

Reg. No

Name

23U332

BCA DEGREE END SEMESTER EXAMINATION : NOVEMBER 2023

SEMESTER 3 : MOBILE APPLICATIONS AND CLOUD TECHNOLOGY

COURSE : 19U3CRBCA9 : RDBMS

(For Regular 2022 Admission and Improvement / Supplementary 2021/2020/2019/2018/2017/2016 Admissions)

Time : Three Hours

Max. Marks: 75

PART A

Answer All (1 mark each)

1. Describe the use of isolation level in recovery proces.
2. Explain the Domain in a relation.
3. Define Database.
4. Define trivial dependency.
5. Illustrate the advantage of using a database rather than using files.
6. What is Relational Algebra?
7. what is meant by insertion anomaly in a relation?
8. What is mean by read only transaction?
9. Give the syntax and use of Select statement.
10. What is mean by partially committed state in a transaction?

(1 x 10 = 10)

PART B

Answer any 8 (2 marks each)

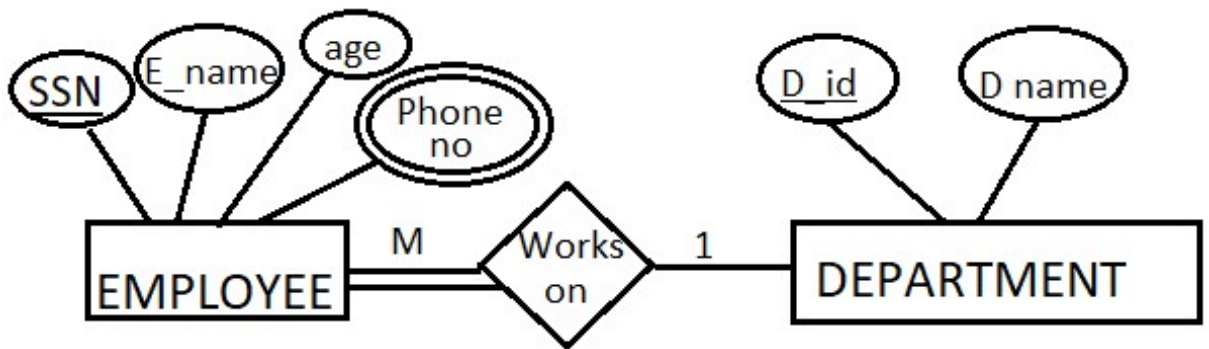
11. Differentiate between the stored and the derived attributes.
12. Differentiate between total participation and partial participation.
13. Construct an SQL command to retrieve the list of employees and the projects they are working on, ordered by the department, and within each department, ordered alphabetically by the last name, then the first name.
14. What is mean by atomicity in a transaction?
15. Give example for serial schedule.
16. What are the different types of lock?
17. Describe third normal form with an example.
18. Consider the schema EMPLOYEE (FNAME, LNAME, AGE, SALARY). Construct SQL query to retrieve the list of employees from employee table by ascending order of their first name
19. What is mean by dependency preservation property in the decomposition of a table?
20. Describe the conditions to implement UNION operation in Relational Algebra.

(2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

21. Convert the ER diagram given below to the relational model.



Find all relations from the above ER model. Write the relational schema for each relation

22. Explain recovery isolation levels.
23. Construct examples for ER model relationship types: one-to-one, one-to-many, many-to-many.
24. Define aggregate functions? Give examples for aggregate functions?
25. Consider the relation $R=(ABCD)$ and the set of functional dependencies $F=[AB \rightarrow CD, C \rightarrow A, D \rightarrow B]$. Identify all the candidate keys of the relation R ?
26. Consider the relation $R=(ABCDE)$, the set of functional dependency $F=[A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A]$ and the decomposition $R_1(ABC)$ and $R_2(ADE)$:
 - a) Is the decomposition is lossless? Why?
 - b) Is the decomposition dependency preserving?
27. Define Data independence. What is the difference between logical and physical data independence?

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. UPS prides itself on having up-to-date information on the processing and current location of each shipped item. To do this, UPS relies on a company-wide information system. Shipped items are the heart of the UPS product tracking information system. Shipped items can be characterized by item number (unique), weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the UPS system at a single retail center. Retail centers are characterized by their type, uniqueID, and address. Shipped items make their way to their destination via one or more standard UPS transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique scheduleNumber, a type (e.g, flight, truck), and a deliveryRoute. Create an Entity Relationship diagram that captures this information about the UPS system. Be certain to indicate identifiers and cardinality constraints.
29. What is mean by database transaction? Draw schematic diagram of transaction states and explain each transaction states?
30. Explain 1NF, 2NF, 3NF, and BCNF. Consider the relation $R=(ABCDEF)$ and the set of functional dependencies $F=[A \rightarrow FC, C \rightarrow D, B \rightarrow E]$. Normalize R into 2NF and then into 3NF.
31. Consider the following relations:
 EMPLOYEE(SSN, FNAME,LNAME, GENDER, AGE, SALARY)
 DEPENDENT(ESSN, FNAME, LNAME, GENDER, ADDRESS)
 Construct SQL expressions for the retrieving the first name of each employee who has a dependent with the first name and is the same sex as the employee.

(12 x 2 = 24)