Chandigarh College of Engineering & Technology (Degree Wing)

Department of Computer Science and Engineering

Database Systems (Practical)

CS 352

Practical - 10

DOP: - / /2024   **DOS:-** / /2024

Submitted By: **Submitted To:**

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Aim :- implementation of at least five different SQL nested sub queries in where clause on each Banking- University and Project assigned.

1. Five queries of nested where clause on Banking Database

Query 1 :- Find Customers Who Have an Account in a Specific Branch

SQL :SELECT Customer_Name, Customer_Street, Customer_City FROM customer WHERE Customer_Name IN (SELECT customer_name FROM depositor WHERE account_number IN (SELECT account_number FROM account WHERE branch_name = 'Downtown'));

Customer_Name	Customer_Street	Customer_City
Johnson	Alma	Palo Alto

Query 2 :- Find Customers Who Have a Loan Amount Greater Than the Average Loan Amount

SQL :SELECT Customer_Name, Customer_Street, Customer_City FROM customer WHERE Customer_Name IN (SELECT borrower.customer_name FROM borrower WHERE borrower.loan_number IN (SELECT loan_number FROM loan WHERE amount > (SELECT AVG(amount) FROM loan)));

Customer_Name	Customer_Street	Customer_City
Hayes	Main	Harrison
Smith	North	Rye
Adams	Spring	Pittsfield

Query 3 :- Find Customers Who Have an Account in More Than One Branch

SQL :SELECT Customer_Name, Customer_Street, Customer_City FROM customer WHERE Customer_Name IN (SELECT depositor.customer_name FROM depositor JOIN account ON depositor.account_number = account.account_number WHERE account.branch_name IN (SELECT branch_name FROM branch WHERE assets > 1000000) GROUP BY depositor.customer_name HAVING COUNT(DISTINCT account.branch_name) > 1);

Customer_Name	Customer_Street	Customer_City
Johnson	Alma	Palo Alto

Query 4 :- Find Customers Who Have a Loan and an Account in the Same Branch

SQL :SELECT Customer_Name, Customer_Street, Customer_City FROM customer WHERE Customer_Name IN (SELECT borrower.customer_name FROM borrower WHERE borrower.loan_number IN (SELECT loan_number FROM loan WHERE branch_name IN (SELECT branch_name FROM depositor JOIN account ON depositor.account_number = account.account_number WHERE depositor.customer_name = borrower.customer_name)));

Customer_Name	Customer_Street	Customer_City
Hayes	Main	Harrison

Query 5 :- Find Customers Who Have No Loans

SQL :SELECT Customer_Name, Customer_Street, Customer_City FROM customer WHERE Customer_Name NOT IN (SELECT borrower.customer_name FROM borrower WHERE borrower.loan_number IN (SELECT loan_number FROM loan));

Customer_Name	Customer_Street	Customer_City
Brooks	Senator	Brooklyn
Glenn	Sandhill	Woodside
Green	Walnut	Stamford
Johnson	Alma	Palo Alto
Jones	Main	Harrison
Lindsay	Park	Pittsfield
Turner	Putnam	Stamford

2. **Five queries of nested where clause on University Database.**

Query 1 :- Find Students Who Are Enrolled in a Course Taught by 'Srinivasan'.

SQL :SELECT name FROM student WHERE ID IN (SELECT DISTINCT ID FROM takes WHERE course_id IN (SELECT course_id FROM teaches WHERE ID = '10101'));

			name
☐ 🖊 Edit	⧉ Copy	✕ Delete	Zhang
☐ 🖊 Edit	⧉ Copy	✕ Delete	Shankar
☐ 🖊 Edit	⧉ Copy	✕ Delete	Levy
☐ 🖊 Edit	⧉ Copy	✕ Delete	Williams
☐ 🖊 Edit	⧉ Copy	✕ Delete	Brown
☐ 🖊 Edit	⧉ Copy	✕ Delete	Bourikas

Query 2 :- Find Courses That Have No Prerequisites

SQL :SELECT course_id, title FROM course WHERE course_id NOT IN (SELECT course_id FROM prereq);

				course_id	title
☐	🖊 Edit	📋 Copy	✖ Delete	BIO-101	Intro. to Biology
☐	🖊 Edit	📋 Copy	✖ Delete	CS-101	Intro. to Computer Science
☐	🖊 Edit	📋 Copy	✖ Delete	FIN-201	Investment Banking
☐	🖊 Edit	📋 Copy	✖ Delete	HIS-351	World History
☐	🖊 Edit	📋 Copy	✖ Delete	MU-199	Music Video Production
☐	🖊 Edit	📋 Copy	✖ Delete	PHY-101	Physical Principles

