

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		Assignment Type: Lab	
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Instructor(s) Name		Dr. V. Venkataramana (Co-ordinator) Dr. T. Sampath Kumar Dr. Pramoda Patro Dr. Brij Kishor Tiwari Dr.J.Ravichander Dr. Mohammand Ali Shaik Dr. Anirodh Kumar Mr. S.Naresh Kumar Dr. RAJESH VELPULA Mr. Kundhan Kumar Ms. Ch.Rajitha Mr. M Prakash Mr. B.Raju Intern 1 (Dharma teja) Intern 2 (Sai Prasad) Intern 3 (Sowmya) NS_2 (Mounika)	
Course Code	24CS002PC215	Course Title	AI Assisted Coding
Year/Sem	II/I	Regulation	R24
Date and Day of Assignment	Week9 - Tuesday	Time(s)	
Duration	2 Hours	Applicable to Batches	
AssignmentNumber: 16.2(Present assignment number)/24(Total number of assignments)			
Q.No.	Question		Expected Time to complete
1	1.1.Display all records from the employee's table. 2. 2. Display only employee names and their departments. 3. 3. Show unique department names. 4. 4. Find employees with salary greater than 50000. 5. 5. Find employees from the IT department. 6. 6. Display employees hired after 2020. 7. 7. Show employees in ascending order of salary.		Week9 - Monday

- | | |
|---|--|
| <p>8. 8. Show top 3 highest-paid employees.</p> <p>9. 9. Count total employees in the company.</p> <p>10. 10. Find the average salary of employees.</p> <p>11. 11. Find the highest and lowest salary.</p> <p>12. 12. Find total salary expenditure per department.</p> <p>13. 13. Display departments having more than one employee.</p> <p>14. 14. Show average salary by department.;</p> <p>15. 15. Count employees hired each year.</p> <p>16. 16. List employees with their department locations.</p> <p>17. 17. Find employees working in Bangalore.</p> <p>18. 18. Display all employees even if they don't belong to a department.</p> <p>19. 19. Find departments with no employees.</p> <p>20. 20. Count employees in each department.</p> <p>21. 21. Find employees earning above average salary.</p> <p>22. 22. Find the department with the highest average salary.</p> <p>23. 23. Find employees hired most recently.</p> <p>24. 24. Find employees earning the second highest salary.</p> <p>25. 25. Find all employees in the same department as 'Amit Sharma'.</p> <p>26. 26. Increase salary by 10% for IT employees.</p> <p>27. 27. Change department of employee 'Ravi' to Marketing.</p> <p>28. 28. Delete employees with salary below 40000.</p> <p>29. 29. Add a new column 'email' to employees.</p> <p>30. 30. Update email IDs for all employees.</p> <p>31. 31. Find top 2 departments by average salary.</p> <p>32. 32. Find how many employees work in each city.</p> <p>33. 33. Show employee count and total salary together.</p> <p>34. 34. Display employees with names starting with 'A'.</p> <p>35. 35. Display employees whose last name ends with 'a'.</p> <p>36. 36. Find employees hired in 2020.</p> <p>37. 37. Show number of days since each employee was hired.</p> <p>38. 38. Display employee names in uppercase.</p> <p>39. 39. Concatenate first and last names.</p> <p>40. 40. Find employees whose salary is between 45000 and 60000.</p> <p>41. 41. Create a view for high salary employees (>55000).</p> <p>42. 42. Display all records from the view.</p> <p>43. 43. Add NOT NULL constraint to department name.</p> <p>44. 44. Drop the view.</p> <p>45. 45. Rename the employees table to staff.</p> <p>46. 46. Create a backup copy of the employees table.</p> <p>47. 47. Delete all data but keep the structure.</p> <p>48. 48. Drop the employees backup table.</p> | |
|---|--|

	49. 49. Create an index on employee last name. 50. 50. Drop the index.	
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Employee Table

emp_id	first_name	last_name	department	salary	hire_date
1	Amit	Sharma	HR	45000	2020-05-20
2	Priya	Patel	Finance	60000	2021-02-10
3	Ravi	Kumar	IT	55000	2019-08-14
4	Neha	Reddy	Marketing	48000	2022-01-05
5	Arjun	Singh	IT	62000	2020-09-12

