DBMS LABSHEET THREE

```
--Roll Number: AM.EN.U4CSE12501
--Name: Surya Seetharaman

Create table temp
(
    sid Varchar(20) primary key,
    sname Varchar(20),
    dept_name Varchar(3) references Departments(dept_name),
    cgpa float, state Varchar(20),
    nationality Varchar(15),
    advisor_id  int references Instructors(Iid)
);

insert into temp values
(
        'u4cse12001','Edward Cullen','CS',8.60,'Tel Aviv','Israeli',3000
);
insert into temp values
(
        'u4cse12002','Harry Potter','CS',7.33,'Jerusalem','Israeli',3001
);
insert into temp values
(
        'p4mec12003','Hermoine Granger', 'ME', 10.00, 'Karnataka', 'Indian', 3002
);
insert into temp values
(
        'p4mec12004','Ronald Weasley','ME',8.98,'Maharashtra','Indian',3002
);
insert into temp values
(
        'u4cse12005','Isabella Swan','CS',8.00,'Eilat','Israeli',3000
);
insert into temp values
(
        'p4mec12006','Tom Cruise','ME',9.05,'Ashkelon','Israeli',3003
);
insert into temp values
(
        'u4cse12007','Ethan Hunt','CS',5.00,'Netanya','Israeli',3001
);
insert into temp values
(
        'p4mec12008','Angelina Jolie','ME',8.64,'Tamil Nadu','Indian',3003
);
insert into temp values
(
        'u4cse12009','Alice Raichand','CS',6.66,'Gujaat','Indian',3000
);
```

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```
insert into temp values
(
        'u4cse12010','Surya Seetharaman','CS',9.31,'Kerala','Indian',3001
);
select * from temp;
```

	sid character varying(20)	sname character varying(20)	dept_name character varying(3)	cgpa double precision	state character varying(20)	nationality character varying(15)	advisor_id integer
1	u4cse12001	Edward Cullen	CS	8.6	Tel Aviv	Israeli	3000
2	u4cse12002	Harry Potter	CS	7.33	Jerusalem	Israeli	3001
3	p4mec12003	Hermoine Grange	ME	10	Karnataka	Indian	3002
4	p4mec12004	Ronald Weasley	ME	8.98	Maharashtra	Indian	3002
5	u4cse12005	Isabella Swan	CS	8	Eilat	Israeli	3000
6	p4mec12006	Tom Cruise	ME	9.05	Ashkelon	Israeli	3003
7	u4cse12007	Ethan Hunt	CS	5	Netanya	Israeli	3001
8	p4mec12008	Angelina Jolie	ME	8.64	Tamil Nadu	Indian	3003
9	u4cse12009	Alice Raichand	CS	6.66	Gujaat	Indian	3000
10	u4cse12010	Surya Seetharam	CS	9.31	Kerala	Indian	3001

```
create table course1
(
 ccode Varchar(6) primary key,
 ctitle Varchar (25), credits int,
 semester Varchar(2)
);

insert into course1 values('CSE340','DBMS',4,'S5');
insert into course1 values('CSE200','DS',4,'S4');
insert into course1 values('CSE100','OOPS',3,'S3');
insert into course1 values('CSE330','OS',2,'S6');
insert into course1 values('CSE320','ALGO',4,'S5');
insert into course1 values('CSE310','SICP',4,'S3');
insert into course1 values('CSE400','software engineering',2,'S1');

select * from course1;
```

	ccode character varying(6)	ctitle character varying(25)	credits integer	semester character varying(2)
1	CSE340	DBMS	4	S5
2	CSE200	DS	4	S4
3	CSE100	OOPS	3	S3
4	CSE330	OS	2	S6
5	CSE320	ALGO	4	S5
6	CSE310	SICP	4	S3
7	CSE400	software engine	2	S1

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```
create table Departments
(
 dept_name Varchar(2) primary key,
 location Varchar(15),
 budget Int
);
```

