**A PROJECT REPORT ON**

**HOTEL MANAGEMENT SYSTEM DATABASE PROJECT**

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**BONAFIDE CERTIFICATE**

Certified that this project report titled “HOTEL MANAGEMENT SYSTEM” is the bonafide work of Ganigapenta Charan [192111166], U.Pothyesvaran [192224046] Patnam Srinivas Arjun [192111263] who carried out the project work under my supervision as a batch. Certified further, that to the best of my knowledge the work reported here in does not form any other project report.

Date: Project supervisor: Head of the department:

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**HOTEL MANAGEMENT SYSTEM DATABASE PROJECT**

**ABSTRACT:**

This project aims to develop a comprehensive Hotel Management System database that streamlines various operations within a hotel, including front office management, booking and reservation, HR, inventory, housekeeping, and customer relationship management (CRM). The database design encompasses various entities such as rooms, room categories, employees, customers, bookings, payments, food and beverages, and bills. The goal is to provide an efficient and scalable solution to manage hotel operations, enhance customer service, and facilitate easy access to information.

**INTRODUCTION:**

Managing a hotel involves a myriad of operations, from booking and reservations to housekeeping and customer service. Traditional methods of managing these tasks often lead to inefficiencies, errors, and subpar customer experiences. With the advent of database management systems, it has become possible to automate and streamline these processes, thereby enhancing operational efficiency and customer satisfaction.

This project focuses on developing a Hotel Management System (HMS) database designed to integrate and manage various aspects of hotel operations. The system will cover essential functions such as room booking, employee management, customer records, payments, and billing. It aims to provide a centralized, reliable, and efficient platform for hotel management, capable of handling both online and in-person transactions. By leveraging this system, hotels can ensure accurate record-keeping, timely service delivery, and better resource management, ultimately leading to an improved guest experience.

**METHODOLOGY:**

The development of the Hotel Management System database follows a systematic approach to ensure it meets the functional requirements and operates efficiently. The methodology involves several key phases:

1. **Requirement Analysis**:
   * **Stakeholder Interviews**: Conduct interviews with hotel management and staff to gather detailed requirements.
   * **Requirement Documentation**: Document all functional and non-functional requirements, including data to be stored, relationships between data, and user interface needs.
2. **Database Design**:
   * **Entity-Relationship (ER) Diagram**: Create an ER diagram to visually represent the data model, showing entities, attributes, and relationships.
   * **Normalization**: Normalize the database schema to eliminate redundancy and ensure data integrity.
   * **Schema Definition**: Define the database schema, including tables, primary keys, foreign keys, and constraints.
3. **Implementation**:
   * **SQL Script Development**: Write SQL scripts to create tables, define relationships, and implement constraints.
   * **Sample Data Insertion**: Insert sample data to test the functionality and integrity of the database.
   * **Application Layer Development**: Develop an application interface using a web framework (e.g., Django, Flask) to interact with the database.
4. **Testing**:
   * **Unit Testing**: Test individual components of the database to ensure they function correctly.
   * **Integration Testing**: Test the interaction between different components to ensure seamless integration.
   * **Performance Testing**: Evaluate the performance of the database under various loads to ensure it can handle real-world usage.
5. **Deployment**:
   * **Server Setup**: Set up a server environment to host the database.
   * **Data Migration**: Migrate data from any existing systems to the new database.
   * **User Training**: Train hotel staff on how to use the new system effectively.
6. **Maintenance**:
   * **Regular Updates**: Update the database schema and application as needed to accommodate new requirements.
   * **Performance Monitoring**: Continuously monitor the performance of the database and optimize as necessary.
   * **Backup and Recovery**: Implement backup and recovery procedures to protect against data loss.

A diagram of a hotel management system

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**LITERATURE SURVEY:**

Literature Survey of School Management Systems:

**"Design and Development of Online Computerized Hotel Management System" by Ogirima, Sanni Abubakar Omuya, Awode, Tolulope Reuben, and Adeosun, Olajide Olusegun.**

* This paper discusses the design and development of an online computerized hotel management system, using Satellite Motel Ilorin, Nigeria, as a case study. It focuses on automating hotel operations such as booking, front office management, and CRM to enhance efficiency and customer service. The implementation utilizes a MySQL database and a web-based interface, highlighting benefits like reduced errors and improved data accuracy.

