MySQL Labs

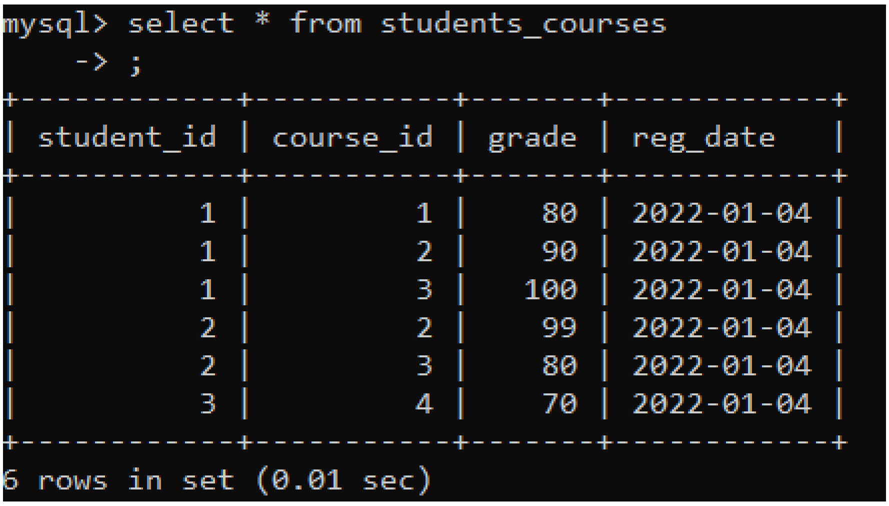
MySQL (Day2):

1 ***Update students courses table, set the registration date value to "Today";***

UPDATE students_courses
Set reg_date = "2022-01-04";

Or

UPDATE students_courses
Set reg_date = CURRENT_DATE();

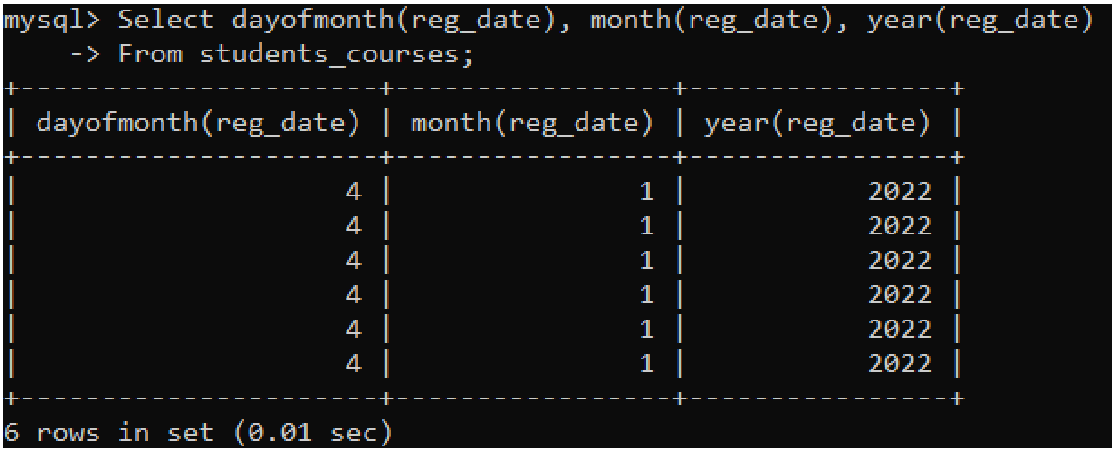


```
mysql> select * from students_courses
    -> ;
+------------+-----------+-------+------------+
| student_id | course_id | grade | reg_date   |
+------------+-----------+-------+------------+
|          1 |         1 |    80 | 2022-01-04 |
|          1 |         2 |    90 | 2022-01-04 |
|          1 |         3 |   100 | 2022-01-04 |
|          2 |         2 |    99 | 2022-01-04 |
|          2 |         3 |    80 | 2022-01-04 |
|          3 |         4 |    70 | 2022-01-04 |
+------------+-----------+-------+------------+
6 rows in set (0.01 sec)
```

2 ***Display the registration date in the following format:***

Day, month/ year

Select dayofmonth(reg_date), month(reg_date), year(reg_date)
From students_courses;

