"
name="submit">Create</button>
    <a href="course_list.php"
class="btn btn-danger"
name="back">Back</a>
    </div>
</form>
</div>
</body>
</html>
course_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete course if delete_id is set in the
URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];

```

```

$sql = "DELETE FROM courses
WHERE id='$id';
if ($conn->query($sql) === TRUE)
{
    echo "<script>alert('Course
deleted successfully');</script>";
    echo
"<script>window.location.href =
'course_list.php';</script>";
} else {
    echo "Error deleting record: " .
$conn->$error;
}
}

// Execute search query if search form
is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM
courses WHERE course_name LIKE
'%$search_term%'";
    $result = $conn->query($query);
} else {
    $query = "SELECT * FROM
courses";
    $result = $conn->query($query);
}
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpua
C0mLASjC"
crossorigin="anonymous">

    <!--External CSS-->
    <link rel="stylesheet"
href="css/courses.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
    <script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP"
crossorigin="anonymous">
    </script>

    </head>
    <body>

        <div class="container"
style="background-color:#FAF8FF">
            <div class="container">
                <h1 style="text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">COURSE LIST</H1>

                <form method="POST">

```

```

<div class="input-group mb-3">
    <input type="text" class="form-control rounded" placeholder="Search by Course name" name="search">
    <button type="submit" class="btn btn-primary">Search</button>
</div>

<a href="course_create.php" class="btn btn-success mb-3"><i class='fas fa-user-plus'></i> Add Course</a>
</form>

<table class="table table-bordered table-hover text-center" style="border:1px solid black">
    <thead class="bg-warning">
        <tr>
            <th>No.</th>
            <th>Course Name</th>
            <th>Slots</th>
            <th>Action</th>
        </tr>
    </thead>
    <tbody style="font-size:1.2rem;font-family:monospace">
        <?php
        if ($result->num_rows >
0) {
            // output data of each
            row
            $i = 1;
            while ($row = $result-
>fetch_assoc()) {
                echo "<tr>";
                echo "<td>" . $i .
                "</td>";
                echo "<td>" .
                $row["course_name"] . "</td>";
                echo "<td>" .
                $row["slots"] . "</td>";
                echo "<td>";
                echo "<a
                    href='course_update.php?id=" .
                $row["id"] . "' class='btn btn-primary
                    btn-sm'>Update<i class='fas fa-edit'></i></a>&nbsp";
                echo "<a href="" .
                $_SERVER['PHP_SELF'] .
                "?delete_id=" . $row["id"] . ""
                class='btn btn-danger btn-sm'
                onclick="return confirm('Are you sure
                    you want to delete this
                    teacher?')>Delete<i class='fas fa-trash'></i></a>";
                echo "</td>";
                echo "</tr>";
                $i++;
            }
        } else {
            echo "<tr><td
                colspan='5'>No courses
                found</td></tr>";
        }
    ?>
    </tbody>
</table>

</div>
</div>

</body>
</html>

course_update.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// Fetching data from the database
if (isset($_GET['id'])) {

    $id =
        mysqli_real_escape_string($conn,
        $_GET['id']);
    $sql = "SELECT * FROM courses
        WHERE id ='$id'";
    $result = mysqli_query($conn,
        $sql);
}

```

```

if ($result &&
mysqli_num_rows($result) > 0) {
    $row =
mysqli_fetch_assoc($result);
} else {
    // If there was an error in the
query, display an error message and
exit
    echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
    exit();
}

// Updating data in the database
if (isset($_POST['update'])) {
    // First, retrieve the data from the
form and sanitize it
    $id =
mysqli_real_escape_string($conn,
$_POST['id']);
    $course_name =
mysqli_real_escape_string($conn,
$_POST['course_name']);
    $slots =
mysqli_real_escape_string($conn,
$_POST['slots']);

    // Then, check if the Course name,
start date and end date already exists in
the database
    $sql = "SELECT * FROM courses
WHERE
course_name='$course_name'";
    $result = mysqli_query($conn,
$sql);

    if (mysqli_num_rows($result) > 0) {
        // If the Course with the same
name, start date and end date already
exists, display an error message
        echo '<script
type="text/javascript">';
        echo ' alert("Course name already
exists!");';
        echo '</script>';
    } else {
        // If the Course with the same
name, start date and end date does not
exist, update the data in the database
        $sql = "UPDATE courses SET
course_name='$course_name', slots
='slots' WHERE id='$id'";
        if (mysqli_query($conn, $sql)) {
            // Data updated successfully,
display an alert message and redirect to
Course_list.php
            echo '<script
type="text/javascript">';
            echo ' alert("Record updated
successfully!");';
            echo ' window.location.href =
"course_list.php";';
            echo '</script>';
            exit; // Make sure to exit after
the redirect
        } else {
            echo "Error updating record: " .
mysqli_error($conn);
        }
    }
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/course.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots

```

```

trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
    integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot
strap@5.1.3/dist/css/bootstrap.min.css"
    integrity="sha384-
PoX9L+uPbsAVCv+jcUsle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/js/bootstrap.bundle.mi
n.js"
    integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>

</head>

<body>
<div class="container mt-3">

    <h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">UPDATE COURSE
DETAILS</h1>

    <!-- Display the data of the
selected Course in the form fields -->
    <form method="POST"
action="">

        <input type="hidden"
name="id" value="<?php echo
$row['id']; ?>">

        <div class="mb-3">
            <label for="course_name"
class="form-label">Course
Name</label>
            <input type="text"
class="form-control"
id="course_name"
name="course_name"
value="<?php echo
$row['course_name']; ?>">
        </div>
        <div class="mb-3">
            <label for="slots"
class="form-label">Course
Slots</label>
            <input type="number"
class="form-control" id="slots"
name="slots"
value="<?php echo
$row['slots']; ?>">
        </div>

        <button type="submit"
name="update" class="btn btn-
primary">Update</button>
        <a href="course_list.php"
class="btn btn-danger">Back</a>
    </form>

</div>

</body>
</html>

dashboard.php

<?php

include 'database_connection.php';
include 'index.php';

// Check if user is not logged in
if (!isset($_SESSION['user_id'])) {
    header("Location: login.php");
}

```

```

    exit;
}
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
        integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
        integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/css/bootstrap.min.css"
        integrity="sha384-
PoX9L+uPbsAVCv+jcUsle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/js/bootstrap.bundle.mi
n.js"
        integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>

<title>Dashboard Page</title>

</head>

<!-- System Description-->
<div id="description_system"
style="box-shadow: 0 0 10px
rgba(0, 0, 0, 0.5);background: radial-
gradient(circle at 24.1% 68.8%,
rgb(50, 50, 50) 0%, rgb(0, 0, 0)
99.4%);font-size:1.2rem;">
    <div class="container-fluid p-3 text-
center">
        <?php
            $user_id = $_SESSION['user_id'];
            $sql = "SELECT * FROM users
WHERE id='$user_id'";
            $result = mysqli_query($conn,
                $sql);
            $user_data =
                mysqli_fetch_assoc($result);
            $user_name = $user_data['name'];
            echo "<h3 style='font-
family:monospace;' class='fw-bolder
text-warning'>Automated Timetable
Scheduling System (ATS)</h3>";
        <?>
        <div class="mt-4">
            <ul class="list-unstyled text-white">
                <li>
                    <em>
                        Automated Timetable
Scheduling System (ATS) is a web-
based application developed for the
Department
                    <em>
                        of Computer Studies at
Cavite State University CCAT
Campus. Its main purpose is to
automate the
                    <em>
                </li>
            </ul>
        </div>
    </div>
</div>

```

scheduling process, ensuring that schedules for teachers, students, and rooms are conflict-free. ATS considers various constraints such as the duration of each timeslot should be based on subject hours. It also assigns appropriate rooms for different subjects based on subject type and room type. By automating the scheduling process, ATS aims to generate an optimized schedule that maximizes efficiency, minimizes conflicts, and reduces the time required to create schedules.

```
</em>
</ul>
</div>

<button type="button"
id="button_close" class="btn-close
btn-close-white" data-bs-
dismiss="alert"
aria-label="Close"></button>
</div>
```

```
<div class="container-fluid">
<div class="row justify-content-
center" style="margin-
right:0px;margin-left:190px;">
    <!-- TEACHER DASHBOARD -->
    <div class="col-5">
        <div class="dashboard hover-
color">

            <?php
                $query = "SELECT
COUNT(*) AS total_teachers FROM
teachers";
                $result =
mysqli_query($conn, $query);

                if ($result) {
                    $row =
mysqli_fetch_assoc($result);
                    $total_teachers =
$row['total_teachers'];
```

```
                } else {
                    $total_teachers = "N/A";
                }
            ?>

            
            <div class="metric rounded-
circle">

                <div class="value">
                    <?php echo '<div
class="display-2 fw-bolder text-
dark">' . $total_teachers . '</div>'; //
Replace display-1 with the desired size
class.?>
                </div>

                <div class="card-body">
                    <div class="label text-
dark">Total Teachers</div>
                </div>

                </div>
            </div>

            <!-- COURSE DASHBOARD-->
            <div class="col-5">
                <div class="dashboard hover-
color">

                    <?php
                        $query = "SELECT
COUNT(*) AS total_course FROM
courses";
                        $result =
mysqli_query($conn, $query);

                    if ($result) {
                        $row =
mysqli_fetch_assoc($result);
                        $total_course =
$row['total_course'];
                    } else {
                        $total_course = "N/A";
                    }
                ?>
```

```

        
        <div class="metric rounded-
circle">

            <div class="value">
                <?php echo '<div
class="display-2 fw-bolder text-
dark">' . $total_section . '</div>; //'
Replace display-1 with the desired size
class.?>
            </div>

            <div class="card-body">
                <div class="label text-
dark">Total Course</div>
            </div>

        </div>
    </div>

    <!-- SECTION DASHBOARD-->
    <div class="col-5">
        <div class="dashboard hover-
color">

            <?php
            $query = "SELECT
COUNT(*) AS total_section FROM
sections";
            $result =
mysqli_query($conn, $query);

            if ($result) {
                $row =
mysqli_fetch_assoc($result);
                $total_section =
$row['total_section'];
            } else {
                $total_section = "N/A";
            }
        ?>

            
        <div class="metric rounded-
circle">

            <div class="value">
                <?php echo '<div
class="display-2 fw-bolder text-
dark">' . $total_course . '</div>; //'
Replace display-1 with the desired size
class.?>
            </div>

            <div class="card-body">
                <div class="label text-
dark">Total Section</div>
            </div>

        </div>
    </div>

    <!-- SUBJECT DASHBOARD-->
    <div class="col-5">
        <div class="dashboard hover-
color">

            <?php
            $query = "SELECT
COUNT(*) AS total_subject FROM
subjects";
            $result =
mysqli_query($conn, $query);

            if ($result) {
                $row =
mysqli_fetch_assoc($result);
                $total_subject =
$row['total_subject'];
            } else {
                $total_subject = "N/A";
            }
        ?>

            
        <div class="metric rounded-
circle">

            <div class="value">

```

```

<?php echo '<div
class="display-2 fw-bolder text-
dark">' . $total_subject . '</div>; //'
Replace display-1 with the desired size
class.?>
</div>

<div class="card-body">
<div class="label text-
dark">Total Subjects</div>
</div>

</div>
</div>
</div>

<!-- Rooms DASHBOARD-->
<div class="col-5">
<div class="dashboard hover-
color">

<?php
$query = "SELECT
COUNT(*) AS total_rooms FROM
rooms";
$result =
mysqli_query($conn, $query);

if ($result) {
$row =
mysqli_fetch_assoc($result);
$total_rooms =
$row['total_rooms'];
} else {
$total_rooms = "N/A";
}
?>


<div class="metric rounded-
circle">

<div class="value">
<?php echo '<div
class="display-2 fw-bolder text-
dark">' . $total_rooms . '</div>; //'
Replace display-1 with the desired size
class.?>
</div>

<div class="card-body">
<div class="label text-
dark">Total Rooms</div>
</div>

</div>
</div>

<!-- randomize DASHBOARD-->
<div class="col-5">
<div class="dashboard hover-
color">

<?php
$query = "SELECT
COUNT(start_time) AS total_sched
FROM faculty_loadings WHERE
start_time IS NOT NULL";
$result =
mysqli_query($conn, $query);

if ($result) {
$row =
mysqli_fetch_assoc($result);
$total_sched =
$row['total_sched'];
} else {
$total_sched = "N/A";
}
?>


<div class="metric rounded-
circle">

<div class="value">
<?php echo '<div
class="display-2 fw-bolder text-
dark">' . $total_sched . '</div>; //'
Replace display-1 with the desired size
class.?>
</div>

<div class="card-body">

```

```
database_connection.php

<?php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "ats_db";

// Create connection
$conn = new mysqli($servername,
$username, $password, $dbname);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn-
>connect_error);
}

?>
```

days\_create.php

```
<?php  
//include the db connection php file.
```

```
include 'database_connection.php';
include 'index.php';

// Check if user is not logged in
if (!isset($_SESSION['user_id'])) {
    header("Location: login.php");
    exit;
}

// Inserting data for courses table
if (isset($_POST['submit'])) {
    $course_name =
    mysqli_real_escape_string($conn,$_P
    OST['day']);

    // Check if data already exists in the
    database
    $day =
    mysqli_real_escape_string($conn,
    $_POST['day']);
    $sql = "SELECT * FROM
available_days WHERE day ='$day'";
    $result = mysqli_query($conn,
    $sql);

    if (mysqli_num_rows($result) > 0) {
        // Data already exists in the
        database, display an error message
        echo '<script
type="text/javascript">';
        echo ' alert("Day already
exists!");';
        echo '</script>';
    } else {
        // Data does not exist in the
        database, insert the data into the table
        $sql = "INSERT INTO
available_days (day) VALUES
('$day')";

        if (mysqli_query($conn, $sql)) {
            echo '<script
type="text/javascript">';
            echo ' alert("New day has been
added successfully!");';
            echo ' window.location.href =
"days_list.php";';
            echo '</script>';
        }
    }
}
```

```

        exit; // Make sure to exit after
the redirect

    } else {
        echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
    }

}

?>
<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots-
trap@5.0.2/dist/js/bootstrap.bundle.mi-
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrghxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>

```

```

<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots-
trap@5.1.3/dist/js/bootstrap.bundle.mi-
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>
</head>

<body>
<title>Add Day</title>
<div class="container mt-3">

    <h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">ADD DAY</h1>

    <form method="post">

        <div class="form-group mt-3">
            <label for="day" class="form-
label">Day:</label>
            <select class="form-select"
name="day" id="day" required>
                <option value="">Select a
day</option>
                <option
value="Monday">Monday</option>
                <option
value="Tuesday">Tuesday</option>
                <option
value="Wednesday">Wednesday</opt
ion>
                <option
value="Thursday">Thursday</option>
                <option
value="Friday">Friday</option>
            </select>
        </div>
    </form>

```

```

        <button type="submit"
class="btn btn-primary mt-3"
name="submit">Create</button>
        <a href="course_list.php"
class="btn btn-danger mt-3"
name="back">Back</a>

        </form>
    </div>

</body>
</html>

days_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete course if delete_id is set in the
// URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];
    $sql = "DELETE FROM
available_days WHERE id='$id'";
    if ($conn->query($sql) === TRUE)
    {
        echo "<script>alert('Day deleted
successfully');</script>";
        echo
"<script>window.location.href =
'days_list.php';</script>";
    } else {
        echo "Error deleting record: " .
$conn->$error;
    }
}

// Execute search query if search form
is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM
available_days WHERE day LIKE
'%$search_term%' OR id LIKE
'%$search_term%'";
    $result = $conn->query($query);
} else {

        $query = "SELECT * FROM
available_days";
        $result = $conn->query($query);
    }

    <?php
    $result = $conn->query($query);
    <?>

    <!doctype html>
    <html lang="en">

        <head>

            <!-- Required meta tags -->
            <meta charset="utf-8">
            <meta name="viewport"
content="width=device-width, initial-
scale=1">
            <!-- CDN Bootstrap CSS -->
            <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTWspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
            <!--External CSS-->
            <link rel="stylesheet"
href="css/courses.css">
            <!-- CDN Bootstrap JS -->
            <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
            </script>
            <!-- CDN jquery -->
            <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
            <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-PoX9L+uPbsAVCv+jcUscl6Udq7Vr

```

```

ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
integrity="sha384-8t+gWy0JhGjbOxbtu2QzKACoVrAJRz/iBRymx1Ht/W1hXxrFL05t8PChqoo3sLsP" crossorigin="anonymous">
</script>

</head>

<body>

<div class="container">
<div class="container">

<h1 style="text-shadow: 3px 2px 3px rgba(0, .5, 0, .80)" class="fw-bolder text-center text-warning mt-3 text-outline">DAYS LIST</h1>

<form method="POST">
<div class="input-group mb-3">

<input type="text"
class="form-control rounded"
placeholder="Search by Day or Id"
name="search">
<button type="submit"
class="btn btn-primary">Search</button>
</div>
</form>
<a href="days_create.php"
class="btn btn-success mb-3"><i
class='fas fa-user-plus'></i> Add
Day</a>

<table class="table table-bordered table-hover text-center"
style="border:1px solid black">
<thead class="bg-warning">
<tr>
<th>No.</th>
<th>Day</th>
<th>Action</th>
</tr>
</thead>
<tbody style="font-size:1.2rem;font-family:monospace">
<?php
if ($result->num_rows > 0) {
// output data of each
row
    $i = 1;
    while ($row = $result->fetch_assoc()) {
        echo "<tr>";
        echo "<td>" . $row["day"] . "</td>";
        echo "<td>";
        echo "<a href='" . $_SERVER['PHP_SELF'] .
"?delete_id=" . $row["id"] . "'"
class='btn btn-danger btn-sm'
onclick="return confirm('Are you sure
you want to delete this
day?')>Delete<i class='fas fa-
trash'></i></a>";
        echo "</td>";
        echo "</tr>";
        $i++;
    }
} else {
    echo "<tr><td
colspan='5'>No day found</td></tr>";
}
?>
</tbody>
</table>

</div>
</div>

</body>
</html>

delete_generated_sched.php

<?php
include 'database_connection.php';

```

```

$query = "UPDATE
faculty_loadings SET
    room_name = NULL,
    room_type = NULL,
    start_time = NULL,
    end_time = NULL,
    day = NULL";
echo"deleted successfully!";
mysqli_query($conn, $query);

?>

faculty_loading_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete section if delete_id is set in
the URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];
    $sql = "DELETE FROM
faculty_loadings WHERE id='$id'";
    if ($conn->query($sql) === TRUE)
    {
        echo "<script>alert('Data deleted
successfully');</script>";
        echo "<script>window.location.href =
'faculty_loading_list.php';</script>";
    } else {
        echo "Error deleting record: " .
$conn->$error;
    }
}

// Update section if update_id is set in
the URL parameters
if (isset($_GET['update_id'])) {
    $id = $_GET['update_id'];
    $query = "SELECT * FROM
faculty_loadings WHERE id='$id'";
    $result = $conn->query($query);
    if ($result->num_rows > 0) {
        $row = $result->fetch_assoc();
    }
}

// Execute search query if search form
is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM
faculty_loadings WHERE teacher
LIKE '%$search_term%' OR
section_name LIKE '%$search_term%' OR
course_name LIKE
'%$search_term%' OR
subject_description LIKE
'%$search_term%'";
} else {
    $query = "SELECT fl.id,
fl.sched_code, fl.teacher_name,
s.subject_code, fl.subject_units,
fl.subject_hours, fl.subject_description,
fl.subject_type, fl.contact_hours,
fl.course_name, fl.section_name,
fl.section_year
FROM faculty_loadings fl
JOIN subjects s ON
fl.subject_description =
s.subject_description
JOIN subjects sd ON
sd.subject_type = s.subject_type
ORDER BY fl.course_year_section
ASC";
```

\$result = \$conn->query(\$query);

}

// Update record if update form is submitted

if (isset(\$\_POST['update'])) {

```

$id = $_POST['id'];
$teacher = $_POST['teacher'];
$subject_description =
$_POST['subject_description'];
$subject_units =
$_POST['subject_units'];
$subject_hours =
$_POST['subject_hours'];
$course_name =
$_POST['course_name'];
$section_name =
$_POST['section_name'];
```

```

$section_year =
$_POST['section_year'];

$sql = "UPDATE faculty_loadings
SET teacher='$teacher',
subject_description='$subject_descripti
on', subject_units='$subject_units',
subject_hours='$subject_hours',
course_name='$course_name',
section_name='$section_name',
section_year='$section_year' WHERE
id='$id'";
if ($conn->query($sql) === TRUE)
{
    echo "<script>alert('Record
updated successfully');</script>";
    echo
"<script>window.location.href =
'faculty_loading_list.php';</script>";
} else {
    echo "Error updating record: " .
$conn->$error;
}
?>

<!doctype html>
<html lang="en">

<head>

<!-- Required meta tags -->
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/boot
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpua
C0mLASjC"
crossorigin="anonymous">
<!--External CSS-->

<link rel="stylesheet"
href="css/faculty_loadings.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot
strap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>

</head>

<body>

<div class="container">

<h1 style="text-shadow: 4px 2px
3px rgba(0, .5, 0, .80);"
class="fw-bolder text-center
text-warning mt-3 text-
outline">FACULTY LOADING</H1>

<form method="POST">

```

```

        <div class="input-group mb-3">
            <input type="text" class="form-control rounded" placeholder="Search by Teacher ID/Name" name="search">
            <button type="submit" class="btn btn-primary">Search</button>
        </div>
    </form>

    <div class="container-fluid text-center">
        <div class="container fw-bolder" style="padding: 5px;">
            <?php // SEMESTER DISPLAY
                $sql = "SELECT * FROM semesters";
                $result = mysqli_query($conn, $sql);

                // Check if the query was successful
                if ($result) {
                    // Fetch the semester name
                    $row = mysqli_fetch_assoc($result);
                    $semester_name = $row['semester_name'];
                    $start_year = $row['start_year'];
                    $end_year = $row['end_year'];

                    // Display the schedule
                    echo '<h1 class="fw-bolder" style="color:dark; margin-top: 0; margin-bottom: 10px; font-family:>' . $semester_name . '</h1>';
                    echo '<p style="margin: 0; color:black; font-family:monospace; font-size: 17px; margin-bottom: 10px;">A.Y: ' . $start_year . '-' . $end_year . '</p>';
                } else {
                    // Handle the case when the query fails
                    echo' Add semester!';
                    echo 'Error fetching semester name: ' .
                    mysqli_error($connection);
                }
            ?>
        </div>

