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By Miguel Angel Y. Cantuja, Rafael Jayson M. Logan, John Vic A. Macusi,
Daniel Jose D. Reyes, Angel Mae A. Taga-oc,
and the

Quezon City Campus
Polytechnic University of the Philippines

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FACULTY PERFORMANCE SYSTEM

A Capstone

Presented to the Faculty of Bachelor of Science in Information Technology Program
Polytechnic University of the Philippines
Quezon City Campus

In Partial Fulfillment of the Requirements for the Degree in
Bachelor of Science in Information Technology

By

Miguel Angel M. Cantuja
Rafael Jayson M. Logan
John Vic A. Macusi
Daniel Jose D. Reyes
Angel Mae A. Taga-oc

MAY 2024



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CERTIFICATION

This CAPSTONE, "**FACULTY PERFORMANCE SYSTEM**" prepared and submitted by MIGUEL ANGEL M. CANTUJA, RAFAEL JAYSON M. LOGAN, JOHN VIC A. MACUSI, DANIEL JOSE D. REYES and ANGEL MAE A. TAGA-OC in partial fulfilment of the requirements for the degree, BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY has been examined and recommended for Oral Examination.

Evaluation Committee

KEZIAH M. CRUZ, MSIT
Adviser

APPROVAL

Approved by the Panel on Oral Examination on April 2024 with the grade of _____.

DEMELYN E. MONZON, PhD.
Chair

ROSCAR E. ESCOBER, PhD.
Member

ALMA C. FERNANDEZ, MIT
Member

LEANDRO B. AVENA IV, MIT
Member

ERNESTO ODPAGA JR.
Member

Accepted in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology.

JAIME P. GUTIERREZ, Jr.
Director



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CERTIFICATION OF ORIGINALITY

This is to certify that the capstone work presented in this thesis, "FACULTY PERFORMANCE SYSTEM" for the degree Bachelor of Science in Information Technology at the Polytechnic University of the Philippines Quezon City Campus embodies the result of original and scholarly work carried out by the undersigned. This thesis does not contain words or ideas taken from published sources or written works that have been accepted as basis for the award of a degree from any other higher education institution, except where proper referencing and acknowledgment were made.

MIGUEL ANGEL Y. CANTUJA

RAFAEL JAYSON M. LOGAN

JOHN VIC A. MACUSI

DANIEL JOSE D. REYES

ANGEL MAE A. TAGA-OC

April , 2024

Date Signed



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ABSTRACT

Title: Faculty Performance System

Researcher: Miguel Angel Y. Cantuja, Rafael Jayson M. Logan, John Vic A. Macusi, Daniel Jose D. Reyes, Angel Mae A. Taga-oc

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Adviser: KEZIAH M. CRUZ, MSIT

The Capstone Project - Faculty Performance System (FPS) addresses the imperative need for an advanced and comprehensive solution to enhance the evaluation and management of faculty performances within Polytechnic University of the Philippines - Quezon City Branch. The project focuses on the development and implementation of a sophisticated FPS, integrating cutting-edge technologies and methodologies to streamline performance assessments. Key components include real-time data synchronization with the Faculty Information System (FIS) and Research Information System (RIS), ensuring accurate and up-to-date faculty information.

The FPS aims to optimize workflows, automate data gathering, and provide actionable insights for administrators through analytics tools. By fostering scalability, security, and user-friendly interfaces, the project aspires to revolutionize the faculty management landscape, fostering a culture of transparency, efficiency, and continuous improvement within educational institutions. The Capstone Project envisions a robust FPS as an integral tool in shaping the future of academic excellence and institutional success.

Keywords: Faculty Performance, Analytics, Automated Data Gathering, Polytechnic University of the Philippines Quezon City Campus



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I. Introduction

Background of the Capstone Project

In the modern higher education landscape, universities and colleges play an essential part in determining the future of individuals and societies. With the rapid advancements in Technology and Education, educational institutions are constantly evolving to meet the demands of a globally competitive world. In this dynamic environment, the efficient management and evaluation of faculty performance stands as a foundation in the pursuit of academic excellence. The Faculty Performance System (FPS) emerges in response to the intricate challenges faced by Polytechnic University of the Philippines - Quezon City Branch (PUPQC), particularly in the realm of Faculty Performance Assessment. Traditionally, faculty evaluations have been conducted using inconvenient and time-consuming methods, involving piles of paperwork, numerous spreadsheets, and disparate data sources. One of the pressing issues faced by PUPQC is the inefficiency inherent in conventional faculty evaluation methods. Paperwork and manual data entry are time-consuming and can lead to errors and inconsistencies in the evaluation process. The decentralized nature of data storage often results in the fragmentation of faculty-related information across various departments, making it challenging for administrators to access a comprehensive and unified view of faculty performances. In this context, the Faculty Performance System seeks to revolutionize the way PUPQC approaches faculty performance evaluation. Employing cutting-edge technology and innovative software solutions, the project aims to create a seamless, centralized, and user-friendly platform for institutions. This platform will empower the organization with the tools necessary to navigate the intricate web of faculty data efficiently.



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and make informed decisions that propel their institutions toward greater academic achievement.

The Faculty Performance System recognizes the pivotal role of Institution Head administrators and endeavors to equip them with a powerful tool that provides real-time access to faculty-related data and performance metrics. Institutional Head Administrators undertake diverse responsibilities such as strategic planning, resource allocation, and fostering an optimal learning environment for faculty and students. To execute these duties with precision, administrators necessitate timely and accurate insights into faculty performance. By incorporating advanced data analytics, the Faculty Performance System will not only streamline the evaluation process but also offer customized reports and actionable insights. These insights will enable Head Administrators to identify trends, recognize exceptional performances, and address areas for improvement promptly. In doing so, the project not only enhances the efficiency of administrative processes but also contributes significantly to the institution's strategic decision-making capabilities. The challenges posed by traditional faculty evaluation methods are not mere hurdles but opportunities for transformation. The Faculty Performance System is an outstanding representation of innovation, guiding educational institutions toward a future in which administrative tasks are streamlined, decisions are data-driven, and faculty members are empowered to excel in their roles.

Context and Scope

The Faculty Performance System is developed in response to the growing need for a comprehensive and data-driven approach to evaluate and enhance Faculty Performances within PUPQC. As the demand for quality education rises, the institution is increasingly focusing on assessing and improving the effectiveness of their faculty



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members. Traditional evaluation methods, such as annual performance reviews often lack the depth and insights required to identify areas of improvement and recognize exceptional performance. Therefore, there is a need for a systematic and analytical approach to evaluate faculty performances, which can be fulfilled by the Faculty Performance System.

The scope of the project encompasses the design, development, and implementation of the Faculty Performance System within PUPQC. The system will be designed to gather and consolidate data from various sources and administrative assessments. It will utilize data analytics and visualization techniques to present an overall analytics dashboard that provides a comprehensive overview of faculty performances. The Faculty Performance System is designed to be scalable and adaptable, allowing for future enhancements and integration with other existing institutional systems. It will adhere to data privacy and security regulations to maintain the confidentiality and integrity of faculty performance data. The project will involve conducting user requirements analysis, system design, database development, data integration, and user interface development. It will also include testing, debugging, and refining the system to ensure its functionality and usability.

Problem Statement

The current faculty evaluation process at PUPQC lacks an efficient system for collecting, analyzing, and presenting comprehensive performance data, resulting in a time-consuming evaluation process for administrators and limited actionable insights. The prevailing evaluation process heavily relies on subjective measures, such as annual performance reviews and informational feedback, which may not adequately capture the complete spectrum of faculty performance indicators. This leads to a lack of transparency



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and consistency in evaluating faculty members, hindering the identification of improvement areas and the recognition of exceptional performance.

The absence of a well-structured and efficient faculty performance system within PUPQC hampers administrators' capacity to assess and enhance the performance and effectiveness of faculty members. To rectify these issues, the envisioned Faculty Performance System is designed to collect and consolidate data from various sources, including student feedback, peer evaluations, administrative assessments, and other pertinent inputs. Such a comprehensive approach will facilitate an objective and thorough overview of faculty performance. The proposed system aims to address these challenges and optimize the faculty evaluation process for better outcomes.

Objectives and Goals

The primary objective of the Faculty Performance System is to develop an advanced and sophisticated system that not only comprehensively analyzes faculty data but also revolutionizes the way institutions approach faculty performance assessment. The project aims to significantly enhance the overall management and understanding of faculty performance within the PUPQC, contributing to a more efficient and informed decision-making process.

To achieve this, the project outlines two key goals. First, the project aims to Develop a Data-Driven System that goes beyond traditional approaches. This involves the design, development, and implementation of an advanced and sophisticated system capable of collecting and analyzing various facets of faculty information. Secondly, the project focuses on Enhancing Efficiency in the faculty performance review process. To streamline data collection, analysis, and reporting, saving administrators a significant amount of time and effort. The Faculty Performance System not only strives for



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technological advancement but also aims to create a transformative tool that empowers administrators, fosters continuous improvement, and elevates academic excellence within the PUPQC institution.

Significance and Relevance

The Capstone Project - Faculty Performance System holds immense significance for Polytechnic University of the Philippines (PUPQC), Institution Head Administrators, Faculty Members, Students and Future Developers:

PUPQC, the project is vital for PUPQC as it ensures the maintenance of high academic standards. By implementing an effective performance evaluation system, the institution can enhance the quality of education provided. This, in turn, helps in attracting more students, improving the institution's reputation, and fostering a conducive learning environment.

Institution Head Administrators, for administrators this project offers valuable insights into faculty members' performance, enabling them to make informed decisions. By analyzing the data generated through the Faculty Performance System, administrators can identify areas of improvement, allocate resources efficiently, and develop targeted strategies for faculty development. This informed decision-making process contributes to the overall growth and effectiveness of the institution.

PUPQC Faculty, clear and objective performance evaluations from the system will provide constructive feedback, enabling faculty members to enhance their teaching methods and professional skills. Additionally, a transparent evaluation system promotes a sense of fairness and motivation among faculty members, encouraging them to excel in their roles and contribute positively to the institution's academic environment.



PUPQC Students, the direct beneficiaries of the system as it ensures they receive high-quality education. When faculty members are evaluated and supported effectively, it leads to improved teaching methods, interactive learning experiences, and overall academic excellence. Consequently, students gain a better education, acquire valuable skills, and are better prepared for future endeavors, contributing to their personal and professional development.

Future Developers, for future developers and educational innovators, the Faculty Performance System serves as a valuable reference and foundation. By studying the project's outcomes and methodologies, they can gain insights into designing advanced performance evaluation systems, educational technologies, and tools to further enhance the learning experience. This knowledge empowers them to contribute to the evolution of education, ensuring continuous improvement in teaching methodologies and student outcomes.

Structure of the Document

I. INTRODUCTION: This section sets the stage for the comprehensive exploration of the Faculty Performance System (FPS), outlining the context, purpose, and significance of the study.

II. LITERATURE REVIEW: A thorough examination of existing literature providing a foundation for understanding the key concepts, methodologies, and technologies related to faculty performance evaluation systems.

III. METHODOLOGY: This section details the research methods and approaches employed to design, develop, and implement the FPS, ensuring a systematic and effective process.



IV. REQUIREMENTS ANALYSIS: The analysis phase focuses on identifying and documenting the functional and non-functional requirements essential for the FPS's successful development and operation.

V. BUSINESS PROCESS ARCHITECTURE: The business processes related to faculty performance evaluation are strategically outlined, emphasizing efficiency and alignment with institutional goals.

VI. APPLICATION ARCHITECTURE: This section delves into the design and structure of the FPS application, encompassing modules and functionalities to meet the specified requirements.

VII. DATA ARCHITECTURE: The architecture for organizing, storing, and managing data within the FPS is outlined, ensuring secure and efficient data handling.

VIII. TECHNOLOGY ARCHITECTURE: This section discusses the technological framework adopted for FPS development, including programming languages and other relevant technologies.

IX. DEVELOPMENT PROCESS: The detailed process of transforming requirements into a functional FPS, covering planning, design, coding, and integration.

X. IMPLEMENTATION: This section explores the deployment of the FPS, ensuring a smooth transition from development to active use within the educational institution.

XI. TESTING AND QUALITY ASSURANCE: The rigorous testing phase is outlined, emphasizing quality assurance measures to validate the FPS's functionality, reliability, and performance.

XII. RESULTS AND EVALUATION: The outcomes of the FPS implementation are assessed, measuring its effectiveness in enhancing faculty performance evaluation processes.



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XIII. CONCLUSION: A summary of key findings, implications, and potential future developments is provided, wrapping up the study on FPS implementation.

XIV. REFERENCES: This section lists the sources and references utilized throughout the study, ensuring academic integrity and providing avenues for further exploration.



II. Literature Review

Agile Scrum Methodology Overview

The Agile Scrum methodology approach used for the Faculty Performance System is structured around manageable releases. Sprint planning entails detailing the upcoming sprint's work, followed by development during the implementation phase. Daily Scrum meetings are integral to the process, beginning with defining the project's vision and goals. Release planning prioritizes feature meetings to facilitate communication, while sprint reviews and retrospectives enable stakeholder feedback and continuous improvement. The final step involves deploying completed features. This approach ensures a flexible and transparent development process, delivering incremental value to stakeholders and promoting continuous enhancement of the Faculty Performance System.

Enterprise Architecture Concepts

The Faculty Performance System is designed using the Service-Oriented Architecture (SOA) as the enterprise architecture concept. SOA is a modular approach that encapsulates business processes into interoperable services, fostering flexibility, scalability, and reusability. The system's components can be organized into the following layers: The system architecture is designed with several layers to cater to institution head administrators. The User Interface (UI) at the Presentation Layer prioritizes simplicity and user-friendliness, featuring a dashboard with key performance indicators and analytics tools. The Application Layer manages faculty data operations, including faculty evaluations, research achievements, and feedback. Real-time Tracking Service ensures continuous monitoring and updates faculty performance. The Business Layer encompasses logic components for data integrity and validation, while integration



components facilitate communication between services. The Data Layer employs a centralized database for efficient querying and retrieval. The Infrastructure Layer utilizes cloud services for scalability and security services to safeguard sensitive faculty data. The Technology Layer involves selecting appropriate programming languages, a suitable Database Management System (DBMS), and frameworks for system development.

By adopting a Service-Oriented Architecture, the Faculty Performance System achieves modularity, maintainability, and scalability, aligning with the institution's long-term goals and evolving needs. These approaches allow for the independent development, deployment, and scaling of services, fostering a more agile and adaptable enterprise architecture.

Relevant Studies and Research

The literature review offers a comprehensive exploration of existing research and scholarly works related to the development and implementation of the Faculty Performance System. The synthesis of literature provided aims to establish a foundational understanding of key concepts, methodologies, and best practices, informing the design and effectiveness of the proposed Faculty Performance System.

In the article "Improving University Faculty Evaluations via Multi-view Knowledge Graph" published in Future Generation Computer Systems, Lin et al. (2021) highlight the transformative role of online tools and toolkits in providing university faculty members easy access to diverse data generated in e-learning environments for teaching and research purposes. The challenge arises in utilizing this wealth of e-learning data in a scientifically and practically sound manner for teacher evaluations within the university performance system. The study underscores the increasing importance of leveraging e-learning data to assess and enhance faculty performance in both research and teaching. Faculty



members can efficiently gauge their strengths and weaknesses by analyzing data related to student participation, performance, and feedback. This information enables instructors to identify areas for improvement in instructional techniques and focus on enhancing effective teaching strategies. Through continuous self-reflection and adjustment informed by collected data, educators can elevate their overall effectiveness in teaching and research.

From the study of Evaluation of Overall Performance of Faculty Members by Using Self-Assessment Methods. As highlighted by Shah et al. (2020), the continuous assessment within education aims for a balanced expansion of qualitative and quantitative dimensions. The system's comprehensive review, including input, output, procedures, and outcomes, supports both performance assessment and professional development. Through constructive feedback, faculty members can identify strengths and areas for growth, enhancing their teaching abilities and overall effectiveness in their roles. This integration of self-assessment methodologies within the Faculty Performance System contributes to ongoing improvements in education quality and the continual development of faculty members. The Faculty Performance System incorporates self-assessment methods to evaluate the overall performance of faculty members, aligning with the dynamic and focused nature of every nation's education system.

The Faculty Performance System gains valuable insights from Leah T. Salas's (2019) study, which focuses on Evaluating the Faculty Performance Evaluation Systems of State Universities and Colleges in the Eastern Visayas region of the Philippines. The study is centered on addressing research questions pertaining to the existing and ideal faculty performance evaluation systems, considering standards of utility, feasibility, propriety, and accuracy. It delves into the evaluation procedures, instruments, and criteria



employed in assessing faculty performance. Utilizing a descriptive-assessment study design, the research methodically explores these aspects, drawing responses from administrators, instructors, and students across the main campuses of state universities and colleges in the Philippine Eastern Visayas Region. The findings from this study contribute valuable insights to the ongoing enhancement and development of the Faculty Performance System.

The study on Faculty Performance Evaluation System with Application of Data Analytics, conducted by Rodelio O. Dela Fuentea and Romel O. Dela Fuentea (2020), focuses on the current evaluation process. It involves student form assessments, with Likert-scaled responses provided on printed sheets. Oversight of attendance and punctuality is managed by the human resources department, and college deans manually evaluate faculty performance based on administrative and classroom criteria, using manual computation for the overall assessment. The study highlights challenges in the existing system, including the distribution of a large number of evaluation forms prone to human error and potential compromises in record confidentiality. The exploration of Data Analytics aims to address these challenges, streamline the evaluation process, and enhance accuracy within the Faculty Performance System.

The exploration of Faculty Performance Evaluation within a Philippine University's Information Technology Program, as outlined by Rommel Verecio et al. (2017), delves into the long-standing practice of communicating academic performance evaluation results in public universities and colleges in the Philippines. Performance, defined as the accomplishment of known tasks assessed against predetermined standards of accuracy, completeness, speed, and efficiency, is a central focus. The study specifically assesses each faculty member's practices to ensure alignment with student expectations and



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program goals. Utilizing a descriptive research design, the study conducted during the second semester of the 2016–2017 academic year at Leyte Normal University's Bachelor of Science in Information Technology program aims to quantitatively describe this phenomenon. The findings contribute valuable insights to the ongoing development and refinement of the Faculty Performance System within the university's Information Technology Program.

The study titled "The Scholar Plot: Design and Evaluation of an Information Interface for Faculty Research Performance" as presented in *Frontiers in Research Metrics and Analytics* by Majeti et al. (2020) emphasizes the critical importance of accurately assessing academic performance for purposes such as recognizing academic achievements, shaping academic policies, and promoting scientific research. The authors underscore the necessity of collecting precise and current data through increasingly automated internet interfaces to efficiently carry out these duties. Additionally, the study highlights the importance of removing biases, especially disciplinary biases, from the collected data. The presented information interface, known as the Scholar Plot, is designed to facilitate insightful examination at various levels, ensuring an accurate and impartial evaluation of academic accomplishments. The insights from this study contribute valuable perspectives to the ongoing refinement and development of the Faculty Performance System, particularly in the context of research performance assessment.

To address the persistent challenge of delayed evaluation results caused by a paper-based faculty performance evaluation system at the University of Nueva Caceres - College of Computer Studies (UNC - CCS), Trillanes-Reyes, Agnes A (2014) proposes the implementation of an Intranet-Based Faculty Performance Evaluation System. This system offers modules specifically designed for evaluating the teaching performance of



faculty members. Notably, the evaluation process involves input from students, the faculty members themselves, peer faculty members, and the department dean of CCS. The system generates comprehensive reports with the evaluation results, providing a breakdown by individual faculty members. This Intranet-Based system facilitates a streamlined and efficient evaluation process, allowing students, faculty, and the dean to assess faculty performance using the designated evaluation modules integrated into the system. The proposed solution addresses the longstanding challenge of delayed evaluations and contributes to the ongoing enhancement of the Faculty Performance System at UNC - CCS.

The implementation of the AMA Computer College Lipa Paperless Faculty Performance Evaluation System, aims to automate the calculation of pupils' cumulative performance ratings, generating an overall summary of reports and findings related to faculty members. Access to the results is restricted to relevant faculty members, administrators, and HR personnel. Additionally, students have the opportunity to provide remarks for each faculty member along with their ratings. Administrators have the responsibility of creating evaluator accounts, requiring a simple log-in process, and providing an option to update passwords if desired. The introduction of this paperless system not only streamlines the evaluation process but also enhances confidentiality and accessibility within the Faculty Performance System at AMA Computer College Lipa.

The investigation into the impact of weights on Faculty Performance Evaluations, as explored in the study titled "How do weights affect Faculty Performance Evaluations?" published in Sustainable Engineering and Innovation, delves into the common practice of evaluating university faculty members based on their performance in teaching, research, and service. Büyükdaklı and Yeralan (2020) emphasize that individual ratings in these



areas are assigned specific weights, and these ratings are then combined to generate an overall score, enabling comparisons between faculty members. The study suggests that the total scores of individual faculty members, determined by blending their achievements with predefined weights, may have broader implications for the university. These scores can potentially influence institutional priorities and decisions regarding recognition or resource distribution, thereby impacting the course and direction of the larger university setting. The findings from this study contribute valuable insights to the ongoing refinement and development of the Faculty Performance System.

The examination of the predictability of faculty instructional performance through a Hybrid Prediction Model, as presented by Cagas et al. (2019), sheds light on the growing utilization of data mining tools in colleges and universities. The study emphasizes the significance of predicting faculty instructional effectiveness, a goal made achievable through the application of data mining algorithms. According to the authors, data mining has simplified this process, enhancing the accuracy and reliability of outcomes in forecasting faculty instructional success. The discussion delves into the technique of leveraging data mining in academic institutions to forecast faculty instructional effectiveness and gather insights about educational environments. This involves processing and evaluating extensive datasets, requiring the application of data analytics methods such as data mining. The study underscores the pivotal role of analytics in improving the precision and dependability of predictions when assessing faculty teaching performance in higher education institutions. The insights from this research contribute to the ongoing enhancement of the Faculty Performance System.



Integration of Information Systems in Enterprise Environments

Enterprise Application Integration (EAI) is crucial for the Faculty Performance System (FPS) to achieve seamless integration with enterprise-level systems like the Faculty Information System (FIS) and Research Information System (RIS). EAI facilitates smooth communication and data exchange among these systems, ensuring they can work together seamlessly. This integration streamlines processes such as faculty data management, research tracking, and performance analysis across multiple platforms. By leveraging EAI, FPS optimizes efficiency, reduces redundancy, and enhances data accuracy by centralizing information flow throughout the institution's interconnected systems. This approach promotes a unified ecosystem that supports collaborative research, streamlined administrative workflows, and comprehensive performance insights for stakeholders.

In addition, data integration is applied for FPS due to the need for consolidating and synchronizing multiple data sources, such as teaching evaluations, research accomplishments, and student feedback. Data integration ensures that FPS can effectively collect, analyze, and present data from these diverse sources, resulting in a comprehensive view of faculty performance. This integrated data approach enables FPS to leverage accurate and holistic information, empowering administrators and faculty members with actionable insights for decision-making and continuous improvement within academic institutions.



III. Methodology

Agile Scrum Methodology in the Project

The Agile Scrum methodology in this capstone project follows an iterative approach, with each sprint building upon the progress of the previous ones. After deployment, the cycle repeats, with continuous feedback loops to refine and enhance the Faculty Performance System iteratively. By adopting this type of methodology, the Faculty Performance System promotes adaptability, transparency, and collaboration, enabling the team to respond effectively to changing requirements and deliver a valuable product incrementally.

Figure 1: Agile Scrum Methodology





1. Project Vision the objective here is to define the overall vision and goals of the Faculty Performance System. Collaboratively create a project vision statement, identify key stakeholders, and establish the high-level objectives for the system.
2. Release Planning, the objective here is to plan and prioritize feature releases based on project goals and stakeholder needs. Break down the project into manageable features, prioritize them, estimate effort, and create a release plan outlining feature delivery timelines.
3. Sprint Planning, the objective here is to plan the work for the upcoming sprint based on prioritized features from the release plan. Collaborate to define user stories, tasks, and acceptance criteria for the upcoming sprint. Estimate and commit to the work.
4. Implementation (Sprint Execution), the objective here is to develop and implement features based on the sprint plan. Daily development activities, regular communication among team members, and continuous integration of completed features.
5. Daily Scrum, the objective here is to facilitate communication, collaboration, and address potential roadblocks. Daily stand-up meetings to discuss progress, share updates, and identify any impediments.
6. Review, the objective here is to demonstrate completed features and gather feedback from stakeholders. Conduct a sprint review meeting to showcase the



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- working software, receive feedback, and adjust priorities or features based on stakeholder input.
7. Retrospective, the objective here is to reflect on the sprint and identify opportunities for improvement. Hold a retrospective meeting to discuss what went well, what could be improved, and actionable items for enhancement in the next sprint.
 8. Deployment, the objective here is to release the completed features to the production environment. Deploy the approved features to the live system, ensuring that the new functionalities are available to end-users.

Roles

The development of Capstone Project - Faculty Performance System requires various roles that play crucial parts in ensuring the success of the project. Here's how each role contributes:

Product Owner, represents the stakeholders, including faculty and administrators, and communicates their needs and priorities to the development team. Defines and prioritizes features and functionalities for the Faculty Performance System based on the overall goals and requirements. Makes decisions regarding the project scope, features, and release timelines. Ensures that the end product meets the needs of the users and aligns with the organization's objectives.

Project Manager, facilitates the agile/scrum development process and ensures that the team follows the agreed-upon processes and practices. Removes impediments and obstacles that hinder the development team's progress. Helps the team to self-organize and collaborate effectively. Acts as a buffer between the team and external distractions, allowing the development team to focus on delivering value.



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Development Team, actively participates in the development of the Faculty Performance System. Collaborates with the Product Owner to understand and implement user stories and requirements. Designs, codes, tests, documents and delivers software increments during each sprint. Engages in continuous improvement and adaptation to enhance productivity and product quality.

Quality Assurance Analyst, ensures that the Faculty Performance System meets specified quality standards and requirements. Develops and executes test plans, test cases, and test scripts to identify and report defects. Collaborates with the development team to address and resolve issues identified during testing. Participates in the definition of acceptance criteria for user stories and ensures that they are met.

Business Analyst, serves as a crucial link between stakeholders and the development team. Responsibilities include gathering and documenting requirements, facilitating stakeholder communication, ensuring quality assurance aligns with requirements, contributing to continuous improvement, analyzing data sources, managing risks, and supporting user training.

Documentation, integral for maintaining transparency, facilitating effective communication, and ensuring systematic project management. This encompasses capturing and detailing requirements, documenting functional specifications and system design, creating user manuals, test cases, and change management documentation. In essence, thorough documentation supports the development, deployment, and maintenance of the Faculty Performance System.

Table 1
Team Role/s in the Project



Team	Role/s
Miguel Angel Y. Cantuja	Quality Assurance
Rafael Jayson M. Logan	Frontend Developer
John Vic A. Macusi	Business Analyst/Documentation
Daniel Jose D. Reyes	Backend Developer
Angel Mae A. Taga-oc	Project Manager/Documentation

Sprint Cycles

The Faculty Performance System sprint cycles refer to structured periods of development aimed at improving the system's functionality and usability. Lasting typically 1-4 weeks, each sprint focuses on implementing specific features, refining existing components, or addressing user feedback. Teams collaborate closely, setting achievable goals for each sprint and conducting regular reviews to evaluate progress. This iterative approach allows for the continuous enhancement of the FPS, ensuring it meets the evolving needs of faculty members and administrators within the project timeline.

