

Case Study-Designing an Event Management on MySQL

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<https://github.com/sahil19883/Event-management>

A detailed Design and Implementation of the Event Management Company Database System

This report discusses a system that is a relational database, and the report explains how this system was created for an event management company. The study shows all the steps from coming up with an idea to carrying it out, showing how organizing data effectively can impact event planning and conducting. The system being suggested consolidates several aspects such as clients, events, venues, participants and resources which boost organizational efficiency, ensure all the data is kept accurate and helps managers make effective strategic decisions within the industry.

Introduction

Today, managing events is very challenging because it involves many projects happening at the same time, diverse expectations from participants and complex logistics. A successfully designed database system holds together successful event operations by making it easier for companies to organize processes, reduce mistakes and provide excellent services to attendees. Due to the complexity of today's event management, data must be organized in a step-by-step way that covers all kinds of events, from corporate events right through to sports tournaments, cultural festivals and conferences.

With events now being very large and complicated thanks to the internet, we need data management that can handle different types of information at once. The company in charge of the event needs to monitor the number of participants, oversee venue reservations, handle dealings with vendors, keep track of the budget and guarantee that all parties have clear communication. When handling events with large numbers of participants, several venues and challenging planning, traditional methods using pen or spreadsheets fail to handle the job.

The mission and objective

Mission Statement

To make memorable occasions, encourage interactions among guests, strengthen client-focused efforts and do this through good planning, flawless organization and outstanding services. It means sticking to high professional, imaginative and detail-oriented standards so that every event effectively achieves its goals of strengthening social ties, celebrating what has been accomplished or supporting business management. It is important to realize clients' dreams as projects to bring positive impacts on all participants and stakeholders.

Primary Objectives

The main goal is to design a database system that helps with all parts of event organization, from the first meeting with clients to collecting feedback after it ends. The main goal of this system is to group important information on participants, event details, venue management, required resources and performance indicators. The database must enable users to monitor real-time event details, engagement of all participants and how well the event is managed.

Data integrity is ensured in the system by making sure the data is organized and keyed properly so that all the data stays correct through the entire event. Besides, the architecture of the database should allow it to grow together with the number of users, the length and variety of events and the range of activities available. System implementation should let you produce automated reports, make internal communication more efficient and give you detailed analytics useful for management and enhancement of the business.

The naming of a legal entity is one of the first tasks.

For the database to work, it is necessary to carefully define and point out the important entities and how they are connected in the system. This system highlighted six main elements:

Employees, Events, Sports, Venues, Roles and Participants, all having their own importance in the data design.

The employee entity includes all staff involved in events which includes event coordinators, the technical team, marketing employees and staff in administration. The entity keeps a detailed record of employee's skills, certificates, the tasks they handle and their performance record.

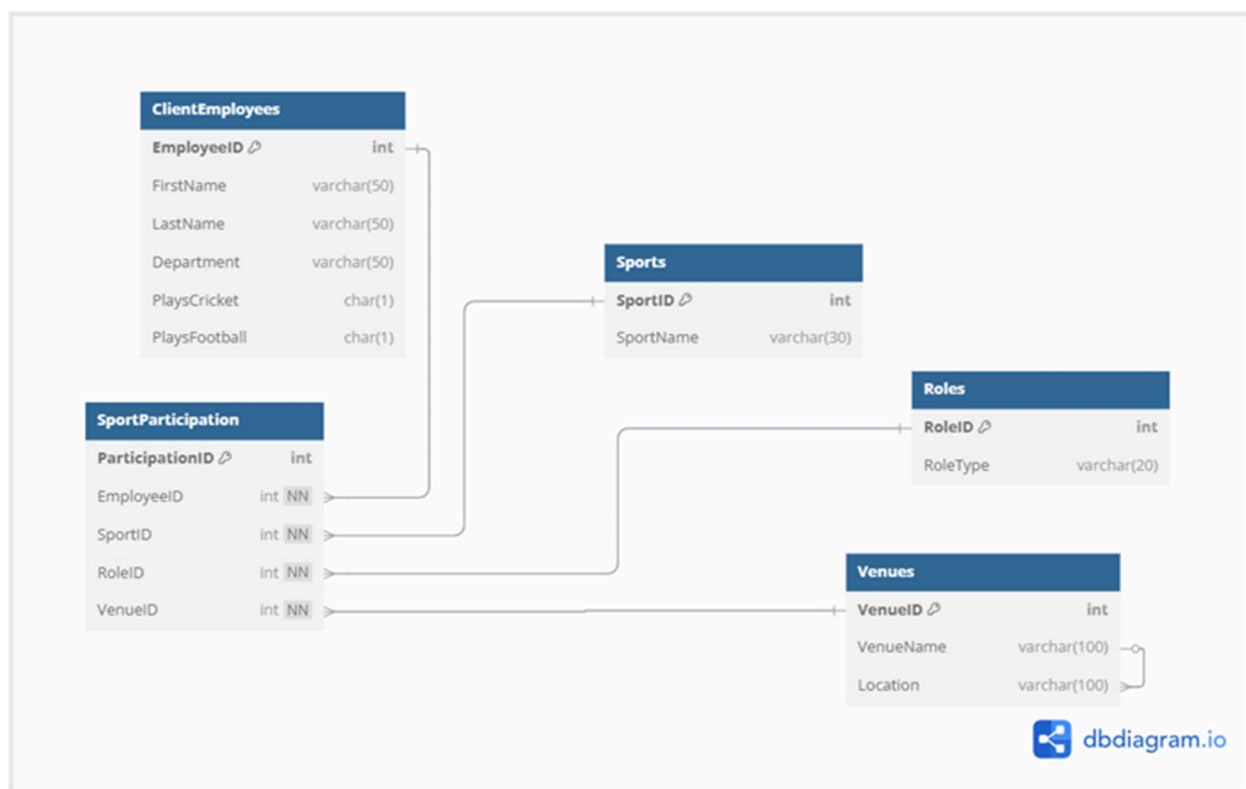
Because of the employee data structure, we manage the workforce, assign talents appropriately and keep track of each employee's performance during event projects.