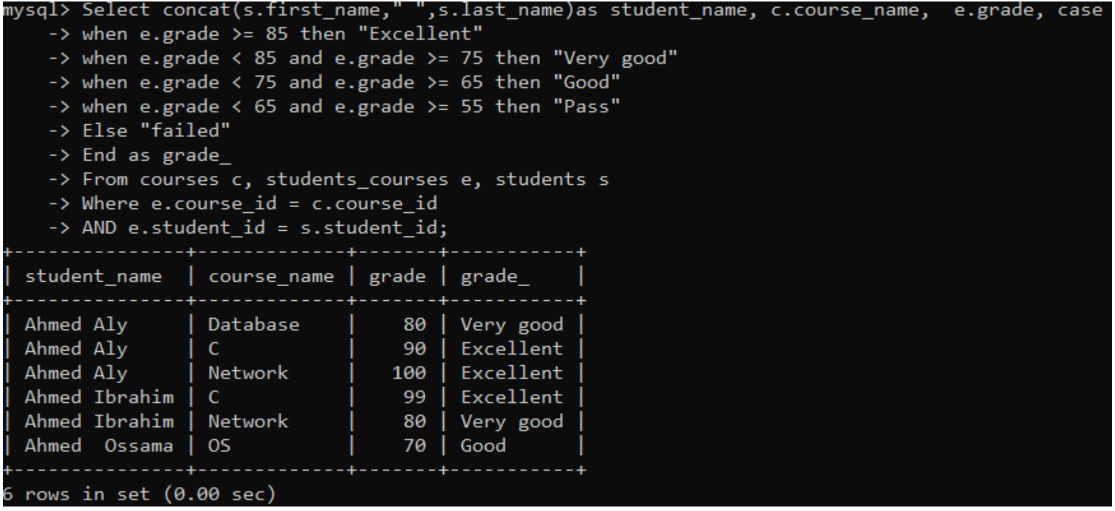


```
mysql> Select dayofmonth(reg_date), month(reg_date), year(reg_date)
    -> From students_courses;
+----------------------+-----------------+----------------+
| dayofmonth(reg_date) | month(reg_date) | year(reg_date) |
+----------------------+-----------------+----------------+
|                    4 |               1 |           2022 |
|                    4 |               1 |           2022 |
|                    4 |               1 |           2022 |
|                    4 |               1 |           2022 |
|                    4 |               1 |           2022 |
|                    4 |               1 |           2022 |
+----------------------+-----------------+----------------+
6 rows in set (0.01 sec)
```

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.

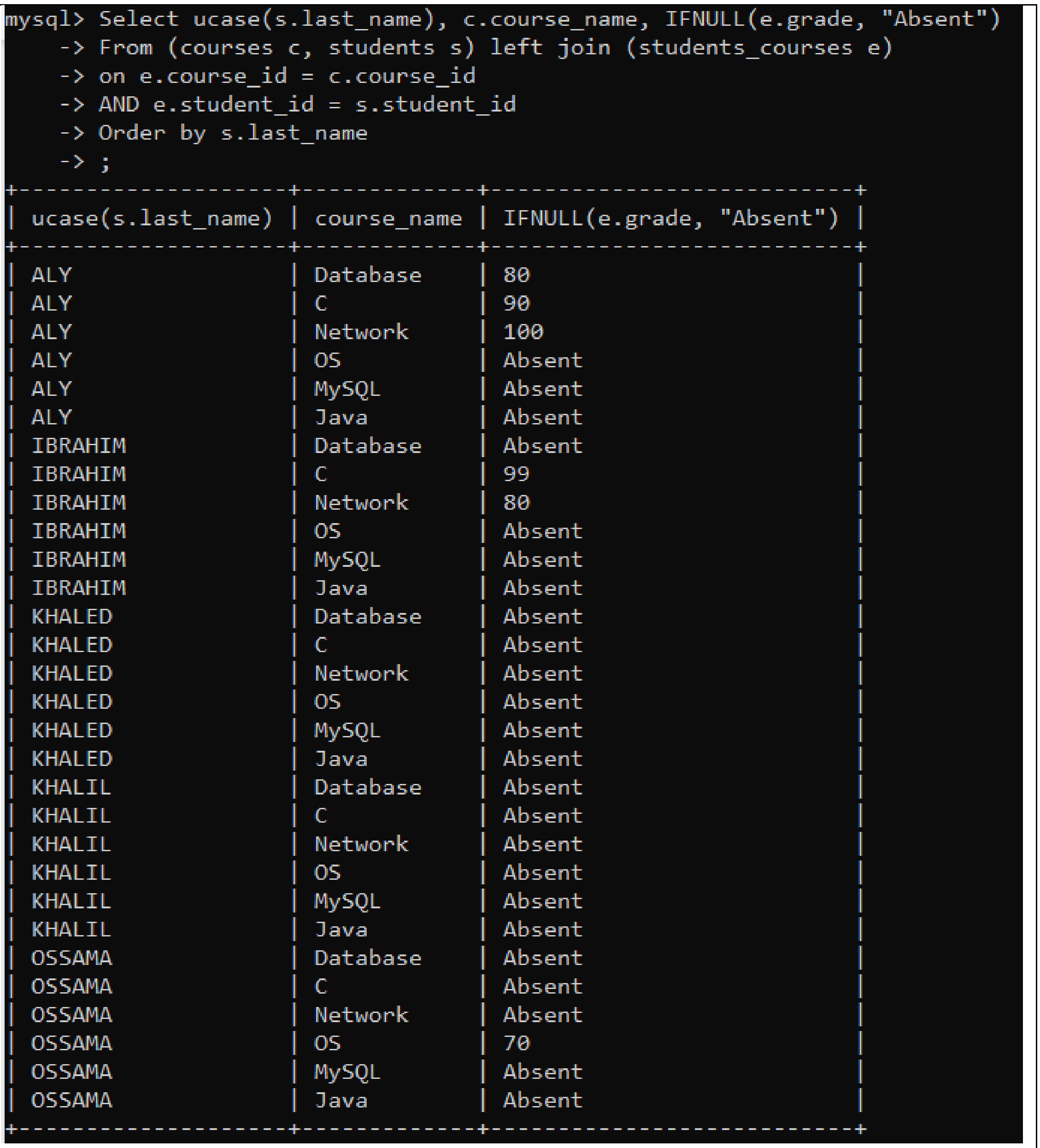
```
Select concat(s.first_name,” “,s.last_name)as student_name,
c.course_name,  e.grade, case
when e.grade >= 85 then “Excellent”
when e.grade < 85 and e.grade >= 75 then “Very good”
when e.grade < 75 and e.grade >= 65 then “Good”
when e.grade < 65 and e.grade >= 55 then “Pass”
Else “failed”
End as grade_
From courses c, students_courses e, students s
Where e.course_id = c.course_id
AND e.student_id = s.student_id;
```



```
mysql> Select concat(s.first_name," ",s.last_name)as student_name, c.course_name,  e.grade, case
    -> when e.grade >= 85 then "Excellent"
    -> when e.grade < 85 and e.grade >= 75 then "Very good"
    -> when e.grade < 75 and e.grade >= 65 then "Good"
    -> when e.grade < 65 and e.grade >= 55 then "Pass"
    -> Else "failed"
    -> End as grade_
    -> From courses c, students_courses e, students s
    -> Where e.course_id = c.course_id
    -> AND e.student_id = s.student_id;
+---------------+-------------+-------+-----------+
| student_name  | course_name | grade | grade_    |
+---------------+-------------+-------+-----------+
| 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 (0.00 sec)
```

