Работа с MySQL

В ранее подключенном MySQL создать базу данных с названием "Human_Friends".

```
mysql>
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0,01 sec)

mysql>
mysql>
mysql>
mysql>
mysql>
mysql> create database Human_Friends;
Query OK, 1 row affected (0,02 sec)

mysql>
mysql>
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| Human_Friends      |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0,00 sec)

mysql>
```

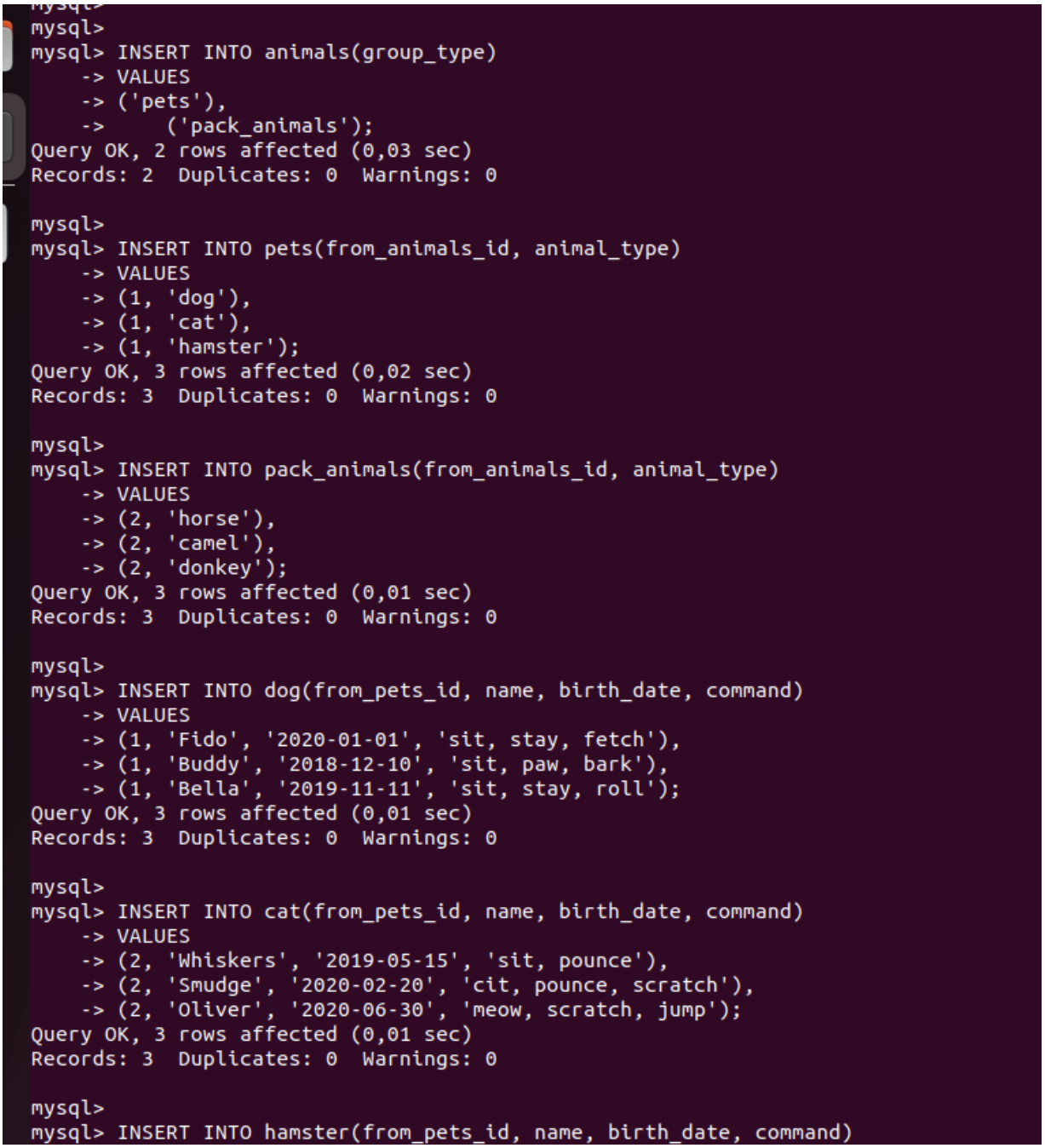
```
mysql>
mysql>
mysql> use Human_Friends;
Database changed
mysql>
mysql>
```