--entered values manually.

	dept_name character varying(2)	location character varying(15)	budget integer
1	ME	Second floor	400000
2	CS	First floor	500000

```
create table Instructors
(
 Iid int primary key,
 Iname Varchar(20),
 dep_name Varchar(2) references Departments (dept_name),
 salary int
);
```

//entered values manually

	iid integer	iname character varying(20)	dep_name character varying(2)	salary integer
1	3000	Remya Rajesh	CS	50000
2	3001	Suhas Kurup	CS	60000
3	3002	Bala K	ME	40000
4	3003	Hari Prasad	ME	20000

```
Create table Batch_details
(
        batchid Varchar(7)primary key,
        ccode Varchar(6) references course1(ccode),
        semester Varchar(2),
        year Varchar(4),
        room_no Varchar(4),
        time_slot_id int references timeslots (time_slot_id)
);
```

//entered values manually

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	batchid character varying(7)	ccode character varying(6)	semester character varying(2)	year character varying(4)	room_no character varying(4)	time_slot_id integer
1	S5CSEA	CSE100	S5	2012	N209	1
2	S5CSEB	CSE200	S5	2012	N208	2
3	S1CSEA	CSE340	S1	2014	S102	1
4	S1CSEB	CSE400	S1	2012	S204	2
5	S2CSEA	CSE330	S2	2013	N300	3
6	S2CSEB	CSE310	S2	2013	N200	4
7	S7CSEA	CSE320	S7	2011	N216	4
8	S7CSEB	CSE320	S7	2011	S220	3

```
create table teach_details
(
        Iid int references Instructors(Iid),
        batchid Varchar(7) references batch_details(batchid),
        ccode Varchar(6) references Course1(ccode),
        semester Varchar(2) ,
        primary key(Iid,ccode,semester),
        year Varchar(20)
);
```

//entered manually

	iid integer	batchid character varying(7)	ccode character varying(6)	semester character varying(2)	year character varying(20)
1	3000	S5CSEA	CSE100	S5	2012
2	3001	S5CSEB	CSE200	s5	2012

```
create table timeslots
(
        time_slot_id int primary key ,
        day Varchar(25),
        start_time time,end_time time
);
```

//entered values manually.

	time_slot_id integer	day character varying(25)	start_time time without time zone	end_time time without time zone
1	1	11/Aug/2014	08:30:00	09:30:00
2	2	11/Aug/2014	13:30:00	16:30:00
3	3	12/Aug/2014	08:30:00	12:30:00
4	4	12/Aug/2014	16:30:00	19:30:00
5	5	13/Aug/2014	09:30:00	10:30:00

```
create table registration_details
(
        sid Varchar (10) references students(sid),
```

```
        batchid Varchar(7) references batch_details(batchid),
        ccode Varchar(6) references course1(ccode),
        semester Varchar(2) ,
        primary key(sid,ccode,semester),
        year int ,
        grade Varchar(2)
);
```

//entered values manually

	sid [PK] character varying	batchid character v	ccode [PK] charac	semester [PK] charac	year integer	grade character v
1	u4cse12001	S5CSEA	CSE100	S5	2012	A
2	u4cse12002	S7CSEA	CSE200	S7	2011	C
3	u4cse12005	S1CSEA	CSE320	S1	2014	B
4	u4cse12007	S5CSEB	CSE340	S5	2012	A

```
create table Prerequisites1
(
        ccode Varchar(6) references Course1(ccode),
        prereqccode Varchar(6) references Course1(ccode),
        primary key(ccode,prereqccode)
);
```

//entered values manually

	ccode [PK] character varyi	prereqccode [PK] character varying(6)
1	CSE340	CSE100
2	CSE330	CSE310
*	CSE400	CSE200