Table 2: **Sprint 1**



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FACULTY PERFORMANCE SYSTEM - SPRINT 1						
Timeline	August 21 to August 25					
Sprint Goal	Login Module					
User Story Number	User Story	Task	Acceptance Criteria/Task	Assignee/s	Remarks	Status
FPS - 001	As a user, I want to be able to login and securely authenticate myself on the system to perform authorized actions.	Implement a secure authentication system with password hashing and secure storage of credentials.	Login Module TextField for Email TextField for Password Checkbox - Remember Me TextButton - Log In	Reyes Logan	2	Done
		Design and develop a user login interface with validation for email and password.	Login Page • users should input only their valid Email and Password, system verifies the credentials and grant access.		7	
		Implement the "Forgot Password" functionality, including generating and verifying password reset tokens.	• users should get redirected to the system home page if sign in process is successful • If sign in process is failed the system will display an error message notifying the user for wrong inputs.		3	
		Implement user session management with secure session storage and expiration.			2	
		Handle errors and log any authentication-related issues for further investigation.			4	
		Test the authentication and login functionality, including unit tests and user acceptance testing.		Cantuja	2	
		Document the authentication process for future reference and maintenance.		Macusi Tagaoc	3	

Table 3: Sprint 2



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FACULTY PERFORMANCE SYSTEM - SPRINT 2						
Timeline	August 28 to September 1					
Sprint Goal	Research Productivity Page					
User Story Number	User Story	Task	Acceptance Criteria/Task	Assignee/s	Remarks	Status
FPS 4	As a user, I want to track and analyze the number of publications and research outputs per faculty member, so that I can assess their productivity and contributions to the academic community	Develop a Faculty Module UI	Research Productivity Module in the system are as follows: <ul style="list-style-type: none">• integration with research information system• user access to the system that records overall;- Publications- Overall Research Contributions- Citation Metrics	Logan Reyes	2	Done
		Develop a function system module fields allows faculty members to manage awards	<ul style="list-style-type: none">• data must be statistically presented• categorization and filtering options for research outputs• user must have the ability to view detailed information for specific research outputs.• search functionality to find specific research outputs.	Logan Reyes	7	
		Perform function testing		Cantuja	3	
		Documentation		Macusi Tagaoc	2	
FPS 5	As a user, I must be able to measure the citations and impact of faculty research, as this will help me evaluate the quality and influence of their work.	Develop a faculty achievements UI	Research Productivity Page <ul style="list-style-type: none">• integration with research information system• users are able to view citation metrics for different categories such as;- publications- authors- research areas	Logan Reyes	2	Done
		Develop a function for faculty that Highlights accomplishments and contributions	<ul style="list-style-type: none">• system provide options to filter and sort the citation metrics based on specific parameters such as;- time period- citation count	Logan Reyes	5	
		Perform function testing		Cantuja	2	
		Documentation		Macusi Tagaoc	2	

Table 4: Sprint 3



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1

FACULTY PERFORMANCE SYSTEM - SPRINT 3							
Timeline	September 4 to September 8						
Sprint Goal	Teaching Effectiveness Module in the system and Progress monitoring for faculty development initiatives						
User Story Number	User Story	Task	Acceptance Criteria/Task		Assignee/s	Remarks	Status
FPS 13	As a user, I want to track and evaluate the progress of faculty members in achieving their development plan objectives. By monitoring their advancements, I can assess the effectiveness of development initiatives in improving faculty performance.	Develop a Progress monitoring for faculty development initiatives UI Integrate with the Faculty Information System (FIS) and utilize analytics tools to recognize the development initiatives undertaken by each faculty member. Generate a pie chart to visually represent the distribution of progress. Users should be able to view, explore further details, and observe the progress over specific time periods.	Progress monitoring for faculty development initiatives are as follows: <ul style="list-style-type: none"> • integration with faculty information system • system displays progress monitoring using a pie graph. • pie graph visually represents the proportion of progress for each initiative such as <ul style="list-style-type: none"> - green: completed - violet: workshops - yellow: seminars - red: trainings • user can view current progress and the overall total trainings conducted • user can drill down for more detailed information on each initiative's progress. • user are able to see the time period for displayed progress with the overall totals. 		Logan Reyes	3 10	Done
		Perform function testing			Cantuja	5	
		Documentation	<ul style="list-style-type: none"> • system provides a legend or key for understanding the graph, such as <ul style="list-style-type: none"> - Completed - Workshops - Seminars - Trainings 		Macusi Tagao	5	
FPS 2	As a user I must be able to access and view average evaluation scores for faculty members. That allows me to assess the teaching effectiveness of the faculty within the institution.	Develop a Teaching Effectiveness page Module UI Integrate with the Faculty Information System and employ analytics tools to recognize teaching effectiveness, presenting the data through a graph. Users should have the capability to observe the average evaluation score and average student score for each faculty member. Additionally, users should be able to identify both the lowest and highest-rated faculty members.	Teaching Effectiveness Module in the system are as follows: <ul style="list-style-type: none"> • integration with faculty information system • on accessing the teaching effectiveness page, user must be able to see the total percentages of; <ul style="list-style-type: none"> Average Institutional Rate - Faculty Ratings:First Semester - Faculty Ratings: Second Semester • able to view average evaluation score that is presented in graphs and includes the following data; <ul style="list-style-type: none"> - Supervisor Evaluation - Student Evaluation - Peer Evaluation - Self Evaluation • for Average Students Scores for Faculty, data is presented in pie graph that has indication of; <ul style="list-style-type: none"> - Above Average - Below Average - Equal Average • users are also able to see the least and highest rated faculty displayed in numbers; <ul style="list-style-type: none"> - High - Average - Least 		Logan Reyes	7 10	Done
		Perform function testing			Cantuja	5	
		Documentation			Tagao Macusi	7	
FPS 3	As a user I must be able to track the trends in teaching effectiveness scores over time to evaluate the overall progress and effectiveness of the faculty members.	Develop a Teaching Effectiveness page UI Integrate with the faculty information system, enabling users to observe trends in teaching effectiveness scores. Create a graph displaying the average ratings. Implement a search function for users to locate specific data.	Teaching Effectiveness Page <ul style="list-style-type: none"> • integration with faculty information system • on accessing the teaching effectiveness page for trends in teaching effectiveness scores, users are able to view the graphs containing average ratings. • system offers search functionality to find specific data • page for trends in teaching effectiveness scores also presents the following; <ul style="list-style-type: none"> - Average Student Rating - Performing Year 		Logan Reyes	9 15	Done
		Perform function testing			Cantuja	5	
		Documentation			Tagao Macusi	3	

Table 5: Sprint 4



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FACULTY PERFORMANCE SYSTEM - SPRINT 4							
Timeline	October 16 to October 28						
Sprint Goal	Professional Development Attendance and Leave Analytics Faculty Awards Recognition Retention and Exit Insights						
User Story Number	User Story	Task	Acceptance Criteria		Assignees	Remarks/Hours	Status
FPS 7	As a user, I must be able to track and monitor the attendance and participation of faculty members in workshops, seminars, and training programs. This will allow me to gather valuable feedback from faculty on the effectiveness and relevance of these professional development activities.	Develop a view or page in the system where authorized users can access and view the module information.	Professional Development Module in the system are as follows:		Logan Reyes	2	Done
		Add filters and search options to the view, allowing users to search for specific faculty records	<ul style="list-style-type: none"> • integration with faculty information system • users should be able to search and filter attendance records based on specific criteria. • the system provides a summary of faculty participation in professional development activities in numbers 		Logan Reyes	7	
		Test the functionality to ensure that faculty members can input their workshop and seminar attendance accurately and that authorized users can view it correctly.	<ul style="list-style-type: none"> • an ongoing education and training program should have a separate section among previous programs. • system are able to update faculty ongoing education and training records. 		Cantuja	3	
		Documentation and user guides to help users understand the system			Macusi Tagaoc	3	
FPS 10	As a user, I want to easily access and analyze information about faculty members' attendance patterns and leave utilization. This will allow me to make informed decisions about their requests and effectively manage approvals	Develop a user interface component for administrators or authorized users to review and manage leave requests, allowing them to approve, reject, or request further information.	Faculty Attendance and Leave Request Management follows:		Logan Reyes	3	Done
		Implement functionality to track and record approved leave requests, ensuring the relevant details and comments are stored accurately.	<ul style="list-style-type: none"> • integration with faculty information system • administrators or authorized users should be able to review and manage leave requests, including <ul style="list-style-type: none"> - approving - rejecting - requesting further information. 		Logan Reyes	6	
		Design and implement the database schema to track faculty attendance and time off, including approved leave, sick leave, personal days, and other types.	<ul style="list-style-type: none"> • the system should track and record approved leave requests, including relevant details and comments. • users should be able to search and filter approved leave requests based on specific criteria. 		Logan Reyes	10	
		Develop features to allow users to compare and analyze attendance and time off statistics across faculty members, departments, or specific time periods.	<ul style="list-style-type: none"> • the system tracks faculty attendance and time off, including : <ul style="list-style-type: none"> - approved leave - sick leave - personal days - etc. • users should be able to compare and analyze attendance and time off statistics across faculty members, departments, or time periods. 		Logan Reyes	8	
FPS 11	As a user, I must be able to evaluate the impact of faculty awards and recognition performance. This will enable me to identify patterns and trends in their performance and assess the effectiveness of these honors in promoting excellence in research and teaching.	Test the functionality to ensure accurate processing of leave requests, tracking of attendance and time off, and accurate comparison and analysis of statistics.			Cantuja	4	Done
		Documentation and user guides to help users understand the system			Macusi Tagaoc	3	
		Design and develop a user interface to showcase faculty achievements.	Faculty Awards and Recognition Impact in the system are as follows:		Logan Reyes	3	
		Implement the backend functionality to retrieve and display faculty achievements.	<ul style="list-style-type: none"> • integration with faculty information system • system displayed the award and achievements using bar graphs • bar height corresponds to the magnitude or significance of the achievement. • user can drill down for more detailed information on each faculty achievement. 		Logan Reyes	10	
		Define the types of achievements to be displayed, such as research publications, awards, grants, presentations, or community contributions.	<ul style="list-style-type: none"> • each bar represents a specific accomplishment or contribution, such as <ul style="list-style-type: none"> - Blue: Project Contribution - Green: Performance Impact - Red: Recognized Faculties 		Logan Reyes	4	Done
		Enable sorting and ordering options for faculty achievements.	<ul style="list-style-type: none"> • user can drill down for more detailed information on each faculty achievement. 		Logan Reyes	4	
		Ensure data privacy and security measures are in place.	<ul style="list-style-type: none"> • each bar represents a specific accomplishment or contribution, such as <ul style="list-style-type: none"> - Blue: Project Contribution - Green: Performance Impact - Red: Recognized Faculties 		Logan Reyes	1	
		Test the faculty achievements display functionality and gather user feedback.	<ul style="list-style-type: none"> • system provides statistics labels or tooltips to describe each bar and its achievement, follows as <ul style="list-style-type: none"> - Faculties with High Recognition Score - Faculties with High Evaluation Score - Number of Eligible Awardee - Faculty Working Hours 		Cantuja	3	
		Document the process for displaying faculty achievements.			Macusi Tagaoc	2	Done
					Macusi Tagaoc	2	

Table 6: Sprint 5



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FACULTY PERFORMANCE SYSTEM - SPRINT 5						
Timeline	October 30 to November 11					
Sprint Goal	Merit and Promotion Progress Feedback and Communication					
User story Number	User Story	Task	Acceptance Criteria	Assignee	Remarks/Hours	Status
FPS 8	As a user, I must be able to view faculty members performances within the university and determine if the requirements for merit awards and promotions are met.	Develop a data collection system for faculty performance metrics.	Merits Awards and Promotion to assess faculty eligibility and suitability for promotion. • integration with faculty information system • the defined criteria should consider factors such as ; - teaching effectiveness - research productivity - professional development.	Logan Reyes	1	Done
FPS 9	As a user, I must be able to determine the faculty members eligibility and suitability for promotion within the university.	Integrate analytics tools to identify performance trends over multiple years.	• users should be able to customize the weightage or importance of each criterion in the evaluation process.	Logan Reyes	4	
		Create a workflow system for consistent and fair performance review processes.	• users should be able to customize the weightage or importance of each criterion in the evaluation process.	Logan Reyes	3	
		Test the functionality to ensure accurate evaluation, outputs, and display records	• a mechanism for assessing faculty eligibility and suitability for promotions based on the defined criteria. • users should be able to show and track faculty performance data, such as; - teaching evaluations - research outputs - service records	Logan Reyes	4	
		Documentation	• the system display the overall assessment results, indicating the faculty member's eligibility or suitability for promotions.	Cantuja		
				Macusi Tagaoc	5	

Table 7: Sprint 6



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Faculty Performance System - Sprint 6							
Timeline	November 11 to November						
Sprint Goal	Merits Awards and Promotion and Workload Allocation and Workload Balance						
User Story Number	User Story	Task	Acceptance Criteria		Assignees	Remarks/Hours	Status
FPS 10	As a user, I want to easily access and analyze information about faculty members attendance patterns and leave utilization. This will allow me to make informed decisions about their request and effectively manage approvals.	Develop a user interface component for administrators or authorized users to review and manage leave requests, allowing them to approve, reject, or request further information.	Faculty Attendance and Leave Request Management follows: <ul style="list-style-type: none">• integration with faculty information system• administrators or authorized users should be able to review and manage leave requests, including<ul style="list-style-type: none">- approving- rejecting- requesting further information.• the system should track and record approved leave requests, including relevant details and comments.		Logan Reyes	3	
		Implement functionality to track and record approved leave requests, ensuring the relevant details and comments are stored accurately.	<ul style="list-style-type: none">• users should be able to search and filter approved leave requests based on specific criteria.• the system tracks faculty attendance and time off, including ;<ul style="list-style-type: none">- approved leave- sick leave- personal days- etc.		Logan Reyes	4	
		Design and implement the database schema to track faculty attendance and time off, including approved leave, sick leave, personal days, and other types.	<ul style="list-style-type: none">• users should be able to compare and analyze attendance and time off statistics across faculty members, departments, or specific time periods.		Logan Reyes	10	
		Develop features to allow users to compare and analyze attendance and time off statistics across faculty members, departments, or specific time periods.	<ul style="list-style-type: none">• users should be able to search and filter approved leave requests based on specific criteria.• the system tracks faculty attendance and time off, including ;<ul style="list-style-type: none">- approved leave- sick leave- personal days- etc.		Logan Reyes	8	Done
		Test the functionality to ensure accurate processing of leave requests, tracking of attendance and time off, and accurate comparison and analysis of statistics.	<ul style="list-style-type: none">• users should be able to compare and analyze attendance and time off statistics across faculty members, departments, or time periods.		Cantuja	4	
		Documentation and user guides to help users understand the system	<ul style="list-style-type: none">• users should be able to compare and analyze attendance and time off statistics across faculty members, departments, or time periods.		Macusi Tagaoc	3	
FPS 12	As a user, I must be able to evaluate the workload balance and fairness among the faculty members. Ensuring that all faculty members assigned tasks are align with their expertise and abilities.	Develop a UI for Workload Allocation that could see the record and workload for each faculty	"Workload Allocation and Workload Balance are as follows: <ul style="list-style-type: none">• integration with faculty information system• workload allocation should consider factors such as;			3	
		The system needs to monitor and document the allocated workload for every faculty member.	<ul style="list-style-type: none">- faculty expertise- availability- contractual obligations		Logan Reyes	4	
		The system must have the capability to search and filter workload allocations based on specific criteria.	<ul style="list-style-type: none">• the system should track and record the assigned workload for each faculty member, including ;<ul style="list-style-type: none">- specific tasks- time commitments.		Logan Reyes	5	
		The system should be able to assess and analyze workload balance statistics across departments or faculty categories.	<ul style="list-style-type: none">• users should be able to search and filter workload allocation based on specific criteria.		Logan Reyes	10	
		Conduct thorough testing, including usability and security testing	<ul style="list-style-type: none">• the system should display workload allocation in a statistically meaningful way to visually represent the distribution of tasks among faculty members.		Macusi	2	
		Documentation	<ul style="list-style-type: none">• workload balance is calculated and displayed in the system, ensuring an equitable distribution of workload.• workload balance statistics should consider factors such as ;<ul style="list-style-type: none">- teaching hours- research commitments- service responsibilities- other workload components.		Tagaoc Macusi	5	Done

Table 8: Sprint 7



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FACULTY PERFORMANCE SYSTEM - SPRINT 7							
Timeline	November 27 to December 9		Task	Acceptance Criteria	Assignees	Remarks	Status
User Story Number	User Story						
FPS 14	As a user, I want to be able to access and view each faculty Basic details in the system.	Develop a faculty profile management module in the system side bar	On the faculty profile management page or module, organize each faculty member in a list format. Clicking the performance button should expand the view to reveal their concise details, contributions, and overall performance within that specific module.	Faculty Profile Management • Faculty Profile Management Dashboard user can view List of Faculty Members their - Faculty Name - Faculty Type - Actions in the dashboard also it has Search Functionality • user can click on specific faculty member listed in a clickable Performance, and upon clicking, it will expand to display their brief details and overall performance within this module • users can view the personal details of each faculty, which include - Last Name - First Name - Middle Name - General Performance Status • Presented as in a manner similar to every module analytics, providing an overall faculty overview that encompasses - Overall Evaluation Performance - Academic Head Rating - Self Rating - Director Rating - Student Rating Categories for 1st sem and 2nd sem - Present Evaluation Percentage - Research Performance	Logan Reyes	2	Done
		Test the functionality			Logan Reyes	7	
		Documentation and user guides to help users understand the system			Cantuja	3	
FPS 15	As a user, I want to be able to access and view each faculty Data table and the characteristic	Develop a faculty management profile module in the system side bar	In the faculty profile management page or module create a each faculty member in a clickable box, and upon clicking, it will expand to display their overall performance within this module	In the faculty profile management page or module create a each faculty member in a clickable box, and upon clicking, it will expand to display their overall performance within this module Test the functionality Documentation and user guides to help users understand the system	Macusi Tagao	5	Done
					Logan Reyes	4	
					Logan Reyes	5	
FPS 16	As a user, I want to be able to see in the dashboard the analytics of overall module performance	Develop a Dashboard module in the system have a top bar	Within the Dashboard module, establish a top bar featuring faculty analytics for each page. Upon clicking, users will access a table displaying comprehensive analytics for all faculty members. The page is scrollable, allowing users to view analytics for every module as they scroll.	Dashboard Module: Within the top bar of the dashboard, users will find the following options: - Faculty Management - Evaluation - Research & Publication - Merit & Promotion - Awards and Recognition - Professional Development And more Clicking on More modules will reveal additional options, such as: - Workload Distribution - Leave Management Beneath this, the dashboard displays the Faculty Type and the user's name. In the dashboard, users should have visibility into: - Average Institutional Rating - Total Research Products - Awarded Faculties - Successful Trainings - Reduced Workloads	Logan Reyes	2	Done
		Test the system to ensure all the performance of all faculty will visible to the user			Logan Reyes	4	
		Documentation and user guides to help users understand the system			Cantuja	3	
					Macusi Tagao	5	

Table 9: Sprint 8



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FACULTY PERFORMANCE SYSTEM - SPRINT 8								
Timeline	January 2 to 8	User Story Number	User Story	Task	Acceptance Criteria	Assignees	Remarks/Hours	Status
	Sprint Goal	Print Module						
		FPS 17	As a user, I must be able to print everything contained in Evaluation module	Develop a print button aligned to the upper right corner Add functionality to the button to allow printing of the entire Research and Productivity dashboards.	"Research Productivity Page - Printing • The user will be able to print everything included on the page, which encompasses: - Date - Time • The graph illustrating the Average Rating Based on Faculty Performance Development in Research Methodologies - Present Academic University Research Goals - Analytical Research Bound and Published Over Years"	Logan Reyes Logan Reyes Cantuja Macusi Tagaoc	2 5 3 3	Done
		FPS 18	As a user, I must be able to print everything contained in Research and Publication module	Develop a print button aligned to the upper right corner Add functionality to the button to allow printing of the entire Evaluation dashboards. Test the functionality	Evaluation Module - Printing • The user will be able to print everything included on the page, which encompasses: - Date - Time • The graph illustrating the Average Rating Based on Faculty Performance Development in Research Methodologies - Present Academic University Research Goals - Analytical Research Bound and Published Over Years	Logan Reyes Logan Reyes Cantuja Macusi Tagaoc	2 5 3 3	Done
		FPS 19	As a user, I must be able to download the Excel file containing the overall performance summary of a particular faculty.	Develop a button next to the performance button Enhance the button's functionality to enable users to download an Excel file containing the comprehensive evaluation of a specific faculty Test the functionality	Faculty Profile Management • Aligned with the performance button, users can click on the Report Button to download an Excel file. Users would then see the overall report of a specific faculty. Criterion A - Teaching Effectiveness follows. Faculty Performance 1.1. Student Evaluation 1.2. Supervisor's Evaluation Users can also see the computation regarding their overall grade, such as: - Overall Average Rating - Faculty Score The evaluation period spans from the first semester to the second semester.	Logan Reyes Logan Reyes Cantuja Macusi Tagaoc	3 10 5 5	Done

Scrum Artifacts

Table 10:Product Backlogs

User	User Story	Acceptance Criteria	Sprint	Sprint



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Story Number			Backlog	Status
FPS 1	<ul style="list-style-type: none">• User Authentication As a user, I want to be able to login and securely authenticate myself on the system to perform authorized actions.EmailPasswordLoginForgot Password	<p>Login Module</p> <p>TextField for Email</p> <p>TextField for Password</p> <p>Checkbox - Remember Me</p> <p>TextButton - Log In</p> <p>TextButton - Forgot Password</p> <p> Login Page</p> <ul style="list-style-type: none">• users should input only their valid Email and Password, system verifies the credentials and grant access.• users should get redirected to the system home page if sign in process is successful• If the sign in process is failed the system will display an error message notifying the user for wrong inputs. <p> Forgot Password</p> <ul style="list-style-type: none">• users can manage their lost password by clicking on the forgot password option.	1	Done
FPS 2	As a user I must be able to access and view average evaluation scores for faculty members. That allows me to assess the teaching effectiveness of the faculty within the institution.	<p>Teaching Effectiveness Module in the system are as follows:</p> <ul style="list-style-type: none">• integration with faculty information system• on accessing the teaching effectiveness page, user must be able to see the total percentages of;- Average Institutional Rate- Faculty Ratings:First Semester- Faculty Ratings: Second Semester • able to view average evaluation score that is presented in graphs and includes the following data;- Supervisor Evaluation- Student Evaluation- Peer Evaluation- Self Evaluation • for Average Students Scores for Faculty, data is presented in pie graph that has indication of;- Above Average- Below Average- Equal Average • users are also able to see the least and highest rated faculty displayed in numbers;- High- Average- Least	3	Done
FPS 3	As a user I must be able to track the trends in teaching effectiveness scores over time to evaluate the overall progress and effectiveness of the faculty members.	<p>Teaching Effectiveness Page</p> <ul style="list-style-type: none">• integration with faculty information system• On accessing the teaching effectiveness page for trends in teaching effectiveness scores, users are able to view the graphs containing average ratings. • system offers search functionality to find specific data• page for trends in teaching effectiveness scores also presents the following;- Average Student Rating	3	Done



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		- Performing Year		
FPS 4	As a user, I want to track and analyze the number of publications and research outputs per faculty member, so that I can assess their productivity and contributions to the academic community	Research Productivity Module in the system are as follows: <ul style="list-style-type: none">• integration with research information system• user access to the system that records overall;- Publications- Conferences- Overall Research Contributions- Grant and Funding Management- Citation Metrics • data must be statistically presented• categorization and filtering options for research outputs• users must have the ability to view detailed information for specific research outputs.• search functionality to find specific research outputs.	2	Done
FPS 5	As a user, I must be able to measure the citations and impact of faculty research, as this will help me evaluate the quality and influence of their work.	Research Productivity Page <ul style="list-style-type: none">• integration with research information system• users are able to view citation metrics for different categories such as;<ul style="list-style-type: none">- publications- authors- research areas • system provide options to filter and sort the citation metrics based on specific parameters such as;<ul style="list-style-type: none">- time period- citation count	2	Done
FPS 6	As a user, I must be able to monitor the success rate of faculty members in securing research grants and funding, as this will indicate their ability to attract external resources and support for their projects.	Research Productivity Page <ul style="list-style-type: none">• integration with research information system• the system has reporting feature that displays the success rate of faculty members in securing research grants and funding in terms of the following<ul style="list-style-type: none">- Personal Grants- Fellowship- Crowdfunding • the system allow filtering and sorting options to view the success rate of faculty members based on different criteria, such as<ul style="list-style-type: none">- department- research area- academic rank. • The system should provide the ability to view historical data and track changes in the success rate over time, allowing for comparisons and trend analysis.	2	Done
FPS 7	As a user, I must be able to track and monitor the attendance and participation of faculty members in workshops, seminars, and training programs. This will allow me to gather valuable feedback from faculty on the effectiveness and	Professional Development Module in the system are as follows: <p>Workshop, Seminar Attendance, and Faculty Participations on educational programs:</p> <ul style="list-style-type: none">• integration with faculty information system• seminar attendance records include details such as;<ul style="list-style-type: none">- event name- date	4	Done



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	relevance of these professional development activities.	- time - duration - location of the workshop or seminar - overall faculty attendees • users should be able to search and filter attendance records based on specific criteria. • the system provides a summary of faculty participation in professional development activities in numbers • an ongoing education and training program should have a separate section among previous programs. • systems are able to update faculty ongoing education and training records.		
FPS 8	As a user, I must be able to view faculty members' performances within the university and determine if the requirements for merit awards and promotions are met.	Merits Awards and Promotion to assess faculty eligibility and suitability for promotion. • integration with faculty information system • the defined criteria should consider factors such as ; - teaching effectiveness - research productivity - service contributions - professional development. • users should be able to customize the weightage or importance of each criterion in the evaluation process. • a mechanism for assessing faculty eligibility and suitability for promotions based on the defined criteria. • users should be able to show and track faculty performance data, such as; - teaching evaluations - research outputs - service records • The system displays analytics and the overall assessment results, indicating the faculty member's eligibility or suitability for promotions.	5	Done
FPS 9	As a user, I must be able to determine the faculty members eligibility and suitability for promotion within the university.		5	Done
FPS 10	As a user, I want to easily access and analyze information about faculty members' attendance patterns and leave utilization. This will allow me to make informed decisions about their request and effectively manage approvals	Faculty Attendance and Leave Request Management follows; • integration with faculty information system • administrators or authorized users should be able to review and manage leave requests, including - approving - rejecting - requesting further information. • the system should track and record approved leave requests, including relevant details and comments. • users should be able to search and filter approved leave requests based on specific criteria. • the system tracks faculty attendance and time off, including ; - approved leave - sick leave - personal days - etc. • Users should be able to compare and analyze attendance and time off statistics across faculty members, departments, or time periods.	4	Done
FPS 11	As a user, I must be able	Faculty Awards and Recognition Impact in the system	4	Done



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	<p>to evaluate the impact of faculty awards and recognition performance. This will enable me to identify patterns and trends in their performance and assess the effectiveness of these honors in promoting excellence in research and teaching.</p>	<p>are as follows:</p> <ul style="list-style-type: none">• integration with faculty information system• system displayed the award and achievements using bar graphs• bar height corresponds to the magnitude or significance of the achievement.• users can drill down for more detailed information on each faculty achievement. • each bar represents a specific accomplishment or contribution, such as<ul style="list-style-type: none">- Blue: Project Contribution- Yellow: Performance Impact- Green: Recognized Faculties • system provides statistics labels or tooltips to describe each bar and its achievement, follows as<ul style="list-style-type: none">- Faculties with High Recognition Score- Faculties with High Evaluation Score- Number of Eligible Awardee- Faculty Working Hours		
FPS 12	<p>As a user, I must be able to evaluate the workload balance and fairness among the faculty members. Ensuring that all faculty members assigned tasks are aligned with their expertise and abilities.</p>	<p>Workload Allocation and Workload Balance are as follows:</p> <ul style="list-style-type: none">• integration with faculty information system• workload allocation should consider factors such as;<ul style="list-style-type: none">- faculty expertise- availability- contractual obligations• the system should track and record the assigned workload for each faculty member, including ;<ul style="list-style-type: none">- specific tasks- time commitments.• users should be able to search and filter workload allocation based on specific criteria.• the system should display workload allocation in a statistically meaningful way to visually represent the distribution of tasks among faculty members.• workload balance is calculated and displayed in the system, ensuring an equitable distribution of workload.• workload balance statistics should consider factors such as ;<ul style="list-style-type: none">- teaching hours- research commitments- service responsibilities- other workload components.• Users should be able to compare and analyze workload balance statistics across departments or faculty categories.	6	Done
FPS 13	<p>As a user, I want to track and evaluate the progress of faculty members in achieving their development plan objectives. By monitoring their advancements, I can assess the effectiveness of development initiatives</p>	<p>Progress monitoring for faculty development initiatives are as follows:</p> <ul style="list-style-type: none">• integration with faculty information system• system displays progress monitoring using a pie graph.• pie graph visually represents the proportion of progress for each initiative such as<ul style="list-style-type: none">- green: completed- violet: workshops- yellow: seminars	3	Done



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	<p>in improving faculty performance.</p>	<ul style="list-style-type: none">- red: trainings• user can view current progress and the overall total trainings conducted• users can drill down for more detailed information on each initiative's progress.• users are able to see the time period for displayed progress with the overall totals.• system provides a legend or key for understanding the graph, such as<ul style="list-style-type: none">- Completed- Workshops- Seminars- Trainings		
FPS 14	<p>As a user, I want to be able to access and view each faculty's Basic details in the system.</p>	<p>Faculty Profile Management</p> <ul style="list-style-type: none">• Faculty Profile Management Dashboard user can view List of Faculty Members their<ul style="list-style-type: none">- Faculty Name- Faculty Type- Actions <p>in the dashboard also it has Search Functionality</p> <ul style="list-style-type: none">• user can click on specific faculty member listed in a clickable Performance, and upon clicking, it will expand to display their brief details and overall performance within this module• users can view the personal details of each faculty, which include<ul style="list-style-type: none">- Last Name- First Name- Middle Name- Faculty Department• Presented as in a manner similar to every module analytics, providing an overall faculty overview that encompasses<ul style="list-style-type: none">- Performance Rating- Research Productivity- Service Contributions- Teaching Effectiveness	7	Done
FPS 15	<p>As a user, I want to be able to access and view each faculty's overall performance in the system.</p>		7	Done
FPS 16	<p>As a user, I want to be able to see in the dashboard the analytics of overall module performance</p>	<p>Dashboard Module:</p> <ul style="list-style-type: none">• Within the top bar of the dashboard, users will find the following options:<ul style="list-style-type: none">- Faculty Management- Evaluation- Research & Publication- Merit & Promotion- Awards and Recognition- Professional Development <p>And more</p> <p>Clicking on More modules will reveal additional options, such as:</p> <ul style="list-style-type: none">- Workload Distribution- Leave Management <p>Beneath this, the dashboard displays the Faculty Type and the user's name.</p> <ul style="list-style-type: none">• In the dashboard, users should have visibility into:<ul style="list-style-type: none">- Average Institutional Rating	7	Done



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		<ul style="list-style-type: none"> - Total Research Products - Awarded Faculties - Successful Trainings - Reduced Workloads • Upon scrolling, users will see or encounter: - Present Academic Year Faculty Evaluation Results - Research Productivity - Workload Distribution - Professional Development - Awards and Recognition Impact <p>Each of these elements has its own clickable modal, directing users to their respective pages.</p>		
FPS 17	As a user, I must be able to print everything contained in Evaluation module	<p>Research Productivity Page - Printing</p> <ul style="list-style-type: none"> • The user will be able to print everything included on the page, which encompasses: - Date - Time • The graph illustrating the Average Rating Based on Faculty Performance Development in Research Methodologies - Present Academic University Research Goals - Analytical Research Bound and Published Over Years 	8	Done
FPS 18	As a user, I must be able to print everything contained in Research and Publication module	<p>Evaluation Module - Printing</p> <ul style="list-style-type: none"> • The user will be able to print everything included on the page, which encompasses: - Date - Time • The graph illustrating the Average Rating Based on Faculty Performance Development in Research Methodologies - Present Academic University Research Goals - Analytical Research Bound and Published Over Years 	8	Done
FPS 19	As a user, I must be able to download the Excel file containing the overall performance summary of a particular faculty.	<p>Faculty Profile Management</p> <ul style="list-style-type: none"> • Aligned with the performance button, users can click on the Report Button to download an Excel file. Users would then see the overall report of a specific faculty. <p>Criterion A - Teaching Effectiveness follows.</p> <p>Faculty Performance</p> <p>1.1. Student Evaluation 1.2. Supervisor's Evaluation</p> <p>Users can also see the computation regarding their overall grade, such as:</p> <ul style="list-style-type: none"> - Overall Average Rating - Faculty Score <p>The evaluation period spans from the first semester to the second semester.</p>	8	Done

Table 11:Sprint Backlogs

Sprint Backlogs						
User Story Number	User Story	Task	Acceptance Criteria	Priority Backlog	Sprints	Remarks



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					s	
FPS 1	<ul style="list-style-type: none">• User Authentication As a user, I want to be able to login and securely authenticate myself on the system to perform authorized actions.Email PasswordLoginForgot Password	<p>Implement a secure authentication system with password hashing and secure storage of credentials.</p> <p>Design and develop a user login interface with validation for email and password.</p> <p>Implement the "Forgot Password" functionality, including generating and verifying password reset tokens.</p> <p>Implement user session management with secure session storage and expiration.</p> <p>Handle errors and log any authentication-related issues for further investigation.</p> <p>Test the authentication and login functionality, including unit tests and user acceptance testing.</p> <p>Document the authentication process for future reference and maintenance.</p>	<p>Login Module</p> <p>TextField for Email</p> <p>TextField for Password</p> <p>Checkbox - Remember Me</p> <p>TextButton - Log In</p> <p>TextButton - Forgot Password</p> <p>Login Page</p> <ul style="list-style-type: none">• users should input only their valid Email and Password, system verifies the credentials and grant access.• users should get redirected to the system home page if sign in process is successful• If the sign in process is failed the system will display an error message notifying the user for wrong inputs.	1	Done	5
FPS 2	<p>As a user I must be able to access and view average evaluation scores for faculty members. That allows me to assess the teaching effectiveness of the faculty within the institution.</p>	<p>Develop a system to track and analyze teaching effectiveness metrics for faculty members.</p> <p>Include features such as average student evaluation scores, comparison against departmental or institutional averages, and monitoring trends over time.</p> <p>Create a user-friendly interface for data entry and management.</p>	<p>Teaching Effectiveness Module in the system are as follows:</p> <ul style="list-style-type: none">• integration with faculty information system• on accessing the teaching effectiveness page, user must be able to see the total percentages of;<ul style="list-style-type: none">- Average Institutional Rate- Faculty Ratings:First Semester- Faculty Ratings: Second Semester• able to view average evaluation score that is presented in graphs and includes the following data;<ul style="list-style-type: none">- Supervisor Evaluation- Student Evaluation- Peer Evaluation- Self Evaluation• for Average Students Scores for Faculty,	3	Done	2



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			data is presented in pie graph that has indication of; - Above Average - Below Average - Equal Average • users are also able to see the least and highest rated faculty displayed in numbers; - High - Average - Least			
FPS 3	As a user I must be able to track the trends in teaching effectiveness scores over time to evaluate the overall progress and effectiveness of the faculty members.	Implement algorithms to calculate average scores and compare performance against averages. Documentation and user guides to help users understand the system	Teaching Effectiveness Page • integration with faculty information system • On accessing the teaching effectiveness page for trends in teaching effectiveness scores, users are able to view the graphs containing average ratings. • system offers search functionality to find specific data • page for trends in teaching effectiveness scores also presents the following; - Average Student Rating - Performing Year	9	3	
FPS 4	As a user, I want to track and analyze the number of publications and research outputs per faculty member, so that I can assess their productivity and contributions to the academic community	Develop statistical presentation features to display research data in a visually appealing and informative manner Implement categorization and filtering options for research outputs, allowing users to filter publications, conferences, and overall research contributions based on specific categories or criteria.	Research Productivity Module in the system are as follows: • integration with research information system • user access to the system that records overall; - Publications - Conferences - Overall Research Contributions - Grant and Funding Management - Citation Metrics • data must be statistically presented • categorization and filtering options for research outputs • users must have the ability to view detailed information for specific research outputs. • search functionality to find specific research outputs.	2	Done	5 2
FPS 5	As a user, I must be able to measure the citations and impact of faculty research, as this will help me evaluate the quality and influence of their work.	Implement the ability to export or download research outputs, enabling users to save or share research data in various formats, such as PDF or CSV.	Research Productivity Page • integration with research information system • users are able to view citation metrics for different categories such as; - publications - authors - research areas • system provide options to filter and sort the citation metrics based on specific parameters such as; - time period	1		



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			- citation count			
FPS 6	As a user, I must be able to monitor the success rate of faculty members in securing research grants and funding, as this will indicate their ability to attract external resources and support for their projects.	Test the functionality of the research publications system thoroughly Document the process for using and navigating the research publications in the system	Research Productivity Page <ul style="list-style-type: none">• integration with research information system• the system has reporting feature that displays the success rate of faculty members in securing research grants and funding in terms of the following<ul style="list-style-type: none">- Personal Grants- Fellowship- Crowdfunding• the system allow filtering and sorting options to view the success rate of faculty members based on different criteria, such as<ul style="list-style-type: none">- department- research area- academic rank.• The system should provide the ability to view historical data and track changes in the success rate over time, allowing for comparisons and trend analysis.		2	
FPS 7	As a user, I must be able to track and monitor the attendance and participation of faculty members in workshops, seminars, and training programs. This will allow me to gather valuable feedback from faculty on the effectiveness and relevance of these	Develop a view or page in the system where authorized users can access and view the workshop and seminar attendance information. Add filters and search options to the view, allowing users to search for specific workshop or seminar attendance records Test the functionality to ensure that faculty members can input their workshop and seminar attendance accurately and that authorized users can view it correctly.	Professional Development Module in the system are as follows: Workshop, Seminar Attendance, and Faculty Participations on educational programs: <ul style="list-style-type: none">• integration with faculty information system• seminar attendance records include details such as;<ul style="list-style-type: none">- event name- date- time- duration- location of the workshop or seminar- overall faculty attendees• users should be able to search and filter attendance records based on specific criteria.• the system provides a summary of faculty	4	Done	2



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	professional development activities.	Documentation and user guides to help users understand the system	participation in professional development activities in numbers <ul style="list-style-type: none">• an ongoing education and training program should have a separate section among previous programs.• systems are able to update faculty ongoing education and training records.			2
FPS 8 FPS 9	As a user, I must be able to view faculty members' performances within the university and determine if the requirements for merit awards and promotions are met.	Develop a data collection system for faculty performance metrics.	Merits Awards and Promotion to assess faculty eligibility and suitability for promotion. <ul style="list-style-type: none">• integration with faculty information system• the defined criteria should consider factors such as ;<ul style="list-style-type: none">- teaching effectiveness- research productivity- professional development.	5	Done	1
		Integrate analytics tools to identify performance trends over multiple years.	<ul style="list-style-type: none">• users should be able to customize the weightage or importance of each criterion in the evaluation process.• a mechanism for assessing faculty eligibility and suitability for promotions based on the defined criteria.	4		4
		Create a workflow system for consistent and fair performance review processes.	<ul style="list-style-type: none">• users should be able to show and track faculty performance data, such as;- teaching evaluations- research outputs- service records	3		3
		Test the functionality to ensure accurate evaluation, outputs, and display records	<ul style="list-style-type: none">• The system displays the overall assessment results, indicating the faculty member's eligibility or suitability for promotions.	4		4
	As a user, I must be able to determine the faculty members eligibility and suitability for promotion within the university.	Documentation		5		5
FPS 10	As a user, I want to easily access and analyze information about faculty members' attendance patterns and leave utilization. This will allow me to make	Develop a user interface component for administrators or authorized users to review and manage leave requests, allowing them to approve, reject, or request further information.	Faculty Attendance and Leave Request Management follows; <ul style="list-style-type: none">• integration with faculty information system• administrators or authorized users should be able to review and manage leave requests, including<ul style="list-style-type: none">- approving- rejecting- requesting further information.	6	Done	3
		Implement functionality to track and record approved	<ul style="list-style-type: none">• the system should track and record approved leave requests, including	9		9



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FPS 14	As a user, I want to be able to access and view each faculty's Basic details in the system.	to recognize the development initiatives undertaken by each faculty member. Generate a pie chart to visually represent the distribution of progress. Users should be able to view, explore further details, and observe the progress over specific time periods.	- green: completed - violet: workshops - yellow: seminars - red: trainings • user can view current progress and the overall total trainings conducted • users can drill down for more detailed information on each initiative's progress. • users are able to see the time period for displayed progress with the overall totals.		
		Perform function testing	• system provides a legend or key for understanding the graph, such as - Completed - Workshops - Seminars - Trainings	3	
		Documentation		5	
FPS 14	As a user, I want to be able to access and view each faculty profile management module in the system sidebar	Develop a faculty profile management module in the system sidebar	Faculty Profile Management:	7	Done
		On the faculty profile management page or module, organize each faculty member in a list format. Clicking the performance button should expand the view to reveal their concise details, contributions, and overall performance within that specific module.	• When accessing the faculty management page, users will encounter a data table listing 10 entities, including: - Faculty name - Faculty type - Evaluation Rating - Number of Present Research Publications - Number of Present Training Attended - Action modal Performance Button		
		Test the functionality	• Users have the option to click on a specific faculty member listed within a clickable performance button. Upon clicking, it expands to reveal their concise details and overall performance within this module.		
		Documentation and user guides to help users understand the system	• Within the modal, users can explore the personal details of each faculty member, presented as follows:		
FPS 15	As a user, I want to be able to access and view each faculty Data table and the characteristic	Develop a faculty management profile module in the system sidebar	- Last Name - First Name - Middle Name - Date of Birth - Faculty Department - Sex - And other relevant information	7	Done 2
		In the faculty profile management page or module create a each faculty member in a clickable box, and upon clicking, it will expand to display their overall performance within this module	• This presentation mirrors the format of every module analytics, offering a comprehensive faculty overview that encompasses: - Performance Rating - Research Productivity		3
		Test the functionality			
		Documentation and			



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		user guides to help users understand the system	- Teaching Effectiveness			
FPS 16	As a user, I want to be able to see in the dashboard the analytics of overall module performance	Develop a Dashboard module in the system have a top bar Within the Dashboard module, establish a top bar featuring faculty analytics for each page. Upon clicking, users will access a table displaying comprehensive analytics for all faculty members. The page is scrollable, allowing users to view analytics for every module as they scroll. Test the system to ensure all the performance of all faculty will visible to the user Documentation and user guides to help users understand the system	Dashboard Module: <ul style="list-style-type: none">Within the top bar of the dashboard, users will find the following options:<ul style="list-style-type: none">- Faculty Management- Evaluation- Research & Publication- Merit & Promotion- Awards and Recognition- Professional DevelopmentAnd more <p>Clicking on More modules will reveal additional options, such as:</p> <ul style="list-style-type: none">- Workload Distribution- Leave Management <p>Beneath this, the dashboard displays the Faculty Type and the user's name. <ul style="list-style-type: none">In the dashboard, users should have visibility into:<ul style="list-style-type: none">- Average Institutional Rating- Total Research Products- Awarded Faculties- Successful Trainings- Reduced WorkloadsUpon scrolling, users will see or encounter:<ul style="list-style-type: none">- Present Academic Year Faculty Evaluation Results- Research Productivity- Workload Distribution- Professional Development- Awards and Recognition Impact<p>Each of these elements has its own clickable modal, directing users to their respective pages.</p></p>	7	Done	5
FPS 17	As a user, I must be able to print everything contained in Evaluation module	Develop a print button aligned to the upper right corner Add functionality to the button to allow printing of the entire Research and Productivity dashboards. Test the functionality Documentation and user guides to help users understand the system	Research Productivity Page - Printing <ul style="list-style-type: none">The user will be able to print everything included on the page, which encompasses:<ul style="list-style-type: none">- Date- TimeThe graph illustrating the Average Rating Based on Faculty PerformanceDevelopment in Research MethodologiesPresent Academic University Research GoalsAnalytical Research Bound and Published Over Years	8	Done	2
FPS 18	As a user, I must be able to print	Develop a print button aligned to the upper right corner	Evaluation Module - Printing <ul style="list-style-type: none">The user will be able to print everything included on the page, which	8	Done	2



		everything contained in Research and Publication module	Add functionality to the button to allow printing of the entire Evaluation dashboards.	encompasses: - Date - Time • The graph illustrating the Average Rating Based on Faculty Performance			5
			Test the functionality	Development in Research Methodologies - Present Academic University Research Goals - Analytical Research Bound and Published Over Years			3
			Documentation and user guides to help users understand the system				3
FPS 19	As a user, I must be able to download the Excel file containing the overall performance summary of a particular faculty.		Develop a button next to the performance button	Faculty Profile Management	8	Done	3
			Enhance the button's functionality to enable users to download an Excel file containing the comprehensive evaluation of a specific faculty	• Aligned with the performance button, users can click on the Report Button to download an Excel file. Users would then see the overall report of a specific faculty. Criterion A - Teaching Effectiveness follows. Faculty Performance 1.1. Student Evaluation 1.2. Supervisor's Evaluation			10
			Test the functionality				5
			Documentation and user guides to help users understand the system	Users can also see the computation regarding their overall grade, such as: - Overall Average Rating - Faculty Score The evaluation period spans from the first semester to the second semester.			5

Integration Approach for Information System

The Faculty Performance System adopts a Point-to-Point Integration approach, establishing direct connections with integrated systems such as the Faculty Information System (FIS) and Research Information System (RIS). This strategy ensures efficient and real-time data synchronization, allowing immediate updates to faculty details from FIS and the integration of the latest research data from RIS. The focused and direct connections streamline communication channels, promoting agility and efficiency in faculty performance assessments within the FPS.



Introduction to TOGAF and 4 Architecture Techniques

The Faculty Performance System benefits significantly from aligning with The Open Group Architecture Framework (TOGAF) and adopting various architecture techniques to drive a structured and effective development process. By utilizing TOGAF's Architecture Development Method (ADM), the system ensures alignment with business objectives, stakeholder requirements, and controlled evolution. TOGAF's ADM provides a comprehensive framework for architecture development, encompassing phases such as architecture vision, business architecture, information systems architecture, technology architecture, and opportunities for continuous improvement. This structured approach enables the Faculty Performance System to evolve in response to changing academic and administrative needs while maintaining alignment with overarching institutional goals.

The Faculty Performance System employs four key architecture techniques guided by The Open Group Architecture Framework (TOGAF) principles:

a. Business Architecture: This technique defines the business architecture of the system by identifying key stakeholders, their concerns, and aligning system features with organizational goals. The Faculty Performance System visually represents its value proposition and customer segments, ensuring strategic alignment and value delivery.

b. Data Architecture: TOGAF's data architecture principles are applied to effectively manage and structure data within the Faculty Performance System. Entity-Relationship Diagrams (ERDs) are employed to model relationships between different data entities such as faculty profiles, performance metrics, and teaching information. This ensures data integrity, accessibility, and consistency across the system.

c. Application Architecture: The system's application architecture is designed using TOGAF principles to ensure modularity, scalability, and alignment with business needs.



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Adopting the Microservices Architecture approach, the Faculty Performance System is broken down into independent, loosely-coupled services that can be developed, deployed, and scaled independently. This promotes flexibility, agility, and maintainability in system development and evolution.

d. Technology Architecture: TOGAF's technology architecture guidelines are leveraged to select and implement appropriate technologies for the Faculty Performance System. This includes identifying suitable hardware, software, and infrastructure components that support system functionality, performance, and security requirements.



IV. Requirements Analysis

Stakeholder Identification

Stakeholders are individuals or groups who have an interest or are affected by the project. Here's an overview of stakeholders for the Faculty Performance System: Stakeholder Engagement Assessment Matrix with desired ("D") and current ("C") levels of engagement per stakeholder.

Stakeholder Engagement Assessment Matrix					
Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
1. PUPQC Director	C			D	
2. PUPQC Academic Head				C	D
3. PUPQC Faculties			C	D	
4. PUPQC Students	C			D	

Table 12: Stakeholder Engagement Assessment Matrix

Table 13: Stakeholder Register



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Stakeholder Register					
Project Name	Faculty Performance System				February 2024
Stakeholders	Role	Category	Influence	Interest	Concerns
1. PUPQC Director	System User	Internal	High	High	Efficient Faculty Performance Handling with Transparency
2. PUPQC Academic Head	Project Owner	Internal	High	High	Effective Faculty Performance Management
3. PUPQC Faculties	Future System Beneficiary	Internal	Medium	Neutral	Efficient Faculty Performance Handling with Transparency
PUPQC Students	Future System Beneficiary	External	Low	Neutral	Improved and Effective Faculty Performance Management

Plan	Status	Task	Outputs
1. Identify Stakeholders	Done	Identifying and communicating with the highest stakeholder and provide details in the project	Product Backlogs and Expected output with the web application
2. Stakeholder Assessment	Done	Creating Stakeholder Assessment Matrix and Stakeholder Register	Stakeholder Engagement Assessment Matrix and Stakeholder Register
3. Communication	Current	Continuous communication	Web application expected output based on the Product backlogs
4. Stakeholder Engagement	Current	Continuous communication	Making them aware of the developing web app

Table 14: **Stakeholder Engagement Plan**

Table 15: **Stakeholder Engagement**



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Stakeholder Engagement						
Stakeholder	Influence	Interest	Project Phase	Engagement Approach	Engagement Tools	Frequency
1. PUPQC Director	High	High	Completed	In person		
2. PUPQC Academic Head	High	High	Development	In person / Online	Messenger / Google Meet	Frequent
3. PUPQC Faculties	Medium	Neutral	Completed	Online	Google Meet	
4. PUPQC Students	Low	Neutral	Completed	Online		

Requirements Gathering techniques

The requirements gathering phase for developing the Faculty Performance System involves employing various effective techniques to collect and document requirements comprehensively. These techniques include conducting interviews, both one-on-one and group sessions, with stakeholders to facilitate detailed discussions, clarify ambiguities, and gather diverse perspectives. Meetings are organized to encourage interactive brainstorming, idea sharing, requirement discussions, and feature prioritization among key stakeholders, fostering collaboration and open dialogue. Observation of users in their natural environment allows the development team to gain insights into user workflows, pain points, and specific needs, providing a deeper understanding of real-world scenarios and user behavior. Prototyping plays a crucial role by creating a visual and functional mockup of the Faculty Performance System to solicit feedback early in the process, enabling stakeholders to visualize the system and facilitating tangible discussions. Document analysis involves reviewing existing documentation, reports,



policies, and relevant materials to extract requirements and ensure alignment with existing processes and regulations. Brainstorming sessions further encourage a free-flowing exchange of ideas and requirements among stakeholders, sparking creativity, generating diverse perspectives, and uncovering potential features that may not be immediately apparent. These techniques collectively ensure that the Faculty Performance System is developed based on a thorough understanding of stakeholder needs and requirements, fostering a successful and user-centric system design and implementation.

User Stories and Use Cases

These are the user stories for the capstone project, total of 18, which are linked to the Faculty Performance System:

1. As a user, I want to be able to login and securely authenticate myself on the system to perform authorized actions.
2. As a user I must be able to access and view average evaluation scores for faculty members. That allows me to assess the teaching effectiveness of the faculty within the institution.
3. As a user I must be able to track the trends in teaching effectiveness scores over time to evaluate the overall progress and effectiveness of the faculty members.
4. As a user, I want to track and analyze the number of publications and research outputs per faculty member, so that I can assess their productivity and contributions to the academic community
5. As a user, I must be able to measure the citations and impact of faculty research, as this will help me evaluate the quality and influence of their work.



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6. As a user, I must be able to monitor the success rate of faculty members in securing research grants and funding, as this will indicate their ability to attract external resources and support for their projects.
7. As a user, I must be able to track and monitor the attendance and participation of faculty members in workshops, seminars, and training programs. This will allow me to gather valuable feedback from faculty on the effectiveness and relevance of these professional development activities.
8. As a user, I must be able to view faculty members performances within the university and determine if the requirements for merit awards and promotions are met.
9. As a user, I must be able to determine the faculty members eligibility and suitability for promotion within the university.
10. As a user, I want to easily access and analyze information about faculty members attendance patterns and leave utilization. This will allow me to make informed decisions about their request and effectively manage approvals
11. As a user, I must be able evaluate the impact of faculty awards and recognition performance. This will enable me to identify patterns and trends in their performance and assess the effectiveness of these honors in promoting excellence in research and teaching.
12. As a user, I must be able to evaluate the workload balance and fairness among the faculty members. Ensuring that all faculty members assigned tasks are align with their expertise and abilities.
13. As a user, I want to track and evaluate the progress of faculty members in achieving their development plan objectives. By monitoring their advancements, I



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can assess the effectiveness of development initiatives in improving faculty performance.

14. As a user, I want to be able to access and view each faculty Basic details in the system.

15. As a user, I want to be able to access and view each faculty overall performance in the system.

16. As a user, I want the Dashboard to provide overall analytics per module/s in the system

17. As a user, I must be able to print everything contained in Evaluation module

18. As a user, I must be able to print everything contained in Research and Publication module

19. As a user, I must be able to download the Excel file containing the overall performance summary of a particular faculty.

Functional Requirements for Integration

The integration of the Faculty Performance System with the enterprise-level systems, specifically the Faculty Information System (FIS) and Research Information System (RIS), necessitates specific functional requirements to ensure seamless data exchange and system interoperability.

For the integration with the Faculty Information System (FIS), the functional requirements include ensuring real-time updates of faculty details, qualifications, and experience from FIS to FPS. Bi-directional data exchange capabilities are essential, enabling both retrieval of data from FIS to FPS and updates from FPS to FIS. Consistent data formatting standards must be implemented to maintain uniformity and integrity of shared faculty information. Secure authentication and authorization protocols are



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imperative to safeguard data transmission between the systems. Additionally, an error resolution mechanism is needed to promptly rectify any discrepancies in faculty information that may arise during data exchange processes.

Regarding integration with the Research Information System (RIS), the FPS requires real-time incorporation of research accomplishments from RIS into its database. Key research metrics from RIS need to be integrated into FPS's performance analysis module to enhance performance evaluation capabilities. Furthermore, features for visualizing research insights within FPS should be implemented to facilitate data-driven decision-making and comprehensive analysis of faculty research activities.

The integration of FPS with FIS and RIS will enable a robust, efficient, and cohesive ecosystem that supports faculty management, research tracking, and performance analysis across multiple platforms within the academic institution. This integration promotes data accuracy, transparency, and productivity, ultimately enhancing the overall effectiveness of the Faculty Performance System.

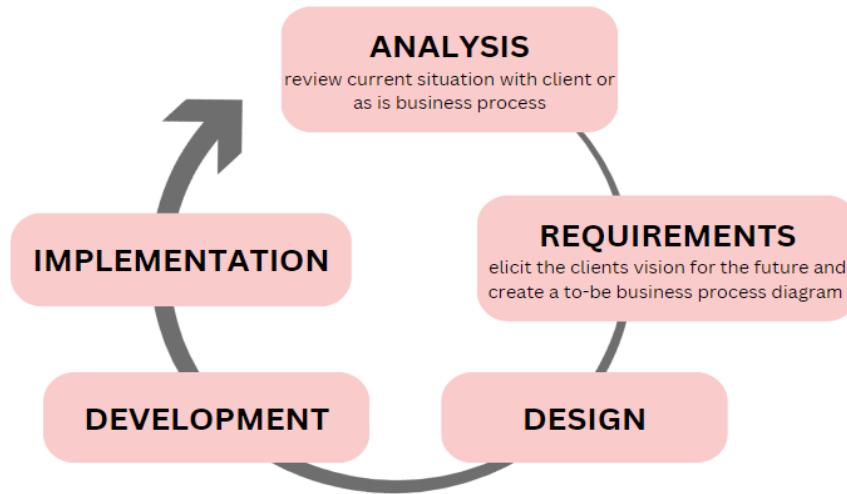


V. Business Process Architecture

Identification of Business Process

The identification of business processes is a foundational step in optimizing organizational efficiency and effectiveness. By examining existing workflows and operational activities, the team will gain insights into how tasks are performed.

Figure 2: **Identification of Business Process**



The analysis phase of the Faculty Performance System development involves a comprehensive review of the current situation with clients, assessing existing business processes within academic institutions. This stage focuses on understanding specific challenges, identifying pain points related to faculty performance evaluation, and gathering relevant information to inform the system's design and development.

Transitioning into the requirements phase, the team collaborates closely with stakeholders to elicit their vision for the future of faculty performance management. Creating a "to-be" business process diagram outlining the desired state of the system, capturing functional requirements such as performance metrics and reporting capabilities, as well as non-functional requirements including security and scalability.

In the design phase, the team translates the gathered requirements into a detailed solution design for the Faculty Performance System. This includes developing architectural diagrams, database schemas, and user interface designs that align with the system's objectives and stakeholder expectations.

During development, the team implements the designed solution by writing code, configuring databases, and integrating necessary features to support faculty performance

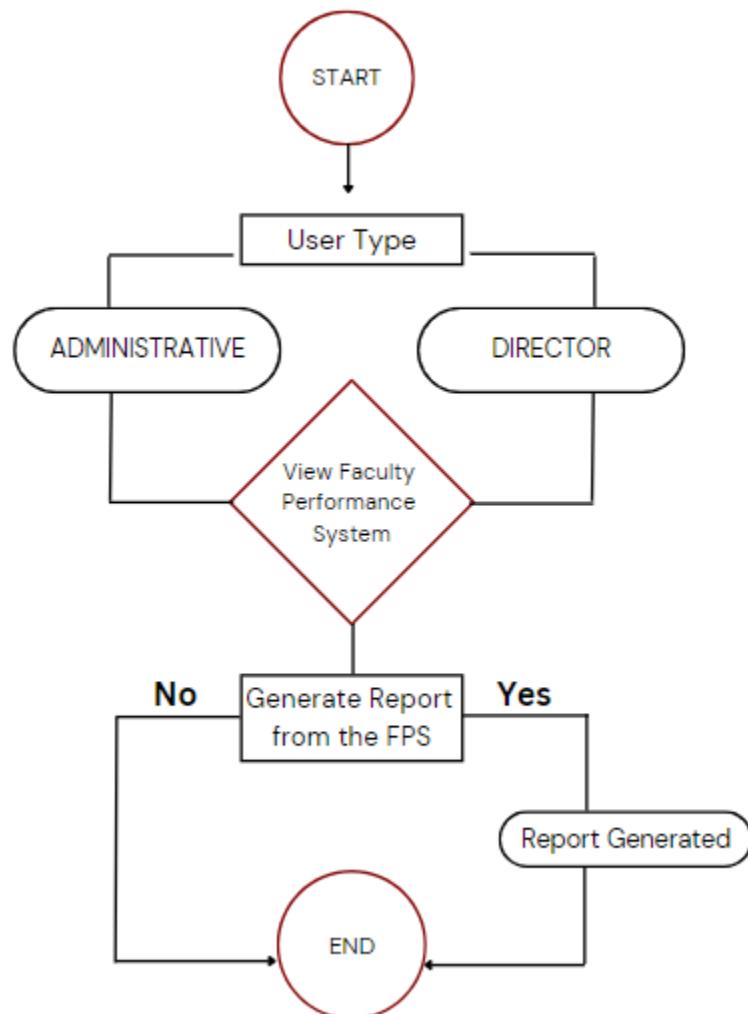


evaluation and analysis within academic settings. The iterative and continuous nature of this development process allows the team to refine and improve the Faculty Performance System as it evolves. Revisit earlier stages to incorporate feedback, address emerging needs, and ensure that the system meets the dynamic requirements of academic institutions.

Business Process Diagram

The business process diagram for Faculty Performance System is a visual representation of the steps and activities involved in achieving specific business goals or objectives. It captures the flow of tasks, decisions, and interactions between different stakeholders or systems involved in a process.

Figure 3: Faculty Performance System Business Process Diagram



This Business Process Diagram illustrates the steps for viewing and generating reports from the Faculty Performance System (FPS). The process begins with the user commencing the system and then identifying their user type. Only valid credentials can proceed to the FPS. Both user types have access to the system analytics. They have the ability to request or generate a report for a specific module within the system. After analyzing and processing data within the FPS, they can now conclude their session.



Alignment of Integrated System with Business Processes

The alignment of an integrated system with business processes involves a systematic approach to optimizing organizational efficiency and effectiveness. It begins with a thorough understanding of existing business processes related to faculty performance, information management, and research contributions, followed by detailed identification and documentation. Integration planning focuses on assessing how integrated systems like the Faculty Information System (FIS) and Research Information System (RIS) can enhance current business processes, emphasizing the identification and bridging of any existing gaps in integration. Customization and configuration of the integrated system are then tailored to precisely align with specific business process needs, ensuring seamless operation and functionality. Active user involvement in the integration process, accompanied by comprehensive training programs, guarantees proficient use of the integrated system by end-users. Data consistency and integrity are prioritized, ensuring uninterrupted data flow between integrated systems and maintaining consistency in data representation throughout the integration process. Real-time updates and monitoring tools are implemented to enable continuous alignment and synchronization of integrated processes. Furthermore, strict adherence to regulatory compliance and robust security measures safeguard sensitive data throughout the integration process, ensuring compliance and data protection. This holistic approach ensures that the integrated system optimally supports and enhances critical business processes within the organization.

Business Process Improvements

Implemented within the Faculty Performance System (FPS), significant business process improvements have been realized. Thorough analysis and mapping of existing processes have streamlined workflows, eliminating inefficiencies and bottlenecks.



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Automation and technology integration have been successfully deployed, reducing manual interventions and accelerating processes. Leveraging data for decision-making is now a reality, with integrated systems providing seamless data flow and analytics tools offering valuable insights. The FPS now embraces customer-centric approaches, enhancing the overall experience and satisfaction of users. Cross-functional collaboration has been fostered, breaking down silos and improving communication channels.

Continuous monitoring, feedback loops, and agile methodologies have facilitated adaptability to changing needs. Quality assurance measures and standardized processes ensure accuracy and consistency in performance evaluations. Risk management strategies are in place, ensuring business continuity. The FPS has nurtured a culture of innovation, recognizing and empowering employees to contribute ideas for ongoing improvements. Regular evaluations and refinements solidify the FPS's alignment with evolving business objectives, contributing to sustained efficiency and effectiveness.



VI. Application Architecture

Components of Application Architecture

The application architecture for Faculty Performance System is a complex yet cohesive structure consisting of several key components distributed across various layers and modules, these are:

The User Interface (UI) Layer features a Dashboard for faculty members to intuitively access and visualize performance metrics, a Reports Module for generating detailed reports, and Profile Management for updating personal information. The Data Layer houses a Database managing faculty-related data, and Data Processing mechanisms for cleaning and aggregating information. The Integration Layer employs APIs for communication between modules and third-party integrations for external data sources. The Security Layer ensures secure access through authentication and authorization, data encryption, and access controls. The Infrastructure Layer involves servers, database servers, and networking components. Monitoring and Logging include a logging system and tools for performance tracking.

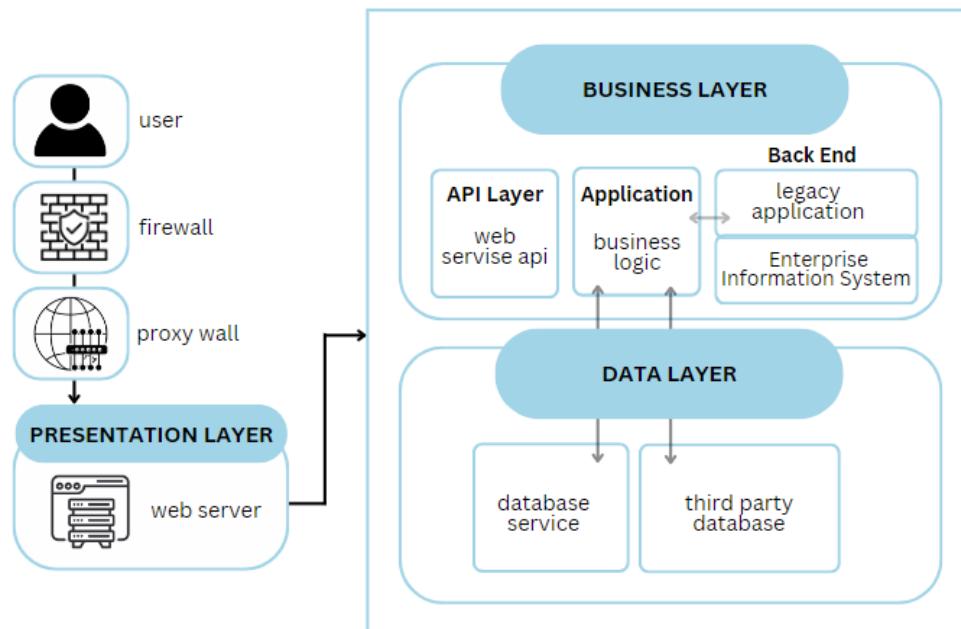
Scalability and Performance Optimization leverage load balancers and caching mechanisms to ensure efficient resource allocation and response times. DevOps practices, integrated with CI/CD tools, oversee version control, automated deployment pipelines, and continuous testing environments, streamlining the software development lifecycle. This cohesive approach not only enhances agility and reliability but also facilitates rapid iteration and feedback incorporation. Furthermore, a well-maintained Documentation and Knowledge Base, housing extensive documentation, acts as a vital

resource hub. Together, these components create a resilient architecture that delivers dependable functionality, robust security, and scalable solutions tailored precisely to the unique requirements and preferences of the PUPQC.

Application Architecture Diagram

Illustrates the structure and components of a software application, depicting how different modules and services interact within the system.

Figure 4: Application Architecture Diagram

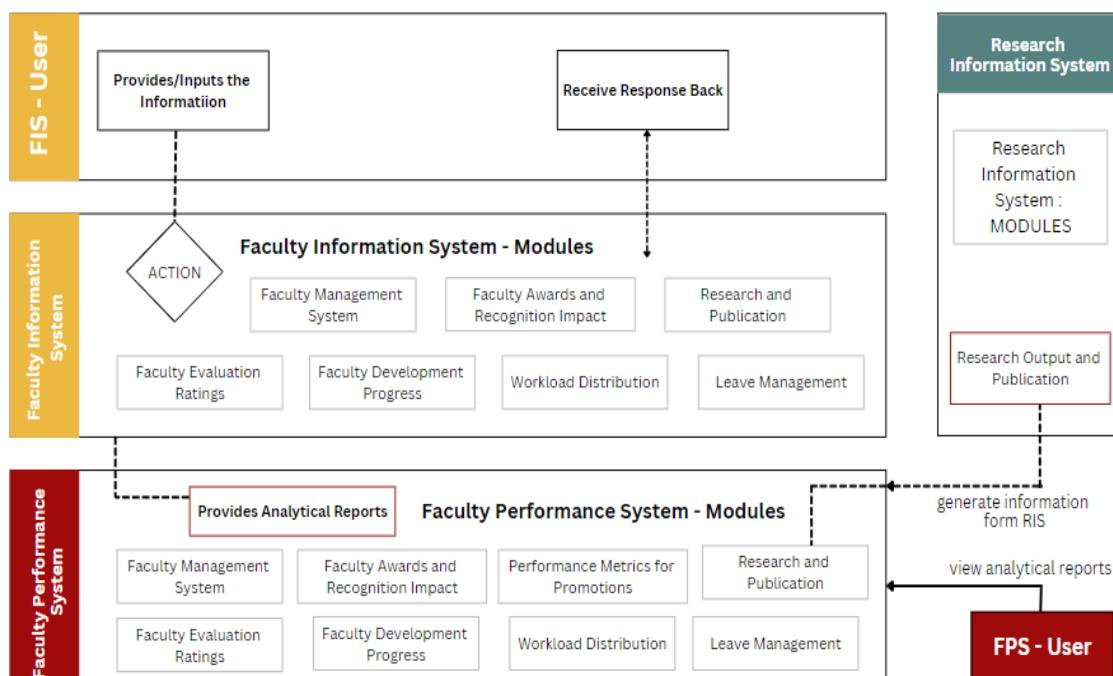


The architecture describes the flow from the user to the data layer. The user interacts with the presentation layer, which is secured by firewalls and hosted on a web server. The presentation layer communicates with the business layer, which hosts applications and backend processes and, in turn, interacts with the data layer to provide database and third-party services.

