

CS403 Data Base Management System

Mid Term Examination – February 2005

Time Allowed: 90 Minutes

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions. Marks are written adjacent to each question.
2. Do not ask any questions about the contents of this examination from anyone.
 - a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.
 - b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.

You are allowed to use MS VISIO to make diagrams. If you do so please remember to copy and paste your code into the examination solution area.

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

Total Marks: 50

Total Questions: 9

Question No. 1

Marks : 12

Give precise answers.

- a) How do we represent many-to-many relationship with an entity?
- b) How do we represent an multi-valued attribute in E-R diagram? How can we transform such an attribute into our relational design?

- c) Give the example from a real table (with actual attributes) having transitive dependency. Mention the problems that the table may have due to transitive dependency and how would you remove them
- d) What are two necessary conditions to identify a candidate key out of the given FDs for a relation R.

Question No. 2

Marks : 15

Explain the following with examples

- a) Functions of DBA
- b) specialization & Generalization
- c) Entity and Entity Instance

Question No. 3

Marks : 1

SQL commands can be classified into three types. Which is NOT an SQL command type?

- ☐ DDL
- ☐ DML
- ☐ DGL
- ☐ DCL

Question No. 4

Marks : 1

A ____ is the smallest unit of application data recognized by system software.

- ☐ Row
- ☐ Field
- ☐ Record
- ☐ Table

Question No. 5

Marks : 1

Which is NOT an advantage of the database approach?

- ☐ Limited data sharing
- ☐ Minimal data redundancy
- ☐ Improved data quality
- ☐ Reduced program maintenance

Question No. 6

Marks : 1

Which is NOT a component of a relational database?

- Entity
- Table
- Attribute
- Hierarchy

Question No. 7

Marks : 1

Which is not a disadvantage of traditional file processing systems?

- Program-data dependence
- Reduced data redundancy
- Limited data sharing
- Lengthy development time

Question No. 8

Marks : 5

Fill in the blanks

- a) The term _____ refers to bare facts recorded in the database.
- b) A major reason for 3-level architecture is to provide _____.
- c) A (n) _____ consists of entities and resources.
- d) A _____ entity type does not need an identifier.
- e) _____ are represented using diamonds linked with participant ETs

Question No. 9

Marks : 13

Given the scenario:

Temporary Employment Corporation (TEC) places temporary workers in companies during peak periods. TEC's manager gives you the following description of the business: TEC has a file of *candidates* who are willing to work. If the candidate has worked before, that candidate has a specific *job history*. Each candidate has several *qualifications*. TEC also has a list of *companies* that request temporaries. Each time a company requests a temporary employee, TEC makes an entry in the *openings* folder. This folder contains an opening number, company name, required qualifications, starting date, anticipated ending date, and hourly pay. Each opening requires only one specific or main qualification. When a candidate matches the qualification, he/she is given the job, and an entry is made in the *placement record* folder. This folder contains an opening number, candidate number, total hours worked, and so on. In addition, an entry is made in the job history for the candidate.

Draw the E-R diagram for the above, providing the degree and cardinalities.