

Name – Sayak Sen

Enrollment No – 2023CSB047

Assignment Sheet – 1

Assignment 1

Creation of the tables:

1.Depts Table

```
create table depts(  
    deptcode varchar(3) primary key,  
    deptname varchar(30) not null  
);
```

deptcode	deptname
AER	Aeronautical
ARC	Architecture
BIO	Biotechnology
CHE	Chemical
CIV	Civil
CSE	Computer Science
ECE	Electronics
ELE	Electrical
IT	Information Tech
MEC	Mechanical
NULL	NULL

2.Students Table

```
CREATE TABLE students (  
    rollno INT PRIMARY KEY,  
    name varchar(30),  
    bdate date check (bdate < '1997-01-01'),  
    deptcode varchar(3),  
    hostel int check (hostel < 10),  
    parent_inc decimal(8,1),  
    FOREIGN KEY (deptcode) REFERENCES depts(deptcode) ON DELETE  
CASCADE  
)
```

rollno	name	bdate	deptcode	hostel	parent_inc
92005010	Aarav	1996-05-12	CSE	1	80000.0
92005011	Rohan	1995-02-20	CSE	1	60000.0
92005012	Kavya	1996-11-11	ECE	2	75000.0
92005013	Sanjay	1995-09-05	ELE	2	50000.0
92005014	Priya	1996-01-19	ELE	3	90000.0
92005015	Manoj	1996-07-23	MEC	3	55000.0
92005016	Ananya	1995-03-15	CSE	4	95000.0
92005017	Meera	1995-06-09	ECE	4	72000.0
92005018	Vikram	1996-04-21	MEC	5	65000.0
92005019	Neha	1995-12-30	CSE	5	88000.0
92005020	Arjun	1996-08-15	CIV	6	77000.0
92005021	Lakshmi	1995-04-04	BIO	7	69000.0
92005102	Ram	1995-05-15	CSE	5	50000.0
92005103	Amit	1995-05-15	ELE	1	50000.0
92005104	Kanha	1996-01-01	CSE	2	65000.0
NULL	NULL	NULL	NULL	NULL	NULL

2.Faculty Table

```
create table faculty(
  fac_code varchar(8) primary key,
  fac_name varchar(30) not null,
  fac_dept varchar(3),
  foreign key (fac_dept) references depts(deptcode)
);
```

fac_code	fac_name	fac_dept
F001	Dr. DBP	CSE
F002	Dr. NLS	ECE
F003	Dr. X	ELE
F004	Dr. Y	MEC
F005	Dr. A	CIV
F006	Dr. B	BIO
F007	Dr. C	CHE
F008	Dr. D	IT
F009	Dr. E	AER
F010	Dr. F	ARC
NULL	NULL	NULL

4.Course Offered Table

```
create table crs_offrd(
  crs_code varchar(5) primary key,
  crs_name varchar(35) not null,
  crs_credits decimal(2,1),
  crs_fac_cd varchar(8),
  foreign key (crs_fac_cd) references faculty(fac_code)
);
```

crs_code	crs_name	crs_credits	crs_fac_cd
AE501	Flight Mechanics	7.0	F009
BT301	Genetics	4.0	F006
CH103	Chemistry	7.0	F004
CH301	Organic Chem	6.5	F007
CS101	DBMS	5.0	F001
CS102	OS	4.5	F001
CS103	MIS	6.0	F001
CS104	Software Engg.	6.0	F002
CV201	Structural Engg	5.5	F005
EE101	Circuits	3.5	F003
IT401	Networks	5.0	F008
PH106	Physics	6.8	F004
NULL	NULL	NULL	NULL

