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Question Paper Code: 1043432

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV/ DEC 2024
Third Semester
Computer Science and Engineering
U20CS301 / U20AI301 / U20IT304 – DATA BASE MANAGEMENT SYSTEM
(Common to Artificial Intelligence and Data Science & Information Technology)
(Regulation 2020)

Time: Three Hours | Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. Define instance and schema.

2. Define Data Dictionary.

3. Compare unique and primary key.

4. List the types of integrity constrains in ER model.

5. State the need of time stamps.

6. Differentiate strict two-phase locking protocol and rigorous two-phase locking protocol.

7. List the factors to be taken into account in choosing a RAID system.

8. What is dynamic hashing?

9. What are the advantages of OODB?

10. State the functions of XML schema.

PART – B (5 x 16 = 80 Marks)

11. (a) Demonstrate XML representation of university database system and also explain about DTD and XML schema. (16)

(OR)

(b) Explain Embedded SQL with its applications. (16)

12. (a) Explain various functional dependencies of an ER model with an example. (16)

(OR)

(b) Construct E – R Diagram for the "Restaurant Menu Ordering System", which will Facilitate the food items ordering and services within a restaurant. The entire restaurant scenario is detailed as follows. The Customer is able to view the food items menu, call the waiter, place orders and obtain the final bill through the computer kept in their table. The waiters through their wireless tablet PC are able to initialize a table for customers, control the table functions to assist customers, orders, send orders to food preparation staff (chef) and finalize the customer's bill. The food preparation staffs (Chefs), with their touch-display interface to the system, are able to view orders sent to the kitchen by waiters. During preparation, they are able to let the waiter know the status of each item, and can send notification when items are completed. The system should have full accountability and logging facilities, and should support supervisor actions to account for exceptional circumstances, such as a meal being refunded or walked out on. (16)

13. (a) (i) Explain When is a transaction said to be deadlocked? (8)

(ii) Explain the deadlock prevention methods with an example. (8)

(OR)

(b) Consider the following schedules. The actions are listed in the order they are schedule, and prefixed with transaction name.

S1: T1: R(X), T2: R(x), T1: W(Y), T2: W(Y), T1: R(Y), T2: R(Y)
S2:T3: R(X), T1: R(X), T1: W(Y), T2: R (Z), T2: W (Z), T3: R (Z)

For each of the schedules, answer the following questions:

(i) What is the precedence graph for the schedule?
(ii) Is the schedule conflict-serializable? If so, what are all the conflict equivalent serial schedules?
(iii) Is the schedule view-serializable? If so, what are all the view equivalent serial schedules? (16)

14. (a) Construct a B and B+ tree to insert the following key (the order of the tree is three) 32, 11, 15, 13, 7, 22, 15, 44, 67, 4. (16)

(OR)

(b) Demonstrate an understanding of static and dynamic hashing with an example. (16)

15. (a) Develop XML representation of university database systems and also explain about DTD and XML schema. (16)

(OR)

(b) Construct any Object definition Language and object query language by using object database. (16)

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