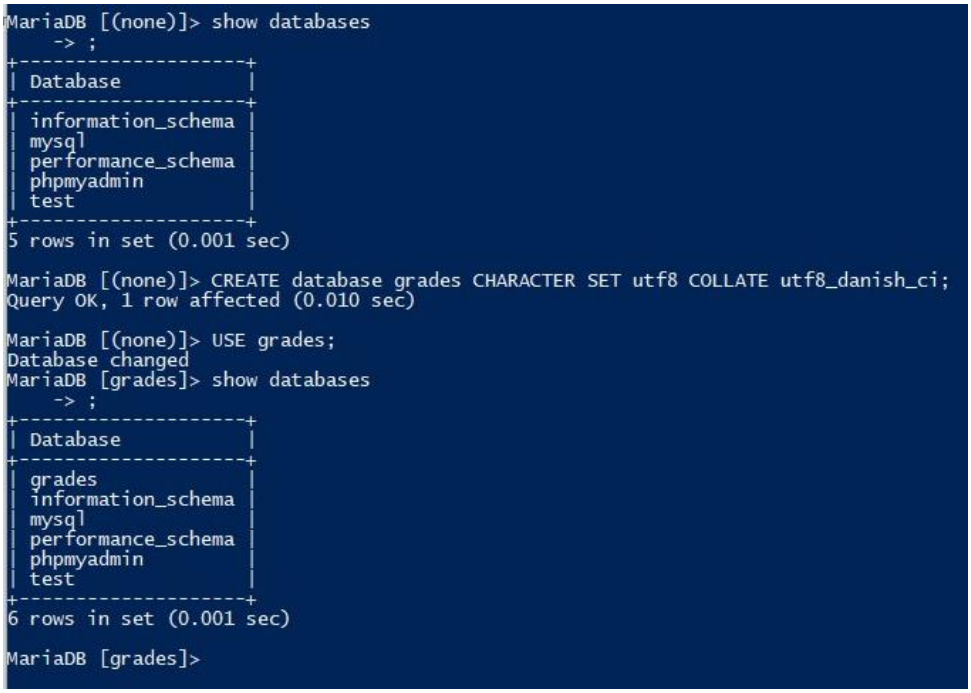
MySQL Labs

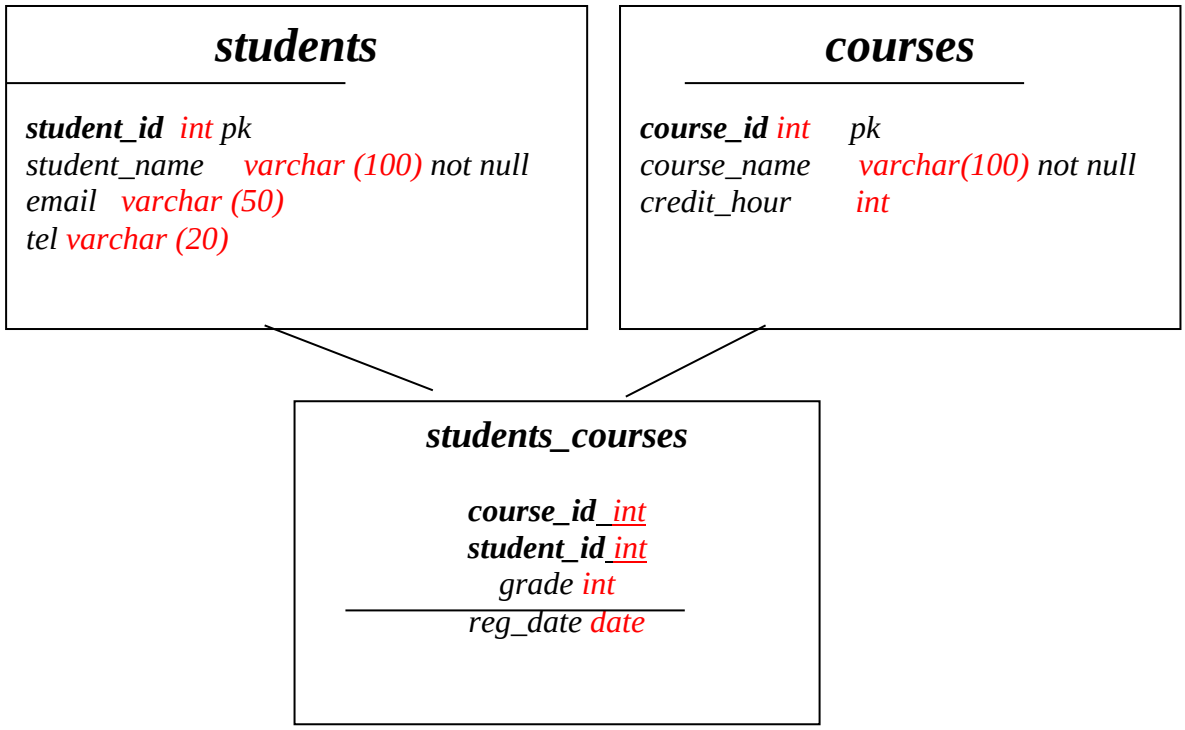
MySQL (Day1):

1.	Create a database called grades
	To Open MySQL using XAMPP :- > C:\XAMP\mysql\bin\PowerShell >>>>> enter .. > mysql –u root –p >>>>> double enter >mariaDB > CREATE database grades CHARACTER SET utf8 COLLATE utf8_danish_ci; 

```
MariaDB [(none)]> show databases
    -> ;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| test               |
+--------------------+
5 rows in set (0.001 sec)

MariaDB [(none)]> CREATE database grades CHARACTER SET utf8 COLLATE utf8_danish_ci;
Query OK, 1 row affected (0.010 sec)

MariaDB [(none)]> USE grades;
Database changed
MariaDB [grades]> show databases
    -> ;
+--------------------+
| Database           |
+--------------------+
| grades             |
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| test               |
+--------------------+
6 rows in set (0.001 sec)

MariaDB [grades]>
```

2.

Create the following tables in the grades database:




```
CREATE TABLE IF NOT EXISTS students(
student_id INT(11) NOT NULL
AUTO_INCREMENT,
student_name VARCHAR(100) NOT NULL,
email VARCHAR(50),
tel VARCHAR(20),
PRIMARY KEY (student_id))
ENGINE = INNODB;

CREATE TABLE IF NOT EXISTS courses(
course_id INT(11) AUTO_INCREMENT,
course_name VARCHAR(100) NOT NULL,
credit_hour INT,
PRIMARY KEY (course_id))
ENGINE = INNODB;

CREATE TABLE IF NOT EXISTS students_courses(
student_id INT(11) NOT NULL,
course_id INT(11) NOT NULL,
grade INT(11),
PRIMARY KEY (student_id, course_id),
FOREIGN KEY (student_id) REFERENCES students (student_id),
FOREIGN KEY (course_id) REFERENCES courses (course_id))
ENGINE = INNODB;
```

```
MariaDB [grades]> show tables
    -> ;
+------------------+
| Tables_in_grades |
+------------------+
| courses          |
| students         |
| students_courses |
+------------------+
3 rows in set (0.001 sec)
```

3	**Modify the students table to allow for longer Student names (150 char) Confirm your modification.**
	ALTER TABLE students **MODIFY student_name VARCHAR(150) ;**
4	**Add constraint to force unique email for each student**
	ALTER TABLE students **MODIFY email VARCHAR(50) UNIQUE;**
5	**Get Time, Date, Current user, MySQL Version using prompt?**
	Select now( ) ; **Select Current_User( ) ;** **Show Variables LIKE '%version%' ;**

```
MariaDB [grades]> SELECT now()
+---------------------+
| now()               |
+---------------------+
| 2023-01-12 13:51:02 |
+---------------------+
1 row in set (0.001 sec)

MariaDB [grades]> SELECT Current_user() ;
+----------------+
| Current_user() |
+----------------+
| root@localhost |
+----------------+
1 row in set (0.000 sec)
```

```
MariaDB [grades]> show variables LIKE '%version%'
    -> ;
+----------------------------------+----------------------------------------+
| Variable_name                    | Value                                  |
+----------------------------------+----------------------------------------+
| in_predicate_conversion_threshold | 1000                                   |
| innodb_version                   | 10.4.27                                |
| protocol_version                 | 10                                     |
| slave_type_conversions           |                                        |
| system_versioning_alter_history  | ERROR                                  |
| system_versioning_asof           | DEFAULT                                |
| tls_version                      | TLSv1.1,TLSv1.2,TLSv1.3                |
| version                          | 10.4.27-MariaDB                        |
| version_comment                  | mariadb.org binary distribution        |
| version_compile_machine          | x64                                    |
| version_compile_os               | Win64                                  |
| version_malloc_library           | system                                 |
| version_source_revision          | 0946c99e7d6f7ac9dfcf3e60dae6ae85161d5ef2 |
| version_ssl_library              | WolfSSL 5.5.1                          |
+----------------------------------+----------------------------------------+
14 rows in set (0.003 sec)
```

