HR Analytics: A SQL Approach

EXPLORING HUMAN RESOURCE DATA THROUGH SQL ANALYTICS

HR ANALYTICS REPORT

Basic Fundamentals of SQL

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SQL Project

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QUERY 1 :
DATA RETRIEVAL (BASIC SELECT)

```
-- 1. Data Retrieval (Basic Select)

SELECT Employee_Name, EmpID FROM human_resource;
```

Employee_Name	EmpID
Adinolfi, Wilson K	10026
Ait Sidi, Karthikeyan	10084
Akinkuolie, Sarah	10196
Alagbe,Trina	10088
Anderson, Carol	10069
Anderson, Linda	10002
Andreola, Colby	10194
Athwal, Sam	10062
Bachiochi, Linda	10114
Bacong, Alejandro	10250

GOAL :

To Fetch basic employee details such as name, ID, and salary.

```
-- Retrieve multiple columns

SELECT Employee_Name, EmpID , Salary, GenderID FROM human_resource;
```

Employee_Name	EmpID	Salary	GenderID
Adinolfi, Wilson K	10026	62506	1
Ait Sidi, Karthikeyan	10084	104437	1
Akinkuolie, Sarah	10196	64955	0
Alagbe,Trina	10088	64991	0
Anderson, Carol	10069	50825	0
Anderson, Linda	10002	57568	0
Andreola, Colby	10194	95660	0
Athwal, Sam	10062	59365	1
Bachiochi, Linda	10114	47837	0
Bacong, Alejandro	10250	50178	1

QUERY 2:
FILTERING DATA

```
SELECT * FROM human_resource WHERE EmploymentStatus = 'Active';

SELECT Employee_Name, Department FROM human_resource WHERE EmploymentStatus = 'Active';
```

Employee_Name	Department
Adinolfi, Wilson K	Production
Alagbe,Trina	Production
Anderson, Linda	Production
Andreola, Colby	Software Engineering
Athwal, Sam	Production
Bachiochi, Linda	Production
Bacong, Alejandro	IT/IS
Barbossa, Hector	IT/IS
Barone, Francesco A	Production
Beak, Kimberly	Production

GOAL :

To Extract specific subsets of data like active employees or those within a salary range.

```
SELECT Employee_Name, Salary FROM human_resource WHERE Salary BETWEEN 40000 AND 60000;
```

Employee_Name	Salary
Anderson, Carol	50825
Anderson, Linda	57568
Athwal, Sam	59365
Bachiochi, Linda	47837
Bacong, Alejandro	50178
Baczenski, Rachael	54670
Barbara, Thomas	47211
Barone, Francesco A	58709
Barton, Nader	52505
Bates, Norman	57834

```
SELECT Employee_Name, Department FROM human_resource
WHERE EmploymentStatus = 'Active' AND PerformanceScore = 'Exceeds';
```

Adinolfi, Wilson K	Production
Anderson, Linda	Production
Barbossa, Hector	IT/IS
Beak, Kimberly	Production
Billis, Helen	Production
Candie, Calvin	Production
Clukey, Elijian	Production
Corleone, Vito	Production
Dougall, Eric	IT/IS
Driver, Elle	Sales

QUERY 3:
SORTING DATA

```
-- 3. Sorting Data (Top Salaries)

SELECT Employee_Name, Salary FROM human_resource ORDER BY Salary DESC;
```

Employee_Name	Salary
King, Janet	250000
Zamora, Jennifer	220450
Houlihan, Debra	180000
Foss, Jason	178000
Corleone, Vito	170500
Monroe, Peter	157000
Roper, Katie	150290
Ruiz, Ricardo	148999
Roup,Simon	140920
Dougall, Eric	138888

GOAL :

To Rank the employees based on salary, department, or hire date.

```
SELECT Employee_Name, Salary, DeptID FROM human_resource ORDER BY DeptID ASC, Salary DESC;
```

Employee_Name	Salary	DeptID
Boutwell, Bonalyn	106367	1
Foster-Baker, Amy	99351	1
LeBlanc, Brandon R	93046	1
Quinn, Sean	83363	1
LaRotonda, William	64520	1
Steans, Tyrone	63003	1
Brown, Mia	63000	1
Smith, Leigh Ann	55000	1
Singh, Nan	51920	1
Howard, Estelle	49920	1

```
SELECT Employee_Name, DateofHire FROM human_resource ORDER BY DateofHire ASC;
```

Employee_Name	DateofHire
Sadki, Nore	01-05-2009
Foster-Baker, Amy	01-05-2009
Corleone, Vito	01-05-2009
Dougall, Eric	01-05-2014
Simard, Kramer	01-05-2015
Sullivan, Timothy	01-05-2015
Salter, Jason	01-05-2015
Cornett, Lisa	01-05-2015
Johnson, Noelle	01-05-2015
Tredinnick, Neville	01-05-2015

QUERY 4:
GROUPING DATA

```
-- 4. Grouping Data (Employee Count by Department)

SELECT Department, COUNT(*) AS Employee_Count FROM human_resource GROUP BY Department;
```