Integration of Software Modules

The process of combining individual software components or modules to work together as a unified system. This integration involves connecting different modules, services, or applications to enable data exchange, communication, and seamless operation across the entire software ecosystem.

Figure 5: **Integration of Software Modules**



The figure depicts the integration of software modules, the Faculty Information System (FIS) is a centralized platform that manages faculty-related information. FIS provides a variety of modules that allow Faculty Users to input details into specific modules within the system. On the other hand, the FPS can only generate data contained in the FIS. Allowing the FPS to acquire analytical reports on faculty performance within PUPQC. The FPS also generates data from the Research Information System (RIS) specifically for the Research and Publication Module.



Communication and Interaction Patterns

The Faculty Performance System generates data from both the Faculty Information System (FIS) and Research Information System (RIS). The Faculty Information System serves as a hub for managing faculty-related data. This one-way data flow from FIS to FPS establishes expectations and interaction patterns that shape relationship types. And for RIS, it does provide information related to Research Output and Publication for FPS and FIS, suggesting that faculty performance metrics inform research endeavors.



VII. Data Architecture

Data Sources and Types

The data sources for the Faculty Performance System (FPS) are diverse and encompass various aspects of faculty activities. The Faculty Performance System (FPS) draws data from an array of sources to comprehensively assess faculty activities. Together, these modules enable FPS to offer a holistic view, and administrative facets for a thorough faculty performance evaluation. These sources include:

Faculty Information System;

- Teaching Effectiveness Module
- Progress Monitoring Module
- Professional Development Module
- Attendance and Leave Analytics Module
- Faculty Awards Recognition Module
- Retention and Exit Insights Module
- Merit and Promotion Progress Module
- Feedback and Communication Module
- Merits Awards and Promotion Module
- Workload Allocation and Workload Balance Module
- Faculty Profile Management Module

Research Information System;

- Research Productivity Module



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**Table 16
Data Types and Dictionary**

Faculty Profile				
Column Name	Data Type	Data Format	Field Size	Description
Faculty ID	text/string	NNNNNN	6	Unique ID for Faculty
First Name	text/string		20	First Name of Faculty
Last Name	text/string		20	Last Name of Faculty
Address	text/string		50	Address of Faculty
Phone Number	text/string		11	Phone Number of Faculty
Birthdate	Date/Time	MM/DD/Y YYY	10	Birthdate of Faculty
Highest Qualification Attained	text/string		20	Highest Academic Degree Achieved by the Faculty Member
Field of Study/Subject	text/string		20	Academic Discipline in which the Faculty Member's Highest Degree was Earned
Name of Degree-Granting Institution	text/string		20	Name of the University or Institution where the Faculty Member obtained their Highest Degree
Employee ID	text/string	NNNNNN	6	Unique ID for Employee
Department/Unit	text/string		20	Department/Unit of an Employee
Job Title/Rank	text/string		20	Job Title/Rank of an Employee
Date of Joining	Date/Time	MM/DD/Y YYY	10	Date of Joining of an Employee
Employment Status	text/string		20	Employment Status of an Employee
teach_eval_id	text/string	NNNNNN	6	Unique ID for teaching evaluation
Student Feedback	text/long text		50	Comments and feedback provided by students regarding the faculty member's teaching methods, course organization, communication, and overall effectiveness.
Teaching Strategies and Innovations	text/long text		50	Information about unique teaching methods, innovative approaches, technology integration, or active learning strategies employed by the faculty member.
Adherence to Syllabus and Objectives	text/long text		50	Evaluation of how well the faculty member adheres to the course syllabus, learning objectives, and instructional outcomes. Student Engagement:
Student Engagement	text/long text		50	Assessment of the faculty member's ability to engage students in the learning process, encourage participation, and create an interactive classroom environment.
Assessment and Grading	text/long text		50	Feedback on the faculty member's methods of assessment, fairness in grading, and timely feedback provided to



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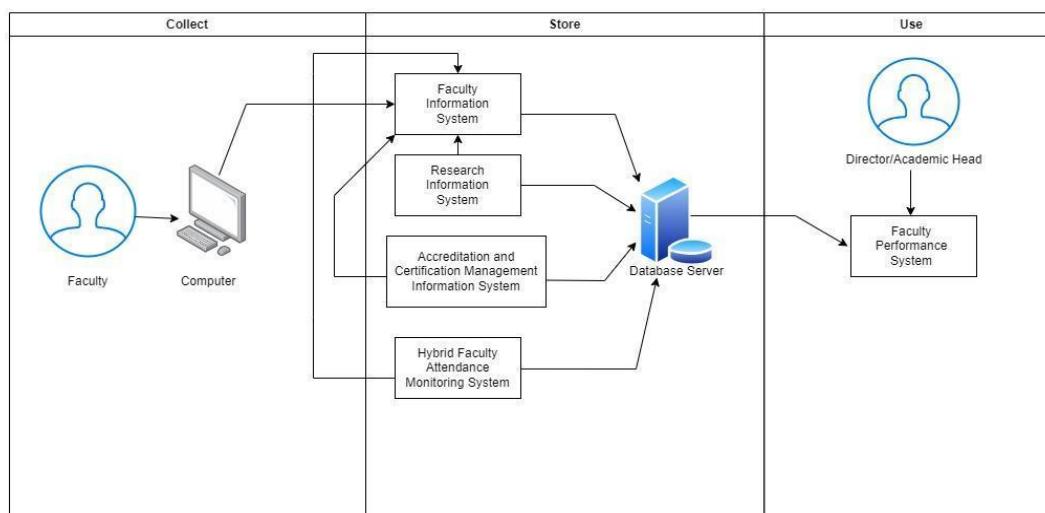
				students.
Inclusivity and Diversity	text/long text		50	Evaluation of how well the faculty member fosters an inclusive and diverse learning environment, accommodating students with different backgrounds and perspectives.
Improvement Plans	text/long text		50	Plans developed by the faculty member based on feedback received, outlining specific steps to enhance their teaching methods and address identified areas for improvement.
Evidence of Student Learning	text/long text		50	Documentation of how the faculty member's teaching has contributed to student learning outcomes, including examples of student work and achievements.
pro_devtrain_id	text/string	NNNNNN	6	Unique ID for Professional Development Training
Workshops and Seminars Attended	text/long text		50	Information about workshops, seminars, and training sessions the faculty member has attended.
Conferences Attended/Presented	text/long text		50	Details about conferences the faculty member has attended or presented at, including conference name, date, location, presentation title, and any associated materials.
Training Certifications	text/long text		50	Information about certifications and training programs completed by the faculty member, including certification name, issuing organization, date of completion, and any associated credentials.
research_pub_id	text/string	NNNNNN	6	Unique ID for research evaluation
Research Interests	text/long text		50	A description of the faculty member's research interests, areas of focus, and expertise.
Published Papers	text/long text		50	Information about each published paper, including title, journal/conference, publication date, and co-authors
Funded Research Projects	text/long text		50	Information about funded research projects, including project title, funding agency, grant amount, project duration, and collaborators.
Citations and Impact Metrics	Numeric/Integer		20	Metrics indicating the number of times the faculty member's research papers have been cited, h-index, and other impact indicators.
Research Awards and Recognitions	text/long text		50	Record of any awards, honors, or recognition received for the faculty member's research contributions.



Data Flow Diagram

A graphical representation of how data flows through a system, illustrating processes, data stores, data sources/destinations, and the flow of data between them. It provides a clear and structured overview of the system's data inputs, processes, and outputs, making it a valuable tool for analyzing and designing information systems.

Figure 7: Data Flow Diagram



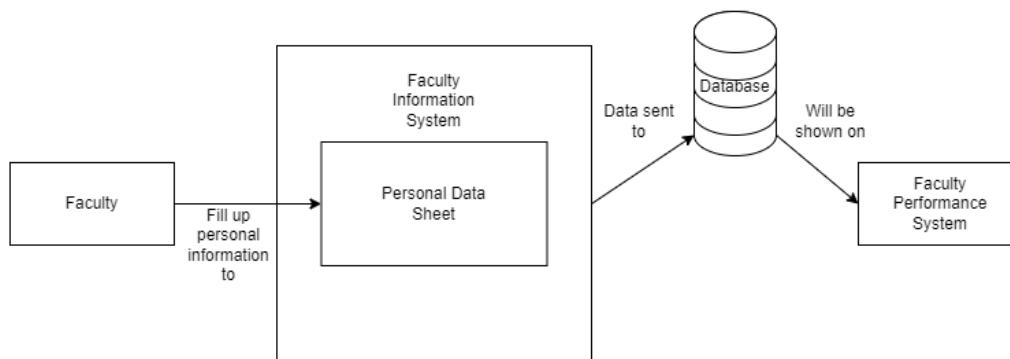
In the collection process depicted in the diagram, faculty data inputted via computers, along with information from the Research Information System, Accreditation and Certification Management Information System, and Hybrid Faculty Attendance Monitoring System, was transmitted to the Faculty Information System. This transfer was facilitated because certain modules required specific data. Subsequently, the collected data was stored on a database server within the Faculty Information System. Following storage, the data was forwarded to the Faculty Performance System for utilization, accessible by the university branch's director or academic head.



Data Storage and Management

Data storage and management encompass the processes and technologies involved in storing, organizing, securing, and accessing data efficiently within an organization. This discipline is crucial for ensuring data integrity, availability, and usability throughout its lifecycle.

Figure 8: Data Storage and Management Process



The comprehensive flowchart depicting the data transformation and mapping process within the Faculty Information System encapsulates several crucial stages in managing a faculty member's personal information. It commences with the faculty member entering their details into a Personal Data Sheet via the system, serving as the primary point of data input. The subsequent seamless transfer of this information to a secure Database establishes a robust foundation for organized and secure storage. The Database acts as a repository for the faculty member's personal data. The Faculty Performance System not only functions as an interface for authorized users to retrieve and view the information but also ensures stringent access controls, safeguarding the privacy of the stored data. The inclusion of data integrity and quality checks throughout

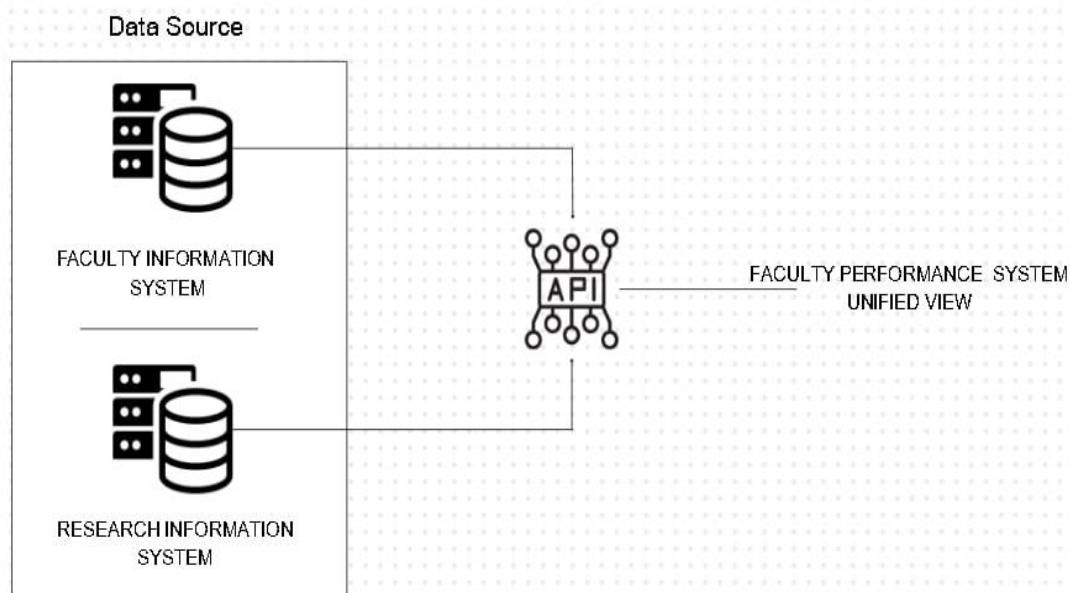


the process underscores the commitment to maintaining accurate and complete information. As part of this meticulous process, the system facilitates updates and modifications, allowing for the dynamic nature of faculty information and ensuring its relevance over time. This holistic approach ensures a systematic, secure, and adaptable journey for faculty personal information, reflecting the commitment to data accuracy, security, and accessibility within institutional systems.

Data Synchronization Across Systems

The process of ensuring that data remains consistent and up-to-date across multiple interconnected systems or databases. This synchronization is essential for maintaining data integrity, enabling accurate reporting, and supporting real-time decision-making across an organization.

Figure 9: **Data Synchronization**





Alignment of Integrated System with Business Processes

The alignment of an integrated system with business processes involves a systematic approach to optimizing organizational efficiency and effectiveness. It begins with a thorough understanding of existing business processes related to faculty performance, information management, and research contributions, followed by detailed identification and documentation. Integration planning focuses on assessing how integrated systems like the Faculty Information System (FIS) and Research Information System (RIS) can enhance current business processes, emphasizing the identification and bridging of any existing gaps in integration. Customization and configuration of the integrated system are then tailored to precisely align with specific business process needs, ensuring seamless operation and functionality. Active user involvement in the integration process, accompanied by comprehensive training programs, guarantees proficient use of the integrated system by end-users. Data consistency and integrity are prioritized, ensuring uninterrupted data flow between integrated systems and maintaining consistency in data representation throughout the integration process. Real-time updates and monitoring tools are implemented to enable continuous alignment and synchronization of integrated processes. Furthermore, strict adherence to regulatory compliance and robust security measures safeguard sensitive data throughout the integration process, ensuring compliance and data protection. This holistic approach ensures that the integrated system optimally supports and enhances critical business processes within the organization.

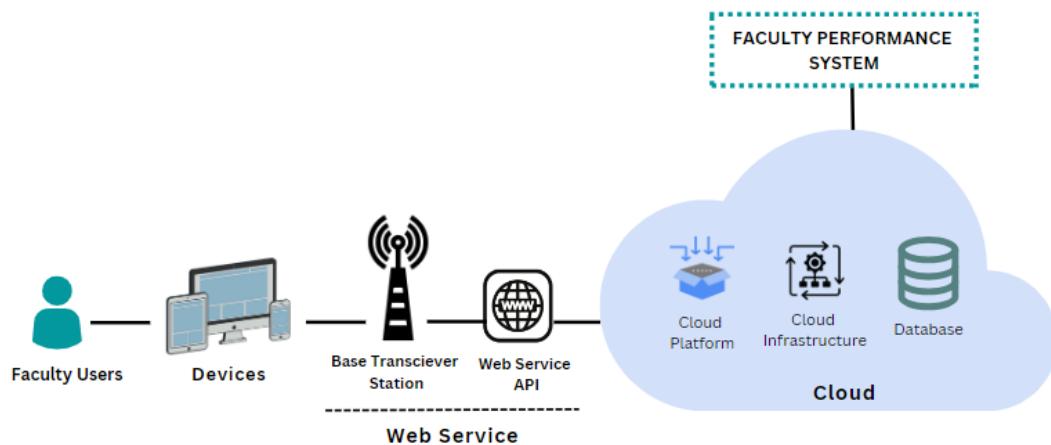


VIII. Technology Architecture

Technology Stack and Infrastructure

The combination of software, hardware, programming languages, frameworks, and tools used to build and operate a software application or system. This stack defines the foundational components and architecture upon which an application is developed, deployed, and maintained.

Figure 11: Technology Architecture



Faculty Users: These are the individuals who interact with the system. They use devices (such as computers or mobile devices) to access the Faculty Performance System. Devices: Represented by computer screens, these devices are used by faculty members to input data, view reports, and perform other tasks related to their performance. Base Transceiver Station (BTS): The BTS acts as an intermediary between the devices used by faculty members and the cloud platform. It facilitates communication and data



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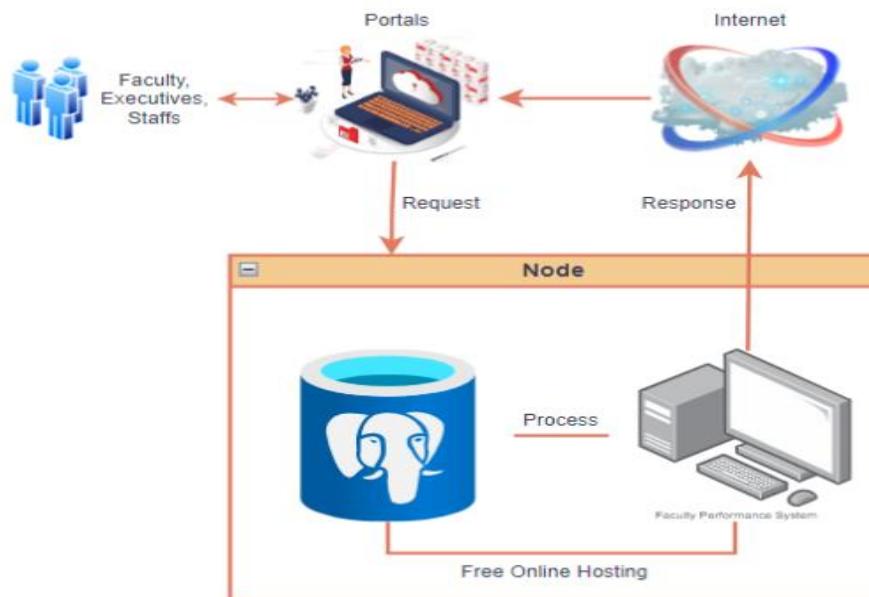
exchange. Web Service API: The Web Service API connects the BTS to the cloud. It allows data to flow between the faculty devices and the cloud infrastructure. Cloud Platform: Cloud Infrastructure: This part of the cloud includes servers, storage, and networking components. It provides the necessary resources for running the Faculty Performance System. Database: The database within the cloud stores faculty-related data, performance metrics, and other relevant information. Faculty Performance System: The entire architecture supports the Faculty Performance System. It enables faculty members to track their performance, access relevant data, and contribute to the overall educational process.

Network Topology and Configuration

The network configuration for accessing the Faculty Performance System is managed through the centralized portal, MyPUPQC, streamlining accessibility and administration. Within this all-in-one platform, users can seamlessly navigate to the Faculty Performance System, ensuring efficient and unified access. Moreover, the system employs a token-based authentication mechanism for logging in and out of the website, enhancing security measures and safeguarding user credentials. This approach not only simplifies user authentication but also reinforces data protection protocols within the network infrastructure.



Figure 12: High Level Architecture



Software Technologies

System Architecture:

Web Application Framework:

Django

Backend Server Technology:

Node.js

Flask

Database Management System: PostgreSQL

Frontend Technologies:

react typescript

react

bootstrap 5

Ajax



Hosting Environment: Github

Security Measures:

SSL/TLS Configuration:

The application encrypts data transmission using SSL/TLS.

Authentication and Authorization:

Password and username authentication is used to accomplish user authentication.

Access is managed by authorization systems according to user classifications and permissions.

Scalability and Performance Considerations

In designing the Faculty Performance System (FPS), prioritizing scalability and performance is critical. The team employs a scalable database system, utilizes caching mechanisms, and distributes network traffic through load balancing. Design the architecture for horizontal scaling, implement asynchronous processing, and leverage content delivery networks (CDN) for efficient content delivery. Optimize frontend code, monitor system performance, and employ scalable architecture patterns like microservices. Prioritize data compression, security measures, and continuous optimization for an FPS that can handle increased loads, provide a responsive user experience, and adapt to evolving requirements effectively. Regular monitoring and testing are key to maintaining optimal performance over time.



IX. Development Process

Agile Scrum Roles and Responsibilities

The success of the Capstone Project - Faculty Performance System relies on the collaborative efforts of key roles. The Product Owner acts as a crucial liaison, prioritizing features aligned with organizational goals. The Scrum Master/Project Manager oversees agile development, ensuring adherence to processes and eliminating obstacles for the development team. The Development Team actively engages in system development in collaboration with the Product Owner. The Quality Assurance Analyst ensures product quality through comprehensive testing. The Business Analyst plays a pivotal role in understanding the business needs and translating them into actionable requirements. It bridges the gap between business stakeholders and the development team, providing valuable insights to shape the product's direction. The Documentation Specialist ensures that all aspects of the Faculty Performance System are well-documented, facilitating a clear understanding for stakeholders and providing a valuable resource for future maintenance and improvements.

Sprint Planning and Backlog Management

In the context of the completed Capstone Project - Faculty Performance System, Sprint Planning and Backlog Management were integral components of the Agile Scrum methodology adopted. Sprint Planning sessions involved collaborative efforts to outline specific tasks, prioritize features, and allocate resources efficiently. The team, having successfully developed the system, utilized Backlog Management to organize and prioritize potential enhancements and future features. This ongoing process facilitated continuous improvement and ensured that any post-launch developments aligned with the



project's objectives and evolving institutional needs. The systematic approach to Sprint Planning and Backlog Management served as a structured framework for maintaining the system's relevance and adaptability in the post-implementation phase.

Sprint Execution and Deliverables

In the post-implementation phase of the Faculty Performance System capstone project, Sprint Execution and Deliverables continued to play a crucial role. The Agile Scrum methodology facilitated the systematic execution of planned tasks and the delivery of incremental improvements. Sprint Execution involved collaborative development efforts, with the team building on the existing system to incorporate enhancements and address any identified areas for refinement. Each sprint yielded deliverables, representing tangible outcomes such as feature enhancements, system optimizations, or new functionalities. This iterative process ensured a continuous cycle of development, testing, and delivery, contributing to the system's ongoing evolution and the sustained satisfaction of end-users. The well-structured Sprint Execution and Deliverables management remained a cornerstone of the project's post-implementation success, maintaining a balance between stability and adaptability in response to emerging needs.

Challenges Faced in the Development Process

1. Scope Creep - The team encountered uncontrolled changes and additions to the project scope during development. This led to unexpected timeline delays, resource overruns, and a deviation from the project's original objectives.
2. Resource Allocation - Struggling to balance workloads and skill sets among team members. Uneven allocation resulted in instances of burnout, decreased productivity, and potential delays in task completion.



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3. Communication - Challenges in ensuring effective communication among team members and stakeholders. Misunderstandings occurred, causing delays, rework, and a potential shift away from project goals.
4. Adaptability - Difficulty responding to changes in requirements or unforeseen challenges. Inflexibility created obstacles in accommodating changes, potentially affecting the project's success.
5. Integration Issues - Struggling to ensure seamless integration of different components. Poorly integrated components resulted in system malfunctions, requiring additional time and effort to resolve.
6. Continuous Improvement - Challenges in identifying and implementing improvements in the development process. Limited focus on continuous improvement hindered the team's ability to address inefficiencies and enhance productivity.
7. Stakeholder Expectations - Difficulty in managing and meeting stakeholder expectations. Misalignment with stakeholder expectations resulted in dissatisfaction and hindered successful project outcomes.
8. Team Collaboration - Struggling with effective collaboration and communication within the development team. Poor collaboration led to misunderstandings, reduced efficiency, and hindered creativity.
9. Risk Management - Challenges in identifying and mitigating potential risks throughout the development process. Inadequate risk management resulted in unforeseen issues impacting project timelines and success.

In response to these challenges, the team has initiated measures to enhance communication, refine resource allocation strategies, and implement more effective risk



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management practices. Ongoing efforts are focused on promoting adaptability, continuous improvement, and a proactive approach to addressing these hurdles.

X. Implementation

Technical Implementation Details

System Architecture:

Web Application Framework: Django



Backend Server Technology: Node.js and Flask

Database Management System: PostgreSQL

Frontend Technologies:

- react typescript
- react
- bootstrap 5
- Ajax

Tools and Technologies Used

Hosting Environment: Github

Security Measures:

- SSL/TLS Configuration:
- The application encrypts data transmission using SSL/TLS.

Authentication and Authorization:

- Password and username authentication is used to accomplish user authentication.
- Access is managed by authorization systems according to user classifications and permissions.

Testing Methodologies:

- The quality assurance of the team will conduct Performance Testing, Cross-Browser Testing, and Security Testing

Test Data:

- Test case 1:

Username: admin@pup.edu.ph

Password: Admin123Admin123



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- Test Results and Validation: Test findings are recorded and verified in relation to predetermined standards.

Test Data:

- Test case 2:
 - Username: admin@pup.edu.ph
 - Password: Admin123Admin123
- Test Results and Validation: Test findings are recorded and verified in relation to predetermined standards.

Code Integration and Interoperability

GitHub serves as the main version control system (VCS) for the Faculty Performance System, offering a productive environment for teamwork in the development of software and version control. The Git framework-based distributed version control features of GitHub enable development teams to collaborate easily. GitHub hosts the primary code repository, which functions as the main center for source code maintenance. Following the popular Gitflow model, the selected branching strategy divides production into feature branches to facilitate concurrent work on various features and fixing bugs. Before being included into the main branch, code changes are put through a methodical review process using GitHub's pull requests mechanism, which guarantees the quality of the code and compliance to coding standards. This collaborative process aids in the effective creation, versions, and ongoing upkeep of the system, especially when combined with GitHub's powerful version control features.



Integration Testing and Compatibility

The Faculty Performance System project incorporates key testing strategies to ensure the robustness and quality of the web application. Performance testing is conducted to rigorously evaluate the website's speed, responsiveness, and overall performance. This includes assessing its capacity to handle expected heavy loads, particularly crucial given its deployment on the internet, ensuring optimal performance under various circumstances. Cross-browser testing is diligently executed to verify seamless operation across diverse browser versions and configurations. The testing process encompasses popular browsers such as Internet Explorer, Firefox, Safari, Chrome, and Edge, guaranteeing a consistent user experience. Additionally, security testing is implemented to fortify the system against unauthorized access, information breaches, and potential security threats. This includes a focus on identifying and rectifying vulnerabilities, especially in user authentication and authorization procedures.

The extensive testing that was done in Faculty Performance System - Integration and Compatibility Testing produced results that were positive, proving the integrated systems' efficacy. The Faculty Information System and Research Information System have displayed through extensive testing methods that include functionality assessments and data quality checks that they are capable of smoothly transferring exact data.

The Faculty Performance System now examines accurate information more quickly from the successful integration, also streamlines administrative procedures and improves stakeholders' ability to make decisions. These systems' resilience guarantees dependable performance, which makes operations easier and promotes more openness within the Polytechnic University of the Philippines - Quezon City Branch.



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XI. Testing and Quality Assurance

Testing Strategies and Methodologies

The key testing strategies employed in this project include:

Performance Testing, to evaluate the website's speed, responsiveness, and overall performance, the quality assurance personnel subjected it to rigorous performance testing. This strategy allowed the team to gauge its ability to handle expected heavy loads, especially considering its deployment on the internet, ensuring optimal performance under varying circumstances.

Cross Browser Testing, rigorous cross-browser testing has been executed to verify the seamless operation of the web application across diverse browser versions and configurations. This encompassed testing on widely used browsers, including Internet Explorer, Firefox, Safari, Chrome, and Edge, to guarantee a consistent user experience.

Security Testing has been implemented to fortify the system against unauthorized access, information breaches, and other potential security threats. The testing process focuses on identifying and rectifying vulnerabilities and flaws in the software system, with particular attention to the reliability of user authentication and authorization procedures.

The meticulous application of these testing strategies throughout the development lifecycle has significantly contributed to the reliability, functionality, and user satisfaction of the Faculty Performance System.

<https://docs.google.com/spreadsheets/d/12IPY1OLhU0FfXYZ6jShblt6Zpeo3Z2P-4TddeaRvxKY/edit?usp=sharing>



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Test Cases and Test Data

Figure 13: FPS - Login Test Case

Backing Link										
Backing Title: FPS - LOGIN										
Created By: CANTUJA, MIGUEL ANGEL										
Date Created: 2/13/2024										
#	Function	Summary	Test Description		Condition/Input Data	Expected Result	Test #1 Date of Execution: 2/13/2024		Test #2 Date of Execution: 2/19/2024	
Actual Output		Result	Notes		Actual Output		Result		Notes	
FPS-1-1	Link redirect	Check if the user is redirected to the FPS login page.	1. Go to preferred browser		https://pupge-fps.onrender.com/login		The link successfully redirected to the FPS log in page.		The link successfully redirected to the FPS log in page.	
			2. Enter Faculty Performance System Link							
			3. Check if the link redirects to the log in page.				It was redirected to the log-in page of FPS.			
FPS-1-2	Display	Check if the display on the login page is correct.	1. Check if there is a logo that displays: FPS logo and logo icon.				It displays the logos, names, input fields, and the button for signing in.		The system successfully displays the output needed by the system.	
			2. Check if there is a name of the system "Faculty Performance System" of "University of the Philippines, Quezon City Faculty Performance System".							
			3. Check if there is an email address input field, password input field, password input field, and sign in button (red color).							
FPS-1-3	Validation	Check if it will display a validation message if there is no input of data.	1. No input of email address and password.		email address: password:		It will display an icon of a red exclamation point(!).		The system successfully displays the output needed by the system.	
			2. Click "Sign in" button.							
			3. Check if there will be an icon that displays a red exclamation point (!).							
FPS-1-4	Validation	Check if it will display a validation message if there is invalid input of data.	1. Input invalid data for both email and password.		email address: asdasdasdasdasd password: asdasdasdasdasd		It will display an icon in the email address input field and password input field that displays a red exclamation point (!) and an error message.		The system successfully displays the output needed by the system.	
			2. Click "Sign in" button.							
			3. Check if there will be an icon that displays a red exclamation point (!) and an error message.							
FPS-1-5	Validation	Check if it will display a validation message if there is invalid input of email address.	1. Input invalid data for email address.		email address: aaaaaaaaaaaaaa password: as123aaaaaaewew		It will display an icon in the email address input field that displays a red exclamation point (!) and an error message. This webmail is invalid.		The system successfully displays the output needed by the system.	
			2. Click "Sign in" button.							
			3. Check if there will be an icon that displays a red exclamation point (!) and an error message.							
FPS-1-6	Validation	Check if it will display a validation message if there is invalid input of password.	1. Input invalid data for password.		email address: admin@pup.edu.ph password: asdasdasdasdasd		It will display an icon in the password input field that displays a red exclamation point (!) and an error message.		The system successfully displays the output needed by the system.	
			2. Click "Sign in" button.							
			3. Check if there will be an icon that displays a red exclamation point (!) and an error message.							
FPS-1-7	Redirection	Check if the user will successfully log in.	1. Input the correct small address and password.		email address: admin@pup.edu.ph password: Admin123Admin123		The user was successfully log in to the FPS system.		The user was successfully log in to the FPS system.	
			2. Click "Sign in" button.							
			3. Check if it will sign in successfully.							

