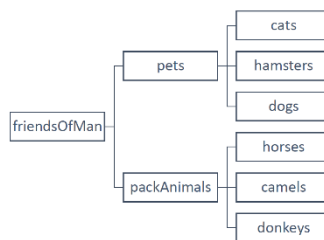


Объектно-ориентированное программирование

6. Диаграмма классов

См. chartAnimals.pdf



7. Работа с MySQL

7.2 - В ранее подключенном MySQL создать базу данных с названием "Human Friends".

```
assa@assa-VirtualBox: ~  
mysql> CREATE DATABASE HumanFriends;  
Query OK, 1 row affected (0,01 sec)  
  
mysql> USE HumanFriends;  
Database changed  
mysql>
```

- Создать таблицы, соответствующие иерархии из вашей диаграммы классов.

```
assa@assa-VirtualBox: ~  
'Give_me_your_paw', 'give_paw', 'Halt', 'Jump', 'Lie', 'Lie_down', 'locate', 'Phew', 'Roll_over', 'Sit', 'Stand',  
'To_me', 'Tumble', 'Ugh', 'Voice', 'Come_here'), PRIMARY KEY(id));  
Query OK, 0 rows affected (0,03 sec)  
  
mysql> CREATE TABLE Camels (id INT AUTO_INCREMENT, Name VARCHAR(20), BirthDay DATE, Commands SET('go', 'Stop', 'L  
ynx', 'Hop', 'Step', 'Quietly', 'GIT', 'DURR', 'KASH', 'KHH', 'HAP', 'COCK', 'Lets_go', 'Hush', 'Crawl', 'face',  
'Give_me_your_paw', 'give_paw', 'Halt', 'Jump', 'Lie', 'Lie_down', 'locate', 'Phew', 'Roll_over', 'Sit', 'Stand',  
'To_me', 'Tumble', 'Ugh', 'Voice', 'Come_here'), PRIMARY KEY(id));  
Query OK, 0 rows affected (0,04 sec)  
  
mysql> CREATE TABLE Donkeys (id INT AUTO_INCREMENT, Name VARCHAR(20), BirthDay DATE, Commands SET('go', 'Stop', 'L  
ynx', 'Hop', 'Step', 'Quietly', 'GIT', 'DURR', 'KASH', 'KHH', 'HAP', 'COCK', 'Lets_go', 'Hush', 'Crawl', 'face',  
'Give_me_your_paw', 'give_paw', 'Halt', 'Jump', 'Lie', 'Lie_down', 'locate', 'Phew', 'Roll_over', 'Sit', 'Stand',  
'To_me', 'Tumble', 'Ugh', 'Voice', 'Come_here'), PRIMARY KEY(id));  
Query OK, 0 rows affected (0,04 sec)  
  
mysql> SHOW TABLES;  
+-----+  
| Tables_in_HumanFriends |  
+-----+  
| Camels  
| Cats  
| Dogs  
| Donkeys  
| Hamsters  
| Horses  
+-----+  
6 rows in set (0,00 sec)  
  
mysql>
```

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



assa@assa-VirtualBox: ~

```
mysql> SELECT * FROM Cats;
```

```
+-----+-----+-----+-----+
| id | Name   | BirthDay | Commands |
+-----+-----+-----+-----+
| 1 | Wanda  | 2020-01-08 | Lie_down,Sit,Voice |
| 2 | Cassie | 2024-03-06 | Come_here |
| 3 | Happy  | 2021-11-12 | Give_me_your_paw,Voice,Come_here |
| 4 | Leopold | 2017-09-10 | Crawl,Tumble,Voice,Come_here |
| 5 | Simba  | 2014-05-13 | Crawl,Lie_down,Tumble,Come_here |
+-----+-----+-----+-----+
5 rows in set (0,00 sec)
```

```
mysql> SELECT * FROM Dogs;
```

```
+-----+-----+-----+-----+
| id | Name   | BirthDay | Commands |
+-----+-----+-----+-----+
| 1 | Pirate | 2023-07-31 | Lie,Sit,Stand |
| 2 | Marsik | 2019-08-11 | face,give_paw,Lie,Sit,To_me,Ugh |
| 3 | Loki   | 2020-03-08 | face,give_paw,Lie,Sit,Stand,Ugh |
| 4 | Strelka | 2018-07-25 | give_paw,Lie,Sit,Stand,To_me,Ugh |
| 5 | Belka  | 2019-04-19 | face,Lie,Sit,Stand,To_me,Ugh |
+-----+-----+-----+-----+
5 rows in set (0,00 sec)
```

```
mysql> SELECT * FROM Hamsters;
```

```
+-----+-----+-----+-----+
| id | Name   | BirthDay | Commands |
+-----+-----+-----+-----+
| 1 | Black  | 2024-04-05 | Jump |
| 2 | Gray   | 2024-01-23 | Roll_over |
| 3 | White  | 2023-11-15 | Halt,Phew |
| 4 | Gold   | 2023-09-30 | Halt,Phew,Roll_over |
| 5 | Silver | 2022-11-30 | Halt,Jump,locate,Phew,Roll_over |
+-----+-----+-----+-----+
5 rows in set (0,00 sec)
```

```
mysql>
```



