SQL CAPSTONE PROJECT

02/10/2025

SAMUEL ASANTE- JULY 2025

NEXTGEN THE BUSINESS OVERVIEW

NextGen Corp is a rapidly growing technology company specializing in innovative software and hardware solutions. While the company excels at attracting top talent and fostering employee satisfaction, it faces challenges with rising turnover, inconsistent performance across departments, and salary disparities that may impact fairness and morale.

To sustain growth and maintain a high-performing workforce, NextGen Corp. needs a data-driven approach to monitor retention trends, evaluate performance, and ensure compensation aligns with employee contributions. Addressing these issues will help optimize workforce effectiveness, retain key talent, and support continued business success.

KEY TERMS USED IN THE CAPSTONE

EMPLOYEE RETENTION; EMPLOYEE TURNOVER

PERFORMANCE SCORE; SALARY; ATTENDANCE RATE, TURNOVER RATE & DATA-DRIVEN INSIGHTS

EMPLOYEE RETENTION ANALYSIS

Q1 THE TOP 5 HIGHEST SERVING EMPLOYEES

Query | Query History

```
1  --Employee Retention Analysis
2
3  --QUESTION 1
4  --Who are the top 5 highest serving employees?
5  SELECT employee_id,first_name, last_name, hire_date
6  FROM employee
7  ORDER BY hire_date
8  LIMIT 5;
9
```

Data Output | Messages | Notifications

	employee_id [PK] integer	first_name character varying (30)	last_name character varying (30)	hire_date date
1	8	David	Moore	2015-06-30
2	48	Frank	Smith	2015-09-08
3	67	Jane	Brown	2015-10-12
4	44	John	Johnson	2015-10-27
5	57	John	Doe	2016-02-16

STRATEGIC INSIGHTS DERIVED

The top 5 highest-serving employees are **pillars of organizational stability and expertise**, but they also represent **a potential risk concentration** if engagement or compensation misaligns. By leveraging their experience through mentorship, rewarding their loyalty, and reintroducing the retention strengths from NextGen's early years, the company can strengthen both **employee satisfaction and long-term organizational continuity**.

EMPLOYEE RETENTION ANALYSIS

Q2 THE TURNOVER RATE FOR EACH DEPARTMENT

Query | Query History

```
12  --What is the turnover rate for each department?
13  SELECT
14      d.department_id,
15      d.department_name,
16  ROUND(COUNT(DISTINCT t.employee_id)::numeric /
17        (COUNT(DISTINCT t.employee_id)+COUNT(DISTINCT e.employee_id))::numeric*100,
18        2) AS turnover_rate
19  FROM department d
20  LEFT JOIN employee e ON d.department_id = e.department_id
21  LEFT JOIN turnover t ON t.employee_id= e.employee_id
22  GROUP BY
23    d.department_id, d.department_name
24  ORDER BY
25    turnover_rate DESC;
26
```

Dashboard | Properties | SQL | Statistics | Dependencies | Dependents

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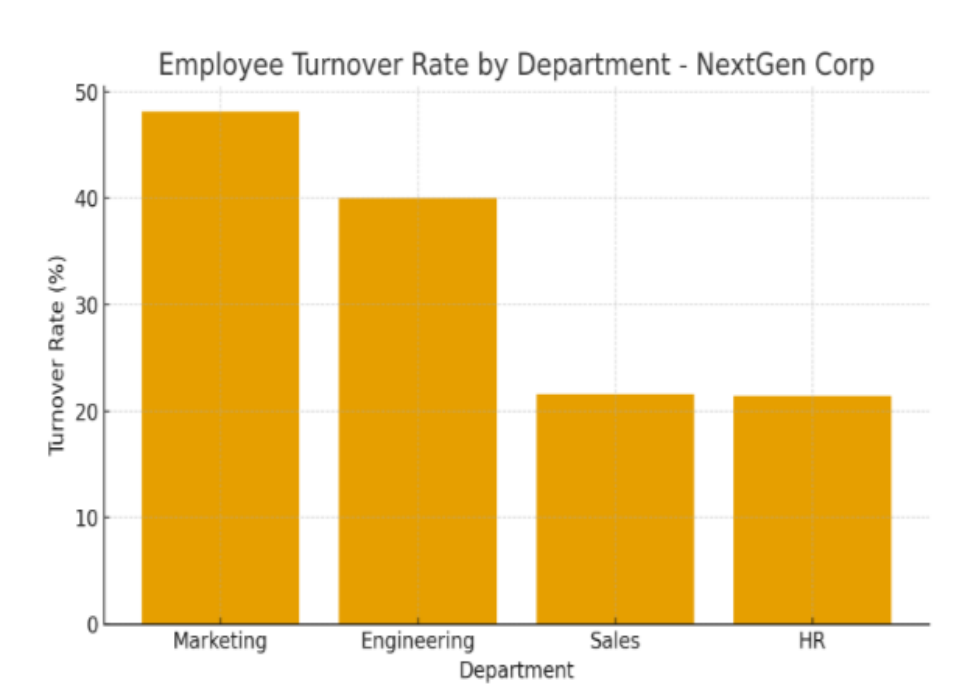
No limit

Query | Query History

Data Output | Messages | Notifications

	department_id [PK] integer	department_name character varying (30)	turnover_rate numeric
1	3	Marketing	48.15
2	1	Engineering	40.00
3	2	Sales	21.62
4	4	HR	21.43

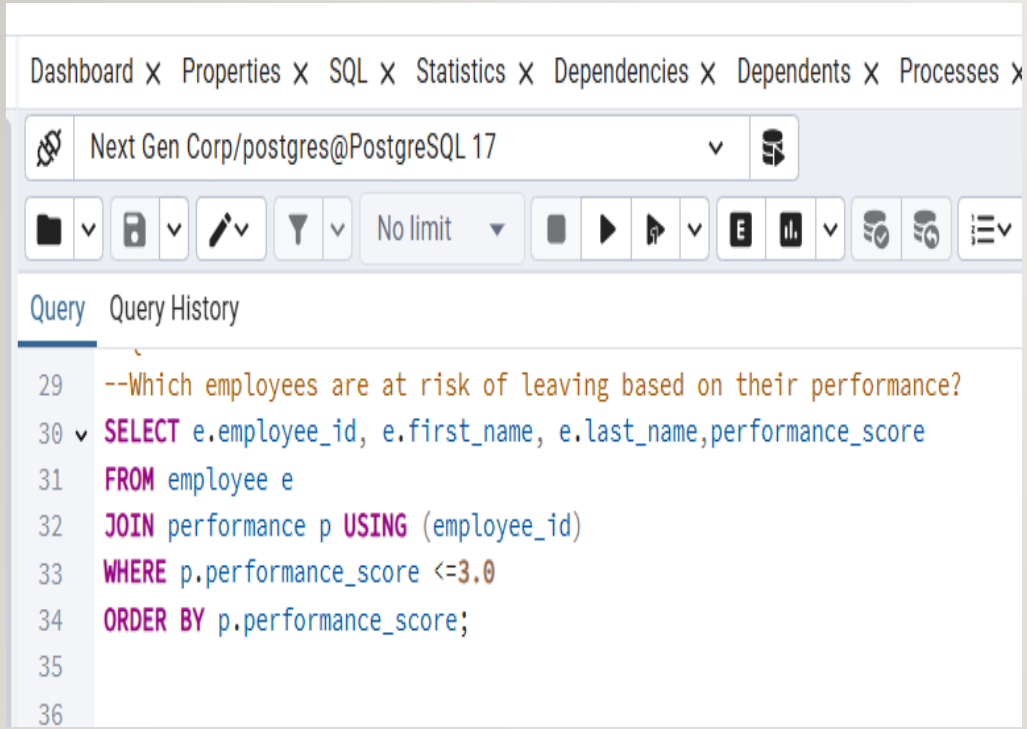
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