4 ***Display the <u>capitalized last name</u> , and the <u>grade</u> , if he has no grade display the keyword <u>absent</u>. [using ifNULL function]***

```
Select ucase(s.last_name), c.course_name, IFNULL(e.grade, “Absent”)
From (courses c, students s) left join (students_courses e)
on e.course_id = c.course_id

AND e.student_id = s.student_id

Order by s.last_name;
```

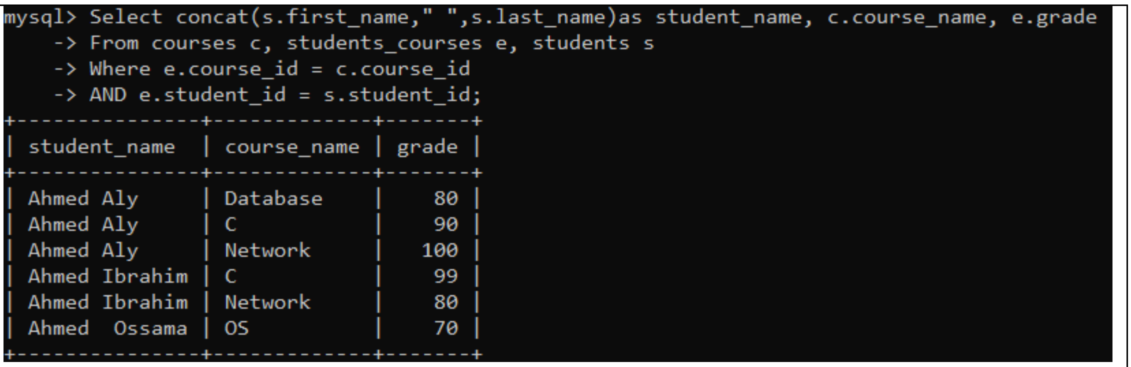


```
mysql> Select ucase(s.last_name), c.course_name, IFNULL(e.grade, "Absent")
    -> From (courses c, students s) left join (students_courses e)
    -> on e.course_id = c.course_id
    -> AND e.student_id = s.student_id
    -> Order by s.last_name
    -> ;
+--------------------+-------------+--------------------------+
| ucase(s.last_name) | course_name | IFNULL(e.grade, "Absent") |
+--------------------+-------------+--------------------------+
| ALY                | Database    | 80                       |
| ALY                | C           | 90                       |
| ALY                | Network     | 100                      |
| ALY                | OS          | Absent                   |
| ALY                | MySQL       | Absent                   |
| ALY                | Java        | Absent                   |
| IBRAHIM            | Database    | Absent                   |
| IBRAHIM            | C           | 99                       |
| IBRAHIM            | Network     | 80                       |
| IBRAHIM            | OS          | Absent                   |
| IBRAHIM            | MySQL       | Absent                   |
| IBRAHIM            | Java        | Absent                   |
| KHALED             | Database    | Absent                   |
| KHALED             | C           | Absent                   |
| KHALED             | Network     | Absent                   |
| KHALED             | OS          | Absent                   |
| KHALED             | MySQL       | Absent                   |
| KHALED             | Java        | Absent                   |
| KHALIL             | Database    | Absent                   |
| KHALIL             | C           | Absent                   |
| KHALIL             | Network     | Absent                   |
| KHALIL             | OS          | Absent                   |
| KHALIL             | MySQL       | Absent                   |
| KHALIL             | Java        | Absent                   |
| OSSAMA             | Database    | Absent                   |
| OSSAMA             | C           | Absent                   |
| OSSAMA             | Network     | Absent                   |
| OSSAMA             | OS          | 70                       |
| OSSAMA             | MySQL       | Absent                   |
| OSSAMA             | Java        | Absent                   |
+--------------------+-------------+--------------------------+
```

5 ***Display students' names, course name along with their grades.***

Select concat(s.first_name,” “,s.last_name)as student_name, c.course_name, e.grade
From courses c, students_courses e, students s
Where e.course_id = c.course_id