        <a href="faculty_loading.php" style="text-align:center" class="btn btn-primary mb-3 mt-3"><i class='fas fa-user-plus'></i>Assign subject</a>
        <button type="button" class="btn btn-danger mb-3 text-center mt-3" id="truncate-btn">Delete All Data</button>
    </div>

    <table class="table table-bordered border-dark table-hover">
        <thead class="bg-success text-white text-center" style="vertical-align:middle;">
            <tr>
                <th>No.</th>
                <th>Sched Code</th>
                <th>Teacher Name</th>
                <th>Subject Code</th>
                <th>Subject Title</th>
                <th>Subject Type</th>
                <th>Contact Hours</th>
                <th>Units</th>
                <th>Year & Section</th>
                <th>Action</th>
            </tr>
        </thead>
        <tbody style="font-size:1.2rem;font-family:monospace">
            <?php
                // Execute search query if search form is submitted
                if (isset($_POST['search'])) {

```

```

$search_term =
$_POST['search'];
$query = "SELECT *
FROM faculty_loadings WHERE
teacher LIKE '%$search_term%' OR
section_name LIKE '%$search_term%' OR
course_name LIKE
'%$search_term%'";
$result = $conn->query($query);
if (!$result) {
    die("Error executing
search query: " . $conn->$error);
}
} else {
$query = "SELECT *
FROM faculty_loadings";
$result = $conn->query($query);
if (!$result) {
    die("Error executing
query: " . $conn->$error);
}
}
?>

<?php

if ($result->num_rows > 0) {

    // output data of each row
    $i = 1;
    while ($row = $result->fetch_assoc()) {
        // Loop through data
        and combine year and section columns
        $section_year =
$row["section_year"];
        $section_name =
$row["section_name"];
        $course_name =
$row["course_name"];

        if ($semester_name ==
"1st SEM"){

            if ($section_year ==
"1st" ) {

```

```

        }

        // Update row in
        database with combined value
        $id = $row["id"];
        $sql = "UPDATE
faculty_loadings SET
course_year_section =
'$course_year_section' WHERE id =
'$id'";
        $result2 = $conn-
>query($sql);

        echo "<tr class='text-
center' style='vertical-align:middle;'>";
        echo "<td>" . $i .
"</td>";
        echo "<td>" .
$row["schedcode"] . "</td>";
        echo "<td>" .
$row["teacher"] . "</td>";
        echo "<td>" .
$row["subject_code"] . "</td>";
        echo "<td>" .
$row["subject_description"] . "</td>";
        echo "<td>" .
$row["subject_type"] . "</td>";
        echo "<td>" .
$row["subject_hours"] . "</td>";
        echo "<td>" .
$row["subject_units"] . "</td>";
        echo "<td>" .
$course_year_section . "</td>";
        echo "<td>";
        echo "<a
href='faculty_loading_update.php?id=" .
$row["id"] . "' class='btn btn-primary
btn-sm'>Update<i class='fas fa-
edit'></i></a><hr>" ;
        echo "<a href='".
$_SERVER['PHP_SELF'] .
"?delete_id=" . $row["id"] . "'"
class='btn btn-danger btn-sm'
onclick='return confirm('Are you sure
you want to delete this
subject?')'">Delete<i class='fas fa-
trash'></i></a>" ;
        echo "</td>";
        echo "</tr>";
        $i++;
}

} else {
    echo "<tr><td
colspan='5'>No faculty_loadings
found</td></tr>";
}
?>
</tbody>
</table>
</div>

<script>
$(document).ready(function () {
    $('#truncate-btn').click(function
() {
        if (confirm("Are you sure
you want to truncate the table?")) {
            $.ajax({
                url:
"truncate_table_faculty_loadings.php",
// the PHP script that truncates the
table
                success: function
(response) {
                    alert(response); //
show the response message from the
PHP script
                }
            });
        }
    });
});
</script>
</body>

</html>

faculty_loading_update.php

<?php
include 'database_connection.php';
include 'index.php';

$error = "";

if (isset($_POST['submit'])) {
    $id = $_POST['id'];
    $teacher = $_POST['teacher'];
}

```

```

$subjectDescription =
$_POST['subject_description'];
$courseName =
$_POST['course_name'];
$sectionName =
$_POST['section_name'];
$sectionYear =
$_POST['section_year'];

if (!empty($emptyFields)) {
    $error = 'Please fill in all required
fields.';
} else {
    $stmt = $conn-
>prepare("SELECT subject_units,
subject_type, subject_hours,
subject_code FROM subjects WHERE
subject_description = ?");
    $stmt->bind_param("s",
$subjectDescription);
    $stmt->execute();
    $result = $stmt->get_result();
    if ($result->num_rows > 0) {
        $row = $result->fetch_assoc();
        $subjectUnits =
$row['subject_units'];
        $subjectType =
$row['subject_type'];
        $subjectHours =
$row['subject_hours'];
        $subjectCode =
$row['subject_code'];
    } else {
        $subjectUnits = "";
        $subjectType = "";
        $subjectHours = "";
        $subjectCode = "";
    }
}

$stmt = $conn-
>prepare("SELECT * FROM
faculty_loadings WHERE teacher=? AND
subject_code=? AND
subject_description=? AND
course_name=? AND section_name=? AND
section_year=?");
    $stmt->bind_param("ssssss",
$teacher, $subjectCode,

```

```

}

if (!empty($error)) {
    echo
"<script>alert(\".$error.\");</script>";
    echo
"<script>window.location.href =
'faculty_loading_list.php';</script>";
    exit();
}
} else {
    $id = $_GET['id'];
    $stmt = $conn->prepare("SELECT *
FROM faculty_loadings WHERE
id=?");
    $stmt->bind_param("i", $id);
    $stmt->execute();
    $result = $stmt->get_result();
    if ($result->num_rows > 0) {
        $row = $result->fetch_assoc();
        $teacher = $row['teacher'];
        $subjectDescription =
$row['subject_description'];
        $courseName =
$row['course_name'];
        $sectionName =
$row['section_name'];
        $sectionYear =
$row['section_year'];
    } else {
        $error = 'Invalid data.';
    }
}
?>

<!DOCTYPE html>
<html>

<head>
    <title>Edit Faculty Loading</title>
    <!-- Include Bootstrap CSS -->
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">
</head>

<body>
    <div class="container">
        <head>
            <h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)"
                class="fw-bolder text-center
text-warning mt-3 text-
outline">UPDATE FACULTY
LOADING DETAILS</h1>
            <?php
                // Show error message if there
is any
                if (!empty($error)) {
                    echo '<div class="alert alert-
danger" role="alert">' . $error .
'</div>';
                }
            ?>
            <form method="POST"
action="<?php echo
$_SERVER['PHP_SELF']; ?>">
                <input type="hidden"
name="id" value="<?php echo $id;
?>">
                <div class="mb-3">
                    <label for="teacher"
class="form-label">Teacher</label>
                    <input type="text"
class="form-control" id="teacher"
name="teacher" value="<?php echo
$teacher; ?>">
                </div>
                <div class="mb-3">
                    <label
for="subject_description" class="form-
label">Subject Title:</label>
                    <select
name="subject_description"
id="subject_description" class="form-
select" required>
                        <option value="">
                            Select subject
description</option>
                        <?php
                            $stmt = $conn-
prepare("SELECT
subject_description FROM subjects");

```

```

        $stmt->execute();
        $result = $stmt-
>get_result();
        while ($row = $result-
>fetch_assoc()) {
            if
($row['subject_description'] ==
$subjectDescription) {
                echo "<option
value="" . $row['subject_description'] .
"" selected>" .
$row['subject_description'] .
"</option>";
            } else {
                echo "<option
value="" . $row['subject_description'] .
">" . $row['subject_description'] .
"</option>";
            }
        }
    ?>
</select>
</div>

<div class="mb-3">
    <label for="course_name"
class="form-label">Course
Name:</label>
    <select class="form-
select" id="course_name"
name="course_name">
    <?php
        $stmt = $conn-
>prepare("SELECT course_name
FROM courses");
        $stmt->execute();
        $result = $stmt-
>get_result();

        while ($row = $result-
>fetch_assoc()) {
            $selected =
($row['course_name'] ==
$sectionName) ? "selected" : "";
            echo '<option
value="" . $row['course_name'] . "" .
$selected . '>' . $row['course_name'] .
'</option>';
        }
    ?>
</select>
</div>

<div class="mb-3">
    <label for="section-name"
class="form-label">Section
Name:</label>
    <select class="form-
select" id="section-name"
name="section_name">
    <?php
        $stmt = $conn-
>prepare("SELECT section_name
FROM sections");
        $stmt->execute();
        $result = $stmt-
>get_result();

        while ($row = $result-
>fetch_assoc()) {
            $selected =
($row['section_name'] ==
$sectionName) ? "selected" : "";
            echo '<option
value="" . $row['section_name'] . "" .
$selected . '>' . $row['section_name'] .
'</option>';
        }
    ?>
</select>
</div>

<div class="mb-3">
    <label for="section-year"
class="form-label">Section
Year:</label>
    <select class="form-
select" id="section-year"
name="section_year">
    <?php
        $years = array("1st",
"2nd", "3rd", "4th");

        foreach ($years as
$year) {
            $selected = ($year ==
$sectionYear) ? "selected" : "";
            echo '<option
value="" . $year . "" .
$selected . '>' . $year .
'</option>';
        }
    ?>
</select>
</div>

```

```

        }
    ?>
</select>
</div>

        <button type="submit"
name="submit" class="btn btn-success">Update</button>
        <a
href="faculty_loading_list.php"
class="btn btn-danger">Cancel</a>
    </form>

        <!-- Include Bootstrap JS -->
        <script
src="https://cdnjs.cloudflare.com/ajax/libs/bootstrap/5.0.2/js/bootstrap.bundle.min.js"></script>

</body>
</html>

faculty_loading.php

<?php
include 'database_connection.php';
include 'index.php';

// Check the number of rows in the
rooms table, course table
$sql = "SELECT COUNT(*) AS
semester_count FROM semesters";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$semester_count =
$row['semester_count'];

$sql = "SELECT COUNT(*) AS
subject_count FROM subjects";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$subject_count =
$row['subject_count'];

$sql = "SELECT COUNT(*) AS
courses_count FROM courses";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);

$courses_count =
$row['courses_count'];

$sql = "SELECT COUNT(*) AS
section_count FROM sections";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$section_count =
$row['section_count'];

$sql = "SELECT COUNT(*) AS
teacher_count FROM teachers";
$result = mysqli_query($conn, $sql);
$row = mysqli_fetch_assoc($result);
$teacher_count =
$row['teacher_count'];

if ($teacher_count <=0 ||
$courses_count <=0 || $section_count
<=0 || $subject_count <=0 ||
$semester_count <1) {
    echo '<script>alert("Please make
sure that you inserted data on the
following table:\n 1. Semester 2.
Teacher\n 3. Course \n 4. Section \n 5.
Subject");</script>';
    echo "<script>window.location.href
= 'course_list.php';</script>";
} else {

$error = "";
function
check_teacher_load($teacher_id) {
    global $conn;
    $query = "SELECT COUNT(*) as
count FROM faculty_loadings
WHERE teacher=?";
    $stmt = $conn->prepare($query);
    $stmt->bind_param("s",
$teacher_id);
    $stmt->execute();
    $result = $stmt->get_result();
    if (!$result) {
        throw new Exception("Query
failed: " . $conn->error);
    }
    $row = $result->fetch_assoc();
    $count = $row['count'];
    return $count;
}

```



```

        // Subject and
course_year_section combination
already exists, do not assign
            echo "<script>alert('The
subject and course section are already
assigned!');</script>";
        } else {
            // Data does not exist,
            insert the data into the faculty_loading
            table
                $stmt = $conn-
>prepare("INSERT INTO
faculty_loadings (teacher,
subject_description, subject_code,
subject_hours, subject_type,
subject_units, course_name,
section_name, section_year) VALUES
(?, ?, ?, ?, ?, ?, ?, ?, ?)");
                $stmt-
>bind_param("ssssssss", $teacher,
$subjectDescription, $subjectCode,
$subjectHours, $subjectType,
$subjectUnits, $courseName,
$sectionName, $sectionYear);
                try {
                    $stmt->execute();
                    echo
"<script>alert('Data added
successfully');</script>";
                    echo
"<script>window.location.href =
'faculty_loading_list.php';</script>";
                } catch(Exception $e) {
                    $error = "Error adding
data: " . $e->getMessage();
                }
            }
        }
    }
?>

<!doctype html>
<html lang="en">

<head>
<!-- Required meta tags -->
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/boot
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/index.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot
strap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>

```

```

<title>ATS-SYSTEM</title>
</head>

<form method="POST">
    <div class="container mt-3">
        <h1 style=" text-shadow: 3px 2px 3px rgba(0, .5, 0, .80)" class="fw-bolder text-center text-warning mt-3 text-outline">ASSIGN SUBJECT TO TEACHER</h1>
        <!-- Dropdown for selecting a teacher -->
        <div class="form-group">
            <label for="teacher">Teacher</label>
            <select class="form-control" id="teacher" name="teacher">
                <?php
                    $sql = "SELECT * FROM teachers ORDER BY firstname ASC";
                    $result = $conn->query($sql);
                    if ($result->num_rows > 0) {
                        while ($row = $result->fetch_assoc()) {
                            echo '<option value="' . $row['firstname'] . ' ' . $row['lastname'] . '"'. $selected . '>' . $row['firstname'] . ' ' . $row['lastname'] . '</option>';
                        }
                    }
                ?>
            </select>
        </div>

        <!-- Dropdown for selecting a course -->
        <div class="form-group">
            <label for="course_name">Course</label>
            <select class="form-control" id="course_name" name="course_name">
                <?php
                    $sql = "SELECT * FROM courses";
                    $result = $conn->query($sql);
                    if ($result->num_rows > 0) {
                        while ($row = $result->fetch_assoc()) {
                            echo '<option value="' . $row['course_name'] . '"'. $selected . '>' . $row['course_name'] . '</option>';
                        }
                    }
                ?>
            </select>
        </div>

        <!-- Dropdown for selecting a course -->
        <div class="form-group">
            <label for="subject_description">Subject Description</label>
            <select class="form-control" id="subject_description" name="subject_description">
                <?php
                    $sql = "SELECT * FROM subjects";
                    $result = $conn->query($sql);
                    if ($result->num_rows > 0) {
                        while ($row = $result->fetch_assoc()) {
                            echo '<option value="' . $row['subject_description'] . '"'. $selected . '>' . $row['subject_description'] . '</option>';
                        }
                    }
                ?>
            </select>
        </div>

        <!-- Dropdown for selecting a section -->
        <div class="form-group">
            <label for="section_name">Section</label>
            <select class="form-control" id="section_name" name="section_name">
                <?php
                    $sql = "SELECT * FROM sections";
                    $result = $conn->query($sql);
                    if ($result->num_rows > 0) {
                        while ($row = $result->fetch_assoc()) {
                            echo '<option value="' . $row['section_name'] . '"'. $selected . '>' . $row['section_name'] . '</option>';
                        }
                    }
                ?>
            </select>
        </div>
    </div>

```

```

$result = $conn->query($sql);
if ($result->num_rows > 0) {
    while ($row = $result->fetch_assoc()) {
        echo '<option value="" . $row["section_name"] . ">' . $row["section_name"] . '</option>';
    }
}
?>
</select>
</div>

<!-- Dropdown for selecting a section year -->
<div class="form-group">
    <label for="section_year">Year</label>
    <select class="form-control" id="section_year" name="section_year">
        <?php
            $year_choices = ['1st', '2nd', '3rd', '4th'];
            foreach ($year_choices as $year) {
                echo '<option value="" . $year . ">' . $year . '</option>';
            }
        ?>
    </select>
</div>

<div class="mt-3">
    <button type="submit" class="btn btn-primary" name="submit">Create</button>
    <a href="faculty_loading_list.php" class="btn btn-danger" name="back">Back</a>
</div>
</div>

</form>
</body>
</html>

forgot_password.php

<?php
session_start();
include 'database_connection.php';

if (isset($_SESSION['user_id'])) {
    header("Location: dashboard.php");
    exit;
}

if (isset($_POST['reset_password'])) {
    $email = $_POST['email'];

    // Generate a new password
    $newPassword =
        generateRandomPassword();

    // Update the password in the database
    $connection =
        mysqli_connect("localhost", "root", "", "ats_db");
    $query = "UPDATE users SET password='$newPassword' WHERE email='$email'";
    mysqli_query($connection, $query);

    // Show the new password to the user
    $_SESSION['success'] = "Your new password is: $newPassword";
    header("Location: login.php");
    exit;
}

// Function to generate a random password
function generateRandomPassword($length = 8) {
    $characters =
        'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ
FGHIJKLMNOPQRSTUVWXYZ0123456789';
    $password = "";
    $charactersLength = strlen($characters);

    for ($i = 0; $i < $length; $i++) {

```

```

$password .= $characters[rand(0,
$charactersLength - 1)];
}

return $password;
}

?>

<!DOCTYPE html>
<html>

<head>
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1, shrink-to-fit=no">
<title>Forgot Password</title>
<!-- Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet">
</head>
<style>

.container {
    padding: 40px;
}

.card {
    background-color: #f0f0f0;
    border: none;
    border-radius: 10px;
    box-shadow: 5px 5px 20px
    rgba(0, 0, 0, 0.2);
}

.card-header {
    background-color: black;
    border: none;
}

.card-body {
    background-color: floralwhite;
}

.form-control {
    background-color: #f0f0f0;
    border: none;
    border-radius: 10px;
}

.btn-success {
    box-shadow: inset 3px 3px 7px
    rgba(0, 0, 0, 0.3), inset -3px -3px 7px
    rgba(255, 255, 255, 0.3);
    padding: 10px 15px;
}

.btn-success {
    background-color: #4bb543;
    border: none;
    border-radius: 10px;
    box-shadow: 5px 5px 20px
    rgba(0, 0, 0, 0.1);
    padding: 10px 15px;
}

.btn-success:hover {
    background-color: #3e923f;
}

a {
    color: #4bb543;
}
</style>

<body>
<div class="container mt-5">
    <div class="row justify-content-
    center">
        <div class="col-md-6">
            <div class="card">
                <div class="card-header
text-center">
                    <h1
style="color:gold;font-
family:tahoma;font-
weight:bold">FORGOT
PASSWORD</h1>
                </div>
                <div class="card-body
shadow-lg p-5 mb-2 bg-gray">
                    <?php
                    if
(isset($_SESSION['error'])) {
                        echo '<div
class="alert alert-danger">' .
$_SESSION['error'] . '</div>';
                        unset($_SESSION['er
ror']);
                    }
                </div>
            </div>
        </div>
    </div>
</div>

```

```

        if
(isset($_SESSION['success'])) {
    echo '<div
class="alert alert-success">'.
$_SESSION['success'] . '</div>';
    unset($_SESSION['s
uccess']);
}
?>
<form style="font-
family:'Franklin Gothic Medium',
'Arial Narrow', Arial, sans-serif"
method="POST">
    <div class="form-
group mb-3">
        <label
for="email">Email</label>
        <input
type="email" class="form-control"
name="email" placeholder="Enter
email" required>
    </div>
    <div class="form-
group mb-3">
        <button
type="submit" name="reset_password"
class="btn btn-success">Reset
Password</button>
        <p class="text-
center"><a href="login.php">Back to
Login</a></p>
    </div>
    </form>
</div>
</div>
</div>
</div>
</body>

</html>

```

Index.php

```

<?php
include 'database_connection.php';
session_start();

// Check if the user is logged in
// Check if user is not logged in
if (!isset($_SESSION['user_id'])) {
    header("Location: login.php");
    exit;
}

// Logout function
if (isset($_POST['logout'])) {
    session_destroy();
    header("Location: login.php");
    exit;
}

?>

<!doctype html>
<html lang="en">

<head>
    <link rel="icon" type="image/x-
icon"
href="logos/CVSU_LOGO.png">

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">

    <!--External CSS-->
    <link rel="stylesheet"
href="css/index.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdnjs.cloudflare.com/ajax/l
ibs/bootstrap/5.0.2/js/bootstrap.bundle.
min.js"></script>

    <!-- CDN jquery -->

```

```

<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscle6Udq7Vr
ypt8Uv7zsLAB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<title>ATS-SYSTEM</title>

<style>
.hidden {
    display: none;
}
</style>

</head>

<body style="background-color:
#d5efed; background-image: linear-
gradient(to left top, #f0f2ee, #f1f5f3,
#f3f7f7, #f7fafb, #fbfcfd, #fbfdfd,
#fcfdfd, #fdfefd, #fcfdfd, #fbfcfc,
#fafafa, #f9f9f9);"
class="d-flex flex-column min-vh-
100" ;>

    <!--Nested Nav Bar -->
    <!-- RESPONSIVE NAV BAR
STARTS HERE -->
    <nav class="navbar navbar-expand
bg-light sticky-top">
        <a class="navbar-brand"
href="dashboard.php">
            <div class="d-flex align-items-
center">
                
            </div>
            <span class="navbar-brand-
label"
style="color: #2e6113;
font-family: Consolas, monospace;
font-size: 2.2rem;">ATS
SYSTEM</span>
        </div>
    </a>

    <div class=" bg-gray text-warning
border ms-12 fw-bolder ">
        <?php
            if
(isset($_SESSION['user_id'])) {
                // Fetch the user data from
the database
                $user_id =
$_SESSION['user_id'];
                $sql = "SELECT * FROM
users WHERE id=$user_id";
                $result =
mysqli_query($conn, $sql);
                $user_data =
mysqli_fetch_assoc($result);

                // Display the user name
                $user_name =
$user_data['name'];
                $welcome_message =
"Welcome, $user_name!";

                if
(!isset($_SESSION['welcome_alert_sh
own'])) {
                    echo
"<script>alert('$welcome_message');</
script>";
                    $_SESSION['welcome_al
ert_shown'] = true;
                }
            }
        ?>
    </div>

    <div class="navbar-nav ms-
auto">
        <li class="nav-item
dropdown">
            <div class="dropdown">

```

```

<button class="fw-bolder
btn btn-danger text-center text-light
dropdown-toggle" type="button"
id="userDropdown"
data-bs-toggle="dropdown" aria-
expanded="false">
    <?php echo
    $user_data['name']; ?>
</button>
<ul class="dropdown-
menu dropdown-menu-dark" aria-
labelledby="userDropdown">
    <li><a
    class="dropdown-item"
    href="update.php">Update
    Account</a></li>
    <li>
        <hr
    class="dropdown-divider">
    </li>
    <li>
        <form
    method="post">
            <button
        type="submit" name="logout"
        class="dropdown-
        item">Logout</button>
            </form>
        </li>
    </ul>
</div>

    </div>
</nav>

<div class="container-fluid
wrapper">
    <div class="d-flex content">
        <div class="sidebar">
            <!-- Your sidebar content
here -->
            <ul class="navbar-nav">
                <li class="nav-item">
                    <a class="nav-link
        hover-color"
        href="semester_list.php">Add
        Semester</a>
                </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color"
        href="days_list.php">Add Day</a>
            </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color"
        href="teacher_list.php">Add
        Teacher</a>
            </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color"
        href="course_list.php">Add
        Course</a>
            </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color"
        href="section_list.php">Add
        Section</a>
            </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color"
        href="subject_list.php">Add
        Subject</a>
            </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color"
        href="room_list.php">Add Rooms</a>
            </li>
            <li class="nav-item">
                <a class="nav-link
        hover-color text-danger"
        href="faculty_loading_list.php">Facult
        y Loading</a>
            </li>
            <li class="nav-item
dropdown">
                <a class="nav-link
        hover-color dropdown-toggle text-

```

```

danger" href="#" id="scheduleDropdown" role="button"
        data-bs-
        toggle="dropdown" aria-
        expanded="false">
            Generate Schedule
        </a>
        <ul class="dropdown-
menu" aria-
labelledby="scheduleDropdown">
            <a class="nav-link
            hover-color text-primary fw-bolder
            text-center h5"
                href="automated_s
            chedule.php">Automated</a>
            </li>
            <hr class="dropdown-
            divider">
            </li>
            <a class="nav-link hover-
            color text-primary fw-bolder text-
            center h5"
                href="TEST.php">Manual</a>
            </ul>
            </li>

            <li class="nav-item
            dropdown">

                <a class="nav-link hover-
                color dropdown-toggle text-danger"
                    href="#" id="scheduleDropdown"
                    role="button"
                    data-bs-
                    toggle="dropdown" aria-
                    expanded="false">
                    View Schedule
                </a>
                <ul class="dropdown-
                menu" aria-
                labelledby="scheduleDropdown">
                    <li><a
                    class="dropdown-item text-primary
                    h5"
                        href="view_room_schedule.php">Vie
                    w Room Schedules</a>
                    </li>
                    <li><a
                    class="dropdown-item hover-color
                    text-primary h5"

```

Schedules

```

                        href="view_teacher_schedule.php">Vi
                    ew Teacher
                    Schedules </a>
                    <li><a
                    class="dropdown-item hover-color
                    text-primary h5"
                        href="view_section_schedule.php">Vi
                    ew Section
                    Schedules
                    </a></li>
                    </li>
                    </ul>
                    </li>

                    <button id="hideSidebar"
                    class="sidebar-toggle btn-warning
                    text-dark text-center mt-3"
                        style="padding: 10px
                    20px; border-radius: 5px; border:
                    none; cursor: pointer; transition:
                    background-color 0.3s; box-shadow: 0
                    2px 4px rgba(0, 0, 0, 0.2);"
                    <i class="fas fa-bars"
                    style="margin-right: 5px;"></i> Hide
                    Sidebar
                    </button>

```

```

                </div>
                </div>
            </div>

            <script>
                $(document).ready(function () {
                    $('.sidebar').show(); // Show the
                    sidebar by default
                    // Hide the sidebar with a slide
                    animation when the "Hide Sidebar"
                    button is clicked
                    $('#hideSidebar').click(function
                    () {
                        $('.sidebar').slideUp(900); //
                    Set the desired animation duration
                    (e.g., 500ms)
                    });
                });
            </script>

```

```

<script>
$(document).ready(function () {
    $('.sidebar').show(); // Show the sidebar by default

    // Show the sidebar when hovering over the logo
    $('#logo').hover(function () {
        $('.sidebar').slideDown(900);
    });
})
</script>

</body>
</html>

login.php

<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1, shrink-to-fit=no">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
        integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTxFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
    <link rel="stylesheet"
href="css/login.css">

<style>
    .container {
        padding: 40px;
    }

    .card {
        background-color: #f0f0f0;
        border: none;
        border-radius: 10px;
        box-shadow: 7px 5px 20px
rgba(0, 0, 0, .5);
    }

    .card-header {
        background-color: black;
        border: none;
    }

    .card-body {
        background-color: floralwhite;
    }

    .form-control {
        background-color: #f0f0f0;
        border: none;
    }

```



```

$_SESSION['error']
] = "You have exceeded the maximum
login attempts. Please try again after
$minutesRemaining minutes.";
header("Location:
login.php");
exit;
}

$query = "SELECT *
FROM users WHERE email='$email'
AND password='$password'";
$result =
mysqli_query($connection, $query);

if
(mysqli_num_rows($result) == 1) {
    // User is
authenticated, reset login attempts and
set session variables
$query =
"UPDATE users SET login_attempts =
0, last_failed_login = NULL WHERE
email='$email'";
mysqli_query($con
nection, $query);

$user =
mysqli_fetch_assoc($result);
$_SESSION['user_
id'] = $user['id'];
$_SESSION['usern
ame'] = $user['username'];
header("Location:
dashboard.php");
exit;
} else {
    // User is not
authenticated, increment login attempts
and update last failed login timestamp
$loginAttempts++;
$lastFailedLogin =
date("Y-m-d H:i:s");
$query =
"UPDATE users SET login_attempts =
$loginAttempts, last_failed_login =
'$lastFailedLogin' WHERE
email='$email'";
mysqli_query($con
nection, $query);
}

// Check if the user
has exceeded login attempts
if ($loginAttempts
>= 3) {
    $_SESSION['err
or'] = "You have exceeded the
maximum login attempts. Please try
again after 5 minutes.";
} else {
    $_SESSION['err
or'] = "Incorrect email or password";
}
header("Location:
login.php");
exit;
}

if
(isset($_SESSION['error'])) {
    echo '
<div class="alert
alert-danger">' . $_SESSION['error'] .
'</div>
';
unset($_SESSION['er
ror']);
}

if
(isset($_SESSION['success'])) {
    echo '
<div class="alert
alert-success">' .
$_SESSION['success'] . '</div>
';
unset($_SESSION['s
uccess']);
}
?>

<form style="font-
family:'Franklin Gothic Medium',
'Arial Narrow', Arial, sans-serif"
method="POST">
<div class="form-
group mb-2">
    <label
for="email">Email</label>

```

```

        <input
type="email" class="form-control"
name="email" placeholder="Enter
email" required>
    </div>

        <div class="form-
group mb-2">
            <label
for="password">Password</label>
            <input
type="password" class="form-control"
name="password" placeholder="Enter
password"
                    required>
    </div>

        <div class="form-
group mb-3">
            <button
type="submit" name="login"
class="btn btn-
success">Login</button>
            <p class="text-
center">Don't have an account? <a
href="register.php">Register
here</a></p>
            <p class="text-
center"><a
href="forgot_password.php">Forgot
Password?</a></p>
    </div>

        </form>
    </div>
</div>
</div>
</div>
</body>
</html>

manual_add_schedule.php

<?php
include 'database_connection.php';
include 'index.php';

// Function to check if a teacher is
available at the given day and time
function isTeacherAvailable($teacher,
$day, $start_time, $end_time)
{
    global $conn;

    $sql = "SELECT * FROM
faculty_loadings WHERE teacher = ?
AND day = ? AND (start_time < ?
AND end_time > ?)";

    $stmt = $conn->prepare($sql);
    $stmt->bind_param("ssss", $teacher,
$day, $end_time, $start_time);
    $stmt->execute();
    $result = $stmt->get_result();

    return mysqli_num_rows($result)
== 0;
}

// Function to check if a room is
available at the given day and time
function
isRoomAvailable($room_name, $day,
$start_time, $end_time)
{
    global $conn;

    $sql = "SELECT * FROM
faculty_loadings WHERE room_name
= ? AND day = ? AND (start_time < ?
AND end_time > ?)";

    $stmt = $conn->prepare($sql);
    $stmt->bind_param("ssss",
$room_name, $day, $end_time,
$start_time);
    $stmt->execute();
    $result = $stmt->get_result();

    return mysqli_num_rows($result)
== 0;
}

// Function to check if there is a
conflict in course_year_section
function
isCourseYearSectionConflict($course_
year_section, $day, $start_time,
$end_time)
{
    global $conn;

```

```

    $sql = "SELECT * FROM
faculty_loadings WHERE
course_year_section = ? AND day = ?
AND (start_time < ? AND end_time >
?);"
    $stmt = $conn->prepare($sql);
    $stmt->bind_param("ssss",
$course_year_section, $day,
$end_time, $start_time);
    $stmt->execute();
    $result = $stmt->get_result();

    return mysqli_num_rows($result) >
0;
}

$error = "";

function check_teacher_load($teacher)
{
    global $conn;
    $query = "SELECT COUNT(*) as
count FROM faculty_loadings
WHERE teacher=?";
    $stmt = $conn->prepare($query);
    $stmt->bind_param("s", $teacher);
    $stmt->execute();
    $result = $stmt->get_result();
    if (!$result) {
        throw new Exception("Query
failed: " . $conn->error);
    }
    $row = $result->fetch_assoc();
    $count = $row['count'];
    return $count;
}

if (isset($_POST['submit'])) {
    $teacher =
mysqli_real_escape_string($conn,
$_POST['teacher']);
    $subjectDescription =
mysqli_real_escape_string($conn,
$_POST['subject_description']);
    $courseName =
mysqli_real_escape_string($conn,
$_POST['course_name']);
    $sectionName =
mysqli_real_escape_string($conn,
$_POST['section_name']);
    $sectionYear =
mysqli_real_escape_string($conn,
$_POST['section_year']);
    $roomName =
mysqli_real_escape_string($conn,
$_POST['room_name']);
    $day =
mysqli_real_escape_string($conn,
$_POST['day']);
    $startTime =
mysqli_real_escape_string($conn,
$_POST['start_time']);
    $endTime =
mysqli_real_escape_string($conn,
$_POST['end_time']);

    $sql = "SELECT * FROM
semesters";
    $result = mysqli_query($conn,
$sql);
    $row = mysqli_fetch_assoc($result);
    $semester_name =
$row['semester_name'];

    if ($semester_name == "1st SEM"){

        if ($sectionYear == "1st" ) {
            $course_year_section =
$courseName . " 101-" .
$sectionName;
        } elseif ($sectionYear == "2nd") {
            $course_year_section =
$courseName . " 201-" .
$sectionName;
        } elseif ($sectionYear == "3rd") {
            $course_year_section =
$courseName . " 301-" .
$sectionName;
        } elseif ($sectionYear == "4th") {
            $course_year_section =
$courseName . " 401-" .
$sectionName;
        } else {
            $course_year_section =
$courseName . $section_year .
$sectionName;
        }
    }
}

```

```

} else{
    if ($sectionYear == "1st" ) {
        $course_year_section =
$courseName . " 102-".
$sectionName;
    } elseif ($sectionYear == "2nd") {
        $course_year_section =
$courseName . " 202-".
$sectionName;
    } elseif ($sectionYear == "3rd") {
        $course_year_section =
$courseName . " 302-".
$sectionName;
    } elseif ($sectionYear == "4th") {
        $course_year_section =
$courseName . " 402-".
$sectionName;
    } else {
        $course_year_section =
$courseName . $section_year .
$sectionName;
    }
}

// Check if the teacher has reached
the maximum load
$teacherLoad =
check_teacher_load($teacher);
if ($teacherLoad >= 30) {
    $error = "Teacher has reached the
maximum load.";
} else {
    $stmt = $conn-
>prepare("SELECT subject_units,
subject_type, subject_hours,
subject_code FROM subjects WHERE
subject_description = ?");
    $stmt->bind_param("s",
$subjectDescription);
    $stmt->execute();
    $result = $stmt->get_result();

    if ($result->num_rows > 0) {
        $row = $result->fetch_assoc();
        $subjectUnits =
$row['subject_units'];
        $subjectType =
$row['subject_type'];
        $subjectHours =
$row['subject_hours'];
        $subjectCode =
$row['subject_code'];
    } else {
        $subjectUnits = "";
        $subjectType = "";
        $subjectHours = "";
        $subjectCode = "";
    }
}

// Check if the timeslot is available
for the teacher, room, and course year
section
$isTeacherAvailable =
isTeacherAvailable($teacher, $day,
$startTime, $endTime);
$isRoomAvailable =
isRoomAvailable($roomName, $day,
$startTime, $endTime);
$isCourseYearSectionConflict =
isCourseYearSectionConflict("$course
Name $sectionYear $sectionName",
$day, $startTime, $endTime);

if ($isTeacherAvailable &&
$isRoomAvailable &&
!$isCourseYearSectionConflict) {
    // Insert the schedule into the
database
    $query = "INSERT INTO
faculty_loadings
(teacher,subject_description,
subject_code, subject_hours,
subject_type, subject_units,
course_name, section_name,
section_year, room_name,
course_year_section, day, start_time,
end_time) VALUES (?, ?, ?, ?, ?, ?, ?, ?,
?, ?, ?, ?, ?, ?, ?)";

    $stmt = $conn->prepare($query);
    $stmt-
>bind_param("ssssssssssss",
$teacher,$subjectDescription,$subject
Code,$subjectHours,$subjectType,
$subjectUnits,$courseName,
$sectionName,$sectionYear,

```

```

$roomName,$course_year_section, $day, $startTime, $endTime);
$stmt->execute();
echo "<script>alert('Data Successfully added!');</script>";
$stmt->close();

echo "Schedule added successfully.";
} else {
    $error = "There is a schedule conflict. Check for the schedule of Teacher, Course Section and Room availability in view schedule page.";
    echo "<script>alert(\".$error.\");</script>";
    echo "<script>window.location.href = 'TEST.php';</script>";
}
}

// Display the error message if there is any
if (!empty($error)) {
    echo $error;
}
?
<!doctype html>
<html lang="en">
<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <!-- CDN Bootstrap CSS -->
    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOMLASjC" crossorigin="anonymous">
    <!--External CSS-->

```

```

<link rel="stylesheet" href="css/index.css">
<!-- CDN Bootstrap JS -->
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-xM1mGRCx+fnLWZ675dQb00Z0E8Rn6PdOo1cUk7tS1lJUaYHc377XqKoqL2uTbqA==" crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" integrity="sha384-PoX9L+uPbsAVCv+jcUscl6Udq7VrypQT8Uv7zsLAbB6C9fV0pG8yBlxkdgsHOD+" crossorigin="anonymous">
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-8t+gWy0JhGjbOxbtu2QzKACoVrAJRz/iBRymx1Ht/W1hXxrFL05t8PChqoo3sLsP" crossorigin="anonymous">
</script>
<title>ATS-SYSTEM</title>
</head>
<form method="POST">
    <div class="container mt-3">
        <h1 style="text-shadow: 3px 2px 3px rgba(0, .5, 0, .8)" class="fw-bolder text-center text-warning mt-3 text-outline">ADD MANUAL SCHEDULE</h1>
        <!-- Dropdown for selecting a teacher -->
        <div class="form-group">
            <label for="teacher">Teacher</label>

```

```

<select class="form-control"
id="teacher" name="teacher">
    <?php
        $sql = "SELECT * FROM
teachers ORDER by firstname ASC";
        $result = $conn-
>query($sql);
        if ($result->num_rows > 0) {
            while ($row = $result-
>fetch_assoc()) {
                echo '<option value="' .
$row['firstname'] . '' . $row['lastname']
. '"' . $selected . '>' . $row['firstname'] .
'' . $row['lastname'] . '</option>';
            }
        }
    ?>
</select>
</div>

<!-- Dropdown for selecting a
course -->
<div class="form-group">
    <label
for="course_name">Course</label>
    <select class="form-control"
id="course_name"
name="course_name">
    <?php
        $sql = "SELECT * FROM
courses";
        $result = $conn-
>query($sql);
        if ($result->num_rows > 0) {
            while ($row = $result-
>fetch_assoc()) {
                echo '<option value="' .
$row["course_name"] . '">' .
$row["course_name"] . '</option>';
            }
        }
    ?>
</select>
</div>

<!-- Form for selecting a subject --
>
<div class="form-group">
    <label
for="subject_description">Subject
Description</label>
    <select class="form-control"
id="subject_description"
name="subject_description">
    <?php
        $sql = "SELECT * FROM
subjects";
        $result = $conn-
>query($sql);
        if ($result->num_rows > 0) {
            while ($row = $result-
>fetch_assoc()) {
                echo '<option value="' .
$row["subject_description"] . '">' .
$row["subject_description"] .
'</option>';
            }
        }
    ?>
</select>
</div>

<!-- Dropdown for selecting a
section -->
<div class="form-group">
    <label
for="section_name">Section</label>
    <select class="form-control"
id="section_name"
name="section_name">
    <?php
        $sql = "SELECT * FROM
sections";
        $result = $conn-
>query($sql);
        if ($result->num_rows > 0) {
            while ($row = $result-
>fetch_assoc()) {
                echo '<option value="' .
$row["section_name"] . '">' .
$row["section_name"] . '</option>';
            }
        }
    ?>
</select>
</div>

```

```

<!-- Dropdown for selecting a
section year -->
<div class="form-group">
    <label
for="section_year">Year</label>
    <select class="form-control"
id="section_year"
name="section_year">
        <?php
        $year_choices = ['1st', '2nd',
'3rd', '4th'];
        foreach ($year_choices as
$year) {
            echo '<option value="'.
$year . '">' . $year . '</option>';
        }
    ?>
</select>
</div>

<div class="form-group">
    <label for="day">Day</label>
    <select class="form-control"
id="day" name="day">
        <?php
        $sql = "SELECT * FROM
available_days";
        $result = $conn-
>query($sql);
        if ($result->num_rows > 0) {
            while ($row = $result-
>fetch_assoc()) {
                echo '<option value="'.
$row["day"] . '">' . $row["day"] .
'</option>';
            }
        }
    ?>
</select>
</div>

<!-- Dropdown for selecting a
room -->
<div class="form-group">
    <label
for="room_name">Room</label>
    <select class="form-control"
id="room_name"
name="room_name">
        <?php
$sql = "SELECT * FROM
rooms";
$result = $conn-
>query($sql);
if ($result->num_rows > 0) {
    while ($row = $result-
>fetch_assoc()) {
        echo '<option value="'.
$row["room_name"] . '">' . $row["room_name"] .
'</option>';
    }
}
?>
</select>
</div>

<!-- Dropdown for selecting a
start time -->
<div class="form-group">
    <label for="start_time">Start
Time</label>
    <select class="form-control"
id="start_time" name="start_time">
        <?php
        $sql = "SELECT start_time
FROM timeslots";
        $result = $conn-
>query($sql);
        if ($result->num_rows > 0) {
            while ($row = $result-
>fetch_assoc()) {
                $start_time = date("h:i
A", strtotime($row["start_time"]));
                echo '<option value="'.
$row["start_time"] . '">' . $start_time .
'</option>';
            }
        }
    ?>
</select>
</div>

<!-- Dropdown for selecting a
start time -->
<div class="form-group">
    <label for="end_time">End
Time</label>
    <select class="form-control"
id="end_time" name="end_time">
        <?php

```

```

    $sql = "SELECT end_time
FROM timeslots";
    $result = $conn-
>query($sql);
    if ($result->num_rows > 0) {
        while ($row = $result-
>fetch_assoc()) {
            $end_time = date("h:i
A", strtotime($row["end_time"]));
            echo '<option value=' . .
$row["end_time"] . "'>' . $end_time . .
'</option>';
        }
    }
    ?>
</select>
</div>

<div class="mt-3">
    <button type="submit"
class="btn btn-primary"
name="submit">Create</button>
    <a
href="manual_schedule_list.php"
class="btn btn-danger"
name="back">Back</a>
    </div>
</div>
</form>
</body>
</html>

register.php

<?php
include 'database_connection.php';

$message = "";

if (isset($_POST['register'])) {
    $name = $_POST['name'];
    $email = $_POST['email'];
    $password = $_POST['password'];
    $confirm_password =
$_POST['confirm_password'];

    $check_query = "SELECT * FROM
users WHERE email = '$email'";
    $check_result =
mysqli_query($conn, $check_query);
    if
(mysqli_num_rows($check_result) >
0) {
        $message = "This email is already
in use.";
    } elseif ($password !==
$confirm_password) {
        $message = "Passwords do not
match!";
    } else {
        $query = "INSERT INTO users
(name, email, password) VALUES
('$name', '$email', '$password')";
        if (mysqli_query($conn, $query))
{
            $_SESSION['message'] =
"User created successfully!";
            header("location: login.php");
        } else {
            $message = "Error: " .
mysqli_error($conn);
        }
    }
}
?>

<!doctype html>
<html lang="en">

<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">

    <!-- Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
```

```

<title>Register</title>
</head>
<style>

    .container {
        padding: 40px;
    }

    .card {
        background-color: #f0f0f0;
        border: none;
        border-radius: 10px;
        box-shadow: 5px 5px 20px
        rgba(0, 0, 0, 0.2);
    }

    .card-header {
        background-color: black;
        border: none;
    }

    .card-body {
        background-color: floralwhite;
    }

    .form-control {
        background-color: #f0f0f0;
        border: none;
        border-radius: 10px;
        box-shadow: inset 3px 3px 7px
        rgba(0, 0, 0, .2), inset -3px -3px 7px
        rgba(255, 255, 255, 0.3);
        padding: 10px 15px;
    }

    .btn-success {
        background-color: #4bb543;
        border: none;
        border-radius: 10px;
        box-shadow: 5px 5px 20px
        rgba(0, 0, 0, 0.1);
        padding: 10px 15px;
    }

    .btn-success:hover {
        background-color: #3e923f;
    }

    a {

        color: #4bb543;
    }
</style>

<body>
    <div class="container">
        <div class="row justify-content-center mt-5">
            <div class="col-md-6">
                <div class="card">
                    <div class="card-header
size text-center">
                        <h1
style="color:gold;font-
family:tahoma;font-weight:bold"
>REGISTER</h1>
                    </div>
                    <div class="card-body
shadow-lg p-5 mb-2 bg-white">
<?php if ($message !=
") : ?>
                    <div class="alert
alert-danger" role="alert">
                        <?= $message ?>
                    </div>
                    <?php endif; ?>
                    <form style="font-
family:'Franklin Gothic Medium',
'Arial Narrow', Arial, sans-serif" ;
method="POST">
                    <div class="form-
group mb-3">
                        <label
for="name">Name:</label>
                        <input type="text"
class="form-control" id="name"
name="name" required>
                    </div>
                    <div class="form-
group mb-3">
                        <label
for="email">Email address:</label>
                        <input
type="email" class="form-control"
id="email" name="email" required>
                    </div>
                    <div class="form-
group mb-3">
                        <label
for="password">Password:</label>

```

