Heritage Institute of Technology

Subject: Data Base Management System Lab
Session 2025 (5th Semester)
Subject Code: CSEN 3151, Credit Points: 1.5,
Department of CSE-AIML

In the laboratory students will be familiarized with Oracle 11g.

Lab Assignment:
Day1:
Create a student table with parameters
Student(Enrollment_No, CollegeRoll_No, Student_Name, Phone_No, Address, BloodGroup).
(i)Describe the TABLE after creating it.
(ii)Store 7 to 8 student records in the table
(iii)Select all the records from the table to retrieve the data in it .
(iv) Select the phone number and BloodGroup of the student for blood camp in case of emergency .
(v)Add a column State and Country and Branch in the student table .
(vi) Select a set of students between the enrollment no to identify branches of the students .
(vii) Select to update the values of the table using where clause .
(viii)Drop a column if not required in the table .
(ix) Practice for the where clauses with ADD (column), MODIFY(datatype) , RENAME(Attribute Name) .
(x)Use of IN operator
(xi)Use of LIKE operators using wildcard characters .
(xii)Knowing about Key constraints like PRIMARY KEY , UNIQUE, NULL, NOT NULL .

Day 2:
Create TABLES using KEY constraints like PRIMARY KEY , FOREIGN KEY, NOT NULL etc .
Create relational DB for the following schemas and write queries for retrieving data.
        Student (sid,sname,address)
        Course (cid,cname,fee)
        Enrolled (cid,sid,doj)

Queries to Retrieve Data
(i) Get all students
(ii) Get all courses being taught in a semester .
(iii) List students along with the courses they are enrolled in
(iv) List all students who enrolled after a certain date (e.g., 01-JUL-2025)
(v) Find the number of students enrolled in each course
(vi) Get the total fee collected per course
(vii)Get the list of students enrolled who need to pay the fee.

Day 3.
Apply key constraints & participation constraints for the following relations.
emp(eid,ename,sal)
dept(did,dname,location)
manages(did,eid,day)

(i)Create Table emp, dept ,manages .
(ii)Alter Table structure if required .
(iii)Apply constraints on columns /tables , PRIMARY KEY ,FOREIGN KEY ,UNIQUE ,NOT NULL .
(iv)Add record in the TABLE.
(iv)Create a view / materialize view using one or more TABLE using JOIN.

Day 4. Create relations Supplies(Sid,Sname,Address) ,Parts(pid,Pname,color) Catalog(sid,pid,cost)

i)Create TABLE Suppliers by applying KEY CONSTRAINTS
ii)Create TABLE Parts by applying KEY CONSTRAINTS.
iii)Populate the data Base with Amazon data related to Electronic Goods.
iv)Write retrieval queries for MAX(cost), MIN(cost), Average(cost) for specific products where Product Id(pid) is specific with their Supplier Names(Sname).
(v) Get all suppliers and the parts they supply filtered by color.
(vi) List all parts with their suppliers address for dispatch .
(vii) Find the cheapest supplier for each part.

Day 5.
Given the following relation between the TABLES .

Professor (SSN,Name,Age,Rank)
Projects (project no,Sponsor Name,starting date,ending date,budget)
Graduate_student (SSN,Name,Age,Degree)

i)Create TABLE Professor, Project, and Graduate
ii) Create Table Supervises such that one professor can supervise many projects, but each project is supervised by one professor.
iii)Participation constraints (One professor can supervise many projects, but each project is supervised by one)
Professor (Relationship with Foreign Key)
iv)Find Many Graduates can work on Many Projects
v)List all the Graduates working on a Project and their hours.
vi)List all the professors and the projects they supervise.(Join Supervises, project with Professor)
vii)A trigger to update a value (project Budget) when a new graduate joins a project.

Day 6.
A contract electronics factory buys parts from suppliers and uses them in different Projects for different clients. Each time a supplier ships a batch of parts for a project.
Retrieve
a) Who the suppliers are?,
b) Which part was delivered?
c) For which project the delivery was received ?
d) And how many units came in that batch from specific Supplier City .

Given Unnormalized Schema
CREATE TABLE Supply_Detail_UNF (
Supplier_ID NUMBER,
Supplier_Name VARCHAR2(60),
Supplier_City VARCHAR2(40),
Part_List VARCHAR2(4000), -- e.g. 'P1,P2,P3'
Project_List VARCHAR2(4000), -- e.g. 'J1,J2'
Qty_List VARCHAR2(4000) -- e.g. '100,250,75'
);

Write down the steps to Convert the UNF to 5NF and try to apply the queries stated above .
Day 7.
P/L SQL:
Stored Procedures and Functions- Basic programming constructs of PL / SQL like if, else, else-if, loop, while, for structure. Populate stored procedure variables with the data fetched from the table using SQL command.

Day 8.
Working with Cursors - Creating Cursors, parameterized cursor, Locks on cursors, Exploring advantages of cursors. Introduction to triggers - Constraints vs Triggers, Creating, Altering

Day 9
Submissions and Viva Voice

Day 10
Examination

Textbooks

1. Database System Concepts, Henry F. Korth and Silberschatz Abraham, Mc.Graw Hill.
2. Fundamentals of Database Systems, Elmasri Ramez and Novathe Shamkant, Benjamin Cummings
Publishing Company.

Reference Books

1. SQL, PL/SQL: The Programming Language of Oracle (With CD-ROM) (English) 4th Revised Edition, Ivan Bayross, BPB Publications.

Course Outcomes:

After completion of the course, students will be able to:

CSEN3151.1. Learn to use Entity Relationship Diagram (ERD) model as a blueprint to develop the corresponding relational model in a RDBMS system like Oracle DBMS.

CSEN3151.2. Apply DDL component of Structured query language (SQL) to create a relational database from scratch through implementation of various constraints in Oracle RDBMS system.

CSEN3151.3. Apply DML component of Structured query language (SQL) for storing and modification of data in Oracle RDBMS system.

CSEN3151.4. Apply DQL component of Structured query language (SQL) to construct complex queries for efficient retrieval of data from existing database as per the user requirement specifications.

CSEN3151.5. Conceptualize and apply various P/L SQL concepts like cursor, trigger in creating database programs.

CSEN3151.6. Develop a fully-fledged database backend system using SQL and P/L SQL programming to establish overall integrity of the database system.