assa@assa-VirtualBox: ~

```
mysql> SELECT * FROM Horses;
```

```
+-----+-----+-----+-----+
| id | Name   | BirthDay | Commands |
+-----+-----+-----+-----+
| 1 | Sophist | 1999-12-17 | go,Stop,Hop,Step,Quietly |
| 2 | Buran   | 2005-06-09 | go,Stop,Lynx,Hop,Step,Quietly |
| 3 | Dakar   | 2010-02-11 | go,Stop,Lynx,Step,Quietly |
| 4 | Bolivar | 2014-10-03 | go,Stop,Lynx,Hop,Step,Quietly |
| 5 | Bucephalus | 2017-11-23 | go,Stop,Lynx,Hop,Step,Quietly |
+-----+-----+-----+-----+
5 rows in set (0,00 sec)
```

```
mysql> SELECT * FROM Camels;
```

```
+-----+-----+-----+-----+
| id | Name   | BirthDay | Commands |
+-----+-----+-----+-----+
| 1 | Bart   | 1987-01-01 | GIT,DURR,KASH,KHH,HAP,COCK |
| 2 | Deneb  | 2021-04-12 | GIT,DURR,KASH |
| 3 | Zloyan | 1998-08-16 | GIT,DURR,KASH,KHH,HAP,COCK |
| 4 | Smoke  | 2013-01-03 | GIT,DURR,KASH,HAP,COCK |
| 5 | Hippie | 2005-02-28 | GIT,DURR,KASH,HAP,COCK |
+-----+-----+-----+-----+
5 rows in set (0,00 sec)
```

```
mysql> SELECT * FROM Donkeys;
```

```
+-----+-----+-----+-----+
| id | Name   | BirthDay | Commands |
+-----+-----+-----+-----+
| 1 | Angel  | 2024-04-15 | Stop,Lets_go |
| 2 | Zeus   | 1994-09-30 | Stop,Hop,Lets_go,Hush |
| 3 | Gres   | 2007-04-01 | Stop,Lets_go,Hush |
| 4 | Apuleius | 2011-06-22 | Stop,Lets_go,Hush |
| 5 | Eeyore | 2024-01-01 | Stop,Lets_go |
+-----+-----+-----+-----+
5 rows in set (0,00 sec)
```

```
mysql> 
```

