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Question Paper Code: 43805

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Third Semester

Information Technology

14UIT305 - DATABASE SYSTEMS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- In a one-to-many relationship, the entity that is on the one side of the relationship is called a(n) _____ entity.
(a) parent (b) child (c) instance (d) subtype
- Which of the following refers to something that can be identified in the users' work environment, something that the users want to track?
(a) Entity (b) Attribute (c) Identifier (d) Relationship
- A _____ is a stored program that is attached to a table or a view.
(a) pseudo file (b) embedded SELECT statement
(c) trigger (d) none of these
- SQL views can be used to hide
(a) columns and rows only (b) complicated SQL syntax only
(c) both (a) and (b) (d) none of these
- Who developed the normalization process.
(a) E.F. codd (b) F.F. codd (c) E.E. codd (d) None of the mentioned

6. A functional dependency between two or more non-key attributes is called
- (a) Transitive dependency (b) Partial transitive dependency
(c) Functional dependency (d) Partial Functional dependency
7. In order to undo the work of transaction after last commit which one should be used
- (a) View (b) Commit (c) Rollback (d) Flashback
8. The deadlock state can be changed back to stable state by using _____ statement.
- (a) Commit (b) Rollback (c) Save point (d) Deadlock
9. Tertiary storage is built with
- (a) a lot of money (b) unremovable media
(c) removable media (d) secondary storage
10. RAID stands for _____
- (a) Redundant Arrays of Independent Disk
(b) Reduced Array of Inexpensive Disk
(c) Random Atomic Identifier
(d) Repeat Atomic Inexpensive Data

PART - B (5 x 2 = 10 Marks)

11. Define Data independence.
12. The employee information in a company is stored in the relation
Employee (name, sex, salary, deptName)
Write the SQL query for the average salary of male employees is more than the average salary in the company.
13. Why is it necessary to decompose a relation?
14. State the benefits of strict two - phase locking.
15. List the factors to be considered in choosing a RAID level.

PART - C (5 x 16 = 80 Marks)

16. (a) Describe with a neat diagram the three schema architecture of a database system.

(16)

Or

(b) Discuss the various notations used in ER model. Draw an ER model for hospital information system. (16)

17. (a) employee (person-name, street, city)
works (person-name, company-name, salary)
company (company-name, city)
manages (person-name, manager-name)

For the above relational database where the primary keys are underlined, give an expression in the relational algebra to express each of the following queries:

- Find the names of all employees who work for First Bank Corporation.
- Find the names and cities of residence of all employees who work for First Bank Corporation.
- Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than \$10,000 per annum.
- Find the names of all employees in this database who live in the same city as the company for which they work.
- Find the names of all employees who live in the same city and on the same street as do their managers.
- Find the names of all employees in this database who do not work for First Bank Corporation. (16)

Or

(b) (i) Discuss the strengths and weakness of the trigger mechanism. Compare triggers with other integrity constraints supported by SQL. (8)

(ii) Outline tuple relational calculus. (8)

18. (a) Illustrate the use of functional dependency and multivalve dependency with suitable examples. (16)

Or

(b) Explain 1NF, 2NF, 3NF and BCNF with suitable example. (16)

19. (a) Analyze the use of 2-phase locking protocol in concurrency control technique. (16)

Or

(b) Explain various recovery techniques during failure of a transaction in detail along with system recovery. (16)

20. (a) Explain in detail about RAID. (16)

Or

(b) (i) Describe the structure of B+ tree and give the algorithm for search in the B+ tree with example. (10)

(ii) Describe the structure of multimedia databases. (6)