6	**Add gender column for the students table. It holds two value (male or female)**
	Alter table students add gender enum ('male', 'female');
7	**Add birth_date column for the students table.**
	Alter table students add birthdate date ;

8	**Drop the student_name column and replace it with first name and last name.**
	ALTER TABLE students **DROP COLUMN student_name;** **ALTER TABLE students ADD first_name VARCHAR(50) NOT NULL;** **ALTER TABLE students ADD last_name VARCHAR(50) NOT NULL;**
9	**Insert your friend's data into the table students.**
	INSERT INTO students (student_id, email, tel, email , gender, first_name , last_name , birth_date) **VALUES** **(3 , "ahmed@gmail" ,"012345", "male" ,"ahmed" ,"ashraf" , "1997-09-20"),** **(4 , "rana@yahoo" , "012345", "male" ,"rana" ,"sayed" , " 2000-10-20") ;**
10	**Create a new table (male_students) based on students table and fill it with the data of male students**
	CREATE Table students_male **Select * from students** **WHERE gender = "male" ;**

```
1 row in set (0.000 sec)

MariaDB [grades]> INSERT INTO students(student_id , email , tel , gender , first_name , l
ast_name , birthdate )
    -> VALUES
    -> (4 , "rana@yahoo" , "2222060" , "female" , "rana" , "sayed" , "2000/10/20") ;
Query OK, 1 row affected (0.010 sec)

MariaDB [grades]> select * from students ;
+------------+-------------+---------+--------+------------+-----------+------------+
| student_id | email       | tel     | gender | first_name | last_name | birthdate  |
+------------+-------------+---------+--------+------------+-----------+------------+
|          3 | ahmed@gmail | 012345  | male   | ahmed      | ashraf    | 1997-09-20 |
|          4 | rana@yahoo  | 2222060 | female | rana       | sayed     | 2000-10-20 |
+------------+-------------+---------+--------+------------+-----------+------------+
2 rows in set (0.000 sec)
```

```
MariaDB [grades]>
MariaDB [grades]> CREATE Table students_male
    -> Select * from students
    -> WHERE gender = "male"
    -> ;
Query OK, 1 row affected (0.015 sec)
Records: 1  Duplicates: 0  Warnings: 0

MariaDB [grades]> show tables
    -> ;
+------------------+
| Tables_in_grades |
+------------------+
| courses          |
| students         |
| students_courses |
| students_male    |
+------------------+
4 rows in set (0.001 sec)
```

```
MariaDB [grades]> select * from  students_male ;
+------------+-------------+--------+--------+------------+-----------+------------+
| student_id | email       | tel    | gender | first_name | last_name | birthdate  |
+------------+-------------+--------+--------+------------+-----------+------------+
|          3 | ahmed@gmail | 012345 | male   | ahmed      | ashraf    | 1997-09-20 |
+------------+-------------+--------+--------+------------+-----------+------------+
1 row in set (0.001 sec)
```

