SQL SELECT Statement

The SELECT statement is used to select data from a database. The result is then stored in a result table, sometimes called the result-set.

Syntax for SQL SELECT

SELECT column_name FROM table_name

We could also select multiple columns:

SELECT column_name1,column_name2
FROM table_name

Or we could select everything in a table using *

SELECT * FROM table_name

To see how this and multiple other queries work, we'll connect to the database and make a function that automatically takes in our query and returns a DataFrame.

```
In [1]:  # Imports
         import sqlite3
         import pandas as pd
         con = sqlite3.connect("sakila.db")

         # Set function as our sql_to_pandas

         def sql_to_df(sql_query):

             # Use pandas to pass sql query using connection form SQLite3
             df = pd.read_sql(sql_query, con)

             # Show the resulting DataFrame
             return df
```

Selecting Multiple Columns

```
In [2]:  # Select multiple columns example
         query = ''' SELECT first_name,last_name
                     FROM customer; '''

         # Grab from first two columns
         sql_to_df(query).head()
```

Out[2]:

	first_name	last_name
0	MARY	SMITH
1	PATRICIA	JOHNSON
2	LINDA	WILLIAMS
3	BARBARA	JONES
4	ELIZABETH	BROWN

Selecting Everything from table with *

```
In [3]:  # Select multiple columns example
         query = ''' SELECT *
                     FROM customer; '''

         # Grab
         sql_to_df(query).head()
```

Out[3]:

	customer_id	store_id	first_name	last_name	email
0	1	1	MARY	SMITH	MARY.SMITH@sakilacustomer.org
1	2	1	PATRICIA	JOHNSON	PATRICIA.JOHNSON@sakilacustomer.org
2	3	1	LINDA	WILLIAMS	LINDA.WILLIAMS@sakilacustomer.org
3	4	2	BARBARA	JONES	BARBARA.JONES@sakilacustomer.org
4	5	1	ELIZABETH	BROWN	ELIZABETH.BROWN@sakilacustomer.org

Syntax for the SQL DISTINCT Statement

In a table, a column may contain duplicate values; and sometimes you only want to list the distinct (unique) values. The DISTINCT keyword can be used to return only distinct (unique) values.

SELECT DISTINCT column_name
FROM table_name;

```
In [4]:  # Select distinct country_ids from the city table.
         query = ''' SELECT DISTINCT(country_id)
                     FROM city'''

         sql_to_df(query).head()
```

Out[4]:

	country_id
0	1
1	2
2	3
3	4
4	5

Syntax for the SQL WHERE

The WHERE clause is used to filter records, the WHERE clause is used to extract only the records that fulfill the specific parameter.

SELECT column_name
FROM table_name
WHERE column_name (math operator) desired_value;

```
In [5]:  # Select all customer info from the 1st store.
         query = ''' SELECT *
                     FROM customer
                     WHERE store_id = 1'''

         sql_to_df(query).head()
```

Out[5]:

	customer_id	store_id	first_name	last_name	email
0	1	1	MARY	SMITH	MARY.SMITH@sakilacustomer.org
1	2	1	PATRICIA	JOHNSON	PATRICIA.JOHNSON@sakilacustomer.org
2	3	1	LINDA	WILLIAMS	LINDA.WILLIAMS@sakilacustomer.org
3	5	1	ELIZABETH	BROWN	ELIZABETH.BROWN@sakilacustomer.org
4	7	1	MARIA	MILLER	MARIA.MILLER@sakilacustomer.org

Note, there are a variety of logical operators you can use for a SQL request.

Operator	Description
%	Equal
<>	Not equal. Note: In some versions of SQL this operator may be written !=
>	Greater than
<	Less than
>=	Greater than or equal
<=	Less than or equal

SQL requires single quotes around text values, while numeric fields are not enclosed in quotes, for example a text value for the above where statement:

```
In [6]:  # Select all customer info from Mary.
         query = ''' SELECT *
                     FROM customer
                     WHERE first_name = 'MARY'  '''

         sql_to_df(query).head()
```

Out[6]:

	customer_id	store_id	first_name	last_name	email	addres
0	1	1	MARY	SMITH	MARY.SMITH@sakilacustomer.org	5

Syntax for AND

The AND operator is used to filter records based on more than one condition.

The AND operator displays a record if both the first condition AND the second condition are true.

```
In [8]:  # Select all films from 2006 that are rated R.

         query = ''' SELECT *
                    FROM film
                    WHERE release_year = 2006
                    AND rating = 'R' '''

         sql_to_df(query).head()
```

Out[8]:

	film_id	title	description	release_year	language_id	original_language_id
0	8	AIRPORT POLLOCK	A Epic Tale of a Moose And a Girl who must Con...	2006	1	None
1	17	ALONE TRIP	A Fast-Paced Character Study of a Composer And...	2006	1	None
2	20	AMELIE HELLFIGHTERS	A Boring Drama of a Woman And a Squirrel who m...	2006	1	None
3	21	AMERICAN CIRCUS	A Insightful Drama of a Girl And a Astronaut w...	2006	1	None
4	23	ANACONDA CONFESSIONS	A Lacklusture Display of a Dentist And a Denti...	2006	1	None

Syntax for OR

The OR operator displays a record if either the first condition OR the second condition is true.

```
In [9]:  # Select all films from R or PG.

         query = ''' SELECT *
                     FROM film
                     WHERE rating = 'PG'
                     OR rating = 'R' '''

         sql_to_df(query).head()
```

Out[9]:

	film_id	title	description	release_year	language_id	original_language_id	rent
0	1	ACADEMY DINOSAUR	A Epic Drama of a Feminist And a Mad Scientist...	2006	1	None	6
1	6	AGENT TRUMAN	A Intrepid Panorama of a Robot And a Boy who m...	2006	1	None	3
2	8	AIRPORT POLLOCK	A Epic Tale of a Moose And a Girl who must Con...	2006	1	None	6
3	12	ALASKA PHANTOM	A Fanciful Saga of a Hunter And a Pastry Chef ...	2006	1	None	6
4	13	ALI FOREVER	A Action-Packed Drama of a Dentist And a Croco...	2006	1	None	4

That's it for now!

In [ ]: