Filtering and Ordering - Lab Assignment #3

Introduction

In this lab, you will write more `SELECT` statements to solidify your ability to query a SQL database. You will also write more specific queries using the tools you learned in the previous lesson.

Objectives

You will be able to:

- Write SQL queries to filter and order results
- Order the results of your queries by using `ORDER BY` (`ASC` & `DESC`)
- Limit the number of records returned by a query using `LIMIT`
- Filter results using `BETWEEN` and `IS NULL`

Famous Dogs

Here's a database full of famous dogs! The `dogs` table is populated with the following data:

name	age	gender	breed	temperament	hungry
Snoopy	3	M	beagle	friendly	1
McGruff	10	M	bloodhound	aware	0
Scooby	6	M	great dane	hungry	1
Little Ann	5	F	coonhound	loyal	0
Pickles	13	F	black lab	mischievous	1
Clifford	4	M	big red	smiley	1
Lassie	7	F	collie	loving	1
Snowy	8	F	fox terrier	adventurous	0
NULL	4	M	golden retriever	playful	1

Connecting to the Database

First, import sqlite3 and establish a connection to the database **dogs.db** in the data folder. Then, create a cursor object so that you can pass SQL queries to the database.

```
#Your code here; import sqlite, create a connection and then a cursor
object.
import sqlite3 as sq
import pandas as pd
conn = sq.connect('data/dogs.db')
```

Queries

Display the outputs for each of the following query descriptions.

Select the name and breed for all female dogs

```
#Your code here
q0 = """
SELECT name,
       breed
FROM dogs
WHERE gender = 'F';
"""

q0_result = pd.read_sql(q0, conn)
q0_result
```

```
         name        breed
0  Little Ann    coonhound
1     Pickles    black lab
2      Lassie       collie
3       Snowy  fox terrier
```

Select the names of all dogs listed in alphabetical order. Notice that SQL lists the nameless dog first.

```
#Your code here
q1 = """
SELECT name
FROM dogs
ORDER BY name;
"""

q1_result = pd.read_sql(q1, conn)
q1_result
```

```
         name
0        None
1    Clifford
2      Lassie
3  Little Ann
4     McGruff
5     Pickles
```

```
6      Scooby
7      Snoopy
8       Snowy
```

Select any dog that doesn't have a name

```
#Your code here
q2 = """
SELECT *
FROM dogs
WHERE name IS NULL;
"""

q2_result = pd.read_sql(q2, conn)
q2_result
```

```
   id  name  age gender             breed temperament  hungry
0   9  None    4      M  golden retriever     playful       1
```

Select the name and breed of only the hungry dogs and list them from youngest to oldest

```
#Your code here
q3 = """
SELECT name,
       breed
FROM dogs
WHERE hungry = 1
ORDER BY age;
"""

q3_result = pd.read_sql(q3, conn)
q3_result
```

```
       name             breed
0    Snoopy            beagle
1  Clifford          big red
2      None  golden retriever
3    Scooby        great dane
4    Lassie            collie
5   Pickles         black lab
```

Select the oldest dog's name, age, and temperament

```
#Your code here
q4 = """
SELECT name,
       age,
       temperament
```

```
FROM dogs
ORDER BY age DESC
LIMIT 1;
"""

q4_result = pd.read_sql(q4, conn)
q4_result
```

```
      name  age  temperament
0  Pickles   13  mischievous
```

Select the three youngest dogs

```
#Your code here
q5 = """
SELECT *
FROM dogs
ORDER BY age
LIMIT 3;
"""

q5_result = pd.read_sql(q5, conn)
q5_result
```

```
   id      name  age gender             breed temperament  hungry
0   1    Snoopy    3      M            beagle    friendly       1
1   6  Clifford    4      M           big red      smiley       1
2   9      None    4      M  golden retriever     playful       1
```

Select the name and breed of the dogs who are between five and ten years old, ordered from oldest to youngest

```
#Your code here
q6 = """
SELECT name,
       breed
FROM dogs
WHERE age BETWEEN 5 AND 10
ORDER BY age DESC;
"""

q6_result = pd.read_sql(q6, conn)
q6_result
```

```
         name        breed
0     McGruff   bloodhound
1       Snowy  fox terrier
2      Lassie       collie
3      Scooby   great dane
4  Little Ann    coonhound
```

Select the name, age, and hungry columns for hungry dogs between the ages of two and seven. This query should also list these dogs in alphabetical order.

```
#Your code here
q7 = """
SELECT name,
       age,
       hungry
FROM dogs
WHERE age BETWEEN 2 AND 7
ORDER BY name;
"""

q7_result = pd.read_sql(q7, conn)
q7_result
```

	name	age	hungry
0	None	4	1
1	Clifford	4	1
2	Lassie	7	1
3	Little Ann	5	0
4	Scooby	6	1
5	Snoopy	3	1

Summary

Great work! In this lab you practiced writing more complex SQL statements to not only query specific information but also define the quantity and order of your results.