***EXPERIMENT – 02***

* ***AIM: -*** Department-Course Subquery and Access Control
* ***THEORY: -***
* A **subquery** is a SELECT statement embedded within another query. It executes first and provides a result that the outer query uses—often within the WHERE clause—to filter data dynamically. For example, you can retrieve all employees working in the same department as 'John' without separately identifying his department.
* **Access control** in databases ensures security by defining what actions users can perform. Administrators use the GRANT command to provide permissions like SELECT or UPDATE, and the REVOKE command to withdraw them. This mechanism helps prevent unauthorized access and maintains data integrity.
* ***SQL QUERIES: -***

1. To create two tables- Departments and courses:

*create table department\_gurvinder(dept\_id int primary key , dept\_name VARCHAR(50));*

*create table courses\_gurvinder(course\_id int primary key , course\_name VARCHAR(100) , dept\_id int, foreign key(dept\_id) REFERENCES department\_gurvinder(dept\_id));*

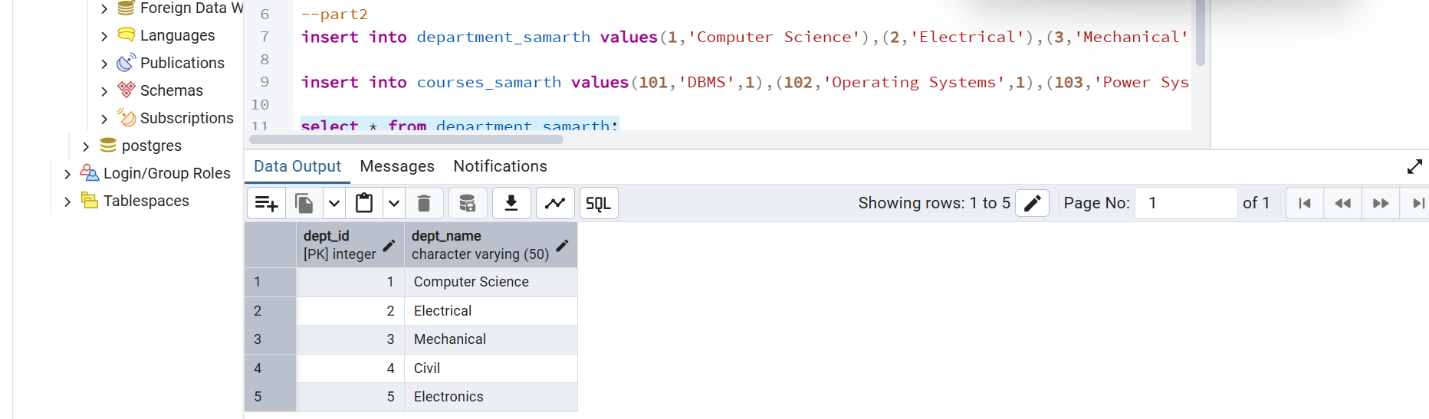
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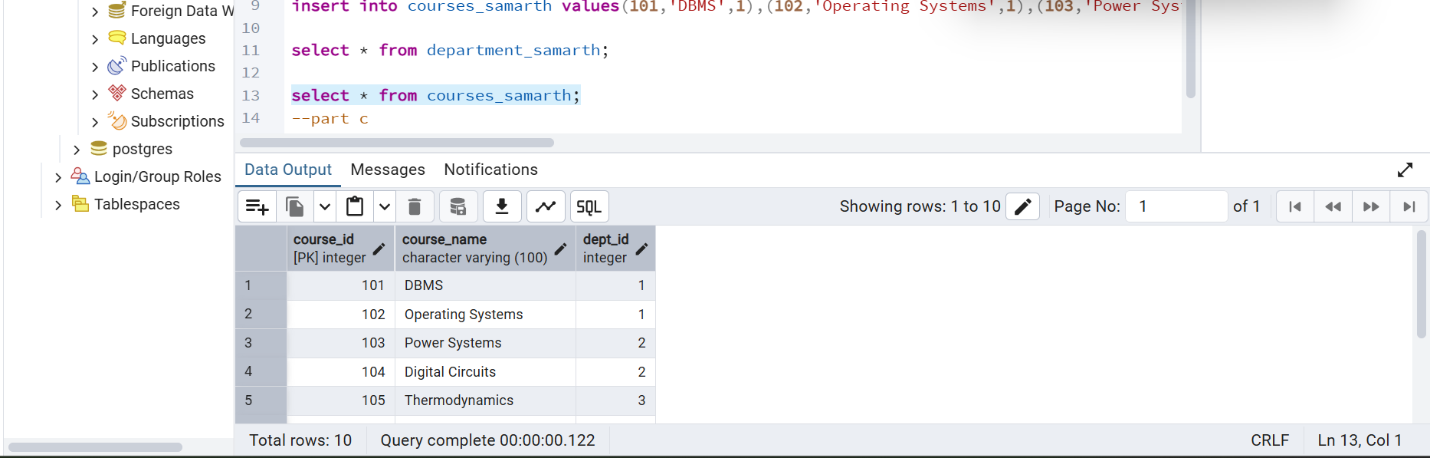
1. To insert values into Departments and Courses and display the table:

*insert into department\_gurvinder values(1,'Computer Science'),(2,'Electrical'),(3,'Mechanical'),(4,'Civil'),(5,'Electronics');*

*insert into courses\_samarth values(101,'DBMS',1),(102,'Operating Systems',1),(103,'Power Systems',2),(104,'Digital Circuits',2),(105,'Thermodynamics',3),(106,'Fluid Mechanics',4),(107,'Structural Engineering',4),(108,'Surveying',4),(109,'Embedded Systems',5),(110,'VLSI Design',5);*