```

        <input
type="password" class="form-control"
id="password" name="password"
required>
    </div>
    <div class="form-
group mb-3">
        <label
for="confirm_password">Confirm
Password:</label>
        <input
type="password" class="form-control"
id="confirm_password"
name="confirm_
password" required>
    </div>
    <button
type="submit" class="btn btn-success"
name="register">Register</button>
    <p class="text-
center">Already have an account? <a
href="login.php">Login here</a></p>
    </form>
</body>
</html>
room_create.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// check if the form is submitted
if (isset($_POST['submit'])) {

    // sanitize and get the form data
    $room_name =
mysqli_real_escape_string($conn,
$_POST['room_name']);
    $room_type =
mysqli_real_escape_string($conn,
$_POST['room_type']);
    $room_capacity =
mysqli_real_escape_string($conn,
$_POST['room_capacity']);

        // check if a record with the same
        room_id or room_name already exists
        $sql = "SELECT * FROM rooms
WHERE room_name = '$room_name'
AND room_type = '$room_type'";
        $result = mysqli_query($conn,
$sql);

        if ($result === false) {
            echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
            exit;
        }

        if (mysqli_num_rows($result) > 0) {
            echo '<script
type="text/javascript">';
            echo ' alert("Room already
exists!");';
            echo ' window.location.href =
"room_create.php";';
            echo '</script>';
            exit;
        } else {
            // insert the data into the table
            $sql= "INSERT INTO rooms
(room_id, room_name, room_type,
room_capacity) VALUES
('$room_name', '$room_type',
'$room_capacity')";

            if (mysqli_query($conn, $sql)) {
                echo '<script
type="text/javascript">';
                echo ' alert("New record added
successfully!");';
                echo ' window.location.href =
"room_list.php";';
                echo '</script>';
                exit;
            } else {
                echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
            }
        }
    ?>

<!doctype html>
```

```

<html lang="en">

<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/_form.css">
    <title>Add room </title>
</head>

<body>
    <div class="container mt-3">
        <h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bold text-center text-warning mt-3
text-outline">ADD ROOM</h1>

        <form method="post">

            <div class="mb-3">
                <label
for="room_name">Room
Name</label>
                <input type="text"
class="form-control" id="room_name"
name="room_name"
placeholder="Enter Room Name">
            </div>

            <div class="mb-3 mt-3">
                <label for="room_type"
class="form-label">Room
Type</label>
                <select class="form-select"
id="room_type" name="room_type"
required>
                    <option value="">Select
                </option>
                    <option
value="Lab">Lab</option>
                    <option
value="Lec">Lec</option>
                </select>
            </div>

            <div class="mb-3">
                <label
for="room_capacity">Capacity</label
>
                <input type="number"
class="form-control"
id="room_capacity"
name="room_capacity"
placeholder="Enter Room
Capacity">
            </div>

            <button type="submit"
class="btn btn-primary"
name="submit">Create</button>
            <a href="room_list.php"
class="btn btn-danger"
name="back">Back</a>
        </form>
    </div>
</body>

</html>

```

room\_list.php

```

<?php
include 'database_connection.php';
include 'index.php';

// Delete section if delete_id is set in
the URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];
    $sql = "DELETE FROM rooms
WHERE id=$id";
    if ($conn->query($sql) === TRUE)
    {

```

```

echo "<script>alert('Rooms
deleted successfully');</script>";
echo
"<script>window.location.href =
'room_list.php';</script>";
} else {
    echo "Error deleting record: " .
$conn->error;
}
}

// Execute search query if search form
is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM rooms
WHERE room_name LIKE
'%$search_term%' OR room_type
LIKE '%$search_term%'";
} else {
    $query = "SELECT * FROM
rooms";
    $result = $conn->query($query);
}

?>

<!doctype html>
<html lang="en">

<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">

    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpua
C0mLASjC"
crossorigin="anonymous">

    <!--External CSS-->

```

```

<link rel="stylesheet"
href="css/rooms.css">

<title>Room List</title>
</head>

<body>

<div class="container">
    <h1 style="text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">ROOM LIST</h1>

    <form method="POST">
        <div class="input-group mb-
3">
            <input type="text"
class="form-control rounded"
placeholder="Search by Rooms
ID/Name/Type"
name="search">
            <button type="submit"
class="btn btn-
primary">Search</button>
        </div>
    </form>

    <a href="room_create.php"
class="btn btn-success mb-3"><i
class='fas fa-user-plus'></i> Add
Rooms</a>

    <table class="table table-bordered
table-hover text-center"
style="border: 1px solid black">
        <thead class="bg-warning">
            <tr>
                <th>No.</th>
                <th>Room Name</th>
                <th>Room Type</th>
                <th>Capacity</th>
                <th>Action</th>
            </tr>
        </thead>
        <tbody style="font-
size: 1.2rem; font-family: monospace">
            <?php
                // Execute search query if
                search form is submitted

```

```

        if (isset($_POST['search'])) {
            $search_term =
$_POST['search'];
            $query = "SELECT *
FROM rooms WHERE room_id LIKE
'%$search_term%' OR room_name
LIKE '%$search_term%' OR
room_type LIKE '%$search_term%'";
            $result = $conn-
>query($query);
            if (!$result) {
                die("Error executing
search query: " . $conn->error);
            }
            } else {
                $query = "SELECT *
FROM rooms";
                $result = $conn-
>query($query);
                if (!$result) {
                    die("Error executing
query: " . $conn->error);
                }
            }

            if ($result->num_rows > 0) {
                $i = 1;
                while ($row = $result-
>fetch_assoc()) {
                    echo "<tr>";
                    echo "<td>" . $i .
"</td>";
                    echo "<td>" .
$row["room_name"] . "</td>";
                    echo "<td>" .
$row["room_type"] . "</td>";
                    echo "<td>" .
$row["room_capacity"] . "</td>";
                    echo "<td>";
                    echo "<a
href='room_update.php?id=" .
$row["id"] . "' class='btn btn-primary
btn-sm'>Update<i class='fas fa-
edit'></i></a>&nbsp";
                    echo "<a href='" .
$_SERVER['PHP_SELF'] .
"?delete_id=" . $row["id"] . "'"
class='btn btn-danger btn-sm'
onclick='return confirm('Are you sure
you want to delete this
Room?')'" .">>Delete<i class='fas fa-
trash'></i></a>";
                    echo "</td>";
                    echo "</tr>";
                    $i++;
                }
            } else {
                echo "<tr><td
colspan='5'>No rooms
found</td></tr>";
            }
        ?>
    </tbody>
</table>
</div>

<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrghxOmkjIVt
wZgMk50D"
crossorigin="anonymous"></script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<script
src="https://kit.fontawesome.com/your
-font-awesome-kit.js"
crossorigin="anonymous"></script>

</body>
</html>

room_update.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// Fetching data from the database

```

```

if (isset($_GET['id'])) {

    $id =
mysqli_real_escape_string($conn,
$_GET['id']);
    $sql = "SELECT * FROM rooms
WHERE id ='$id'";
    $result = mysqli_query($conn,
$sql);

    if ($result &&
mysqli_num_rows($result) > 0) {
        $row =
mysqli_fetch_assoc($result);
    } else {
        // If there was an error in the
        // query, display an error message and
        // exit
        echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
        exit();
    }

// Updating data in the database
if (isset($_POST['update'])) {
    // First, retrieve the data from the
    // form and sanitize it
    $room_name =
mysqli_real_escape_string($conn,
$_POST['room_name']);
    $room_type =
mysqli_real_escape_string($conn,
$_POST['room_type']);
    $room_capacity =
mysqli_real_escape_string($conn,
$_POST['room_capacity']);

    // Then, check if the Room code and
    // name already exists in the database
    $sql = "SELECT * FROM rooms
WHERE room_name= '$room_name'
AND room_type = '$room_type'";
    $result = mysqli_query($conn,
$sql);

    if (mysqli_num_rows($result) > 0) {
        // If the room with the same room
        // id and name already exists, display an
        // error message
        echo '<script
type="text/javascript">';
        echo ' alert("Room already
exists!");';
        echo '</script>';
    } else {
        // If the room with the same room
        // id and name does not exist, update the
        // data in the database
        $sql = "UPDATE rooms SET
room_name='$room_name',
room_type='$room_type',
room_capacity='$room_capacity'
WHERE id='$id'";
        if (mysqli_query($conn, $sql)) {
            // Data updated successfully,
            // display an alert message and redirect to
            // room_list.php
            echo '<script
type="text/javascript">';
            echo ' alert("Record updated
successfully!");';
            echo ' window.location.href =
"room_list.php";';
            echo '</script>';
            exit; // Make sure to exit after
            // the redirect
        } else {
            echo "Error updating record: " .
mysqli_error($conn);
        }
    }
?>

<!doctype html>
<html lang="en">

<head>

<!-- Required meta tags -->
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet">

```

```

        integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/dashboard.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6mw
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
        integrity="sha384-
PoX9L+uPbsAVCv+jcUscle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>

</head>

<body>
<div class="container mt-3">

    <h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">UPDATE ROOM
DETAILS</h1>

        <!-- Display the data of the
selected Room in the form fields -->
<form method="POST">

        <input type="hidden"
name="id" value="<?php echo
$row['id']; ?>">

        <div class="mb-3">

            <label for="room_name"
class="form-label">Room
Name</label>
            <input type="text"
class="form-control" id="room_name"
name="room_name"
value="<?php echo
$row['room_name']; ?>">
        </div>

        <div class="mb-3">

            <label for="room_type"
class="form-label">Room
Type</label>
            <select class="form-select"
id="room_type" name="room_type">
<?php
// Define the allowed
Room type
$allowed_room_types =
array('Lab', 'Lec');

// Loop through each
allowed subject type and create an
option in the dropdown menu
foreach
($allowed_room_types as $room_type)
{
    $selected =
($allowed_room_types ==
$row['room_type']) ? 'selected' : "";
    echo "<option
value='$room_type'
$selected>$room_type</option>";
}
?>
</select>

```

```

</div>

<div class="mb-3">
    <label for="room_capacity"
    class="form-
    label">room_capacity</label>
    <input type="text"
    class="form-control"
    id="room_capacity"
    name="room_capacity"
    value=<?php echo
    $row['room_capacity']; ?>">
</div>

    <button type="submit"
    name="update" class="btn btn-
    primary">Update</button>
    <a href="room_list.php"
    class="btn btn-danger">Back</a>
</form>

</div>

<!-- CDN Bootstrap JS and
dependencies -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-X9rbZItmdP6ROkU6KFpP0o+IKwOmR1SHz0UUN/u0W8+k2l2QKLmYJL3aWpKR8y"
        crossorigin="anonymous">
</script>
</body>
</html>

section_create.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// check if the form is submitted
if (isset($_POST['submit'])) {

    // get the form data
    $section_name =
    mysqli_real_escape_string($conn,$_P
    OST['section_name']);

    // check if a record with the same
    section name, start date, and end date
    already exists
    $sql = "SELECT * FROM sections
    WHERE section_name =
    '$section_name'";
    $result = mysqli_query($conn,
    $sql);

    if (mysqli_num_rows($result) > 0) {
        echo '<script
        type="text/javascript">';
        echo ' alert("A section with the
        same name and course");';
        echo ' window.location.href =
        "section_create.php";';
        echo '</script>';
        exit;
    }

    // insert the data into the database
    $sql = "INSERT INTO sections (
    section_name) VALUES (
    '$section_name')";

    if (mysqli_query($conn, $sql)) {
        echo '<script
        type="text/javascript">';
        echo ' alert("New record added
        successfully!");';
        echo ' window.location.href =
        "section_list.php";';
        echo '</script>';
        exit;
    } else {
        echo "Error: " . $sql . "<br>" .
        mysqli_error($conn);
    }
?>
```

```

<!doctype html>
<html lang="en">

<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
        content="width=device-width, initial-
        scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
        href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
        rel="stylesheet"
        integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
        Nao0Yz1ztcQTwFspd3yD65Vohhpuu
        COmLASjC"
        crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
        href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
        src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-
        xm/1MSCs2sDx6kLZ6Qm84zE4U6m
        SWJXa3gfn+Or05YnSdrgHxOmkjIVt
        wZgMk50D"
        crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
        src="https://code.jquery.com/jquery-
        3.6.0.min.js"></script>
    <link rel="stylesheet"
        href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
        integrity="sha384-
        PoX9L+uPbsAVCv+jcUsle6Udq7Vr
        ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
        gsHOD+" crossorigin="anonymous">
    <script
        src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-
        8t+gWy0JhGjbOxbtu2QzKACoVrAJR
        z/iBRymx1Ht/W1hXxrFL05t8PChqoo
        3sLsP" crossorigin="anonymous">
    </script>

<body>
    <div class="container mt-3">
        <h1 style=" text-shadow: 3px 2px
            3px rgba(0, .5, 0, .80)" class="fw-
            bolder text-center text-warning mt-3
            text-outline">ADD SECTION</h1>
        <form method="post">

            <div class="mb-3 mt-3">
                <label for="section_name"
                    class="form-label"> Section
                Name</label>
                <select class="form-select"
                    id="section_name"
                    name="section_name" required>
                    <option value="">Select
                </option>
                    <option
                        value="A">A</option>
                    <option
                        value="B">B</option>
                    <option
                        value="C">C</option>
                    <option
                        value="D">D</option>
                    <option
                        value="E">E</option>
                    <option
                        value="F">F</option>
                </select>
            </div>

            <button type="submit"
                class="btn btn-primary"
                name="submit">Create</button>
            <a href="section_list.php"
                class="btn btn-danger"
                name="back">Back</a>
            </form>
        </div>
    </body>

```

```

</html>

section_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete section if delete_id is set in
// the URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];
    $sql = "DELETE FROM sections
WHERE id='$id'";
    if ($conn->query($sql) === TRUE)
    {
        echo "<script>alert('section
deleted successfully');</script>";
        echo
"<script>window.location.href =
'section_list.php';</script>";
    } else {
        echo "Error deleting record: " .
$conn->error;
    }
}

// Execute search query if search form
// is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM
sections WHERE section_name LIKE
'%$search_term%'";
    $result = $conn->query($query);
} else {
    $query = "SELECT * FROM
sections";
    $result = $conn->query($query);
}
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTxFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/sections.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-PoX9L+uPbsAVCv+jcUsle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
integrity="sha384-8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP"
crossorigin="anonymous">
    </script>
</head>

```

```

<body>

    <div class="container">
        <div class="container">

            <h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">SECTION LIST</H1>

            <form method="POST">
                <div class="input-group mb-
3">

                    <input type="text"
class="form-control rounded"
placeholder="Search by section_name"
name="search">
                    <button type="submit"
class="btn btn-
primary">Search</button>
                </div>
            </form>

            <a href="section_create.php"
class="btn btn-success mb-3"><i
class='fas fa-user-plus'></i> Add
section</a>

            <table class="table table-
bordered table-hover text-center"
style="border:1px solid black">
                <thead class="bg-warning">
                    <tr>
                        <th>No.</th>
                        <th>Section Name</th>
                        <th>Action</th>
                    </tr>
                </thead>
                <tbody style="font-
size:1.2rem;font-family:monospace">

                    <?php
                        // Execute search query if
search form is submitted
                        if
                            (isset($_POST['search'])) {
                                $search_term =
$_POST['search'];

```

```

$(query = "SELECT *
FROM sections WHERE
section_name LIKE
'%$search_term%';
$result = $conn-
>query($query);
if (!$result) {
    die("Error executing
search query: " . $conn->error);
}
} else {
    $query = "SELECT *
FROM sections";
    $result = $conn-
>query($query);
if (!$result) {
    die("Error executing
query: " . $conn->error);
}
}
?>

<?php
if ($result->num_rows >
0) {
    // output data of each
row
    $i = 1;
    while ($row = $result-
>fetch_assoc()) {
        echo "<tr>";
        echo "<td>" . $i .
"</td>";
        echo "<td>" .
$row["section_name"] . "</td>";
        echo "<td>";
        echo "<a
href='section_update.php?id=' .
$row["id"] . '" class='btn btn-primary
btn-sm'>Update<i class='fas fa-
edit'></i></a>&nbsp';
        echo "<a href='".
$_SERVER['PHP_SELF'] .
"?delete_id=" . $row["id"] . '"'
class='btn btn-danger btn-sm'
onclick='return confirm('Are you sure
you want to delete this
section?')'">Delete<i class='fas fa-
trash'></i></a>";
        echo "</td>";
    }
}

```

```

        echo "</tr>";
        $i++;
    }
} else {
    echo "<tr><td
colspan='5'>No sections
found</td></tr>";
}
?>
</tbody>
</table>

</div>
</div>

</body>
</html>

section_update.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// Fetching data from the database
if (isset($_GET['id'])) {

    $id =
    mysqli_real_escape_string($conn,
    $_GET['id']);
    $sql = "SELECT * FROM sections
WHERE id ='$id'";
    $result = mysqli_query($conn,
    $sql);

    if ($result &&
    mysqli_num_rows($result) > 0) {
        $row =
        mysqli_fetch_assoc($result);
    } else {
        // If there was an error in the
        // query, display an error message and
        // exit
        echo "Error: " . $sql . "<br>" .
        mysqli_error($conn);
        exit();
    }
}

echo "</tr>";
// Updating data in the database
if (isset($_POST['update'])) {
    // First, retrieve the data from the
    // form and sanitize it
    $id =
    mysqli_real_escape_string($conn,
    $_POST['id']);
    $section_name =
    mysqli_real_escape_string($conn,
    $_POST['section_name']);

    // Then, check if the section name,
    // course and year already exists in the
    // database
    $sql = "SELECT * FROM sections
WHERE section_name='$section_na
me'AND id!='$id'";
    $result = mysqli_query($conn,
    $sql);

    if (mysqli_num_rows($result) > 0) {
        // If the section with the same
        // name, course and year already exists,
        // display an error message
        echo '<script
type="text/javascript">';
        echo ' alert("section name already
exist")';
        echo '</script>';
    } else {
        // If the section with the same
        // name, course and year does not exist,
        // update the data in the database
        $sql = "UPDATE sections SET =
section_name='$section_name',
WHERE id='$id'";
        if (mysqli_query($conn, $sql)) {
            // Data updated successfully,
            // display an alert message and redirect to
            // section_list.php
            echo '<script
type="text/javascript">';
            echo ' alert("Record updated
successfully!");';
            echo ' window.location.href =
"section_list.php";';
            echo '</script>';
        }
    }
}

```

```

        exit; // Make sure to exit after
the redirect
    } else {
        echo "Error updating record: " .
mysqli_error($conn);
    }
}
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots-
trap@5.0.2/dist/js/bootstrap.bundle.mi-
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>

```

```

<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots-
trap@5.1.3/dist/js/bootstrap.bundle.mi-
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>

</head>

<body>
    <div class="container mt-3">
        <h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">UPDATE SECTION
DETAILS</h1>

        <!-- Display the data of the
selected section in the form fields -->
        <form method="POST">
            <div class="mb-3">
                <input type="hidden"
name="id" value="<?php echo
$row['id']; ?>">
            <div class="mb-3">
                <label for="section_name"
class="form-label">Section
Name</label>
                <select class="form-
select" id="section_name"
name="section_name">
                    <?php
                    // Define the allowed
                    section names

```

```

        $allowed_section_name
    }
}

// Loop through each
allowed section name and create an
option in the dropdown menu
foreach
($allowed_section_names as
$section_name) {
    $selected =
($section_name ==
$row['section_name']) ? 'selected' : '';
    echo "<option
value='$section_name'
$selected>$section_name</option>";
}
?>
</select>

</div>

<?php
// Fetching data from the
database to display the selected
course_name
if (isset($_GET['id'])) {

    $id =
mysqli_real_escape_string($conn,
$_GET['id']);
    $sql = "SELECT * FROM
sections WHERE id ='$id'";
    $result =
mysqli_query($conn, $sql);

    if ($result &&
mysqli_num_rows($result) > 0) {
        $row =
mysqli_fetch_assoc($result);
        $selected_course_name
= $row['section_name']; // Retrieve the
selected course_name from the
database
    } else {
        // If there was an error
in the query, display an error message
and exit
        echo "Error: " . $sql .
"<br>" . mysqli_error($conn);
        exit();
    }
}
?>

<button type="submit"
name="update" class="btn btn-
primary">Update</button>
<a href="section_list.php"
class="btn btn-danger">Back</a>

</form>
</div>

<!-- CDN Bootstrap JS and
dependencies -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-X9rbZItmdP6R0KU6KFpP0o+IKwOmR1SHz0UUN/u0W8+k2l2QKLmYJ1L3aWpKR8y"
crossorigin="anonymous">
</script>
</body>
</html>

semester_create.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// check if the form is submitted
if (isset($_POST['submit'])) {

    // get the form data
    $semester_name =
mysqli_real_escape_string($conn,
$_POST['semester_name']);
}

```

```

$start_year =
mysqli_real_escape_string($conn,
$_POST['start_year']);
$end_year =
mysqli_real_escape_string($conn,
$_POST['end_year']);

// check if a record with the same
// semester name, start date, and end date
// already exists
$sql = "SELECT * FROM semesters
WHERE semester_name =
'$semester_name' AND start_year =
'$start_year' AND end_year =
'$end_year'";
$result = mysqli_query($conn,
$sql);

if (mysqli_num_rows($result) > 0) {
    echo '<script'
    type="text/javascript">';
    echo ' alert("A semester with the
same name and date range already
exists!");';
    echo ' window.location.href =
"semester_create.php";';
    echo '</script>';
    exit;
} else {
    // Check if a record with the same
    // semester name, but different start and
    // end years already exists
    $sql = "SELECT * FROM
semesters WHERE semester_name =
'$semester_name' AND (start_year !=
'$start_year' OR end_year !=
'$end_year')";
    $result = mysqli_query($conn,
$sql);

    if (mysqli_num_rows($result) >
0) {
        echo '<script'
        type="text/javascript">';
        echo ' alert("A semester with
the same name but different date range
is not allowed delete the existing
first");';
        echo ' window.location.href =
"semester_create.php";';
        echo '</script>';
        exit;
    }
}

echo '</script>';
exit;

}

// insert the data into the database
$sql = "INSERT INTO semesters
( semester_name, start_year, end_year)
VALUES ('$semester_name',
'$start_year', '$end_year')";

if (mysqli_query($conn, $sql)) {
    echo '<script'
    type="text/javascript">';
    echo ' alert("New record added
successfully!");';
    echo ' window.location.href =
"semester_list.php";';
    echo '</script>';
    exit;
} else {
    echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
}
}

?>
<!doctype html>
<html lang="en">

<head>
<!-- Required meta tags -->
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/_form.css">
<title>Add Semester </title>

```

```

</head>

<body>
    <div class="container mt-3">
        <h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)"
            class="fw-bolder text-center
text-warning mt-3 text-outline">ADD
SEMESTER</H1>

    <form method="post">

        <div class="mb-3 mt-3">
            <label for="semester_name"
class="form-label">Name</label>
            <select class="form-select"
id="semester_name"
name="semester_name" required>
                <option
value="">Select</option>
                <option value="1st
SEM">1st SEM</option>
                <option value="2nd
Sem">2nd SEM</option>
                <option
value="Midyear">Midyear</option>
            </select>
        </div>

        <div class="mb-3">
            <label for="start_year"
class="form-label">Start Year:</label>
            <input type="number"
class="form-control" id="start_year"
name="start_year" min="2022"
max="2099"
                required>
        </div>

        <div class="mb-3">
            <label for="end_year"
class="form-label">End Year:</label>
            <input type="number"
class="form-control" id="end_year"
name="end_year" min="2023"
max="2099" required>
        </div>

    </form>
    <button type="submit"
class="btn btn-primary"
name="submit">Create</button>
    <a href="semester_list.php"
class="btn btn-danger"
name="back">Back</a>
</div>
</body>
</html>

semester_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete semester if delete_id is set in
the URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];

    // Check the number of rows before
deleting
    $countQuery = "SELECT
COUNT(*) as total FROM semesters";
    $countResult = $conn-
>query($countQuery);
    $rowCount = $countResult-
>fetch_assoc()['total'];

    if ($rowCount > 1) {
        $sql = "DELETE FROM
semesters WHERE id='$id'";

        if ($conn->query($sql) ===
TRUE) {
            echo "<script>alert('Semester
deleted successfully');</script>";
            echo
"<script>window.location.href =
'semester_list.php';</script>";
        } else {
            echo "Error deleting record: " .
$conn->error;
        }
    } else {

```

```

echo '<script
type="text/javascript">';
echo ' alert("Unable to delete. At
least one semester must be present.");';
echo ' window.location.href =
"semester_list.php";';
echo '</script>'; }
?

