

Задание №7

- 1) В подключенном MySQL репозитории создать базу данных “Друзья человека”.
- 2) Создать таблицы, соответствующие иерархии из вашей диаграммы классов.
- 3) Заполнить таблицы данными о животных, их командах и датами рождения.
- 4) Удалить записи о верблюдах и объединить таблицы лошадей и ослов.
- 5) Создать новую таблицу для животных в возрасте от 1 до 3 лет и вычислить их возраст с точностью до месяца (в отдельном столбце).
- 6) Объединить все созданные таблицы в одну, сохраняя информацию о принадлежности к исходным таблицам.

```
andrey@andrey-VirtualBox:~$ sudo mysql
```

создаём БД (file: 1-create_db.sql):

```
mysql> create database HumanFriends;
mysql> use HumanFriends;
```

создаём таблицы (file: 2-create_tables.sql):

```
mysql> CREATE TABLE Cat (
-> id INT AUTO_INCREMENT,
-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> PRIMARY KEY(id));

mysql> CREATE TABLE Dog (
-> id INT AUTO_INCREMENT,
-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> PRIMARY KEY(id));

mysql> CREATE TABLE Hamster (
-> id INT AUTO_INCREMENT,
-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
```

```

-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> PRIMARY KEY(id));

mysql> CREATE TABLE Horse (
-> id INT AUTO_INCREMENT,
-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> PRIMARY KEY(id));

mysql> CREATE TABLE Camel (
-> id INT AUTO_INCREMENT,
-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> PRIMARY KEY(id));

mysql> CREATE TABLE Donkey (
-> id INT AUTO_INCREMENT,
-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> PRIMARY KEY(id));

```

```

mysql> show tables;
+-----+
| Tables_in_HumanFriends |
+-----+
| Camel                   |
| Cat                     |
| Dog                     |
| Donkey                  |
| Hamster                 |
| Horse                   |
+-----+

```

заполняем таблицы (file: 3-insert_datas.sql):

```

mysql> INSERT INTO Cat (Nick, BirthDay, Commands) VALUES
-> ('Whiskers', '2021-05-15', ('Sit,Pounce')),
-> ('Smudge', '2022-02-02', ('Sit,Pounce,Scratch')),
-> ('Oliver', '2022-06-30', ('Meow,Scratch,Jump'));

mysql> INSERT INTO Dog (Nick, BirthDay, Commands) VALUES
-> ('Fido', '2022-01-01', ('Sit,Stay,Fetch')),
-> ('Buddy', '2020-12-10', ('Sit,Paw,Bark')),
-> ('Bella', '2021-11-11', ('Sit,Stay,Roll'));

```

```
mysql> INSERT INTO Hamster (Nick, BirthDay, Commands) VALUES
-> ('Hammy', '2023-03-10', ('Roll,Hide')),
-> ('Peanut', '2023-08-01', ('Roll,Spin'));

mysql> INSERT INTO Horse (Nick, BirthDay, Commands) VALUES
-> ('Thunder', '2017-07-21', ('Trot,Canter,Gallop')),
-> ('Storm', '2016-05-05', ('Trot,Canter')),
-> ('Blaze', '2022-02-28', ('Trot,Jump,Gallop'));

mysql> INSERT INTO Camel (Nick, BirthDay, Commands) VALUES
-> ('Sandy', '2018-11-03', ('Walk,Carry Load')),
-> ('Dune', '2020-12-12', ('Walk,Sit')),
-> ('Sahara', '2017-08-14', ('Walk,Run'));

mysql> INSERT INTO Donkey (Nick, BirthDay, Commands) VALUES
-> ('Eeyore', '2019-09-18', ('Walk,Carry Load,Bray')),
-> ('Burro', '2023-01-23', ('Walk,Bray,Kick'));
```

```
andrey@andrey-VirtualBox: ~
mysql> SELECT * FROM Cat;
+----+-----+-----+-----+
| id | Nick   | BirthDay | Commands |
+----+-----+-----+-----+
| 1  | Whiskers | 2021-05-15 | Sit,Pounce |
| 2  | Smudge  | 2022-02-02 | Sit,Pounce,Scratch |
| 3  | Oliver  | 2022-06-30 | Scratch,Meow,Jump |
+----+-----+-----+-----+
3 rows in set (0,00 sec)

mysql> SELECT * FROM Dog;
+----+-----+-----+-----+
| id | Nick   | BirthDay | Commands |
+----+-----+-----+-----+
| 1  | Fido   | 2022-01-01 | Sit,Stay,Fetch |
| 2  | Buddy  | 2020-12-10 | Sit,Paw,Bark |
| 3  | Bella  | 2021-11-11 | Sit,Stay,Roll |
+----+-----+-----+-----+
3 rows in set (0,00 sec)

mysql> SELECT * FROM Hamster;
+----+-----+-----+-----+
| id | Nick   | BirthDay | Commands |
+----+-----+-----+-----+
| 1  | Hammy  | 2023-03-10 | Roll,Hide |
| 2  | Peanut | 2023-08-01 | Roll,Spin |
+----+-----+-----+-----+
2 rows in set (0,00 sec)

mysql> SELECT * FROM Horse;
+----+-----+-----+-----+
| id | Nick   | BirthDay | Commands |
+----+-----+-----+-----+
| 1  | Thunder | 2017-07-21 | Trot,Canter,Gallop |
| 2  | Storm   | 2016-05-05 | Trot,Canter |
| 3  | Blaze   | 2022-02-28 | Jump,Trot,Gallop |
+----+-----+-----+-----+
3 rows in set (0,00 sec)

mysql> SELECT * FROM Camel;
+----+-----+-----+-----+
| id | Nick   | BirthDay | Commands |
+----+-----+-----+-----+
| 1  | Sandy  | 2018-11-03 | Walk,Carry Load |
| 2  | Dune   | 2020-12-12 | Sit,Walk |
| 3  | Sahara | 2017-08-14 | Walk,Run |
+----+-----+-----+-----+
3 rows in set (0,00 sec)

mysql> SELECT * FROM Donkey;
+----+-----+-----+-----+
| id | Nick   | BirthDay | Commands |
+----+-----+-----+-----+
| 1  | Eeyore | 2019-09-18 | Walk,Carry Load,Bray |
| 2  | Burro  | 2023-01-23 | Walk,Bray,Kick |
+----+-----+-----+-----+
2 rows in set (0,00 sec)
```

Удаляем записи о верблюдах и объединяем таблицы лошадей и ослов (file: 4-del_and_create.sql):

```
mysql> DELETE FROM Camel;

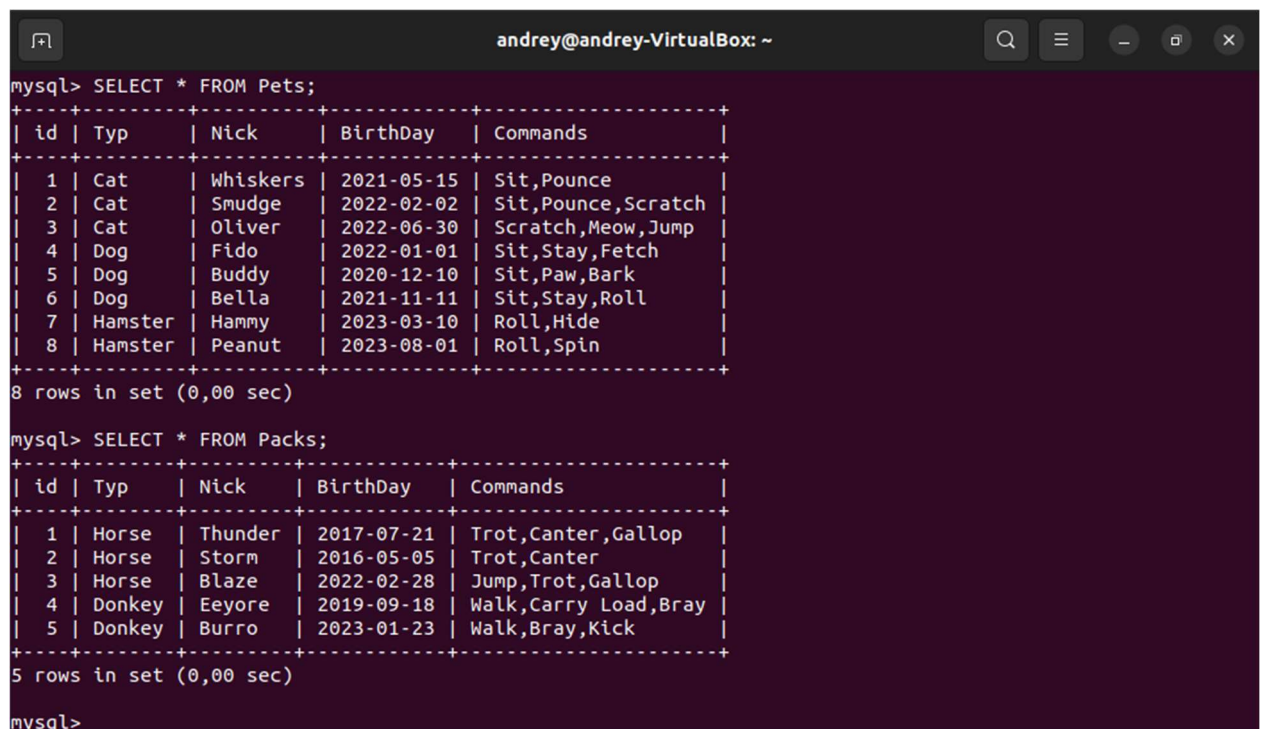
mysql> CREATE TABLE Packs (
  -> id INT AUTO_INCREMENT,
  -> Typ VARCHAR(12),
  -> Nick VARCHAR(20),
  -> BirthDay DATE,
  -> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
  -> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
  -> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
  -> PRIMARY KEY(id));

mysql> INSERT INTO Packs (Typ, Nick, BirthDay, Commands)
  -> SELECT 'Horse', Nick, BirthDay, Commands FROM Horse
  -> UNION ALL SELECT 'Camel', Nick, BirthDay, Commands FROM Camel
  -> UNION ALL SELECT 'Donkey', Nick, BirthDay, Commands FROM Donkey;
```

