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Name :

Class :

Matric No :

OBJECTIVES

To have some experienced create data models and Entity Relationship Diagram Model

PLEASE ANSWER ALL QUESTIONS

DATA MODELS

QUESTION 1 - THE PREMIER HARDWARE COMPANY

Premier Hardware (PH) is a wholesaler and distributor of various manufacturers' tools and other hardware products. Its customers are hardware and home improvement stores, which in turn sell the products at retail to individual consumers.

As a middleman it buys its goods from the manufacturers and then sells them to the retail stores. Below is a description of how it operates.

PH employs salesperson to market and sell its products to customers. SALESPERSON has four attributes (Salesperson Number, Name, Commission Percentage, Year of Hire), with Salesperson Number serving as the unique identifier of the salespersons. A salesperson works in exactly one office. A salesperson has no customers or many customers. A salesperson is authorized to sell at least one and probably many products.

A product is sold by at least one and possibly many salespersons. The PRODUCT entity has three attributes (Product Number, Name, Unit Price), with Product Number being the unique identifier. The company is interested in keeping track of how many units of each product each salesperson has sold.

OFFICE has three attributes (Office Number, Telephone, Size). Office Number is the unique identifier. An office has either no salespersons working in it or one salesperson.

Customers are hardware or home improvement stores. The CUSTOMER entity has three attributes (Customer Number, Name, HQ City) and Customer Number is the unique identifier. A customer must have exactly one salesperson. A customer must have at least one but can have many employees. An EMPLOYEE(Employee Number, Name, Title) works for exactly one customer. PH has an interest only in maintaining data about the people who are its customers' employees as long as their employer remains a customer of PH. If a particular hardware store or home improvement chain stops buying goods from PH, then PH no longer cares about that store's or chain's employees. Furthermore, while PH assumes that each of its customers assigns their employees unique employee numbers, those numbers can only be assumed to be unique within that customer store or chain. Draw the ERD for PH as described above.

QUESTION 2 – VERY POPULAR BOOKSTORES

Very Popular Bookstores (VPB), a chain of bookstores wants to keep track of the books it sells, their publishers, their authors, and the customers who buy them.

The BOOK entity has four attributes (Book Number, Name, Publication Year, Pages); Book Number is the unique identifier. A book has exactly one publisher. A book must have at least one author but can have many. A book that VPB carries may not as yet have been bought by any of its customers or may have been bought by many of its customers.

PUBLISHER has five attributes (Publisher Name, City, Country, Telephone, Year Founded); Publisher Name is the unique identifier of the PUBLISHER entity. A publisher may have published many books that VPB carries; however, VPB also wants to be able to keep track of some publishers that currently have no books in VPB's inventory.

For a person to be of interest to VPB as an author, she must have written at least one and possibly many books that VPB carries. An AUTHOR has four attributes (Author Number, Name, Year Born, Year Died); Author Number uniquely identifies an author.

For a customer to be of interest to VPB, he must have bought at least one book and possibly many. CUSTOMER has six attributes (Customer Number, Name, Street, City, State, Country) with Customer Number as the unique identifier.

Draw the ERD for VPB as described above.

QUESTION 3

The city of Kuala Lumpur wants to maintain information about its extensive system of high schools, including its teachers and their university degrees, its students, administrators, and the subjects that are taught. Each school has a unique name, plus an address, telephone number, year built, and size in square feet. Students have a student number, name, home address, home telephone number, current grade, and age. With regard to a student's school assignment, the school system is only interested in keeping track of which school a student currently attends. Each school has several administrators, such as the principal and assistant principals. Administrators are identified by an employee number and also have a name, telephone number, and office number.

   a. What attributes are described for the entity STUDENT?
   b. Which attribute should you use as the STUDENT entity's identifier? Why?
   c. What is the relationship between student and school?
   d. What is the relationship between schools and administrators?
   e. Draw the ERD for system as described above.