<!doctype html>
<html lang="en">

<head>

<!-- Required meta tags -->
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTWfspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/dashboard.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>

```

```

<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUsle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP"
crossorigin="anonymous"></script>

```

```

<title>Semester List</title>

```

```

</head>

```

```

<body>

<div class="container">
<div class="container">

<h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">SEMESTER LIST</h1>

<form method="POST"
action="semester_list.php">
<div class="input-group mb-
3">

<input type="text"
class="form-control rounded"
placeholder="Search by semester name
or ID" name="search">
<button type="submit"
class="btn btn-
primary">Search</button>
</div>
</form>

<a href="semester_create.php"
class="btn btn-success mb-3">Add
Semester</a>

```

```

<table class="table table-bordered table-hover text-center" style="border:1px solid black">
    <thead class="bg-warning">
        <tr>
            <th>No.</th>
            <th>Semester Name</th>
            <th>Start Year</th>
            <th>End Year</th>
            <th>Action</th>
        </tr>
    </thead>
    <tbody style="font-size:1.2rem;font-family:monospace">
        <?php
            // Execute search query if
            // search form is submitted
            if
                (isset($_POST['search'])) {
                    $search_term =
                    $_POST['search'];
                    $query = "SELECT *
                    FROM semesters WHERE
                    semester_name LIKE
                    '%$search_term%' OR semester_id
                    LIKE '%$search_term%'";
                    $result = $conn->query($query);
                    if (!$result) {
                        die("Error executing
                        search query: " . $conn->error);
                    }
                } else {
                    $query = "SELECT *
                    FROM semesters";
                    $result = $conn->query($query);
                    if (!$result) {
                        die("Error executing
                        query: " . $conn->error);
                    }
                }
            // Check if any rows were
            // returned
            if ($result->num_rows >
            0) {
                // output data of each
                // row
                $i = 1;
                while ($row = $result->fetch_assoc()) {
                    echo "<tr>";
                    echo "<td>" . $i .
                    "</td>";
                    echo "<td>" .
                    $row["semester_name"] . "</td>";
                    echo "<td>" .
                    $row["start_year"] . "</td>";
                    echo "<td>" .
                    $row["end_year"] . "</td>";
                    echo "<td><a
                    href='semester_update.php?id=" .
                    $row["id"] . "' class='btn btn-primary
                    btn-sm me-1'>Update</a>" ;
                    echo "<a
                    href='semester_list.php?delete_id=" .
                    $row["id"] . "' class='btn btn-danger
                    btn-sm me-1'>Delete</a></td>";
                    echo "</tr>";
                    $i++;
                }
            } else {
                echo "No results
                found";
            }
        ?>
    </tbody>
</table>
</div>
</div>
</body>
</html>
semester_update.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// Fetching data from the database
if (isset($_GET['id'])) {

```

```

$id =
mysqli_real_escape_string($conn,
$_GET['id']);
$sql = "SELECT * FROM semesters
WHERE id ='$id'";
$result = mysqli_query($conn,
$sql);

if ($result &&
mysqli_num_rows($result) > 0) {
    $row =
mysqli_fetch_assoc($result);
} else {
    // If there was an error in the
    // query, display an error message and
    // exit
    echo "Error: " . $sql . "<br>" .
    mysqli_error($conn);
    exit();
}

// Updating data in the database
if (isset($_POST['update'])) {
    // First, retrieve the data from the
    // form and sanitize it
    $id =
mysqli_real_escape_string($conn,
$_POST['id']);

    $semester_name =
mysqli_real_escape_string($conn,
$_POST['semester_name']);
    $start_year =
mysqli_real_escape_string($conn,
$_POST['start_year']);
    $end_year =
mysqli_real_escape_string($conn,
$_POST['end_year']);

    // Then, check if the semester name,
    // start date and end date already exists in
    // the database
    $sql = "SELECT * FROM semesters
WHERE
semester_name='$semester_name'
AND start_year='$start_year' AND
end_year='$end_year' AND id!='$id'";
    $result = mysqli_query($conn,
$sql);

    if (mysqli_num_rows($result) > 0) {
        // If the semester with the same
        // name, start date and end date already
        // exists, display an error message
        echo '<script
type="text/javascript">';
        echo ' alert("Semester with the
same name, start date and end date
already exists!");';
        echo '</script>';
    } else {
        // If the semester with the same
        // name, start date and end date does not
        // exist, update the data in the database
        $sql = "UPDATE semesters SET
semester_name='$semester_name',
start_year ='$start_year',
end_year ='$end_year' WHERE
id='$id'";
        if (mysqli_query($conn, $sql)) {
            // Data updated successfully,
            // display an alert message and redirect to
            // semester_list.php
            echo '<script
type="text/javascript">';
            echo ' alert("Record updated
successfully!");';
            echo ' window.location.href =
"semester_list.php";';
            echo '</script>';
            exit; // Make sure to exit after
            // the redirect
        } else {
            echo "Error updating record: " .
            mysqli_error($conn);
        }
    }
?>

<!doctype html>
<html lang="en">

<head>

<!-- Required meta tags -->
<meta charset="utf-8">

```

```

<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpua
C0mLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/dashboard.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUsle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP"
crossorigin="anonymous"><script
t>
</head>

```

```

<body>
<div class="container mt-3">
<h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)"
class="fw-bolder text-center
text-warning mt-3 text-
outline">UPDATE SEMESTER
DETAILS</h1>

<!-- Display the data of the
selected semester in the form fields -->
<form method="POST"
action="">
<input type="hidden"
name="id" value="<?php echo
$row['id']; ?>">
<div class="mb-3">
<label for="semester_name"
class="form-label">Semester
Name</label>
<select class="form-select"
id="semester_name"
name="semester_name">
<?php
// Define the allowed
semester names
$allowed_semester_names
= array('1st SEM', '2nd SEM',
'Midyear');

// Loop through each
allowed semester name and create an
option in the dropdown menu
foreach
($allowed_semester_names as
$semester_name) {
$selected =
($semester_name ==
$row['semester_name']) ? 'selected' : '';
echo "<option
value='$semester_name'
$selected>$semester_name</option>";
}
?>
</select>
</div>

```

```

<div class="mb-3">
    <label for="start_year"
    class="form-label">Start Year</label>
        <input type="number"
    class="form-control" id="start_year"
    name="start_year"
        value=<?php echo
    $row['start_year']; ?>" min="2022"
    max="2099" required>
    </div>
    <div class="mb-3">
        <label for="end_year"
    class="form-label">End Year</label>
        <input type="number"
    class="form-control" id="end_year"
    name="end_year"
        value=<?php echo
    $row['end_year']; ?>" min="2022"
    max="2099" required>
    </div>

        <button type="submit"
    name="update" class="btn btn-primary">Update</button>
        <a href="semester_list.php"
    class="btn btn-danger">Back</a>
    </form>
</div>

<!-- CDN Bootstrap JS and
dependencies -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
    integrity="sha384-X9rbZItmdP6ROkU6KFpP0o+IKwOmR1SHz0UUN/u0W8+k2l2QKLmYJL3aWpKR8y"
    crossorigin="anonymous"></script>
</body>
</html>

subject_create.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// check if the form is submitted
if (isset($_POST['submit'])) {

    // get the form data
    $subject_code =
    $_POST['subject_code'];
    $subject_description =
    $_POST['subject_description'];
    $subject_type =
    $_POST['subject_type'];
    $subject_units =
    $_POST['subject_units'];
    $subject_hours =
    $_POST['subject_hours'];

    // check if a record with the same
    // subject code and type already exists
    $sql = "SELECT * FROM subjects
    WHERE subject_code='$subject_code'
    AND subject_type='$subject_type'
    AND
    subject_description='$subject_descripti
    on'";
    $result = mysqli_query($conn, $sql);

    if (mysqli_num_rows($result) > 0) {
        if (mysqli_query($conn, $sql)) {
            echo '<script
type="text/javascript">';
            echo ' alert("Subject already
exist!");';
            echo ' window.location.href =
"subject_list.php";';
            echo '</script>';
            exit;
        } else {
            echo "Error updating record: ".
            mysqli_error($conn);
            exit;
        }
    } else {
        // No record found, perform the
        // insert
        $sql = "INSERT INTO subjects
        (subject_code, subject_description,
        subject_type, subject_units,

```

```

subject_hours) VALUES
('{$subject_code}', '{$subject_description}',
 '{$subject_type}', '{$subject_units}',
 '{$subject_hours}')";

if (mysqli_query($conn, $sql)) {
    echo '<script'
    type="text/javascript">';
    echo ' alert("New record added
successfully!");';
    echo ' window.location.href =
"subject_list.php";';
    echo '</script>';
    exit;
} else {
    echo "Error inserting record: " .
mysqli_error($conn);
    exit;
}

?>
<!doctype html>
<html lang="en">

<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/_form.css">
    <title>Add Subject </title>
</head>

<body>
    <div class="container mt-3">

```

```

<h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">ADD SUBJECT</H1>

<form method="post">

    <div class="mb-3">
        <label
for="subject_code">Subject
Code</label>
        <input type="text"
class="form-control"
id="subject_code"
name="subject_code"
placeholder="Enter
Subject Code">
    </div>

    <div class="mb-3">
        <label
for="subject_description">Subject
Title</label>
        <input type="text"
class="form-control"
id="subject_description"
name="subject_description"
placeholder="Enter
Subject Description">
    </div>

    <div class="mb-3 mt-3">
        <label for="subject_type"
class="form-label">Subject
Type</label>
        <select class="form-select"
id="subject_type"
name="subject_type" required>
            <option value="">Select
</option>
            <option
value="Lab">Lab</option>
            <option
value="Lec">Lec</option>
        </select>
    </div>

    <div class="mb-3">
        <label
for="subject_units">Units</label>

```

```

        <input type="number"
class="form-control"
id="subject_units"
name="subject_units"
placeholder="Enter
number of Units">
    </div>

    <div class="mb-3 mt-3">
        <label for="subject_hours"
class="form-label">Subject
Hours</label>
        <select class="form-select"
id="subject_hours"
name="subject_hours" required>
            <option value="">Select
</option>
            <option value="1">1
hour</option>
            <option value="2">2
hours</option>
            <option value="1.5">1
hour and 30 minutes</option>
            <option value="3">3
hours</option>
        </select>
    </div>

        <button type="submit"
class="btn btn-primary"
name="submit">Create</button>
        <a href="subject_list.php"
class="btn btn-danger"
name="back">Back</a>
    </form>
</div>
</body>

</html>

subject_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete section if delete_id is set in
the URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];
    $sql = "DELETE FROM subjects
WHERE id=$id";
    if ($conn->query($sql) === TRUE)
    {
        echo "<script>alert('subject
deleted successfully');</script>";
        echo
        "<script>window.location.href =
'subject_list.php';</script>";
    } else {
        echo "Error deleting record: " .
$conn->$error;
    }
}

// Execute search query if search form
is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM
subjects WHERE subject_description
LIKE '%$search_term%' OR
subject_code LIKE '%$search_term%' OR
subject_type LIKE
'%$search_term%'";
} else {
    $query = "SELECT * FROM
subjects";
    $result = $conn->query($query);
}
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9

```

```

Nao0Yz1ztcQTwFspd3yD65Vohpuu
COmLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/subjects.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-xm1MScs2sDx6kLZ6Qm84zE4U6mSWJXa3gfn+Or05YnSdrgHxOmkjIVtwZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-PoX9L+uPbsAVCv+jcUsle6Udq7VrypQT8Uv7zsLAbB6C9fV0pG8yBlxkgHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
integrity="sha384-8t+gWy0JhGjbOxbtu2QzKACoVrAJRz/iBRymx1Ht/W1hXxrFL05t8PChqoo3sLsP"
crossorigin="anonymous">
</script>

</head>
<body>
<div class="container">
<div class="container">
<h1 style="text-shadow: 3px 2px 3px rgba(0, .5, 0, .80)" class="fw-bolder text-center text-warning mt-3 text-outline"> SUBJECT LIST </h1>
<form method="POST">
<div class="input-group mb-3">
<input type="text" class="form-control rounded" placeholder="Search by Subject Description/Code/Type" name="search">
<button type="submit" class="btn btn-primary">Search</button>
</div>
</form>
<a href="subject_create.php" class="btn btn-success mb-3"><i class="fas fa-user-plus"></i> Add Subject</a>
<table class="table table-bordered table-hover text-center" style="border: 1px solid black">
<thead class="bg-warning">
<tr>
<th>No.</th>
<th>Subject Code</th>
<th>Subject Title</th>
<th>Subject Type</th>
<th>Units</th>
<th>Contact hours</th>
<th>Action</th>
</tr>
</thead>
<tbody style="font-size: 1.2rem; font-family: monospace">
<?php
// Execute search query if search form is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT *
FROM subjects WHERE
subject_description LIKE
'%$search_term%' OR subject_code
LIKE '%$search_term%' OR

```

```

subject_type LIKE
'%$search_term%';
$result = $conn-
>query($query);
if (!$result) {
    die("Error executing
search query: " . $conn->$error);
}
} else {
    $query = "SELECT *
FROM subjects";
$result = $conn-
>query($query);
if (!$result) {
    die("Error executing
query: " . $conn->$error);
}
}
?>

<?php
if ($result->num_rows >
0) {
    // output data of each
row
    $i = 1;
    while ($row = $result-
>fetch_assoc()) {
        echo "<tr>";
        echo "<td>" . $i .
"</td>";
        echo "<td>" .
$row["subject_code"] . "</td>";
        echo "<td>" .
$row["subject_description"] . "</td>";
        echo "<td>" .
$row["subject_type"] . "</td>";
        echo "<td>" .
$row["subject_units"] . "</td>";
        echo "<td>" .
$row["subject_hours"] . "</td>";
        echo "<td>" ;
        echo "<a
href='subject_update.php?id=" .
$row["id"] . "' class='btn btn-primary
btn-sm'>Update<i class='fas fa-
edit'></i></a>&nbsp";
        echo "<a href='"
. $_SERVER['PHP_SELF'] .
"?delete_id=" . $row["id"] . "'"
class='btn btn-danger btn-sm'
onclick="return confirm('Are you sure
you want to delete this
subject?')>Delete<i class='fas fa-
trash'></i></a>";
        echo "</td>";
        echo "</tr>";
        $i++;
    }
} else {
    echo "<tr><td
colspan='5'>No subjects
found</td></tr>";
}
?>
</tbody>
</table>
</div>
</div>

</body>
</html>

subject_update.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';

// Fetching data from the database
if (isset($_GET['id'])) {

    $id =
mysqli_real_escape_string($conn,
$_GET['id']);
    $sql = "SELECT * FROM subjects
WHERE id ='$id'";
    $result = mysqli_query($conn,
$sql);

    if ($result &&
mysqli_num_rows($result) > 0) {
        $row =
mysqli_fetch_assoc($result);
    } else {
        // If there was an error in the
        // query, display an error message and
        exit
    }
}

```

```

        echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
        exit();
    }
}

// Updating data in the database
if (isset($_POST['update'])) {
    // First, retrieve the data from the
    // form and sanitize it
    $subject_code =
mysqli_real_escape_string($conn,
$_POST['subject_code']);
    $subject_description =
mysqli_real_escape_string($conn,
$_POST['subject_description']);
    $subject_type =
mysqli_real_escape_string($conn,
$_POST['subject_type']);
    $subject_units =
mysqli_real_escape_string($conn,
$_POST['subject_units']);
    $subject_hours =
mysqli_real_escape_string($conn,
$_POST['subject_hours']);

    // Then, check if the subject code,
    // description and type already exists in
    // the database
    $sql = "SELECT * FROM subjects
WHERE subject_code =
'$subject_code' AND
subject_description
='$subject_description' AND
subject_type = '$subject_type' AND
id != '$id'";
    $result = mysqli_query($conn,
$sql);

    if (mysqli_num_rows($result) > 0) {
        // If the subject with the same
        // subject code, description and type
        // already exists, display an error
        // message
        echo '<script
type="text/javascript">';
        echo ' alert("subject with the same
subject code, description and type
already exists!");';
        echo '</script>';
    } else {
        // If the section with the same
        // subject code, description and type does
        // not exist, update the data in the
        // database
        $sql = "UPDATE subjects SET
subject_code = '$subject_code',
subject_description = '$subject_descripti
on', subject_type = '$subject_type',
subject_units = '$subject_units',
subject_hours = '$subject_hours'
WHERE id = '$id'";
        if (mysqli_query($conn, $sql)) {
            // Data updated successfully,
            // display an alert message and redirect to
            // subject_list.php
            echo '<script
type="text/javascript">';
            echo ' alert("Record updated
successfully!");';
            echo ' window.location.href =
"subject_list.php";';
            echo '</script>';
            exit; // Make sure to exit after
            // the redirect
        } else {
            echo "Error updating record: " .
mysqli_error($conn);
        }
    }
?>

<!doctype html>
<html lang="en">

<head>

<!-- Required meta tags -->
<meta charset="utf-8">
<meta name="viewport"
content="width=device-width, initial-
scale=1">
<!-- CDN Bootstrap CSS -->
<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet">

```

```

        integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
<!--External CSS-->
<link rel="stylesheet"
href="css/dashboard.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
        integrity="sha384-
PoX9L+uPbsAVCv+jcUscle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>
</head>

<body>
<div class="container mt-3">

<h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">UPDATE SUBJECT
DETAILS</h1>

<!-- Display the data of the
selected subject in the form fields -->
<form method="POST">

<input type="hidden"
name="id" value="<?php echo
$row['id']; ?>">

<div class="mb-3">

<label for="subject_code"
class="form-label">Subject
Code</label>
<input type="text"
class="form-control"
id="subject_code"
name="subject_code"
value="<?php echo
$row['subject_code']; ?>">
</div>

<div class="mb-3">

<label
for="subject_description" class="form-
label">Subject Title</label>
<input type="text"
class="form-control"
id="subject_description"
name="subject_description"
value="<?php echo
$row['subject_description']; ?>">
</div>

<div class="mb-3">

<label for="subject_type"
class="form-label">Subject
Type</label>
<select class="form-select"
id="subject_type"
name="subject_type">
<?php
// Define the allowed
subject type
$allowed_subject_types =
array('Lab', 'Lec');
```

```

// Loop through each
allowed subject type and create an
option in the dropdown menu
foreach
($allowed_subject_types as
$subject_type) {
    $selected =
($allowed_subject_types ==
$row['subject_type']) ? 'selected' : '';
    echo "<option
value='$subject_type'
$selected>$subject_type</option>";
}
?>
</select>

</div>

<div class="mb-3">

    <label for="subject_units"
class="form-label">Units</label>
    <input type="text"
class="form-control"
id="subject_units"
name="subject_units"
value="<?php echo
$row['subject_units']; ?>">

</div>

<div class="mb-3">

    <label for="subject_hours"
class="form-label">Subject
Hours</label>
    <select class="form-select"
id="subject_hours"
name="subject_hours">
    <?php
        // Define the allowed
        subject hours
        $allowed_subject_hours =
array(1, 1.5, 3, );
        // Loop through each
        allowed subject hour and create an
        option in the dropdown menu
        foreach
        ($allowed_subject_hours as
        $subject_hour) {
            $selected =
($subject_hour ==
$row['subject_hours']) ? 'selected' : '';
            echo "<option
value='$subject_hour'
$selected>$subject_hour</option>";
        }
    ?>
    </select>
</div>

    <button type="submit"
name="update" class="btn btn-primary">Update</button>
    <a href="subject_list.php"
class="btn btn-danger">Back</a>

</form>

</div>

<!-- CDN Bootstrap JS and
dependencies -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-X9rbZitmdP6R0kU6KFpP0o+IKwOmR1SHz0UUN/u0W8+k2l2QKLmYJ1L3aWpKR8y"
crossorigin="anonymous">
</script>
</body>

</html>

teacher_create.php

<?php

// Include the db connection PHP file
include 'database_connection.php';
include 'index.php';

// Check if user is not logged in

```

```

if (!isset($_SESSION['user_id'])) {
    header("Location: login.php");
    exit;
}

// Inserting data into the teachers table
if (isset($_POST['submit'])) {
    $firstname =
        mysqli_real_escape_string($conn,
        $_POST['firstname']);
    $lastname =
        mysqli_real_escape_string($conn,
        $_POST['lastname']);
    $teacher_id =
        mysqli_real_escape_string($conn,
        $_POST['teacher_id']);

