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EPAM University Programs

DevOps L1 course

Database Administration

TASK DB1

PART 1	
	1. Download MySQL server for your OS on VM.
	2. Install MySQL server on VM.
	3. Select a subject area and describe the database schema, (minimum 3 tables)
CREATE DATABASE epam_hometask DEFAULT CHARACTER SET cp1251 DEFAULT COLLATE cp1251_general_ci;	4. Create a database on the server through the console.

```
ser@ubuntu: ~/Downloads

mysql> show databases;
+-----+
| Database |
+-----+
| check_permissions |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.00 sec)

mysql> CREATE DATABASE epam_hometask DEFAULT CHARACTER SET cp1251 DEFAULT COLLATE cp1251_general_ci;
Query OK, 1 row affected (0.18 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| check_permissions |
| epam_hometask |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.00 sec)

mysql> 
```

```
CREATE TABLE customer(
id INT PRIMARY KEY AUTO_INCREMENT,
first_name VARCHAR(255) NOT NULL,
last_name VARCHAR(255) NOT NULL,
age INT,
email VARCHAR (255) NOT NULL UNIQUE,
phone_number VARCHAR (18) NOT NULL UNIQUE
);

CREATE TABLE product(
id INT PRIMARY KEY AUTO_INCREMENT,
product_id INT,
name VARCHAR (255),
price DOUBLE PRECISION NOT NULL
);
```

5. Fill in tables.

```
CREATE TABLE sale(
id INT PRIMARY KEY AUTO_INCREMENT,
user_id INT,
product_id INT REFERENCES product(product_id),
quantity INT CONSTRAINT CHECK (quantity>0),
FOREIGN KEY (user_id) REFERENCES customer(id) ON DELETE CASCADE
);
```

```
ser@ubuntu: ~/Downloads
mysql> use epan_hometask;
Database changed
mysql> CREATE TABLE customer(
-> id INT PRIMARY KEY AUTO_INCREMENT,
-> first_name VARCHAR(255) NOT NULL,
-> last_name VARCHAR(255) NOT NULL,
-> age INT,
-> email VARCHAR (255) NOT NULL UNIQUE,
-> phone_number VARCHAR (18) NOT NULL UNIQUE
-> );
Query OK, 0 rows affected (2.03 sec)

mysql> CREATE TABLE product(
-> id INT PRIMARY KEY AUTO_INCREMENT,
-> product_id INT,
-> name VARCHAR (255),
-> price DOUBLE PRECISION NOT NULL
-> );
Query OK, 0 rows affected (1.61 sec)

mysql> CREATE TABLE sale(
-> id INT PRIMARY KEY AUTO_INCREMENT,
-> user_id INT,
-> product_id INT REFERENCES product(product_id),
-> quantity INT CONSTRAINT CHECK (quantity>0),
-> FOREIGN KEY (user_id) REFERENCES customer(id) ON DELETE CASCADE
-> );
Query OK, 0 rows affected (1.74 sec)

mysql> show tables;
+-----+
| Tables_in_epan_hometask |
+-----+
| customer                 |
| product                  |
| sale                     |
+-----+
3 rows in set (0.01 sec)

mysql>
```

```
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Ivan', 'Petrov', 18, 'petrov@test.ua',
'+380501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Иван', 'Петров', 81,
'ivpetrov@test.ua', '+480501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Petrov', 'Ivan', 81,
'petroviv@test.ua', '+580501234567');
```

```
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Petr', 'Ivanov', 19, 'petrov1@test.ua', '+680501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Петр', 'Иванов', 20, 'petrov2@test.ua', '+780501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Иван', 'Иванов', 21, 'petrov3@test.ua', '+880501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Максим', 'Петров', 22, 'petrov4@test.ua', '+980501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Maksim', 'Petrov', 23, 'petrov5@test.ua', '+180501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Sergey', 'Sergeev', 24, 'petrov6@test.ua', '+280501234567');
INSERT INTO customer(first_name, last_name, age, email, phone_number) VALUES('Maksim', 'Sergeev', 25, 'petrov7@test.ua', '+381501234567');
```

```
INSERT INTO product (product_id, name, price) VALUES(1014809, 'лопата саперная Solid', 752.46);
INSERT INTO product (product_id, name, price) VALUES(1003455, 'лопата штыковая Solid', 751.25);
INSERT INTO product (product_id, name, price) VALUES(1001567, 'лопата штыковая SmartFit', 660.14);
INSERT INTO product (product_id, name, price) VALUES(1027039, 'грабли Хач М', 579.03);
INSERT INTO product (product_id, name, price) VALUES(1000621, 'лопата саперная', 488.92);
INSERT INTO product (product_id, name, price) VALUES(1000685, 'разрыхлитель QuikFit', 397.81);
INSERT INTO product (product_id, name, price) VALUES(1027112, 'корнеудалитель Хач', 206.70);
INSERT INTO product (product_id, name, price) VALUES(1003459, 'вилы для компоста Solid', 115.69);
INSERT INTO product (product_id, name, price) VALUES(1000655, 'грабли-аэратор QuikFit', 224.58);
INSERT INTO product (product_id, name, price) VALUES(1027037, 'грабли для листьев Хач L', 333.47);
INSERT INTO product (product_id, name, price) VALUES(133433, 'грабли для листьев Хач', 442.36);
```

```
INSERT INTO sale (user_id, product_id, quantity) VALUES(3, 1003455, 2);
INSERT INTO sale (user_id, product_id, quantity) VALUES(4, 1001567, 3);
INSERT INTO sale (user_id, product_id, quantity) VALUES(5, 1027039, 4);
INSERT INTO sale (user_id, product_id, quantity) VALUES(6, 1000621, 5);
INSERT INTO sale (user_id, product_id, quantity) VALUES(7, 1000685, 6);
INSERT INTO sale (user_id, product_id, quantity) VALUES(8, 1027112, 7);
INSERT INTO sale (user_id, product_id, quantity) VALUES(9, 1003459, 8);
INSERT INTO sale (user_id, product_id, quantity) VALUES(10, 1000655, 9);
INSERT INTO sale (user_id, product_id, quantity) VALUES(9, 1027037, 10);
INSERT INTO sale (user_id, product_id, quantity) VALUES(8, 133433, 11);
INSERT INTO sale (user_id, product_id, quantity) VALUES(7, 1014809, 12);
INSERT INTO sale (user_id, product_id, quantity) VALUES(6, 1003455, 13);
INSERT INTO sale (user_id, product_id, quantity) VALUES(5, 1001567, 14);
```

```
INSERT INTO sale (user_id, product_id, quantity) VALUES(4, 1027039, 15);
INSERT INTO sale (user_id, product_id, quantity) VALUES(3, 1000621, 16);
INSERT INTO sale (user_id, product_id, quantity) VALUES(2, 1000621, 17);
```

```
ser@ubuntu: ~/Downloads
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO sale (user_id, product_id, quantity) VALUES(3, 1000621, 16);
Query OK, 1 row affected (0.07 sec)

mysql> INSERT INTO sale (user_id, product_id, quantity) VALUES(2, 1000621, 17);
Query OK, 1 row affected (0.13 sec)

mysql> select * from customer;
+-----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number |
+-----+-----+-----+-----+-----+-----+
| 1 | Ivan | Petrov | 18 | petrov@test.ua | +380501234567 |
| 2 | Иван | Петров | 81 | ivpetrov@test.ua | +480501234567 |
| 3 | Petrov | Ivan | 81 | petroviv@test.ua | +580501234567 |
| 4 | Petr | Ivanov | 19 | petrov1@test.ua | +680501234567 |
| 5 | Петр | Иванов | 20 | petrov2@test.ua | +780501234567 |
| 6 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 |
| 7 | Максим | Петров | 22 | petrov4@test.ua | +980501234567 |
| 8 | Maksim | Petrov | 23 | petrov5@test.ua | +180501234567 |
| 9 | Sergey | Sergeev | 24 | petrov6@test.ua | +280501234567 |
| 10 | Maksim | Sergeev | 25 | petrov7@test.ua | +381501234567 |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.01 sec)

mysql> select * from product;
+-----+-----+-----+-----+
| id | product_id | name | price |
+-----+-----+-----+-----+
| 1 | 1014809 | лопата саперная Solid | 752.46 |
| 2 | 1003455 | лопата штыковая Solid | 751.25 |
| 3 | 1001567 | лопата штыковая SmartFit | 660.14 |
| 4 | 1027039 | грабли Хакт М | 579.03 |
| 5 | 1000621 | лопата саперная | 488.92 |
| 6 | 1000685 | разрыхлитель QuikFit | 397.81 |
| 7 | 1027112 | корнеудалитель Хакт | 206.7 |
| 8 | 1003459 | вилы для компоста Solid | 115.69 |
| 9 | 1000655 | грабли-аэратор QuikFit | 224.58 |
| 10 | 1027037 | грабли для листьев Хакт L | 333.47 |
| 11 | 133433 | грабли для листьев Хакт | 442.36 |
+-----+-----+-----+-----+
11 rows in set (0.00 sec)

mysql>
```

```
ser@ubuntu: ~/Downloads

10 rows in set (0.01 sec)

mysql> select * from product;
+-----+-----+-----+-----+
| id | product_id | name | price |
+-----+-----+-----+-----+
| 1 | 1014809 | лопата саперная Solid | 752.46 |
| 2 | 1003455 | лопата штыковая Solid | 751.25 |
| 3 | 1001567 | лопата штыковая SmartFit | 660.14 |
| 4 | 1027039 | грабли Хачт М | 579.03 |
| 5 | 1000621 | лопата саперная | 488.92 |
| 6 | 1000685 | разрыхлитель QuikFit | 397.81 |
| 7 | 1027112 | корнеудалитель Хачт | 206.7 |
| 8 | 1003459 | вилы для компоста Solid | 115.69 |
| 9 | 1000655 | грабли-аэратор QuikFit | 224.58 |
| 10 | 1027037 | грабли для листьев Хачт L | 333.47 |
| 11 | 133433 | грабли для листьев Хачт | 442.36 |
+-----+-----+-----+-----+
11 rows in set (0.00 sec)

mysql> select * from sale;
+-----+-----+-----+-----+
| id | user_id | product_id | quantity |
+-----+-----+-----+-----+
| 1 | 3 | 1003455 | 2 |
| 2 | 4 | 1001567 | 3 |
| 3 | 5 | 1027039 | 4 |
| 4 | 6 | 1000621 | 5 |
| 5 | 7 | 1000685 | 6 |
| 6 | 8 | 1027112 | 7 |
| 7 | 9 | 1003459 | 8 |
| 8 | 10 | 1000655 | 9 |
| 9 | 9 | 1027037 | 10 |
| 10 | 8 | 133433 | 11 |
| 11 | 7 | 1014809 | 12 |
| 12 | 6 | 1003455 | 13 |
| 13 | 5 | 1001567 | 14 |
| 14 | 4 | 1027039 | 15 |
| 15 | 3 | 1000621 | 16 |
| 16 | 2 | 1000621 | 17 |
+-----+-----+-----+-----+
16 rows in set (0.00 sec)

mysql> 
```

