A PROJECT REPORT ON
HOTEL MANAGEMENT SYSTEM

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in partial fulfillment for the completion of course

CSA0537-DATABASE MANAGEMENT SYSTEM FOR DATA MODEL

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BONAFIDE CERTIFICATE

Certified that this project report titled "MOVIE RESERVATION DATABASE" is the bonafide work **P.Keerthana[192211638], Sathya Sri[192110087], A.Jyoshna [192211459]** who carried out the project work under my supervision as a batch. Certified further, that to the best of my knowledge the work reported herein does not form any other project report

Date: **Project Supervisor:**   **Head of the Department:**

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HOTEL MANAGEMENT SYSTEM DATABASE PROJECT

1.ABSTRACT:

The Hotel Management System Database Project aims to create a comprehensive and efficient database system to streamline various operations within a hotel environment. This project encompasses the design, implementation, and management of a database that will facilitate the day-to-day activities of hotel staff, improve guest experience, and enhance overall operational efficiency.The database will be structured to handle various aspects of hotel management, including:Guest Management: This module will manage guest information, including personal details, booking history, preferences, and special requests. It will allow staff to efficiently handle reservations, check-ins, check-outs, and room assignments.Room Management: The system will maintain a record of available rooms, their types, rates, and current occupancy status. It will also handle room maintenance schedules and facilitate room service requests.Reservation System: Guests can make reservations through the system, which will provide real-time availability information and booking confirmation. Staff can manage reservations, modify bookings, and handle cancellations through this module.

KEYWORDS: Rooms, RoomCategories, Employees, Customers, Bookings, Payments, FoodAndBeverages, Bills.
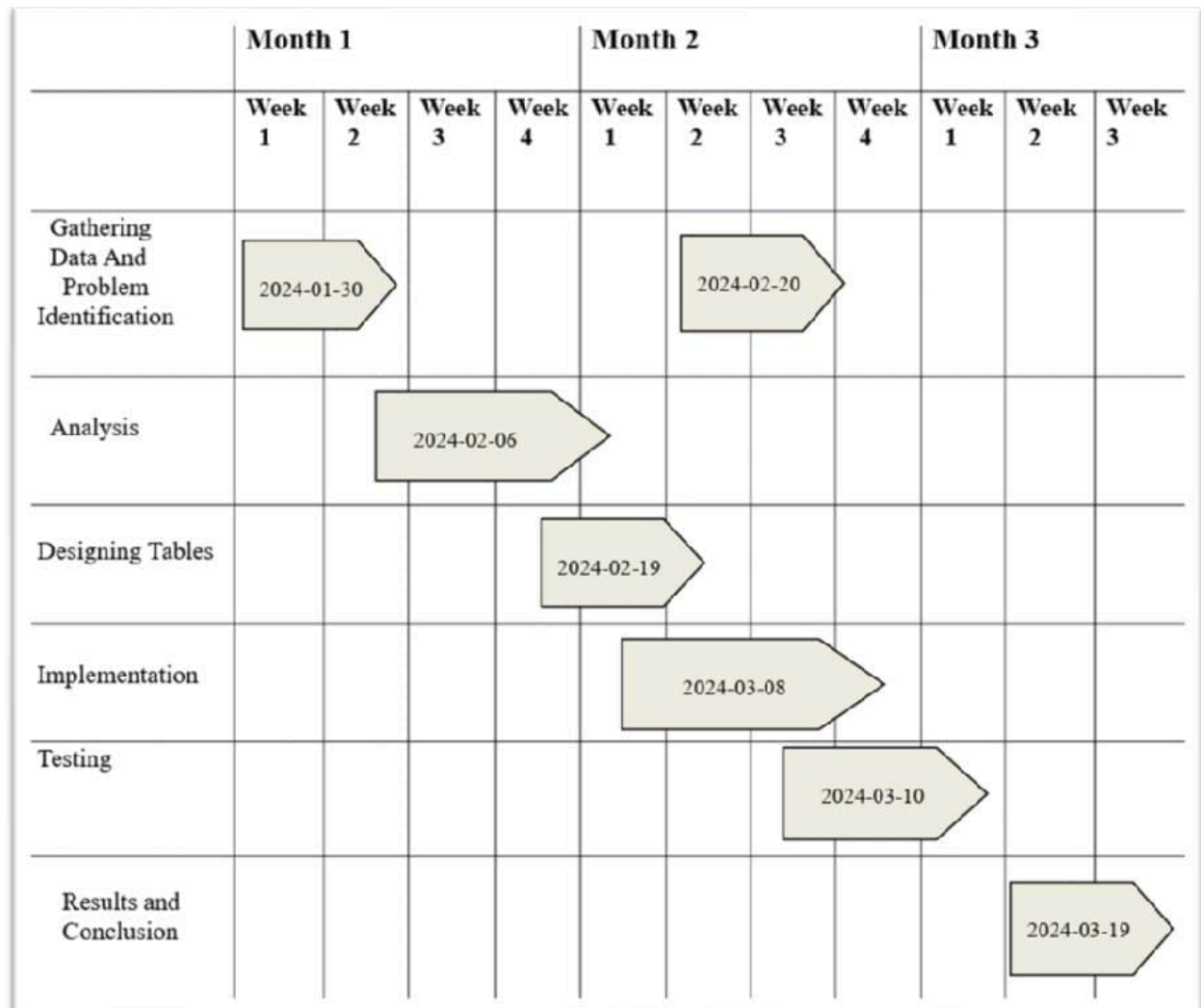
2.INTRODUCTION:

