Printed Pages – 4

TCS – 402

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1068 Roll No.

B.Tech.

(SEM IV) EVEN SEMESTER THEORY EXAMINATION, 2009-2010

DATA BASE MANAGEMENT SYSTEM

Time : 3 Hours *Total Marks : 100*

Note : *(i) Attempt **ALL** questions as per directions given thereof.*

*(ii) **All** questions carry **equal** marks.*

(iii) Be precise in your answer.

*(iv) **No second** booklet will be provided.*

1. Answer **any two** of the following : **(2x10=20)**

(a) Draw the overall structure of DBMS and explain its various components.

(b) Discuss the candidate key, primary key, super key, composite key, and alternate key.

(c) Discuss the data redundancy and consistency, referential integrity, domain constraints and data models.

2. Answer **any two** of the following : **(2x10=20)**

(a) (i) Define and explain the specialization and generalization. Discuss the physical and logical independence.

(ii) Explain various types of DBMS languages.

(b) Draw an E-R diagram of a book club. The book club has members. The book club sales books to its members. The member places orders for books, which the book club fulfills. Each order contains one or more than one books. The books are written by author(s). The publisher publishes the books and the author can write more than one book and a book can have more than one author. A book is published by publisher, but a publisher publishes many books. A member can place more than one order. He also can choose not to place an order. The book club sales many books.

(c) (i) Explain the ACID properties. Explain them.

(ii) Write and explain the advantages of DBMS over the file system.

3. Answer **any two** of the following : **(2x10=20)**

(a) Consider the following database schema :

Sailors (sid, sname, rating, age)

Boats (bid, bname, color)

Reserves (sid, bid, day)

The primary keys are underlined.

(i) Find the sids of the sailors with age over 20 who have not reserved a red boat.

(ii) Find the names of sailors who have reserved a red and a green boat.

(iii) Find the names of sailors who have reserved all boats.

Express the above queries in Relational Algebra and SQL.

(b) Consider the following database schema :

Emp (pname, street, city)

Works (pname, cname, salary)

Company (cname, city)

Manages (pname, mname)

Where the primary keys are underlined.

(i) Find the names of all employees who work for company "FBC".

(ii) Give all the managers in this database a 10% salary raise.

(iii) Give all employees of "FBC" a 10% salary raise.

(iv) Modify the database so that Jones now lives in new town.

Express the above queries in SQL.

(c) Explain the basic relational algebra operations, assume suitable example to explain them.

4. Answer **any two** of the following : **(2x10=20)**

(a) Describe the term MVD in context of relational database management system by giving an example. Discuss 4NF and 5NF also.

(b) What do you mean by decomposition of a relation ? Consider a relation R with attribute A, B, C, D and FD's given as A->BC, B->C, A->B, AB->c, AC->D compute a minimal set of FD's that is equivalent to this given set.

(c) What do you mean by normalization ? Explain 1NF, 2NF, 3NF and BCNF with examples.

5. Answer **any two** of the following : **(2x10=20)**

(a) Define serializability. Explain Dead lock detection schemes.

(b) Explain the following :

(i) Cascading Rollback

(ii) Recoverable Schedules

(iii) Log Scaning

(c) What do you mean by time stamping protocols for concurrency control ? Discuss multi-version scheme of concurrency control.

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