Part II

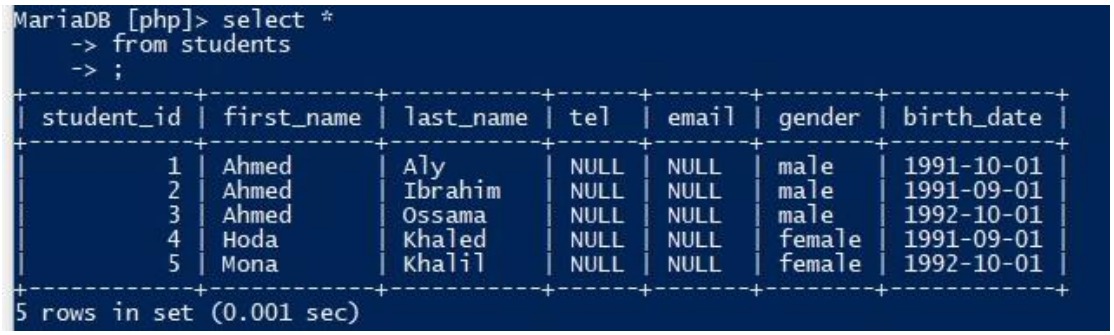
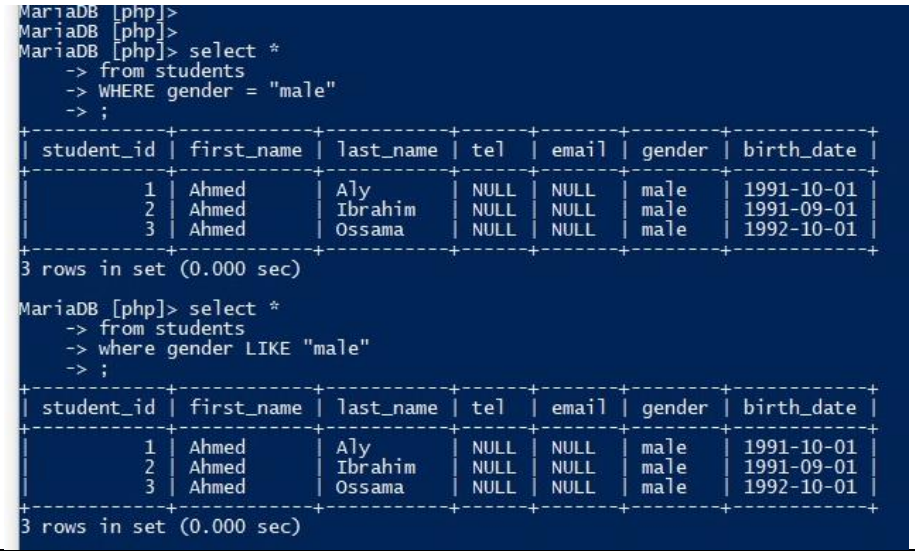
Create another database “php”

create database php CHARACTER SET utf8 COLLATE utf8_danish_ci

Use php

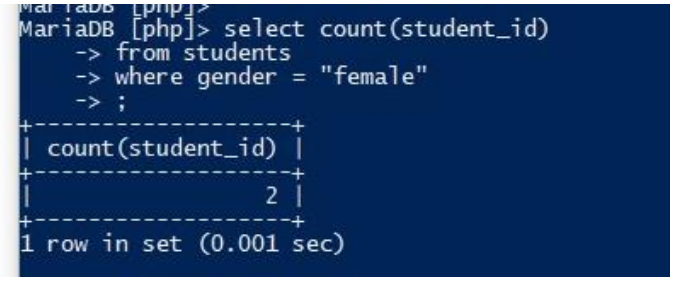
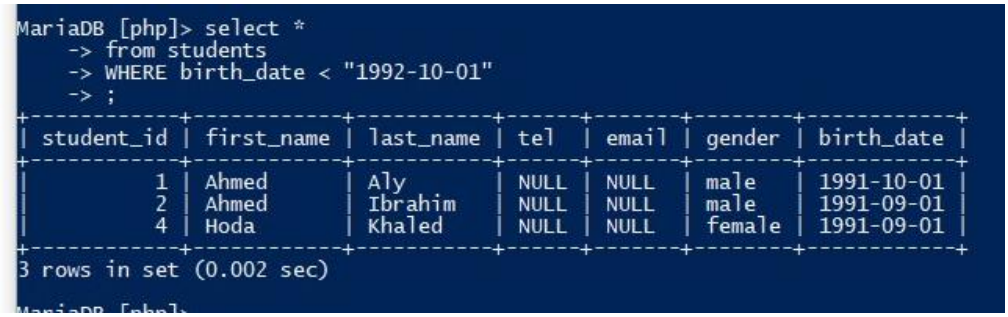
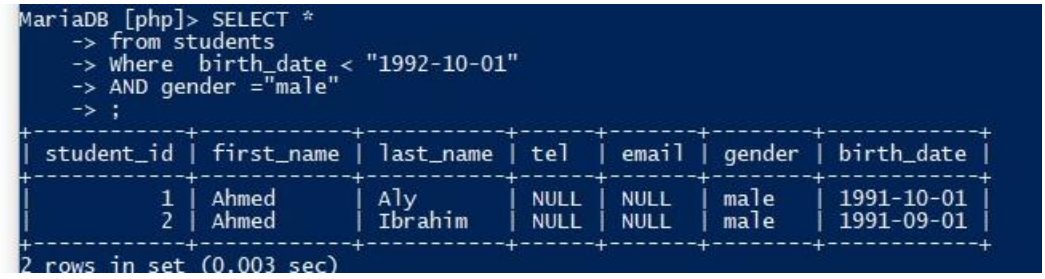
\. <path of file> ……> .\ C:\XAMP\mysql\bin\php.txt

