Module-4 Database

## What is RDBMS?

* RDBMS (Relational Database Management System) is a database management system based on the relational model. It stores data in tables (rows and columns) and supports the use of SQL (Structured Query Language) for data manipulation. Examples include MySQL, PostgreSQL, and Oracle.

## What is SQL?

* SQL (Structured Query Language) is a standard programming language used to manage relational databases. It is used for querying, updating, and managing data in RDBMS.

## Write SQL Commands

* Here are some basic SQL commands:

1. SELECT
2. INSERT
3. UPDATE
4. DELETE
5. CREATE
6. ALTER
7. DROP
8. JOIN

## What is join?

* JOIN is an SQL operation that combines rows from two or more tables based on a related column between them. The result of a JOIN is a new table with data from the involved tables.

## Write type of joins.

* There are several types of SQL joins:

1. INNER JOIN
2. LEFT JOIN (LEFT OUTER JOIN)
3. RIGHT JOIN (RIGHT OUTER JOIN)
4. FULL JOIN (FULL OUTER JOIN)
5. CROSS JOIN

## How Many constraints and describe it?

* There are several types of constraints in SQL:

1. NOT NULL
2. UNIQUE
3. PRIMARY KEY
4. FOREIGN KEY
5. CHECK
6. DEFAULT

## Difference between RDBMS vs DBMS

|  |  |  |
| --- | --- | --- |
| **Feature** | **RDBMS (Relational**  **Database Management System)** | **DBMS (Database**  **Management System)** |
| **Definition** | An RDBMS is a type of DBMS that stores data in a structured format, using tables (rows and columns) and relationships between them. | A DBMS is a software that manages databases. It can store data in various formats, not necessarily in tables. |
| **Data Storage** | Data is stored in tables with rows and columns, based on the relational model. | Data can be stored in various formats, such as hierarchical, network, or flat files. |
| **Data Integrity** | RDBMS enforces data integrity using primary keys, foreign keys, and constraints. | DBMS may not have the same level of data integrity enforcement as RDBMS. |
| **Normalization** | RDBMS supports data normalization (breaking down large tables into smaller ones) to reduce redundancy. | DBMS may or may not support normalization; it depends on the system. |
| **Relationships** | RDBMS supports relationships between tables (e.g., one-to-many, many-to-many). | DBMS may not support relationships between tables in the same way as RDBMS. |
| **Transaction Management** | RDBMS supports ACID  (Atomicity, Consistency, Isolation, Durability) properties for transactions. | DBMS may not support ACID properties for transaction management. |
| **Query Language** | RDBMS uses SQL  (Structured Query  Language) to interact with the data. | DBMS may use proprietary or non-standard query languages. |
| **Examples** | MySQL, PostgreSQL, Oracle, SQL Server, SQLite, etc. | File system-based DBMS, XML databases, etc. |
| **Scalability** | RDBMS can be scaled horizontally or vertically to handle larger datasets. | DBMS may not handle large  datasets efficiently compared to RDBMS. |
| **Complexity** | RDBMS is more complex due to relational data structures and the need for relationships. | DBMS is simpler but less efficient for complex, relational data handling. |

## What is an SQL alias?

* An SQL alias is a temporary name given to a table or column for the purpose of a query. It simplifies queries and makes them easier to read.

## Write a query to create the table in Structured Query Language.

* CREATE TABLE Students (

StudentID INT PRIMARY KEY,

Name VARCHAR (100),

Age INT,

Grade VARCHAR (2)

);

## Write a query to insert data into table.

* INSERT INTO Students (StudentID, Name, Age, Grade) VALUES (1, 'Ankit', 20, 'A');

## Write a query to update data into table with validations.

* UPDATE Students SET Grade = 'B'

WHERE StudentID = 1;

IF NOT EXISTS (SELECT \* FROM Students WHERE StudentID = 1) THEN

PRINT 'Record not found'; END

## Write a query to delete data from table with validations.

* DELETE FROM Students

WHERE StudentID = 1;

IF NOT EXISTS (SELECT \* FROM Students WHERE StudentID = 1) THEN

PRINT 'Record not found'; END

## Write a query to insert new column in existing table.

* ALTER TABLE Students

ADD Email VARCHAR(100);

## Write a query to drop table and database.

* DROP TABLE Students;

DROP DATABASE School;

## Write a query to find max and min value from table.

* SELECT MAX(Age) AS MaxAge, MIN(Age) AS MinAge FROM Students;

## Create two tables named Seller and Product apply foreign key in product table. Fetch data from both tables using different joins.

CREATE TABLE Seller (

SellerID INT PRIMARY KEY,

SellerName VARCHAR(100)

);

CREATE TABLE Product (

ProductID INT PRIMARY KEY,

ProductName VARCHAR(100),

SellerID INT,

FOREIGN KEY (SellerID) REFERENCES Seller(SellerID)

);

SELECT Product.ProductName, Seller.SellerName

FROM Product

JOIN Seller ON Product.SellerID = Seller.SellerID;

## What is API Testing?

* API Testing is a software testing type that focuses on verifying the functionality, reliability, and performance of application programming interfaces (APIs). It ensures that APIs work as intended, providing the expected output for a given input.

## Types of API Testing

* Types of API Testing include:

1. Functional Testing
2. Security Testing
3. Load Testing
4. Reliability Testing
5. Performance Testing
6. Validation Testing

## What is Responsive Testing?

* Responsive Testing is the process of ensuring that a website or application functions and displays correctly across different devices and screen sizes. It checks for layout adjustments, usability, and overall user experience on various screen resolutions.

## Which types of tools are available for Responsive Testing?

* Some tools for Responsive Testing include:

1. Browser Developer Tools
2. Browser Stack
3. Responsinator
4. Google Chrome Dev Tools
5. Selenium

## What is the full form of IPA, .APK?

* The full form of IPA is iOS App Store Package, and the full form of .APK is Android Package Kit.

## How to create steps to open the developer option mode ON?

* To enable Developer Options on an Android device:

1. Go to 'Settings'.
2. Scroll down and select 'About phone'.
3. Tap on 'Build number' 7 times.
4. Developer Options will be unlocked and can be accessed from 'Settings' > 'Developer options'.