

# Employee Management & Attendance Tracker – Project Report

## **Introduction:**

The Employee Management & Attendance Tracker project was developed to maintain employee records, track attendance, calculate work hours, and generate HR reports. It simulates a real-world HR system by ensuring efficient data management and reporting using SQL Server.

## **Abstract:**

This project demonstrates how database systems can simplify HR operations. The system manages employee details, their roles, departments, and daily attendance. It automates repetitive tasks such as timestamping and status updates and provides insights into attendance trends and work hours. Reports generated from the database help management monitor employee discipline, late arrivals, and overall work productivity.

## **Tools Used:**

- SQL Server Management Studio (SSMS)
- T-SQL for queries, triggers, and functions
- Database normalization (up to 3NF), dummy data population (200+ records), reporting using aggregate functions

## **Steps Involved in Building the Project:**

1. Database Design: Employees, Departments, Roles, and Attendance tables with relationships.
2. Data Population: Inserted 200+ employee records and attendance data across months.
3. Automation with Triggers: Auto-set timestamps and assign attendance status.
4. Function for Work Hours: Reusable calculation of daily work hours.
5. Report Generation: Monthly summaries, department-wise late arrivals, and work-hour analysis.

## **Sample Outputs (Screenshots Attached):**

```

-- Sum of days with a status 'Late' THEN 1 ELSE 0 END) AS LateDays,
SUM(CASE WHEN a.status = 'Half Day' THEN 1 ELSE 0 END) AS HalfDays
FROM Attendance a
JOIN Employees e ON e.emp_id = a.emp_id
GROUP BY e.emp_id, e.emp_name, FORMAT(a.att_date, 'yyyy-MM')
ORDER BY e.emp_id, Month;

```

emp_id	emp_name	Month	TotalDays	PresentDays	AbsentDays	LateDays	HalfDays
1	Sumit Singh	2025-08	2	1	0	0	1
2	Sumit Singh	2025-09	1	0	0	1	0
3	Sumit Singh	2025-10	1	0	0	1	0
4	Alka Yadav	2025-08	2	0	0	2	0
5	Alka Yadav	2025-09	1	0	0	1	0
6	Alka Yadav	2025-10	1	1	0	0	0
7	Akash Roy	2025-08	2	0	0	2	0
8	Akash Roy	2025-09	1	1	0	0	0
9	Akash Roy	2025-10	1	0	0	1	0
10	Vikram Rajput	2025-08	2	1	0	0	1
11	Vikram Rajput	2025-09	1	0	0	1	0
12	Vikram Rajput	2025-10	1	1	0	0	0
13	Gita Devi	2025-08	2	0	1	1	0
14	Gita Devi	2025-09	1	0	0	1	0
15	Gita Devi	2025-10	1	0	0	1	0
16	Moshin Singh	2025-08	2	1	0	1	0
17	Moshin Singh	2025-09	1	0	0	1	0

Query executed successfully.

```

WHERE a.check_in > '09:30:00'
AND a.status NOT IN ('Absent', 'Half Day')
ORDER BY a.att_date, e.emp_id;

-- Auto-set created_at timestamp
CREATE TRIGGER trg_SetCreatedAt
ON Attendance

```

emp_id	emp_name	att_date	check_in
8	Soniya Shinde	2025-08-01	09:52:00.0000000
61	John Doe	2025-08-01	09:43:00.0000000
111	Ketaki Deshpande	2025-08-01	09:34:00.0000000
139	Forrest Green	2025-08-01	10:29:00.0000000
149	Mary Brown	2025-08-01	10:23:00.0000000
162	Grant Hamison	2025-08-01	09:54:00.0000000
9	Priyanka Pawar	2025-08-02	10:32:00.0000000
14	Gurmeet Kaur	2025-08-02	09:39:00.0000000
16	Virat Rajput	2025-08-02	09:44:00.0000000
76	Dhruv Jain	2025-08-02	09:34:00.0000000
83	Karthik Iyer	2025-08-02	10:03:00.0000000
121	James Wilson	2025-08-02	09:43:00.0000000
133	Kai Lawson	2025-08-02	10:08:00.0000000
152	Michael Clark	2025-08-02	10:08:00.0000000
170	Cora Bell	2025-08-02	09:35:00.0000000
196	Julian Montgomery	2025-08-02	10:44:00.0000000
107	Alaina Robinson	2025-08-02	10:07:00.0000000

Query executed successfully.

## Conclusion:

This project successfully demonstrates how SQL-based systems can automate HR processes. From employee data management to attendance reporting, it provides an efficient solution for HR teams. By leveraging triggers, functions, and queries, the system eliminates manual effort, improves accuracy, and ensures effective monitoring of workforce productivity.

The Employee Management & Attendance Tracker serves as a practical example of how databases can support real-world business operations and decision-making.