Query 3 :- Find Students Who Have Completed All Prerequisites for 'CS-190'

SQL :SELECT name FROM student WHERE ID IN (SELECT ID FROM takes WHERE course_id IN (SELECT prereq_id FROM prereq WHERE course_id = 'CS-190') GROUP BY ID HAVING COUNT(DISTINCT course_id) = (SELECT COUNT(*) FROM prereq WHERE course_id = 'CS-190'));

				name
☐	🖊 Edit	📋 Copy	✖ Delete	Zhang
☐	🖊 Edit	📋 Copy	✖ Delete	Shankar
☐	🖊 Edit	📋 Copy	✖ Delete	Levy
☐	🖊 Edit	📋 Copy	✖ Delete	Williams
☐	🖊 Edit	📋 Copy	✖ Delete	Brown
☐	🖊 Edit	📋 Copy	✖ Delete	Bourikas

Query 4 :- Find Instructors Who Teach Courses in the 'Physics' Department

SQL :SELECT name FROM instructor WHERE ID IN (SELECT DISTINCT ID FROM teaches WHERE course_id IN (SELECT course_id FROM course WHERE dept_name = 'Physics'));

				name
☐	🖊 Edit	📋 Copy	✖ Delete	Einstein

Query 5 :- Find Departments That Have a Budget Greater Than the Average Budget

SQL :SELECT dept_name FROM department WHERE budget > (SELECT AVG(budget) FROM department);

←T→				dept_name
☐	🖉 Edit	⧉ Copy	✕ Delete	Biology
☐	🖉 Edit	⧉ Copy	✕ Delete	Comp. Sci.
☐	🖉 Edit	⧉ Copy	✕ Delete	Finance

3. Five queries of nested where clause on Computational Database of Faculty.

Query 1 :- Get details of teaching staff older than the average age of all teaching staff.

SQL :SELECT * FROM `details_teaching_contacts` WHERE `AGE` > (SELECT AVG(`AGE`) FROM `details_teaching_contacts`);

NAME	AGE	GENDER	PHONE_NUMBER	E_MAIL
Anil Kumar Vaghmare	44	Male	6284561607	anilvaghmare@ccet.ac.in
Aradhana Mehta	57	Female	8054977561	amehta@ccet.ac.in
Davinder Singh Saini	46	Male	8146730369	dssaini@ccet.ac.in
Dheerendra Singh	45	Male	9876439071	dsingh@ccet.ac.in
Irfan Ahmad Khan	43	Male	7835847022	iakhan@ccet.ac.in
Jatinder Madan	52	Male	9041291970	jatindermadan@ccet.ac.in
Krishan Gopal Sharma	44	Male	9414403565	kgsharma@ccet.ac.in
Parul Aggarwal	43	Female	8437911722	parul@ccet.ac.in
Radhey Sham	46	Male	9888040982	radheysham@ccet.ac.in
Rajesh Kumar	51	Male	9478548248	rajeshaastha@ccet.ac.in
Ram Bahadur Patel	56	Male	9416932840	rbpatel@ccet.ac.in
Sarabjeet Singh	44	Male	9463739413	ssingh@ccet.ac.in
Sarita Sharma	45	Female	9988292611	saritas@ccet.ac.in
Varun Gupta	45	Male	9646047091	varungupta@ccet.ac.in

Query 2 :- Get the names of teaching staff who have a phone number ending with 6.

SQL :SELECT NAME, PHONE_NUMBER FROM details_teaching_contacts WHERE PHONE_NUMBER LIKE '%6' AND E_MAIL IN (SELECT E_MAIL FROM details_non_teaching_staff WHERE EMAIL_ID LIKE '%@ccet.ac%');

NAME	PHONE_NUMBER
Arfat Ahmed	8860736206
Gulshan Goyal	9417506206
Hardeep Saini	9914611106
Mohammad Sakib Perwez Khan	7839452836
Vettivel S C	9865822376
Vinod Chauhan	9466736896