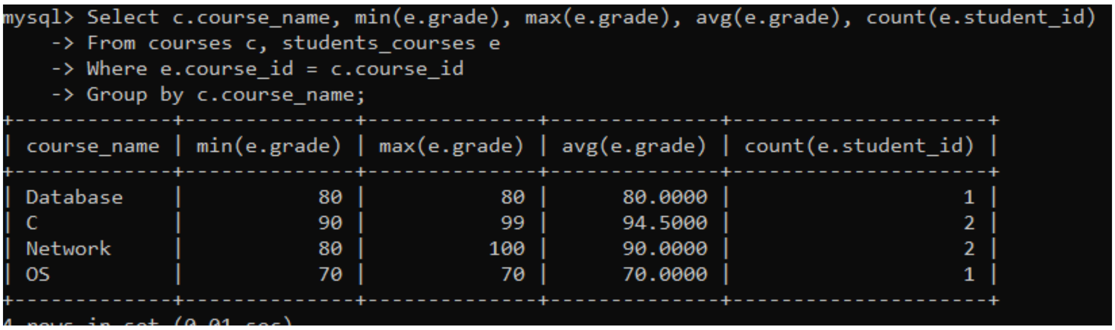
AND e.student_id = s.student_id;



```
mysql> Select concat(s.first_name," ",s.last_name)as student_name, c.course_name, e.grade
    -> From courses c, students_courses e, students s
    -> Where e.course_id = c.course_id
    -> AND e.student_id = s.student_id;
+---------------+-------------+-------+
| student_name  | course_name | grade |
+---------------+-------------+-------+
| Ahmed Aly     | Database    |    80 |
| Ahmed Aly     | C           |    90 |
| Ahmed Aly     | Network     |   100 |
| Ahmed Ibrahim | C           |    99 |
| Ahmed Ibrahim | Network     |    80 |
| Ahmed  Ossama | OS          |    70 |
+---------------+-------------+-------+
```

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>.***

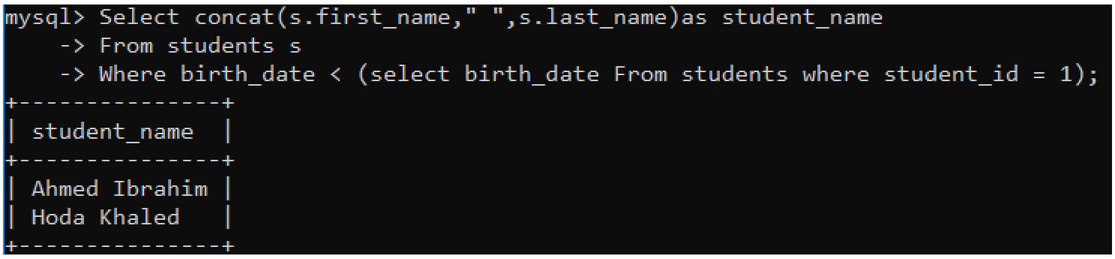
```
Select c.course_name, min(e.grade), max(e.grade), avg(e.grade), count(e.student_id)
From courses c, students_courses e
Where e.course_id = c.course_id

Group by c.course_name;
```



```
mysql> Select c.course_name, min(e.grade), max(e.grade), avg(e.grade), count(e.student_id)
    -> From courses c, students_courses e
    -> Where e.course_id = c.course_id
    -> Group by c.course_name;
+-------------+--------------+--------------+--------------+---------------------+
| course_name | min(e.grade) | max(e.grade) | avg(e.grade) | count(e.student_id) |
+-------------+--------------+--------------+--------------+---------------------+
| Database    |           80 |           80 |      80.0000 |                   1 |
| C           |           90 |           99 |      94.5000 |                   2 |
| Network     |           80 |          100 |      90.0000 |                   2 |
| OS          |           70 |           70 |      70.0000 |                   1 |
+-------------+--------------+--------------+--------------+---------------------+
4 rows in set (0.01 sec)
```

7 ***Use subquery to display the <u>names of the students</u> who were born before student no 1.***

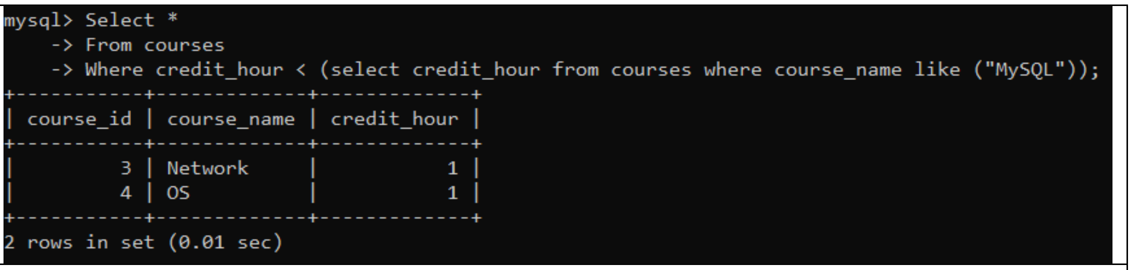
```
Select concat(s.first_name,” “,s.last_name)as student_name
From students s
Where birth_date < (select birth_date From students where student_id = 1);
```



```
mysql> Select concat(s.first_name," ",s.last_name)as student_name
    -> From students s
    -> Where birth_date < (select birth_date From students where student_id = 1);
+---------------+
| student_name  |
+---------------+
| Ahmed Ibrahim |
| Hoda Khaled   |
+---------------+
```

