

DAILY-TIME RECORD WITH PAYROLL MANAGEMENT SYSTEM

FOR TREASURES OF BOLINAO

BEACH RESORT & HOTEL

A Projected Study to the Faculty
of Information Technology Department

STI Alaminos

In Partial Fulfilment of the Requirements for
Application Design and Development, Advanced Java Programming,
and Advanced C# Programming

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APPROVAL SHEET

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ABSTRACT

Daily-Time Record with Payroll Management System for Treasure of Bolinao Beach
Resort & Hotel

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The **Daily-Time Record (DTR)** is a vital tool that businesses use to track and record employee attendance, including hours worked, time-in, and time-out. Payroll systems are also necessary for precisely calculating employee benefits, deductions, salaries, and other entitlements. Many organizations continue to use manual processes, which are prone to mistakes, inefficiencies, and delays, despite their significance.

As technology develops quickly, Automated systems have emerged as useful instruments for speeding these processes due to the rapid advancement of it. Automated payroll and DTR systems provide better accuracy, quicker processing, and secure data management by doing away with the need for manual calculations and paperwork. These developments improve overall organizational efficiency and lessen administrative burdens.

The **Daily-Time Record with Payroll Management System** was developed to employee attendance tracking and payroll processing for **Treasures of Bolinao Beach Resort & Hotel**, a premier hospitality establishment in Pangasinan. The system aims to address challenges associated with manual attendance recording, error-prone payroll computations, and time-consuming administrative tasks.

The proposed system automates the recording of employees' daily time records, ensuring accuracy in attendance monitoring. It integrates these records with a payroll

management that computes salaries, deductions, and benefits efficiently. The system features an intuitive interface for administrators, a secure database for data storage, and a reporting tool for generating detailed summaries of employee records and payroll transactions.

Through testing and implementation, the system demonstrated its ability to reduce administrative workload, improve data accuracy, and enhance employee satisfaction by ensuring timely and precise payroll processing. This project highlights the potential of technology in optimizing human resource management in the hospitality industry.

Keywords: Daily-Time Record (DTR), Payroll Management, Employee Attendance Tracking, Payroll Processing, Technology Integration, Automation.

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CHAPTER I

INTRODUCTION

Situation Analysis

In today's competitive business environment, the efficient management of employee attendance and payroll is essential for any organization's success. According to *Armstrong and Taylor (2014)*, manual processes for handling attendance and payroll often result in inefficiencies, such as delays in payroll processing and increased administrative workload. For businesses like **Treasures of Bolinao Beach Resort & Hotel**, where excellent service and employee satisfaction are crucial to delivering quality customer experiences, managing employee attendance and payroll manually presents significant challenges. Traditional methods for handling Daily-Time Records (DTR) and payroll processing are often slow, error-prone, and labor-intensive, especially in larger organizations. As noted by *Dessler (2020)*, such outdated processes can lead to inaccurate records, delayed payroll, and increased administrative workload, negatively impacting employee morale, operational efficiency, and overall business performance.

Daily-Time Records (DTR) are fundamental for tracking employee attendance, recording the time they clock in and out, and ensuring that their working hours comply with company policies and labor regulations. Similarly, payroll management is crucial for calculating employees' salaries, deductions, benefits, and bonuses, ensuring that they are paid accurately and on time. When these processes are handled manually, mistakes can occur—whether it's incorrect timekeeping, miscalculated salaries, or missed deductions leading to delays in payments and dissatisfaction among employees.

The rapid advancement of technology has brought about a solution to these challenges: automation. By integrating attendance tracking with payroll processing through an automated **Daily-Time Record with Payroll Management System**, organizations can eliminate the inefficiencies and inaccuracies associated with manual methods. Automation will make easier the entire process, allowing for real-time tracking of employee hours, automatic calculation of payroll, and instant generation of reports. This reduces the burden on human resources staff, minimizes the risk of errors, and ensures that payroll is processed on time, every time.

This capstone project focuses on developing a **Daily-Time Record with Payroll Management System** specifically for **Treasures of Bolinao Beach Resort & Hotel**. The goal is to replace the resort's current manual system with an efficient, automated solution that enhances accuracy, saves time, and improves overall employee experience. The proposed system will not only track employee attendance in real-time but also compute payroll automatically, integrating both functions to be efficient.

The system's benefits are multiple. By leveraging the latest technological advancements, the system will improve operational efficiency, ensure accurate payroll computation, and reduce administrative workloads. Employees will benefit from timely and accurate compensation, while management will gain access to real-time data and detailed reports that provide insights into workforce performance. Furthermore, the automated system will reduce the risk of errors and compliance issues, ensuring that the resort adheres to labor regulations and company policies.

In conclusion, this project demonstrates how integrating technology into traditional business processes can drive significant improvements. By embracing automation, **Treasures of Bolinao Beach Resort & Hotel** it can improve its human resource management, increase productivity, and improve employee satisfaction, setting a standard for modern, efficient, and reliable business operations in the hospitality industry.

Project Objectives

1. To identify the current processes involved in the existing Daily Time Record and Payroll Management System of Treasures of Bolinao Beach Resort and Hotel.
2. To determine the difficulties encountered in the existing Daily Time Record and Payroll Management System of Treasures of Bolinao Beach Resort and Hotel.
3. To devise the features needed for the development of the proposed system.
4. To determine the acceptability level of the developed system, consider (a) functionality, (b) reliability, (c) usability, (d) efficiency, (e) maintainability, and (f) portability.

Requirements Determination

The requirements for the Daily Time Record (DTR) with Payroll Management System were determined through a combination of elicitation techniques, ensuring a comprehensive understanding of user needs and system specifications.

Functional Requirements

1. User Authentication and Management

REQ001: Biometric Authentication

- Employees must time in and out using the Digital Persona Fingerprint Scanner to ensure accurate identification and prevent unauthorized access to the system

2. Attendance Tracking

REQ002: Real-Time Data Logging

- The system must automatically record employee attendance (time-in and time-out) in real time.

REQ003: Late and Absentee Tracking

- The system should highlight employees who are late or absent and provide alerts for management.

REQ004: Generate DTR Reports

- Generate DTR reports available for review by management.

3. Payroll Integration

REQ005: Automated Payroll Calculation

- The system should automatically calculate payroll based on attendance data, including adjustments for overtime and absences.

REQ006: Attendance-Based Payroll

- Payroll calculations must be directly tied to attendance records.

REQ007: Manual Salary Adjustments

- Administrators should be able to manually adjust payroll values when necessary (e.g., bonuses, deductions).

4. Employee Record Management

REQ008: Add New Employees

- The system should allow administrators to add new employee records, including relevant personal and job-related details.

REQ009: Edit Employee Information

- Administrators must be able to update existing employee information as needed.

5. Dashboard and Reporting

REQ010: Dashboard Overview

- The dashboard should display real-time data on pie chart of department list,

REQ011: Generate Salary Reports

- Generate salary reports for payroll periods, which can be reviewed by management.

REQ012: Payslip Generation

- The system should generate payslips in a printable format using Crystal Reports.

Non-Functional Requirements

1. Performance

REQ013: System Response Time

- The system should process actions, such as logins, attendance logging, and report generation, within 3-10 seconds to ensure smooth user experience.

2. Scalability

REQ014: User Support

- The system should support up to 2-3 users (admin) for simultaneous use.

3. Security

REQ015: Data Encryption

- Sensitive data, such as biometric data and payroll records, must be encrypted during storage and transmission.

4. Usability

REQ016: User-Friendly Interface

- The system must have an intuitive and easy-to-navigate interface to minimize training time for administrators.

REQ017: Desktop Compatibility

- The system should be compatible with desktops or personal computers running on Windows OS.

5. Compliance

REQ018: Labor Law Compliance

- The system must comply with local labor laws for attendance tracking, overtime calculation, and payroll management.

6. Reporting Features

REQ019: Real-Time Attendance Monitoring

- Administrators should be able to monitor attendance data in real-time through the system dashboard.

REQ020: Accurate Payroll Reports

- Ensure payroll reports are accurate, with detailed breakdowns of hours worked, overtime, and deductions.

Importance of the Project

This study, entitled "Daily-Time Record with Payroll Management System for Treasures of Bolinao", aims to address the challenges of manual attendance tracking and payroll processing through the use of innovative technology. It will be beneficial to the following entities:

To the Treasure of Bolinao Administration. This study will enhance administrative efficiency by automating attendance and payroll management. The incorporation of a fingerprint scanner eliminates human error, fraud, and inaccuracies, ensuring a secure and reliable process. It will reduce the time spent on manual computations and paperwork, allowing the administration to focus on strategic planning and organizational growth.

To the Employees of Treasure of Bolinao. This study will benefit from improved transparency in their attendance records and payroll computations. With the use of biometrics, employees will experience fair and accurate compensation based on reliable data. This system will also minimize delays in salary disbursement, fostering a sense of trust and satisfaction in their workplace.

To the Business and Community of Bolinao. This study improved administrative efficiency; this project supports the sustainable operations of the Treasure of Bolinao. The innovation will serve as a model for modernizing similar systems in other organizations within the community, contributing to local economic development.

To the Developers of the System. This study offers developers a chance to enhance their skills in system development, particularly in integrating biometric technology. It provides practical experience in creating efficient, secure, and user-friendly solutions, showcasing their expertise and boosting their professional growth in the IT field.

Scope and Limitations

Scope

The Daily Time Record (DTR) and Payroll Management System for Treasures of Bolinao Beach Resort & Hotel is designed to automate attendance tracking and payroll processing, managed entirely by the resort's administrators. The system features biometric fingerprint scanning for accuracy, along with real-time monitoring of employee attendance, including time-in, time-out, and overtime. It includes a dashboard that displays the total number of employees present and absent, facilitating efficient monitoring. Payroll is automatically calculated based on attendance data, including adjustments for tardiness, absences, and overtime, while ensuring compliance with mandatory deductions such as SSS, PhilHealth, and Pag-IBIG. Administrators can add, update, retrieve, create or delete employee records, adjust attendance and payroll as needed, and generate reports such as DTR summaries, payroll breakdowns. The system

ensures data security through encryption and role-based access control and generates detailed reports to aid decision-making and compliance with labor regulations.

Limitations

The system relies on biometric fingerprint devices, which may encounter issues such as unreadable fingerprints due to dirt or moisture, requiring manual adjustments. The system is limited to attendance and payroll management and does not include other administrative functionalities. Additionally, there is no self-service portal for employees to access their records, requiring administrators to provide printed pay slips and reports. Administrators may face an increased workload as they handle all tasks related to attendance and payroll. Lastly, initial training is required for employees and administrators to familiarize themselves with the system, and environmental factors, such as power outages, may cause temporary disruptions.

Definition of Terms

Daily Time Record (DTR) – A tool used to track the time employees come in and out of work every day. This record helps calculate how many hours an employee worked for the payroll.

Payroll Management System – A system that makes it easier to compute employees' salaries, including deductions, so they are paid correctly and on time.

Fingerprint Scanner – A machine that scans a person's fingerprint to check if they are really the one clocking in or out of work. It's used to make attendance tracking more secure.

Biometric Authentication – A way of verifying a person's identity using unique features, like their fingerprint, to make sure the right person is logging in.

Automation – Doing tasks using technology instead of manually. For example, the system computes payroll automatically to save time and avoid mistakes.

Timekeeping – The process of recording when employees arrive at and leave work. This ensures that everyone follows their schedule.

Buddy Punching – A specific type of time fraud where a co-worker clocks in or out for someone else, even if they are not present.

User Interface (UI) – The part of the system that users see and use, like the buttons and screens. It should be simple and easy to use.

Database – A storage area in the system where all information, like attendance records and payroll data, is safely kept and can be accessed when needed.

Treasurer's Office – The department in charge of handling money and making sure all employees are paid correctly and on time.

Real-Time Monitoring – The ability to see updates immediately. For example, when someone clocks in, their attendance is recorded instantly in the system.

System Security – Measures used to protect the system from hackers or anyone who is not allowed to access it, ensuring that data is safe.

Attendance Log – A record that shows the times employees clocked in and out every day, stored in the system for reference.

Employee Profile – The personal and work-related information of each employee, such as their name, schedule, and salary details, saved in the system.

CHAPTER II

METHODOLOGY

This chapter discusses the methods and processes used in the development and implementation of the Daily Time Record (DTR) with Payroll Management System for the Treasure of Bolinao, Bolinao, Pangasinan Using a Fingerprint Scanner. The methodology includes project design, system development, testing, and deployment.

Project Methodology

Agile Methodology

The Agile methodology is particularly suited to projects requiring iterative development and close collaboration, which is essential for a system incorporating fingerprint scanners and Crystal Reports. It allows for flexibility in adapting to evolving requirements, especially when integrating hardware and software components. With features like automated payroll, real-time attendance tracking, and biometric authentication, Agile's adaptability ensures timely and precise implementation while minimizing risks.

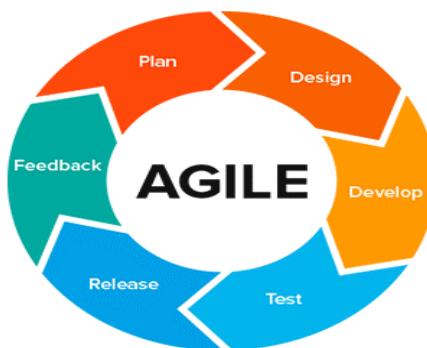


Figure 1. Agile Diagram

Definition and Justification

The Agile methodology is an iterative and incremental approach to software development. It emphasizes collaboration, customer feedback, and small, rapid releases.

The key principles include:

- Delivering working software frequently
- Welcoming changing requirements, even late in development
- Continuous improvement and attention to technical excellence

Iterative Development: Since integrating the fingerprint scanner and Crystal Reports involves both hardware and software components, there may be challenges during development. Agile accommodates this by allowing for testing, and adjustments through regular iterations or sprints.

Adaptability to Change: The Daily Time Record (DTR) and Payroll Management System involves integrating hardware (fingerprint scanner) and software (Crystal Reports), which may require adjustments as new challenges arise during development. Agile's iterative approach allows for seamless incorporation of changes without derailing the entire project timeline. As feedback is gathered after each sprint, the system can evolve based on real-world needs.

Iterative Testing of Components: Fingerprint scanners and payroll calculations are core elements of this system that need to work together smoothly. Agile ensures these components are developed, tested, and refined incrementally. For example, during the first sprint, the fingerprint scanner will be developed and tested to ensure accurate attendance data is recorded before integrating it with the payroll module.

Focus on Functionality Over Design Iteration: Instead of presenting prototypes to stakeholders for feedback, the Agile methodology emphasizes delivering functional software first. This approach ensures that the core functionalities of the system (such as the fingerprint scanner (attendance tracking) and payroll calculation) are prioritized. By focusing on functionality, the system meets the practical needs of the stakeholders early in the process.

Frequent Deliverables: Agile's sprint-based model ensures that the team delivers functional pieces of the system regularly. For instance:

Sprint 1: Focuses on basic attendance capture with the fingerprint scanner.

Sprint 2: Implements payroll computation based on DTR data.

Sprint 3: Integrates Crystal Reports to generate payroll summaries and attendance details.

Focus on Delivering Value: Agile emphasizes delivering usable software incrementally. Critical system functions, like attendance tracking and payroll management, are developed and deployed early, ensuring the system is operational as soon as possible. This aligns well with the project's practical focus, ensuring the system is functional even in the initial phases, ready to be used by the resort for daily operations.

Methodology Implementation

Planning: The project was divided into multiple sprints, with each sprint focused on specific modules, such as integrating the fingerprint scanner, implementing payroll calculations, and setting up Crystal Reports for report generation.

Clear deliverables and timelines were established for each sprint to ensure steady progress.

Design: The system's prototypes were developed by the team based on the functional and visual requirements determined during the planning phase.

Design decisions were based on understanding stakeholder needs, gathered during initial requirement elicitation, rather than presenting prototypes for direct feedback.

Development: Modules were implemented in small increments. For example, the fingerprint scanner functionality was built and tested before moving on to payroll calculations.

Testing: Unit testing was conducted after each sprint, focusing on individual components, such as attendance logging and report generation.

Integrated testing was performed to ensure the fingerprint scanner worked seamlessly with the payroll features.

Deployment: A plan soft launch was carried out at the resort, allowing staff to test the system in a live environment and provide feedback.

Minor bugs and usability issues were addressed based on the feedback collected during the soft launch.

Agile in Action:

Sprint 1: Focused on setting up the fingerprint scanner and ensuring accurate attendance data capture.

Sprint 2: Integrated the DTR data with the payroll computation system.

Sprint 3: Developed and integrated Crystal Reports to generate payroll summaries and attendance details.

Project Architecture

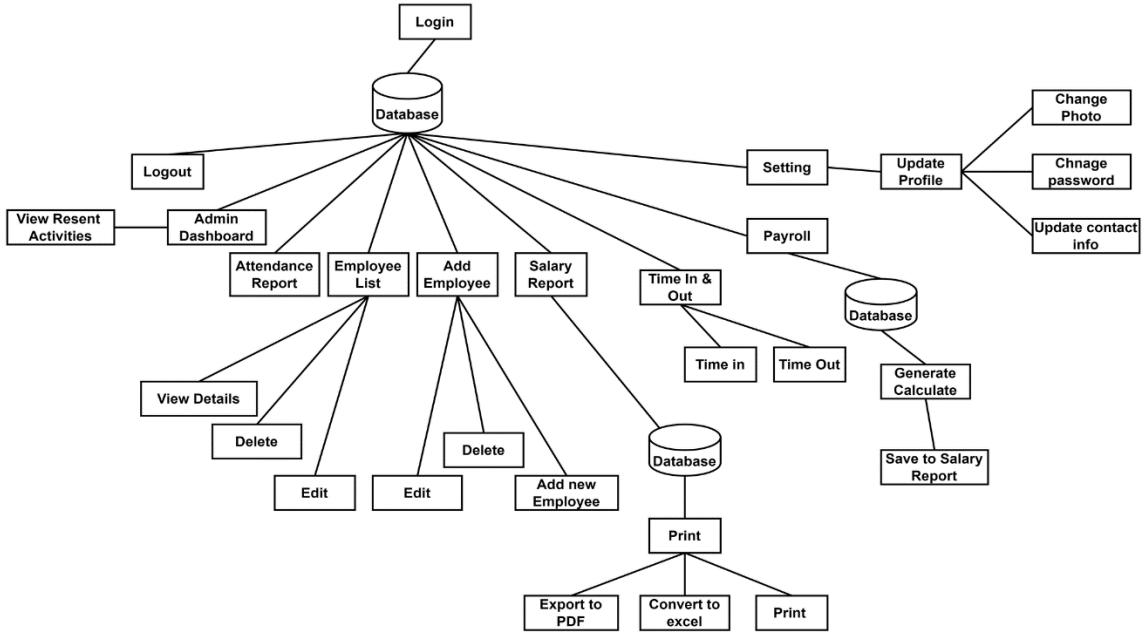


Figure 2. System Architecture

The architecture diagram showcases the structure and flow of the **Daily Time Record - Payroll System (DTR-PR)**. It is divided into multiple interconnected components and modules, each fulfilling a specific function:

UI (User Interface):

1. Login Module:
 - Authenticates users and restricts unauthorized access.
 - Connects directly to the database to verify credentials.
2. Database:
 - Acts as the central data repository, storing essential information like employee records, attendance logs, payroll data, and system settings.
 - Interacts with almost every module for data retrieval and storage.

3. Dashboard:

- Displays key metrics and summaries for administrative users.
- Provides quick access to other functional modules.

4. Admin Dashboard Modules:

- Employee List: Displays and manages employee records (view, edit, delete and can generate reports).
- Add Employee: Enables administrators to register new employees.
- Salary Report: Provides detailed payroll summaries and calculations.
- Time In & Out: Tracks and logs employee working hours.

5. Settings:

- Allows users to change password and add users Ensures security and customization for user accounts.

6. Payroll:

- Performs salary computations based on attendance and time logs.
- Features options to generate and save payroll data into reports.

7. Export and Print:

- Converts reports into PDFs or Excel files for documentation and further analysis.
- Allows printing directly from the system

Justification of the Architecture

1. Meeting System Requirements:

- The architecture is designed to meet the primary goals of the system: accurate attendance tracking, payroll integration, and easy-to-access reports.
- Centralized database ensures efficient data management and quick access for all modules.

2. Scalability:

- The modular design allows for future additions, such as new report types or advanced analytics, without disrupting existing functionality.

