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EPAM University Programs

DevOps L1 course

Database Administration

TASK DB1

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| **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. |  |
| 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  ); | 5. Fill in tables. |  |
| CREATE TABLE product(  id INT PRIMARY KEY AUTO\_INCREMENT,  product\_id INT,  name VARCHAR (255),  price DOUBLE PRECISION NOT NULL  ); |  |
| 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  ); |  |
| 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 Xact M', 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 Xact', 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 Xact L', 333.47);  INSERT INTO product (product\_id, name, price) VALUES(133433, 'грабли для листьев Xact', 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); |  |
| 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. |  |
|  | 7. Execute other different SQL queries DDL, DML, DCL. |  |
| 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; | DDL  +Create  +alter  +drop |  |
| /\* 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;  DELETE FROM customer2  WHERE id=1; | DML  +Select from  +Insert  +update  +delete |  |
| /\* 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](mailto:dcl@localhost);  SHOW GRANTS FOR dcl@localhost; | DCL  +Grant  +Revoke |  |
| 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,  email VARCHAR (255) NOT NULL UNIQUE,  phone\_number VARCHAR (18) NOT NULL UNIQUE  );  DROP TABLE customer; | 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. |  |
| select \* from mysql.db \G; | 9. Make a selection from the main table DB MySQL. |  |
| **PART 2** | |
| sudo mysqldump -u test -p epam\_hometask > ~/Downloads/2022\_10\_17\_backup.sql | 10.Make backup of your database. |  |
| use epam\_hometask;  show tables;  drop table customer;  show tables;  select \* from customer;  alter table customer drop column last\_name; | 11.Delete the table and/or part of the data in the table. |  |
| sudo mysql -u root -p epam\_hometask < ~/Downloads/2022\_10\_17\_backup.sql  select \* from customer; | 12.Restore your database. |  |
| In AWS RDS create MySQL database    mysql -u epam -p -h hometaskepam-p13.c1ddfydkf75m.eu-central-1.rds.amazonaws.com  mysql> create database epam\_hometask;  mysql -u epam -p epam\_hometask -h hometaskepam-p13.c1ddfydkf75m.eu-central-1.rds.amazonaws.com < ~/Downloads/2022\_10\_18\_backup.sql | 13.Transfer your local database to RDS AWS. |  |
| mysql -u epam -p -h hometaskepam-p13.c1ddfydkf75m.eu-central-1.rds.amazonaws.com  mysql> use epam\_hometask; | 14.Connect to your database. |  |
| 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; | 15.Execute SELECT operator similar step 6. |  |
|  | 16.Create the dump of your database. |  |
| db.dropDatabase epam\_hometask; | PART 3 – MongoDB |  |
| use epam\_hometask; | 17. Create a database. Use the use command to connect to a new database (If it doesn't exist, Mongo will create it when you write to it). |  |
| db.createCollection("user");  show collections; | 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. |  |
| 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"},  {  $set: {  sale: [  {product\_name:"лопата саперная Solid", price: 752.46},  {product\_name:"лопата штыковая Solid", price: 751.25}  ]  }  }  ) | 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. |  |
|  | 20. Use find() to list documents out. |  |