Practices for Lesson 1: Introduction to Modeling

Chapter 1

Practice 1-1: Identify the Modeling Approach

Tasks

In this practice, you review the following case study, identify the models that need to be developed, and the approach that should be used.

Starlight DVD and Games Rentals is a successful company that rents DVDs and games. Last year's turnover almost doubled to $6.5 million with a profile margin of just over 10%, which is high in this type of business. The number of rentals increased by 80% and the customer base tripled to 30,000. The number of available movie titles grew by 8%, reflecting the increase in the titles coming out on DVD. The number of copies in the stores increased by 45% to 63,000. The renting of games is still an immature business (less than 5% of the turnover) and the number of game titles is steady as new games replace those removed from the catalog.

Starlight already has an information system to track rentals, but this needs enhancement to support proposed changes to the business. A team of business consultants has carried out a study and produced a report outlining proposals. The following is an excerpt from the report:

- Starlight attracts new customers easily and the number of rentals is growing rapidly. The customer base is not stable, however, which is a cause for concern. We suggest implementing some new concepts that should attract new customers and retain existing customers.

- The main idea is to introduce the concept of membership at Starlight. Members will pay a membership fee (the amount to be decided) that entitles them to certain privileges that are valid for a period of time (length to be decided). Initially, there will be three types of memberships (gold, silver, and bronze) although more may be introduced later. Bronze membership is free and replaces the current way of handling rentals. Silver and gold memberships incur a fee but entitle the member to privileges, such as a discount on the usual rental price for a type of title, a free DVD after a certain number of rentals, the right to take out more than the usual number of DVDs at the same time, and the right to take out more "new release" titles than usual.

- In the current situation, only individuals ("customers") can rent. It is proposed to extend membership to companies as well.

- A membership will be of a certain type, last for a specified period, and will be renewed periodically. The type of membership cannot be changed. If someone wants to upgrade from a bronze to a silver membership, the bronze membership is terminated and a silver membership is created. Members will receive an automatic renewal or upgrade offer about a month before the membership is due to expire if they have rented a tape or game during the previous four weeks. Bronze memberships that do not lead to a rental during the rental period are terminated automatically. Silver and gold members receive a membership card only after paying the appropriate fee. Members can terminate their membership by request at any time.

- Another cause for concern is the number of "lost" DVDs. We propose some new procedures to address this problem. Every customer seeking membership will have to provide proof of identity as part of the registration process. A photocopy of the identification will be stored. A membership card, containing the membership number, type, expiration date, and a photograph of the holder, will be provided. This card will have to be shown for every rental transaction.

- In addition, the store manager will be able to produce a weekly report identifying DVDs that are more than two weeks overdue. Members who have the DVDs will be requested to return them immediately. The request will be repeated until the DVDs are returned. Members who fail to return DVDs, or who repeatedly break the rules by keeping DVDs for two weeks or more, will have their membership terminated.
- Starlight management emphasizes that all amendments to the information system must be flexible enough to deviate from fees and time frames in individual cases.