Laboratory work 2

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1. Explain the difference between DDL and DML, give the following examples:

a. at least 3 DDL commands;

```
ALTER TABLE  department
        ADD COLUMN budget integer;
DROP TABLE department CASCADE;
CREATE TABLE department (
        dept_name varchar(20) PRIMARY KEY,
        building varchar(20)
);
```

b. at least 4 DML commands.

```
SELECT * FROM department;
UPDATE department SET dept_name = 'Chemistry' WHERE dept_name = 'Biology';
INSERT INTO department (dept_name, building, budget) VALUES ('Chemistry', 'Watson',
60000);
DELETE FROM department WHERE dept_name = 'Music';
```

2.

```
CREATE TABLE customers (
        id integer PRIMARY KEY,
        full_name varchar(50) NOT NULL,
        timestamp timestamp NOT NULL,
        delivery_address text NOT NULL
);
CREATE TABLE products (
        id varchar PRIMARY KEY,
        name varchar UNIQUE NOT NULL,
        description text,
        price double precision NOT NULL CHECK (price > 0)
);

CREATE TABLE orders (
        code integer PRIMARY KEY,
        customer_id integer REFERENCES customers (id),
        total_sum double precision NOT NULL CHECK (total_sum > 0),
        is_paid boolean NOT NULL
);

CREATE TABLE order_items (
        order_code integer REFERENCES orders (code),
        product_id varchar REFERENCES products (id),
        quantity integer NOT NULL CHECK (quantity > 0)
);
```

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) CREATE TABLE students (
        full_name varchar PRIMARY KEY,
        age integer NOT NULL,
        birth_date timestamp NOT NULL,
        gender varchar(6) NOT NULL,
        average_grade numeric(3,2) NOT NULL,
```

```
        information_about_yourself text,
        the_need_for_a_dormitory boolean NOT NULL,
        additional_info text
);
b) CREATE TABLE instructors (
        full_name varchar PRIMARY KEY,
        speaking_languages text NOT NULL,
        work_experience text NOT NULL,
        the_possibility_of_having_remote_lessons boolean NOT NULL
);
c) CREATE TABLE lesson_participants(
        lesson_title        varchar PRIMARY KEY,
        teaching_instructor varchar REFERENCES instructors (full_name),
        studying_students   varchar REFERENCES students (full_name),
        room_number         integer NOT NULL
);
```

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

```
INSERT INTO customers (id, full_name, timestamp, delivery_address) VALUES (1, 'Tom
Holland', '2021-08-12  12:02:22', 'street Astana 54');
UPDATE customers SET delivery_address = 'street Gogol 32' WHERE delivery_address =
'street Astana 54';
DELETE FROM customers WHERE full_name = 'Tom Holland';
INSERT INTO orders (code, customer_id, total_sum, is_paid) VALUES (1, 1, 5678, False);
INSERT INTO products (id, name, price) VALUES (1, 'tie', 2000);
INSERT INTO order_items (order_code, product_id, quantity) VALUES (1, 1, 200);
```