Department	Employee_Count
Production	201
IT/IS	50
Software Engineering	11
Admin Offices	9
Sales	31
Executive Office	1

```
-- Group by gender

SELECT Sex, COUNT(*) AS Employee_Count FROM human_resource GROUP BY Sex;

SELECT GenderID, COUNT(*) AS Employee_Count FROM human_resource GROUP BY GenderID;
```

Sex	Employee_Count
M	132
F	171

GenderID	Employee_Count
1	132
0	171

GOAL :

To Group the employees by department, gender, or performance, and count them.

```
-- Group by performance score

SELECT PerformanceScore, COUNT(*) AS Performance_Count FROM human_resource GROUP BY PerformanceScore;
```

PerformanceScore	Performance_Count
Exceeds	36
Fully Meets	236
Needs Improvement	18
PIP	13

QUERY 5:
AGGREGATION FUNCTIONS

```
-- 5. Aggregation Functions (Average Salary)

SELECT AVG(Salary) AS Average_Salary FROM human_resource;
```

Average_Salary
69292.3168

GOAL :

To Calculate average, maximum, and minimum salaries, both overall and by department.

```
-- Maximum salary

SELECT MAX(Salary) AS Highest_Salary FROM human_resource;
SELECT Department, MAX(Salary) AS Highest_Salary FROM human_resource group by department order by  Highest_Salary desc;
```

Highest_Salary
250000

Department	Highest_Salary
Executive Office	250000
IT/IS	220450
Sales	180000
Production	170500
Software Engineering	108987
Admin Offices	106367

```
-- Minimum salary.

SELECT MIN(Salary) AS Lowest_Salary FROM human_resource;
SELECT Department, MIN(Salary) AS Lowest_Salary FROM human_resource group by department order by  Lowest_Salary asc;
```

Lowest_Salary
45046

Department	Lowest_Salary
Production	45046
Admin Offices	49920
IT/IS	50178
Sales	55875
Software Engineering	77692
Executive Office	250000

QUERY 6 :
CALCULATING PERCENTAGES

```
-- 6. Calculating Percentages (Percentage of Employees by Gender)

SELECT GenderID, COUNT(*) * 100.0 / (SELECT COUNT(*) FROM human_resource) AS Percentage
FROM human_resource GROUP BY GenderID;
```

GenderID	Percentage
1	43.56436
0	56.43564

```
-- Percentage of employees by department

SELECT DeptID, COUNT(*) * 100.0 / (SELECT COUNT(*) FROM human_resource) AS Percentage
FROM human_resource GROUP BY DeptID;
```

DeptID	Percentage
5	66.00660
3	16.50165
4	3.30033
1	3.30033
6	10.56106
2	0.33003

GOAL :

To Find the percentage breakdowns of employees by gender, department, and employment status.

```
-- Percentage of employees by employment status

SELECT EmploymentStatus, COUNT(*) * 100.0 / (SELECT COUNT(*) FROM human_resource) AS Percentage
FROM human_resource GROUP BY EmploymentStatus;
```

EmploymentStatus	Percentage
Active	65.67657
Voluntarily Terminated	29.04290
Terminated for Cause	5.28053

QUERY 7:
LIMITING RESULTS

```sql
-- 7. Limiting Results (Top 5 Salaries)

SELECT Employee_Name ,Department, Salary FROM human_resource ORDER BY Salary DESC LIMIT 5;
```

Employee_Name	Department	Salary
King, Janet	Executive Office	250000
Zamora, Jennifer	IT/IS	220450
Houlihan, Debra	Sales	180000
Foss, Jason	IT/IS	178000
Corleone, Vito	Production	170500

```sql
-- Top 5 employees by days late in the last 30 days

SELECT Employee_Name, DaysLateLast30 FROM human_resource ORDER BY DaysLateLast30 DESC LIMIT 5;
```

Employee_Name	DaysLateLast30
Fernandes, Nilson	6
Sparks, Taylor	6
O'hare, Lynn	6
Miller, Ned	6
Delarge, Alex	6

GOAL :

To Limit the output to top or bottom 5 entries, such as highest salaries or most frequent tardiness.

```sql
-- Bottom 5 salaries

SELECT Employee_Name, Department, Salary FROM human_resource ORDER BY Salary ASC LIMIT 5;
```

Employee_Name	Department	Salary
Zima, Colleen	Production	45046
Jacobi, Hannah	Production	45069
Rhoads, Thomas	Production	45115
Mahoney, Lauren	Production	45395
Kirill, Alexandra	Production	45433

QUERY 8:
BASIC SUBQUERIES

```sql
-- 8. Basic Subqueries (Employees in High Average Salary Departments)

SELECT Employee_Name,Department, DeptID, Salary
FROM human_resource
WHERE DeptID IN (SELECT DeptID FROM human_resource GROUP BY DeptID HAVING AVG(Salary) > 50000);
```