8 ***Use subquery to display the <u>data of all the courses</u> with a credit hour similar to MySQL's credit hours***

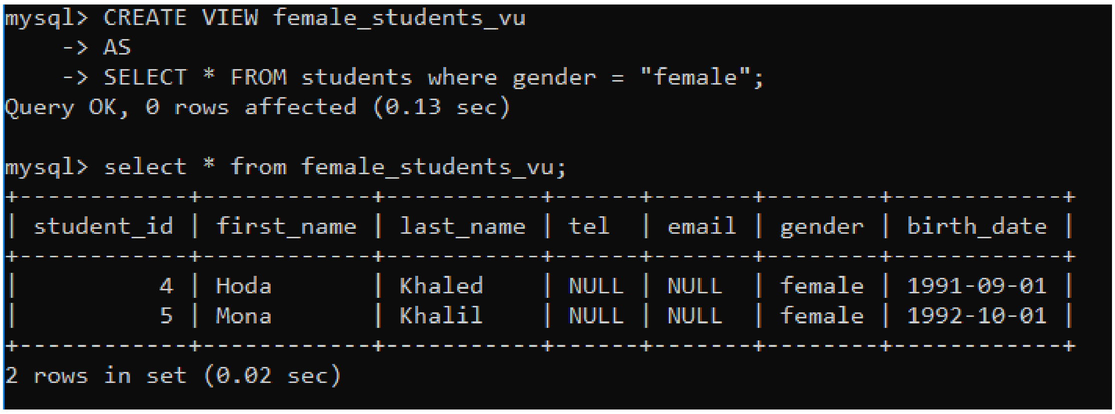
```
Select *
From courses
Where credit_hour = (select credit_hour from courses where course_name like (“MySQL”));
```



```
mysql> Select *
    -> From courses
    -> Where credit_hour < (select credit_hour from courses where course_name like ("MySQL"));
+-----------+-------------+-------------+
| course_id | course_name | credit_hour |
+-----------+-------------+-------------+
|         3 | Network     |           1 |
|         4 | OS          |           1 |
+-----------+-------------+-------------+
2 rows in set (0.01 sec)
```

10 ***Create a view called female_students_vu to display all the female students***

CREATE VIEW *female_students_vu*
AS
SELECT * FROM students where gender = “female”;



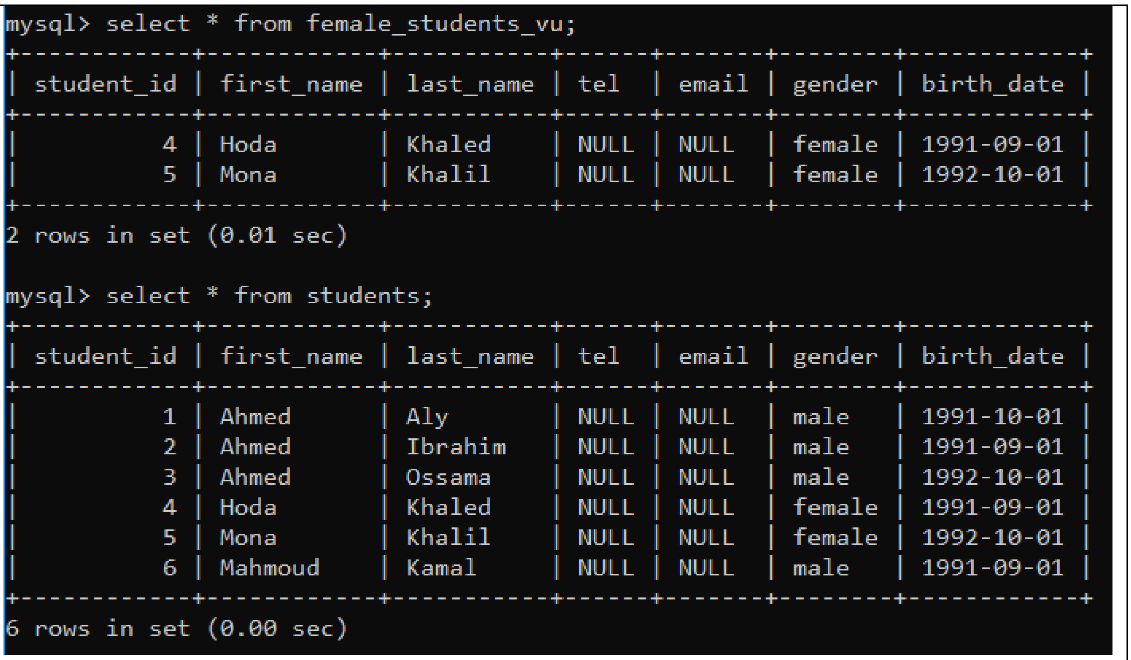
```
mysql> CREATE VIEW female_students_vu
    -> AS
    -> SELECT * FROM students where gender = "female";
Query OK, 0 rows affected (0.13 sec)

mysql> 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 (0.02 sec)
```

11 ***Try to insert a male student through your view***

Insert into female_students_vu

Values(6, “Mahmoud”, “Kamal”, NULL, NULL, “male”, “1991-09-01”);

