

Assignment 03

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Q1. Below are the displayed screenshots, starting from the creation of the table and followed by queries.

	salesman_id	name	address_city	coverage_city	commission	date_of_employment	date_of_release
▶	1	Shashank Asthana	Lucknow	Pune	0.10	2022-01-22	NULL
	2	Shreshth Vatsal Sharma	Aligarh	Gurugram	0.12	2019-05-12	2023-03-11
	3	Anurag Verma	Bengaluru	Chennai	0.11	2022-01-22	NULL
	4	Manan Srivastava	Chennai	Bengaluru	0.09	2019-05-12	2023-03-11
	5	G Mukund	Kolkata	Howrah	0.08	2022-01-22	NULL
	6	Naman Gupta	Hyderabad	Sikanderabad	0.10	NULL	NULL
	7	Mayank	Pune	Mumbai	0.12	NULL	NULL
	8	Sharonya Jain	Ahmedabad	Gandhinagar	0.11	NULL	NULL
	9	Pranav Pant	Jaipur	Ajmer	0.09	NULL	NULL

- a. Display commission rates of Mumbai and Chennai.

Result Grid		Filter Rows:
	commission	
▶	0.11	
	0.12	



- b. Display salesman_id and name of all salespeople who work in the same city as their address.

Result Grid		Filter Rows
	salesman_id	name
+	NULL	NULL


- c. Display salesman_id and name of all salespeople who have different addresses and coverage cities.

	salesman_id	name
▶	1	Shashank Asthana
	2	Shreshth Vatsal Sharma
	3	Anurag Verma
	4	Manan Srivastava
	5	G Mukund
	6	Naman Gupta
	7	Mayank
	8	Sharonya Jain
	9	Pranav Pant
	10	Samaksh Verma

- d. Display the highest commission rate of all salespeople working in Mumbai.

Result Grid			Filter
	highest_commission		
	0.12		

- e. Display the coverage_city with the highest commission rate.

Result Grid			Filter Rows:
	coverage_city		
▶	Gurugram		
	Mumbai		


- f. Display the average commission rate for all cities.

	AVG(commission)
▶	0.100000

- g. Find the coverage_city where the commission rate is the same for all salespeople.

	coverage_city
▶	Ajmer
	Bengaluru
	Chennai
	Gandhinagar
	Gurugram
	Howrah
	Kanpur
	Mumbai
	Pune
	Sikanderabad

- h. Find the commission rate that is common across all coverage cities.

Result Grid		 Filter Rows:
	commission	

- i. Display all details of the salesperson who has worked for all cities.

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Cont

	salesman_id	name	address_city	coverage_city	commission	date_of_employment	date_of_release
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL

- j. Add two new columns, 'date_of_employment' and 'date_of_release,' to the table to record the date of employment for all employees and the date of release if the salesperson has left the company.


date_of_employment	date_of_release
2022-01-22	NULL
2019-05-12	2023-03-11
2022-01-22	NULL
2019-05-12	2023-03-11
2022-01-22	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL

Q2. Screenshots of the tables created are shown below, followed by queries.

Classroom table,

Result Grid		Filter Rows:	
	building	room_number	capacity
▶	Main Building	101	50
	Main Building	102	60
	Science Block	201	40
✱	NULL	NULL	NULL

Department table

Result Grid		 Filter Rows:	
	dept_name	building	budget
▶	CSE	Main Building	1000000.00
	Mathematics	Science Block	800000.00
	Philosophy	Science Block	750000.00
•	NULL	NULL	NULL

Instructor table

Result Grid				
Filter Rows: <input type="text"/>				
	ID	instructor_name	dept_name	salary
▶	101	Dr. Rajesh Kumar	CSE	85000.00
	102	Prof. Priya Sharma	Mathematics	75000.00
	103	Dr. Suresh Gupta	Philosophy	78000.00
●	NULL	NULL	NULL	NULL

Course table,


Result Grid		Filter Rows:	Edit:	
	course_id	title	dept_name	credit
▶	1	Introduction to Programming	CSE	4
	2	Calculus I	Mathematics	3
	3	Literature	Philosophy	4
*	NULL	NULL	NULL	NULL

