Name: Samriddhi Verma
Reg.No.:16BCE1375
Prof. M. Premalatha

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Programme	:	**B.Tech - CSE**	Semester	:	**Winter 18 - 19**
Course	:	**Database Management Systems (Embedded Lab)**	Code	:	**CSE2004**
Faculty	:	**Prof. R. Gayathri Prof. M. Premalatha**	Slot	:	**L3 + L4**

Ex. No. 3
21/01/18

SQL – DML and Aggregate Functions

Create the following table with primary and foreign key constraints

student(regno, sname, cgpa)

course(ccode, cname, credits)

faculty(empid, fname, salary, designation)

course_student_faculty(regno, ccode, fid)

Code:

```
SQL> create table student(regno varchar(6),sname char(10),cgpa
number(2,2),constraint pk_regno primary key(regno));

Table created.

SQL> create table course(ccode varchar(6),cname char(10),credits
number(2),constraint pk_ccode primary key(ccode));

Table created.

SQL> create table faculty(empid varchar(6),fname char(10),salary
number(7),designation   char(10),constraint   pk_empid   primary
key(empid));

Table created.
```

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```
SQL> create table course_student_faculty(regno varchar2(6) not
null,ccode varchar2(6) not null,empid varchar2(6) not null,
constraint fk_regno foreign key(regno) references
student,constraint fk_ccode foreign key(ccode) references
course, constraint fk_empid foreign key(empid) references
faculty);

Table created.

SQL> desc student
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
----------------
 REGNO                                     NOT NULL VARCHAR2(6)
 SNAME                                              CHAR(10)
 CGPA                                               NUMBER(2,2)

SQL> desc course
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
----------------
 CCODE                                     NOT NULL VARCHAR2(6)
 CNAME                                              CHAR(10)
 CREDITS                                            NUMBER(2)

SQL> desc faculty
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
----------------
 EMPID                                     NOT NULL VARCHAR2(6)
 FNAME                                              CHAR(10)
 SALARY                                             NUMBER(7)
 DESIGNATION                                        CHAR(10)

SQL> desc course_student_faculty
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
----------------
 REGNO                                     NOT NULL VARCHAR2(6)
 CCODE                                     NOT NULL VARCHAR2(6)
 EMPID                                     NOT NULL VARCHAR2(6)
```

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Write SQL Queries for the following:

Part A: DML

1. Insert minimum 5 records to each table.

Code:

```
SQL> insert into student values('&regno','&sname','&cgpa');
Enter value for regno: 1375
Enter value for sname: Samriddhi
Enter value for cgpa: 8.8
old   1: insert into student values('&regno','&sname','&cgpa')
new   1: insert into student values('1375','Samriddhi','8.8')

1 row created.

SQL> /
Enter value for regno: 1384
Enter value for sname: Raj
Enter value for cgpa: 9.03
old   1: insert into student values('&regno','&sname','&cgpa')
new   1: insert into student values('1384','Raj','9.03')

1 row created.

SQL> /
Enter value for regno: 1385
Enter value for sname: Abhiraj
Enter value for cgpa: 9
old   1: insert into student values('&regno','&sname','&cgpa')
new   1: insert into student values('1385','Abhiraj','9')

1 row created.

SQL> /
Enter value for regno: 1383
Enter value for sname: Anmol
Enter value for cgpa: 8.29
old   1: insert into student values('&regno','&sname','&cgpa')
new   1: insert into student values('1383','Anmol','8.29')

1 row created.

SQL> /
Enter value for regno: 1296
Enter value for sname: Aastha
```

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```
Enter value for cgpa: 8.9
old   1: insert into student values('&regno','&sname','&cgpa')
new   1: insert into student values('1296','Aastha','8.9')

1 row created.

SQL> insert into course values('&ccode','&cname','&credits');
Enter value for ccode: cse1004
Enter value for cname: OOPS
Enter value for credits: 4
old   1: insert into course values('&ccode','&cname','&credits')
new   1: insert into course values('cse1004','OOPS','4')

1 row created.

SQL> /
Enter value for ccode: cse2004
Enter value for cname: dbms
Enter value for credits: 4
old   1: insert into course values('&ccode','&cname','&credits')
new   1: insert into course values('cse2004','dbms','4')

1 row created.

SQL> /
Enter value for ccode: cse1007
Enter value for cname: java
Enter value for credits: 4
old   1: insert into course values('&ccode','&cname','&credits')
new   1: insert into course values('cse1007','java','4')

1 row created.

SQL> /
Enter value for ccode: cse3009
Enter value for cname: data vis
Enter value for credits: 4
old   1: insert into course values('&ccode','&cname','&credits')
new   1: insert into course values('cse3009','data vis','4')

1 row created.

SQL> /
Enter value for ccode: cse4003
Enter value for cname: AI
Enter value for credits: 4
old   1: insert into course values('&ccode','&cname','&credits')
```

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```
new   1: insert into course values('cse4003','AI','4')

1 row created.

