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: B

(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: D

(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: B

(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: B

(5) Which of the following is a single valued attribute

(A) Register_number
(B) Address
(C) SUBJECT_TAKEN
(D) Reference
ANS: A

(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: B

(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:
Attributes are the properties which define the entity type in an ER model. For example, PersonId, FirstName, MiddleName, Lastname and DateOfBirth are the attributes which defines the entity type Person.
Simple: Atomic values that can't be further divided into components. Ex: id of employee.
Composite: First Name, Middle Name and Last Name of the Name.
Single-Valued: Title of Book attribute.
Multi-valued: Phone Number is the multivalued example.
Derived Attribute: Percentage attribute of Student Entity.

(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:
Strong Entity: entity that doesn't depend on any other entity is strong entity. It contains primary key. Tire entity is the strong entity.

Weak Entity: It is dependent on the strong entity for the existence. It depends on the parent entity and doesn't contain primary key. An example of weak entity is loan entity which only exist if there is customer entity.

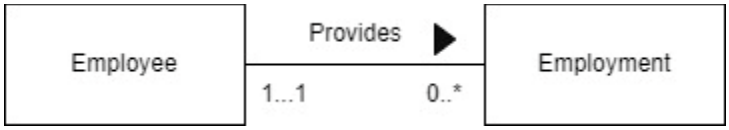
(9) Create an ER diagram for each of the following descriptions:
(Exercise 12.10 in 5th edition/ 11.10 in 4th edition)

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

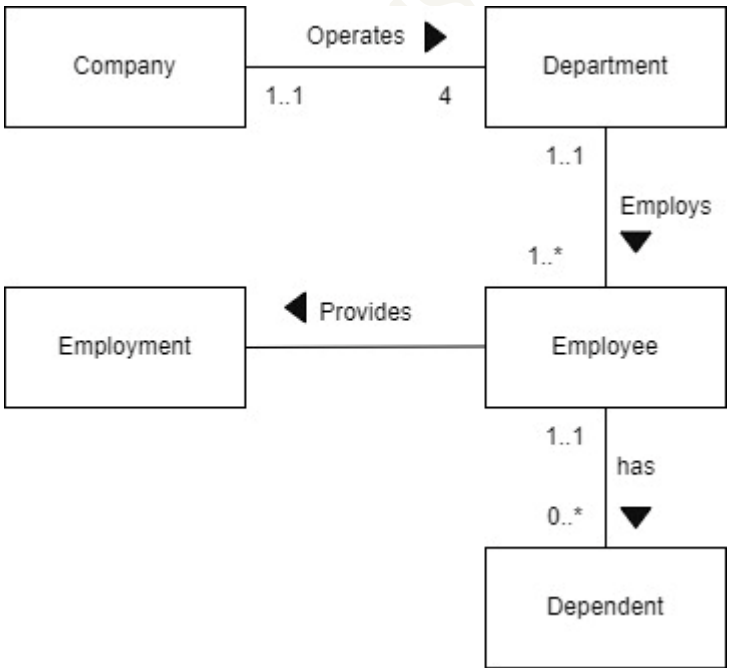
b. Each department in part (a) employs one or more employees, and each employee works for one department.
ANS:

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:

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



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: