1. **SQL Data Types**

**Instructions:**

Please share your answers filled in line in the Word document. Submit code separately wherever applicable.

Please ensure you update all the details:

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**Topic: SQL Data Types**

**Assignments: -**

1. Create a database with a sales table containing data types like int, varchar, char, date, time, timestamp, Boolean, decimal, and text.

-- Create the database

CREATE DATABASE sales\_database;

-- Use the database

USE sales\_database;

-- Create the sales table

CREATE TABLE sales (

id INT,

product\_name VARCHAR(50),

category CHAR(1),

sale\_date DATE,

sale\_time TIME,

created\_at TIMESTAMP,

is\_sold BOOLEAN,

price DECIMAL(10, 2),

description TEXT

);

1. Insert 10 random values in the table?

INSERT INTO sales (id, product\_name, category, sale\_date, sale\_time, created\_at, is\_sold, price, description)

VALUES

(1, 'Product A', 'A', '2023-06-01', '09:30:00', NOW(), TRUE, 19.99, 'Description A'),

(2, 'Product B', 'B', '2023-06-02', '14:45:00', NOW(), TRUE, 29.99, 'Description B'),

(3, 'Product C', 'C', '2023-06-03', '11:15:00', NOW(), FALSE, 9.99, 'Description C'),

(4, 'Product D', 'D', '2023-06-04', '17:20:00', NOW(), TRUE, 39.99, 'Description D'),

(5, 'Product E', 'E', '2023-06-05', '10:00:00', NOW(), TRUE, 49.99, 'Description E'),

(6, 'Product F', 'F', '2023-06-06', '12:30:00', NOW(), FALSE, 14.99, 'Description F'),

(7, 'Product G', 'G', '2023-06-07', '15:45:00', NOW(), TRUE, 24.99, 'Description G'),

(8, 'Product H', 'H', '2023-06-08', '16:10:00', NOW(), TRUE, 34.99, 'Description H'),

(9, 'Product I', 'I', '2023-06-09', '09:00:00', NOW(), TRUE, 44.99, 'Description I'),

(10, 'Product J', 'J', '2023-06-10', '13:20:00', NOW(), FALSE, 19.99, 'Description J');

1. Change the data type of the existing column from DECIMAL (10,2) to FLOAT?

To change the data type of an existing column from DECIMAL(10,2) to FLOAT, you can use the ALTER TABLE statement in SQL. Here's an example of how you can achieve that for the "price" column in the "sales" table:

*ALTER TABLE sales*

*MODIFY COLUMN price FLOAT;*

This statement modifies the data type of the "price" column from DECIMAL(10,2) to FLOAT. Please note that altering the data type of a column may lead to potential data loss or precision changes, so make sure to review your data and backup your table before performing such alterations.

1. Change the data type of the existing column from Text to Varchar?

ALTER TABLE sales

ALTER COLUMN description TYPE VARCHAR(255);

This statement changes the data type of the "description" column from TEXT to VARCHAR with a maximum length of 255 characters. You can modify the length (e.g., VARCHAR(100), VARCHAR(500), etc.) based on your specific requirements.

1. What is the “BLOB” Data Type in SQL, and what are the different types of BLOB?

*In SQL, the BLOB (Binary Large Object) data type is used to store binary data, such as images, audio files, video files, or any other type of data that cannot be represented as plain text. BLOBs are typically used when you need to store large amounts of unstructured binary data within a database.*

*There are different types of BLOBs, depending on the database system you are using. Here are some common types:*

*1. BLOB: This is the generic BLOB type that can store any binary data. It is the most basic form of BLOB and is supported by most database systems.*

*2. TEXT: Although TEXT is not technically a BLOB type, it is often included in discussions about BLOBs because it is used to store large amounts of text data. TEXT types can hold variable-length character data, such as documents, articles, or even HTML code.*

*3. TINYBLOB: A TINYBLOB can store up to 255 bytes of binary data. It is typically used for small binary objects.*

*4. BLOB: The BLOB type can store large amounts of binary data. The maximum size varies depending on the database system, but it can often store several gigabytes of data.*

*5. MEDIUMBLOB: A MEDIUMBLOB can store even larger amounts of binary data compared to the regular BLOB type. Again, the maximum size depends on the database system.*

*6. LONGBLOB: The LONGBLOB type is used to store extremely large binary objects. It can typically store up to 4 gigabytes of data.*

*It's worth noting that the specific names and storage limits of BLOB types may vary slightly between different database management systems, such as MySQL, PostgreSQL, Oracle, or SQL Server.*

1. Write different character data types and different numerical data types?

*In MySQL, there are various character and numerical data types available. Here are some commonly used ones:*

*Character Data Types:*

*1. CHAR: A fixed-length string that can hold up to 255 characters.*

*2. VARCHAR: A variable-length string that can hold up to 65,535 characters.*

*3. TEXT: A large text object that can store up to 65,535 characters.*

*4. ENUM: A string object that can have one value chosen from a predefined list of values.*

*5. SET: A string object that can have zero or more values chosen from a predefined list of values.*

*Numerical Data Types:*

*1. TINYINT: A small integer with a range of -128 to 127 (signed) or 0 to 255 (unsigned).*

*2. SMALLINT: A small integer with a range of -32,768 to 32,767 (signed) or 0 to 65,535 (unsigned).*

*3. MEDIUMINT: A medium-sized integer with a range of -8,388,608 to 8,388,607 (signed) or 0 to 16,777,215 (unsigned).*

*4. INT: A standard-sized integer with a range of -2,147,483,648 to 2,147,483,647 (signed) or 0 to 4,294,967,295 (unsigned).*

*5. BIGINT: A large integer with a range of -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 (signed) or 0 to 18,446,744,073,709,551,615 (unsigned).*

*6. FLOAT: A floating-point number with single precision.*

*7. DOUBLE: A floating-point number with double precision.*

*8. DECIMAL: A fixed-point number with a user-defined precision and scale.*

*These are just a few examples of character and numerical data types in MySQL. The choice of data type depends on the specific requirements of your database and the nature of the data you want to store.*