    // Check if the teacher already exists
    // in the database
    $sql = "SELECT * FROM teachers
            WHERE firstname = '$firstname' AND
            lastname = '$lastname' OR teacher_id =
            '$teacher_id'";
    $result = mysqli_query($conn,
    $sql);

    if (mysqli_num_rows($result) > 0) {
        // Teacher already exists in the
        // database, display an error message
        echo '<script
type="text/javascript">';
        echo ' alert("Teacher already
exists!");';
        echo ' window.location.href =
"teacher_list.php";'; // Redirect to
        teacher list page
        echo '</script>';
        exit; // Exit after the redirect
    } else {
        // Teacher does not exist in the
        // database, insert the data into the table
        $sql = "INSERT INTO teachers
                (firstname, lastname, teacher_id)
            VALUES ('$firstname', '$lastname',
            '$teacher_id')";

        if (mysqli_query($conn, $sql)) {
            echo '<script
type="text/javascript">';
            echo ' alert("New record added
successfully!");';
            echo ' window.location.href =
"teacher_list.php";'; // Redirect to
            teacher list page
            echo '</script>';
            exit; // Exit after the redirect
        } else {
            echo "Error: " . $sql . "<br>" .
            mysqli_error($conn);
        }
    }
}

?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
NaoYz1ztcQTWfspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>

```

```

<!-- CDN jquery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot-
strap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
<script
src="https://cdn.jsdelivr.net/npm/boots-
trap@5.1.3/dist/js/bootstrap.bundle.mi-
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBrYmx1Ht/W1hXxrFL05t8PChqoo
3sLsP" crossorigin="anonymous">
</script>
</head>

<body>
<title>Add teacher</title>
<div class="container mt-3">

<h1 style=" text-shadow: 3px 2px
3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">ADD TEACHER</h1>

<form method="post">
<div class="mb-3">

    <label for="teacher_id"
class="form-label">Teacher
ID:</label>
    <input type="number"
class="form-control" id="teacher_id"
placeholder="Enter teacher id"
name="teacher_id"
required>
</div>

<div class="mb-3 mt-3">
    <label for="firstname"
class="form-label">Firstname</label>
    <input type="text"
class="form-control" id="firstname"
placeholder="Enter firstname"
required>
</div>

    <div class="mb-3 mt-3">
        <label for="lastname"
class="form-label">Lastname</label>
        <input type="text"
class="form-control" id="lastname"
placeholder="Enter lastname"
name="lastname"
required>
</div>

    <button type="submit"
class="btn btn-primary"
name="submit">Create</button>
    <a href="teacher_list.php"
class="btn btn-danger"
name="back">Back</a>
</div>
</form>
</div>
</body>
</html>
Teacher_list.php

<?php
include 'database_connection.php';
include 'index.php';

// Delete teacher if delete_id is set in
the URL parameters
if (isset($_GET['delete_id'])) {
    $id = $_GET['delete_id'];
    $sql = "DELETE FROM teachers
WHERE id='$id'";
    if ($conn->query($sql) === TRUE)
    {
        echo "<script>alert('Teacher
deleted successfully');</script>";
        echo
"<script>window.location.href =
'teacher_list.php';</script>";
    } else {

```

```

        echo "Error deleting record: " .
$conn->$error;
    }
}

// Execute search query if search form
is submitted
if (isset($_POST['search'])) {
    $search_term = $_POST['search'];
    $query = "SELECT * FROM
teachers WHERE firstname LIKE
'%$search_term%' OR lastname LIKE
'%$search_term%' OR teacher_id like
'%$search_term%'";
    $result = $conn->query($query);
} else {
    $query = "SELECT * FROM
teachers ORDER BY lastname ASC";
    $result = $conn->query($query);
}
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boot
strap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
C0mLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boot
strap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUsle6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
    <script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
8t+gWy0JhGjbOxbtu2QzKACoVrAJR
z/iBRymx1Ht/W1hXxrFL05t8PChqoo
3sLsP"
crossorigin="anonymous">
    </script>
</head>
<body>

    <div class="container">
        <div class="container">
            <h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)" class="fw-
bolder text-center text-warning mt-3
text-outline">TEACHER LIST</H1>

            <form method="POST">
                <div class="input-group mb-
3">
                    <input type="text"
class="form-control rounded"
placeholder="Search by firstname or
lastname or id"
name="search">
                </div>
            </form>
        </div>
    </div>
</body>

```

```

<button type="submit"
class="btn btn-
primary">Search</button>
</div>
</form>

<a href="teacher_create.php"
class="btn btn-success mb-3"><i
class='fas fa-user-plus'></i> Add
Teacher</a>

<table class="table table-
bordered table-hover text-center"
style="border:1px solid black">
<thead class="bg-warning">
<tr>
<th>No.</th>
<th>Teacher ID</th>
<th>Lastname</th>
<th>Firstname</th>
<th>Action</th>
</tr>
</thead>
<tbody style="font-
size:1.2rem;font-family:monospace">
<?php
if ($result->num_rows >
0) {
    // output data of each
row
    $i = 1;
    while ($row = $result-
>fetch_assoc()) {
        echo "<tr>";
        echo "<td>" . $i .
        "</td>";
        echo "<td>" .
        $row["teacher_id"] . "</td>";
        echo "<td>" .
        $row["lastname"] . "</td>";
        echo "<td>" .
        $row["firstname"] . "</td>";
        echo "<td>";
        echo "<a href='teacher_update.php?id=" .
        $row["id"] . "' class='btn btn-primary
btn-sm'>Update<i class='fas fa-
edit'></i></a>&nbsp";
        echo "<a href='" .
        $_SERVER['PHP_SELF'] . "
"?delete_id=" . $row["id"] . "'"
        class='btn btn-danger btn-sm'
        onclick="return confirm('Are you sure
you want to delete this
teacher?')>Delete<i class='fas fa-
trash'></i></a>";

        echo "</td>";
        echo "</tr>";
        $i++;
    }
} else {
    echo "<tr><td
colspan='5'>No teachers
found</td></tr>";
}
?>
</tbody>
</table>
</div>
</div>

</body>
</html>

teacher_update.php

<?php

//include the db connection php file.
include 'database_connection.php';
include 'index.php';

// Check if user is not logged in
if (!isset($_SESSION['user_id'])) {
    header("Location: login.php");
    exit;
}

// Fetching data from the database
if (isset($_GET['id'])) {
    $teacher_id =
    mysqli_real_escape_string($conn,
    $_GET['id']);
    $sql = "SELECT * FROM teachers
WHERE id ='$teacher_id'";
    $result = mysqli_query($conn,
    $sql);
}

```

```

if ($result &&
mysqli_num_rows($result) > 0) {
    $row =
mysqli_fetch_assoc($result);
} else {
    // If there was an error in the
query, display an error message and
exit
    echo "Error: " . $sql . "<br>" .
mysqli_error($conn);
    exit();
}

// Updating data in the database
if (isset($_POST['update'])) {
    // First, retrieve the data from the
form and sanitize it
    $id =
mysqli_real_escape_string($conn,
$_POST['id']);
    $firstname =
mysqli_real_escape_string($conn,
$_POST['firstname']);
    $lastname =
mysqli_real_escape_string($conn,
$_POST['lastname']);
    $teacher_id =
mysqli_real_escape_string($conn,
$_POST['teacher_id']);

    // Then, check if the teacher_id
already exists in the database
    $sql = "SELECT * FROM teachers
WHERE firstname = '$firstname' AND
lastname = '$lastname' OR
teacher_id='$teacher_id'";
    $result = mysqli_query($conn,
$sql);

    if (mysqli_num_rows($result) > 0) {
        // If the teacher_id already exists,
display an error message
        echo '<script'
type="text/javascript">';
        echo ' alert("Teacher ID already
exists!");';
        echo '</script>';
    } else {
        // If the teacher_id does not exist,
update the data in the database
        $sql = "UPDATE teachers SET
firstname='$firstname',
lastname='$lastname',
teacher_id='$teacher_id' WHERE
id='$id'";
        if (mysqli_query($conn, $sql)) {
            // Data updated successfully,
display an alert message and redirect to
teacher_list.php
            echo '<script'
type="text/javascript">';
            echo ' alert("Record updated
successfully!");';
            echo ' window.location.href =
"teacher_list.php";';
            echo '</script>';
            exit; // Make sure to exit after
the redirect
        } else {
            echo "Error updating record: " .
mysqli_error($conn);
        }
    }
?>

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpue
COmLASjC"
crossorigin="anonymous">
    <!--External CSS-->

```

```

<link rel="stylesheet"
      href="css/dashboard.css">
    <!-- CDN Bootstrap JS -->
    <script
      src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
      integrity="sha384-xm/1MSCs2sDx6kLZ6Qm84zE4U6mSWJXa3gfn+Or05YnSdrgHxOmkjIVtwZgMk50D"
      crossorigin="anonymous">
        </script>
    <!-- CDN jquery -->
    <script
      src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
    <link rel="stylesheet"
      href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
      integrity="sha384-PoX9L+uPbsAVCv+jcUsle6Udq7VrypQT8Uv7zsLAbB6C9fV0pG8yBlxkdgsHOD+" crossorigin="anonymous">
        <script
          src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"
          integrity="sha384-8t+gWy0JhGjbOxbtu2QzKACoVrAJRz/iBRymx1Ht/W1hXxrFL05t8PChqoo3sLsP"
          crossorigin="anonymous"></script>
    </head>
    <body>
      <div class="container mt-3">

        <h1 style="text-shadow: 3px 2px 3px rgba(0, .5, 0, .80)" class="fw-bolder text-center text-warning mt-3 text-outline">UPDATE TEACHER INFORMATION</h1>

        <form method="post">
          <input type="hidden"
            name="id" value="<?php echo $row['id']; ?>">
          <div class="mb-3 mt-3">
            <label for="firstname" class="form-label">Firstname</label>
            <input type="text"
              class="form-control" id="firstname"
              placeholder="Enter firstname"
              name="firstname"
              value="<?php echo $row['firstname']; ?>" required>
          </div>
          <div class="mb-3 mt-3">
            <label for="lastname" class="form-label">Lastname</label>
            <input type="text"
              class="form-control" id="lastname"
              placeholder="Enter lastname"
              name="lastname"
              value="<?php echo $row['lastname']; ?>" required>
          </div>
          <div class="mb-3">
            <label for="teacher_id" class="form-label">Teacher ID:</label>
            <input type="number"
              class="form-control" id="teacher_id"
              placeholder="Enter teacher id"
              name="teacher_id"
              value="<?php echo $row['teacher_id']; ?>" required>
          </div>
        <button type="submit"
          class="btn btn-primary"
          name="update">Update</button>
        <a href="teacher_list.php"
          class="btn btn-danger"
          name="back">Back</a>
      </div>
    </body>
  </html>
timeslot_list.php

<?php
// include the database connection file
include 'database_connection.php';
include 'index.php';
// Fetch the time slots from the database and order them by timeslot_id

```

```

$result = $conn->query("SELECT
start_time, end_time, duration,
timeslot_id_based_on_duration FROM
timeslots ORDER BY
timeslot_id_based_on_duration ASC,
start_time ASC, end_time ASC,
duration ASC");

// Check if there are any time slots in
the database
while ($row = $result->fetch_assoc())
{
    // Determine AM or PM based on
    the hour value
    $start_time = date('h:i A',
    strtotime($row['start_time']));
    $end_time = date('h:i A',
    strtotime($row['end_time']));

    $timeSlots[] = array(
        'start_time' => $start_time,
        'end_time' => $end_time,
        'duration' => $row['duration'],
        'timeslot_id' =>
        $row['timeslot_id_based_on_duration']
    );
}

?>
<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
    content="width=device-width, initial-
    scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
    href="https://cdn.jsdelivr.net/npm/boot-
    strap@5.0.2/dist/css/bootstrap.min.css"
    rel="stylesheet"
    integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTwFspd3yD65Vohhpuu
COmLASjC"
    crossorigin="anonymous">
    <!-- External CSS -->

```

```

<link rel="stylesheet"
href="css/dashboard.css">
<!-- CDN Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/boots-
trap@5.0.2/dist/js/bootstrap.bundle.mi-
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
</script>
<!-- CDN jQuery -->
<script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>

</head>

<body>

<div class="container">
    <h4 class="mt-4 fw-bold text-center
    bg-warning">
        <p class="lead fw-
        bold">TIMESLOT ID IS BASED ON
        THE FOLLOWING: [1 = 1 HOUR] [4
        = 1 HOUR AND 30 MINUTES] [2 = 2
        HOURS] [3 = 3 HOURS]</p>
    </h4>
    <table class="table mt-4 table-
    bordered table table-hover text-
    center">
        <thead>
            <tr>
                <th>No.</th>
                <th>Start Time</th>
                <th>End Time</th>
                <th>Timeslot ID</th>
            </tr>
        </thead>
        <tbody>
            <?php
            if (!empty($timeSlots)) {
                $counter = 1;
                foreach ($timeSlots as $slot) {
                    echo "<tr>";

```

```

        echo "<td>" . $counter .
"</td>";
        echo "<td>" . $slot['start_time']
. "</td>";
        echo "<td>" . $slot['end_time'] .
"</td>";
        echo "<td>" .
$slot['timeslot_id'] . "</td>";
        echo "</td>";
        echo "</tr>";
        $counter++;
    }
} else {
    echo "<tr><td colspan='6'>No
time slots found</td></tr>";
}
?>
</tbody>

</table>

</div>
</div>

</body>

</html>

truncate_table_faculty_loadings.php

<?php
include 'database_connection.php';

// Truncate the table
$sql = "TRUNCATE TABLE
faculty_loadings"; // replace
table_name with the name of the table
you want to truncate
if ($conn->query($sql) === TRUE) {
    echo "Deleted successfully";

} else {
    echo "Error truncating table: ".
$conn->$error;
}

$conn->close();
?>
update.php

<?php
// Start the session at the beginning of
the file
include 'index.php';

// Check if the user is logged in
if (!isset($_SESSION['user_id'])) {
    // Redirect to the login page if the
user is not logged in
    header('Location: login.php');
    exit();
}

// Include the database connection file
include 'database_connection.php';

// Check if the form is submitted
if (isset($_POST['submit'])) {
    // Get the form data
    $name = $_POST['name'];
    $email = $_POST['email'];
    $password = $_POST['password'];

    // Validate the form data
    if (empty($name) || empty($email))
{
        $error_message = 'Please fill in all
the fields';
    } else {
        // Check if the email is already in
use
        $user_id = $_SESSION['user_id'];
        $sql_check_email = "SELECT *
FROM users WHERE email='$email'
AND id!='$user_id'";
        $result_check_email =
mysqli_query($conn,
$sql_check_email);

        if
(mysqli_num_rows($result_check_em
ail) > 0) {
            $error_message = 'Email
address is already in use by another
user';
        } else {
            // Update the user data in the
database

```

```

        $user_id =
$_SESSION['user_id'];
        $sql = "UPDATE users SET
name='$name', email='$email',
password='$password' WHERE
id='$user_id'";
        $result = mysqli_query($conn,
$sql);

        if ($result) {
            $success_message = 'User
data updated successfully';
        } else {
            $error_message = 'Error
updating user data: ' .
mysqli_error($conn);
        }
    }

    if (isset($success_message)) {
        // Redirect to the dashboard page
        // after showing the alert box
        echo
"<script>alert('$success_message');
window.location.href='dashboard.php';
</script>";
        exit();
    }
}

// Fetch the user data from the database
$user_id = $_SESSION['user_id'];
$sql_fetch_user_data = "SELECT *
FROM users WHERE id='$user_id'";
$result_fetch_user_data =
mysqli_query($conn,
$sql_fetch_user_data);
$row_fetch_user_data =
mysqli_fetch_assoc($result_fetch_user
_data);

// Assign the user data to variables for
// displaying in the form
$name =
$row_fetch_user_data['name'];
$email =
$row_fetch_user_data['email'];
$password =
$row_fetch_user_data['password'];
?>

```

```

<!doctype html>
<html lang="en">

<head>

    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1">
    <!-- CDN Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9
Nao0Yz1ztcQTxFspd3yD65Vohhpuu
COmLASjC"
crossorigin="anonymous">
    <!--External CSS-->
    <link rel="stylesheet"
href="css/index.css">
    <!-- CDN Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/boots
trap@5.0.2/dist/js/bootstrap.bundle.mi
n.js"
integrity="sha384-
xm/1MSCs2sDx6kLZ6Qm84zE4U6m
SWJXa3gfn+Or05YnSdrgHxOmkjIVt
wZgMk50D"
crossorigin="anonymous">
    </script>
    <!-- CDN jquery -->
    <script
src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/boots
trap@5.1.3/dist/css/bootstrap.min.css"
integrity="sha384-
PoX9L+uPbsAVCv+jcUscl6Udq7Vr
ypQT8Uv7zsLAbB6C9fV0pG8yBlxkd
gsHOD+" crossorigin="anonymous">
    <title>ATS-SYSTEM</title>

</head>

<body>

```

```

<div class="container">

    <h1 style=" text-shadow: 3px
2px 3px rgba(0, .5, 0, .80)"
        class="fw-bolder text-center
text-warning mt-3 text-
outline">UPDATE USER
ACCOUNT</H1>

    <?php if
(isset($success_message)) { ?>
        <div class="alert alert-
success">
            <?php echo
$success_message; ?>
        </div>
        <?php } ?>
        <?php if (isset($error_message)) {
?>
            <div class="alert alert-
danger">
                <?php echo $error_message;
?>
            </div>
        <?php } ?>

    <form method="post">

        <div class="form-group">
            <label
for="name">Name:</label>
            <input type="text"
class="form-control" id="name"
name="name" value="<?php echo
$user_data['name']; ?>">
        </div>

        <div class="form-group">
            <label for="email">Email
address:</label>
            <input type="email"
class="form-control" id="email"
name="email"
value="<?php echo
$user_data['email']; ?>">
        </div>

        <div class="form-group">

```

<label
 for="password">Password:</label>
 <div class="input-group">
 <input type="password"
class="form-control" id="password"
name="password"
value="<?php echo
\$user\_data['password']; ?>">
 <div class="input-group-
append">
 <button class="btn btn-
outline-success" type="button"
id="togglePassword">Show</button>
 </div>
 </div>
 </div>

<!-- Form inputs go here -->
 <div class="form-group mt-3">
 <button type="submit"
name="submit" class="btn btn-
primary">Update</button>
 <button type="button"
class="btn btn-danger"
onclick="window.history.back()">Bac
k</button>
 </div>
</form>

</div>
</body>

<!-- JavaScript jquery to toggle
password visibility -->
<script>
 \$(document).ready(function() {
 const passwordField =
 \$('#input[name="password"]');
 const togglePasswordField =
 \$('#togglePassword');

 togglePasswordField.on('click',
 function() {
 const type =
 passwordField.attr('type') ===
 'password' ? 'text' : 'password';
 passwordField.attr('type', type);
 togglePasswordField.text(typ
e === 'password' ? 'Show' : 'Hide');
 });
 });

```

    });
  });
</script>
</html>
<?php
// Close the database connection
mysqli_close($conn);
?>
<!-- End of code -->

view_room_generatePDF.php

<?php
require_once
'TCPDF_TEMPLATE/TCPDF_TEMP
LATE/TCPDF-main/tcpdf.php'; //
Include TCPDF library

include 'database_connection.php';

// Start output buffering
ob_start();

// Generate PDF using TCPDF
$pdf = new TCPDF('L', 'mm', 'A4',
true, 'UTF-8');
$pdf->SetCreator(PDF_CREATOR);
$pdf->SetAuthor('TuyPogi');
$pdf->SetTitle('Room Schedules');
$pdf->SetMargins(5, 5, 5);
$pdf->SetHeaderMargin(5);
$pdf->SetFooterMargin(8);
$pdf->SetAutoPageBreak(true, 10);
$pdf->AddPage();

$html =
<!DOCTYPE html>
<html>
<head>
  <title>View Schedule</title>
  <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">
  <style>
  .table {
    width: 100%;
    margin-bottom: 1rem;
    color: white;
    background-color: #388e3c;
}
}

.table-bordered td {
  border: 1px solid black;
  padding: 8px;
  text-align: center;
  vertical-align: middle;
  font-family: Georgia;
}

.table-bordered th{
  border: 1px double black;
  padding: 8px;
  text-align: center;
  color:white;
  vertical-align: middle;
  font-weight:bold;
  font-size:12px;
}

.table-hover tbody tr:hover {
  background-color: rgba(0, 0, 0,
0.075);
}

.table-primary,
.table-primary > th,
.table-primary > td {
background-color: #fefaec;
  color: black;
}

.table-warning,
.table-warning > th,
.table-warning > td {
  background-color: #a6e4e7;
  color: black;
}

.table-info,
.table-info > th,
.table-info > td {
  background-color:#ffd79a;
  color: black;
}

.table-danger,
.table-danger > th,

```

```

.table-danger > td {
    background-color: #ccda46;
    color: black;
}

.table-secondary,
.table-secondary > th,
.table-secondary > td {
    background-color: #ff7575;
    color: black;
}

.bg-light {
    background-color: #FFC646
!important;
}

.fw-bolder {
    font-weight: bolder !important;
}

.text-center {
    text-align: center !important;
    color: black !important;
}

.text-warning {
    color: #ffc107 !important;
}

.mt-3 {
    margin-top: 1rem !important;
}

.text-outline {
    -webkit-text-stroke-width: 1px;
    -webkit-text-stroke-color: rgba(0, 0, 0, 0.5);
    text-shadow: 5px 2px 3px rgba(0, .5, 0, .80);
}

.mt-4 {
    margin-top: 1.5rem !important;
}

.alert {
    position: relative;
    padding: 0.75rem 1.25rem;
    margin-bottom: 1rem;
}

    border: 1px solid transparent;
    border-radius: 0.25rem;
}

.alert-info {
    color: #0c5460;
    background-color: #d1ecf1;
    border-color: #bee5eb;
}

/* Add vertical-align: middle to
table cells */

.table td,
.table th {
    vertical-align: middle;
}

/* Separate page for each table */

.table-container {
    page-break-after: always;
}

/* Change weight of subject_title
column */

.table td:nth-child(4),
.table th:nth-child(4) {
    font-weight: bold;
}

</style>

</head>
<body>
<h1 style="text-align:center;font-weight:bold;font-size:2.9em;color:darkgreen;font-family:monospace;">ROOM SCHEDULES</h1>
';

function calculateRowspan($room_name, $day)
{
    global $conn;
    // Query to count the number of
    rows for the teacher and day
    combination

```

```

$countQuery = "SELECT
COUNT(*) AS num_rows FROM
faculty_loadings WHERE room_name
= '$room_name' AND day = '$day'";
$countResult = $conn-
>query($countQuery);

if ($countResult !== false &&
$countResult->num_rows > 0) {
    $countRow = $countResult-
>fetch_assoc();
    return $countRow['num_rows'];
}

return 1; // Default rowspan value
}

$sql = "SELECT DISTINCT
room_name FROM faculty_loadings
ORDER BY room_name";
$result = $conn->query($sql);

if ($result !== false && $result-
>num_rows > 0) {
    $html .= '<div class="container">';

    while ($row = $result-
>fetch_assoc()) {
        $room_name =
$row['room_name'];
        $sql = "SELECT * FROM
faculty_loadings WHERE room_name
= '$room_name' ORDER BY
FIELD(day, 'Monday', 'Tuesday',
'Wednesday', 'Thursday', 'Friday'),
start_time, end_time";
        $scheduleResult = $conn-
>query($sql);

        if ($scheduleResult !== false &&
$scheduleResult->num_rows > 0) {
            $html .= '<div class="table-
container">'; // Add table container for
separate page
            $html .= '<table class="table
mt-4 table-bordered table-hover">';
            $html .= '<thead class="fw-
bolder bg-dark text-
light"><tr><th>Room</th><th>Day</t
h><th>Subject Code</th><th>Subject
Title</th><th>Teacher</th><th>Cours
e Year &
Section</th><th>Start_Time</th><th>
End_Time</th></tr></thead>';
            $html .= '<tbody>';