Department Table

dept_id	dept_name	location
1	HR	Hyderabad
2	Finance	Mumbai
3	IT	Bangalore
4	Marketing	Chennai
5	Operations	Delhi

1. Display all records from the employee's table

```
1.sql
-- Run on active connection | ==Select block
-- Drop if exists to allow re-running the script
DROP TABLE IF EXISTS emp;
DROP TABLE IF EXISTS department;

-- Create department table
CREATE TABLE department (
    dep_id INT PRIMARY KEY,
    department VARCHAR(100) NOT NULL,
    location VARCHAR(100)
);

-- Create emp table (department is a foreign key referencing department.dep_id)
CREATE TABLE emp (
    empid INT PRIMARY KEY,
    firstname VARCHAR(50) NOT NULL,
    lastname VARCHAR(50) NOT NULL,
    department INT REFERENCES department(dep_id),
    salary DECIMAL(10,2),
    hire_date DATE
);

-- Sample data for department
INSERT INTO department (dep_id, department, location) VALUES
    (1, 'Engineering', 'New York'),
    (2, 'Sales', 'Chicago'),
    (3, 'HR', 'San Francisco');

-- Sample data for emp
INSERT INTO emp (empid, firstname, lastname, department, salary, hire_date) VALUES
    (101, 'Alice', 'Smith', 1, 85000.00, '2020-06-15'),
    (102, 'Bob', 'Jones', 2, 65000.00, '2019-03-01'),
    (103, 'Carol', 'Lee', 1, 92000.00, '2021-11-12');

-- View both tables
SELECT * FROM department;
SELECT * FROM emp;
```

Output:

dep_id	department	location
1	Engineering	New York
2	Sales	Chicago
3	HR	San Francisco

empid	firstname	lastname	department	salary	hire_date
empid	firstname	lastname	department	salary	hire_date
101	Alice	Smith	1	85000	2020-06-15T00:00:00Z
102	Bob	Jones	2	65000	2019-03-01T00:00:00Z
103	Carol	Lee	1	92000	2021-11-12T00:00:00Z

2. 2. Display only employee names and their departments.
3. 3. Show unique department names.
4. 4. Find employees with salary greater than 50000.
5. 5. Find employees from the IT department.
6. 6. Display employees hired after 2020.
7. 7. Show employees in ascending order of salary.

```
-- 2. Display only employee names and their departments
SELECT e.firstname, e.lastname, d.department
FROM emp e
JOIN department d ON e.department = d.dep_id;

-- 3. Show unique department names
SELECT DISTINCT department FROM department;

-- 4. Find employees with salary greater than 50000
SELECT firstname, lastname, salary
FROM emp
WHERE salary > 50000;

-- 5. Find employees from the IT department
SELECT e.firstname, e.lastname, d.department
FROM emp e
JOIN department d ON e.department = d.dep_id
WHERE d.department = 'IT';

-- 6. Display employees hired after 2020
SELECT firstname, lastname, hire_date
FROM emp
WHERE hire_date > '2020-12-31';

-- 7. Show employees in ascending order of salary
SELECT firstname, lastname, salary
FROM emp
ORDER BY salary ASC;
```

Outputs:

2.

FROM department
SELECT * FROM emp; -- 1 Display only

firstname	lastname	department
Alice	Smith	Engineering
Carol	Lee	Engineering
Bob	Jones	Sales
Eva	Clark	HR
David	Brown	IT

3.

department

department
Engineering
Sales
HR
IT

4.

Display only employees names and salary
Show unique departments

firstname	lastname	salary
Alice	Smith	85000
Bob	Jones	65000
Carol	Lee	92000
David	Brown	72000

5.

firstname	lastname	department
a c Filter...	a c Filter...	a c Filter...
David	Brown	IT

6.

firstname	lastname	hire_date
a c Filter...	a c Filter...	a c Filter...
Carol	Lee	2021-11-12T00:00:00.000Z
David	Brown	2022-02-18T00:00:00.000Z
Eva	Clark	2023-07-25T00:00:00.000Z

7.

firstname	lastname	salary
a c Filter...	a c Filter...	a c Filter...
Eva	Clark	48000
Bob	Jones	65000
David	Brown	72000
Alice	Smith	85000
Carol	Lee	92000

