



**PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE**
Autonomous
Siddhartha Nagar, Vijayawada-520010
Re-accredited at 'A+' by the NAAC

Course Code				23CGMAP232			
Title of the Course				Data Base Management Systems Lab			
Offered to: (Programme/s)				B.Sc. Hons. (CSCS)			
L	0	T	0	P	2	C	1
Year of Introduction:		2024-25		Semester:			3
Course Category:		Major Practical	Course Relates to:		Global / National / Regional / Local		
Year of Revision:				Percentage:			
Type of the Course:				Skill Development / Employability			
Crosscutting Issues of the Course :							
Pre-requisites, if any				DBMS Concepts and Programming knowledge			

Course Description:

The objective of course is to provide students with practical experience in database management using Oracle SQL and PL/SQL. Students will learn to create and manage database objects, perform data manipulation and retrieval, implement advanced querying techniques, and develop PL/SQL programs

Course Aims and Objectives:

S.NO	COURSE OBJECTIVES
1	Introduce students to the foundational concepts and syntax of SQL
2	Equip students with the skills to design and manage relational databases
3	Develop students' ability to perform complex data retrieval and manipulation.
4	Provide comprehensive training in procedural programming using PL/SQL
5	Teach students how to manage errors and optimize database performance

Course Outcomes

At the end of the course, the student will be able to...

CO NO	COURSE OUTCOME	BTL	PO	PSO
CO1	Using DDL commands in Oracle, including creating, altering, and dropping tables	K2	1,2,7	2
CO2	Performing data manipulation operations using DML commands	K3	1,2,7	2
CO3	Understand and implement various types of joins	K3	1,2,7	2
CO4	Write and execute basic PL/SQL programs	K3	1,2,7	2
CO5	Use both implicit and explicit cursors in Oracle PL/SQL,	K3	1,2,7	2

execute triggers			
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CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	2	2					3		2
CO2	2	3					2		3
CO3	3	2					3		2
CO4	3	3					3		3
CO5	3	3					3		3

Use the codes 3, 2, 1 for High, Moderate and Low correlation Between CO-PO-PSO respectively

Course Structure

This lab list covers the key areas of a Database management systems lab course, providing hands-on practice with Oracle technology

Unit 1: Implementing DDL commands in Oracle (6Hrs)

Lab 1:

Exercise 1: Creating Tables without Constraints

1. Create tables without applying any constraints to understand basic table creation.

Tasks:

- Create a table Employees with columns: Employee_ID, First_Name, Last_Name, Hire_Date, and Department.
- Create a table Projects with columns: Project_ID, Project_Name, and Start_Date.

2. Creating Tables with Primary Key and Foreign Key Constraints

Exercise 2:

Defining Tables with Primary and Foreign Keys

1. **Objective:** Learn to create tables with primary key and foreign key constraints to ensure referential integrity.

2. **Tasks:**

1. Create a table Departments with columns: Department_ID and Department_Name, and apply a primary key constraint on Department_ID.
2. Create a table Employees with columns: Employee_ID, First_Name, Last_Name, Hire_Date, Department_ID, and apply a primary key constraint on Employee_ID. Add a foreign key constraint on Department_ID to reference Departments.

Lab 2:

Exercise 3: Creating Tables with Unique and Check Constraints

Objective: Create tables with unique and check constraints to enforce data uniqueness and valid data values.

1. **Tasks:**

1. Create a table Products with columns: Product_ID, Product_Name, Price, and Category. Apply a primary key constraint on Product_ID and a unique constraint on Product_Name.

2. Create a table Orders with columns: Order_ID, Order_Date, Product_ID, and Quantity. Apply a primary key constraint on Order_ID and a check constraint to ensure Quantity is greater than 0.

Exercise 4: Creating Tables with Composite Keys and Default Values

1. **Objective:** Create tables with composite primary keys and default values for columns.
2. **Tasks:**
 - o Create a table Order_Items with columns: Order_ID, Product_ID, Quantity, and Price. Apply a composite primary key constraint on Order_ID and Product_ID. Set default values for Quantity (1) and Price (0.00).
 - o Create a table Customer_Reviews with columns: Review_ID, Customer_ID, Review_Date, and Rating. Apply a primary key constraint on Review_ID and set a default value for Review_Date as the current date.

Exercise 5: Creating Tables with Referential Integrity Constraints

1. **Objective:** Create tables that enforce referential integrity between parent and child tables.
2. **Tasks:**
 - o Create a table Customers with columns: Customer_ID, Customer_Name, and Contact_Number, and apply a primary key constraint on Customer_ID.
 - o Create a table Invoices with columns: Invoice_ID, Customer_ID, Invoice_Date, and Amount. Apply a primary key constraint on Invoice_ID and a foreign key constraint on Customer_ID to reference Customers.