3. Security:

- User authentication via the login module ensures only authorized access.
- Settings allow users to change sensitive details like passwords and contact info.

4. Efficiency:

- The system is designed with direct data flow between modules, minimizing delays and improving performance.
- Export and print functions streamline reporting processes for administrative tasks.

5. Addressing User Needs:

- Administrative users can manage attendance, payroll, and employee records seamlessly from a centralized dashboard.
- Employees have access to their personal settings, ensuring a user-friendly experience.

6. Challenges and Trade-Offs:

- A trade-off was made between simplicity and scalability; while the system's structure may seem complex initially, it ensures flexibility for future upgrades.
- Implementing real-time database interactions requires robust infrastructure to prevent latency.

Data Instrumentation

This document outlines the elicitation techniques to be employed in gathering the necessary information for the Daily Time Record (DTR) with Payroll Management System of Treasures of Bolinao, Beach Resort & Hotel in Pangasinan. The goal is to ensure a comprehensive understanding of the requirements from the employees of Treasures Bolinao and to align with the use cases and requirements set forth in previous deliverables.

Key Questions

- What are your primary concerns with the current payroll and timekeeping process?
- How do you currently record your attendance and track hours worked?
- What specific features would improve the efficiency of your payroll and attendance tracking?
- Are there any challenges in using the current system to manage your attendance or view payroll details?
- How would you feel about using biometric systems for logging in and out?

Joint Application Development (JAD)

1. Ms. Joanna Campus (Employee)

- **Role:** Represents the end-users who interact with the current system daily.
- Share insights on challenges and inefficiencies in the current attendance and payroll system.
- Provide feedback on desired system functionalities to improve user experience.
- Highlight specific issues with logging attendance, break tracking, and overtime calculations.

2. Ms. Mhae Camaso (Administrator)

- **Role:** Acts as a subject-matter expert on payroll processing and timekeeping operations.
- Describe the administrative processes and bottlenecks in payroll management.
- Ensure the system meets compliance, reporting, and data security requirements.
- Suggest features to streamline payroll computation and attendance reporting for management.

3. Mr. Reymundo Reyes (Owner)

- **Role:** Represents business priorities and ensures the system aligns with organizational goals.
- Provide high-level feedback on cost-effectiveness and efficiency improvements.
- Emphasize the importance of accurate payroll calculations and employee satisfaction.
- Review the proposed functionalities for alignment with the resort's operational objectives.

Topics to Cover

- Current challenges in payroll processing and timekeeping.

- Desired functionalities for biometric attendance tracking and payroll automation.
- Compliance, reporting, and data security requirements.
- Specific needs related to the calculation of overtime, late tracking, and attendance reporting.

Questionnaires

1. What are the major challenges you currently face with payroll processing and attendance tracking?
2. How frequently do you experience inaccuracies in attendance records or payroll calculations?
3. What features would you prioritize for improving attendance and payroll management?
4. Are there any compliance issues or risks associated with the current system?
5. How would you like the new system to handle overtime, breaks, and late arrivals?
6. What level of reporting and data analytics is needed to support your role?
7. How can the system improve communication or transparency with employees about their payroll?

Document Analysis

Types of Documents to Analyze

- Current payroll processing manuals.
- Business process documentation related to timekeeping and payroll.
- User manuals for the existing timekeeping and payroll systems.

Observation

Situations for Observation

- Daily payroll processing activities.
- Real-time attendance tracking during employee logins and logouts.

Aspects to Observe

- Employee interactions with the current system interface.
- Common issues or obstacles encountered during data entry and processing.

Observation Process:

Current System Limitations

- Employees often report errors in attendance records due to manual data entry.
- Payroll calculations require frequent adjustments to account for overtime or missed clock-ins.
- Administrators face delays when consolidating attendance and payroll data.

- Employee Interactions with the System
- Employees sometimes forget to clock in or out, leading to incomplete records.
- Manual corrections for attendance are time-consuming and prone to errors.

Data Entry and Processing

- The current system lacks real-time tracking, leading to delays in payroll generation.
- Administrators spend significant time reconciling discrepancies in attendance logs.

Opportunities for Improvement

- Automated overtime and bonus calculations would save time and enhance employee satisfaction.
- Real-time attendance tracking would provide more transparency and faster data validation.

Population and Locale of the Project

1. Population

The population of this study consists of the employees and administrators at Treasures of Bolinao Beach Resort & Hotel in Bolinao, Pangasinan. These individuals play a crucial role in the Daily Time Record (DTR) with Payroll Management System

implementation and will be the primary users of the system. The population can be divided into several categories:

Management Team

The management team includes heads/owners, administrators responsible for overseeing the payroll and attendance tracking systems at the resort. They play a pivotal role in ensuring the system meets business requirements and complies with labor regulations. Their input will be crucial in defining the system's functionalities and setting up policies related to timekeeping and payroll processing.

Support Staff

The support staff comprises various employees who are involved in the day-to-day operations of the resort. These individuals include front desk officers, housekeeping personnel, kitchen staff, and maintenance workers, among others. They will be the primary users of the biometric attendance system and will directly benefit from the system's improved efficiency and accuracy in payroll and attendance tracking.

Payroll Processors

Payroll processors are the employees responsible for managing and processing payroll data. This group is essential for understanding the current payroll system's inefficiencies and how the new DTR system can reduce errors and automate payroll calculations. Their feedback will help in designing the system to ensure smoother payroll operations and compliance with labor laws.

2. Locale

The locale for this project is Treasures of Bolinao Beach Resort & Hotel, located in Bolinao, a coastal town in the province of Pangasinan, Philippines. The resort is a key player in the local hospitality industry and attracts both local and international tourists. The system will be implemented throughout the resort to improve the timekeeping and payroll management processes across various departments.

Geographic Location

Treasures of Bolinao is located in the town of Bolinao, which is situated in the northern part of Pangasinan, approximately 250 kilometers from Metro Manila. The distance from **Alaminos City** to **Bolinao** is approximately 47 kilometers (around 29 miles depending on traffic and road conditions). Bolinao is a well-known tourist destination famous for its pristine beaches, natural wonders, and historical landmarks. This location is strategically significant as it supports a thriving tourism business that requires efficient operational management, including accurate attendance and payroll systems.

Operational Setting

The DTR and Payroll Management System will be used across all departments of Treasures of Bolinao, including front desk, housekeeping, food & beverage services, and maintenance. These departments interact with the system regularly to track employee attendance, manage work hours, and ensure payroll is processed accurately. The implementation of this system aims to improve operational efficiency by automating

manual processes, ensuring compliance with labor laws, and enhancing accuracy in the payroll calculation process.

By focusing on the Treasures of Bolinao Beach Resort & Hotel as the study's locale, the project aims to address the unique needs of a hospitality business, streamline administrative operations, and ultimately enhance employee satisfaction and operational efficiency.

Tools for Data Analysis

Data analysis involves the process of inspecting, cleaning, transforming, and modeling data to uncover useful information, draw conclusions, and support decision-making. Including the weighted and diagram by getting that in surveys and feedback of others.

Use Case Diagram. A use case diagram is a visual representation of the interactions between users (actors) and a system. It illustrates the functionalities and behaviors of a system from the perspective of its users, showcasing the various ways users can interact with the system to achieve specific goals or tasks.

Entity-Relationship Diagram. This was used as visual representation of the connections in the SQL Database. It was used to map out the structure and logic of the system for the implementation. The Entities, Attributes, Primary Keys, Relationships, Cardinality and

Optionality were indicated in the Entity Relationship Diagram for clarity and wider understanding to what connections are built in developing the System.

Data Dictionary. The Data Dictionary was used to serve as the structured resource that describes the data elements inside the database with their Attributes, Constraints, and Relationships. The components include the Field Name, Description, Data Type, Field Size, Constraints, Default Value, Allowed Values, and Relationships between them.

Use Case Description. The Use Case Description defines how users interact with the system to accomplish specific tasks. It includes key elements such as actors, steps, and expected outcomes. This ensures a clear understanding of the system's functionality in various scenarios.

Average Score. The Average Score is used to determine the central tendency of responses or evaluations. It is calculated by summing all the scores and dividing the total by the number of respondents. This provides a simple measure of overall performance or feedback.

Weighted Mean. The formula below will be used for getting the weighted mean result.

$$x = \frac{\sum xw}{n}$$

Where:

X = mean

x = number of respondents

w = weight

n = total number of respondents

To compute the overall weighted mean, the proponents used the formula below.

$$OWM = \frac{\sum awm}{\text{number of items}}$$

Where:

OWM = Overall Weighted Mean, representing the average weight across all items.

awm = Assigned weighted mean for each individual item, calculated based on its score and weight.

number of items = Total count of items evaluated to determine the overall mean.

For getting the mean using Excel to get the weighted mean, example diagram below:

1	Category	R1	R2	R3	R4	R5	Mean
2	Functionality						
3	Suitability	4	3	5	4	3	3.8
4	Accuracy	3	4	5	3	4	3.8
5	Compliance	5	4	4	5	4	4.4
6	Security	4	3	4	4	5	4
7	Reability	3	4	3	5	3	3.6
8	Maturity	5	4	5	3	4	4.2
9	Fault Tolerance	4	5	4	4	4	4.2
10	Recoverability	4	4	3	5	3	3.8
11	Usability	3	3	4	3	5	3.6
12	Understandability	5	5	5	5	4	4.8
13	Learnability	40	39	42	41	39	40.2

Figure 3. Getting The Weighted Mean Diagram

Scale of Measurement.

Scale	Range	Interpretation	Descriptive Interpretation
5	4.21 – 5.00	Excellent	The system's condition is optimal with no features missing.
4	3.41 – 4.20	Very Good	The system's condition is adequate and its functionality is fair.
3	2.61 – 3.40	Good	The system's condition is limited but functioning properly.
2	1.81 – 2.60	Fair	The system is functioning properly, but features are extensive and need refinement.
1	1.00 -1.80	Poor	The system's condition is suboptimal with essential features missing.

Table 1. Scale of Measurement

This table used to interpret the overall performance or feedback based on numerical ratings. It categorizes scores into descriptive levels, providing a clear understanding of system effectiveness and functionality. This ensures consistent evaluation and interpretation of results.

Tools for System Development

The Daily Time Record (DTR) and Payroll Management System project, will need a set of tools that cover various aspects of system development, from design to implementation and deployment.

1. C# (Programming Language)

Purpose: Used for the backend development of the system.

- Business Logic: Handles the payroll calculation, attendance tracking, and other core functionalities.
- Database Integration: C# will connect to SQL Server to retrieve, store, and manage data for the payroll and attendance.
- User Interface: Develop the user interface (UI) for system users, allowing employees and administrators to interact with the system.
- Hardware Integration: Integrate biometric fingerprint scanner devices for attendance tracking.

2. SQL (Structured Query Language)

Purpose: Used for database design and management.

- Database Creation: Design a database to store employee records, attendance data, payroll details, and reports.

- Data Querying: Write SQL queries to extract, update, and manipulate data (e.g., calculating total hours worked, generating payroll summaries).
- Data Security: Use SQL to ensure proper data security, such as restricting access to sensitive payroll information.

3. Crystal Reports

Purpose: Used for report generation and presentation.

- Report Creation: Generate payslips, attendance records, and payroll summaries.
- Report Design: Create formatted reports that are ready for printing or digital distribution to employees.
- Integration with Database: Link Crystal Reports with the SQL database to ensure real-time report generation based on the latest data.

4. Visual Studio (Integrated Development Environment - IDE)

Purpose: A development environment for writing and debugging your code.

- Code Development: Use Visual Studio to write C# code for the backend logic and user interface.
- Debugging: Identify and fix errors in the code using the integrated debugging tools.

- Integration with SQL: Visual Studio allows easy integration with SQL Server for database connection and management.
- UI Design: Design and implement the front-end interface where employees and administrators can interact with the system.

5. Microsoft Excel

Purpose: Used for data manipulation, analysis, and visualization.

- Data Collection: Organize and analyze data (such as attendance records or payroll data) before transferring it into the system.
- Analysis: Perform basic statistical analysis or visualize data (e.g., employee attendance patterns, payroll distribution).
- Report Generation: Generate charts, graphs, or tables for analysis, which can be referenced in system reports or presentations.

6. Microsoft Word

Purpose: Used for documentation and reporting.

- System Documentation: Write system documentation, such as user manuals, technical specifications, and requirement documents.
- Reports and Proposals: Create formal project reports, proposals, and progress reports for stakeholders.

- Requirements Elicitation: Document gathered requirements and stakeholder feedback.

7. Biometric Fingerprint Scanner

Purpose: Hardware device used to capture employee attendance.

- Employee Attendance Tracking: The biometric fingerprint scanner will capture employees' attendance by scanning their fingerprints when they log in and out.
- Integration with Software: Integrate the scanner with your system using appropriate APIs or SDKs to store attendance data in your database.

8. GitHub (Version Control System)

Purpose: To manage and track changes in the source code.

- Code Versioning: Use Git to manage changes in the source code over time and keep track of revisions.
- Collaboration: If multiple developers are working on the project, Git enables collaboration by allowing everyone to work on different parts of the code simultaneously and merge changes without conflict.
- Backup and Recovery: Ensure the security of the codebase and facilitate recovery in case of errors or failures.

9. Canva (Presentation and Design Tool)

Purpose: Canva is a versatile graphic design tool that is ideal for creating visually appealing presentations, reports, and marketing materials.

- Presentation Design: Create professional presentations to present your project, progress
- Reports and Posters: Design infographics or posters for system summaries, data visualization, or highlighting key features of the DTR-PR system.
- Project Proposals: Use Canva to design project proposals, mockups, and other documents that need to be visually engaging.

Design Principle and Patterns

Single Responsibility Principle

Single Responsibility Principle indicates that an object or class should be made for a specific function. In this project, this principle was applied as shown in the following pictures below. Classes are made only to perform functions that are intended only for one reason. Under the Models Folder, there are 5 classes with specific methods.

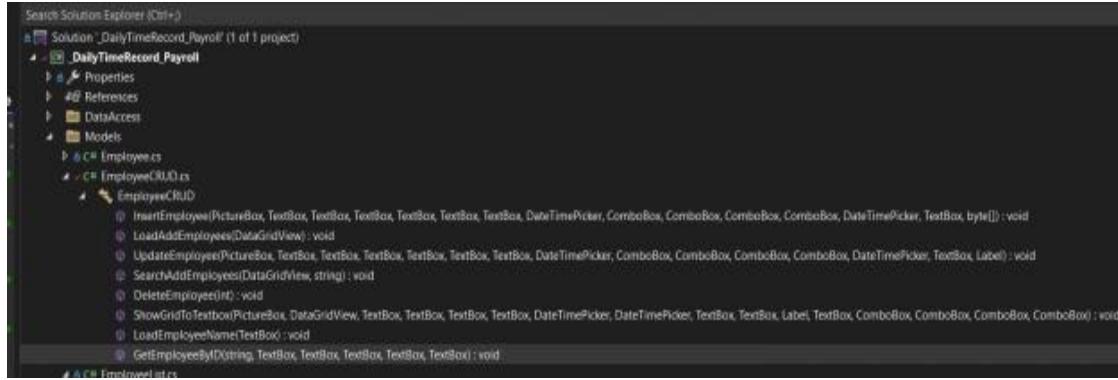


Figure4: Employee CRUD

Open/Closed Principle (OCP):

The EmployeeCRUD class can be extended by adding new methods for other operations, such as exporting data to a file, without modifying the existing methods.

Single Responsibility Principle (SRP):

EmployeeCRUD figure shows how CRUD was implemented in this project. The EmployeeCRUD class contains methods that applies to CRUD Principle, Create, Retrieve, Update and Delete. The EmployeeCRUD class is focused solely on handling CRUD operations for employees. Each method has a single responsibility, such as InsertEmployee for insertion, LoadAddEmployees for loading data, and so on. The following shows which method was applied to which:

CREATE

- InsertEmployee() – Solely for adding employee.

RETRIEVE

- SearchAddEmployee() – Solely for searching employee
- LoadAddEmployee() – Solely for loading employee list
- ShowGridToTextBox()
- LoadEmployeeName() - Solely for loading employee name
- GetEmployeeByID() -Solely for getting the employee by ID

UPDATE

- UpdateEmployee() – Solely for updating employee

DELETE

- DeleteEmployee() – solely for deleting employee

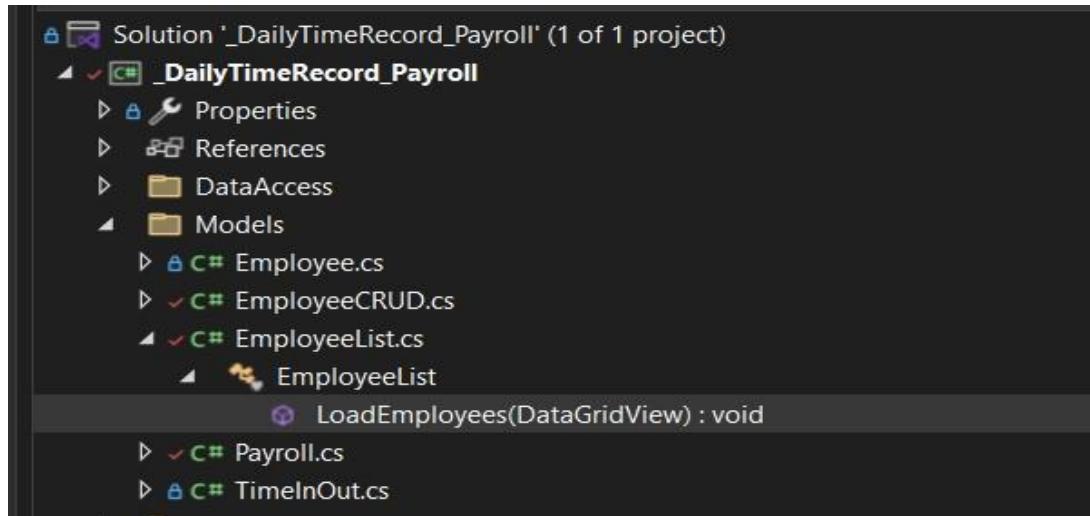


Figure 5: EmployeeList Class

EmployeeList class contains LoadEmployees method that is responsible for loading employee list on the Employee List data grid view.

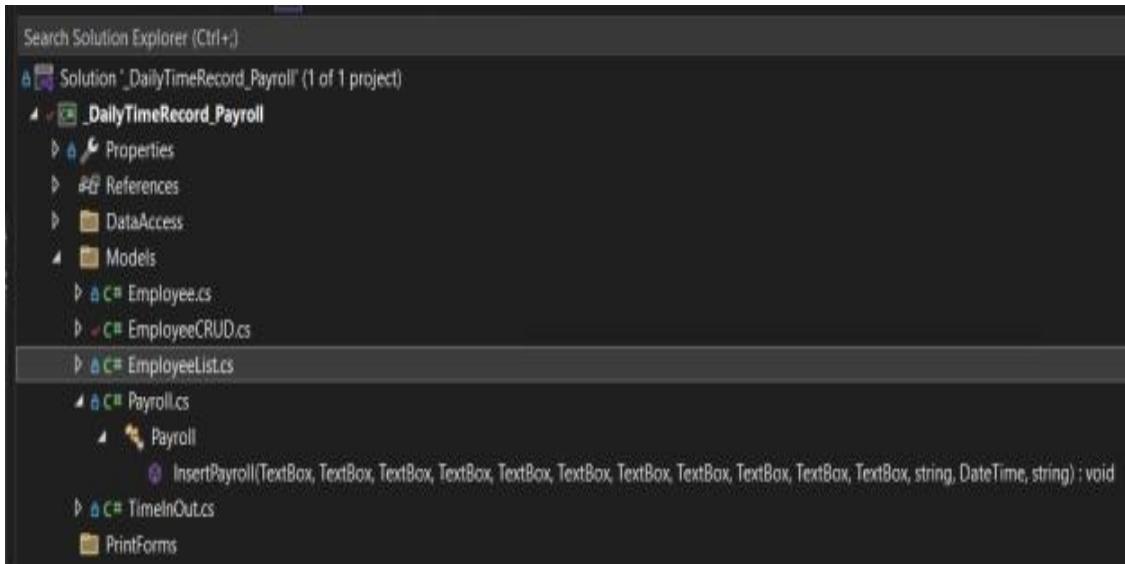


Figure 6: Payroll Class

The Payroll class contains InsertPayroll method solely responsible for inserting data on textboxes on the Payroll form.

