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systems
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Distributed
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Parallel
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sometimes
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System
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Management
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fact

Database System Lab (CSE 3103)

Session 04

Nazmus Sakib, Assistant Professor, Dept. of CSE, AUST

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OPERATOR

Operator	**Description**
=	Equal
<>	Not equal
>	Greater than
<	Less than
>=	Greater than or equal
<=	Less than or equal
BETWEEN	Between an inclusive range
LIKE	Search for a pattern
IN	To specify multiple possible values for a column

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LIKE OPERATOR

- The SQL LIKE clause is used to compare a value to similar values using wildcard operators. There are two wildcards used in conjunction with the LIKE operator:
- →The percent sign (%)
- →The underscore (_)
- The percent sign represents zero, one, or multiple characters. The underscore represents a single number or character. The symbols can be used in combinations.

LIKE OPERATOR

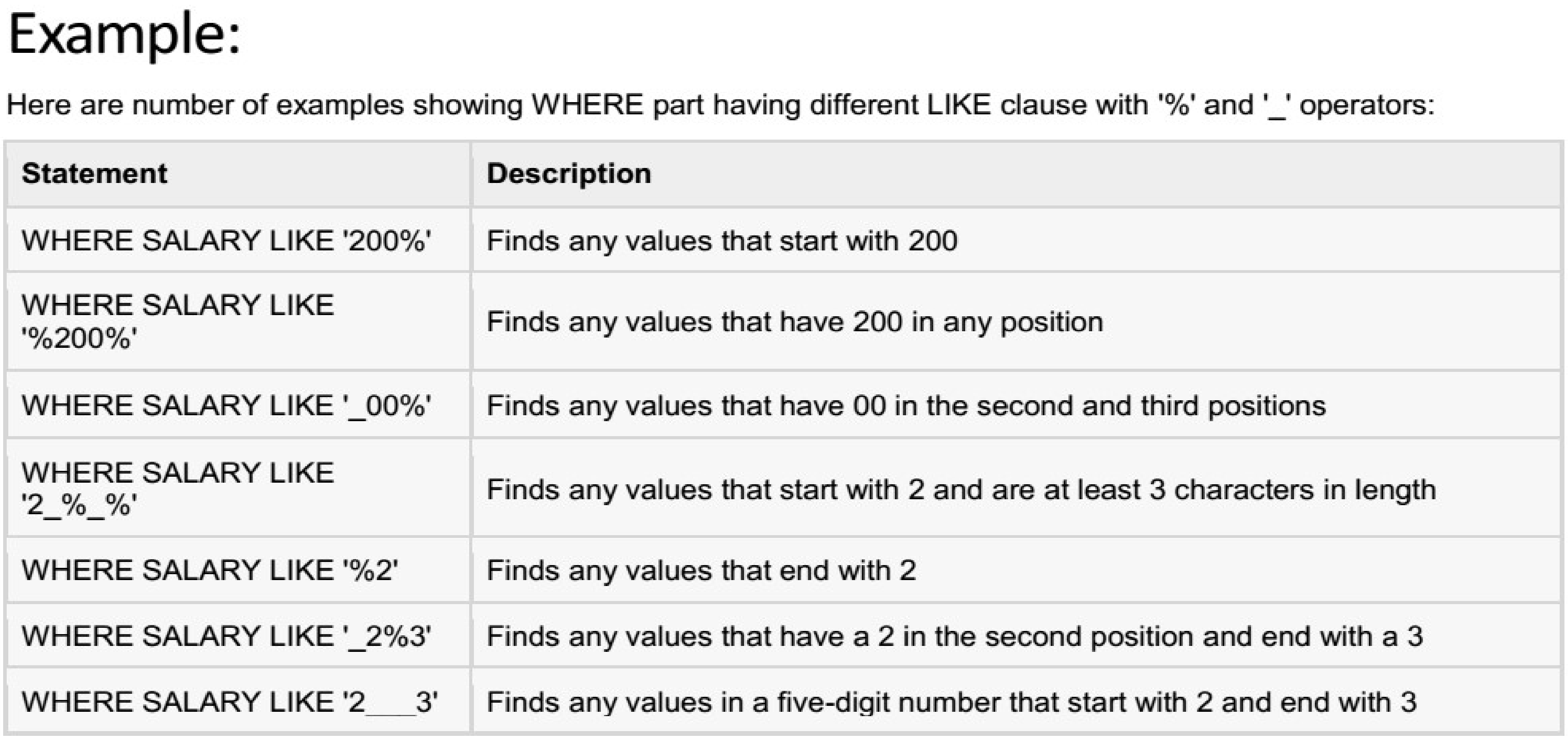
SYNTAX

```
SELECT column name(s)
FROM table name
WHERE column_ name LIKE pattern
```

You may also combine with the **NOT** keyword (Logical Negation). The NOT operator reverses the meaning of the logical operator with which it is used.