Figure 14: FPS - Dashboard Test Case

Backlog Link:	FPS - DASHBOARD								
Backlog Title:	CANTUJA, MIGUEL ANGEL								
Created By:									
Date Created:	2/13/2024								
Test Description						Test #1 Date of Execution: 2/19/2024	Test #2 Date of Execution: 2/19/2024		
#	Function	Summary	Process	Condition/Input Data	Expected Result	Actual Output	Result	Actual Output	
FPS - 2 - 1	Display	Check if the logged-in account is in the correct profile.	1. Check the profile page to see if the same data is saved in the database.		The login user is the same as the data saved in the database.	The system successfully displays the output needed by the system.	Passed	The link successfully redirected to the FPS log in page.	
FPS - 2 - 2	Display	Check if the contents of the graph on the dashboard show accurate data from each module.	1. Click the "view all" hyperlink in the right upper corner of each module. 2. Check the contents of each graphs are accurate and correct.		If displays accurate data from each module.	The system successfully displays the output needed by the system.	Passed		
FPS - 2 - 3	Button Navigation	Check if the "red" navigation up button is working.	1. Scroll down the webpage. 2. Click the "red" navigation up button to scroll up. 3. Check if, after clicking the navigation button, it goes up.		It scrolls up into the upper part of the webpage.	The system successfully displays the output needed by the system.	Passed	The system successfully displays the output needed by the system.	
FPS - 2 - 4	Top Navigation Bar	Check if the top navigation bar is working after clicking the specific module.	1. Click a module in the top navigation bar. 2. Check if, after clicking a module, it redirects to the desired module.		If redirects to the page of a specific module that was clicked by the user.	The system successfully displays the output needed by the system.	Passed	The system successfully displays the output needed by the system.	
FPS - 2 - 5	Cursor Navigation	Observe if navigating the cursor to a certain graph, a small pop-up window will show up to view the specific data of the pointed area of the graph.	1. Point the cursor to a part of graph available in the webpage. 2. Check if it displays the small pop-up window that contains details about the pointed part of the graph.		If displays a small pop-up window that shows details of parts of the graph.	It displays correct output.	Passed	The system successfully displays the output needed by the system.	



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Figure 15: FPS - Evaluation Test Case

Backlog Link:		Backlog Title: FPS - EVALUATIONS		Test Description		Test #1 Date of Execution: 2/14/2024		Test #2 Date of Execution: 2/19/2024	
#	Function	Summary	Process	Condition/Input Data	Expected Result	Actual Output	Result	Actual Output	Result
FPS - 3 - 1	Display	Check if the elements in the webpage are correct and show accurate data, indicating that there is no misspelling of names or inconsistency shown in the module.	1. Look carefully at each name and number shown on the webpage.		It displays accurate and correct data.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 2	Drop-down display	Check if it displays the specific year of data chosen by the user for the graph of "Faculty Evaluation Average Ratings."	1. Click the drop down list. 2. Choose and click the year you desire. 3. Check if the desired year appears according to the graph.		It displays accurate year and correct data.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 3	Drop-down display	Check if it displays the specific year of data chosen by the user for the graph of "Trends in Teaching Effectiveness Over Time".	1. Click the drop down list. 2. Choose and click the year you desire. 3. Check if the desired year appears according to the graph.		It displays accurate year and correct data.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 4	Display	Check if it displays a pop-up window that shows the table of faculty members and their corresponding ratings.	1. Click the "eye" icon. 2. Check if a pop-up window appears on the screen that contains faculty members and each individual rating.		It displays a table that contains available data from the database and the ratings of each individual faculty member.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 5	Print	Check if it accurately prints the report for the faculty evaluation.	1. Click the "downward" green arrow button. 2. Click the "print" blue button. 3. Check if there will a pop-up window to print the overall evaluation report.		It displays pop-up window to prints the report (the whole webpage except the top navigation bar).	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 6	Cursor Navigation	Observe: If navigating the cursor to a certain graph, a small pop-up window will show up to view the specific data of the pointed area of the graph.	1. Point the cursor to a part of graph available in the webpage. 2. Check if it displays the small pop-up window that contains details about the pointed part of the graph.		It displays a small pop-up window that shows details of parts of the graph.	It displays correct output.	Passed	It displays correct output.	Passed

Figure 16: FPS - Individual Evaluation Test Case

Backlog Link:		Backlog Title: FPS - INDIVIDUAL EVALUATIONS (Pop-up window)		Test Description		Test #1 Date of Execution: 2/14/2024		Test #2 Date of Execution: 2/19/2024	
#	Function	Summary	Process	Condition/Input Data	Expected Result	Actual Output	Result	Actual Output	Result
FPS - 3 - 7	Display	Check if the elements in the webpage are correct and show accurate data, indicating that there is no misspelling of names or inconsistency shown in the module.	1. Look carefully at each name and number shown on the webpage.		It displays accurate and correct data.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 8	Setting the number of entries	Check if the number of entries was accurately set based on what the user wanted.	1. Click the dropdown list. 2. Choose from the 4 choices (10, 25, 50, 100 and so on). 3. Check if there are changes in the number of entries in the table.		It displays the accurate number of entries chosen by the user.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 9	Display	Check if the pagination buttons are working and if they display accurate and consistent data.	1. Choose what page of entries (1, 2, 3, 4...). 2. Click the button with the number corresponding to the page desired. 3. Check if there are changes in the table.		It displays the desired page.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 10	Column Sort	Check if the column sorting of each column is working properly and if it displays the highest value and the lowest value, and vice versa (A to Z, lowest number to highest number).	1. Click the upward arrow in the right upper corner of the cell. 2. Check if there are changes based on the column that was available in the table.		It displays the sorted last names of the faculty.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 11	Close Button	Check if the close button is working properly.	1. Click the close button. 2. Check if the pop-up window closes.		It closes the pop-up window.				
FPS - 3 - 12	Search	Check if searching for a non-existent input in the search input field shows an error message.	1. Click the search bar. 2. Type a random character (names, random letters, or numbers). 3. Check if there is an error message appears on the table.	123	It displays the message, "No matching records found".	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 13	Search	Check if searching for existing data displays it in the table.	1. Click the search bar. 2. Type a specific last name, first name, or anything that identifies the desired output.	Avena	It displays the searched faculty member or the faculty type that was available in the database.	It displays correct output.	Passed	It displays correct output.	Passed
FPS - 3 - 14	Clear Search	Check if clearing the search input is working properly.	1. Click the search bar. 2. Type a character (letter or number). 3. Click the "x" in the right corner of the search input field. 4. Check if it clears the input character.	qweqwe	It clears the input characters in the search bar.	It displays correct output.	Passed	It displays correct output.	Passed

Figure 17: FPS - Individual Research Test Case



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Test Description				Test #1 Date of Execution: 2/14/2024		Test #2 Date of Execution: 2/19/2024	
#	Function	Summary	Process	Condition/inp ut Data	Expected Result	Actual Output	Result
FPS - 4 - 1	Display	Check if the elements in the webpage are correct and show accurate data, indicating that there is no misspelling of names or inconsistency shown in the module.	1. Look carefully at each name and number shown on the webpage.		It displays accurate and correct data.	It displays correct output.	Passed
FPS - 4 - 2	Drop-down display	Check if it displays the specific year of data chosen by the user for the graph of "Average Rating Based Faculty Performance Development in Research Methodologies".	1. Click the drop down list. 2. Choose and click the year you desire. 3. Check if the desired year appears according to the graph.		It displays accurate year and correct data.	It displays correct output.	Passed
FPS - 4 - 3	Display	Check if it displays a pop-up window that shows the table of faculty members and their corresponding ratings.	1. Click the "eye" icon. 2. Check if a pop-up window appears on the screen that contains faculty members and each individual rating.		It displays a table that contains available data from the database and the ratings of each individual faculty member.	It displays correct output.	Passed
FPS - 4 - 4	Print	Check if it accurately prints the report for the faculty evaluation.	1. Click the "downward" green arrow button. 2. Click the "print" blue button. 3. Check if there will a pop-up window to print the overall evaluation report.		It displays pop-up window to prints the report (the whole webpage except the top navigation bar).	It displays correct output.	Passed
FPS - 4 - 5	Button Navigation	Check if the "red" navigation up button is working.	1. Scroll down the webpage. 2. Click the "red" navigation up button to scroll up. 3. Check if, after clicking the navigation button, it goes up.		It scrolls up into the upper part of the webpage.	The system successfully displays the output needed by the system.	Passed
FPS - 4 - 6	Cursor Navigation	Observe: If navigating the cursor to a certain graph, a small pop-up window will show up to view the specific data of the pointed area of the graph.	1. Point the cursor to a part of graph available in the webpage. 2. Check if it displays the small pop-up window that contains details about the pointed part of the graph.		It displays a small pop-up window that shows details of parts of the graph.	It displays correct output.	Passed

Figure 18: FPS - Individual Research Test Case

Test Description				Test #1 Date of Execution: 2/14/2024		Test #2 Date of Execution: 2/19/2024	
#	Function	Summary	Process	Condition/inp ut Data	Expected Result	Actual Output	Result
FPS - 4 - 7	Display	Check if the elements in the webpage are correct and show accurate data, indicating that there is no misspelling of names or inconsistency shown in the module.	1. Look carefully at each name and number shown on the webpage.		It displays accurate and correct data.	It displays correct output.	Passed
FPS - 4 - 8	Setting the number of entries	Check if the number of entries was accurately set based on what the user wanted.	1. Click the dropdown list. 2. Choose from the 4 choices (10, 25, 50, 100 and so on). 3. Check if there are changes in the number of entries in the table.		It displays the accurate number of entries chosen by the user.	It displays correct output.	Passed
FPS - 4 - 9	Display	Check if the pagination buttons are working and if they display accurate and consistent data.	1. Choose what page of entries (1, 2, 3, 4...). 2. Click the button with the number corresponding to the page desired.		It displays the desired page.	It displays correct output.	Passed
FPS - 4 - 10	Column Sort	Check if the column sorting of each column is working properly and if it displays the highest value and the lowest value, and vice versa (A to Z, lowest number to highest number).	1. Click the upward arrow in the right upper corner of the cell. 2. Check if there are changes based on the column sorting available in the table.		It displays the sorted last names of the faculty.	It displays correct output.	Passed
FPS - 4 - 11	Close Button	Check if the close button is working properly.	1. Click the close button. 2. Check if the pop-up window closes.		It closes the pop-up window.		
FPS - 4 - 12	Search	Check if searching for a non-existent input in the search input field shows an error message.	1. Click the search bar. 2. Type a random character (names, random letters, or numbers). 3. Check if there is an error message appears on the table.	123	It displays the message, "No matching records found".	It displays correct output.	Passed
FPS - 4 - 13	Search	Check if searching for existing data displays it in the table.	1. Click the search bar. 2. Type a specific last name, first name, or anything that identifies the desired output. 3. Check if the input character (letter or number) appears on the table.	Avena	It displays the searched faculty member or the faculty type that was available in the database.	It displays correct output.	Passed
FPS - 4 - 14	Clear Search	Check if clearing the search input is working properly.	1. Click the search bar. 2. Type a character (letter or number). 3. Click the "x" in the right corner of the search input field. 4. Check if it clears the input character.	qweqwe	It clears the input characters in the search bar.	It displays correct output.	Passed

Figure 19: FPS - Faculty Management Test Case



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Backing Title:		FPS - FACULTY MANAGEMENT						
Created By:		CANTUJA, MIGUEL ANGEL						
Date Created:		2/13/2024						
Test Description								
#	Function	Summary	Process	Condition/In put Data	Expected Result	Actual Output	Result	Test #1 Date of Execution: 2/14/2024 Test #2 Date of Execution: 2/19/2024
FPS - 5 - 1	Display	Check if the elements in the webpage are correct and show accurate data, indicating that there is no misspelling of names or information shown in the module.	1. Look carefully at each name and number shown on the webpage.	It displays accurate and correct data.	It displays the actual and correct data.	Passed	Passed	It displays the actual and correct data.
FPS - 5 - 2	Setting the number of entries	Check if the number of entries was accurately set based on what the user wanted.	1. Click the dropdown list. 2. Choose from the 4 choices (10, 25, 50, 100). 3. Check if there are changes in the number of entries in the table.	It displays the accurate number of entries chosen by the user.	It displays the accurate number of entries chosen by the user.	Passed	Passed	It displays the accurate number of entries chosen by the user.
FPS - 5 - 3	Display	Check if the pagination buttons are working and if they display accurate and consistent data.	1. Choose what page of entries (1, 2, 3, 4...).	It displays the desired page.	It displays the desired page.	Passed	Passed	It displays the desired page.
FPS - 5 - 4	Faculty Name Sort	Check if the name sorting is working properly and it displays the last name from A to Z and vice versa.	1. Click the upward arrow in the right upper corner of the cell names "Faculty Name". 2. Click the downward arrow in the right upper corner of the cell names "Faculty Name".	It displays the sorted last names of the faculty.	It displays the sorted last names of the faculty (A to Z, Z to A).	Passed	Passed	It displays the sorted last names of the faculty (A to Z, Z to A).
FPS - 5 - 5	Faculty Type Sort	Check if the faculty type sorting is working properly.	1. Click the upward arrow in the right upper corner of the cell names "Faculty Type". 2. Click the downward arrow in the right upper corner of the cell names "Faculty Type".	It displays the sorted type of the faculty.	It displays the sorted type of the faculty.	Passed	Passed	It displays the sorted type of the faculty.
FPS - 5 - 6	Search	Check if searching for a non-existent input in the search input field shows an error message.	1. Click the search bar. 2. Type a random character (names, random letters, or numbers). 3. Check if there is an error message appears on the table.	qweqwewq	It displays the message, "No matching records found".	It displays the message, "No matching records found".	Passed	It displays the message, "No matching records found".
FPS - 5 - 7	Search	Check if searching for existing data displays it in the table.	1. Click the search bar. 2. Type a specific last name, first name, or faculty type. 3. Check if the input character (letter or number) appears on the table.	Abalos	It displays the searched faculty member or the faculty type that was available in the database.	It displays the searched faculty member or the faculty type that was available in the database.	Passed	It displays the searched faculty member or the faculty type that was available in the database.
FPS - 5 - 8	Pop-up	Check if the pop-up window displays the individual rating of a faculty member (Present Year Evaluation Performance, Overall Academic Research Performance).	1. Click "Performances" with the blue button in the "Actions" column. 2. Check if there will be a pop-up window appears on the screen.	It displays the individual ratings of a faculty member (Present Year Evaluation Performance, Overall Academic Research Performance).	It displays the individual ratings of a faculty member (Present Year Evaluation Performance, Overall Academic Research Performance).	Passed	Passed	It displays the individual ratings of a faculty member (Present Year Evaluation Performance, Overall Academic Research Performance).
FPS - 5 - 9	Button Navigation	Check if the "red" navigation up button is working.	1. Scroll down the webpage. 2. Click the "red" navigation up button to scroll up. 3. Check if, after clicking the navigation button, it goes up.	It scrolls up into the upper part of the webpage.	The system successfully displays the output needed by the system.	Passed	Passed	The system successfully displays the output needed by the system.

Test Case and Test data Excel Sheet link:

<https://docs.google.com/spreadsheets/d/12IPY1OLhU0FfXYZ6jShblt6Zpeo3Z2P-4TddeaRvxKY/edit?usp=sharing>

Test Results and Bug Reports

Test Summary Report #1

Project: Faculty Performance System

Test Date: February 14, 2024

Tested Version: Version 2.0

Tested By: Miguel Angel Cantuja

Type of Test: *Performance Testing*

Tool Used: Lighthouse

Total No. of Requirements: 5

Test Results:

Requirement 1: Log-in page

Tracing the performance of the Faculty Performance System login page.



The screenshot shows a browser window with the URL <https://pupqc-fps.onrender.com/login/?next=/dashboard>. On the left is the login form for the "Faculty Performance System". On the right is the Lighthouse audit interface, which displays a performance score of 59. The audit results show various metrics: Performance (59), Accessibility (76), Best Practices (82), SEO (89), and PWA (66). A detailed list of diagnostic issues is provided, including:

- Largest Contentful Paint element — 8,090 ms
- Minimize main-thread work — 5.7 s
- Eliminate render-blocking resources — Potential savings of 1,510 ms
- Properly size images — Potential savings of 548 KiB
- Serve images in next-gen formats — Potential savings of 463 KiB
- Reduce unused CSS — Potential savings of 108 KiB
- Preconnect to required origins — Potential savings of 410 ms
- Reduce unused JavaScript — Potential savings of 91 KiB
- Avoid serving legacy JavaScript to modern browsers — Potential savings of 9 KiB
- Efficiently encode images — Potential savings of 18 KiB
- Minify CSS — Potential savings of 18 KiB
- Minify JavaScript — Potential savings of 9 KiB

Comment: The performance score on the log-in page of "Faculty Performance System" is "59," which shows the system was performing "averagely" due to higher latency, which indicates the system was slower.

Diagnostics by Lighthouse:

This screenshot shows the same browser setup as the previous one, but the Lighthouse audit results are expanded to show the "DIAGNOSTICS" section. The diagnostics list includes the same items as the first screenshot, with additional details and potential savings for each issue.



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Comment: As provided by the diagnostics of Lighthouse, one of the issues seen in the system is that, due to the elements used in the page, it causes higher latency to the system, which is why the system is slow.

Requirement 2: Dashboard

The screenshot shows the Faculty Performance System dashboard. On the left, there's a large image of a university building at night. To the right, there are several sections: 'PRESENT INSTITUTIONAL RATING' (4.8), 'PRESENT RESEARCH PRODUCTS' (94), and 'Present Academic Year Faculty Evaluation Results' (with three cards: 98% Department Institutional Rating over 100%, 78% Faculty Rating over 100% First Semester, and 70% Faculty Rating over 100% Second Semester). On the far right, a Lighthouse performance audit is displayed. The audit summary shows a score of 32. Below the score, it says 'Values are estimated and may vary. The [performance score is calculated](#) directly from these metrics. See calculator.' It includes a legend for metric ranges (red for 0-49, orange for 50-89, green for 90-100) and a table of metrics with their values: First Contentful Paint (4.2 s), Largest Contentful Paint (9.9 s), Total Blocking Time, and Cumulative Layout Shift. A note at the bottom says 'No issues detected so far'.

Comment: The performance rating of the dashboard page of the “Faculty Performance System” is “32,” which means that the dashboard page is performing badly and may need some changes to perform effectively and efficiently.

Diagnostics by Lighthouse:

This screenshot is identical to the previous one, showing the Faculty Performance System dashboard and its Lighthouse audit. The audit details are expanded, listing specific performance issues: Reduce JavaScript execution time (6.8 s), Minimize main-thread work (14.1 s), Reduce the impact of third-party code (Third-party code blocked the main thread for 1,510 ms), Largest Contentful Paint element (9,890 ms), Properly size images (Potential savings of 1,242 kB), Defer offscreen images (Potential savings of 1,191 kB), Serve images in next-gen formats (Potential savings of 987 kB), and Eliminate render-blocking resources (Potential savings of 1,690 ms). The note at the bottom of the audit summary remains 'No issues detected so far'.

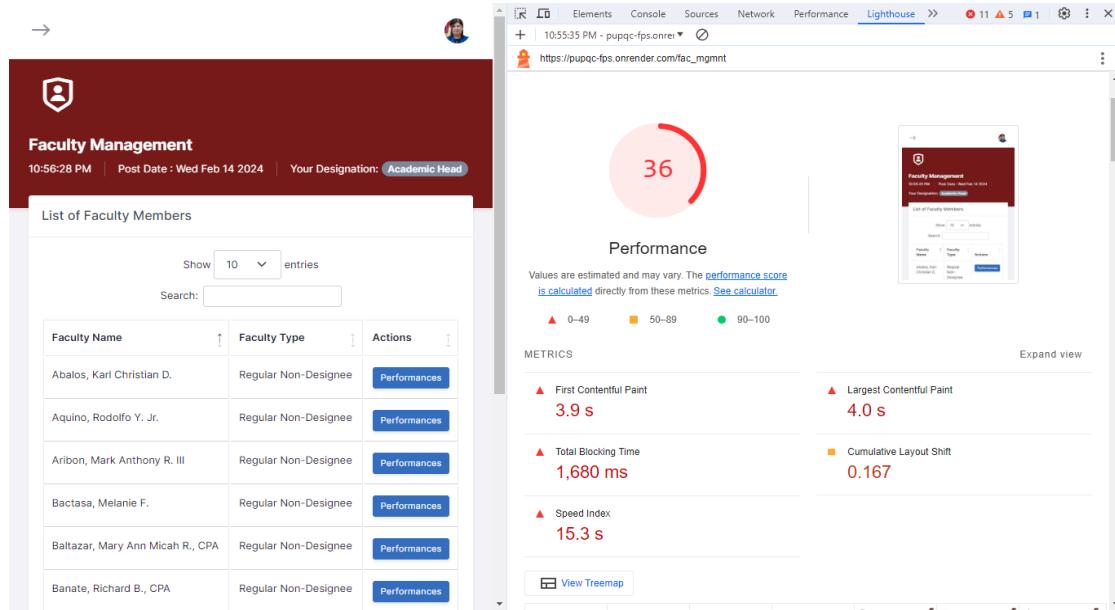


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Comment: As provided by the diagnostics of Lighthouse, one of the issues seen in the system is that, due to the elements used in the page, it causes higher latency to the system, which is why the system is slow.

Requirement 3: Faculty Management



Comment: The performance rating of the “Faculty Management” page is “36,” which means the page was performing slower and there should be changes to make it more efficient.

Diagnostics by Lighthouse:



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The screenshot shows the Faculty Management system interface on the left and the Lighthouse performance audit results on the right. The Faculty Management interface displays a list of faculty members with their names, types, and actions. The Lighthouse audit shows various performance issues with severity levels (Red, Green, Yellow) and potential savings.

Faculty Name	Faculty Type	Actions
Abalos, Karl Christian D.	Regular Non-Designee	Performances
Aquino, Rodolfo Y. Jr.	Regular Non-Designee	Performances
Arion, Mark Anthony R. III	Regular Non-Designee	Performances
Bactasa, Melanie F.	Regular Non-Designee	Performances
Baltazar, Mary Ann Micah R., CPA	Regular Non-Designee	Performances
Banate, Richard B., CPA	Regular Non-Designee	Performances

LIGHTHOUSE AUDIT RESULTS:

- Reduce JavaScript execution time — 5.7 s
- Minimize main-thread work — 10.7 s
- Reduce the impact of third-party code — Third-party code blocked the main thread for 1,910 ms
- Reduce initial server response time — Root document took 4,840 ms
- Eliminate render-blocking resources — Potential savings of 1,920 ms
- Largest Contentful Paint element — 4,010 ms
- Reduce unused CSS — Potential savings of 106 Kib
- Reduce unused JavaScript — Potential savings of 1,096 Kib
- Avoid large layout shifts — 5 elements found
- Preconnect to required origins — Potential savings of 210 ms
- Minify CSS — Potential savings of 18 Kib
- Defer offscreen images — Potential savings of 1,307 Kib

Comment: According to the diagnostics of Lighthouse, the critical issues that affected the performance of the system were the elements used in the system, especially the CSS and Javascript elements.

Requirement 4: Evaluations

The screenshot shows the Teaching Effectiveness evaluation page on the left and the Lighthouse performance audit results on the right. The evaluation page displays average ratings and a bar chart comparing student and supervisor ratings across years. The Lighthouse audit shows performance metrics and a summary score.

Rating Type	Value
Average Institutional Rate	98%
Faculty Rating: First Semester	72%
Faculty Rating: Second Semester	66%

LIGHTHOUSE AUDIT RESULTS:

- Performance: 29
- Accessibility: 78
- Best Practices: 91
- SEO: 80
- PWA: -

Performance details:
Values are estimated and may vary. The [performance score is calculated](#) directly from these metrics. [See calculator.](#)

Score Range	Count
0-49	▲
50-89	■
90-100	●

METRICS:

Metric	Value
First Contentful Paint	3.6 s
Largest Contentful Paint	7.1 s
Total Blocking Time	4,570 ms
Cumulative Layout Shift	0

Comment: The performance rating of the "Evaluation" page is "29," which shows the page is underperforming or not performing well due to the slower and higher latency of the webpage.

Diagnostics by Lighthouse:



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The screenshot shows a browser window with two main panels. On the left is a dark-themed dashboard titled "Teaching Effectiveness" showing faculty evaluation average ratings for 2021, 2022, 2023, and 2024. The right panel is a "Lighthouse" performance audit for the URL https://pupqc-fps.onrender.com/eval_analytics, dated 11:05:23 PM on Wednesday, February 14, 2024. The audit results are categorized under "DIAGNOSTICS" and include various recommendations with potential savings.

Rating	Year	1st Sem Supervisor Rating	1st Sem Student Rating	1st Sem Peer Rating	2nd Sem Supervisor Rating	2nd Sem Student Rating	2nd Sem Peer Rating	Summer Sem Supervisor Rating	Summer Sem Student Rating	Summer Sem Peer Rating	Summer Sem Self Rating
Average Rating	2021	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	2022	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	2023	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	2024	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

Comment: According to the diagnostics of Lighthouse, the critical issues that affected the performance of the system were the elements used in the system, especially the unnecessary CSS and Javascript elements.

Requirement 5: Research & Publication

The screenshot shows a browser window with two main panels. On the left is a dark-themed dashboard titled "Research and Publications Analytics" showing average rating based faculty performance development in research methodologies for 2022 and 2024. The right panel is a "Lighthouse" performance audit for the URL https://pupqc-fps.onrender.com/rsrc_analytics, dated 11:19:17 PM on Wednesday, February 14, 2024. The audit results are categorized under "Performance" and "Metrics".

Year	Most Research Productive Year	Least Research Productive Year
2022	2022	2024

Performance: A large red circle displays a score of 46. Below it, a note states: "Values are estimated and may vary. The [performance score is calculated](#) directly from these metrics. See calculator."

METRICS:

Metric	Value
First Contentful Paint	3.6 s
Largest Contentful Paint	4.1 s
Total Blocking Time	2,250 ms
Cumulative Layout Shift	0
Speed Index	6.9 s



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Comment: The performance rating of the "Research and Publications" page is "46." It shows the performance of the Research and Publications page is below average and it needs changes to have a better performance.

Diagnostics by Lighthouse:

The screenshot shows two side-by-side views. On the left is the 'Research and Publications Analytics' dashboard, featuring a bar chart titled 'Average Rating Based Faculty Performance Development in Research Methodologies' comparing the years 2022 and 2024. The chart shows a significant drop from approximately 32 in 2022 to about 12 in 2024. On the right is the Lighthouse performance audit interface, displaying a score of 46/100. The audit results section lists various performance issues with their potential improvements:

- Reduce JavaScript execution time — 6.8 s
- Minimize main-thread work — 12.4 s
- Reduce the impact of third-party code — Third-party code blocked the main thread for 2,020 ms
- Eliminate render-blocking resources — Potential savings of 1,680 ms
- Largest Contentful Paint element — 4,060 ms
- Reduce unused CSS — Potential savings of 106 kB
- Reduce unused JavaScript — Potential savings of 1,052 kB
- Preconnect to required origins — Potential savings of 250 ms
- Minify CSS — Potential savings of 18 kB
- Serve images in next-gen formats — Potential savings of 918 kB
- Properly size images — Potential savings of 1,220 kB
- Defer offscreen images — Potential savings of 1,307 kB

Comment: According to the diagnostics of Lighthouse, the critical issues that affected the performance of the system were the elements used in the system, especially the unnecessary Javascript elements.

Conclusion: It concludes that, due to the performance issues of the system, it needed changes and improvements to perform efficiently.

Type of Test: *Cross-Browser Testing*

Tool Used: Manual

Total No. of Requirements: 5

Requirement 1: Log-in

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed



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Requirement 2: Dashboard

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 3: Faculty Management

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 4: Evaluations

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 5: Research & Publications

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Conclusion: The Faculty Performance System was working in the five (5) tested browsers, and it shows the exact same output as intended.

Type of Test: *Security Testing*

Tool Used: Manual

Total No. of Requirements : 4

Requirement 1: URL Manipulation



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Result: Passed

Comment: The url of the Faculty Performance System cannot be manipulated; specifically, it resets when an active link to the system is copied and pasted into a browser, and it redirects to the login page of the system.

Steps:

- Log-in to the system
- Go to dashboard
- Copy the url
- Go to other browser
- Paste the url

Requirement 2: Session expiry

Result: Passed

Comment: After idling to the system in 1 hour (60 minutes), then refreshing the site, the system redirects to the login page which depicts the session has expired and the user needs to login again to their account.

Requirement 3: Cookie based testing

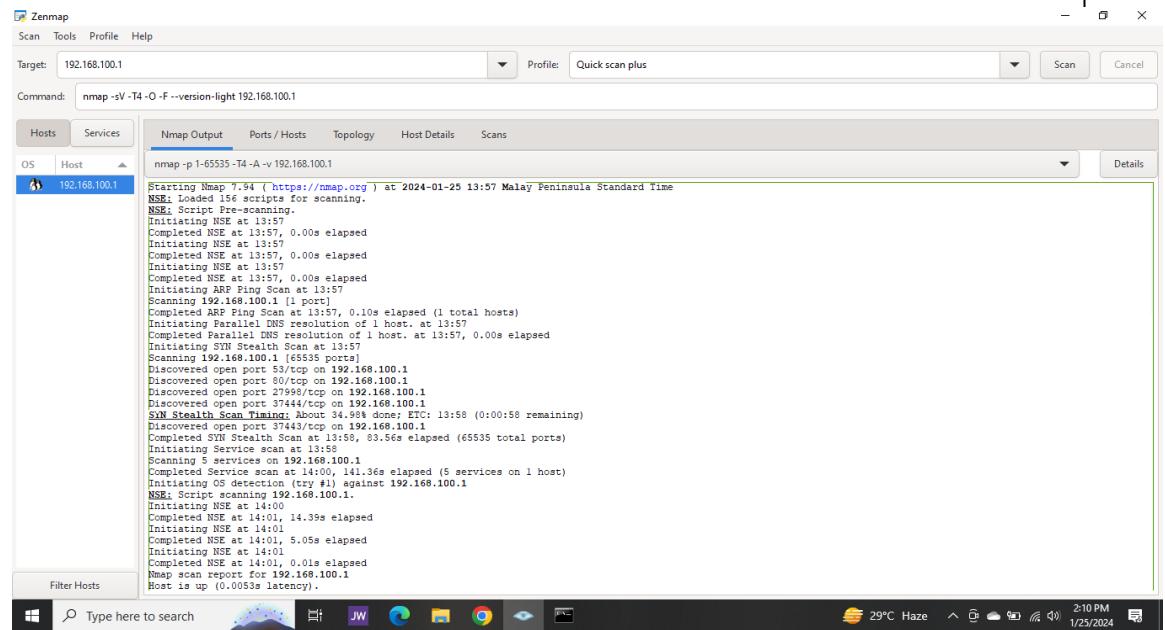
Result: Passed

Comment: After closing the browser, then opening it after a few minutes and logging into the system, there is no information from the last session.

Requirement 4: Zenmap/Nmap

Comment: Using the Zenmap/Nmap tool, the tester interprets that the deployment was good for the network of the system, but still, some parts should be reviewed for security best practices.

Conclusion: It concludes that the Faculty Performance System follows security best practices to ensure the data of the stakeholders is protected, and some parts should be reviewed to improve security, especially the "CSP," which is a security layer that detects XSS (cross-site scripting) or the appearance of unwanted and malicious pop-up windows advertisements.



Quality Assurance Measures

Numerous quality assurance as well as quality control procedures are put into place in order to show the precision and accuracy of the monitoring activities:

1. Validation: Procedures for validating procedures and equipment ensure that they can yield precise and accurate results. This could entail measuring measurement uncertainties, comparing outcomes with accepted reference procedures, and carrying out validation studies. Regular quality control inspections are carried out to keep an eye on how well monitoring tools and processes are working. To find and fix any variations from predicted values, this entails evaluating blank samples, running control samples, and doing instrument checks.
2. Data Verification: To guarantee the accuracy of gathered data, data verification procedures are put in place. This could entail going over data entries again, looking for abnormalities or outliers, and contrasting data from other sources to find



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discrepancies. Organizations may demonstrate the precision and accuracy of their monitoring efforts by putting certain quality assurance and control procedures into place. This will guarantee that monitored data is trustworthy and credible for use in regulatory compliance and decision-making processes.



XII. Results and Evaluation

Project Outcomes and Deliverables

The capstone project has resulted in a set of strong outcomes and deliverables, indicating that the objectives were met. The Faculty Performance System serves as the bedrock for efficiently storing and managing diverse faculty data. Its successful implementation provides a streamlined and organized repository, facilitating easy access to critical information for institution head administrators. The system has introduced a user-friendly interface tailored specifically for institution head administrators. This intuitive interface ensures seamless navigation and accessibility to faculty-related data and performance metrics. Its design prioritizes clarity and ease of use, empowering administrators to effortlessly retrieve, analyze, and interpret data essential for informed decision-making.