заодно создадим аналогичную таблицу и для домашних животных (file: 4a-create_pets.sql):

```
mysql> CREATE TABLE Pets (
  -> id INT AUTO_INCREMENT,
  -> Typ VARCHAR(12),
  -> Nick VARCHAR(20),
  -> BirthDay DATE,
  -> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
  -> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
  -> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
  -> PRIMARY KEY(id));

mysql> INSERT INTO Pets (Typ, Nick, BirthDay, Commands)
  -> SELECT 'Cat', Nick, BirthDay, Commands FROM Cat
  -> UNION ALL SELECT 'Dog', Nick, BirthDay, Commands FROM Dog
  -> UNION ALL SELECT 'Hamster', Nick, BirthDay, Commands FROM Hamster;
```



```
mysql> SELECT * FROM Pets;
+----+-----+-----+-----+-----+
| id | Typ  | Nick   | BirthDay | Commands |
+----+-----+-----+-----+-----+
| 1  | Cat  | Whiskers | 2021-05-15 | Sit,Pounce |
| 2  | Cat  | Smudge  | 2022-02-02 | Sit,Pounce,Scratch |
| 3  | Cat  | Oliver  | 2022-06-30 | Scratch,Meow,Jump |
| 4  | Dog  | Fido    | 2022-01-01 | Sit,Stay,Fetch |
| 5  | Dog  | Buddy   | 2020-12-10 | Sit,Paw,Bark |
| 6  | Dog  | Bella   | 2021-11-11 | Sit,Stay,Roll |
| 7  | Hamster | Hammy  | 2023-03-10 | Roll,Hide |
| 8  | Hamster | Peanut | 2023-08-01 | Roll,Spin |
+----+-----+-----+-----+-----+
8 rows in set (0,00 sec)

mysql> SELECT * FROM Packs;
+----+-----+-----+-----+-----+
| id | Typ  | Nick   | BirthDay | Commands |
+----+-----+-----+-----+-----+
| 1  | Horse | Thunder | 2017-07-21 | Trot,Canter,Gallop |
| 2  | Horse | Storm  | 2016-05-05 | Trot,Canter |
| 3  | Horse | Blaze  | 2022-02-28 | Jump,Trot,Gallop |
| 4  | Donkey | Eeyore  | 2019-09-18 | Walk,Carry Load,Bray |
| 5  | Donkey | Burro   | 2023-01-23 | Walk,Bray,Kick |
+----+-----+-----+-----+-----+
5 rows in set (0,00 sec)

mysql>
```

