**Database Management System Lab**

Code: PMDS506P

**Digital Assignment 3**

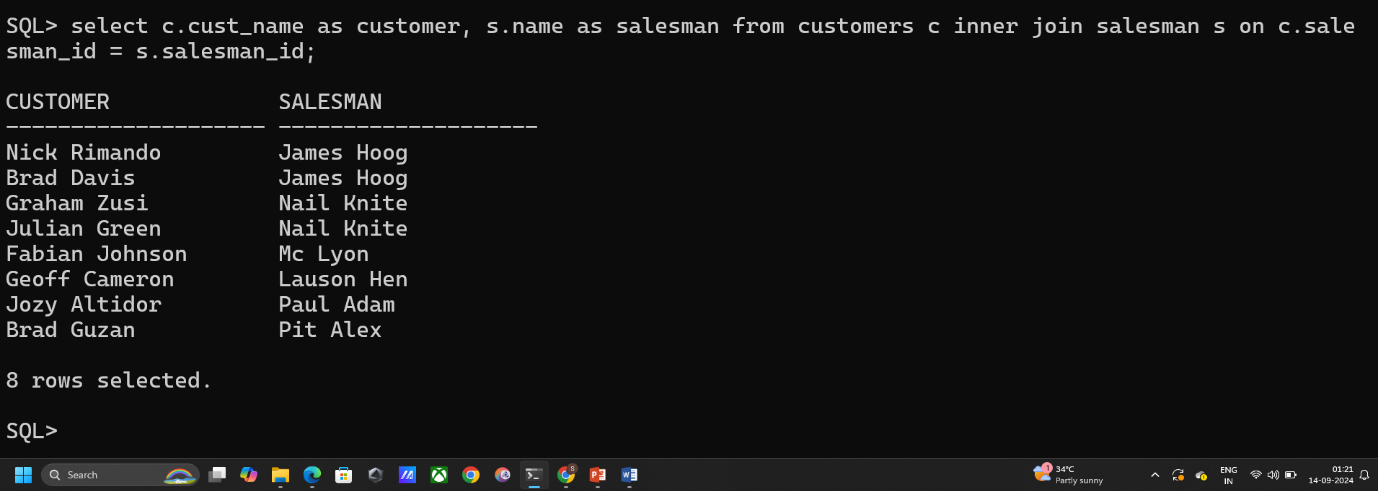
**Name: Soumyadeep Ganguly**

**Reg. No.: 24MDT0082**

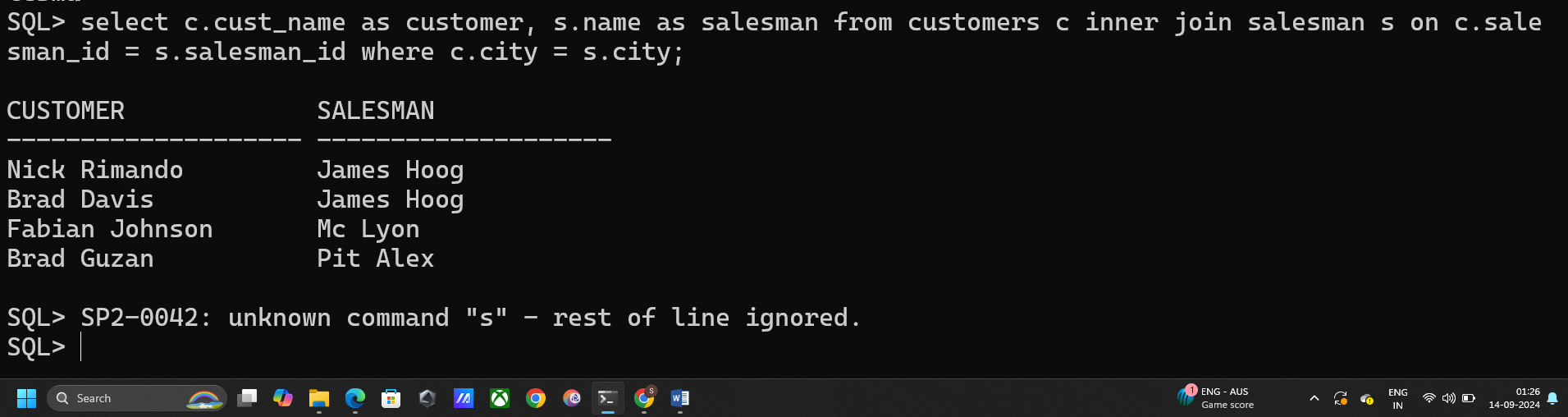
**Course: M.Sc in Data Science**

**Q1. Create the following tables and answer the following questions.**

1. **Retrieve all customers and their corresponding salesmen's names using an inner join.**

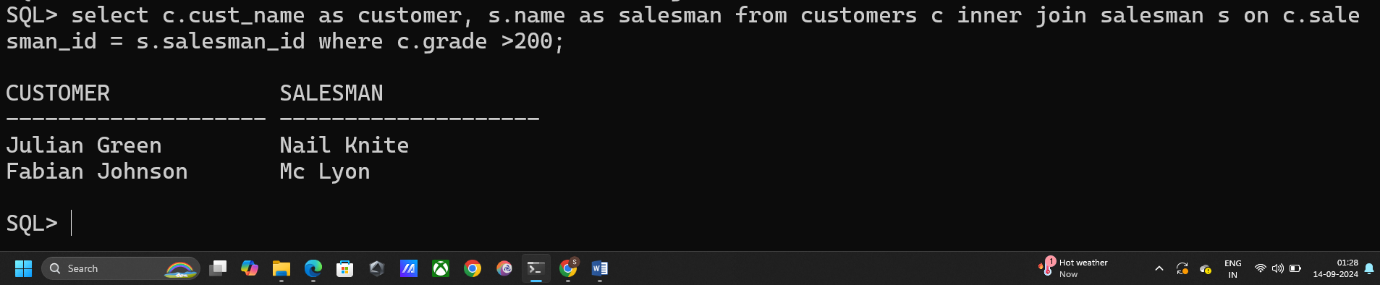
SELECT C.CUST\_NAME AS CUSTOMER, S.NAME AS SALESMAN FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID;

1. **Find all customers and their respective salesmen where the customer's city is the same as the salesman's city.**

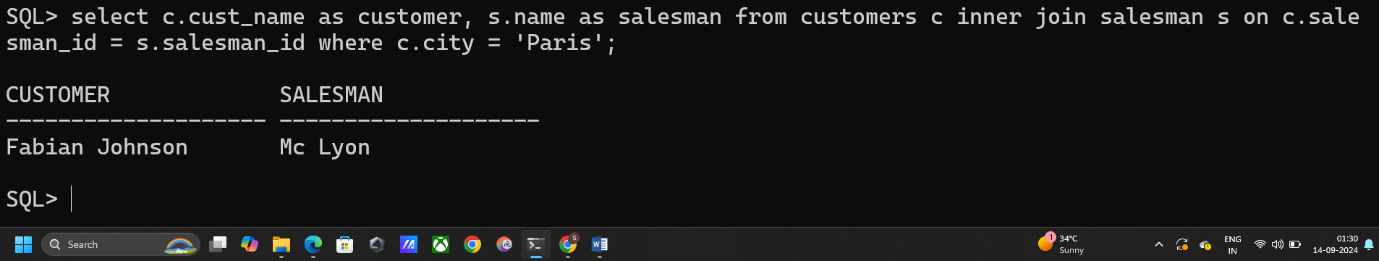
SELECT C.CUST\_NAME AS CUSTOMER, S.NAME AS SALESMAN FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID WHERE C.CITY = S.CITY;

