DBMS LAB 2 - Select Statements & Aggregate Functions

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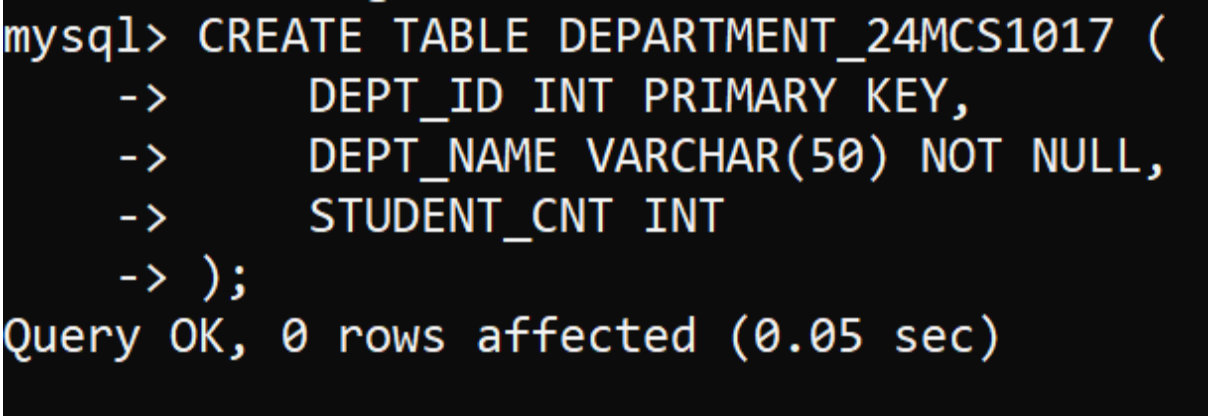
Reg.No.24MCS1017

1. Create the following tables with suitable constraints:
a. STUDENT (REG_NO, NAME, GENDER, AGE, DID, SEMESTER). Make REG_NO as the primary key and DID as foreign key to the DEPARTMENT table. NAME cannot be null.
b. DEPARTMENT (DEPT_ID, DEPT_NAME, STUDENT_CNT). Make DEPT_ID as the primary key and DEPT_NAME cannot be null.

```
CREATE TABLE DEPARTMENT_24MCS1017 (
    DEPT_ID INT PRIMARY KEY,
    DEPT_NAME VARCHAR(50) NOT NULL,
    STUDENT_CNT INT
);
```

```
mysql> CREATE TABLE DEPARTMENT_24MCS1017 (
    ->      DEPT_ID INT PRIMARY KEY,
    ->      DEPT_NAME VARCHAR(50) NOT NULL,
    ->      STUDENT_CNT INT
    -> );
Query OK, 0 rows affected (0.05 sec)
```

```
CREATE TABLE STUDENT_24MCS1017 (
    REG_NO INT PRIMARY KEY,
    NAME VARCHAR(50) NOT NULL,
    GENDER CHAR(1),
    AGE INT,
    DID INT,
    SEMESTER INT,
    FOREIGN KEY (DID) REFERENCES DEPARTMENT_24MCS1017(DEPT_ID)
);
```

```
mysql> CREATE TABLE STUDENT_24MCS1017 (
    ->      REG_NO INT PRIMARY KEY,
    ->      NAME VARCHAR(50) NOT NULL,
    ->      GENDER CHAR(1),
    ->      AGE INT,
    ->      DID INT,
    ->      SEMESTER INT,
    ->      FOREIGN KEY (DID) REFERENCES DEPARTMENT_24MCS1017(DEPT_ID)
    -> );
Query OK, 0 rows affected (0.08 sec)
```

