

## ADBMS(LAB CYCLE1)

### I)DDL Commands:

1. Create the database named CYBERCOLLEGE and the above tables in the CYBERCOLLEGE database; include the Primary Key Constraint, Referential Integrity Constraints, and Check Constraint

```
mysql>
mysql> create database cybercollege;
Query OK, 1 row affected (0.03 sec)

mysql> use cybercollege;
Database changed
mysql> create table student(stdu_no char(9) primary key,stud_name char(30),stud_fname char(20),address char(50),city char(30),state char(5),postal_code char(9));
Query OK, 0 rows affected (0.20 sec)

mysql> desc student;
```

Field	Type	Null	Key	Default	Extra
stdu_no	char(9)	NO	PRI	NULL	
stud_name	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
address	char(50)	YES		NULL	
city	char(30)	YES		NULL	
state	char(5)	YES		NULL	
postal_code	char(9)	YES		NULL	

```
7 rows in set (0.06 sec)
```

```
mysql> desc student;
```

Field	Type	Null	Key	Default	Extra
stdu_no	char(9)	NO	PRI	NULL	
stud_name	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
address	char(50)	YES		NULL	
city	char(30)	YES		NULL	
state	char(5)	YES		NULL	
postal_code	char(9)	YES		NULL	

```
7 rows in set (0.06 sec)
```

```
mysql> create table instructor(instructor_id char(5) primary key,stud_lname char(30),stud_fname char(20),phone char(8));
Query OK, 0 rows affected (0.06 sec)
```

```
mysql> desc instructor;
```

Field	Type	Null	Key	Default	Extra
instructor_id	char(5)	NO	PRI	NULL	
stud_lname	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
phone	char(8)	YES		NULL	

```
4 rows in set (0.01 sec)
```

```
mysql> create table course(course_code char(6) primary key,course_tittle char(25),course_hours numeric(2,0));
Query OK, 0 rows affected (0.07 sec)
```

```
mysql> desc course;
```

Field	Type	Null	Key	Default	Extra
course_code	char(6)	NO	PRI	NULL	
course_tittle	char(25)	YES		NULL	
course_hours	decimal(2,0)	YES		NULL	

```
3 rows in set (0.01 sec)
```

```
mysql> .
```

```
MySQL 5.7 Command Line Client
+-----+
| phone | char(8) | YES | | NULL | |
+-----+
4 rows in set (0.01 sec)

mysql> create table course(course_code char(6) primary key,course_title char(25),course_hours numeric(2,0));
Query OK, 0 rows affected (0.07 sec)

mysql> desc course;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| course_code | char(6) | NO | PRI | NULL | |
| course_title | char(25) | YES | | NULL | |
| course_hours | decimal(2,0) | YES | | NULL | |
+-----+
3 rows in set (0.01 sec)

mysql> create table section(sec_id char(7) primary key,time_off char(10),days_off char(10),sec_room char(8),class_size numeric(3,0),check(class_size)=0,number_enrolled numeric(3,0),check(number_enrolled)=0,instructor_id char(5) references instructor(instructor_id),course_code char(6) references course(course_code));
Query OK, 0 rows affected (0.06 sec)

mysql> desc section;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| sec_id | char(7) | NO | PRI | NULL | |
| time_off | char(10) | YES | | NULL | |
| days_off | char(10) | YES | | NULL | |
| sec_room | char(8) | YES | | NULL | |
| class_size | decimal(3,0) | YES | | NULL | |
| number_enrolled | decimal(3,0) | YES | | NULL | |
| instructor_id | char(5) | YES | | NULL | |
| course_code | char(6) | YES | | NULL | |
+-----+
8 rows in set (0.01 sec)

mysql> create table enrollement(stdu_no char(9) references student(stdu_no),sec_id char(7) references section(sec_id),grade char(2));
Query OK, 0 rows affected (0.05 sec)

mysql> desc enrollement;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| stdu_no | char(9) | YES | | NULL | |
| sec_id | char(7) | YES | | NULL | |
| grade | char(2) | YES | | NULL | |
+-----+
3 rows in set (0.01 sec)
```

## 2.Add a field Country to the STUDENT table with the default value set to 'India'

```
3 rows in set (0.01 sec)

mysql>
mysql>
mysql> alter table student add country varchar(20) default 'India';
Query OK, 0 rows affected (0.25 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc student;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| stdu_no | char(9) | NO | PRI | NULL | |
| stud_name | char(30) | YES | | NULL | |
| stud_fname | char(20) | YES | | NULL | |
| address | char(50) | YES | | NULL | |
| city | char(30) | YES | | NULL | |
| state | char(5) | YES | | NULL | |
| postal_code | char(9) | YES | | NULL | |
| country | varchar(20) | YES | | India | |
+-----+
8 rows in set (0.01 sec)

mysql>
```

3.. Add a constraint to the Grade field in the ENROLMENT table that accepts only the values A,B,C, and 'D'.

```
mysql> alter table enrollement add constraint grade check (grade('A','B','C'));
Query OK, 0 rows affected (0.13 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc enrollement;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stdu_no | char(9) | YES | | NULL | |
| sec_id | char(7) | YES | | NULL | |
| grade | char(2) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

4.Modify the ENROLMENT table by changing the width of the field Grade to 2

```
mysql> alter table enrollement modify grade char(2);
Query OK, 0 rows affected (0.11 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc enrollement;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stdu_no | char(9) | YES | | NULL | |
| sec_id | char(7) | YES | | NULL | |
| grade | char(2) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

5. Add a new column, salary to the INSTRUCTOR table and display its modified schema.

```
mysql> desc instructor;
```

Field	Type	Null	Key	Default	Extra
instructor_id	char(5)	NO	PRI	NULL	
stud_lname	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
phone	char(8)	YES		NULL	

```
4 rows in set (0.00 sec)
```

```
mysql> alter table instructor add salary varchar(10);
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> desc instructor;
```

Field	Type	Null	Key	Default	Extra
instructor_id	char(5)	NO	PRI	NULL	
stud_lname	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
phone	char(8)	YES		NULL	
salary	varchar(10)	YES		NULL	

```
5 rows in set (0.00 sec)
```

6. Drop the column Country from the STUDENT table.

```
mysql> desc student;
```

Field	Type	Null	Key	Default	Extra
stdu_no	char(9)	NO	PRI	NULL	
stud_name	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
address	char(50)	YES		NULL	
city	char(30)	YES		NULL	
state	char(5)	YES		NULL	
postal_code	char(9)	YES		NULL	
country	varchar(20)	YES		India	

```
8 rows in set (0.00 sec)
```

```
mysql> alter table student drop country;
```

```
Query OK, 0 rows affected (0.07 sec)
```

```
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> desc student;
```

Field	Type	Null	Key	Default	Extra
stdu_no	char(9)	NO	PRI	NULL	
stud_name	char(30)	YES		NULL	
stud_fname	char(20)	YES		NULL	
address	char(50)	YES		NULL	
city	char(30)	YES		NULL	
state	char(5)	YES		NULL	
postal_code	char(9)	YES		NULL	

```
7 rows in set (0.00 sec)
```

7.create a view for instructors to display the courses taught by an instructor  
 .Display the personal details but by hiding salary information

```
mysql> select * from instructor;
+-----+-----+-----+-----+-----+
| instructor_id | instra_fname | instra_lname | phone   | salary |
+-----+-----+-----+-----+-----+
| 201           | Asha         |              | 80785639 | 22000  |
| 202           | Ashna        |              | 90783499 | 33000  |
| 203           | Sandeep      |              | 90783499 | 27500  |
| 204           | Asifa        |              | 98113499 | 44000  |
| 205           | George       |              | 98111199 | 23000  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> create view inst as select i.instructor_id,i.instra_fname,i.phone,c.course_tittle from instructor i join course c join section s where i.instructor_id=s.instructor_id and s.course_code=c.course_code;
Query OK, 0 rows affected (0.00 sec)
```

