MySQL Lab 2

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MySQL Labs :-

MySQL (Day2):

1	Update students courses table, set the registration date value to "Today";
	UPDATE students_courses **SET reg_date = current_date() ;**
2	Display the registration date in the following format: **Day, month/ year**
	SELECT DATE_FORMAT(reg_date,'%a,%e %M %Y ') as RegDate **-> FROM students_courses ;**

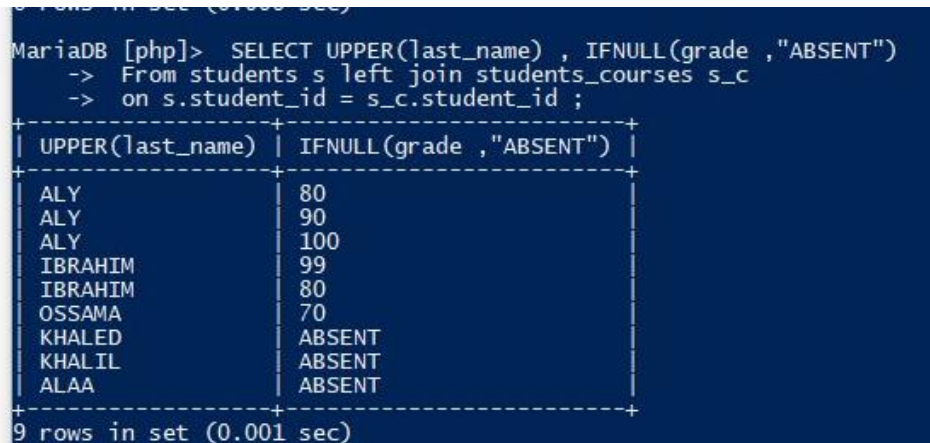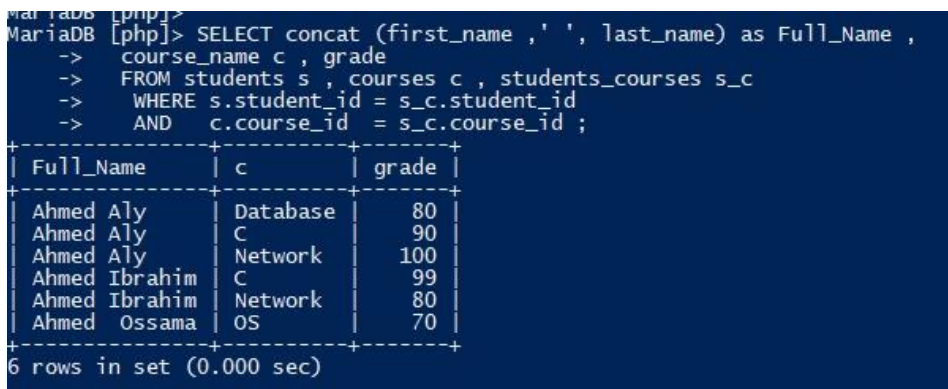| 3	Display the <u>full name (first, last)</u> of the student with <u>his grade.</u>
	if his garde is greater than 85% Excellent, from 75% to 85% Very good, from 65% to 75% Good and from 55% to 65% pass otherwise will be graded as failed.

SELECT concat (first_name ,' ', last_name) as Full_Name ,
**   course_name c , grade**
**   , CASE**
** when grade >= 85 then "Excellent"**
** when grade < 85 and grade >= 75 then "Very good"**
**   when grade < 75 and grade >= 65 then "Good"**
** when grade < 65 and grade >= 55 then "Pass"**
** Else "failed"**
** End as Remarks**

** FROM students s , courses c , students_courses s_c**
** WHERE s.student_id = s_c.student_id**
** AND   c.course_id = s_c.course_id**

```
MariaDB [php]>
MariaDB [php]>
MariaDB [php]> SELECT concat (first_name ,' ', last_name) as Full_Name , course_name c , grade
    ->      , CASE
    ->       when grade >= 85 then "Excellent"
    ->       when grade < 85 and grade >= 75 then "Very good"
    ->       when grade < 75 and grade >= 65 then "Good"
    ->      when grade < 65 and grade >= 55 then "Pass"
    ->      Else "failed"
    ->      End as Remarks
    ->      FROM students s , courses c , students_courses s_c
    ->      WHERE s.student_id = s_c.student_id
    ->      AND   c.course_id  = s_c.course_id
    -> ;
+---------------+----------+-------+-----------+
| Full_Name     | c        | grade | Remarks   |
+---------------+----------+-------+-----------+
| Ahmed Aly     | Database |    80 | Very good |
| Ahmed Aly     | C        |    90 | Excellent |
| Ahmed Aly     | Network  |   100 | Excellent |
| Ahmed Ibrahim | C        |    99 | Excellent |
| Ahmed Ibrahim | Network  |    80 | Very good |
| Ahmed  Ossama | OS       |    70 | Good      |
+---------------+----------+-------+-----------+
6 rows in set (0.001 sec)
```

