Reg. No. : | | | | | | | | | | |

Question Paper Code: 31425

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Fourth Semester

Computer Science and Engineering

01UCS405 – DATABASE MANAGEMENT SYSTEMS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Describe the responsibilities of the DBA and the database designers.
2. Define Candidate key and Primary key with suitable example.
3. Distinguish between Data Definition Language (DDL) and Data Manipulation Language (DML).
4. Write an SQL query to retrieve the details of employee drawing the second largest salary from the relation schema: employee (Emp-No, Emp-Name, Designation, and Salary).
5. List out the desirable properties of transaction.
6. Describe the need for concurrency control.
7. Compare static hashing with dynamic hashing.
8. When it is preferable to use a dense index rather than a sparse index? Justify your answer.
9. Define data classification.
10. List the various data warehouse tools.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Discuss the main characteristics of the database approach and how it differs from traditional file systems. (6)

(ii) Explain briefly about the architecture of Database Management System with neat sketch. (10)

Or

(b) (i) Construct an ER model for student administration system. Students who apply for a course are registered in the system. Short listed candidates are called for interview and their marks recorded. Selected candidates are admitted. (6)

(ii) Describe normalization. Explain 1NF, 2NF and 3NF with suitable example. (10)

12. (a) (i) Consider the insurance database given below where primary keys are underlined. Construct the SQL queries for the following relational database.

Person (driver-id, name, address)
Car (license, model, year)
Accident (report-number, date, location)
Owns (driver-id, license)
Participated (driver-id, car, report-number, damage-amount)

(1) Find the number of accidents in which the cars belonging to "*XXX*" were involved.

(2) Add a new accident to the database; assume any values for required attributes.

(3) Delete the TATA-SUMO belonging to *XXX*.

(4) Update the damage amount for the car with license number "*AAB4545*" in the accident with report number "*AA1538*" to Rs.20, 000. (12)

(ii) List the data types that are allowed for SQL attributes. (4)

Or

(b) Briefly explain the optimization techniques that apply heuristic rules to modify the internal representation of a query with suitable example. (16)

13. (a) (i) Discuss how serializability is used to enforce concurrency control in a database system with neat sketch. (8)

(ii) Explain the different measures of transaction equivalence in detail. Differentiate between conflict equivalence and view equivalence. (8)

Or

(b) (i) Discuss briefly about the timestamp ordering protocol for concurrency control with neat sketch. (8)

(ii) Illustrate the principles of deadlock and starvation related with concurrency control in detail. (8)

14. (a) Explain how *data retrieval*, *insertion* and *deletion* are done using B tree and B+ tree indices in detail with neat sketch. (16)

Or

(b) Explain the Spatial database concepts in detail with neat sketch. (16)

15. (a) Explain briefly about Mandatory Access Control (MAC) and Role-based Access Control for multilevel security with neat sketch. (16)

Or

(b) (i) Explain the important challenges in database security. (4)

(ii) Explain the various association rules involved in data mining in detail. (12)

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