

CS 3560 – Requirements Specification for a Library Management System



CPP wants to convert its current library system into an automated library management system to ensure effective control of the loans while reducing operational costs. Currently, all students, items, and loans are maintained through a manual process. Loans are carried out only by the library's staff, who also daily check those with past due dates to warn students via email. The information collected from students consists of their bronco id, name, and course only. For each loan, a manual receipt is provided to the student including header information such as the loan number, student name, loan date, the due date (when the item should be returned), borrowed item and its daily price, and the total price of the loan based on its date and due date. A copy of those receipts is made so that staff can later feed this data into spreadsheets. Then, all loan information is manually converted into financial reports for business analysis. The library currently lends two types of items, including books and documentaries (films). For the books, the system records their code, title, description, location, daily price, status (borrowed/available), all authors, pages, publisher, and publication date. For the documentaries, the system records their code, title, description, location, daily price, status (borrowed/available), director, length, and release date.

The current loan and item return process works as follows. First, the student browses the library shelves and chooses an available book or documentary. Next, he/she brings this item to the counter and informs the library staff how long the item is needed, which will be registered as the loan due date. No loan can be set for longer than 6 months and include more than one item. If there are no past due dates, the staff records the loan with all information required, including the estimated price for the loan with its defined due date. If past due dates are found, a new loan is denied until the student returns the corresponding item and makes the corresponding payment. After the due dates, staff charges students per extra day according to the item's daily price plus 10% of this value as a fine. This process is to encourage students to return items on the due date and increase their availability. If a student needs the item longer, a new loan should be generated to avoid fines. The staff will decide about lending the item again to the same student according to the item demand (students asking for the item when it is currently borrowed). When returning an item to the library, the staff records its return date on the loan and calculates the final loan price including potential fines. The staff only accepts the item back if the loan is paid in full, returning the item to the appropriate library location and making it available again. The student is allowed to return an item before the due date, and the loan price is adjusted accordingly.

Some of the general complaints about the current system include:

- Slow item search processes conducted basically by students browsing the shelves.
- Inaccuracy of prices for items charged at the counter.
- Inaccuracy of the item availability information and its due date.

- Poor information regarding authors/directors of books/documentaries.
- Inaccuracy of the information included in the spreadsheets from the receipts.
- Lack of reports that consolidate loans by student and/or period.

The automated library system should address the problems mentioned before through a *software-based solution*. In particular, a *desktop application* with a *graphical user interface* should be developed to provide services such as student registration, item registration, loan registration/management, and intelligent revenue report. The system should (requirements):

- allow staff to conduct an item search process, informing their accurate availability and due dates when appropriate.
- allow staff to generate loans including all information currently being used.
- allow staff to better manage the author's and directors' information by including the name, nationality, and subject of the authors, as well as the name, nationality, and style of the directors.
- calculate the final loan price including potential fines when students are returning books to the library and register the paid price.
- allow staff to list all loans that are overdue.
- allow staff to print (screen) receipts when loans are generated.
- allow staff to generate a report (screen) with consolidated revenue information filtered by student and period.

Processes that should not be addressed: item reservation, login/user privileges.

Use-case diagrams.