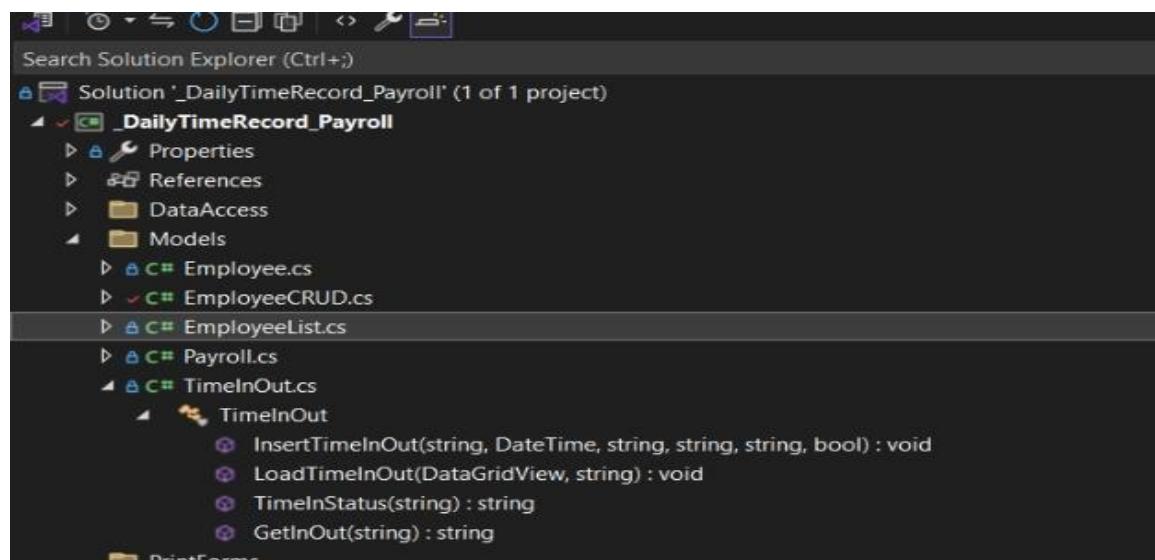


Figure 7: TimeInOut Class

TimeInOut Class contains methods responsible to everything about time in and time out of employee.

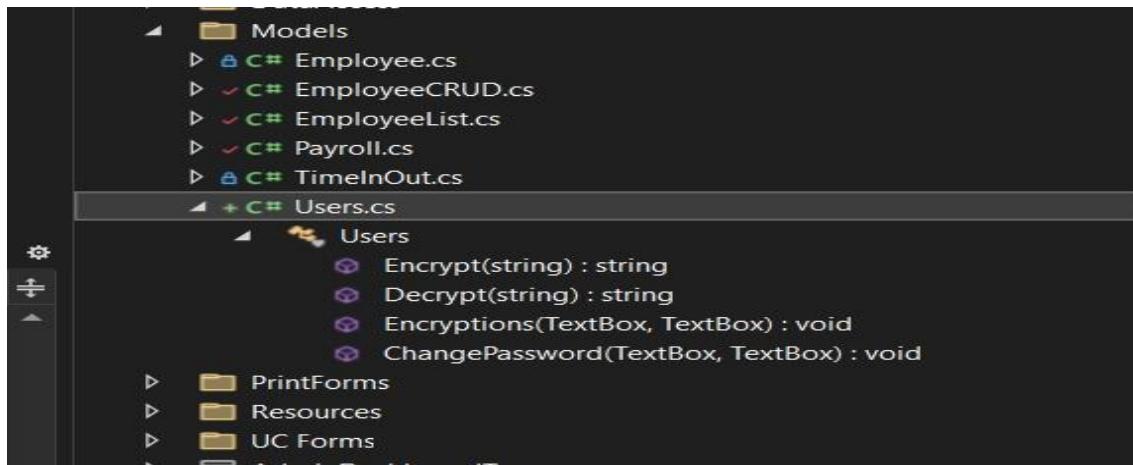


Figure 8: Users Class

Singleton Pattern

The Users class is responsible for actions regarding users such as encrypting and decrypting password and changing password.

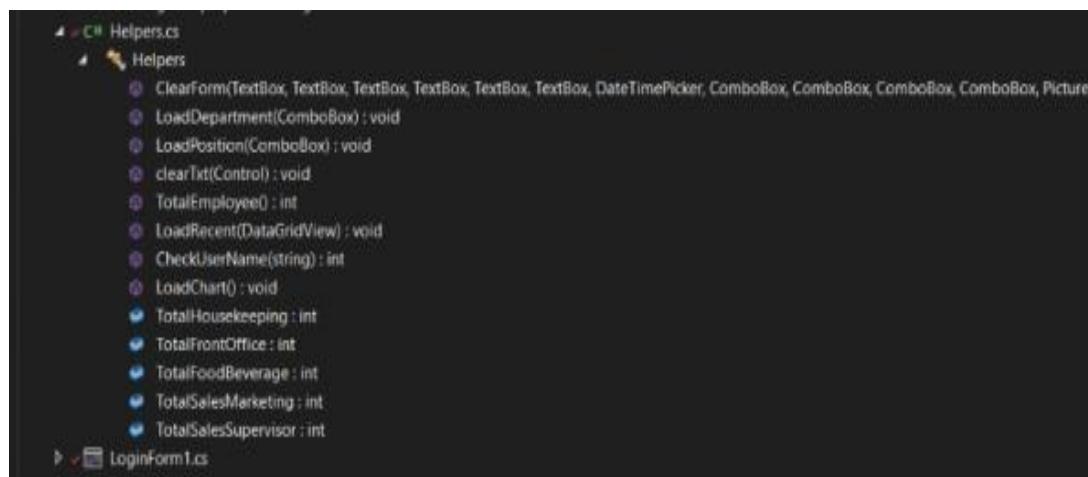


Figure 9: Helpers

Structural Pattern

The Helpers class acts as a façade to abstract database access and UI logic. It provides simplified methods for interacting with the database (e.g., LoadDepartment, LoadPosition, LoadRecent, etc.) without the caller needing to know the underlying complexity of SQL commands, adapters, and connection management

The SqlCommand object used in methods like LoadDepartment, LoadPosition, and LoadRecent effectively acts like a command object. It encapsulates the SQL query or stored procedure to be executed, and the logic for processing the results is abstracted inside the methods of the Helpers class.

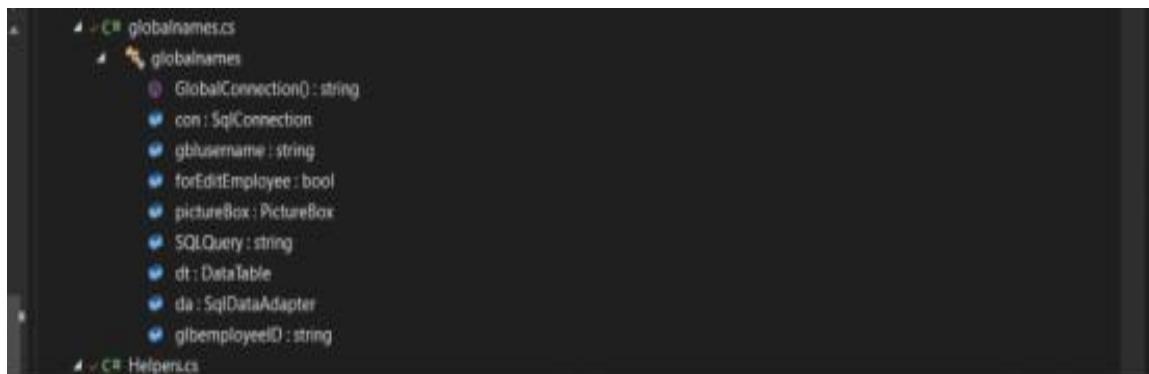


Figure 10: GlobaNames

Singleton Pattern

The code suggests that globalnames.con (the database connection) is likely meant to be a singleton, assuming it is a single instance of the connection shared across the application.

This pattern is inferred because `globalnames.con` is used globally within the helper methods, meaning there is a central, shared instance for database operations.

Conclusion

While the code doesn't explicitly define many design patterns, several patterns are used in an implicit or informal way. The most notable are:

1. Singleton Pattern (for the global database connection)
2. Factory Method (for creating database-related objects dynamically)
3. Command Pattern (encapsulates SQL operations in objects)

Initial Prototypes

Initial Prototypes refer to the early versions of a system or application developed to visualize and test its design, layout, and functionality before final implementation. These prototypes serve as blueprints, allowing developers and stakeholders to evaluate the system's usability, features, and overall workflow. They are typically created to identify potential issues, gather feedback, and make necessary adjustments to ensure the final product meets user needs and expectations. Initial prototypes often include mockups of user interfaces, navigation structures, and basic functionality, providing a clear representation of how the system will look and function once fully developed.

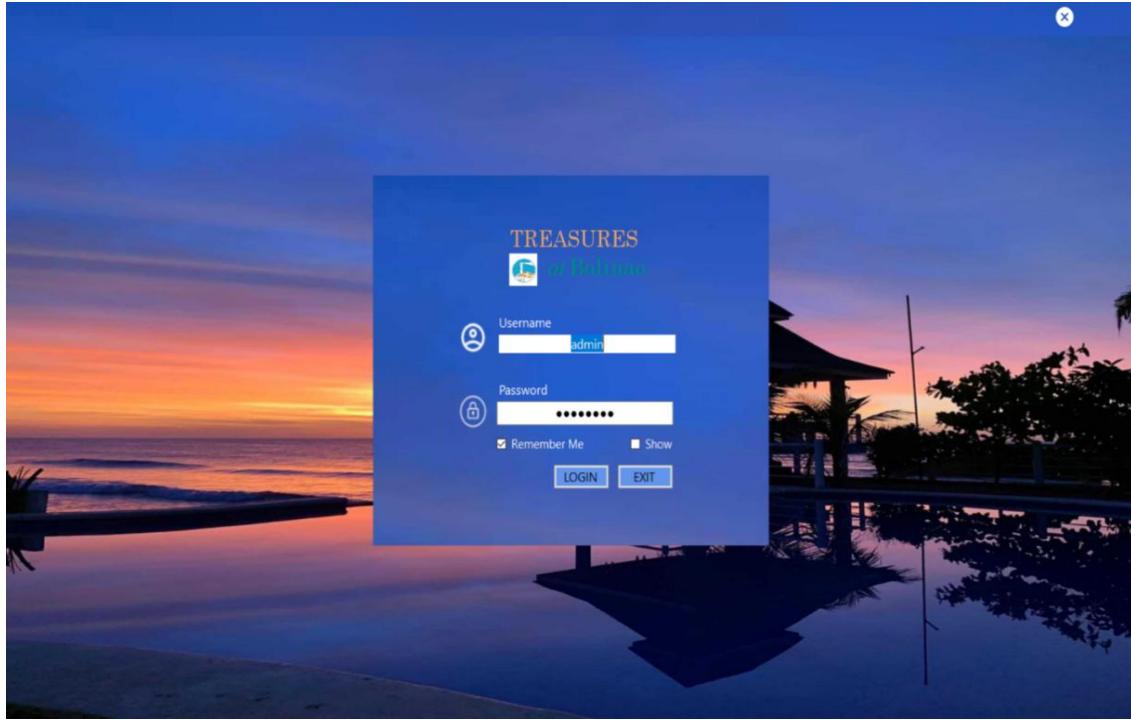


Figure 11. Log in Form

The **login form** serves as the system's access point, ensuring that only authorized users can gain entry. It requires users to input their username and password, which are verified against stored credentials. The form includes options like "**Remember Me**" to save login details for future sessions and a "**Show Password**" feature for ease of use when entering credentials. Upon successful authentication, the system grants access to administrative functions such as employee management, attendance tracking, payroll processing, and report generation. If login credentials are incorrect, access is denied, maintaining the security and integrity of the system.

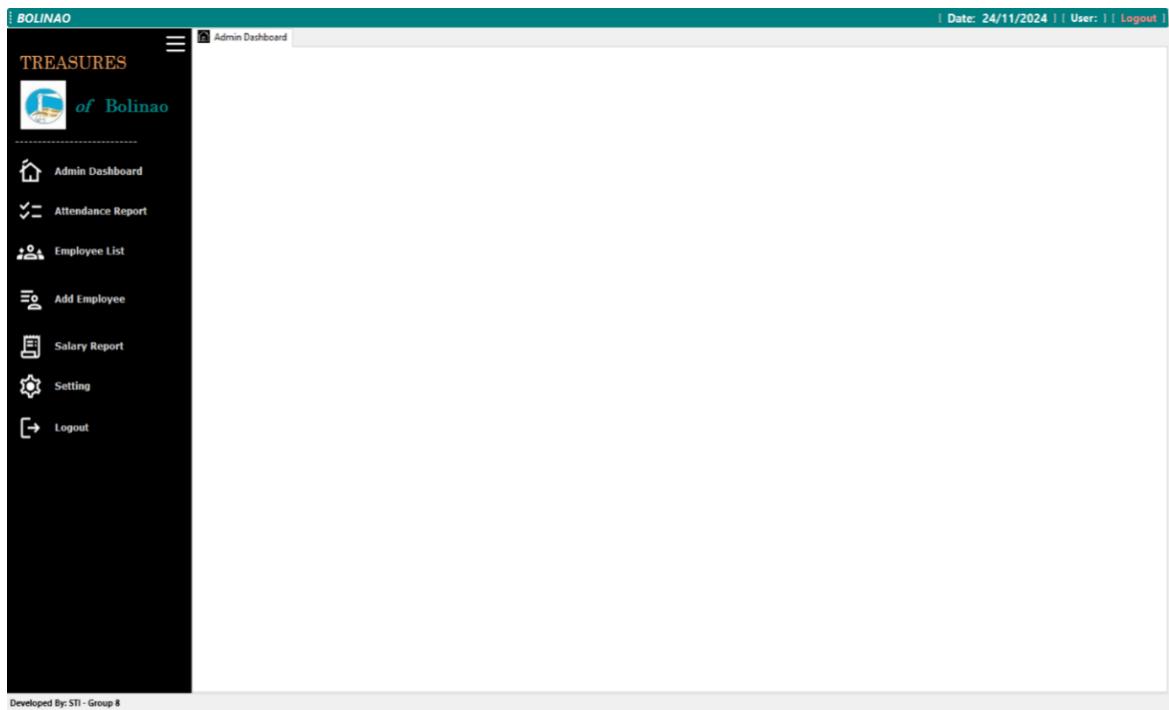


Figure 12. Dashboard Dorm

The **Admin Dashboard** serves as the central hub for monitoring and managing system operations. It provides a summary of key employee attendance data, including the number of employees who are **present** and **absent** for the day. This real-time attendance overview enables administrators to quickly assess workforce availability. Additionally, the dashboard features a sidebar menu with essential modules such as **Attendance Report**, **Employee List**, **Add Employee**, **Salary Report**, and **Settings**, and **Time In and Out** access to system functions. The top navigation bar displays the current date and logged-in user, enhancing contextual awareness and security.

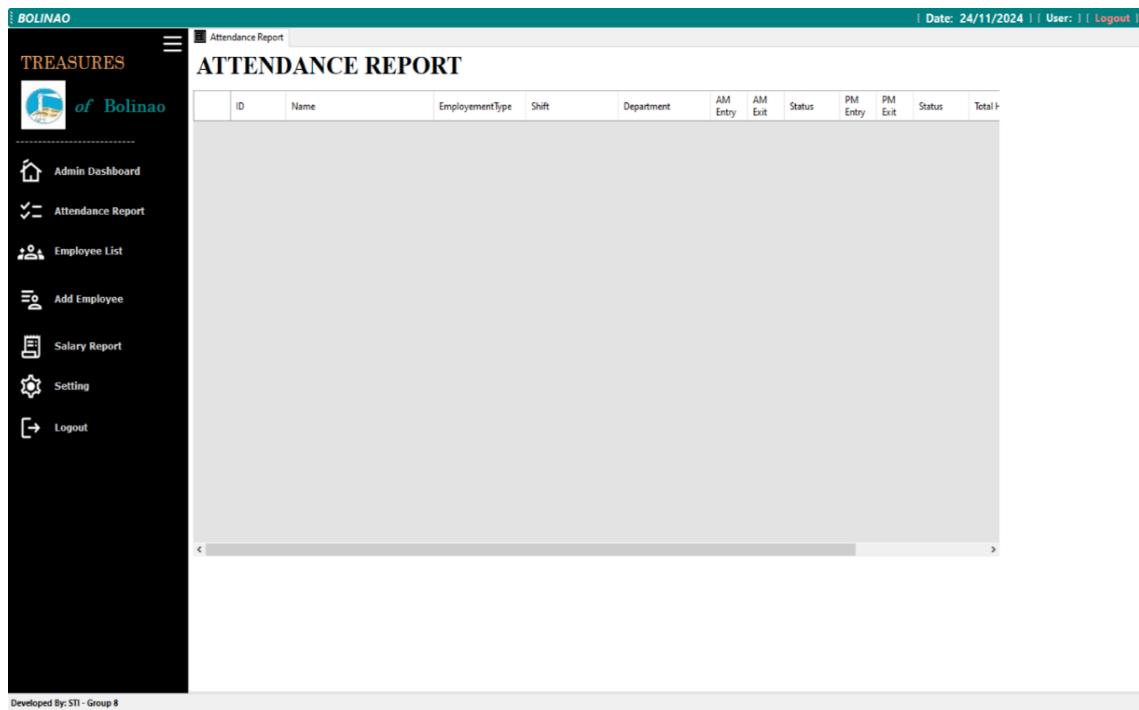


Figure 13. Attendance Report Form

The figure represents a prototype interface for an employee management system named "**Treasures of Bolinao**". The figure highlights the **Attendance Report** section of the system. It features a large, empty table designed to display detailed employee attendance records. The table includes columns for ID, Name, Employment Type, Shift, Department, AM Entry, AM Exit, Status, PM Entry, PM Exit, Status, and Total Hours. This layout is structured to capture comprehensive attendance data for each employee, allowing for efficient monitoring and management. The design ensures clarity and organization, making it easy to track attendance information at a glance.

EMPLOYEE LIST

Detailed Attendance Report for...

ID	Name	Department	Employee Type	Print	View	Delete
001	Sarte, Angelina Corpuz	Housekeeping	Regular	Print	View	Delete
002	Untalan, Le Claire Untal	Front Office	Regular	Print	View	Delete
003	Apostol, Aldrich Corpuz	Food and Beverage	Regular	Print	View	Delete
004	Camer, Dean Camero	Sales and Marketing	Regular	Print	View	Delete
006	dflsdfl, hsbdn sdf	Housekeeping	Regular	Print	View	Delete
008	fgrfgd, fgdfg dffdf	Front Office	Regular	Print	View	Delete
009	Serte, Mark Corpuz	Housekeeping	Regular	Print	View	Delete
0099	hdth, bthchgdhg hjsj	Housekeeping	Regular	Print	View	Delete
010	sgsdg, kijjhfdjs dffdsd	Housekeeping	Regular	Print	View	Delete
02	a, a a	Housekeeping	Regular	Print	View	Delete
020	dfgdf, djhs fdfdg	Housekeeping	Regular	Print	View	Delete
040	sfsdf, hagsphgah sdhshd	Food and Beverage	Regular	Print	View	Delete
090	ghshghd, hdhghghd hdhghd	Food and Beverage	Regular	Print	View	Delete
1	z, z z	Housekeeping	Regular	Print	View	Delete
2	q, q q	Housekeeping	Regular	Print	View	Delete
202	nsjdh, nhshdhs shdh	Housekeeping	Regular	Print	View	Delete
23	x, x x	Housekeeping	Regular	Print	View	Delete
d	d, d d	Housekeeping	Regular	Print	View	Delete
q	q, q q q	Housekeeping	Regular	Print	View	Delete
s	d, c c	Housekeeping	Part-time	Print	View	Delete

Figure 14. Employee List Form

The figure shows the **Employee List** form from the system interface. This section provides a detailed view of all employees, displayed in a structured table format. The table includes columns for ID, Name, Department, and Employee Type, allowing users to easily identify and categorize employee details. Each row is equipped with three action buttons: **Print**, **View**, and **Delete**, enabling users to generate a hard copy of employee information, review detailed records, or remove an employee entry from the system.