1. **Show all customers along with their salesmen's details who have a grade higher than 200.**

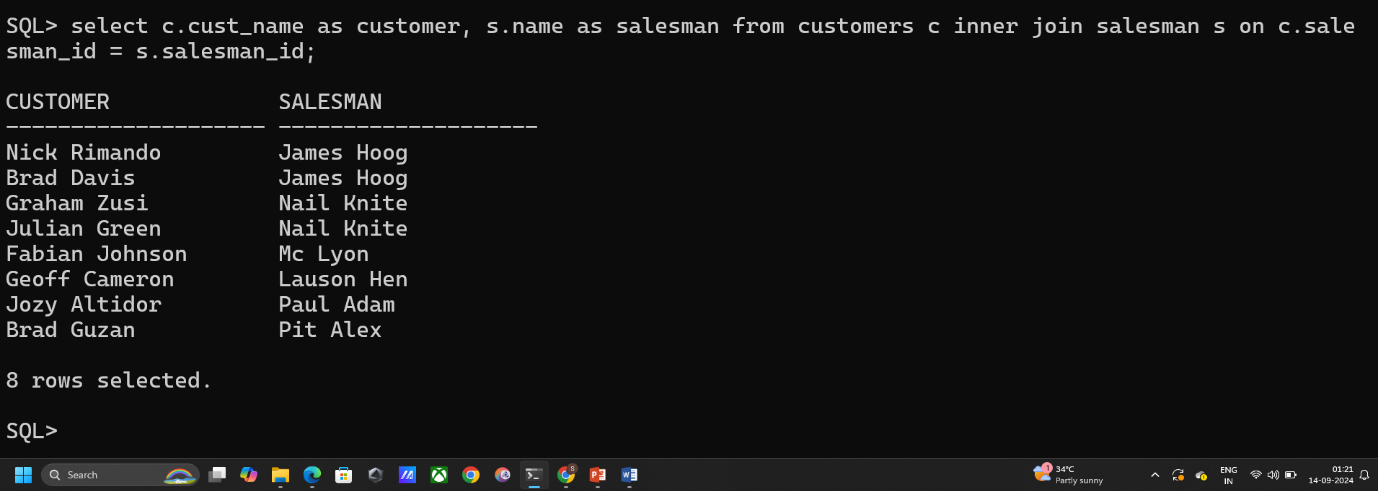
SELECT C.CUST\_NAME AS CUSTOMER, S.NAME AS SALESMAN FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID WHERE C.GRADE >200;



1. **Find customers in Paris and their corresponding salesmen’s names.**

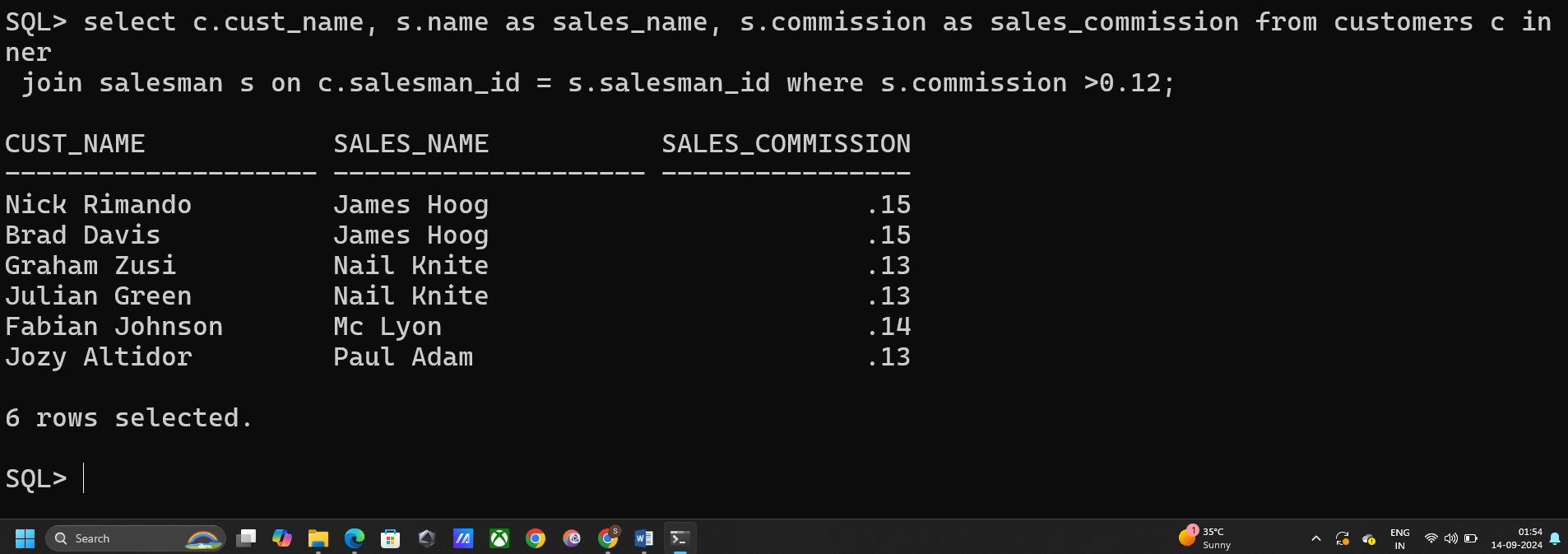
SELECT C.CUST\_NAME AS CUSTOMER, S.NAME AS SALESMAN FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID WHERE C.CITY = 'PARIS';

1. **Retrieve the customer\_id and the name of the salesman who serves them.**

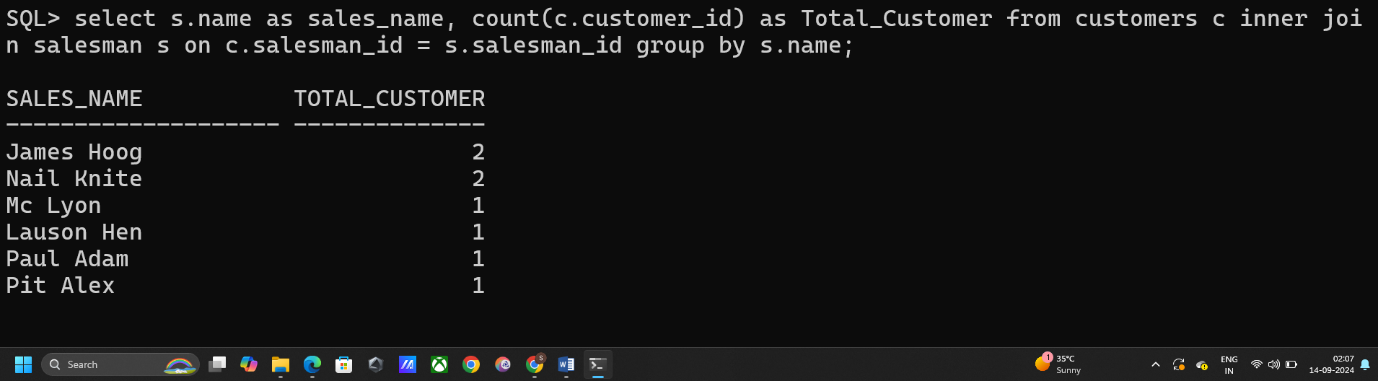
SELECT C.CUST\_NAME AS CUSTOMER, S.NAME AS SALESMAN FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID;

1. **List all customers whose salesmen have a commission greater than 0.12.**

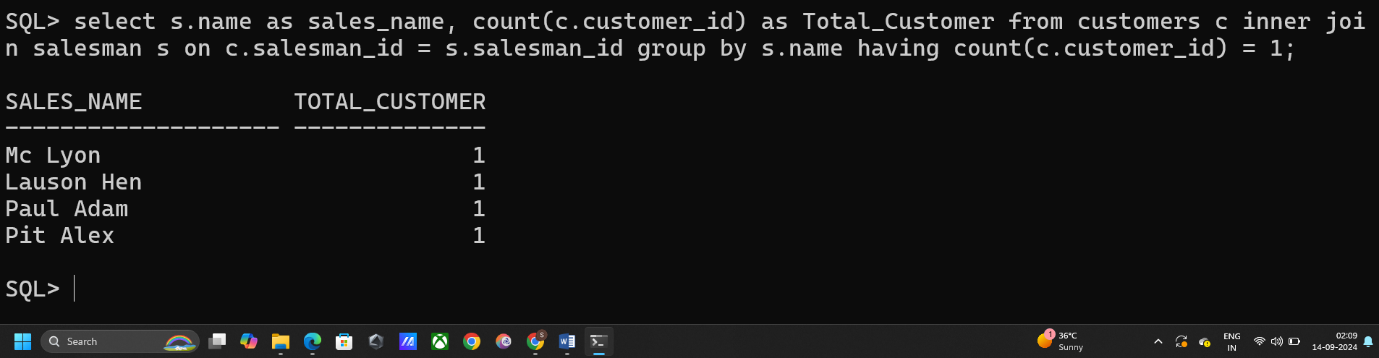
SELECT C.CUST\_NAME, S.NAME AS SALES\_NAME, S.COMMISSION AS SALES\_COMMISSION FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID WHERE S.COMMISSION >0.12;



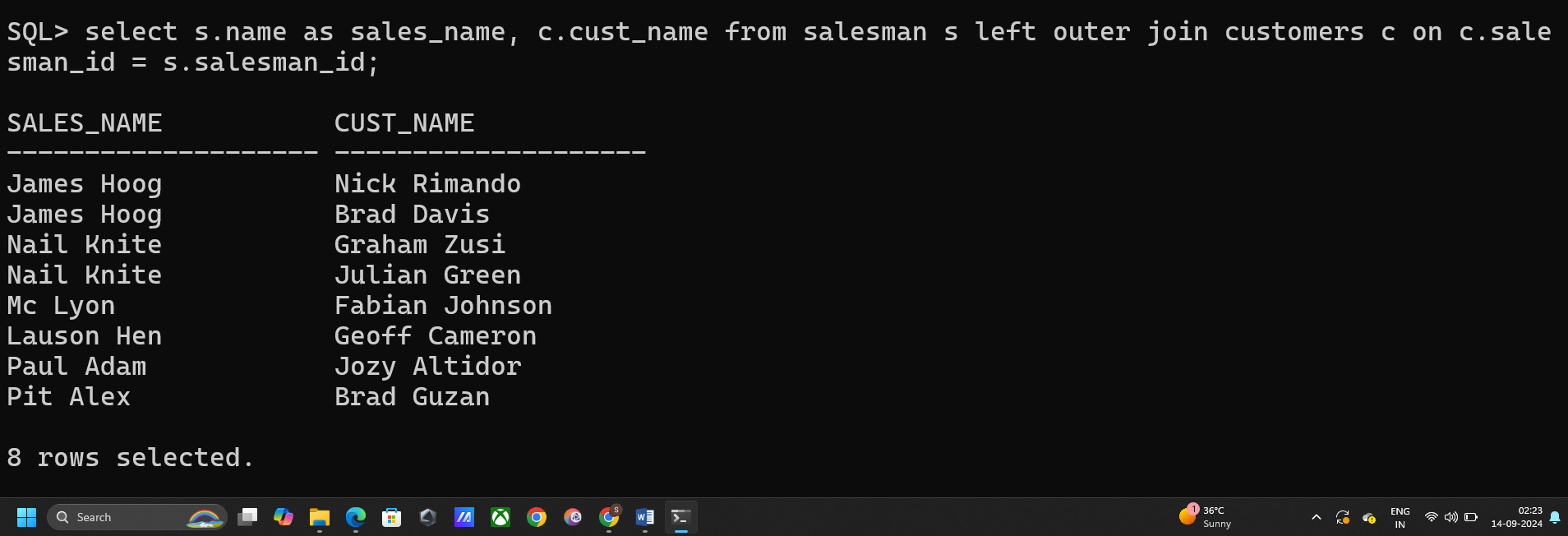
1. **Find the total number of customers each salesman has, using an inner join.**

SELECT S.NAME AS SALES\_NAME, COUNT(C.CUSTOMER\_ID) AS TOTAL\_CUSTOMER FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID GROUP BY S.NAME;

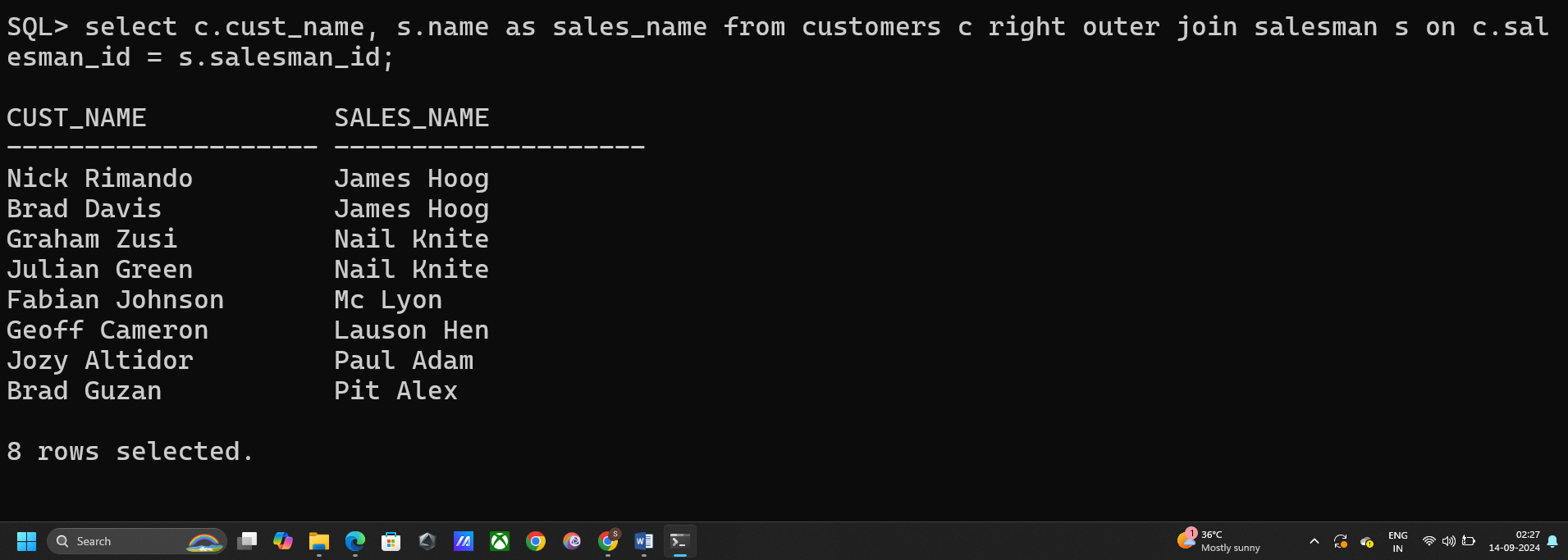
1. **Retrieve all salesmen who have at least one customer.**

SELECT S.NAME AS SALES\_NAME, COUNT(C.CUSTOMER\_ID) AS TOTAL\_CUSTOMER FROM CUSTOMERS C INNER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID GROUP BY S.NAME HAVING COUNT(C.CUSTOMER\_ID) = 1;

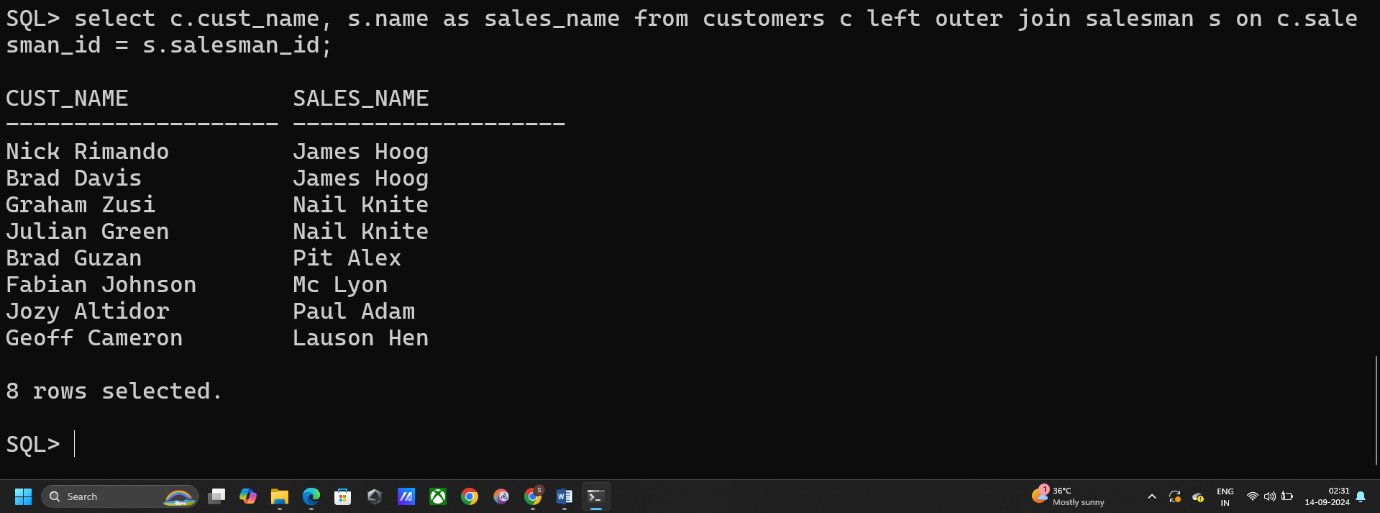
1. **Retrieve all salesmen and their customers using a left outer join.**

SELECT S.NAME AS SALES\_NAME, C.CUST\_NAME FROM SALESMAN S LEFT OUTER JOIN CUSTOMERS C ON C.SALESMAN\_ID = S.SALESMAN\_ID;

1. **List all customers and their respective salesmen using a right outer join.**

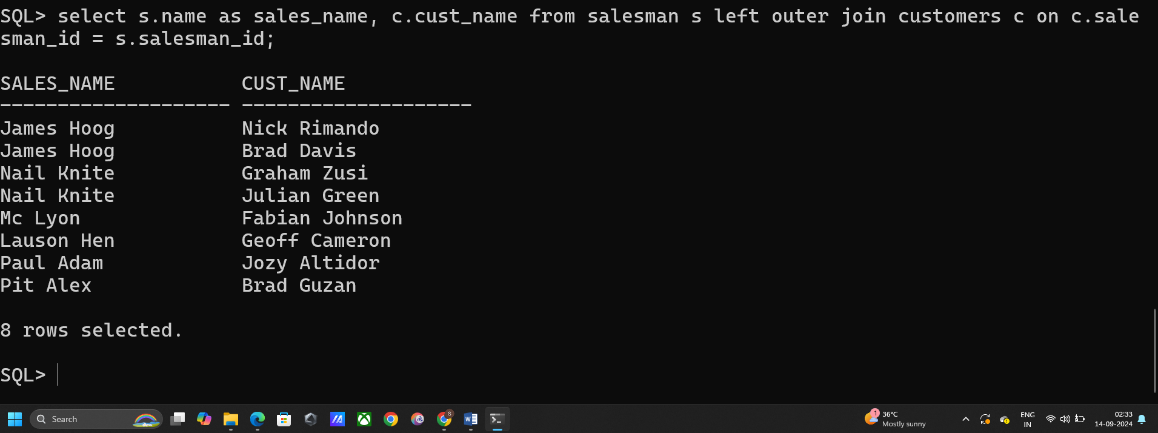
SELECT C.CUST\_NAME, S.NAME AS SALES\_NAME FROM CUSTOMERS C RIGHT OUTER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID;

1. **Retrieve all customers even if they don't have a corresponding salesman.**

SELECT C.CUST\_NAME, S.NAME AS SALES\_NAME FROM CUSTOMERS C LEFT OUTER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID;

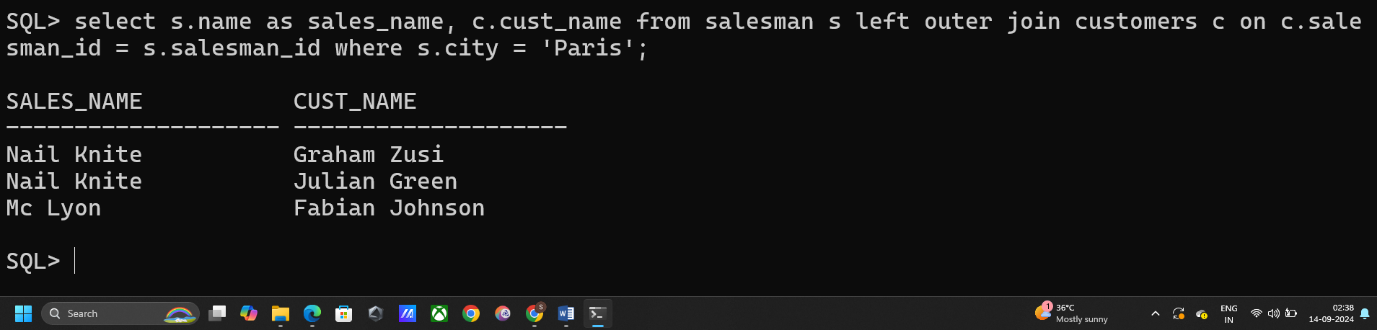
1. **Show all salesmen along with the customer names they serve, even if the salesman has no customers.**

SELECT S.NAME AS SALES\_NAME, C.CUST\_NAME FROM SALESMAN S LEFT OUTER JOIN CUSTOMERS C ON C.SALESMAN\_ID = S.SALESMAN\_ID;

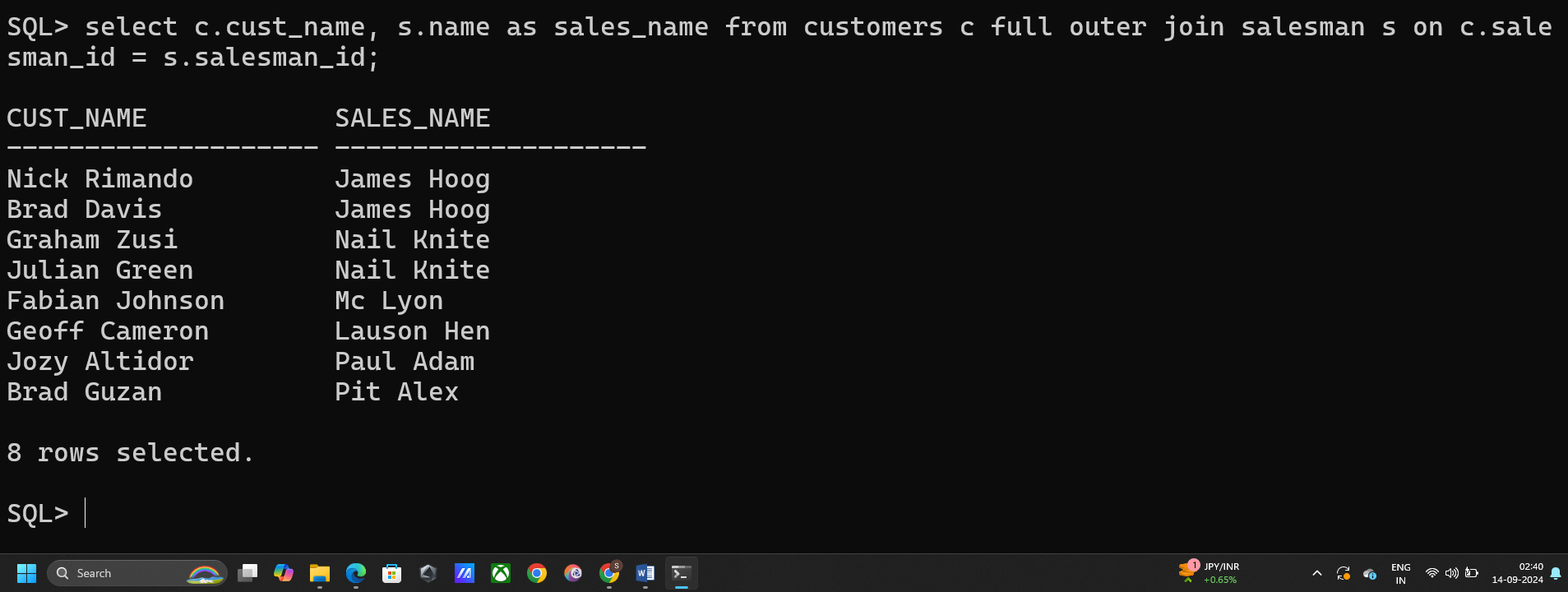


1. **Find all salesmen in Paris and list their customers, including those who don’t have any customers.**

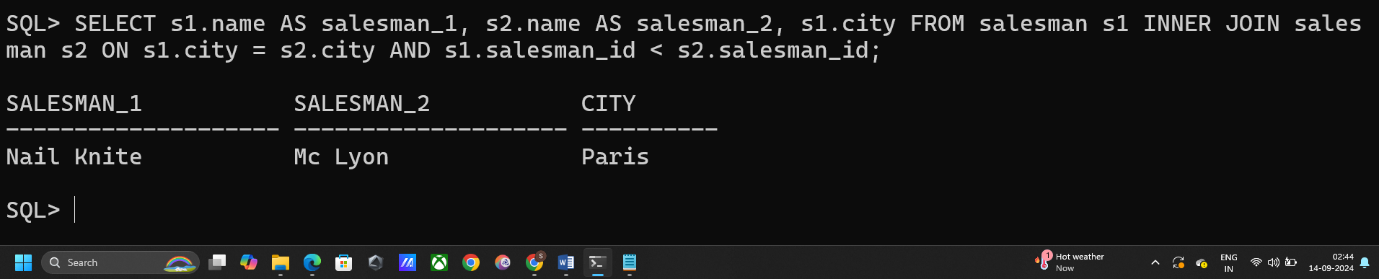
SELECT S.NAME AS SALES\_NAME, C.CUST\_NAME FROM SALESMAN S LEFT OUTER JOIN CUSTOMERS C ON C.SALESMAN\_ID = S.SALESMAN\_ID WHERE S.CITY = 'PARIS';



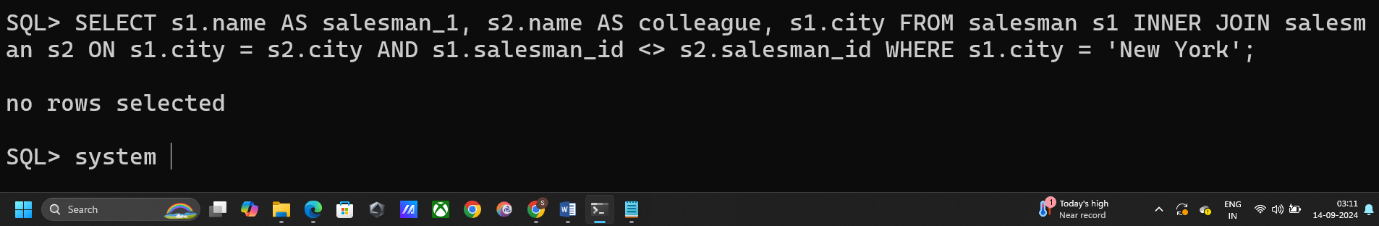
1. **Show all customers and their corresponding salesmen’s details using a full outer join.**

SELECT C.CUST\_NAME, S.NAME AS SALES\_NAME FROM CUSTOMERS C FULL OUTER JOIN SALESMAN S ON C.SALESMAN\_ID = S.SALESMAN\_ID;

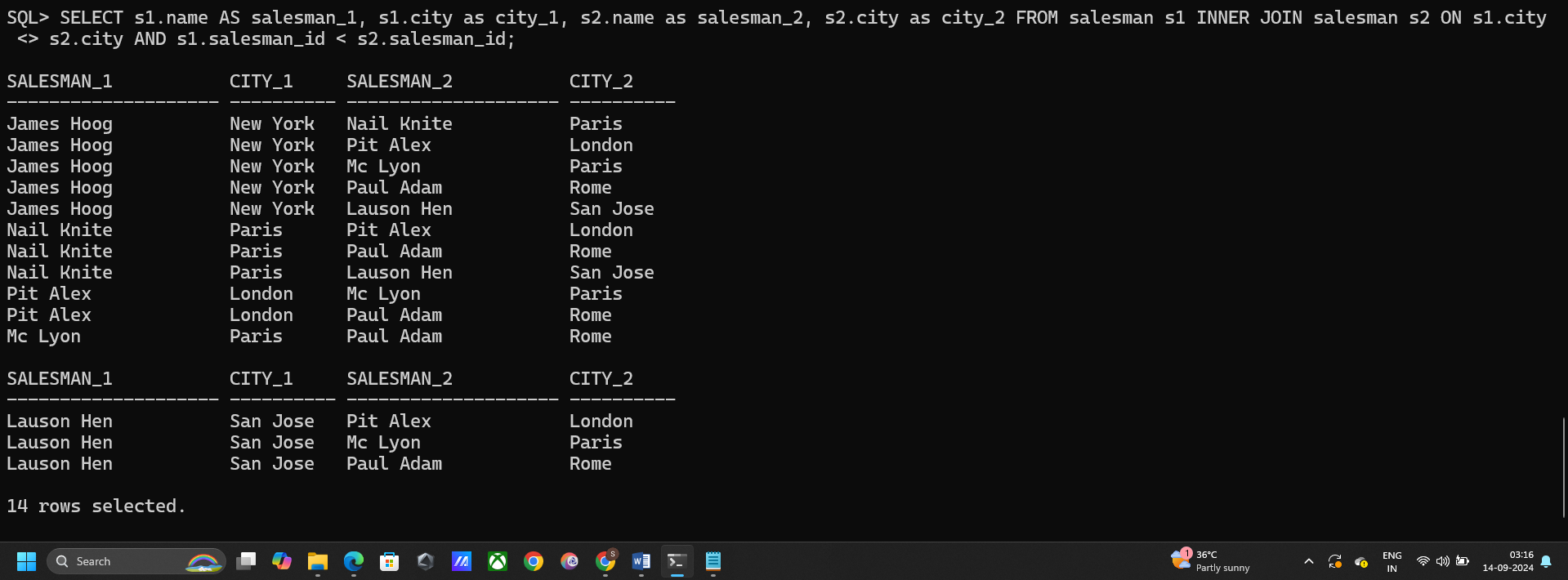
1. **Find pairs of salesmen working in the same city.**

SELECT S1.NAME AS SALESMAN\_1, S2.NAME AS SALESMAN\_2, S1.CITY FROM SALESMAN S1 INNER JOIN SALESMAN S2 ON S1.CITY = S2.CITY AND S1.SALESMAN\_ID < S2.SALESMAN\_ID;

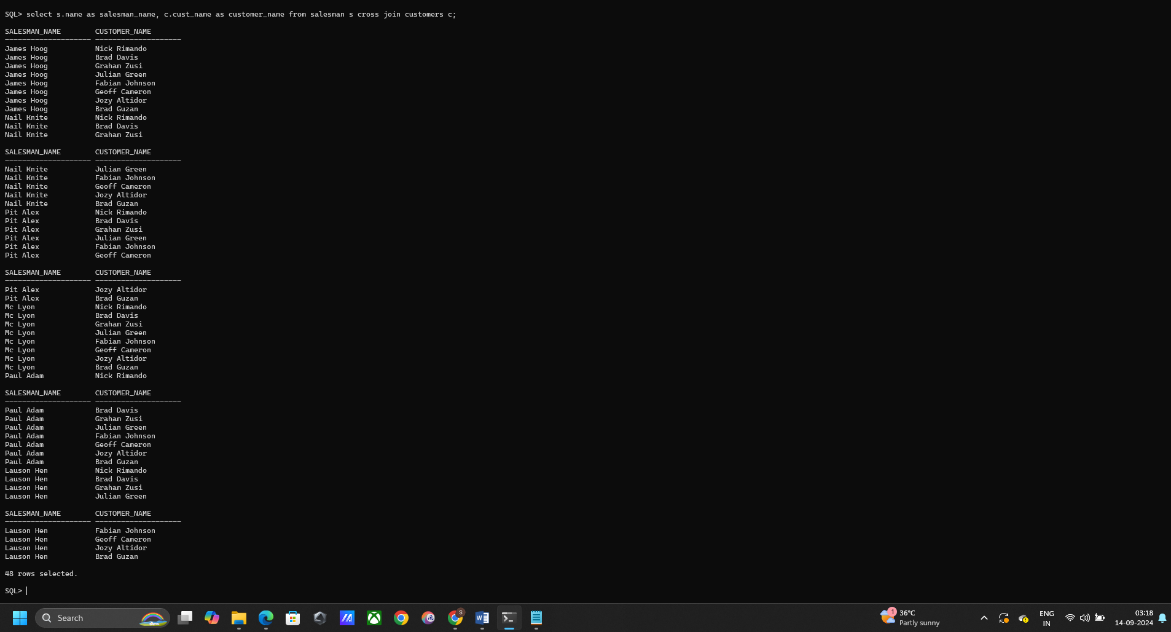
1. **Find salesmen in New York who have colleagues also in New York.**

SELECT S1.NAME AS SALESMAN\_1, S2.NAME AS COLLEAGUE, S1.CITY FROM SALESMAN S1 INNER JOIN SALESMAN S2 ON S1.CITY = S2.CITY AND S1.SALESMAN\_ID <> S2.SALESMAN\_ID WHERE S1.CITY = 'NEW YORK';

1. **List all salesmen pairs who are from different cities.**

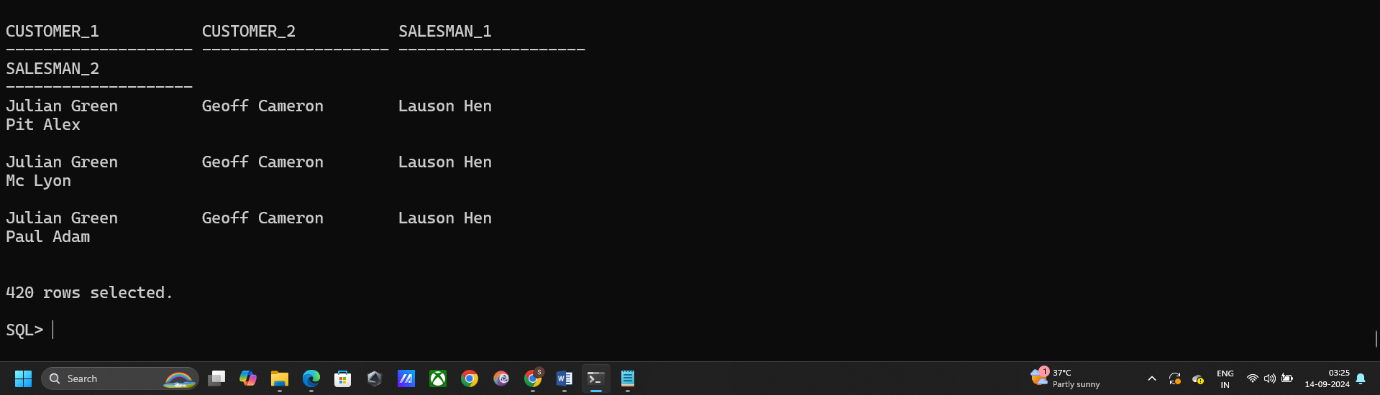
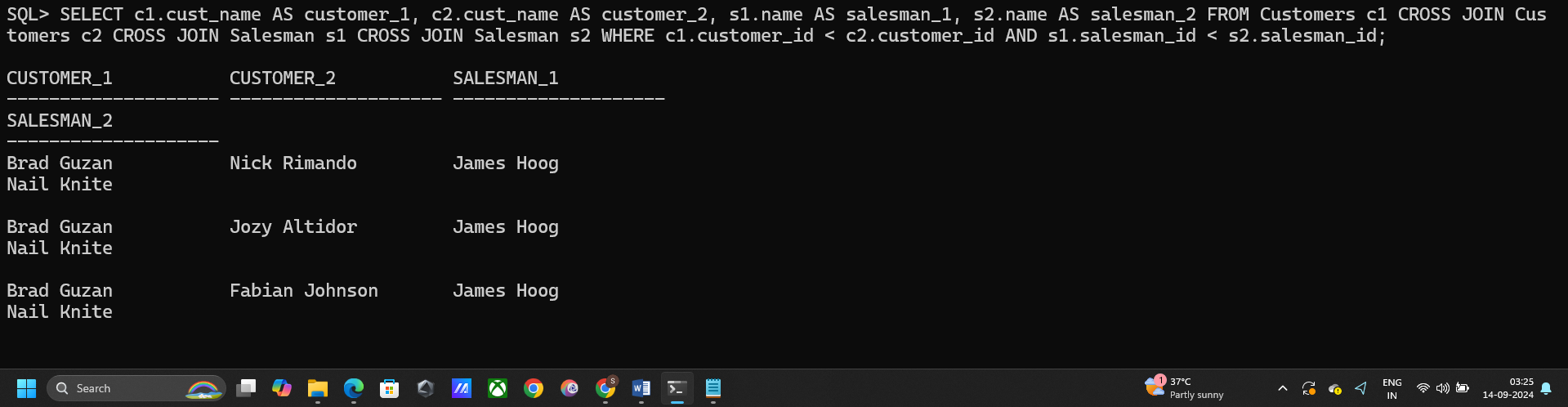
SELECT S1.NAME AS SALESMAN\_1, S1.CITY AS CITY\_1, S2.NAME AS SALESMAN\_2, S2.CITY AS CITY\_2 FROM SALESMAN S1 INNER JOIN SALESMAN S2 ON S1.CITY <> S2.CITY AND S1.SALESMAN\_ID < S2.SALESMAN\_ID;

1. **Retrieve the Cartesian product of all salesmen and customers.**

SELECT S.NAME AS SALESMAN\_NAME, C.CUST\_NAME AS CUSTOMER\_NAME FROM SALESMAN S CROSS JOIN CUSTOMERS C;

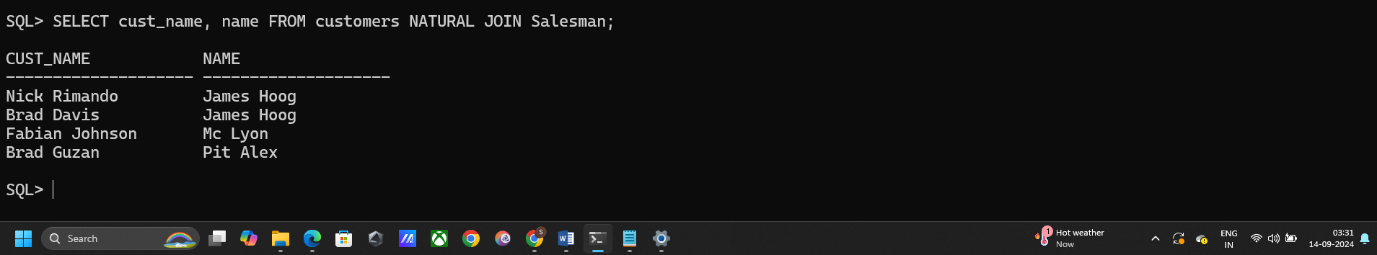
1. **List all pairs of customers with all pairs of salesmen using a cross join.**

SELECT C1.CUST\_NAME AS CUSTOMER\_1, C2.CUST\_NAME AS CUSTOMER\_2, S1.NAME AS SALESMAN\_1, S2.NAME AS SALESMAN\_2 FROM CUSTOMERS C1 CROSS JOIN CUSTOMERS C2 CROSS JOIN SALESMAN S1 CROSS JOIN SALESMAN S2 WHERE C1.CUSTOMER\_ID < C2.CUSTOMER\_ID AND S1.SALESMAN\_ID < S2.SALESMAN\_ID;



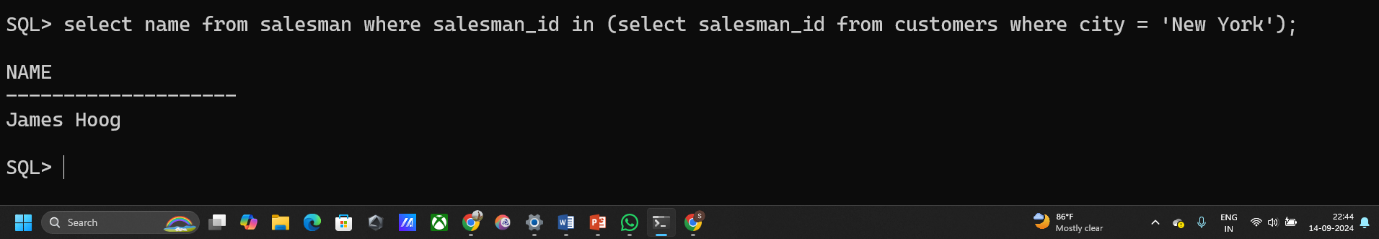
1. **Perform a natural join to retrieve all customers and their corresponding salesmen.**

SELECT CUST\_NAME, NAME FROM CUSTOMERS NATURAL JOIN SALESMAN;

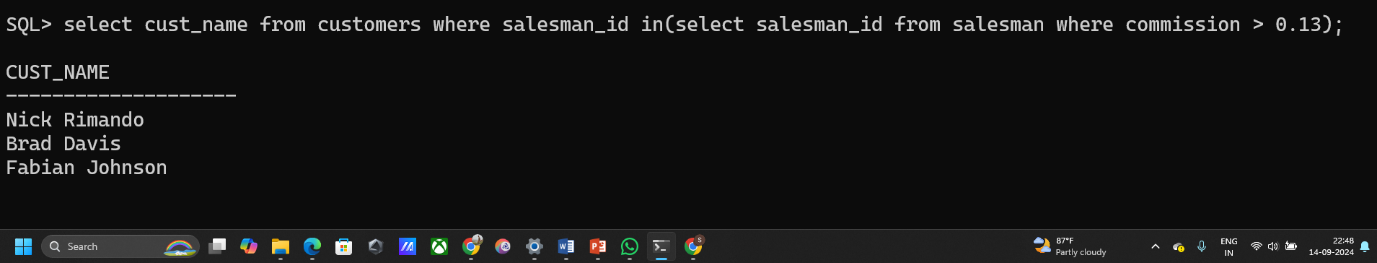


**Q2. Using the same tables in Q1, use subqueries idea to find the following.**

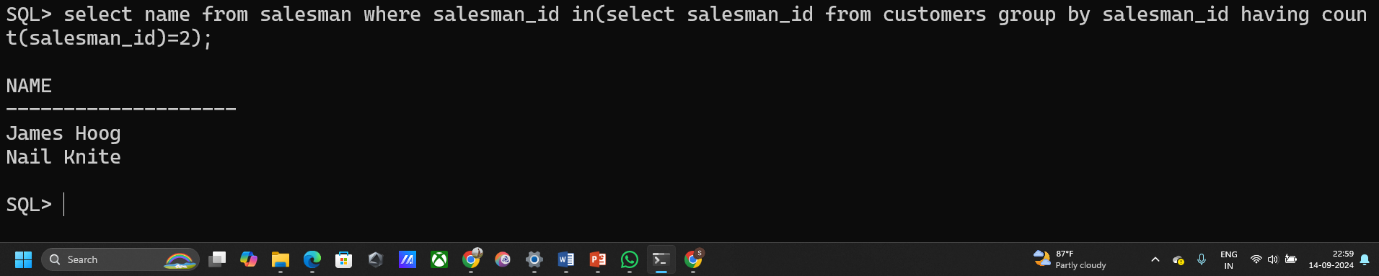
1. **Find the names of all salesmen who have customers in the city of "New York."**

SELECT NAME FROM SALESMAN WHERE SALESMAN\_ID IN (SELECT SALESMAN\_ID FROM CUSTOMERS WHERE CITY = 'NEW YORK');