## Query Result:

```
mysql> select * from inst;
+-----+-----+-----+-----+
| instructor_id | instra_fname | phone   | course_tittle |
+-----+-----+-----+-----+
| 201           | Asha         | 80785639 | AOS           |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

## II)DML Commands:

8. . Insert details of you and your 5 friends in STUDENT table and the details of 5 instructors with names (Asha, Ashna, Sandeep, Asifa, George) in INSTRUCTOR table

```
mysql> insert into student values(101,'arya','manoj','pookalam','wayanad','k',673592);
Query OK, 1 row affected (0.02 sec)

mysql> insert into student values(102,'sruthi','das','parvoor','ekm','k',673595);
Query OK, 1 row affected (0.01 sec)

mysql> insert into student values(103,'manu','jose','vadakara','calicut','k',673593);
Query OK, 1 row affected (0.00 sec)

mysql> insert into student values(104,'blessy','jose','balussery','calicut','k',673593);
Query OK, 1 row affected (0.00 sec)

mysql> insert into student values(105,'aron','mk','mookanoor','angamali','k',673597);
Query OK, 1 row affected (0.01 sec)

mysql> select * from student;
+-----+-----+-----+-----+-----+-----+-----+
| stdu_no | stud_name | stud_fname | address | city | state | postal_code |
+-----+-----+-----+-----+-----+-----+-----+
| 101 | arya | manoj | pookalam | wayanad | k | 673592 |
| 102 | sruthi | das | parvoor | ekm | k | 673595 |
| 103 | manu | jose | vadakara | calicut | k | 673593 |
| 104 | blessy | jose | balussery | calicut | k | 673593 |
| 105 | aron | mk | mookanoor | angamali | k | 673597 |
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> desc instructor;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| instructor_id | char(5) | NO | PRI | NULL | |
| instra_lname | char(30) | YES | | NULL | |
| instra_fname | char(20) | YES | | NULL | |
| phone | char(8) | YES | | NULL | |
| salary | varchar(10) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.01 sec)

mysql> insert into instructor values(201,'Asha','',8078563499,20000);
ERROR 1406 (22001): Data too long for column 'phone' at row 1
mysql> insert into instructor values(201,'Asha','',80785639,20000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into instructor values(202,'Ashna','',9078563499,30000);
ERROR 1406 (22001): Data too long for column 'phone' at row 1
mysql> insert into instructor values(202,'Ashna','',90783499,30000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into instructor values(203,'Sandeep','',98783499,25000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into instructor values(204,'Asifa','',98113499,40000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into instructor values(205,'George','',98111199,50000);
Query OK, 1 row affected (0.00 sec)

mysql> select * from instructor;
+-----+-----+-----+-----+-----+
| instructor_id | instra_lname | instra_fname | phone | salary |
+-----+-----+-----+-----+-----+
| 201 | Asha | | 80785639 | 20000 |
| 202 | Ashna | | 90783499 | 30000 |
| 203 | Sandeep | | 98783499 | 25000 |
| 204 | Asifa | | 98113499 | 40000 |
| 205 | George | | 98111199 | 50000 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```



9. . Add details of the first and second semester courses. Also add a new course for Data Mining with a course code of 20MCA260 worth with credit of 4 hours

```
mysql> insert into course values('20MCA101','MFCS',7,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA102','ADS',6,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA103','DIGITAL',8,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA104','ASE',12,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA201','ADBMS',8,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA202','AI',7,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA203','ACN',5,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA204','AOS',13,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into course values('20MCA260','DATA MINING',4,2);
Query OK, 1 row affected (0.00 sec)

mysql> select * from course;
```

course_code	course_title	course_hours	semester
20MCA101	MFCS	7	1
20MCA102	ADS	6	1
20MCA103	DIGITAL	8	1
20MCA104	ASE	12	1
20MCA201	ADBMS	8	2
20MCA202	AI	7	2
20MCA203	ACN	5	2
20MCA204	AOS	13	2
20MCA260	DATA MINING	4	2

```
9 rows in set (0.00 sec)
```