SELECT name AS 'Название продукта', price AS 'Цена, грн.'  
FROM product JOIN sale ON product.product\_id=sale.product\_id  
JOIN customer  
ON sale.user\_id=customer.id  
WHERE customer.age>60  
GROUP BY product.name, product.price  
ORDER BY product.price DESC;

6. Construct and execute  
SELECT operator with  
WHERE, GROUP BY and  
ORDER BY.  
Вывести список товаров с  
ценой отсортированной по  
убываюнию, которые  
приобретают люди старше 60  
лет.

```
ser@ubuntu: ~/Downloads
mysql> SELECT name AS 'Название продукта', price AS 'Цена, грн.'
-> FROM product JOIN sale ON product.product_id=sale.product_id
-> JOIN customer
-> ON sale.user_id=customer.id
-> WHERE customer.age>60
-> GROUP BY product.name, product.price
-> ORDER BY product.price DESC;
+-----+-----+
| Название продукта | Цена, грн. |
+-----+-----+
| лопата штыковая Solid | 751.25 |
| лопата саперная | 488.92 |
+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

7. Execute other different SQL queries DDL, DML, DCL.

DDL  
+Create  
+alter  
+drop

```
CREATE TABLE customer2(
id INT PRIMARY KEY AUTO_INCREMENT,
first_name VARCHAR(255) NOT NULL,
last_name VARCHAR(255) NOT NULL,
age INT,
email VARCHAR (255) NOT NULL UNIQUE,
phone_number VARCHAR (18) NOT NULL UNIQUE
);
INSERT INTO customer2(first_name, last_name, age, email, phone_number) VALUES('Петр', 'Иванов', 20,
'petrov2@test.ua', '+780501234567');
INSERT INTO customer2(first_name, last_name, age, email, phone_number) VALUES('Иван', 'Иванов', 21,
'petrov3@test.ua', '+880501234567');

ALTER TABLE customer2
ADD COLUMN date_of_registration TIMESTAMP;

ALTER TABLE customer2
RENAME COLUMN date_of_registration TO registration;

DROP TABLE customer2;
```



```
ser@ubuntu: ~/Downloads

mysql> /* DDL (CREATE, ALTER, DROP) */
mysql> CREATE TABLE customer2(
  -> id INT PRIMARY KEY AUTO_INCREMENT,
  -> first_name VARCHAR(255) NOT NULL,
  -> last_name VARCHAR(255) NOT NULL,
  -> age INT,
  -> email VARCHAR (255) NOT NULL UNIQUE,
  -> phone_number VARCHAR (18) NOT NULL UNIQUE
  -> );

Query OK, 0 rows affected (1.59 sec)

mysql>
mysql> INSERT INTO customer2(first_name, last_name, age, email, phone_number) VALUES('Петр', 'Иванов', 20, 'petrov2@test.ua', '+780501234567');
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO customer2(first_name, last_name, age, email, phone_number) VALUES('Иван', 'Иванов', 21, 'petrov3@test.ua', '+880501234567');
Query OK, 1 row affected (0.12 sec)

mysql> select * from customer2;
+----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number |
+----+-----+-----+-----+-----+-----+
| 1 | Петр | Иванов | 20 | petrov2@test.ua | +780501234567 |
| 2 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 |
+----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> ALTER TABLE customer2
  -> ADD COLUMN date_of_registration TIMESTAMP;
Query OK, 0 rows affected (1.12 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE customer2
  -> RENAME COLUMN date_of_registration TO registration;
Query OK, 0 rows affected (0.43 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> select * from customer2;
+----+-----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number | registration |
+----+-----+-----+-----+-----+-----+-----+
| 1 | Петр | Иванов | 20 | petrov2@test.ua | +780501234567 | NULL |
| 2 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 | NULL |
+----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> DROP TABLE customer2;
Query OK, 0 rows affected (0.59 sec)

mysql>
```

```
/* DML (SELECT, INSERT, UPDATE, DELETE) */
SELECT CONCAT (customer2.first_name, ' ', customer2.last_name) AS 'Имя и фамилия', product.name
AS 'Название товара', product.price AS 'Цена, грн.'
FROM product JOIN sale ON product.product_id=sale.product_id
JOIN customer2
ON sale.user_id=customer2.id
WHERE customer2.id=2;

