

CME4413 HOMEWORK4 PROBLEMS

Due: 30 December, 2016 Time: 11:00PM

Each of the problems below describes a situation and gives an E-R model for the transaction processing database.

Choose a problem that you will solve and

- Produce a description of the data warehousing requirements that could accompany this problem.*
- Draw a dimensional model to match the description.*
- Create a data warehouse using SQL Server Management Studio.*
- Prepare a report which will include figures and tables.*

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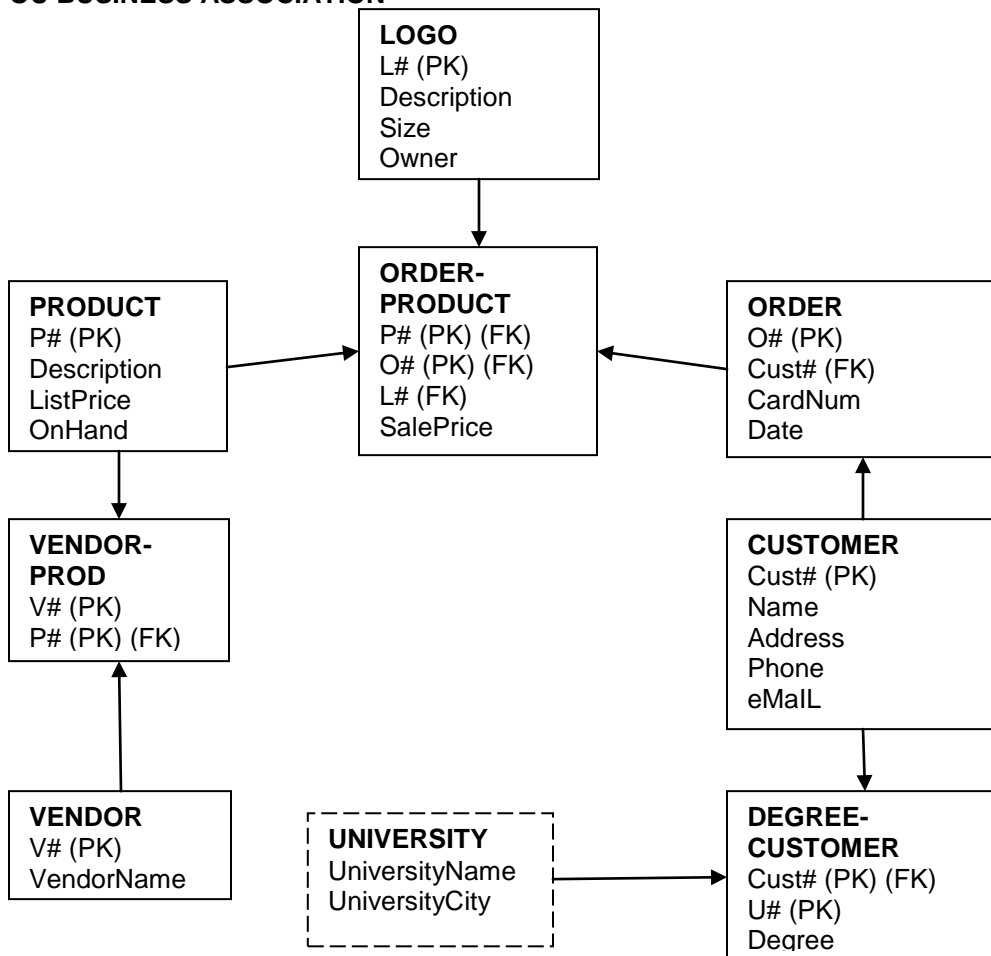
1. OU Business Association

The OU Business Association wants to sell College logo goods like shirts, notepads, desk sets, and pens. They want to sell primarily to customers who are alumni or friends of the college. When a customer contacts the Business Association the association records customer name, address, phone, and e-mail. The customer places an order for the products they want. The order includes date, credit card number and a list of product codes for products ordered, quantity ordered for each one, price for each item and total price for the order. The system includes description, list price and amount on hand for gift items that are offered. For each product, the system must keep track of the vendors they buy from and the vendors catalog number for that product. Each product can come from several vendors and each vendor offers a number of different products.