- Удалить записи о верблюдах и объединить таблицы лошадей и ослов.

```
assa@assa-VirtualBox: ~
mysql> DELETE FROM Camels;
Query OK, 5 rows affected (0,00 sec)

mysql> SELECT * FROM Camels;
Empty set (0,00 sec)

mysql> CREATE TABLE packAnimals (id INT AUTO_INCREMENT, Type VARCHAR(12), Name VARCHAR(20), BirthDay DATE, Commands SET('go', 'Stop', 'Lynx', 'Hop', 'Step', 'Quietly', 'GIT', 'DURR', 'KASH', 'KHH', 'HAP', 'COCK', 'Lets_go', 'Hush'), PRIMARY KEY(id));
Query OK, 0 rows affected (0,03 sec)

mysql> SELECT * FROM packAnimals;
Empty set (0,00 sec)

mysql> INSERT INTO packAnimals (Type, Name, BirthDay, Commands) SELECT 'Horse', Name, BirthDay, Commands FROM Horses UNION ALL SELECT 'Camel', Name, BirthDay, Commands FROM Camels UNION ALL SELECT 'Donkey', Name, BirthDay, Commands FROM Donkeys;
Query OK, 10 rows affected (0,00 sec)
Records: 10 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM packAnimals;
+-----+-----+-----+-----+-----+
| id | Type | Name | BirthDay | Commands |
+-----+-----+-----+-----+-----+
| 1 | Horse | Sophist | 1999-12-17 | go,Stop,Hop,Step,Quietly |
| 2 | Horse | Buran | 2005-06-09 | go,Stop,Lynx,Hop,Step,Quietly |
| 3 | Horse | Dakar | 2010-02-11 | go,Stop,Lynx,Step,Quietly |
| 4 | Horse | Bolivar | 2014-10-03 | go,Stop,Lynx,Hop,Step,Quietly |
| 5 | Horse | Bucephalus | 2017-11-23 | go,Stop,Lynx,Hop,Step,Quietly |
| 6 | Donkey | Angel | 2024-04-15 | Stop,Lets_go |
| 7 | Donkey | Zeus | 1994-09-30 | Stop,Hop,Lets_go,Hush |
| 8 | Donkey | Gres | 2007-04-01 | Stop,Lets_go,Hush |
| 9 | Donkey | Apuleius | 2011-06-22 | Stop,Lets_go,Hush |
| 10 | Donkey | Eeyore | 2024-01-01 | Stop,Lets_go |
+-----+-----+-----+-----+-----+
10 rows in set (0,00 sec)

mysql>
```

```
assa@assa-VirtualBox: ~
mysql> CREATE TABLE Pets (id INT AUTO_INCREMENT, Type VARCHAR(12), Name VARCHAR(20), BirthDay DATE, Commands SET('Crawl', 'face', 'Give_me_your_paw', 'give_paw', 'Halt', 'Jump', 'Lie', 'Lie_down', 'locate', 'Phew', 'Roll_over', 'Sit', 'Stand', 'To_me', 'Tumble', 'Ugh', 'Voice', 'Come_here'), PRIMARY KEY(id));
Query OK, 0 rows affected (0,02 sec)

mysql> INSERT INTO Pets (Type, Name, BirthDay, Commands) SELECT 'Cat', Name, BirthDay, Commands FROM Cats UNION ALL SELECT 'Dog', Name, BirthDay, Commands FROM Dogs UNION ALL SELECT 'Hamster', Name, BirthDay, Commands FROM Hamsters;
Query OK, 15 rows affected (0,01 sec)
Records: 15 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM Pets;
+-----+-----+-----+-----+-----+
| id | Type | Name | BirthDay | Commands |
+-----+-----+-----+-----+-----+
| 1 | Cat | Wanda | 2020-01-08 | Lie_down,Sit,Voice |
| 2 | Cat | Cassie | 2024-03-06 | Come_here |
| 3 | Cat | Happy | 2021-11-12 | Give_me_your_paw,Voice,Come_here |
| 4 | Cat | Leopold | 2017-09-10 | Crawl,Tumble,Voice,Come_here |
| 5 | Cat | Simba | 2014-05-13 | Crawl,Lie_down,Tumble,Come_here |
| 6 | Dog | Pirate | 2023-07-31 | Lie,Sit,Stand |
| 7 | Dog | Marsik | 2019-08-11 | face,give_paw,Lie,Sit,To_me,Ugh |
| 8 | Dog | Loki | 2020-03-08 | face,give_paw,Lie,Sit,Stand,Ugh |
| 9 | Dog | Strelka | 2018-07-25 | give_paw,Lie,Sit,Stand,To_me,Ugh |
| 10 | Dog | Belka | 2019-04-19 | face,Lie,Sit,Stand,To_me,Ugh |
| 11 | Hamster | Black | 2024-04-05 | Jump |
| 12 | Hamster | Gray | 2024-01-23 | Roll_over |
| 13 | Hamster | White | 2023-11-15 | Halt,Phew |
| 14 | Hamster | Gold | 2023-09-30 | Halt,Phew,Roll_over |
| 15 | Hamster | Silver | 2022-11-30 | Halt,Jump,locate,Phew,Roll_over |
+-----+-----+-----+-----+-----+
15 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.