Run Lab Script then answer the following

1	**Display all students’ information.**
	Select * from students 
2	**Display male students only.** **SELECT * From students** **WHERE gender >> = “male” or gender LIKE “male”** 

```
MariaDB [php]> select *
    -> from students
    -> ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          1 | Ahmed      | Aly       | NULL | NULL  | male   | 1991-10-01 |
|          2 | Ahmed      | Ibrahim   | NULL | NULL  | male   | 1991-09-01 |
|          3 | Ahmed      | Ossama    | NULL | NULL  | male   | 1992-10-01 |
|          4 | Hoda       | Khaled    | NULL | NULL  | female | 1991-09-01 |
|          5 | Mona       | Khalil    | NULL | NULL  | female | 1992-10-01 |
+------------+------------+-----------+------+-------+--------+------------+
5 rows in set (0.001 sec)
```

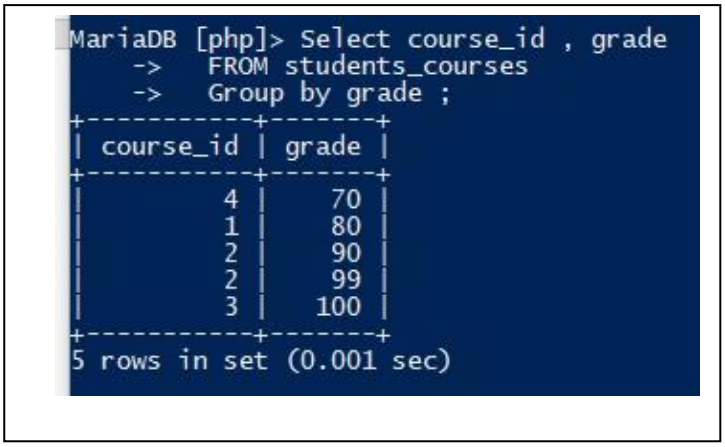
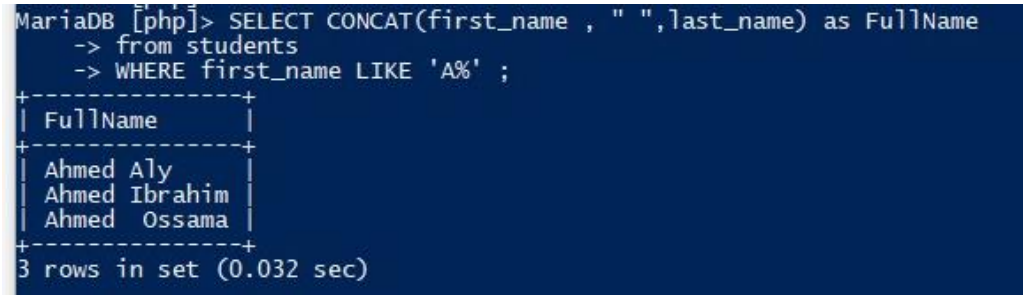
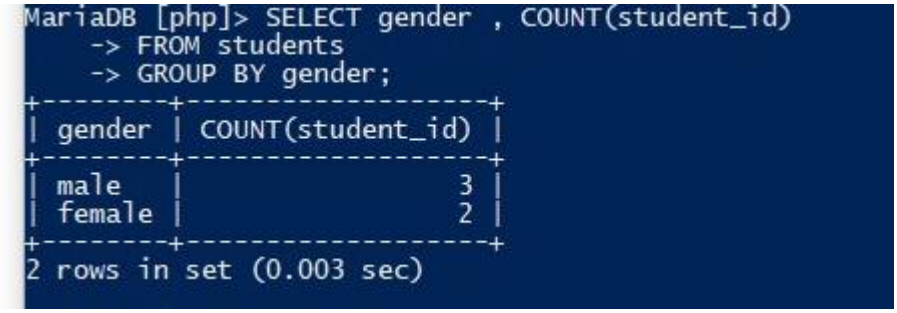
```
MariaDB [php]>
MariaDB [php]>
MariaDB [php]> select *
    -> from students
    -> WHERE gender = "male"
    -> ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          1 | Ahmed      | Aly       | NULL | NULL  | male   | 1991-10-01 |
|          2 | Ahmed      | Ibrahim   | NULL | NULL  | male   | 1991-09-01 |
|          3 | Ahmed      | Ossama    | NULL | NULL  | male   | 1992-10-01 |
+------------+------------+-----------+------+-------+--------+------------+
3 rows in set (0.000 sec)

MariaDB [php]> select *
    -> from students
    -> where gender LIKE "male"
