BYTEWISE LIMITED

Data Engineering Track

Task: Week – 2 (First Month)

Task No: 5

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Internee Name: Umer Farooq

Mentor Name: Muhammad Ahtisham

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".

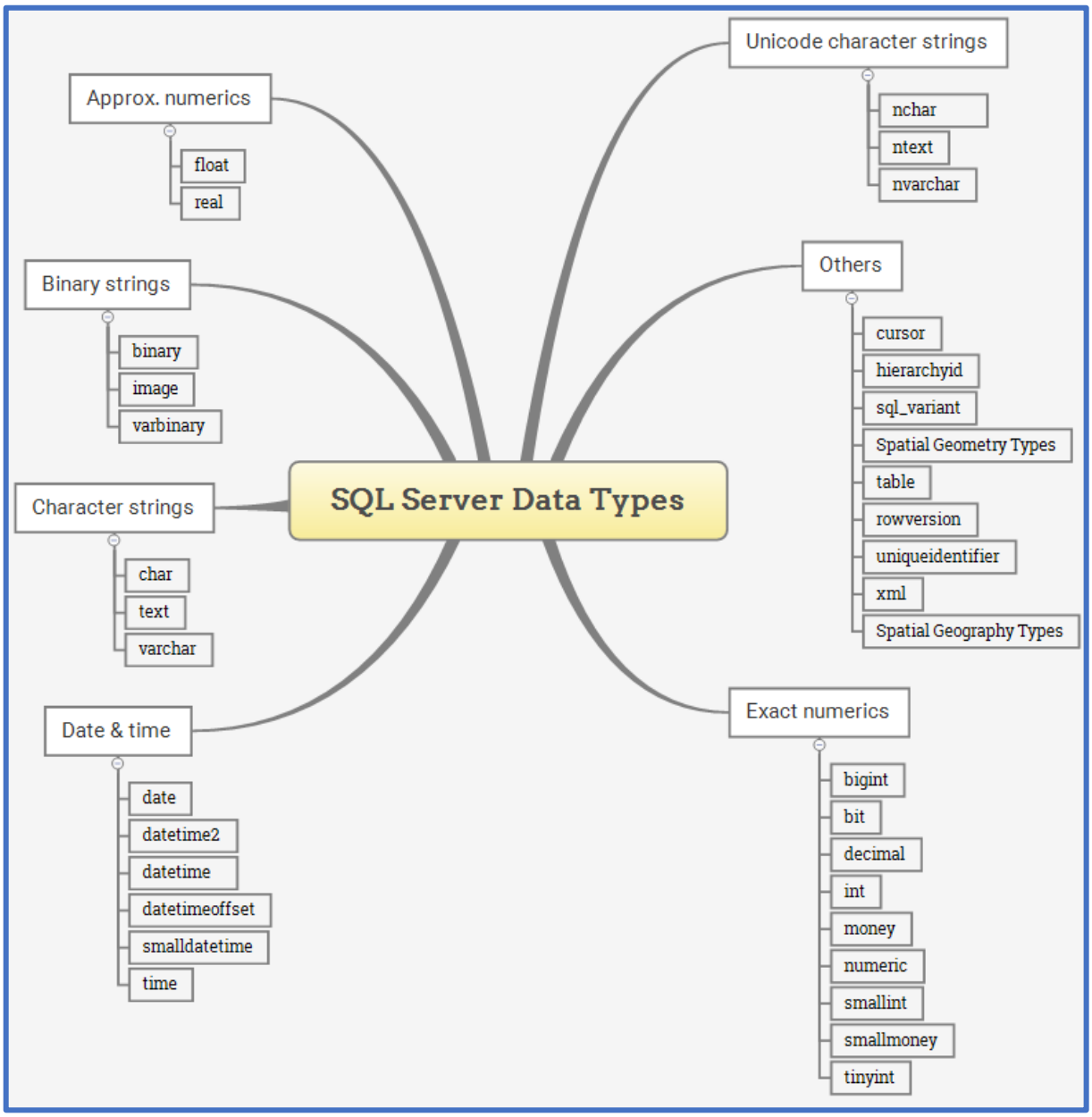
- While creating a table, for each column, you have to use a datatype. It identifies a particular type of data, like integer, Boolean, or floating points, and so on.
- It is important to **choose the correct data type** for a column because **it affects the amount of storage** required for the data and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



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 );
```

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

```
CREATE TABLE products ( product_id INTEGER PRIMARY KEY, price DECIMAL(10,2), quantity INTEGER );
```

3. 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) );
```

4. DATE - used to store dates Example:

```
CREATE TABLE orders ( order_id INTEGER PRIMARY KEY, order_date DATE, customer_id INTEGER );
```

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

```
CREATE TABLE tasks ( task_id INTEGER PRIMARY KEY, task_name VARCHAR(50), is_complete BOOLEAN );
```

6. 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.