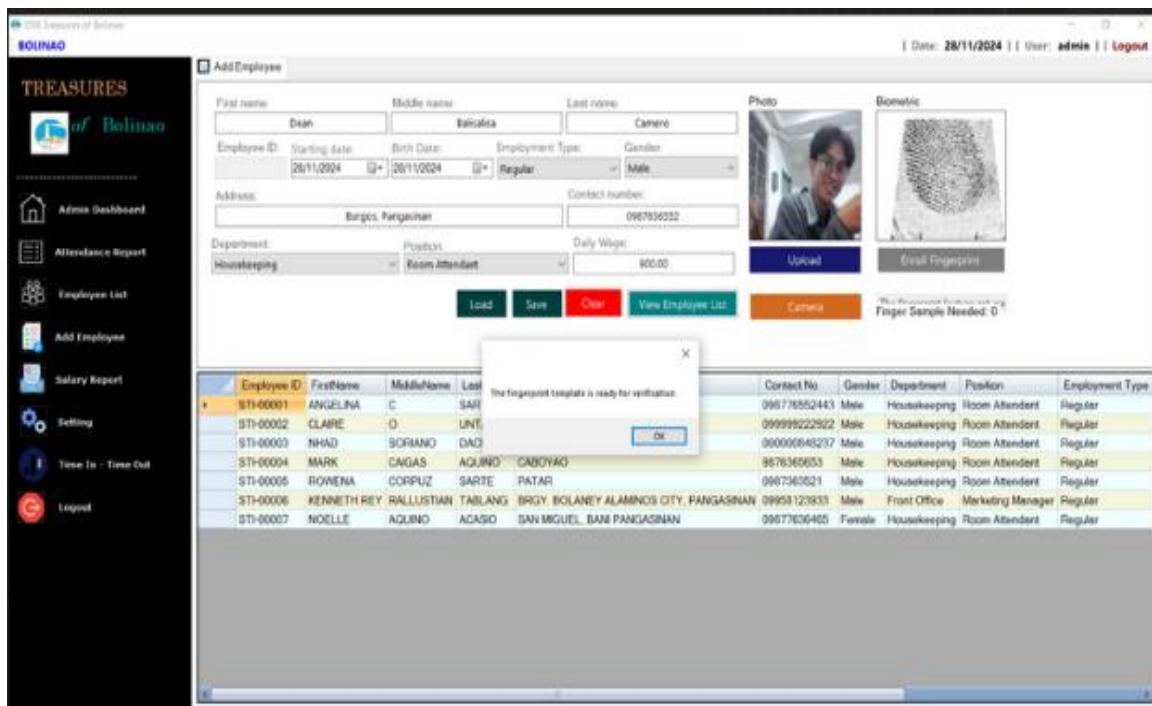


Figure 15: Add Employee Form

The figure depicts the **Add Employee** form from the system interface. This form allows to input and manage employee details. The upper section is a form can enter personal information, including the first, middle, and last name, starting and birth dates, employment type, gender, address, contact number, department, position, and daily wage. A photo upload feature and a biometric enrollment section for fingerprint scanning are prominently displayed, enhancing the identification and security features of the system.

The middle section contains functional buttons such as **Load**, **Save**, **Clear**, and **View Employee List**, enabling efficient data entry, saving, and navigation to the full employee list. A message box appears in the figure, confirming that a fingerprint template is ready for verification, indicating successful biometric enrollment.

The lower section includes a table summarizing existing employees with their Employee ID, Name, Contact Number, Address, Gender, Department, Position, and Employment Type. This allows administrators to quickly review existing records while adding new entries. The layout is organized to streamline the employee registration process while integrating advanced features like biometric enrollment.



Figure 16. Salary Report Form

The **Salary Report** figure is a comprehensive section of the "TREASURES of Bolinao" system, designed to manage and display detailed salary computations for employees. It includes the calculation of salary deductions for lateness and absences, as well as statutory deductions such as SSS, Pag-IBIG, and PhilHealth contributions. Additionally, it provides features for calculating 13th-month pay. The page is user-friendly and allows for generating and printing payslips, ensuring streamlined payroll processing and accurate record-keeping. This functionality supports both administrative efficiency and transparency in employee salary management.

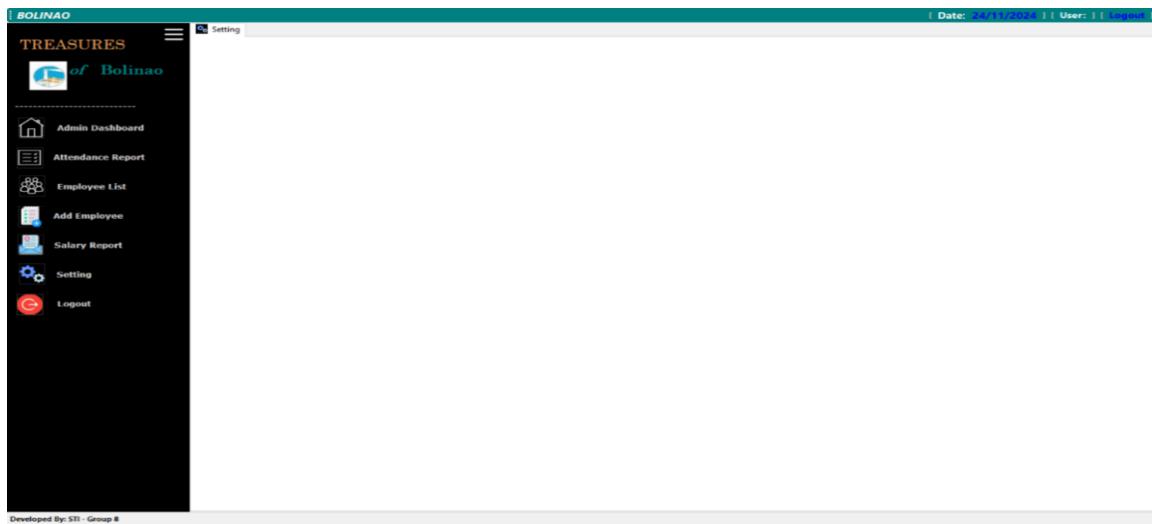


Figure 17. Setting Form

The **Setting Module** is designed specifically for managing user profiles within the Daily Time Record (DTR) and Payroll Management System. It allows administrators to add, change password or delete user accounts and update personal information such as username and password.

A screenshot of the "Daily In Out" TimeInOut form. On the left, there's a form for entering employee details: Employee ID (STI-00001), Department (Housekeeping), Employment Type (Regular), Shift, and Name (SARTE, ANGELINA C). Next to it are two images: a photo of a person and a fingerprint scan. Below the photo is the message "Finger removed." and below the fingerprint is "False Accept Rate = 0". To the right is a table showing a list of time records for employee STI-00001. The table has columns for EmployeeID, Date, Time, Status, and Remarks. The data is as follows:

Figure 18. TimeInOut Form

This figure **TimeInOut Form** is a prototype interface for managing employee attendance within an organization. It displays key employee details, including Employee ID, department, employment type, shift, and name, along with a photo for identity verification. A biometric fingerprint section is included to enhance security, with an indicator for the "False Accept Rate." The current date and time are prominently displayed at the center, alongside a "Time In" confirmation showing the recorded clock-in time. On the right, an attendance log table provides a detailed history of the employee's time-in and time-out records, including the date, time, status (IN/OUT), and remarks (AM/PM).

Implementation Plan

This implementation plan outlines the systematic approach for deploying the Daily Time Record and Payroll Management System for Treasures of Bolinao Beach Resort & Hotel. The goal is to ensure a smooth transition to the new system, minimizing disruptions, and enhancing operational efficiency.

Deployment Strategy

Phased Deployment

- Complexity: The system includes multiple modules (biometric attendance, payroll calculations, reporting features) that require separate validation.
- User Training: Phased deployment allows gradual user onboarding and adjustment.

Implementation Steps

Pre-Implementation (Infrastructure Setup)

- Configure biometric devices, server hardware, and network.
- Install required software (C# environment, SQL database, and Crystal Reports)

1. Testing and Quality Assurance

- Complete unit and integration testing for all modules.
- Validate data transfer to another processes.

2. Data Process Plan

- Prepare employee records, time logs, and payroll data to the new system.

Implementation

System Installation

- Deploy biometric attendance and payroll systems in the production environment.
- Configure user roles, permissions, and settings.

System Configuration

- Set up and integrate biometric devices.
- Customize payroll settings to align with labor compliance requirements.

Resource Requirements

Human Resources

- Development Team: Developers and testers.

Technical Resources

- Hardware: Biometric devices, servers, and backup systems.
- Software: Visual Studio 2022, SQL Server, and Crystal Reports.

Financial Resources

- Estimated budget: PHP 4,500 for hardware and software

CHAPTER III

RESULTS AND DISCUSSION

This chapter presents the results and discussion of the implementation of the Daily Time Record (DTR) with Payroll Management System for Treasures of Bolinao Beach Resort & Hotel. The findings highlight significant improvements in operational efficiency, data accuracy, and employee satisfaction after the shift from the manual Bundy clock system.

Current Processes Involved in the Existing Inventory and Transaction System

The current processes for managing daily time records (DTR) and payroll at Treasures of Bolinao Beach Resort & Hotel utilize a traditional Bundy clock system, where employees manually clock in and out using timecards. These timecards are collected and reviewed by payroll staff, who manually calculate working hours, overtime, and deductions, including government-mandated contributions. Attendance records are consolidated, and salaries are computed using basic tools like calculators or spreadsheets. Additionally, reports and analyses for management are generated through manual data compilation and processing.

Difficulties Encountered by the Manager in the Existing Process of Treasures of Bolinao

This manual system faces several difficulties, including errors in punch-ins and punch-outs, lost or damaged timecards, and discrepancies that require time-consuming resolution. Manual payroll calculations increase the risk of computational errors, delay

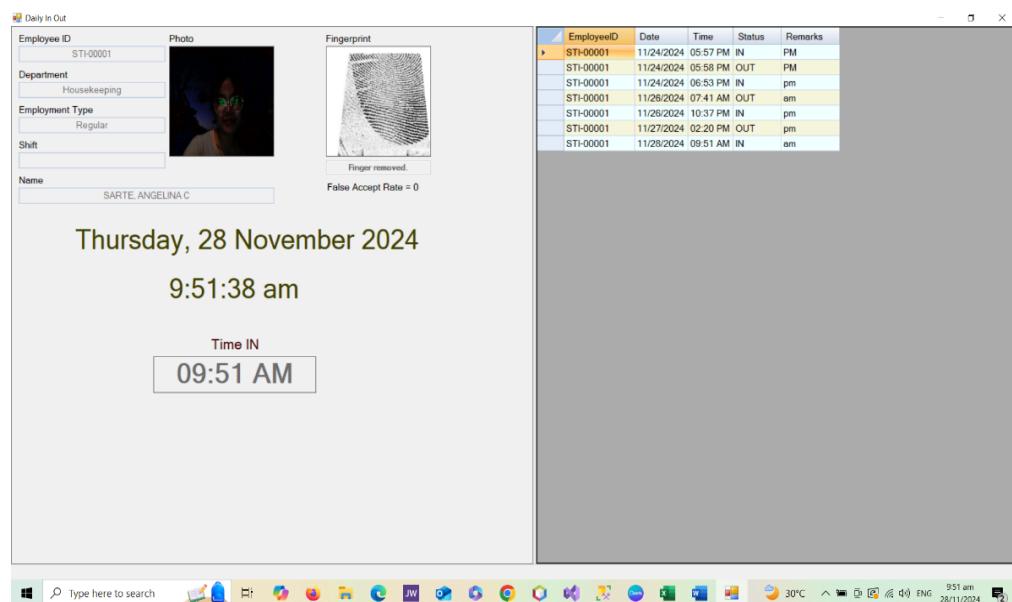
payroll processing, and complicate compliance with labor laws. Generating attendance and payroll reports for decision-making is labor-intensive, making it challenging to ensure timely and efficient operations. These inefficiencies underscore the need for an automated, reliable, and technology-driven system.

The Features of the Proposed System for Treasures of Bolinao

The proposed Daily Time Record (DTR) and Payroll Management System for Treasures of Bolinao Beach Resort & Hotel includes a range of features designed to modernize and streamline attendance tracking and payroll processes without relying on notifications.

1. Biometric TimeKeeping

- Employees clock in and out using a biometric fingerprint scanner, ensuring precise and secure identification.



2. Real-Time Attendance Logging

- Automatically records employee attendance (time-in and time-out) in real time, eliminating manual errors and delays.

Employee Daily Time Record					
	Month	April	Year	2024	
MHAE CAMASO					
ADMIN OFFICE					
SARTE, ANGELINA C	STI-00001				
DATE	MORNING		AFTERNOON		OVERTIME
	IN	OUT	IN	OUT	IN
12/04/2024	10:30AM				
04/12/2024		11:59AM	10:21AM	7:17PM	
05/12/2024			6:18PM	10:56PM	
06/12/2024	11:21AM	11:34AM	1:17PM	1:18PM	

3. Automated Payroll Processing

- Integrates attendance data directly into payroll calculations, accounting for regular hours, overtime, and deductions for accurate salary computation.

TREASURES OF BOLINAO BEACH RESORT & HOTEL Sitio Abrac, Purok 2 Patar Bolinao, Pangasinan		Treasures of Bolinao	
PAY SLIP For period of 16/12/2024		DATE PRINTED : 11/12/2024	
Employee Name Position	SARTE, ANGELINA C Room Attendant	Date Hired	: 24/11/2024
Earnings Basic Salary Leaves and Overtime Leave Without Pay Overtime Pay Holiday and Rest Day Pay 13th Month Pay and Other Benefits Incentives and Other Income		Deductions Withholding Tax SSS Contribution PhilHealth Contribution Pag-ibig Contribution Late Deduction	
Gross Pay Php 2,704.00		Total Deduction Php 955.00	
		Net Pay Php 1,749.00	
Employee Signature <hr/>			

4. Customizable Salary Adjustments

- Enables manual adjustments to salaries for deductions, bonuses, or other scenarios as needed.

The screenshot shows the 'Salary Report' interface. On the left is a sidebar with navigation links: Admin Dashboard, Employee List, Add Employee, Salary Report, Setting, Time In - Time Out, Payroll, and Logout. The main area displays an employee's details: Employee Code (STI0001), Employee Name (SARTE, ANGELINA C), Employee Position (Room Attendant), and Employment Type (Regular). Below this are sections for Payroll Details (Income, OT/Holiday, Reg. OT/Holiday, Daily Wages, Rate Wage) and Deductions (Cash Advance, PHIC, SSS, PAGIBIG, Other Deduction, Late Deduction). A large blue button at the bottom right says '1,749.00'. At the top right, it shows the date (11/12/2024), user (admin), and logout link.

5. Employee Record Management

- Facilitates adding, updating, and maintaining comprehensive employee records, including personal and employment details.

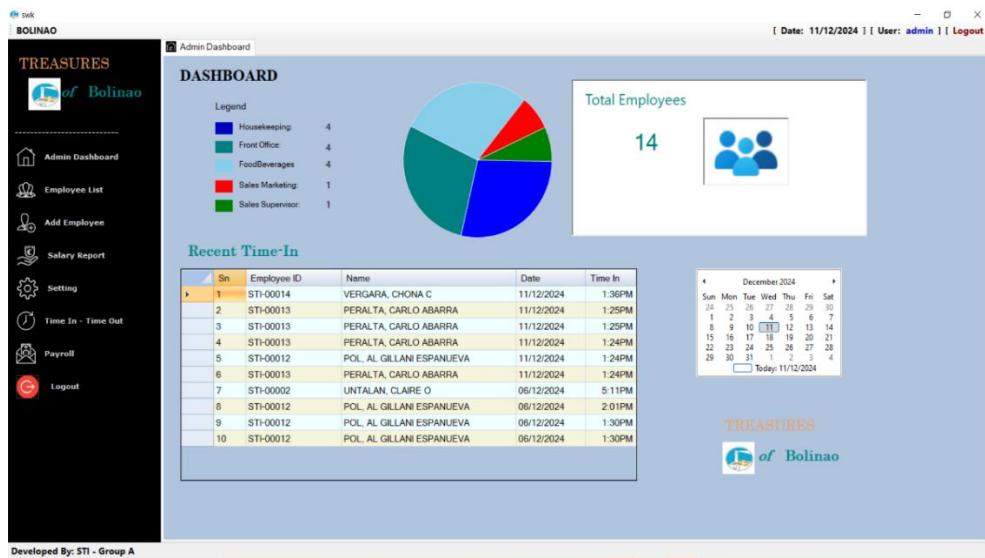
The screenshot shows the 'Add Employee' page and a list of employees. The sidebar on the left includes Admin Dashboard, Employee List, Add Employee, Salary Report, Setting, Time In - Time Out, Payroll, and Logout. The 'Add Employee' form requires input for First name, Middle name, Last name, Employee ID, Starting date, Birth Date, Employment Type, Gender, Address, Department, Position, and Daily Wage. Buttons for Load, Save, Clear, View Employee List, Upload, and Camera are available. Below this is a table of employees:

Employee ID	FirstName	MiddleName	LastName	Address	Contact No	Gender	Department	Position	Employ
STI-00001	ANGELINA	C	SARTE	PATAR	098776552443	Male	Housekeeping	Room Attendant	Regula
STI-00002	CLARE	O	UNTALAN	BANI	099999222022	Male	Housekeeping	Room Attendant	Regula
STI-00003	CHARLES	M	NPAZ	AGNO	09298387344	Male	Housekeeping	Room Attendant	Regula
STI-00004	WARREN	A	ABUAN	FERNANDEZ	0949857474	Male	Sales Supervisor	Room Attendant	Regula
STI-00005	RESH		ATEZORA	GEMINO	09123123	Male	Food and Beverage	Chef	Part-tim
STI-00006	JOHN GLENN	M	MELGAR	ARIZ	09132467789	Male	Front Office	Chef	Regula
STI-00007	ROED JOY	S	CAMBA	ANDA	1234555	Male	Front Office	Marketing Manager	Regula
STI-00008	JOM	N	CAS	BAGIO	123445	Male	Sales and Marketing	Room Attendant	Regula
STI-00009	SHADRACH	C	PANSOY	BARANGAY SAN ROQUE ALAMINOS CITY PAGASINAN	09562502830	Male	Food and Beverage	Bar tender	Regula
STI-00010	ALDRICH	CORPUZ	APOSTOL	CATUDAY	0987763054	Male	Food and Beverage	Bar tender	Regula
STI-00011	HAROLD	VACULAD	HUMILDE	STA. MARIA ALAMINOS CITY, PAGASINAN	09891835574	Male	Food and Beverage	Bar tender	Regula
STI-00012	AL GILLANI	ESPAÑUEVA	POL	ZARAGOZA	0988762737	Male	Housekeeping	Room Attendant	Regula
STI-00013	CARLO	ABARRA	PERALTA	ALAMINOS CITY	09153462068	Male	Front Office	Marketing Manager	Regula
STI-00014	CHONA	C	VERGARA	ALAMINOS CITY	0900009999	Female	Front Office	Marketing Manager	Regula

At the bottom left, it says 'Developed By: STI - Group A'.

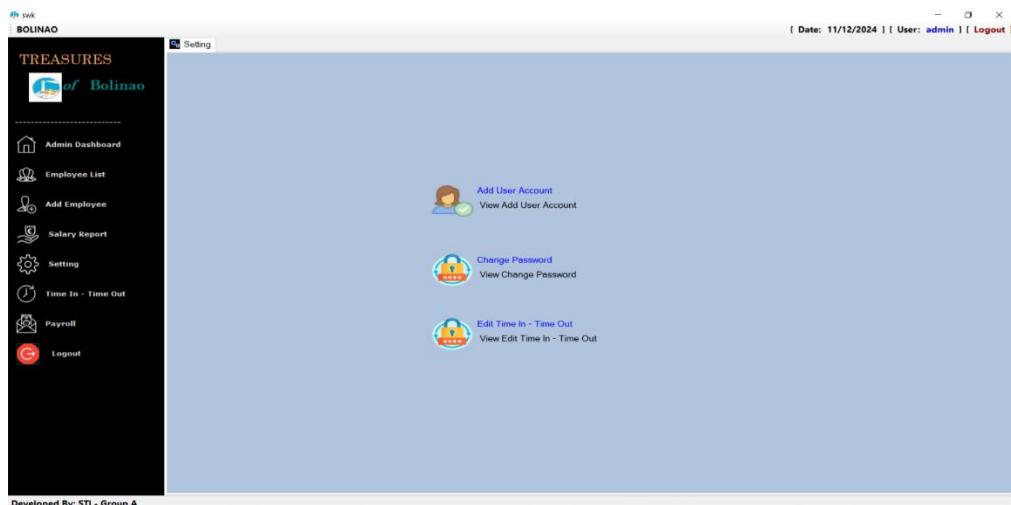
6. Dashboard Overview

- Dashboard can view recent time-ins, number of employees, pie chart of department and jumbler of employees per department.



