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13MCA25

Second Semester MCA Degree Examination, Dec.2017/Jan.2018
Database Management Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Explain any two characteristics and three advantages of DBMS approach, briefly. (10 Marks)
b. Explain briefly, actors on the scene and workers behind the scene of DBMS. (10 Marks)
- 2 a. What is data model? Describe the three-schema architecture of DBMS with a diagram. (10 Marks)
b. Explain centralized and client-server architectures for DBMS. (10 Marks)
- 3 a. What is entity type? Draw an ER structure for representing the relation between a strong entity and a weak entity with an example. (06 Marks)
b. Consider a MOVIE database in which data is recorded about the movies industry. Data requirements of movies industry are captured. Each movie is identified by title and year of release. Each movie has length in minutes and classified under are genres (like action, horror etc.) Each movie has a plot outline. Production companies are identified by name and each has an address. A production company produces one or more movies. Actors are identified by id-other details like name and date of birth of actors are also stored. Each actor acts in one or more movies. Each actor has a role in movie. Directors are identified by id. Other details like name and date of birth of directors are also stored. Each director directs one or more movies. Each movie has one or more actors and one or more directors and is produced by a production company.
Design an E-R diagram for the movie database and mention the appropriate participation and cardinality ratios. (10 Marks)
c. List all the notations used in ER diagram. (04 Marks)
- 4 a. Explain the various update operation deal with constraint violations. (10 Marks)
b. Explain the SELECT and PROJECT Uniary Relational operations with an example. (10 Marks)
- 5 a. Consider the following relational schema and answer the following queries using relational algebra:
AUTHOR (author_id, author_name, author_city)
PUBLISHER (publisher_id, pname, pcity)
CATALOG (book_id, title, author_id, publisher_id, year, price)
(i) List the title of the books written by 'Ramez Elmasri'.
(ii) Retrieve the author details for the book published in the year 2012.
(iii) Retrieve the name of the publisher who published the book cost above 600.
(iv) List the book-ids of the books written by the authors from Bangalore. (08 Marks)
b. What is Join? Explain the natural join, equi join, θ join, outer join with an example. (10 Marks)
c. Explain the Binary relational operations: Division with an example. (02 Marks)

- 6 a. Consider the following database schema:
Employee (SSN, Ename, salary, address, DNo.)
Department (DNo, Dname, MSSN)
Project (PNo, PName, Plocation)
Works ON (SSN, PNo, Hours)
Solve the following queries using SQL:
- (i) List all the SSN and Salary starts with 'B'.
 - (ii) List the SSN and project name of all the employees who work on the project located at 'Mysore'.
 - (iii) Retrieve the name of the departments whose employees draw salary below 20000.
 - (iv) Retrieve the name and address of all employees who work for the 'Admin' department. (08 Marks)
- b. Give the syntax and example for the following SQL commands:
(i) DROP (ii) SELECT (iii) INSERT (iv) ALTER (08 Marks)
- c. What is view? Describe and syntax views in SQL. Give an example. (04 Marks)
- 7 a. What is normalization? Explain the 1NF, 2NF and 3NF with example. (10 Marks)
b. Define functional dependency. Explain Boyq-codd normal form with example. (10 Marks)
- 8 a. Explain the Triggers and function in PL/SQL with an example. (10 Marks)
b. Explain the procedures and exception handling in PL/SQL with an example. (10 Marks)