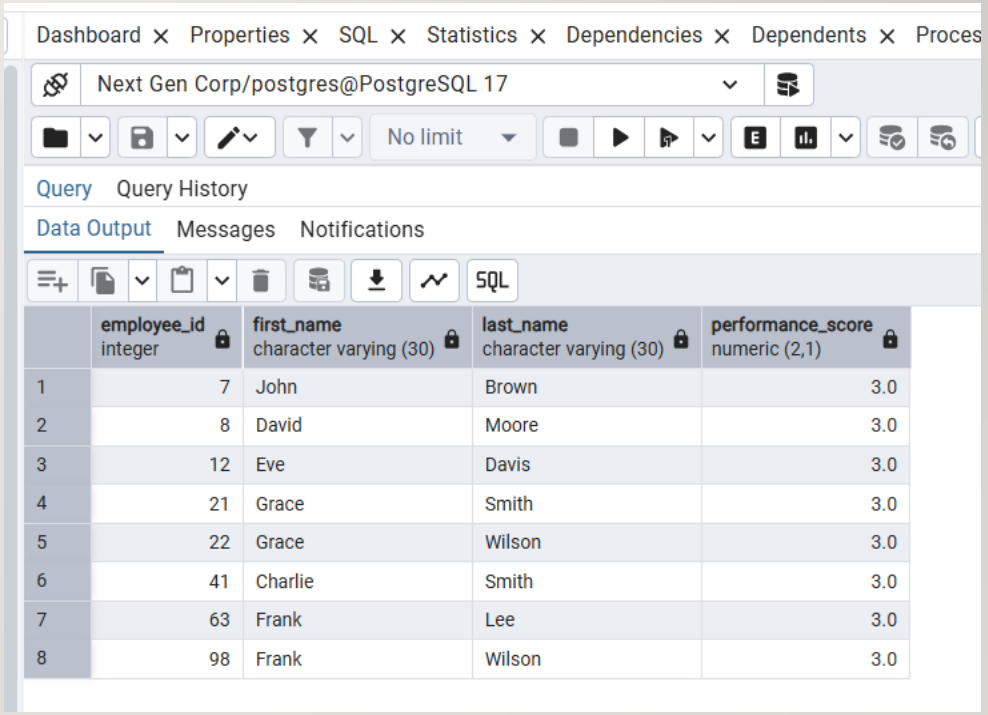


- NextGen Corp's data shows high turnover in **Marketing (48.15%)** and **Engineering (40%)**, while **Sales (21.62%)** and **HR (21.43%)** have lower rates. This suggests issues with workload, growth opportunities, or pay in the higher-turnover areas. The company should focus on improving **retention, career development, and compensation** in Marketing and Engineering to boost stability and reduce turnover costs.

EMPLOYEE RETENTION ANALYSIS

Q3 EMPLOYEES WHO ARE AT RISK OF LEAVING BASED ON THEIR PERFORMANCE





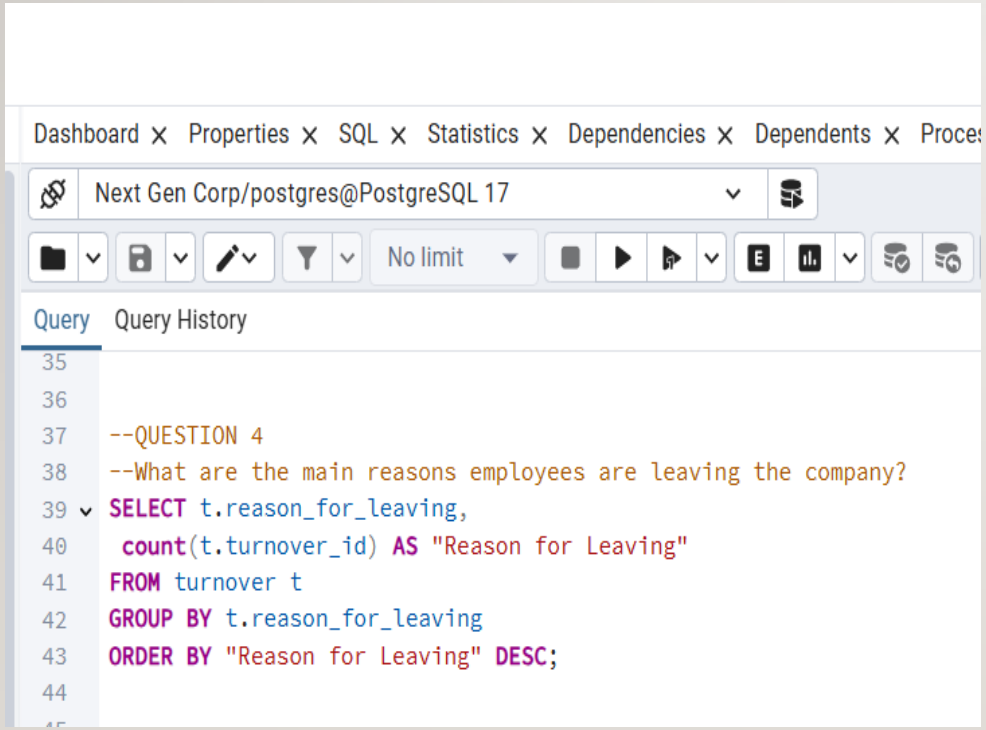
	employee_id integer	first_name character varying (30)	last_name character varying (30)	performance_score numeric (2,1)
1	7	John	Brown	3.0
2	8	David	Moore	3.0
3	12	Eve	Davis	3.0
4	21	Grace	Smith	3.0
5	22	Grace	Wilson	3.0
6	41	Charlie	Smith	3.0
7	63	Frank	Lee	3.0
8	98	Frank	Wilson	3.0

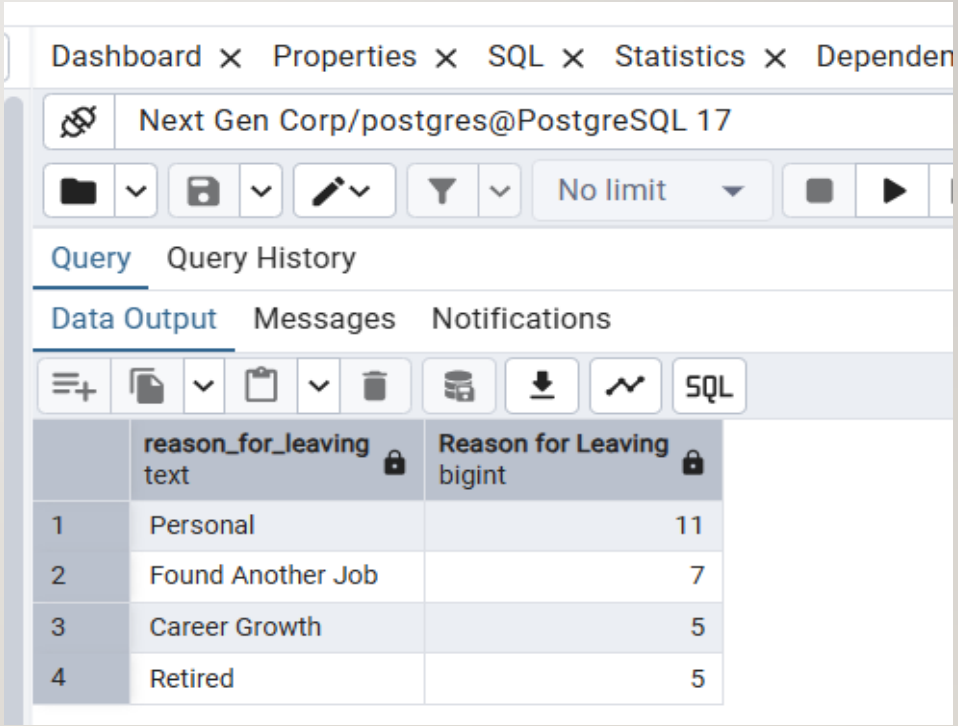
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