10. . Add a new section for this new course with section ID as 301. The section should meet in 2-4 on MW in BLGNG102. The class size should be 35, and number enrolled should be 0. The instructor should be 3, and the course is 20MCA260.

Also add sections 302 and 303 for the courses AOS and OB and enrol 5 students each to these course.

```
mysql> desc section;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| sec_id | char(7) | NO | PRI | NULL | |
| time_off | char(10) | YES | | NULL | |
| days_off | char(10) | YES | | NULL | |
| sec_room | char(8) | YES | | NULL | |
| class_size | decimal(3,0) | YES | | NULL | |
| number_enrolled | decimal(3,0) | YES | | NULL | |
| instructor_id | char(5) | YES | | NULL | |
| course_code | char(10) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> insert into section values(301,2-4,'MW','BLGNG102',35,0,3,'20MCA60');
Query OK, 1 row affected (0.00 sec)

mysql> insert into section values(302,2,'MW','BLGNG102',35,5,201,'20MCA204');
Query OK, 1 row affected (0.00 sec)

mysql> insert into section values(303,2,'MW','BLGNG102',35,5,202,'20MCA205');
Query OK, 1 row affected (0.00 sec)

mysql> select * from section;
+-----+-----+-----+-----+-----+-----+-----+-----+
| sec_id | time_off | days_off | sec_room | class_size | number_enrolled | instructor_id | course_code |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 301 | -2 | MW | BLGNG102 | 35 | 0 | 3 | 20MCA60 |
| 302 | 2 | MW | BLGNG102 | 35 | 5 | 201 | 20MCA204 |
| 303 | 2 | MW | BLGNG102 | 35 | 5 | 202 | 20MCA205 |
+-----+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> update section set time_off=2.4 where sec_id=301;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> select * from section;
+-----+-----+-----+-----+-----+-----+-----+-----+
| sec_id | time_off | days_off | sec_room | class_size | number_enrolled | instructor_id | course_code |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 301 | 2.4 | MW | BLGNG102 | 35 | 0 | 3 | 20MCA60 |
| 302 | 2 | MW | BLGNG102 | 35 | 5 | 201 | 20MCA204 |
| 303 | 2 | MW | BLGNG102 | 35 | 5 | 202 | 20MCA205 |
+-----+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

11. Register yourself along with your 3 friends for this new course by adding a row to the ENROLMENT table. The grade should be null.

```
mysql> desc enrollement;
+-----+-----+-----+-----+-----+-----+
| Field | Type  | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stdu_no | char(9) | YES  |     | NULL    |       |
| sec_id  | char(7) | YES  |     | NULL    |       |
| grade   | char(2) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> insert into enrollement values(101,201,'');
Query OK, 1 row affected (0.01 sec)

mysql> insert into enrollement values(101,301,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into enrollement values(102,301,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into enrollement values(103,301,'');
Query OK, 1 row affected (0.00 sec)

mysql> select * from enrollement;
+-----+-----+-----+
| stdu_no | sec_id | grade |
+-----+-----+-----+
| 101     | 201    |       |
| 101     | 301    |       |
| 102     | 301    |       |
| 103     | 301    |       |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

12. Update the 301 section, and increase the class sizes by 10%.

```
mysql> update section set class_size=class_size+(class_size * 10/100) where sec_id=301;
Query OK, 1 row affected, 1 warning (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 1

mysql> select * from section;
+-----+-----+-----+-----+-----+-----+-----+-----+
| sec_id | time_off | days_off | sec_room | class_size | number_enrolled | instructor_id | course_code |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 301    | 2.4      | MW       | BLGNG102 | 39         | 0               | 3             | 20MCA60     |
| 302    | 2        | MW       | BLGNG102 | 35         | 5               | 201           | 20MCA204    |
| 303    | 2        | MW       | BLGNG102 | 35         | 5               | 202           | 20MCA205    |
+-----+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

13. Give a 10% increment in salary for all instructors.

