BCA 604: Advanced SQL Programming

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks

Pre-requisites: Basic computer literacy including ability to create and manipulate files and install software.

Course Objectives:

1. Knowledge of DBMS, both in terms of use and implementation/design.
2. Understand basic database concepts, including the structure and operation of the relational data model. Discussed about the normalizations.
3. Learn structured query language (SQL) to an intermediate/advanced level.
4. Understand the structure and design of relational databases and using different quarries
5. Be able to write PL/SQL statements that create database objects.
6. Understand the importance commands are procedure, function, trigger.

Detailed Syllabus

Unit-1 Database Concept: Database and Data Base Management System Definition, File Management System and its disadvantages, Benefits of DBMS, RDBMS Definition, DBMS V/S RDBMS.
Unit-2 Relational Databases: E.F Codd's Rules, Normalization: 1NF, 2NF, 3NF, BCNF. Relational Databases Terminology: Relation, Tuple, Attribute, Cardinality, Degree, Domain.
Unit-3 Keys:Super Key, Candidate Key, Primary Key, Foreign Key. Structured Query Language: Features of SQL, SQL *PLUS, SQL V/s SQL *PLUS, Rules for SQL, SQL Delimiters, Components of SQL. Constraints: Data constraints, Types of data constraints: UNIQUE, NOT NULL at column level, CHECK, NULL value constraint
Unit-4 Relational Databases: Relational Algebra. Operations, Select, Project, Union, Difference, Intersection Cartesian product, Join, Natural Join, Simple Queries, Nested Queries, Join queries, semi-join queries, self-join.
Unit-5 **PL/SQL:** Basic Introduction, Advantages of PL/SQL, The generic PL/SQL block, Literals, Variables, Constants, Comparisons, Comments. **Control Structure:** Conditional Control, Iterative Control and Sequential Control.
Unit-6 **PL/SQL Transaction:** Cursor, Types of Cursor: Implicit cursor, Explicit cursor. **PL/SQL Database objects:** Introduction of Procedure and Functions, Advantages of using Procedure and Functions, Database Triggers, Triggers v/s Procedure, Types of Triggers

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Text and Reference Books

1. Database System Concepts, Henry Korth, A. Silberschatz, 5th Edition, 2005.
2. SQL, PL/SQL the Programming Language of Oracle, Ivan Bayross, BPB Publications, 4th Edition.
3. Schaum's Outline of "Fundamental of Relational Databases", Ramon A. Mata, Pauline K. Cushman, McGraw Hill, December, 2006.

Course Outcomes:

After completing the course, students will be able to:

1. Students will familiar database and file management.
2. Students will follow the E.F Codd's Rules and understand the normalization and importance in RDBMS.
3. To understand the indignity constraints and various keys, features of SQL, SQL *PLUS.
4. Students will study of Relational databases and Relational algebra.
5. Students will understand the Literals, Variables, Constants, Comparisons, Comments.
6. To understand the PL/SQL Transaction used by Cursor, Implicit cursor, Explicit cursor and type of trigger.