Event Entity is the main structure used to organize unique occasions, gatherings or activities that the company is handling. It includes all the information needed such as style of event, timeline, main reason for the event, intended audience and the ways to judge whether it was successful.

Every event record keeps links to the involved participants, event locations and required items which help shape a complete plan for the event.

It mainly handles details about athletic events and competitions, including specific guidelines, rules, needed equipment and the criteria for eligibility. The specialized entity manages sports events, tournaments and recreational activities that need specific ways of organizing and following regulations.

This entity handles all details about a venue, like specifications of the space, limits on capacity, what's available on site, schedules of bookings and important contact details for responsibility. They back up the selection, coordination and planning of venues with full details of facilities and their availability tracking



Creating and Developing a Database

When building the database, normalization principles, entity-relationship models and strategies for better performance have been used to design a solution that can grow easily. At the beginning of the process, conceptual modeling focuses on finding important business rules and connections between data and this is followed by logical design that describes each table, its data and the rules for them.

How Tables are Organized and Related

The Client Employees table is used to manage participants, holding important information such as Employee ID, FirstName, LastName, Department, Contact Number, Email and whether the person Plays Cricket or Plays Football. Both employee management and participation in different sports are made easier by the table's design which uses flags to record an individual's involvement.

All the sports in the table are defined by a Sport ID key along with Sport Name, a Description, the full Rules and a list of Equipment Required. Because of this structure, it's possible to manage different sport types easily and keep detailed documents about the requirements and rules for all the activities.

Special roles in events are described in the Roles table by using Role ID as the primary key, Role Name, Description and Required Skills information. It guarantees that each member of the team is assigned to their proper position depending on their abilities and level of experience.

How the Venue is Managed

The primary key used by the Venues table is Venue ID and the table also includes Venue Name, Location, Capacity, Facilities, Contact Person and Booking Status. With this system, it is possible to choose locations, set maximum numbers, align bookings and store specific information about different facilities to make the right choices.

TABLES

Table Name	Type	Purpose
ClientEmployees	Entity	Stores detailed information of all employees provided by XYZ Corp, including their department and sport preferences (Cricket/Football via Y/N).
Sports	Entity	Holds the list of sports (Cricket, Football) being organized for the event.
Roles	Entity	Defines the type of role an employee holds in the event — either <i>Official</i> (player) or <i>Unofficial</i> (support staff).
Venues	Entity	Stores venue details including name and location where the sports events are held.
SportParticipation	Process	(Conceptual/Virtual via Views) Used to link employees to the sports they are participating in, along with their roles and assigned venues. created SQL views to simulate this participation based on conditions like <code>PlaysCricket = 'Y'</code> .

ensuring your data makes sense and is correct

It makes sure all tables are in Third Normal Form (3NF) so that data redundancy does not occur and the data stays consistent. Foreign key relationships set up a link between related data, so all

references are checked for validity and there are no missing, orphaned data. Unique identification for each record is achieved with primary key constraints and check constraints enforce data entry business rules and requirements.

TABLE : clientemployees

```
mysql> describe clientemployees;
```

Field	Type	Null	Key
EmployeeID	int	NO	PRI
FirstName	varchar(50)	YES	
LastName	varchar(50)	YES	
Department	varchar(50)	YES	
PlaysCricket	char(1)	YES	
PlaysFootball	char(1)	YES	

```
6 rows in set (0.01 sec)
```

EmployeeID	FirstName	LastName	Department	PlaysCricket	PlaysFootball
101	Aman	Shah	IT	Y	N
102	Neha	Patel	Marketing	N	Y
103	Ravi	Kumar	HR	Y	Y
104	Simran	Singh	Finance	N	N
105	Aditya	Gupta	Operations	Y	N

Implementation

At this point, you need to build the MySQL database using the planned database schema, set relationships and develop the essential queries. Industry best practices for database deployment are followed with the correct indexing methods, safety controls and performance tips in implementation.

Working with Database Creation and the Implementation of Tables

The first thing to do is make the database structure with MySQL DDL, creating all the needed tables and setting up their data types, rules and relationships. The primary key in the Client

Employees table is auto-incrementing, text-type fields are varchar and there are Boolean fields for keeping track of employee sports participation.

The act of making dynamic views

Dynamic SQL views is used to form virtual participation tables without storing the repetitive data physically. The Plays Cricket column is automatically set to render employees who have entered 'Y' by filtering them out of other groups, allowing for on-the-spot identification of cricket participants.

Sportparticipation

Q) How do we identify all official cricket participants ?

```
mysql> CREATE VIEW OfficialCricketParticipants AS
-> SELECT EmployeeID, 1 AS SportID, 1 AS RoleID, 1 AS VenueID
-> FROM ClientEmployees
-> WHERE PlaysCricket = 'Y';
Query OK, 0 rows affected (0.03 sec)
```

Q) How do we identify all official football participants?

```
mysql> CREATE VIEW OfficialFootballParticipants AS
-> SELECT
->     EmployeeID,
->     FirstName,
->     LastName,
->     2 AS SportID,
->     1 AS RoleID,
->     2 AS VenueID
-> FROM ClientEmployees
-> WHERE PlaysFootball = 'Y';
Query OK, 0 rows affected (0.04 sec)
```

How Business Intelligence Queries Are Set up

The system is equipped with detailed query tools to address different business intelligence needs such as knowing who the participants are, analyzing multiple sports side by side and generating statistics. By choosing the right methods for indexing and joins, the execution time is reduced, and the system increases data accuracy.

Benefits and drawbacks of neural networks.

The system put in place has many benefits.

Foreign key relationships and constraint checks contribute greatly to keeping data accurate and in line in a relational database. With a normalized structure, redundant data is avoided and whenever information is updated in one spot, all related records also get the update immediately.

The system is also very beneficial because it can serve an expanding user base, add more event options and handle bigger venues without significant changes to its structure. Using this design, horizontal scaling is possible by dividing the table and vertical scaling is achieved by adding resources to the servers.

Thanks to Enhanced Reporting and Analytics Capabilities, complex analysis can be done using querying data, gathering information and comparing tables. It helps the organization watch how people join the event and perform during it, along with how resources are used, all of which supports better choices and improved procedures.

Machine learning and automation eliminate much of the work in categorizing participants, choosing their roles and organizing schedules. Humans' errors and the struggle of tracking spreadsheets via manual entry are eliminated and each change to data is recorded in the system.

Shortcomings and Problems

Developing a system with many data connections is hard at the early stage because one needs to invest much time and effort in database design, programming and testing. When staff switch

from traditional work to database systems, there may be a slight drop in how operations are carried out during the transition.

To maintain systems and technical requirements, you need to handle database management, backups, security updates and watch performance regularly with the help of experts.

Organizations are required to either develop their employees' skills or hire professional database administrators to maintain and protect the company's software and data.

Relying on Technology Infrastructure opens the system to risks during technical failures or system outages that would disrupt the organization's event management work. The system relies on having backed up data, ready disaster recovery strategies and extra operation plans to sustain its operations when emergencies happen.

Conclusion

The use of relational database technology shown in the system turns regular event planning into operations that are automated, effective and data driven. All of this happens thanks to the implementation which supports managing events, safeguards all the information and makes sure the system can scale.

The project demonstrates how normalization, entity-relationship modeling and constraints are applied to ensure accurate and dependable project data. Creating views dynamically and filtering participants automatically are new ways to handle complicated business tasks, ensuring the system stays fast and the data is accurate.

In the future, integrating with external tools such as payment gateways, means of communication and systems for managing venues could help build a complete event management ecosystem. For example, more features could include mobile app pages, an immediate message notification system and in-depth analytics to monitor how people participate and the outcomes of the event.

By successfully using this database system, event management companies can continue to advance, still offering top service as they grow. Thanks to the way it is built, the system can keep up with new competition in the event industry and changing business demands.

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