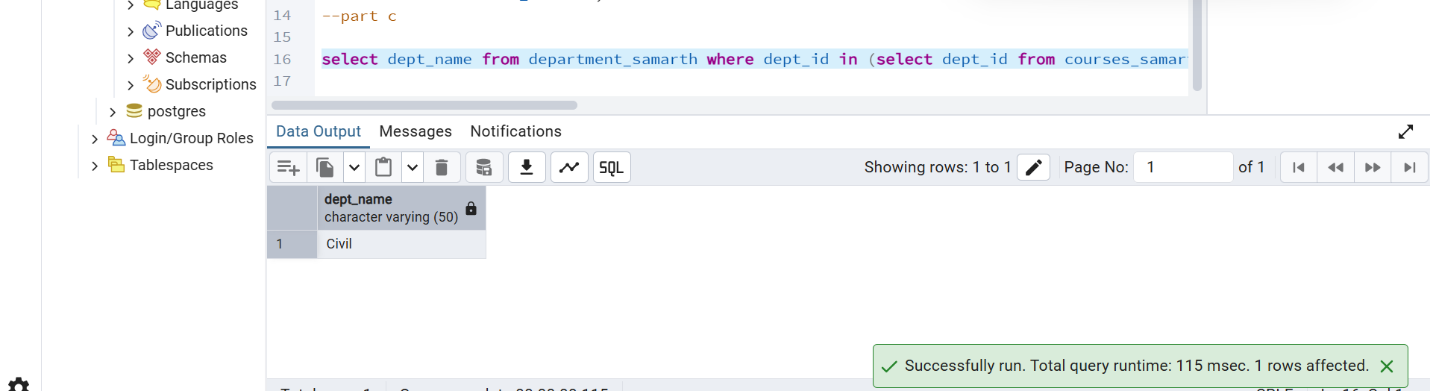
*select \* from department\_gurvinder;*

*select \* from courses\_gurvinder;*

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3.Retrieve Departments Offering More Than Two Courses Using Subquery:

select dept\_name from department\_*gurvinder* where dept\_id in (select dept\_id from courses\_*gurvinder* group by dept\_id having count(course\_name)>2);

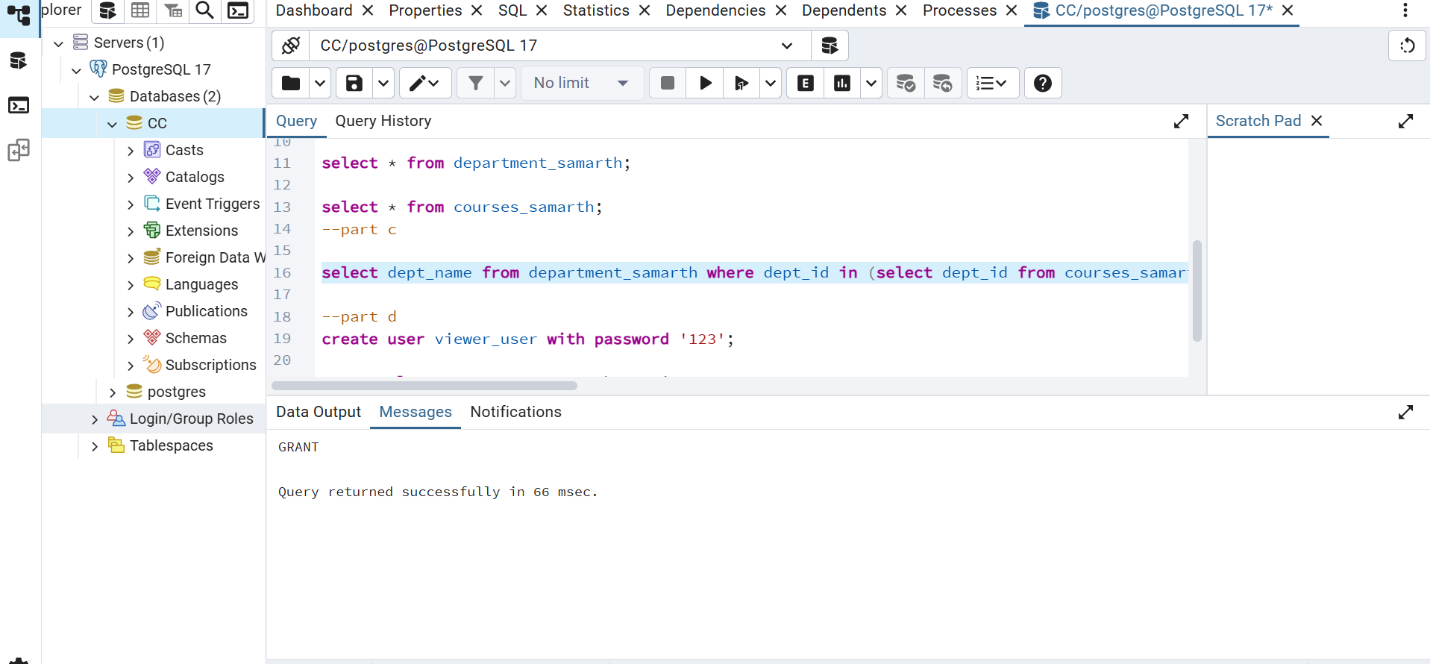


4. Grant SELECT Access on Courses Table Using DCL

create user viewer\_user with password '123';

grant select on courses\_*gurvinder*

to viewer\_user



* ***CONCLUSION:*** *-***Subqueries** enhance query flexibility by allowing dynamic data filtering based on results from other queries.

**Access control** is essential for database security, ensuring that only authorized users can view or modify data.