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Introduction to SQL and MySQL

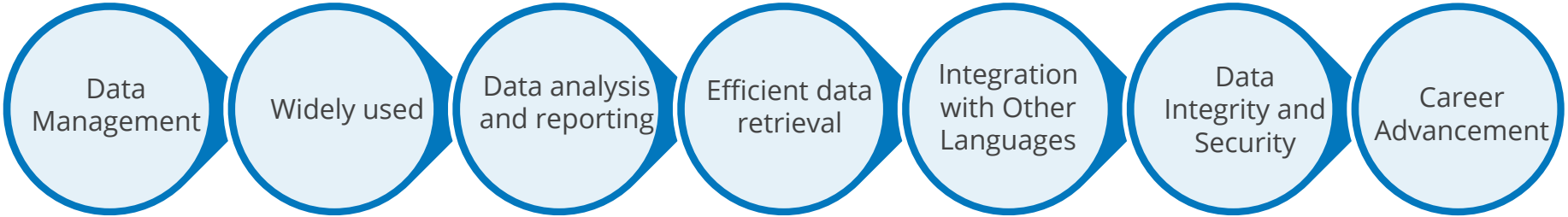
Pre-requisites

Hope you have gone through the self-learning content for this session on the PRISM portal.

By the End of this Session, You Will:

- Understand the basics of SQL
- Learn the uses of SQL
- Work on the types of SQL commands
- Explore an RDBMS called MySQL
- Understand the IDE, which is widely used for development in MySQL

Why Learn SQL?



Pop Quiz

Q. What is the primary purpose of SQL?

a. To create user interfaces for databases

b. To design and manage network infrastructures

c. To program web applications

d. To manage and manipulate relational databases

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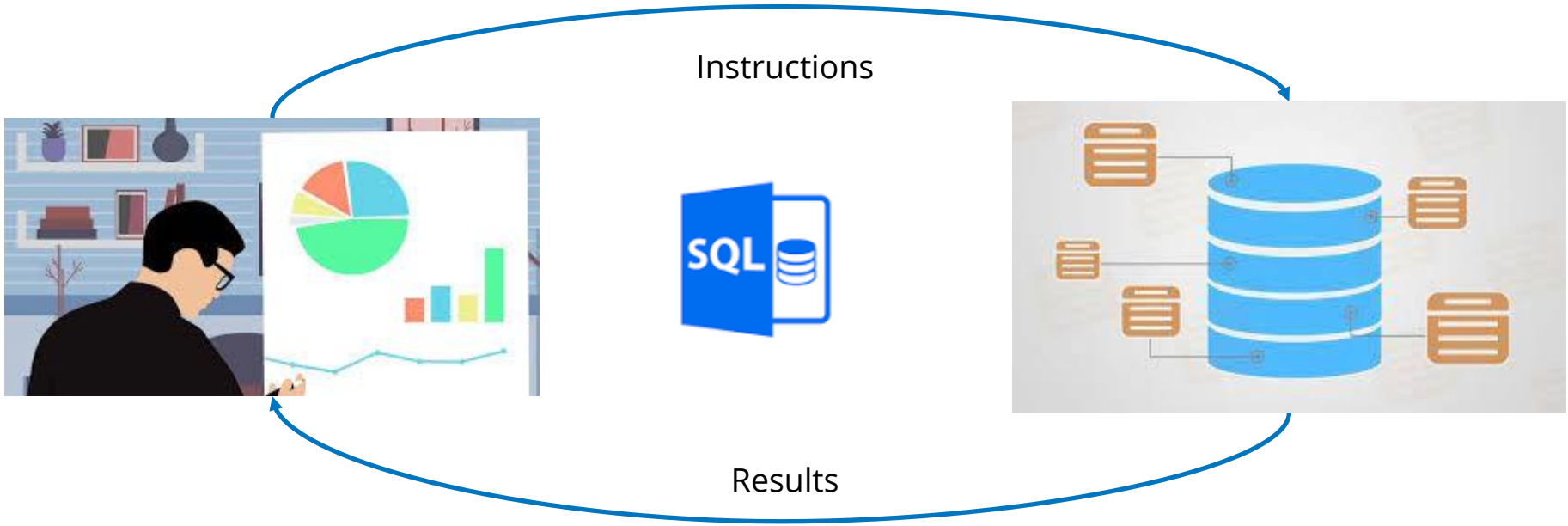
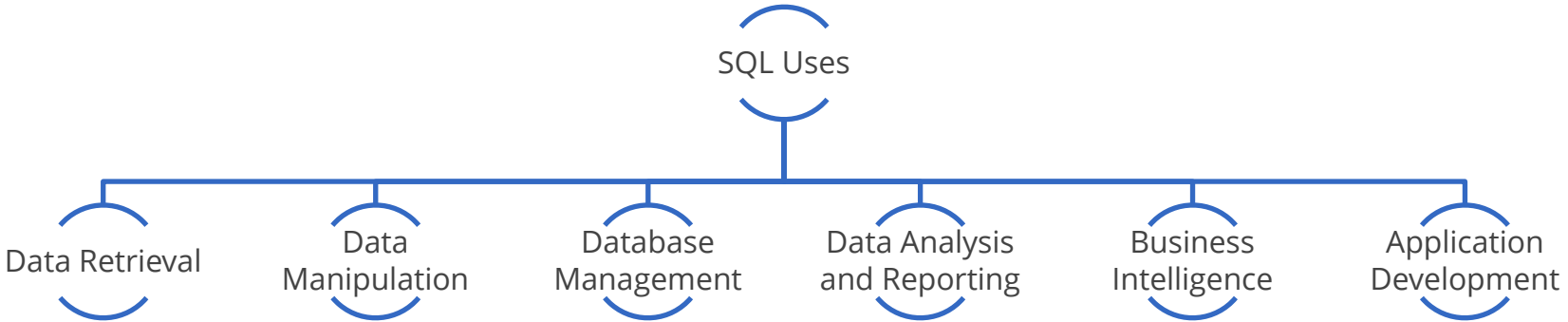
Introduction to SQL

