



SQL PROJECT

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CASE STUDY – ATTENDENCE MANAGEMENT SYSTEM

CASE STUDY QUESTIONS

Questions:

1. Create Table:
 - o Write an SQL statement to create all tables with the specified columns.
2. Insert Records:
 - o Insert at least 10 records in all the tables.
3. Select Records:
 - o Write a query to select all attendance records from the Attendance table where the Status is 'Late'.
4. Where Clause (AND/OR):
 - o Write a query to select all employees from the Employees table who work in the 'HR' department and were hired after January 1, 2020.
5. LIKE Operator:
 - o Write a query to select all departments where the DepartmentName contains 'Sales'.
6. CASE Statement:
 - o Write a query to select CheckInTime, CheckOutTime, and a new column AttendanceDuration from the Attendance table. Calculate AttendanceDuration as the difference between CheckOutTime and CheckInTime.
7. Subquery:
 - o Write a query to find all employees who have at least one 'Approved' leave request. Use a subquery in the WHERE clause to find these EmployeeIDs.
8. Group By:
 - o Write a query to get the total number of days each employee was present in the current month. Group the results by EmployeeID.

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Administration Schemas

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Limit to 10000 rows

MY SQL PROJECT

Case Study: ATTENDANCE MANAGEMENT SYSTEM

1. Create Tables

CREATE TABLE Employees

(EmployeeID INT PRIMARY KEY,
FirstName VARCHAR(50),
LastName VARCHAR(50),
Email VARCHAR(100),
Phone VARCHAR(20),
Department VARCHAR(50),
HireDate DATE);

2. Insert Records

INSERT INTO Employees VALUES
(1, 'John', 'Doe', 'john.doe@email.com', '1234567890', 'HR', '2021-05-10'),
(2, 'Jane', 'Smith', 'jane.smith@email.com', '0987654321', 'IT', '2019-07-22'),
(3, 'Alice', 'Johnson', 'alice.johnson@email.com', '1122334455', 'Finance', '2018-03-15');

Object Info Session Output



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Administration Schemas

Information

No object selected

```
19 (2, 'Jane', 'Smith', 'jane.smith@email.com', '0987654321', 'IT', '2019-07-22'),  
20 (3, 'Alice', 'Johnson', 'alice.johnson@email.com', '1122334455', 'Finance', '2018-03-15'),  
21 (4, 'Bob', 'Brown', 'bob.brown@email.com', '2233445566', 'HR', '2020-06-01'),  
22 (5, 'Charlie', 'Davis', 'charlie.davis@email.com', '3344556677', 'Marketing', '2022-01-10'),  
23 (6, 'Diana', 'Evans', 'diana.evasns@email.com', '4455667788', 'IT', '2017-09-25'),  
24 (7, 'Edward', 'Garcia', 'edward.garcia@email.com', '5566778899', 'Operations', '2016-05-14'),  
25 (8, 'Fiona', 'Harris', 'fiona.harris@email.com', '6677889900', 'HR', '2023-02-20'),  
26 (9, 'George', 'Iverson', 'george.iverson@email.com', '7788990011', 'Finance', '2021-11-11'),  
27 (10, 'Hannah', 'Jackson', 'hannah.jackson@email.com', '8899001122', 'Marketing', '2020-08-05');  
28  
29  
30 • ◇ CREATE TABLE Departments (  
31     DepartmentID INT PRIMARY KEY,  
32     DepartmentName VARCHAR(50),  
33     Location VARCHAR(100)  
34 );  
35  
36 • ◇ INSERT INTO Departments VALUES  
37 (1, 'HR', 'New York'),  
38 (2, 'IT', 'Los Angeles').
```