Employee_Name	Department	DeptID	Salary
Adinolfi, Wilson K	Production	5	62506
Ait Sidi, Karthikeyan	IT/IS	3	104437
Akinkuolie, Sarah	Production	5	64955
Alagbe,Trina	Production	5	64991
Anderson, Carol	Production	5	50825
Anderson, Linda	Production	5	57568
Andreola, Colby	Software Engineering	4	95660
Athwal, Sam	Production	5	59365
Bachiochi, Linda	Production	5	47837
Bacong, Alejandro	IT/IS	3	50178

```sql
-- Find departments with more than 50 employees

SELECT DeptID FROM human_resource
WHERE DeptID IN (SELECT DeptID FROM human_resource GROUP BY DeptID HAVING COUNT(*) > 50);

SELECT Department, DeptID FROM human_resource
WHERE DeptID IN (SELECT DeptID FROM human_resource GROUP BY Department, DeptID HAVING COUNT(*) > 50);
```

Department	DeptID
Production	5
Production	5
Production	5
Production	5
Production	5
Production	5
Production	5
Production	5
Production	5
Production	5

GOAL :

To Identify the employees in high-paying departments, large departments, or those earning above department averages.

```sql
-- Find employees with salaries above the department average

SELECT Employee_Name, Salary,Department, DeptID FROM human_resource
WHERE Salary > (SELECT AVG(Salary) FROM human_resource WHERE DeptID = human_resource.DeptID);
```

Employee_Name	Salary	Department	DeptID
Ait Sidi, Karthikeyan	104437	IT/IS	3
Andreola, Colby	95660	Software Engineering	4
Barbossa, Hector	92328	IT/IS	3
Beak, Kimberly	70131	Production	5
Becker, Renee	110000	IT/IS	3
Booth, Frank	103613	IT/IS	3
Boutwell, Bonalyn	106367	Admin Offices	1
Bozzi, Charles	74312	Production	5
Bunbury, Jessica	74326	Sales	6
Cady, Max	77692	Software Engineering	4

INSIGHTS FROM HUMAN RESOURCE DATA ANALYSIS:

1)EMPLOYEE INFORMATION OVERVIEW:

I retrieved key employee details, including **names, employee IDs, salaries, and gender distribution,** to get an overview of the dataset. This data serves as the foundation for more in-depth analysis.

2) ACTIVE EMPLOYEES:

I filtered the dataset to focus on employees currently employed, revealing important insights into the workforce's current composition.

3) SALARY INSIGHTS:

I analyzed salaries to determine the number of employees earning between 40,000 and 60,000. This provides a look at mid-range earners within the company.

Top earners were sorted to showcase employees with the highest salaries, while a separate query identified the lowest-paid individuals.

The **top and bottom Salary** results will be in **Department Executive Office** and **Production** respectively.

4) PERFORMANCE AND EMPLOYMENT STATUS:

Employees with an **'Exceeds' performance score** were identified, allowing us to pinpoint high achievers who are also currently active in their roles.

5) DEPARTMENT-WISE EMPLOYEE DISTRIBUTION:

I grouped employees by department to reveal how staff is distributed across the organization. Some departments have notably larger teams than others, providing a clear picture of workforce allocation. **Production Department** have **high number of employees (201)**

6) GENDER DISTRIBUTION:

An analysis of gender distribution revealed the proportion of male and female employees. Understanding gender composition is vital for assessing diversity within the organization. **Male (132)** and **Female (171)**

7) PERFORMANCE SCORE DISTRIBUTION:

Grouping employees by their performance scores allowed us to understand how employees are evaluated. The company can use this information to focus on performance improvement or recognition programs.

8) AVERAGE, MAXIMUM, AND MINIMUM SALARIES:

I calculated the average salary across the entire organization. Additionally, identified the highest and lowest salaries by department, offering insights into compensation trends across different areas.

The average salary is **69292.31,** the **highest salary** in the organization is **2,50,000(Executive Office),** and **the lowest** salary is **45,046(Production)**

9) EMPLOYEE DISTRIBUTION BY GENDER, DEPARTMENT, AND EMPLOYMENT STATUS:

I calculated the percentage of employees based on gender, department, and employment status. These percentages offer insights into the structure of the workforce.

10) LATE ARRIVALS:

I identified the top 5 employees with the late arrivals in the last 30 days. This could indicate issues with punctuality or the need for management intervention.

11) DEPARTMENTS WITH HIGHER AVERAGE SALARIES:

Subqueries allowed us to find departments with average salaries higher than 50,000 indicating which areas of the company offer higher compensation. **(Production, IT/IS)**

12) DEPARTMENTS WITH LARGE TEAMS:

I identified departments with more than 50 employees, showcasing the larger teams in the organization that may require different management or resource allocation strategies. **(Production)**

13) EMPLOYEES EARNING ABOVE DEPARTMENT AVERAGE:

Finally, I found employees earning more than their department's average salary, highlighting individuals who may be receiving higher-than-average compensation within their respective teams.

Thank You !!!