**SQL Notes**

-Set of statements that all programs and users use to access data in Oracle Database; used to talk to RDBMS.

Datatypes:

NUMBER

VARCHAR2

DATE

BLOB

CLOB

TIMESTAMP

Schema- Collection of logical structures of data or schema objects.

Database Objects:

Constraints

* Primary Key
* Foreign Key
* Default
* Index
* Not Null
* Unique
* Check

Triggers – Operation to execute on CRUD

Procedures

Indexes

Object Tables

Object Views

Functions -\*Can only select

Procedures- Can do transactions.

Sequences

Tables and Views

Operators:

\*Multiplication

+Addition

-Subtraction

/Division

|| Concatenation

SQL Sub Languages

DDL- Data Definition Language; Used to create schema; defining things

CREATE- Make objects

ALTER- Modify a table

DROP – Remove object

TRUNCATE- Reset tables

RENAME – Rename a column

DML- Data Manipulation Language: CRULD; Used to update, add or remove data

C- INSERT

R- SELECT

U-UPDATE

D- DELETE

TCL- Transaction Control Language: Commit and restore data.

COMMIT-A transaction; permanent change to DB

ROLLBACK

SAVEPOINT

DQL – Data Query Language: Read in CRUD: Retrieve data.

R in CRUD

DCL – Data Control Language; Permissions used by DBA

GRANT

REVOKE

Normalization- Reduce data redundancy.

1st NF- Every column is atomic (Simplest form).

2nd NF- 1st NF + Remove partial dependencies (Only an issue if you have composite keys; one column relies on one column of composite key).

3rd NF- 2nd NF + Remove transitive dependencies (Column indirectly relate to primary key).

**JDBC**

-Java Database Connectivity; Application Programming Interface that allows client to access databases using Java.

-Uses a driver manager and database specific drivers to provide connectivity to database.

-JDBC driver manger ensures that the correct driver is used to access each data source.

-Driver: Interface that handles the communications with he database server.

Connection- Interface that has methods for contacting a database; any communication must be through connection

Statement- Use objects form this interface to submit SQL statements.

ResultSet- Objects that hold data retrieved from database after execution query.

SQLException- Exception that handles any errors that occur in database application.

**Creating JDBC Application**

1. Import the necessary packages. Java.sql\*.
2. Register the JDBC driver. -initialize a driver so that you can open a communication channel.

–JAR: Java Archive, Multiple compiled.class files into one executable file.

1. Open a connection.

What is required for a connection?

1. URL to DB

jdbc : oracle : thin: (URL for DB): port number: ORCL

1. Username for DB.
2. Password for DB.
3. Driver
4. Execute a query
5. Get data from result set
6. Close connection.

Connection.close();

Statement- Used for general purpose access to DB. Poor readability. Can have SQL interjections.

Statement = connection. getStatement();

Prepared Statement – Accepts input parameters at runtime; USE INSTEAD OF STATEMENTS.

Prepared Statement = connection.prepareStatement():

Callable Statements – Used to invoke stored procedures.

Callable Statement = connection.prepareCall();

? – Known as the parameter marker. Values must be supplied before sql execution. Ordinal position starts at 1.

* Boolean execute(sql): use for DDL;
* Int execute Update (sql): use for DML; return number of rows affected.
* Result execute Query(sql): use to return result set.

Transactions

-By default in auto commit mode.

-To change set Auto Commit(false);

-Commit

-connection.commit();

Rollback

* -connection.rollback();

Object Relational Mapping- Technique to convert data between object models and relational databases.