```
mysql> select * from instructor;
```

instructor_id	instra_lname	instra_fname	phone	salary
201	Asha		80785639	20000
202	Ashna		90783499	30000
203	Sandeep		98783499	25000
204	Asifa		98113499	40000
205	George		98111199	50000

```
5 rows in set (0.00 sec)
```

```
mysql> update instructor set salary=salary+(salary*10/100);
Query OK, 5 rows affected (0.01 sec)
Rows matched: 5  Changed: 5  Warnings: 0
```

```
mysql> select * from instructor;
```

instructor_id	instra_lname	instra_fname	phone	salary
201	Asha		80785639	22000
202	Ashna		90783499	33000
203	Sandeep		98783499	27500
204	Asifa		98113499	44000
205	George		98111199	55000

```
5 rows in set (0.00 sec)
```

14. Delete section 302 and verify for the rows in enrolment table for that section.

```
mysql> select * from section;
```

sec_id	time_off	days_off	sec_room	class_size	number_enrolled	instructor_id	course_code
301	2.4	MW	BLGNG102	39	0	3	20MCA60
302	2	MW	BLGNG102	35	5	201	20MCA204
303	2	MW	BLGNG102	35	5	202	20MCA205

```
3 rows in set (0.02 sec)

mysql> delete from section where section_id=302;
ERROR 1054 (42S22): Unknown column 'section_id' in 'where clause'
mysql> delete from section where sec_id=302;
Query OK, 1 row affected (0.03 sec)

mysql> select * from section;
```

sec_id	time_off	days_off	sec_room	class_size	number_enrolled	instructor_id	course_code
301	2.4	MW	BLGNG102	39	0	3	20MCA60
303	2	MW	BLGNG102	35	5	202	20MCA205

```
2 rows in set (0.00 sec)
```

### III)TCL Commands:

15.Undo the previous delete operation

```
mysql> rollback;
Query OK, 0 rows affected (0.00 sec)

mysql> _
```

16. Save all the transactions to the database.

```
mysql> commit;
Query OK, 0 rows affected (0.00 sec)
```

17.. Grant the privilege to read and delete from the ENROLMENT table to the User U1.

```
mysql> create user 'U1' identified by '12345678';
Query OK, 0 rows affected (0.09 sec)

mysql> select user from mysql.user;
+-----+
| user          |
+-----+
| U1            |
| mysql         |
| mysql.session |
| mysql.sys     |
| root          |
+-----+
5 rows in set (0.00 sec)
```

```
mysql> grant select,delete on enrollement to 'U1';
Query OK, 0 rows affected (0.01 sec)

mysql> show grants for 'U1';
+-----+
| Grants for U1@%                |
+-----+
| GRANT USAGE ON *.* TO 'U1'@'%' |
| GRANT SELECT, DELETE ON `cybercollege`.`enrollement` TO 'U1'@'%' |
+-----+
2 rows in set (0.00 sec)

mysql> █
```

## 18. Revoke the delete privilege from U1

```
mysql> revoke delete on enrollement from 'U1';
Query OK, 0 rows affected (0.01 sec)

mysql> show grants for 'U1';
+-----+
| Grants for U1@% |
+-----+
| GRANT USAGE ON *.* TO 'U1'@'%' |
| GRANT SELECT ON `cybercollege`.`enrollement` TO 'U1'@'%' |
+-----+
2 rows in set (0.00 sec)

mysql>
```

## IV) Accessing database (SELECT,filtering using WHERE,HAVING,GROUPBY,ORDER BYClauses,Subquery)

19. . Display the full name and contact details of students living in Kochi.

