

These are some real-life challenges that can be solved using SQL. Some examples at some common issues utilizing Microsoft SQL Suite and Software Salaries dataset are provided in the following PDF

1) Buscar el salario máximo, o el Nth salario que deseemos

The screenshot shows the SQL Server Enterprise Manager interface. The Object Explorer on the left shows the database structure, including the 'dbo.salarydata' table. The SQL Query window on the right contains the following SQL code:

```

1  --Buscamos el salario mas alto
2
3  SELECT max (salary)
4  FROM salarydata
5
6  --Buscamos el segundo salario mas alto
7
8  SELECT salary
9  FROM salarydata
10 WHERE salary < (SELECT MAX(salary) FROM salarydata)
11 ORDER BY salary DESC
12 OFFSET 1 ROWS FETCH NEXT 1 ROWS ONLY;
13
14

```

The Results pane shows the output of the query:

| salary |
|-----------|
| 100000000 |

2) Elaborar un ranking de salarios de los distintos empleados

The screenshot shows the SQL Server Enterprise Manager interface. The Object Explorer on the left shows the database structure, including the 'dbo.salarydata' table. The SQL Query window on the right contains the following SQL code:

```

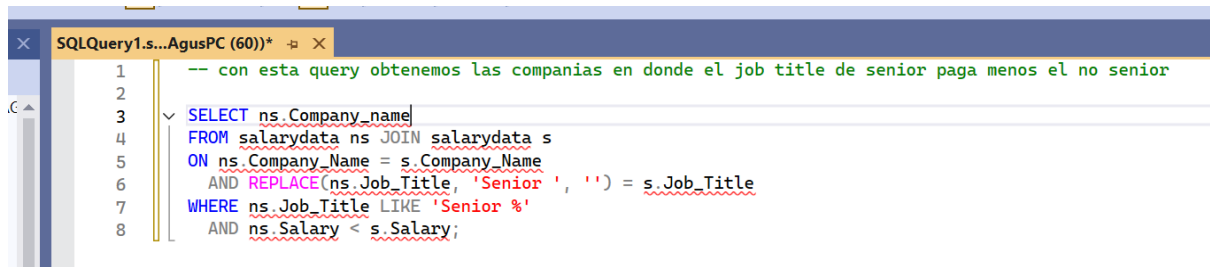
1  -- Rankeamos salarios de mayor a menor, con rango compartido para iguales valores
2
3  SELECT *, DENSE_RANK() OVER (ORDER BY salary DESC) AS Rank
4  FROM salarydata;
5
6
7

```

The Results pane shows the output of the query, displaying a list of employees with their salaries and ranks:

| Rating | Company_Name | Job_Title | Salary | Salaries_Reported | Location | Employment_Status | Job_Roles | Rank | |
|--------|--------------|------------------------|---|-------------------|----------|-------------------|-----------|----------|---|
| 1 | 36 | Thapar University | Software Development Engineer (SDE) | 90000000 | 1 | New Delhi | Full Time | SDE | 1 |
| 2 | 38 | Concentrix | Oracle Database Administrator | 10000000 | 1 | Bangalore | Full Time | Database | 2 |
| 3 | 35 | Koru UX Design | Senior Front End Developer | 10000000 | 1 | Pune | Full Time | Frontend | 2 |
| 4 | 36 | OASYS Cybernetics | Senior Java Developer | 10000000 | 1 | Chennai | Full Time | Java | 2 |
| 5 | 37 | Niyo Infotech | Lead UI Designer, Magento Front-end Developer | 9900000 | 1 | Bangalore | Full Time | Frontend | 3 |
| 6 | 38 | Amazon | Software Development Engineer (SDE) | 9850000 | 1 | Kolkata | Full Time | SDE | 4 |
| 7 | 42 | FFF Enterprises | Non Software Development Engineer | 9800000 | 1 | Mumbai | Full Time | SDE | 5 |
| 8 | 43 | Digital Raju | Software Development Engineer (SDE) | 9800000 | 1 | New Delhi | Full Time | SDE | 5 |
| 9 | 50 | Gaana Lyrics Point.com | Software Development Engineer (SDE) II | 9700000 | 1 | Hyderabad | Full Time | SDE | 6 |
| 10 | 46 | GGH Heavy Industries | Best Buy Mobile Sales Associate | 9600000 | 1 | Bangalore | Full Time | Mobile | 7 |
| 11 | 39 | NortonLifeLock | Software Development Engineer In Test (SDET) | 9400000 | 1 | Pune | Full Time | SDE | 8 |
| 12 | 35 | ArisGlobal | Software Development Engineer | 8700000 | 1 | Bangalore | Full Time | SDE | 9 |