    -> ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          1 | Ahmed      | Aly       | NULL | NULL  | male   | 1991-10-01 |
|          2 | Ahmed      | Ibrahim   | NULL | NULL  | male   | 1991-09-01 |
|          3 | Ahmed      | Ossama    | NULL | NULL  | male   | 1992-10-01 |
+------------+------------+-----------+------+-------+--------+------------+
3 rows in set (0.000 sec)
```

3	**Display the <u>number of female</u> students.**
	Select count (student_id) **From students** **Where gender = “female”** 
4	**Display the <u>students’ data</u> for the students who are born before 1992-10-01.**
	Select * from students **WHERE birth_date < “1992-10-01”** 
5	**Display the <u>students’ data</u> for the male students who are born before 1991-10-01.**
	Select * **From students** **WHERE birth_date < “1992-10-01”** **AND gender = “male”** 

```
MariaDB [php]> select count(student_id)
    -> from students
    -> where gender = "female"
    -> ;
+--------------------+
| count(student_id) |
+--------------------+
|                  2 |
+--------------------+
1 row in set (0.001 sec)
```

```
MariaDB [php]> select *
    -> from students
    -> WHERE birth_date < "1992-10-01"
    -> ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          1 | Ahmed      | Aly       | NULL | NULL  | male   | 1991-10-01 |
|          2 | Ahmed      | Ibrahim   | NULL | NULL  | male   | 1991-09-01 |
|          4 | Hoda       | Khaled    | NULL | NULL  | female | 1991-09-01 |
+------------+------------+-----------+------+-------+--------+------------+
3 rows in set (0.002 sec)
```