4	Display the <u>capitalized last name</u> , and the <u>grade</u> , if he has <mark>no grade</mark> display the keyword <u>absent</u>. [using ifNULL function]
	SELECT UPPER(last_name) , IFNULL(grade ,"ABSENT") **From (students s) left join (students_courses s_c)** **on (s.student_id = s_c.student_id)**
5	Display <u>students' names</u>, <u>course name</u> along with their grades.
	SELECT concat (first_name ,' ', last_name) as Full_Name , **course_name c , grade** **FROM students s , courses c , students_courses s_c** **WHERE s.student_id = s_c.student_id** **AND c.course_id = s_c.course_id ;**

6	**For each course**, display the <u>course name</u>, <u>min grade</u>, <u>max grade</u>, <u>average grade</u>, <u>number of attended students</u>.
| | **SELECT course_name , min(grade) as lower , max(grade) as higher , avg(grade) ,**<br>**Count(s_c.student_id) as Num_Of_Students**<br>**From courses c , students_courses s_c**<br>**WHERE c.course_id = s_c.course_id**<br>**Group By course_name ;**<br><br>```
MariaDB [php]> SELECT course_name , min(grade) as lower , max(grade) as higher , avg(grade)
    -> , Count(s_c.student_id) as Num_Of_Students
    -> From courses c , students_courses s_c
    -> Where c.course_id = s_c.course_id
    -> Group By course_name ;
+-------------+-------+--------+-----------+-----------------+
| course_name | lower | higher | avg(grade) | Num_Of_Students |
+-------------+-------+--------+-----------+-----------------+
| C           |    90 |     99 |   94.5000 |               2 |
| Database    |    80 |     80 |   80.0000 |               1 |
| Network     |    80 |    100 |   90.0000 |               2 |
| OS          |    70 |     70 |   70.0000 |               1 |
+-------------+-------+--------+-----------+-----------------+
4 rows in set (0.001 sec)
``` |
| 7 | Use subquery to display the <u>names of the students</u> who were born before student no 1. |
| | **Select CONCAT(first_name , ` `, last_name) as Student_Name ,**<br>**From Students**<br>**WHERE birth_date < ( SELECT birth_date from students**<br>                           **WHERE student_id = 1 );**<br><br>```
MariaDB [php]>
MariaDB [php]>
MariaDB [php]> Select CONCAT(first_name , ' ' , last_name) as Student_Name
    ->    From Students
    ->    WHERE birth_date < ( SELECT birth_date from students where student_id = 1 ) ;
+---------------+
| Student_Name  |
+---------------+
| Ahmed Ibrahim |
| Hoda Khaled   |
+---------------+
2 rows in set (0.001 sec)
``` |