- 3) Encontrar las empresas en donde el title de senior paga menos que el de no senior usando SelfJoin



```
1  -- con esta query obtenemos las companias en donde el job title de senior paga menos el no senior
2
3  SELECT ns.Company_name
4  FROM salarydata ns JOIN salarydata s
5  ON ns.Company_Name = s.Company_Name
6  AND REPLACE(ns.Job_Title, 'Senior ', '') = s.Job_Title
7  WHERE ns.Job_Title LIKE 'Senior %'
8  AND ns.Salary < s.Salary;
```

Basado en el ejemplo de una tabla en donde comparamos salarios del manager con sus empleados, hay dos opciones para realizar la misma query

SELECT E.NAME

FROM EMPLOYEE E

JOIN EMPLOYEE M ON E.MANAGERID = M.ID

WHERE E.SALARY > M.SALARY;

O usando CTEs

WITH SALARY_EMPLOYEE AS (

SELECT ID, NAME, SALARY, MANAGERID

FROM EMPLOYEE),

SALARY_MANAGER AS (

SELECT ID, SALARY

FROM EMPLOYEE)

SELECT E.NAME, E.SALARY, M.SALARY AS MANAGER_SALARY

FROM SALARY_EMPLOYEE E JOIN SALARY_MANAGER M ON E.MANAGERID = M.ID

WHERE E.SALARY > M.SALARY;

4) HACER UN LISTADO DE COMPAÑÍAS EN DONDE NO EXISTAN DUPLICADOS

The screenshot shows the SQL Server Enterprise Manager interface. The Object Explorer on the left displays the database structure for AGUSBE-PC\SQLEXPRESS01. The main window shows a query in the SQLQuery1.s...AgusPC (57) tab:

```
1 SELECT Company_Name
2 FROM Salaries
3 WHERE Company_Name IN (
4     SELECT Company_Name
5     FROM Salaries
6     GROUP BY Company_Name
7     HAVING COUNT(*) > 1
8 );
9
```

The Results pane at the bottom shows the output of the query, listing 12 companies with duplicate names:

| Company_Name |
|---|
| 1 Sasken |
| 2 Unacademy |
| 3 Appoids Tech Solutions |
| 4 Freelancer |
| 5 Samsung R&D Institute India - Bangalore |
| 6 DXMinds Technologies |
| 7 Craft Silicon |
| 8 Baronford & Associates |
| 9 Wibmo |
| 10 Bookmyshow |
| 11 Knowledge Flex |
| 12 Novocav Solutions |

The status bar at the bottom indicates the query was executed successfully.

5) Salario mas alto por locación

The screenshot shows the SQL Server Enterprise Manager interface. The main window shows a query in the SQLQuery1.s...AgusPC (57) tab:

```
1 SELECT location, MAX(salary) AS highest_salary
2 FROM Salaries
3 GROUP BY location;
4
```

The Results pane at the bottom shows the output of the query, listing 10 locations with their highest salaries:

| location | highest_salary |
|------------------|----------------|
| 1 New Delhi | 90000000 |
| 2 Pune | 10000000 |
| 3 Hyderabad | 9700000 |
| 4 Kerala | 2900000 |
| 5 Bangalore | 10000000 |
| 6 Mumbai | 9800000 |
| 7 Madhya Pradesh | 7800000 |
| 8 Chennai | 10000000 |
| 9 Kolkata | 9850000 |
| 10 Jaipur | 2500000 |

The status bar at the bottom indicates no issues were found.