            $firstRow = true; // Flag to
check if it's the first row for the
course_year_section
            $previousDay = ""; // Variable
to store the previous day
            $rowspan = 0; // Variable to
store the rowspan value for the day

            while ($scheduleRow =
$scheduleResult->fetch_assoc()) {
                $day = $scheduleRow['day'];
                $bgColorClass = "";

                // Set background color class
                // based on the day of the week
                if ($day == 'Monday') {
                    $bgColorClass = 'table-
primary';
                } elseif ($day == 'Tuesday')
{
                    $bgColorClass = 'table-
warning';
                } elseif ($day ==
'Wednesday') {
                    $bgColorClass = 'table-
info';
                } elseif ($day == 'Thursday')
{
                    $bgColorClass = 'table-
danger';
                } elseif ($day == 'Friday') {
                    $bgColorClass = 'table-
secondary';
                }
                $html .= '<tr class="" . $bgColorClass .
"">';

                // Output teacher only for the
                // first row
                if ($firstRow) {
                    $firstRow = false;
                    $html .= '<td
class="header_row bg-light"
rowspan="" . $scheduleResult-

```

```

>num_rows . "'> . $room_name .
'</td>';
}
// Check if the current day is
the same as the previous day
if ($day != $previousDay) {
    // Calculate the rowspan
    value for the day
    $rowspan =
    calculateRowspan($room_name,
    $day);
    $html .= '<td
    class="header_row bg-light"
    rowspan="" . $rowspan . "'> . $day .
'</td>';
}

$html .= '<td> .
$scheduleRow['subject_code'] . '</td>';
$html .= '<td> .
$scheduleRow['subject_description'] .
'</td>';
$html .= '<td> .
$scheduleRow['teacher'] . '</td>';
$html .= '<td> .
$scheduleRow['course_year_section'] .
'</td>';
// Format the start time and
end time in 12-hour format with
AM/PM
$html .= '<td> . $start_time
= date("h:i A",
strtotime($scheduleRow['start_time']));
'</td>';
$html .= '<td> . $end_time
= date("h:i A",
strtotime($scheduleRow['end_time']));
'</td>';

$html .= '</tr>';
$previousDay = $day;

// Check if the table exceeds
the page height and add a page break if
necessary
if ($pdf->GetY() >= $pdf-
>getPageHeight() - 100) {
    $pdf->AddPage();
}
}

$html .= '</tbody>';
$html .= '</table>';

$html .= '</div>'; // End of
table container
}

$scheduleResult->free_result();

$html .= '</div>';
} else {
$html .= '<div class="alert alert-info
mt-4">No schedule found.</div>';
}

$html .= '
</body>
</html>
';

$pdf->writeHTML($html, true, false,
true, false, ""); // Generate PDF from
HTML content

$pdf->Output('course_schedules.pdf',
'T'); // Output PDF for printing

$conn->close();
ob_end_flush(); // Flush output buffer
and turn off output buffering
?>

view_room_schedule.php

<?php
include 'database_connection.php';
include 'index.php';

echo '
<!DOCTYPE html>
<html>

<head>
<title>View Schedule</title>
<link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">

```

```

<h1 style=" text-shadow: 4px 2px
3px rgba(0, .5, 0, .80); " class="fw-
bolder text-center text-warning mt-3
text-outline">ROOM
SCHEDULES</H1>

<div class="container fw-bolder
text-center " style="padding: 5px;">

    $sql = "SELECT * FROM
semesters";
    $result = mysqli_query($conn,
$sql);

    // Check if the query was
successful
    if ($result) {
        // Fetch the semester name
        $row =
mysqli_fetch_assoc($result);
        $semester_name =
$row['semester_name'];
        $start_year = $row['start_year'];
        $end_year = $row['end_year'];

        // Display the schedule
        echo '<h1 class= "fw-bolder"
style="color:dark; margin-top: 0;
margin-bottom: 10px;font-family:>' .
$semester_name . '</h1>';
        echo '<p style="margin:
0;color:black;font-family:monospace;
font-size: 17px; margin-bottom:
10px;">A.Y: ' . $start_year . '-' .
$end_year . '</p>';
    } else {
        // Handle the case when the
query fails
        echo 'Error fetching semester
name: ' . mysqli_error($connection);
    }

    echo ' </div>
<style>
.table-bordered {
    border: .2rem solid;
    text-align: center;
    vertical-align: middle;
}

```

```

.header_row{
    color: darkgreen;
    font-family: consolas ;
    text-align: center;
    font-size: 2rem;
    vertical-align: middle;
}

.print-page {
    padding: 20px;
}

.print-table {
    width: 100%;
    border-collapse: collapse;
    page-break-before: always; /* Added property for separate pages */
}

.print-table:not(:first-of-type) {
    page-break-inside: avoid; /* Added property for subsequent tables */
}

.print-table thead th {
    font-weight: bold;
    background-color: #223e28;
    color: #fff;
}

.print-table tbody td {
    padding: 4px;
}

.print-table tbody tr:hover {
    background-color: #e0e0e1;
}

.print-btn {
    margin-top: 20px;
}

.header_row{
    color: darkgreen;
    text-align: center;
    vertical-align: middle;
    font-family:monospace;
    font-size:1.5rem;
    font-weight:bold;
}

```

```

        color:green;
    }
}

.bg-dark {
    background-color: yellow;
}

.bg-green {
    background-color: green;
}

.room-label {
    font-size:2rem;
    text-align: center;
    margin-top: 20px;
    font-family:monospace;
    vertical-align:middle;
}

}

@media print {
    body {
        visibility: hidden;
    }

    .print-page {
        visibility: visible;
        width: 100%;
        height: 100%;
        margin: 0;
        padding: 20px;
        box-sizing: border-box;
        page-break-after: always;
    }
}

.print-table thead th {
    padding: 2px;
    font-family: monospace;
    font-size:13px;
    font-weight: bolder;
    color: black;
    text-align:center;
    vertical-align:middle;
    border:3px solid green;
}

.print-table thead th:nth-child(1) {
    color:green;
}

.print-table thead th:nth-child(2) {
    color:green;
}

.print-table thead th:nth-child(3) {
    color:green;
}

.print-table thead th:nth-child(4) {
    color:green;
}

.print-table thead th:nth-child(5) {
    color:green;
}

.print-table thead th:nth-child(6) {
    color:green;
}

.print-table thead th:nth-child(7) {
    color:green;
}

.print-table thead th:nth-child(8) {
    color:green;
}

.print-table tbody td {
    padding: 4px;
    color: black;
    font-family:monospace;
    border:.5px solid ;
}

}

</style>

<script>
// Handle Ctrl+P key press event
document.addEventListener("keydown", function(event) {
    if (event.ctrlKey && event.key === "p" || "P") {
        event.preventDefault(); // Prevent default print action
        window.location.href =
        "view_room_generatePDF.php"; // Redirect to generatePDF.php
    }
});
</script>';

```

```

function
calculateRowspan($room_name, $day)
{
    global $conn;
    // Query to count the number of
    rows for the teacher and day
    combination
    $countQuery = "SELECT
    COUNT(*) AS num_rows FROM
    faculty_loadings WHERE room_name
    = '$room_name' AND day = '$day'";
    $countResult = $conn-
    >query($countQuery);

    if ($countResult !== false &&
    $countResult->num_rows > 0) {
        $countRow = $countResult-
        >fetch_assoc();
        return $countRow['num_rows'];
    }

    return 1; // Default rowspan value
}

$sql = "SELECT DISTINCT
room_name FROM faculty_loadings
ORDER BY room_name";
$result = $conn->query($sql);

if ($result !== false && $result-
>num_rows > 0) {
    echo '<div class="container print-
page">';

    while ($row = $result-
    >fetch_assoc()) {
        $room_name =
$row['room_name'];
        $sql = "SELECT * FROM
faculty_loadings WHERE room_name
= '$room_name' ORDER BY
FIELD(day, 'Monday', 'Tuesday',
'Wednesday', 'Thursday', 'Friday'),
start_time, end_time";
        $scheduleResult = $conn-
        >query($sql);

        if ($scheduleResult !== false &&
$scheduleResult->num_rows > 0) {
            echo '<table class="table mt-4
print-table table-bordered table-
hover">';
            echo '<thead class="fw-
bolder text-
light"><tr><th>Room</th><th>Day</t
h><th>Subject Code</th><th>Subject
Title</th><th>Subject
Type</th><th>Teacher</th><th>Cour
se Year &
Section</th><th>Start_Time</th><th>
End_Time</th></tr></thead>';
            echo '<tbody>';

            $firstRow = true; // Flag to
            check if it's the first row for the
            course_year_section
            $previousDay = ""; // Variable
            to store the previous day
            $rowspan = 0; // Variable to
            store the rowspan value for the day

            while ($scheduleRow =
$scheduleResult->fetch_assoc()) {
                $day = $scheduleRow['day'];
                $bgColorClass = "";

                // Set background color class
                based on the day of the week
                if ($day == 'Monday') {
                    $bgColorClass = 'table-
primary';
                } elseif ($day == 'Tuesday')
                {
                    $bgColorClass = 'table-
warning';
                } elseif ($day ==
'Wednesday') {
                    $bgColorClass = 'table-
info';
                } elseif ($day == 'Thursday')
                {
                    $bgColorClass = 'table-
danger';
                } elseif ($day == 'Friday') {
                    $bgColorClass = 'table-
secondary';
                }
            }
        }
    }
}

```

```

echo '<tr class="" .';
$bgColorClass . "">';
    // Output course year &
    section only for the first row
    if ($firstRow) {
        $firstRow = false;
        echo '<td'
        class="header_row bg-light"
        rowspan="" . $scheduleResult-
        >num_rows . ">' . $room_name .
        '</td>';
    }

    // Check if the current day is
    the same as the previous day
    if ($day != $previousDay) {
        // Calculate the rowspan
        value for the day
        $rowspan =
        calculateRowspan($room_name,
        $day);
        echo '<td'
        class="header_row bg-light"
        rowspan="" . $rowspan . ">' . $day .
        '</td>';
    }

    echo '<td>'.
    $scheduleRow['subject_code'] . '</td>';
    echo '<td>'.
    $scheduleRow['subject_description'] .
    '</td>';
    echo '<td>'.
    $scheduleRow['subject_type'] . '</td>';
    echo '<td>'.
    $scheduleRow['teacher'] . '</td>';
    echo '<td>'.
    $scheduleRow['course_year_section'] .
    '</td>';
        // Format the start time and
        end time in 12-hour format with
        AM/PM
        $start_time = date("h:i A",
        strtotime($scheduleRow['start_time']));
        $end_time = date("h:i A",
        strtotime($scheduleRow['end_time']));
        echo '<td>' . $start_time .
        '</td>';
    echo '<td>' . $end_time .
    '</td>';
    echo '</tr>';
    // Update the previous day
    variable
    $previousDay = $day;
}

echo '</div>'; // Close the print-
content container
echo '</div>'; // Close the print-
page container

echo '</tbody>';
echo '</table>';
} else {
    echo 'No rooms found.';
}
}

echo '</div>';

view_section_generatePDF.php
<?php
require_once
'TCPDF TEMPLATE/TCPDF_TEMP
LATE/TCPDF-main/tcpdf.php'; //
Include TCPDF library

include 'database_connection.php';

// Start output buffering
ob_start();

// Generate PDF using TCPDF
$pdf = new TCPDF('L', 'mm', 'A4',
true, 'UTF-8');
$pdf->SetCreator(PDF_CREATOR);
$pdf->SetAuthor('TuyPogi');
$pdf->SetTitle('Course Schedules');
$pdf->SetMargins(5, 5, 5);
$pdf->SetHeaderMargin(2);
$pdf->SetFooterMargin(5);
$pdf->SetAutoPageBreak(true, 10);
$pdf->AddPage();

$html = '

```

```

<!DOCTYPE html>
<html>
<head>
  <title>View Schedule</title>
  <link rel="stylesheet"
  href="https://cdnjs.cloudflare.com/ajax
  /libs/bootstrap/5.0.2/css/bootstrap.min.
  css">
  <style>
    .table {
      width: 100%;
      margin-bottom: 1rem;
      color: white;
      background-color: #388e3c;
    }

    .table-bordered td {
      border: 1px solid black;
      padding: 8px;
      text-align: center;
      vertical-align: middle;
      font-family: Georgia;
    }

    .table-bordered th{
      border: 1px double black;
      padding: 8px;
      text-align: center;
      color: white;
      vertical-align: middle;
      font-weight: bold;
      font-size: 12px;
    }

    .table-hover tbody tr:hover {
      background-color: rgba(0, 0, 0,
      0.075);
    }

    .table-primary,
    .table-primary > th,
    .table-primary > td {
      background-color: #fefaec;
      color: black;
    }

    .table-warning,

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    .table-warning > th,
    .table-warning > td {
      background-color: #a6e4e7;
      color: black;
    }

    .table-info,
    .table-info > th,
    .table-info > td {
      background-color: #ffd79a;
      color: black;
    }

    .table-danger,
    .table-danger > th,
    .table-danger > td {
      background-color: #ccda46;
      color: black;
    }

    .table-secondary,
    .table-secondary > th,
    .table-secondary > td {
      background-color: #ff7575;
      color: black;
    }

    .bg-light {
      background-color: #FFC646
      !important;
    }

    .fw-bolder {
      font-weight: bolder !important;
    }

    .text-center {
      text-align: center !important;
      color: black !important;
    }

    .text-warning {
      color: #ffc107 !important;
    }

    .mt-3 {
      margin-top: 1rem !important;
    }

    .text-outline {

```

```

        -webkit-text-stroke-width: 1px;
        -webkit-text-stroke-color: rgba(0,
0, 0, 0.5);
        text-shadow: 5px 2px 3px rgba(0,
.5, 0, .80);
    }

.mt-4 {
    margin-top: 1.5rem !important;
}

.alert {
    position: relative;
    padding: 0.75rem 1.25rem;
    margin-bottom: 1rem;
    border: 1px solid transparent;
    border-radius: 0.25rem;
}

.alert-info {
    color: #0c5460;
    background-color: #d1ecf1;
    border-color: #bee5eb;
}

/* Add vertical-align: middle to
table cells */
.table td,
.table th {
    vertical-align: middle;
}

/* Separate page for each table */
.table-container {
    page-break-after: always;
}

/* Change weight of subject_title
column */
.table td:nth-child(4),
.table th:nth-child(4) {
    font-weight: bold;
}

</style>

</head>
<body>

<h1 style="text-align:center;font-
weight:bold;font-
size:2.9em;color:darkgreen;font-
family:monospace;">>COURSE
SCHEDULES</h1>
';

function
calculateRowspan($course_year_sectio
n, $day) {
    global $conn;
    // Query to count the number of
    rows for the teacher and day
    combination
    $countQuery = "SELECT
COUNT(*) AS num_rows FROM
faculty_loadings WHERE
course_year_section =
'$course_year_section' AND day =
'$day'";
    $countResult = $conn-
>query($countQuery);

    if ($countResult !== false &&
$countResult->num_rows > 0) {
        $countRow = $countResult-
>fetch_assoc();
        return $countRow['num_rows'];
    }

    return 1; // Default rowspan value
}

$sql = "SELECT DISTINCT
course_year_section FROM
faculty_loadings ORDER BY
course_year_section ASC ";
$result = $conn->query($sql);

if ($result !== false && $result-
>num_rows > 0) {
    $html .= '<div class="container">';

    while ($row = $result-
>fetch_assoc()) {
        $course_year_section =
$row['course_year_section'];
        $sql = "SELECT * FROM
faculty_loadings WHERE
course_year_section =

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strtotime($scheduleRow['start_time']));
'</td>';
    $html .= '<td>'. $end_time =
date("h:i A",
strtotime($scheduleRow['end_time'])).'
</td>';
    $html .= '</tr>';

$previousDay = $day;

// Check if the table exceeds
the page height and add a page break if
necessary
if ($pdf->GetY() >= $pdf-
>getPageHeight() - 100) {
    $pdf->AddPage();
}
}

$html .= '</tbody>';
$html .= '</table>';

$html .= '</div>'; // End of
table container
}

$scheduleResult->free_result();
}

$html .= '</div>';
} else {
    $html .= '<div class="alert alert-info
mt-4">No schedule found.</div>';
}

$html .= '
</body>
</html>
';

$pdf->writeHTML($html, true, false,
true, false, ""); // Generate PDF from
HTML content

$pdf->Output('course_schedules.pdf',
'T'); // Output PDF for printing

$conn->close();
ob_end_flush(); // Flush output buffer
and turn off output buffering
?>

view_section_schedule.php
<?php
include 'database_connection.php';
include 'index.php';

echo '
<!DOCTYPE html>
<html>

<head>
    <title>View Schedule</title>
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">

<div class="container-fluid text-center
">
<h1 style=" text-shadow: 4px 2px 3px
rgba(0, .5, 0, .80); " class="fw-bolder
text-center text-warning mt-3 text-
outline">COURSE
SCHEDULES</h1>

<div class="container fw-
bolder" style="padding: 5px;">

$sql = "SELECT * FROM
semesters";
$result =
mysqli_query($conn, $sql);

// Check if the query was
successful
if ($result) {
    // Fetch the semester name
    $row =
mysqli_fetch_assoc($result);
    $semester_name =
$row['semester_name'];
    $start_year =
$row['start_year'];
    $end_year =
$row['end_year'];

    // Display the schedule
    echo '<h1 class="fw-
bolder" style="color:dark; margin-top:

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0; margin-bottom: 10px;font-family:>' . $semester_name . '</h1>';
echo '<p style="margin: 0;color:black;font-family:monospace;
font-size: 17px; margin-bottom: 10px;">A.Y: ' . $start_year . '-' .
$end_year . '</p>';
} else {
    // Handle the case when
the query fails
    echo 'Error fetching
semester name: ' .
mysql_error($connection);
}

echo ' </div>

<style>
.table-bordered {
    border: .2rem solid;
    text-align: center;
    vertical-align: middle;
}
.header_row{
    color: darkgreen;
    font-family: consolas ;
    text-align: center;
    font-size: 2rem;
    vertical-align: middle;
}
.print-page {
    padding: 20px;
}
.print-table {
    width: 100%;
    border-collapse: collapse;
    page-break-before: always; /* Added property for separate pages */
}
.print-table:not(:first-of-type) {
    page-break-inside: avoid; /* Added property for subsequent tables */
}
.print-table thead th {
    font-weight: bold;
    background-color: #223e28;
    color: #fff;
}
.print-table tbody td {
    padding: 4px;
}
.print-table tbody tr:hover {
    background-color: #e0e0e1;
}
.print-btn {
    margin-top: 20px;
}
.header_row{
    color: darkgreen;
    text-align: center;
    vertical-align: middle;
    font-family:monospace;
    font-size:1.5rem;
    font-weight:bold;
}
.bg-dark {
    background-color: yellow;
}
.bg-green {
    background-color: green;
}
.room-label {
    font-size:2rem;
    text-align: center;
    margin-top: 20px;
    font-family:monospace;
    vertical-align:middle;
}
@media print {
    body {
        visibility: hidden;
    }
}
.print-page {
    visibility: visible;
    width: 100%;
}

```

```

height: 100%;
margin: 0;
padding: 20px;
box-sizing: border-box;
page-break-after: always;
}

.print-table thead th {
    padding: 2px;
    font-family: monospace;
    font-size: 13px;
    font-weight: bolder;
    color: black;
    text-align: center;
    vertical-align: middle;
    border: 3px solid green;
}

.print-table thead th:nth-child(1) {
    color: green;
}
.print-table thead th:nth-child(2) {
    color: green;
}
.print-table thead th:nth-child(3) {
    color: green;
}
.print-table thead th:nth-child(4) {
    color: green;
}

.print-table thead th:nth-child(5) {
    color: green;
}
.print-table thead th:nth-child(6) {
    color: green;
}

.print-table thead th:nth-child(7) {
    color: green;
}
.print-table thead th:nth-child(8) {
    color: green;
}

.print-table tbody td {
    padding: 4px;
    color: black;
}

font-family: monospace;
border: .5px solid ;
}

}

</style>

<script>
// Handle Ctrl+P key press event
document.addEventListener("keydown", function(event) {
    if (event.ctrlKey && event.key === "p" || "P") {
        event.preventDefault(); // Prevent default print action
        window.location.href =
        "view_section_generatePDF.php"; // Redirect to generatePDF.php
    }
});
</script>';

function calculateRowspan($course_year_section, $day)
{
    global $conn;
    // Query to count the number of rows for the teacher and day combination
    $countQuery = "SELECT COUNT(*) AS num_rows FROM faculty_loadings WHERE course_year_section = '$course_year_section' AND day = '$day'";
    $countResult = $conn->query($countQuery);

    if ($countResult !== false && $countResult->num_rows > 0) {
        $countRow = $countResult->fetch_assoc();
        return $countRow['num_rows'];
    }

    return 1; // Default rowspan value
}

```

```

$sql = "SELECT DISTINCT
course_year_section FROM
faculty_loadings ORDER BY
course_year_section ASC";
$result = $conn->query($sql);

if ($result !== false && $result-
>num_rows > 0) {
    echo '<div class="container print-
page">';

    while ($row = $result-
>fetch_assoc()) {
        $course_year_section =
$row['course_year_section'];
        $sql = "SELECT * FROM
faculty_loadings WHERE
course_year_section =
'$course_year_section' ORDER BY
FIELD(day, 'Monday', 'Tuesday',
'Wednesday', 'Thursday', 'Friday'),
start_time, end_time";
        $scheduleResult = $conn-
>query($sql);

        if ($scheduleResult !== false &&
$scheduleResult->num_rows > 0) {
            echo '<table class="table mt-4
print-table table-bordered table table-
hover">';

            echo '<thead class="fw-
bolder text-light"><tr><th>Course
Year &
Section</th><th>Day</th><th>Subjec
t Code</th><th>Subject
Title</th><th>Subject
Type</th><th>Teacher</th><th>Roo
m</th><th>Start_Time</th><th>End_
Time</th></tr></thead>';
            echo '<tbody>';

