# **Module – 3**

1. What is RDBMS

A relational database is a type of database that stores and provides access to data points that are related to one another. Relational databases are based on the relational model, an intuitive, straightforward way of representing data in tables. In a relational database, each row in the table is a record with a unique ID called the key. The columns of the table hold attributes of the data, and each record usually has a value for each attribute, making it easy to establish the relationships among data points.

RDBMS stands for Relational Database Management System. It is an information management system that is oriented on a data model. Here all the information is properly stored as tables. RDBMS Example systems are SQL Server, Oracle, MySQL, MariaDB, and SQLite.

1. What is SQL?

SQL stands for Structured Query Language which is basically a language used by databases. This language allows to handle the information using tables and shows a language to query these tables and other objects related (views, functions, procedures, etc.). Most of the databases like SQL Server, Oracle, Postgre SQL, MySQL, MariaDB handle this language (with some extensions and variations) to handle the data.

With SQL you can insert, delete, and update data. You can also create, delete, or alter database objects.

Structured Query Language (SQL) is a standardized programming language that is used to manage relational databases and perform various operations on the data in them.

1. Write SQL commands

* DDL (Data Definition Language):

DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in the database. DDL is a set of SQL commands used to create, modify, and delete database structures but not data. These commands are normally not used by a general user, who should be accessing the database via an application.

List of DDL commands:

CREATE: This command is used to create the database or its objects (like table, index, function, views, store procedure, and triggers).

DROP: This command is used to delete objects from the database.

ALTER: This is used to alter the structure of the database.

TRUNCATE: This is used to remove all records from a table, including all spaces allocated for the records are removed.

COMMENT: This is used to add comments to the data dictionary.

RENAME: This is used to rename an object existing in the database.

* DQL (Data Query Language):

DQL statements are used for performing queries on the data within schema objects. The purpose of the DQL Command is to get some schema relation based on the query passed to it. We can define DQL as follows it is a component of SQL statement that allows getting data from the database and imposing order upon it. It includes the SELECT statement. This command allows getting the data out of the database to perform operations with it. When a SELECT is fired against a table or tables the result is compiled into a further temporary table, which is displayed or perhaps received by the program i.e. a front-end.

List of DQL:

SELECT: It is used to retrieve data from the database.

* DML(Data Manipulation Language):

The SQL commands that deals with the manipulation of data present in the database belong to DML or Data Manipulation Language and this includes most of the SQL statements. It is the component of the SQL statement that controls access to data and to the database. Basically, DCL statements are grouped with DML statements.

List of DML commands:

INSERT : It is used to insert data into a table.

UPDATE: It is used to update existing data within a table.

DELETE : It is used to delete records from a database table.

LOCK: Table control concurrency.

CALL: Call a PL/SQL or JAVA subprogram.

EXPLAIN PLAN: It describes the access path to data.

* DCL (Data Control Language):

DCL includes commands such as GRANT and REVOKE which mainly deal with the rights, permissions, and other controls of the database system.

List of DCL commands:

GRANT: This command gives users access privileges to the database.

REVOKE: This command withdraws the user’s access privileges given by using the GRANT command.

* TCL (Transaction Control Language):

Transactions group a set of tasks into a single execution unit. Each transaction begins with a specific task and ends when all the tasks in the group successfully complete. If any of the tasks fail, the transaction fails. Therefore, a transaction has only two results: success or failure. You can explore more about transactions here. Hence, the following TCL commands are used to control the execution of a transaction:

COMMIT: Commits a Transaction.

ROLLBACK: Rollbacks a transaction in case of any error occurs.

SAVEPOINT: Sets a save point within a transaction.

SET TRANSACTION: Specifies characteristics for the transaction.

1. What is join

SQL join statements allow us to access information from two or more tables at once. They also keep our database normalized. Normalization allows us to keep data redundancy low so that we can decrease the amount of data anomalies in our application when we delete or update a record.

1. Write types of join.

* INNER JOIN: The INNER JOIN keyword selects all rows from both the tables as long as the condition is satisfied. This keyword will create the result-set by combining all rows from both the tables where the condition satisfies i.e value of the common field will be the same.
* LEFT JOIN: This join returns all the rows of the table on the left side of the join and matches rows for the table on the right side of the join. For the rows for which there is no matching row on the right side, the result-set will contain null. LEFT JOIN is also known as LEFT OUTER JOIN.
* EIGHT JOIN: RIGHT JOIN is similar to LEFT JOIN. This join returns all the rows of the table on the right side of the join and matching rows for the table on the left side of the join. For the rows for which there is no matching row on the left side, the result-set will contain null. RIGHT JOIN is also known as RIGHT OUTER JOIN.
* FULL JOIN: FULL JOIN creates the result-set by combining results of both LEFT JOIN and RIGHT JOIN. The result-set will contain all the rows from both tables. For the rows for which there is no matching, the result-set will contain NULL values.