```
mysql> select * from student;
```

stdu_no	stud_fname	stud_lname	address	city	state	postal_code
101	arya	manoj	pookalam	wayanad	k	673592
102	sruthi	das	parvoor	kochi	k	673595
103	manu	jose	vadakara	calicut	k	673593
104	blessy	jose	balussery	calicut	k	673593
105	aron	mk	mookanoor	angamali	k	673597

```
5 rows in set (0.02 sec)
```

  

```
mysql> select stud_fname,stud_lname,address from student where city='kochi';
```

stud_fname	stud_lname	address
sruthi	das	parvoor

```
1 row in set (0.02 sec)
```

20. . List the student details who has longest first name

```
mysql> select * from student;
```

stdu_no	stud_fname	stud_lname	address	city	state	postal_code
101	arya	manoj	pookalam	wayanad	k	673592
102	sruthi	das	parvoor	kochi	k	673595
103	manu	jose	vadakara	calicut	k	673593
104	blessy	jose	balussery	calicut	k	673593
105	aron	mk	mookanoor	angamali	k	673597

```
5 rows in set (0.00 sec)
```

  

```
mysql> select * from student where lenght(stud_fname)=(select max(lenght(stud_fname))from student);
```

```
ERROR 1305 (42000): FUNCTION cybercollege.lenght does not exist
```

```
mysql> select * from student where length(stud_fname)=(select max(length(stud_fname))from student);
```

stdu_no	stud_fname	stud_lname	address	city	state	postal_code
102	sruthi	das	parvoor	kochi	k	673595
104	blessy	jose	balussery	calicut	k	673593

```
2 rows in set (0.01 sec)
```



21. Display the name and phone number of the instructors who are handling the courses AOS and ADBMS

```
mysql> select instra_fname,phone from instructor i join course c join section s where i.instructor_id=s.instructor_id and s.course_code=c.course_code and c.course_title='AOS' or 'ADBMS';
```

instra_fname	phone
Ashna	90783499

```
1 row in set, 1 warning (0.10 sec)
```

22. List the codes, titles, and credit hours for courses worth 4 hours. Order the results in descending order of course code

```
mysql> select * from course;
```

course_code	course_title	course_hours	semester
20MCA101	MFCS	7	1
20MCA102	ADS	4	1
20MCA103	DIGITAL	8	1
20MCA104	ASE	4	1
20MCA201	ADBMS	8	2
20MCA202	AI	7	2
20MCA203	ACN	5	2
20MCA204	AOS	13	2
20MCA260	DATA MINING	4	2

```
9 rows in set (0.00 sec)
```

```
mysql> select course_code,course_title,course_hours from course where course_hours=4 order by course_code desc;
```

course_code	course_title	course_hours
20MCA260	DATA MINING	4
20MCA104	ASE	4
20MCA102	ADS	4

```
3 rows in set (0.01 sec)
```

23. Display the names of the students in the descending order along with their phone number.

```
mysql> select * from student;
+-----+-----+-----+-----+-----+-----+-----+
| stdu_no | stud_fname | stud_lname | address | city | state | postal_code |
+-----+-----+-----+-----+-----+-----+-----+
| 101 | arya | manoj | pookalam | wayanad | k | 673592 |
| 102 | sruthi | das | parvoor | kochi | k | 673595 |
| 103 | manu | jose | vadakara | calicut | k | 673593 |
| 104 | blessy | jose | balussery | calicut | k | 673593 |
| 105 | aron | mk | mookanoor | angamali | k | 673597 |
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select stud_fname,stud_lname from student order by stud_fname desc;
+-----+-----+
| stud_fname | stud_lname |
+-----+-----+
| sruthi | das |
| manu | jose |
| blessy | jose |
| arya | manoj |
| aron | mk |
+-----+-----+
5 rows in set (0.01 sec)
```

24. List the student's name, course code and section id grouping

The students by their grade.