This data also shows that all these eight employees have a **performance score of 3.0**, indicating they are performing at an average level. This uniform score suggests a potential **engagement or motivation issue**, as consistently mid-level performance can be an early warning sign of disengagement or dissatisfaction, putting these employees **at risk of leaving**. Strategically, NextGen Corp should focus on **re-engaging these employees** through performance feedback sessions, clearer career growth paths, and recognition programs. Providing **targeted development opportunities** and discussing individual goals can help improve their performance and commitment, reducing the likelihood of turnover among this group.

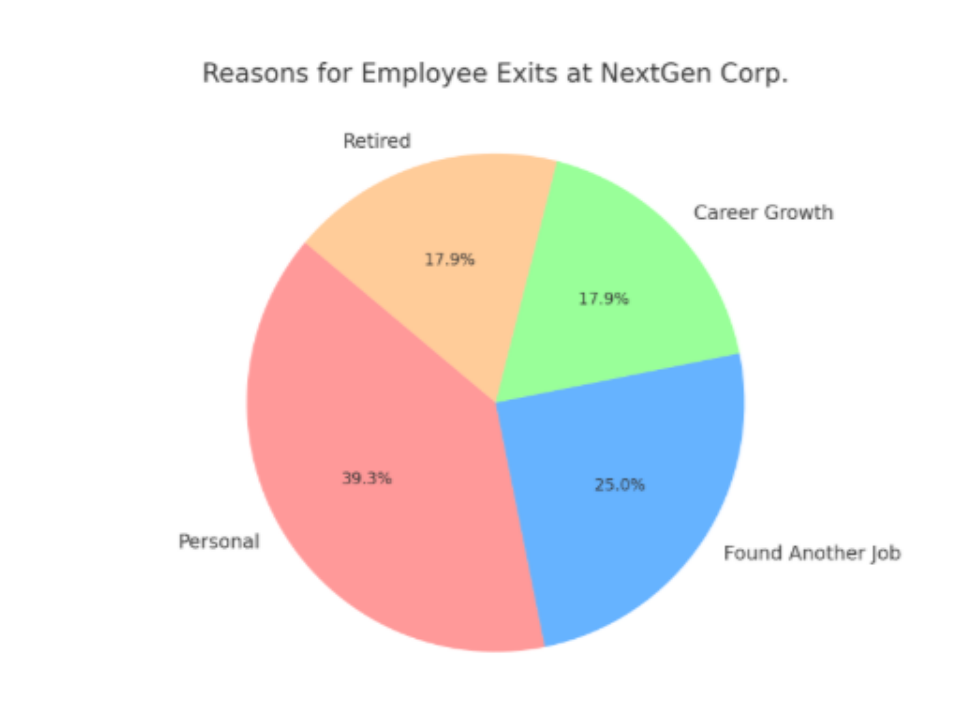
EMPLOYEE RETENTION ANALYSIS

Q4 THE MAIN REASONS EMPLOYEES ARE LEAVING THE COMPANY





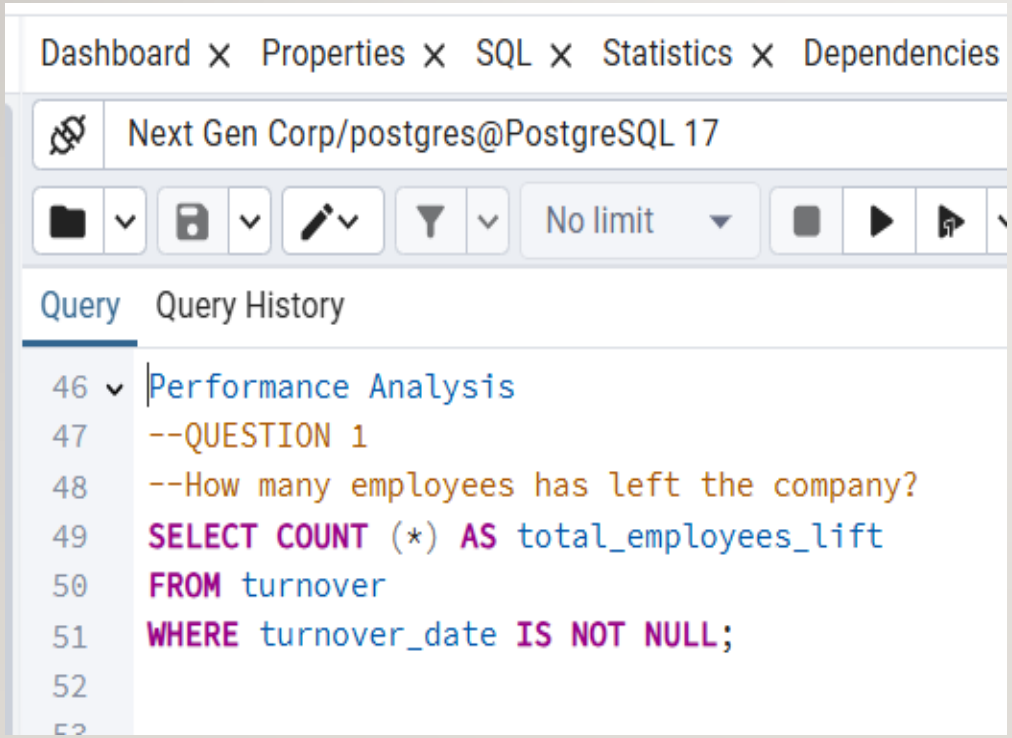
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