Создать новую таблицу для животных в возрасте от 1 до 3 лет и вычислить их возраст с точностью до месяца (в отдельном столбце) (file: 5-create_young.sql):

```
mysql> CREATE TABLE YoungAnimals (  
-> id INT AUTO_INCREMENT,  
-> Typ VARCHAR(12),  
-> Nick VARCHAR(20),  
-> BirthDay DATE,  
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',  
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',  
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),  
-> Age TEXT,  
-> PRIMARY KEY(id));  
  
mysql> INSERT INTO YoungAnimals (Typ, Nick, BirthDay, Commands, Age)  
-> SELECT Typ, Nick, BirthDay, Commands,  
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')  
-> FROM Pets  
-> WHERE  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) >= 12 AND  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) < 36  
-> UNION ALL SELECT Typ, Nick, BirthDay, Commands,  
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')  
-> FROM Packs  
-> WHERE  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) >= 12 AND  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) < 36;
```

```
andrey@andrey-VirtualBox: ~  
mysql> INSERT INTO YoungAnimals (Typ, Nick, BirthDay, Commands, Age)  
-> SELECT Typ, Nick, BirthDay, Commands,  
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')  
-> FROM Pets  
-> WHERE  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) >= 12 AND  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) < 36  
-> UNION ALL SELECT Typ, Nick, BirthDay, Commands,  
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')  
-> FROM Packs  
-> WHERE  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) >= 12 AND  
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) < 36;
```

Query OK, 7 rows affected (0,00 sec)
Records: 7 Duplicates: 0 Warnings: 0

```
mysql> SELECT * FROM YoungAnimals;  
+-----+-----+-----+-----+-----+-----+  
| id | Typ | Nick | BirthDay | Commands | Age |  
+-----+-----+-----+-----+-----+-----+  
| 1 | Cat | Smudge | 2022-02-02 | Sit,Pounce,Scratch | 2 year, 5 month |  
| 2 | Cat | Oliver | 2022-06-30 | Scratch,Meow,Jump | 2 year, 0 month |  
| 3 | Dog | Fido | 2022-01-01 | Sit,Stay,Fetch | 2 year, 6 month |  
| 4 | Dog | Bella | 2021-11-11 | Sit,Stay,Roll | 2 year, 7 month |  
| 5 | Hamster | Hammy | 2023-03-10 | Roll,Hide | 1 year, 3 month |  
| 6 | Horse | Blaze | 2022-02-28 | Jump,Trot,Gallop | 2 year, 4 month |  
| 7 | Donkey | Burro | 2023-01-23 | Walk,Bray,Kick | 1 year, 5 month |  
+-----+-----+-----+-----+-----+-----+  
7 rows in set (0,00 sec)
```

```
mysql>
```


объединяем все таблицы в одну, с сохранением информации о их принадлежности к исходным таблицам (file: 6-concatenate.sql):

```
mysql> CREATE TABLE AllAnimal (  
  -> id INT AUTO_INCREMENT,  
  -> Typ VARCHAR(12),  
  -> Nick VARCHAR(20),  
  -> BirthDay DATE,  
  -> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',  
  -> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',  
  -> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),  
  -> PRIMARY KEY(id));  
  
mysql> INSERT INTO AllAnimal (Typ, Nick, BirthDay, Commands)  
  -> SELECT Typ, Nick, BirthDay, Commands  
  -> FROM Pets  
  -> UNION ALL SELECT Typ, Nick, BirthDay, Commands  
  -> FROM Packs;
```

```
andrey@andrey-VirtualBox: ~  
  -> Typ VARCHAR(12),  
  -> Nick VARCHAR(20),  
  -> BirthDay DATE,  
  -> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',  
  -> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',  
  -> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),  
  -> PRIMARY KEY(id));  
Query OK, 0 rows affected (0,04 sec)  
  
mysql> INSERT INTO AllAnimal (Typ, Nick, BirthDay, Commands)  
  -> SELECT Typ, Nick, BirthDay, Commands  
  -> FROM Pets  
  -> UNION ALL SELECT Typ, Nick, BirthDay, Commands  
  -> FROM Packs;  
Query OK, 13 rows affected (0,01 sec)  
Records: 13  Duplicates: 0  Warnings: 0  
  
mysql> SELECT * FROM AllAnimal;  
+-----+-----+-----+-----+-----+  
| id | Typ | Nick | BirthDay | Commands |  
+-----+-----+-----+-----+-----+  
| 1 | Cat | Whiskers | 2021-05-15 | Sit,Pounce |  
| 2 | Cat | Smudge | 2022-02-02 | Sit,Pounce,Scratch |  
| 3 | Cat | Oliver | 2022-06-30 | Scratch,Meow,Jump |  
| 4 | Dog | Fido | 2022-01-01 | Sit,Stay,Fetch |  
| 5 | Dog | Buddy | 2020-12-10 | Sit,Paw,Bark |  
| 6 | Dog | Bella | 2021-11-11 | Sit,Stay,Roll |  
| 7 | Hamster | Hammy | 2023-03-10 | Roll,Hide |  
| 8 | Hamster | Peanut | 2023-08-01 | Roll,Spin |  
| 9 | Horse | Thunder | 2017-07-21 | Trot,Canter,Gallop |  
| 10 | Horse | Storm | 2016-05-05 | Trot,Canter |  
| 11 | Horse | Blaze | 2022-02-28 | Jump,Trot,Gallop |  
| 12 | Donkey | Eeyore | 2019-09-18 | Walk,Carry Load,Bray |  
| 13 | Donkey | Burro | 2023-01-23 | Walk,Bray,Kick |  
+-----+-----+-----+-----+-----+  
13 rows in set (0,00 sec)  
  
mysql> 
```

или можно объединить с добавлением возраста (file: 7-concatenate with age.sql):

```
mysql> CREATE TABLE AllAnimal (  
  -> id INT AUTO_INCREMENT,  
  -> Typ VARCHAR(12),
```

```

-> Nick VARCHAR(20),
-> BirthDay DATE,
-> Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide',
-> 'Paw','Bark','Scratch','Spin','Meow','Jump','Trot',
-> 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'),
-> Age TEXT,
-> PRIMARY KEY(id));

mysql> INSERT INTO AllAnimal (Typ, Nick, BirthDay, Commands, Age)
-> SELECT Typ, Nick, BirthDay, Commands,
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')
-> FROM Pets
-> UNION ALL SELECT Typ, Nick, BirthDay, Commands,
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')
-> FROM Packs;

```

```

andrey@andrey-VirtualBox: ~
mysql> CREATE TABLE AllAnimal ( id INT AUTO_INCREMENT, Typ VARCHAR(12), Nick VARCHAR(20), BirthDay DATE,
Commands SET('Sit','Stay','Fetch','Pounce','Roll','Hide', 'Paw','Bark','Scratch','Spin','Meow','Jump',
Trot', 'Canter','Gallop','Walk','Carry Load','Bray','Kick','Run'), Age TEXT, PRIMARY KEY(id));
Query OK, 0 rows affected (0,07 sec)

mysql> INSERT INTO AllAnimal (Typ, Nick, BirthDay, Commands, Age)
-> SELECT Typ, Nick, BirthDay, Commands,
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')
-> FROM Pets
-> UNION ALL SELECT Typ, Nick, BirthDay, Commands,
-> CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ',
-> TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month')
-> FROM Packs;
Query OK, 13 rows affected (0,02 sec)
Records: 13  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM AllAnimal;
+-----+-----+-----+-----+-----+-----+
| id | Typ | Nick | BirthDay | Commands | Age |
+-----+-----+-----+-----+-----+-----+
| 1 | Cat | Whiskers | 2021-05-15 | Sit,Pounce | 3 year, 1 month |
| 2 | Cat | Smudge | 2022-02-02 | Sit,Pounce,Scratch | 2 year, 5 month |
| 3 | Cat | Oliver | 2022-06-30 | Scratch,Meow,Jump | 2 year, 0 month |
| 4 | Dog | Fido | 2022-01-01 | Sit,Stay,Fetch | 2 year, 6 month |
| 5 | Dog | Buddy | 2020-12-10 | Sit,Paw,Bark | 3 year, 6 month |
| 6 | Dog | Bella | 2021-11-11 | Sit,Stay,Roll | 2 year, 7 month |
| 7 | Hamster | Hammy | 2023-03-10 | Roll,Hide | 1 year, 3 month |
| 8 | Hamster | Peanut | 2023-08-01 | Roll,Spin | 0 year, 11 month |
| 9 | Horse | Thunder | 2017-07-21 | Trot,Canter,Gallop | 6 year, 11 month |
| 10 | Horse | Storm | 2016-05-05 | Trot,Canter | 8 year, 2 month |
| 11 | Horse | Blaze | 2022-02-28 | Jump,Trot,Gallop | 2 year, 4 month |
| 12 | Donkey | Eeyore | 2019-09-18 | Walk,Carry Load,Bray | 4 year, 9 month |
| 13 | Donkey | Burro | 2023-01-23 | Walk,Bray,Kick | 1 year, 5 month |
+-----+-----+-----+-----+-----+-----+
13 rows in set (0,01 sec)

mysql>

```

Примечание. Все расчёты с датами в таблицах сделаны на 6.07.2024 г.