Systems Engineering Design Project
ENPM 643, Fall 2007

Integrated Library System

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Overview

- Introduction to ILS
- Goals
- Modules
- UML models
- Requirements
- GUI's

Introduction to ILS

- An integrated library system, or ILS, is an enterprise resource planning system for a library. It is used to track items owned, orders made, bills paid, etc.

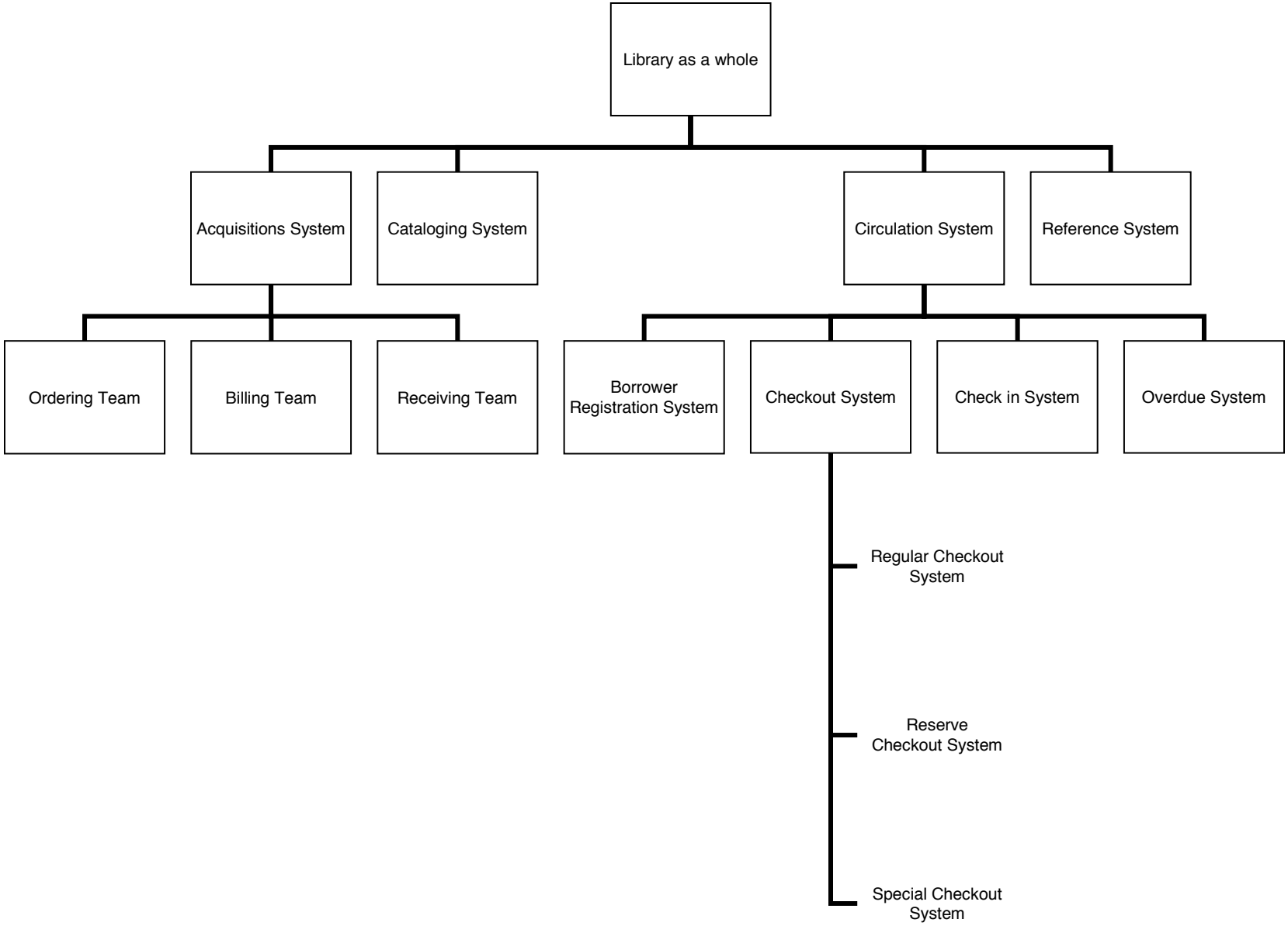
- The Integrated Library System would have two user interfaces; one for patrons and one for staff. ILS would be based on discrete modules which are then integrated into a unified interface.