The Association has several logos that they can put on any item. These include blank, an interlocking OU, the Price College logo and several other symbols. The order should indicate which logo each ordered item needs. The logo data includes name, size, and owner (owners get a royalty for the use of the logo). Each order line has only one logo but logos can appear on any item.

In addition the Association wants to record the degree(s) each customer has and when they got it. They want the degree (BBA-MIS, MBA, etc.), the date and granting university for each degree the customer has.

OU BUSINESS ASSOCIATION



2. Schooner Rental Agency

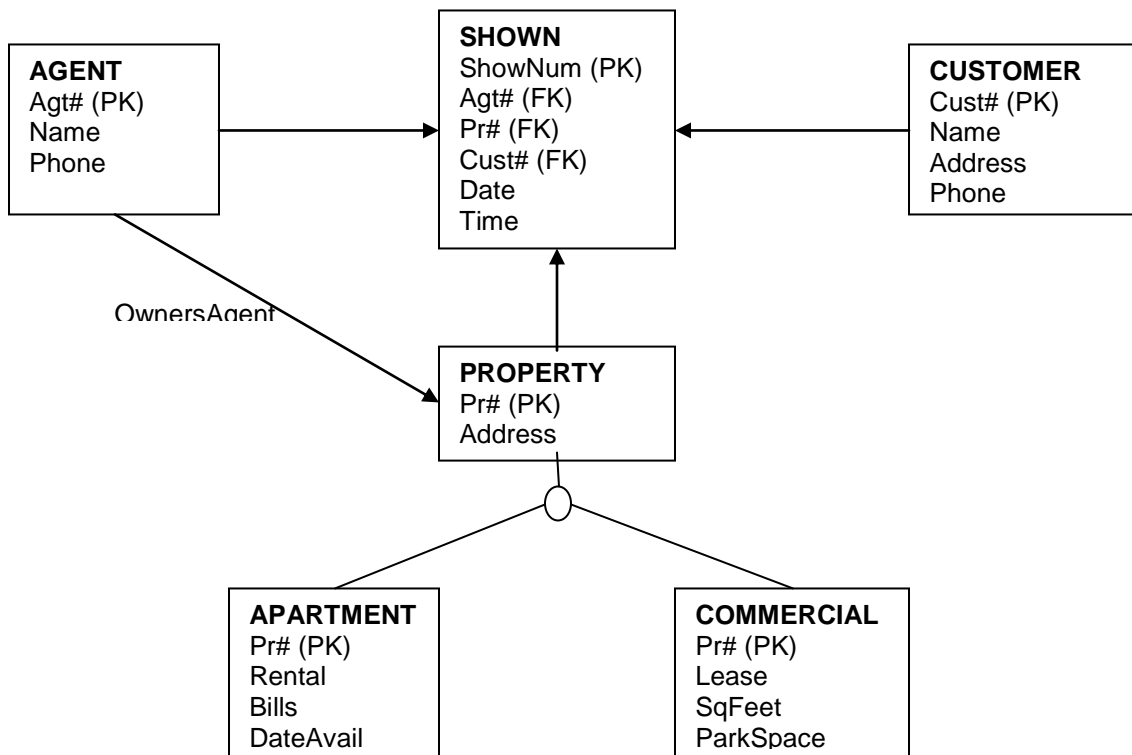
The Schooner Rental Agency rents apartments and commercial property in the Norman area. Each property has an address and owner. Apartments rent by the month and the system needs the monthly rental, the approximate utility bills, and an available date. Commercial property rents by the year and the system provides yearly lease cost, square feet, and number of parking spaces for each property.

Schooner Rental employs agents to rent the property. The system keeps name, address and phone number for each agent. Each property has a single “owners agent” who is responsible for working with the owner to assure that the property is maintained. There are a number of agents who are “renters agents” who show the property and try to obtain renters for it. When an agent shows a property, the system must show each date and time and potential customer that a given agent showed a given property to. Agents may be both owner and renter agents for a given property. Each property may have many renters agents and each renters agent can show many properties several times to the same customer.