1. How many constraint and describes it self.

constraints is a vital attribute in real-time systems. Timing constraints decides the total correctness of the result in real-time systems. The correctness of results in real-time system does not depends only on logical correctness but also the result should be obtained within the time constraint. There might be several events happening in real time system and these events are scheduled by schedulers using timing constraints.

1. Performance Constraints :

The constraints enforced on the response of the system is known as Performance Constraints. This basically describes the overall performance of the system. This shows how quickly and accurately the system is responding. It ensures that the real-time system performs satisfactorily.

2. Behavioral Constraint :

The constraints enforced on the stimuli generated by the environment is known as Behavioral Constraints. This basically describes the behavior of the environment. It ensures that the environment of a system is well behaved.

The both performance and behavioral constraints are classified into three categories: Delay Constraint, Deadline Constraint, and Duration Constraint. These are explained as following below.

1. Difference between RDBMC vs DBMC

|  |  |
| --- | --- |
| **RDBMS** | **DBMS** |
| Data stored is in table format | Data stored is in the file format |
| Multiple data elements are accessible together | Individual access of data elements |
| Data in the form of a table are linked together | No connection between data |
| Normalisation is not achievable | There is normalisation |
| Support distributed database | No support for distributed database |
| Data is stored in a large amount | Data stored is a small quantity |
| Here, redundancy of data is reduced with the help of key and indexes in RDBMS | Data redundancy is common |
| RDBMS supports multiple users | DBMS supports a single user |
| It features multiple layers of security while handling data | There is only low security while handling data |
| The software and hardware requirements are higher | The software and hardware requirements are low |
| Oracle, SQL Server. | XML, Microsoft Access. |

1. What is API testing?

API TESTING is a software testing type that validates Application Programming Interfaces (APIs). The purpose of API Testing is to check the functionality, reliability, performance, and security of the programming interfaces. In API Testing, instead of using standard user inputs(keyboard) and outputs, you use software to send calls to the API, get output, and note down the system’s response. API tests are very different from GUI Tests and won’t concentrate on the look and feel of an application. It mainly concentrates on the business logic layer of the software architecture.

1. Types of API testing

1. Functional Testing:

The very first API testing type on the list falls under the black-box testing category. This type of testing bases its test cases on the specifications of the software component under test; meaning that there is a test of specific functions within the codebase that stand for specific scenarios. These functions are designed for the sole purpose of monitoring whether the API is behaving as it is expected to.

They also help ensure that the deviations, if any, are dealt with in a timely and effective manner. In its truest sense, functional testing is a quality assurance process where functions are tested by feeding them input and examining the output.

2. UI Testing:

As the name clearly suggests, UI testing is a specific process of ensuring the smooth functioning of the user interface. Often used as an alternative for functional testing, UI testing has more to do with the user interface associated with the API rather than the API in terms of the codebase. The main objective of this test is to provide developers with a quick analysis of the usability, efficiency, and functionality of both the front-end and the back-end.

Despite the fact that it makes for a viable alternative for functional testing, it is highly recommended that UI testing should be used only for testing functions related to the user interface, and should be treated as a subset during functional testing.

3. Runtime & Error Detection:

Most testing types like Functional testing and Validation testing involve analyzing the API behavior in the given environments or scenarios. On the other hand, runtime and error detection testing only concern itself with monitoring the actual running of the API. It enables the developers to identify the potential defects that are detected during execution.

When implemented with utmost precision, the test can provide accurate results in terms of bug detection. These tests are your best bet when it comes to exposing critical bugs by focusing on specific aspects like monitoring, error detection, execution errors, and any possible leaks.

4. Load Testing:

This non-functional testing helps determine the performance of a software application or product. This test is carried out at the end of the completion of the codebase that brought the product into being. The software application is released in real-time environments where a number of users can test it at the same time.

To ensure enhanced effectiveness, load testing simulates different scenarios for testing the application and upgrading it to its highest potential. These tests help the developer understand the operating capability of the application, study the sustainability of the application when multiple users are using it, and determine the application’s capacity to scale in order to accommodate more users.

5. Security Testing:

One of the most critical testing types, Security Testing brings the weak links, loopholes, threats, and possible risks in a software application to the developers’ attention. The tests also help prevent harmful attacks from external threats. If not identified and rectified in time, these threats can lead to the leak of valuable information, revenue, and the very reputation of the organization.

When done correctly, security testing can combat the threats so that the system functions smoothly without external interference. After the detection of these vulnerabilities, developers can fix them and strengthen the application via coding.