Introduction to SQL

Structured Query Language



Need for SQL


SQL Uses
Data Retrieval
Data Manipulation
Database Management
Data Analysis and Reporting
Business Intelligence
Application Development

Applications of SQL

IT Industry

Banking Industry

Healthcare Industry

Pop Quiz

Q. In the healthcare industry, SQL should be commonly used for _____.

a. Performing surgical procedures

b. Managing patient appointments

c. Analyzing medical images

d. Managing and querying patient data in databases

Pop Quiz

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Introduction to Queries

What is a Query?

A query refers to a specific request or a command used to retrieve, manipulate, or manage data stored in a database.

INSERT

- Used to insert data into a table

UPDATE

- Used to update existing data in a table

DELETE

- Used to delete data from a table


Q&A

Demo – Usage of a Query

Pop Quiz

Q. Which of the following statements about SQL is true?

a. SQL is a programming language used for creating operating systems

b. SQL is specific to a particular database management system and cannot be used with others

c. SQL allows for the management and manipulation of structured data in databases

d. SQL is primarily used for creating Graphical User Interfaces (GUI) for software applications

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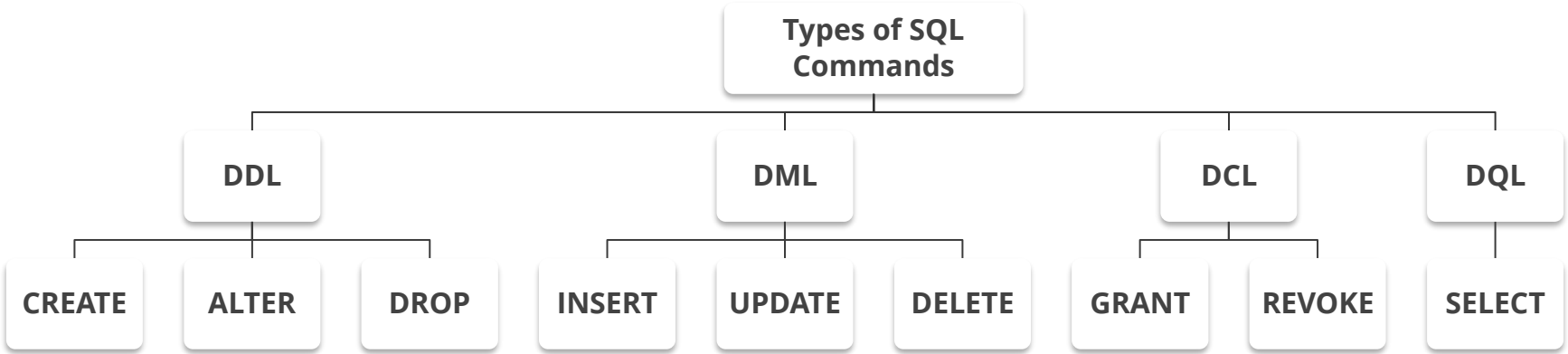
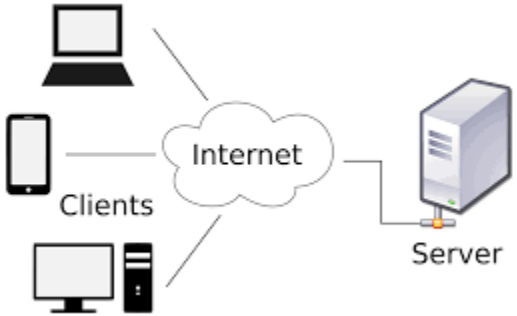
Types of SQL Commands