6) Los 3 salarios mas altos por locación y su respectivo rol de trabajo

The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Salarios' database structure. The right pane shows a query window with the following SQL code:

```
1 WITH SalaryRanking AS (  
2     SELECT job_roles, location, salary,  
3           DENSE_RANK() OVER (PARTITION BY location ORDER BY salary DESC) AS salary_rank  
4     FROM Salaries  
5 )  
6 SELECT job_roles, salary, location  
7 FROM SalaryRanking  
8 WHERE salary_rank <= 3;  
9
```

The query results are displayed in a table with the following data:

| job_roles | salary | location |
|-----------|----------|-----------|
| Database | 10000000 | Bangalore |
| Frontend | 9900000 | Bangalore |
| Mobile | 9800000 | Bangalore |
| Java | 10000000 | Chennai |
| Java | 8000000 | Chennai |
| SDE | 4500000 | Chennai |
| SDE | 9700000 | Hyderabad |
| SDE | 8600000 | Hyderabad |
| SDE | 8000000 | Hyderabad |
| SDE | 2500000 | Jaipur |
| SDE | 2400000 | Jaipur |
| SDE | 1900000 | Jaipur |

7) Eliminar filas en donde las posiciones solo sean Intern

DELETE FROM Salaries

WHERE Employment_status = Intern

8) TOP 5 salaries

The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Salarios' database structure. The right pane shows a query window with the following SQL code:

```
1 SELECT TOP 5 Salary  
2 FROM Salaries  
3 GROUP BY Salary  
4 ORDER BY COUNT(*) ASC  
5
```

The query results are displayed in a table with the following data:

| Salary |
|---------|
| 2033856 |
| 1146816 |
| 1034880 |
| 1950000 |
| 1997952 |

9) Select BIG salaries

The screenshot shows the SQL Server Enterprise Manager interface. The Object Explorer on the left displays the database structure for 'AGUSBE-PC\SQLEXPRESS01'. The 'Salaries' table is selected under the 'Tables' folder. The SQL Query window on the right contains the following query:

```
1 SELECT Job_Title, salary, Salaries_Reported
2 FROM Salaries
3 WHERE salary >= 100000 AND Salaries_Reported >= 3
```

The query results are displayed in a table with the following data:

| Job_Title | salary | Salaries_Reported |
|--------------------------|---------|-------------------|
| Android Developer | 400000 | 3 |
| Android Developer | 400000 | 3 |
| Android Developer | 1000000 | 3 |
| Android Developer | 300000 | 3 |
| Android Developer | 600000 | 3 |
| Android Developer | 100000 | 3 |
| Android Developer | 192000 | 3 |
| Android Developer | 400000 | 3 |
| Android Developer | 300000 | 3 |
| Android Developer | 600000 | 3 |
| Android Developer | 300000 | 3 |
| Senior Android Developer | 700000 | 5 |

10) Finding most commons job title that appears at least 20 times

The screenshot shows the SQL Server Enterprise Manager interface. The Object Explorer on the left displays the database structure for 'AGUSBE-PC\SQLEXPRESS01'. The 'Salaries' table is selected under the 'Tables' folder. The SQL Query window on the right contains the following query:

```
1 SELECT Job_Title
2 FROM Salaries
3 GROUP BY Job_Title
4 HAVING COUNT(Job_Title) >= 20
```

The query results are displayed in a table with the following data:

| Job_Title |
|---|
| Software Development Engineer (SDE1) |
| Software Development Engineer - Contractor |
| Software Development Engineer - Intern |
| Software Development Engineer Contractor |
| Software Development Engineer I |
| Software Development Engineer II |
| Software Development Engineer III |
| Software Development Engineer In Test |
| Software Development Engineer In Test (SDET) |
| Software Development Engineer In Test (SDET)... |
| Software Development Engineer In Test (SDET)... |
| Software Development Engineer In Test (SDET)... |