2. Insert suitable records into the STUDENT & DEPARTMENT tables.

INSERT INTO DEPARTMENT_24MCS1017 (DEPT_ID, DEPT_NAME,
STUDENT_CNT)
VALUES
   (1001, 'Computer Science', 200),
   (1002, 'Mechanical', 150),
   (1003, 'Electrical', 180),
   (1004, 'Civil', 90);

```
mysql> INSERT INTO DEPARTMENT_24MCS1017 (DEPT_ID, DEPT_NAME, STUDENT_CNT)
    -> VALUES
    ->      (1001, 'Computer Science', 200),
    ->      (1002, 'Mechanical', 150),
    ->      (1003, 'Electrical', 180),
    ->      (1004, 'Civil', 90);
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

INSERT INTO STUDENT_24MCS1017 (REG_NO, NAME, GENDER, AGE, DID,
SEMESTER)
VALUES
   (1, 'Kavya', 'F', 20, 1001, 5),
   (2, 'Abhi', 'M', 21, 1002, 3),
   (3, 'Mahesh', 'M', 22, 1003, 7),
   (4, 'Amit', 'M', 19, 1004, 4),
   (5, 'Kriti', 'F', 20, 1002, 5),
   (6, 'Rohit', 'M', 21, 1003, 6);

```
mysql> INSERT INTO STUDENT_24MCS1017 (REG_NO, NAME, GENDER, AGE, DID, SEMESTER)
    -> VALUES
    ->      (1, 'Kavya', 'F', 20, 1001, 5),
    ->      (2, 'Abhi', 'M', 21, 1002, 3),
    ->      (3, 'Mahesh', 'M', 22, 1003, 7),
    ->      (4, 'Amit', 'M', 19, 1004, 4),
    ->      (5, 'Kriti', 'F', 20, 1002, 5),
    ->      (6, 'Rohit', 'M', 21, 1003, 6);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM STUDENT_24MCS1017;
+--------+--------+--------+------+------+----------+
| REG_NO | NAME   | GENDER | AGE  | DID  | SEMESTER |
+--------+--------+--------+------+------+----------+
|      1 | Kavya  | F      |   20 | 1001 |        5 |
|      2 | Abhi   | M      |   21 | 1002 |        3 |
|      3 | Mahesh | M      |   22 | 1003 |        7 |
|      4 | Amit   | M      |   19 | 1004 |        4 |
|      5 | Kriti  | F      |   20 | 1002 |        5 |
|      6 | Rohit  | M      |   21 | 1003 |        6 |
+--------+--------+--------+------+------+----------+
6 rows in set (0.00 sec)
```

3. Retrieve all the details of the department table.

```
mysql> SELECT * FROM DEPARTMENT_24MCS1017;
+---------+------------------+-------------+
| DEPT_ID | DEPT_NAME        | STUDENT_CNT |
+---------+------------------+-------------+
|    1001 | Computer Science |         200 |
|    1002 | Mechanical       |         150 |
|    1003 | Electrical       |         180 |
|    1004 | Civil            |          90 |
+---------+------------------+-------------+
4 rows in set (0.00 sec)
```

4. Fetch the department id's of all departments that exists in your college.
SELECT DEPT_ID
FROM DEPARTMENT_24MCS1017;

```
mysql> SELECT DEPT_ID
    -> FROM DEPARTMENT_24MCS1017;
+---------+
| DEPT_ID |
+---------+
|    1001 |
|    1002 |
|    1003 |
|    1004 |
+---------+
4 rows in set (0.00 sec)
```

5. Fetch the department id and department name of all departments.
SELECT DEPT_ID, DEPT_NAME
FROM DEPARTMENT_24MCS1017;

```
mysql> SELECT DEPT_ID, DEPT_NAME
    -> FROM DEPARTMENT_24MCS1017;
+---------+------------------+
| DEPT_ID | DEPT_NAME        |
+---------+------------------+
|    1001 | Computer Science |
|    1002 | Mechanical       |
|    1003 | Electrical       |
|    1004 | Civil            |
+---------+------------------+
4 rows in set (0.00 sec)
```

6. Retrieve the registration number and names of students belonging to DEPTID 1003.
SELECT REG_NO, NAME
FROM STUDENT_24MCS1017
WHERE DID = 1003;

```
mysql> SELECT REG_NO, NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE DID = 1003;
+--------+--------+
| REG_NO | NAME   |
+--------+--------+
|      3 | Mahesh |
|      6 | Rohit  |
+--------+--------+
2 rows in set (0.00 sec)
```

7. Retrieve the registration number and names of female students belonging to DID 1002.