Hotel Management System is an automated administration system. This system keeps the records of equipment resources other than programming of this association. The proposed framework will monitor Workers, Residents, Accounts and generation of reports with respect to the present status.This project has GUI based programming that will help in Storing. Updating and Recovering the data through different user friendly menu-driven modules. The venture "Hotel Management System" is meant to keep up the everyday condition of Affirmation/Vacation of Residents. List of Workers, Payment details and so on.Fundamental target of this project is to give answers for hotels to oversee most of their work uses modernized procedures. This product application will help administrators to deal with Clients Data. Room Allocation Details, Payment Details, Billing Information etc.

The existing system is a manually maintained system. All the Hotel records are to be kept up for the details of every client such as Fee details, Room Allocation, Attendance and so forth. Every one of these details are entered and recovered manually, because of this there are numerous disservices like Time Consuming, Updating Procedure, Incorrectness of Data. For evading this

we presented a new system in modernized form which gives simple and fast access over the information.In hotel operations, acquisition of products and services is the most vulnerable area which could prompt to malpractice since lodgings spend considerable sums on merchandise, (for example, nourishment and drink, utensils, toiletries and so forth.) and administrations. (for example, cleaning and security administrations, bunch protection administrations and so forth.). The proposed system will over all these problems.

Grant chart:

|	Month 1				Month 2				Month 3		
	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3
Gathering Data And Problem Identification	2024-01-30					2024-02-20					
Analysis		2024-02-06									
Designing Tables				2024-02-19							
Implementation					2024-03-08						
Testing							2024-03-10				
Results and Conclusion										2024-03-19	

3.METHODOLOGY:

The database design involves creating several key tables to store relevant information:

1. **Requirements Gathering:** Understand the needs of the hotel management system. Identify key entities such as guests, rooms, reservations, staff, services, etc. Determine the relationships between these entities.
2. **Conceptual Design:** Create an Entity-Relationship Diagram (ERD) to visualize the entities, their attributes, and relationships. This high-level view helps in understanding the structure of the database.
3. **Normalization:** Normalize the database schema to reduce redundancy and improve data integrity. This involves breaking down tables into smaller, related tables to eliminate data duplication and anomalies. Aim for at least 3rd Normal Form (3NF) or higher.
4. **Schema Design:** Based on the ERD and normalization, design the actual database schema. Define tables, their columns, data types, constraints (such as primary keys, foreign keys, unique constraints), and indexes.
5. **Physical Design:** Consider the physical aspects of the database, such as storage, indexing, partitioning, and performance optimization. Choose appropriate storage engines, filegroups, and tablespaces. Indexes should be carefully chosen to speed up common queries.
6. **Security Design:** Implement security measures to protect sensitive data. Define user roles and permissions to control access to the database. Encrypt sensitive data if necessary.
7. **Data Integrity:** Enforce data integrity constraints to maintain consistency and accuracy. Use foreign key constraints to enforce referential integrity between related tables. Implement checks and triggers to enforce business rules.
8. **Backup and Recovery:** Develop a backup and recovery strategy to ensure data availability and disaster recovery. Regularly backup the database and test the restoration process.
9. **Testing and Validation:** Test the database schema and queries thoroughly to ensure correctness and performance. Perform unit testing, integration testing, and load testing to identify and fix any issues.
10. **Documentation:** Document the database schema, data dictionary, and any relevant information about the database design, including assumptions and constraints. This documentation helps in understanding and maintaining the database in the future.

