

**VIDUSH SOMANY INSTITUTE OF TECHNOLOGY & RESEARCH**  
**Department of Information Technology**

**Subject Name: DBMS**  
**Subject Code: CT306-N**

**Semester: III**  
**Academic Year: 2022**

**Assignment: 1**

- Q 1** Define database. Explain the three level architecture of DBMS.
- Q 2** Explain different database users.
- Q 3** List the major functions performed by DBA
- Q 4** Explain DDL,DML,DCL
- Q 5** Explain advantages and disadvantages of Conventional File-based systems over Database management systems.

**Assignment: 2**

- Q 1** What is Relational Algebra? Define Relational Algebra Operation cross product with example.
- Q 2** Explain following relational algebra operation
  - (i) Natural join operation
  - (ii) Selection and projection operation
- Q 3** Given the following relations:  
Vehicle(reg\_no, make, color)  
Person(eno, name, address)  
Owner(eno, reg\_no)  
Write expression in the relational algebra to answer the following queries:
  - (i) List the reg\_no of vehicles owned by john.
  - (ii) List the names of persons who own maruti cars.
  - (iii) List all the red coloured vehicles.
- Q 4** Consider following schema and represent given statement in relation algebra from:  
Branch(branch\_name, branch\_city)  
Account(branch\_name, acc\_no, balance)  
Depositor(customer\_name, acc\_no)
  - (i) Find out the list of the customers who have an account at 'abc' branch.
  - (ii) Find out all customers who have an account in 'ahmedabad' city and the balance is greater than 10000.
  - (iii) Find a list of all branch names with their maximum balance.

- Q 5** Explain the following terms:  
1. Entity 2. Attribute 3. Weak Entity Sets 4. Participation Constraints 5. Mapping Cardinalities.
- Q 6** Explain Aggregation, Specialization and Generalization concepts in ER diagrams with suitable examples.
- Q 7** Draw E – R Diagram for the (i) School Management System (ii) Library Management System (iii) University Exam System
- Q 8** Construct an E-R diagram for a hospital with a set of patients and medical doctors. Associate with each patient a log of various tests suggested by doctors and examinations conducted. Use Specialization and Generalization in your diagram.

### Assignment 3

- Q 1** Consider following schema and write SQL for given statements.  
Student(RollNo, Name, Age, Sex, City)  
Student\_marks(RollNo, Sub1, Sub2, Sub3, Total, Average)  
Write query to  
(i) Display name and city of students whose total marks are greater than 225.  
(ii) Display name of students who got more than 60 marks in each subject.  
(iii) Display name of city from where more than 10 students come from.  
(iv) Display a unique pair of male and female students.
- Q 2** Write queries for the following tables: T1 ( Empno, Ename , Salary, Designation) T2 (Empno, Deptno.)  
(i) Display all the details of the employee whose salary is lesser than 10K.  
(ii) Display the Deptno in which Employee Seeta is working.  
(iii) Add a new column Deptname in table T2.  
(iv) Change the designation of Geeta from 'Manager' to 'Senior Manager'.  
(v) Find the total salary of all the employees.  
(vi) Display Empno, Ename, Deptno and Deptname.  
(vii) Drop the table T1.
- Q 3** For Supplier – Parts database  
Supplier(S#, sname, status, city)  
Parts(P#, pname, color, weight, city)  
SP(S#, P#, quantity)  
Answer the following queries in SQL.  
i) Find the name of parts having 'Red' color.  
ii) Delete parts whose weight is more than 100 gram.  
iii) Count how many times each supplier has supplied part 'P2'.  
iv) How many times shipment is for more than 100 quantities?

- Q 4** Explain Super key, Candidate key, Primary Key and Foreign key.
- Q 5** What is the constraint in the database? Explain types of constraints with suitable examples.
- Q 6** Write difference between DDL, DML, DRL.
- Q 7** Differentiate between DCL and TCL.

### **Assignment 4**

- Q 1** What is normalization? What is the need for normalization? Explain 1NF, 2NF and 3NF?
- Q 2** What is functional dependency? Explain non-loss decomposition.
- Q 3** Explain BCNF with the help of an example.
- Q 4** Given FD's for relation R{A,B,C,D,E,F}. Find closure of FD sets by applying Armstrong axioms?  
 $A \rightarrow B$ ,  $A \rightarrow C$ ,  $CD \rightarrow E$ ,  $CD \rightarrow F$ ,  $B \rightarrow E$
- Q 5** What are Multivalued dependencies? Explain with an appropriate example.

### **Assignment 5**

- Q 1** Explain Query Optimization Process.
- Q 2** Explain various steps involved in Query evaluation.
- Q 3** Explain the measures of query cost, selection operation and join.

### **Assignment 6**

- Q.1.** Explain Trigger and its types. Explain its applications, advantages, needs and also the syntax to create it.
- Q.2.** Explain Cursor and its types in PL/SQL
- Q 3** Write a PL/SQL block to print the sum of numbers from 1 to 50.

- Q 4** Write a PL/SQL block to print the given number is odd or even.
- Q 5** What is a view? What are its types? Write the syntax for creating a view.
- Q 6** Explain Hashing and b-trees structure in dbms.

## **Assignment 7**

- Q 1** What is a Transaction? Explain the properties of the transaction. Explain the States of the transaction with a neat sketch.
- Q 2** Explain Conflict and View Serializability with examples.
- Q 3** (i) Explain Two phase commit protocol  
(ii) Explain Two phase locking
- Q 4** What is deadlock? Explain Deadlock prevention and Detection techniques.
- Q 5** Explain immediate database modification log based recovery method. Also explain role of check point in log base
- Q 6** What is concurrency? What are the three problems due to concurrency? How the problems can be avoided, explain for one of the three problems.
- Q 7** Explain Time Stamp based protocols in detail.
- Q 8** Explain the concept of ACID properties in DBMS?

## **Assignment 8**

- Q.1.** Explain the difference between Discretionary access control and Mandatory access control.
- Q.2.** What is security of data? Explain data encryption.
- Q 3** What is authentication authorization and access control in DBMS?
- Q 4** What is SQL injection and how does it work?

## **Assignment 9**

- Q.1. Differentiate between web database and distributed database.
- Q.2. Define data warehouse. List the advantages of data warehouse.
- Q 3 Define datamining and explain it with example.
- Q 4 Write difference between Sql and nosql.

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