The system keeps track of name, address, and phone for each customer.

Describe the data you wish to present and produce an appropriate dimensional model.

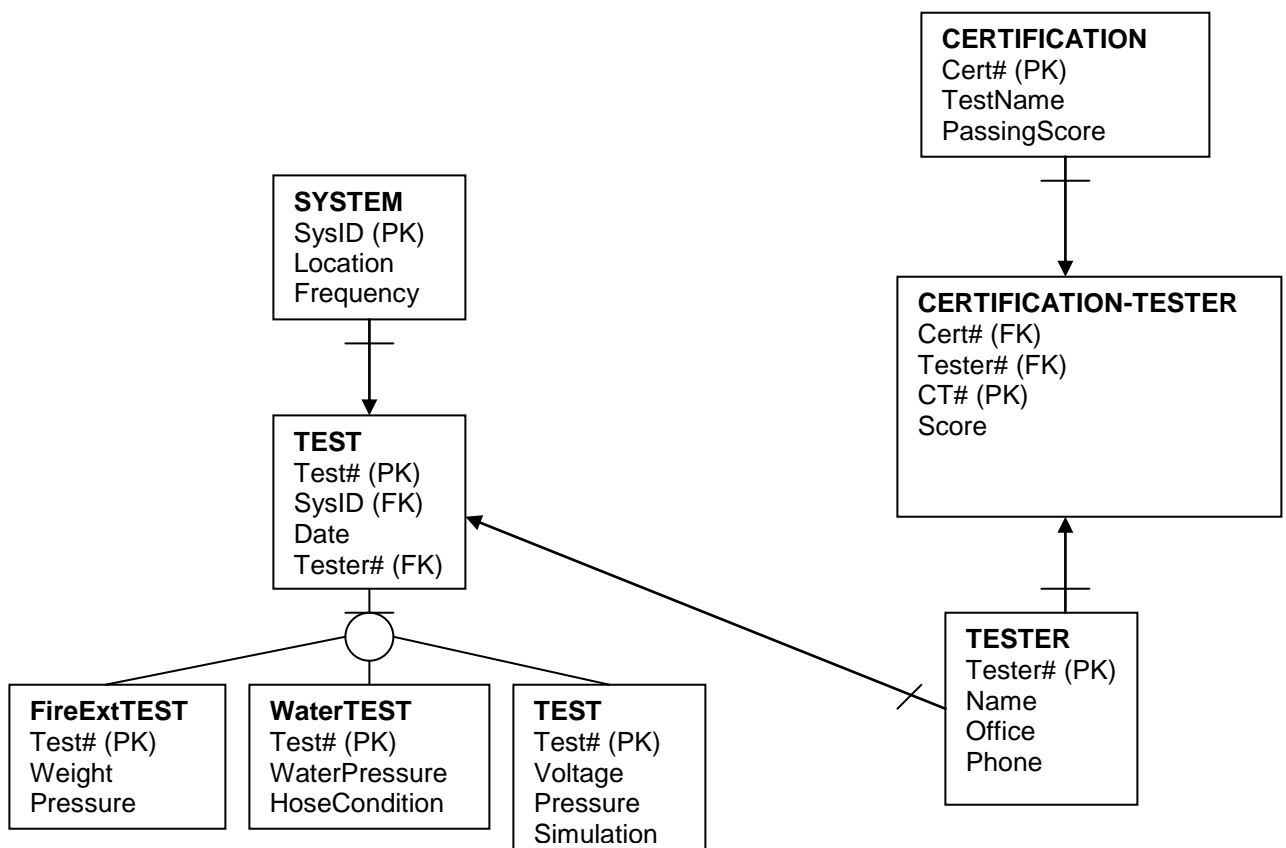
Sooner Rental Agency



3. OU Maintenance Shop

The OU Maintenance Shop needs a record keeping system to record tests on fire defense systems. There are a number of different systems to keep track of with data. Each one should have data on location and required test frequency. Each system must be tested several times a year. Each test requires test date and the name of the test person and test data. Appropriate test data depends on the type of system. There are three types of systems: fire extinguishers, water hose and halon gas systems. Test data for traditional fire extinguishers are readings for extinguisher weight and a pressure reading. Test data for water hoses is water pressure and hose condition. For halon systems we record sensor response voltage, simulation test response (yes no) for the manual trip lever and pressure reading for the halon tank.

