

Oracle Course Structure

Syllabus:

Introduction to DBMS:

- Approach to data management
- Introduction to prerequisites
- File and file system
- Disadvantages of file
- Review of database management terminology
- Database models
 - Hierarchical model
 - Network model
 - Relational model

Introduction to RDBMS:

- Feature of RDBMS
- Advantages of RDBMS over FMS and DBMS
- The 12 rules (E.F. Codd's Rules – RDBMS)
- Need for database design
- Support of normalization process for data management
 - Client server technology
 - Oracle corporation products
 - Oracle versions

- About SQL & SQL*PLUS

Sub language commands:

- Data definition language (DDL)
- Data retrieval language (DRL)
- Data manipulation language (DML)
- Transaction control language (TCL)
- Database security and privileges (DCL)

Introduction to SQL Database Object:

- Oracle predefined data types
- DDL Commands

- Create, alter (add, modify, rename, drop)
- columns, drop
- Working with DML, DRL Commands
- Operators support
 - DML-Insert, update, delete
 - DQL-SELECT statements using WHERE Clause
 - Comparison and conditional operations
 - Arithmetic and logical operations
 - Set operators (UNION, UNION ALL, INTERSECT, MINUS)
 - Special operators – IN (NOT IN), BETWEEN (NOT BETWEEN), LIKE (NOT LIKE), IS NULL (IS NOT NULL)

Built in functions:

- Arithmetic functions, character functions, date functions
- Aggregate functions, OLAP functions & general functions

Grouping the result of a query:

- Using group by and having clause of DRL statement
- Using order by clause

Working with integrity constraints:

- Importance of data integrity
- Support of integrity constraints for relating table in RDBMS
- Working with different types of integrity constraints
 - NOT NULL constraint
 - UNIQUE constraint
 - PRIMARY KEY constraint
 - FOREIGN KEY constraint
 - CHECK constraint
 - REF constraint

- Understanding ON DELETE clause in referential integrity constraint
- Working with composite constraint
- Applying DEFAULT option to columns
- Working with multiple constraints upon a column
- Adding constraints to a table
- Dropping of constraints
- Enabling for constraints
- Querying for constraint information

Querying multiple table (Joins):

- Equi join/inner join/simple join
- Cartesian join
- Non-equi join
- Outer joins
- Self join

Working with sub queries:

- Understanding the practical approach to sub queries/nested select/sub select/inner select/outer select
- What is the purpose of a sub query?
- Sub query principle and usage
- Type of sub queries
 - Single row
 - Multiple row
 - Multiple column
- Applying group functions in sub queries
- The impact of having clause in sub queries
- IN,ANY/SOME,ALL operators in sub queries
- PAIR WISE and NON PAIR WISE comparison in sub queries
- Be ... aware of NULL's
- Correlated sub queries
- Handling data retrieval with EXISTS and NOT EXISTS operators

Working with DCL,TCL commands:

- Grant, revoke
- Commit, rollback, savepoint

- SQL Editor commands
- SQL Environment settings

Maintaining database objects:

VIEWS in oracle:

- Understanding the standards of VIEWS in oracle
- Types of VIEWS
 - Relational views
 - Object views
- Prerequisites to work with views
- Practical approach of SIMPLE VIEWS and COMPLEX VIEWS
- Column definitions in VIEWS
- Using VIEWS for DML operations
- In-line view
- Forced views
- Putting CHECK constraint upon VIEWS
- Creation of READ ONLY VIEWS
- Understanding the IN LINE VIEWS
- About materialized views
- View triggers
- Working with sequences
- Working with synonyms
- Working with index and clusters
- Creating cluster tables, implementing locks

Pseudo columns in oracle:

- Understanding pseudo columns in oracle
- Types of pseudo columns in oracle
 - CURRVAL and NEXTVAL
 - LEVEL
 - ROWID
 - ROWNUM

Data partitions & parallel process:

- Types of partitions
 - Range partitions

- Hash partitions
- List partition
- Composite partition
- Parallel query process

- Locks
 - Row level locks
 - Table level locks
 - Shared lock
 - Exclusive lock
 - Dead lock

- SQL*Loader:
 - SQL*Loader architecture
 - Data file (Input datafiles)
 - Control file
 - Bad file
 - Discard file
 - Log file
 - .txt to bse table
 - .csv to base table
 - From more than one file to single table

PL-SQL

- Introduction to programming languages
- Introduction to PL/SQL
- PL/SQL Architecture
- PL/SQL Data types
- Variable and constants
- Using built_in functions
- Conditional and unconditional statements
 - Simple IF,ELSIF, ELSE...IF
 - Selection case, simple case, GOTO label and EXIT

- Iterations in PL/SQL
 - Simple LOOP,WHILE LOOP,FOR LOOP and NESTED LOOPS

- SQL within PL/SQL
- Composite data types (complete)
- Cursor management in PL/SQL
 - Implicit cursors
 - Explicit cursors
 - Cursor attributes
 - Cursor with parameters
 - Cursors with LOOPS
 - Cursors with sub queries
 - Ref.cursors

- Record and PL/SQL Table types

Advanced PL/SQL

Procedures in PL/SQL:

- STORED PROCEDURES
- PROCEDURE with prameters (IN,OUT and IN OUT)
- POSITIONAL Notation and NAMED Notation
- Procedure with cursors
- Dropping a procedure

Functions in PL/SQL

- Difference between procedures and functions
- User defined functions
- Nested functions
- Using stored function in SQL statements

Packages in PL/SQL:

- Creating PACKAGE specification and PACKAGE body
- Private and public objects in PACKAGE

EXCEPTIONS in PL/SQL:

Types of exceptions:

- User defined exceptions
- Pre defined exceptions
- RAISE_APPLICATION_ERROR

- PRAGMA_AUTONOMOUS_TRANSACTION
- SQL Error code values

Data base triggers in PL/SQL:

Types of triggers

- Row level triggers
- Statement level triggers
- DDL Triggers
- Trigger auditing

File input/output:

- PL/SQL file I/O (input/output) using UTL_FILE package

Implementing object technology

- What is object technology?
- OOPS-object instances
- Creation of objects
- Creating user defined data types
- Creating object tables
- Inserting rown in a table using objects
- Retrieving data from object based tables
- Calling a method
- Indexing abstract data type attributes

Using LOBS

- Large objects (LOBS)
- Creting tables-LOB
- Working with LOB values
- Inserting, updating & Deleting values in LOBs
- Populating lobis DBMS_LOB routines
- Using B-FILE

Using collections

- Advantages of collection
- Ref cursor (dynamic cursor)
- Weak ref cursor
- Strong ref cursor
- Nested tables VARRAYS or VARYING arrays

- Creating tables using nested tables
- Inserting, updating & deleting nested table records
- Nested table in PL/SQL

Oracle data base architecture

- Introduction to oracle database architecture
- Physical structures logical structures
- DB Memory structures background process
- 2tire, 3tire, N-tier architecture

Advanced features

- 9i joins
- New date function
- Rename column
- Inner join/natural join
- Left outer join/right outer join
- Full outer join
- Multiple inserts
- Insert all command
- Merge statement
- NVL2(), NULLIF(), COALESCE()
- CASE expression of select command
- Temporary tables/global tables
- New function EXTRACT()
- Autonomous traction
- Pragma_autonomous_transaction()
- Returning into clause
- Bulk collect
- About flash back queries
- Dynamic SQL
- New 11g features

DBA CONCEPTS

- Data base
- Table space
- Types of tablespaces
- Datafiles/se