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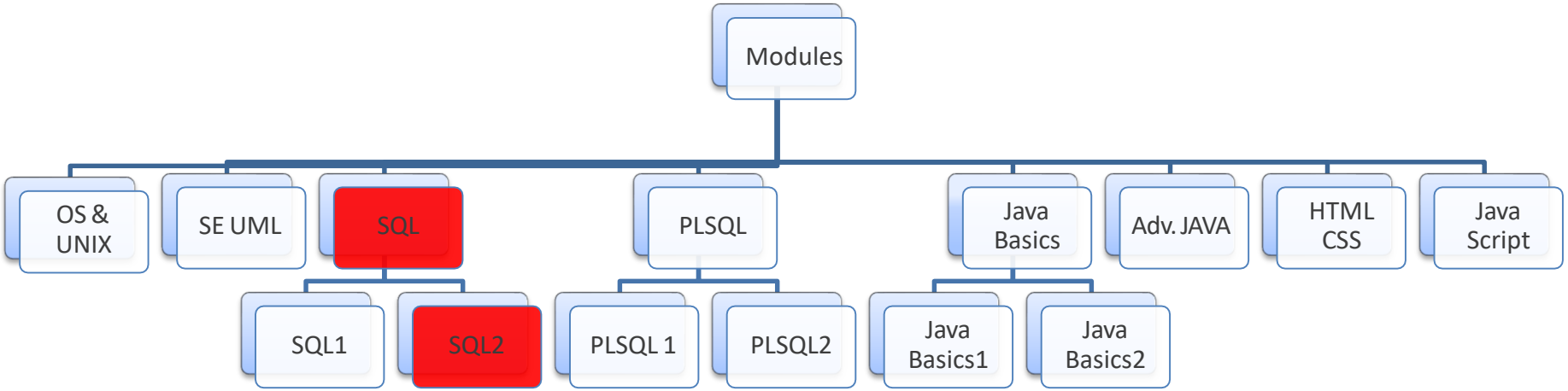
Accelerating Business Outcomes

SQL-Part 2

Module Overview

The following module hierarchy presents the technical modules required to build the basic IT skills and acquaints you with relevant technology basics.

The current module – **SQL 2**(highlight in red) underwrites Basics of SQL 2 and will enable you to enhance one's query writing skills.



* **Recommended duration: 10 hours**

Module Objectives

By the end of this module, you will be able to:

- Create and Alter Tables
- Manage Table Constraints
- Manipulate Data using DML
- Control Data Transactions using TCL
- Grant and Revoke privileges using DCL
- Manage other schema objects like view, Sequence and Index

Tables - Create and Alter Tables

What is Schema ?

A schema is the collection of multiple database objects, which are known as schema objects. These objects have direct access by their owner schema.

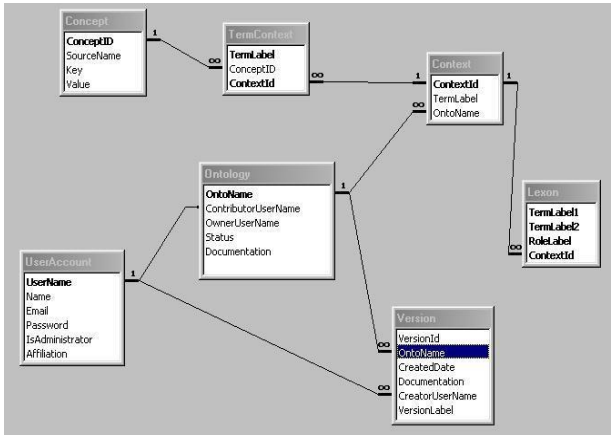
Below table lists the schema objects.

- **Table** - To store data
- **View** - To project data in a desired format from one or more tables
- **Sequence** - To generate numeric values
- **Index** - To improve performance of queries on the tables
- **Synonym** - Alternative name of an object

One of the first steps in creating a database is to create the tables that will store an organization's data.

Database design involves identifying system user requirements for various organizational systems such as order entry, inventory management, and accounts receivable.

Regardless of database size and complexity, each database is comprised of tables.



