**Bahria University, Lahore Campus**

Department of Computer Sciences

Lab Journal 06

**(Fall 2023)**

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| Course: | **Database Management System Lab** | Date: |
| Course Code: | CSL 220 | Max Marks: 40 |
| Faculty’s Name: |  | Lab Engineer: |

Name: AFFAN AHMAD \_\_\_ Enroll No: \_03-134221-003\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# **Lab 6: SQL Case Study**

**Instructions for the Case Study:**

Perform the given queries

Suitable tuples have to be entered so that queries may be executed correctly

**Scenario**

A university database contains information about students, courses, and registrations. The database schema consists of the following tables:

**1. Students:**

- student\_id (Primary Key)

- student\_name

- student\_age

- student\_major

**2. Courses:**

- course\_id (Primary Key)

- course\_name

- course\_department

- course\_credits

**3. Registrations:**

- registration\_id (Primary Key)

- student\_id (Foreign Key referencing Students)

- course\_id (Foreign Key referencing Courses)

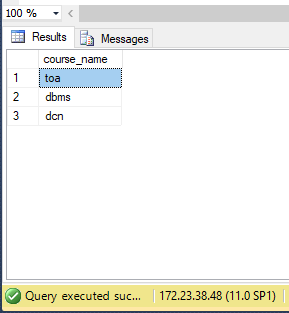
- registration\_date

**Assume suitable data exists in these tables.**

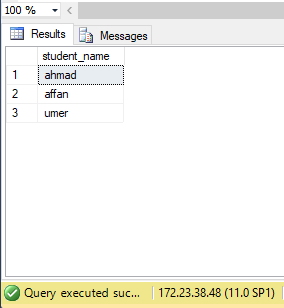
**Task 1:**

1. Write SQL queries to create the database named "UniversityDB" and create the three tables (Students, Courses, Registrations) with the appropriate attributes.
2. create database UniversityDB
3. create table Students128
4. (
5. student\_id int Primary Key,
6. student\_name varchar,
7. student\_age int ,
8. student\_major varchar,
9. );
10. create table courses128
11. (
12. course\_id int Primary Key,
13. course\_name varchar,
14. course\_department varchar ,
15. course\_credits varchar
16. );
17. create table Registrations128
18. (
19. registration\_id int Primary Key,
20. student\_id int Foreign Key references Students128,
21. course\_id int Foreign Key references Courses128,
22. registration\_date int
23. );
24. Display the names of all courses offered by the university.

select course\_name from courses129



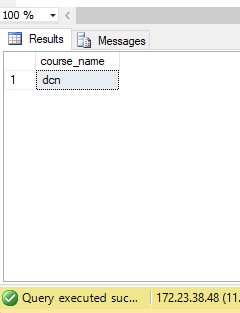
1. List all students who are majoring in "Computer Science."
2. select student\_name from Students127
3. where student\_major = 'computer science';



1. Show the course names that belong to the "Science" department.

select course\_name from courses127

where course\_department = 'science';



1. Retrieve the names of students who have registered for the course with ID 101.

SELECT S.student\_name

FROM Students S, Registrations R

WHERE S.student\_id = R.student\_id

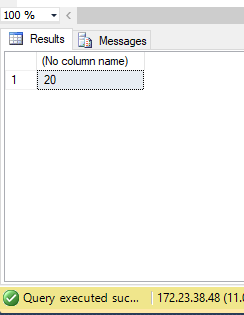
AND R.course\_id = 101;

1. Display the total number of registrations in the database.

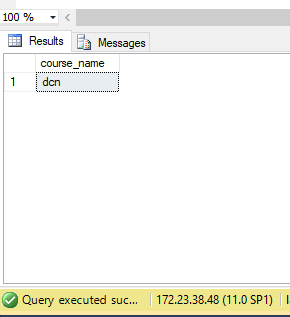
**Task 2:**

1. Write an SQL query to calculate the average age of all students.

select avg(student\_age) from Students127



1. List the course names that have more than 3 credits.
2. select course\_name from courses126
3. where course\_credits>3 ;



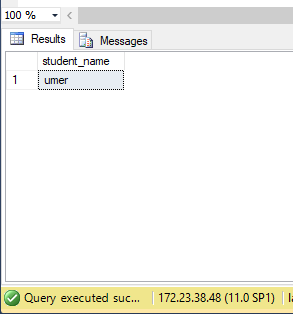
1. Show the names of students who are majoring in "Mathematics" and are older than 20 years.

SELECT S.student\_name

FROM Students S

WHERE S.student\_major = 'Mathematics'

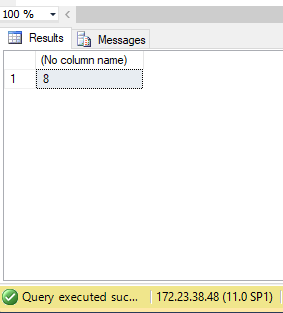
AND S.student\_age > 20;



1. Display the student names who have not registered for any course.
2. List the course names along with the count of students registered for each course.
3. Retrieve the student names who registered for courses in the year 2022.

**Task 3:**

1. Calculate the sum of credits for all courses.
2. SELECT SUM(course\_credits) FROM courses126



1. Show the student names along with their major and the department of the courses they have registered for.
2. Display the course names with the earliest registration date.
3. List the student names who registered for the same course multiple times.

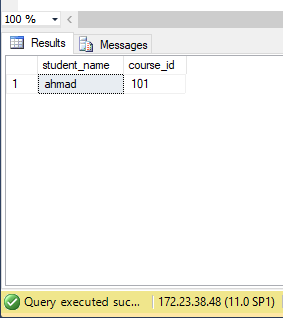
SELECT S.student\_name, R.course\_id

FROM Students S, Registrations R

WHERE S.student\_id = R.student\_id

GROUP BY S.student\_name, R.course\_id

HAVING COUNT(R.registration\_id) > 1;



1. Retrieve the course names that have the highest number of registrations.

SELECT C.course\_name

FROM Courses C

WHERE C.course\_id = (

SELECT course\_id

FROM Registrations

GROUP BY course\_id

ORDER BY COUNT(\*) DESC

LIMIT 1

);

1. Eliminate the "Registrations" table from the database.

DROP TABLE Registrations122

**Lab Grading Sheet**

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| --- | --- | --- | --- |
| **Task** | **Max Marks** | **Obtained Marks** | **Comments(*if any*)** |
| 1. | 10 |  |  |
| 2. | 10 |  |  |
| 3. | 10 |  |  |
| 4. | 10 |  |  |
| **Total** | **40** |  | **Signature** |

* **Note : Attempt all tasks and get them checked by your Lab. Instructor**