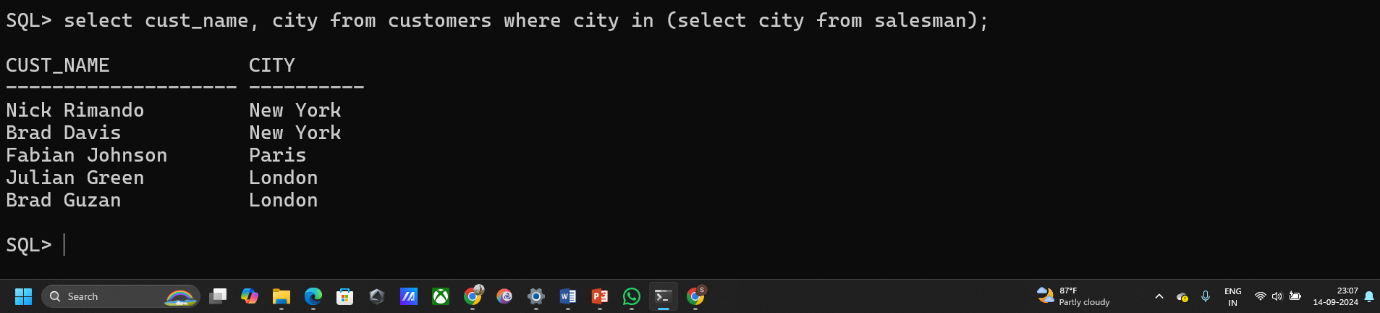
1. **Retrieve the cust\_name of customers whose salesman has a commission greater than 0.13.**

SELECT CUST\_NAME FROM CUSTOMERS WHERE SALESMAN\_ID IN(SELECT SALESMAN\_ID FROM SALESMAN WHERE COMMISSION > 0.13);

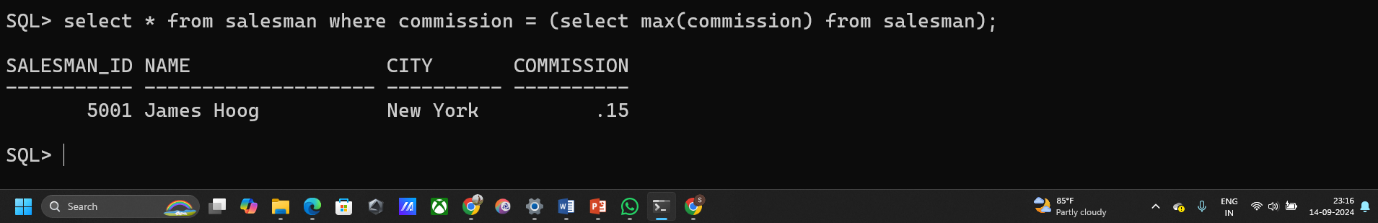
1. **List all salesmen who serve more than two customers.**

SELECT NAME FROM SALESMAN WHERE SALESMAN\_ID IN(SELECT SALESMAN\_ID FROM CUSTOMERS GROUP BY SALESMAN\_ID HAVING COUNT(SALESMAN\_ID)=2);

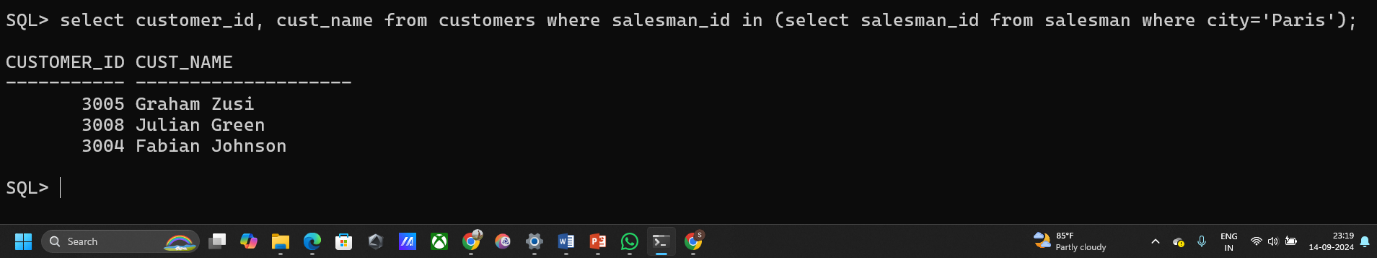
1. **Find the names of customers who have the same city as any salesman.**

SELECT CUST\_NAME, CITY FROM CUSTOMERS WHERE CITY IN (SELECT CITY FROM SALESMAN);

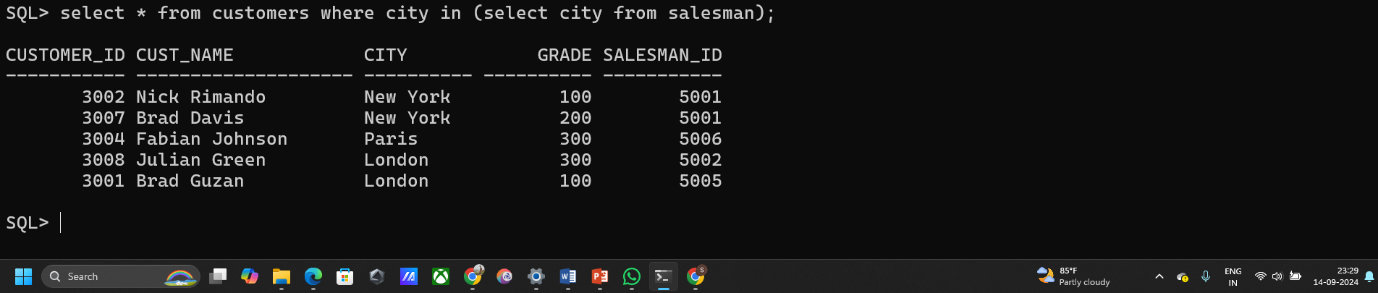
1. **Retrieve the details of the salesman with the highest commission.**

select \* from salesman where commission = (select max(commission) from salesman);

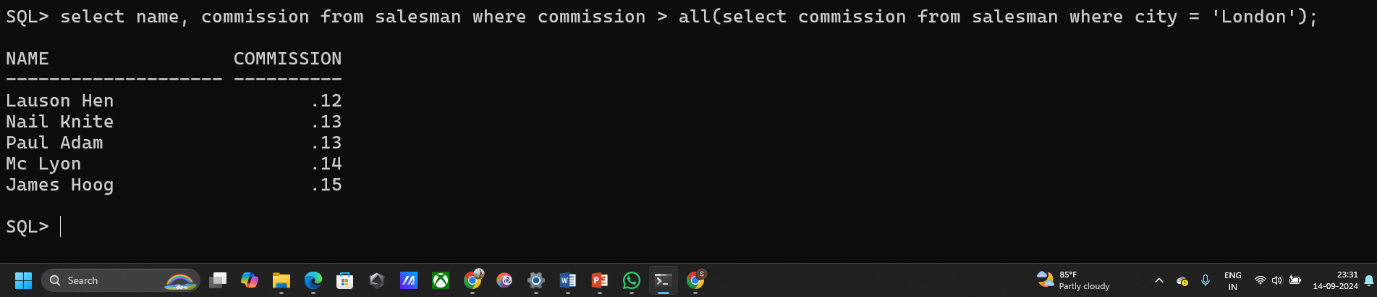
1. **List the customer\_id and cust\_name of customers whose salesmen work in "Paris.**

SELECT CUSTOMER\_ID, CUST\_NAME FROM CUSTOMERS WHERE SALESMAN\_ID IN (SELECT SALESMAN\_ID FROM SALESMAN WHERE CITY='PARIS');

1. **List all customers who are served by salesmen from cities other than their own.**

SELECT \* FROM CUSTOMERS WHERE CITY IN (SELECT CITY FROM SALESMAN);

1. **Retrieve the name of salesmen whose commission is greater than the commission of any salesman from "London."**

SELECT NAME, COMMISSION FROM SALESMAN WHERE COMMISSION > ALL(SELECT COMMISSION FROM SALESMAN WHERE CITY = 'LONDON');