A PROPOSED OFFERING OF A CAR PARKING MANAGEMENT SYSTEM FOR SM MALL OF ASIA

A Project Proposal Presented to the Faculty

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In Partial Fulfillment of the Requirements for the

Degree of Bachelor of Science in Information Technology

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PROJECT PROPOSAL

INTRODUCTION

The chapter is an introduction of the Parking Management System project giving an overview about the purpose it would serve, its target users and the operates issues that it would address. It presents the problems and issues of the current manual form of parking process and how the proposed system will improve efficiency, accuracy and customer satisfaction in the SM Malls set up.

The Parking Management System is used to help make parking simple, quick, and more systematic. It is directed to customers of the mall, parking attendants, and administrators who need the easy, yet efficient means to keep control over parking in the building. The system will not require access to the internet since it will be running on a local computer network within the mall. The parking employees may handle the documentation of a vehicle manually into the system and all documentation will be retained safely in a local database.

Manually, most of the parking tasks have been done traditionally. The information about the vehicle would be registered on docket by attendant and the tickets would be prepared manually where delays easily occur, most especially in a crowded mall. The paper documents might be lost or spoiled resulting in quarrels and misunderstandings. Customers were usually required to stay in long queues as they either entered or left the parking space hence slowing down the operations affecting customer satisfaction negatively.

In solving these issues, we can speculate through developing a Parking Management System which shall automate and simplify diverse parking procedures. Under this system, the attendants will be able to register cars easily, estimate charges and keep track of available spaces on a real time basis. It will use centralized data, and such data will be easy to search, sort and generate reports.

The system will be developed to possess a user friendly interface, which will be easy to operate by the attendants who have technical experience. Intuitive interface and clear instructions will enable the staves to use it without the need of a lengthy training period. Since it shall be locally run, it will keep running smoothly even when the internet is not it implies that there would be no break in the parking operations.

The primary objective of this project is to modernize the parking system of SM Malls but within the confines of making its operations reliable and cost-effective. It also tries to minimize paperwork, eliminates data loss and provides accuracy. The system will also generate valuable reports, like the daily collection number of the parked vehicles, etc., which will assist in handling the situation better to make better decision.

While the proposed Parking Management System addresses the immediate challenges of inefficiency, data loss, and long queues, it also lays the groundwork for future upgrades. As technology advances, the system can be enhanced with features such as automated gate barriers, license plate recognition, or integration with mobile applications for reservations and digital payment. Periodic reviews and user feedback will ensure the system remains reliable, adaptable, and responsive to the changing needs of both administrators and customers. By implementing this system, SM Malls will not only modernize current parking operations but also establish a foundation for scalable, future-ready improvements.

CLIENT INFORMATION

This chapter provides the details about the client organization, company, business background and their relevant information.

Client Organization

Client Name: SM Mall of Asia

Contact Information

Address: 7th Floor, MOA Square, Marina Way, Seashell Lane, cor Coral Way, Mall of Asia Complex, Pasay City, Philippines

Phone: +63 908 866 2316

Email: customercare@smsupermalls.com

Relevant Image

Image 1. Outside of SM Mall of Asia

Business and Industry

The SM Mall of Asia are known to be a shopping center of in the country of the Philippines, operating in major cities and key provinces across the country, Each branch offers various stores, restaurants, entertainment, facilities, and services that attract thousands of visitors all day. Be of the large volume of customers, smooth operations, especially in the area of parking are priority. The management seeks interest in practical solutions that can make day-to day task easier for their staves and improve convenience for shoppers.

PROJECT SCOPE

This chapter includes the deliverables, inclusion, exclusions, assumptions, and constraints that could affect the outcome of the proposed system.

Deliverables

The end project output will be a fully operational Parking Management System that will be locally hosted and customized to fit SM Mall of Asia. It will have a dashboard in place of the administrator who supervises and manages vehicle logs and also by computing parking duration and fees automatically on time basis. The operation of parking will be enhanced in efficiency, precision and accountability by the system.

Inclusion

The project will involve designing, development and implementation of a Parking Management System in the local network of the mall. Functions will include the secure log in between the staff and administrators, logging of vehicles including automatic calculation of time and frequency of charges, as well as generating report on summary of parking activities. It also involves the basic training meetings of the users of the systems to ascertain the right usage and handling of records.

Exclusion

In this project the real-time detection of parking slots through cameras and sensors, or even RFID technology will not be a part of the project. There is no direct tie to any kind of advanced automation features that come into the initial development but can be contemplated on later updates. It will not create a dedicated mobile application, and its scope excludes hardware installation, including ticket dispensers, obstacles, or biometrics.

