Pewlett Hackard Employee Data Analysis

Project Overview

As part of the Pewlett Hackard Data Engineering Team, this project explores employee data from the 1980s and 1990s. Using structured SQL queries and relational database techniques, the goal was to analyze historical hiring trends, departmental organization, and employee records to provide actionable insights.

Introduction

This analysis focuses on employee data from Pewlett Hackard during the 1980s and 1990s. The goal was to understand hiring trends, departmental structures, and employee characteristics through structured SQL queries. The insights from this analysis provide a snapshot of the company's workforce during this period and highlight key patterns in hiring and department composition.

This project involved three main stages:

1. **Data Modeling**: Creating a schema based on historical employee data.
2. **Data Engineering**: Populating the database with employee records from CSV files.
3. **Data Analysis**: Using SQL queries to identify trends and extract insights from the data.

Project Structure

Files and Folders

- Data Analysis_Summary.pdf: This is a written summary in a pdf file for ease of over information retrieval.
- README.md: This document, providing an overview of the project and its outcomes.

Folder - EmployeeCSVdata:

- Folder - Data: Contains six CSV files representing the employee data for analysis.

Folder - Part 1 Data Modeling:

- Contains: Module_9_challenge_ERD(1).pdf - This is the Entity Relationship Diagram of the tabes.

Folder - Part 2 Data Engineering:

- Contains:
    - SCHEMA.sql: Script defining the database schema, including table relationships, primary keys, and foreign keys.
    - Data Paths.sql: Script loading the data into the tables from the six CSV files

Folder - Part 3 Data Analysis

- Contains:
    - Data Analysis_Questions_Code.pgsql/sql (different file type): Queries used to analyze the data and answer specific business questions.
    - Data Analysis_Questions_Results.xlsx: An Excel file - summarizing the results of the SQL queries.

Key Insights and Recommendations

Summary of Findings

Employee Overview

- The dataset includes extensive employee records, detailing salaries, departments, and managerial relationships.
- Salaries vary widely, with certain departments demonstrating significantly higher compensation trends.

Hiring Trends

- The year 1986 was a peak hiring period, signaling company expansion.
- Overall, hiring was steady throughout the 1980s and 1990s, with a few standout years like 1986.

Departmental Insights

- Sales and Development departments accounted for the largest employee counts, highlighting their importance to company operations.
- Each department had clearly defined managerial oversight, ensuring structured operations.

Employee Characteristics

- Certain unique names, like "Hercules," were identified, along with notable last name patterns suggesting familial or regional connections.

Recommendations

1. **Diversity in Hiring**: Future recruitment efforts should focus on expanding diversity in employee backgrounds while maintaining strong department growth.
2. **Salary Benchmarking**: Review and adjust salaries across departments to ensure competitive and fair compensation structures.
3. **Retention Strategies**: Analyze trends in employee tenure to improve retention, especially for high-turnover departments like Sales and Development.
4. **Strategic Growth Planning**: Leverage lessons from the 1986 hiring surge to prepare for similar expansion opportunities.

Conclusion

The analysis of historical employee data from Pewlett Hackard offers valuable insights into hiring trends, department structures, and salary patterns. These findings can guide future workforce planning and organizational growth strategies, ensuring continued success for the company.