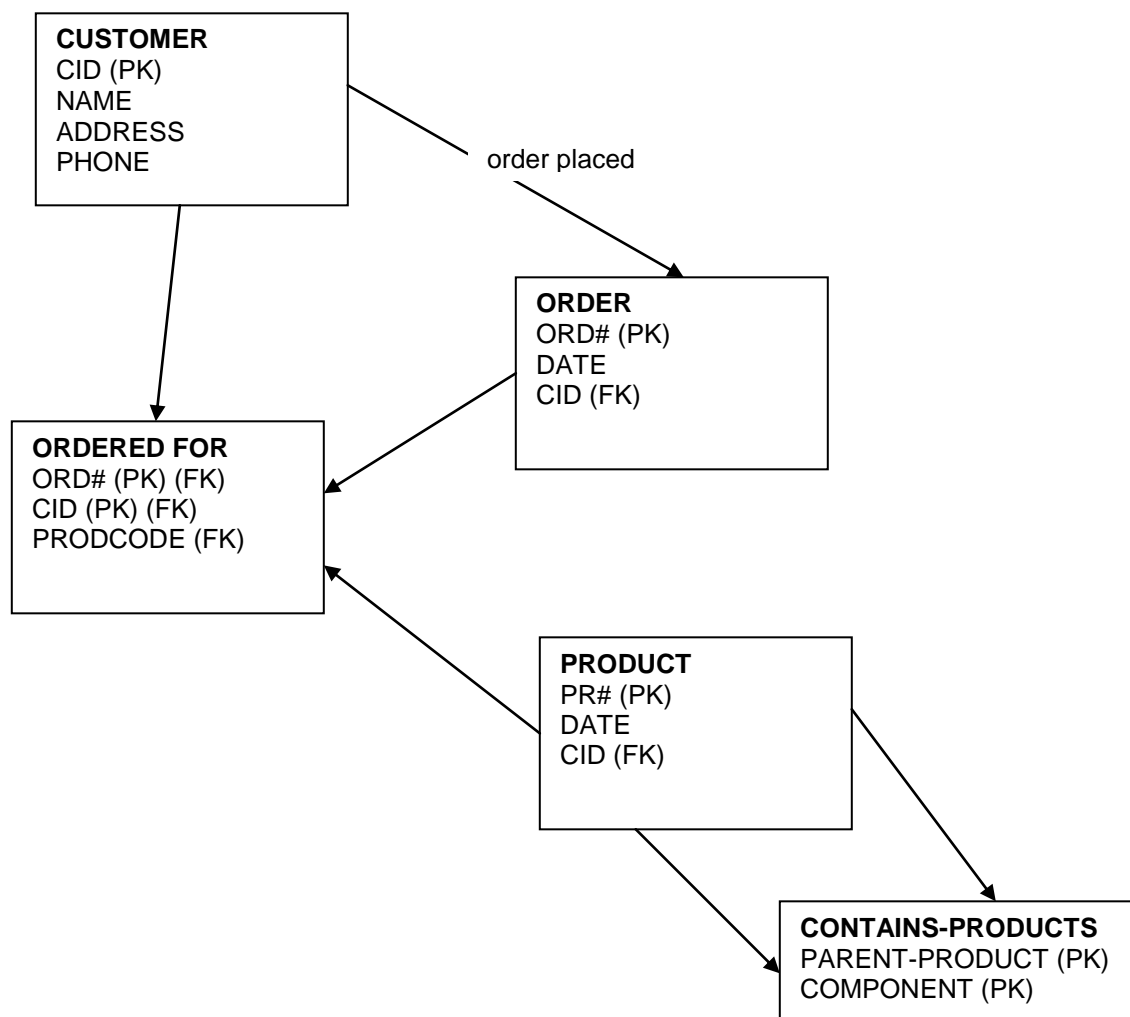
The system also keeps track of testers including name, office address and office phone number. Each tester has to pass several certification tests each year. The system records the test name, required passing score and frequency required. The system also records the date and test score for each test taken.