5.Course Registered Table

```
create table crs_regd(
  crs_rollno int,
  crs_cd varchar(5),
  marks decimal(5,2),
  primary key(crs_rollno, crs_cd),
  foreign key (crs_rollno) references students(rollno),
  foreign key (crs_cd) references crs_offrd(crs_code)
);
```

crs_rollno	crs_cd	marks			
92005010	CH103	60.00			
92005010	CS101	50.00			
92005010	CS102	65.00			
92005010	CS103	70.00			
92005011	CS101	45.00			
92005011	CS102	80.00			
92005011	PH106	72.00			
92005012	CS103	67.00			
92005012	CS104	59.00	92005018	CS104	60.00
92005012	EE101	55.00	92005018	CV201	77.00
92005013	CS101	50.00	92005018	PH106	58.00
92005013	EE101	60.00	92005019	CH301	65.00
92005014	CS102	55.00	92005019	CS101	55.00
92005014	EE101	90.00	92005019	CS104	90.00
92005015	CH103	78.00	92005020	AE501	59.00
92005015	PH106	82.00	92005020	CS103	66.00
92005016	CH103	85.00	92005020	CV201	80.00
92005016	CS101	40.00	92005021	BT301	75.00
92005016	CS102	48.00	92005021	CS102	71.00
92005016	PH106	88.00	92005021	IT401	68.00
92005017	BT301	69.00	92005102	CH103	20.00
92005017	CS103	65.00	92005102	PH106	30.00
92005017	CS104	70.00	92005103	CS101	88.00
			NULL	NULL	NULL

Queries

1.Inserting Queries that violate the constraints

```
insert into students values(92005010,'John Doe','2000-05-15','CSE',1,50000);
```

Error Code: 3819. Check constraint 'students_chk_1' is violated.

2. Delete records from dept where deptcode='CSE'.

```
delete from students where deptcode = 'CSE';
```

Before deleting :

rollno	name	bdate	deptcode	hostel	parent_inc
92005010	Aarav	1996-05-12	CSE	1	80000.0
92005011	Rohan	1995-02-20	CSE	1	60000.0
92005012	Kavya	1996-11-11	ECE	2	75000.0
92005013	Sanjay	1995-09-05	ELE	2	50000.0
92005014	Priya	1996-01-19	ELE	3	90000.0
92005015	Manoj	1996-07-23	MEC	3	55000.0
92005016	Ananya	1995-03-15	CSE	4	95000.0
92005017	Meera	1995-06-09	ECE	4	72000.0
92005018	Vikram	1996-04-21	MEC	5	65000.0
92005019	Neha	1995-12-30	CSE	5	88000.0
92005020	Arjun	1996-08-15	CIV	6	77000.0
92005021	Lakshmi	1995-04-04	BIO	7	69000.0
92005102	Ram	1995-05-15	CSE	5	50000.0
92005103	Amit	1995-05-15	ELE	1	50000.0
92005104	Kanha	1996-01-01	CSE	2	65000.0
NULL	NULL	NULL	NULL	NULL	NULL

After Deleting :

rollno	name	bdate	deptcode	hostel	parent_inc
92005012	Kavya	1996-11-11	ECE	2	75000.0
92005013	Sanjay	1995-09-05	ELE	2	50000.0
92005014	Priya	1996-01-19	ELE	3	90000.0
92005015	Manoj	1996-07-23	MEC	3	55000.0
92005017	Meera	1995-06-09	ECE	4	72000.0
92005018	Vikram	1996-04-21	MEC	5	65000.0
92005020	Arjun	1996-08-15	CIV	6	77000.0
92005021	Lakshmi	1995-04-04	BIO	7	69000.0
92005103	Amit	1995-05-15	ELE	1	50000.0
NULL	NULL	NULL	NULL	NULL	NULL

After deleting i re-inserted the values for future queries that require CSE students.

3.Find out the courses offered by the faculty dbp and nls.

```
select faculty.fac_code, faculty.fac_name, crs_offrd.crs_code,
crs_offrd.crs_name, crs_offrd.crs_credits
from faculty JOIN
crs_offrd ON faculty.fac_code = crs_offrd.crs_fac_cd where
faculty.fac_name = 'Dr. NLS' or faculty.fac_name = 'Dr. DBP';
```

fac_code	fac_name	crs_code	crs_name	crs_credits
F001	Dr. DBP	CS101	DBMS	5.0
F001	Dr. DBP	CS102	OS	4.5
F001	Dr. DBP	CS103	MIS	6.0
F002	Dr. NLS	CS104	Software Engg.	6.0