1. Use truncate and delete to remove the student data. What are the notable differences between truncate, delete and drop commands of SQL?

```
--solution for question 1.
truncate table temp;
--TRUNCATE COMMAND:-
--The truncate command hence deletes the whole structure and recreates it.
--That is, it deletes the contents of the table but retains the structure.
--It is a DDL command.
delete from temp;
--DELETE COMMAND:-
--The delete command also deletes the contents of the table ,  sequentially row by row or
```

full table.
--We can give conditions for the deletion of a particular row.
--That is, it deletes the contents of the table but retains the structure.
--It is a DML command.
drop table temp;
--DROP COMMAND:-
-- It deletes the whole structure including the contents of the structure.
--That is, it deletes the contents of the table and it doesn't retain the structure.
--It is a DDL command.

2. Write down the differences between the different data types you have used.
--solution for question 2.
--CHAR<SIZE>
--This data type helps us create a sequence of characters/strings of size <SIZE>.
--The values inserted into this data type should be included in quotes.
--is size is not mentioned the default size is taken as one.
--VARCHAR<SIZE>
--This is also used to declare strings .
--The difference of this from CHAR<SIZE> is that , a field of CHAR type always allocates ,
--memory storage for the maximum number of characters that can be stored in thhe field while,
--a VARCHAR field will alocate only enough memory to store the actual size of VARCHAR field which is implementor defined and can
--vary between 254 to 2048 characters.
--INT
--This data type is used to store all integer type values and it does not have any arguments.
--The size is automatically set to a value depending on the computer.
--FLOAT
--This data type is used to store decimal point values like cgpa.
--DATE
--This is a special kind of data type used to store datalike date of birth,date of admission etc.
--The format we use is the IBM USA Standard mm/dd/yyyy.
--TIME
--This is a special kind of data type used to store time. We use the hh.mm AM/PM format. (IBM USA Standard).

3. Retrieve the name of the courses that has 'systems' or 'software' appearing anywhere in
their names irrespective of the lower or upper case. (String operation)

--solution for question 3.
select ctitle from course1 where ctitle ilike '%systems%' or ctitle ilike '%software%';

	ctitle character varying(25)
1	software engineering

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4. Display the details of the courses with following two headers (String concatenation)
CourseCode:CourseTitle

--solution for question 4.
select ccode || ':' || ctitle as "CourseCode:CourseTitle" , credits as "Credits" from course1 ;

	CourseCode:CourseTitle text	Credits integer
1	CSE340:DBMS	4
2	CSE200:DS	4
3	CSE100:OOPS	3
4	CSE330:OS	2
5	CSE320:ALGO	4
6	CSE310:SICP	4
7	CSE400:software engineering	2

5. Find the number of instructors for each course for different batches in a semester and year.

--solution for question five
SELECT batchid,semester,year1 ,count(distinct instructorid) from Teach group by batchid , semester ,year1 ;

6. Find the number of departments located in the first floor.
--Solution for question 6.
select count(distinct dept_name) from Departments where location = 'First floor';

	count bigint
1	1

7.Find the average salary of instructors of each department.

--Solution for question7.
select dep_name,AVG(salary) from instructors group by dep_name;

	dep_name character varying(2)	avg numeric
1	ME	30000.
2	CS	55000.

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8. Find the average salary and the name of each department if the average salary is more than Rs. 15000.

--solution for question 8.
select dep_name,AVG(salary) from instructors group by dep_name having AVG(salary) > 15000;

	dep_name character varying(2)	avg numeric
1	ME	30000.
2	CS	55000.