```
assa@assa-VirtualBox: ~
mysql> INSERT INTO YoungAnimals (Type, Name, BirthDay, Commands, Age) SELECT Type, Name, 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 Type, Name, BirthDay, Commands, CONCAT(TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) div 12, ' year, ', TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) % 12, ' month') FROM packAnimals WHERE TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) >= 12 AND TIMESTAMPDIFF(MONTH, BirthDay, CURDATE()) < 36;
Query OK, 3 rows affected (0,00 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM YoungAnimals;
+-----+-----+-----+-----+-----+-----+
| id | Type | Name | BirthDay | Commands | Age |
+-----+-----+-----+-----+-----+-----+
| 1 | Cat | Happy | 2021-11-12 | Give_me_your_paw,Voice,Come_here | 2 year, 8 month |
| 2 | Dog | Pirate | 2023-07-31 | Lie,Sit,Stand | 1 year, 0 month |
| 3 | Hamster | Silver | 2022-11-30 | Halt,Jump,locate,Phew,Roll_over | 1 year, 8 month |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0,00 sec)

mysql>
```

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

```
hal abr 5 21:33
assa@assa-VirtualBox: ~
here'), PRIMARY KEY(id));
Query OK, 0 rows affected (0,02 sec)

mysql> INSERT INTO FriendsOfMan (Type, Name, BirthDay, Commands) SELECT Type, Name, BirthDay, Commands FROM Pets UNION ALL SELECT Type,
Name, BirthDay, Commands FROM packAnimals;
Query OK, 25 rows affected (0,02 sec)
Records: 25 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM FriendsOfMan;
+-----+-----+-----+-----+-----+
| id | Type | Name | BirthDay | Commands |
+-----+-----+-----+-----+-----+
| 1 | Cat | Wanda | 2020-01-08 | Lie_down,Sit,Voice |
| 2 | Cat | Cassie | 2024-03-06 | Come_here |
| 3 | Cat | Happy | 2021-11-12 | Give_me_your_paw,Voice,Come_here |
| 4 | Cat | Leopold | 2017-09-10 | Crawl,Tumble,Voice,Come_here |
| 5 | Cat | Simba | 2014-05-13 | Crawl,Lie_down,Tumble,Come_here |
| 6 | Dog | Pirate | 2023-07-31 | Lie,Sit,Stand |
| 7 | Dog | Marsik | 2019-08-11 | face,give_paw,Lie,Sit,To_me,Ugh |
| 8 | Dog | Loki | 2020-03-08 | face,give_paw,Lie,Sit,Stand,Ugh |
| 9 | Dog | Strelka | 2018-07-25 | give_paw,Lie,Sit,Stand,To_me,Ugh |
| 10 | Dog | Belka | 2019-04-19 | face,Lie,Sit,Stand,To_me,Ugh |
| 11 | Hamster | Black | 2024-04-05 | Jump |
| 12 | Hamster | Gray | 2024-01-23 | Roll_over |
| 13 | Hamster | White | 2023-11-15 | Halt,Phew |
| 14 | Hamster | Gold | 2023-09-30 | Halt,Phew,Roll_over |
| 15 | Hamster | Silver | 2022-11-30 | Halt,Jump,locate,Phew,Roll_over |
| 16 | Horse | Sophist | 1999-12-17 | go,Stop,Hop,Step,Quietly |
| 17 | Horse | Buran | 2005-06-09 | go,Stop,Lynx,Hop,Step,Quietly |
| 18 | Horse | Dakar | 2010-02-11 | go,Stop,Lynx,Step,Quietly |
| 19 | Horse | Bolivar | 2014-10-03 | go,Stop,Lynx,Hop,Step,Quietly |
| 20 | Horse | Bucephalus | 2017-11-23 | go,Stop,Lynx,Hop,Step,Quietly |
| 21 | Donkey | Angel | 2024-04-15 | Stop,Lets_go |
| 22 | Donkey | Zeus | 1994-09-30 | Stop,Hop,Lets_go,Hush |
| 23 | Donkey | Gres | 2007-04-01 | Stop,Lets_go,Hush |
| 24 | Donkey | Apuleius | 2011-06-22 | Stop,Lets_go,Hush |
| 25 | Donkey | Eeyore | 2024-01-01 | Stop,Lets_go |
+-----+-----+-----+-----+-----+
25 rows in set (0,00 sec)

mysql>
```