Goals of the Library Automation System

- To design an Integrated Library System, consisting of an acquisition system, cataloging system and a circulation system.
- Goals for automation is to eliminate all manual files, speed up the processing of materials, and provide better control over services and materials.
- To increase the amount of work that can be performed without additional staff and to be able to offer new services within existing staffing levels.
- System shall eliminate all manual filing and files.
- System shall provide a full range of overdue and other notices and reports that will improve services to users.

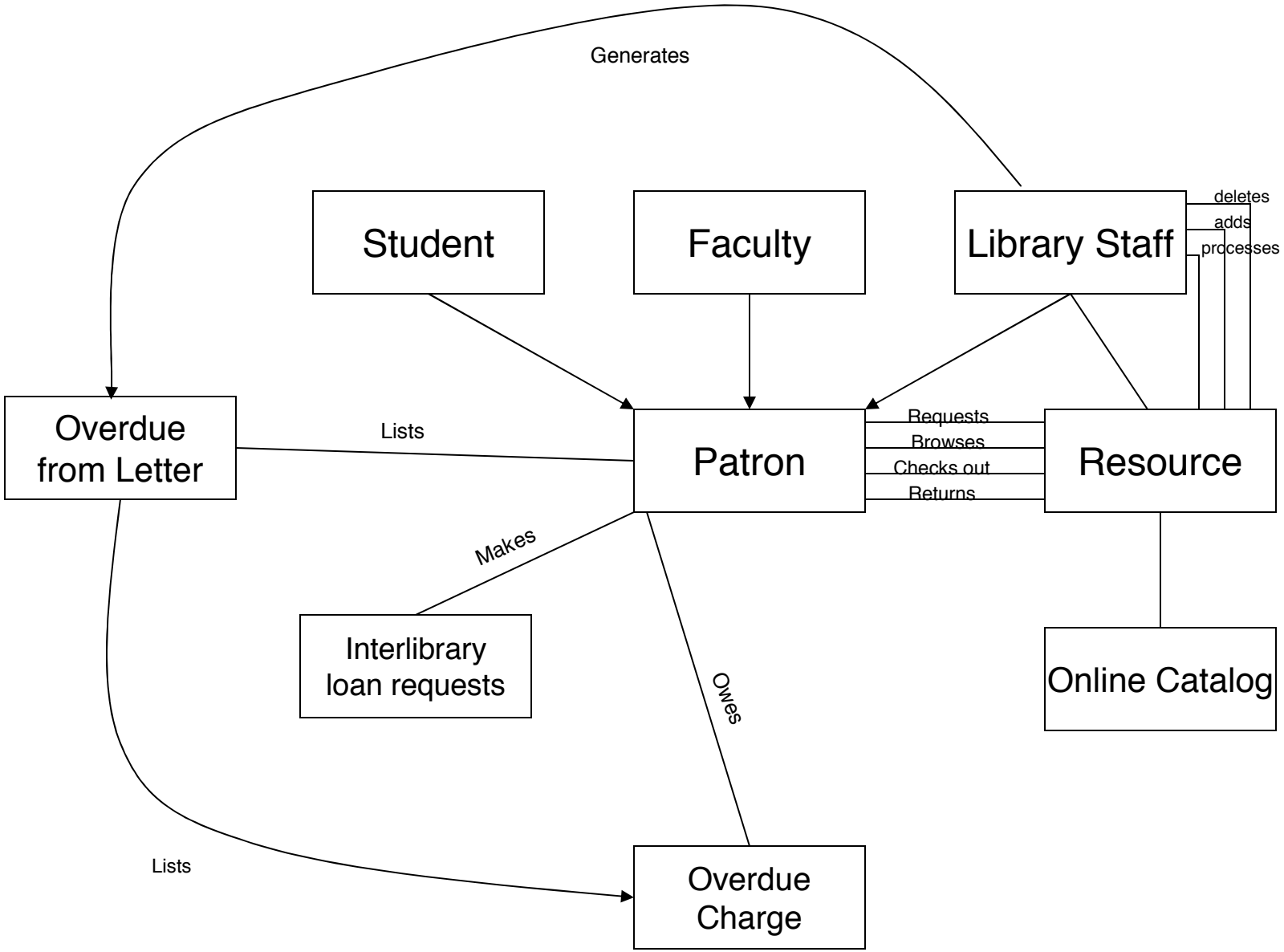
Modules of ILS

- Acquisition
- Cataloging
- Circulation
- Reference
- OPAC (Open Public Access Catalog)


Library as a whole
Acquisitions System
Cataloging System
Circulation System
Reference System
Ordering Team
Billing Team
Receiving Team
Borrower Registration System
Checkout System
Check in System
Overdue System
Regular Checkout System
Reserve Checkout System
Special Checkout System

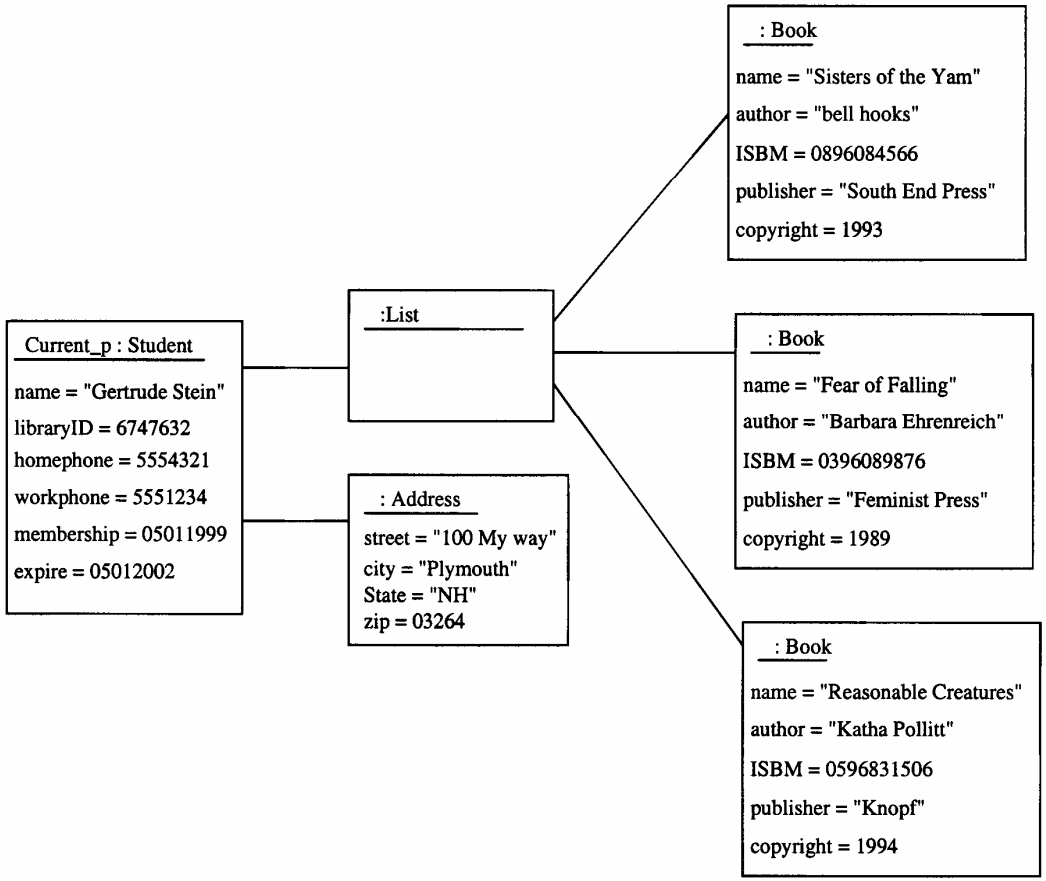
UML Models

- Class Diagrams
- Object Diagrams