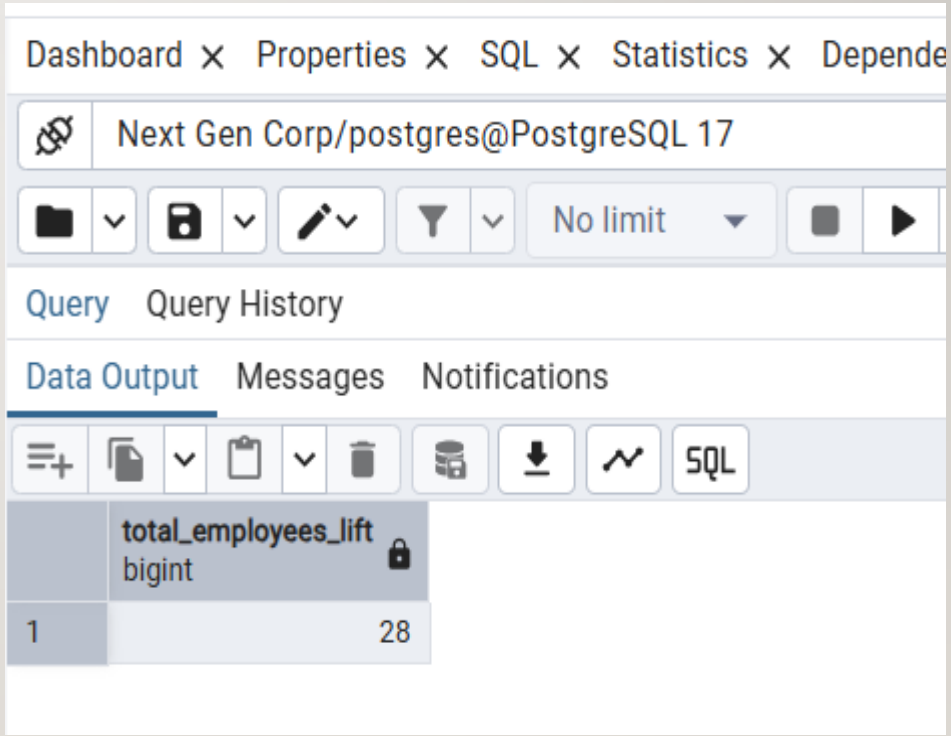


- The data shows that most employees leave NextGen Corp for **personal reasons (11 cases)**, followed by **finding another job (7)** and **career growth or retirement (5 each)**. This pattern indicates that while some turnover is unavoidable, a significant portion may stem from employees seeking better opportunities or clearer advancement paths. Strategically, NextGen should focus on **enhancing career development programs, internal mobility, and flexible work options** to address personal and professional needs. By improving **work-life balance and career progression opportunities**, the company can reduce voluntary exits and strengthen long-term employee retention.
- This visual pie chat makes it easier to prioritize strategic interventions, such as flexible work options and enhanced career development programs

PERFORMANCE ANALYSIS

Q1 NUMBER OF EMPLOYEES WHO LEFT COMPANY





STRATEGIC INSIGHTS DERIVED FROM THIS DATA

Analysis of the 28 employee exits reveals that personal reasons are the primary driver of turnover, accounting for nearly 40% of all departures. This suggests that issues related to work-life balance, flexibility, or personal well-being may be significant concerns for employees. The second most common reason, employees leaving for another job, indicates competitive pressures in the labour market which suggesting that some employees may be drawn to better pay or growth opportunities elsewhere. Meanwhile, career growth and retirement each represent about 18% of exits, with the former highlighting potential gaps in internal mobility and advancement. Strategically, NextGen Corp. should focus on strengthening retention by introducing flexible work arrangements, improving internal career progression pathways, and benchmarking compensation against industry standards to remain competitive. Additionally, succession planning and knowledge transfer programs could help mitigate the impact of retirements on organizational continuity.

PERFORMANCE ANALYSIS

Q2 NUMBER OF EMPLOYEES PERFORMANCE BETWEEN 5.0 / BELOW 3.5

Dashboard × Properties × SQL × Statistics × Dependencies × Dependents × Processes ×

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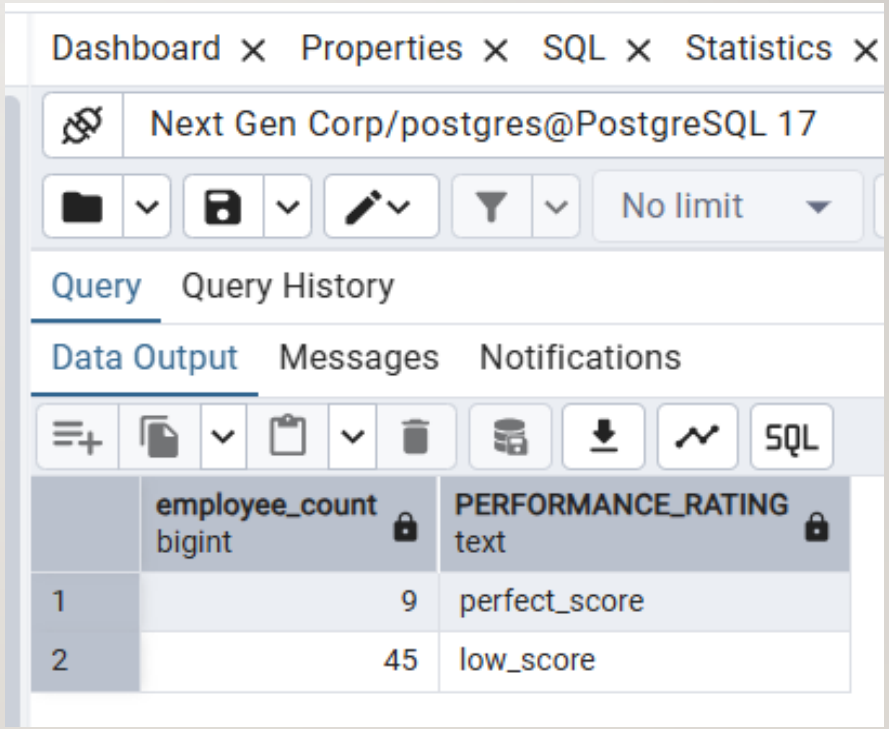
No limit

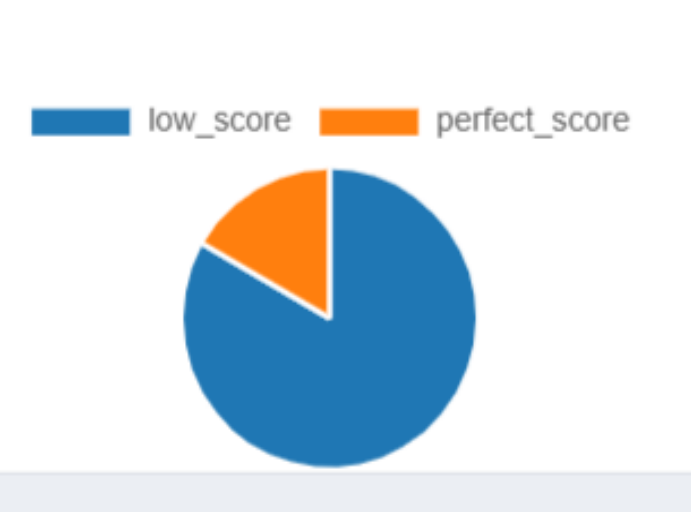
Query Query History

```
70  --QUESTION 2
71  --How many employees have a performance score of 5.0 / below 3.5?
72  SELECT COUNT(distinct p.employee_id) AS EMPLOYEE_COUNT,
73  CASE WHEN performance_score = 5.0 then 'perfect_score'
74       WHEN performance_score < 3.5 then 'low_score'
75       ELSE 'Average_score'
76  END AS "PERFORMANCE_RATING"
77  FROM "performance" p
78  WHERE performance_score = 5.0 OR performance_score < 3.5
79  GROUP BY "PERFORMANCE_RATING"
80  ORDER BY "PERFORMANCE_RATING" DESC
81
```



