Conceptual Diagrams

Objective

The objective in this exercise is to practice some of the techniques you will need for the challenges.

Overview

In this exercise, you will create conceptual data diagrams from the scenarios given.

Part 1 – Scenario

Acme Vehicle Hire rents vehicles to customers. Vehicles are rented by an employee who takes payment by credit card. The customer has the choice of paying for insurance or using their own insurance.

When the vehicle is returned, it is checked by a service employee who will advise if any repair is necessary.

Part 1a

Identifying the Entities

1. Identify and make a list of the entities.
2. Using the list, make a list of entities and their relationships, e.g. employee rents vehicle.
3. Draw these entities and relationships as a diagram. (Use whatever tool you prefer or have available but use UML style notation. Use paper if no tool is available).

Part 1b

In this part of the exercise you will extend the above diagram to include the cardinality of the entities.

1. For each of the relationships, identify the numbers of occurrences involved for each direction. E.g. an employee may rent many vehicles, and a vehicle may be rented out by many employees (at different times). Add the cardinalities to your diagram. (Remember that the cardinality is written at the opposite end to the entity expressing the cardinality).
2. Examine your diagram and decide whether you have adequate entities and relationships. Add more if you need them.

Part 2 – Scenario

Cerberus Security Systems are a company which produces and sells domestic (house) alarm systems that are assembled from components. Some components are manufactured internally but others are purchased from suppliers. Manufactured components are available from stock but purchased components are only bought as required to complete a system.

An engineer surveys the house and then produces a specification for the alarm system. The system and components are then assembled to match the specification.

Part 2a

Identifying the Entities

1. Identify and make a list of the entities.
2. Using the list, make a list of entities and their relationships
3. Draw these entities and relationships as a diagram.

Part 2b

1. For each of the relationships, identify the numbers of occurrences involved for each direction. Add the cardinalities to your diagram. (Remember that the cardinality is written at the opposite end to the entity expressing the cardinality).
2. Examine your diagram and decide whether you have adequate entities and relationships. Add more if you need them.