Создать таблицы, соответствующие иерархии из вашей диаграммы классов:

```
mysql>
mysql> CREATE TABLE IF NOT EXISTS animals(
    -> id SERIAL PRIMARY KEY,
    ->     group_type VARCHAR(45)
    -> );
Query OK, 0 rows affected (0,05 sec)

mysql> CREATE TABLE IF NOT EXISTS pets(
    -> id SERIAL PRIMARY KEY,
    -> from_animals_id BIGINT UNSIGNED NOT NULL,
    ->     animal_type VARCHAR(45),
    ->     FOREIGN KEY (from_animals_id) REFERENCES animals(id) ON UPDATE CASCADE ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0,11 sec)

mysql> CREATE TABLE IF NOT EXISTS pack_animals(
    -> id SERIAL PRIMARY KEY,
    -> from_animals_id BIGINT UNSIGNED NOT NULL,
    -> animal_type VARCHAR(45),
    -> FOREIGN KEY (from_animals_id) REFERENCES animals(id) ON UPDATE CASCADE ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0,65 sec)

mysql> CREATE TABLE IF NOT EXISTS dog(
    -> id SERIAL PRIMARY KEY,
    -> from_pets_id BIGINT UNSIGNED NOT NULL,
    -> name VARCHAR(45),
    -> birth_date DATE,
    -> command VARCHAR(200),
    -> FOREIGN KEY (from_pets_id) REFERENCES pets(id) ON UPDATE CASCADE ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0,13 sec)

mysql> CREATE TABLE IF NOT EXISTS cat(
    -> id SERIAL PRIMARY KEY,
    -> from_pets_id BIGINT UNSIGNED NOT NULL,
    -> name VARCHAR(45),
    -> birth_date DATE,
    -> command VARCHAR(200),
    -> FOREIGN KEY (from_pets_id) REFERENCES pets(id) ON UPDATE CASCADE ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0,05 sec)

mysql> CREATE TABLE IF NOT EXISTS hamster(
    -> id SERIAL PRIMARY KEY,
    -> from_pets_id BIGINT UNSIGNED NOT NULL,
```

```
mysql>
mysql>
mysql> show full tables;
+-------------------------+------------+
| Tables_in_Human_Friends | Table_type |
+-------------------------+------------+
| animals                 | BASE TABLE |
| camel                   | BASE TABLE |
| cat                     | BASE TABLE |
| dog                     | BASE TABLE |
| donkey                  | BASE TABLE |
| hamster                 | BASE TABLE |
| horse                   | BASE TABLE |
| pack_animals            | BASE TABLE |
| pets                    | BASE TABLE |
+-------------------------+------------+
9 rows in set (0,00 sec)

mysql>
mysql>
```