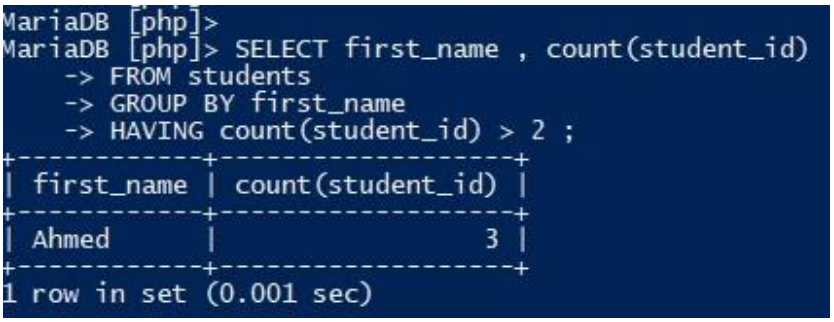
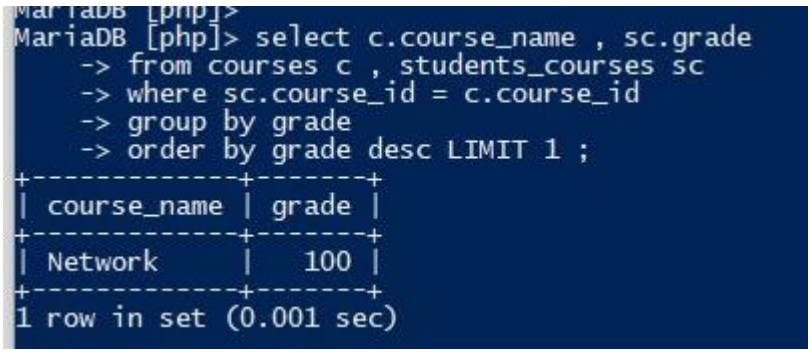
```
MariaDB [php]> SELECT *
    -> from students
    -> Where  birth_date < "1992-10-01"
    -> AND gender ="male"
    -> ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          1 | Ahmed      | Aly       | NULL | NULL  | male   | 1991-10-01 |
|          2 | Ahmed      | Ibrahim   | NULL | NULL  | male   | 1991-09-01 |
+------------+------------+-----------+------+-------+--------+------------+
2 rows in set (0.003 sec)
```

6	**Display course_id and their grades sorted by grades.**
	Select course_id , grade **FROM students_courses** **Group by grade** 
7	**Display students' names that begin with A.**
	Select CONCAT (first_name, " ", last_name) as FullName from students **FROM students** **WHERE first_name like 'A%' ;** 
8	**Display the gender, number of males and females.**
	SELECT gender , COUNT(students_id) **From students** **Group By gender ;** 

```
MariaDB [php]> Select course_id , grade
    ->   FROM students_courses
    ->   Group by grade ;
+-----------+-------+
| course_id | grade |
+-----------+-------+
|         4 |    70 |
|         1 |    80 |
|         2 |    90 |
|         2 |    99 |
|         3 |   100 |
+-----------+-------+
5 rows in set (0.001 sec)
```

```
MariaDB [php]> SELECT CONCAT(first_name , " ",last_name) as FullName
    -> from students
    -> WHERE first_name LIKE 'A%' ;
+---------------+
| FullName      |
+---------------+
| Ahmed Aly     |
| Ahmed Ibrahim |
| Ahmed  Ossama |
+---------------+
3 rows in set (0.032 sec)
```

```
MariaDB [php]> SELECT gender , COUNT(student_id)
    -> FROM students
    -> GROUP BY gender;
+--------+--------------------+
| gender | COUNT(student_id) |
+--------+--------------------+
| male   |                  3 |
| female |                  2 |
+--------+--------------------+
2 rows in set (0.003 sec)
```

9	**Display the repeated first names and their counts if higher than 2 .**
	Select first_name, count(student_id) **from students** **Group by first_name** **Having count(student_id) > 2;**  MariaDB [php]> MariaDB [php]> SELECT first_name , count(student_id) -> FROM students -> GROUP BY first_name -> HAVING count(student_id) > 2 ; +------------+--------------------+ | first_name | count(student_id) | +------------+--------------------+ | Ahmed | 3 | +------------+--------------------+ 1 row in set (0.001 sec)
10	**Display the subject with highest grade**
	Select c.course_name , sc.grade **From courses c, students_courses sc** **Where c.course_id = sc.course_id** **Group by grade** **Order by grade DESC limit 1;**  MariaDB [php]> MariaDB [php]> select c.course_name , sc.grade -> from courses c , students_courses sc -> where sc.course_id = c.course_id -> group by grade -> order by grade desc LIMIT 1 ; +-------------+-------+ | course_name | grade | +-------------+-------+ | Network | 100 | +-------------+-------+ 1 row in set (0.001 sec)

,