

2/4 B.Tech FIRST SEMESTER

IT3L3

**DATABASE MANAGEMENT SYSTEMS LAB
(Common to CSE/IT/ECM)**

Credits: 2

Lecture:--

Internal assessment: 25 marks

Lab:- 3 Periods /week

Semester end examination: 50 marks

Objectives:

- To provide hands on experience on Database Management Systems such as MSAccess, Microsoft SQL Server and ORACLE .
- To provide knowledge on creating databases and posing complex SQL queries of relational databases.
- To be familiar with a broad range of data management issues including data integrity and security
- To Perform stored procedures & functions
- To Setup triggers that activate to perform specific data-handling operations when they insert or update table rows.
- Develop Programs using Cursors & Packages.

Outcomes:

Students will be able to

- Construct database schema using Structured Query Language which would provide functionality to create tables and to enforce constraints.
- Query and update data from tables
- Write complex queries to select a subset of the data from the collection of tables.
- Write programming blocks with conditionals, assignments, loops, etc in PL/SQL.
- Write Exception Handling, Transaction oriented programs, stored procedures, functions, packages ,Cursors and triggers in PL/SQL.

Exercises:

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables).
2. Queries using SELECT command. using ANY, ALL, IN, EXISTS, NOT EXISTS, Constraints. Example- Select the roll number and name of the student who secured fourth rank in the class.
3. Nested queries and correlated nested queries (Join, outer join, set operations, ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET).
4. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING .
5. Creation ,dropping of Views and updation through views.

6. Queries using Conversion functions (to_char, to_number and to_date), string functions(Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date).
7. Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)ii)Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
8. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
9. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.
10. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
11. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
12. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
13. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
14. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD

Reference Books:

- 1) ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rdEdition.
- 2) ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.
- 3) SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.