	employee_count bigint	PERFORMANCE_RATING text
1	9	perfect_score
2	45	low_score

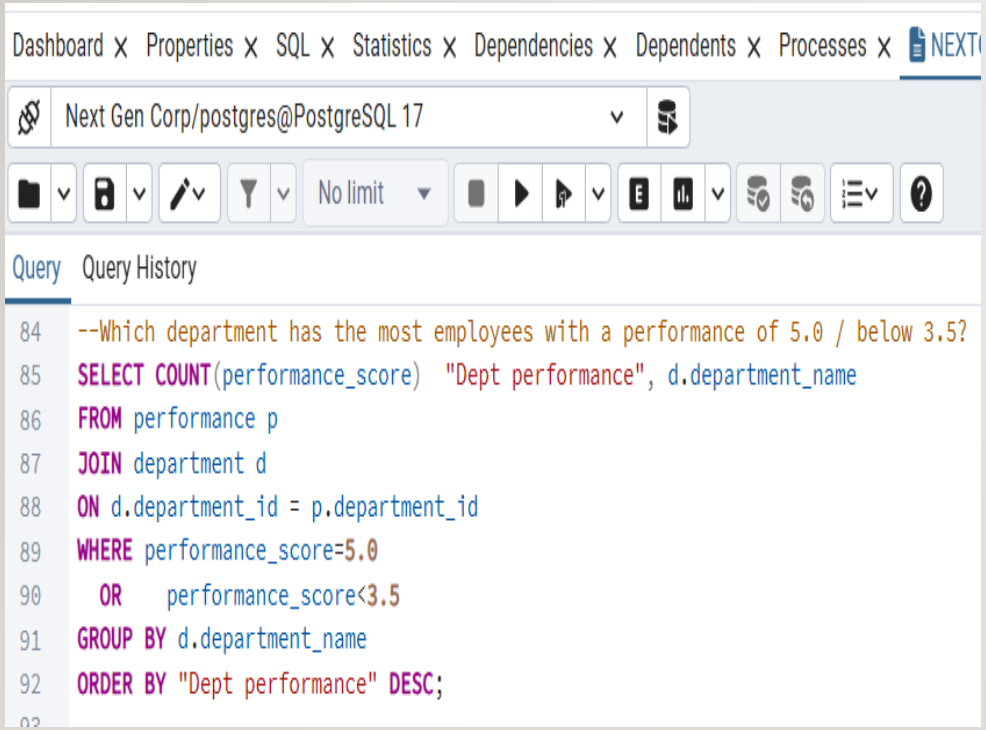
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

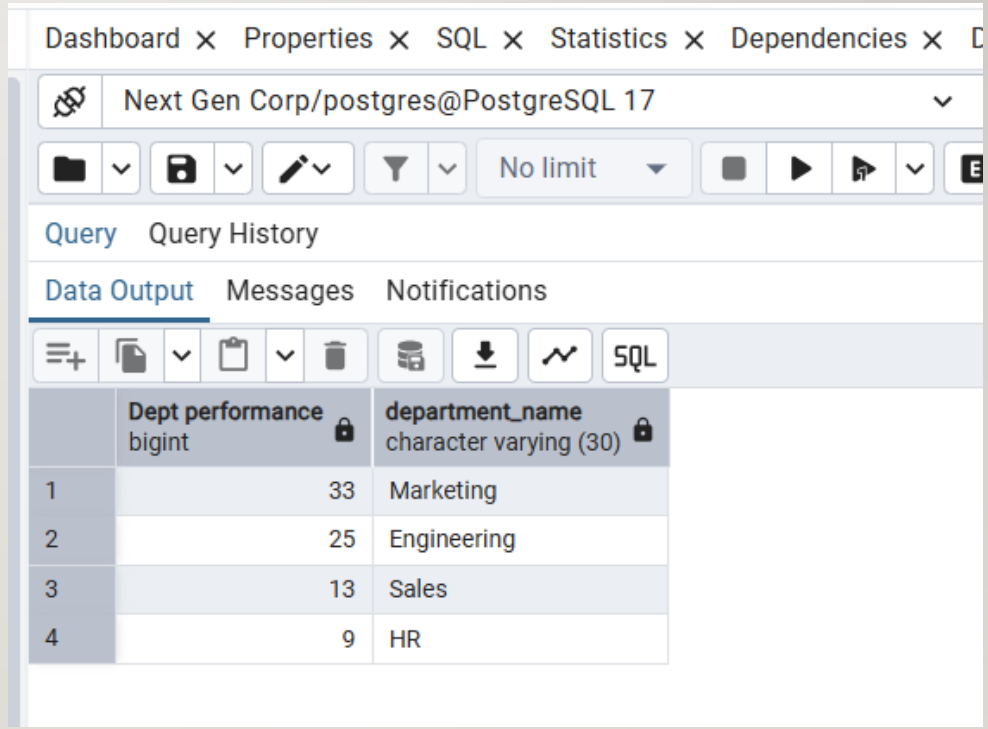


- The performance data shows that only 9 employees achieved a perfect score of 5.0, while 45 employees received a lower score of 3.5. This indicates that overall performance levels may be below expectations, suggesting potential gaps in motivation, training, or performance management. The small group of high performers could be used as role models or mentors to help improve team performance across the company. Strategically, NextGen Corp. should focus on identifying the factors driving high performance—such as skill level, management support, or engagement—and apply these insights to underperforming groups. Implementing targeted training programs, setting clearer performance goals, and recognizing top performers can help raise overall productivity and engagement.

PERFORMANCE ANALYSIS

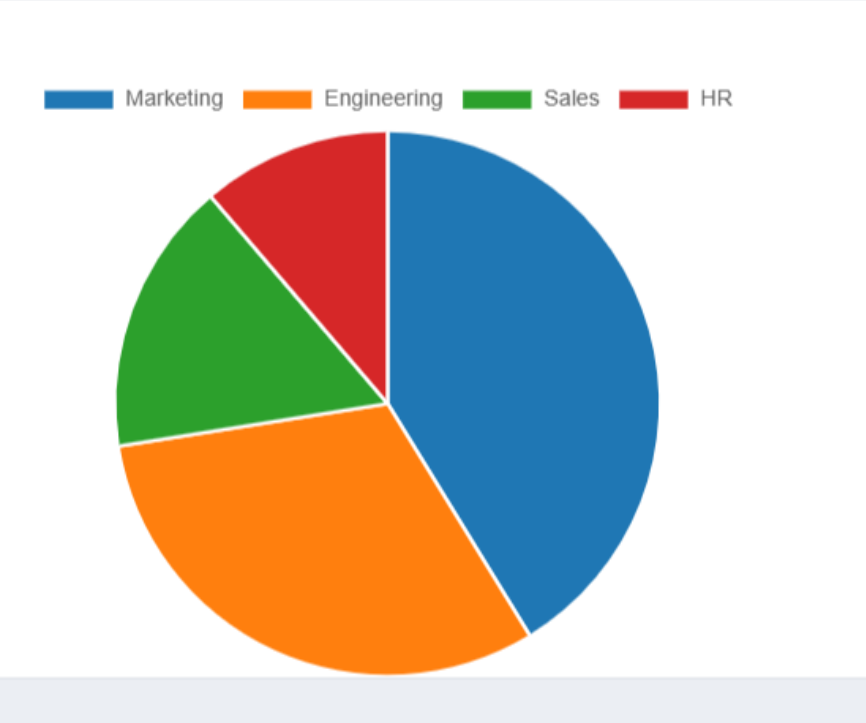
Q3 DEPARTMENT WHICH HAS THE MOST EMPLOYEES WITH A PERFORMANCE OF 5.0 / BELOW 3.5





	Dept performance bigint	department_name character varying (30)
1	33	Marketing
2	25	Engineering
3	13	Sales
4	9	HR

STRATEGIC INSIGHTS DERIVED FROM THIS DATA



Based on the data, the **Marketing department** has the highest number of employees with performance scores of 5.0 or below 3.5, totaling 33 employees. This suggests significant performance variability within the department when some employees are excelling while others may be struggling to meet expectations. The **Engineering department** follows with 25 employees, indicating potential skill or workload challenges, while **Sales (13)** and **HR (9)** show relatively smaller performance gaps. Strategically, NextGen Corp. should focus on understanding the root causes of inconsistent performance in Marketing such as leadership effectiveness, training gaps, or workload imbalance. Implementing targeted performance improvement plans, mentorship programs, and skill enhancement workshops could help lift low performers while maintaining motivation for high achievers. Regular performance reviews and data-driven monitoring would also help ensure consistent progress across departments.