Заполнить таблицы данными о животных, их командах и датами рождения.



```
mysql>
mysql> INSERT INTO animals(group_type)
    -> VALUES
    -> ('pets'),
    ->     ('pack_animals');
Query OK, 2 rows affected (0,03 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO pets(from_animals_id, animal_type)
    -> VALUES
    -> (1, 'dog'),
    -> (1, 'cat'),
    -> (1, 'hamster');
Query OK, 3 rows affected (0,02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO pack_animals(from_animals_id, animal_type)
    -> VALUES
    -> (2, 'horse'),
    -> (2, 'camel'),
    -> (2, 'donkey');
Query OK, 3 rows affected (0,01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO dog(from_pets_id, name, birth_date, command)
    -> VALUES
    -> (1, 'Fido', '2020-01-01', 'sit, stay, fetch'),
    -> (1, 'Buddy', '2018-12-10', 'sit, paw, bark'),
    -> (1, 'Bella', '2019-11-11', 'sit, stay, roll');
Query OK, 3 rows affected (0,01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO cat(from_pets_id, name, birth_date, command)
    -> VALUES
    -> (2, 'Whiskers', '2019-05-15', 'sit, pounce'),
    -> (2, 'Smudge', '2020-02-20', 'cit, pounce, scratch'),
    -> (2, 'Oliver', '2020-06-30', 'meow, scratch, jump');
Query OK, 3 rows affected (0,01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO hamster(from_pets_id, name, birth_date, command)
```

```
mysql>
mysql> INSERT INTO hamster(from_pets_id, name, birth_date, command)
    -> VALUES
    -> (3, 'Hammy', '2021-03-10', 'roll, hide'),
    -> (3, 'Peanut', '2021-08-01', 'roll, spin'),
    -> (3, 'Chip', '2021-05-12', 'hide, spin');
Query OK, 3 rows affected (0,02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO horse(from_pack_animals_id, name, birth_date, command)
    -> VALUES
    -> (1, 'Thunder', '2015-07-21', 'trot, canter, gallop'),
    -> (1, 'Storm', '2014-05-05', 'trot, canter'),
    -> (1, 'Blaze', '2016-02-29', 'trot, jump, gallop');
Query OK, 3 rows affected (0,00 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO camel(from_pack_animals_id, name, birth_date, command)
    -> VALUES
    -> (2, 'Sandy', '2016-11-03', 'walk, carry load'),
    -> (2, 'Dune', '2018-12-12', 'walk, sit'),
    -> (2, 'Sahara', '2015-08-14', 'walk, run');
Query OK, 3 rows affected (0,02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO donkey(from_pack_animals_id, name, birth_date, command)
    -> VALUES
    -> (3, 'Eeyore', '2017-09-18', 'walk, carry load, bray'),
    -> (3, 'Burro', '2019-01-23', 'walk, bray, kick'),
    -> (3, 'Alga', '2018-05-21', 'walk, kick');
Query OK, 3 rows affected (0,01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
```

Удалить записи о верблюдах и объединить таблицы лошадей и ослов:

- Удалил таблицу Camel

```
mysql>
mysql> DROP TABLE camel;
Query OK, 0 rows affected (0,03 sec)

mysql>
mysql>
mysql> show full tables;
+--------------------------+------------+
| Tables_in_Human_Friends | Table_type |
+--------------------------+------------+
| animals                  | BASE TABLE |
| cat                      | BASE TABLE |
| dog                      | BASE TABLE |
| donkey                   | BASE TABLE |
| hamster                  | BASE TABLE |
| horse                    | BASE TABLE |
| pack_animals             | BASE TABLE |
| pets                     | BASE TABLE |
+--------------------------+------------+
8 rows in set (0,00 sec)

mysql>
```