Unit 2: DML commands

Lab 3:

Exercise 6:

- Insert Data into emp and dept tables

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

	A	B	C	D	E	F	G	H
1	7839	KING	PRESIDENT		1981-11-11	5000		10
2	7698	BLAKE	MANAGER	7839	1981-05-01	2850		30
3	7782	CLARK	MANAGER	7839	1981-06-09	2450		10
4	7566	JONES	MANAGER	7839	1981-04-02	2975		20
5	7788	SCOTT	ANALYST	7566	1982-12-09	3000		20
6	7902	FORD	ANALYST	7566	1981-12-03	3000		20
7	7369	SMITH	CLERK	7902	1980-12-17	800		20
8	7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
9	7521	WARD	SALESMAN	7698	1981-02-25	1250	500	30
10	7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30
11	7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30
12	7876	ADAMS	CLERK	7788	1983-01-12	1100		20
13	7900	JAMES	CLERK	7698	1981-12-03	950		30
14	7934	MILLER	CLERK	7782	1982-01-23	1300		10

https://livesql.oracle.com/apex/livesql/file/content_O5AEB2HE08PYEPTGCFLZU9YCV.html

Lab 4: Queries

Exercise 7:

1. Display all the information of the EMP table?
2. Display unique Jobs from EMP table?
3. List the emps in the asc order of their Salaries?
4. List the details of the emps in asc order of the Dptnos and desc of Jobs?
5. Display all the unique job groups in the descending order?
6. Display all the details of all 'Mgrs'
7. List the emps who joined before 1981.
8. List the Empno, Ename, Sal, Daily sal of all emps in the asc order of Annsal
9. Display the Empno, Ename, job, Hiredate, Exp of all Mgrs
10. List the Empno, Ename, Sal, Exp of all emps working for Mgr 7369.
11. Display all the details of the emps whose Comm. Is more than their Sal.
12. List the emps in the asc order of Designations of those joined after the second half of 1981.
13. List the emps along with their Exp and Daily Sal is more than Rs.100.
14. List the emps who are either 'CLERK' or 'ANALYST' in the Desc order.

Unit 3: Joins and views

Lab 5: joins

Exercise 8:

- List the total information of EMP table along with DNAME and Loc of all the emps Working Under 'ACCOUNTING' & 'RESEARCH' in the asc Deptno.
- List the Empno, Ename, Sal, Dname of all the 'MGRS' and 'ANALYST' working in New York, Dallas with an exp more than 7 years without receiving the Comm asc order of Loc.
- Display the Empno, Ename, Sal, Dname, Loc, Deptno, Job of all emps working at CINCAGO or working for ACCOUNTING dept with Ann Sal>28000, but the Sal should not be=3000 or 2800 who doesn't belongs to the Mgr and whose no is having a digit '7' or '8' in 3rd position in the asc order of Deptno and desc order of job.
- Display the total information of the emps along with Grades in the asc order.
 - List all the Grade2 and Grade 3 emps
 - Display all Grade 4,5 Analyst and Mgr.
- List the Empno, Ename, Sal, Dname, Grade, Exp, and Ann Sal of emps working for Dept10 or20.

Lab 6: views

Exercise 9

Create a simple view to display specific columns from a table.

Task: Create a view named Employee_View that displays Employee_ID, First_Name, and Last_Name from the Employees table.

Create a view that joins multiple tables.

Task: Create a view named Employee_Department_View that displays Employee_ID, First_Name, Last_Name, and Department_Name by joining the Employees and Departments tables.

Create an updatable view that allows DML operations.

Task: Create a view named Updateable_Employee_View that displays Employee_ID, First_Name, and Last_Name and allows updates to the Last_Name column.

Create a view that is read-only and does not allow DML operations.

Task: Create a view named ReadOnly_Department_View that displays Department_ID and Department_Name.

Unit 4: PL/SQL blocks

Lab 7: basic PL/SQL programs

Exercise 10:

1. Write programs on Nested Blocks and Control Structures
2. Display Employee Details Using PL/SQL
3. Write a program to check the given number is prime or not.

Lab 8: procedures and functions

Exercise 11:

Create a Procedure to Update Employee's Department

1. Call the Procedure
2. Create a Procedure to Checkout a Book
3. Create programs on Transaction Control Statements
4. Create a Function to Calculate Employee Tenure
5. Use the Function in a Query

Unit 5: cursors and triggers

(6Hrs)

Lab 9: cursors

Exercise 12:

1. Create an explicit cursor to fetch and display all student names and their enrollment dates.
2. Use a cursor FOR loop to process each student record and print details.
3. Define a cursor that takes a department number as a parameter and fetches the employee details for that department.

Lab 10: Triggers and exceptions

Exercise 13:

1. Create a Trigger to Automatically Update Book Quantity When a Book is Returned
2. Create a Trigger to Update `Last_Updated` Column
3. Test the Trigger
4. Handle Exception for Division by Zero
5. Handle Exception for No Data Found
6. Create a user defined exception

References:

Nilesh Shah. (2011). *Database Systems Using ORACLE* (2nd ed.). PHI
https://www.youtube.com/playlist?list=PLL_LQvNX4xKyiExzq9GKwORoH6nvaRnOQ



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23CGMAP232 :Data Base Management Systems Lab

Offered to: B. Sc. Hons. (CSCS)
Max. Marks : 50 (CIA: 15 + SEE: 35)

Semester: III
Hrs/Week: 2

Model Paper : Practicals

Time: 3 Hrs.

Max. Marks: 35

Section – A

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|-----------------|------|
| 1. Experiment-1 | 15 M |
| 2. Experiment-2 | 10 M |

Section – B

Viva Voce	10 M
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