4. Gifts4U

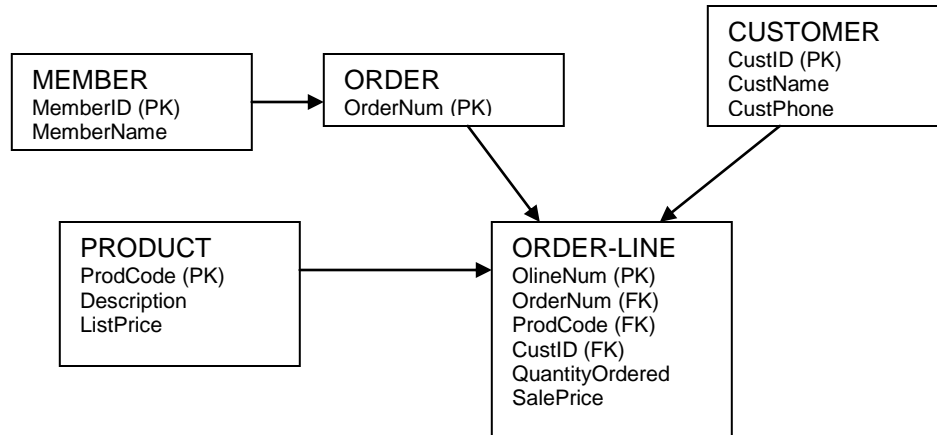
Gifts 4U is a company that sells “care packages” to university students. A care package is a selection of food or clothing given to students during a exam week. The company has an inventory of products consisting of other products or items. For example, the “Jumbo Pack” consists of a “Deluxe Food Pack” and a “Winter Sleep Pack.” The Deluxe Food Pack has a number of food items and smaller packs, also offered for sale by the company. Each product requires Code, Name and Description.

The way the ordering process works is that purchasers place orders for products. The order can contain selections for several students. The order contains customer Name, Address, and Phone. It also contains Name, Address, Phone and Product Code for each student receiving a gift. Students can get gifts from several purchasers and purchasers can give gifts to several students. Gifts4U considers both purchasers and students to be customers.



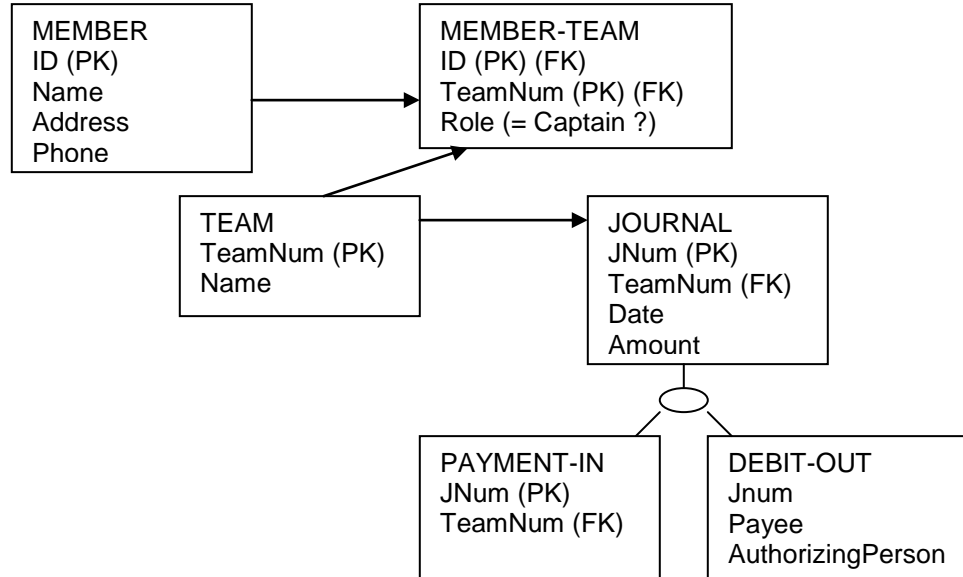
5. IB Selling

The IB Selling company has its members selling OU gifts. They sell by giving each member an order sheet containing Member Name, and MemberID. The member contacts customers. On each line of the order the member lists CustomerName, CustomerPhone, ProductCode, QuantityOrdered, and Price of the product ordered. The ProductCode comes from a Product table that contains the code, a Description and the ListPrice. The same customer may order the same product several times if they desire.



