1. Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.
2. Design an E-R diagram for keeping track of the exploits of your favorite sports team. You should store the matches played, the scores in each match, the players in each match and individual player statistics for each match. Summary statistics should be modeled as derived attributes. 5. Extend the E-R diagram of the previous question to track the same information for all teams in a league.
3. A large bank operates several divisions. Information Technology (IT) is operated as one of these divisions. Within the IT division are many departments that are managed by one manager, and all IT employees belong to one of these departments. The IT division assigns its employees to one or more ongoing projects in the bank. A project may be planned, but not have any employees assigned to it for several months. Each project will have a single employee assigned who acts as a project leader.
4. A hardware store sells several home workshop products to the public (such as power saws and sanders). Each product has several different manufacturers who manufacture it, and prices are different for products made by different manufacturers. Each time one or more products are sold to a customer, an invoice is created which lists the date, items purchased and their prices, and then the total purchase and tax amounts.
5. The Ministry of Transportation (MOT) supplies department keeps track of all the items (furniture and equipment such as a chair or printer) in the Ministry offices. There are several MOT buildings and each one is given a different name to identify it. Each item is assigned a unique ID when it is purchased. This ID is used to keep track of the item, which is assigned to a room within a building. Each room within a building is assigned to a department, and each department has a single employee as its manager.
6. A cooking club organizes several dinners for its members. The purpose of the club is to allow several members to get together and prepare a dinner for the other members. The club president maintains a database that plans each meal and tracks which members attends each dinner, and also keeps track of which members creates each dinner. Each dinner serves many members and any member is allowed to attend. Each dinner has an invitation. This invitation is mailed to each member. The invitation includes the date of the dinner and location. Each dinner is based on a single entrée and a single dessert. This entrée and dessert can be used again for other dinners.
7. ABC Consulting is a small-sized consulting firm in the IT industry. ABC’s business is managing several Systems Development projects by assigning staff consultants to these projects as their skills are needed. Each employee is designated to have one primary skill, but there may be other employees with the same primary skill. A consultant may work on one or more projects, or may not yet be assigned to a project. The company charges for each project by billing each consultant's hours worked by the billing rate. The hourly billing rate is dependent on the employee’s primary job skill.
8. A company purchases products and sells them to its customers. Each time a sale occurs, an invoice is created listing the customer name, and a list of purchase product descriptions, the supplier name for the products, and the price of each product. The product number identifies each product and will appear again if another customer purchases the same product. Each supplier can supply many products which we can sell, but each product has only one supplier.
9. You are asked to create a database to produce a report of customer details. The report is to list the customer name, account balance, credit limit, and other customer details. The report will also list the customer account rep (one of our sales employees). Our sales reps manage many customers each, but each customer will be managed by only one account rep at any one time. However, your design should allow for customer's being managed by many account reps as it is possible that some of our employees may leave the company - thus, requiring new account reps for a customer.
10. A company operates a warehouse parts supply business. The company has several warehouses located in Toronto which each store several hundreds of automotive parts. We need to keep a record of how many parts are "on hand" - meaning inventory levels that tell us how many we have for each part. To help us organize our parts, each part is assigned a specific classification. There are 4 classifications that we use to organize hundreds of parts.
11. To keep track of office furniture, computers, printers, and so on, the FOUNDIT Company requires the creation of a simple database. Each piece of office furniture, computer or printer is given an identification number. Each item is then placed in a room of one of three buildings. The building manager is responsible for the items in their building.