

DATABASE MANAGEMENT SYSTEM - LAB

COURSE CREDITS: 02

NO OF HOURS: 60

COURSE OUTCOMES (COS):

- CO1: Understand the basic concepts of database management systems and structure query language.
- CO2: The students will gain knowledge to draw ER diagrams and analyze functional dependencies for designing a robust database
- CO3: The students will be able to convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

PART A

1. Draw E-R diagram and convert entities and relationships to relation table for a givenscenario. Two assignments shall be carried out i.e. consider two different scenarios(e.g. bank, college)

Consider the Company database with following Schema

EMPLOYEE (FNAME, MINIT, LNAME, SSN, BDATE, ADDRESS, SEX, SALARY, SUPERSSN, DNO)

DEPARTMENT (DNAME, DNUMBER, MGRSSN, MSRSTARTDATE)

DEPT_LOCATIONS (DNUMBER, DLOCATION)
PROJECT (PNAME, PNUMBER, PLOCATION, DNUM)

WORKS_ON (ESSN, PNO, HOURS)

DEPENDENT (ESSN, DEPENDENT_NAME, SEX, BDATE, RELATIONSHIP)

2. Perform the following:
Viewing all databases, creating a Database, viewing all Tables in a Database, Creating Tables (With and Without Constraints), Inserting/Updating/Deleting Records in a Table, Saving (Commit) and Undoing (rollback)
3. Perform the following:
Altering a Table, Dropping/Truncating/Renaming Tables, backing up / Restoring a Database.
4. For a given set of relation schemes, create tables and perform the following Simple Queries, Simple Queries with Aggregate functions, Queries with Aggregate functions (group by and having clause).
5. Execute the following queries
 - a. How the resulting salaries if every employee working on the 'Research' Departments is given a 10% raise?
 - b. Find the sum of the salaries of all employees of the 'Accounts' department, as well as the maximum salary, the minimum salary, and the average salary in this department

6. Execute the following queries
 - a. Retrieve the name of each employee Controlled by Department number 5 (use EXISTS operator).
 - b. Retrieve the name of each dept and number of employees working in each Department which has at least 2 employees
7. Execute the following queries
 - a. For each project, retrieve the project number, the project name, and the number of employees who work on that project. (use GROUP BY)
 - b. Retrieve the name of employees who born in the year 1990's
8. For each Department that has more than five employees, retrieve the department number and number of employees who are making salary more than 40000.
9. For each project on which more than two employees work, retrieve the project number, project name and the number of employees who work on that project.
10. For a given set of relation tables perform the following: Creating Views (with and without check option), Dropping views, Selecting from a view

PART B

Create the following tables with properly specifying Primary keys, foreign keys and solve the following queries.

BRANCH (Branchid, Branchname, HOD)
STUDENT (USN, Name, Address, Branchid, sem)
BOOK (Bookid, Bookname, Authorid, Publisher, Branchid)
AUTHOR (Authorid, Authorname, Country, age)
BORROW (USN, Bookid, Borrowed_Date)

1. Perform the following:
 Viewing all databases, creating a Database, viewing all Tables in a Database, Creating Tables (With and Without Constraints),
 Inserting/Updating/Deleting Records in a Table,
 Saving (Commit) and Undoing (rollback)
 Execute the following Queries:
2.
 - a. List the details of Students who are all studying in 2nd sem BCA.
 - b. List the students who are not borrowed any books.
3.
 - a. Display the USN, Student name, Branch_name, Book_name, Author_name, Books_Borrowed_Date of 2nd sem BCA Students who borrowed books.

- b. Display the number of books written by each Author.
- 4.
 - a. Display the student details who borrowed more than two books.
 - b. Display the student details who borrowed books of more than one Author.
- 5.
 - a. Display the Book names in descending order of their names.
 - b. List the details of students who borrowed the books which are all published by the same publisher.

Consider the following schema:

STUDENT (USN, name, date_of_birth, branch, mark1, mark2, mark3, total, GPA)

- 6. Perform the following:
Creating Tables (With and Without Constraints), Inserting/Updating/Deleting Records in a Table, Saving (Commit) and Undoing (rollback)
- 7. Execute the following queries:
 - a. Find the GPA score of all the students.
 - b. Find the students who born on a particular year of birth from the date of birthcolumn.
- 8.
 - a. List the students who are studying in a particular branch of study.
 - b. Find the maximum GPA score of the student branch-wise.