7. Data Security and Privacy

- Restricts access to confidential information, through encryption of password. Has also a backup and recovery in case of system failure.



8. Compliance with Labor Laws

- Adheres to local labor regulations for attendance tracking, overtime computations, and payroll management to ensure full legal compliance.

11. User-Friendly Interface

- Designed for ease of use with an intuitive layout, minimizing the learning curve for administrators.

12. Fast System Performance

- Processes key functions, such as attendance logging and report generation, quickly to maintain operational efficiency.

13. Desktop Compatibility

- Operates on Windows-based desktop systems, making it accessible and compatible with the existing infrastructure.

Acceptability Level of the Developed System

The Daily Time Record and Payroll Management System (DTR-PR) was evaluated by students and faculty members to determine its acceptability based on various software quality factors, including functionality, reliability, usability, maintainability, and portability. The evaluation aimed to assess the system's overall performance and

effectiveness in addressing the needs of the organization. The results of the evaluation, presented below, indicate the weighted mean for each factor:

System Evaluation According to Functionality

FUNCTIONALITY	Mean	Description
1.Suitability: The functions of the system are appropriate.	5	Excellent
2. Accuracy: The system's results are accurate.	5	Excellent
3. Compliance: It adheres to existing standards and policies.	4.93	Excellent
4. Security: It prevents unauthorized access.	4.90	Excellent
Weighted Mean	4.96	Excellent

Table 2. Evaluation of Respondents to System Functionality

Functionality. Table 2 presents The Daily Time Record and Payroll Management System (DTR-PR) was rated excellent in terms of functionality. The system received perfect scores of 5 for both suitability and accuracy, demonstrating that its functions are highly appropriate for its intended purpose and that the results it produces are accurate. Compliance scored 4.93, indicating the system adheres to existing standards and policies, ensuring it aligns with organizational and regulatory requirements. Security received a rating of 4.90, reflecting the system's strong ability to prevent unauthorized access,

safeguarding sensitive information. These results confirm that the system excels in functionality, effectively meeting user needs while maintaining security and compliance.

System Evaluation According to Reliability

RELIABILITY	Mean	Description
1. Maturity: There is a minimal frequency of software faults/failure.	4.93	Excellent
2. Fault Tolerance: The system has capability of handling errors.	4.93	Excellent
3. Recoverability: Systems performance is establishing from failure.	4.96	Excellent
Weighted Mean	4.94	Excellent

Table 3. Evaluation of Respondents to System Reliability

Reliability. Table 3 presents The Daily Time Record and Payroll Management System (DTR-PR) received an excellent rating for reliability, with a weighted mean of 4.94. Maturity was rated 4.93, indicating that the system experiences minimal software faults or failures, ensuring stable performance. Fault tolerance also scored 4.93, reflecting the system's robust capability to handle errors effectively without compromising functionality. Recoverability received a rating of 4.96, demonstrating the system's ability to restore performance quickly after a failure. These results highlight the system's high reliability, ensuring consistent and dependable operation in real-world usage.

System Evaluation According to Usability

USABILITY	Mean	Description
1.Understability: Concepts are easily recognized.	4.97	Excellent
2. Learnability: The system has capability of handling system errors.	4.90	Excellent
3. Recoverability: Systems performance is re-establishing from failure.	4.87	Excellent
Weighted Mean	4.91	Excellent

Table 4. Evaluation of Respondents to System Usability

Usability. Table 4 presents The Daily Time Record and Payroll Management System (DTR-PR) achieved an excellent rating in usability, with a weighted mean of 4.91. The system's understandability scored 4.97, highlighting that users found the system's concepts and interface easy to recognize and comprehend. Learnability was rated at 4.90, demonstrating that users could quickly and effectively learn how to navigate and use the system. Recoverability scored 4.87, reflecting the system's ability to maintain or restore usability after encountering errors. These results confirm that the system is highly user-friendly, offering an intuitive and efficient experience for its users.

System Evaluation According to Efficiency

EFFICIENCY	Mean	Description
1. Time Behavior: There is fast response time of the system.	4.93	Excellent
2. Resource Behavior: Resources used for system performance are accessibility.	4.93	Excellent
Weighted Mean	4.93	Excellent

Table 5. Evaluation of Respondents to System Efficiency

Efficiency. Table 5 presents The Daily Time Record and Payroll Management System (DTR-PR) received an excellent rating for efficiency, with a weighted mean of 4.93. Both time behavior and resource behavior were rated at 4.93, indicating that the system provides fast response times and ensures optimal accessibility and utilization of resources for its performance. These results demonstrate that the system operates with high efficiency, enabling smooth and prompt execution of its functions while maintaining accessibility and effective resource management.

System Evaluation According to Maintainability

MAINTAINABILITY	Mean	Description
1. Analyzability – Failure causes can easily identified.	4.97	Excellent
2. Changeability – effort in modifying system.	4.93	Excellent
3. Stability – Components can easily modified.	4.93	Excellent

Weighted Mean	4.94	Excellent
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Table 6. Evaluation of Respondents to System Maintainability

Maintainability. Table 6 presents The Daily Time Record and Payroll Management System (DTR-PR) received an excellent rating for maintainability, with a weighted mean of 4.94. Analyzability was rated 4.97, indicating that users and developers can easily identify the causes of any failures or issues within the system. Changeability scored 4.93, reflecting that the system can be modified with minimal effort, ensuring it can be adapted to future needs. Stability also received a rating of 4.93, highlighting that the system's components can be easily modified without compromising its functionality or performance. These results demonstrate that the system is highly maintainable, ensuring smooth operation and ease of updates over time.

System Evaluation According to Portability

Portability	Mean	Description
1. Adaptability: Specification changes are done easily.	5	Excellent
2. Install ability: There is effortless process of installing the system.	4.87	Excellent
3. Conformance – System is compliant to portability standards.	4.97	Excellent
4. Replaceability - ease to exchange a system component within a specified environment.	5	Excellent

Weighted Mean	4.96	Excellent
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Table 7. Evaluation of Respondents to System Portability

Portability. Table 7 The Daily Time Record and Payroll Management System (DTR-PR) received an excellent rating for portability, with a weighted mean of 4.96. The system's adaptability scored a perfect 5, demonstrating that specification changes are easily implemented, allowing for flexibility in various environments. Installability was rated 4.87, indicating that the system can be effortlessly installed with minimal difficulty. Conformance to portability standards scored 4.97, reflecting the system's compliance with recognized portability guidelines, ensuring it operates seamlessly across different platforms. Replaceability also received a perfect score of 5, showcasing the ease with which system components can be exchanged within specified environments. These results affirm the system's outstanding portability, ensuring smooth deployment and compatibility across various platforms and environments.

Overall System Evaluation

Area	Average Weighted Mean	Descriptive Interpretation
1. Functionality	4.96	Excellent
2. Reliability	4.94	Excellent
3. Usability	4.91	Excellent
4. Efficiency	4.93	Excellent
5. Maintainability	4.94	Excellent

6. Portability	4.96	Excellent
Overall Weighted Mean	4.94	Excellent

Table 8. Overall Evaluation of Respondents to System

The Daily Time Record and Payroll Management System (DTR-PR) received an excellent overall evaluation, with a weighted mean of 4.94. The system was rated highly across all key areas:

- Functionality scored 4.96, reflecting its robust features and effectiveness in meeting user needs.
- Reliability received a rating of 4.94, indicating stable and dependable performance.
- Usability was rated 4.91, highlighting its user-friendly interface and ease of use.
- Efficiency achieved a score of 4.93, demonstrating quick response times and optimal resource use.
- Maintainability earned 4.94, showing ease in system updates and troubleshooting.
- Portability also scored 4.96, confirming the system's flexibility and compatibility across different platforms.

These results demonstrate that the DTR-PR system is highly acceptable and performs excellently in all evaluated areas, ensuring it is an effective, reliable, and user-friendly tool for managing time records and payroll.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The study aimed to address the inefficiencies in the current timekeeping and payroll processes at Treasures of Bolinao Beach Resort & Hotel, which rely on a traditional bundy clock system. This manual approach has led to recurring challenges, including inaccurate attendance tracking, frequent payroll computation errors, lost or damaged time cards, and difficulties in ensuring compliance with labor laws. These issues have resulted in operational delays, administrative burdens, and employee dissatisfaction.

The study was conducted to address inefficiencies in the current Daily Time Record (DTR) and payroll processes at Treasures of Bolinao Beach Resort & Hotel, which rely on a traditional bundy clock system. This manual system has led to significant challenges, including inaccurate attendance tracking, frequent payroll computation errors, lost or damaged time cards, and difficulties in maintaining compliance with labor laws. These inefficiencies result in operational delays, increased administrative workload, and employee dissatisfaction.

To address these challenges, the study proposed a biometric-based DTR and Payroll Management System. The system integrates biometric fingerprint authentication for accurate timekeeping, automated payroll processing to reduce errors, and a secure centralized database for managing employee records. Features include real-time attendance monitoring, customizable reporting, and compliance with labor regulations. By adopting this technology, the resort can improve operational efficiency, enhance data security, minimize administrative workload, and ensure accurate and timely salary

computation, ultimately fostering trust among employees and improving overall performance.

Findings

1. Identification of Current Processes

The existing DTR and payroll system at the resort relies on a traditional bundy clock system and manual timecard collection. Payroll computations are performed using basic tools like calculators and spreadsheets, with reports generated through labor-intensive manual compilation

2. Difficulties in the Existing System

Challenges include inaccuracies in attendance tracking due to missed or incomplete punches, frequent errors in manual payroll calculations, and issues arising from lost or damaged time cards. Additionally, compliance with labor laws, such as overtime and payroll documentation, is challenging to maintain with the current manual processes.

3. Development of System Features

The proposed biometric-based system includes features such as fingerprint authentication for accurate timekeeping, automated payroll calculation to eliminate errors, a centralized database for secure record

management, and real-time attendance monitoring. Customizable reporting tools ensure easy generation of detailed summaries for management review.

4. Evaluation of System Acceptability

The proposed system is designed to meet high standards of functionality, reliability, usability, efficiency, maintainability, and portability. These attributes ensure that the system will address current challenges effectively while remaining adaptable to the resort's future needs.

Conclusions

The findings reveal that the resort's current manual processes for timekeeping and payroll are outdated and inefficient, resulting in operational delays, administrative burdens, and potential legal risks. The reliance on manual input leads to frequent errors in payroll calculations and attendance records, which can result in compliance issues and dissatisfaction among employees. These inefficiencies highlight the urgent need for an automated system to streamline operations and reduce the risk of mistakes.

The proposed biometric-based system offers a modern solution by automating critical functions such as time tracking and payroll calculations. This system ensures accurate data collection, minimizes human error, and guarantees compliance with labor laws by correctly calculating working hours, overtime, and deductions. By automating these processes, the system eliminates the risks associated with the current manual methods and ensures fair and timely payment to employees.

A significant advantage of the proposed system is its real-time monitoring and reporting capabilities. These features allow management to track attendance and payroll information instantly, offering valuable insights for informed decision-making. By enabling immediate access to data, the system allows for prompt identification of discrepancies and makes it easier to resolve issues quickly, thus improving operational efficiency and reducing the chances of costly mistakes.

Additionally, the system is designed to be user-friendly and scalable, ensuring that administrators and employees can easily adapt to the new technology. Its intuitive interface reduces the learning curve, making it simple to use. The system's scalability also allows it to grow with the resort, accommodating increased employee numbers and evolving business needs, ensuring that it remains reliable and sustainable in the long term.

The evaluation of the Daily Time Record and Payroll Management System (DTR-PR) demonstrates that the system meets high standards across key attributes such as functionality, reliability, usability, efficiency, maintainability, and portability. These qualities ensure that the system not only addresses the current challenges faced by the resort in managing time records and payroll but also provides the flexibility and scalability needed to adapt to future needs. The positive feedback from the system's evaluation confirms its capability to streamline operations, enhance accuracy, and improve overall efficiency, making it a valuable solution for the resort's long-term success.

Recommendations

1. Encourage other businesses to adopt modern biometric-based systems for accurate and secure timekeeping.

2. Recommend automating payroll processes and integrating them with attendance systems to eliminate manual errors.
3. Advocate for the use of centralized, secure databases to efficiently manage employee records while maintaining strict data protection measures.
4. Emphasize the importance of configuring payroll systems to ensure compliance with labor laws and regulations.

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APPENDIX A

Project Workplan and Gantt Chart

No.	Activity/Task	Anticipated Result	August	September	October	November	December									
			1	2	3	4	5	1	2	3	4	5	1	2	3	
1	Planning Phase(Project Plan)	All														
1.1	Initial Research and Understanding	Research and Understanding	Angelina, Le Claire													
1.1.1	Conduct a Literature Review	Literature review	Angelina, Le Claire													
1.1.2	Gather information about DTR-PR	Informations Gathered	Angelina, Le Claire													
1.2	Identify Target Location	Target Location	Angelina													
1.2.1	Identify a business or establishment to benefit from the system.	Identified Establishments	Angelina													
1.2.2	Establish an agreement with management for collaboration.	Agreement with Management	Angelina													
1.3	Identify Current System	Identify the Current System	Angelina, Le Claire													
1.3.1	Analyze the existing system, such as the Bundy Clock and manual payroll processing.	Analyzed Bundy Clock	Angelina													
1.4	Definition of Scope and Limitations	Scope and Limitations	Warren, Aldrich													
1.4.1	Define what the system will include (e.g., biometric fingerprint system, payroll)	Define System Features	Warren, Aldrich													
1.4.2	Establish limitations (e.g., no employee self-service portal).	Define Limitations	Warren, Aldrich													
1.5	Requirements Gathering	Gather Requirements needed	Le Claire													
1.5.1	Collect specific requirements from stakeholders (e.g., admin, employees)	Collaborate with the stakeholders	Le Claire													
1.5.2	Document desired system features and functionalities.	Document desired system	Le Claire													
1.6	Planning Team	Plan the System with the Team	Le Claire, Angelina													
1.6.1	Assign roles and responsibilities within the development team.	Responsibilities by member	Angelina													

Figure 19. Planning Phase

This figure highlights that the **Planning Phase** is the foundation of the project, focusing on understanding the requirements and setting clear objectives. It involves conducting initial research, gathering information about the current system, and identifying the project's scope and limitations.

Analysis Phase		All														
		Le Claire														
1	Define Functional Requirements	Define system features for attendance, payroll, and accurate attendance tracking.	Le Claire													
1.1	Record employee attendance, calculating payroll, and generating reports.	Automated and precise payroll computation.	Le Claire, Angelina													
1.2	Specify payroll features, including deductions.	Generate detailed and accurate reports.	Le Claire, Angelina													
1.3	Define requirements for real-time attendance tracking.	Ensure system meets performance and security	Dean, Warren, Aldrich													
1.4	Define Non - Functional Requirements	Achieve 3-second response time.	Dean, Warren, Aldrich													
1.4.1	Set performance targets (e.g., 3-second response time).	Implement robust encryption.	Dean, Warren, Aldrich													
1.4.2	Establish security requirements, like data encryption.	Ensure ease of use for all users.	Dean, Warren, Aldrich													
1.4.3	Interface must be user-friendly	Collect stakeholder inputs for design.	Le Claire													
1.5	Requirement Gathering	Gather Requirements	All													
1.5.1	Conduct interviews with employees and administrators.	Identify User Challenges/Needs	All													
1.5.2	Focus on their challenges with the current system.	Refined and prioritized list of requirements	All													
1.5.3	Conduct Joint Application Development (JAD) sessions.	Collaborate with the Employees and Users	All													
1.6	Questionnaires	Questionnaires for the Employee	Le Claire													
1.6.1	To collect a broad range of opinions and experiences from employees	Collect opinions and Experiences	Le Claire													
1.7	Document Analysis	Document the Current System	Le Claire													
1.8	Identify gaps in the current system	Identify Gaps in their Current System	Le Claire													
1.9	Observation	Understand current workflows and usage.	All													
1.9.1	Observe currently interact with the timekeeping and payroll system during their daily tasks	Document daily user interactions.	All													
1.10	Develop Use Cases and Scenarios	Create use cases to guide development	Dean, Angelina													
1.10.1	Create use case diagrams (e.g., for Biometric Enrollment, Attendance Tracking).	Visualize system interactions.	Dean													
1.10.2	Ensure use cases align with functional requirements.	Align use cases with system goals.	Dean													
1.10.3	Outline scenarios for each use case to clarify expected interactions.	Define interaction scenarios.	Dean													
1.11	Feasibility Analysis	Confirm project viability.	Le Claire													
1.11.1	Assess resource availability (budget, manpower).	Ensure sufficient resources are available.	Le Claire													
1.11.2	Identify any constraints that may impact project completion.	Recognize potential challenges early	Le Claire													
1.12	Internal Review and Documentation	Finalize and approve system requirements.	Le Claire													
1.12.1	Review all findings internally and document the final analysis.	Validate analysis results.	Le Claire													
1.12.2	Secure to proceed with system design.	Obtain approval to start system design.	All													

Figure 20. Analysis Phase

This figure shows that the **Analysis Phase** delves deeper into the project's technical and functional requirements. Functional requirements, such as attendance recording and payroll calculations, are defined, alongside non-functional requirements like performance and security.

57			
58	Design Phase		
59	Create Use Case Diagrams and Workflow	Create a UseCase Diagrams	Dean, Angelina
60	Draft diagrams for each use case (e.g., Biometric Enrollment, Payroll Calculation).	Draft clear and accurate use case diagrams..	Dean
61	Map out workflows to illustrate end-to-end processes.	Map workflows to show end-to-end system processes.	Dean
62	Ensure diagrams are clear and align with requirements.	Align diagrams with system requirements.	Dean
63	System Architecture Design	Create System Architecture	Warren, Angelina
64	Define System Requirements & Components	Define system requirements and key components	Warren, Le Claire
65	Create System Architecture Diagram	Create a complete system architecture diagram.	Warren, Le Claire
66	Define Database Scheme and Relationship	Develop a clear database schema with relationships.	Warren, Le Claire
67	Identify Third Party Libraries or APIs to be used	Identify necessary third-party libraries or APIs.	Warren, Le Claire
68	Ensure Scalability and Security Aspects	Ensure scalability and robust security features.	Warren, Le Claire
69	User Interface (UI) Design	Create UI Design	Angelina
70	Design a user-friendly interface with intuitive navigation.	Design an intuitive and user-friendly interface.	Angelina
71	Focus on easy data entry and quick access to key features.	Simplify data entry and improve feature navigation	Angelina
72	System Security and Privacy Design	Secure and Privacy Design	Angelina
73	System Security and Privacy Design	Design a Security and privacy Design	Angelina
74	Plan for encryption of sensitive data (biometric, payroll).	Plan encryption for sensitive data.	Angelina
75	Establish access control measures for secure login.	Establish secure access control measures.	Angelina
76	Prototype Development	Develop a Prototype	Angelina, Le Claire
77	Create low-fidelity prototypes.	Develop low-fidelity prototypes for usability feedback.	Angelina, Le Claire
78	Present prototypes to gather feedback on usability.	Prototypes Usability	Angelina, Le Claire
79	Review and Approval of Design Documents	Approval of Design Documents	Angelina, Le Claire
80	Review the system design and architecture documents within the team	Review Design Phase with a team	Angelina, Le Claire
81			

Figure 21. Design Phase

This figure illustrates that the **Design Phase** is where the system's architecture and interface take shape. The team creates use case diagrams, workflows, and system architecture to map out each component. User interface design prioritizes simplicity and functionality to ensure a seamless user experience. Data security and privacy are integrated into the design, and prototypes are developed for stakeholder review.

