SQL

Lecture 11

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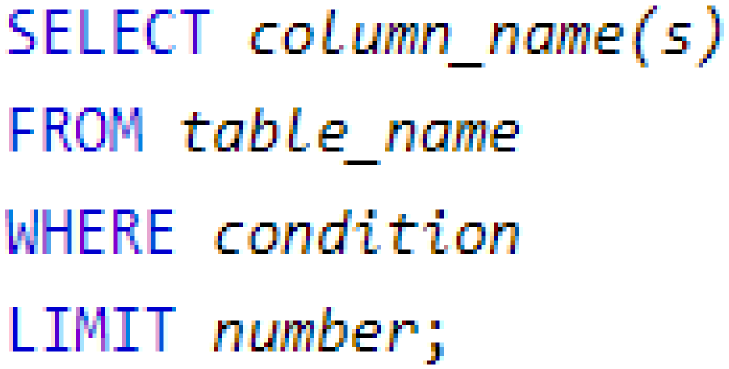
Table→ learners

id	first_name	last_name	city	roll	email
1	Alice	Johnson	Dhaka	101	aj@example.com
2	Bob	Brown	Dhaka	102	bob@example.com
3	Charlie	Chopra	Barishal	103	charlie@example.com
4	David	Das	Khulna	104	david@example.com
5	Emily Davis		Rangpur	105	emily@example.com

LIMIT

- **LIMIT** clause is used to *specify the number of records* to return from a query.
- It is commonly used with *SELECT* statements.
- The LIMIT clause can also be used with an optional *OFFSET* to skip a certain number of rows before starting to return the results.



```
SELECT column_name(s)
FROM table_name
WHERE condition
LIMIT number;
```

Example

--This will return the first 3 rows from the students table.

```
SELECT * FROM students
LIMIT 3;
```

--This will skip the first 2 rows and return the next 3 rows.

```
SELECT * FROM students
LIMIT 3 OFFSET 2;
```

LIKE Operator

- The LIKE operator is used in a WHERE clause to search for a *specified pattern* in a column.
- There are two *wildcards* often used in conjunction with the LIKE operator:
  - The percent sign (%) represents zero, one, or multiple characters
  - The underscore sign (_) represents one, single character
- Syntax

```
SELECT column_name
FROM table_name
WHERE column_name LIKE pattern;
```

Examples

```
SELECT * FROM students
WHERE city LIKE 'L_nd__’;
```

--Return all students from a city that starts with 'L' followed by one wildcard character, then 'nd' and then two wildcard characters:

```
SELECT * FROM students
WHERE city LIKE '%L%’;
```

--Output: Return all students from a city that *contains* the letter 'L':

Like Operator with (% and _ wildcards)

LIKE Operator	Description
`WHERE name LIKE 'a%'`	Finds any values that start with "a"
`WHERE name LIKE '%a'`	Finds any values that end with "a"
`WHERE name LIKE '%or%'`	Finds any values that have "or" in any position
`WHERE name LIKE '_r%'`	Finds any values that have "r" in the second position
`WHERE name LIKE 'a_%'`	Finds any values that start with "a" and are at least 2 characters in length
`WHERE name LIKE 'a__%'`	Finds any values that start with "a" and are at least 3 characters in length
`WHERE name LIKE 'a%o'`	Finds any values that start with "a" and ends with "o"

Wildcard Characters

- A *wildcard* character is used to substitute one or more characters in a string.
- Wildcard characters are used with the *LIKE operator.*
- The LIKE operator is used in a WHERE clause to search for a specified pattern in a column.

Symbol	Description
%	Represents zero or more characters
_	Represents a single character
[ ]	*Represents any single character within brackets
^	*Represents any character not in the brackets
-	*Represents any single character within the specified range

<u>* Not supported in MySQL</u>

Exercises on LIKE

- Find the students who name start with ‘A’.
- Find the students whose name end with ‘a’.
- Find students whose name contain ‘ch’.
- Find students whose name is 5 characters long and starts with ‘S’.
- Find teachers whose city starts with 'New' but ends with any character.

Exercises on LIKE

- Find the students who name start with ‘A’.
  ```
  SELECT *  FROM students WHERE name LIKE 'A%';
  ```

- Find the students whose name end with ‘a’.
  ```
  SELECT *  FROM students WHERE name LIKE ‘%a';
  ```

- Find students whose name contain ‘ch’.
  ```
  SELECT *  FROM students WHERE name LIKE ‘%ch%’;
  ```

- Find students whose name is 5 characters long and starts with ‘S’.
  ```
  SELECT * FROM students WHERE name LIKE 'S____’;
  ```
- Find teachers whose city starts with ‘Dhak' but ends with any character.
  ```
  SELECT *  FROM teachers WHERE city LIKE ‘Dhak_';
  ```

String Functions

- **CONCAT()**: Concatenates two or more strings into one.
  - `SELECT CONCAT(first_name, last_name) FROM students.`

- **LENGTH()**: Returns the length of a string.
  - `SELECT name, LENGTH(city)FROM students;`

- **LOWER()**: Converts a string to lowercase.
  - `SELECT name, lower(city)FROM students;`

- **UPPER()**: Converts a string to uppercase.
  - `SELECT name, upper(city)FROM students;`

String Functions

- **LEFT()**: Returns the leftmost characters from a string.
  - `SELECT LEFT(first_name,3) FROM students;`
- **RIGHT()**: Returns the rightmost characters from a string.
  - `SELECT RIGHT(last_name,3) FROM students;`
- **LPAD()**: Pads the left side of a string with another string until it reaches the specified length.
  - `SELECT LPAD(roll, 6, '0' FROM students;`

    [101→ 000101]
- **RPAD()**: Pads the right side of a string with another string until it reaches the specified length.
  - `SELECT RPAD(city, 7, '*') FROM students;`

  [dhaka→dhaka**]
- **REPLACE()**: Replaces all occurrences of a substring within a string.
  - `SELECT name, REPLACE(city, ‘Dhaka', ‘Dhaka City')`

  `FROM students;`

  [Dhaka→Dhaka City]

Aliases

- SQL aliases are used to give a *table, or a column* in a table, a ***temporary*** name.
- Aliases are often used to make column names more readable.
- An alias only exists for the duration of that query.
- An alias is created with the AS keyword.

```
SELECT id AS student_ID
FROM students;
```

```
SELECT id student_ID
FROM students;
```

```
SELECT CONCAT(first_name, last_name)AS name
FROM students.
```

Exercises

- Retrieve all students who live in Dhaka.
- Find students whose email ends with '@example.com’.
- List all students whose first name and city starts with ‘A’ .
- Retrieve the first name, last name, and email number, and display the email column as Contact Email and both name as Name.
- Retrieve the students' names in uppercase.
- Display the roll numbers padded with first three letter of your department.
- Retrieve students with replacement of all phone numbers starting with 019 to 017.
- Find students whose roll number is greater than 102.
- Find distinct cities where students live.
- Retrieve students whose last name contains ‘s’.