12 ***Select all the data from your view and then from the students table***



```
mysql> 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 (0.01 sec)

mysql> 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 | Mahmoud    | Kamal     | NULL | NULL  | male   | 1991-09-01 |
+------------+------------+-----------+------+-------+--------+------------+
6 rows in set (0.00 sec)
```

13 ***Prevent the ability to insert another male student through you view***

alter view *female_students_vu*
AS
*SELECT * FROM students where gender = “female”*
WITH CHECK OPTION;

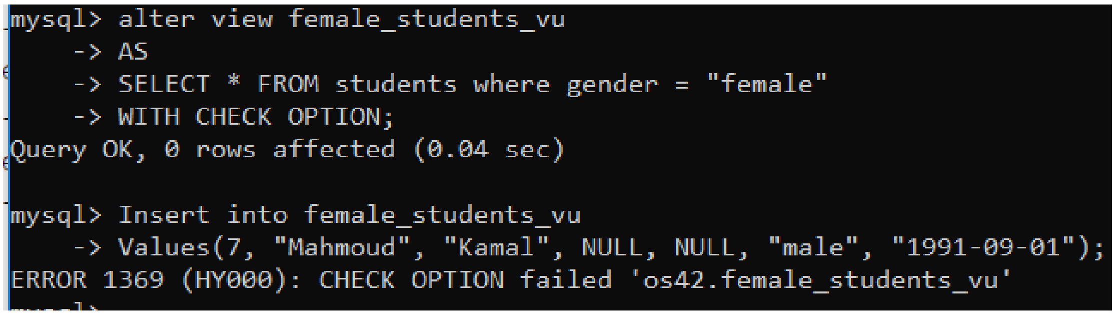
.

.

.

Insert into female_students_vu

Values(7, “Mahmoud”, “Kamal”, NULL, NULL, “male”, “1991-09-01”);



```
mysql> alter view female_students_vu
    -> AS
    -> SELECT * FROM students where gender = "female"
    -> WITH CHECK OPTION;
Query OK, 0 rows affected (0.04 sec)

mysql> Insert into female_students_vu
    -> Values(7, "Mahmoud", "Kamal", NULL, NULL, "male", "1991-09-01");
ERROR 1369 (HY000): CHECK OPTION failed 'os42.female_students_vu'
```

14 ***Use the information schema to display the table name , schema and the updatability of the female_students_vu view***

USE INFORMATION_SCHEMA;

*SELECT * FROM INFORMATION_SCHEMA.VIEWS*

WHERE TABLE_NAME = “female_students_vu”

AND TABLE_SCHEMA = “OS42”\G

Or

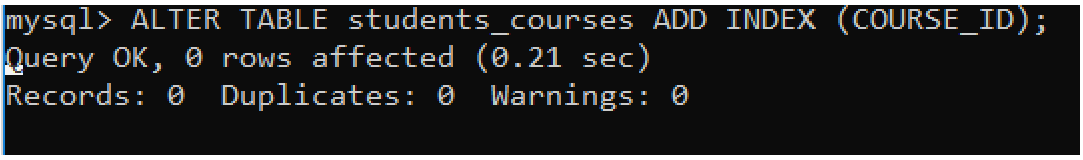
SELECT TABLE_NAME,TABLE_SCHEMA,VIEW_DEFINITION FROM INFORMATION_SCHEMA.VIEWS WHERE TABLE_SCHEMA = 'OS42' AND TABLE_NAME = 'female_students_vu';

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 FROM INFORMATION_SCHEMA.Tables WHERE TABLE_SCHEMA = 'OS42' AND TABLE_NAME = 'students';

16 ***Create a nonunique index on the foreign key column (COURSE_ID) in the students_courses table.***

ALTER TABLE students_courses ADD INDEX (COURSE_ID);



```
mysql> ALTER TABLE students_courses ADD INDEX (COURSE_ID);
Query OK, 0 rows affected (0.21 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

SHOW INDEX from students_courses;

17 ***Create a user with your name and give him the privilege to access the grades database***

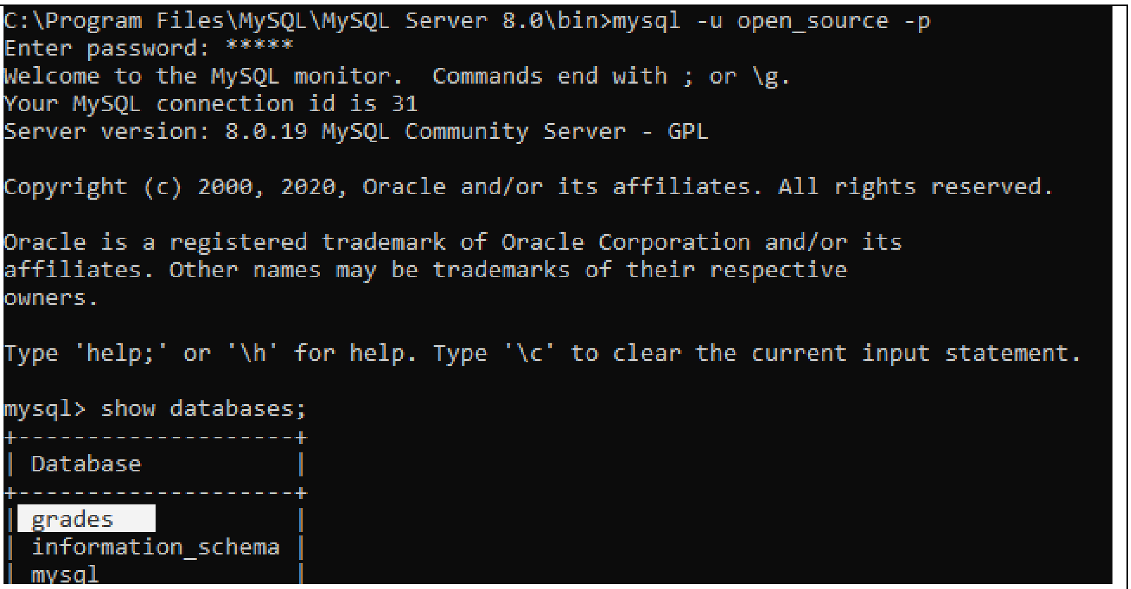
CREATE USER “open_source”@”localhost”

IDENTIFIED BY “os123”;

*GRANT ALL PRIVILEGES ON *.**

TO “open_source”@”localhost”

WITH GRANT OPTION;