**Guirong Guo, Yan Lu, "Design and analysis of hotel management system based on information technology", COMPUTER MODELLING & NEW TECHNOLOGIES**

* This study by Guirong Guo and Yan Lu explores the design and analysis of a hotel management system leveraging information technology. Published in COMPUTER MODELLING & NEW TECHNOLOGIES, it discusses the implementation of IT to enhance hotel operations efficiency and guest satisfaction.

**W.P.S.W. Weerasinghe, D.I. De Silva, "Research on Hotel Management System".**

* W.P.S.W. Weerasinghe and D.I. De Silva's research focuses on the development and evaluation of a hotel management system, aiming to improve operational efficiency and customer service. The study, published in October 2022, delves into various aspects of system design and implementation in hospitality management.

**Jingda Yang, "Research and design of hotel management system model".**

* Jingda Yang's research involves the creation and analysis of a model for a hotel management system. Presented at the International Conference on Education Technology and Information System (ICETIS) in 2013, the study proposes a structured approach to optimize hotel operations using innovative technological solutions.

**Akash, Md. Ahsan Kabir; Sarafath, Kazi Zafarullah, "Hotel Management System".**

* Md. Ahsan Kabir Akash and Kazi Zafarullah Sarafath present a comprehensive overview of a Hotel Management System, emphasizing its functionalities and benefits for the hospitality industry. Published online, the document discusses practical applications and considerations for implementing such systems to enhance service delivery and management efficiency.

**CODE:**

-- Rooms Table

CREATE TABLE Rooms (

RoomID INT PRIMARY KEY,

RoomNumber VARCHAR(10) NOT NULL,

CategoryID INT,

Status VARCHAR(20),

FOREIGN KEY (CategoryID) REFERENCES RoomCategories(CategoryID)

);

-- RoomCategories Table

CREATE TABLE RoomCategories (

CategoryID INT PRIMARY KEY,

CategoryName VARCHAR(50),

Price DECIMAL(10, 2)

);

-- Employees Table

CREATE TABLE Employees (

EmployeeID INT PRIMARY KEY,

FirstName VARCHAR(50),

LastName VARCHAR(50),

Position VARCHAR(50),

Salary DECIMAL(10, 2),

HireDate DATE

);

-- Customers Table

CREATE TABLE Customers (

CustomerID INT PRIMARY KEY,

FirstName VARCHAR(50),

LastName VARCHAR(50),

Address VARCHAR(100),

PhoneNumber VARCHAR(15),

Email VARCHAR(50)

);

-- Bookings Table

CREATE TABLE Bookings (

BookingID INT PRIMARY KEY,

CustomerID INT,

RoomID INT,

CheckInDate DATE,

CheckOutDate DATE,

FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID),

FOREIGN KEY (RoomID) REFERENCES Rooms(RoomID)

);

-- Payments Table

CREATE TABLE Payments (

PaymentID INT PRIMARY KEY,

BookingID INT,

Amount DECIMAL(10, 2),

PaymentDate DATE,

PaymentMethod VARCHAR(50),

FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID)

);

-- FoodAndBeverages Table

CREATE TABLE FoodAndBeverages (

ItemID INT PRIMARY KEY,

ItemName VARCHAR(50),

Price DECIMAL(10, 2)

);

-- Bills Table

CREATE TABLE Bills (

BillID INT PRIMARY KEY,

BookingID INT,

TotalAmount DECIMAL(10, 2),

BillDate DATE,

FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID)

);

**Implementation**

To implement the SQL code for the Hotel Management System database, follow these step-by-step instructions:

**1. Set Up Your Database Environment**

* **Install MySQL Server**: Ensure you have MySQL server installed on your machine or have access to a MySQL server instance.
* **Database Client**: Use a database client such as MySQL Workbench, phpMyAdmin, or a command-line interface to interact with the MySQL server.

**2. Create the Database**

* **Connect to MySQL Server**: Open your MySQL client and connect to your MySQL server.
* **Create Database**: Create a new database for the Hotel Management System.

**3. Execute the SQL Code**

* **Copy and Execute SQL Code**: Copy the provided SQL code for creating tables (Rooms, RoomCategories, Employees, Customers, Bookings, Payments, FoodAndBeverages, and Bills) and execute it within your MySQL client.

