Laboratory work 2

Please write your answers to the pdf file for defence:

1. Explain the difference between DDL and DML, give the following examples:
   a. at least 3 DDL commands;
   b. at least 4 DML commands.

a)DDL - is a syntax for creating and modifying databases and tables in them.

CREATE TABLE something (ID char (4),

name VARCHAR(20) NOT NULL,

purpose TEXT);

ALTER TABLE something DROP COLUMN purpose;

DROP TABLE something;

b)DML – is used to get, insert and modify data in tables in database.

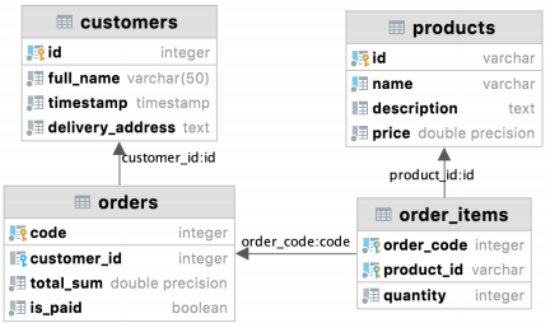
INSERT INTO something VALUES (‘0000’, ‘light’, ‘it was too dark’);

UPDATE something SET purpose = NULL;

SELECT * FROM something;

DELETE FROM something;

2. Write SQL statements to create tables in the figure below:



grey circle - not null, blue column - unique; quantity, total_sum, price > 0

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CREATE  TABLE products (
id VARCHAR(5) NOT NULL UNIQUE,
name VARCHAR(20) NOT NULL UNIQUE,
description TEXT,
price DOUBLE PRECISION NOT NULL,
PRIMARY KEY (id));
CREATE  TABLE customers (
id INT NOT NULL UNIQUE,
full_name VARCHAR(50) NOT NULL,
timestamp TIMESTAMP NOT NULL,
delivery_address TEXT NOT NULL,
PRIMARY KEY (id));
CREATE  TABLE orders (
code INT NOT NULL UNIQUE,
customer_id INT NOT NULL UNIQUE,
total_sum DOUBLE PRECISION NOT NULL,
is_paid BOOLEAN NOT NULL,
FOREIGN KEY (customer_id) REFERENCES customers(id));
CREATE  TABLE order_items (
order_code INT NOT NULL UNIQUE,
product_id VARCHAR(5) NOT NULL UNIQUE,
quantity INT NOT NULL,
PRIMARY KEY (order_code, product_id),
FOREIGN KEY (order_code) REFERENCES orders(code),
FOREIGN KEY (product_id) REFERENCES products(id));
```

3. Write SQL statements describing tables with appropriate ***data types*** and ***constraints*** satisfying the following conditions*(maybe you need additional tables to store data **atomically** and **efficiently**)*:
   a. a students table storing data such as full name, age, birth date, gender, average grade, information about yourself, the need for a dormitory, additional info.
   b. an instructors table storing data such as full name, speaking languages, work experience, the possibility of having remote lessons.
   c. a lesson participants table storing data such as lesson title, teaching instructor, studying students, room number.

a)CREATE TABLE students (

id INT NOT NULL UNIQUE,

full_name VARCHAR(50) NOT NULL,

birth_date CHAR(4) NOT NULL,

gender BOOLEAN NOT NULL,

average_grade DOUBLE PRECISION NOT NULL,

dormitory BOOLEAN NOT NULL,

information TEXT,

PRIMARY KEY (id))

b)CREATE TABLE instructors (

id INT NOT NULL UNIQUE,

full_name VARCHAR(50) NOT NULL,

speaks_english BOOLEAN NOT NULL,

speaks_russian BOOLEAN NOT NULL,

speaks_kazakh BOOLEAN NOT NULL,

work_expirience SHORTINT NOT NULL,

remote_lessons BOOLEAN NOT NULL,

PRIMARY KEY (id))

c)CREATE TABLE lessons (

student_id INT NOT NULL UNIQUE,

instructor_id INT NOT NULL UNIQUE,

lesson_title VARCHAR(50) NOT NULL,

room VARCHAR(4),

PRIMARY KEY (student_id, instructor_id),

FOREIGN KEY (student_id) REFERENCES students(id),

FOREIGN KEY (instructor_id) REFERENCES instructors(id))

4. Give examples of insertion, update and deletion of data on tables from exercise 2.

INSERT INTO products VALUES (‘00000’, ‘OmegaMart Lemon’, ‘It is not normal lemon’, ‘1,99’);

UPDATE orders SET is_paid = NULL WHERE code = 042;

DELETE FROM orders WHERE customer_id = 666;