```
mysql> select student.stud_fname,student.stud_lname,section.course_code,enrollement.sec_id from student inner join section inner join enrollement on student.stdu_no=enrollement.stdu_no and section.sec_id=enrollement.sec_id group by enrollement.grade;
+-----+-----+-----+-----+
| stud_fname | stud_lname | course_code | sec_id |
+-----+-----+-----+-----+
| arya | manoj | 20MCA60 | 301 |
+-----+-----+-----+-----+
1 row in set (0.02 sec)
```

## V) Optimizing databases (Join,Aggregate & Set operations,Other operators like arithmetic,logical,special etc):

25. . Use an inner join between the STUDENT and ENROLMENT tables for showing the full name, Section id and Grade

```
MySQL 5.7 Command Line Client
mysql> select course_code,course_title,course_hours from course where course_hours=4 order by course_code desc;
+-----+-----+-----+
| course_code | course_title | course_hours |
+-----+-----+-----+
| 20MCA260    | DATA MINING | 4            |
| 20MCA104    | ASE          | 4            |
| 20MCA102    | ADS          | 4            |
+-----+-----+-----+
3 rows in set (0.01 sec)

mysql> select * from student;
+-----+-----+-----+-----+-----+-----+
| stud_no | stud_fname | stud_lname | address | city | state | postal_code |
+-----+-----+-----+-----+-----+-----+
| 101     | arya      | manoj      | pookalam | wayanad | k      | 673592      |
| 102     | sruthi    | das        | parvoor  | kochi   | k      | 673595      |
| 103     | manu     | jose       | vadakara | calicut | k      | 673593      |
| 104     | blessy    | jose       | balussery | calicut | k      | 673593      |
| 105     | aron      | mk         | mookansoor | angamali | k      | 673597      |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select stud_fname,stud_lname from student order by stud_fname desc;
+-----+-----+
| stud_fname | stud_lname |
+-----+-----+
| sruthi     | das        |
| manu      | jose       |
| blessy     | jose       |
| arya       | manoj      |
| aron       | mk         |
+-----+-----+
5 rows in set (0.01 sec)

mysql> select student.stud_fname,student.stud_lname,enrollement.sec_id,enrollement.grade from student inner join enrollement on student.stud_no=enrollement.stud_no;
+-----+-----+-----+-----+
| stud_fname | stud_lname | sec_id | grade |
+-----+-----+-----+-----+
| arya      | manoj      | 201    |      |
| arya      | manoj      | 301    |      |
| sruthi    | das        | 302    |      |
| manu     | jose       | 301    |      |
+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql>
```

26. Use an outer join between the STUDENT and ENROLMENT tables for showing the full name, Section id and Grade. Include all the students regardless of whether they have a matching section.

```
mysql> select * from student;
+-----+-----+-----+-----+-----+-----+
| stud_no | stud_fname | stud_lname | address | city | state | postal_code |
+-----+-----+-----+-----+-----+-----+
| 101 | aya | manoj | pookalam | wayanad | k | 673592 |
| 102 | sruthi | das | parvoor | kochi | k | 673595 |
| 103 | manu | jose | vadakara | calicut | k | 673593 |
| 104 | blessy | jose | balussery | calicut | k | 673593 |
| 105 | aron | mk | mookanoor | angamali | k | 673597 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select stud_fname,stud_lname from student order by stud_fname desc;
+-----+-----+
| stud_fname | stud_lname |
+-----+-----+
| sruthi | das |
| manu | jose |
| blessy | jose |
| aya | manoj |
| aron | mk |
+-----+-----+
5 rows in set (0.01 sec)

