DATABASE MANAGEMENT SYSTEM

A MINI PROJECT ASSIGNMENT REPORT
ON
AMUSEMENT PARK DATABASE MANAGEMENT SYSTEM

Submitted in partial fulfillment of requirements for the award of 4th Sem of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

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CERTIFICATE

Certified that the Mini project work titled **"AMUSEMENT PARK DATABASE MANAGEMENT SYSTEM"** is a bona fide work carried out by **JOHANAZ NADAF (1MJ23CS076), KUSUM R(1MJ23CS088), LAKSHMI N(1MJ23CS090) and MANASVINI BV(1MJ23CS097),** partial fulfillment for the award of degree of Bachelor of Engineering in Computer Science & Engineering during the academic year 2024-25. It is certified that all the corrections/suggestions indicated for Internal Assessment have been incorporated in the Report. The mini project report has been approved as it satisfies the academic requirements.

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DECLARATION

We**, JOHANAZ NADAF(1MJ23CS076), KUSUM R(1MJ23CS088) , LAKSHMI N(1MJ23CS090)** and **MANASVINI BV(1MJ23CS097)** students of Fourth Semester B.E, Department of Computer Science Engineering, MVJ College of Engineering, Bengaluru, hereby declare that the entire work titled "**AMUSEMENT PARK DATABASE MANAGEMENT SYSTEM**" has been carried out by us and submitted in partial fulfilment for the award of Degree of **Bachelor of Engineering** in **Computer Science Engineering** during the year 2024-2025.

Further we declare that the content of the dissertation has not been submitted previously by anybody for the award of any Degree or Diploma to any other University.

We also declare that any Intellectual Property Rights generated out of this project carried out at MVJCE will be the property of MVJ College of Engineering, Bengaluru and we will be one of the authors of the same.

Place: Bengaluru
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ACKNOWLEDGEMENT

ABSTRACT

The Amusement Park System is a comprehensive database management system designed to streamline and automate the operations of amusement parks. This project focuses on the development and implementation of a relational database that efficiently manages critical information such as visitor details, ticket bookings, ride schedules, staff assignments, maintenance logs, and financial transactions. The system provides real-time data access and supports key functionalities including ticket reservations, ride availability tracking, and revenue reporting. By leveraging SQL and normalization techniques, the database ensures data integrity, minimizes redundancy, and enhances overall operational efficiency. The system is designed with scalability in mind, allowing for easy adaptation to parks of various sizes and complexities. This project demonstrates how effective database design and management can optimize amusement park operations, improve customer experience, and support data-driven decision-making

ACRONYMS

Acronym	Abbreviation
USN	University Seat Number
SEM	Semester
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets
PHP	Hypertext Preprocessor
MySQL	My Structured Query Language
XAMPP	Cross-Platform(X), Apache, MySQL, PHP, Perl

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CHAPTER 1

INTRODUCTION

Amusement parks have become a vital component of the global entertainment industry, drawing millions of visitors each year. These parks offer a wide range of attractions, rides, events, and recreational activities that cater to people of all ages, making them popular destinations for leisure and tourism. Given the scale and complexity of their operations, effective management is essential to ensure a seamless and enjoyable experience for visitors. Key challenges faced by amusement park operators include managing large crowds, optimizing resource allocation, maintaining safety standards, coordinating staff, and minimizing wait times at various attractions. To meet these demands, it is imperative to implement a robust and intelligent management system that can streamline daily operations and enhance overall efficiency. This project aims to design and develop a comprehensive amusement park management system that addresses these challenges through the use of modern technologies. The system will facilitate the smooth handling of customer flow, monitor real-time operations, allocate resources efficiently, and provide actionable insights for decision-making. By leveraging automation and data-driven strategies, the proposed solution seeks to improve both customer satisfaction and operational performance, ultimately contributing to the long-term success and sustainability of amusement park enterprises.