Eg: NOT EXISTS, NOT BETWEEN, NOT IN, etc. This is a negate operator.

LIKE OPERATOR



Example:

Here are number of examples showing WHERE part having different LIKE clause with '%' and '_' operators:

Statement	Description
WHERE SALARY LIKE '200%'	Finds any values that start with 200
WHERE SALARY LIKE '%200%'	Finds any values that have 200 in any position
WHERE SALARY LIKE '_00%'	Finds any values that have 00 in the second and third positions
WHERE SALARY LIKE '2_%_%'	Finds any values that start with 2 and are at least 3 characters in length
WHERE SALARY LIKE '%2'	Finds any values that end with 2
WHERE SALARY LIKE '_2%3'	Finds any values that have a 2 in the second position and end with a 3
WHERE SALARY LIKE '2___3'	Finds any values in a five-digit number that start with 2 and end with 3

IN OPERATOR

- IN operator allows you to specify multiple values in WHERE clause

```
SELECT column name(s)
FROM table name
WHERE column_ name IN (value1, value2,….)
```

Example

```
SELECT *  FROM CUSTOMER WHERE AGE IN (25, 27);
```

BETWEEN OPERATOR

- BETWEEN operator selects a range of data between two values. Values can be numbers, text, or dates.

```
SELECT column name(s)
FROM table name
WHERE column_ name BETWEEN value1  AND value2
```

Example

```
SELECT *  FROM CUSTOMER WHERE AGE BETWEEN 23 AND 27;
```

OR | AND OPERATOR

- The AND operator displays a record if both the first condition and the second condition is TRUE.
- The OR operator displays a record if either the first condition or the second condition is true.
- Examples:

```
SELECT * FROM CUSTOMER WHERE AGE > =25 AND SALARY >=6500;

SELECT * FROM CUSTOMER WHERE AGE > =25 OR SALARY >=6500;

SELECT   *   FROM CUSTOMER WHERE NAME LIKE ‘KA%’ AND (AGE > =25 OR
SALARY >=6500);
```

TOP OPERATOR

- The TOP clause is used to specify the number of records to return.
- The TOP clasue can be very useful on large tables with thousands of records.

- SYNTAX

```
SELECT TOP number | percent column_name(s)
FROM table_name
```

- Examples :

```
SELECT TOP 3 * FROM CUSTOMER

SELECT TOP 60 percent FROM CUSTOMER
```

SQL Aggregate Functions

- SQL aggregate functions return a single value, calculated from values in a column.
- Useful aggregate functions:

✓AVG() - Returns the average value

✓COUNT() - Returns the number of rows

✓FIRST() - Returns the first value

✓LAST() - Returns the last value

✓MAX() - Returns the largest value

✓MIN() - Returns the smallest value

✓SUM() - Returns the sum

SQL Scalar functions

- SQL scalar functions return a single value, based on the input value.
- Useful scalar functions:

✓UPPER() - Converts a field to upper case

✓LOWER() - Converts a field to lower case

✓MID() - Extract characters from a text field

✓LEN() - Returns the length of a text field

✓ROUND() - Rounds a numeric field to the number of decimals specified

✓NOW() - Returns the current system date and time

✓FORMAT() - Formats how a field is to be displayed

GROUP BY FUNCTION

- The GROUP BY statement is used in conjunction with the aggregate functions to group the result-set by one or more columns.
- Syntax

```
SELECT column_name, aggregate_function(column_name)
FROM table_name
WHERE column_name operator value
GROUP BY column_name
```

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GROUP BY FUNCTION

- Examples:

```
SELECT Age, MAX(Salary) FROM CUSTOMER
```

- Error message
- **error message**

```
Level 16, State 1, Line 1 Column 'CUSTOMER.Age' is invalid in the select list
because it is not contained in either an aggregate function or the GROUP BY clause
```

- Solution
- `SELECT Age, MAX(Salary) FROM CUSTOMER GROUP BY Age`

HAVING FUNCTION

- The HAVING clause was added to SQL because the WHERE keyword could not be used with aggregate functions.
- Syntax

```
SELECT column_name, aggregate_function(column_name)
FROM table_name
WHERE column_name operator value
GROUP BY column_name
HAVING aggregate_function(column_name) operator value
```

HAVING FUNCTION

- Examples:

```
SELECT Age, MAX(Salary) FROM CUSTOMER GROUP BY Age
HAVING NAME LIKE 'Ka%'
```

- Error message
- error message

```
Level 16, State 1, Line 1 Column 'CUSTOMER.Age' is invalid in the select list
because it is not contained in either an aggregate function or the GROUP BY clause
```

- Solution

```
SELECT Age, MAX(Salary) FROM CUSTOMER GROUP BY Age
HAVING Age >=25
```

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Parallel
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major
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