Объединил Лошадей и Ослов в общую тублицу:

```
mysql>
mysql>
mysql> CREATE TABLE IF NOT EXISTS horse_and_donkey(
    -> id SERIAL PRIMARY KEY,
    ->     name VARCHAR(45),
    ->     type VARCHAR(45),
    ->     birth_date DATE,
    ->     command VARCHAR(200),
    ->     from_animals_id BIGINT UNSIGNED NOT NULL,
    ->     FOREIGN KEY (from_animals_id) REFERENCES animals(id) ON UPDATE CASCADE ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0,08 sec)

mysql>
mysql>
mysql>
mysql> INSERT INTO horse_and_donkey(name, type, birth_date, command, from_animals_id)
    -> SELECT name, animal_type as type, birth_date, command, 2 FROM pack_animals p
    -> JOIN horse h ON p.id = h.from_pack_animals_id
    -> UNION
    -> SELECT name, animal_type as type, birth_date, command, 2 FROM pack_animals p
    -> JOIN donkey d ON p.id = d.from_pack_animals_id;
Query OK, 6 rows affected (0,03 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql>
```

```
mysql>
mysql>
mysql> select * from horse_and_donkey;
+----+---------+--------+------------+-----------------------+-----------------+
| id | name    | type   | birth_date | command               | from_animals_id |
+----+---------+--------+------------+-----------------------+-----------------+
|  1 | Thunder | horse  | 2015-07-21 | trot, canter, gallop  |               2 |
|  2 | Storm   | horse  | 2014-05-05 | trot, canter          |               2 |
|  3 | Blaze   | horse  | 2016-02-29 | trot, jump, gallop    |               2 |
|  4 | Eeyore  | donkey | 2017-09-18 | walk, carry load, bray |               2 |
|  5 | Burro   | donkey | 2019-01-23 | walk, bray, kick      |               2 |
|  6 | Alga    | donkey | 2018-05-21 | walk, kick            |               2 |
+----+---------+--------+------------+-----------------------+-----------------+
6 rows in set (0,01 sec)

mysql>
```

Создать новую таблицу для животных в возрасте от 1 до 3 лет и вычислить их возраст с точностью до месяца.

```
mysql>
mysql> CREATE TABLE IF NOT EXISTS new_animals_table
    -> (
    -> id SERIAL PRIMARY KEY,
    -> name VARCHAR(45),
    -> type VARCHAR(45),
    ->     birth_date DATE,
    ->     command VARCHAR(200)
    -> );
Query OK, 0 rows affected (0,04 sec)

mysql>
mysql>
mysql> INSERT INTO new_animals_table (name, type, birth_date, command)
    -> SELECT name, animal_type as type, birth_date, command FROM animals a
    -> JOIN pets p ON a.id = p.from_animals_id
    -> JOIN dog d ON p.id = d.from_pets_id
    -> WHERE (TIMESTAMPDIFF(MONTH, birth_date, CURRENT_DATE()) / 12) < 3
    -> UNION
    -> SELECT name, animal_type as type, birth_date, command FROM animals a
    -> JOIN pets p ON a.id = p.from_animals_id
    -> JOIN cat c ON p.id = c.from_pets_id
    -> WHERE (TIMESTAMPDIFF(MONTH, birth_date, CURRENT_DATE()) / 12) < 3
    -> UNION
    -> SELECT name, animal_type as type, birth_date, command FROM animals a
    -> JOIN pets p ON a.id = p.from_animals_id
    -> JOIN hamster h ON p.id = h.from_pets_id
    -> WHERE (TIMESTAMPDIFF(MONTH, birth_date, CURRENT_DATE()) / 12) < 3
    -> UNION
    -> SELECT name, type, birth_date, command FROM animals a
    -> JOIN horse_and_donkey hd ON a.id = hd.from_animals_id
    -> WHERE (TIMESTAMPDIFF(MONTH, birth_date, CURRENT_DATE()) / 12) < 3;
Query OK, 3 rows affected (0,04 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
```

```
mysql>
mysql>
mysql> select * from new_animals_table;
+----+--------+---------+------------+------------+
| id | name   | type    | birth_date | command    |
+----+--------+---------+------------+------------+
|  1 | Hammy  | hamster | 2021-03-10 | roll, hide |
|  2 | Peanut | hamster | 2021-08-01 | roll, spin |
|  3 | Chip   | hamster | 2021-05-12 | hide, spin |
+----+--------+---------+------------+------------+
3 rows in set (0,00 sec)

mysql>
```

Объединить все созданные таблицы в одну, сохраняя информацию о принадлежности к исходным таблицам.