Section table

	course_id	sec_id	semester	year	building	room_number	time_slot_id
▶	1	1	Fall	2023	Main Building	101	1
	2	1	Spring	2023	Main Building	102	2
	3	1	Fall	2023	Science Block	201	3
*	NUL	NUL	NUL	NUL	NUL	NUL	NUL

Teaches table

Result Grid





Filter Rows:

Ed

	ID	course_id	sec_id	semester	year
▶	101	1	1	Fall	2023
	102	2	1	Spring	2023
	103	3	1	Fall	2023
✱	NULL	NULL	NULL	NULL	NULL

Student table

Result Grid			 Filter Rows:	<input type="text"/>	Edit
	ID	name	dept_name	total_credit	
▶	202	Priya Sharma	Mathematics	45	
	203	Rahul Verma	Philosophy	55	
	12345	Amit Patel	CSE	50	
•	NULL	NULL	NULL	NULL	

Takes table

Result Grid

Filter Rows:

Edit:

	ID	course_id	sec_id	semester	year	grade
	202	2	1	Spring	2023	B+
	203	3	1	Fall	2023	A-
	12345	1	1	Fall	2023	A+
	NULL	NULL	NULL	NULL	NULL	NULL

Advisor table

	s_ID	i_ID
▶	12345	101
	202	102
	203	103
*	NULL	NULL

Time slot table,

	time_slot_id	day	start_time	end_time
▶	1	Monday	09:00:00	10:30:00
	2	Tuesday	10:00:00	11:30:00
	3	Wednesday	13:30:00	15:00:00
*	NULL	NULL	NULL	NULL

Grade points table

	grade	points
▶	A	9.00
	A-	8.50
	A+	10.00
	B	7.00
	B-	6.50
	B+	8.00
	C	6.00
	F	0.00
*	NULL	NULL

Prereq table

	course_id	prereq_id
▶	2	1
	3	2
*	NULL	NULL

Now writing the queries as displayed below

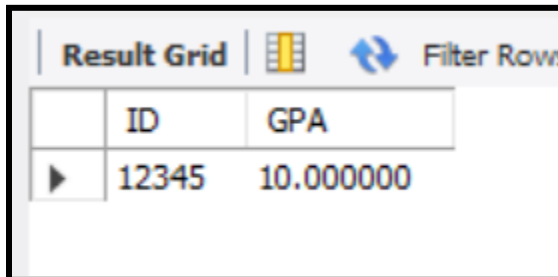
- Find the total grade points earned by the student with ID '12345', across all courses taken by the student.

	ID	name	total_grade_points
▶	12345	Amit Patel	40.00

- Find the grade point average (GPA) for the above student, that is, the total grade points divided by the total credits for the associated courses.

	ID	name	GPA
▶	12345	Amit Patel	10.000000

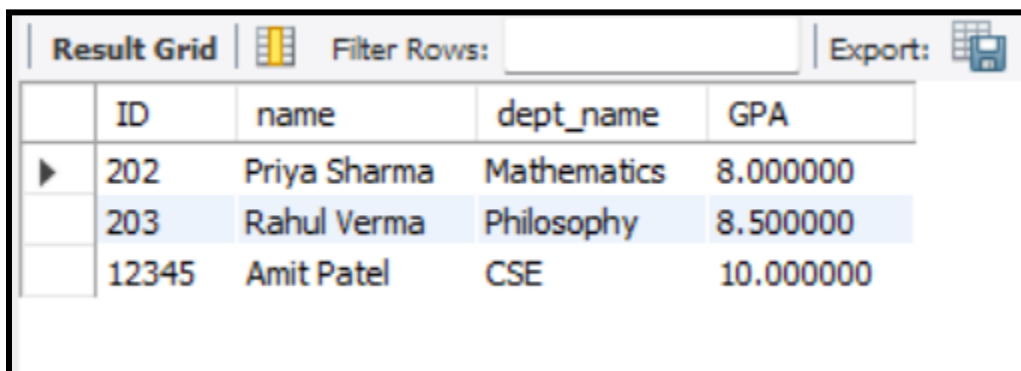
- c. Find the ID and the grade-point average of each student for the CSE department.



