**Title: Implementing a Digital Parking Management System for Bestlink College of the Philippines**

**1. Introduction**

Efficient parking management is essential in academic environments, especially where space is limited, and different types of users, such as students, faculty, and visitors, require parking access. At Bestlink College of the Philippines (BCP), the existing parking system faces challenges that result in space misallocation, delays, and user dissatisfaction. In response to these issues, this project proposes a **Digital Parking Management System (DPMS)** designed to automate the process, improve efficiency, and enhance the user experience by streamlining access, managing slot availability, and calculating fees based on user categories.

**2. Problem Statement**

The current manual parking system at BCP lacks a streamlined, digital method for managing parking slots and calculating parking fees. This limitation creates inefficiencies that affect user experience and the ability to accurately monitor and allocate spaces. To address these challenges, this study presents the DPMS as a solution that will automate parking slot assignment, user authentication, and fee calculation.

**3. Objectives**

The primary goal of this study is to assess the effectiveness of a digital parking system in reducing administrative workload and improving user satisfaction at BCP. Specifically, the project aims to:

* Provide a structured interface for user login and account management.
* Implement parking slot selection by user category (students, teachers, visitors, and principal).
* Automate parking fee calculations based on user type and usage duration.
* Allow users to generate and view receipts for parking transactions.

**4. System Overview**

The DPMS uses a combination of HTML, CSS, and JavaScript to create a functional, web-based platform:

* **HTML** structures the interface and sections for user interaction, such as login, registration, and parking type selection.
* **CSS** styles the system for a cohesive, user-friendly look across devices.
* **JavaScript** provides functionality, such as handling user authentication, calculating parking fees, and managing different stages of the parking process.

**5. Methodology**

A **quantitative research approach** guides this study to measure DPMS’s impact on parking management at BCP. By comparing user feedback and efficiency data collected before and after implementing the system, we will quantify improvements in terms of user experience, time saved, and overall satisfaction.

**Pre-Implementation Data Collection**: Before deploying the DPMS, a survey will measure user satisfaction, the average time required for parking management, and any challenges with the current system.

**Post-Implementation Data Collection**: After the DPMS is implemented, users will complete a similar survey to gauge the system's impact. Additionally, system logs will record transaction duration, login success rates, and error occurrences to provide objective measures of system reliability and efficiency.

**6. System Design and Features**

The DPMS consists of the following core modules:

**User Authentication and Account Management**: Users can create accounts, log in, and reset passwords securely. Credentials are stored locally to facilitate smooth access and user data management.

**Parking Slot Selection**: Based on user category (student, teacher, visitor, or principal), users select an available parking slot. Each user type has specific slots and a set rate, ensuring space is efficiently allocated.

**Automated Fee Calculation**: The system calculates parking fees based on the selected category and duration, displaying the fee instantly to enhance user transparency.

**Receipt Generation**: A receipt summarizes the transaction, showing the parking type, slot, duration, and total fee, ensuring transparency and clarity in billing.

**7. Data Analysis**

The collected data will be analyzed using:

* **Descriptive Statistics** to summarize key metrics, such as average transaction time, user satisfaction ratings, and system reliability.
* **Comparative Analysis** to determine significant improvements in user satisfaction and efficiency by comparing data before and after DPMS deployment.
* **Reliability Testing** to evaluate system stability and consistency in transaction processing.

**8. Expected Outcomes**

The study anticipates that implementing the DPMS will lead to:

* **Improved User Experience**: Higher satisfaction scores in post-implementation surveys due to ease of access and transparent fee calculation.
* **Enhanced Efficiency**: Reduced time in parking slot allocation and fee transactions, allowing users to complete tasks faster.
* **Reliable Data Tracking**: System logs will confirm a consistent performance, with minimal errors and secure transactions.

**9. Conclusion**

This project demonstrates the effectiveness of a digital parking management system in addressing parking-related challenges at BCP. By improving slot allocation, enhancing security, and automating billing, the DPMS offers a scalable solution that can adapt to further requirements or expand for use at other facilities.

**10. Recommendations for Future Research**

Further improvements may include:

* **Database Integration** for secure data storage and scalability.
* **Mobile Application Development** to increase accessibility for users on the go.
* **Enhanced Security** measures, like encrypted data handling and multi-factor authentication, to bolster user account safety.