Query 3 :- Find all printers used by individuals whose last name is Gupta

SQL :SELECT * FROM details_official_printer WHERE name IN (SELECT name FROM details_official_printer WHERE name LIKE '%Gupta%');

id	name	department	designation	printer_model	date_of_last_refill	date_of_issue
7	Dr. Varun Gupta	Applied Sciences	Professor	canon_mf3010	2021-09-17	NULL
8	Dr. Varun Gupta	Applied Sciences	Professor	canon_mf3010	2022-05-11	NULL
9	Dr. Varun Gupta	Applied Sciences	Professor	canon_mf3010	2021-04-12	NULL
10	Dr. Varun Gupta	Applied Sciences	Professor	canon_mf3010	2022-07-12	NULL
15	Dr. Ankit Gupta	CSE	AP	Brother_7500D	2022-05-11	2021-07-28
41	Dr. Bhasker Gupta	ECE	Professor	HP_1108	2021-09-27	NULL
42	Dr. Bhasker Gupta	ECE	Professor	HP_1108	2022-04-06	NULL
43	Dr. Bhasker Gupta	ECE	Professor	HP_1108	2022-12-01	NULL
44	Dr. Bhasker Gupta	ECE	Professor	Brother_7500D	NULL	2022-06-21

Query 4 :- Find all Assistant Professors in the 'Computer Science Engg.' department with more than 200 months of experience:

SQL : SELECT NAME, DESIGNATION, DEPARTMENT, EXPERIENCE_MONTHS FROM details_teaching_official WHERE DESIGNATION = 'Assistant Professor' AND DEPARTMENT = 'Computer Science Engg.' AND EXPERIENCE_MONTHS > (SELECT 200);

NAME	DESIGNATION	DEPARTMENT	EXPERIENCE_MONTHS
Amit Chhabra	Assistant Professor	Computer Science Engg.	238
Gulshan Goyal	Assistant Professor	Computer Science Engg.	244
Sarabjeet Singh	Assistant Professor	Computer Science Engg.	264
Sunita	Assistant Professor	Computer Science Engg.	216

Query 5 :- Find all employees who joined after '2016-01-01' and have a 'Regular' association type.

SQL :SELECT NAME, DESIGNATION, DEPARTMENT, JOINING_DATE, ASSOCIATION_TYPE
     FROM details_teaching_official WHERE JOINING_DATE > (SELECT '2016-01-01') AND
     ASSOCIATION_TYPE = (SELECT 'Regular');

NAME	DESIGNATION	DEPARTMENT	JOINING_DATE	ASSOCIATION_TYPE
Amit Chhabra	Assistant Professor	Computer Science Engg.	2016-11-07	Regular
Anil Kumar	Assistant Professor	Civil Engg.	2016-06-10	Regular
Anil Kumar Vaghmare	Assistant Professor	Electronics and Communications Engg.	2018-05-09	Regular
Animesh Singh	Assistant Professor	Computer Science Engg.	2017-04-26	Regular
Ankit Gupta	Assistant Professor	Computer Science Engg.	2016-03-04	Regular
Aradhana Mehta	Associate Professor	Civil Engg.	2017-10-20	Regular
Arfat Ahmed	Assistant Professor	Civil Engg.	2017-11-01	Regular
Dinesh Sharma	Assistant Professor	Electronics and Communications Engg.	2018-04-20	Regular
Dr Parvinder Kaur	Assistant Professor	Electronics and Communications Engg.	2018-04-23	Regular
Gulshan Goyal	Assistant Professor	Computer Science Engg.	2016-03-04	Regular
Hardeep Saini	Assistant Professor	Electronics and Communications Engg.	2018-04-20	Regular
Irfan Ahmad Khan	Assistant Professor	Electronics and Communications Engg.	2018-05-07	Regular
Karuna Sharma	Assistant Professor	Civil Engg.	2016-12-02	Regular
Mohammad Sakib Perwez Khan	Assistant Professor	Civil Engg.	2016-01-16	Regular
Mukesh Kumar	Assistant Professor	Mechanical Engg.	2016-02-08	Regular
Poonam	Assistant Professor	Civil Engg.	2016-06-10	Regular
Sarabjeet Singh	Assistant Professor	Computer Science Engg.	2016-03-04	Regular
Shilpa Jindal	Assistant Professor	Electronics and Communications Engg.	2018-05-02	Regular
Sudhakar Kumar	Assistant Professor	Computer Science Engg.	2016-03-18	Regular
Sunita	Assistant Professor	Computer Science Engg.	2016-03-04	Regular
Vettivel S C	Assistant Professor	Mechanical Engg.	2016-03-30	Regular