Codes:

```
-- 8. Show top 3 highest-paid employees
SELECT firstname, lastname, salary
FROM emp
ORDER BY salary DESC
LIMIT 3;

-- 9. Count total employees in the company
SELECT COUNT(*) AS total_employees
FROM emp;

-- 10. Find the average salary of employees
SELECT AVG(salary) AS average_salary
FROM emp;

-- 11. Find the highest and lowest salary
SELECT MAX(salary) AS highest_salary, MIN(salary) AS lowest_salary
FROM emp;

-- 12. Find total salary expenditure per department
SELECT d.dep_name AS department, SUM(e.salary) AS total_salary
FROM emp e
JOIN department d ON e.department_id = d.dep_id
GROUP BY d.dep_name;

-- 13. Display departments having more than one employee
SELECT d.dep_name AS department, COUNT(e.empid) AS employee_count
FROM emp e
JOIN department d ON e.department_id = d.dep_id
GROUP BY d.dep_name
HAVING COUNT(e.empid) > 1;
```

```
-- 14. Show average salary by department
SELECT d.dep_name AS department, AVG(e.salary) AS avg_salary
FROM emp e
JOIN department d ON e.department_id = d.dep_id
GROUP BY d.dep_name;

-- 15. Count employees hired each year
SELECT YEAR(hire_date) AS hire_year, COUNT(*) AS total_hired
FROM emp
GROUP BY YEAR(hire_date)
ORDER BY hire_year;

-- 16. List employees with their department locations
SELECT e.firstname, e.lastname, d.dep_name AS department, d.location
FROM emp e
JOIN department d ON e.department_id = d.dep_id;

-- 17. Find employees working in Bangalore
SELECT e.firstname, e.lastname, d.dep_name AS department, d.location
FROM emp e
JOIN department d ON e.department_id = d.dep_id
WHERE d.location = 'Bangalore';

-- 18. Display all employees even if they don't belong to a department
SELECT e.firstname, e.lastname, d.dep_name AS department
FROM emp e
LEFT JOIN department d ON e.department_id = d.dep_id;

-- 19. Find departments with no employees
SELECT d.dep_name AS department
FROM department d
LEFT JOIN emp e ON e.department_id = d.dep_id
WHERE e.empid IS NULL;
```

```
-- 20. Count employees in each department
SELECT d.dep_name AS department, COUNT(e.empid) AS employee_count
FROM department d
LEFT JOIN emp e ON e.department_id = d.dep_id
GROUP BY d.dep_name;

-- 21. Find employees earning above average salary
SELECT firstname, lastname, salary
FROM emp
WHERE salary > (SELECT AVG(salary) FROM emp);

-- 22. Find the department with the highest average salary
SELECT d.dep_name AS department, AVG(e.salary) AS avg_salary
FROM emp e
JOIN department d ON e.department_id = d.dep_id
GROUP BY d.dep_name
ORDER BY avg_salary DESC
LIMIT 1;

-- 23. Find employees hired most recently
SELECT firstname, lastname, hire_date
FROM emp
ORDER BY hire_date DESC
LIMIT 1;

-- 24. Find employees earning the second highest salary (robust method)
SELECT firstname, lastname, salary
FROM emp
WHERE salary = (
| SELECT MAX(salary) FROM emp WHERE salary < (SELECT MAX(salary) FROM emp)
);
```

```
-- 25. Find all employees in the same department as 'Amit Sharma'  
SELECT e2.firstname, e2.lastname  
FROM emp e2  
WHERE e2.department_id = (  
    SELECT e1.department_id  
    FROM emp e1  
    WHERE e1.firstname = 'Amit' AND e1.lastname = 'Sharma'  
);  
  
-- 26. Increase salary by 10% for IT employees  
UPDATE emp e  
JOIN department d ON e.department_id = d.dep_id  
SET e.salary = e.salary * 1.10  
WHERE d.dep_name = 'IT';  
  
-- 27. Change department of employee 'Ravi' to Marketing  
UPDATE emp e  
JOIN department d ON d.dep_name = 'Marketing'  
SET e.department_id = d.dep_id  
WHERE e.firstname = 'Ravi';
```

Outputs:

8.

firstname	lastname	salary
Carol	Lee	92000
Alice	Smith	85000
Amit	Sharma	76000

9.

total_employees
a c Filter...
7

10.

average_salary
a c Filter...
70428.571429

11.

highest_salary	lowest_salary
a c Filter...	a c Filter...
92000	48000

12.

department	total_salary
Engineering	177000
Sales	120000
HR	48000
IT	148000

13.

< -- 12. Find total salary expenditure per de...

--

department	employee_count
Engineering	2
Sales	2
IT	2

14.

department	avg_salary
Engineering	88500
Sales	60000
HR	48000
IT	74000

15.

hire_year	total_hired
2019	1
2020	1
2021	2
2022	1
2023	2

16.

firstname	lastname	department	location
a c Filter...	a c Filter...	a c Filter...	a c Filter...
Alice	Smith	Engineering	New York
Carol	Lee	Engineering	New York
Bob	Jones	Sales	Chicago
Ravi	Kumar	Sales	Chicago
Eva	Clark	HR	San Francisco
David	Brown	IT	Los Angeles
Amit	Sharma	IT	Los Angeles

17.

firstname	lastname	department	location
a c Filter...	a c Filter...	a c Filter...	a c Filter...
No data			

18.

firstname	lastname	department
a c Filter...	a c Filter...	a c Filter...
Alice	Smith	Engineering
Bob	Jones	Sales
Carol	Lee	Engineering
David	Brown	IT
Eva	Clark	HR
Ravi	Kumar	Sales
Amit	Sharma	IT

19.

< -- 18. Display all employees even if they d...

department
a c Filter...
Marketing

20.

< no employee... -- 20. Count employees in each departme..

department	employee_count
a c Filter...	a c Filter...
Engineering	2
Sales	2
HR	1
IT	2
Marketing	0

21.

< -- 20. Count employees in each department... | -- 21. Find employee

firstname	lastname	salary
a c Filter...	a c Filter...	a c Filter...
Alice	Smith	85000
Carol	Lee	92000
David	Brown	72000
Amit	Sharma	76000

22.

department | avg_salary

department	avg_salary
a c Filter...	a c Filter...
Engineering	88500

23.

< -- 22. Find the department with the highest average salary | -- 23. Find employees hired most recently

firstname	lastname	hire_date
a c Filter...	a c Filter...	a c Filter...
Eva	Clark	2023-07-25T00:00:00.000Z

24.

firstname | lastname | salary

firstname	lastname	salary
a c Filter...	a c Filter...	a c Filter...
Alice	Smith	85000

25.

firstname	lastname
David	Brown
Amit	Sharma

27.

empid	firstname	lastname	department_id
101	Alice	Smith	1
102	Bob	Jones	2
103	Carol	Lee	1
104	David	Brown	4
105	Eva	Clark	3
106	Ravi	Kumar	5
107	Amit	Sharma	4