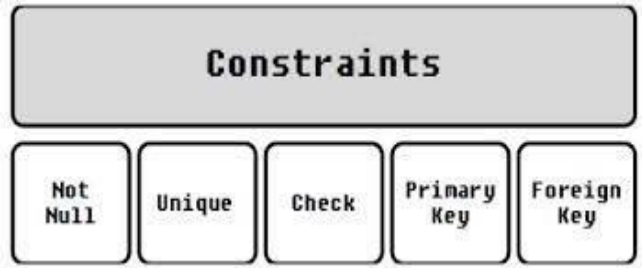
References	• http://www.tutorialspoint.com/sql_certificate/using_ddl_statements.htm

Constraints - Manage Table Constraints

What is Constraint ?

Constraints are the set of rules defined in Oracle tables to ensure data integrity. These rules are enforced and placed for each column or set of columns. Whenever the table participates in data action, these rules are validated and raise exception upon violation.

The available constraint types are NOT NULL, Primary Key, Unique, Check, and Foreign Key.



Syntax :

```
column [data type] [CONSTRAINT constraint_name] constraint_type
```

References

- http://www.tutorialspoint.com/plsql/plsql_basic_syntax.htm

DML - Manipulate Data using DML

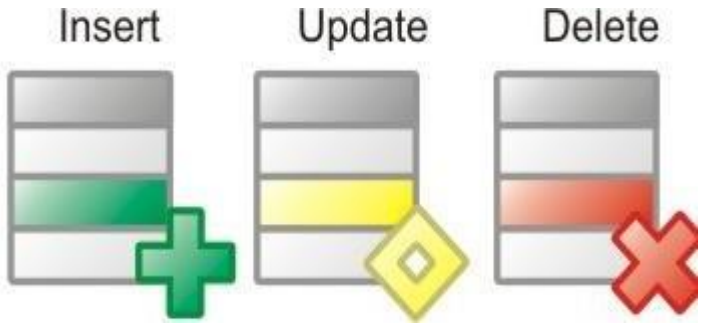
Oracle provides Data Manipulation Language (DML) commands to exercise data operations in the database.

Data operations can be populating the database tables with the application or business data, modifying the data and removing the data from the database, whenever required.

Besides the data operations, there are set of commands which are used to control these operations. These commands are grouped as Transaction Control Language.

There are three types of DML statements involved in a logical SQL transaction namely Insert, Update, Delete and Merge.

A transaction is the logical collection of DML actions within a database session.



References

- http://www.tutorialspoint.com/sql_certificate/manipulating_data.htm

TCL - Control Data Transactions using TCL

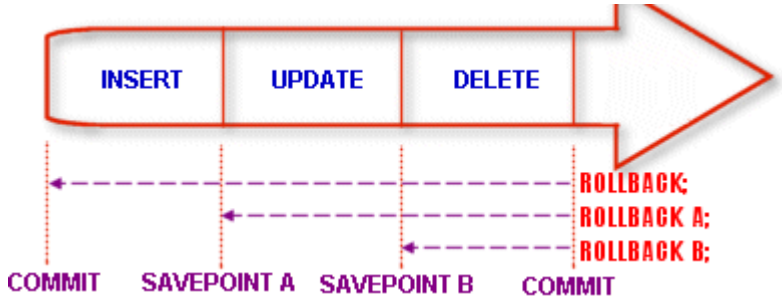
TCL in Oracle is the acronym of Transaction Control Language. TCL in Oracle is used to control a transaction and its behavior.

A transaction is a set of SQL statements which Oracle treats as a Single Unit. i.e. all the statements should execute successfully or none of the statements should execute.

To control transactions, Oracle does not make permanent DML statements unless you commit it. If you don't commit the transaction and power goes off or system crashes, then the transaction is roll backed.

Oracle has 3 different commands that control a transaction. They are:

1. Commit
2. Savepoint
3. Rollback



References

- http://www.oracle-dba-online.com/sql/commit_rollback_savepoint.htm

DCL - Grant and Revoke privileges using DCL

Data Control Language Statements are used to grant privileges on tables, views, sequences, synonyms, procedures to other users or roles.

