

September 2021

**RELATIONAL DATABASE MANAGEMENT SYSTEMS (FOR IT)**

Time Allowed: 1.5 Hours

Full Marks: 70

**Answer to Question No.1 is compulsory and Answer any two questions from the rest.**

1. Choose the correct answer from the given alternatives (any twenty): 20 x 2
- a) Schema in DBMS means- i) Redundancy ii) Structure iii) Abstraction
  - b) Primary Key is chosen by- i) Database administrator ii) Database Designer iii) Database Viewer
  - c) DDL stands for-  
i) Data Display Language ii) Data Design Language iii) Data Defination Language
  - d) Data Independence is- i) 2 types ii) 3 types iii) 4 types
  - e) Candidate key is the-  
i) Minimal set of Primary key ii) Minimal set of Super key iii) Minimal set of Composit key
  - f) DML stands for-  
i) Data Manipulation Language ii) Data Manual Language iii) Data Machine Language
  - g) \_\_\_\_\_ attribute can be computed at runtime. i) Multivalued ii) Stored iii) Derived
  - h) In ACID property 'I' stands for is- i) Isolation ii) Integrity iii) Integer
  - i) Full form of DCL \_\_\_\_\_.  
i) Data Central Language ii) Data Control Language iii) Data Constant Langage
  - j) Normalization is a process of-  
i) decomposing a set of relation ii) reduce redundancy iii) all of the above
  - k) Which of the following is not a DDL commands?- i) ALTER ii) DROP iii) SELECT
  - l) Views is a- i) Temporary table ii) Virtual Table iii) Dynamic Table
  - m) Which of the following is the way to undo the effects of an aborted transaction?  
i) Rollback ii) Recovery iii) Error control iii) Super key
  - n) Proper subset of candidate key is not a- i) Composit key ii) Primary key iii) Super key
  - o) This attribute can be divided in further-  
i) simple attribute ii) Composite attribute iii) stored attribute
  - p) Data abstraction has \_\_\_\_\_level. i) 1 ii) 2 iii) 3
  - q) Which is/are the component of RDBMS? i) Procedures ii)Data iii) all of the above
  - r) Binary relationship means- i) two entity set ii) three entity set iii) four entity set
  - s) A \_\_\_\_\_ key chosen by the database designer.  
i) Super key ii) Candidate key iii)Primary key

- t) Command for creating a database table is-  
i) START TABLE ii) CREATE TABLE iii) MAKE TABLE
- u) Command for inserting the value of a database table- i) INSERT ii) ENTER iii) PUSH
- v) \_\_\_\_\_ operation merges two different table into a single table.  
i) SELECT ii) INSERT iii) UNION
- w) An example of Multilevel index is- i) B-tree ii) B+ tree iii) all of the above
- x) An attribute is a \_\_\_\_\_ in a relation.- i) Row ii) Column iii) Tuple
- y) Meta data is- i) Data about Data ii) Data iii) Instance

2. a) Difference between DDL and DML?  
b) Look in to the following database table namely EMPLOYEE and answer the corresponding SQL query

**EMPLOYEE**

Employee_id	Employee_Name	Employee_Address	Employee_Contact
25	Rakesh Verma	Kolkata	9932556699
10	Arun Sharma	Delhi	9962553125

- i) Write a SQL code to Show the Employee Name whose address is Kolkata?  
ii) Write a SQL code to Show the details of employee whose Employee\_id is 10? 7.5+7.5
3. a) What is PL SQL? What are the uses of database trigger?  
b) Explain the use of cursor? Discuss Rollback and Recovery? 7.5+7.5
4. a) What do you mean by table and field in SQL?  
b) What are the different join operations performed in SQL? 7+8
5. a) Describe the ACID properties in transaction?  
b) Describe the different states of Transaction with diagram? 7.5+7.5
6. Write short notes on:  
a) Two phase locking.  
b) Deadlock and starvation? 7.5+7.5
7. a) What is Entity Set? Difference between weak entity and Strong entity?  
b) What are the different attributes? 8+7
8. Consider the employee database:  
Employee (emp\_id, emp\_name, street)  
Works (emp\_name, company\_name, salary)  
Company (company\_name, city)  
Manages (emp\_name, manager\_name)  
Write the appropriate SQL statement on the basis of the above table:  
a) Find the names and cities of residence of all employees who work for the UBI.  
b) Find the name, street addresses and cities of residence of all employees who work for the UBI and earn more than Rs. 50,000.  
c) find all employees in the database who do not work for the UBI.  
d) Find the 2<sup>nd</sup> highest salary for employees in UBI.  
e) Find the company that has the most employees. 3x5

9. a) Explain Functional Dependency? Consider a relational schema  $R(A,B,C,D,E,F)$  and  $F=\{A \rightarrow B, C \rightarrow DE, AC \rightarrow F, D \rightarrow AF, E \rightarrow CF\}$ . Find the closure of D and DE? 8+7  
b) Explain Super key, Primary Key?
10. a) Consider a relational schema  $R(A,B,C,D)$  and  $F=\{AB \rightarrow CD, C \rightarrow A, D \rightarrow B, \}$ . What are the candidate keys in the above relational schema ?  
b) Consider a relational schema  $R(A,B,C,D,E)$  and  $F=\{A \rightarrow B, B \rightarrow E, C \rightarrow D, \}$ . Check whether is it 3<sup>rd</sup> normal form or not? If not decompose it? 7.5+7.5
11. a) Why Normalisation is required? Discuss 3-Schema Architecture?  
b) Write about Data Independence? Also define Logical data independence and physical data independence? 7.5+7.5
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