CHAPTER 2

LITERATURE SURVEY

Reseach Title: Analysis of queue management in theme park introducing the fast pass system

AUTHOR:LI JIAXIN and LI QIAN

PUBLISHED IN THE YEAR: *July 2023*

This paper tells us how to improve tourist satisfaction is one of the main challenges for theme parks, and the key is to develop an appropriate queue management strategy. We develop a theme park queueing model considering the Fast Pass system, derive the optimal pricing strategy under profit maximization, and analyze the Shanghai Disney theme park as an example. The contribution of this paper is to establish a mathematical model of the queuing of theme parks with heterogeneous tourists and incorporate tourist satisfaction into the objective function. The results show that the equilibrium result of the Fast Pass system under profit maximization can optimize both tourist satisfaction (travel utility) and theme park profit, which is more acceptable to theme park operators.

Research Title : Success factors of theme park – an exploration study

AUTHOR: Markus Schuckert

PUBLISHED IN THE YEAR:*JANUARY 2007*

This paper discusses authenticity and the staging of experiences as critical success factors for the management of theme parks. Empirical data gathered from personal interviews with theme park managers in Austria, Germany and Switzerland reveal the assumption that the literature is not in line with the critical success factors of theme park management. The paper concludes by outlining future research on success factors of theme parks.

CHAPTER 3

PROBLEM ANALYSIS

In many **amusement parks**, recreational centers, and entertainment venues, the current system for managing tickets and booking rides remains largely manual or relies on inconsistent, fragmented digital solutions. These outdated processes have led to a host of operational challenges, including long wait times, booking conflicts, inefficient use of resources, and an overall decrease in customer satisfaction. Manual ticket management, in particular, is susceptible to human errors such as double bookings, loss or duplication of ticket data, and difficulty in tracking real-time visitor inflow and ride occupancy.

Such inefficiencies not only create logistical issues but also put additional strain on staff who are required to intervene and resolve conflicts that arise due to system limitations.

Additionally, the absence of a cohesive and standardized ride booking system often results in confusion for both visitors and park operators. Visitors are frequently required to queue up for long durations or book individual rides through disparate systems, leading to frustration and a suboptimal experience.
During high-traffic days, such as weekends or holidays, these inefficiencies are magnified, causing crowd congestion, extended wait times, and bottlenecks at popular attractions. In some cases, **the lack of effective queue management and booking oversight may also compromise safety protocols, as staff are unable to track and manage the volume of visitors accurately.**

From a business perspective, these problems contribute to revenue loss, reduced customer loyalty, and negative word-of-mouth, which can significantly impact the reputation and sustainability of the venue. Moreover, manual and semi-digital systems often lack robust data integrity measures, making it difficult to analyze trends, forecast demand, or make data-driven operational decisions. This results in missed opportunities for optimization, targeted marketing, and improved visitor engagement.

To address these critical issues, this project **Amusement park data base management** aims to conceptualize and develop a comprehensive, automated ticket and ride booking management system that integrates modern technology with user-centric design principles. The primary objective is to eliminate the drawbacks associated with manual and inconsistent systems by offering a seamless, end-to-end solution that ensures data accuracy, reduces administrative workload, and enhances the overall visitor experience.

CHAPTER 4

EXISTING SYSTEM

The existing systems employed by many amusement parks and recreational facilities are still largely **dependent on manual or semi-automated processes**. These legacy systems are not only outdated but also inefficient, resulting in a wide range of **operational challenges** and negative customer experiences. A major drawback of manual ticketing and ride management is the significant delay it introduces in the overall service process. Visitors often face long wait times at entry gates, ticket counters, and individual ride queues. This not only diminishes the enjoyment of their visit but also reduces the number of attractions they can engage with during their stay.

In addition to prolonged waiting periods, there is a notable difficulty in managing and organizing customer information effectively. **Manual data entry and paper-based ticketing systems are prone to errors, duplication, and data loss, making it hard to maintain accurate records of visitor attendance, transaction histories, or booking preferences**. This lack of structured data management further complicates tasks such as crowd control, resource allocation, and ride scheduling, thereby impacting the efficiency of daily operations. Another critical issue is the absence of real-time reporting and data-driven insights. Management often operates without timely access to key metrics such as current crowd levels at different rides, average wait times, and real-time ticket sales. This results in reactive rather than proactive decision-making, limiting the facility's ability to optimize its services during peak hours or special events.