PERFORMANCE ANALYSIS

Q4. AVERAGE PERFORMANCE SCORE BY DEPARTMENT

Dashboard X Properties X SQL X Statistics X Dependencies X Dependents X Processes X

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No limit

Query Query History

```
94  --QUESTION 4
95  --What is the average performance score by department?
96  SELECT
97    department.department_name,
98    ROUND(AVG(performance.performance_score) ,2) AS avg_performance,
99    ROUND(CAST (AVG(salary.salary_amount)AS NUMERIC), 2)AS avg_salary
100   FROM department
101   JOIN performance USING (Department_id)
102   JOIN salary USING (employee_id)
103   GROUP BY department.department_name
104   ORDER BY avg_salary DESC;
105
106
```

Dashboard X Properties X SQL X Statistics X Dependencies X Deper

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No limit

Query Query History

Data Output Messages Notifications

SQL

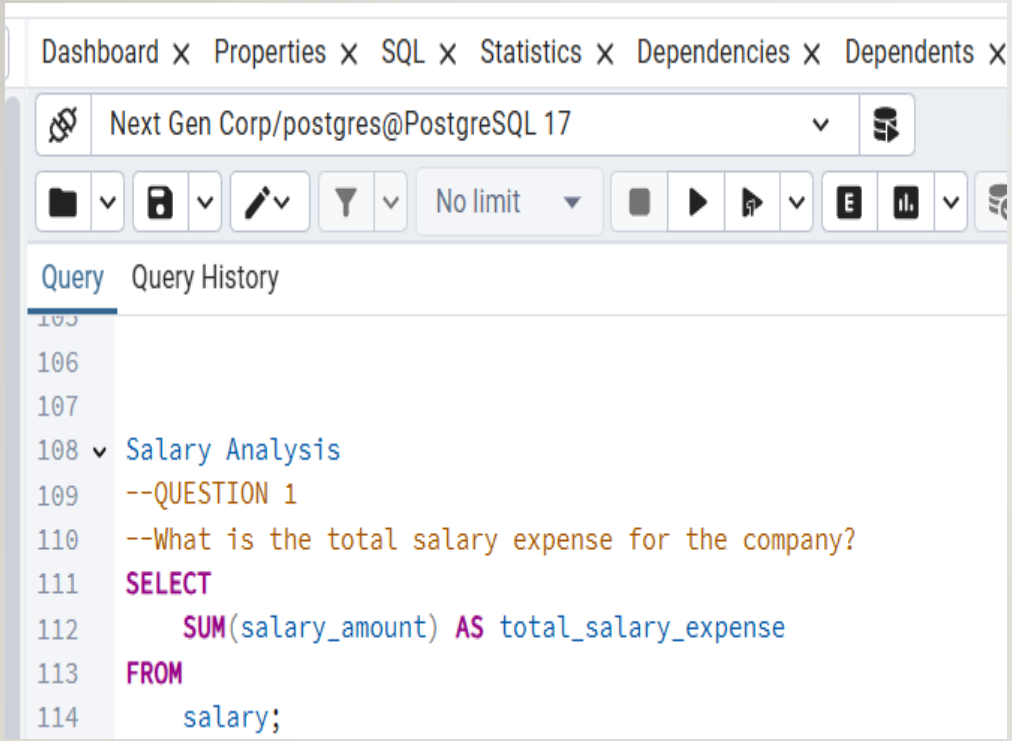
	department_name character varying (30)	avg_performance numeric	avg_salary numeric
1	HR	4.05	83000.00
2	Sales	4.00	82857.14
3	Engineering	4.10	80000.00
4	Marketing	4.13	80000.00

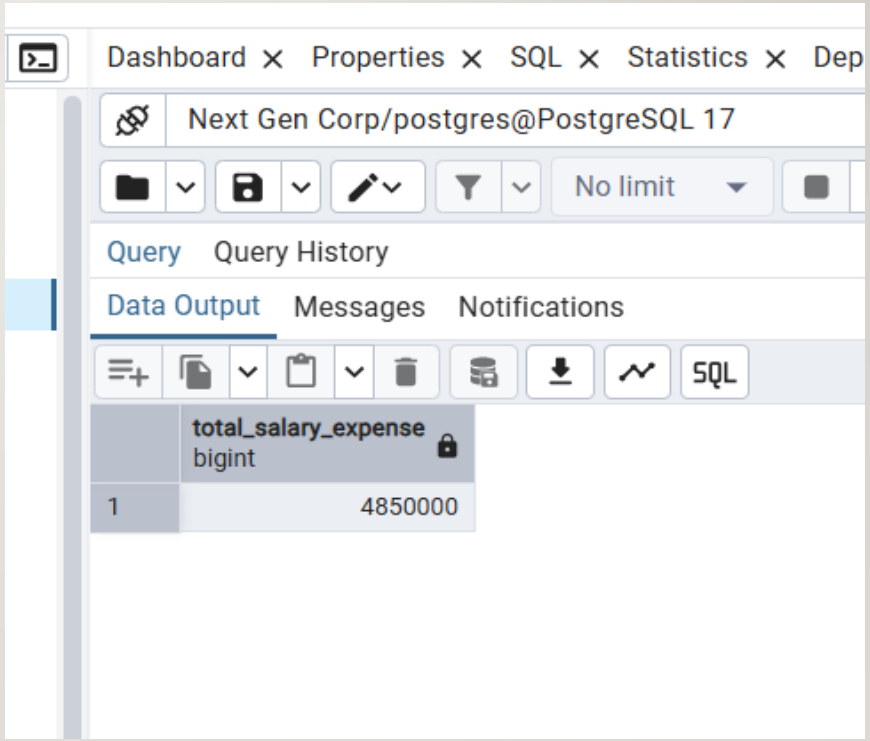
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

- The data shows that **Marketing** leads with the highest average performance score of **4.13**, followed closely by **Engineering (4.10)**, **HR (4.05)**, and **Sales (4.00)**. Interestingly, both Marketing and Engineering have similar average salaries at **$80,000**, yet their performance is higher than HR and Sales, whose salaries are slightly higher—around **$83,000**. This suggests that higher pay is not directly translating to better performance in HR and Sales, implying that other factors such as motivation, team culture, or leadership may play a more significant role. Strategically, NextGen Corp. should evaluate whether salary structures align with performance outcomes and consider introducing performance-based incentives or recognition programs. Additionally, exploring what drives higher productivity in Marketing and Engineering—such as better management practices, clearer goals, or employee engagement—can help replicate these strengths across lower-performing departments.