6. OU Soccer Club

The OU Soccer Club wants to have a three man tournament. Every player must be registered with the club (Name, Phone, Address). A player can enter a team by registering as captain, paying an entry fee, and listing two other players for the team. The club wants to record payments from the team and expenses paid out. Payments list Team, Captain, Date and Amount. Payments list Payee, AuthorizingPerson, Date and Amount.

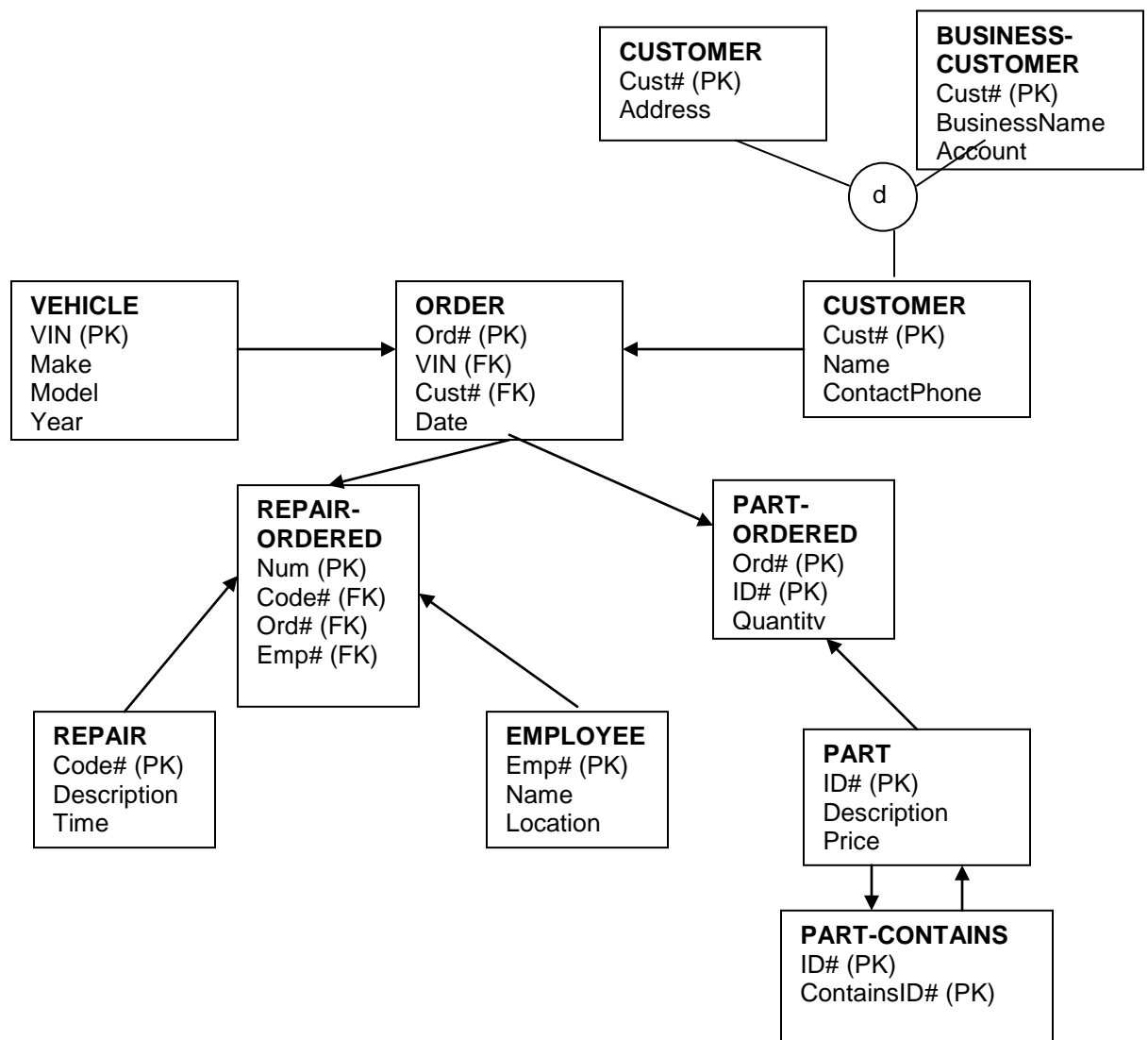


7. The OU Auto Repair Shop

The OU Auto Repair Shop wants an information system to track its operations. It tracks vehicle make, model, year and vehicle identification number (VIN) for each vehicle it repairs. Each time a customer brings a vehicle in the system creates a repair order that captures date, vehicle make, model, color, and vehicle identification number (VIN) for the vehicle. Different customers may bring the same vehicle in for repair at different times. Only one customer is listed on any repair