HR Database Management System – Sql Server Project

1. Introduction:

This project illustrates how SQL server can be used to manage and analyze HR database system. Its goal is to extract the useful information and helps in making HR decisions. This database includes tables for employees, department, jobs locations, countries, region and dependents. On running SQL queries, we can get insights into different tables that are having relations between them.

2. Methodologies:

- **Tools Used**: Microsoft SQL Server Management Studio (SSMS)
- **Database Tables:** Employees, Department, Jobs, Dependents, Locations, Countries, Regions.
- **SQL Techniques Applied:**
    - SELECT, WHERE, BETWEEN, IN, NOT IN
    - Left join, Inner join, Self-join
    - Group By, Having
    - Subqueries (Nested)
    - Aggregate Functions: AVG, MAX, MIX, Count
    - Conditional Login using CASE
    - Set Operations: Union, Intersect,Except

3. Approaches:

Following are the steps to analyze HR data:

- Basic Data Retrieval queries (eg. Salary ranges, joining Dates)
- Perform Joins across tables to relate employees with jobs and departments
- Use grouping and aggregation functions to analyze departments by salary
- Use subqueries to compare individual salaries of departments
- Implement conditional logic to classify employees
- Apply Set operations to combine different records across related tables
- Check data completeness (e.g. employee with or without phone numbers)

4. Key Findings:

- Identified departments with Highest and lowest salaries.
- Managers having more than 5 direct reports.
- Identified Employees having no dependents or missing contact details.

- Some departments and countries don't have associated employees or locations
- Several employees earn above the average salary of their departments.

5. Insights:

- **Improved Speed and Efficiency:** SQL databases handle large HR data sets much faster than spreadsheets. This means HR teams can quickly find the information they need and respond faster.
- **Better Speed and Efficiency:** SQL databases can handle large amounts of HR data faster and more smoothly than tools like Excel. This helps HR teams quickly find and use employee information.
- **Automation Saves Time:** SQL allows automation of common HR tasks, such as checking data and doing calculations. This reduces manual work and improves accuracy
- **Ready to Grow:**As the company grows, SQL Server can handle more data and users without slowing down. It's a system that grows with the business.
- **Data-Driven HR:** With SQL, HR can make decisions based on real data instead of guesswork. This helps HR contribute more effectively to company success.

6. Actionable Recommendations:

- **Standardize Data Formats:** Ensure data accuracy and compatibility by enforcing standardized formats for key fields (e.g., dates, job titles, departments) before integrating with other systems.
- **Enhance Data Quality with Mandatory Fields :** Make key fields such as emergency contacts, number of dependents, and personal contact information mandatory to ensure completeness and reliability of employee records.
- **Clean Up Legacy Data:** Perform a system audit to remove or update outdated entries, such as unused departments, inactive job titles, or obsolete country codes, to maintain a clean and accurate database.

7. Conclusion:

This project illustrates how SQL Server can be utilized to manage and derive insights from HR databases. By executing sql queries across multiple related tables can ensure data completeness, and support strategic planning in human resources. Future improvements may include integration with business intelligence tools for visual dashboards and real-time data tracking.