SALARY ANALYSIS

Q1. THE TOTAL SALARY EXPENSE FOR THE COMPANY



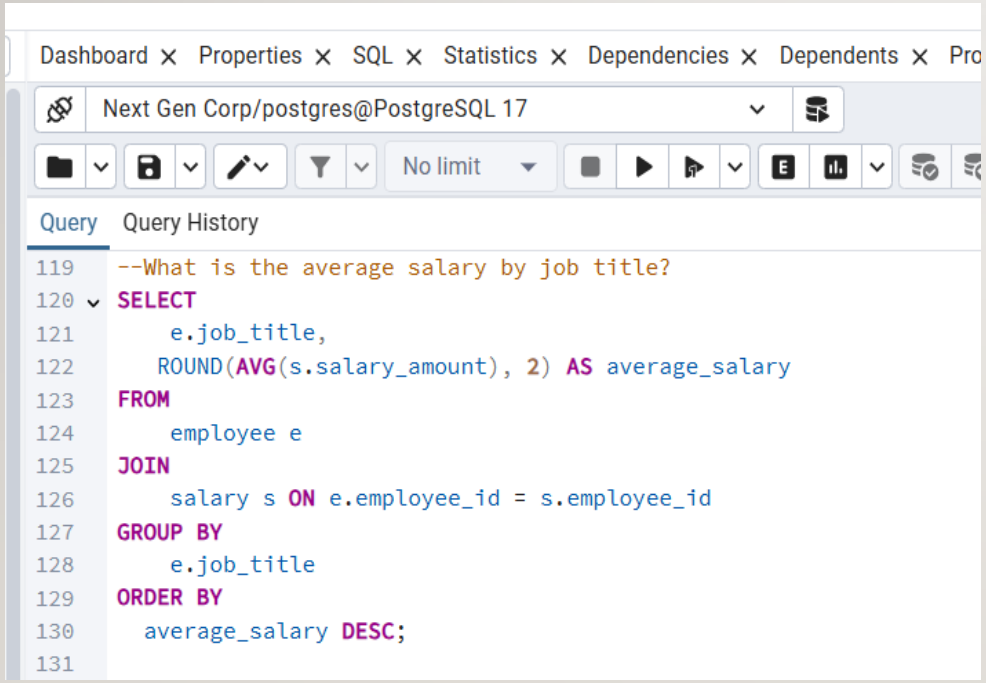


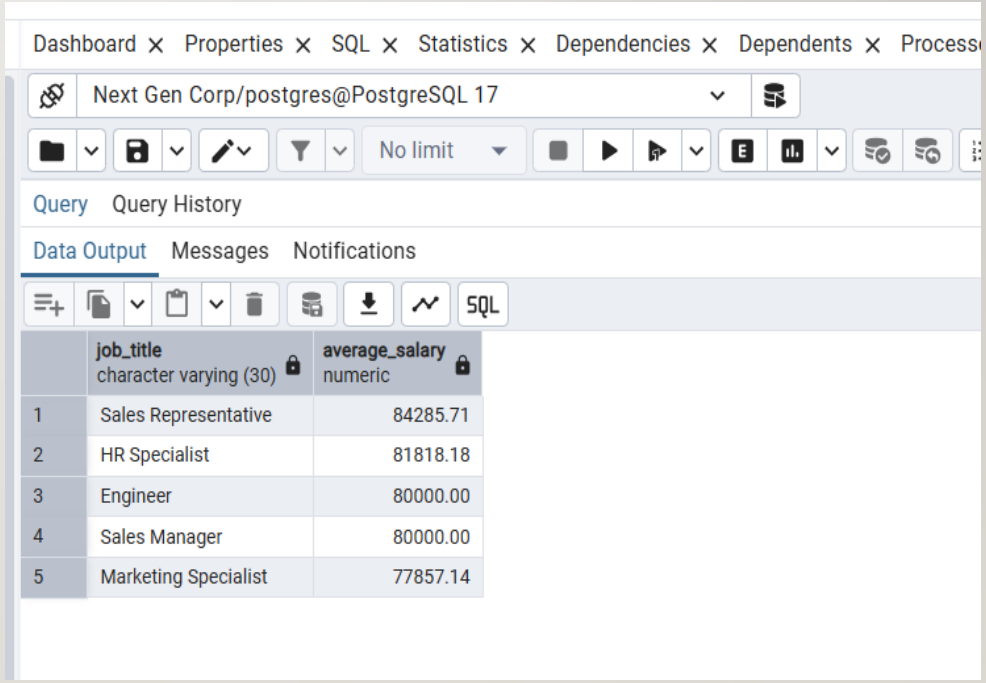
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

- The company's total salary expense of **$4,850,000** shows a large investment in its workforce, but the data suggests that higher pay does not always mean higher performance. **Marketing** and **Engineering** employees have strong average performance scores despite having lower average salaries, while **HR** and **Sales** earn slightly more but perform a bit lower. This means money alone may not be the main driver of good performance. To get better results from this investment, NextGen Corp. should focus on **non-monetary motivators** like better training, clearer goals, recognition programs, and career growth opportunities. At the same time, the company should review its **pay-for-performance strategy** to make sure salary and performance are more closely linked, ensuring fairness and better motivation across all departments.

SALARY ANALYSIS

Q2 THE AVERAGE SALARY BY JOB TITLE





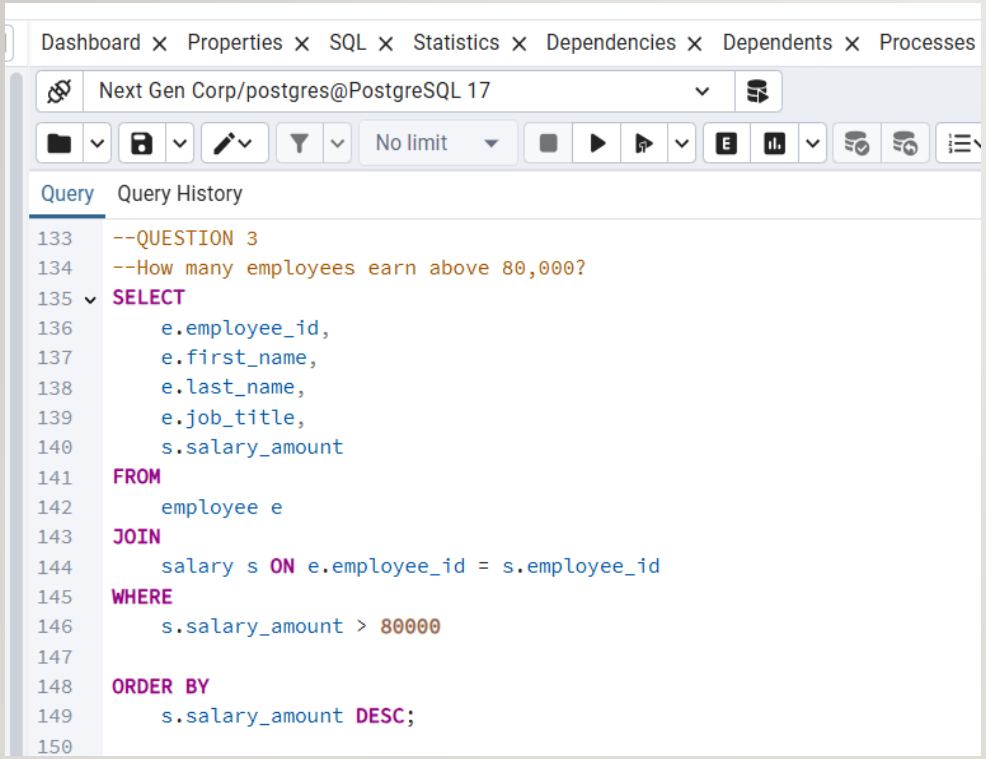
	job_title character varying (30)	average_salary numeric
1	Sales Representative	84285.71
2	HR Specialist	81818.18
3	Engineer	80000.00
4	Sales Manager	80000.00
5	Marketing Specialist	77857.14

