

MCA IV SEMESTER  
DBMS LAB EXAMINATION 2021

Max Marks 80

Instructions:

Draw the ER diagram for the system and get it checked before you proceed for implementation.

**Q1: Consider the following relational schema for the Office of the Controller of Examinations Application.**

Student (Rollno, Name, Dob, Gender, Doa, Bcode);

Implement a check constraint for

- Gender
- Date of Admission

Branch (Bcode, Bname, Dno);

Department (Dno, Dname);

Course (Ccode, Cname, Credits, Dno);

Branch\_Course (Bcode, Ccode, Semester);

Enrolls (Rollno, Ccode, Sess, Grade);

For Example,

SESS can take values 'APRIL 2013', 'NOV 2013'

Implement a check constraint for grade Value Set ('S', 'A', 'B', 'C', 'D', 'E', 'U');

Students are admitted to Branches and they are offered by Departments. A branch is offered by only one department.

Each branch has a set of Courses (Subjects). Each student must enroll during a semester. Courses are offered by Departments. A course is offered only by one department. If a student is unsuccessful in a course he/she must enroll for the course during next session. A student has successfully completed a course if the grade obtained by is from the list (A, B, C, D, and E).

A student is unsuccessful if he/she have grade 'U' in a course.

Primary Keys are underlined.

**Question (A)**

Develop a SQL query to list details of Departments that offer more than 3 branches.

**Question (B)**

Develop a SQL query to list the details of Departments that offer more than 6 courses.

**Question (C)**

Develop a SQL query to list the details of courses that are common for more than 3 branches.

**Question (D)**

Develop a SQL query to list students who got 'S' in more than 2 courses during single enrollment.

**Question (E)**

Create a view that will keep track of the roll number, name and number of courses, a student has completed successfully.

**(II) Write a stored procedure that receives as input the id of an employee and displays his name and his salary. Then call this procedure for the employee id=2 Employee (id, FNAME, LNAME, SALARY)**

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**Q2: Consider the following relations for an Order Processing Database application in a Company.**

Customer (**Customerno varchar2 (5), Cname varchar2 (50)**);

Implement check constraints to check Customerno starts with 'C'.

Cust\_Order (**Orderno varchar2(5), Odate Date**, Customerno **references Customer**, **Ord\_amt number(8)**);

Implement check constraints to check Orderno starts with 'O'.

Ord\_amt is derived attribute (default value is 0);

Item (**Itemno varchar2 (5), Item\_name varchar2 (30), unit\_price number (5)**);

Implement check constraint to check Itemno starts with 'I'.

Order\_item (**Orderno references Cust\_order**, **Itemno references item**, **qty number (3)**);

*Primary Key* is underlined.

**Questions**

**Question (A)**

Develop SQL query to list the details of customers who have placed more than 3 orders.

**Question (B)**

Develop a SQL query to list details of items whose price is less than the average price of all items in each order.

**Question (C)**

Develop a SQL query to list the orderno and number of items in each order.

**Question (D)**

Develop a SQL query to list the details of items that are present in 25% of the orders.

**Question (E)**

Develop an update statement to update the value of Ord\_amt.

**Question (H)**

Create a view that keeps track of detail of each customer and number of Order placed.

**(II) Write a stored procedure that receives as input the id of an employee and returns his id and the number of projects he participates in Employee (id, NAME) Works\_On (idEmpl, project)**

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**Q3: Consider the following relational schema**

Staff (Staffno number (5), Name varchar2 (30), Dob Date, Gender Char (2), Doj Date, Designation varchar2 (30), Basic\_pay number (6), Deptno varchar2 (5));

Gender must take value 'M' or 'F'.

Dept (Deptno varchar2 (5), Name varchar2 (30));

Skill (Skill\_code varchar2 (5), Description varchar2 (30), Charge\_Outrage number (3));

Staff\_skill (Staffno number (5), Skill\_code varchar2 (5));

Project (Projectno varchar2 (5), Pname varchar2 (5), Start\_Date Date, End\_Date Date, Project\_Manager\_Staffno number (5));

Project Number must start with 'P'.

Works (Staffno number (5), Projectno varchar2 (5), Date\_Worked\_On Date, Intime Timestamp, Outtime Timestamp);

Primary Key is underlined.

**Questions**

**Question (A)**

Develop DDL to implement the above schema specifying appropriate data types for each attributes and enforcing primary key, check constraints and foreign key constraints.

**Question (B)**

Populate the database with rich data set.

**Question (C)**

Develop a SQL query to list the departmentno and number of staff in each department,

**Question (D)**

Develop a SQL query to list the details of staff who earn the AVG basic pay of all staff.

**Question (E)**

Develop a SQL query to list the details of staff who have more than 3 skills.

**Question (F)**

Develop a SQL query to list the details of staff who have skills with a charge greater than 60 per hour.

**Question (G)**

Create a view that will keep track of the department number, department name, the number of employees in the department and total basic pay expenditure for the department.

**Question (H)**

Develop a SQL query to list the details of Dept. which has more than 5 staff working in it.

**Question (I)**

Develop a SQL query to list the details of staff who have more than 3 skills.

**(II) Write a stored procedure that receives as input the sex and the department and displays the average salary of the employees** Employees (id, name, salary, sex, Did) Department (Did, Dname)

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**Q4: Consider the following relational schema for a banking database application.**

Customer (Cid, Cname);

Branch (Bcode, Bname);

Account (Ano, Atype, Balance, Cid, Bcode);

An account can be a saving account or a current account. Check Atype in 'S' or 'C'. A customer can have both types of accounts.

Transaction (Tid, Ano, Tttype, Tdate, Tamount);

Ttype can be 'D' or 'W'.

D – Deposit, W – Withdrawal

Primary Key is underlined.

**Question (A)**

Develop DDL to implement the above schema specifying an appropriate data type for each attribute enforcing primary key, check constraints and foreign key constraints.

**Question (B)**

Populate the database with a rich data set.

**Question (C)**

Develop a SQL query to list the details of customers who have a saving account and a current account.

**Question (D)**

Develop a SQL query to list the details of branches and the number of accounts in each branch.

**Question (E)**

Develop a SQL query to list the details of branches where the number of accounts is less than the average number of accounts in all branches.

**Question (F)**

Develop a SQL query to list the details of customers who have performed three transaction on a day.

**Question (G)**

Create a view that will keep track of branch details and the number of accounts in each branch.

**(II) Write a stored procedure that receives as input the id of an employee and displays his name, Address and his salary. Then call this procedure for the employee id=5 Employee (id, FNAME, Address, LNAME, SALARY)**