Introduction to MySQL

Introduction to MySQL

- MySQL is an open-source **Relational Database Management System (RDBMS)** that is widely used for managing and manipulating data.
- It uses SQL (Structured Query Language) as its primary language for interacting with the database, allowing users to perform tasks such as data retrieval, insertion, modification, and deletion.



Architecture

Demo – Basic SQL Commands

Pop Quiz

Q. Which type of SQL command is used to modify the structure of existing database objects in MySQL?

a. Data Definition Language (DDL)

b. Data Manipulation Language (DML)

c. Data Control Language (DCL)

d. Data Query Language (DQL)

Pop Quiz

Q. Which type of SQL command is used to modify the structure of existing database objects in MySQL?

a. **Data Definition Language (DDL)**

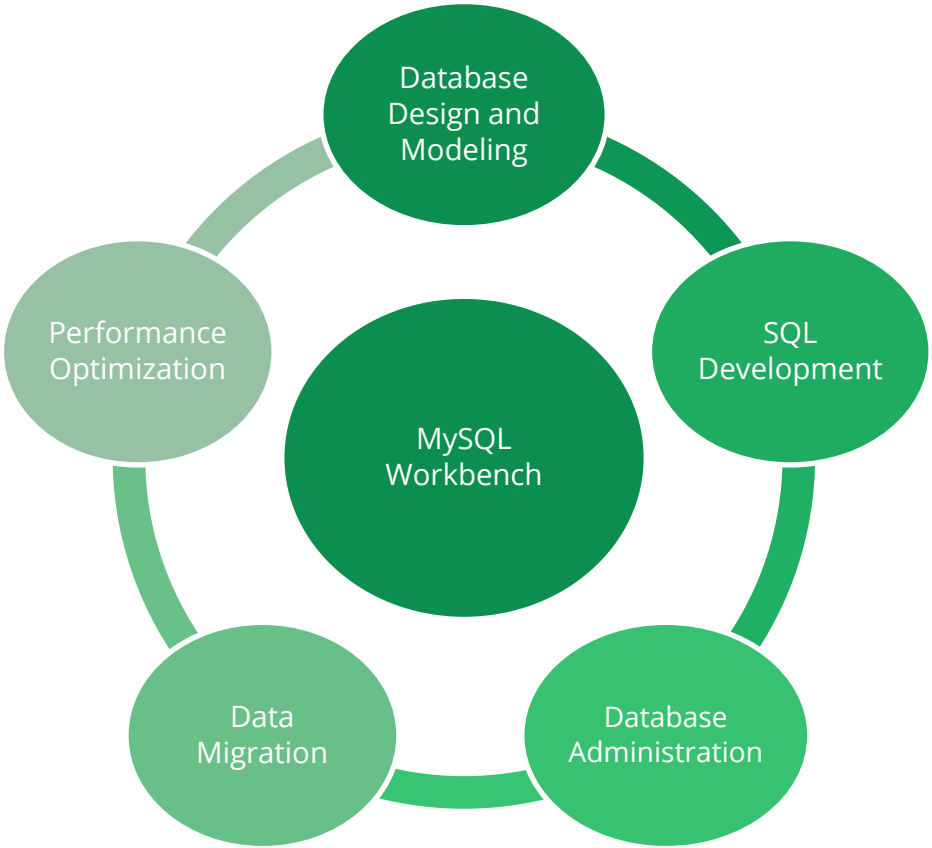
b. Data Manipulation Language (DML)

c. Data Control Language (DCL)

d. Data Query Language (DQL)