8	Use subquery to display the **data of all the courses** with a credit hour similar to MySQL's credit hours
| | **Select * From Courses**<br><br>**WHERE credit_hour = (Select credit_hour from courses**<br>            **WHERE course_name like "MySQL")**<br>**AND course_name != "**<br><br>```
MariaDB [php]>
MariaDB [php]> Select * From Courses
    ->    WHERE credit_hour = (Select credit_hour from courses
    ->                         WHERE course_name like "MySQL") ;
+-----------+-------------+-------------+
| course_id | course_name | credit_hour |
+-----------+-------------+-------------+
|         1 | Database    |           2 |
|         5 | MySQL       |           2 |
+-----------+-------------+-------------+
2 rows in set (0.000 sec)
``` |
| 10 | Create a view called **female_students_vu** to display all the female students |
| | **CREATE view female_students_vu**<br>  **AS**<br> **-> Select ***<br> **-> FROM students**<br> **-> WHERE gender = "female" ;**<br><br><br> **-> Select * from female_students_vu " ;**<br><br>```
MariaDB [php]>
MariaDB [php]>    CREATE view female_students_vu
    ->    AS
    ->    Select *
    ->    FROM students
    ->    WHERE gender = "female" ;
Query OK, 0 rows affected (0.004 sec)

MariaDB [php]> Select * from female_students_vu ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          4 | Hoda       | Khaled    | NULL | NULL  | female | 1991-09-01 |
|          5 | Mona       | Khalil    | NULL | NULL  | female | 1992-10-01 |
+------------+------------+-----------+------+-------+--------+------------+
2 rows in set (0.001 sec)
``` |
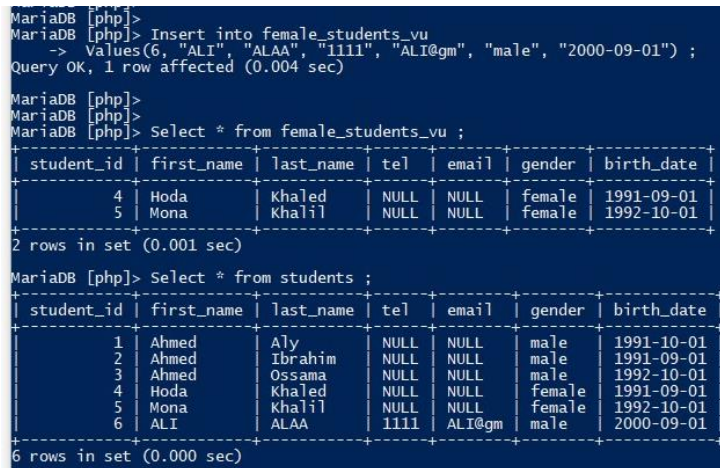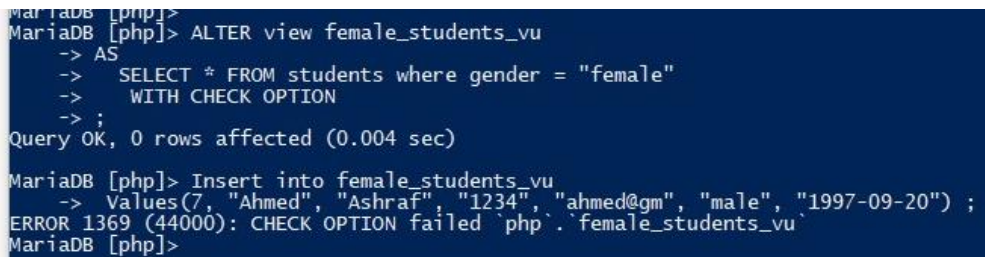
11	Try to <u>insert a male student</u> through your view
	Insert into female_students_vu Values(6, "ALI", "ALAA", "1111", "ALI@gm", "male", "2000-09-01") ;
12	Select all the data from your view and then from the students table
| | ```
MariaDB [php]>
MariaDB [php]> Insert into female_students_vu
    -> Values(6, "ALI", "ALAA", "1111", "ALI@gm", "male", "2000-09-01") ;
Query OK, 1 row affected (0.004 sec)

MariaDB [php]>
MariaDB [php]>
MariaDB [php]> Select * from female_students_vu ;
+------------+------------+-----------+------+-------+--------+------------+
| student_id | first_name | last_name | tel  | email | gender | birth_date |
+------------+------------+-----------+------+-------+--------+------------+
|          4 | Hoda       | Khaled    | NULL | NULL  | female | 1991-09-01 |
|          5 | Mona       | Khalil    | NULL | NULL  | female | 1992-10-01 |
+------------+------------+-----------+------+-------+--------+------------+
2 rows in set (0.001 sec)

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 |
|          6 | ALI        | ALAA      | 1111 | ALI@gm | male   | 2000-09-01 |
+------------+------------+-----------+------+--------+--------+------------+
6 rows in set (0.000 sec)
``` |
| 13 | Prevent the ability to insert another male student through you view |
| | ALTER view female_students_vu<br>AS<br>  SELECT * FROM students where gender = "female"<br>  WITH CHECK OPTION  ;<br><br>Insert into female_students_vu<br><br>Values(7, "Ahmed", "Ashraf", "1234", "ahmed@gm", "male", "1997-09-20") ;<br><br>```
MariaDB [php]>
MariaDB [php]> ALTER view female_students_vu
    -> AS
    ->   SELECT * FROM students where gender = "female"
    ->     WITH CHECK OPTION
    -> ;
Query OK, 0 rows affected (0.004 sec)

MariaDB [php]> Insert into female_students_vu
    -> Values(7, "Ahmed", "Ashraf", "1234", "ahmed@gm", "male", "1997-09-20") ;
ERROR 1369 (44000): CHECK OPTION failed `php`.`female_students_vu`
MariaDB [php]>
``` |