ER-Diagram of Hotel Management System
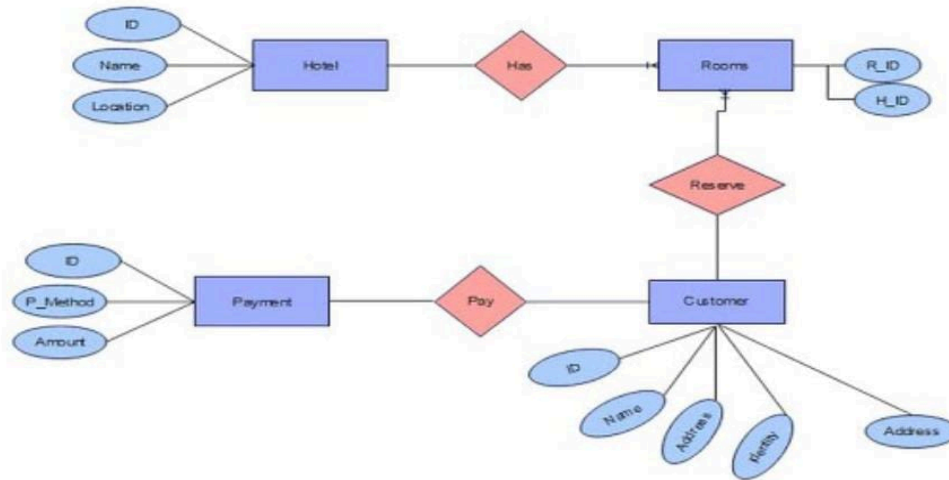
4.Literature Survey:

A literature survey for a hotel management system would involve reviewing academic papers, industry reports, books, and other relevant sources to gather information on various aspects of hotel management systems, including their functionalities, technologies, challenges, and best practices.

➢ **Introduction to Hotel Management Systems**
  ○ Definition of hotel management systems
  ○ Importance of hotel management systems in the hospitality industry
  ○ Evolution of hotel management systems
➢ **Functionalities of Hotel Management Systems**
  ○ Reservation management
  ○ Front desk operations
  ○ Housekeeping management
  ○ Point of Sale (POS) integration
  ○ Inventory management
  ○ Customer relationship management (CRM)
  ○ Reporting and analytics
➢ **Technologies Used in Hotel Management Systems**
  ○ Property Management Systems (PMS)
  ○ Central Reservation Systems (CRS)

- ○ Channel Management Systems
- ○ Customer Relationship Management (CRM) software
- ○ Mobile applications
- ○ Cloud-based solutions
- ○ Integration with Internet of Things (IoT) devices
- ➢ **Challenges in Hotel Management Systems**
  - ○ Integration issues with legacy systems
  - ○ Data security and privacy concerns
  - ○ Training and adoption by staff
  - ○ Scalability for multi-property management
  - ○ Keeping up with evolving guest expectations
- ➢ **Best Practices and Case Studies**
  - ○ Successful implementations of hotel management systems
  - ○ Strategies for overcoming challenges
  - ○ Case studies highlighting improved efficiency and guest satisfaction
- ➢ **Future Trends in Hotel Management Systems**
  - ○ Artificial Intelligence (AI) and machine learning applications
  - ○ Personalization and guest experience enhancement
  - ○ Sustainability and green initiatives
  - ○ Contactless technologies for a post-pandemic world
  - ○ Blockchain for security and transparency