order, however. The system keeps customer name, contact phone, and address for individuals listed on the repair order. Businesses may bring in vehicles, and in that case the system needs customer name (person who brought in the vehicle) business name, contact phone, and business account number.

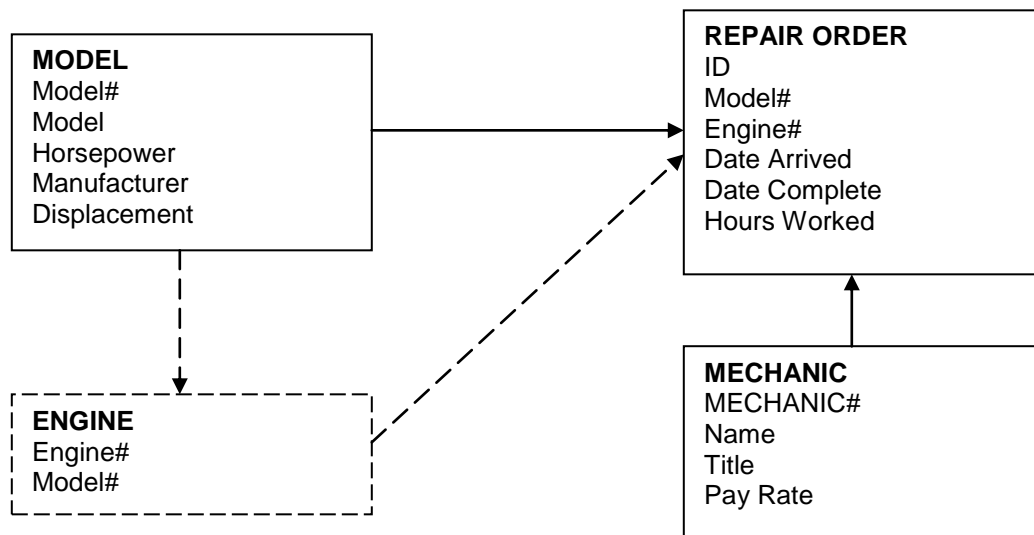
The repair order lists repair codes, description and standard number of hours for each repair task requested. The repair information comes from the Chilton standard repair table that lists codes and standard times for most repairs. Each order can include several different repair requests. The same repair (for example, replace a tire) may occur several times on a single order. The system must track employee ID, name and location for the employee that does each repair task.

The system must also track parts used. Each part can contain other parts. A part may be contained in several other parts. The system tracks ID, description and price for each part in inventory.