4. Find out the courses with full details offered by dbp.

```
select faculty.fac_code, faculty.fac_name, faculty.fac_dept,
crs_offrd.crs_code, crs_offrd.crs_name, crs_offrd.crs_credits
from faculty
JOIN
crs_offrd ON faculty.fac_code = crs_offrd.crs_fac_cd where
faculty.fac_name = 'Dr. DBP';
```

fac_code	fac_name	fac_dept	crs_code	crs_name	crs_credits
F001	Dr. DBP	CSE	CS101	DBMS	5.0
F001	Dr. DBP	CSE	CS102	OS	4.5
F001	Dr. DBP	CSE	CS103	MIS	6.0

5. Get the courses the credits of which lies between 4.0 and 6.0.

```
select crs_name, crs_credits from crs_offrd where crs_credits between
4.0 and 6.0;
```

crs_name	crs_credits
Genetics	4.0
DBMS	5.0
OS	4.5
MIS	6.0
Software Engg.	6.0
Structural Engg	5.5
Networks	5.0

6. Get the courses the credits of which are > 6.5.

```
select crs_name , crs_credits from crs_offrd where crs_credits>6.5;
```

crs_name	crs_credits
Flight Mechanics	7.0
Chemistry	7.0
Physics	6.8

Assignment 2

1. Count the number of students in CSE dept.

```
select count(*) from students where deptcode = 'CSE';
```

count(*)
6

2. Determine the minimum, maximum and average marks of each courses.

```
select crs_cd,min(marks) as MinMarks,max(marks) as MaxMarks,avg(marks) as AvgMarks from crs_regd group by crs_cd;
```

crs_cd	MinMarks	MaxMarks	AvgMarks
AE501	59.00	59.00	59.000000
BT301	69.00	75.00	72.000000
CH103	20.00	85.00	60.750000
CH301	65.00	65.00	65.000000
CS101	40.00	88.00	54.666667
CS102	48.00	80.00	63.800000
CS103	65.00	70.00	67.000000
CS104	59.00	90.00	69.750000
CV201	77.00	80.00	78.500000
EE101	55.00	90.00	68.333333
IT401	68.00	68.00	68.000000
PH106	30.00	88.00	66.000000

3.Determine the total credits of the courses registered by a student.

```
select crs_rollno,sum(crs_credits) as total_credit from crs_offrd
join crs_regd on crs_offrd.crs_code = crs_regd.crs_cd group by
crs_rollno;
```

crs_rollno	total_credit
92005020	18.5
92005017	16.0
92005021	13.5
92005010	22.5
92005015	13.8
92005016	23.3
92005102	13.8
92005019	17.5
92005011	16.3
92005013	8.5
92005103	5.0
92005014	8.0
92005012	15.5
92005018	18.3

4.Count the number of students in each hostel whose department is CSE.

```
select hostel , count(*) as cse_students from students where
deptcode = 'CSE' group by hostel;
```

hostel	cse_students
1	2
4	1
5	2
2	1

5.Display the hostel,rollno,parent_inc of the student who has the max(parent_inc) in a hostel.

```
select rollno,hostel,parent_inc from students as s where parent_inc = (select max(parent_inc) from students where hostel = s.hostel);
```

rollno	hostel	parent_inc
92005010	1	80000.0
92005012	2	75000.0
92005014	3	90000.0
92005016	4	95000.0
92005019	5	88000.0
92005020	6	77000.0
92005021	7	69000.0
NULL	NULL	NULL

6.Display the name and parental income of each student greater than the parental income of some rollno 92005010.

```
select name , parent_inc from students where parent_inc >(select parent_inc from students where rollno = 92005010);
```

name	parent_inc
Priya	90000.0
Ananya	95000.0
Neha	88000.0

7.Find out marks of students who have marks more than rollno 92005102 for course CH103 and PH106.

```
select * from crs_regd where (crs_cd = 'CH103' and marks > (select marks from crs_regd where crs_rollno = 92005102 and crs_cd = 'CH103'))
UNION
select * from crs_regd where (crs_cd = 'PH106' and marks > (select marks from crs_regd where crs_rollno = 92005102 and crs_cd = 'PH106'));
```

crs_rollno	crs_cd	marks
92005010	CH103	60.00
92005015	CH103	78.00
92005016	CH103	85.00
92005011	PH106	72.00
92005015	PH106	82.00
92005016	PH106	88.00
92005018	PH106	58.00