9. Display the student details sorted by name in the descending order.

--solution for question 9.
select * from temp order by sname desc;

	sid character varying(20)	sname character varying(20)	dept_name character varying(3)	cgpa double precision	state character varying(20)	nationality character varying(15)	advisor_id integer
1	p4mec12006	Tom Cruise	ME	9.05	Ashkelon	Israeli	3003
2	u4cse12010	Surya Seetharam	CS	9.31	Kerala	Indian	3001
3	p4mec12004	Ronald Weasley	ME	8.98	Maharashtra	Indian	3002
4	u4cse12005	Isabella Swan	CS	8	Eilat	Israeli	3000
5	p4mec12003	Hermoine Grange	ME	10	Karnataka	Indian	3002
6	u4cse12002	Harry Potter	CS	7.33	Jerusalem	Israeli	3001
7	u4cse12007	Ethan Hunt	CS	5	Netanya	Israeli	3001
8	u4cse12001	Edward Cullen	CS	8.6	Tel Aviv	Israeli	3000
9	p4mec12008	Angelina Jolie	ME	8.64	Tamil Nadu	Indian	3003
10	u4cse12009	Alice Raichand	CS	6.66	Gujaat	Indian	3000

10. Alter and add a column join date to the instructor table.

--solution for question 10.
alter table instructors add column join_date Date;

	iid [PK] integer	iname character varying	dep_name character varying(2)	salary integer	join_date date
1	3000	Remya Rajesh	CS	50000	
2	3001	Suhas Kurup	CS	60000	
3	3002	Bala K	ME	40000	
4	3003	Hari Prasad	ME	20000	

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11. Find the employees who joined after '01/Jan/2002'
//manually entered the join date values into the table

	iid [PK] integer	iname character varying(2(	dep_name character varying(2)	salary integer	join_date date
1	3000	Remya Rajesh	CS	50000	21/Mar/2010
2	3001	Suhas Kurup	CS	60000	05/May/2013
3	3002	Bala K	ME	40000	30/Aug/2000
4	3003	Hari Prasad	ME	20000	24/Sep/1999

--solution to question 11.
select * from Instructors where join_date > '01/Jan/2002';

	iid integer	iname character varying(20)	dep_name character varying(2)	salary integer	join_date date
1	3001	Suhas Kurup	CS	60000	2013-05-05
2	3000	Remya Rajesh	CS	50000	2010-03-21

12. Find the name of the students and the name of the courses he/she has registered for.

--solution of question 12.
select sname,ctitle from temp t,course1 c,registration_details r where r.sid=t.sid and c.ccode=r.ccode;

	sname character varying(20)	ctitle character varying(25)
1	Edward Cullen	OOPS
2	Harry Potter	DS
3	Ethan Hunt	DBMS
4	Isabella Swan	ALGO

13. Find the name of the instructors and the name of the courses they teach for 5th semester CS-A batch students.

--solution for question 13.

select iname,ctitle from instructors i,course1 c ,teach_details t,batch_details b where b.batchid = 'S5CSEA' and b.semester='S5' and t.batchid=b.batchid and i.lid=t.lid and t.ccode=c.ccode;

	iname character varying(20)	ctitle character varying(25)
1	Remya Rajesh	OOPS

14. Find the name of the instructors from the CS department and the name of the courses they teach for 5th semester CS-A batch students.

--solution for question 14.
select iname,ctitle from instructors i,course1 c ,teach_details t,batch_details b where i.dep_name='CS' and b.batchid = 'S5CSEA' and b.semester='S5' and t.batchid=b.batchid and i.lid=t.lid and t.ccode=c.ccode;

	iname character varying(20)	ctitle character varying(25)
1	Remya Rajesh	OOPS

15. Display the name of the course and the name of the pre-requisite course.

--solution for question 15.
select a.ctitle,b.ctitle from course1 a,course1 b,Prerequisites1 p where a.ccode=p.ccode and b.ccode = p.prereqccode;

	ctitle character varying(25)	ctitle character varying(25)
1	DBMS	OOPS
2	OS	SICP
3	software engine	DS

16. Find the number of rooms that are engaged on '11/Aug/2014' from 8:30 to 9:30 A.M.

select count(room_no) from Batch_details, TimeSlots where TimeSlots.time_slot_id =Batch_details.time_slot_id and TimeSlots.start_time =8:30 and TimeSlot.end_time =9:30 and TimeSlots.day ='2014/08/11';