**Database Management System – cs422 DE**

**Assignment 6 – Week 9**

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**This assignment is based on lecture 8 (chapter 16 & 17).**

○ 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) 3NF essentially identifies

**A. 1-* relationships**
B. * - * relationships
C. 1-1 relationships
D. None of the above

(2) While checking our tables for normalization, if we find that they are not even in 2NF then we must have missed some

A. 1-* relationships
**B. * - * relationships**
C. 1-1 relationships
D. None of the above



(3) How to identify parent and child entities in a relationship?

Parent and child entities are identified using participation constraints. The entity that has optional participation in the relationship is designated as the parent entity, and the entity that has mandatory participation in the relationship is designed as the child entity. It is important to gain note that the participation for a given entity in a relationship is represented by the minimum value on the opposite side of the relationship

(4) Solve review question 17.2/ 16.2 (a,b,c,d,g,i) from 5th /4th edition of the course text book.

a) strong entity types: objects are represented by their attributes and, as objects are interring distinguishable, a subset of these attributes forms a primary key for uniquely identified an instance of an entity. Entity types that have primary keys are called strong entities.

b) weak entity types; instance of weak entity sets associated with the same instance of the strong entity must be distinguishable from each other by a subset of the attributes of the weak entity. This subset of the attributes is called discriminator.

c) one-to-many (1:*) binary relationship types; one to many relationships between entity sets indicates that for an occurrence of the entity, there could be zero, one or more entities from the other entity set.

d) One-to-one binary relationship types: One to one relationship between entity sets indicates that for each entity, in either set there is at most one entity in the second set that is associated with it. E.g. Employee and Address is one to one since each employee has one address associated with it.

g) Many-to –many binary relationship types: When one or more value in an entity is associated with one or more values to other entity in a relationship. E.g. one or more customer can purchase many different products.

i) Multi-value attributes: Create a relation to represent the multi-valued attribute and post a copy of the primary key of the owner entity into the new relation to act as a foreign key. E.g. the hobbies for a client, the proper way to handle this is to maintain the data in a one - to - many child tables.



(5) Discuss how the technique of normalization can be used to validate the relations derived from the conceptual data model. (17.3/16.3)

The logical data model can be validated using the technique of normalization and against the transactions that the model is required to support. Normalization is used to improve the model so that it satisfies various constraints that avoid unnecessary duplication of data. Normalization ensures that the resultant model is a closer model of the enterprise that it serves, it is consistent, and has minimal redundancy and maximum stability

(6) Solve exercise 17.8/16.8 from the 5th /4th edition of the course text book. In the ERD, only those attributes are listed which are PK for that entity. You are required to add more attributes to the relations which will be logically applicable to that entity.

PaymentMethod(pMethodNo,....)

Invoice(invoiceNo, pMehtodNo, orderNo)

Order(orderNo, customerNo)

OrderDetail(orderDetailId, orderNo, productNo)

Customer(customerNo)

Employee(employeeNo) Product(productNo)

Shipment(shipmentNo, orderDetailId, employeeNo, sMethodNo)

Note: Dashed underline means Foreign Key, Solid underline means Primary Key