Assignment 3

1.List students (rollno,name,deptcode) registered for course EE101.

```
select rollno,name,deptcode from students
join crs_regd on students.rollno = crs_regd.crs_rollno
where crs_cd = 'EE101';
```

rollno	name	deptcode
92005012	Kavya	ECE
92005013	Sanjay	ELE
92005014	Priya	ELE

2.List students (rollno,name) in ELE dept registered for course EE101.

```
select rollno,name from students
join crs_regd on students.rollno = crs_regd.crs_rollno
where deptcode = 'ELE' and crs_cd = 'EE101';
```

rollno	name
92005013	Sanjay
92005014	Priva

3. List students (rollno, name) in ELE dept not registered for course EE101.

```
select rollno, name from students
join crs_regd on students.rollno = crs_regd.crs_rollno
where deptcode = 'ELE' and rollno not in (select crs_rollno from
crs_regd where crs_cd = 'EE101');
```

rollno	name
92005103	Amit

4. List the names of the students who have registered for both the courses 'DBMS' and 'OS'.

```
select name from students
join crs_regd on crs_regd.crs_rollno = students.rollno
join crs_offrd on crs_regd.crs_cd = crs_offrd.crs_code
where crs_name in ('DBMS', 'OS')
group by rollno
having count(DISTINCT crs_name) = 2;
```

name
Aarav
Rohan
Ananya

5. Find the names of the faculty members who have offered either 'MIS' or 'Software Engg.'

```
select fac_name from faculty
join crs_offrd on faculty.fac_code = crs_offrd.crs_fac_cd
where crs_name = 'MIS'
UNION
select fac_name from faculty
join crs_offrd on faculty.fac_code = crs_offrd.crs_fac_cd
where crs_name = 'Software Engg.';
```

fac_name
Dr. DBP
Dr. NLS

6.Find the names of the faculty members who have offered 'MIS' but not offered 'Software Engg.'

```
select fac_name from faculty
join crs_offrd on faculty.fac_code = crs_offrd.crs_fac_cd
where crs_name = 'MIS'
EXCEPT
select fac_name from faculty
join crs_offrd on faculty.fac_code = crs_offrd.crs_fac_cd
where crs_name = 'Software Engg.';
```

fac_name
Dr. DBP

7.Find out the students in each hostel who are not registered for any course.

```
select name,hostel from students
where rollno not in (select crs_rollno from crs_regd);
```

name	hostel
Kanha	2

8.Select the students who are in ELE dept or who have registered for course CS101.

```
select rollno,name,deptcode from students
where deptcode = 'ELE'
UNION
select rollno,name,deptcode from students
join crs_regd on students.rollno = crs_regd.crs_rollno
where crs_cd = 'CS101';
```

rollno	name	deptcode
92005013	Sanjay	ELE
92005014	Priya	ELE
92005103	Amit	ELE
92005010	Aarav	CSE
92005011	Rohan	CSE
92005016	Ananya	CSE
92005019	Neha	CSE

9.Display the students who have registered to all the courses.

```
select rollno,name,deptcode from students
join crs_regd on students.rollno = crs_regd.crs_rollno
group by rollno having count(crs_cd) = (select count(*) from
crs_offrd);
```

rollno	name	deptcode
--------	------	----------

10.Give Grace Marks 5 in subject 'DBMS'to the students who have scored less than 50 in that subject.

```
update crs_regd
set marks = marks + 5
where crs_cd = (select crs_code from crs_offrd where crs_name =
'DBMS') and marks < 50;
```

2 row(s) affected Rows matched: 2 Changed: 2 Warnings: 0