The Open University of Sri Lanka

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Master of Arts in Teacher Education
Final Examination 2008

CSE1175: Database Management Systems

Duration: 2 Hours

Date: 01.06.2008 **Time: 10.00 am -12.00 noon**

Answer Four Questions only.

(01)

i. Give three tasks that should be done in order to convert a manual file system into a matching computer file system.

ii. Very briefly, state *four* problems found in file systems.

iii. With the help of an example, explain *Structural* and *Data Dependence*.

iv. With the help of a well-defined example, explain briefly about *Data Inconsistency*. You need not write the formal definition of data inconsistency.

(02)

i. What do you understand by the terms *Data* and *Information*? Describe very briefly.

ii. A computer database is a shared/integrated computer structure. Unlike in a manual database, some additional facts are kept in a computer database. Explain briefly giving examples.

iii. What is *Data Redundancy*? Explain with the help of an example.

(03)

i. With the help of an example, discuss each of the following terms:
   a) Field b) Record c) File

ii. Give examples for the following:
   (a) Derived attribute
   (b) Recursive relationship
   (c) Weak entity

iii. Attributes in a database are classified as SingleValued/Multivalued. Explain using examples.

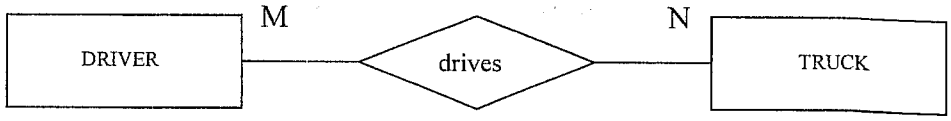
iv. From the above two classes of attributes indicated in part iii) which one is the most suitable for practical application?

(04)

i. State four types of users in a database system and very briefly describe their functions.

ii. "*Within the broad key classification, several specialized keys can be defined*" Discuss what you mean by the following:
   a. Super Key
   b. Candidate Key
   c. Primary Key

iii. Suppose that you have the entity relationship model shown in the following figure:



Note: During some time interval, a *DRIVER* can drive many different *TRUCK*s and any *TRUCK* can be driven by many *DRIVERS*s

How would you convert this model into an entity relationship model that displays only 1:M relationships? (Make sure that you draw the revised entity relationship model)

(05) Consider the following set of requirements for a University Database.

i. The university consists of several faculties and only one dean administrates each faculty.

ii. Each faculty consists of several departments and these departments offer courses.

iii. Each department has students who take courses.

iv. Lecturers are attached to departments and for a course, combined teaching is allowed.

Identify the entities and draw the conceptual schema for this database application. Show clearly the attributes and relationship types among entities. State clearly any assumptions you make.

(06)

i. Classify (use one or two lines) database systems according to

- No of users
- Location
- Expected type and extent of use

ii. Consider the following ERD:

We need to keep track of each employee's name, employee number, job classification, amount of Rupees paid per hour for a particular job classification, number of hours worked by an employee on a particular project, project number and the project name.

(a) Describe the above ERD by considering the attributes of each entity and the relationship type. State any assumptions you make.

(b) Map the above ERD and obtain the Relational Schema.