Assumptions

It is assumed that all the details of parking operation that might be expected of SM Mall of Asia, including pricing and policies as well as reporting requirements will be provided prior to the system development. The user assigned to operate the system would have minimum skills in computers and would be sent to the offered training sessions. It would be assumed that the system would use the existing local network and equipment of the mall without significant hardware upgrade. The time schedule can however be drawn back by the delay in provision of operational information, procurement of the feedback on the system during development or avail of staff to train and evaluate the system. The budget constraint will demand that the system be implemented with the help of free software and will operate within what is available to the local network structure.

Constraints

Data accuracy when providing information from the customer must be correct to avoid any service errors. The SM Mall of Asia would be required to provide a digital device, specifically a computer that is compatible with the system. Staff should also be constant with updating the system within the work hours to avoid any delays and to assure the efficiency of the system.

PROJECT APPROACH

Overview of the Proposed Approach

This project will follow an Agile Methodology to ensure a flexible, collaborative, and step-by-step development process. Using Agile allows the team to divide the work into smaller phases called sprints, which are set periods of time where specific tasks and goals are completed.

Methodologies and Frameworks

This project follows the Agile Framework, divided into five development sprints. Each sprint includes a cycle of planning, designing, developing, testing, and reviewing in a repeated cycle. Each phase in the Agile cycle plays a specific role in making sure the project meets the needs of our clients' parking.

Figure 1. Agile Framework Diagram for Parking Management System

Proposed Approach Users Table

1. **Plan** – In this phase, the project team identifies the parking's needs and sets clear objectives for the system. Tasks such as reducing waiting time, monitoring parking, and recording parking history are defined to guide the development.

2. **Design** – The design phase focuses on creating the user interface (UI) and the database structure. This ensures that the system is simple, user-friendly, and capable of handling important data.

3. **Develop & Test** – The features are built based on the plan and design. Each function is tested carefully to check for errors and make sure the system works properly.

4. **Review** – The system is assessed to see if it meets the objectives. Feedback from the staff and owner is gathered to identify improvements.

5. **Deploy** – In this phase, the final version of the system is prepared for use. It is presented, installed, and made ready for actual operations

PROJECT TEAM

The project will be developed by a group of four members working collaboratively throughout the planning, development, and implementation phases. The team is committed to delivering a functional and user-friendly Parking Management System by combining each member's skills, experiences, and contributions.

Name	Role	Relevant Skills
Kim Razel Torrazo 	Project Leader	Basic programming skills in VB.NET and Proficient skills in and SSMS Data Base Manager.
Ben Onde 	Backend Engineer	Basic knowledge in creating database and being a back-end developer.
Mallory Makyla Chua 	UI/UX Designer	Basic knowledge in wireframing, prototyping, and designing user-friendly interfaces for web and mobile applications.
Sean Roscoe D. Panday 	QA Specialist	Have knowledge in

		creating test cases, executing manual and automated tests, and identifying bugs to ensure software quality and reliability.

Table 1. Project Team with Images

PROJECT TIMELINE

The project timeline only marks the key milestones, the anticipated outcomes, and the dependencies of each stage of this project.

Month	Sprint	Deliverables and Milestones
1	Planning and Design	Requirements gathering, database design, UI mock-ups, and development roadmap.
2	Development	Dashboard, available space monitoring, fee calculation, report generation.
3	Testing	System Testing, Debugging, Documentation, UI Improvement.
4	Deployment	Final Deployment and Training.
5	Final Phase – Development and Presentation	System deployment, final build, and project. defense.

Table 2. Project Timeline for Parking Management System

The development timeline for the Parking Management System is set for four months, divided into four agile sprints. Each sprint targets specific features and deliverables to achieve a progressive system enhancement with iterative testing.

PROJECT RESOURCES

In this project, the necessary hardware and software along with experienced human resources are utilized to design a Parking Management System and concentrate on efficient design, development, testing, and documentation.

Hardware

- **Laptop/Computer** – A reliable laptop or desktop computer will be used as the main device for system development. This will serve for coding the program, testing the system's functions, and preparing documentation. It must have at least an Intel i5 processor (or equivalent), 8GB RAM, and sufficient storage to smoothly run Visual Basic, SQL Server, and other tools.
- **External Storage (Hard Drive/USB Drive)** – An external storage device will be used to back up source codes, database files, and project documents. This prevents data loss in case of system errors or computer failure.

Software

- **Microsoft Visual Basic** – The programming environment used for building the Parking Management System. It allows developers to create the user interface and implement the system's features.
- **SQL Server Management Studio (SSMS)** – The database management software that stores, organizes, and secures data such as logging of vehicles including automatic calculation of time and frequency of charges, as well as generating report on summary of parking activities. It ensures that information is easily retrievable and well structured.
- **Microsoft Word and Word** – will be used to write reports and system documentation.
- **Internet Connection** – A stable internet connection is necessary for research, downloading required software, accessing online resources, and using design tools like Canva and Figma.