INSERT INTO customer2(first_name, last_name, age, email, phone_number, date_of_registration) VALUES('Максим',
'Петров', 22, 'petrov@test.ua', '+380501234567', TIMESTAMP '2022-10-17 19:19:19');

UPDATE customer2 SET date_of_registration = TIMESTAMP '2019-08-19 18:18:18'
WHERE id=1;
```

DML  
+Select from  
+Insert  
+update  
+delete



DELETE FROM customer2  
WHERE id=1;

```
ser@ubuntu: ~/Downloads

mysql> /* DML (SELECT, INSERT, UPDATE, DELETE) */
mysql> select * from customer2;
+----+-----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number | date_of_registration |
+----+-----+-----+-----+-----+-----+-----+
| 1 | Петр | Иванов | 20 | petrov2@test.ua | +780501234567 | NULL |
| 2 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 | NULL |
+----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT CONCAT (customer2.first_name, ' ', customer2.last_name) AS 'Имя и фамилия', product.name AS 'Название товара', product.price AS 'Цена, грн.'
-> FROM product JOIN sale ON product.product_id=sale.product_id
-> JOIN customer2
-> ON sale.user_id=customer2.id
-> WHERE customer2.id=2;
+-----+-----+-----+
| Имя и фамилия | Название товара | Цена, грн. |
+-----+-----+-----+
| Иван Иванов | лопата саперная | 488.92 |
+-----+-----+-----+
1 row in set (0.00 sec)

mysql> INSERT INTO customer2(first_name, last_name, age, email, phone_number, date_of_registration) VALUES('Максим', 'Петров', 22, 'petrov@test.ua', '+380501234567', TIMESTAMP '2022-10-17 19:19:19');
Query OK, 1 row affected (0.16 sec)

mysql> select * from customer2;
+----+-----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number | date_of_registration |
+----+-----+-----+-----+-----+-----+-----+
| 1 | Петр | Иванов | 20 | petrov2@test.ua | +780501234567 | NULL |
| 2 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 | NULL |
| 3 | Максим | Петров | 22 | petrov@test.ua | +380501234567 | 2022-10-17 19:19:19 |
+----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)

mysql> UPDATE customer2 SET date_of_registration = TIMESTAMP '2019-08-19 18:18:18'
-> WHERE id=1;
Query OK, 1 row affected (0.46 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> DELETE FROM customer2
-> WHERE id=1;
Query OK, 1 row affected (0.15 sec)

mysql> select * from customer2;
+----+-----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number | date_of_registration |
+----+-----+-----+-----+-----+-----+-----+
| 2 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 | NULL |
| 3 | Максим | Петров | 22 | petrov@test.ua | +380501234567 | 2022-10-17 19:19:19 |
+----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)
```

```
/* DCL (Grant, Revoke) */
CREATE USER 'dcl'@'localhost' IDENTIFIED BY '123';
SHOW GRANTS FOR dcl@localhost;
GRANT SELECT, INSERT ON check_permissions.* TO dcl@localhost;
SHOW GRANTS FOR dcl@localhost;
REVOKE INSERT ON check_permissions.* FROM dcl@localhost;
SHOW GRANTS FOR dcl@localhost;
```

DCL  
+Grant  
+Revoke

```
ser@ubuntu: ~/Downloads
mysql> /* DCL (Grant, Revoke) */
mysql> CREATE USER 'dcl'@'localhost' IDENTIFIED BY '123';
Query OK, 0 rows affected (0.13 sec)

mysql> SHOW GRANTS FOR dcl@localhost;
+-----+
| Grants for dcl@localhost |
+-----+
| GRANT USAGE ON *.* TO 'dcl'@'localhost' |
+-----+
1 row in set (0.00 sec)

mysql> GRANT SELECT, INSERT ON check_permissions.* TO dcl@localhost;
Query OK, 0 rows affected (0.14 sec)

mysql> SHOW GRANTS FOR dcl@localhost;
+-----+
| Grants for dcl@localhost |
+-----+
| GRANT USAGE ON *.* TO 'dcl'@'localhost' |
| GRANT SELECT, INSERT ON 'check_permissions'.* TO 'dcl'@'localhost' |
+-----+
2 rows in set (0.00 sec)

mysql> REVOKE INSERT ON check_permissions.* FROM dcl@localhost;
Query OK, 0 rows affected (0.13 sec)

mysql> SHOW GRANTS FOR dcl@localhost;
+-----+
| Grants for dcl@localhost |
+-----+
| GRANT USAGE ON *.* TO 'dcl'@'localhost' |
| GRANT SELECT ON 'check_permissions'.* TO 'dcl'@'localhost' |
+-----+
2 rows in set (0.00 sec)

mysql> 
```

```
CREATE DATABASE check_permissions;
CREATE USER 'hometask'@'localhost' IDENTIFIED BY '123';
GRANT SELECT, INSERT, CREATE, ALTER, EXECUTE ON check_permissions .* TO
'hometask'@'localhost';
SYSTEM mysql -u hometask -p;
```

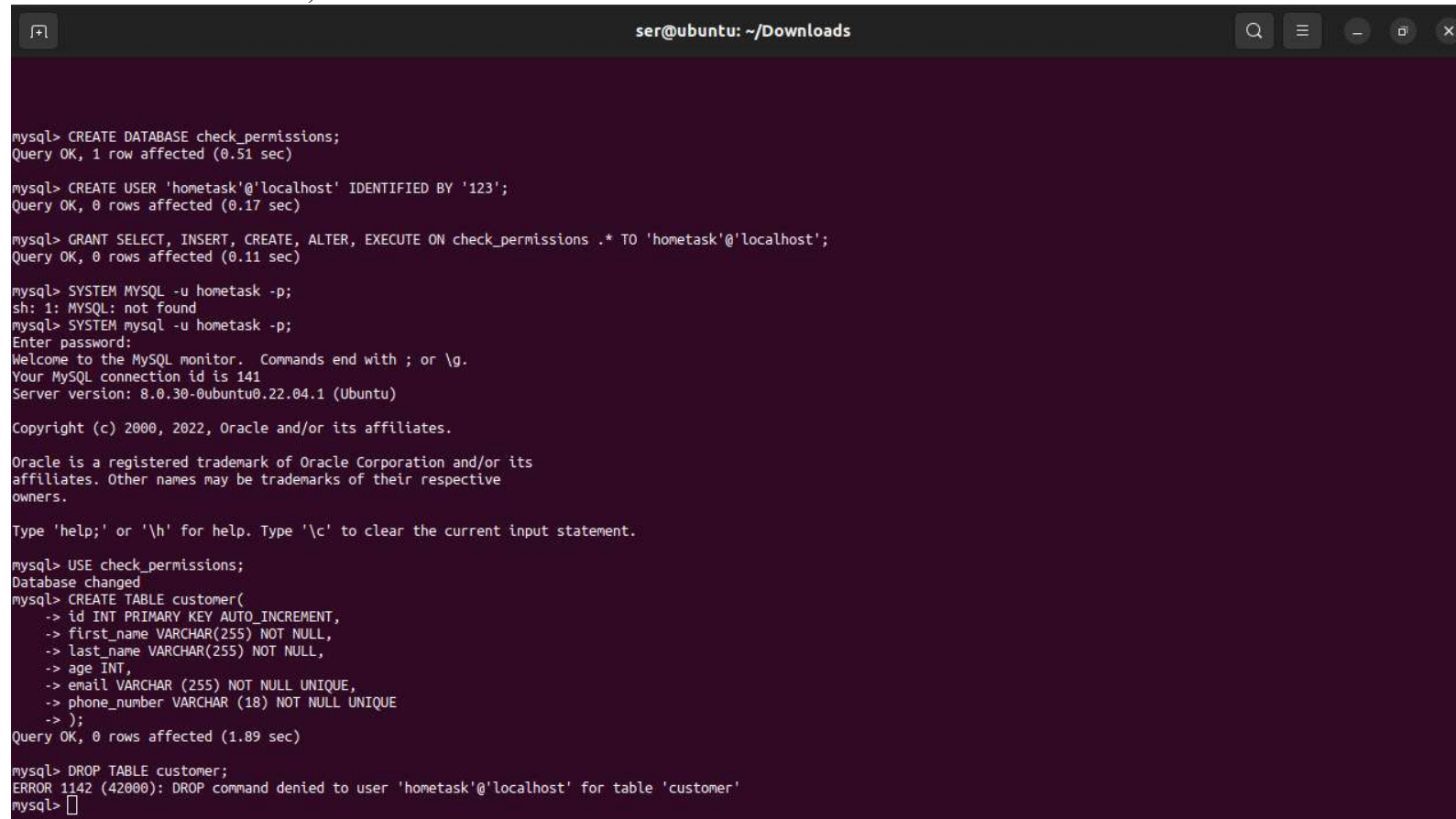
```
USE check_permissions;
```

```
CREATE TABLE customer(
id INT PRIMARY KEY AUTO_INCREMENT,
first_name VARCHAR(255) NOT NULL,
last_name VARCHAR(255) NOT NULL,
age INT,
```

8. Create a database of new users with different privileges. Connect to the database as a new user and verify that the privileges allow or deny certain actions.

```
email VARCHAR (255) NOT NULL UNIQUE,  
phone_number VARCHAR (18) NOT NULL UNIQUE  
);
```

```
DROP TABLE customer;
```



```
ser@ubuntu: ~/Downloads  
  
mysql> CREATE DATABASE check_permissions;  
Query OK, 1 row affected (0.51 sec)  
  
mysql> CREATE USER 'hometask'@'localhost' IDENTIFIED BY '123';  
Query OK, 0 rows affected (0.17 sec)  
  
mysql> GRANT SELECT, INSERT, CREATE, ALTER, EXECUTE ON check_permissions .* TO 'hometask'@'localhost';  
Query OK, 0 rows affected (0.11 sec)  
  
mysql> SYSTEM MYSQL -u hometask -p;  
sh: 1: MYSQL: not found  
mysql> SYSTEM mysql -u hometask -p;  
Enter password:  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 141  
Server version: 8.0.30-0ubuntu0.22.04.1 (Ubuntu)  
  
Copyright (c) 2000, 2022, Oracle and/or its affiliates.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
mysql> USE check_permissions;  
Database changed  
mysql> CREATE TABLE customer(  
-> id INT PRIMARY KEY AUTO_INCREMENT,  
-> first_name VARCHAR(255) NOT NULL,  
-> last_name VARCHAR(255) NOT NULL,  
-> age INT,  
-> email VARCHAR (255) NOT NULL UNIQUE,  
-> phone_number VARCHAR (18) NOT NULL UNIQUE  
-> );  
Query OK, 0 rows affected (1.89 sec)  
  
mysql> DROP TABLE customer;  
ERROR 1142 (42000): DROP command denied to user 'hometask'@'localhost' for table 'customer'  
mysql>
```

```
select * from mysql.db \G;
```

9. Make a selection from the main table DB MySQL.

```
ser@ubuntu: ~/Downloads
mysql> SELECT * FROM mysql.db \G;
***** 1. row *****
      Host: localhost
      Db: check_permissions
      User: dcl
      Select_priv: Y
      Insert_priv: N
      Update_priv: N
      Delete_priv: N
      Create_priv: N
      Drop_priv: N
      Grant_priv: N
      References_priv: N
      Index_priv: N
      Alter_priv: N
      Create_tmp_table_priv: N
      Lock_tables_priv: N
      Create_view_priv: N
      Show_view_priv: N
      Create_routine_priv: N
      Alter_routine_priv: N
      Execute_priv: N
      Event_priv: N
      Trigger_priv: N
***** 2. row *****
      Host: localhost
      Db: check_permissions
      User: hometask
      Select_priv: Y
      Insert_priv: Y
      Update_priv: N
      Delete_priv: N
      Create_priv: Y
      Drop_priv: N
      Grant_priv: N
      References_priv: N
      Index_priv: N
```

## PART 2

`sudo mysqldump -u test -p epam_hometask > ~/Downloads/2022_10_17_backup.sql`

10. Make backup of your database.

```
ser@ubuntu: ~/Downloads/backup
ser@ubuntu:~/Downloads/backup$ sudo mysqldump -u test -p epam_hometask > ~/Downloads/backup/2022_10_18_backup.sql
Enter password:
ser@ubuntu:~/Downloads/backup$ ls -la
total 16
drwxrwxr-x 2 ser ser 4096 Oct 18 09:24 .
drwxr-xr-x 5 ser ser 4096 Oct 18 09:23 ..
-rw-rw-r-- 1 ser ser 6274 Oct 18 09:24 2022_10_18_backup.sql
ser@ubuntu:~/Downloads/backup$
```

use epam\_hometask;  
show tables;  
drop table customer;

11. Delete the table and/or part of the data in the table.

show tables;  
select \* from customer;  
alter table customer drop column last\_name;

```
ser@ubuntu: ~/Downloads/backup
ser@ubuntu:~/Downloads/backup$ sudo mysqldump -u test -p epam_hometask > ~/Downloads/backup/2022_10_18_backup.sql
Enter password:
ser@ubuntu:~/Downloads/backup$ ls -la
total 16
drwxrwxr-x 2 ser ser 4096 Oct 18 09:24 .
drwxr-xr-x 5 ser ser 4096 Oct 18 09:23 ..
-rw-rw-r-- 1 ser ser 6274 Oct 18 09:24 2022_10_18_backup.sql
ser@ubuntu:~/Downloads/backup$ mysql -u test -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 148
Server version: 8.0.30-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> use epam_hometask;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----+
| Tables_in_epam_hometask |
+-----+
| customer                |
| customer2               |
| product                 |
| sale                    |
+-----+
4 rows in set (0.01 sec)
```



```
mysql> drop table customer;  
ERROR 3730 (HY000): Cannot drop table 'customer' referenced by a foreign key constraint 'sale_ibfk_1' on table 'sale'.  
mysql> show tables;
```

```
+-----+  
| Tables_in_epam_hometask |  
+-----+  
| customer                |  
| customer2               |  
| product                 |  
| sale                    |  
+-----+  
4 rows in set (0.00 sec)
```

