BYTEWISE LIMITED

Data Engineering Track

Task: Week – 2 (First Month)

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## Task Details:

This task includes the following:

* Data Types in SQL

# DATA TYPES:

“A data type specifies **what kind of data you want to store** in the table field”.

* While creating a table, for each column, you have to use a datatype. It identifies a particular type of data, like integer, Boolean, or floating points, and so on.
* It is important to **choose the correct data type** for a column because **it affects the amount of storage** required for the data and the operations that can be performed on the data.

## Importance of Data Types:

* **Efficiency:** Data types allow for efficient storage and retrieval of data. For example, using a numeric data type for a column that stores numbers allows for faster calculations and sorting.
* **Data Integrity:** By specifying a data type for a column, you can ensure that the data entered into that column is of the correct type. This helps to prevent data entry errors and ensures that the data in the table is consistent.
* **Query Optimization:** The use of appropriate data types can improve the performance of SQL queries by reducing the amount of data that needs to be processed.

## Data Types in SQL Server:

## SQL Server Data Types

There are several data types in SQL Server, some of the commonly used data types include:

1. **Numeric:** Integers (INT, SMALLINT, BIGINT), Decimal (DECIMAL, NUMERIC), Floating point numbers (FLOAT, REAL)
2. **Character:** Fixed-length character strings (CHAR), Variable-length character strings (VARCHAR), TEXT, Unicode character strings (NCHAR, NVARCHAR)
3. **Date and Time:** Date (DATE), Time (TIME), DateTime (DATETIME)
4. **Boolean:** Bit (BIT)
5. **Binary:** Fixed-length binary data (BINARY), Variable-length binary data (VARBINARY), Image data (Image)
6. **Others:** XML (XML), Unique identifier (UNIQUEIDENTIFIER), Cursor (CURSOR), Table (TABLE)

## Examples of Data Types:

1. INTEGER - used to store whole numbers Example:

CREATE TABLE employees ( emp\_id INTEGER PRIMARY KEY, age INTEGER, salary INTEGER );

1. DECIMAL - used to store decimal numbers with precision Example:

CREATE TABLE products ( product\_id INTEGER PRIMARY KEY, price DECIMAL(10,2), quantity INTEGER );

1. VARCHAR - used to store variable-length character strings Example:

CREATE TABLE customers ( customer\_id INTEGER PRIMARY KEY, first\_name VARCHAR(50), last\_name VARCHAR(50), email VARCHAR(100) );

1. DATE - used to store dates Example:

CREATE TABLE orders ( order\_id INTEGER PRIMARY KEY, order\_date DATE, customer\_id INTEGER );

1. BOOLEAN - used to store true/false values Example:

CREATE TABLE tasks ( task\_id INTEGER PRIMARY KEY, task\_name VARCHAR(50), is\_complete BOOLEAN );

1. BLOB - used to store binary data, such as images or files Example:

CREATE TABLE documents ( doc\_id INTEGER PRIMARY KEY, doc\_name VARCHAR(100), doc\_data BLOB );

These are just a few examples of the data types that can be used in SQL. It's important to choose the appropriate data type for each column or variable to ensure efficient storage and manipulation of data.