```
SELECT REG_NO, NAME
FROM STUDENT_24MCS1017
WHERE DID = 1002
  AND GENDER = 'F';
```

```
mysql> SELECT REG_NO, NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE DID = 1002
    ->    AND GENDER = 'F';
+--------+-------+
| REG_NO | NAME  |
+--------+-------+
|      5 | Kriti |
+--------+-------+
1 row in set (0.00 sec)
```

8. Find the number of male students belonging to DID 1003.

```
SELECT COUNT(*) AS num_male_students
FROM STUDENT_24MCS1017
WHERE DID = 1003
  AND GENDER = 'M';
```

```
mysql> SELECT COUNT(*) AS num_male_students
    -> FROM STUDENT_24MCS1017
    -> WHERE DID = 1003
    ->    AND GENDER = 'M';
+-------------------+
| num_male_students |
+-------------------+
|                 2 |
+-------------------+
1 row in set (0.00 sec)
```

9. Retrieve the registration number and names of students whose age is > 19.
SELECT REG_NO, NAME
FROM STUDENT_24MCS1017
WHERE AGE > 19;

```
mysql> SELECT REG_NO, NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE AGE > 19;
+--------+--------+
| REG_NO | NAME   |
+--------+--------+
|      1 | Kavya  |
|      2 | Abhi   |
|      3 | Mahesh |
|      5 | Kriti  |
|      6 | Rohit  |
+--------+--------+
5 rows in set (0.00 sec)
```

10. List the names of students whose names start with letter 'A'.
SELECT NAME
FROM STUDENT_24MCS1017
WHERE NAME LIKE 'A%';

```
mysql> SELECT NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE NAME LIKE 'A%';
+--------+
| NAME   |
+--------+
| Abhi   |
| Amit   |
+--------+
```

11. List the names of students whose names end with letter 'a'.
SELECT NAME
FROM STUDENT_24MCS1017
WHERE NAME LIKE '%a';

```
mysql> SELECT NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE NAME LIKE '%a';
+--------+
| NAME   |
+--------+
| Kavya  |
+--------+
1 row in set (0.00 sec)
```

12. List the names of students whose names contain the letter 'm'.
SELECT NAME
FROM STUDENT_24MCS1017
WHERE NAME LIKE '%m%';

```
mysql> SELECT NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE NAME LIKE '%m%';
+----------+
| NAME     |
+----------+
| Mahesh   |
| Amit     |
+----------+
```

13. List the names of students whose names contain the letter 'm' but not at the start or at the end of their names.

```
SELECT NAME
FROM STUDENT_24MCS1017
WHERE NAME LIKE '%m%'
  AND NAME NOT LIKE 'm%'
  AND NAME NOT LIKE '%m';
```

```
mysql> SELECT NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE NAME LIKE '%m%'
    ->    AND NAME NOT LIKE 'm%'
    ->    AND NAME NOT LIKE '%m';
+-------+
| NAME  |
+-------+
| Amit  |
+-------+
1 row in set (0.00 sec)
```

14. List the registration numbers and names of students belonging to DIDs 1002 and 1003.

```
SELECT REG_NO, NAME
FROM STUDENT_24MCS1017
WHERE DID IN (1002, 1003);
```

```
mysql> SELECT REG_NO, NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE DID IN (1002, 1003);
+---------+---------+
| REG_NO  | NAME    |
+---------+---------+
|       2 | Abhi    |
|       5 | Kriti   |
|       3 | Mahesh  |
|       6 | Rohit   |
+---------+---------+
4 rows in set (0.00 sec)
```

15. What is the maximum count of students in a department?
SELECT MAX(STUDENT_CNT) AS max_student_count
FROM DEPARTMENT_24MCS1017;