```
mysql> select * from customer;
```

```
+-----+-----+-----+-----+-----+-----+  
| id | first_name | last_name | age | email                | phone_number |  
+-----+-----+-----+-----+-----+-----+  
| 1  | Ivan       | Petrov    | 18  | petrov@test.ua       | +380501234567 |  
| 2  | Иван       | Петров    | 81  | ivpetrov@test.ua     | +480501234567 |  
| 3  | Petrov     | Ivan      | 81  | petroviv@test.ua     | +580501234567 |  
| 4  | Petr       | Ivanov    | 19  | petrov1@test.ua      | +680501234567 |  
| 5  | Петр       | Иванов    | 20  | petrov2@test.ua      | +780501234567 |  
| 6  | Иван       | Иванов    | 21  | petrov3@test.ua      | +880501234567 |  
| 7  | Максим     | Петров    | 22  | petrov4@test.ua      | +980501234567 |  
| 8  | Maksim     | Petrov    | 23  | petrov5@test.ua      | +180501234567 |  
| 9  | Sergey     | Sergeev   | 24  | petrov6@test.ua      | +280501234567 |  
| 10 | Maksim     | Sergeev   | 25  | petrov7@test.ua      | +381501234567 |  
+-----+-----+-----+-----+-----+-----+  
10 rows in set (0.00 sec)
```

```
mysql> alter table customer drop column last_name;  
Query OK, 0 rows affected (1.10 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> select * from customer;
```

```
+-----+-----+-----+-----+-----+  
| id | first name | age | email                | phone number |  
+-----+-----+-----+-----+-----+  
| 1  | Ivan       | 18  | petrov@test.ua       | +380501234567 |  
| 2  | Иван       | 81  | ivpetrov@test.ua     | +480501234567 |  
| 3  | Petrov     | 81  | petroviv@test.ua     | +580501234567 |  
| 4  | Petr       | 19  | petrov1@test.ua      | +680501234567 |  
| 5  | Петр       | 20  | petrov2@test.ua      | +780501234567 |  
| 6  | Иван       | 21  | petrov3@test.ua      | +880501234567 |  
| 7  | Максим     | 22  | petrov4@test.ua      | +980501234567 |  
| 8  | Maksim     | 23  | petrov5@test.ua      | +180501234567 |  
| 9  | Sergey     | 24  | petrov6@test.ua      | +280501234567 |  
| 10 | Maksim     | 25  | petrov7@test.ua      | +381501234567 |  
+-----+-----+-----+-----+-----+
```

```
ser@ubuntu: ~/Downloads/backup

+-----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email | phone_number |
+-----+-----+-----+-----+-----+-----+
| 1 | Ivan | Petrov | 18 | petrov@test.ua | +380501234567 |
| 2 | Иван | Петров | 81 | ivpetrov@test.ua | +480501234567 |
| 3 | Petrov | Ivan | 81 | petroviv@test.ua | +580501234567 |
| 4 | Petr | Ivanov | 19 | petrov1@test.ua | +680501234567 |
| 5 | Петр | Иванов | 20 | petrov2@test.ua | +780501234567 |
| 6 | Иван | Иванов | 21 | petrov3@test.ua | +880501234567 |
| 7 | Максим | Петров | 22 | petrov4@test.ua | +980501234567 |
| 8 | Maksim | Petrov | 23 | petrov5@test.ua | +180501234567 |
| 9 | Sergey | Sergeev | 24 | petrov6@test.ua | +280501234567 |
| 10 | Maksim | Sergeev | 25 | petrov7@test.ua | +381501234567 |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> alter table customer drop column last_name;
Query OK, 0 rows affected (1.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> select * from customer;
+-----+-----+-----+-----+-----+-----+
| id | first_name | age | email | phone_number |
+-----+-----+-----+-----+-----+-----+
| 1 | Ivan | 18 | petrov@test.ua | +380501234567 |
| 2 | Иван | 81 | ivpetrov@test.ua | +480501234567 |
| 3 | Petrov | 81 | petroviv@test.ua | +580501234567 |
| 4 | Petr | 19 | petrov1@test.ua | +680501234567 |
| 5 | Петр | 20 | petrov2@test.ua | +780501234567 |
| 6 | Иван | 21 | petrov3@test.ua | +880501234567 |
| 7 | Максим | 22 | petrov4@test.ua | +980501234567 |
| 8 | Maksim | 23 | petrov5@test.ua | +180501234567 |
| 9 | Sergey | 24 | petrov6@test.ua | +280501234567 |
| 10 | Maksim | 25 | petrov7@test.ua | +381501234567 |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.01 sec)

mysql> 
```

```
sudo mysql -u root -p epam_hometask < ~/Downloads/2022_10_17_backup.sql
select * from customer;
```

12.Restore your database.



```
ser@ubuntu: ~/Downloads/backup

ser@ubuntu:~/Downloads/backup$ sudo mysql -u test -p epam_hometask < ~/Downloads/backup/2022_10_18_backup.sql
Enter password:
ser@ubuntu:~/Downloads/backup$ mysql -u test -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 157
Server version: 8.0.30-0ubuntu0.22.04.1 (Ubuntu)

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owners.

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

mysql> use epam_hometask;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----+
| Tables_in_epam_hometask |
+-----+
| customer                |
| customer2               |
| product                 |
| sale                    |
+-----+
4 rows in set (0.00 sec)