5.Code:

```
-- Table for room categories
CREATE TABLE RoomCategories (
   CategoryID INT PRIMARY KEY,
   CategoryName VARCHAR(50) NOT NULL,
   Price DECIMAL(10, 2) NOT NULL
);

-- Table for rooms
CREATE TABLE Rooms (
   RoomNumber INT PRIMARY KEY,
   CategoryID INT,
   Status VARCHAR(20) DEFAULT 'Available', -- Status can be 'Available', 'Occupied', 'Under Maintenance', etc.
   FOREIGN KEY (CategoryID) REFERENCES RoomCategories(CategoryID)
);

-- Table for employees
CREATE TABLE Employees (
```

```sql
    EmployeeID INT PRIMARY KEY,
    FirstName VARCHAR(50) NOT NULL,
    LastName VARCHAR(50) NOT NULL,
    Position VARCHAR(50) NOT NULL,
    Salary DECIMAL(10, 2) NOT NULL
);

-- Table for customers
CREATE TABLE Customers (
    CustomerID INT PRIMARY KEY,
    FirstName VARCHAR(50) NOT NULL,
    LastName VARCHAR(50) NOT NULL,
    Address VARCHAR(100),
    Phone VARCHAR(20)
);

-- Table for bookings
CREATE TABLE Bookings (
    BookingID INT PRIMARY KEY,
    CustomerID INT,
    RoomNumber INT,
    CheckInDate DATE,
    CheckOutDate DATE,
    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID),
    FOREIGN KEY (RoomNumber) REFERENCES Rooms(RoomNumber)
);

-- Table for payments
CREATE TABLE Payments (
    PaymentID INT PRIMARY KEY,
    BookingID INT,
    Amount DECIMAL(10, 2) NOT NULL,
    PaymentMethod VARCHAR(50) NOT NULL, -- Cash, Credit Card, etc.
    PaymentDate DATE,
    FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID)
);

-- Table for food and beverages
CREATE TABLE FoodAndBeverages (
    ItemID INT PRIMARY KEY,
    ItemName VARCHAR(100) NOT NULL,
    Price DECIMAL(10, 2) NOT NULL
);

-- Table for bills
CREATE TABLE Bills (
    BillID INT PRIMARY KEY,
    BookingID INT,
    TotalAmount DECIMAL(10, 2) NOT NULL,
```

```
    BillDate DATE,
    FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID)
);
```

6.IMPLEMENTATION:

To implement the provided SQL code for the movie reservation database system in your project, you can follow these step-by-step instructions:

1. Requirements Gathering:

- Understand the specific requirements of the hotel management system. This involves identifying the data entities (e.g., guests, rooms, reservations, staff), their attributes, and the relationships between them.
- Gather input from stakeholders such as hotel managers, staff members, and IT personnel to ensure that all necessary features and functionalities are considered.

2. Database Design:

- Design the database schema based on the requirements gathered in the previous step. This includes defining tables, columns, primary and foreign keys, and establishing relationships between tables.
- Normalize the database schema to eliminate data redundancy and improve data integrity.
- Consider the scalability and performance requirements of the system when designing the database structure.

3. Selecting a DBMS:

- Choose a suitable database management system based on factors such as scalability, performance, reliability, cost, and compatibility with existing systems.
- Commonly used DBMS for hotel management systems include MySQL, PostgreSQL, Microsoft SQL Server, and Oracle.

4. Database Implementation:

- Install and configure the selected DBMS on the appropriate server or hosting environment.
- Create the database and tables based on the designed schema using SQL scripts or graphical tools provided by the DBMS.
- Set up user accounts and permissions to control access to the database and ensure data security.

5. Data Population:

- Populate the database with initial data, such as existing guest records, room details, staff information, etc. This can be done manually or by importing data from existing sources.
- Validate the imported data to ensure accuracy and consistency with the database schema.

6. Application Integration:

- Develop or configure the hotel management system application to interact with the database.
- Implement data access layer components (e.g., DAOs, repositories) to encapsulate database interactions and facilitate data manipulation operations (CRUD - Create, Read, Update, Delete).
- Integrate the application with the DBMS using appropriate database connectivity mechanisms such as JDBC (Java Database Connectivity) or ORM (Object-Relational Mapping) frameworks.

7. Testing and Quality Assurance:

- Conduct comprehensive testing of the integrated system to ensure that data is being stored, retrieved, and manipulated correctly.
- Perform unit tests, integration tests, and system tests to validate the functionality and performance of the database management system.
- Address any issues or bugs identified during the testing phase and make necessary adjustments to the database schema or application code.

8. Deployment and Maintenance:

- Deploy the hotel management system with the integrated DBMS to the production
- environment.
- Monitor the system performance and database health regularly to identify and address any   potential issues.
- Perform routine database maintenance tasks such as backups, index optimization, and
- database tuning to ensure optimal performance and data integrity.

