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.

   a. Develop a SQL query to list details of Departments that offer more than 3 branches.
   b. Develop a SQL query to list the details of Departments that offer more than 6 courses.
   c. Develop a SQL query to list the details of courses that are common for more than 3 branches.
   d. Develop a SQL query to list students who got 'S' in more than 2 courses during single enrollment.

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.

Question (A)

    a. Develop SQL query to list the details of customers who have placed more than 3 orders.
    b. Develop a SQL query to list details of items whose price is less than the average price of all items in each order.
    c. Develop a SQL query to list the orderno and number of items in each order.
    d. Develop a SQL query to list the details of items that are present in 25% of the orders.

Q3

Consider the following relational schema
Staff (<u>Staffno</u> 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 (<u>Deptno</u> varchar2 (5), Name varchar2 (30));

Skill (<u>Skill_code</u> varchar2 (5), Description varchar2 (30), Charge_Outrage number (3));

Staff_skill (<u>Staffno</u> number (5), Skill_code varchar2 (5));

Project (<u>Projectno</u> varchar2 (5), Pname varchar2 (5), Start_Date Date, End_Date Date, Project_Manager_Staffno number (5));

Project Number must start with 'P'.

Works (<u>Staffno number (5), Projectno</u> varchar2 (5), Date_Worked_On Date, Intime Timestamp, Outtime Timestamp);

Primary Key is underlined.

    a. Develop a SQL query to list the departmentno and number of staff in each department,
    b. Develop a SQL query to list the details of staff who earn the AVG basic pay of all staff.
    c. Develop a SQL query to list the details of staff who have more than 3 skills.
    d. Develop a SQL query to list the details of staff who have skills with a charge outrate greater than 60 per hour.

Q4

Consider the following relational schema for a banking database application.
Customer (<u>Cid</u>, Cname);

Branch (<u>Bcode</u>, Bname);

Account (<u>Ano</u>, 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 (<u>Tid, Ano</u>, Tttype, Tdate, Tamount);

Ttype can be 'D' or 'W'.

D – Deposit, W – Withdrawal

Primary Key is underlined.

   a. Develop a SQL query to list the details of customers who have a saving account and a current account.
   b. Develop a SQL query to list the details of branches and the number of accounts in each branch.
   c. 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.
   d. Develop a SQL query to list the details of customers who have performed three transaction on a day.