81			
82	Implementation Phase		
83	Setting Up Development Environment	Development environment is fully configured and Database and required servers are successfully set	Angelina
84	Configure the Database Server and Other Required Servers	CICD pipelines are implemented for seamless	Angelina
85	Set Up Continuous Integration/Continuous Deployment	Database Development	Angelina
86	Database Development	Database schema for DTR and Payroll System	Angelina
87	Develop Database Schema for DTR and Payroll System	Tables for employees, time logs, and payroll data are	Angelina
88	Implement Tables for Employee Records, Time Logs, Payroll Data	Database operations are automated and efficient	Angelina
89	Write Database Triggers, Stored Procedures, and Functions	Perform Initial Database Testing (Data Integrity and Validation)	Angelina
90	Develop Biometric Authentication	Development of Biometrics	Angelina
91	Implement the fingerprint scanning process for employee enrollment	Fingerprint enrollment for employees is functional.	Angelina
92	Develop Time-In and Time-Out Functionality via Biometric Input	Time-in and time-out are operational using biometrics.	Angelina
93	Build Attendance Tracking	Attendance Tracking	Angelina
94	Implement Real-Time Attendance Logging for Time-In and Time-Out	Accurate real-time attendance logs are generated.	Angelina
95	Ensure Compatibility with Payroll Calculations	Attendance integrates seamlessly with payroll.	Angelina
96	Develop Payroll Calculation Module	Develop a Payroll Calculations	Angelina
97	Develop the code to calculate employee salaries based on attendance records.	Payroll computation based on attendance is accurate.	Angelina
98	Implement Overtime Functionalities	Overtime calculations are automated and precise	Angelina
99	Ensure Payroll is Linked to Attendance Records Accurately	Payroll is accurately linked to attendance data.	Angelina
100	Create Reporting Feature	Reporting feature	Angelina
101	Develop Reports for Attendance and Payroll (Daily, Weekly, Monthly)	Generate daily, weekly, and monthly reports effectively.	Angelina
102	Conduct Testing	Conduct testing	All
103	Test individual modules to ensure each one works correctly	All modules work as intended.	All
104	Test the integrated system to ensure smooth operation between modules	Modules function correctly together.	All
105	Perform end-to-end testing	System operates smoothly from start to finish.	All
106			

Figure 22. Implementation phase

This figure emphasizes that the **Implementation Phase** is where the system is brought to life. The development team sets up the necessary infrastructure, including servers and databases, and ensures smooth integration of modules.

107			
108	Maintenance Phase		
109	System Testing and Debugging	Debugging and Testing	Angelina
110	Simulate employee time logs and payroll runs to verify accuracy.	All errors identified and resolved.	All
111	Perform module-by-module testing for functionality and accuracy.	All modules functioning as intended without bugs or	Angelina
112	Document and fix any identified issues.	Documentation of issues and their resolution for future	Le Claire, Angelina
113	Data Backup and Configuration	Data BackUp	Angelina
114	Securely store the backup for future reference.	Reliable backup stored and readily available for	Angelina
115	System Performance Optimization	Performance Optimized	Angelina
116	Optimize database queries and system responsiveness.	Improved system performance with faster response	Angelina
117	User Acceptance Testing (UAT)	User Acceptance testing	All
118	Allow the Admin team to test the system with sample data.	Admin team validates that the system meets user	All
119	Deploy the system in the production environment.	Deploy the System in the Production	All
120	Train administrators and employees on system usage.	Admins and employees are confident and proficient in	All
121			

Figure 23. Maintenance Phase

This figure underscores that the **Maintenance Phase** is crucial for ensuring the system's longevity and reliability. The team conducts system testing and debugging to address any identified issues and optimize performance. Data backup and configuration are securely handled to safeguard against data loss.

APPENDIX B

Survey Guides

1. On a scale of 1-5, how user-friendly do you find the current attendance and payroll system?
2. How satisfied are you with the accuracy of the current payroll calculations (1-5)?
3. How often do you experience issues with recording attendance or tracking work hours (1-5)?
4. Do you think biometric authentication would improve the security of attendance tracking? (Yes/No)
5. How often do you need to manually adjust or correct your attendance record? (Never, Rarely, Sometimes, Often, Always)
6. Would you prefer to view your payroll and attendance records through a self-service portal? (Yes/No)
7. What challenges do you face when tracking your break times or overtime hours?
8. Are there any specific features you would like to see in the new DTR and Payroll system?
9. What changes to the attendance system would make it easier for you to track your work hours?
10. How would you suggest improving the process for calculating overtime and bonuses?

APPENDIX C

Use Case Model

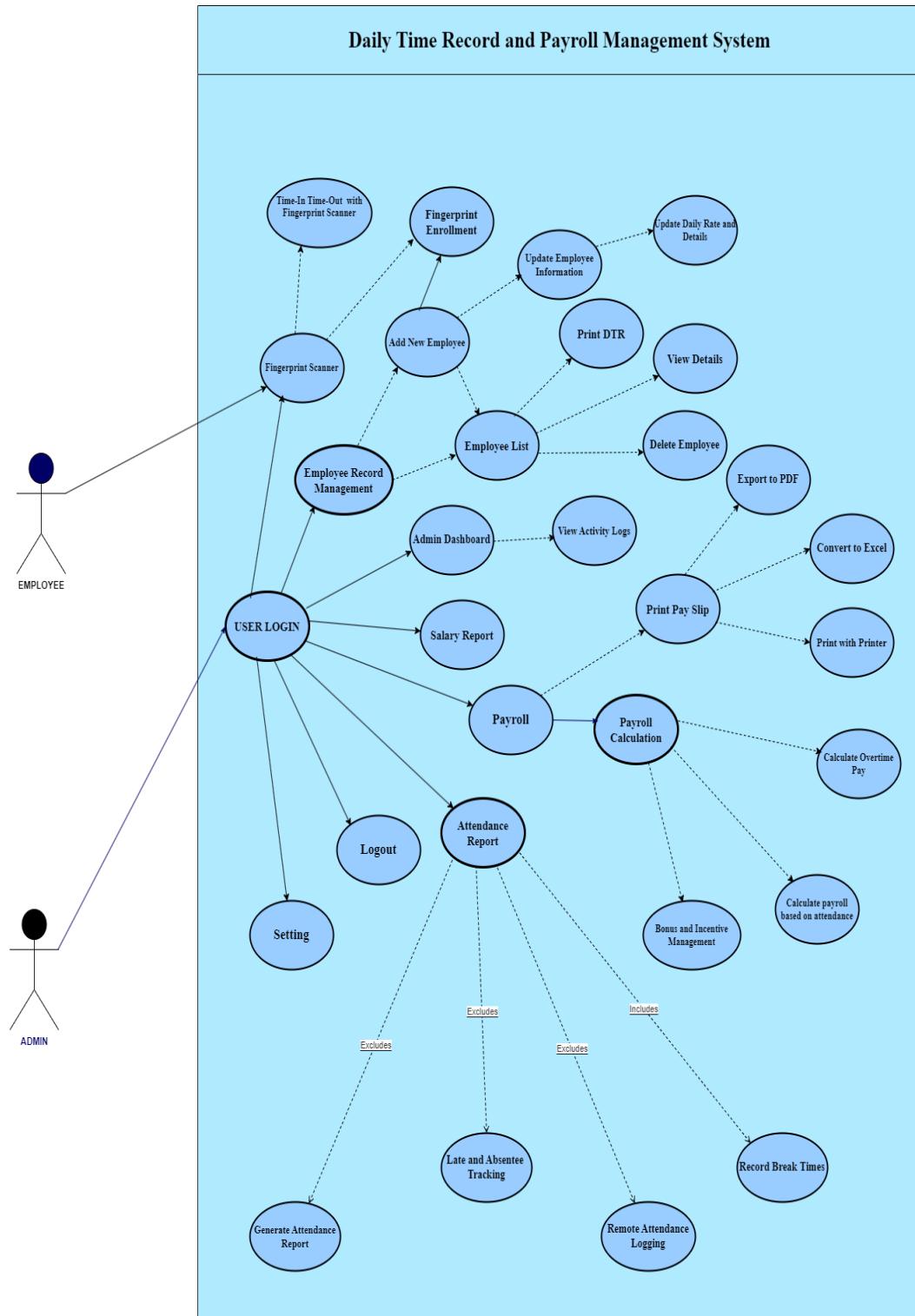


Figure. 24. Use Case Diagram

APPENDIX D

Use Case Description

Use Case ID: UC-01		
Use Case Name:	User Login	
Description:	This use case allows the user (either Employee or Admin) to log in to the system to access relevant functions based on their role. The user must enter their email and password, with a maximum of 5 attempts. If the account becomes locked, they must contact the administrator to unlock it.	
Primary Actor:	Admin	
Preconditions:	User must have an account to log in.	
Post Conditions:	The system displays the user's dashboard.	
	Actor	System
Main Flow:	1. The user enters their email and password.	
	2. The user submits the email and password for verification.	3. The system validates the email and password.
		4. The system displays the user's dashboard.
	5. The use case ends.	
Alternate Flow:	AF1. Missing email and password	
	1. The system prompts for email and password.	
	2. Use case resumes at main flow step 1.	

Table 9. UC-01 User Login

Use Case ID: UC-02		
Use Case Name:	Fingerprint Scanner	
Description:	This use case allows employees to time-in/out by using the fingerprint scanner to authenticate their identity.	
Primary Actor:	Employee	
Preconditions:	The user must have their fingerprint registered in the system database. The scanner must be connected and functional.	
Post Conditions:	The user is either authenticated successfully and granted access, or denied access if the fingerprint does not match.	
	Actor	System
Main Flow:	1. Place finger on the scanner.	
		2. Detects the fingerprint and scans it.
	3. Waits for verification.	
		4. Matches the scanned fingerprint with the database.
	5. Access is granted or denied.	
		6. Displays authentication result and logs the attempt.

Table10. UC-02 Fingerprint Scanner

Use Case ID: UC-03	
Use Case Name:	Time-In Time-Out with Fingerprint Scanner
Description:	This use case allows employees to log in and out using the biometric system to accurately record their attendance.
Primary Actor:	Employee

Preconditions:	Employee must be enrolled in the biometric system.	
Post Conditions:	Attendance log updated with login/logout times.	
	Actor	System
Main Flow:	Employee scans their biometric data to log in.	
		System verifies biometric data and logs the login time.
	Employee scans their biometric data to log out.	
		System verifies biometric data and logs the logout time.
		5. The use case ends.
Alternate Flow:	AF3. Unreadable biometric data	
		1. The system prompts for email and password.

Table11. UC-03 - Time-In Time-Out with Fingerprint Scanner

Use Case ID: UC-04		
Use Case Name:	Employee Record Management	
Description:	Manages and organizes employee records, enabling the admin to view, update, and maintain accurate employee information in the system.	
Primary Actor:	Admin	
Preconditions:	Employee records exist in the system.	
Post Conditions:	Employee records are accessed, viewed, or modified as needed and saved accurately.	
	Actor	System

Main Flow:	1. Admin accesses the employee record management system.	
		2. System displays a list of employee records.).
	3. Admin selects an employee record to view or update.	
		4 System retrieves and displays the selected employee's information.
	5. Admin makes necessary updates to the employee record.	
		6. System validates the changes and saves the updated record.

Table 12. UC-04 Employee Record Management

Use Case ID: UC-05		
Use Case Name:	Add New Employee	
Description:	Adds a new employee to the system, including personal, contact, and employment information for record-keeping and payroll processing.	
Primary Actor:	Admin	
Preconditions:	The admin has the necessary employee details for input.	
Post Conditions:	New employee information is saved and available in the system for tracking and payroll purposes.	
	Actor	System
Main Flow:	1. Admin initiates the process to add a new employee.	
		2. System prompts the admin to enter employee details (e.g., name, address, position, salary).

	3. New employee data is saved in the system.	
		4. System validates the entered data for completeness and correctness.

Table 13. UC-05 Add New Employee

Use Case ID: UC-06		
Use Case Name:	Fingerprint Enrollment	
Description:	This use case allows a user to register their fingerprint into the system for future authentication purposes. The fingerprint is scanned and stored securely in the database.	
Primary Actor:	Admin/User	
Preconditions:	The user must be authorized to enroll fingerprints. The fingerprint scanner must be connected and functional.	
Post Conditions:	The user's fingerprint is successfully stored in the system database or an error message is displayed if enrollment fails.	
	Actor	System
Main Flow:	1. Initiates enrollment process.	
		2. Prompts the user to place their finger on the scanner.
	3. Places finger on the scanner.	
		4. Scans the fingerprint and displays a success message.
	5. Confirms enrollment completion.	
		6. Stores the fingerprint in the database securely.

Table14. UC-06 Fingerprint Enrollment

Use Case ID: UC-07	
Use Case Name:	Update Employee Information

Description:	Allows the admin to update existing	
Primary Actor:	Admin	
Preconditions:	The employee's record already exists in the system.	
Post Conditions:	Updated employee information is saved and reflected in the system.	
	Actor	System
Main Flow:	1. Admin selects an employee to update information.	
		2. System retrieves the current information of the selected employee.
	3. Admin enters updated information (e.g., address, contact details, position, salary).	
		4. System validates the updated information for completeness and accuracy.
	5. Updated employee data is saved in the system.	

Table15. UC-07 Update Employee Information

Use Case ID:	UC-08	
Use Case Name:	Update Daily Pay Rate and Details	
Description:	Allows admins to update employee pay rates and relevant details.	
Primary Actor:	Admin	
Preconditions:	Admin has access to employee records..	
Post Conditions:	Employee pay rate and details are updated.	
	Actor	System

Main Flow:	1. Admin selects an employee's record to update pay rate.	
		2. System updates pay rate in the employee's profile.

Table 16. UC-08 Update Daily Pay Rate and Details

Use Case ID: UC-09		
Use Case Name:	Employee List	
Description:	This use case enables the admin to view and manage the list of employees stored in the system.	
Primary Actor:	Admin	
Preconditions:	The admin must be logged into the system.	
Post Conditions:	The employee list is displayed to the admin.	
	Actor	System
Main Flow:	1. Requests to view the employee list.	
		2. Retrieves and displays the employee list.

Table 17. UC-09 Employee List

Use Case ID: UC-10	
Use Case Name:	Generate Report
Description:	This use case allows the admin or employee to generate and print a Daily Time Record (DTR) report, which summarizes attendance and work hours for a specific period.
Primary Actor:	Admin
Preconditions:	The user must be logged into the system. The system must have attendance records for the selected date range.

Post Conditions:	The DTR is successfully printed or saved as a file.	
	Actor	System
Main Flow:	1. Requests to print the DTR.	
	2. Prompts the user to select the date range.	
	3. Selects the date range and confirms.	
	4. Retrieves attendance records from the database.	
	5. Reviews the generated DTR.	
	6. Displays the DTR and provides print options.	

Table 18. UC-10 Generate Report

Use Case ID:	UC-11	
Use Case Name:	View Details	
Description:	This use case allows a user to view detailed information about a specific record, such as an employee, attendance, or system data.	
Primary Actor:	Admin	
Preconditions:	The user must be logged into the system and have the necessary permissions. The record to be viewed must exist in the system.	
Post Conditions:	The detailed information of the selected record is displayed to the user.	
	Actor	System
Main Flow:	1. Selects a record to view details.	
	2. Retrieves detailed information about the selected record.	
	3. Views the details displayed on the screen.	

		4. Ensures the data is up-to-date and accurate.

Table 19. UC-011 View Details

Use Case ID:			UC-12
Use Case Name:	Delete Employee		
Description:	This use case allows the admin to remove an employee's record from the system. This action is typically performed when an employee resigns or their data is no longer needed.		
Primary Actor:	Admin		
Preconditions:	The admin must be logged into the system.		
Post Conditions:	The employee record is deleted from the system.		
	Actor	System	
Main Flow:	1. Selects an employee from the employee list.		
		2. Displays the selected employee's details.	
	3. Confirms the deletion request.		
		4. Verifies the request and removes the employee record from the database.	
	5. Receives a confirmation message.		
		6. Logs the deletion activity for audit purposes.	

Table 20. UC-012 Delete Employee

Use Case ID:		UC-13
Use Case Name:	Admin Dashboard	

Description:	This use case allows the admin to access an overview of the system's key metrics, manage system functionalities, and monitor operations in real-time. The dashboard serves as a control panel for administrative tasks.	
Primary Actor:	Admin	
Preconditions:	The admin gains access to system insights and management tools..	
Post Conditions:	The admin gains access to system insights and management tools.	
	Actor	System
Main Flow:	1. Logs into the system and navigates to the dashboard.	
		2. Displays the dashboard with key metrics and options (e.g., employee count, attendance overview, pending tasks).
	3. Interacts with dashboard elements (e.g., clicks on metrics for detailed views).	
		4. Retrieves and displays the requested data or management options.
	5. Performs necessary administrative actions (e.g., updating data, generating reports).	
		6. Updates the system and reflects changes in real-time on the dashboard.

Table 21. UC-013 Admin Dashboard

Use Case ID:	UC-14
Use Case Name:	View Activity Log

Description:	This use case allows the admin to view a record of system activities, including user actions, updates, and system events, for monitoring and audit purposes	
Primary Actor:	Admin	
Preconditions:	The admin must be logged into the system with appropriate permissions.	
Post Conditions:	The activity log is displayed to the admin.	
	Actor	System
Main Flow:	1. Navigates to the activity log section.	
		2. Displays a list of recorded activities with details like date, time, user, and action performed.
	3. Searches or filters the logs (e.g., by date, user, or activity type).	
		4. Retrieves and displays the filtered log entries.
	5. Views detailed information about a specific log entry if needed.	
		6. Displays the full details of the selected activity log entry.

Table 22. UC-014 View Activity Log

Use Case ID:	UC-15
Use Case Name:	Generate Salary Report
Description:	This use case allows the admin to generate a report detailing the salaries of employees, including deductions, bonuses, and net pay for a specified period.

Primary Actor:	Admin	
Preconditions:	Employee salary data must exist in the system.	
Post Conditions:	A salary report is generated and displayed or exported as a file (e.g., PDF, Excel).	
	Actor	System
Main Flow:	1. Navigates to the Salary Report section.	
		2. Prompts the admin to select a date range or reporting period.
	3. Selects the date range and confirms.	
		4 . Retrieves salary data for the specified period, including employee details, salary breakdown, and totals.
	5. Reviews the generated salary report.	
		6. Displays the report and provides options to print or export it.

Table 23. UC-015 Generate Salary Report

Use Case ID:	UC-16	
Use Case Name:	Payroll	
Description:	This use case allows the admin to calculate and process the payroll for employees, which includes calculating salaries, deductions, bonuses, and generating payslips	
Primary Actor:	Admin	
Preconditions:	The system must have up-to-date employee salary, attendance, and deduction information.	
Post Conditions:	The system updates the financial records and payroll data. Main Flow:	
	Actor	System

Main Flow:	1. Navigates to the payroll section.	
	2. Prompts the admin to select the payroll period and employee details.	
	3. Selects the payroll period and confirms the data.	
	4. Retrieves employee attendance, salary, and deduction information.	
	5. Reviews the payroll summary and makes necessary adjustments (e.g., bonuses or corrections).	
	6. Calculates the final salary for each employee, including deductions and bonuses.	

Table 24. UC-016 Payroll

Use Case ID: UC-17		
Use Case Name:	Print pay Slip	
Description:	This use case allows the admin or employee to generate and print an individual payslip for a specific payroll period, detailing salary, deductions, bonuses, and net pay.	
Primary Actor:	Admin/Employee	
Preconditions:	The payroll for the selected period must be processed. Post Conditions:	
Post Conditions:	The payslip is successfully printed or saved as a file.	
	Actor	System
Main Flow:	1. Selects the employee and payroll period.	
	2. Retrieves the payslip details for the specified employee and period.	
	3. Reviews the payslip data.	

		4. Displays the payslip preview.
	5. Confirms to print the payslip.	
		6. Sends the payslip to the printer or exports it as a file.

Table 25. UC-017Print pay Slip

Use Case ID: UC-18		
Use Case Name:	Export To PDF	
Description:	This use case allows the user to export system data, reports, or documents into a PDF format for easy sharing, saving, or printing.	
Primary Actor:	Admin	
Preconditions:	The user must be logged into the system.	
Post Conditions:	The selected data or report is successfully exported into a PDF file.	
	Actor	System
Main Flow:	1. Navigates to the data or report to be exported.	
		2. Displays the available data or report options.
	3. Selects the "Export to PDF" option.	
		4. Prepares the selected data and converts it into a PDF file format.
	5. Confirms the export process.	
		6. Generates the PDF and provides a download link or sends the file to the user.

Table 26. UC-018 Export To PDF

Use Case ID:	UC-19	
Use Case Name:	Convert to Excel	
Description:	This use case allows the user (admin or authorized person) to export system data or reports into an Excel file for further analysis or record-keeping.	
Primary Actor:	Admin	
Preconditions:	The data or report to be converted must exist in the system.	
Post Conditions:	The user can download or share the Excel file.	
	Actor	System
Main Flow:	1. Navigates to the data/report they wish to export.	
		2. Displays the available data or report options.
	3. Selects the option to convert the data to Excel.	
		4. Prepares the data and converts it into an Excel file format.
	5. Confirms the file conversion.	
		6. Exports the data into an Excel file and provides a download link or sends the file to the user.

