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## **Hands-on Lab: Basics of SQL SELECT Statement**

#### Estimated time needed: 20 minutes

In this lab, you will learn one of the most commonly used statements of SQL (Structured Query Language), the SELECT statement. The SELECT statement is used to select data from a database.

#### How does the syntax of a SELECT statement look?

```
1. 1
2. 2
3. 3
4. 4

1. SELECT column1, column2, ...
2. FROM table_name
3. WHERE condition
4.;

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```

#### What do the keywords / clauses of a SQL statement shown above do?

- FROM: Specifies from which table to get the data. The clause can include optional JOIN subclauses to specify the rules for joining tables.
- [Optional Clause] WHERE: Specifies which rows to retrieve.

#### Why is there a semicolon after the SQL statements?

• Some database systems require a semicolon at the end of each SQL statement for execution. It is a standard way to separate one SQL statement from another which allows more than one SQL statement to be executed in the same call to the server. So, it is good practice to use a semicolon at the end of each SQL statement.

### Software Used in this Lab

In this lab, you will use <u>Datasette</u>, an open source multi-tool for exploring and publishing data.

### **Database Used in this Lab**

The database used in this lab comes from the following dataset source: <u>Film Locations in San Francisco</u> under a <u>PDDL: Public Domain Dedication and License</u>.

## **Objectives**

After completing this lab, you will be able to:

Query a database

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• Retrieve data records from one or more tables of a database as resultset according to the criteria you specify

# Task A: Exploring the Database

Let us first explore the SanFranciscoFilmLocations database using the Datasette tool:

1. I	f the first statement listed below is not already in the Datasette textbox on the right, then copy the code below by clickin	ıg
C	on the little copy button on the bottom right of the codeblock below and then paste it into the textbox of the Datasette too	٥Ī
ι	using either Ctrl+V or right-click in the text box and choose Paste.	

```
    SELECT * FROM FilmLocations;

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```

2. Click Submit Query.

3. N	Now you can scroll down the table and explore all the columns and rows of the FilmLocations table to g	get an overall i	dea
o	f the table contents.		

4. These are the column attribute descriptions from the **FilmLocations** table:

2. 2

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```
8.8
 9.9
10. 10
11. 11
12. 12
13. 13

    FilmLocations(

                             titles of the films,
        Title:
                             time of public release of the films,
 3.
        ReleaseYear:
 4.
        Locations:
                             locations of San Francisco where the films were shot,
 5.
        FunFacts:
                             funny facts about the filming locations,
 6.
        ProductionCompany: companies who produced the films,
 7.
                             companies who distributed the films,
        Distributor:
 8.
        Director:
                             people who directed the films,
 9.
                             people who wrote the films,
        Writer:
10.
        Actor1:
                             person 1 who acted in the films,
11.
        Actor2:
                             person 2 who acted in the films,
        Actor3:
                             person 3 who acted in the films
12.
13. )
Copied!
```

## Task B: Example exercises on SELECT statement

Now let us go through some examples of SELECT queries:

- 1. In this example, suppose we want to retrieve details of all the films from the "FilmLocations" table. The details of each film record should contain all the film columns.
  - 1. Problem:

Retrieve all records with all columns from the "FilmLocations" table.

2. Solution:

```
    1. 1
    1. SELECT * FROM FilmLocations;
    Copied!
```

3. Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

4. Your output resultset should match like below:

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2. In this	example, now we want to retrieve selective details of all the film records. Let us retrieve the names of all the films
along	with director names and writer names.
1. 1	Problem:
	Retrieve the names of all films with director names and writer names.
_	
2. \	Solution:
	<ol> <li>1. 1</li> <li>1. SELECT Title, Director, Writer FROM FilmLocations;</li> </ol>
	Copied!
3 (	Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and
]	paste it to the textbox of the Datasette tool. Then click <b>Submit query</b> .
4	V
4.	Your output resultset should match like below:

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restric	s example, we want to retrieve film names along with filming locations and release yes et the output resultset so that we can retrieve only the film records released in 2001 and including 2001).	
	Problem:	
	Retrieve the names of all films released in the 21st century and onwards (releasincluding 2001), along with filming locations and release years.	se years after 2001
2.	Solution:	
	<ol> <li>1. 1</li> <li>1. SELECT Title, ReleaseYear, Locations FROM FilmLocations WHERE ReleaseYe</li> <li>Copied!</li> </ol>	ear>=2001;
	Copy the solution code above by clicking on the little copy button on the bottom right paste it to the textbox of the Datasette tool. Then click <b>Submit query</b> .	t of the codeblock below and

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4. Your output resultset should match like below:



### Task C: Practice exercises on SELECT statement

Finally, let us practice creating and running some SELECT queries.

#### 1. Problem:

Retrieve the fun facts and filming locations of all films.

- ▶ Click here for Hint
- **▼** Click here for Solution
  - 1.
  - SELECT Locations, FunFacts FROM FilmLocations;

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► Click here for Output

### 2. Problem:

Retrieve the names of all films released in the 20th century and before (release years before 2000 including 2000) that, along with filming locations and release years.

- ► Click here for Hint
- ▼ Click here for Solution
  - 1. 1
- 1. SELECT Title, ReleaseYear, Locations FROM FilmLocations WHERE ReleaseYear<=2000;
  Copied!</pre>
- ▶ Click here for Output
- 3. Problem:

Retrieve the names, production company names, filming locations, and release years of the films which are not written by James Cameron.

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- ▶ Click here for Hint
- ▼ Click here for Solution
  - 1. 1

SELECT Title, ProductionCompany, Locations, ReleaseYear FROM FilmLocations WHERE Writer<>"James Cameron";
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► Click here for Output

Congratulations! You have completed this Lab.

# Author(s)

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## **Other Contributor(s)**

## Changelog

Date	Version	Changed by	<b>Change Description</b>
2023-05-11	1.6	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-10	1.5	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-10	1.4	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-04	1.3	Benny Li	Republished
2022-07-27	1.2	Lakshmi Holla	Updated html tag
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2020-11-20	1.0	Sandip Saha Joy	Initial version created

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