Integral to the project's success is the incorporation of real-time performance tracking mechanisms. These mechanisms offer institution head administrators up-to-date insights into faculty performances, enabling prompt responses to emerging needs and fostering a proactive approach to performance management. The real-time nature of this feature ensures that administrators are equipped with the most current information, contributing to the overall agility and responsiveness of the system. Furthermore, the project has integrated advanced analytics tools to generate customized reports and insights. This analytical capability empowers administrators to make data-driven decisions, identify trends, and pinpoint strengths and areas for improvement among faculty members. The tailored reporting and analytics component elevate the project



beyond basic data management, providing a strategic layer for administrators to glean valuable insights from the amassed data.

Alignment with Project Objectives

The capstone project's outcomes closely align with the original project objectives, indicating a resounding success in meeting the overarching goals. The primary objective, to develop a Faculty Performance System with a comprehensive approach to data management and real-time performance tracking. The introduction of real-time tracking mechanisms further solidifies the alignment with project objectives. This feature provides institution head administrators with up-to-date information, aligning precisely with the project's intent to enable prompt responses to emerging needs. The mechanisms represent a tangible manifestation of the project's commitment to enhancing the institution's agility in addressing faculty performance dynamics. The user-friendly interface tailored for administrators serves as a testament to the project's commitment to seamless access to faculty-related data and performance metrics. This aligns perfectly with the project's objective to provide administrators with an intuitive tool for efficient navigation and data retrieval, contributing to the overall enhancement of management processes. Moreover, the integration of advanced analytics tools stands out as a pivotal achievement, directly addressing the project objective of empowering administrators to generate customized reports and make data-driven decisions. The inclusion of these tools elevates the project beyond basic data management, aligning with the higher-level objective of enhancing the overall management and understanding of faculty performance within the institution.



Stakeholder and User Feedback

Stakeholders Feedback

1. Provide a more intricate and personalized display of individual (faculty) performance
2. The system should be refined to spotlight the distinctive contributions and accomplishments of each faculty member
3. The system should have a ranking module in replacement of the promotions and merit
4. The system should have an individual printing (Save as PDF) inside individual faculty details

Defense Panelist Feedback

1. Data presented are confusing, Add more consideration with the User Experience
2. Add report feature to the system modules
3. Additional filtering features within the Faculty Performance System
4. Always have careful consideration in selecting the appropriate types of graphs or charts based on the specific nature of the data or information being presented
5. Add more filtering features in Research Module and within the system
6. It is a good idea to prioritize system security.

Redefense Feedback

1. Graphs used should be applicable to the provided data. For instance: Pie Graphs should be used only when the data aggregates to 100%. Bar Graphs are recommended for straightforward category comparisons.



2. Clear Data Interpretations: Mere display of numbers or graphs is insufficient; there should be supporting evidence for the data presented. For example, if there are 55 faculty members evaluated as the highest, it should be clearly reflected in the system.
3. Implement data filtering to avoid duplicate entries. If data is absent for a specific year, it should be represented as '0' to ensure clarity in graphs and presentations.
4. Historical Data Presentation: Whenever possible, include data from the previous five years relative to the present year (e.g., if the current year is 2024, data should be shown from 2019 to 2023).
5. Faculty Performance Criteria: Faculty performance is assessed based on attendance or participation in a minimum of 32 hours (maximum) of job-related training, seminars, or conferences per faculty member, as per Mam Alma's guidance.
6. Research Module: Enhance the research module with filters for: Completed Research Studies, Research Outputs Published in CHED.
7. Data Redundancy: Ensure data integrity by double-checking for redundancy, such as identical year and semester data or repeated terminology like 'workshop.'

Lessons Learned

The capstone project has provided invaluable lessons learned, shaping the team's understanding of effective project management, collaboration, and technical implementation. Some key lessons include:

1. Effective Communication is Paramount - A clear and consistent communication is crucial for project success. Regular team meetings, status updates, and



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transparent communication channels were established, mitigating misunderstandings and ensuring everyone remained informed.

2. Adaptability in the Face of Challenges - Unexpected challenges are inevitable, requiring adaptability and a proactive approach. The team embraced an agile mindset, adjusting project plans and strategies when faced with unforeseen obstacles, ensuring minimal disruptions to the overall timeline.
3. Stakeholder Engagement is Continuous - Continuous stakeholder engagement is essential for project alignment with organizational goals. Regular feedback sessions with stakeholders ensured that the project remained aligned with institutional needs, and adjustments were made promptly based on their input.
4. Balancing Technical Excellence with User-Focused Design - Technical excellence is vital, but user-focused design is equally important for user adoption. The user-friendly interface was iteratively refined based on user feedback, ensuring that the final product not only met technical standards but also provided an intuitive experience.
5. Thorough Testing and Quality Assurance are Crucial - Rigorous testing and quality assurance are critical for identifying and rectifying potential issues. Comprehensive testing protocols were established, and iterative testing phases were conducted to identify and address any bugs or inconsistencies in the system.
6. Continuous Learning and Skill Development - The project environment is an opportunity for continuous learning and skill development. Team members actively sought opportunities to expand their knowledge, adopting new tools and techniques that contributed to the project's overall success.



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7. Documentation is a Foundation for Sustainability - Well-documented processes and code are essential for project sustainability and future development. The team maintained thorough documentation throughout the project, ensuring that future iterations or modifications can be undertaken seamlessly.
8. Effective Project Planning Mitigates Risks - Comprehensive project planning helps identify and mitigate potential risks. Early identification of potential risks in the planning phase allowed the team to develop contingency plans, minimizing the impact of unforeseen challenges.
9. Celebrating Milestones Enhances Team Morale - Celebrating project milestones is crucial for team morale. The team acknowledged and celebrated achievements, fostering a positive and collaborative atmosphere that contributed to overall project success.
10. Feedback Loops Drive Continuous Improvement - Establishing feedback loops is essential for continuous improvement. Regular retrospectives and feedback sessions allowed the team to identify areas for improvement and implement changes promptly, contributing to an iterative and evolving development process.



XIII. Conclusion

Key Takeaways and Summary

The capstone project, focused on developing a Faculty Performance System, has yielded key takeaways that encapsulate the essence of our journey. The successful implementation of the system has revolutionized data management, enabling efficient storage and organization of diverse faculty data, aligning seamlessly with the project's core objective. The integration of real-time tracking mechanisms empowers institutional head administrators with up-to-date information, fostering a proactive approach to addressing emerging needs and enhancing overall decision-making agility. Additionally, the development of a user-friendly interface tailored for administrators ensures seamless access to faculty-related data and performance metrics, underscoring the project's commitment to user-centric design principles.

The incorporation of advanced analytics tools provides administrators with the capability to generate customized reports, make data-driven decisions, and identify trends, strengths, and areas for improvement among faculty members. These outcomes align closely with the initially defined objectives, emphasizing the successful realization of the project's overarching goals. Prioritizing effective communication has proven pivotal in mitigating challenges, ensuring team cohesion, and fostering a transparent work environment. Continuous stakeholder engagement has been instrumental in keeping the project aligned with organizational goals, ensuring that the final product meets the needs and expectations of key stakeholders. Balancing technical excellence with a user-focused design approach has been critical for ensuring not only the functionality but also the usability and adoption of the developed system. Rigorous testing protocols and



comprehensive documentation have been indispensable for ensuring the robustness, sustainability, and future development of the Faculty Performance System. Embracing opportunities for continuous learning and skill development has enhanced the capabilities of the project team, contributing to the project's overall success. Establishing feedback loops has been instrumental in driving continuous improvement, allowing the team to iteratively refine the project based on real-world experiences and user perspectives.

The Faculty Performance System project has not only achieved its initial goals but also set a strong foundation for future development, embodying resilience, user-focus, and continuous improvement. The insights gained from this project underscore the importance of integrating technology with strategic planning and stakeholder involvement. Prioritizing these elements, the project has demonstrated how innovative solutions can effectively address complex organizational needs. Moving forward, the principles and practices developed through this project can serve as a model for similar initiatives, highlighting the value of a holistic approach to system design and implementation.

Project Achievements and Contributions

Integration of Advanced Analytics Tools: Successful integration of advanced analytics tools for generating customized reports and insights. Empowered administrators with data-driven decision-making capabilities, enabling the identification of trends, strengths, and areas for improvement among faculty members. Alignment with Original Project Objectives: The project outcomes closely align with the initially defined objectives.

Demonstrated a commitment to delivering solutions that meet the overarching goals of enhancing overall faculty performance management within educational institutions.

Effective Communication Strategies: Implementation of clear and consistent communication channels within the project team. Mitigated challenges, fostered team



cohesion, and ensured a transparent work environment, contributing to overall project success. Adaptability and Resilience: Successful adaptation to unforeseen challenges, maintaining project momentum. Demonstrated resilience in the face of obstacles, ensuring that the project continued to progress and achieve its objectives. Continuous Stakeholder Engagement: Ongoing engagement with stakeholders to gather feedback and ensure alignment with organizational goals. Produced a final product that not only meets technical standards but also aligns closely with the needs and expectations of key stakeholders. Balanced Technical Excellence with User-Centric Design: Striking a balance between technical excellence and user-focused design principles. Ensured not only the functionality but also the usability and adoption of the Faculty Performance System among end-users. Thorough Testing and Documentation: Implementation of rigorous testing protocols and comprehensive documentation. Ensured the robustness, sustainability, and future development of the system, laying a strong foundation for continued success. Continuous Learning and Skill Development: Embracing opportunities for continuous learning and skill development within the project team. Enhanced the capabilities of team members, contributing to the overall success and innovation of the project. Feedback-Driven Iterative Improvement: Establishing feedback loops for continuous improvement throughout the project lifecycle. Enabled the team to iteratively refine the project based on real-world experiences and user perspectives, ensuring a high-quality final product.

Future Work and Enhancements

The successful implementation of the Faculty Performance System lays a solid foundation for future work and enhancements. Key areas for consideration include:



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1. Expanded Data Sources: Explore the integration of additional data sources, such as external research databases or collaborative platforms, to provide a more comprehensive view of faculty achievements.
2. Enhanced Analytics Capabilities: Continuously evolve the analytics tools to provide more advanced and predictive insights, enabling administrators to anticipate trends and proactively address performance dynamics.
3. Incorporation of Machine Learning Algorithms: Investigate the application of machine learning algorithms for predictive analytics, allowing the system to identify patterns and recommend interventions to improve faculty performance.
4. Enhanced Security Measures: Implement additional security measures to safeguard sensitive faculty data, considering advancements in encryption technologies and data protection standards.
5. Mobile Accessibility: Optimize the user interface for mobile devices to facilitate on-the-go access for administrators, ensuring they can efficiently manage and track faculty performance from anywhere.
6. Automated Reporting and Notification Systems: Develop automated reporting and notification systems that can alert administrators to specific performance trends or milestones, enabling timely intervention and recognition.
7. Benchmarking and Comparative Analysis Tools: Introduce benchmarking features that allow institutions to compare the current faculty performance metrics against industry standards or peer institutions, facilitating a broader understanding of performance levels.



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8. Enhanced Collaboration Features: Implement collaborative features that enable faculty members to share best practices, collaborate on research initiatives, and contribute to a more dynamic and interconnected academic community.
9. Integration with Professional Development Platforms: Explore integration with professional development platforms, facilitating a seamless connection between faculty performance data and individualized professional development plans.

These future work and enhancement considerations aim to propel the Faculty Performance System into a dynamic and continually evolving tool that meets the evolving needs of PUPQC, fostering innovation and contributing to the continuous improvement of faculty management processes.

Closing Remarks

In closing, the team's completion of the Faculty Performance System project marks a significant milestone in the pursuit of excellence within PUPQC. This project, characterized by its multifaceted approach to data management, real-time performance tracking, and comprehensive faculty assessment, stands as a testament to the collaborative efforts, innovation, and dedication of the project team.

The integration of systems, including the Faculty Information System and Research Information System enhances the system's functionality, providing administrators with a nuanced understanding of faculty performance. As the team reflects on the journey from conception to implementation, it is evident that this project not only addresses the intricate challenges of faculty performance assessment but also contributes to a culture of continuous improvement and adaptability within the educational landscape. The careful consideration given to data privacy, security measures, and stakeholder



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involvement underscores our commitment to ethical practices and collaboration. The system's adaptability to evolving institutional needs ensures its relevance in the ever-changing educational environment.

The team extends gratitude to all stakeholders and contributors who played a pivotal role in bringing this project to fruition. The Faculty Performance System, with its integrated approach and comprehensive features, is poised to make a lasting impact on how PUPQC manages and understands faculty performance.

As the team closes this chapter, they look forward to the continued success and evolution of the Faculty Performance System, contributing to the enhancement of educational quality and the cultivation of a culture that values continuous growth and excellence.



References

- Fuente, R. O. D., & Fuente, R. O. D. (2022, March 31). *Faculty performance evaluation system with application of data analytics*. South Asian Journal of Engineering and Technology. <https://doi.org/10.26524/sajet.2022.12.05>
- Sen, P. (2017, March). <http://www.iosrjournals.org/iosr-jhss/papers/Vol.%202022%20Issue3/Version-4/L22030498104.pdf>. *IOSR Journal of Humanities and Social Science*, 22(03), 105–111. <https://doi.org/10.9790/0837-220304105111>
- Ramasamy, K. (2023). https://jag.journalagent.com/cpr/pdfs/CPR_45_5_524_527.pdf. *Journal of Clinical Practice and Research*, 524–527. <https://doi.org/10.14744/cpr.2023.43153>
- Rupp, A. A. (2018, June). ITEMS Corner New ITEMS Portal: Taking ITEMS into the 21st Century <https://ncme.elevate.commpartners.com>. *Educational Measurement: Issues and Practice*, 37(2), 70–70. <https://doi.org/10.1111/emip.12208>
- Hać, A. (1986, July). A distributed algorithm for performance improvement through file replication, file migration and process migration. *Performance Evaluation*, 6(2), 167. [https://doi.org/10.1016/0166-5316\(86\)90032-5](https://doi.org/10.1016/0166-5316(86)90032-5)
- Majeti, D., Akleman, E., Ahmed, M. E., Petersen, A. M., Uzzi, B., & Pavlidis, I. (2020, January 28). Scholar Plot: Design and Evaluation of an Information Interface for Faculty Research Performance. *Frontiers in Research Metrics and Analytics*, 4. <https://doi.org/10.3389/frma.2019.00006>



POLYTECHNIC UNIVERSITY OF THE PHILIPPINES

1

Buyukdagli, O., & Yeralan, S. (2020, July 14). How do weights affect faculty performance evaluations? *Sustainable Engineering and Innovation*, 2(2), 89–101. <https://doi.org/10.37868/sei.v2i2.112>

Sachdeva, S. (2016, June 6). Scrum Methodology. *International Journal of Engineering and Computer Science*. <https://doi.org/10.18535/ijecs/v5i6.11>

Langdon, D. G. (1987, November). Why a performance orientation is important: An example. *Performance + Instruction*, 26(9–10), 9–10. <https://doi.org/10.1002/pfi.4160260904>

Uddin, M. A., Mahmood, M., & Fan, L. (2019, March 11). Why does individual employee engagement matters for team performance? *Team Performance Management: An International Journal*, 25(1/2), 47–68. <https://doi.org/10.1108/tpm-12-2017-0078>

Carstens, A., & Fletcher, L. (2010, July 26). Evaluating the effectiveness of a cross-disciplinary genre-focused writing intervention. *Journal for Language Teaching*, 43(1). <https://doi.org/10.4314/jlt.v43i1.56956>

Saleh. (2012, March 1). The Implications of Teacher Effectiveness Requirements for Initial Teacher Education Reform. *Journal of Social Sciences*, 8(3), 310–317. <https://doi.org/10.3844/jssp.2012.310.317>

Trung, L. H. (2019). <https://euroasia-science.ru/pdf-arxiv/the-controllability-function-of-polynomial-for-descriptor-systems-23-31/>. *EurasianUnionScientists*, 4(65). <https://doi.org/10.31618/esu.2413-9335.2019.4.65.275>



POLYTECHNIC UNIVERSITY OF THE PHILIPPINES

1

SINGHA, K. (2022, September 1).

<https://www.ntm.org.in/download/ttvol/volume16-2/Biblio1.pdf>. *Translation Today*, 16(2), 187–198. <https://doi.org/10.46623/tt/2022.16.2.ab1>

Caminiti, C., Iezzi, E., Ghetti, C., De' Angelis, G., & Ferrari, C. (2015, June). A method for measuring individual research productivity in hospitals: development and feasibility. *BMC Health Services Research*, 15(1). <https://doi.org/10.1186/s12913-015-1130-7>

Canadian Teachers' Perceptions of Online Professional Development. (2022, September 30). *Journal of Educators Online*, 19(3).
<https://doi.org/10.9743/jeo.2022.19.3.6>

Srinivasacharlu, A. (2019, September 1). Continuing Professional Development (CPD) of Teacher Educators in 21st Century. *Shanlax International Journal of Education*, 7(4), 29–33. <https://doi.org/10.34293/education.v7i4.624>

<https://inass.org/wp-content/uploads/2022/05/2022083131-2.pdf>. (2022, August 31). *International Journal of Intelligent Engineering and Systems*, 15(4).
<https://doi.org/10.22266/ijies2022.0831.31>

Hirsh, S. (2018, June 20). Reaching New Scholarly Heights: School of Information Student Research Journal Hits Milestone with 100,000 Full Text Downloads. *School of Information Student Research Journal*, 8(1). <https://doi.org/10.31979/2575-2499.080103>



POLYTECHNIC UNIVERSITY OF THE PHILIPPINES

1

Yong-Ik Kim. (2015, June). Trainee Teachers' Recognition on the G National University Education' Instructional Practice (Learning Support Staff) Program. *Teacher Education Research*, 54(2), 155–170. <https://doi.org/10.15812/ter.54.2.201506.155>

Morgenstern, J. (2019, October 15). Why pretest probability is absolutely essential. *First10EM Blog*. <https://doi.org/10.51684/firs.9601>

RABII, N. (2021, October 1).
https://www.ijherjournal.com/journaldetail/comparative-religions-reality-and-challenges-methodological-approach_118#:~:text=COMPARATIVE%20RELIGIONS%2C%20REALITY%20AND%20METHODOLOGICAL%20APPROACH. *International Journal of Humanities and Educational Research*, 03(05), 213–224. <https://doi.org/10.47832/2757-5403.5-3.19>

Casillano, N. F. B., Azura, A. A., Abenis, E. B., & Madeja, J. B. (2021, October 5). Comparative Historical Trends of Faculty Performance in Instruction, Research and Extension in a Philippine State University. *Indian Journal of Science and Technology*, 14(37), 2865–2870. <https://doi.org/10.17485/ijst/v14i37.946>



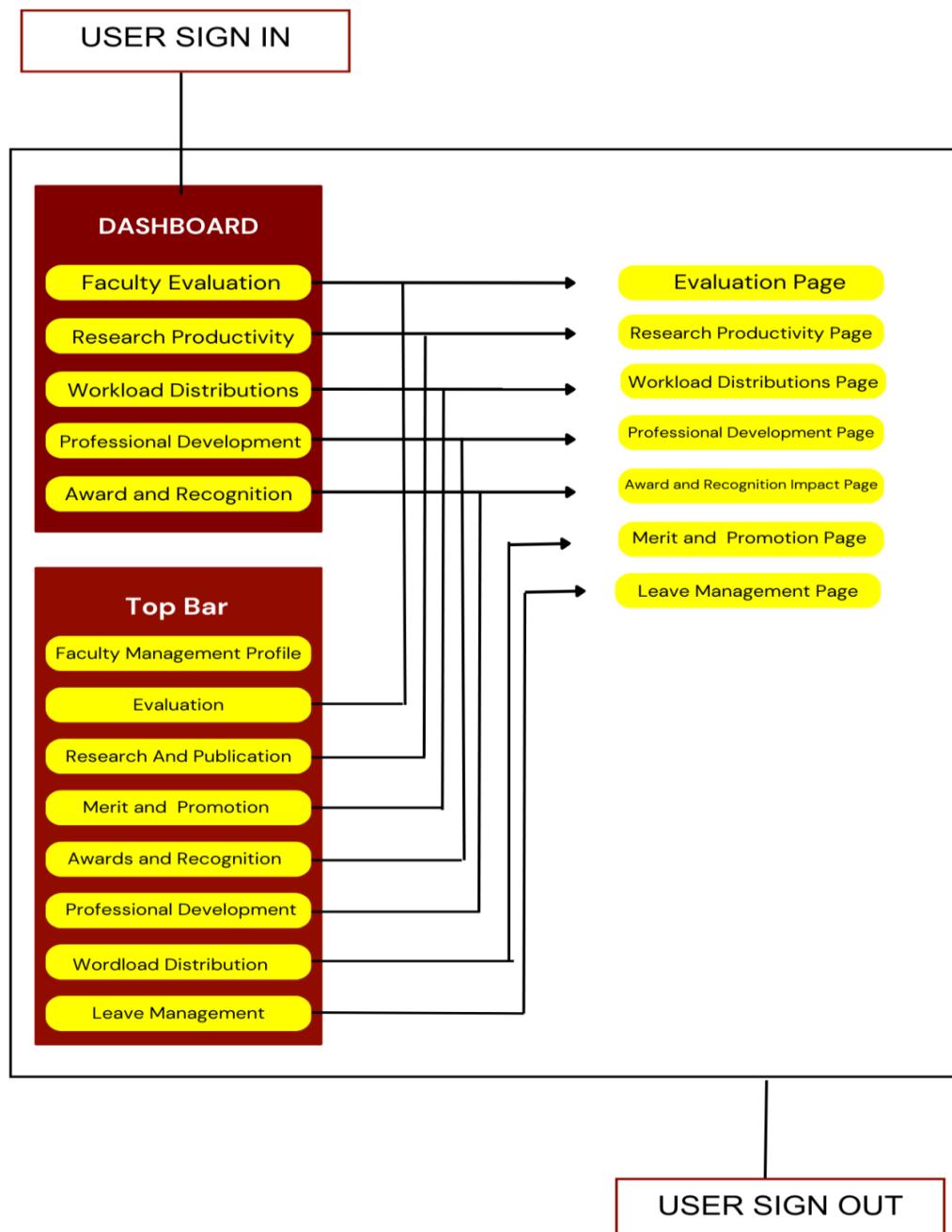
APPENDICES



APPENDIX A - Supplementary Material



System Architecture





Capstone Defense Presentation



Capstone 2 Faculty Performance System

BSIT 4-2
January 27, 2024

Reyes, Daniel Backend Developer	Logan, Rafael Project Manager Frontend Developer
Macusi, John Documentation	Cantuja, Miguel Quality Assurance
	Tagaoc, Angel Business Analyst Documentation
Prof. Demelyn E. Monzon Capstone Adviser	



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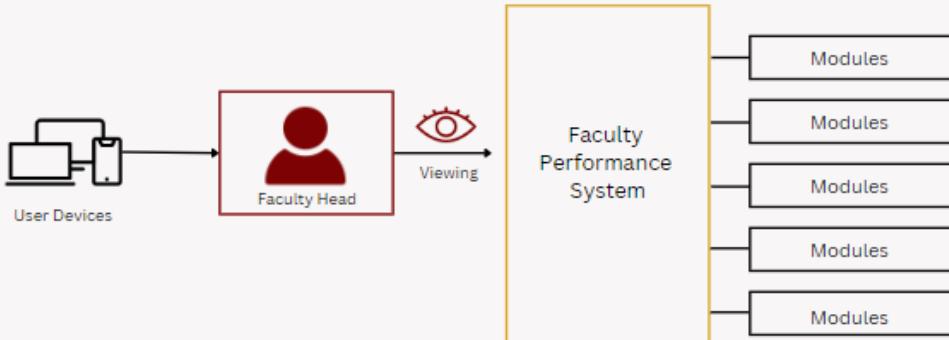
FACULTY PERFORMANCE SYSTEM

- The Faculty Performance System purpose is to comprehensively assess and enhance the effectiveness of academic faculty within educational institutions. Its main goal is by providing a structured framework for evaluating the faculty. The system aims to facilitate informed decision-making regarding faculty development as it serves as a valuable tool for institutional planning, and continuous improvement in the overall performance and professional growth of faculty members.



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FUNCTIONALITY MODEL



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FACULTY PERFORMANCE

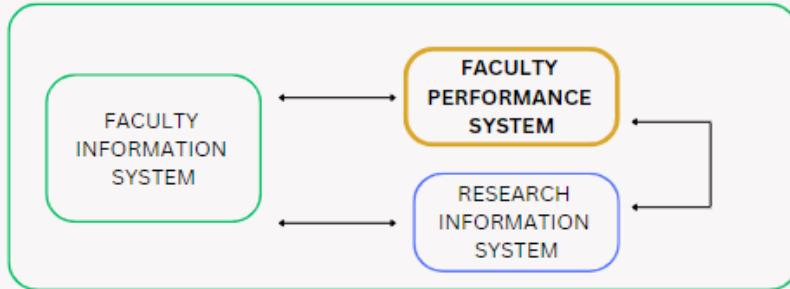
- Faculty Management System
- Faculty Evaluation Ratings
- Performance in Development of Research Methodologies
- Performance Metrics for Promotions
- Faculty Awards and Recognition Impact
- Faculty Development Progress
- Workload Distribution
- Leave Management



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INTEGRATED POINTS

Our system seamlessly integrates with external systems through the utilization of APIs, enabling the exchange of data crucial for our operations. External entities leverage these APIs to provide us with pertinent data, which we, in turn, utilize for calculating and generating the desired charts within the Faculty Performance System.



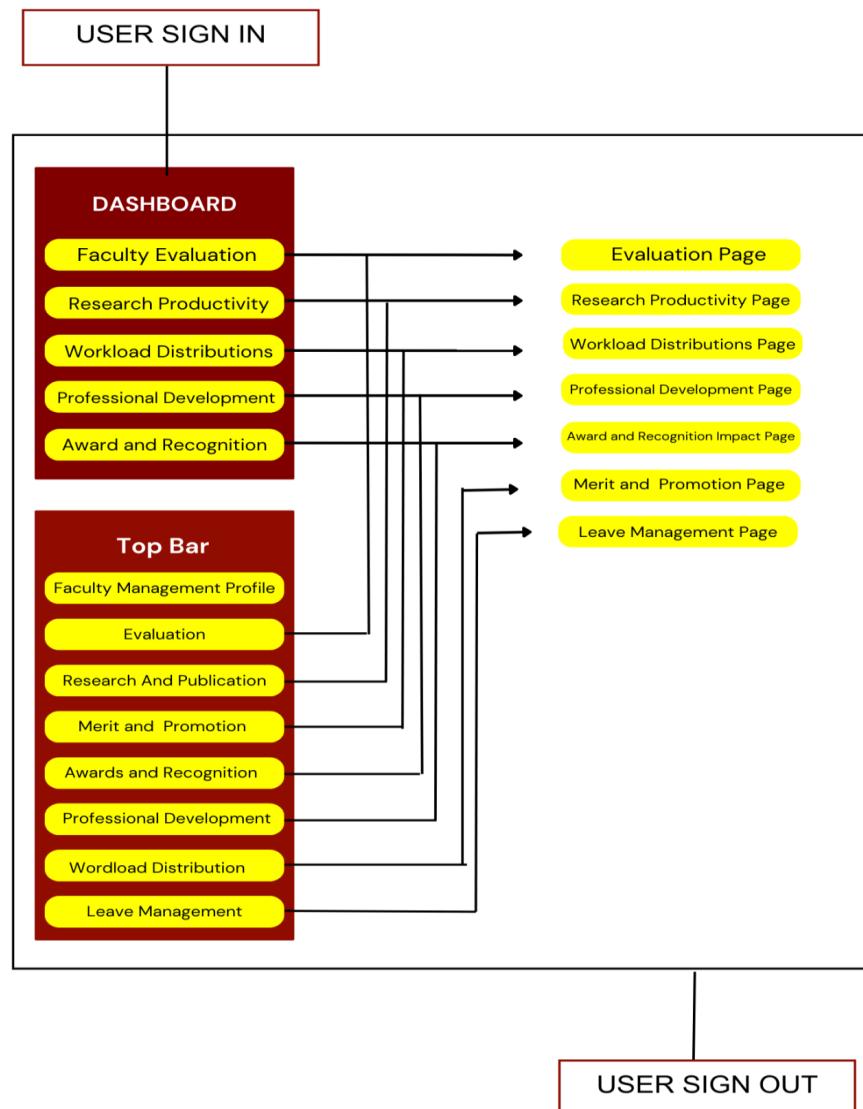
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FACULTY PERFORMANCE SYSTEM DEMO



APPENDIX B - Technical Documentation

15.1 System Integration





15.2. Information Systems Integration

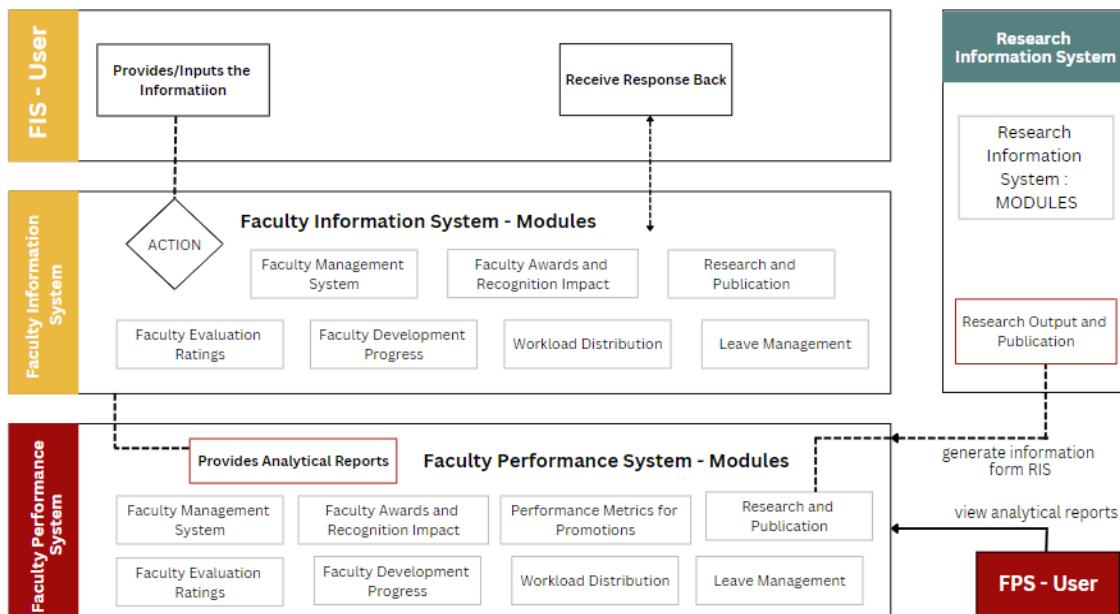
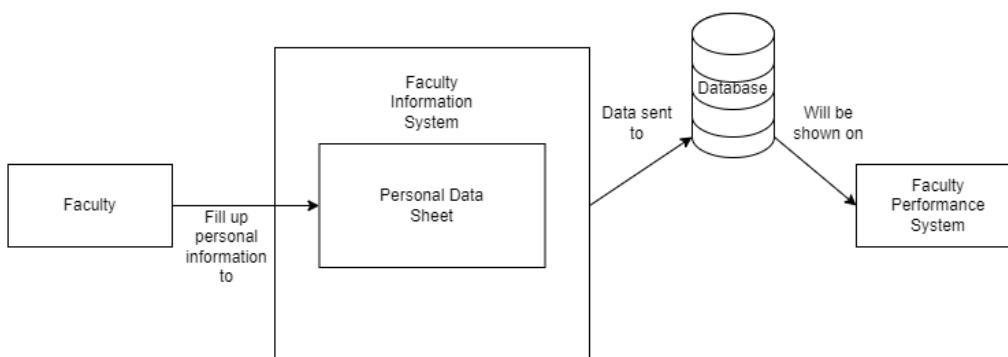


Diagram showing the integration points and data flows





15.3. Application Design and Development:

Detailed information about the software modules and components

Faculty Profile Management

Faculty Information: Stores basic information and contact details of faculty members.

Educational Background: Tracks faculty's educational qualifications and certifications.

Employment History: Records the faculty's employment history within the institution.

Teaching Evaluation and Feedback

Student Evaluation: Captures student feedback on faculty teaching performance.

Peer Evaluation: Includes evaluations from colleagues and department heads.

Teaching Observations: Conducts classroom observations to assess teaching practices.

Research and Publications

Research Output Tracking: Records faculty publications, conferences, and other research contributions.

Grant and Funding Management: Manages faculty research grants and funding received. Citation Metrics: Tracks citations and impact of faculty research.

Professional Development and Training

Workshop and Seminar Attendance: Records faculty participation in professional development activities.



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Continuing Education: Tracks faculty participation in ongoing education and training programs.

Performance Evaluation and Goal Setting

Self-Assessment: Allows faculty members to self-assess their performance and set goals.

Performance Appraisal: Conducts periodic performance evaluations by department heads or administrators.

Merit and Promotion Tracking

Merit Criteria: Defines criteria for merit awards and promotions.

Promotion Evaluation: Assesses faculty eligibility and suitability for promotions.

Feedback and Communication

Faculty Feedback Mechanism: Provides a channel for faculty to give feedback on institutional matters.

Performance Review Feedback: Facilitates feedback from department heads or administrators to faculty.

Attendance and Leave Management

Leave Tracking: Manages faculty leave requests and approvals.

Attendance Records: Tracks faculty attendance and time off.

Faculty Awards and Recognition

Awards Management: Records faculty awards and recognition received.

Faculty Achievements: Highlights faculty accomplishments and contributions.

Workload Distribution

Workload Allocation: Assigns teaching, research, and service tasks to faculty members.



Workload Balance: Ensures equitable distribution of workload among faculty.

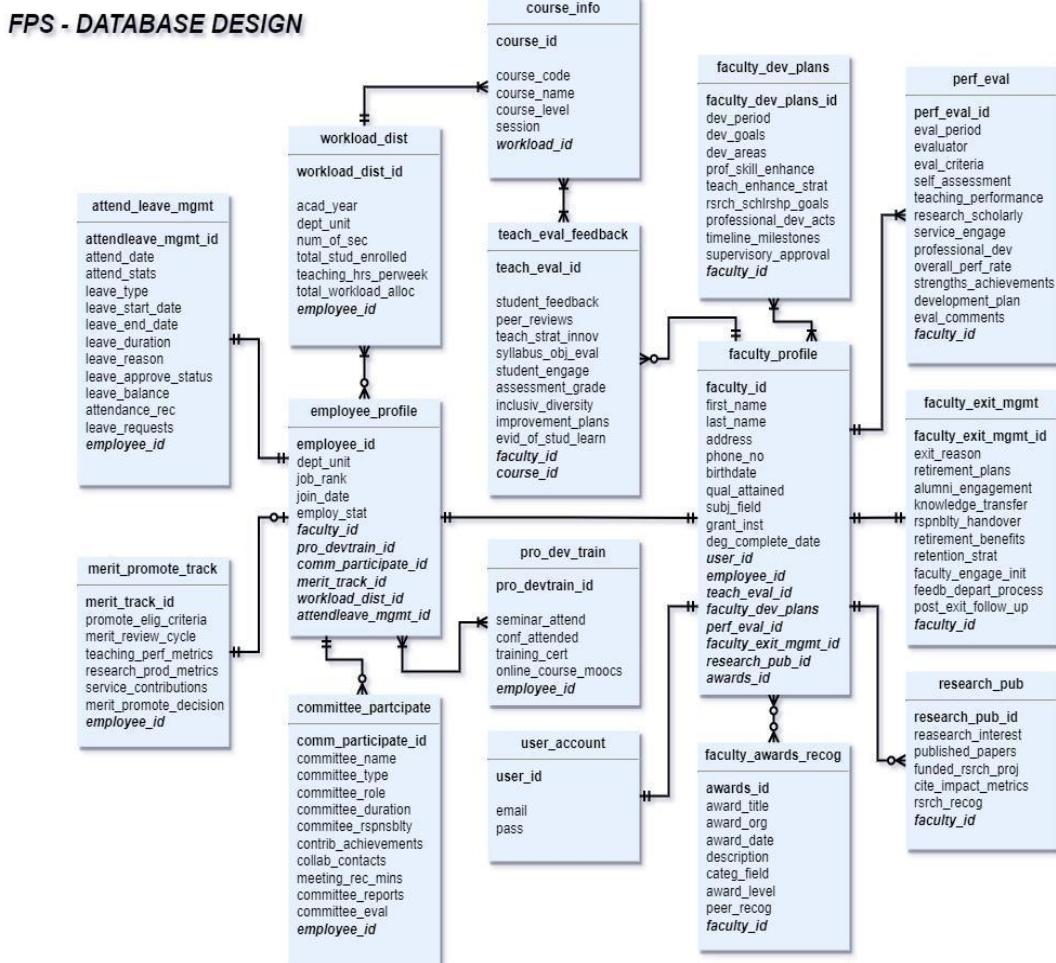
Faculty Development Progress

Personalized Plans: Assists faculty in creating development plans for career growth.

Progress Monitoring: Tracks the progress of faculty development initiatives.

15.4. Database Schema and Data Management

Database schema design and Entity-relationship diagrams (ERDs)





15.5. Network Configuration

The network configuration for accessing the Faculty Performance System is managed through the centralized portal, MyPUPQC, streamlining accessibility and administration. Within this all-in-one platform, users can seamlessly navigate to the Faculty Performance System, ensuring efficient and unified access. Moreover, the system employs a token-based authentication mechanism for logging in and out of the website, enhancing security measures and safeguarding user credentials. This approach not only simplifies user authentication but also reinforces data protection protocols within the network infrastructure.



15.6. Deployment and Infrastructure:

Deploying a website on Render provides a straightforward and efficient process, guaranteeing quick deployment and scalability. Utilizing Render's user-friendly platform, developers can effortlessly deploy their websites with minimal setup requirements. Render's integrated continuous deployment functionality automatically updates the website whenever changes are made to the repository, streamlining the deployment process. Moreover, Render offers comprehensive monitoring and logging tools, enabling developers to oversee website performance and address any issues promptly.

15.7. Security Measures

The team has implemented comprehensive security measures covering authentication, authorization, and encryption within the system. Robust authentication mechanisms, such as username and password combinations, are employed, with regular training programs promoting secure practices and encouraging the use of strong passwords. Periodic reviews and updates to user access align privileges with current roles, reducing the risk of unauthorized access. Authorization is managed through a role-based access control (RBAC) system, assigning specific access permissions to different user roles. This granular approach ensures users only have access to necessary functionalities, and regular audits further enhance the effectiveness of the authorization mechanism. For data protection, encryption is implemented both in transit and at rest. Secure communication protocols like HTTPS encrypt data during transmission, safeguarding personal information and performance records against interception. Sensitive data stored in databases is also encrypted, providing an additional layer of protection, and access to encryption keys is restricted to authorized personnel. Regular



assessments of encryption protocols are conducted to ensure compliance with industry standards and the latest security practices.

15.8. Testing and Quality Assurance:

Test Results and Bug Reports

Test Summary Report #2

Project: Faculty Performance System

Test Date: February 14, 2024

Tested Version: Version 2.0

Tested By: Miguel Angel Cantuja

Type of Test: Performance Testing

Tool Used: Lighthouse

Total No. of Requirements: 5

Test Results:

Requirement 1: Log-in page

Tracing the performance of the Faculty Performance System login page.

- Result: The performance score on the log-in page of "Faculty Performance System" is "59," which shows the system was performing "averagely" due to higher latency, which indicates the system was slower.

Diagnostics by Lighthouse:

- Result: As provided by the diagnostics of Lighthouse, one of the issues seen in the system is that, due to the elements used in the page, it causes higher latency to the system, which is why the system is slow.

Requirement 2: Dashboard



- Result: The performance rating of the dashboard page of the “Faculty Performance System” is “32,” which means that the dashboard page is performing badly and may need some changes to perform effectively and efficiently.

Diagnostics by Lighthouse:

- Result: As provided by the diagnostics of Lighthouse, one of the issues seen in the system is that, due to the elements used in the page, it causes higher latency to the system, which is why the system is slow.

Requirement 3: Faculty Management

- Result: The performance rating of the “Faculty Management” page is “36,” which means the page was performing slower and there should be changes to make it more efficient.

Diagnostics by Lighthouse:

- Result: According to the diagnostics of Lighthouse, the critical issues that affected the performance of the system were the elements used in the system, especially the CSS and Javascript elements.

Requirement 4: Evaluations

- Result: The performance rating of the “Evaluation” page is “29,” which shows the page is underperforming or not performing well due to the slower and higher latency of the webpage.

Diagnostics by Lighthouse:

- Result: According to the diagnostics of Lighthouse, the critical issues that affected the performance of the system were the elements used in the system, especially the unnecessary CSS and Javascript elements.

Requirement 5: Research & Publication

- Result: The performance rating of the “Research and Publications” page is “46.” It shows the performance of the Research and Publications page is below average and it needs changes to have a better performance.

Diagnostics by Lighthouse:

- Result: According to the diagnostics of Lighthouse, the critical issues that affected the performance of the system were the elements used in the system, especially the unnecessary Javascript elements.



Conclusion: It concludes that, due to the performance issues of the system, it needed changes and improvements to perform efficiently.

Type of Test: Cross-Browser Testing

Tool Used: Manual

Total No. of Requirements: 5

Requirement 1: Log-in

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 2: Dashboard

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 3: Faculty Management

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 4: Evaluations

Chrome: Passed

Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Requirement 5: Research & Publications

Chrome: Passed



Microsoft Edge: Passed

Brave browser: Passed

Mozilla Firefox: Passed

Opera browser: Passed

Conclusion: The Faculty Performance System was working in the five (5) tested browsers, and it shows the exact same output as intended.

Type of Test: Security Testing

Tool Used: Manual

Total No. of Requirements : 4

Requirement 1: URL Manipulation

Result: Passed

Comment: The url of the Faculty Performance System cannot be manipulated; specifically, it resets when an active link to the system is copied and pasted into a browser, and it redirects to the login page of the system.

Steps:

- Log-in to the system
- Go to dashboard
- Copy the url
- Go to other browser
- Paste the url

Requirement 2: Session expiry

Result: Passed

Comment: After idling to the system in 1 hour (60 minutes), then refreshing the site, the system redirects to the login page which depicts the session has expired and the user needs to login again to their account.

Requirement 3: Cookie based testing

Result: Passed



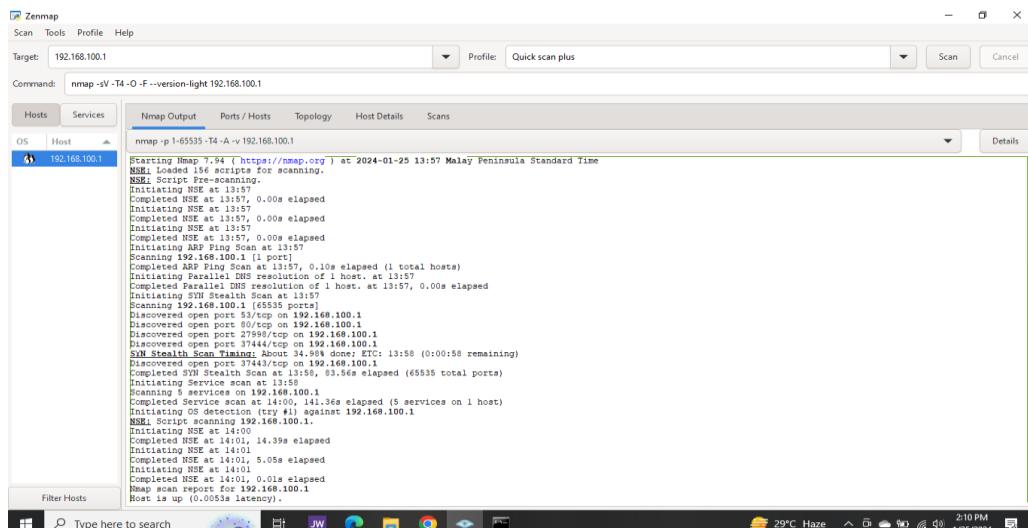
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Comment: After closing the browser, then opening it after a few minutes and logging into the system, there is no information from the last session.

Requirement 4: Zenmap/Nmap

Comment: Using the Zenmap/Nmap tool, the tester interprets that the deployment was good for the network of the system, but still, some parts should be reviewed for security best practices.



A screenshot of the Zenmap interface. The target is set to 192.168.100.1. The command entered is nmap -sV -T4 -O -F --version-light 192.168.100.1. The results tab shows the following output:

```
Starting Nmap 7.94 ( https://nmap.org ) at 2024-01-25 13:57 Malay Peninsula Standard Time
Nmap Scan Pre-scan complete (0.00s)
Initiating NSE at 13:57
Completed NSE at 13:57, 0.00s elapsed
Initiating NSE at 13:57
Completed NSE at 13:57, 0.00s elapsed
Initiating NSE at 13:57
Completed NSE at 13:57, 0.00s elapsed
Initiating ARP Ping Scan at 13:57
Scanning 192.168.100.1 [1 port]
Initiating Parallel DNS resolution of 1 host. at 13:57
Completed Parallel DNS resolution of 1 host. at 13:57, 0.00s elapsed
Scanning 192.168.100.1 (65535 ports)
Discovered open port 53/tcp on 192.168.100.1
Discovered open port 27999/tcp on 192.168.100.1
Discovered open port 37444/tcp on 192.168.100.1
NSE Stealth Scan Timing: 13:57.000s to 13:58.000s ETC: 13:58 (0:00:58 remaining)
Completed SYN Stealth Scan at 13:58, 83.56s elapsed (65535 total ports)
Initiating Service scan on 192.168.100.1
Completed Service scan at 14:00, 141.36s elapsed (5 services on 1 host)
Initiating OS detection (try #1) against 192.168.100.1
Completed OS detection (try #1) against 192.168.100.1
Initiating NSE at 14:01
Completed NSE at 14:01, 14.39s elapsed
Initiating NSE at 14:01
Completed NSE at 14:01, 5.05s elapsed
Initiating NSE at 14:01
Completed NSE at 14:01, 0.01s elapsed
Nmap scan report for 192.168.100.1
Host is up (0.005s latency).
```

Conclusion: It concludes that the Faculty Performance System follows security best practices to ensure the data of the stakeholders is protected, and some parts should be reviewed to improve security, especially the "CSP," which is a security layer that detects XSS (cross-site scripting) or the appearance of unwanted and malicious pop-up windows advertisements.

15.9. System Monitoring and Maintenance

Tools and techniques for monitoring system health

The team uses a variety of strong tools and methods to keep an eye on the security and well-being of the system, with Dynatrace serving as the main all-inclusive monitoring



solution. Key performance data are captured and analyzed using Dynatrace, providing real-time insight into the behavior of the system. With its sophisticated features, Dynatrace helps to monitor database performance, server resource usage, and application response times, providing insightful information about possible bottlenecks and improvement opportunities. By continuously analyzing potential security risks and abnormalities, the tool's tracking features improve the capacity to proactively identify and address security issues. The documentation describes the approach to using Dynatrace for centralized logging, which makes it easier to aggregate and analyze logs from different parts of the system.

Furthermore, performance and security tests are smoothly included into our development processes thanks to the usage of Dynatrace in ongoing integration and deployment pipelines. In order to maintain the Faculty Performance System's optimal security posture and alignment with changing project needs, the documentation also stresses the significance of routine reviews and modifications to the monitoring strategy and the utilization of Dynatrace's capabilities.

Logging and error handling mechanisms

1. *Logging Mechanism:* The logging mechanism involves implementing comprehensive logging across the system to capture events, errors, and user activities with timestamps, severity levels, and contextual information. Different log levels (INFO, DEBUG, WARNING, ERROR, and CRITICAL) categorize the severity of events, allowing dynamic adjustments based on the system's operational state. Additionally, a centralized logging system or platform is utilized to consolidate logs from different components and servers, facilitating easy analysis and troubleshooting through a unified log repository.



2. *Error Handling Mechanism:* The error handling mechanism focuses on user-friendly practices, including providing clear and understandable error messages to end-users with guidance on potential solutions. It emphasizes graceful degradation to enable the system to operate with reduced functionality during errors, prioritizing critical functionalities over non-critical features. Additionally, the system assigns unique error codes to different types of errors for easy identification and reference, and detailed error descriptions in logs assist developers in diagnosing and fixing issues.

3. *Real-time Monitoring:* Real-time monitoring involves setting up mechanisms to detect critical errors and anomalies promptly. Automated alerts and notifications are configured to inform the operations team immediately about potential issues. Additionally, integration with monitoring tools is implemented, combining logging and error handling to offer a comprehensive view of the system's health. This integration allows for correlating logs with performance metrics, enhancing diagnostic capabilities.

4. *Debugging Information:* For debugging information, the system enables verbose logging in development environments, providing additional contextual information in logs to facilitate debugging. In production environments, logs are carefully managed to avoid sensitive information, with measures in place to anonymize or mask personal data to comply with privacy and security standards.

5. *Regular Audits: Periodic Log Audits:* Conduct regular audits of logs to identify patterns, recurring errors, or potential security threats. Adjust error handling mechanisms based on audit findings to improve system robustness.

6. *Documentation: Logging and Error Handling Documentation:* Document logging and error handling mechanisms, including log formats, error codes, and escalation



procedures. Ensure that new team members are familiar with the logging practices and error handling protocols.

By implementing these logging and error handling mechanisms, the Faculty Performance System can effectively capture and manage information about its operational status, diagnose issues promptly, and enhance the overall reliability of the system. Regular monitoring and documentation are essential for maintaining the effectiveness of these mechanisms over time.

Disaster Recovery and Backup Procedures include the following key components:

Backup Strategy:

- Perform regular backups of the entire system, including databases, configurations, and critical files.
- Implement a daily backup schedule for up-to-date data recovery capabilities.
- Store backups in secure, offsite locations, utilizing cloud-based storage for redundancy.
- Employ incremental backup strategies to minimize data transfer and storage requirements.
- Regularly test the restoration process for both full and incremental backups.

Disaster Recovery Plan:

- Maintain a detailed disaster recovery plan with step-by-step procedures for system recovery.
- Include contact information for key personnel, vendors, and third parties.
- Establish an emergency response team with defined roles, responsibilities, and communication protocols.



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- Implement offsite data replication for real-time mirroring to a geographically distant secondary location.
- Conduct regular disaster recovery drills and refine the plan based on testing results.

System Monitoring and Alerts:

- Implement automated monitoring systems to detect anomalies, unauthorized access, or potential threats.
- Configure alerts to notify administrators immediately in case of system irregularities.
- Conduct regular security audits to identify and address vulnerabilities.
- Keep software, antivirus programs, and security patches up-to-date.

Redundancy and Failover:

- Utilize redundant servers for continuous operation in case of server failures.
- Implement load balancing to evenly distribute traffic across servers.
- Establish failover mechanisms to automatically switch to backup systems during primary system failures.
- Regularly test failover processes to guarantee seamless transitions.

Communication Plan:

- Develop a communication plan to inform stakeholders during and after a disaster.
- Provide updates on the status of recovery efforts and expected timelines for system restoration.

Regular Training:

- Conduct regular training sessions for staff involved in disaster recovery.



- Ensure personnel are well-versed in their roles and the procedures outlined in the recovery plan.

By implementing these Disaster Recovery and Backup Procedures, the Faculty Performance System enhances its resilience, minimizes downtime, and ensures the continuity of critical operations in the face of unforeseen events. Regular testing, monitoring, and communication are key components of a robust disaster recovery strategy.

15.10. APIs and Integration Points

Documentation of APIs used for integration

The Faculty Performance System seamlessly integrates with external systems through the utilization of APIs, enabling the exchange of data crucial for our operations. External entities leverage these APIs to provide us with pertinent data, which we, in turn, utilize for calculating and generating the desired charts within the Faculty Performance System. This collaborative approach allows stakeholders to compare and gain insights into the ongoing activities within the faculty. By visualizing the data derived from external systems, our platform ensures transparency and facilitates informed decision-making processes.

15.11. User Documentation

The User Documentation for the Faculty Performance System provides guidance for a positive and productive experience within the system. Key points include:

1. Accessing the System: Use provided login credentials and adhere to multi-factor authentication if applicable. Contact the system administrator for login assistance or password-related issues.



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2. Dashboard Navigation: Familiarize yourself with the dashboard layout and key components. Customize your dashboard for quick access and consult help resources for specific queries.
3. Performance Metrics and Evaluation: Understand the significance of key performance metrics aligned with your role. Exercise proficiency in interpreting performance reports and initiating evaluations. Explore additional resources, such as tutorial videos, for a deeper understanding.
4. Privacy and Security Measures: Adhere to data confidentiality guidelines and respect access control policies. Implement security best practices and regularly update passwords.
5. Troubleshooting: Consult the troubleshooting section for solutions to common issues. Document and report persistent problems to the system administrator.
6. Conclusion: Regularly engage with the system for feature updates. Embrace continuous improvement and collaborative utilization. Provide feedback on user experiences to contribute to system enhancements.

Troubleshooting Guide

1. Login Issues:

Problem: Unable to log in.

Solution: Confirm username and password. If issues persist, contact the system administrator.

2. Dashboard Navigation:

Problem: Difficulty finding specific information.

Solution: Use the search bar and guidance icons. For further assistance, refer to the help section or contact the system administrator.



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3. Data Entry and Updates:

Problem: Issues viewing or updating information.

Solution: Ensure all required fields are filled accurately. If problems persist, check for error messages and contact the system administrator.

4. Performance Metrics and Reports:

Problem: Unable to understand performance reports.

Solution: Review tooltips and guidance icons within reports. If unclear, contact the system administrator for clarification.

8. Privacy and Security Concerns:

Problem: Worries about data confidentiality.

Solution: Familiarize yourself with the system's privacy settings. If concerns persist, contact the system administrator for information on privacy measures.

FAQs - Frequently Asked Questions

Q1. How do I log in for the first time?

Answer: Use the provided username and password. If forgotten, use the "Forgot Password" option or contact the system administrator.

Q2. What if I can't find something on the dashboard?

Answer: Use the search bar or guidance icons. For additional assistance, refer to the system's help resources or contact the system administrator.

Q3. How often should I update my information in the system?

Answer: Regularly update your information, especially with changes. If uncertain, consult the user manual or contact the system administrator.

Q4. What if I don't understand the performance reports?



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Answer: Review tooltips or guidance icons within the reports. If unclear, contact the system administrator for assistance.

Q5. How is my privacy protected in the system?

Answer: Familiarize yourself with the system's privacy settings. For detailed information, contact the system administrator for clarification.

Q6. What if I encounter a technical issue not listed here?

Answer: Document the issue clearly and report it promptly to the designated system administrator. Provide as much detail as possible for efficient resolution.

Q7. Are faculty members able to use the system and input their personal information?

Answer: No, only the designated administrator can access the system.

15.12. Known Issues and Troubleshooting

List of known possible issues and their status:

Login Failure:

Possible Issue: Incorrect username or password.

Status: "Invalid Credentials" message displayed. Users are prompted to re-enter credentials or use other option.

Dashboard Information Not Loading:

Possible Issue: Connectivity or server issues.

Status: "Loading..." indicator displayed. System attempts to reconnect automatically. If persistent, users are advised to check internet connection or contact the system administrator.

Data Entry Errors:

Possible Issue: Missing or inaccurate data.



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Status: Error message displayed. Users are prompted to review and correct data.

Contact system administrator for persistent issues.

Performance Reports Not Generating:

Possible Issue: Data discrepancies or system error.

Status: "Report Generation Error" message displayed. Users advised to check

data accuracy or contact system administrators for assistance.

Data Conflicts:

Possible Issue: Overlapping events in the data handling.

Status: "Conflict Detected" message displayed. Users guided to resolve conflicts

or contact system administrators for assistance.

Privacy and Security Concerns:

Possible Issue: Unauthorized access or data breach concerns.

Status: "Security Alert" notification displayed. Users instructed to review privacy

settings. System administrator conducts a security review and communicates any

necessary actions.

Technical Anomalies not Listed:

Possible Issue: Unforeseen technical glitches.

Status: Users instructed to document the issue clearly and report it promptly to the

system administrator. A detailed investigation is conducted for resolution.

Slow System Performance:

Possible Issue: Heavy server load or system maintenance.

Status: "System Maintenance" notification displayed. Users informed of the

maintenance period. If performance issues persist, users can contact the system

administrator.



Failure to Receive Real-time Feedback:

Possible Issue: Delayed data updates or system latency.

Status: "Data Syncing" notification displayed. Users advised to wait for synchronization completion. If the issue persists, contact the system administrator for further assistance.

User Interface Display Issues:

Possible Issue: Browser compatibility or resolution settings.

Status: "Display Resolution Error" message displayed. Users are prompted to adjust browser settings or contact system administrators for guidance.

15.13. Version Control and Source Code Repository

The project utilized the version control of Git and Github. Git is a distributed version control system designed for efficient tracking of changes in source code during software development, facilitating collaboration among multiple developers. GitHub, a web-based platform built on Git, provides a centralized space for hosting repositories.

Leveraging Git and GitHub for the Faculty Performance System Capstone Project offers significant advantages. Firstly, Git's version control ensures a systematic approach to tracking changes, allowing contributors to work on different aspects concurrently while maintaining a coherent codebase. Additionally, GitHub enhances collaboration by providing features such as pull requests, code reviews, and issue tracking, promoting efficient communication and teamwork. This integrated approach not only ensures code quality and transparency but also streamlines project management, contributing to the overall success of the Faculty Performance System development.



Repository Location and Access Details

The Faculty Performance System project repository on GitHub is securely hosted and accessible only to authorized developers. It is configured as a private repository to maintain the confidentiality and integrity of the source code. Access is restricted, and collaboration permissions are granted only to developers with appropriate authorization. Collaboration requests are managed by Daniel Reyes, ensuring controlled and organized development.

The GitHub workflow involves leveraging branching and merging strategies to enhance the development process. Branching allows for dedicated environments for testing and individual development, providing a sandbox for developers to work on specific features. The merging process seamlessly integrates and tests individual contributions, facilitating collaboration and ensuring continuous improvement for the Faculty Performance System website. This strategy streamlines the development workflow, enhances code management, and promotes effective collaboration.

15.14. DevOps and Continuous Integration/Continuous Deployment (CI/CD)

Devops and Continuous Integration (Ci/CD)

In the Faculty Performance System project's DevOps framework, the team has seamlessly incorporated Azure DevOps, a comprehensive platform that streamlines our development, testing, and deployment processes. Leveraging Azure DevOps, the team established a robust Continuous Integration/Continuous Deployment (CI/CD) pipeline. This pipeline is meticulously configured to automate the build, test, and deployment phases, ensuring a swift and reliable delivery of updates to the Faculty Performance System. This integrated approach not only enhances the efficiency of the development



cycle but also fosters a more collaborative and streamlined environment for the project team.

Deployment and Rollback procedures

The team have implemented meticulous rollback procedures within Azure DevOps, ensuring that in the event of unforeseen issues post-deployment, we can swiftly revert to a stable version. This strategic integration of deployment strategies and rollback procedures enhances the reliability and resilience of our deployment pipeline, contributing to the overall success and stability of the Faculty Performance System.

15.15. Licensing and Open Source Libraries

System Architecture:

Web Application Framework:

Django

Backend Server Technology:

Node.js

Flask

Database Management System: PostgreSQL

Frontend Technologies:

react typescript

react

bootstrap 5

Ajax

Hosting Environment: Github

Security Measures:

SSL/TLS Configuration:



The application encrypts data transmission using SSL/TLS.

Authentication and Authorization:

Password and username authentication is used to accomplish user authentication.

Access is managed by authorization systems according to user classifications and permissions.

15.16. Performance Metrics and Monitoring

Metrics collected and monitored

Teaching Effectiveness:

Metrics: Student feedback scores, peer evaluations, classroom engagement assessments.

Monitoring: Continuous tracking of teaching effectiveness based on feedback, evaluations, and class participation metrics.

Research Productivity:

Metrics: Number of publications, research projects completed, citation impact.

Monitoring: Regular assessment of faculty research productivity, tracking publications, project outcomes, and academic influence.

Professional Development:

Metrics: Workshops attended, certifications obtained, skill enhancement.

Monitoring: Real-time tracking of professional development activities, ensuring faculty engagement in continuous learning.

Performance Evaluation:

Metrics: Performance scores, goal achievement.



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Monitoring: Ongoing evaluation of faculty performance against predefined goals and institutional standards.

Merit and Promotion Progress:

Metrics: Progress towards merit and promotion criteria.

Monitoring: Systematic tracking of faculty progress, providing insights for merit increases and promotion assessments.

Attendance and Leave Analytics:

Metrics: Attendance records, leave requests, punctuality.

Monitoring: Regular monitoring of attendance, leave patterns, and punctuality for effective workforce management.

Faculty Awards and Recognition Impact:

Metrics: Awards received, impact on faculty and institution.

Monitoring: Tracking the impact of faculty awards and recognition on individual faculty members and the overall institution.

Workload Distribution Analysis:

Metrics: Teaching hours, committee workload, administrative tasks.

Monitoring: Analysis of the distribution of workload among faculty, ensuring a balanced and fair allocation.

Faculty Development Progress:

Metrics: Progress in professional growth plans, skill development.

Monitoring: Tracking faculty development plans to ensure progress aligns with individual and institutional goals.

Faculty Awards and Recognition Impact:

Metrics: Awards received, impact on faculty and institution.



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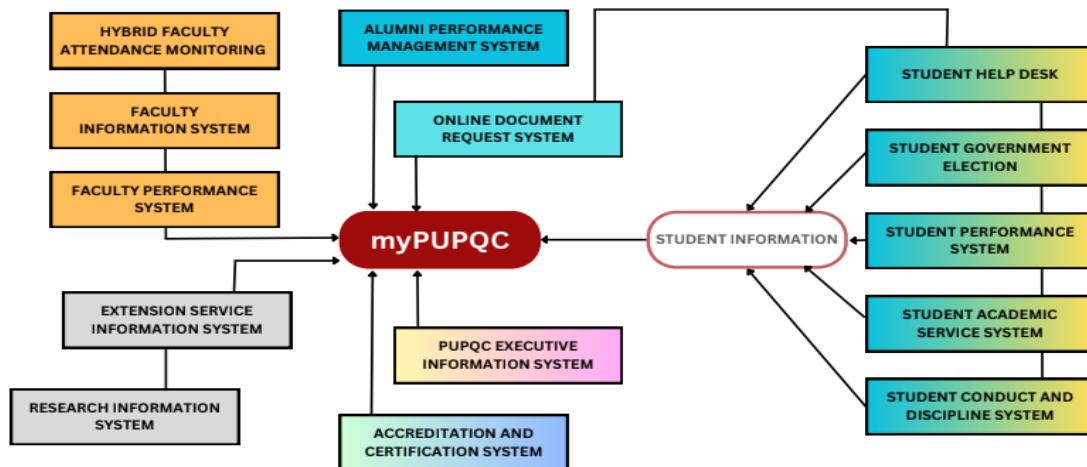
Monitoring: Tracking the impact of faculty awards and recognition on individual faculty members and the overall institution.

APPENDIX C - Scrum Artifacts

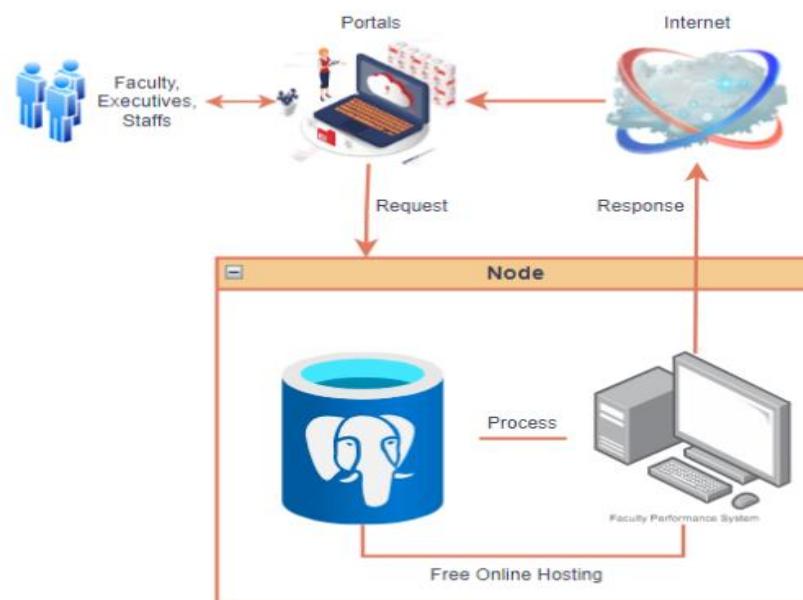


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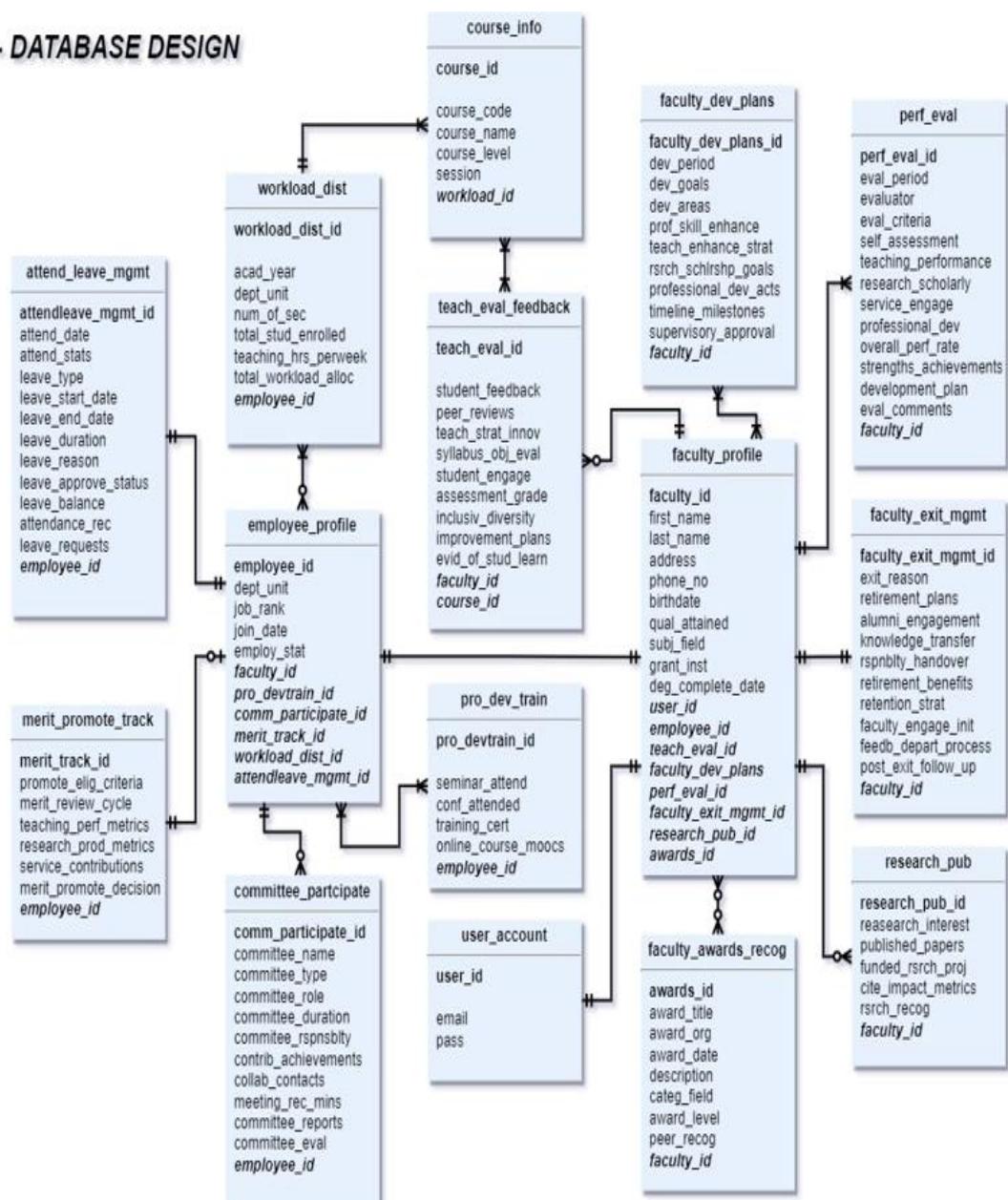


Faculty Performance System - High Level Architecture





FPS - DATABASE DESIGN





APPENDIX D - Requirements Traceability Matrix

SR/Ref No	User Story/Business Requirement	Acceptance Criteria	Faculty Performance System - Requirements Tracesability Matrix		
			Solution Design/Module	For QA Team to fill-up	
			Test Case No.	Test Case Title	Passed/Failed
FPS 1	<ul style="list-style-type: none"> • User Authentication <ul style="list-style-type: none"> As a user, I want to be able to login and securely authenticate myself on the system to perform authorized actions. Email Password Login Forgot Password 	<ul style="list-style-type: none"> Login Module TextField for Email TextField for Password Checkbox - Remember Me TextButton - Log In TextButton - Forgot Password <p>Login Page</p> <ul style="list-style-type: none"> users should input only their valid Email and Password, system verifies the credentials and grant access. users should get redirected to the system home page if sign in process is successful If sign in process is failed the system will display an error message notifying the user for wrong inputs 		FPS 1 - 1 to FPS 1 - 7	FPS - LOGIN 7/7 (Passed)
FPS 2	<ul style="list-style-type: none"> As a user I must be able to access and view average evaluation scores for faculty members. That allows me to assess the teaching effectiveness of the faculty 	<p>Teaching Effectiveness Module in the system are as follows:</p> <ul style="list-style-type: none"> - integration with faculty information system - on accessing the teaching effectiveness page, user must be able to see the total percentages of: <ul style="list-style-type: none"> - Average Institutional Rate - Faculty Ratings First Semester - Self Evaluation for Average Students Scores for Faculty, data is presented in pie graph that has indication of: <ul style="list-style-type: none"> - Above Average - Below Average - Equal Average users are also able to see the least and highest rated faculty displayed in numbers; - High 		FPS 3 - 1 to FPS 3 - 6	FPS - EVALUATIONS 6/6 (Passed)
FPS 4	<ul style="list-style-type: none"> As a user, I want to track and analyze the number of publications and research outputs per faculty member, so that I can assess their productivity and contributions to the academic community 	<p>Research Productivity Module in the system are as follows:</p> <ul style="list-style-type: none"> - integration with research information system - user access to the system that records overall: <ul style="list-style-type: none"> - Publications - Conferences - Overall Research Contributions - Grant and Funding Management - Citation Metrics data must be statistically presented categorization and filtering options for research outputs user must have the ability to view detailed information for 		FPS 4 - 1 to FPS 4 - 14	FPS - RESEARCH AND PUBLICATIONS / FPS INDIVIDUAL RESEARCH 6/6 (Passed)
FPS 5	<ul style="list-style-type: none"> As a user, I must be able to measure the citations and impact of faculty research, as this will help me evaluate the quality and influence of their work. 	<p>Research Productivity Page</p> <ul style="list-style-type: none"> - integration with research information system - users are able to view citation metrics for different categories such as: <ul style="list-style-type: none"> - publications - authors - research areas system provide options to filter and sort the citation metrics based on specific parameters such as: - time period 			
FPS 6	<ul style="list-style-type: none"> As a user, I must be able to monitor the success rate of faculty members in securing research grants and funding, as this will indicate their ability to attract external resources and support for their projects. 	<p>Research Productivity Page</p> <ul style="list-style-type: none"> - integration with research information system - the system has reporting feature that displays the success rate of faculty members in securing research grants and funding in terms of the following <ul style="list-style-type: none"> - Personal Grants - Fellowship - Crowd Funding the system allow filtering and sorting options to view the success rate of faculty members based on different criteria, such <ul style="list-style-type: none"> - research area - academic rank the system should provide the ability to view historical data and track changes in the success rate over time, allowing for comparisons and trend analysis. 			
FPS 7	<ul style="list-style-type: none"> As a user, I must be able to track and monitor the attendance and participation of faculty members in workshops. 	<p>Professional Development Module in the system are as follows:</p> <ul style="list-style-type: none"> - integration with faculty information system - user access to the system that records overall: <ul style="list-style-type: none"> - Workshops - Conferences - Seminars - Training Programs data must be statistically presented categorization and filtering options for professional development 			FPS - Professional Development Module 5/5 (Passed)
FPS 8 FPS 9	<ul style="list-style-type: none"> As a user, I must be able to view faculty members performances within the university and determine if the requirements for merit awards and promotions are met. As a user, I must be able to determine the faculty members eligibility and suitability for promotion within the university 	<p>Merits Awards and Promotion to assess faculty eligibility and suitability for promotion.</p> <ul style="list-style-type: none"> - integration with faculty information system - the defined criteria should consider factors such as : <ul style="list-style-type: none"> - teaching effectiveness - research productivity - professional development users should be able to customize the weightage or importance of each criterion in the evaluation process. a mechanism for assessing faculty eligibility and suitability for promotions based on the defined criteria. users should be able to show and track faculty performance data, such as, <ul style="list-style-type: none"> - teaching evaluations - research outputs the system display analytics and the overall assessment results, indicating the faculty member's eligibility or suitability for promotions. 			FPS - Merits Awards and Promotion 6/6 (Passed)



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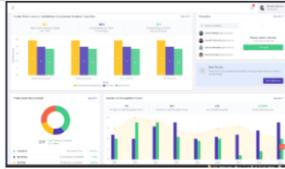
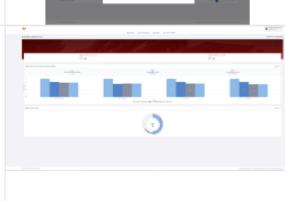
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FPS 10	As a user, I want to easily access and analyze information about faculty members attendance patterns and leave utilization. This will allow me to make informed decisions about their request and effectively manage approvals.	Faculty Attendance and Leave Request Management follows: <ul style="list-style-type: none">integration with faculty information systemadministrators or authorized users should be able to review and manage leave requests, including approving, rejecting, requesting further information.the system should track and record approved leave requests, including relevant details and comments.users should be able to search and filter approved leave requests based on specific criteria.the system tracks faculty attendance and time off, including:<ul style="list-style-type: none">approved leavesick leavepersonal daysetc.users should be able to compare and analyze attendance and time off statistics across faculty members, departments, or time periods.		FPS - Faculty Attendance and Leave Request Management	6/6 (Passed)
FPS 11	As a user, I must be able evaluate the impact of faculty awards and recognition performance. This will enable me to identify patterns and trends in their performance and assess the effectiveness of these honors in promoting excellence in research and teaching.	Faculty Awards and Recognition Impact in the system are as follows: <ul style="list-style-type: none">integration with faculty information systemsystem displays the award and achievements using bar graphsbar height corresponds to the magnitude or significance of the achievement.user can drill down for more detailed information on each faculty achievement.each bar represents a specific accomplishment or contribution, such as<ul style="list-style-type: none">Blue: Project ContributionYellow: Performance ImpactGreen: Recognized Facultiessystem provides statistics labels or tooltips to describe each bar and its achievement.Faculties with High Recognition ScoreFaculties with High Evaluation ScoreNumber of Eligible AwardeeFaculty Working Hours		FPS - Faculty Awards and Recognition	6/6 (Passed)
FPS 12	As a user, I must be able to evaluate the workload and balance and fairness among the faculty.	Workload Allocation and Workload Balance are as follows: <ul style="list-style-type: none">integration with faculty information systemworkload allocation should consider factors such as:		FPS - Workload Allocation	7/7 (Passed)



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FPS 13 As a user, I want to track and evaluate the progress of their faculty members in achieving their development plan objectives. By monitoring their advancements, I can assess the effectiveness of development initiatives in improving faculty performance.	<p>Progress monitoring for faculty development initiatives are as follows:</p> <ul style="list-style-type: none">Integration with faculty information systempie graph visually represents the proportion of progress for each initiative such as<ul style="list-style-type: none">green: completedviolet: workshopsyellow: seminarsred: trainingsuser can view current progress and the overall total trainings conducteduser can drill down for more detailed information on each initiative's progressuser are able to see the time period for displayed progress with the overall totalsystem provides a legend or key for understanding the graph, such as<ul style="list-style-type: none">CompletedWorkshopsSeminarsTrainings			
FPS 14 As a user, I want to be able to access and view each faculty basic details in the system.	<p>Faculty Profile Management</p> <ul style="list-style-type: none">user can click on specific faculty member listed in a clickable box, and upon clicking, it will expand to display their brief details and overall performance within this moduleusers can view the personal details of each faculty, which include<ul style="list-style-type: none">Last NameFirst NameMiddle NameDate of BirthFaculty DepartmentSexSo onPresented as in a manner similar to every module analytics, providing an overall faculty overview that encompasses<ul style="list-style-type: none">Performance RatingResearch ProductivityService Contributions		FPS 5 - 1 to FPS 5 - 9	FPS - FACULTY MANAGEMENT QIG (Passed)
FPS 15 As a user, I want to be able to access and view each faculty overall performance in the system.	<p>As a user, I want to be able to see in the dashboard the analytics of overall module performance</p>		FPS 2 - 1 to FPS 2 - 5	FPS - DASHBOARD 5/5 (Passed)
FPS 16 As a user, I want to be able to see in the dashboard the analytics of overall module performance	<p>Within the top bar of the dashboard, users will find the following options:<ul style="list-style-type: none">Faculty ManagementEvaluationResearch & PublicationMerit & PromotionAwards and RecognitionProfessional DevelopmentAnd moreClicking on More modules will reveal additional options, such as:<ul style="list-style-type: none">Workload DistributionLeave ManagementBeneath the dashboard displays the Faculty Type and the user's name. In the dashboard, users should have visibility into:<ul style="list-style-type: none">Average Institutional RatingTotal Research ProductsAwarded FacultiesSuccessful TrainingsReduced WorkloadsUpon scrolling, users will see or encounter:<ul style="list-style-type: none">Present Academic Year Faculty Evaluation Results</p>			



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FPS 17	<p>As a user, I must be able to print Evaluation Module everything contained in Evaluation module</p> <ul style="list-style-type: none">The user will be able to print everything included on the page, which encompasses:<ul style="list-style-type: none">DateTimeThe graph illustrating the Faculty Evaluation Average RatingsTrends in Teaching Effectiveness Over TimeAverage Student Scores for Each FacultyFrom Least Rated Faculties To Highest Rated Faculties		FPS 3 - 5	FPS - EVALUATIONS	1/1 (Passed)
FPS 18	<p>As a user, I must be able to print Research Productivity Page Module everything contained in Research and Publication module</p> <ul style="list-style-type: none">The user will be able to print everything included on the page, which encompasses:<ul style="list-style-type: none">DateTimeThe graph illustrating the Average Rating Based on Faculty Performance Development in Research MethodologiesPresent Academic University Research GoalsAnalytical Research Bound and Published Over Years		FPS 4 - 4	FPS - RESEARCH AND PUBLICATIONS	1/1 (Passed)
FPS 10	<p>As a user, I must be able to download the Excel file containing the overall performance summary of a particular faculty.</p> <p>Faculty Profile Management</p> <ul style="list-style-type: none">Aligned with the performance button, users can click on the Report Button to download an Excel file. Users would then see the overall report of a specific faculty. Criterion A- Teaching Effectiveness follows. <p>Faculty Performance</p> <p>1.1. Student Evaluation</p> <p>1.2. Supervisor's Evaluation</p> <p>Users can also see the computation regarding their overall grade, such as:</p> <ul style="list-style-type: none">Overall Average RatingFaculty Score <p>The evaluation period spans from the first semester to the second semester.</p>		FPS 5 - 10	FPS - FACULTY MANAGEMENT	1/1 (Passed)



APPENDIX E - Grammatical Certificate

This is to certify that the undersigned has reviewed and been proofread carefully the project study paper entitled, "FACULTY PERFORMANCE SYSTEM: developed by Miguel Angel Y. Cantuja, Rafael Jayson M. Logan, John Vic A. Macusi, Daniel Jose D. Reyes, and Angel Mae A. Taga-oc; therefore, aligned with the set of structural rules that govern the composition of sentences, phrases, and words in the English language. Also, all corrections and recommendations made have been done and/or incorporated in the final manuscript,

This certification is issued on the **DATE** upon the request of the above-mentioned researchers for whatever legal purpose it may serve.

Signed:

GRAMMARIAN NAME AND SIGNATURE

Conformed:

CANTUJA, MIGUEL ANGEL Y.

LOGAN, RAFAEL JAYSON M.

MACUSI, JOHN VIC A.

REYES, DANIEL JOSE D.

TAGA-OC, ANGEL MAE A.

**APPENDIX F - Turnitin Plagiarism Checker Result****Capstone - Faculty Performance System****ORIGINALITY REPORT**

7% SIMILARITY INDEX	5% INTERNET SOURCES	2% PUBLICATIONS	5% STUDENT PAPERS
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PRIMARY SOURCES

1	www.coursehero.com Internet Source	1%
2	Jean Pierre Saldaña Bartra, Jhony Felix Huayllani Puja, Margarita Giraldo Retuerto, Laberiano Andrade-Arenas. "Prototype of Mobile Application Oriented to the Educational Help for Blind People in Peru", International Journal of Interactive Mobile Technologies (ijIM), 2022 Publication	<1%
3	Submitted to Laguna State Polytechnic University Student Paper	<1%
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5	Submitted to St Dominic College of Asia Student Paper	<1%
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7	www.scribd.com	



APPENDIX G - Biographical Statement



 <i>miguelangelcantuja@gmail.com</i> <i>Calamiong Compound, Barangay Bagong Silangan, Quezon City</i>	<p>Miguel Angel Y. Cantuja is a fourth year IT student of Polytechnic University of the Philippines - Quezon City Branch. He is a full-time student who is passionate about what he does, especially enhancing his skills in different fields. His hobbies are playing basketball and video games; he also reads research articles. He was assigned as a Quality Assurance Analyst, responsible for reporting and documenting system issues. He aspires to be a Quality Assurance Officer or Technical Support, and be promoted to become a System Administrator for a certain company that pays well.</p>
 <i>logan.rafaeljayson@gmail.com</i> <i>Casimiro Townhomes, Deparo Caloocan City</i>	<p>Rafael Jayson M. Logan is a fourth-year information technology student at the Polytechnic University of the Philippines, Quezon City Campus. He is a full-time student, an Indie Game Developer, and the founder of Pylon Esports, Sta. Mesa Branch. He is a game developer and freelancer at Fiverr and Upwork. His expertise and experience include skills in game design, level design, and game environment, specifically 3D environment art, and his freelance commissions extend from 3D environment to full-fledged video games. He aspires to be one of the best game developers and leaders in the world and to be one of the Filipino Game Developers who will win awards and be a pioneer of campus esports.</p>
	<p>John Vic A. Macusi is a fourth year student at Polytechnic University of the Philippines - Quezon</p>



 <p><i>jayviemacusi01@gmail.com</i></p> <p>Bicoleyte Street, Brgy. Commonwealth Quezon City</p>	<p>City Branch, pursuing a passion for technology through a Bachelor of Science degree in Information Technology. He has proven himself in roles such as Quality Assurance Analyst and Front-end Developer in his Thesis. On this capstone project he was assigned as Scrum Master and Documentation. With an ardent interest in Web Design and Development. He possesses a profound understanding of various web development languages, such as HTML, CSS, and JavaScript, along with some knowledge of PHP, Flutter.</p>
 <p><i>daniel.reyes7710@gmail.com</i></p> <p>Sampaguita Street, Barangay Holy Spirit, Quezon City</p>	<p>Reyes, Daniel Jose Desantores, is a fourth-year IT student at Polytechnic University of the Philippines - Quezon City Branch. A full-time student who is enthusiastic about what he does, particularly improving abilities in many subjects. His pastimes include playing indoor and outdoor games, cleaning, working, studying, and reading research articles. He was tasked with creating several university website systems to help faculty members be more efficient by organizing, storing, and analyzing stakeholder data. He hopes to be a software/web developer, eventually becoming a full-stack developer, cybersecurity personnel and software/hardware technical support representative.</p>



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amtagaoc@gmail.com

Faisal St. Filinvest II,
Quezon City

Angel Mae A. Taga-oc is a fourth-year Information Technology student at the Polytechnic University of the Philippines - Quezon City Branch. She is a full-time student, with a profound interest in the dynamic world of technology. Throughout her academic journey, she has honed her project management and problem-solving skills, tackling real-world IT challenges with enthusiasm and a commitment to excellence. She is poised to contribute and thrive in the fast-paced and dynamic landscape of Information Technology.

**APPENDIX H - Matrix**

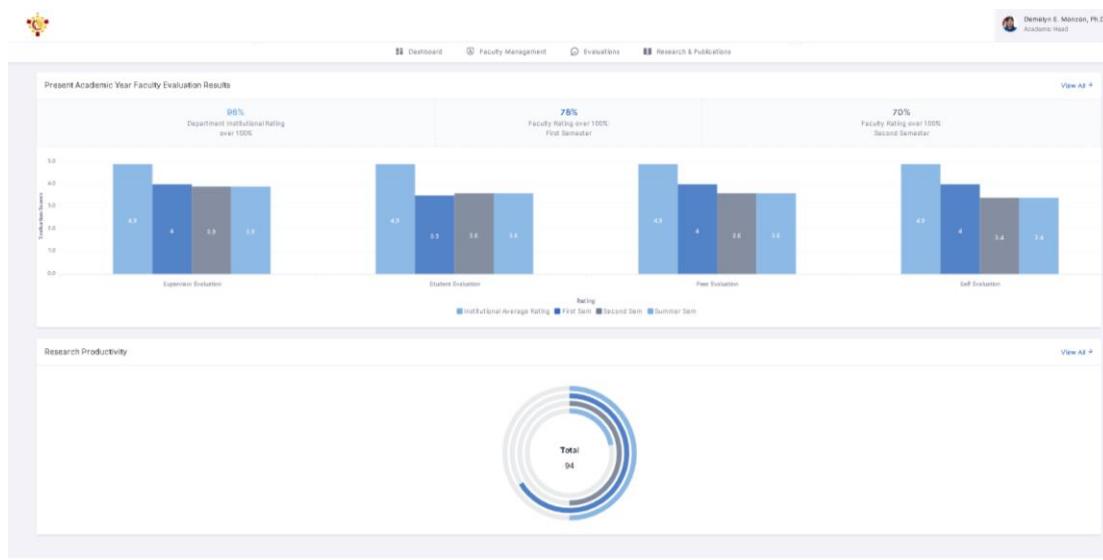
Matrix					
Comments	Panel	Addressed (Yes or No)	Proofs	Document ed (Yes or No)	Page/s
1. Data presented are confusing, Add more consideration with the User Experience	Christian Maldonado	Yes	Proof #1	Yes	115
2. Add report feature	Amity Faith Arcega	Yes	Proof #2	Yes	115
3. Additional filtering features within the Faculty Performance System		Yes	Proof #3	Yes	115
4. Always have careful consideration in selecting the appropriate types of graphs or charts based on the specific nature of the data or information being presented	Lev Justin Saclayan	Yes	N/A	Yes	115



5. Add more filtering features in Research Module and within the system	John Cris Cayetano	Yes	Proof #4	Yes	115
6. It is a good idea to prioritize system security.		Yes	N/A	Yes	115
7. Provide a more intricate and personalized display of individual (faculty) performance	Alma Fernandez	Yes	Proof #5	Yes	115
8. The system should be refined to spotlight the distinctive contributions and accomplishments of each faculty member		Yes	N/A	Yes	115
9. The system should have a ranking module in replacement of the promotions and merit	Ernesto Odpaga Jr.	No	N/A	Yes	115
10. The system should have an individual printing (Save as PDF) inside individual faculty details		Yes	Proof #6	Yes	115

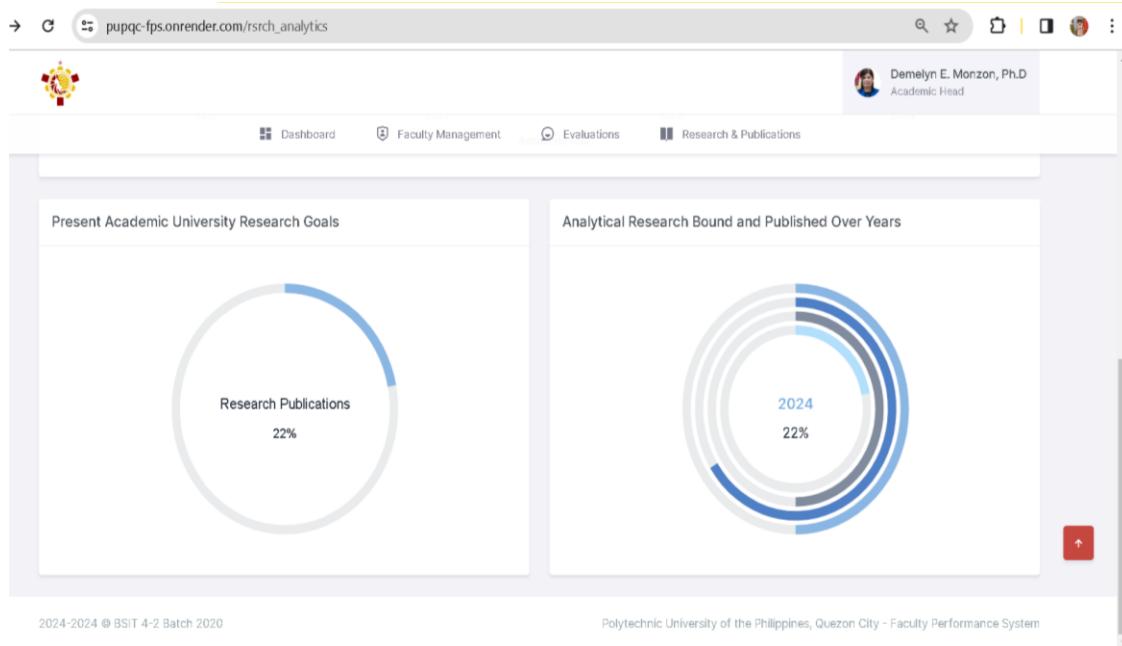
Proof Section

Proof #1: Comment #1

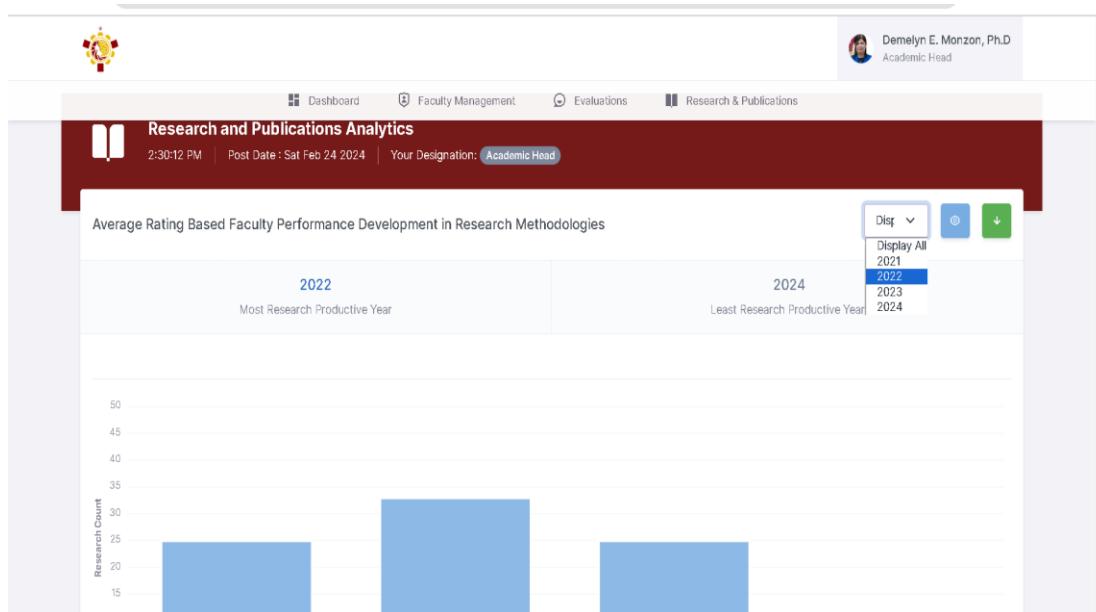




Proof #2: Comment 2



Proof #3: Comment 3

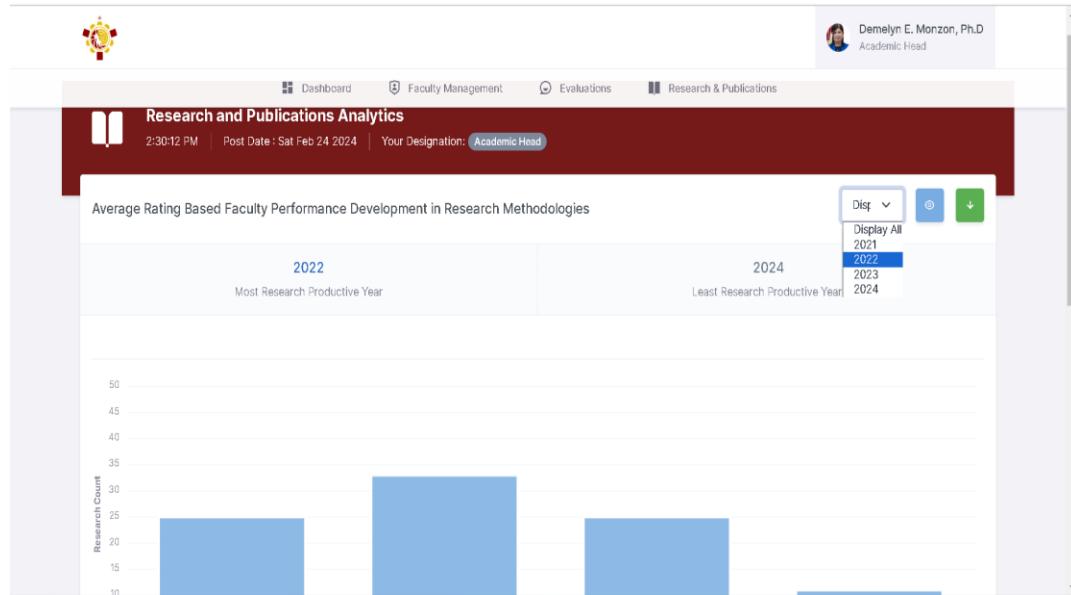


Proof #4: Comment 5



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Proof #5: Comment 7

A screenshot of a web browser window titled "myPUPQC-FPS". The address bar shows the URL "pupqc-fps.onrender.com/fac_mgmnt". The page header includes the university logo and links for Dashboard, Faculty Management, and Evaluations. The main content is a table titled "List of Faculty Members" with 10 entries per page. The table columns are "Faculty Name" and "Faculty Type". The entries are: Abalos, Karl Christian D. (Regular Non-Designee); Aquino, Rodolfo Y. Jr. (Regular Non-Designee); Arion, Mark Anthony R. III (Regular Non-Designee); and Bactasa, Melanie F. (Regular Non-Designee).



Proof #6: Comment 10