Introduction to MySQL Workbench

Introduction to MySQL Workbench



Poll Time

Q. Which of the following statements about MySQL Workbench is true?

a. MySQL Workbench is a command-line tool used for database administration

b. MySQL Workbench is an open-source programming language

c. MySQL Workbench provides a visual interface for designing, managing, and querying MySQL databases

d. MySQL Workbench is specific to a particular operating system and cannot be used on others

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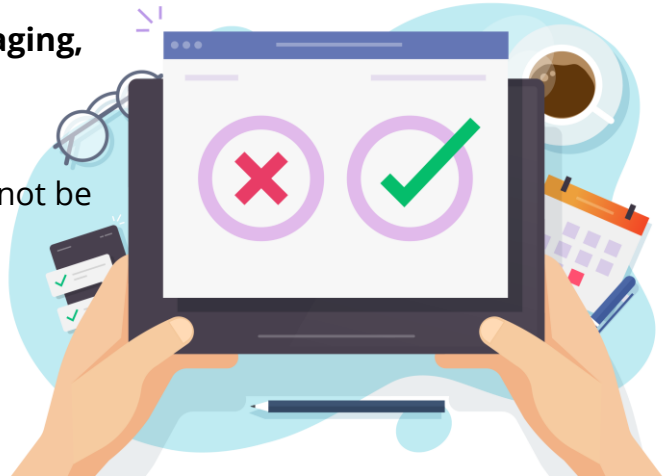


Q&A

Summary

- Utilize Structure Query Language (SQL) for creating and manipulating structured datasets.
- Categorize SQL commands into DDL, DML, DQL, and DCL.
- Employ SQL as the core programming language in MySQL, a Relational Database Management System (RDMS).
- Use MySQL Workbench, an Integrated Development Environment (IDE), for development in MySQL.

Activity 1

Pre-requisites:

- MySQL Workbench

Scenario:

You are getting started with a fresh database connection using MySQL Workbench. Perform the below-mentioned activities.

- Create a new connection named "mysql_practice".
- Sign in to the above connection.
- Open a blank sql script and execute a command to list all the default databases, which is "**SHOW DATABASES;**"

Next Session:
Deep Dive into SQL Queries

THANK YOU

Please complete your assessments and review the self-learning content for this session on the **PRISM** portal.

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Introduction to DDL

Pre-requisites

Hope you have gone through the self-learning content for this session on the PRISM portal.

By the End of this Session, You Will:

- Differentiate between the types of DDL commands.
- Demonstrate the usage of the CREATE command to create databases and tables.
- Utilize the ALTER command to make changes to existing databases and tables.
- Compare and contrast the DROP command with the TRUNCATE and DELETE commands.
- Assess the differences in functionality and outcomes between DROP, TRUNCATE, and DELETE commands.
- Execute the SELECT command to query existing data.

Recap

Pop Quiz

Q. Which of the below commands is not a DDL command?

a. CREATE

b. UPDATE

c. ALTER

d. DROP

Pop Quiz

Q. Which of the below commands is not a DDL command?

a. CREATE

b. UPDATE

c. ALTER

d. DROP

Introduction to DDL

What is DDL?

DDL stands for Data Definition Language, and it consists of SQL commands used to define and manage the structure of database objects.

Different Types of DDL Commands

CREATE

- Used to create database objects, such as tables, views, indexes, functions, procedures, and triggers.

ALTER

- Used to modify the structure of existing database objects, including adding, modifying, or dropping columns, constraints, and indexes.

DROP

- Used to remove or delete existing database objects, such as tables, views, indexes, functions, procedures, and triggers.

RENAME

- Used to rename database objects, such as tables, views, columns, and constraints.

TRUNCATE

- Used to remove all rows from a table, while keeping the table structure intact.

CREATE Command

Purpose and Syntax of CREATE Command

Creating a database

```
CREATE DATABASE
database_name;
```

Creating a table

```
CREATE TABLE table_name (
    column1 datatype,
    column2 datatype,
    ...
    columnN datatype
);
```

Creating a view

```
CREATE VIEW view_name AS
    SELECT column1, column2, ...
    FROM table_name
    WHERE condition;
```

Demo - CREATE Command

Pop Quiz

Q. Which of the following is the correct syntax for creating a table named "employees" with columns "id" (integer), "name" (varchar), and "salary" (decimal) using the CREATE command in SQL?