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Object Info Session

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```
39      (2, 'IT', 'Los Angeles'),  
40      (3, 'Finance', 'Chicago'),  
41      (4, 'Marketing', 'Houston'),  
42      (5, 'Operations', 'San Francisco'),  
43      (6, 'Sales', 'Seattle'),  
44      (7, 'Support', 'Boston'),  
45      (8, 'Engineering', 'Austin'),  
46      (9, 'Legal', 'Denver'),  
47      (10, 'Admin', 'Miami');  
48  
49 • ◇ CREATE TABLE Attendance1 (  
50     AttendanceID INT PRIMARY KEY,  
51     EmployeeID INT,  
52     Date DATE,  
53     CheckInTime DATETIME,  
54     CheckOutTime DATETIME,  
55     Status VARCHAR(20),  
56     FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID)  
57 );  
58  
59 • ◇ INSERT INTO Attendance VALUES  
60      (1, 1, '2024-02-01', '2024-02-01 08:35:00', '2024-02-01 17:00:00', 'Present'),  
61      (2, 2, '2024-02-01', '2024-02-01 09:15:00', '2024-02-01 17:30:00', 'Late'),  
62      (3, 3, '2024-02-02', '2024-02-02 08:45:00', '2024-02-02 17:15:00', 'Present'),  
63      (4, 4, '2024-02-02', '2024-02-02 10:00:00', '2024-02-02 18:00:00', 'Late'),  
64      (5, 5, '2024-02-03', '2024-02-03 08:00:00', '2024-02-03 16:30:00', 'Present'),  
65
```

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```
63 | (4, 4, '2024-02-02', '2024-02-02 10:00:00', '2024-02-02 18:00:00', 'Late'),
64 | (5, 5, '2024-02-03', '2024-02-03 08:00:00', '2024-02-03 16:30:00', 'Present'),
65 | (6, 6, '2024-02-03', '2024-02-03 08:20:00', '2024-02-03 17:10:00', 'Present'),
66 | (7, 7, '2024-02-04', '2024-02-04 09:00:00', '2024-02-04 17:30:00', 'Late'),
67 | (8, 8, '2024-02-04', '2024-02-04 08:10:00', '2024-02-04 16:45:00', 'Present'),
68 | (9, 9, '2024-02-05', '2024-02-05 08:50:00', '2024-02-05 17:20:00', 'Present'),
69 | (10, 10, '2024-02-05', '2024-02-05 09:30:00', '2024-02-05 18:00:00', 'Late');

70 |
71 |
72 • CREATE TABLE Holidays (
73     HolidayID INT PRIMARY KEY,
74     HolidayDate DATE,
75     HolidayName VARCHAR(100)
76 );
77 • INSERT INTO Holidays VALUES
78     (1, '2024-12-25', 'Christmas'),
79     (2, '2024-07-04', 'Independence Day'),
80     (3, '2024-01-01', 'New Year'),
81     (4, '2024-11-28', 'Thanksgiving'),
82     (5, '2024-05-27', 'Memorial Day'),
83     (6, '2024-09-02', 'Labor Day'),
84     (7, '2024-02-14', 'Valentine Day'),
85     (8, '2024-04-01', 'Easter Monday'),
86     (9, '2024-06-19', 'Juneteenth'),
87     (10, '2024-10-31', 'Halloween');

88 |
```

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```
87     (10, '2024-10-31', 'Halloween');

88

89 • ◇ CREATE TABLE LeaveRequests (
90     LeaveRequestID INT PRIMARY KEY,
91     EmployeeID INT,
92     StartDate DATE,
93     EndDate DATE,
94     LeaveType VARCHAR(50),
95     Status VARCHAR(20),
96     FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID)
97 );
98 • ◇ INSERT INTO LeaveRequests VALUES
99     (1, 1, '2024-01-10', '2024-01-15', 'Vacation', 'Approved'),
100    (2, 2, '2024-02-05', '2024-02-07', 'Sick', 'Approved'),
101    (3, 3, '2024-03-01', '2024-03-03', 'Personal', 'Pending'),
102    (4, 4, '2024-04-15', '2024-04-20', 'Vacation', 'Rejected'),
103    (5, 5, '2024-05-10', '2024-05-12', 'Sick', 'Approved'),
104    (6, 6, '2024-06-25', '2024-06-30', 'Vacation', 'Approved'),
105    (7, 7, '2024-07-15', '2024-07-18', 'Sick', 'Pending'),
106    (8, 8, '2024-08-05', '2024-08-07', 'Personal', 'Approved'),
107    (9, 9, '2024-09-20', '2024-09-22', 'Vacation', 'Pending'),
108    (10, 10, '2024-10-10', '2024-10-12', 'Sick', 'Approved');

109

110

111 • ◇ CREATE TABLE WorkSchedules (
112     ScheduleID INT PRIMARY KEY,
```

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```
111 • CREATE TABLE WorkSchedules (
112     ScheduleID INT PRIMARY KEY,
113     EmployeeID INT,
114     StartTime TIME,
115     EndTime TIME,
116     ScheduleDate DATE,
117     FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID)
118 );
119 • INSERT INTO WorkSchedules VALUES
120     (1, 1, '08:00:00', '17:00:00', '2024-02-01'),
121     (2, 2, '09:00:00', '18:00:00', '2024-02-02'),
122     (3, 3, '08:30:00', '17:30:00', '2024-02-03'),
123     (4, 4, '10:00:00', '19:00:00', '2024-02-04'),
124     (5, 5, '08:00:00', '16:30:00', '2024-02-05'),
125     (6, 6, '08:20:00', '17:10:00', '2024-02-06'),
126     (7, 7, '09:00:00', '17:30:00', '2024-02-07'),
127     (8, 8, '08:10:00', '16:45:00', '2024-02-08'),
128     (9, 9, '08:50:00', '17:20:00', '2024-02-09'),
129     (10, 10, '09:30:00', '18:00:00', '2024-02-10);

130
131
132 ##### 3. Select Records:
133 • SELECT * FROM Attendance
134 WHERE Status = 'Late';
135
136
```

