

An Example of Hotel Maintenance System built with SQL Database

Abstract: This paper presents the design and implementation of an automated hotel maintenance system aimed at integrating the maintenance of hotel operations, from a request is sent, to an employee is assigned the task, till the job is accomplished and the log record is updated, all tasks are cascaded because the system utilizes a relational database ensuring timely repairs, and minimizing service disruptions. All work orders are streamlined, tracking asset conditions, and to schedule preventive maintenance — to keep maintaining data accuracy and accessibility.

System Brief Structure

The hotel maintenance system built with an **SQL database** focuses on organizing data related to:

- Maintenance requests
- Staff assignments
- Rooms and facilities
- Equipment/assets
- Maintenance schedules

Database Schema Components

Here is a simplified SQL schema that supports core maintenance functionalities:

1. Rooms Table

```
sql
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CREATE TABLE Rooms (
  RoomID INT PRIMARY KEY,
  RoomNumber VARCHAR(10),
  Floor INT,
  RoomType VARCHAR(50)
);
```

2. MaintenanceRequests Table

```
sql
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CREATE TABLE MaintenanceRequests (
  RequestID INT PRIMARY KEY,
  RoomID INT,
  IssueDescription TEXT,
  Status VARCHAR(20), -- e.g., 'Pending', 'In Progress', 'Completed'
  RequestDate DATE,
```

```
CompletionDate DATE,  
FOREIGN KEY (RoomID) REFERENCES Rooms(RoomID)  
);
```

3. Staff Table

```
sql  
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CREATE TABLE Staff (  
    StaffID INT PRIMARY KEY,  
    Name VARCHAR(100),  
    Role VARCHAR(50)  
);
```

4. Assignments Table

```
sql  
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CREATE TABLE Assignments (  
    AssignmentID INT PRIMARY KEY,  
    RequestID INT,  
    StaffID INT,  
    AssignedDate DATE,  
    FOREIGN KEY (RequestID) REFERENCES MaintenanceRequests(RequestID),  
    FOREIGN KEY (StaffID) REFERENCES Staff(StaffID)  
);
```

Benefits of SQL-Based Maintenance System

- **Efficient Tracking:** Keeps logs of issues and repairs.
- **Scheduling:** Enables preventive maintenance planning.
- **Accountability:** Links tasks to specific staff members.
- **Reporting:** Facilitates data-driven decisions with SQL queries.

Sample Query: Open Requests Per Staff Member

```
sql  
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SELECT s.Name, COUNT(*) AS OpenRequests  
FROM Staff s  
JOIN Assignments a ON s.StaffID = a.StaffID  
JOIN MaintenanceRequests r ON a.RequestID = r.RequestID  
WHERE r.Status != 'Completed'  
GROUP BY s.Name;
```

Reference

Priyadharshini, S., & Joy, C. R. (2021). Design and implementation of an automated hotel management system. *International Journal of Engineering and Advanced Technology (IJEAT)*, Volumn 10, Issue 5, 256–259. <https://doi.org/10.35940/ijeat.E2569.0610521>

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Learning outcomes for Data Concept

