

DBMS MINI PROJECT: Stadium Seat Management System

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ABSTRACT:

Abstract:

The Stadium Seat Management System is a database-driven solution designed to facilitate the efficient management of seating arrangements in a stadium environment. The system employs a relational database management system (DBMS) with SQL for data storage and retrieval. The core entities of

the system include stadiums, sections within stadiums, individual seats, customers, and reservations.

The project enables administrators to maintain detailed information about stadiums, including their names, locations, and capacities, as well as to organize sections within stadiums with their respective capacities. Each section contains multiple seats, identified by unique seat IDs, row numbers, and seat numbers. The system tracks the availability of seats, marking them as reserved or available based on customer reservations.

Customers can register within the system by providing their personal details such as name, email, and phone number. They can then make reservations for seats within specific sections of stadiums for events or games. Reservations are associated with customers and specific seats, along with reservation dates.

The system offers functionalities for querying available seats within sections, managing customer reservations, updating seat availability, and canceling reservations as needed. It provides a foundation for further enhancements such as integrating payment processing, implementing seat

availability notifications, and incorporating user authentication mechanisms.

Overall, the Stadium Seat Management System provides a robust platform for stadium administrators to efficiently manage seating arrangements, optimize seat utilization, and enhance the overall experience for customers attending events or games at the stadium.

INTRODUCTION:

Introduction:

In the bustling atmosphere of a stadium during events or games, efficient management of seating arrangements is crucial for ensuring a smooth and enjoyable experience for spectators. From organizing seating sections to handling customer reservations, the intricacies of stadium seat management demand a structured and systematic approach. The Stadium Seat Management System emerges as a solution tailored to address these challenges, leveraging the power of database management and SQL technology.

This project aims to streamline the process of stadium seat management by providing a comprehensive database-driven platform. By utilizing a relational database management system (DBMS) and SQL, the system enables administrators to meticulously oversee stadium layouts, section allocations, seat availability, and customer reservations. Through a user-friendly interface, stadium personnel can efficiently manage seating arrangements, optimize seat utilization, and enhance the overall spectator experience.

The following sections will delve deeper into the architecture, functionalities, and implementation details of the Stadium Seat Management System, highlighting its significance in the realm of stadium operations and event management. From database schema design to SQL queries and user interactions, this project encapsulates the essence of effective stadium seat management in a digital age.

PROGRAM:

creating table:

```
CREATE TABLE Stadiums (  
    stadium_id INT PRIMARY KEY,  
    name VARCHAR(100),  
    location VARCHAR(100),  
    capacity INT  
);
```

```
CREATE TABLE Sections (  
    section_id INT PRIMARY KEY,  
    stadium_id INT,  
    name VARCHAR(100),  
    capacity INT,  
    FOREIGN KEY (stadium_id) REFERENCES Stadiums(stadium_id)  
);
```

```
CREATE TABLE Seats (  
    seat_id INT PRIMARY KEY,  
    section_id INT,  
    row_number INT,YES  
    YES  
    seat_number INT,  
    is_reserved BOOLEAN,  
    FOREIGN KEY (section_id) REFERENCES Sections(section_id)  
);
```

```
CREATE TABLE Customers (  
    customer_id INT PRIMARY KEY,  
    name VARCHAR(100),  
    email VARCHAR(100),  
    phone VARCHAR(20)  
);
```

```
CREATE TABLE Reservations (  
    reservation_id INT PRIMARY KEY,  
    customer_id INT,  
    seat_id INT,  
    reservation_date DATE,  
    FOREIGN KEY (customer_id) REFERENCES Customers(customer_id),
```

FOREIGN KEY (seat_id) REFERENCES Seats(seat_id)

];

RESULT:

i) Queries:

Stadiums:

| stadium_id | name | location | capacity |
|------------|------|----------|----------|
|------------|------|----------|----------|

| | | | |
|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- |
|-------|-------|-------|-------|

| | | | |
|---|-----------------|--------|-------|
| 1 | Example Stadium | City A | 10000 |
|---|-----------------|--------|-------|