Furthermore, the current systems are incapable of tracking visitor behavior and preferences in any meaningful way. Without such insights, it becomes extremely difficult to offer personalized experiences or targeted recommendations to guests—features that are increasingly expected by modern consumers who are accustomed to digital convenience and tailored services in other sectors such as e-commerce, travel, and entertainment.

DISADVANTAGES OF THE EXISTING SYSTEM:

- Long Wait Times.

- Inaccurate and Disorganized Customer Data.

- Inability to Track Visitor Behavior.

- No Real-Time Ride Availability or Wait Time Information.

- Higher Dependency on Human Labor

- Poor Customer Satisfaction and Retention.

- Inflexible and Non-Responsive Operations

CHAPTER 5

PROPOSED SYSTEM

The Amusement Park System is a simplified but practical database-driven solution developed to manage core operations of an amusement park, primarily focusing on ticket bookings and ride management. The project leverages a relational database model with two main tables—rides and ticket_booking—to store and retrieve critical information efficiently.

Our Proposed System includes storing the details of each ride including ride ID, name, and ticket price. Ticket booking Table stores user input like visitor age, ride selected, type of ticket (Regular/VIP), and ticket price.

The system allows users to:

- Enter their age.

- Select a ride from the list.

- Choose ticket type (Regular or VIP).

- Book the ticket (details are stored in the database).

Note: The system calculates and stores the ticket price based on selection, but the price is not shown to users in real-time, which we acknowledge as a current limitation

ADVANTAGES OF THE PROPOSED SYSTEM:

- **Centralized Data Management:**
- **Improved Operational Efficiency:**
- **Accurate Ticket Price Calculation and Storage:**
- **Visitor Information Tracking:**
- **Enhanced Data Organization Through Relational Database:**
- **Classification of Ticket Types(VIP or regular)**
- **Ease of Data Retrieval for Administrative Use:**
- **Potential for Analytics and Decision Support:**

CHAPTER 6

SOFTWARE REQUIREMENTS

The Amusement Park Management system requires a combination of front-end technologies and Back-end technologies that support and real-time interaction.

This also uses MySQL for database and XAMPP(Apache) as localhost

Finally, to test the project via link we use Microsoft edge.

The requirements are as follows:

1. Frontend Development Tools:

- **HTML** – for structuring the web interface (booking form)
- **CSS** – for styling the interface

2. Development Environment:

- **Visual Studio Code (VS Code)** – lightweight code editor with syntax highlighting, live server extension, and debugging tools
- **Live Server Extension** – to run the project on localhost and view changes in real time
    - ➢ **XAMPP(Apache)**

3. Browsers for Testing:

- **Microsoft edge**

4. Backend Development Tools:

- **PHP(Hyper text preprocessor)-**It is a server-side scripting language used primarily for web development

5.Database :

- **MySQL (managed using phpmyadmin):** It is a free and open source web based tool written in PHP used for managing Mysql or MariaDB databases through a graphical user interface(GUI).

CHAPTER 7

IMPLEMENTATION

The system was implemented using a web form and phpMyAdmin:

1. Database Setup:

Database Name: park

Tables:

rides: Contains ride names and ticket prices.

ticket_booking: Stores user inputs—name, age, ride selected, ticket type, and final ticket price.

2. Ride Options Included:

- Ferris Wheel

- Bumper Car

- Roller Coaster

3. Frontend Form:

An HTML form (connected via PHP) was created to collect:

- Visitor Name

- Age

- Selected Ride

- Ticket Type (Regular or VIP

4. **Backend Logic:**

Upon submission, the data is stored in the ticket_booking table.

