ScienceQtech Employee Performance Mapping

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**1. Introduction**

ScienceQtech is a data science startup engaged in diverse domains such as fraud detection, market basket analysis, self-driving cars, supply chain optimization, early cancer detection, customer sentiment analysis, and drug discovery. With the annual appraisal cycle approaching, the HR department required a comprehensive analysis of employee performance, project involvement, and compensation to inform appraisals and organizational planning.

This project aimed to:

* Structure and import HR and project data into a relational database,
* Run analytics and reporting SQL queries for HR decision-making,
* Map employee roles to industry standards,
* Calculate bonuses and identify training needs.

**2. Database Design & Data Import**

2.1. Schema Creation

Three tables were created:

* **emp\_record\_table:** Employee master data (personal, job, salary, ratings, manager, project).
* **proj\_table:** Project details (name, domain, dates, status).
* **data\_science\_team:** Subset of employees in the data science team.

*See [Screenshot 1–3] for successful imports.*

Table Definitions (Excerpt)

CREATE TABLE emp\_record\_table (

emp\_id VARCHAR(10) PRIMARY KEY,

first\_name VARCHAR(100) NOT NULL,

last\_name VARCHAR(100) NOT NULL,

gender ENUM('M','F','O') NOT NULL,

role VARCHAR(100) NOT NULL,

dept VARCHAR(100) NOT NULL,

exp INT NOT NULL CHECK (exp >= 0),

country VARCHAR(100) NOT NULL,

continent VARCHAR(50) NOT NULL,

salary DECIMAL(12,2) NOT NULL CHECK (salary >= 0),

emp\_rating INT NOT NULL CHECK (emp\_rating BETWEEN 1 AND 5),

manager\_id VARCHAR(10),

proj\_id VARCHAR(10),

FOREIGN KEY (proj\_id) REFERENCES proj\_table(project\_id)

);

2.2. Data Import

CSV files were imported using MySQL Workbench's Table Data Import Wizard. All records were successfully loaded:

* proj\_table: 6 records
* emp\_record\_table: 18 records
* data\_science\_team: 13 records

**3. Data Cleaning**

Date columns initially had inconsistent formats. To resolve this, date fields were stored as VARCHAR during import, then converted using STR\_TO\_DATE() where needed. This ensured compatibility with MySQL's date requirements.

**4. Queries & Analysis**

4.1. Employee Listings and Filtering

* **Employee Department Listing:**  
  Lists all employees and their departments.
* **Performance Rating Filters:**
* Ratings <2, >4, and between 2–4 are queried separately for targeted HR review.
* **Finance Department Names:**  
  Concatenates first and last names for Finance staff.

4.2. Management Structure

* **Managers with Reporters:**  
  Identifies employees who have direct reports, including the President, with reporter counts.

4.3. Departmental Analytics

* **Healthcare & Finance Employees:**  
  Uses UNION to list all employees from both departments.
* **Department Grouping with Max Ratings:**  
  Shows each employee’s rating alongside the maximum rating in their department.

4.4. Compensation Analysis

* **Min/Max Salary by Role:**  
  Provides salary ranges for each role, aiding in compensation benchmarking.
* **Experience Ranking:**  
  Ranks employees by years of experience for succession planning.
* **High Earners View:**  
  A view was created for employees earning more than $6,000, grouped by country.
* **Bonus Calculation:**  
  Calculates bonus as 5% of salary times performance rating for each employee.
* **Average Salary by Continent/Country:**  
  Aggregates average salaries for geographic pay equity analysis.

4.5. Advanced SQL Features

* **Nested Query for Senior Staff:**  
  Finds employees with more than 10 years’ experience.  
  **Stored Procedure:**  
  Returns all employees with more than 3 years’ experience for quick HR access.
* **Stored Function for Job Profile Standardization:**  
  Checks if each data science team member’s title matches the company standard based on experience.
* **Indexing and Query Optimization:**  
  An index was created on first\_name to optimize search queries, confirmed via EXPLAIN plan.

**5. Results & Insights**

* **Data Quality:**  
  All tables were successfully populated and validated.
* **Employee Performance:**  
  Distribution of ratings allows HR to target underperformers (<2) and reward top performers (>4).
* **Role Alignment:**  
  The function check ensures employees’ titles match organizational standards, supporting fair promotions and training.
* **Compensation:**  
  Salary analysis highlights disparities and supports equitable bonus distribution.
* **Managerial Structure:**  
  Identification of managers and their teams aids in workforce planning.
* **Geographic Analysis:**  
  Average salary by country/continent provides insights for international HR policy.

**6. Screenshots**

*(In zip.)*

**7. Conclusion**

This project delivered a robust, normalized employee database for ScienceQtech, enabling advanced HR analytics and performance mapping. Through structured queries, views, procedures, and functions, actionable insights were generated for HR and management, supporting fair appraisals, compensation decisions, and strategic workforce development.

**8. Recommendations**

* **Automate Data Imports:** Use ETL tools or scripts for regular updates.
* **Enforce Date Formats:** Store dates as DATE type after cleaning at source.
* **Expand Analytics:** Integrate more advanced analytics (e.g., predictive attrition modeling).
* **Continuous Improvement:** Regularly update the schema and queries as business needs evolve.