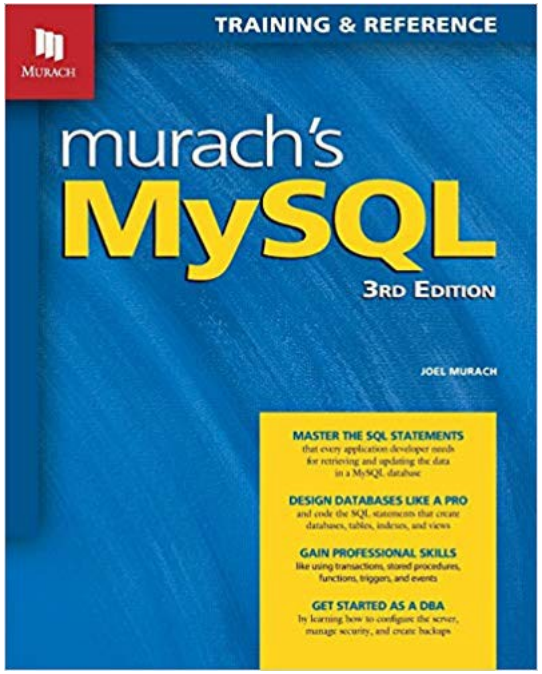
Introduction to SQL SELECT

Topic 3

Lesson 1 – SQL SELECT on one table

Chapter 3 Murach's MySQL



Extracting data from a single table

```
SELECT field_list
    FROM table
    WHERE condition_true
    ORDER BY order_field_list
    LIMIT num_tuples;
```

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

The field_list and the order_field_list are comma separated
All SQL commands are terminated with a semicolon

AS keyword

The AS keyword in the field list allows us to change the name of the attribute in the results.

Student

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

Write a query that returns the school column from the Student table with the field school aliased as school_name

Computed result and the AS keyword

Your field list can contain a computation on the fields in the table

Student

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

Write a query that returns the ID, Name and the number of credits left for the student to graduate

ORDER BY clause

You can specify multiple fields to order by as well as different ordering directions. ASC – signifies ORDER BY with values increasing. DESC – signified ORDER BY with values decreasing.

Extended format:
ORDER BY expression [ASC|DESC][, expression [ASC|DESC]]

Ordering by field position

Rather than specifying the name of the field in the output, you can specify the field position in the output. This places a dependency between the field list and the order_by list.

This functionality is provided in SQL but typically is considered bad practice.

Limit clause

Limit the number of tuples that are returned as the result. The default is to return the first n tuples in the result. But you can also specify an offset to start returning from. The extended syntax for the clause is:

LIMIT [offset,] row_count

EXAMPLE:

SELECT * FROM STUDENT LIMIT 2, 2;

WHERE clause

The format of the WHERE clause is:
expression1 **operation** expression2

The supported operations are: **=** equals, **<** less than, **>** greater than, **<=** less than or equal, **>=** greater than or equal, **<>** not equal , **!=** not equal, **LIKE** (a limited regular expression) . LIKE has 2 special characters The under score matches any one character, **%** matches any collection of characters.

Example: SELECT * FROM student where ID != 1;
SELECT * FROM student where Name LIKE 'D%';

WHERE clause allows multiple conditions

The WHERE clause uses the KEYWORDS **AND** and **OR** to place multiple restrictions on the data

Student_instance1

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

The syntax for the compound WHERE clause is

```
WHERE [NOT] search_condition_1 {AND|OR}
      [NOT] search_condition_2 ...
```

IN Keyword

IN operation returns true if the left side is equal to any value on the right side. The IN keyword can be preceded by the NOT keyword

EXAMPLE:

SELECT Name FROM Student where ID IN (1,2);

SELECT Name FROM Student where ID NOT IN (1,2);

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

BETWEEN Keyword

Between operation specifies a range for a condition
EXAMPLE:

SELECT name FROM student where Name between "S" and "Szzz";

SELECT name FROM student where id BETWEEN 1 AND 5;

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

LIKE Keyword

LIKE operation allows you to match parts of a string
EXAMPLE:

SELECT name FROM student where name LIKE "S%"

SELECT name FROM student where name LIKE "%s";

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

SQL Practice (1)

Write SQL statements to :

1. Extract all student names from the student table
2. Extract all Khoury college students from the student table
3. Extract all Khoury college students from the student table ordering the results by the last name
4. Extract 5 Khoury college students from the student table ordering the results by the last name

SQL Practice (2)

Write SQL statements to :

1. Extract all fields from the student table where the id is either 1 or 3
2. Extract all Khoury college students and all D'Amore McKim students
3. Extract all college students whose IDs are < 15 OR >20
4. Extract college students from the student table whose IDs are greater than 15 and less than 20

id	name	school	credits_earned	credits_req
1	Smith	Khoury	32	120
2	Shah	D'Amore McKim	64	128
3	Li	Khoury	50	120

MySQL work

Let's use the MySQL workbench to write SELECT statements using the ap database

Go to the website, page topic 2, and download the sql_exercises1.sql exercise. Complete the first 9 queries.

SQL Practice (3)

1. Extract all information on students, first order the output by credits_earned in ascending order and then order by name in ascending order
2. Extract all information on students, first order the output by credits_earned in descending order and then order by name in ascending order.

Summary

In this module you learned:

- SQL SELECT clauses: SELECT FROM, WHERE, ORDER BY, LIMIT.