1. Pets:

```
mysql>
mysql> CREATE TABLE IF NOT EXISTS general_table_pets(
    -> id SERIAL PRIMARY KEY,
    ->     name VARCHAR(45),
    ->     type VARCHAR(45),
    ->     birth_date DATE,
    ->     command VARCHAR(200)
    -> );
Query OK, 0 rows affected (0,05 sec)

mysql>
mysql>
mysql>
mysql>
mysql> INSERT INTO general_table_pets(name, type, birth_date, command)
    -> SELECT name, animal_type as type, birth_date, command FROM pets p
    -> JOIN dog d ON p.id = d.from_pets_id
    -> UNION
    -> SELECT name, animal_type as type, birth_date, command FROM pets p
    -> JOIN cat c ON p.id = c.from_pets_id
    -> UNION
    -> SELECT name, animal_type as type, birth_date, command FROM pets p
    -> JOIN hamster h ON p.id = h.from_pets_id;
Query OK, 9 rows affected (0,02 sec)
Records: 9  Duplicates: 0  Warnings: 0

mysql>
mysql>
```

```
mysql>
mysql>
mysql> select * from general_table_pets;
+----+----------+---------+------------+----------------------+
| id | name     | type    | birth_date | command              |
+----+----------+---------+------------+----------------------+
|  1 | Fido     | dog     | 2020-01-01 | sit, stay, fetch     |
|  2 | Buddy    | dog     | 2018-12-10 | sit, paw, bark       |
|  3 | Bella    | dog     | 2019-11-11 | sit, stay, roll      |
|  4 | Whiskers | cat     | 2019-05-15 | sit, pounce          |
|  5 | Smudge   | cat     | 2020-02-20 | cit, pounce, scratch |
|  6 | Oliver   | cat     | 2020-06-30 | meow, scratch, jump  |
|  7 | Hammy    | hamster | 2021-03-10 | roll, hide           |
|  8 | Peanut   | hamster | 2021-08-01 | roll, spin           |
|  9 | Chip     | hamster | 2021-05-12 | hide, spin           |
+----+----------+---------+------------+----------------------+
9 rows in set (0,00 sec)

mysql>
```

2. Pack_Animals

```
mysql>
mysql>
mysql> CREATE TABLE IF NOT EXISTS general_table_pack_animals
    -> (
    ->     id SERIAL PRIMARY KEY,
    ->     name VARCHAR(45),
    ->     type VARCHAR(45),
    ->     birth_date DATE,
    ->     command VARCHAR(200)
    -> );
Query OK, 0 rows affected, 1 warning (0,01 sec)

mysql>
mysql>
mysql>
mysql> INSERT INTO general_table_pack_animals(name, type, birth_date, command)
    -> SELECT name, animal_type as type, birth_date, command FROM pack_animals p
    -> JOIN horse h ON p.id = h.from_pack_animals_id
    -> UNION
    -> SELECT name, animal_type as type, birth_date, command FROM pack_animals p
    -> JOIN donkey d ON p.id = d.from_pack_animals_id;
Query OK, 6 rows affected (0,01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql>
```

```
mysql>
mysql>
mysql> select * from general_table_pack_animals;
+----+---------+--------+------------+-------------------------+
| id | name    | type   | birth_date | command                 |
+----+---------+--------+------------+-------------------------+
|  1 | Thunder | horse  | 2015-07-21 | trot, canter, gallop    |
|  2 | Storm   | horse  | 2014-05-05 | trot, canter            |
|  3 | Blaze   | horse  | 2016-02-29 | trot, jump, gallop      |
|  4 | Eeyore  | donkey | 2017-09-18 | walk, carry load, bray  |
|  5 | Burro   | donkey | 2019-01-23 | walk, bray, kick        |
|  6 | Alga    | donkey | 2018-05-21 | walk, kick              |
+----+---------+--------+------------+-------------------------+
6 rows in set (0,00 sec)

mysql>
```