Codes:

```
-- 28. Delete employees with salary below 40000
DELETE FROM emp
WHERE salary < 40000;

-- 29. Add a new column 'email' to employees
ALTER TABLE emp ADD COLUMN email VARCHAR(100);

-- 30. Update email IDs for all employees
UPDATE emp
SET email = CONCAT(LOWER(firstname), '.', LOWER(lastname), '@company.com');

-- 31. Find top 2 departments by average salary
SELECT d.dep_name AS department, AVG(e.salary) AS avg_salary
FROM emp e
JOIN department d ON e.department_id = d.dep_id
GROUP BY d.dep_name
ORDER BY avg_salary DESC
LIMIT 2;

-- 32. Find how many employees work in each city
SELECT d.location AS city, COUNT(e.empid) AS total_employees
FROM department d
LEFT JOIN emp e ON e.department_id = d.dep_id
GROUP BY d.location;

-- 33. Show employee count and total salary together
SELECT d.dep_name AS department, COUNT(e.empid) AS employee_count, SUM(e.salary) AS total_salary
FROM emp e
JOIN department d ON e.department_id = d.dep_id
GROUP BY d.dep_name;

-- 34. Display employees with names starting with 'A'
SELECT firstname, lastname
FROM emp
WHERE firstname LIKE 'A%';
```

```
-- 35. Display employees whose last name ends with 'a'  
SELECT firstname, lastname  
FROM emp  
WHERE lastname LIKE '%a';  
  
-- 36. Find employees hired in 2020  
SELECT firstname, lastname, hire_date  
FROM emp  
WHERE YEAR(hire_date) = 2020;  
  
-- 37. Show number of days since each employee was hired  
SELECT firstname, lastname, DATEDIFF(CURDATE(), hire_date) AS days_since_hired  
FROM emp;  
  
-- 38. Display employee names in uppercase  
SELECT UPPER(firstname) AS firstname_upper, UPPER(lastname) AS lastname_upper  
FROM emp;  
  
-- 39. Concatenate first and last names  
SELECT CONCAT(firstname, ' ', lastname) AS full_name  
FROM emp;  
  
-- 40. Find employees whose salary is between 45000 and 60000  
SELECT firstname, lastname, salary  
FROM emp  
WHERE salary BETWEEN 45000 AND 60000;  
  
-- 41. Create a view for high salary employees (>55000)  
CREATE VIEW high_salary_employees AS  
SELECT firstname, lastname, salary, department_id  
FROM emp  
WHERE salary > 55000;  
  
-- 42. Display all records from the view  
SELECT * FROM high_salary_employees;
```

```

-- 43. Add NOT NULL constraint to department name
ALTER TABLE department MODIFY dep_name VARCHAR(100) NOT NULL;

-- 44. Drop the view
DROP VIEW IF EXISTS high_salary_employees;

-- 45. Rename the employees table to staff
RENAME TABLE emp TO staff;

-- 46. Create a backup copy of the employees table
CREATE TABLE staff_backup AS
SELECT * FROM staff;

-- 47. Delete all data but keep the structure
DELETE FROM staff;

-- 48. Drop the employees backup table
DROP TABLE IF EXISTS staff_backup;

-- 49. Create an index on employee last name
CREATE INDEX idx_lastname ON staff(lastname);

-- 50. Drop the index
DROP INDEX idx_lastname ON staff;

```

Outputs:

31.

dep_name	avg_salary
a c Filter...	a c Filter...
Engineering	88500
IT	81400

32.

city	total_employees ↑
New York	2
Chicago	1
San Francisco	1
Los Angeles	2
Bangalore	1

33.

dep_name	employee_count	total_salary
Engineering	2	177000
Sales	1	65000
HR	1	48000
IT	2	162800
Marketing	1	55000

34.

firstname	lastname
a <small>b</small> c Filter...	a <small>b</small> c Filter...
Alice	Smith
Amit	Sharma

35.

firstname	lastname
a <small>b</small> c Filter...	a <small>b</small> c Filter...
Amit	Sharma

36.

firstname	lastname	hire_date
a <small>b</small> c Filter...	a <small>b</small> c Filter...	a <small>b</small> c Filter...
Alice	Smith	2020-06-15T00:00:00.000Z

37.

firstname	lastname	days_since_hired
a <small>b</small> c Filter...	a <small>b</small> c Filter...	a <small>b</small> c Filter...
Alice	Smith	1967
Bob	Jones	2439
Carol	Lee	1452
David	Brown	1354
Eva	Clark	832
Ravi	Kumar	1658
Amit	Sharma	1033

38.

first_upper	last_upper
a <small>b</small> c Filter...	a <small>b</small> c Filter...
ALICE	SMITH
BOB	JONES
CAROL	LEE
DAVID	BROWN
EVA	CLARK
RAVI	KUMAR
AMIT	SHARMA

39.

full_name

a**b**c Filter...

Alice Smith

Bob Jones

Carol Lee

David Brown

Eva Clark

Ravi Kumar

Amit Sharma

40.

firstname

a**b**c Filter...

lastname

a**b**c Filter...

salary

a**b**c Filter...

Eva

Clark

48000

Ravi

Kumar

55000

42.

firstname	lastname ↑	salary	department_id
Alice	Smith	85000	1
Bob	Jones	65000	2
Carol	Lee	92000	1
David	Brown	79200	4
Amit	Sharma	83600	4

After all queries:

Output:

firstname	lastname	department_id	salary	hire_date	email
					No data