7.TABLES:

```
mysql> SELECT * FROM RoomCategories;
+------------+--------------+--------+
| CategoryID | CategoryName | Price  |
+------------+--------------+--------+
|          1 | Standard     | 100.00 |
|          2 | Deluxe       | 150.00 |
|          3 | Suite        | 250.00 |
+------------+--------------+--------+
```

```
mysql> SELECT * FROM Rooms;
+------------+------------+-------------------+
| RoomNumber | CategoryID | Status            |
+------------+------------+-------------------+
|        101 |          1 | Available         |
|        102 |          2 | Occupied          |
|        103 |          1 | Available         |
|        104 |          3 | Under Maintenance |
|        105 |          2 | Available         |
+------------+------------+-------------------+
```

```
mysql> SELECT * FROM Employees;
+------------+-----------+----------+--------------+----------+
| EmployeeID | FirstName | LastName | Position     | Salary   |
+------------+-----------+----------+--------------+----------+
|          1 | John      | Doe      | Manager      | 50000.00 |
|          2 | Jane      | Smith    | Receptionist | 30000.00 |
|          3 | Michael   | Johnson  | Housekeeping | 25000.00 |
|          4 | Emily     | Brown    | Waiter       | 28000.00 |
|          5 | David     | Jones    | Chef         | 45000.00 |
+------------+-----------+----------+--------------+----------+
```

8.CONCLUSION:

The conclusion of this project is A Hotel management system is a computerized management system. This system keeps the records of hardware assets besides software of this organization. The proposed system will keep a track of Workers, Recidents, Accounts and generation of report regarding the present status. This project has GUI based software that will help in storing, updating and retrieving the information through various user-friendly menu-driven modules.The project "Hotel Management System" is aimed to develop to maintain the day-to-day state of admission/Vacation of Residents, List of Workers , payment details etc. Main objective of this project is to provide solution for hotel to manage most there work using computerized process. This software application will help admin to handle customers information, room allocation details, payment details, billing information.etc. Detailed explanation about modules and design are provided in project documentation. The existing system is a manually maintained system. All the Hotel records are to be maintained for the details of each customers, Fee details, Room Allocation , Attendance etc. All these details are entered and retrieved manually,because of this there are many disadvantages like Time Consuming ,updating process, inaccuracy of data.For avoiding this we introduced or proposed a new system in proposed system the computerized version of the existing system. provides easy and quick access over the data.

9.FUTURE ENHANCEMENT:

Future enhancements to a hotel management system database can be vast and diverse, aimed at improving efficiency, customer satisfaction, and overall management of the hotel operations. Here are some potential enhancements:

1. **Mobile App Integration:** Develop a mobile application for guests to easily book rooms, check-in/check-out, order room service, request housekeeping, and access loyalty programs.
2. **Integration with IoT Devices:** Implement IoT sensors in rooms for automated temperature control, lighting, and to monitor energy usage. This integration can also include smart locks for keyless entry.
3. **Predictive Analytics:** Utilize data analytics to predict demand patterns, optimize pricing strategies, and personalize guest experiences. This can involve machine learning algorithms to forecast occupancy rates and adjust pricing dynamically.
4. **Customer Relationship Management (CRM) Integration:** Integrate CRM software to manage guest interactions, preferences, and feedback. This helps in offering personalized services and marketing campaigns tailored to individual guests.

5. **Advanced Reporting and Business Intelligence:** Enhance reporting capabilities with real-time dashboards and customizable reports. This allows management to gain insights into revenue, occupancy rates, guest demographics, and operational efficiencies.
6. **Online Reputation Management:** Monitor and manage the hotel's online reputation by aggregating guest reviews from various platforms. Implement sentiment analysis to gauge customer satisfaction and address any issues promptly.
7. **Enhanced Loyalty Program:** Expand the loyalty program to offer more rewards, exclusive perks, and tiered membership levels based on guest spending and frequency of visits.
8. **Contactless Payment Solutions:** Implement contactless payment options such as mobile wallets, NFC, or QR codes to streamline the checkout process and minimize physical contact.
9. **Environmental Sustainability Tracking:** Integrate features to track and reduce the hotel's environmental footprint, such as monitoring water and energy usage, waste management, and promoting eco-friendly practices among guests.
10. **Multi-language Support:** Offer multilingual interfaces and services to cater to international guests, ensuring a seamless experience regardless of language barriers.

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