Ticket price is retrieved based on ride and ticket type and stored alongside the booking.
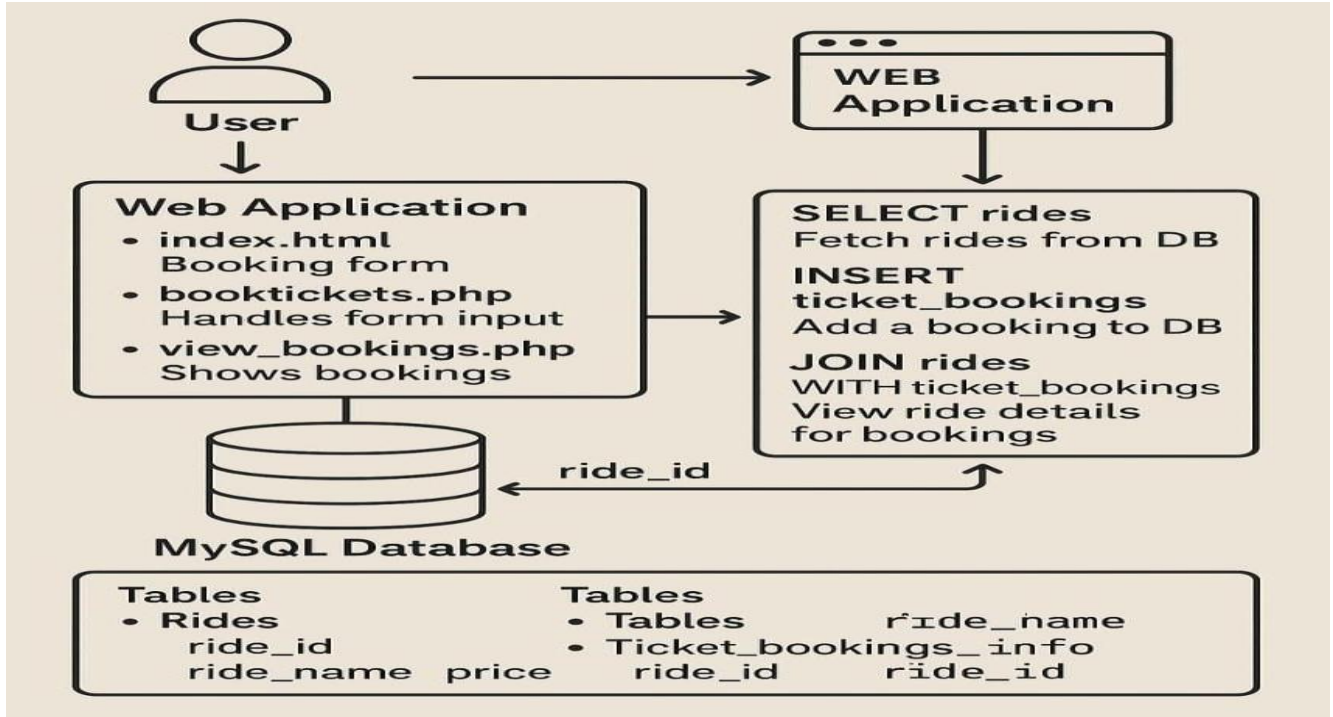

Fig 7.1: Back-end Logic

CHAPTER 8

RESULTS

The Amusement Park Management system is successfully implemented as a web-based tool that allows customers to book amusement park tickets. The application is tested and verified for various inputs, demonstrating that this ticket booking works accurately.

Fig 8.1: Booking Form

Fig 8.2: All the Bookings

Fig 8.3: Database results

CHAPTER 9

APPLICATIONS

1. Ticket Booking Automation

➢ Streamlines the booking process via a web form.

➢ Automatically calculates ticket prices and stores bookings.

2. Customer Management

➢ Tracks visitor details like name, age, and ticket type (VIP or regular).

➢ Enables personalized services based on visitor profiles.

3.Ride Management

➢ Stores and organizes ride information and pricing

➢ Ensures ride bookings are valid through foreign key constraints.

4.Booking Overview & Reporting

➢ View and analyze bookings through an interface using SQL JOINs.

➢ Helps monitor ride popularity and customer trends.

5.Operational Efficiency

➢ Reduces manual work and human error in ticketing and ride allocation.

➢ Supports efficient staff deployment and resource use.

6.Business Intelligence & Strategic Planning

➢ Uses stored data for analytics to guide future park improvements.

➢ Can be expanded to support real-time tracking, maintenance alerts, and marketing strategies.

CHAPTER 10
ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

1. Improved Operations:

  - Streamlines booking and ride management through database automation.

  - Ensures valid bookings and consistent pricing with foreign key relationships.

2. Enhanced Visitor Experience:

  - Tracks visitor details (name, age, ticket type) to personalize services.