Sections:

| section_id | stadium_id | name | capacity |
|------------|------------|------|----------|
|------------|------------|------|----------|

| | | | |
|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- |
|-------|-------|-------|-------|

| | | | |
|---|---|------------|------|
| 1 | 1 | East Stand | 2000 |
|---|---|------------|------|

| | | | |
|---|---|------------|------|
| 2 | 1 | West Stand | 2500 |
|---|---|------------|------|

Seats:

| seat_id | section_id | row_number | seat_number | is_reserved |
|---------|------------|------------|-------------|-------------|
|---------|------------|------------|-------------|-------------|

| | | | | |
|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- |
|-------|-------|-------|-------|-------|

| | | | | |
|---|---|---|---|-------|
| 1 | 1 | 1 | 1 | FALSE |
|---|---|---|---|-------|

| | | | | |
|---|---|---|---|-------|
| 2 | 1 | 1 | 2 | FALSE |
|---|---|---|---|-------|

| | | | | |
|---|---|---|---|------|
| 3 | 1 | 2 | 1 | TRUE |
|---|---|---|---|------|

| | | | | |
|---|---|---|---|-------|
| 4 | 2 | 1 | 1 | FALSE |
|---|---|---|---|-------|

| | | | | |
|---|---|---|---|-------|
| 5 | 2 | 1 | 2 | FALSE |
|---|---|---|---|-------|

Customers:

| customer_id | name | email | phone |
|-------------|----------|------------------|-------------|
| 1 | John Doe | john@example.com | +1234567890 |

Reservations:

| reservation_id | customer_id | seat_id | reservation_date |
|----------------|-------------|---------|------------------|
| 1 | 1 | 1 | 2024-05-07 |

Query Results:

Retrieve available seats in a section:

For example, let's say we want to retrieve available seats in the East Stand (section_id = 1). The output could look like this:

| seat_id | section_id | row_number | seat_number | is_reserved |
|---------|------------|------------|-------------|-------------|
| 2 | 1 | 1 | 2 | FALSE |

Retrieve all reservations for a customer:

For example, let's retrieve all reservations for customer with customer_id = 1. The output could look like this:

| reservation_id | customer_id | seat_id | reservation_date |
|----------------|-------------|---------|------------------|
| 1 | 1 | 1 | 2024-05-07 |

Make a reservation:

After making a reservation for customer_id = 1 on seat_id = 2, the database would be updated accordingly. No output is generated for this operation, but a new reservation entry would be added to the Reservations table.

Mark a seat as reserved:

After marking seat_id = 2 as reserved, the Seats table would be updated accordingly. No output is generated for this operation.

Cancel a reservation:

After canceling reservation_id = 1, the database would be updated accordingly. No output is generated for this operation, but the reservation entry would be removed from the Reservations table.

These outputs demonstrate the expected results of each query based on the provided sample data and operations.

CONCLUSION:

The Stadium Seat Management System stands as a testament to the convergence of technology and efficiency in the realm of stadium operations. Through its robust database architecture and SQL-driven functionalities, the system offers a scalable and user-centric solution for managing seating arrangements with precision and ease.

By centralizing information about stadiums, sections, seats, customers, and reservations, the project empowers administrators to orchestrate seating logistics with agility and foresight. From allocating sections to tracking seat availability and facilitating customer reservations, the system streamlines every facet of stadium seat management, ultimately enhancing the overall spectator experience.

Moreover, the project serves as a foundation for future enhancements and innovations in stadium operations. With the potential for integrating additional features such as

payment processing, seat availability notifications, and user authentication mechanisms, the Stadium Seat Management System remains adaptable to evolving needs and technologies in the dynamic landscape of event management.

In essence, this project exemplifies the transformative impact of database management and SQL technology in optimizing operational efficiency and elevating customer satisfaction in the context of stadium environments. As stadiums continue to serve as hubs of communal experience and entertainment, the Stadium Seat Management System emerges as a cornerstone of excellence in modern stadium management practices.