

Kelas : _____
Nama : _____
NPM : _____



CASE: Library Book Collection Management System

The functional requirements for an automated university library circulation system include the need to support searching, borrowing, and book-maintenance activities. The system should support searching by title, author, keywords, and ISBN. Searching the library's collection database should be available on terminals in the library and available to potential borrowers via the Web. If the book of interest is currently checked out, a valid borrower should be allowed to request the book to be returned. Once the book has been checked back in, the borrower requesting the book should be notified of the book's availability.

The borrowing activities are built around checking books out and returning books by borrowers. There are three types of borrowers: students, faculty or staff, and guests. Regardless of the type of borrower, the borrower must have a valid ID card. If the borrower is a student, having the system check with the registrar's student database validates the ID card. If the borrower is a faculty or staff member, having the system check with the personnel office's employee database validates the ID card. If the borrower is a guest, the ID card is checked against the library's own borrower database. If the ID card is valid, the system must also check to determine whether the borrower has any overdue books or unpaid fines. If the ID card is invalid, the borrower has overdue books, or the borrower has unpaid fines, the system must reject the borrower's request to check out a book, otherwise the borrower's request should be honored. If a book is checked out, the system must update the library's collection database to reflect the book's new status.

The book-maintenance activities deal with adding and removing books from the library's book collection. This requires a library manager to both logically and physically add and remove the book. Books being purchased by the library or books being returned in a damaged state typically cause these activities. If a book is determined to be damaged when it is returned and it needs to be removed from the collection, the last borrower will be assessed a fine. However, if the book can be repaired, depending on the cost of the repair, the borrower might not be assessed a fine. Every Monday, the library sends reminder e-mails to borrowers who have overdue books. If a book is overdue more than two weeks, the borrower is assessed a fine. Depending on how long the book remains overdue, the borrower can be assessed additional fines every Monday.

Normal Flow of Events:

1. The Borrower brings books to the Librarian at the check out desk.
2. The Borrower provides Librarian their ID card.
3. The Librarian checks the validity of the ID Card.
 - If the Borrower is a Student Borrower, Validate ID Card against Registrar's Database.
 - If the Borrower is a Faculty/Staff Borrower, Validate ID Card against Personnel Database.
 - If the Borrower is a Guest Borrower, Validate ID Card against Library's Guest Database.
4. The Librarian checks whether the Borrower has any overdue books and/or fines.
5. The Borrower checks out the books.

SubFlows:

Alternate/Exceptional Flows:

- 4a. The ID Card is invalid, the book request is rejected.
- 5a. The Borrower either has overdue books, fines, or both, the book request is rejected.

According to the case:

- a. Identify external entities of the system
- b. List all functional requirements of the system
- c. Create set of DFDs of the System, including:
 - a. Context Diagram
 - b. DFD Level 0
 - c. DFD Level 1 for process "borrow books". You are given the process description for "borrow books" above