mysql> select student.stud_fname,student.stud_lname,enrollement.sec_id,enrollement.grade from student inner join enrollement on student.stud_no=enrollement.stud_no;
+-----+-----+-----+-----+
| stud_fname | stud_lname | sec_id | grade |
+-----+-----+-----+-----+
| aya | manoj | 201 | |
| aya | manoj | 301 | |
| sruthi | das | 302 | |
| manu | jose | 301 | |
+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> select student.stud_fname,student.stud_lname,enrollement.sec_id,enrollement.grade from student left join enrollement on student.stud_no=enrollement.stud_no;
+-----+-----+-----+-----+
| stud_fname | stud_lname | sec_id | grade |
+-----+-----+-----+-----+
| aya | manoj | 201 | |
| aya | manoj | 301 | |
| sruthi | das | 302 | |
| manu | jose | 301 | |
| blessy | jose | NULL | NULL |
| aron | mk | NULL | NULL |
+-----+-----+-----+-----+
6 rows in set (0.01 sec)

mysql>
```

27. Give a 7% salary rise to instructors whose salary is less than the average.

```
mysql> update instructor set salary=salary+(salary*7/100) where salary<(select avg(salary));
Query OK, 0 rows affected (0.00 sec)
Rows matched: 0 Changed: 0 Warnings: 0

mysql> select * from instructor;
+-----+-----+-----+-----+-----+
| instructor_id | instra_fname | instra_lname | phone | salary |
+-----+-----+-----+-----+-----+
| 201 | Asha | MK | 80785639 | 22000 |
| 202 | Ashna | jose | 90783499 | 33000 |
| 203 | Sandeep | reejish | 98783499 | 27500 |
| 204 | Asifa | MV | 98113499 | 44000 |
| 205 | George | MR | 98111199 | 23000 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

28. List full name and salary of instructors whose last name ends with 'a' and earns highest salary.

```
mysql> select * from instructor;
+-----+-----+-----+-----+-----+
| instructor_id | instra_fname | instra_lname | phone   | salary |
+-----+-----+-----+-----+-----+
| 201          | Asha         |              | 80785639 | 22000  |
| 202          | Ashna        |              | 90783499 | 33000  |
| 203          | Sandeep      |              | 98783499 | 27500  |
| 204          | Asifa        |              | 98113499 | 44000  |
| 205          | George       |              | 98111199 | 23000  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select instra_fname,salary from instructor where salary=(select max(salary) from instructor) and instra_fname in(select instra_fname from instructor where instra_fname like '%a');
+-----+-----+
| instra_fname | salary |
+-----+-----+
| Asifa        | 44000  |
+-----+-----+
1 row in set (0.00 sec)
```

29. Display the details of instructor who draws lowest salary.

```
mysql> select * from instructor where salary=(select min(salary) from instructor);
+-----+-----+-----+-----+-----+
| instructor_id | instra_fname | instra_lname | phone   | salary |
+-----+-----+-----+-----+-----+
| 201          | Asha         |              | 80785639 | 22000  |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

30. List the students details who lived in Kochi, Kerala or in Bangalore, Karnataka or both

```
mysql> select * from student;
```

stdu_no	stud_fname	stud_lname	address	city	state	postal_code
101	arya	manoj	pookalam	kerala	k	673592
102	sruthi	das	parvoor	kochi	k	673595
103	manu	jose	vadakara	calicut	k	673593
104	blessy	jose	balussery	calicut	k	673593
105	aron	mk	mookanoor	angamali	k	673597

```
5 rows in set (0.00 sec)
```

## Query and Result:

```
mysql> select * from student where city='kochi' and 'kerala' or 'bangalor' and 'karnadaka' or city in('kochi','kerala','bangalor','karnadaka');
```

stdu_no	stud_fname	stud_lname	address	city	state	postal_code
101	arya	manoj	pookalam	kerala	k	673592
102	sruthi	das	parvoor	kochi	k	673595

```
2 rows in set, 2 warnings (0.00 sec)
```