**4. Verify Table Creation**

* **Verify Tables**: After executing the SQL code, verify that the tables have been created successfully by checking the database schema.
* **Describe Tables**: Use the DESCRIBE command to view the structure of each table.

**5. Start Populating Data**

* **Insert Sample Data**: Populate the tables with relevant data for testing purposes.

**6. Implement Business Logic**

* **Backend Development**: Develop the backend logic to handle user interactions and manipulate data. This may involve writing SQL queries or integrating with a backend programming language such as Python, PHP, or Java.
  + **User Authentication**: Implement user authentication to manage access control.
  + **Reservation Validation**: Validate booking requests to ensure room availability.
  + **Payment Processing**: Handle payment transactions and update the Payments and Bills tables accordingly.

**7. Testing and Refinement**

* **Functional Testing**: Test all functionalities of the hotel management system to ensure they meet the requirements.
* **User Feedback**: Collect feedback from users and make necessary adjustments to improve the system's performance and usability.
* **Optimization**: Refine the system based on testing results to optimize performance and enhance user experience.

**8. Deployment and Maintenance**

* **Deployment**: Deploy the system to a live server environment. Ensure the server has all necessary configurations and security measures.
* **Training**: Provide training to hotel staff on how to use the new system effectively.
* **Ongoing Maintenance**: Regularly update the system to address any bugs, implement new features, and improve overall performance.

**TABLES:**

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**Conclusion**

The Hotel Management System database project successfully addresses the complexities of hotel operations by providing a centralized platform to manage bookings, customer information, employee records, payments, and billing. Through careful design and implementation, the system ensures data integrity, operational efficiency, and enhanced customer service.

The implemented database supports essential hotel functions, facilitates accurate record-keeping, and improves resource management. By automating various processes, the system reduces the chances of errors, streamlines operations, and enhances the overall guest experience.

This project demonstrates the potential of database management systems in the hospitality industry, showcasing how technology can transform traditional operations into efficient, modern practices.

**Future Enhancement**

Future enhancements for the Hotel Management System database may include:

1. **Mobile Application Integration**:
   * Develop mobile applications for both hotel staff and guests to provide on-the-go access to the system, allowing for real-time updates and interactions.
2. **Advanced Reporting**:
   * Implement advanced reporting and analytics features to provide deeper insights into hotel operations, customer preferences, and financial performance. This can aid in strategic decision-making and operational improvements.
3. **AI and Machine Learning**:
   * Integrate AI and machine learning algorithms to predict customer preferences, optimize room pricing, and enhance marketing strategies. These technologies can also help in resource allocation and demand forecasting.
4. **IoT Integration**:
   * Incorporate Internet of Things (IoT) devices for smart room management, energy efficiency, and enhanced guest experiences. For example, IoT sensors can automate lighting, temperature control, and other room amenities based on guest preferences.
5. **Enhanced Security**:
   * Implement advanced security measures, such as encryption, multi-factor authentication, and regular security audits, to protect sensitive customer and financial data. Ensuring data privacy and security is crucial in maintaining trust and compliance with regulations.

These enhancements will further improve the functionality, scalability

**REFERENCES:**

Here are some references for Hotel Management Database systems:

### 1.Ogirima, Sanni Abubakar Omuya1\*, Awode, Tolulope Reuben2, Adeosun, Olajide Olusegun3. **“Online computerized**hotel management system**”, M**arch 31, 2014, Published: April 2, 2014

### 2.Guirong Guo\*, Yan Lu,**“Design and analysis of**hotel management system **based on information technology”,** COMPUTER MODELLING & NEW TECHNOLOGIES 2014 18(10) 296-301,12 May 2014.

3. **W.P.S.W. Weerasinghe, D.I. De Silva, “Research on**Hotel Management System**”,** Vol. 12 No. 5. October 2022

4.Jingda Yang, “**Research and design of**hotel management system **model”,** 10.2991/icetis-13.2013.260, 2013.

# 5. **Akash, Md. Ahsan Kabir; Sarafath, Kazi Zafarullah,** “Hotel Management System”, http://dspace.ewubd.edu:8080/handle/123456789/3836, 2022-09-28.