**Database Testing using selenium (Including Database concepts and sql)**

* **Database Testing -**Validating whether the data displaying on the User Interface is matching the data that is stored in the database.

Examples:Adding a new user from UI, should add a new record with the same user details under the tables say users table in DBUpdating a new user, should update the details stored in DB along with displaying the updated details on UI.

* **Database** - Database is a collection of related data.

Example for related data: Employee Data like Employee ID, Employee Name, Employee Location, Employee Experience etc. can be stored in Database.

* **Database Management System** - Software that stores data in databases in an organized way to make it easier to create, retrieve, update etc.

Examples:  MySQL, Oracle, MangoDB, MariaDB, SQLite, Cassandra and many more (Google Search - dbms software list)

* **Data Models** - define how data is connected to each other and stored inside the system.

Types of Data Models - Hierarchical Model, Network Model, Entity-Relationship Model and Relational Model

**Relational Model**s popular and widely used by most of the DBMS

DBMS using Relational Data Models are known as RDBMS

Data is stored in the form of tables (Tables organize data in the form of columns and rows) Provide an example (Employee Data)

* **SQL**  - Programming language for Relational Databases

Stands for Structured Query LanguageSince SQL is for Relational Databases, it comes as a default feature in the RDBMS software like Oracle, MySQL etc.

The following things can be performed on Database using SQL:

* Retrieving the data from Database
* Inserting new data into Database
* Modifying existing data in Database
* Deleting existing data in Database
* Creating new Databases
* Creating new tables inside Databases
* Deleting tables and databases and many more

So far explained commands will be enough for understanding/practicing the Database Testing using Selenium If you still want to practice more on SQL, refer to the below website:<https://www.w3schools.com/sql/>

**Database Testing using Selenium (Continued) - Java Database Connectivity (JDBC)**

In this session, I will explain how to connect to Database from Java Programs. Follow the below steps:

* Install Database in our local machine and start it

Download XAMPP from here and install it - <https://www.apachefriends.org/download.html>

Launch XAMPP and Start MySQL Relational Database Software which comes by default with XAMPP

* Open command prompt from C:/XAMPP/mysql/bin folder, to MySQL database system and trigger different SQL statements given below:
* Connect to Database System using - **mysql -u root**
* root is the default username of database
* Close the command prompt and relaunch it from C:/XAMPP/mysql/bin folder
* Provide a password to the Database System using - **mysqladmin.exe -u root password root**
* Now connect to Database using - **mysql -u root –p**
* When prompted for password type root and press Enter

View the default databases inside the MySQL using - **show databases;**

Create a new database in MySQL using - **create database db;**

Confirm its creation using **show databases;**

Pick the newly created database using - **use db;**

View the tables inside the db database using - **show tables;**

Create a new table using - **create table Employee(Name VARCHAR(50), Location VARCHAR(50), Experience INTEGER);**

Confirm its creation using **show tables;**

View the records inside the table using - **select \* from Employee;**

Observe that you will see no records

Insert the new records into the table using:

**Insert into Employee values('Ravikanth','Hyderabad',10);**

**Insert into Employee values('Gopal','Bangalore',8);**

**Insert into Employee values('Teja','Pune',3);**

Confirm new records insertion using **select \* from Employee;**

* Executing the SQL statements from Java Programs using JDBC

Create a new Maven Project say 'JDBCDemo'

Add the dependency tags of mysql connect into the pom.xml file - <https://mvnrepository.com/artifact/mysql/mysql-connector-java>

Create a new Class say 'Demo' with main method inside it and write the code for connecting to database using JDBC -

Restructure the code using try catch blocks -

Clear the deprecation messageTrigger prepared statements from Java programs -

In real time, we may be creating a new user from the UI of the application using Selenium and retrieve the values of the newly created user from the database and compare whether the details are matching with DB.