

## **BCA-406P**

### **GRAPHICS AND MULTIMEDIA SYSTEM LAB**

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**0 0 2**

**Note:** - At least ten experiments are to be conducted.

1. Write a program for 2D line drawing using DDA algorithm.
2. Write a program to draw a line using Bresenham's Algo.
3. Write a program for circle drawing as Raster Graphics Display.
4. Write a program to draw a circle using Midpoint algorithm.
5. Write a program to rotate a point about origin.
6. Write a program to rotate a triangle about origin.
7. Write a program to scale the triangle.
8. Write a program to translate the triangle.
9. Write a program to reflect the triangle.
10. Write a program for line clipping.
11. Write a program for polygon clipping.
12. Write a Program to implement 2D-transformation.
13. Introduction to Flash 5.0 creating a small animation using Flash 5.0.

**DATA BASE MANAGEMENT SYSTEM LAB**

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**Part I:** Getting familiar with SQL (Maximum number of turns allotted: 3)

- 1) Creating tables.
- 2) Insertion, Deletion, Updation and Retrieval of data.
- 3) Arithmetic operations, Logical operations and Pattern matching.
- 4) Concept of Grouping (Group by clause, Having Clause).
- 5) Use Aggregate function in query.
- 6) Write commands for Joins, Union and Intersection.
- 7) Concept of Sub-query.
- 8) Concept of Data constraints (Unique Key, Primary Key, Foreign Key).
- 9) Creating Views and Indexes.

**Part II:** Relational Database Implementation

Implement the following mini-project's database schemas and give an expression in SQL for each of the queries.

**Project 1. Library Management System:**

Create the following schema, enter at least 5 records in each table and answer the queries given below.

**LibraryBooks** (Accession number, Title, Author, Department, PurchaseDate, Price)

**IssuedBooks** (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled "Database System Concepts".
- c) Change the Department of the book titled "Discrete Mathematics" to "CSE".
- d) List all books that belong to "CSE" department.
- e) List all books that belong to "CSE" department and are written by author "Navathe".
- f) List all computer (Department="CSE") that have been issued.
- g) List all books which have a price less than 500 or purchased between "01/01/2015" and "01/01/2019".

**Project 2. Student Management System:**

Create the following schema, enter at least 5 records in each table and answer the queries given below.

**Student** (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

**Academic\_details** (College roll number, Paper code, Attendance, Marks in home examination)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper 2.
- c) List all students who live in “Lucknow” and have marks greater than 60 in paper 1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper 2.

### **Project 3. Customer Management System:**

Create the following schema, enter at least 5 records in each table and answer the queries given below.

**Customer** (CustID, email, Name, Phone, ReferrerID)

**Bicycle** (BicycleID, DatePurchased, Color, CustID, ModelNo)

**BicycleModel** (ModelNo, Manufacturer, Style)

**Service** (StartDate, BicycleID, EndDate)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer “Honda”.
- c) List the bicycles purchased by the customers who have been referred by customer “C1”.
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

### **Project 4. Human Resource Management System:**

Create the following tables, enter at least 5 records in each table and answer the queries given below.

**EMPLOYEE** ( Person\_Name, Street, City )

**WORKS** ( Person\_Name, Company\_Name, Salary )

**COMPANY** ( Company\_Name, City )

**MANAGES** ( Person\_Name, Manager\_Name )

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column “email” of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for “Samba Bank” and earn more than \$10,000.
- e) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

**Project 5. Supplier Management System:**

Create the following tables, enter at least 5 records in each table and answer the queries given below.

**Suppliers** (SNo, Sname, Status, SCity)

**Parts** (PNo, Pname, Colour, Weight, City)

**Project** (JNo, Jname, Jcity)

**Shipment** (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers names for suppliers who do not supply part P2.
- d) For each shipment get full shipment details, including total shipment weights.
- e) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- f) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- g) Get the names of cities that store more than five red parts.
- h) Get full details of parts supplied by a supplier in Delhi.

SOFTWARE ENGINEERING LAB

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**Note: - At least 6 mini-projects are to be implemented from Part II.**

**Part I** – To Familiarize with CASE tools using ATM system as specification. (Maximum number of turns allotted: 3)

1. Introduction and project definition
2. Software process overview
3. Project planning
4. Software requirements
5. Introduction to UML and use case diagrams
6. System modeling (DFD and ER)
7. Flow of events and activity diagram
8. OO analysis: discovering classes
9. Interaction diagrams: sequence and collaboration diagrams
10. Software Design: software architecture and object-oriented design
11. State Transition Diagram
12. Component and deployment diagrams
13. Software testing
14. Presentations.

**Part II-** Design a mini-project using CASE tools

Students are divided into batches of 5 each and each batch has to draw the following diagrams using UML for given different case studies for each batch. UML diagrams to be developed are:

1. Use Case Diagram.
2. Class Diagram.
3. Sequence Diagram.
4. Collaboration Diagram.
5. State Diagram
6. Activity Diagram.

7. Component Diagram
8. Deployment Diagram.

**Projects:**

1. Patient Appointment and Prescription Management System
2. Organized Retail Shopping Management Software
3. Online Hotel Reservation Service System
4. Examination and Result computation system
5. Automatic Internal Assessment System
6. Parking Allocation System
7. Wholesale Management System
8. Criminal Record Management : Implement a criminal record management system for jailers, police officers and CBI officers
9. DTC Route Information: Online information about the bus routes and their frequency and fares
10. Car Pooling: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.