Database Management System – cs422 DE

Assignment 5 – Week 6

This assignment is based on lecture 6 (chapter 12).

○ Submit your *own work* on time. No credit will be given if the assignment is submitted after the due date.
○ Note that the completed assignment should be submitted in .doc, .docx, .rtf or .pdf format only.
○ In MCQs, if you think that your answer needs more explanation to get credit then please write it down.
○ You are encouraged to discuss these questions in the Sakai forum.

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(1) A student can take not more than 5 subjects in a semester. The number of students allowed in a subject in a semester is not more than 40. The student – subject relationship is:
(A) 5:40 (B) 40:5
(C) N:5 (D) 40:M
ANS:

(2) Which of the following is NOT a basic element of all versions of the E-R model?
(A) Entities
(B) Attributes
(C) Relationships
(D) Primary keys
ANS:

(3) The attribute *name* could be structured as a attribute consisting of first name, middle initial, and last name. This type of attribute is called
(A) Simple attribute
(B) Composite attribute
(C) Multivalued attribute
(D) Derived attribute
ANS:

(4) Which of the following indicates the minimum number of entities that must be involved in a relationship?
(A) Maximum cardinality
(B) Minimum cardinality
(C) ERD
(D) Keys
ANS:

(5) Which of the following is a single valued attribute
(A) Register_number
(B) Address
(C) SUBJECT_TAKEN
(D) Reference
ANS:

(6) In a one-to-many relationship, the entity that is on the many side of the relationship is called as
(A) Strong entity
(B) Weak entity
(C) Entity that has optional participation in the relationship
(D) Entity that has mandatory participation in the relationship
ANS:

(7) Describe what attributes represent in an ER model and provide examples of simple, composite, single-valued, multi-valued, and derived attributes.
(Review Question 12.3 in 5th edition/ 11.3 in 4th edition)
ANS:
An attribute represents a property of an entity or a relationship type Examples:

Simple: years of study

Composite: name formed by first name, last name

Single-valued:branchNoattribute of Branch

Multi-valued:telNoattribute of Branch

Derived: salary, calculated by worked hours times salary

(8) Describe how strong and weak entity types differ and provide an example of each.
(Review Question 12.8 in 5th edition/ 11.8 in 4th edition)
ANS:
A strong entity type is an entity type that is notexistence-dependent on some other entity type

A weak entity type is an entity type that is existence-dependent on some other entity type.

(9) Create an ER diagram for each of the following descriptions:
(Exercise 12.10 in 5th edition/ 11.10 in 4th edition)

a. Each company operates four departments, and each department belongs to one company.
ANS:

Tables: Company Department
1 4

b. Each department in part (a) employs one or more employees, and each employee works for one department.
ANS:

Tables: Department Employee
1 1.*

c. Each of the employees in part (b) may or may not have one or more dependants, and each dependant belongs to one employee.
ANS:

Tables: Employee Dependent

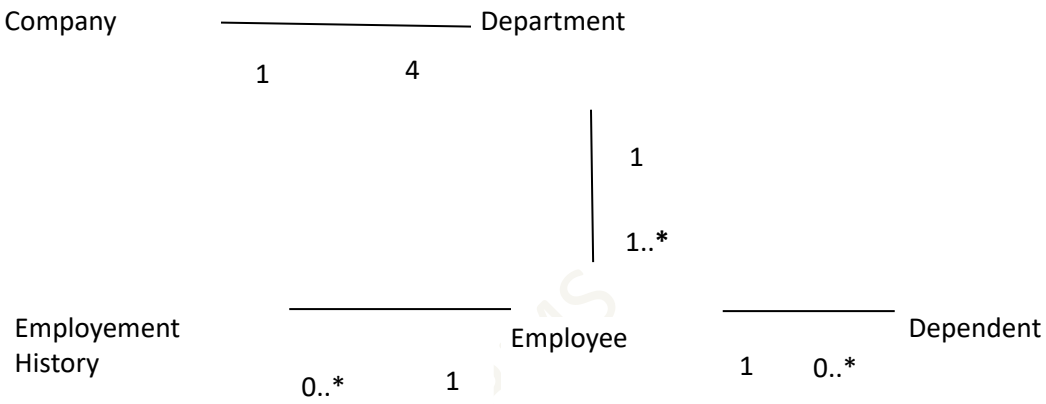
1 0.*

d. Each employee in part (c) may or may not have an employment history.
ANS:

Tables: Employee EmployeeHistory

1 0.*

e. Represent all the ER diagrams described in (a), (b), (c), and (d) as a single ER diagram.
ANS:



(10) Solve exercise 12.12 from the 5th edition (11.12 from the 4th edition). If time permits, solve from *a-* *f.* Otherwise, it's ok if you just solve *f.*

ANS: