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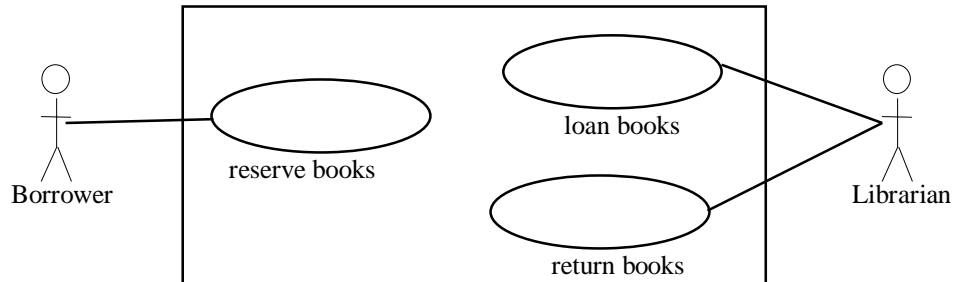Pearson Building Room 402

D50 Advances in Software Engineering for Distributed Systems
Tutorial Session 2 - Work Sheet

This Tutorial session will give you practical experience with class and sequence diagrams.

Lending Library & Its `Loan Books' Use Case

Analysis so far:

The use case model has two actors and three use cases as shown below:

At the initial stage of the analysis, a use case description for 'Loan books' was generated as follows:
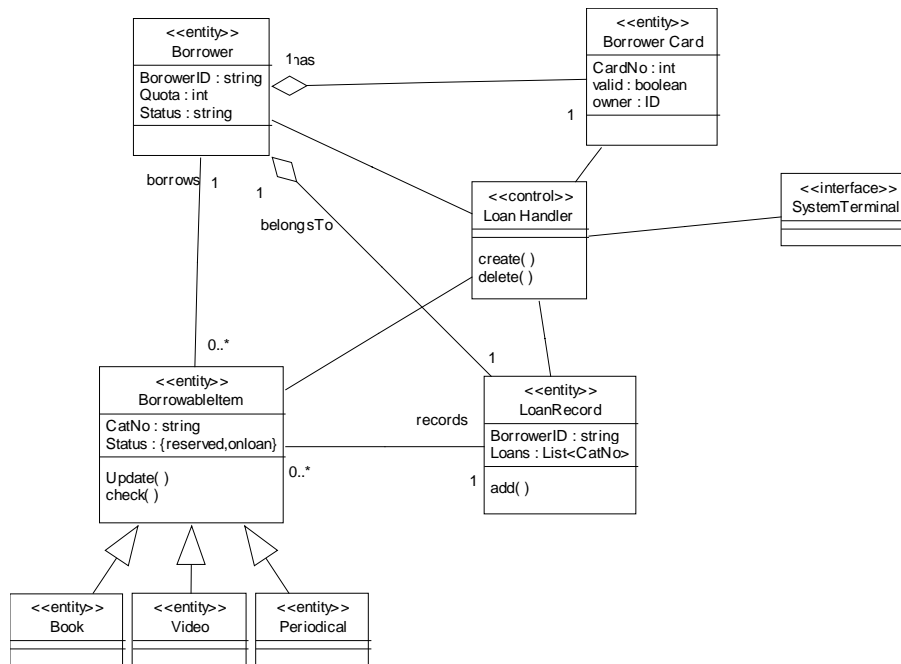
> *"The borrower passses the books and the borrower card to the librarian. The librarian reads the borrower details into the system using the bar code reader. Reader details appear on the screen for the librarian to check. From each book to be borrowed the librarian reads the book details using the bar code reader. Book details are displayed on the screen. The librarian passes the book through the barcode reader to record the loan. The librarian then stamps the book with the date and passes it, along with the borrower card, back to the borrower.*
> * *If the borrower is not allowed to borrow books for whatever reasons, terminate the use case;*
> * *If the book is reserved by someone else, do not lend the book;*
> * *If the quota of books which can be borrowed by the borrower is exceeded, stop the use case."*

A problem domain object list appropriate to the 'Loan books' use case was drafted and revised:

Borrower	Book
Borrower card	Video
Borrowable Item	Periodical
Bar code reader	System terminal
Loan record	Loan handler

An initial class diagram was based on the use case description and this list (reproduced next)

Tasks for Tutorial 2:

This class diagram must be checked by rewriting each use case in terms of the elements now defined. The flow of control in the use case must be understood, requiring the production of a sequence diagram showing the relationships between objects in temporal order. Finally, the class diagram must be revised to accommodate new, revised and more detailed associations, attributes and operations. This is again a simplified version of the procedures set out in the notes, in particular omitting any changes required for the implementation environment. In summary:

- Rewrite the 'Loan books' use case in terms of the classes defined and the atomic operations.
- Prepare a sequence diagram appropriate to the 'Loan books' use case
- Revise the initial class diagram taking into account all the detailed design changes required.

Remember that these tasks represent further stages of elaboration and formalisation, demanding the application of both analytical and creative effort.