```
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -u open_source -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 31
Server version: 8.0.19 MySQL Community Server - GPL

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owners.

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

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| grades             |
| information_schema |
| mysql              |
```
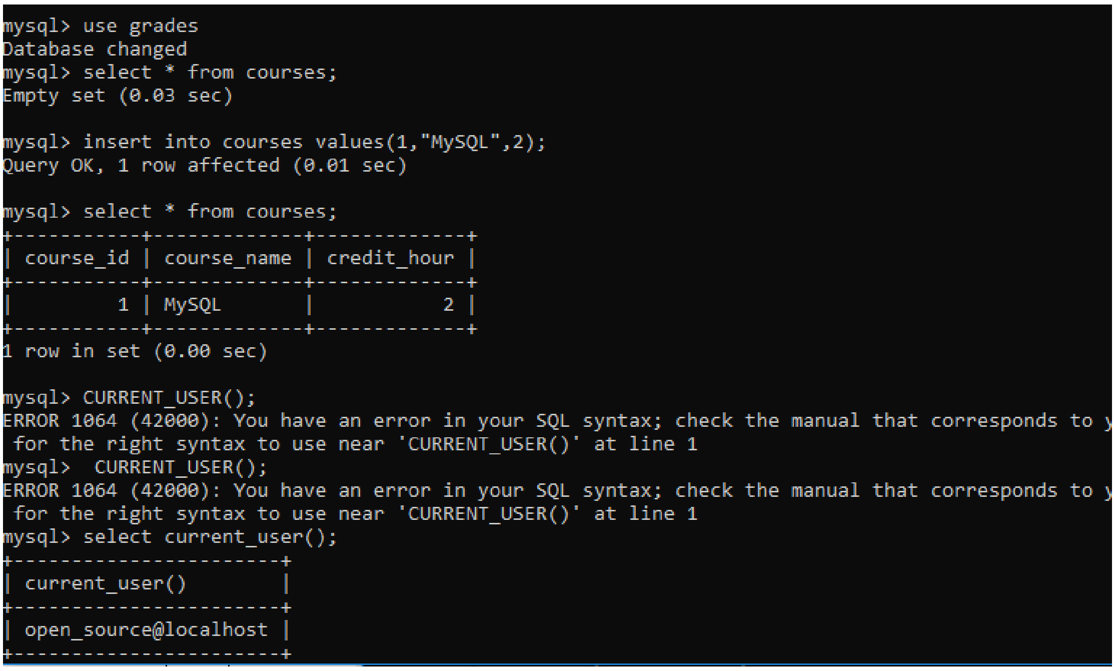
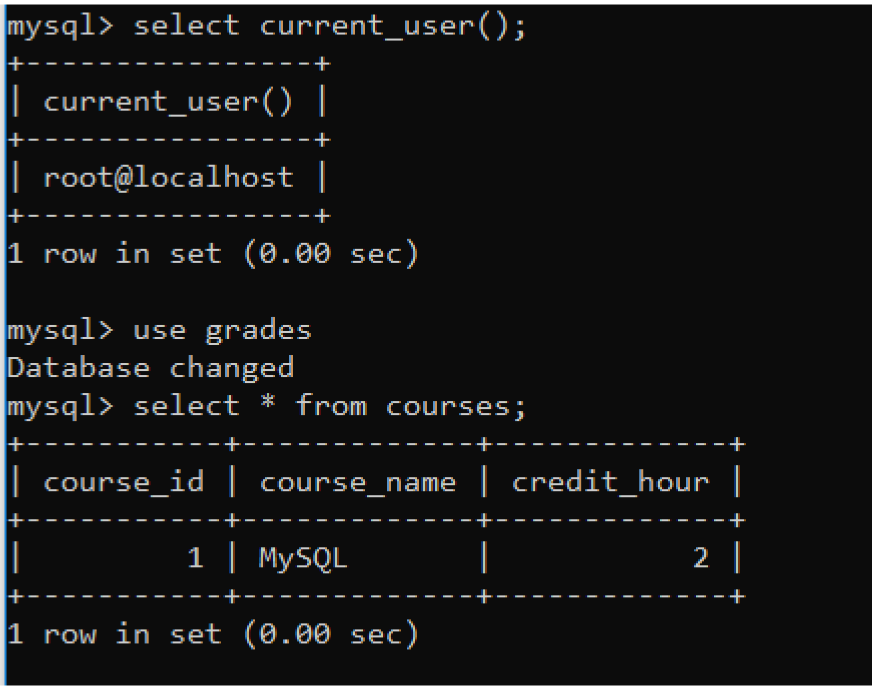

18 ***Connect to mysql using the user you created and try to insert one record in the courses table.***

"open_source"@"localhost"



```
mysql> use grades
Database changed
mysql> select * from courses;
Empty set (0.03 sec)

mysql> insert into courses values(1,"MySQL",2);
Query OK, 1 row affected (0.01 sec)

mysql> select * from courses;
+-----------+-------------+-------------+
| course_id | course_name | credit_hour |
+-----------+-------------+-------------+
|         1 | MySQL       |           2 |
+-----------+-------------+-------------+
1 row in set (0.00 sec)

mysql> CURRENT_USER();
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to y
 for the right syntax to use near 'CURRENT_USER()' at line 1
mysql>  CURRENT_USER();
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to y
 for the right syntax to use near 'CURRENT_USER()' at line 1
mysql> select current_user();
+----------------------+
| current_user()       |
+----------------------+
| open_source@localhost |
+----------------------+
```

"root"@"localhost"



```
mysql> select current_user();
+----------------+
| current_user() |
+----------------+
| root@localhost |
+----------------+
1 row in set (0.00 sec)

mysql> use grades
Database changed
mysql> select * from courses;
+-----------+-------------+-------------+
| course_id | course_name | credit_hour |
+-----------+-------------+-------------+
|         1 | MySQL       |           2 |
+-----------+-------------+-------------+
1 row in set (0.00 sec)
```

19 ***Change your password.***

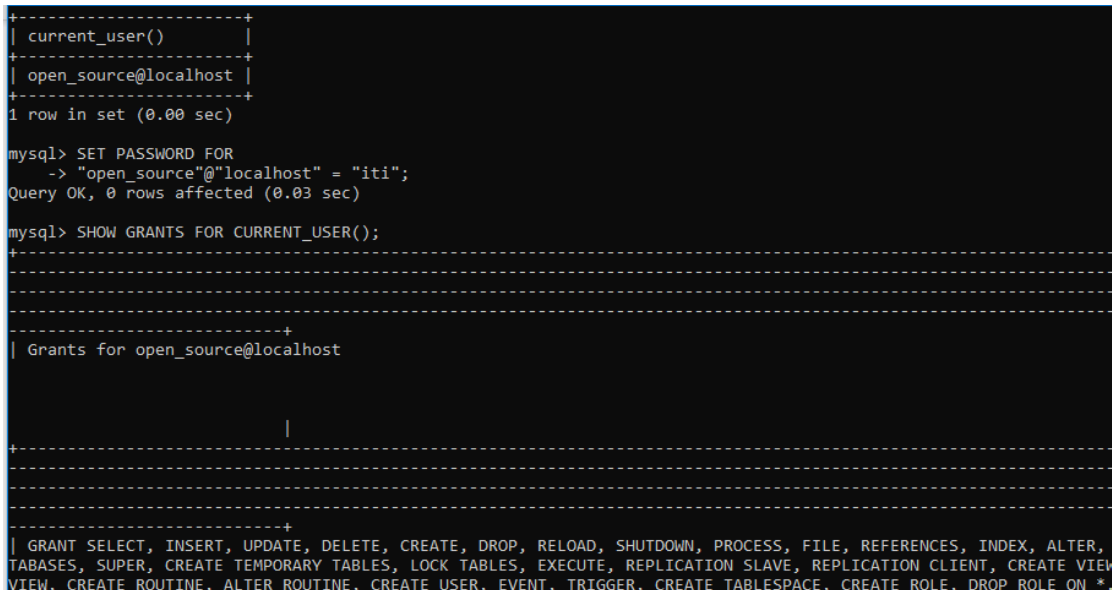
SET PASSWORD FOR

"open_source"@"localhost" = "iti";

20 ***Show your privileges.***

SHOW GRANTS FOR CURRENT_USER();

SHOW GRANTS FOR "open_source"@"localhost";



```
+----------------------+
| current_user()       |
+----------------------+
| open_source@localhost |
+----------------------+
1 row in set (0.00 sec)

mysql> SET PASSWORD FOR
    -> "open_source"@"localhost" = "iti";
Query OK, 0 rows affected (0.03 sec)

mysql> SHOW GRANTS FOR CURRENT_USER();
+-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------
----------------------------+
| Grants for open_source@localhost



                            |
+-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------
----------------------------+
| GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP, RELOAD, SHUTDOWN, PROCESS, FILE, REFERENCES, INDEX, ALTER,
TABASES, SUPER, CREATE TEMPORARY TABLES, LOCK TABLES, EXECUTE, REPLICATION SLAVE, REPLICATION CLIENT, CREATE VIEW
VIEW, CREATE ROUTINE, ALTER ROUTINE, CREATE USER, EVENT, TRIGGER, CREATE TABLESPACE, CREATE ROLE, DROP ROLE ON *.
```