6. Validation Testing:

Validation testing is one of the last processes that are carried out during the test cycle of a software application. It is conducted after verification of the API’s constituent parts and functions, at the end of the development process.

When it comes to effective validation testing, here are a few things developers must consider – has the product been built in accordance with the project specifications? Is the API an accurate and efficient method of doing what is required? Can any modifications be made to the existing codebase in order to optimize the performance of the software product? This set of basic questions is quite important to the successful execution of any and every application.

1. What is responsive testing?

Responsive testing is a process that renders web pages on viewports of multiple devices using CSS media queries based on the user device where the website is accessed. In simple terms, responsive testing ensures how responsive web design is optimized well for all types of screen sizes and resolutions. A business that owns a website that works well on all screen sizes, has more chances of capturing the user base and remains ahead of the competition. There are several components of responsive web design like flexible layout design, media queries, media and typography which are taken care of while designing the website. Responsive design involves the practice of building flexible layouts using flexible grids. It allows auto-adjusting the size whenever the website dynamics like width, margins, length, etc., change. No matter how easy it may seem, incorporating responsive design in an ongoing project is quite difficult. It is better to follow its guidelines before starting any project.

1. Which types of tools are available for responsive testing

LT Browser Lembda testing

Google Resizer I am responsive

Pixel tuner

1. What is full fromof:

.ipa : ios app store package

.apk : Android Application Package

1. How to creat step for to open the developer option mode ON?

Step 1: Go to Settings > About Phone.

Step 2: Tap Software Info > Build Number.

Step 3: Developer Options > developer option ON

**MODUL - 4**

1. Which components have you used in load runner?

Load Generator - It is used to generate the load against the application by running the script.

VuGen - It is used for generating and editing scripts.

Controller - It is used to control, launch, and sequence the instance of a Load Generator.

Agent Process - It is used to manage the connection between the Controller and Load Generator instances.

Analysis - It assembles the logs from different load generators and formats the reports for visualization of results and monitoring data.

1. How can you set the number of Vuser in load runner?

You can set the number of Vusers in the controller section while creating your scenarios. Many other advanced options like ramp-up, ramp-down of Vusers are also available in the Controller section.

1. What is correlation?

The word correlation is used in everyday life to denote some form of association. We might say that we have noticed a correlation between foggy days and attacks of wheeziness. However, in statistical terms we use correlation to denote association between two quantitative variables.

1. What is the process for developing a vuser script?

recording the vuser script

edit the vuser script

runtime setting

run the vuser script in stand-alone mode

incorporate the vuser script into a load runner scenario.

1. How load runner interacts with the application?

Protocol is used in Load Runner to interact with the application.

1. How many Vuser are required for load testing?

The number of VUsers required depends on your system under test, network configurations, hardware settings, memory, operating system, software applications objective of a performance test. There can not be any generic value for Vuser.

1. What is the relationship between Response time and throughput?

The configuration of our systems refers to that of the client machines on which we run the Vusers. The configuration of any client machine includes its hardware settings, memory, operating system, software applications, development tools, etc. This system component configuration should match with the overall system configuration that would include the network infrastructure, the web server, the database server, and any other components that go with this larger system so as to achieve the load testing objectives.

1. What is the difference between hits/second and requests/second?

Hits per sec is the number of calls to the Webserver per second.

And Request per sec is the number of request made to the webserver per second.

Point to be notice here is "one Request may have many calls(Hits)".

1. What is the automation testing?

Automation testing is a Software testing technique to test and compare the actual outcome with the expected outcome. This can be achieved by writing test scripts or using any automation testing tool. Test automation is used to automate repetitive tasks and other testing tasks which are difficult to perform manually.

1. Which are the browser supported by selenium Ide?

Selenium IDE has add-ons for Firefox and Chrome browsers. Selenium IDE comes with a rich set of commands that are powered by Selenese and it allows you to record and test different interactions of a web application with the browser.

1. What are the advantage of selenium?

1) Selenium is free and open-source software.

2) Selenium supports a variety of programming languages for creating programmes (Test scripts)

3) Selenium is compatible with a variety of operating systems (MS Windows, Linux, Macintosh etc.

4) Selenium works with a variety of browsers (Mozilla Firefox, Google Chrome, IE, Opera, Safari)

5) Parallel test execution is supported by Selenium.

6) Selenium consumes less hardware.

1. Why tester should opt for selenium and not QTP?

Selenium is an open source whereas QTP is a commercial tool

Selenium is used specially for testing web based applications while QTP can be used for testing client server application also

Selenium supports Firefox, IE, Opera, Safari on operating systems like Windows, Mac, Linux etc. however QTP is limited to Internet Explorer on Windows.

Selenium supports many programming languages like Ruby, Perl, Python whereas QTP supports only VB script