mysql> select * from customer;
+----+-----+-----+-----+-----+-----+
| id | first_name | last_name | age | email                | phone_number |
+----+-----+-----+-----+-----+-----+
| 1  | Ivan      | Petrov   | 18  | petrov@test.ua       | +380501234567 |
| 2  | Иван     | Петров  | 81  | ivpetrov@test.ua     | +480501234567 |
| 3  | Petrov    | Ivan     | 81  | petroviv@test.ua     | +580501234567 |
| 4  | Petr      | Ivanov   | 19  | petrov1@test.ua      | +680501234567 |
| 5  | Петр     | Иванов  | 20  | petrov2@test.ua      | +780501234567 |
| 6  | Иван     | Иванов  | 21  | petrov3@test.ua      | +880501234567 |
| 7  | Максим    | Петров  | 22  | petrov4@test.ua      | +980501234567 |
| 8  | Maksim    | Petrov   | 23  | petrov5@test.ua      | +180501234567 |
+----+-----+-----+-----+-----+-----+

```

## In AWS RDS create MySQL database

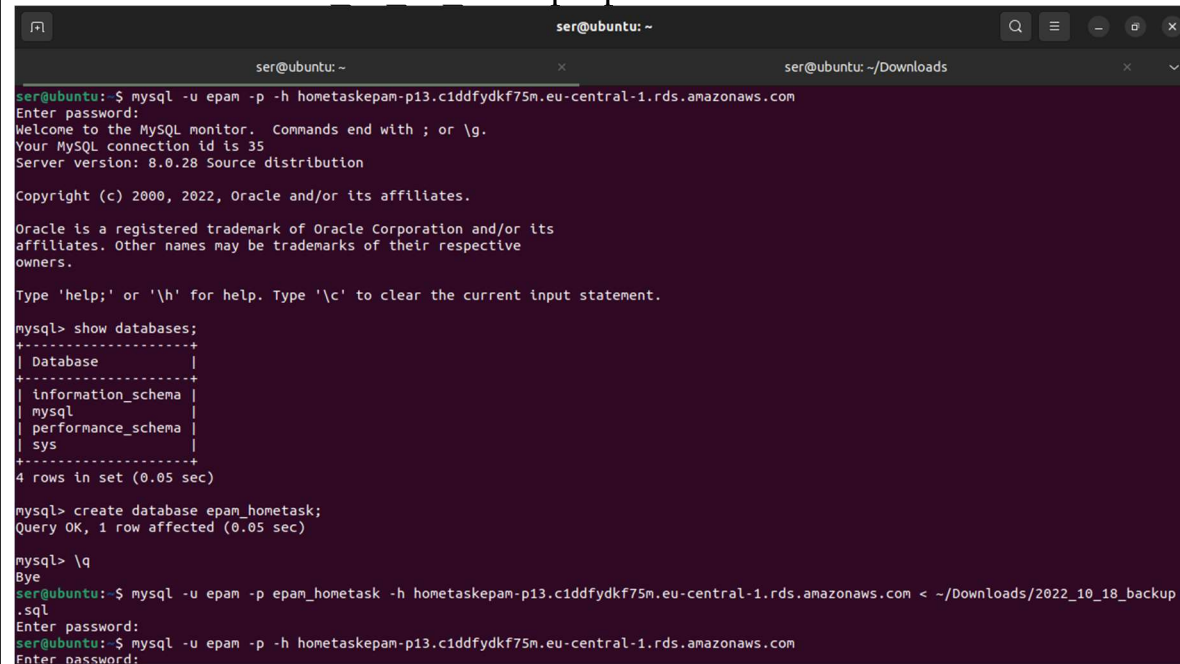
The screenshot shows the AWS Management Console interface for an Amazon RDS instance. A green banner at the top indicates 'Successfully modified instance hometaskepam-p13'. The breadcrumb navigation shows 'RDS > Databases > hometaskepam-p13'. The instance name 'hometaskepam-p13' is displayed prominently. Below this, a 'Summary' section provides key details:

DB identifier	CPU	Status	Class
hometaskepam-p13	3.44%	Available	db.t2.micro
Role	Current activity	Engine	Region & AZ
Instance	1 Connections	MySQL Community	eu-central-1c

At the bottom, there are tabs for 'Connectivity & security', 'Monitoring', 'Logs & events', 'Configuration', 'Maintenance & backups', and 'Tags'.

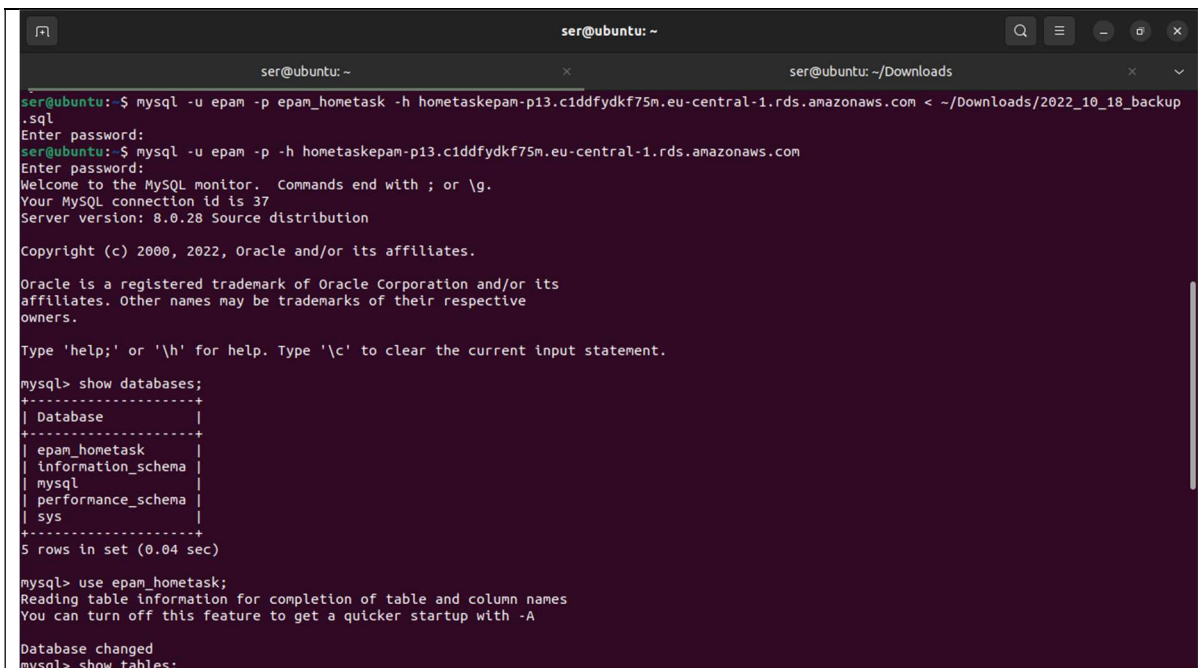
13. Transfer your local database to RDS AWS.

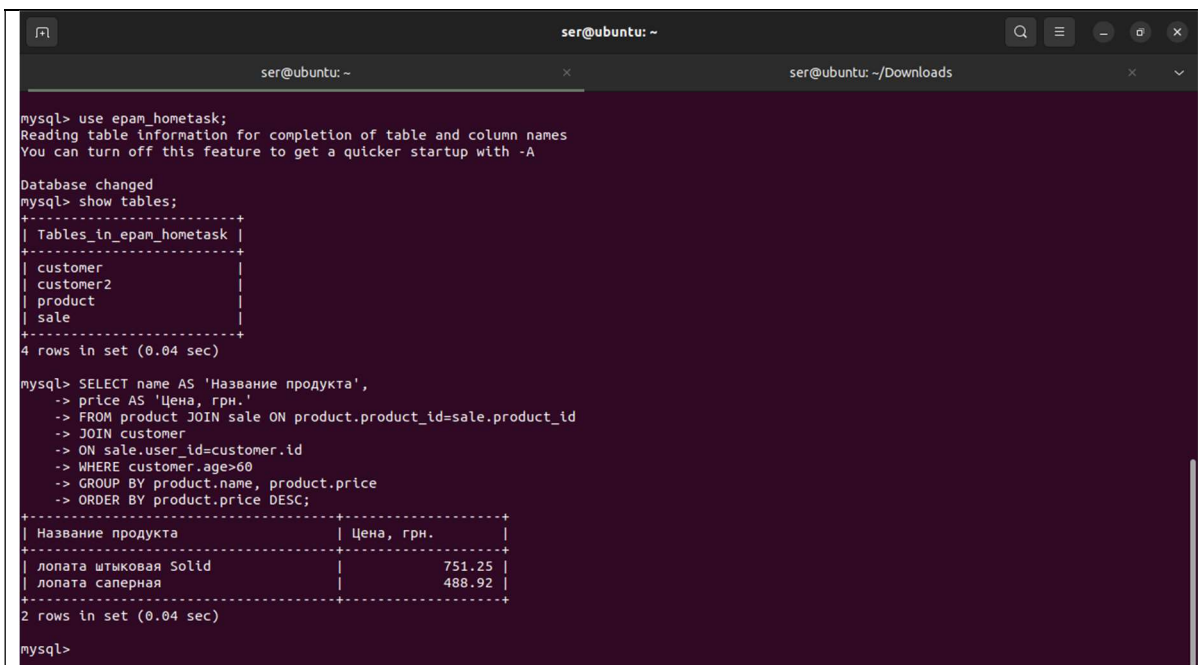
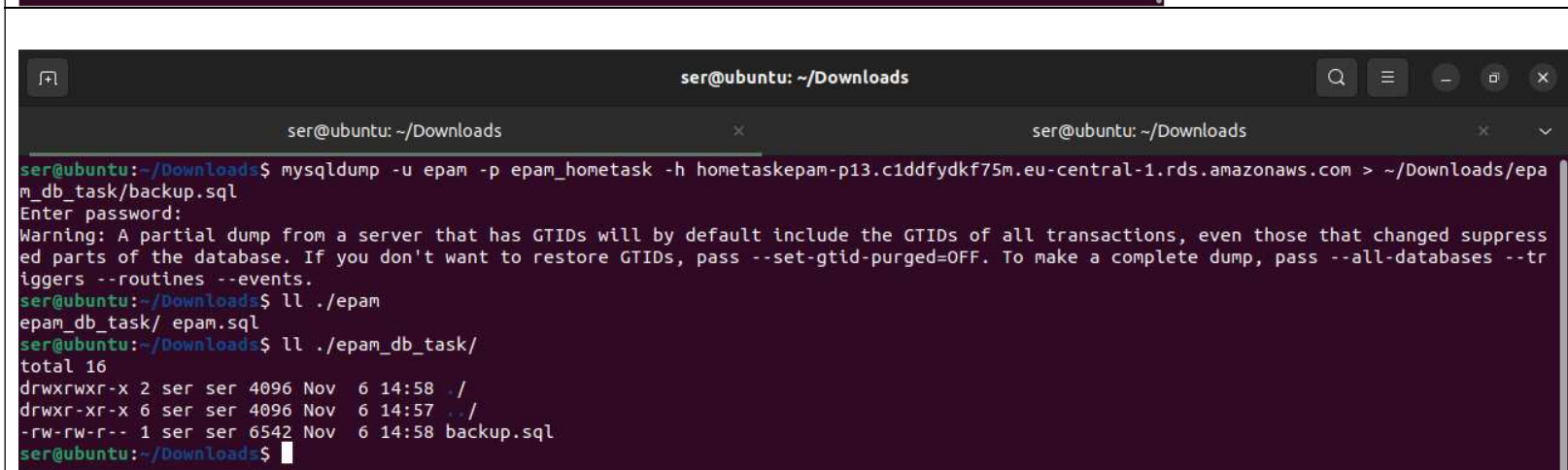
```
mysql -u epam -p -h hometaskepam-p13.c1ddfjdkf75m.eu-central-1.rds.amazonaws.com
mysql> create database epam_hometask;
mysql -u epam -p epam_hometask -h hometaskepam-p13.c1ddfjdkf75m.eu-central-1.rds.amazonaws.com
< ~/Downloads/2022_10_18_backup.sql
```

A screenshot of a terminal window titled 'ser@ubuntu: ~'. The terminal shows a series of commands and their outputs. First, the user runs 'mysql -u epam -p -h hometaskepam-p13.c1ddfjdkf75m.eu-central-1.rds.amazonaws.com', which prompts for a password. After entering the password, the MySQL monitor displays a welcome message, connection ID (35), server version (8.0.28), and copyright information. The user then runs 'show databases;', which returns a list of four databases: information\_schema, mysql, performance\_schema, and sys. Next, the user runs 'create database epam\_hometask;', which returns 'Query OK, 1 row affected (0.05 sec)'. Finally, the user runs '\q', which returns 'Bye'. Below the terminal window, the command 'mysql -u epam -p epam\_hometask -h hometaskepam-p13.c1ddfjdkf75m.eu-central-1.rds.amazonaws.com < ~/Downloads/2022\_10\_18\_backup.sql' is shown, followed by a password prompt and the command being executed.