  - Enables tailored experiences that can boost satisfaction and loyalty.

3. **Efficient Data Handling:**

  - Uses SQL for data operations (SELECT, INSERT, JOIN), making data retrieval and updates easy and efficient.

4. Integrated System:

  - Combines HTML (frontend), PHP (backend), and MySQL (database) for seamless interaction.

  - Hosted using XAMPP, making local deployment simple.

5. Supports Strategic Planning:

  - Offers data-driven insights for better business decisions.

  - Can evolve into a full management system with real-time tracking and maintenance planning.

DISADVANTAGES:

1. **Scalability Issues:**

  - As currently implemented, it may not handle high traffic or large datasets efficiently.

2. **Limited Functionality:**

  - Basic booking and viewing features; lacks advanced analytics or real-time updates.

3. **Security Concerns:**

  - Simple PHP form handling may be vulnerable to attacks like SQL injection if not properly secured.

4. **Manual Deployment:**

  - Requires local server setup (XAMPP), which might not be practical for live deployment without further development.

5. **No User Roles or Authentication:**

  - Lacks role-based access control (e.g., admin vs. regular users), which limits secure multi-user interaction.

CONCLUSION

The amusement park database management system (DBMS) project successfully showcases the practical application of core database and web technologies to solve real-world problems in a fun and engaging environment. This project aimed to streamline the process of booking rides, managing customer data, and tracking ticketing information, thereby enhancing both operational efficiency and customer satisfaction at an amusement park.

By integrating a front-end interface using HTML and CSS with a PHP-powered backend, and managing data through a MySQL database, the system effectively demonstrates the synergy between different layers of modern web-based applications. Key features, such as booking rides through an online form and displaying consolidated data using SQL JOIN operations, not only improve the user experience but also enable efficient data retrieval and integrity through the use of foreign key constraints.

The methodology followed in this project—from database design to interface development and backend logic—was rooted in standard software development practices. It emphasized modularity, reusability, and data consistency. The inclusion of techniques like form validation, SQL queries (SELECT, INSERT, JOIN), and use of phpMyAdmin for database management, highlights a comprehensive understanding of how different components interact in a live environment.

Moreover, the project lays a solid foundation for future enhancements. Possible future improvements could include integration with payment gateways, real-time ticket availability checks, analytics dashboards, user authentication systems, and mobile responsiveness. With such upgrades, the system could evolve into a full-fledged park management solution capable of handling operations at scale.

In conclusion, this project has not only deepened our understanding of database systems and web development, but it has also equipped us with hands-on experience in building real-world applications. It reflects the value of a well-designed DBMS in improving efficiency, ensuring data reliability, and offering meaningful user experiences. The project stands as a testament to the power of thoughtful planning, structured design, and technological integration in transforming basic concepts into impactful solutions.

FUTURE ASPECTS

As technology continues to evolve, there are numerous opportunities to extend and enhance the current amusement park database system. Below are several aspects that represent the long-term vision and future potential of this project:

1. Integration with IoT and Smart Devices

- o Embed IoT sensors in rides and entry points to:
- a. Track maintenance needs
- b. Monitor crowd density
- c. Ensure safety compliance
- o Provide wearable RFID bands for contactless entry, ride access, and payment.

2. Enhanced Security and Compliance

- Apply advanced security measures like:

  - Data encryption

  - Multi-factor authentication

  - GDPR and PCI-DSS compliance for data and payment handling

3. Customer Relationship Management (CRM)

- Integrate a CRM system to manage customer queries, feedback, and loyalty programs.

- Offer personalized marketing based on previous visits and interests.

4. Multi-language and Accessibility Support

- Add multilingual support for international visitors.

- Ensure compliance with accessibility standards (like WCAG) to support users with disabilities.

5. Virtual and Augmented Reality

- Use AR/VR to enhance the visitor experience:

  - Virtual ride previews

6. Expansion to Other Business Domains

- Adapt the core database system for similar domains like:

  - Theme parks

  - Water parks

  - Museums and exhibitions

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Web Resources and Case Studies
    MySQL Sample Databases (e.g., Sakila, World)
    https://dev.mysql.com/doc/index-other.html