Table 27. UC-019 Convert to Excel

Use Case ID:	UC-20
Use Case Name:	Print with Printer

Description:	This use case allows the user to print documents, reports, or other files directly from the system to a connected printer.	
Primary Actor:	Admin	
Preconditions:	A printer must be connected and properly configured to the system.	
Post Conditions:	The system logs the printing activity.	
	Actor	System
Main Flow:	1. Open the document or report to be printed.	
	2. Display the document or report on the screen.	
	3. Select the “Print” option from the system.	
		4. Prompts the user to select a printer (if multiple printers are available).
	5. Confirm to print the document.	
		6. Sends the document to the printer.

Table 28. UC-020 Print with Printer

Use Case ID:	UC-21
Use Case Name:	Payroll Calculation

Description:	Calculates employee payroll based on attendance and salary settings.	
Primary Actor:	Admin	
Preconditions:	Attendance and salary data are available.	
Post Conditions:	Payroll data is calculated and recorded.	
	Actor	System
Main Flow:	1. Admin initiates payroll calculation.	
		2. System calculates payroll using attendance and pay rate.
	3. Payroll data is saved.	

Table 29. UC-021 Payroll Calculation

Use Case ID: UC-22		
Use Case Name:	Calculate Overtime Pay	
Description:	Calculates the overtime pay based on extra hours worked by employees.	
Primary Actor:	Admin	
Preconditions:	Attendance records must include overtime hours.	
Post Conditions:	Overtime pay is calculated and added to payroll data.	
	Actor	System
Main Flow:	1. Admin initiates payroll calculation.	

		2. System calculates overtime based on extra hours.
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Table 30. UC-022 Calculate Overtime Pay

Use Case ID: UC-23		
Use Case Name:	Calculate Payroll based on Attendance	
Description:	This use case calculates employee payroll automatically by considering attendance records, including work hours, leaves, and overtime, for accurate salary computation.	
Primary Actor:	Admin	
Preconditions:	The attendance records for the payroll period must be complete and accurate.	
Post Conditions:	Employee payroll is calculated and stored in the system.	
	Actor	System
Main Flow:	1. Admin selects “Calculate payroll.”	
		2. Retrieves attendance records for the payroll period.
	3. Confirms the payroll period.	
		4. Computes payroll based on attendance, overtime, and leaves.
	5. Admin reviews the results.	

		6.Saves the payroll data and generates a report.
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Table 31. UC-23 Calculate Payroll based on Attendance

Use Case ID: UC-24		
Use Case Name:	Bonus and Incentive Management	
Description:	This use case describes the process of managing bonuses and incentives for employees. It includes the steps for calculating, approving, and distributing bonuses and incentives based on predefined criteria.	
Primary Actor:	Admin	
Preconditions:	The bonus and incentive criteria are defined and approved.	
Post Conditions:	Bonuses and incentives are calculated and distributed to employees.	
	Actor	System
Main Flow:	1.Selects “Managing Bonuses.”	
		2.Calculates and applies bonuses.
	3.Input bonus and incentive details.	
		4.Generates a summary report.
	5.Confirms and saves updates.	

Table 32. UC-24 Bonus and Incentive Management

Use Case ID: UC-25	
Use Case Name:	Biometric integration
Description:	Integrates biometric data to track employee attendance, ensuring accurate timekeeping and reducing manual entry errors.
Primary Actor:	Admin
Preconditions:	Biometric devices are set up and operational.

Post Conditions:	Biometric attendance data is recorded and synchronized with the system.	
	Actor	System
Main Flow:	1. Admin initiates biometric data synchronization.	
		2. System retrieves attendance data from biometric devices.
		3. System verifies and matches biometric data with employee records.
		4. System verifies and matches biometric data with employee records.

Table 33. UC-25 Biometric integration

Use Case ID:			UC-26
Use Case Name:	Biometric Enrollment		
Description:	This use case allows employees to enroll their biometric data into the system, facilitating secure login and logout.		
Primary Actor	Employee		
Preconditions:	Employee must have a system account.		
Post Conditions:	Biometric data is securely stored.		
	Actor	System	
Main Flow:	The employee initiates biometric enrollment.		

	2. The employee provides biometric data (e.g., fingerprint).	
		3. System captures and stores biometric data.
		4. System confirms successful enrollment.
		5. The use case ends.
Alternate Flow:	AF2. Unreadable biometric data	
		1. The system prompts for email and password.

Table 34. UC-26 Biometric Enrollment

Use Case ID:			UC-27
Use Case Name:			Self-Service Updates by Admin
Description:			This use case allows admin to update the personal information of employees, such as contact details, address, or emergency contacts, through the system without requiring admin intervention.
Primary Actor:			Admin
Preconditions:			The employee must be logged into the system with valid credentials..
Post Conditions:			Employee information is successfully updated in the system database.
	Actor	System	
Main Flow:	1.Employee logs into the system.		

		2.Verifies login credentials and grants access
	3.Employee selects the “Update Information” option.	
		4.Display the employee’s current personal information.
	5.Employee edits the required fields (e.g., contact details).	

Table35. UC-027 Self-Service Updates by Admin

Use Case ID:			UC-28
Use Case Name:	Additional Document Storage of Employee		
Description:	This use case allows employee or admins to upload and store additional documents, such as certifications, resumes, or other work-related files, into the system for record-keeping and accessibility.		
Primary Actor:	Admin		
Preconditions:	The system must have sufficient storage capacity.		
Post Conditions:	The uploaded document is securely saved in the system’s database		
	Actor	System	
Main Flow:	1.Logs into the system.		
		2.Verify login credentials.	
	3.Selects "Upload Document."		
		4.Displays upload	
	5.Uplands and confirms		
		6.Saves the document	

Table 36. UC-028 Additional Document Storage of Employee

Use Case ID:	UC-29	
Use Case Name:	Manual Salary Adjustment	
Description:	This use case allows the admin to manually adjust an employee's salary for reasons such as corrections, promotions, or other special cases.	
Primary Actor:	Admin	
Preconditions:	The admin must be logged into the system with proper access rights.	
Post Conditions:	The adjusted salary is updated in the system.	
	Actor	System
Main Flow:	1.Selects “Manual Salary Adjustment.”	
		2.Display employee salary details.
	3.Inputs new salary details.	
		4.Validates and updates the salary.
	5.Confirms the adjustment.	
		6.Saves changes and generates a confirmation message.

Table 37. UC-029 Manual Salary Adjustment

Use Case ID:	UC-30
Use Case Name:	Attendance Tracking
Description:	Tracks employee attendance through their biometric login and logout actions.
Primary Actor:	Employee, Admin

Preconditions:	Employee must log in/out using biometric.	
Post Conditions:	Attendance data is recorded and available for reports..	
	Actor	System
Main Flow:	Employee logs in using biometric.	
		2. System records login time.
	Employee logs out at the end of their shift.	
		System records logout time..
	5. The use case ends.	

Table 38 UC-30 Attendance Tracking

Use Case ID: UC-31		
Use Case Name:	Records Break Times	
Description:	Records employee break times to ensure accurate tracking of total work hours.	
Primary Actor:	Admin	
Preconditions:	Employee attendance is already recorded for the workday.	
Post Conditions:	Break time data is recorded and saved.	
	Actor	System
Main Flow:	1.Admin initiates break-time r	
		2. System prompts for start and end times of the break.
	3. Break-time data is saved.	

		4. System records the break duration and updates work hours.
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Table 39. UC-31 Records Break Times

Use Case ID:			UC-32
Use Case Name:			Remote Attendance Logging
Description:			This use case allows employees to log their attendance remotely through the system, using a web or mobile platform, ensuring flexibility for remote work setups.
Primary Actor:			Admin
Preconditions:			The employee must have access to the system via a verified device.
Post Conditions:			Attendance data is successfully recorded in the system.
		Actor	System
Main Flow:		1.Logs into the system remotely.	
			2.Verifies credentials and access rights
		3.Selects “Log Attendance.”	
			4.Captures attendance details (e.g., time, location)
		5.Confirms submission.	
			6.Records attendance and displays confirmation

Table 40 UC-32 Remote Attendance Logging

Use Case ID:		UC-33
Use Case Name:		Late and Absentee Tracking

Description:	Tracks employee lateness and absenteeism based on attendance records to ensure accurate timekeeping and payroll adjustments.	
Primary Actor:	Admin	
Preconditions:	Employee attendance data is available.	
Post Conditions:	Late and absentee records are updated and saved.	
	Actor	System
Main Flow:	1. Admin initiates late and absentee tracking.	
		2. System checks attendance data for any lateness or absence.
	4. Late and absentee data is saved.	
		3. System updates records for late or absent employees.

Table 41 UC-33 Late and Absentee Tracking

Use Case ID:	UC-34	
Use Case Name:	Custom Attendance Adjustments	
Description:	This use case allows the admin to manually adjust attendance records for employees to correct errors or account for valid exceptions like approved leaves or missed punches.	
Primary Actor:	Admin	
Preconditions:	The admin must be logged into the system with appropriate access rights.	
+	The adjusted attendance record is updated in the system.	
	Actor	System
Main Flow:	1. Admin selects “Adjust Attendance.”	
		2. Display the

		attendance records.
	3.Admin updates and confirms the adjustment.	
		4.Validates the adjustment.
	5.Saves the changes and show a confirmation message.	

Table 42 UC-34 Custom Attendance Adjustments

Use Case ID:		
UC-35		
Use Case Name:	Generate Attendance Report	
Description:	Allows administrators to generate detailed attendance reports for analysis.	
Primary Actor:	Admin	
Preconditions:	Attendance data must be available.	
Post Conditions:	Attendance report is generated and saved.	
	Actor	System
Main Flow:	Admin requests an attendance report.	
		2. System generates the report.
		3. System saves and displays the report.

Table 43. UC-35 Generate Attendance Report

APPENDIX E

Entity Relationship Diagram

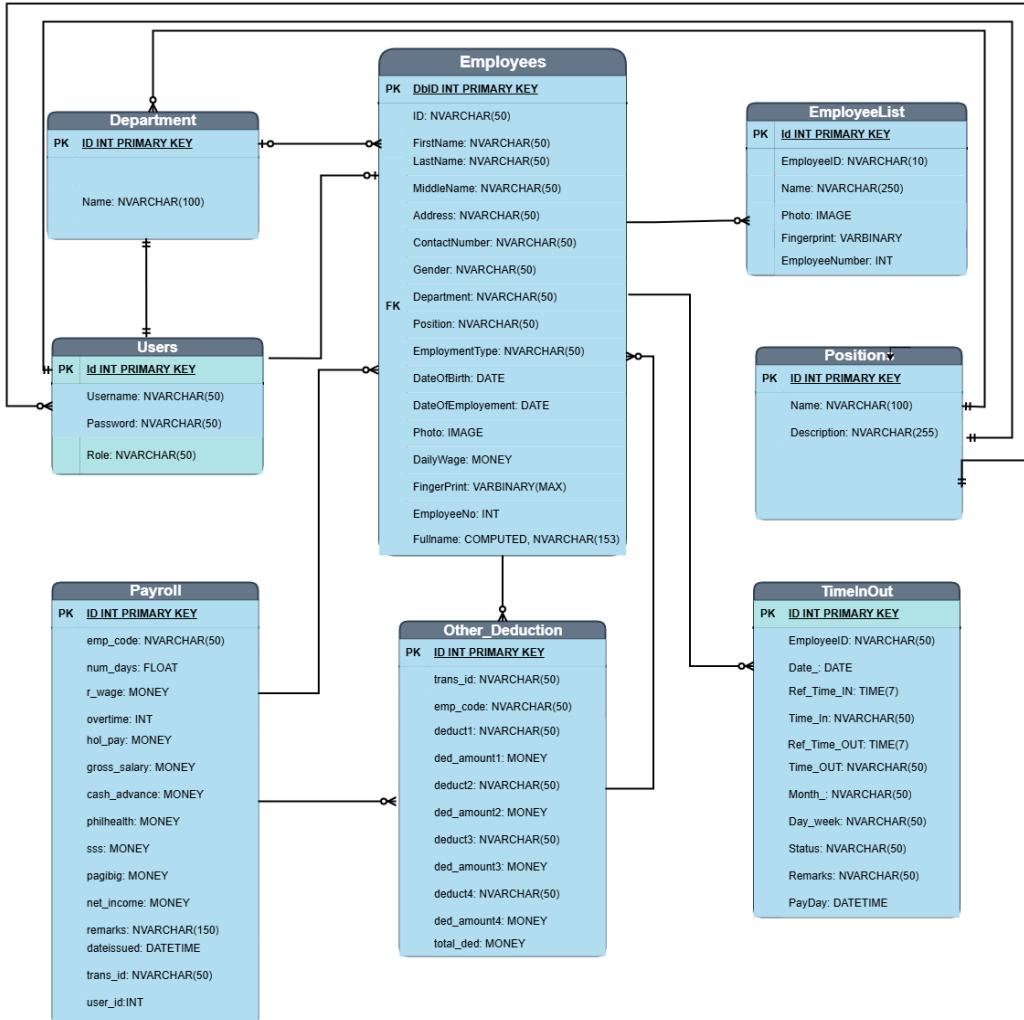


Figure. 25 ERD

The figure represents a relational database design for an **Employee Management System**. This system is designed to manage essential organizational operations such as employee records, payroll, attendance, and department assignments. At its core is the **Employees** table, which stores comprehensive employee details, including personal information, employment history, and associations with specific departments and job positions via the **Department** and **Position** tables. The database also incorporates a **Users**

table to manage system authentication by storing login credentials and user roles tied to employee records. Payroll processing is facilitated through the **Payroll** table, which calculates salaries based on workdays, gross income, and standard deductions, with additional, customizable deductions managed by the **Other_Deduction** table. Attendance tracking is handled by the **TimeInOut** table, which logs clock-in and clock-out times, ensuring accurate payroll computation and compliance with work schedules. Additionally, the **EmployeeList** table stores biometric data like fingerprints for secure and efficient employee identification. This database design integrates multiple facets of employee management, ensuring data consistency, accuracy, and streamlined operations.

APPENDIX F

Data Scheme

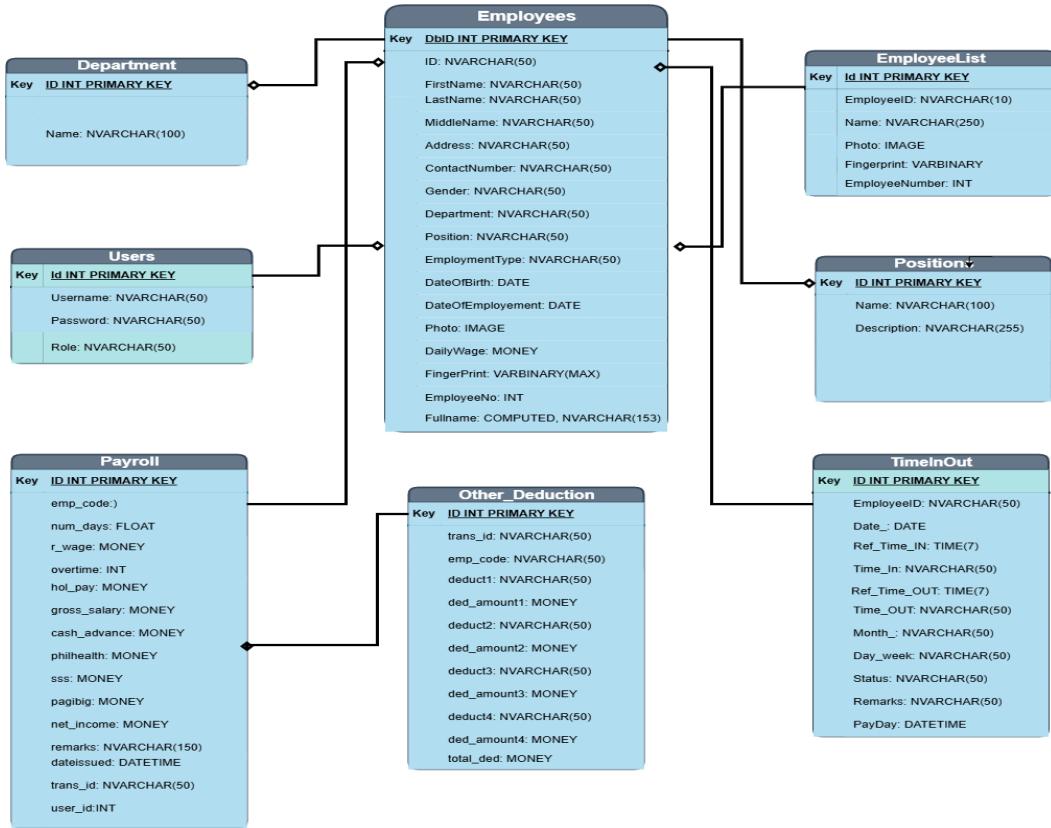


Figure. 26 Data Scheme

This figure represents a database schema designed to manage employee records, departments, payroll, and time tracking. It can be used by an Admin and payroll system to organize employee data, attendance, and salary information. The relationships defined in the schema ensure data integrity and clearly establish how different entities, such as employees, departments, positions, and payroll, are connected. This structured approach supports efficient data management, scalability, and easy maintenance.

APPENDIX G

Data Library

Table44. Department

Column	Data Type	Constraints	Description
Id	Int	primary key	Unique identifier for each department.
Name	nvarchar(100)	not null	Name of the department.

Table45. Employee

Column	Data Type	Constraints	Description
DbID	int	primary key	Unique identifier for each department.
ID	nvarchar(100)	not null,unique	Unique employee ID.
FirstName	nvarchar(50)	not null	Employee's first name.
LastName	nvarchar(50)	not null	Employee's last name.
MiddleName	nvarchar(50)		Employee's middle name.
Address	nvarchar(50)		Employee's address.
ContactNumber	nvarchar(50)		Contact phone number.
Gender	nvarchar(50)		Gender of the employee.
Department	int	foreignkey	References Department(Id)
Position	nvarchar(50)		Employee's job position.
EmploymentType	nvarchar(50)		Employment type (e.g., Full-time, Part-time).
DateOfBirth	date		Employee's date of birth.
DateOfEmployement	date		Date when the employee was hired.
Photo	image		Employee's photo.
Dailywage	money		Employee's daily wage.
Fingerprint	varbinary		Binary data for employee's fingerprint.
EmployeeNo	int	unique	Unique employee number.
Fullname	nvarchar(153)	computed persisted	Concatenated full name (FirstName + LastName)

Table46. Position

Column	Data Type	Constraints	Description
Id	Int	primary key	Unique identifier for each department.

Name	nvarchar(100)	not null	Name of the department.
Position	nvarchar(50)		Employee's position

Table47. User

Column	Data Type	Constraints	Description
Id	Int	primary key	Unique identifier for each department.
Username	nvarchar(50)	not null, unique	Login username.
Password	nvarchar(50)	not null	Encrypted login password.
Role	nvarchar(50)		User's role (Admin)

Table48. EmployeeList

Column	Data Type	Constraints	Description
id	Int	primary key	Unique identifier for each department.
EmployeeId	nvarchar(50)	not null, unique	Employee's ID
Name	nvarchar(50)	not null	Full name of the employee.
Photo	image		Employee's photo.
Fingerprint	varbinary		Employee's fingerprint data.
EmployeeNumber	int	foreign key	References

Table49. Payroll

Column	Data Type	Constraints	Description
ID	int	primary key	Unique identifier for each department
emp_code	nvarchar(50)		May reference employee's internal payroll code..
num_days	float		Number of days worked.
r_wage	money		Regular wage.
overtime	int		Overtime hours.
hol_pay	money		Holiday pay.
gross_salary	money		Total gross salary.
cash_advance	money		Cash advances deducted.
philhealth	money		PhilHealth deduction.
sss	money		SSS deduction.
pagibig	money		Pag-IBIG deduction.
net_income	money		Net income after deductions.

remarks	nvarchar(150)		Remarks about the payroll.
dateissued	datetime		Date when the payroll was processed.
trans_id	nvarchar(50)		
user_id	int	foreign key	References Users(Id).

Table50. TimeInOut

Column	Data Type	Constraints	Description
ID	int	PRIMARY KEY	Unique identifier for the record.
EmployeeID	nvarchar(50)	FOREIGN KEY	References Employees(ID).
Date	date		Date of the record.
Ref_Time_IN	time		Scheduled time in.
Time_IN	nvarchar(50)		Actual time in.
Ref_Time_OUT	time		Scheduled time out.
Time_OUT	nvarchar(50)		Actual time out.
Month_	nvarchar(50)		Month of the record (e.g., January).
Day_week	nvarchar(50)		Day of the week (e.g., Monday).
Status	nvarchar(50)		Status of the time entry (e.g., Present, Absent).
Remarks	nvarchar(50)		Additional notes or comments.
PayDay	datetime		The payday related to this time entry, indicating when the employee receives their payment.