8. USG Company

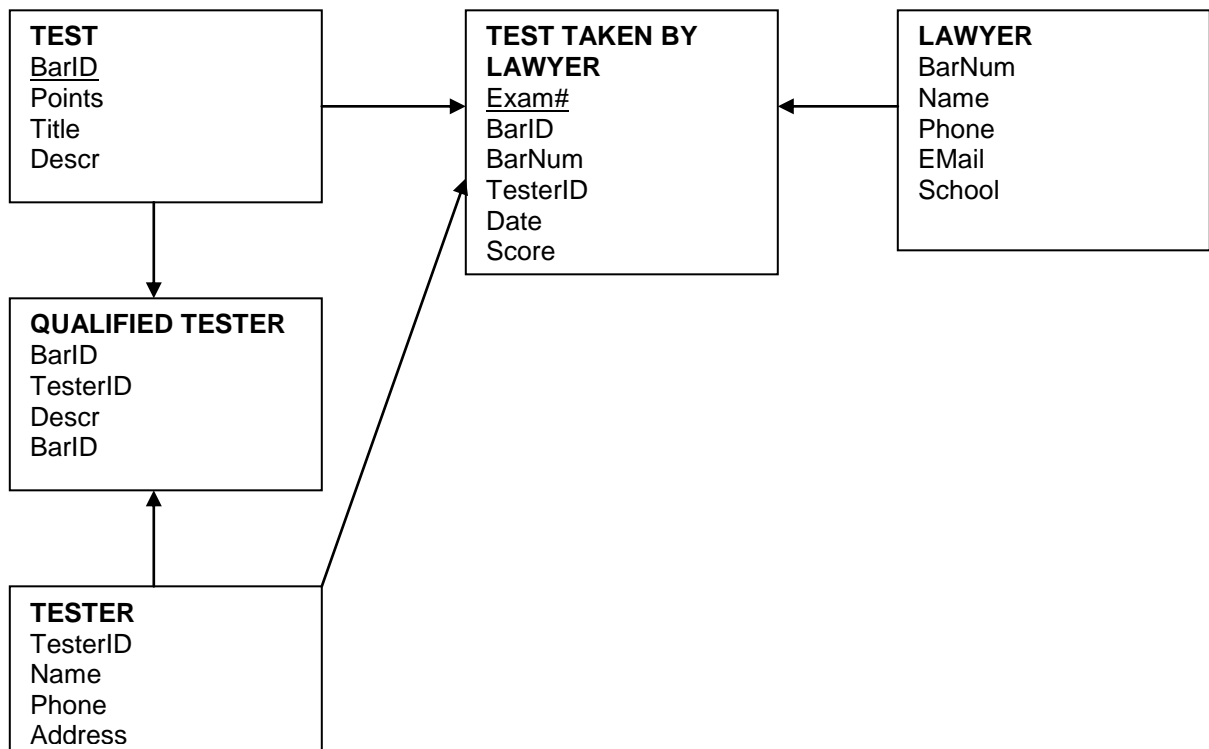
The USG Company repairs diesel engines. It wants a database to keep track of the engines while they are being worked on. When each engine arrives for repair the company creates a Repair Order for it that has a repair ID, model, engine serial number, and date of arrival. There are approximately 10 models that the system keeps track of. We need to keep track of manufacturer, model, horsepower and displacement. As space becomes available in a mechanic's work area each engine is assigned to a single mechanic. The system contains mechanic's name, job title and pay rate. Once the mechanic completes the repair, he/she marks the completion date on the Repair Order and returns the order to the billing office.



9. The Price Legal Defense Association

The Price Legal Defense Association needs to keep track of the certifications of its lawyers. There are a number of certification tests that a member must take over time. The tests are described by a Bar Association ID, Description and number of points credit they are worth. Each lawyer and legal aid professional must pass (pass = 60%) 15 points of professional testing a year. A lawyer may take the same course several times, but can count a passing score on it only once per year. It is important that the PLDA keep track of which each member took, the score they made, and when they took the test. Each lawyer is identified with a Bar Number, Name, telephone, e-mail and school they graduated from.

Tests are written or oral exams given by a certified tester. The system must keep track of testers (Name, phone, address) and the tests they are qualified to administer. Testers can each administer several different tests and there are several testers for each different test. The company also wants to keep track of who administered each test to each of its lawyers.



10. The Norman Adult Basketball Association

The Norman Adult Basketball Association wants a computer system to track the games in their season. The association is made up of teams identified by ID, Name, UniformColor, CoachName and CoachPhone. Coaches may coach several teams, but each team has only one coach. Teams are assigned to leagues (Name, CommissionerName) for their game schedule. The system needs to track games and keep track of the Date, CourtNumber, HomeTeam, VisitingTeam, HomeScore and VisitingScore.

Create an E-R diagram for this. Indicate attributes, keys, foreign keys and referential integrity.