```
mysql> SELECT MAX(STUDENT_CNT) AS max_student_count
    -> FROM DEPARTMENT_24MCS1017;
+-------------------+
| max_student_count |
+-------------------+
|               200 |
+-------------------+
1 row in set (0.00 sec)
```

16. What is the minimum count of students in a department?
SELECT MIN(STUDENT_CNT) AS min_student_count
FROM DEPARTMENT_24MCS1017;

```
mysql> SELECT MIN(STUDENT_CNT) AS min_student_count
    -> FROM DEPARTMENT_24MCS1017;
+-------------------+
| min_student_count |
+-------------------+
|                90 |
+-------------------+
1 row in set (0.00 sec)
```

17. What is the average student count per department in your college?

SELECT AVG(STUDENT_CNT) AS average_student_count
FROM DEPARTMENT_24MCS1017;

```
mysql> SELECT AVG(STUDENT_CNT) AS average_student_count
    -> FROM DEPARTMENT_24MCS1017;
+-----------------------+
| average_student_count |
+-----------------------+
|              155.0000 |
+-----------------------+
1 row in set (0.00 sec)
```

18. List the students who study 3rd year in your college using Between.

SELECT REG_NO, NAME
FROM STUDENT_24MCS1017
WHERE SEMESTER BETWEEN 5 AND 6;

```
mysql> SELECT REG_NO, NAME
    -> FROM STUDENT_24MCS1017
    -> WHERE SEMESTER BETWEEN 5 AND 6;
+--------+-------+
| REG_NO | NAME  |
+--------+-------+
|      1 | Kavya |
|      5 | Kriti |
|      6 | Rohit |
+--------+-------+
```

19. List the different departments which have students.

SELECT DISTINCT DID
FROM STUDENT_24MCS1017;

```
mysql> SELECT DISTINCT DID
    -> FROM STUDENT_24MCS1017;
+-------+
| DID   |
+-------+
| 1001  |
| 1002  |
| 1003  |
| 1004  |
+-------+
4 rows in set (0.00 sec)
```

20. Display the count of students enrolled in CSE department;
SELECT COUNT(*) AS student_count
FROM STUDENT_24MCS1017
WHERE DID = 1001;

```
mysql> SELECT COUNT(*) AS student_count
    -> FROM STUDENT_24MCS1017
    -> WHERE DID = 1001;
+---------------+
| student_count |
+---------------+
|             1 |
+---------------+
1 row in set (0.00 sec)
```

21. Display the contents of DEPARTMENT table in ascending order of Students count.
SELECT DEPT_ID, DEPT_NAME, STUDENT_CNT
FROM DEPARTMENT_24MCS1017
ORDER BY STUDENT_CNT ASC;

```
mysql> SELECT DEPT_ID, DEPT_NAME, STUDENT_CNT
    -> FROM DEPARTMENT_24MCS1017
    -> ORDER BY STUDENT_CNT ASC;
+---------+-----------------+-------------+
| DEPT_ID | DEPT_NAME       | STUDENT_CNT |
+---------+-----------------+-------------+
|    1004 | Civil           |          90 |
|    1002 | Mechanical      |         150 |
|    1003 | Electrical      |         180 |
|    1001 | Computer Science |        200 |
+---------+-----------------+-------------+
4 rows in set (0.00 sec)
```

22. Display the contents of DEPARTMENT table in descending order of Students count.

SELECT DEPT_ID, DEPT_NAME, STUDENT_CNT
FROM DEPARTMENT_24MCS1017
ORDER BY STUDENT_CNT DESC;

```
mysql> SELECT DEPT_ID, DEPT_NAME, STUDENT_CNT
    -> FROM DEPARTMENT_24MCS1017
    -> ORDER BY STUDENT_CNT DESC;
+---------+-----------------+-------------+
| DEPT_ID | DEPT_NAME       | STUDENT_CNT |
+---------+-----------------+-------------+
|    1001 | Computer Science |        200 |
|    1003 | Electrical      |         180 |
|    1002 | Mechanical      |         150 |
|    1004 | Civil           |          90 |
+---------+-----------------+-------------+
4 rows in set (0.00 sec)
```