|  |
| --- |
| **DEPARTMENT OF COMPUTER SCIENCE** |
| **ST. JOSEPH'S COLLEGE, DEVAGIRI (AUTONOMOUS), CALICUT** |
| THIRD SEMESTER M.Sc COMPUTER SCIENCE FCSS3L03: ADVANCED DATABSE MANAGEMENT SYSTEM & OBJECT ORIENTED PROGRAMMING CONCEPTS (PRACTICAL III) |

## UNIT I: ADVANCED DATBASE MANAGEMENT SYSTEM

### 1: Familiarization of DDL Commands and Constraints.

Consider the schema

Student(admission\_no, stud\_name) Membership(member\_id, admission\_no) Book(book\_id, book\_name, author, book\_type) BookType(type\_id, type)

BookIssue(issue\_id, issue\_date, member\_id, book\_id)

1. Create the above tables and provide appropriate integrity constraints and insert few records to the tables.
2. Add a column “programme” to the Student table.
3. Modify the column width of book\_name and author of Book relation.
4. Drop the BookType table.

### (2 to 9, Use the following relations. If needed, make necessary changes the schema.)

|  |  |
| --- | --- |
| Department | |
| Dname | Not NULL,unique |
| Dnumber | Primary key |
| ManagerID | Refers to EmployeeID of Employee Table |
| Mgr\_start\_date | Not NULL |

|  |  |
| --- | --- |
| Employee | |
| Name | Not NULL |
| EmployeeID | Primary key |
| BirthDate |  |
| HouseName |  |
| Gender |  |
| Salary | 5000 to 25000 |
| SuperEID | Refers to Employee itself |
| Dnumber | Refers to Dnumber of Department Table |

|  |  |
| --- | --- |
| DeptLocations | |
| Dnumber | Dnumber refers to Dnumber of Department Table. Also Dnumber and Dlocation are combined Primary key. |
| Dlocation |

|  |  |
| --- | --- |
| Project | |
| Pname | Not NULL |
| Pnumber | Primary key |
| Plocation |  |
| Dnumber | Not NULL, Refers to Department Table |

|  |  |
| --- | --- |
| Works-on | |
| EmployeeID | Refers to Employee Table |
| Pnumber | Refers to Project |
| Hours | Not NULL |

|  |  |
| --- | --- |
| Dependent | |
| EmployeeID | Refers to Employee Table |
| DependName | Not NULL |
| Sex |  |
| BirthDate |  |
| Relationship |  |
|  | EmployeeID and DependName together forms primary key. |

**2: Execution of DM L Commands**

1. Insert a single record into department table.
2. Insert more than a record into Employee table using a single insert command.
3. Update the employee table to set the salary of all employees to Rs15000/- who are getting a

salary>10,000.

1. Move a project “P1” of department no D1 to another department D2.
2. Delete only those who are working on a particular project say ‘’P1’’.

**3: Retrieving data using select Commands**

1. List the records in the Employee table order by salary in ascending/descending order.
2. Display only those Employees whose Dnumber is 30.
3. Retrieve the name and birthdate of Employee working in a particular in a particular

department.

1. For every project located in “Cochin”, list the project number, the controlling department no and

the department manager’s name, Housename and birth date.

1. List the employees who work in more than one project.

### 4: Aggregate functions

1. Find the sum of salaries of all employees, the maximum salary, the minimum salary, and the

average salary.

1. Count the number of projects handled in each department.
2. Count number of employees working in each department.
3. Find the department number and maximum salary of those departments where minimum salary

is greater than 10000 rupees.

### 5: String functions

1. Retrieve all employees whose name begins with Á’.
2. Find all employees who were born during 1980’s.

### 6: Date functions

1. List all employees whose age lies between 25 - 45 years
2. Calculate the service period of all managers.

### 7: Union, intersection, set difference

1. Make list of all project numbers for projects that involve an employee whose name is “Raju”

either as a worker or as a manager of the department that controls project.

### 8: Nested Queries and join operation

1. Retrieve the name of each employee who has a dependent with the same name and is the same

sex as Employee.

1. Retrieve the names of employees who have no dependents
2. List the names of all managers who have at least one dependant.
3. For each employee, retrieve the employee’s name and name of his or her immediate

supervisor.

### 9: Database Views

1. Create a view to display the department no, minimum salary, maximum salary and average salary

in each department.

1. Create a view displaying the employee name, project name and hours worked by her/him.
2. Update the project name of above view(Q1) from pname=’ProductX’ to pname=’Product Y’.
3. Drop the above specified view.
4. Create a view work\_info to display the employee id, employee name, project no of all employees

whose working hour is greater than 0.

### 10: Stored procedures & Functions

1. create a procedure to that generate all the prime numbers below the given number and count the

no. of prime numbers generated.

1. Consider the employee table (emp\_id, ename, basic, dept) and insert 10 records to the table.

Write a procedure to update the salary of an employee accepting emp\_id and rate as parameters. Also fetch the names and salaries of the five highest-paid employees with their department.

1. Consider the relations

Customer(cust\_id, cust\_name, address)

Order(ord\_no, cust\_id, ord\_date, ship\_date, status, comments)

Field “Status” takes values like “delivered”, “pending”, “shipped” “cancelled”. Insert few records and create a stored procedure to return the count of orders delivered, pending, shipped and cancelled.

1. Create a function to find the factorial of a number passed as parameter.
2. Write a function to check a number is perfect, abundant or deficient.

### 11: Triggers

1. Create a table Student (id, name, dob) and insert few records. Create trigger to prevent

updating and deletion from the student table.

1. Consider the schema

Product (prod\_id, prod\_name, price, quantity\_available) Sale (sale\_id, prod\_id, quantity)

Create a trigger to update the quantity in stock after each sale.

1. Drop the trigger created in Q1.

**12: ER diagram**

Draw the ER diagram and design a database (Normalize the tables to sufficient levels) for

1. Hospital Management System
2. CD lending Library System