```
mysql -u epam -p -h hometaskepam-p13.c1ddfjdkf75m.eu-central-1.rds.amazonaws.com
mysql> use epam_hometask;
```

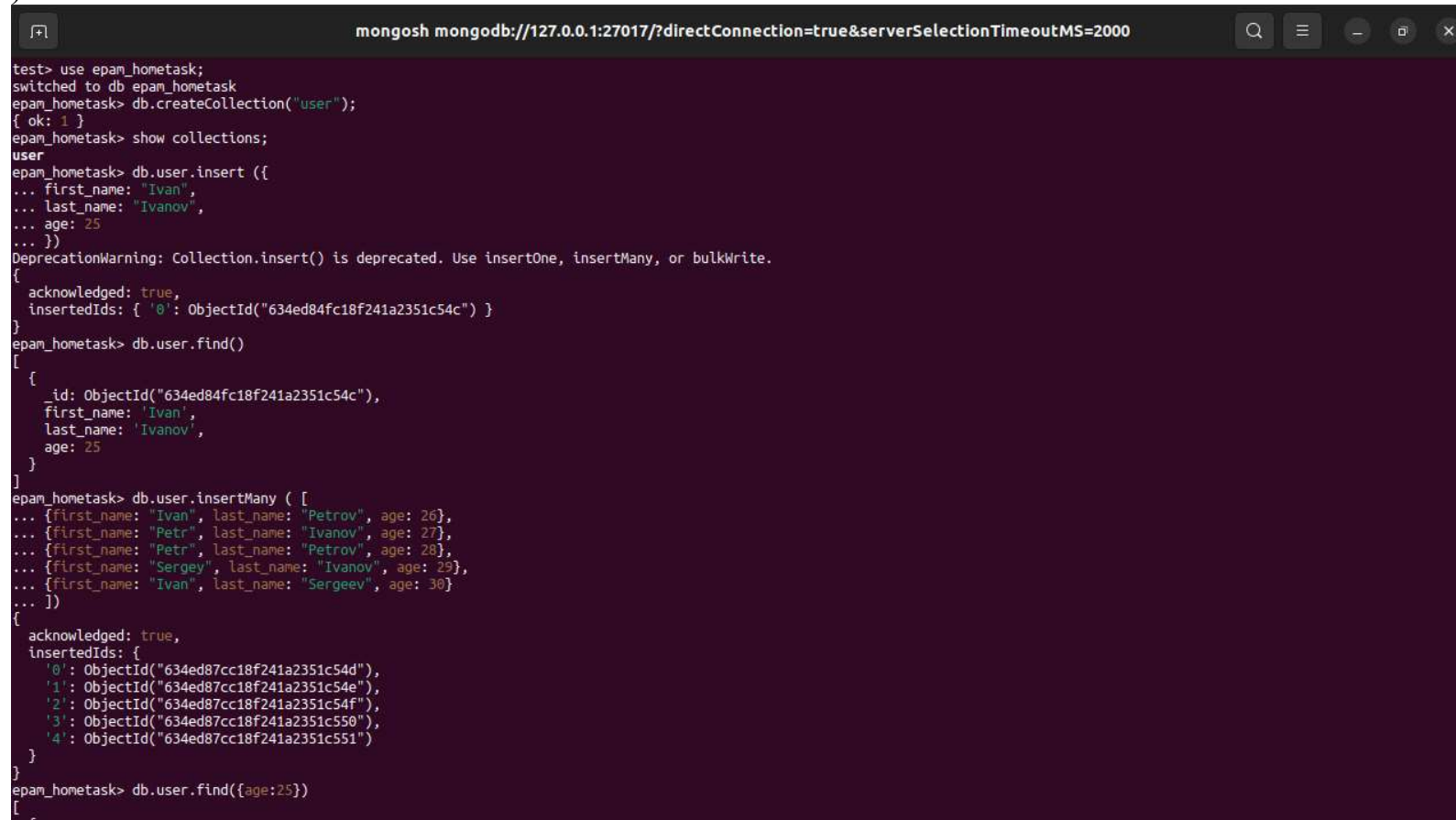
14.Connect to your database.

 <pre> ser@ubuntu: ~ ser@ubuntu: ~ ser@ubuntu: ~/Downloads ser@ubuntu:~\$ mysql -u epam -p epam_hometask -h hometaskeam-p13.ciddfydkf75m.eu-central-1.rds.amazonaws.com &lt; ~/Downloads/2022_10_18_backup.sql Enter password: ser@ubuntu:~\$ mysql -u epam -p -h hometaskeam-p13.ciddfydkf75m.eu-central-1.rds.amazonaws.com Enter password: Welcome to the MySQL monitor.  Commands end with ; or \g. Your MySQL connection id is 37 Server version: 8.0.28 Source distribution  Copyright (c) 2000, 2022, Oracle and/or its affiliates.  Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.  Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  mysql&gt; show databases; +-----+   Database   +-----+   epam_hometask     information_schema     mysql     performance_schema     sys   +-----+ 5 rows in set (0.04 sec)  mysql&gt; use epam_hometask; Reading table information for completion of table and column names You can turn off this feature to get a quicker startup with -A  Database changed mysql&gt; show tables; </pre>		
<pre> mysql&gt; SELECT name AS 'Название продукта', price AS 'Цена, грн.' FROM product JOIN sale ON product.product_id=sale.product_id JOIN customer ON sale.user_id=customer.id WHERE customer.age&gt;60 GROUP BY product.name, product.price ORDER BY product.price DESC; </pre>		<p>15.Execute SELECT operator similar step 6.</p>

 <pre> mysql&gt; use epam_hometask; Reading table information for completion of table and column names You can turn off this feature to get a quicker startup with -A  Database changed mysql&gt; show tables; +-----+   Tables_in_epam_hometask   +-----+   customer                    customer2                   product                     sale                      +-----+ 4 rows in set (0.04 sec)  mysql&gt; SELECT name AS 'Название продукта', -&gt; price AS 'Цена, грн.' -&gt; FROM product JOIN sale ON product.product_id=sale.product_id -&gt; JOIN customer -&gt; ON sale.user_id=customer.id -&gt; WHERE customer.age&gt;60 -&gt; GROUP BY product.name, product.price -&gt; ORDER BY product.price DESC; +-----+-----+   Название продукта   Цена, грн.   +-----+-----+   лопата штыковая Solid   751.25     лопата саперная   488.92   +-----+-----+ 2 rows in set (0.04 sec)  mysql&gt; </pre>	
 <pre> ser@ubuntu: ~/Downloads ser@ubuntu:~/Downloads\$ mysqldump -u epam -p epam_hometask -h hometaskepm-p13.ciddfydkf75m.eu-central-1.rds.amazonaws.com &gt; ~/Downloads/epam_db_task/backup.sql Enter password: Warning: A partial dump from a server that has GTIDs will by default include the GTIDs of all transactions, even those that changed suppressed parts of the database. If you don't want to restore GTIDs, pass --set-gtid-purged=OFF. To make a complete dump, pass --all-databases --triggers --routines --events. ser@ubuntu:~/Downloads\$ ll ./epam epam_db_task/ epam.sql ser@ubuntu:~/Downloads\$ ll ./epam_db_task/ total 16 drwxrwxr-x 2 ser ser 4096 Nov  6 14:58 ./ drwxr-xr-x 6 ser ser 4096 Nov  6 14:57 ../ -rw-rw-r-- 1 ser ser 6542 Nov  6 14:58 backup.sql ser@ubuntu:~/Downloads\$ </pre>	<p>16.Create the dump of your database.</p>
<p>db.dropDatabase epam_hometask;</p> <p>use epam_hometask;</p>	<p>PART 3 – MongoDB</p> <p>17. Create a database. Use the use command to connect to a new database (If it doesn't exist, Mongo will</p>

	create it when you write to it).
<pre>db.createCollection("user"); show collections;</pre>	18. Create a collection. Use db.createCollection to create a collection. I'll leave the subject up to you. Run show dbs and show collections to view your database and collections.
<pre>db.user.insert ({   first_name: "Ivan",   last_name: "Ivanov",   age: 25 })  db.user.find()  db.user.insertMany ( [   {first_name: "Ivan", last_name: "Petrov", age: 26},   {first_name: "Petr", last_name: "Ivanov", age: 27},   {first_name: "Petr", last_name: "Petrov", age: 28},   {first_name: "Sergey", last_name: "Ivanov", age: 29},   {first_name: "Ivan", last_name: "Sergeev", age: 30} ])  db.user.find({age:25})  db.user.find({\$or:[{first_name:"Petr"}, {age: 26}]})  db.user.update(   {first_name: "Ivan"},</pre>	19. Create some documents. Insert a couple of documents into your collection. I'll leave the subject matter up to you, perhaps cars or hats.