Table51. Other_Deduct

Column	Data Type	Constraints	Description
Id	int	primary key	Unique identifier for each department.
trans_id	nvarchar(50)	UNIQUE	Transaction ID for the deduction.
emp_code	nvarchar(50)	FOREIGN KEY	References Employees(ID).
Deduct1	nvarchar(50)		First deduction name.

ded_amount1	money		Amount for the first deduction.
Deduct2	nvarchar(50)		Second deduction name.
ded_amount2	money		Amount for the second deduction.
Deduct3	nvarchar(50)		Third deduction name.
total_ded	money		Total deduction amount.

This data library tables include stored procedures, functions, triggers, and views that are designed to manage key aspects of employee data, payroll, attendance, and user authentication within the database. The stored procedures automate critical tasks, such as adding new employees, updating payroll records, and calculating net salaries. Functions handle specific calculations, such as determining total deductions or validating user credentials for login. Triggers maintain data integrity by automatically executing actions, like updating employee records when a department changes. Views simplify data retrieval by providing easy-to-use queries that combine complex datasets, such as employee and payroll information, into structured reports.

APPENDIX H

Data Structure

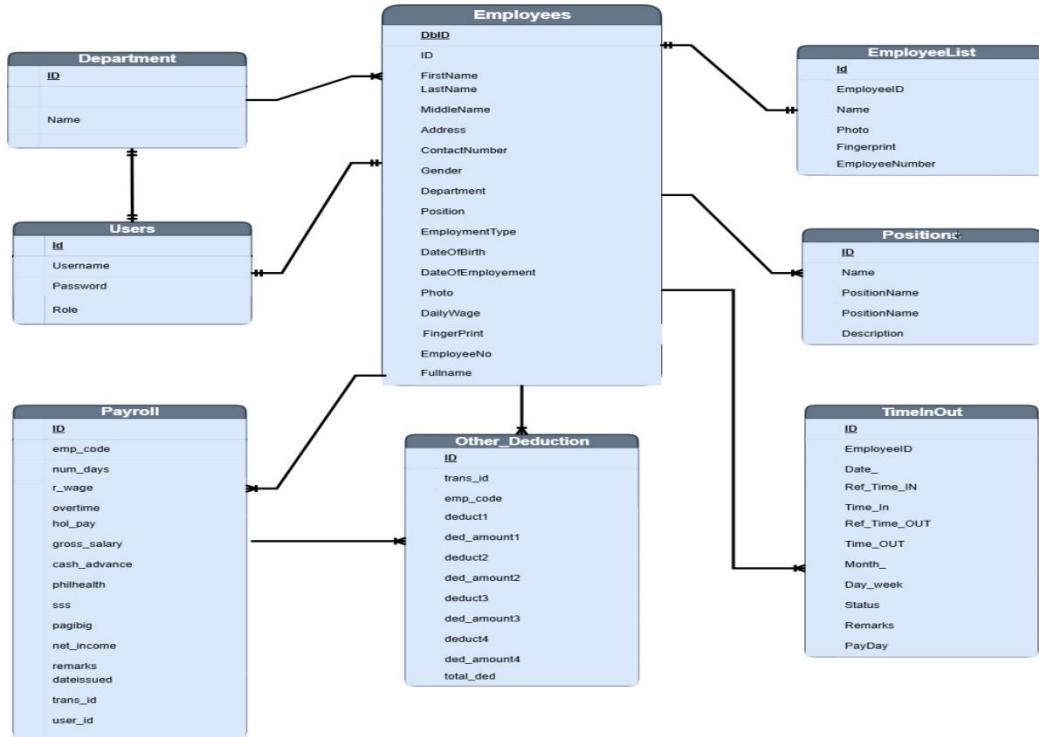


Figure. 27 Data Structure

The proposed data structure is designed to emphasize **scalability**, **efficiency**, and **maintainability**, ensuring that the system is adaptable, performant, and easy to manage. To achieve scalability, the structure organizes data in modular tables with clearly defined relationships, such as one-to-many connections between employees and departments or employees and payroll records.

Scalability: The data structure is designed to support horizontal and vertical scaling as the system grows. Modular tables with clear one-to-one and one-to-many relationships allow for the efficient organization of data and the ability to add new entities or expand existing ones without impacting the overall structure. Partitioning large datasets, such as time tracking in TimeInOut or payroll records, enables the system to handle increased

workloads by dividing data into manageable segments. This modular approach also supports the distribution of processing loads across multiple servers if needed.

Efficiency: The structure follows normalization principles to eliminate data redundancy and maintain consistency. Time-sensitive tables like TimeInOut and Payroll are optimized using partitioning or indexing, ensuring the system performs well under heavy usage. This ensures fast, responsive operations even as the data grows.

Maintainability: A well-organized schema with clearly defined relationships between entities ensures the data structure is easy to understand and manage. Changes, such as adding a new table for benefits or expanding payroll deductions, can be made with minimal impact on existing tables. The use of descriptive naming conventions and documentation simplifies onboarding for new developers and reduces errors during updates. Built-in data validation through constraints.

APPENDIX I

ACCEPTABILITY OF DTR-PR

(adapted from ISO 9126-1 by McCall (1997))

Name of Respondent: _____

Date: _____

Sex: Male Female

Office: _____

Position/Designation: _____

Direction: Please evaluate/rate the following items to determine the acceptability of the system by checking the corresponding box using the scale below:

	5 – Excellent	4 – Very Good	3 – Good	2 – Fair	1 – Poor					
Functionality				5	4	3	2	1		
1	Suitability – The functions of the system are appropriate.									
2	Accuracy – The system's results are accurate.									
3	Compliance – It adheres to existing standards and policies.									
4	Security – It prevents unauthorized access.									
Reliability										
1	Maturity – There is minimal frequency of software faults/failures.									
2	Fault Tolerance – The system has capability of handling system errors.									
3	Recoverability – System's performance is re-establishing from failure.									
Usability										
1	Understandability – Concepts are easily recognized.									
2	Learnability – The system's functions are easy to learn									
3	Operability – The system is easy to use or operate.									
Efficiency										
1	Time Behavior – There is fast response time of the system.									
2	Resource Behavior – Resources used for system performance are accessible.									
Maintainability										
1	Analyzability – Failure causes can easily be identified									
2	Changeability – Effort in modifying the system									
3	Stability – Components can be easily modified									
Portability										
1	Adaptability – Specification changes are done easily.									

2	Installability – There is effortless process of installing the system.					
3	Conformance – System is compliant to portability standards.					
4	Replaceability – Ease to exchange a system component within a specified environment.					

APPENDIX J

Documentations

 **Rc Reyes**

What Is a Bundy Time Clock?

A Bundy clock is a mechanical time clock that is used to keep track of employee work hours. It records at which date and time each employee started and ended their assigned shift by punching or stamping employees' personal paper time cards inserted into it.

 It is a hardware

Yes, a Bundy clock is considered hardware. It is a

 **Mhae Camaso**

Magkano na po pala yung deduction ma'am sa Pag-ibig , SSS, and PhilHealth po? Na-ask po kasi namin si ate Joanna kanina kaso di daw po nya alam kung magkano. Pasensya na po sa bala ma'am Mhae ah. Last na po munang tanong namin, thank you po. 



NOV 25 AT 7:43 PM

Hello, sige will send later.

NOV 25 AT 9:05 PM

PhilHealth - 250.00
SSS - 405.00
Pag-Ibig - 200.00

Hello. Good morning.

NOV 26 AT 12:18 PM

Good morning po, THANK YOU PO ma'am Mhae. 

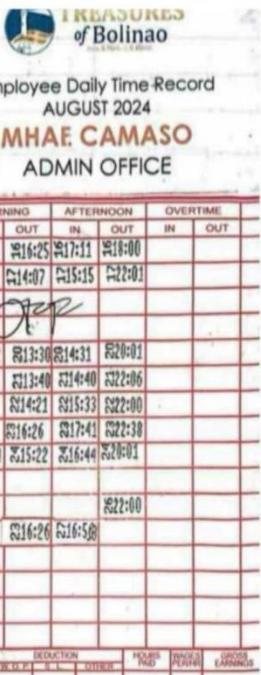
Sent



 **Rc Reyes**

Yes, a Bundy clock is considered hardware. It is a mechanical or electronic device used for timekeeping, specifically for recording employee attendance. The term typically refers to punch clocks that physically record the time employees clock in and out, which qualifies them as hardware rather than software.

Yes, software can be considered a system. It refers to a collection of programs, procedures, and routines that perform specific tasks on a computer or device. Software systems can include operating systems, applications, and various utilities that work together to manage hardware and perform functions for users.



DATE	MORNING		AFTERNOON		OVERTIME	
	IN	OUT	IN	OUT	IN	OUT
16	8:09:55	9:16:25	9:17:11	10:18:00		
17	8:09:46	9:14:07	9:15:15	10:21:01		
18					Over	
19						
20	8:07:42	9:13:30	9:14:31	10:20:01		
21	8:09:41	9:14:40	9:14:40	10:22:06		
22	8:09:44	9:14:21	9:15:33	10:22:00		
23	8:09:49	9:14:26	9:17:41	10:22:38		
24	8:07:44	9:15:22	9:16:44	10:20:01		
25						
26	8:15:27				8:22:00	
27	8:09:38	9:16:26	9:16:58			
28						
29						
30						
31						
	REGULAR HOURS	REDUCTION	OT HOURS	OT PAYES	GROSS EARNINGS	

Figure28. Documentation1



Figure29. Documentation2



Figure30. Documentation3



Figure31. Documentation4

The figures illustrate the researcher conducting a study and interviewing staff about the current system at Treasures of Bolinao Beach Resort & Hotel. The researcher also contacted the owner to request permission and discuss the proposed DTR-PR system, as well as consulted with the administrator to gather details about payroll deductions.



Figure32. Documentation5



Figure33. Documentation6

The figures 32 and 33 illustrate the process by which the researcher conducted a representation of the Daily Time Record and Payroll Management System (DTR-PR) at STI Alaminos, focusing on the evaluation by 1st-year college students. These figures showcase how the evaluation was structured and how the feedback from the respondents contributed to the overall assessment of the system's performance. The data collected from the participants was then used to calculate the overall weighted mean, which reflects the combined evaluation across all categories, such as functionality, reliability, usability, efficiency, maintainability, and portability.

APPENDIX K

Curriculum Vitae



ANGELINA C. SARTE
Software Developer

CONTACT

- 09270383525
- angelina.sarte@icloud.com
- Patar, Bolinao Pangasinan

AWARDS

Consistent Honor Student since Elementary

LANGUAGE

- English
- Tagalog

EDUCATION

SYSTEM TECHNOLOGY INSTITUTE (STI)
ALAMINOS CITY
PANGASINAN
Information Technology, in Progress.
2023-2025

Bachelor of Arts in English Language

PANGASINAN STATE UNIVERSITY SENIOR HIGH SCHOOL 2021-2022
Tourism/Housekeeping
(TVL) 2019-2020

PROFILE

Seeking a challenging yet rewarding role where I can use my years of experience providing fast, accurate and empathetic support to a wide range of customers.

EXPERIENCE

EXPERIENCE CUSTOMER SERVICE REPRESENTATIVE/FACEBOOK PAGE MANAGER DECEMBER 2019- APRIL 2023
KUYA BENJIE'S TRANSIENT HOUSE

- Handles bookings and reservation
- Manages Facebook Page for Promotion
- Caters to new reservation: inquiries, aftersales, and complaints; resolves customer transactions.
- Attend Tourism seminars as representative of the establishment.

ASSISTANT PHOTOGRAPHER/VIDEOGRAPHER ACS PHOTOGRAPHY 2022-2023

- Photographer
- Photo/Video Editor
- Page assistant manager

STORE MANAGER ROWENA'S MINI GROCERY STORE NOVEMBER 2023-FEBRUARY 2024

- Responsible for budgeting and running the business.
- Acts as Inventory control specialist
- Employee Trainer • Handler of costumers inquiries.
- Processing papers and permits for the establishment.
- Cashier

SKILLS

- Computer Literacy
- Basic Design using CANVA
- Problem-Solving
- Design Thinking
- Adobe Products Literacy
- Data Entry Good Encoding Speed
- Customer Service
- Strong Communication
- Google Suites
- Time management
- Communication skills - both written and verbal.
- Problem-solving skills
- Basic Programming Language C#/Java
- UI Design
- Photography and Videography Literacy



ALDRICH C. APOSTOL

CONTACT

09157372640
aldrichapostol5@gmail.com
Catuday, Bolinao, Pangasinan

AWARDS

Best in Manuscript (Capstone Research) - 2024 STI ALAMINOS
Best in Collaboration (Capstone Research) - 2024 STI ALAMINOS
With Distinction 2019-2020
Perfect Attendance award 2018-2019
Outstanding Performer 2019-2020

EDUCATION

Information Technology
STI ALAMINOS CITY
2023-Current

Technical Vocational and Liveliohood(TVL)
DACP NORTE NATIONAL HIGH SCHOOL
2019-2020

Grade 7 - Grade 10
DACP NORTE NATIONAL HIGH SCHOOL
2014-2017

PROFILE

Aspiring IT professional with a solid foundation in computer systems, programming, and network management, seeking to leverage technical skills and innovative thinking to contribute to cutting-edge projects. Dedicated to continuous learning and committed to delivering efficient and scalable IT solutions. Currently pursuing an IT degree at STI and aiming to grow in roles that align with my passion for technology and problem-solving

SKILLS

- Strong communication and interpersonal skills
- Proficient in Microsoft Office (Word, Excel, PowerPoint)
- Basic Programming in Java and C#
- Photo editing using tools like Canva, Capcut
- Video editing using tools like Adobe Premiere Pro or CapCut
- Computer operations, troubleshooting, and maintenance
- Basic understanding of database management
- Team collaboration and leadership
- Analytical and problem-solving skills
- Sales and customer service skills
- Basic understanding of Python
- Quick adaptability to new technologies and tools

CAREER OBJECTIVES

To leverage my technical skills, creativity, and passion for technology in a dynamic environment that fosters continuous learning and professional growth. As a dedicated Information Technology student, I aim to contribute to organizational success by utilizing my expertise in programming, multimedia editing, and communication, while enhancing my knowledge in sales and customer service. My ultimate goal is to excel in the IT industry and make a meaningful impact through innovation and teamwork.



LE CLAIRE O. UNTALAN

CONTACT

- 09948853363
- leclaireuntalan26@gmail.com
- Bani, Pangasinan

AWARDS

- Best in Manuscript (Capstone Research) - 2024 STI ALAMINOS
- Best in Collaboration (Capstone Research) - 2024 STI ALAMINOS
- With Distinction - 2021-2023
- Leadership Awardee (Vice Governor 12) - 2022-2023
- With Honors - Grade 10
- Student-Athlete Award - Grade 7-10

EDUCATION

Information Technology
STI ALAMINOS CITY
2023-Current

Science Technology
Engineering and
Mathematics (STEM)
GOLDEN WEST COLLEGES
SHS
2022-2023

Kinder - Grade 10
BANI EAST INTEGRATED
SCHOOL
2009-2020

PROFILE

A dedicated and driven Information Technology student with a strong foundation in programming, multimedia editing, and communication. Adept at utilizing tools like Microsoft Office, Excel, and programming languages such as Java and C#. Passionate about technology, teamwork, and continuous learning to achieve professional excellence.

SKILLS

- Strong communication and interpersonal skills
- Proficient in Microsoft Office (Word, Excel, PowerPoint)
- Basic Programming in Java and C#
- Photo editing using tools like Canva, Capcut
- Video editing using tools like Adobe Premiere Pro or CapCut
- Computer operations, troubleshooting, and maintenance
- Basic understanding of database management
- Team collaboration and leadership
- Analytical and problem-solving skills
- Sales and customer service skills
- Basic understanding of Python
- Quick adaptability to new technologies and tools

CAREER OBJECTIVES

To leverage my technical skills, creativity, and passion for technology in a dynamic environment that fosters continuous learning and professional growth. As a dedicated Information Technology student, I aim to contribute to organizational success by utilizing my expertise in programming, multimedia editing, and communication, while enhancing my knowledge in sales and customer service. My ultimate goal is to excel in the IT industry and make a meaningful impact through innovation and teamwork.



DEAN HENDRIX B. CAMERO

Software Developer

CONTACTS

-  09773804882
-  camerodean01@gmail.com
-  Pob. Burgos, Pangasinan

PROFILE

Results-driven IT professional with expertise in making form development and project management, specializing in real-time progress tracking and reporting systems. Demonstrated success in leading projects, particularly in construction tech solutions, and delivering high-impact applications. Proficient in managing all stages of the software development lifecycle, from requirements gathering to deployment. Adept at problem-solving and working independently to overcome challenges, with a strong focus on innovation and efficiency.

AWARDS

With Honors - Grade 11 - 12
 Student-Taekwondo Award - Grade 12
 Student-Boxing Award - Grade 10 - 11
 Student-Modeling Award - Grade 9

SKILLS

Technical Proficiency:

- Knowledge of Software and Tools
- Fundamental Knowledge of Data Analysis

Soft Skills:

- Teamwork: The capacity to cooperate and function effectively in a group environment.
- Strong analytical and critical thinking abilities are necessary for problemsolving.
- Time management: The capacity to effectively manage time and prioritize tasks.

Learning and Adaptability:

- Quick Learner: The capacity and willingness to pick up new abilities and information fast.
- Flexibility: Able to adjust to shifting conditions and welcome new challenges.

Capabilities for Organization:

- Project management: The capacity to manage several tasks and adhere to deadlines.

Customer support:

- Interpersonal Skills: Creating a good rapport and successfully meeting the demands of clients.

Possibility of Leadership:

- Initiative: The ability to see opportunities and act on them proactively.
- Motivation: The desire to accomplish objectives and support the success of the team.

LANGUAGE

- English
- Tagalog

EDUCATION

SYSTEM TECHNOLOGY INSTITUTE (STI)
ALAMINOS CITY
PANGASINAN
 Information Technology, in Progress.
 2023 - 2025

ALAMINOS CITY NATIONAL HIGH SCHOOL
 Science Technology Mathematics (STEM) 2021-2023

SAN MIGUEL NATIONAL HIGH SCHOOL 2018 - 2019

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WARREN A. FERNANDEZ

CONTACT

-  09916107882
-  warrenfernandezabuan@gmail.com
-  Alos, Pangasinan

AWARDS

- Best in Manuscript (Capstone Research) - 2024 STI ALAMINOS
- Best in Collaboration (Capstone Research) - 2024 STI ALAMINOS
- With Distinction - 2021-2023
- Best in Research - 2023 ALOS NATIONAL HIGH SCHOOL
- With Honors - Grade 11
- Student-Athlete Award - Grade 8-12

EDUCATION

Information Technology
STI ALAMINOS CITY
2023 - 2025 (Current)

General Academic Strand (GAS)
SHS - ALOS NATIONAL HIGH SCHOOL
2021 - 2023

Secondary School
ALOS NATIONAL HIGH SCHOOL
2017 - 2021

Primary School
ALOS ELEMENTARY SCHOOL
2011 - 2017

PROFILE

An enthusiastic and dedicated Information Technology student with a well-rounded skill set in programming, multimedia content creation and communication. Equipped with proficiency in tools like Excel, Microsoft Office and programming languages like Java and C#, with a strong focus on teamwork and adaptability. Committed to embracing new technologies, working collaboratively in a team environment, and pursuing professional growth through continuous learning.

SKILLS

- Programming knowledge in Java and C#
- Team-oriented with leadership experience
- Adaptability to new technologies and tools
- Photo editing using tools like Canva and Capcut
- Video editing with software such as Capcut
- Strong analytical and problem-solving abilities
- Technology/Computer Related Skills
- Time management and organizational skills

CAREER OBJECTIVES

As an IT student, my career objective is to utilize my creativity, passion for technology, and problem-solving skills to drive impactful contributions in collaborative projects. I am committed to continuously improving my proficiency with essential tools such as Microsoft Office, Excel, and programming languages like Java and C#. My goal is to grow as a skilled IT professional, applying my knowledge and expertise to develop innovative solutions, deliver exceptional results, and make a positive difference in the technology industry through teamwork and forward-thinking initiatives.

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