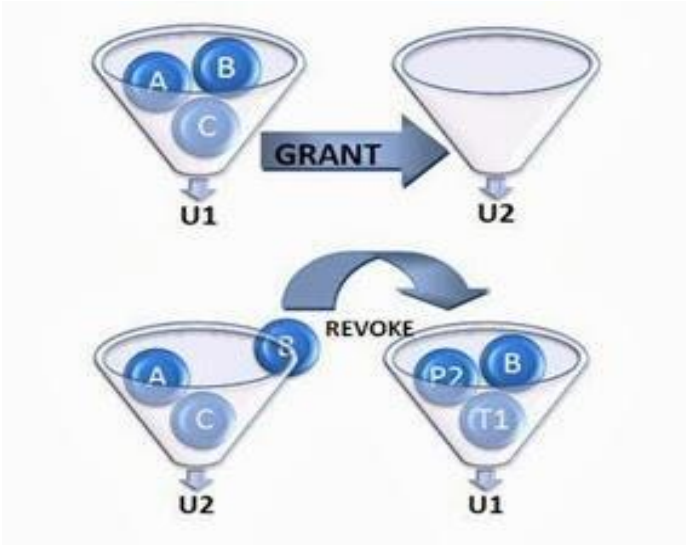
The DCL statements are:

- GRANT: Use to grant privileges to other users or roles
- REVOKE: Use to take back privileges granted to other users and roles

Privileges are of two types:

1. System Privileges
2. Object privileges

- **System Privileges** are normally granted by a DBA to users. Examples of system privileges are CREATE SESSION, CREATE TABLE, CREATE USER etc.
- **Object privileges** means privileges on objects such as tables, views, synonyms, procedure. These are granted by owner of the object.



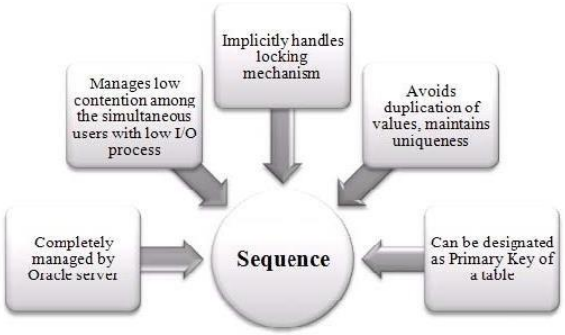
References

- http://beginner-sql-tutorial.com/sql-grant-revoke-privileges-roles.htm

Schema Objects - Manage other schema objects

Apart from tables, other essential schema objects are view, sequences, indexes and synonyms.

- **View** is a logical or virtual table.
- **Synonyms** are simply alias names for database object. Synonyms also simplify query writing and provide an element of system security by disguising the actual name of a database object.
- **Sequences** are special database objects that support the automatic generation of integer values, and are often used to generate primary key values for tables.
- **Indexes** are created on table columns to facilitate the rapid retrieval of information from tables.



References

- http://www.tutorialspoint.com/sql_certificate/creating_other_schema_objects.htm

Additional References

To explore more on the subject, refer the below links and books:

Links:

https://docs.oracle.com/cd/E11882_01/server.112/e41084.pdf http://www.oracle-dba-online.com/sql/oracle_sql_tutorial.htm

Books:

- Oracle Database 11g SQL by Jason Price

Self Check?

Instructions to write Self Evaluation Sheet:

Open the excel sheet, refer SQL Part 2 sheet, write down the solutions for all questions, save a local copy in your machine.

Lab Assignment

- Refer ***Assignment Document*** for this module to proceed with **Lab Assignment.**
- Do **submit the Solutions** for the given assignment and refer the ***Participant guide*** for submission procedure.

Module Summary

Now that you have completed this module, you will be able to:

- Create the table and Alter the table values.
- Accomplish the Constraints of table.
- Perform data operations using DML.
- Regulate the Data Transactions using TCL.
- Grant and Revoke privileges using DCL.
- Manage other schema objects like view, Sequence & Index.

Thank you!