```
{
$set: {
sale: [
{product_name:"лопата саперная Solid", price: 752.46},
{product_name:"лопата штыковая Solid", price: 751.25}
]
}
}
}
```



The screenshot shows a MongoDB terminal window with the title bar "mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000". The terminal content is as follows:

```
test> use epan_hometask;
switched to db epan_hometask
epan_hometask> db.createCollection("user");
{ ok: 1 }
epan_hometask> show collections;
user
epan_hometask> db.user.insert ({
... first_name: "Ivan",
... last_name: "Ivanov",
... age: 25
... })
DeprecationWarning: Collection.insert() is deprecated. Use insertOne, insertMany, or bulkWrite.
{
  acknowledged: true,
  insertedIds: { '0': ObjectId("634ed84fc18f241a2351c54c") }
}
epan_hometask> db.user.find()
[
  {
    _id: ObjectId("634ed84fc18f241a2351c54c"),
    first_name: 'Ivan',
    last_name: 'Ivanov',
    age: 25
  }
]
epan_hometask> db.user.insertMany ( [
... {first_name: "Ivan", last_name: "Petrov", age: 26},
... {first_name: "Petr", last_name: "Ivanov", age: 27},
... {first_name: "Petr", last_name: "Petrov", age: 28},
... {first_name: "Sergey", last_name: "Ivanov", age: 29},
... {first_name: "Ivan", last_name: "Sergeev", age: 30}
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("634ed87cc18f241a2351c54d"),
    '1': ObjectId("634ed87cc18f241a2351c54e"),
    '2': ObjectId("634ed87cc18f241a2351c54f"),
    '3': ObjectId("634ed87cc18f241a2351c550"),
    '4': ObjectId("634ed87cc18f241a2351c551")
  }
}
epan_hometask> db.user.find({age:25})
[
  {
```

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
}
}
epam_hometask> db.user.find({age:25})
[
  {
    _id: ObjectId("634ed84fc18f241a2351c54c"),
    first_name: 'Ivan',
    last_name: 'Ivanov',
    age: 25
  }
]
epam_hometask> db.user.find({$or:[{first_name:"Petr"}, {age: 26}]})
[
  {
    _id: ObjectId("634ed87cc18f241a2351c54d"),
    first_name: 'Ivan',
    last_name: 'Petrov',
    age: 26
  },
  {
    _id: ObjectId("634ed87cc18f241a2351c54e"),
    first_name: 'Petr',
    last_name: 'Ivanov',
    age: 27
  },
  {
    _id: ObjectId("634ed87cc18f241a2351c54f"),
    first_name: 'Petr',
    last_name: 'Petrov',
    age: 28
  }
]
epam_hometask> db.user.update(
... {first_name: "Ivan"},
... {
...   $set: {
...     sale: [
...       {product_name:"лопата саперная Solid", price: 752.46},
...       {product_name:"лопата штыковая Solid", price: 751.25}
...     ]
...   }
... }
... )
DeprecationWarning: Collection.update() is deprecated. Use updateOne, updateMany, or bulkWrite.
```

20. Use find() to list documents out.