The screenshot shows a 'Result Grid' window with a toolbar containing a 'Filter Rows' button. The table has two columns: 'ID' and 'GPA'. A single row is displayed with the ID '12345' and GPA '10.000000'.

	ID	GPA
▶	12345	10.000000

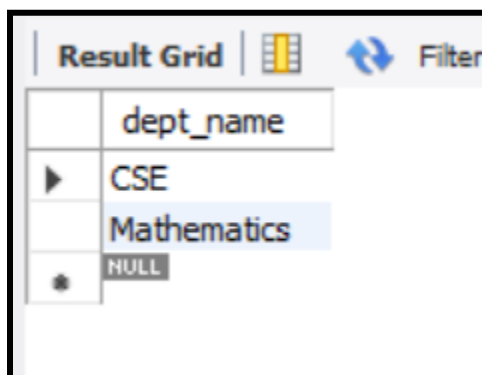
- d. Find the ID, Name, and GPA for the topper of each department in the University.



The screenshot shows a 'Result Grid' window with a toolbar containing 'Filter Rows' and 'Export' buttons. The table has five columns: 'ID', 'name', 'dept_name', and 'GPA'. Three rows are displayed, representing the top student for each department.

	ID	name	dept_name	GPA
▶	202	Priya Sharma	Mathematics	8.000000
	203	Rahul Verma	Philosophy	8.500000
	12345	Amit Patel	CSE	10.000000

- e. Find the names of those departments whose budget is higher than that of Philosophy. List them in alphabetic order.



The screenshot shows a 'Result Grid' window with a toolbar containing a 'Filter' button. The table has one column: 'dept_name'. Three rows are displayed, representing departments with a higher budget than Philosophy.

	dept_name
▶	CSE
	Mathematics
●	NULL

- f. Find the IDs of those students who have retaken at least three distinct courses at least once.

Result Grid	
ID	

- g. Find the names and IDs of those instructors who teach every course taught in his or her department (i.e., every course that appears in the course relation with the instructor's department name). Order results by name.

Result Grid			Filter Rows:
	ID	instructor_name	
▶	101	Dr. Rajesh Kumar	
	103	Dr. Suresh Gupta	
	102	Prof. Priya Sharma	
✱	NULL	NULL	

- h. Find the names and IDs of those instructors along with the details of the courses they taught in Fall 2018, such that the total number of students getting A+ is more than 3 in those courses.

Result Grid						Filter Rows:	Export:
ID	instructor_name	course_id	title	credit			

- i. Find the ID and name of each instructor who has never given an A grade in any course she or he has taught.

Result Grid			Filter Rows:
	ID	instructor_name	
▶	101	Dr. Rajesh Kumar	
	102	Prof. Priya Sharma	
	103	Dr. Suresh Gupta	
✱	NULL	NULL	






- j. Define the view student_grades (ID, GPA), giving the grade-point average of each student. Make sure your view definition correctly handles the case of null values for the grade attribute of the takes relation.

```
CREATE VIEW student_grades AS
SELECT s.ID, s.name, COALESCE(SUM(gp.points * c.credit) / NULLIF(SUM(c.credit), 0), 0) AS GPA
FROM student s
LEFT JOIN takes t ON s.ID = t.ID
LEFT JOIN course c ON t.course_id = c.course_id
LEFT JOIN grade_points gp ON t.grade = gp.grade
GROUP BY s.ID, s.name;
```

Q3. We expect the constraint “an instructor cannot teach sections in two different

classrooms in a semester in the same time slot” to hold.

- Write an SQL query that returns all (instructor, section) combinations that violate this constraint.
- Write an SQL assertion to enforce this constraint.

Result Grid   Filter Rows: Export:  Wrap Cell Content:  

instructor_1	course_id	sec_id	semester	year	building_1	room_number_1	time_slot_id_1	instructor_2	building_2	room_number_2	time_slot_id_2
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None of the instructors matched the conditions given in the question

*** The queries that have not returned any value do not have any errors in the code , while the values that were entered in the table while populating the table were not likely to be queried according to the condition for that particular query.**
