



S. D. COLLEGE OF ENGINEERING & TECHNOLOGY

Jansath Road Muzaffarnagar

SUBJECT NAME : DATA BASE MANAGEMENT SYSTEM
SUBJECT CODE : KCS – 501
SEMESTER : V
BRANCH : CSE / IT

ASSIGNMENT NO - 1

1. Draw the architecture of Data Base System.
2. Compare the three data models with respect to the basic operation and storage structure.
3. Explain the E/R model in details. Also justify the significance of this model.
4. Explain the DBMS language used for various database operations?
5. Explain in short
 - a. DBA
 - b. Schema and Subschema
 - c. Entities and Attributes.

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ASSIGNMENT NO – 2

1. Define the five basic operators of relational algebra with an example each.
2. Explain entity integrity and referential integrity rules in relational model. Show how these are realized in SQL.
3. Consider the following relational schemas:
EMPLOYEE (EMPLOYEE_NAME, STREET, CITY)
WORKS (EMPLOYEE_NAME, COMPANYNAME, SALARY)
COMPANY (COMPANY_NAME, CITY)
 - a) Specify the table definitions in SQL.
 - (i) Find the names of all employees who work for first Bank Corporation.
 - (ii) Find the names and company names of all employees sorted in ascending order of company name and descending order of employee names of that company.
 - (iii) Change the city of First Bank Corporation to 'New Delhi'.
4. Consider the following relations for a database that keeps track of business trips of salespersons in a sales office:
SALESPERSON (SSN, Name, start_year, Dept_no)
TRIP (SSN, From_city, To_city, Departure_Date, Return_Date, Trip_ID)
EXPENSE (Trip_ID, Account#, Amount)
Specify the following queries in relational algebra: (4x3 =12)
 - (i) Give the details (all attributes of TRIP) for trips that exceeded \$2000 in expenses.
 - (ii) Print the SSN of salesman who took trips to 'delhi'.
 - (iii) Print the trip expenses incurred by the salesman with SSN= '234-56-7890'.
5. In an organization several projects are undertaken. Each project can employ one or more employees. Each employee can work on one or more projects. Each project is undertaken on the required of client. A client can request for several projects. Each project has only one client. A project can use a number of items and an item may be used by several projects. Draw an E-R diagram and convert it to a relational schema.



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ASSIGNMENT NO – 3

1. What do you mean by normalization? Explain 1NF and 2NF with examples?
2. Define the term functional Dependencies.
3. What do you mean by decomposition of a relation? Consider the relational scheme R (A,B,C,D,E,F) and FD's $A \rightarrow BC$, $C \rightarrow A$, $D \rightarrow E$, $F \rightarrow A$, $E \rightarrow D$. Is the decomposition of R into $R_1(A, C, D)$, $R_2(B, C, D)$ and $R_3(E, F, D)$ lossless?
4. Give an example of a relational scheme R and a set of dependencies such that R is in BCNF but not in 4F.
5. Define partial functional dependency. Consider the following two sets of functional dependencies $F = \{A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H\}$ sets of functional dependencies $F = \{A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H\}$ and $G = \{A \rightarrow CD, E \rightarrow AH\}$. Check whether or not they are equivalent.



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ASSIGNMENT NO – 4

1. Define the term ACID properties?
2. Write short notes on:
 - a. Deadlock Avoidance in Database Transaction
 - b. Deadlock Recovery in Database Transaction
3. Give an example of a relational scheme R and a set of dependencies such that R is in BCNF but not in 4NF
4. What is log file? Write the steps for log-based recovery of a system with suitable example.
5. Which of the following schedules are conflicts serializable? For each serializable schedule find the equivalent schedule. S1: r1(x); r3(x); w3(x); w1(x); r2(x) S2: r3(x); r2(x); w3(x); r1(x); w1(x) S3: r1(x); r2(x); r3(y); w1(x); r2(z); r2(y); w2(y).



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ASSIGNMENT NO – 5

1. What is Time stamp-based protocol? What is need of time stamping protocol? Explain how timestamp ordering protocol works?
2. Explain the phantom phenomenon. Devise a time stamp-based protocol that avoids the phantom phenomenon.
3. What do you mean by multiple granularities? How is it implemented in transaction system?
4. Explain the following protocols for concurrency control.
 - a. Lock based protocols
 - b. Time Stamp based protocols
5. What is Two phase Locking (2PL)? Describe with the help of example

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