            $firstRow = true; // Flag to
check if it's the first row for the
course_year_section
            $previousDay = ""; // Variable
to store the previous day
            $rowspan = 0; // Variable to
store the rowspan value for the day

                while ($scheduleRow =
$scheduleResult->fetch_assoc()) {
                    $day = $scheduleRow['day'];
                    $bgColorClass = "";

                    // Set background color class
                    // based on the day of the week
                    if ($day == 'Monday') {
                        $bgColorClass = 'table-
primary';
                    } elseif ($day == 'Tuesday')
{
                        $bgColorClass = 'table-
warning';
                    } elseif ($day ==
'Wednesday') {
                        $bgColorClass = 'table-
info';
                    } elseif ($day == 'Thursday')
{
                        $bgColorClass = 'table-
danger';
                    } elseif ($day == 'Friday') {
                        $bgColorClass = 'table-
secondary';
                    }

                    echo '<tr class="" .
$bgColorClass . ">';

                    // Output course year &
                    // section only for the first row
                    if ($firstRow) {
                        $firstRow = false;
                        echo '<td
class="header_row bg-light"
rowspan="" . $scheduleResult-
>num_rows . "">'.
$course_year_section . '</td>';
                    }

                    // Check if the current day is
                    // the same as the previous day to merge
                    // cell if me day
                    if ($day != $previousDay) {
                        // Calculate the rowspan
                        // value for the day
                        $rowspan =
calculateRowspan($course_year_sectio
n, $day);
                    }
                }
            }
        }
    }
}

```

```

echo '<td
class="header_row bg-light"
rowspan="" . $rowspan . ">' . $day .
'</td>';
}

echo '<td>'.
$scheduleRow['subject_code'] . '</td>';
echo '<td>'.
$scheduleRow['subject_description'] .
'</td>';
echo '<td>'.
$scheduleRow['subject_type'] . '</td>';
echo '<td>'.
$scheduleRow['teacher'] . '</td>';
echo '<td>'.
$scheduleRow['room_name'] . '</td>';

// Format the start time and
end time in 12-hour format with
AM/PM
$start_time = date("h:i A",
strtotime($scheduleRow['start_time']));
$end_time = date("h:i A",
strtotime($scheduleRow['end_time']));

echo '<td>' . $start_time .
'</td>';
echo '<td>' . $end_time .
'</td>';

echo '</tr>';
// Update the previous day
variable
$previousDay = $day;

}

echo '</div>'; // Close the print-
content container
echo '</div>'; // Close the print-
page container

echo '</tbody>';
echo '</table>';
} else {
echo 'No rooms found.';
}
}

```

```

echo '</div>';

view_teacher_generatePDF.php
<?php
require_once
'TCPDF_TEMPLATE/TCPDF_TEMP
LATE/TCPDF-main/tcpdf.php'; //
Include TCPDF library

include 'database_connection.php';

// Start output buffering
ob_start();

// Generate PDF using TCPDF
$pdf = new TCPDF('L', 'mm', 'A4',
true, 'UTF-8');
$pdf->SetCreator(PDF_CREATOR);
$pdf->SetAuthor('TuyPogi');
$pdf->SetTitle('Teacher Schedules');
$pdf->SetMargins(5, 5, 5);
$pdf->SetHeaderMargin(2);
$pdf->SetFooterMargin(5);
$pdf->SetAutoPageBreak(true, 10);
$pdf->AddPage();

$html = '
<!DOCTYPE html>
<html>
<head>
<title>View Schedule</title>
<link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">
<style>
.table {
width: 100%;
margin-bottom: 1rem;
color: white;
background-color: #388e3c;
}

.table-bordered td {
border:1px solid black;
padding: 8px;
text-align: center;
vertical-align: middle;
font-family:Georgia;

```

```

        color: black;
    }

.table-bordered th{
    border: 1px double black;
    padding: 8px;
    text-align: center;
    color:white;
    vertical-align: middle;
    font-weight:bold;
    font-size:12px;
}

.table-hover tbody tr:hover {
    background-color: rgba(0, 0, 0, 0.075);
}

.table-primary,
.table-primary > th,
.table-primary > td {
    background-color: #fefaec;
    color: black;
}

.table-warning,
.table-warning > th,
.table-warning > td {
    background-color: #a6e4e7;
    color: black;
}

.table-info,
.table-info > th,
.table-info > td {
    background-color:#ffd79a;
    color: black;
}

.table-danger,
.table-danger > th,
.table-danger > td {
    background-color: #ccda46;
    color: black;
}

.table-secondary,
.table-secondary > th,
.table-secondary > td {
    background-color: #ff7575;
}
}

.color-black {
    color: black;
}

.bg-light {
    background-color: #FFC646 !important;
}

.fw-bolder {
    font-weight: bolder !important;
}

.text-center {
    text-align: center !important;
    color: black !important;
}

.text-warning {
    color: #ffc107 !important;
}

.mt-3 {
    margin-top: 1rem !important;
}

.text-outline {
    -webkit-text-stroke-width: 1px;
    -webkit-text-stroke-color: rgba(0, 0, 0, 0.5);
    text-shadow: 5px 2px 3px rgba(0, 5, 0, .80);
}

.mt-4 {
    margin-top: 1.5rem !important;
}

.alert {
    position: relative;
    padding: 0.75rem 1.25rem;
    margin-bottom: 1rem;
    border: 1px solid transparent;
    border-radius: 0.25rem;
}

.alert-info {
    color: #0c5460;
    background-color: #d1ecf1;
    border-color: #bee5eb;
}

```

```

        }

/* Add vertical-align: middle to
table cells */
.table td,
.table th {
    vertical-align: middle;
}

/* Separate page for each table */
.table-container {
    page-break-after: always;
}

/* Change weight of subject_title
column */
.table td:nth-child(4),
.table th:nth-child(4) {
    font-weight: bold;
}

</style>

</head>
<body>
    <h1 style="text-align:center;font-
weight:bold;font-
size:2.9em;color:darkgreen;font-
family:monospace;">TEACHER
SCHEDULES</h1>
';
function calculateRowspan($teacher,
$day) {
    global $conn;
    // Query to count the number of
    // rows for the teacher and day
    // combination
    $countQuery = "SELECT
COUNT(*) AS num_rows FROM
faculty_loadings WHERE teacher =
'$teacher' AND day = '$day'";
    $countResult = $conn-
>query($countQuery);

    if ($countResult !== false &&
$countResult->num_rows > 0) {
        $countRow = $countResult-
>fetch_assoc();
        return $countRow['num_rows'];
    }
}

return 1; // Default rowspan value
}

$sql = "SELECT DISTINCT teacher
FROM faculty_loadings ORDER BY
teacher ASC";
$result = $conn->query($sql);

if ($result !== false && $result-
>num_rows > 0) {
    $html .= '<div class="container">';

    while ($row = $result-
>fetch_assoc()) {
        $teacher = $row['teacher'];
        $sql = "SELECT * FROM
faculty_loadings WHERE teacher =
'$teacher' ORDER BY FIELD(day,
'Monday', 'Tuesday', 'Wednesday',
'Thursday', 'Friday'), start_time,
end_time";
        $scheduleResult = $conn-
>query($sql);

        if ($scheduleResult !== false &&
$scheduleResult->num_rows > 0) {
            $html .= '<div class="table-
container">; // Add table container for
separate page
            $html .= '<table class="table
mt-4 table-bordered table-hover">';
            $html .= '<thead class="fw-
bolder bg-dark text-
light"><tr><th>Teacher</th><th>Day
</th><th>Subject
Code</th><th>Subject
Title</th><th>Course Year &
Section</th><th>Room</th><th>Start
_Time</th><th>End_Time</th></tr><
/thead>';
            $html .= '<tbody>';

            $firstRow = true; // Flag to
            check if it's the first row for the
            course_year_section
            $previousDay = ""; // Variable
            to store the previous day
        }
    }
}

```

```

    $rowspan = 0; // Variable to
    store the rowspan value for the day

    while ($scheduleRow =
    $scheduleResult->fetch_assoc()) {
        $day = $scheduleRow['day'];
        $bgColorClass = "";

        // Set background color class
        based on the day of the week
        if ($day == 'Monday') {
            $bgColorClass = 'table-
primary';
        } elseif ($day == 'Tuesday')
        {
            $bgColorClass = 'table-
warning';
        } elseif ($day ==
'Wednesday') {
            $bgColorClass = 'table-
info';
        } elseif ($day == 'Thursday')
        {
            $bgColorClass = 'table-
danger';
        } elseif ($day == 'Friday') {
            $bgColorClass = 'table-
secondary';
        }

        $html .= '<tr class="" .
$bgColorClass . "'>';

        // Output teacher only for the
        first row
        if ($firstRow) {
            $firstRow = false;
            $html .= '<td
class="header_row bg-light"
rowspan="" . $scheduleResult-
>num_rows . "'>'. $teacher . '</td>';
        }
        // Check if the current day is
        the same as the previous day
        if ($day != $previousDay) {
            // Calculate the rowspan
            value for the day
            $rowspan =
            calculateRowspan($teacher, $day);
            $html .= '<td
class="header_row bg-light"
rowspan="" . $rowspan . "'>'. $day .
'</td>';
        }

        $html .= '<td>' .
$scheduleRow['subject_code'] . '</td>';
        $html .= '<td>' .
$scheduleRow['subject_description'] .
'</td>';
        $html .= '<td>' .
$scheduleRow['course_year_section'] .
'</td>';
        $html .= '<td>' .
$scheduleRow['room_name'] . '</td>';
        // Format the start time and
        end time in 12-hour format with
        AM/PM
        $html .= '<td>' . $start_time
        = date("h:i A",
        strtotime($scheduleRow['start_time']));
        '</td>';
        $html .= '<td>' . $end_time
        = date("h:i A",
        strtotime($scheduleRow['end_time']));
        '</td>';

        $html .= '</tr>';
        $previousDay = $day;

        // Check if the table exceeds
        the page height and add a page break if
        necessary
        if ($pdf->GetY() >= $pdf-
>getPageHeight() - 100) {
            $pdf->AddPage();
        }

        $html .= '</tbody>';
        $html .= '</table>';

        $html .= '</div>'; // End of
        table container
    }

    $scheduleResult->free_result();
}

```

```

$html .= '</div>';
} else {
    $html .= '<div class="alert alert-info mt-4">No schedule found.</div>';
}

$html .= '
</body>
</html>
';

$pdf->writeHTML($html, true, false, true, false, ""); // Generate PDF from HTML content

$pdf->Output('teacher_schedules.pdf', 'T'); // Output PDF for printing

$conn->close();
ob_end_flush(); // Flush output buffer and turn off output buffering
?>

view_teacher_schedule.php
<?php
include 'database_connection.php';
include 'index.php';

echo '
<!DOCTYPE html>
<html>

<head>
    <title>View Schedule</title>
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax
/libs/bootstrap/5.0.2/css/bootstrap.min.
css">
    <h1 style=" text-shadow: 4px 2px
3px rgba(0, .5, 0, .80); " class="fw-
bolder text-center text-warning mt-3
text-outline">TEACHER
SCHEDULES</H1>

    <div class="container fw-bolder
text-center" style="padding: 5px;">';

$sql = "SELECT * FROM
semesters";
}

$result = mysqli_query($conn,
$sql);

// Check if the query was successful
if ($result) {
    // Fetch the semester name
    $row =
mysqli_fetch_assoc($result);
    $semester_name =
$row['semester_name'];
    $start_year = $row['start_year'];
    $end_year = $row['end_year'];

    // Display the schedule
    echo '<h1 class= "fw-bolder"
style="color:dark; margin-top: 0;
margin-bottom: 10px;font-family:>' .
$semester_name . '</h1>';
    echo '<p style="margin:
0;color:black;font-family:monospace;
font-size: 17px; margin-bottom:
10px;">A.Y: ' . $start_year . '-'.
$end_year . '</p>';
} else {
    // Handle the case when the
query fails
    echo 'Error fetching semester
name: ' . mysqli_error($connection);
}

echo ' </div>
<style>
.table-bordered {
    border: .2rem solid;
    text-align: center;
    vertical-align: middle;
}

.header_row{
    color: darkgreen;
    font-family: consolas ;
    text-align: center;
    font-size: 2rem;
    vertical-align: middle;
}

.print-page {
    padding: 20px;
}

```

```

.print-table {
    width: 100%;
    border-collapse: collapse;
    page-break-before: always; /* Added property for separate pages */
}

.print-table:not(:first-of-type) {
    page-break-inside: avoid; /* Added property for subsequent tables */
}

.print-table thead th {
    font-weight: bold;
    background-color: #223e28;
    color: #fff;
}

.print-table tbody td {
    padding: 4px;
}

.print-table tbody tr:hover {
    background-color: #e0e0e1;
}

.print-btn {
    margin-top: 20px;
}

.header_row{
    color: darkgreen;
    text-align: center;
    vertical-align: middle;
    font-family:monospace;
    font-size:1.5rem;
    font-weight:bold;
}

.bg-dark {
    background-color: yellow;
}

.bg-green {
    background-color: green;
}

.room-label {
    font-size:2rem;
}

text-align: center;
margin-top: 20px;
font-family:monospace;
vertical-align:middle;
}

@media print {
    body {
        visibility: hidden;
    }
}

.print-page {
    visibility: visible;
    width: 100%;
    height: 100%;
    margin: 0;
    padding: 20px;
    box-sizing: border-box;
    page-break-after: always;
}

.print-table thead th {
    padding: 2px;
    font-family: monospace;
    font-size:13px;
    font-weight: bolder;
    color: black;
    text-align:center;
    vertical-align:middle;
    border:3px solid green;
}

.print-table thead th:nth-child(1) {
    color:green;
}

.print-table thead th:nth-child(2) {
    color:green;
}

.print-table thead th:nth-child(3) {
    color:green;
}

.print-table thead th:nth-child(4) {
    color:green;
}

.print-table thead th:nth-child(5) {
    color:green;
}

```

```

}

.print-table thead th:nth-child(6) {
    color:green;
}

.print-table thead th:nth-child(7) {
    color:green;
}
.print-table thead th:nth-child(8) {
    color:green;
}

.print-table tbody td {
    padding: 4px;
    color: black;
    font-family:monospace;
    border:.5px solid ;
}

}

</style>

<script>
// Handle Ctrl+P key press event
document.addEventListener("keydown",
", function(event) {
    if (event.ctrlKey && event.key ===
    "p" || "P") {
        event.preventDefault(); // Prevent
        default print action
        window.location.href =
        "view_teacher_generatePDF.php"; //
        Redirect to generatePDF.php
    }
});
</script>';

// Function to calculate the rowspan
value for the day
function calculateRowspan($teacher,
$day) {
    global $conn;
    // Query to count the number of
    rows for the teacher and day
    combination
    $countQuery = "SELECT
    COUNT(*) AS num_rows FROM
    faculty_loadings WHERE teacher =
    '$teacher' AND day = '$day'";
    $countResult = $conn-
    >query($countQuery);

    if ($countResult !== false &&
    $countResult->num_rows > 0) {
        $countRow = $countResult-
        >fetch_assoc();
        return $countRow['num_rows'];
    }

    return 1; // Default rowspan value
}
$sql = "SELECT DISTINCT teacher
FROM faculty_loadings ORDER BY
teacher ASC";
$result = $conn->query($sql);

if ($result !== false && $result-
>num_rows > 0) {
    echo '<div class="container print-
page">';

    while ($row = $result-
    >fetch_assoc()) {
        $teacher = $row['teacher'];
        $sql = "SELECT * FROM
faculty_loadings WHERE teacher =
'$teacher' ORDER BY FIELD(day,
'Monday', 'Tuesday', 'Wednesday',
'Thursday', 'Friday'), start_time,
end_time";
        $scheduleResult = $conn-
        >query($sql);

        if ($scheduleResult !== false &&
        $scheduleResult->num_rows > 0) {
            echo '<table class="table mt-4 print-
table table-bordered table table-
hover">';
            echo '<thead class="fw-bolder bg-
dark text-
light"><tr><th>Teacher</th><th>Day
</th><th>Subject
Code</th><th>Subject
Title</th><th>Subject
Type</th></th><th>Room</th><th>C
ourse Year &

```



## APPENDIX M

### CURRICULUM VITAE



**Hernando Jr. J. Costelo**  
 Sitio Burol, Tejeros Convention Rosario, Cavite  
 09676746394  
[hernandocostelo@gmail.com](mailto:hernandocostelo@gmail.com)

**OBJECTIVE**

I am dedicated to expanding my knowledge and expertise to contribute valuable insights and make a meaningful impact within your organization. I am committed to bringing passion and enthusiasm to my work, striving to give my best effort and add value to the company.

**EDUCATION**

**BACHELOR'S DEGREE IN COMPUTER SCIENCE | CAVITE STATE UNIVERSITY CCAT CAMPUS**  
 Rosario, Cavite  
 2018-2023

**SENIOR HIGH SCHOOL | FAR EAST ASIA PACIFIC INSTITUTE OF TOURISM SCIENCE AND TECHNOLOGY**  
 JIM BUILDING, DAANG AMAYA 1, TANZA, CAVITE 4108  
 2016-2018

**JUNIOR HIGH SCHOOL | TANZA NATIONAL COMPREHENSIVE NATIONAL HIGH SCHOOL**  
 Tanza, Cavite  
 2012-2016

**ELEMENTARY | TEJEROS CONVENTION ELEMENTARY SCHOOL**  
 Tejeros Convention Rosario, Cavite  
 2006-2012

**SKILLS**

- Computer Literate
- Knowledge in Microsoft Office (Word, Excel, PowerPoint)
- Basic Graphic Design using (CS3 Photoshop)
- Basic Knowledge in this following Programming Language (PHP, Python, Java, and C++)
- Knowledge in Web Development (HTML, CSS, PHP, MySQL, XAMPP, GitHub, Figma)

**CHARACTER REFERENCE**

- **JOYVILYN C. CANDANO**  
 OFFICE ASSISTANT  
 H.R.D Singapore Pte, Ltd  
 09051391082

---

**HERNANDO JR. J. COSTELO**



**Name: Gaetos, Michelle Emmanuel S.**

**CONTACT**

📞 +63 908 385 1787  
✉️ emmanuelxgaetos@gmail.com  
📍 Block.14 Lot 26 Phase 1,  
Amaya Breeze, Tanza,  
Cavite City

**PROFILE**

To build a long-term career with opportunities, with career growth. To use my skills in the best possible way for achieving a company's goal.

---

**SKILLS**

- Basic Knowledge in HTML
- Basic Knowledge in CSS
- Customer Service

**EXPERIENCE**

**Game Keeper**  
Mystery  
April 2018 – March 2023

---

**EDUCATION**

**TERTIAL EDUCATION**  
Cavite State University  
CCAT Campus      2018 - Present

**SECONDARY SCHOOL**

Saint Paul College of  
Makati      2016-2018

National High School      2012- 2016

**PRIMARY EDUCATION**  
General Pio Del Pilar

Makati Elementary School      2006-  
2012

# JOHNUEL M. JAVIER

## APPLICANT

• Sitio Burol, Brgy Tejeros Convention Rosario, Cavite  
 • 0995-558-0873  
 • awelismjavier11@gmail.com



## CAREER OVERVIEW

Highly driven information technology student seeking an intern position in graphic designer where I can lend my knowledge of designing to help your organization improve profitability.

## EDUCATION

### Primary

- Concepcion Pinagbakuran Elementary School 2005 - 2010
- Sariaya, Quezon

### Secondary

- Lutucan National High School 2012 - 2018
- Sariaya, Quezon

### Tertiary

- Bachelor of Science in Computer Science
- Rosario, Cavite
- Cavite State University CCAT Campus 2018 - 2023

## SKILLS

- Basic knowledge in adobe Photoshop
- Basic knowledge in video editing
- Basic knowledge in HTML, CSS and JAVASCRIPT
- Basic knowledge in Microsoft Excel, Word and PowerPoint

## ACHIEVEMENT

- NCII Passer

## REFERENCE

Mrs. Herlyn C. Maralan  
 Public High School Teacher  
 Amaya School of Home Industries  
 herlyncestelo9@gmail.com  
 0926275192

## Affirmation Statement

I hereby affirms that the information contained in the resume is true to the best of my knowledge and conscience.

Johnuel Javier  
(Applicant)

# REN RUSSEL E. LAVILLA

## APPLICANT

 B13 L9 PH2A Grand Riverside Subd. General Trias City, Cavite  
 09759902764  
 renlavilla12321@gmail.com



## CAREER OVERVIEW

I manage secretarial duties like sorting and sending mail as a professional. To keep the office tidy and clean for guests or clients, I maintain an inventory of office supplies and place fresh orders as necessary.

## EDUCATION

### Tertiary

- Bachelor of Science in Computer
- Science Rosario, Cavite
- Cavite State University CCAT Campus 2018-2023

### Secondary

#### Senior High School:

- Luis Y. Ferrer Junior Senior High School 2018-2016
- South Square Village, Pasong Kawayan 1, General Trias City, Cavite

#### Junior High School

- Governor Ferrer Memorial High School 2016-2012
- Pinagtipunan, General Trias City, Cavite

## SKILLS

- Verbal and written communication skills
- Basic Knowledge in Graphic Designing (Adobe Photoshop)
- Basic Knowledge in Microsoft Excel, word, PowerPoint

## STRENGTH

- Willingness to adapt new things and learn new knowledge
- Hard working and obedient

## REFERENCE

Juliana Silva

CEO | Liceria & Co.

[hello@reallygreatsite.com](mailto:hello@reallygreatsite.com)  
+123-456-7890

# LESTER D. QUIJANO

## APPLICANT

 09502351005  
 [quijanolester75@gmail.com](mailto:quijanolester75@gmail.com)  
 Bijia, Calibuyo, Tanza, Cavite



## CAREER OVERVIEW

Seeking a challenging position in a reputed organization where I can learn new skills, expand my knowledge, and leverage my learnings. To get an opportunity where I can make the best of my potential and contribute to the organization's growth.

## EDUCATION

### Tertiary

- Bachelor of Science in Computer Science
- Rosario, Cavite
- Cavite State University CCAT Campus 2018 - 2023

### SKILLS

- Problem solving.
- Decision making.
- Concentration.
- Attention to detail.
- Teamwork.
- Able to follow instructions and production schedules.
- Able to act quickly when a problem arises

### Secondary

- Amaya School of home and industries  
2012-2018  
Sahud Ulan, Tanza Cavite

### Primary

- Flaviana F. Arayata Elementary School
- 2006- 2012
- Bagong Pook, Calibuyo, Tanza, Cavite

## REFERENCE

Flaviana F. Arayata Elementary School  
2006- 2012  
Bagong Pook, Calibuyo, Tanza, Cavite