a. CREATE TABLE employees (id INTEGER, name VARCHAR, salary DECIMAL);

b. CREATE TABLE employees (id INT, name VARCHAR, salary DECIMAL);

c. CREATE employees TABLE (id INT, name VARCHAR, salary DECIMAL);

d. TABLE employees CREATE (id INTEGER, name VARCHAR, salary DECIMAL);

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c. CREATE employees TABLE (id INT, name VARCHAR, salary DECIMAL);

d. TABLE employees CREATE (id INTEGER, name VARCHAR, salary DECIMAL);

ALTER Command

Purpose and Syntax of ALTER Command

Adding a column

```
ALTER TABLE
table_name ADD
column_name
datatype;
```

Modifying the data type of columns

```
ALTER TABLE
table_name ALTER
COLUMN column_name
datatype;
```

Renaming a column

```
ALTER TABLE table_name
RENAME COLUMN
old_column_name TO
new_column_name;
```

Dropping a column

```
ALTER TABLE
table_name DROP
COLUMN
column_name;
```

Adding constraints to columns

```
ALTER TABLE table_name
ADD CONSTRAINT
constraint_name
constraint_type
(column_name);
```

Demo - ALTER Command

Pop Quiz

Q. Which of the following is a valid use of the ALTER command in SQL?

a. Modifying the data in a table

b. Deleting a table from the database

c. Renaming a column in a table

d. Inserting new rows into a table

Pop Quiz

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Q&A

DROP, TRUNCATE, and DELETE Commands

Purpose and Syntax of DROP, TRUNCATE, and DELETE Commands

DROP vs. TRUNCATE vs. DELETE		
DROP is used to remove or delete existing database objects, such as tables, views, indexes, functions, procedures, and triggers.	TRUNCATE is used to remove all rows from a table, while keeping the table structure intact.	DELETE is used to remove rows from a table based on specified conditions.

Demo – DROP, TRUNCATE, and DELETE Commands

Pop Quiz

Q. Which of the following statements about the TRUNCATE command in SQL is true?

a. TRUNCATE can be used to delete specific rows from a table based on a condition

b. TRUNCATE permanently deletes the table structure and all associated data

c. TRUNCATE preserves the table structure while deleting all the associated data

d. TRUNCATE is a DML (Data Manipulation Language) command

Pop Quiz

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c. TRUNCATE preserves the table structure while deleting all the associated data

d. TRUNCATE is a DML (Data Manipulation Language) command

Introduction to SELECT Commands

Purpose and Syntax of SELECT Command

The SELECT command is one of the fundamental commands in SQL, used for retrieving data from one or more tables in a database. It allows you to specify the columns you want to retrieve, apply filters to the data, perform calculations, and sort the results.

Syntax of SELECT command

```
SELECT column1, column2, ... FROM table_name
WHERE condition GROUP BY column(s) HAVING
condition ORDER BY column(s);
```

Purpose and Syntax of SELECT Command

SELECT	Specifies the columns you want to retrieve from the table(s).
FROM	Specifies the table(s) from which you want to retrieve data.
WHERE	Optional clause to filter the data based on specified conditions.
GROUP BY	Optional clause used to group the data based on specified column(s).
HAVING	Optional clause to filter the grouped data based on specified conditions.
ORDER BY	Optional clause to sort the result set based on specified column(s).

Demo – SELECT Command

Pop Quiz

Q. Which of the following is the correct syntax for selecting all columns from a table named "employees" in SQL?

a. SELECT * FROM employees;

b. SELECT columns FROM employees;

c. SELECT ALL FROM employees;

d. SELECT employees;

Pop Quiz

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a. **SELECT * FROM employees;**

b. SELECT columns FROM employees;

c. SELECT ALL FROM employees;

d. SELECT employees;


Q&A

Summary

- DDL commands define and manage the structure of database objects
- DDL commands include CREATE, ALTER, DROP, TRUNCATE, and RENAME commands
- DROP, TRUNCATE, and DELETE have different commands, each with its specific use case.
- SELECT command is used to retrieve data from a table.

Activity 1

Pre-requisites:

- MySQL Workbench

Scenario:

You want to set up a new database for an organization to store information about its employees, projects, and departments.

- Create a database named **company_db**.
- Create a table named **employee** with the below schema:

Emp_id: char(8)	**Emp_name:** varchar(20)	**Dept_no:** integer	**Manager_id:** char(8)	**Salary:** Decimal	**Hire_date:** Date

Session Feedback

THANK YOU

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