SQL OPERATORS AND DATADTYPES

Understanding SQL OPERATORS

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Purpose of the Notes:

This guide is designed to help learners understand the fundamental concepts of SQL, including data types and operators. It provides clear explanations of key concepts, enabling beginners to develop a solid foundation for working with databases and performing data manipulations.

ELEMENTS OF SQL

DATA TYPES: -

1. TEXT (OR CATEGORICAL DATA)
2. NUMERICAL
3. DATE AND TIME
4. BOOLEN DATA

TEXT (OR) CATEGORICAL DATA

1. **Char: -** A data type in SQL used to store fixed-length character Strings.
2. **Varchar: -** A data type used to store variable-length character Strings.

CHAR	VARCHAR
1. Char Used to store character strings of a fixed length.	Varchar Used to store character strings of variable length.
2. In char, if the string is shorter than the fixed length, it gets padded with extra spaces.	In varchar, if the string is shorter than the set length, it stores it as is, without padding.
3. Char stands for 'Character'	Varchar stands for 'Variable character'

NUMBERICAL

1. **Integer: -** Whole numbers without any decimal point.
2. **Float: -** A numerical data type used to store numbers with decimal Points.
3. **Bigint: -** Provides the necessary storage capacity to accommodate large Values.

DATE AND TIME

1. **Date:** - Stores calendar dates.
   Example: 2024-07-07
2. **Time:** - Stores time of day values.
   Example: 14:30:00
3. **Datetime:** - Stores both date and time together.
   Example: 2024-05-10 14:30:00

BOOLEAN

The Boolean data type is used to represent logical values.

- It has two possible values:
  - True
  - False

TYPES OF OPERATORS

1. **ARITHMETIC OPERATORS:** - Used to perform mathematical operations such as addition, subtraction, multiplication, and division.

2. **COMPARISON OPERATORS:** - Used to compare two values and return a Boolean result (True or False). Examples include equals, not equals, greater than, and less than.

3. **LOGICAL OPERATORS:** - Used to combine multiple Boolean expressions and return a single Boolean value. Common logical operators are AND, OR, and NOT.

4. **MEMBERSHIP OPERATORS:** - Used to check for the presence of a value in a set, such as IN and NOT IN.

5. **BITWISE OPERATORS:** - Used to perform operations on binary numbers at the bit level. Examples include AND, OR, XOR, and NOT.

ARITHMETIC OPERATORS

1. \+ : - Addition
2. \- : - Subtraction
3. * : - Multiplication
4. / : - Division
5. % : - (Modules) It is used to show the reminder
6. // : - (Floor Division)
   It shows the value before the decimal or round down
7. ** : - (Exponentiation)
   Raises a number to the power according to the specified condition.

COMPARISON OPERATORS

1. = : - Equal
2. <> or != : - Not Equal
3. > : - Greater than
4. < : - Less than
5. >= : - Greater than equal to
6. <= : - Less than equal to
7. IS NULL : - Checks if a value is NULL.
8. IS NOT NULL : - Checks if a value is not NULL.
9. Between : - Checks if a value is within a specified range

LOGICAL OPERATORS

1. And : - Retrieves rows where all specify conditions Are true.
2. Or : - Retrieves rows where at least one of The specified conditions are true.
3. Not : - Retrieves rows that do not meet the Specified Condition.

MEMBERSHIP OPERATORS

1. In : - Retrieves rows where a specified value Matches any value in a list.
2. Not in : - Retrieves rows where a specified value does Not match any value in the list.

BITWISE OPERATORS

1. & : - Performs a bitwise AND operation.
2. | : - Performs a bitwise OR operation.
3. ^ : - Performs a bitwise XOR (exclusive OR) Operation.