SQL>              insert               into               faculty
values('&empid','&fname','&salary','&designation');
Enter value for empid: 50001
Enter value for fname: Tom
Enter value for salary: 50000
Enter value for designation: Senior Professor
old                   1:       insert       into       faculty
values('&empid','&fname','&salary','&designation')
new                   1:       insert       into       faculty
values('50001','Tom','50000','Senior Professor')

1 row created.

SQL> /
Enter value for empid: 50002
Enter value for fname: Dick
Enter value for salary: 30000
Enter value for designation: Junior Professor
old                   1:       insert       into       faculty
values('&empid','&fname','&salary','&designation')
new                   1:       insert       into       faculty
values('50002','Dick','30000','Junior Professor')

1 row created.

SQL> /
Enter value for empid: 50003
Enter value for fname: Harry
Enter value for salary: 35000
Enter value for designation: Research Scholar
old                   1:       insert       into       faculty
values('&empid','&fname','&salary','&designation')
new                   1:       insert       into       faculty
values('50003','Harry','35000','Research Scholar')

1 row created.

SQL> /
Enter value for empid: 50004
Enter value for fname: Sapan
Enter value for salary: 60000
Enter value for designation: HOD
```

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```
old                    1:       insert       into       faculty
values('&empid','&fname','&salary','&designation')
new                    1:       insert       into       faculty
values('50004','Sapan','60000','HOD')

1 row created.

SQL> /
Enter value for empid: 50005
Enter value for fname: Aston
Enter value for salary: 40000
Enter value for designation: Junior Professor
old                    1:       insert       into       faculty
values('&empid','&fname','&salary','&designation')
new                    1:       insert       into       faculty
values('50005','Aston','40000','Junior Professor')

1 row created.

SQL> select * from student;

REGNO  SNAME            CGPA
------ ---------- ----------
1375   Samriddhi         8.8
1384   Raj              9.03
1385   Abhiraj             9
1383   Anmol            8.29
1296   Aastha            8.9

SQL> select * from course;

CCODE      CNAME         CREDITS
---------- ---------- ----------
cse1004    OOPS                4
cse2004    dbms                4
cse1007    java                4
cse3009    data vis            4
cse4003    AI                  4

SQL> select * from faculty;

EMPID  FNAME          SALARY DESIGNATION
------ ---------- ---------- --------------------
50001  Tom             50000 Senior Professor
50002  Dick            30000 Junior Professor
50003  Harry           35000 Research Scholar
50004  Sapan           60000 HOD
```

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```
50005  Aston           40000 Junior Professor

SQL>          insert          into          course_student_faculty
values('&regno','&ccode','&empid');
Enter value for regno: 1375
Enter value for ccode: cse2004
Enter value for empid: 50003
old              1:     insert     into     course_student_faculty
values('&regno','&ccode','&empid')
new              1:     insert     into     course_student_faculty
values('1375','cse2004','50003')

1 row created.

SQL> /
Enter value for regno: 1384
Enter value for ccode: cse3009
Enter value for empid: 50001
old              1:     insert     into     course_student_faculty
values('&regno','&ccode','&empid')
new              1:     insert     into     course_student_faculty
values('1384','cse3009','50001')

1 row created.

SQL> /
Enter value for regno: 1385
Enter value for ccode: cse2004
Enter value for empid: 50003
old              1:     insert     into     course_student_faculty
values('&regno','&ccode','&empid')
new              1:     insert     into     course_student_faculty
values('1385','cse2004','50003')

1 row created.

SQL> /
Enter value for regno: 1383
Enter value for ccode: cse4003
Enter value for empid: 50002
old              1:     insert     into     course_student_faculty
values('&regno','&ccode','&empid')
new              1:     insert     into     course_student_faculty
values('1383','cse4003','50002')

1 row created.
```

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```
SQL> /
Enter value for regno: 1296
Enter value for ccode: cse1004
Enter value for empid: 50005
old              1:     insert     into     course_student_faculty
values('&regno','&ccode','&empid')
new              1:     insert     into     course_student_faculty
values('1296','cse1004','50005')

1 row created.

SQL> select * from course_student_faculty;

REGNO  CCODE    EMPID
------ -------- ------
1375   cse2004  50003
1384   cse3009  50001
1385   cse2004  50003
1383   cse4003  50002
1296   cse1004  50005
```

2. **Display the student details whose cgpa is greater than 8.5**

```
SQL> select count(cgpa) from student where cgpa>8.5;

COUNT(CGPA)
-----------
          4
```

