National University of Computer & Emerging Sciences Karachi Campus

Stadium Management System

Project Report

Database Systems

BCY – 5A

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Description

We have digitalized the process of storing and retrieving all the information related to the Stadium, Teams and its members, billing, stadium staff, team reservation, etc. by developing a database for a stadium administration that has numerous stadiums in a city. In accordance with the seats available, we will also generate tickets for fans who want to see the game at a given time and date with the preferred seat type. Furthermore, a team can also reserve a stadium at any time when the stadium is not already reserved, and the team will be billed according on the number of hours of the reservation.

Entities

1. **Stadiums** (Stadium entity has information regarding stadium type, seats capacity etc.)

2. **Teams** (Teams will provide their details before reserving a stadium)

3. **Team Members** (This entity contains member's details and the team they belong to)

4. **Billing** (Total billing for reserving stadium, calculated as rate/hour)

5. **Team Reservation** (Total summary of the reservation of teams i.e. starting and ending time of reservation, team information and the stadium they chose. Furthermore, it will contain the total cost of reservation as well)

6. **Tickets** (Ticket entity contains information regarding stadium, and time of the match and ticket price. It will not contain the details of spectators. Ticket price could vary according to types of seats)

7. **Stadium Staff** (It will contain the information about staff working in the stadium, types of staff and their salary as well)

Concepts Used

- SQL functions used for calculation of bills.
- Joins and subqueries are used to retrieve relevant information.
- Auto-increment used to allot stadium IDs dynamically
- Triggers are used on application level to notify insertion of order.
- Transactions used on application level to control stadium reservation and ticket booking concurrency.

Normalization Process

Entities *After* Normalization (Up to BCNF)

1. Stadium
2. Location
3. Teams
4. Team Members
5. Reservation
6. Billing
7. Duration (Weak Entity)
8. Seat
9. Ticket
10. Staff
11. Jobs

Entity-Relation diagram