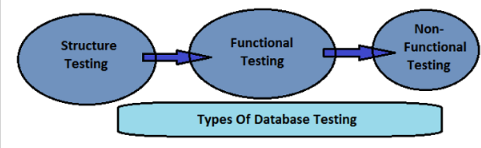
**Structural Database Testing**

Structural database testing is mainly used for verifying those components of database that are not exposed to the end users. This involves all the components of repository which can be used to store the data and that are not changed by the end users. Database administrators with a good command over the SQL stored procedures and other required concepts normally perform this type of testing.

The following are the common components that are tested with respect to the Structural Testing.

**Schema / Mapping Testing**

This involves validating of the objects of the front-end application along with database object mapping.



In Schema Testing

* Sometimes the end user application objects are not correctly mapped or cannot be compatible with database objects. Therefore, we need to check the validation of various schema formats that are associated with the databases.
* Therefore, we need to find the unmapped objects in database, like tables, views, columns which are required.
* To perform object mapping in schemas there are various tools in the market that can be used

**Example:** In the Microsoft SQL Server, a tester will be able to write simple queries and to check and validate schemas in the database.

To make changes to the table structure the tester wants to make changes, he/she should ensure that all the stored procedures at that table are compatible with this change.

Stored Procedures and Views Testing

In this type of testing, a tester need to ensure that the manual execution of the stored procedures and also the views generate the required result.

The tester ensures:

* If it can enable the required triggers to be executed as expected.
* If any unused stored procedures are present in the database.
* Whether the development team has covered all of the loops and conditions by passing the input to applications in the procedures.
* If the TRIM operations are applied properly when the data is fetched from required tables in the databases.
* Check the validation of the overall integration of the stored procedure modules as per the given requirements of the application under test.
* Error handling and exception mechanisms are followed.

The most frequently tools that are used to perform stored procedures testing are LINQ, SP TEST TOOL etc.

Trigger Testing

In the trigger testing, a tester needs to ensure the below mentioned objectives:

* If the coding conventions are followed during the coding phase of the triggers.
* If the trigger updates the given data correctly once they have been executed.
* Validation of the Update/Insert/Delete triggers functionality with respect to application under test.
* See if the triggers executed meets the given conditions.

Tables and Column testing

The key areas covered in this type of testing are:

* Validation of the data types in the database to field values in the front-end application.
* Validation of the length of data field in the database to the length of data types in the given application.
* Check if there are any unmapped tables or columns in the database from the application field objects.
* Naming the conventions of the database tables and columns which are verified, if they are in accordance with the business requirement or not.
* Validation of the Keys and Indexes in the given database, that is the primary and foreign keys in the tables are defined as per requirement.
* Checking if the primary keys and their corresponding foreign keys are same in the two tables.
* Check whether the Unique and NOT NULL characteristics of keys are maintained.
* Length and the data type of the keys and indexes are maintained as per requirement.

Database Server Check

Database Server check involves the following verification:

* Whether the database server can handle the expected number of transactions as per the business requirement.
* Whether the configuration details of database servers meet the business requirement.
* Whether the user authorization is maintained as per the requirement.