3. **List the name of the faculty with their designation who receive more than 50000 as salary.**

```
SQL> select fname,designation from faculty where salary>50000;

FNAME      DESIGNATION
---------- --------------------
Sapan      HOD
```

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4. **List the course details which has 3 or 4 credits.**

```
SQL> select ccode,cname from course where credits=3 or
credits=4;

CCODE      CNAME
---------- ----------
cse1004    OOPS
cse2004    dbms
cse1007    java
cse3009    data vis
cse4003    AI
```

5. **List the student details in descending order based on their cgpa.**

```
SQL> select regno,sname,cgpa from student order by cgpa desc;

REGNO  SNAME           CGPA
------ ---------- ----------
1384   Raj              9.03
1385   Abhiraj             9
1296   Aastha            8.9
1375   Samriddhi         8.8
1383   Anmol            8.29
```

6. **List the student details with cgpa in descending order and name in ascending order.**

```
SQL> select regno,sname,cgpa from student order by cgpa
desc,sname asc;

REGNO  SNAME           CGPA
------ ---------- ----------
1384   Raj              9.03
1385   Abhiraj             9
1296   Aastha            8.9
1375   Samriddhi         8.8
1383   Anmol            8.29
```

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7. List the id of the faculty who teaches 'CSE2004.

```
SQL> select empid from course_student_faculty where
ccode='cse2004';

EMPID
------
50003
50003
```

8. Update the cgpa of the student whose regno is 18BCE1006. //I am updating cgpa for regno 1383.

```
SQL> update student set cgpa=6.8 where regno=1383;

1 row updated.

SQL> select * from student;

REGNO  SNAME            CGPA
------ ---------- ----------
1375   Samriddhi         8.8
1384   Raj              9.03
1385   Abhiraj             9
1383   Anmol             6.8
1296   Aastha            8.9
```

9. Copy the contents of student table as stud_new.

```
SQL> create table stud_new as select * from student;

Table created.

SQL> select * from stud_new;

REGNO  SNAME            CGPA
------ ---------- ----------
1375   Samriddhi         8.8
1384   Raj              9.03
1385   Abhiraj             9
1383   Anmol             6.8
1296   Aastha            8.9
```

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10. **Delete students with less than 7 cgpa from stud_new table.**

```
SQL> delete from stud_new where cgpa<7;

1 row deleted.

SQL> select * from stud_new;

REGNO  SNAME            CGPA
------ ---------- ----------
1375   Samriddhi         8.8
1384   Raj              9.03
1385   Abhiraj             9
1296   Aastha            8.9
```

Part B: Aggregation

1. **Add school attribute to student relation and update the value for all students.**

```
SQL> alter table student add school char(20);

Table altered.

SQL> update student set school='Computing Science' where regno=
1375;

1 row updated.

SQL> update student set school='Computing Science' where regno=
1384;

1 row updated.

SQL> update student set school='Computing Science' where regno=
1385;

1 row updated.

SQL> update student set school='Computing Science' where regno=
1383;

1 row updated.
```

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```
SQL> update student set school='Computing Science' where regno=
1296;

1 row updated.
```

2. List the minimum credit.

```
SQL> select min(credits) from course;

MIN(CREDITS)
------------
           4
```

3. List the number of instructors with professor as designation and receive more than 2 lakhs as salary.

```
SQL>     select     count(fname)     from     faculty     where
designation='professor' and salary>200000;

COUNT(FNAME)
------------
           0
```

4. Display the average credit of all the students.

```
SQL> select avg(credits) from course_student_faculty;

AVG(CREDITS)
------------
           4
```

5. Display the number of students whose credit is >9.

```
SQL> select sname from student where cgpa>9;

SNAME
----------
Raj
```

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6. List the designation along with sum of salary for each designation.

```
SQL> select designation,sum(salary) from faculty group by
designation;

DESIGNATION          SUM(SALARY)
-------------------- -----------
Research Scholar           35000
Junior Professor           70000
HOD                        60000
Senior Professor           50000
```

7. Display the total credits.

```
SQL> select sum(credits) from course;

SUM(CREDITS)
------------
          20

SQL> select count(credits) from course;

COUNT(CREDITS)
--------------
             5
```

8. Display the average cgpa for each school.

```
SQL> select school,avg(cgpa) from student group by school;

SCHOOL                AVG(CGPA)
-------------------- ----------
Computing Science         8.506
```

9. Display the number of students whose credit is >9 for each school.

```
SQL> select count(sname) from student where cgpa > 9 group by school;

COUNT(SNAME)
------------
           1
```

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10. Display the average cgpa for each school if the average exceeds 8.

```
SQL> select school,avg(cgpa) from student group by school having
avg(cgpa)>8;

SCHOOL                 AVG(CGPA)
---------------------- ----------
Computing Science           8.506
```