14	**Use the information schema to display the <u>table name</u> , <u>schema</u> and the <u>updatability</u> of the female_students_vu view**
| | **SELECT table_name , is_updatable , table_schema**<br><br>**FROM views**<br><br>**Where table_name = "female_students_vu" ;** **OR**<br>**SELECT * FROM INFORMATION_SCHEMA.VIEWS WHERE TABLE_NAME = "female_students_vu" AND TABLE_SCHEMA = "php"\G ;**<br><br>```
MariaDB [information_schema]> select table_name , is_updatable , table_schema
    -> from views
    -> Where table_name = "female_students_vu" ;
+-------------------+--------------+--------------+
| table_name        | is_updatable | table_schema |
+-------------------+--------------+--------------+
| female_students_vu | YES         | php          |
+-------------------+--------------+--------------+
1 row in set (0.018 sec)
``` |
| 15 | **Use the information schema to display the <u>create time</u>, <u>table_rows</u>, <u>auto_increment</u>, and the <u>comments</u> on the students table.** |
| | **SELECT TABLE_ROWS,TABLE_COMMENT, CREATE_TIME,AUTO_INCREMENT**<br>**FROM INFORMATION_SCHEMA.Tables**<br>**WHERE TABLE_SCHEMA = 'php'**<br>**AND TABLE_NAME = 'students';**<br><br>```
MariaDB [information_schema]>
MariaDB [information_schema]> SELECT TABLE_ROWS,TABLE_COMMENT,CREATE_TIME,AUTO_INCREMENT
FROM INFORMATION_SCHEMA.Tables WHERE TABLE_SCHEMA = 'php' AND TABLE_NAME = 'students';
+------------+---------------+---------------------+----------------+
| TABLE_ROWS | TABLE_COMMENT | CREATE_TIME         | AUTO_INCREMENT |
+------------+---------------+---------------------+----------------+
|          6 |               | 2023-01-11 17:48:45 |              7 |
+------------+---------------+---------------------+----------------+
1 row in set (0.001 sec)
``` |
| 16 | **Create a nonunique index on the foreign key column (COURSE_ID) in the students_courses table.** |
| | **Create index COURSE_ID**<br>**ON steudents_courses (course_ID) ;**<br>**>> SHOW INDEX from students_courses\G ;**<br><br>```
Index_comment:
*********************** 3. row ***********************
        Table: students_courses
   Non_unique: 1
     Key_name: COURSE_ID
 Seq_in_index: 1
  Column_name: course_id
    Collation: A
  Cardinality: 6
     Sub_part: NULL
       Packed: NULL
         Null:
   Index_type: BTREE
      Comment:
Index_comment:
3 rows in set (0.002 sec)
``` |

17	Create a user with your name and give him the privilege to access the grades database
|    | **Create user ` ahmed09ashraf ’ @localhost IDENTIFIED BY ‘123’**<br><br>**GRANT ALL ON grades.***<br>   **-> TO "ahmed09ashraf" @"localhost"**<br>   **-> WITH GRANT OPTION ;**<br><br>```
129D05D498ED9CA7E5CE9B8F83EB' WITH GRANT OPTION |
| GRANT ALL PRIVILEGES ON `grades`.* TO `ahmed09ashraf`@`localhost` WITH GRANT OPTION
                                                                    |
``` |
| 18 | Connect to mysql using the user you created and try to insert one record in the courses table. |
|    | **->mysql -u ahmed09ashraf -p**<br>**-> Enter password: \*\*\***<br><br>```
MariaDB [(none)]> Ctrl-C -- exit!
Bye
PS C:\XAMP\mysql\bin> mysql -u ahmed09ashraf -p
Enter password: ***
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 58
Server version: 10.4.27-MariaDB mariadb.org binary distribution
```<br><br>**->INSERT INTO courses**<br>**->VALUES (7 , "NodeJS" , "5") ;**<br><br>```
MariaDB [grades]> INSERT INTO courses
    -> VALUES (7 , "NodeJS" , "5")
    -> ;
Query OK, 1 row affected (0.032 sec)

MariaDB [grades]> select * from courses ;
+-----------+-------------+-------------+
| course_id | course_name | credit_hour |
+-----------+-------------+-------------+
|         7 | NodeJS      |           5 |
+-----------+-------------+-------------+
1 row in set (0.000 sec)
``` |

19	Change your password.
| | **SET PASSWORD For 'ahmed09ashraf' @'localhost' = password('111')** <br><br> **Try with new password :-** <br><br> ```
bye
PS C:\XAMP\mysql\bin> mysql -u ahmed09ashraf -p
Enter password: ***
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 9
Server version: 10.4.27-MariaDB mariadb.org binary distribution

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SET PASSWORD For 'ahmed09ashraf' @'localhost' = password('111');
Query OK, 0 rows affected (0.001 sec)
``` |
| 20 | Show your privileges. |
| | **SHOW GRANTS FOR CURRENT_USER() ;** <br><br> ```
MariaDB [(none)]> SHOW GRANTS FOR CURRENT_USER() ;
+-------------------------------------------------------------+
| Grants for ahmed09ashraf@localhost                          |
+-------------------------------------------------------------+
| GRANT USAGE ON *.* TO `ahmed09ashraf`@`localhost` IDE
129D05D498ED9CA7E5CE9B8F83EB' WITH GRANT OPTION |
| GRANT ALL PRIVILEGES ON `grades`.* TO `ahmed09ashraf`       |
+-------------------------------------------------------------+
``` |