

MySQL

27-Oct

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PROJECT NO.	
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Q1. What is MySQL?

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- 1) MySQL is a relational database management system.
 - 2) MySQL is open source.
 - 3) MySQL is free.
 - 4) MySQL is ideal for both small and large applications.
 - 5) MySQL is very fast, reliable, scalable, and easy to use.
 - 6) The MySQL Document store allows users to mix relational data and JSON documents in the same database and application.

Q. Why to use MySQL?

→ MySQL is a popular open-source relational database management system (RDBMS) for storing and managing data because of its many advantages including:

- | | |
|----------------|----------------|
| 1) Reliability | 2) Scalability |
| 3) Performance | 4) Ease of use |
| 5) Security | 6) Open Source |
- 7) Web and data warehouse strengths.

1> Scalability

1> Reliability

→ MySQL is known for its reliability and constant availability.

2> Scalability

→ MySQL can handle a wide range of applications. From small personal project to large data warehouse.

- It uses a vertical scaling architecture, which allows you to add more resources to your existing server.

3> Performance

→ MySQL's storage-engine architecture allows you to configure the database server for specific applications.

4> Ease of use

→ MySQL is easy to install and use, and you can modify the source code to meet your needs.

5> Security

→ MySQL offers encryption, data masking and authentication plugins to protect data integrity.

6) Inteb and data warehouse strengths.

→ MySQL is the de-facto standard for high-traffic websites because of its fast data insert capability and support for specialized web functions.

Q.3 What is database?

→ A database is a structured collection of data that's stored electronically on a computer system. Databases can store any type of data, including numbers, words, images, and videos. and files.

Q4. What is rdbms?

→ RDBMS is a database management system that stores data in the form of tables, which are composed of rows and columns. It supports structured query language to manage and manipulate the data.

→ Data is stored in tables. A table consists of rows and columns. Each row in a table represents a single record and each column represents a data field.

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Keys:

- primary key - A unique identifier for a record in a table. Each table can have only one primary key.

- foreign key - A field in one table that is a primary key in another table. It establishes a relationship betⁿ the two tables.

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Relationships:

Rdbms handles different types of relⁿ betⁿ tables:→

- one-to-one: Each record in one table is related to a single record in another table.

- one-to-many: A record in one table can be related to multiple records in another table.

- Many-to-Many
Records in 2 table are related through a third table.

Q5. What is Primary Key?

→ A primary key is a column or set of columns in a database table that uniquely identifies each row.

- A primary key ensures that each row in a table is distinct which is essential for maintaining data integrity.

- It serves as the main reference point for database operations, such as searching, updating and deleting records.

- A table can only have one primary key and the values in the primary key must be unique.

Q.6 Explore real data types in SQL?

1. Numeric Data Types

* INT: Whole num (-2,147,483,648 to 2,147,483,647)

* TINYINT: Small integers (0 to 255 or -258 to 127)

SMALLINT: Small integers (-32,768 to 32,767).

MEDIUMINT: Medium-Sized integers
(-8,388,608 to 8,388,607)

BIGINT: Large integers
(-9 quintillion to 9 quintillion)

DECIMAL: Exact values with precision and scale.

Float / Double: → Approximate values with a floating point-precision.

#2 String Data Types.

CHAR(n): Fixed length string.

VARCHAR(n): Variable-length string.

TEXT: Large text data (up to 65,535 char).

TINYTEXT, MEDIUMTEXT, LONGTEXT:
Larger variants of TEXT.

Binary Data Types

- * BINARY: fixed-length binary data.
- * VARBINARY(n): Variable-length binary data.
- * BLOB: large Binary objects.

Date and time datatypes

- * DATE: Stores date (YYYY-MM-DD)
- * TIME: stores Time (HH-MM-SS)
- * DateTime: Date and time combined.
- * Time Stamp: Date, time, and timezone info
- * Year: stores a year (YYYY or YY format)

Boolean Data Type.

Boolean / Bool: True or false

Miscellaneous Datatypes

ENUM: Predifined list of values.

SET: store a multiple value from list.

UUID: 128-bit unique identifier.

JSON: stores JSON data.

XML: stores XML data.

Special Data types

Geometry: stores geometric shapes

INET / INET6: Stores IP addresses.

Q7 What are CRUD Queries?

→ CRUD queries are fundamental operations used in database management and application development to handle persistent data.

CRUD stands for Create, Read, Update, and Delete.

1. Create - Add new records or data to the database.

```
insert into users (username, email, pass)
values ('uvi-rajs', 'yui@gmail.com', '#34A27')
```

2. Read - view existing data from db.

```
select username, email from users where
user-id = 1;
```


3. Update - Modify the existing data with in database.

Update users

set email = 'yur.new@gmail.com'

where user-id = 1;

4. Delete → Remove existing data from the database.

Delete from users where id user-id = 1;