Human Resources

1. **Project Leader – Kim Razel Torrazo**

The Project Leader is in charge of the whole development process and keeps track of the work of the team on the objectives and schedule. He oversees the work, tracks progress, and plays the primary role of communicating with the client. He also handles the system documentation since it involves her word processor and report creation abilities to ensure that the project contains clear and well structured documentation of the project.

2. **Back-end Developer – Ben O. Onde**

The database of the system is managed by the Back-end Developer and makes sure that all the data is stored and processed correctly. His duty would include the creation and manipulation of the SQL database to save the table information, serving orders, and request of the customers. He also assists in project documentation and presentation and also where necessary contribute on the technical input.

3. **UI/UX Designer – Mallory Makyla Chua**

The UI/UX Designer will ensure the system design is transformed into a working application. Having experience with front-end development, form-based system, she leads the work on the code of the User interface which should be user-friendly to both the staff and the restaurant owner. She even helps in designing mock-ups of system designs ensuring that the design is straightforward enough and user-friendly in a crowded restaurant environment.

4. **Quality Assurance Specialist – Sean Roscoe D. Panday**

In charge of making sure software is free of bugs and any problematic performance via manual and automated tests, test design, and test execution in terms of writing test plans, test cases, and scripts. Knowledgeable about documentation, defect tracking, and liaising with development groups to provide stable and fully implemented products.

RISK MANAGEMENT

The Risk Management section outlines possible risks to the Parking Management System, their impact on operations, and preventive measures to maintain system stability and avoid disruptions.

Risk Management

Risk	Description	Mitigation
Manual Input Errors	Implement user interface features such as dropdown menus, auto-fill fields, and validation checks to minimize keystroke errors and ensure accurate data entry.	Build in user interface validations, drop down menus, and auto fill devices, in order to prevent keystroke errors.
Security Vulnerabilities	Apply data encryption for sensitive information, enforce secure login protocols, and perform regular system updates to maintain protection against potential threats.	Use encryption on sensitive information, utilize secure log in protocols and update system security patches frequently.
Training Gaps	Develop comprehensive user manuals and conduct structured training sessions to ensure that all personnel operating the system are properly informed and equipped.	Prepare full user manuals and organize full training workshops with all the people who will operate the system.

Hardware Malfunctions	Invest in reliable computer hardware and install Uninterruptible Power Supply (UPS) units to prevent data loss in the event of power interruptions or equipment failure.	Get good quality and reliable computers and put Uninterruptible Power Supply (UPS) units in place to avoid data loss in the case of power failures.

Table 3. Risk Management for Parking Management System

COMMUNICATION PLAN

During the Parking Management System project, communication will be handled through a blend of formalized meetings, written communications to facilitate sanity, responsibility and punctual exchange of information. The weekly progress meeting will be developed to observe the development condition and discuss any problem.

Frequency and Format of Project Team Meetings

Agenda	Frequency	Format	Purpose
Progress Meetings	Twice a Week	In-person held at a designated location or Virtual Meetings.	To review current progress, discuss issues, align next steps, and brainstorm revisions.
Status Updates	Weekly or As Needed	Online chat group	To provide formal updates, share documents, and send important announcements.
Day-to-Day Coordination	Daily or As Needed	Online chat group	To communicate quickly, share files, and address urgent concerns among team members.
Documentation Feedback Decisions	Continuous (as tasks progress)	Shared documents or reports	To record revisions, agreements, and documentations.

Table 4. Communication Plan for Parking Management System

PROJECT GOVERNANCE

This chapter incorporates the positions available in the system together with the capabilities and functions. The Project Manager and the assigned representative of the Parking Management System will all make major decision in the project like the approval of the system designs, change feature or modification in the project scope.

Roles and Responsibilities

Name	Role	Responsibilities
Kim Razel N. Torrazo	Lead Developer	Takes charge of overall system architecture and implementation is frontend/backend integration via HTML, CSS, JavaScript, MySQL; guarantees UI / correspondence to project objectives.
Ben O. Onde	Back-end Engineer	Handles server setup, database connectivity, a development, and ensures back-end security a scalability
Mallory Makyla P. Chua	Front-end Designer	Creates user friendly interface, attentive to layout design, visual consistency and good user experience across web and kiosk platforms.
Sean Roscoe D. Panday	QA Specialist	Supervises quality

		monitoring by automation testing, bug documentation and Wares tracking. Pre-deploy system reliability and usability.