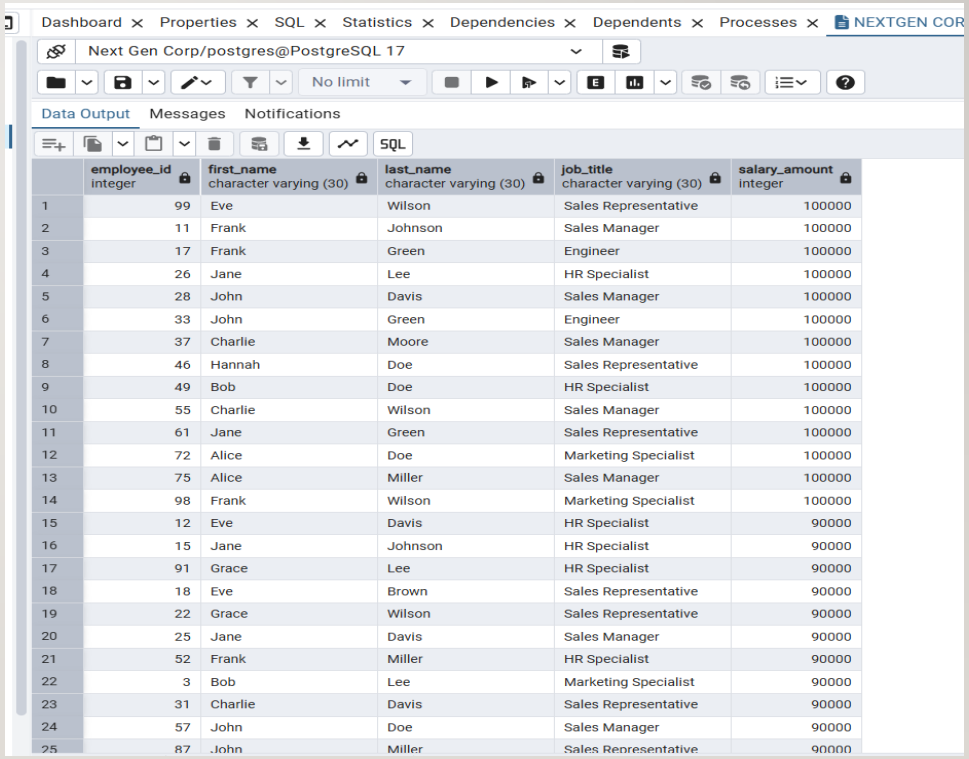
STRATEGIC INSIGHTS DERIVED FROM THIS DATA

The data shows that **Sales Representatives** earn the highest average salary (**$84,285.71**), while **Marketing Specialists** earn the lowest (**$77,857.14**). Despite similar pay for **Engineers** and **Sales Managers** (**$80,000**), performance data suggests Marketing and Engineering achieve stronger results. This indicates some **pay-performance imbalance**, where higher salaries don't always lead to better outcomes. NextGen Corp. should review salary structures to ensure fairness, align pay more closely with performance, and consider rewarding high-performing but lower-paid roles like Marketing Specialists to boost motivation and retention.

SALARY ANALYSIS

Q3. THE NUMBER EMPLOYEES EARN ABOVE 80,000





	employee_id integer	first_name character varying (30)	last_name character varying (30)	job_title character varying (30)	salary_amount integer
1	99	Eve	Wilson	Sales Representative	100000
2	11	Frank	Johnson	Sales Manager	100000
3	17	Frank	Green	Engineer	100000
4	26	Jane	Lee	HR Specialist	100000
5	28	John	Davis	Sales Manager	100000
6	33	John	Green	Engineer	100000
7	37	Charlie	Moore	Sales Manager	100000
8	46	Hannah	Doe	Sales Representative	100000
9	49	Bob	Doe	HR Specialist	100000
10	55	Charlie	Wilson	Sales Manager	100000
11	61	Jane	Green	Sales Representative	100000
12	72	Alice	Doe	Marketing Specialist	100000
13	75	Alice	Miller	Sales Manager	100000
14	98	Frank	Wilson	Marketing Specialist	100000
15	12	Eve	Davis	HR Specialist	90000
16	15	Jane	Johnson	HR Specialist	90000
17	91	Grace	Lee	HR Specialist	90000
18	18	Eve	Brown	Sales Representative	90000
19	22	Grace	Wilson	Sales Representative	90000
20	25	Jane	Davis	Sales Manager	90000
21	52	Frank	Miller	HR Specialist	90000
22	3	Bob	Lee	Marketing Specialist	90000
23	31	Charlie	Davis	Sales Representative	90000
24	57	John	Doe	Sales Manager	90000
25	87	John	Miller	Sales Representative	90000

STRATEGIC INSIGHTS DERIVED FROM THIS DATA

- Out of the workforce, 28 employees earn above $80,000, indicating a notable concentration of higher salaries among a subset of staff. This could highlight potential disparities or a tiered pay structure that may need review for fairness and alignment with performance.

SALARY ANALYSIS

Q4. HOW PERFORMANCE CORRELATE WITH SALARY ACROSS DEPARTMENTS

```
151
152  --QUESTION 4
153  --How does performance correlate with salary across departments?
154
155  SELECT
156      d.department_name,
157      ROUND(AVG(p.performance_score), 2) AS avg_performance_score,
158      ROUND(AVG(s.salary_amount), 2) AS avg_salary
159  FROM
160      department d
161  JOIN
162      employee e ON d.department_id = e.department_id
163  JOIN
164      performance p ON e.employee_id = p.employee_id
165  JOIN
166      salary s ON e.employee_id = s.employee_id
167  GROUP BY
168      d.department_name
169  ORDER BY
170      avg_salary DESC;
171
```

Dashboard × Properties × SQL × Statistics × Dependencies × Dependents × Proces

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No limit

Query Query History

Data Output Messages Notifications

SQL

	department_name character varying (30)	avg_performance_score numeric	avg_salary numeric
1	Sales	4.07	82068.97
2	HR	4.11	81818.18
3	Engineering	4.01	80000.00
4	Marketing	4.17	77857.14

STRATEGIC INSIGHTS DERIVED FROM THIS DATA

- The data suggests that higher salaries do not directly correspond to higher performance. Marketing has the highest performance score (4.17) despite the lowest average salary, while Sales and HR earn more but perform slightly lower (4.07 and 4.11). Engineering falls in the middle. This indicates that factors other than salary—such as work environment, recognition, training, and career growth—likely play a stronger role in driving performance. NextGen Corp. may benefit from focusing on non-monetary motivators while ensuring that pay and performance are reasonably aligned for fairness and motivation.

CONCLUSION

- The SQL analysis for NextGen Corp reveals that employee performance does not always align with salary levels across departments, with Marketing and Engineering achieving strong performance despite lower average pay, while HR and Sales earn more but perform slightly lower. This suggests that non-monetary factors such as training, recognition, and career growth significantly influence employee outcomes. To optimize retention, motivation, and fairness, the company should enhance its pay-for-performance strategy and invest in programs that support employee development and engagement.