**IT5182: Fundamentals of Data Models and Databases**

**Tutorial Five: Entity Relationship Modelling**

**Hollywood Video Rentals - Creating an Entity Relationship Diagram**

**Goal**

The purpose of this practice is for you define the data requirements for Hollywood Video Rentals by constructing an Entity Relationship Diagram.

**Scenario**

In Tutorial One, you created two Business Process Models that captured the *processing requirements* of Hollywood Video Rentals. We will use details from this model for the next stage in the development of a database system for Hollywood Rentals – defining the *data requirements* for the database system. We can do this because not only are the processing requirements captured in business process models, they also identify *the data required to perform that processing*.

We created two business process models for Hollywood Rentals; *Adding a new video to the inventory* and *Modifying existing inventory data.* When we examine these two models, we see that three data stores are used to perform several process steps. These data stores are; **Copy, Title and Supplier**. These data stores become the entities within our entity relationship diagram.

To construct an Entity Relationship Diagram that captures the *data requirements* of Hollywood Rentals, we need to determine what are the entities (the things of interest to Hollywood Rentals i.e. Copy, Title and Supplier), the attributes that describe the entities (e.g. Product Code, Movie Category etc.) and the relationships that exist between entities e.g. a Supplier *supplies* Copies.

If we know that the data stores in our business process models become entities in our entity relationship diagram, the next step is to determine the relationships between those entities. These details come from the *business rules* that the analyst discovers within the business.

The analysts involved in the development of Hollywood Rentals database system have determined the following business rules:

* A supplier can be the supplier of several copies of a video title.
* There may be several copies of a title, but a title does not need to have any copies.
* Details of a supplier can be entered into the system even if the supplier does not currently supply any copies of a title.
* When details of a copy of a title are entered into the system, the copy must be cross referenced to a valid title and a valid supplier.

**Task**

Using the above business rules, construct an Entity Relationship Model in Visual Paradigm that identifies the required entities and the relationships (which should be named) between those entities. Attributes will be added to each entity in the next part of this tutorial.

**Adding Attributes to the Entity Relationship Diagram**

**Goal**

The purpose of this practice is for you to use the Visual Paradigm to refine the entity relationship diagram by defining attributes, primary keys and foreign keys. Also indicate whether the attributes are mandatory or optional i.e. must the user always supply a value for each of the attributes within each entity when a new record is created. The type of data that will be recorded by each attribute (e.g. characters, number etc.), will be documented in a future tutorial. Ignore these details for now.

**Scenario**

After further analysis, the analysts have determined the following information about the entities:

**The Title Entity**

* Each title is uniquely identified by a ten-character product code.
* Each title has a 60-character name.
* Each title requires a flag indicating whether or not it is monochrome (black and white). The flag can take the values Y (Yes) and N (No).
* Each title may have an age rating code that is one of the following: G (General), 15 (Over 15), PG (Parental Guidance).
* A title may belong to a movie category. The categories are: DRA (Drama), COM (Comedy), HOR (Horror), ADV (Adventure).
* The audio for a movie title may be recorded as MON (Mono), STE (Stereo), or SUR (Surround Sound).

**The Copy**

* Each copy is uniquely identified by a six-digit Copy ID.
* The condition of a copy may be unspecified or designated as G (Good), F (Fair), or U (Unacceptable).
* Every copy must have a four-character shelf code that indicates the location of the copy in the store.
* The date that the copy was acquired by the store must be recorded.
* Staff may record remarks about each copy. Allow 80 characters for this.

**The Supplier Entity**

* Each supplier is uniquely identified by a six-digit Supplier ID.
* Each supplier has a name. Allow 30 characters for the name of the supplier.
* Most suppliers have a sales contact. Allow 30 characters for the name of the contact.
* A sales contact usually has an e-mail address. Allow 30 characters for this.
* The telephone number of a sales contact may also be recorded. Allow 15 characters for this.