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```
135
136
137     ##### 4. Where Clause (AND/OR):
138 •   SELECT * FROM Employees
139     WHERE Department = 'HR'
140     AND HireDate > '2020-01-01';
141
142
143     ##### 5. LIKE Operator:
144 •   SELECT * FROM Departments
145     WHERE DepartmentName LIKE '%Sales%';
146
147
148     ##### 6. CASE Statement:
149 •   SELECT CheckInTime,
150         CheckOutTime,
151         TIMEDIFF(CheckOutTime, CheckInTime) AS AttendanceDuration
152     FROM Attendance;
153
154
155     ##### 7. Subquery:
156 •   SELECT * FROM Employees
157     WHERE EmployeeID IN (
158         SELECT EmployeeID
159         FROM LeaveRequests
160         WHERE Status = 'Approved');
```

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```
159      FROM LeaveRequests
160      WHERE Status = 'Approved');|
161
162
163      ##### 8. Group By:
164 •      SELECT EmployeeID, COUNT(*) AS TotalDaysPresent
165      FROM Attendance
166      WHERE Status = 'Present'
167      AND MONTH(Date) = MONTH(CURDATE())
168      AND YEAR(Date) = YEAR(CURDATE())
169      GROUP BY EmployeeID;
170
171
172      ##### 9. Having Clause:
173 •      SELECT EmployeeID, COUNT(*) AS TotalLeaveRequests
174      FROM LeaveRequests
175      GROUP BY EmployeeID
176      HAVING COUNT(*) > 3;
177
178
179      ##### 10. Limit:
180 •      SELECT e.EmployeeID, e.FirstName, e.LastName, COUNT(a.Status) AS AbsentDays
181      FROM Employees e
182      JOIN Attendance a ON e.EmployeeID = a.EmployeeID
183      WHERE a.Status = 'Absent'
184      AND a.Date >= DATE_SUB(CURDATE(), INTERVAL 1 YEAR)
```

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```
184 AND a.Date >= DATE_SUB(CURDATE(), INTERVAL 1 YEAR) |
185 GROUP BY e.EmployeeID, e.FirstName, e.LastName
186 ORDER BY AbsentDays DESC
187 LIMIT 5;

188
189
190 ##### 11. Inner Join:
191 • SELECT e.EmployeeID, e.FirstName, e.LastName, d.DepartmentName
192 FROM Employees e
193 INNER JOIN Departments d ON e.Department = d.DepartmentID;
194
195
196 ##### 12. Outer Join:
197 • SELECT e.EmployeeID, e.FirstName, e.LastName, lr.LeaveRequestID, lr.StartDate, lr.EndDate, lr.LeaveType, lr.Status
198 FROM Employees e
199 LEFT JOIN LeaveRequests lr ON e.EmployeeID = lr.EmployeeID;
200
201
202 ##### 13. Join with Aggregation:
203 • SELECT a.EmployeeID,
204     ROUND(AVG(TIMESTAMPDIFF(HOUR, a.CheckInTime, a.CheckOutTime)), 2) AS AvgHoursWorkedPerDay
205 FROM Attendance a
206 INNER JOIN WorkSchedules ws ON a.EmployeeID = ws.EmployeeID
207 GROUP BY a.EmployeeID;
208
209
```

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205 FROM Attendance a
206 INNER JOIN WorkSchedules ws ON a.EmployeeID = ws.EmployeeID
207 GROUP BY a.EmployeeID;
208
209
210 ##### 14. Subquery with Join:
211 • SELECT e.EmployeeID, e.FirstName, e.LastName, a.Date AS WorkDate,
212 (SELECT h.HolidayName FROM Holidays h WHERE h.HolidayDate = a.Date) AS HolidayName
213 FROM Employees e
214 INNER JOIN Attendance a ON e.EmployeeID = a.EmployeeID
215 WHERE a.Date IN (SELECT HolidayDate FROM Holidays);
216
217
218 ##### 15. Advanced Join:
219 • SELECT e.FirstName, e.LastName, d.DepartmentName, h.HolidayName
220 FROM Employees e
221 INNER JOIN Departments d ON e.Department = d.DepartmentName
222 INNER JOIN Attendance a ON e.EmployeeID = a.EmployeeID
223 LEFT JOIN Holidays h ON a.Date = h.HolidayDate
224 WHERE h.HolidayDate IS NOT NULL;
225
226 ----- END -----
227
228
229

---- THE END ----