- Use Case
- Sequence Diagram
- State Diagram

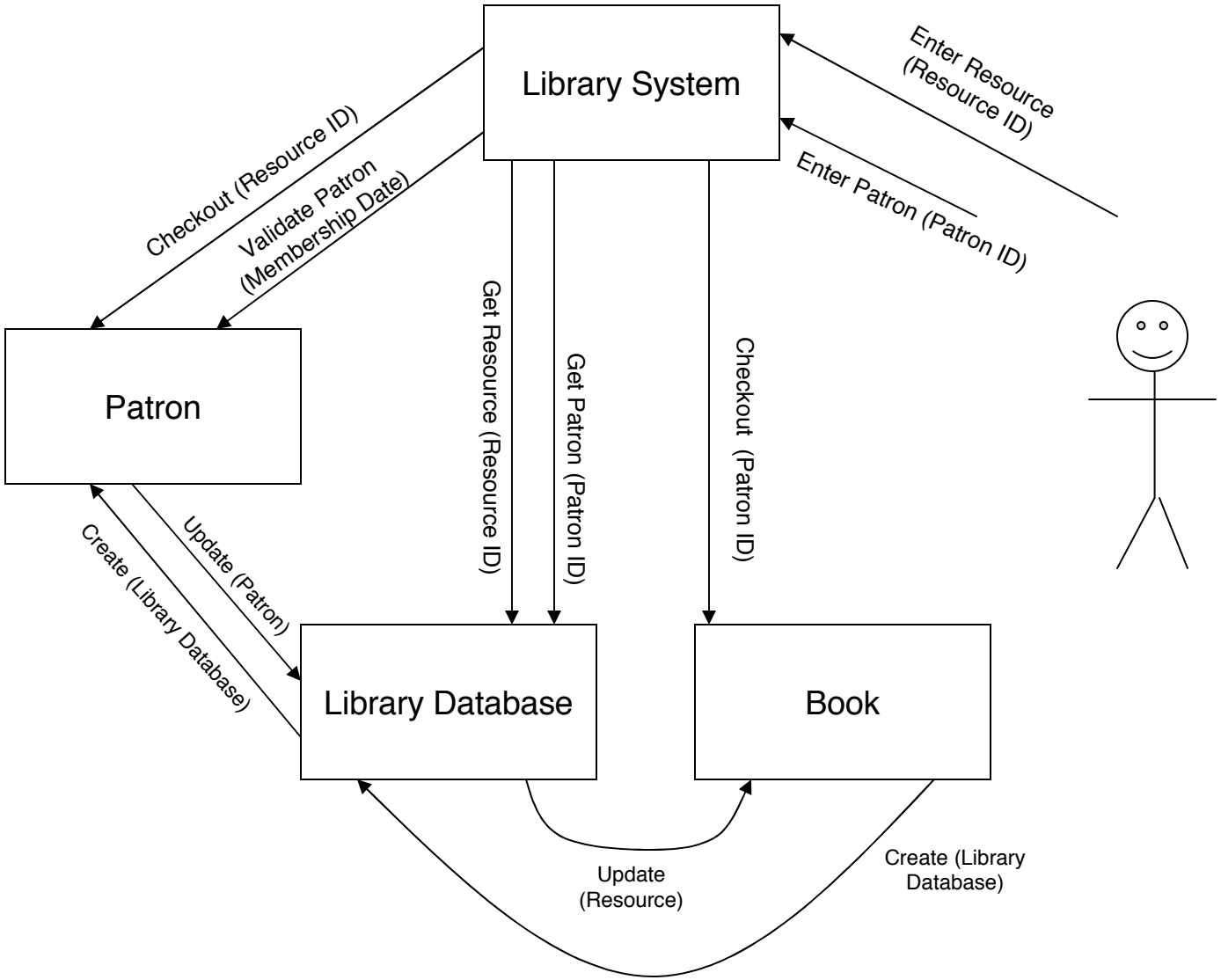


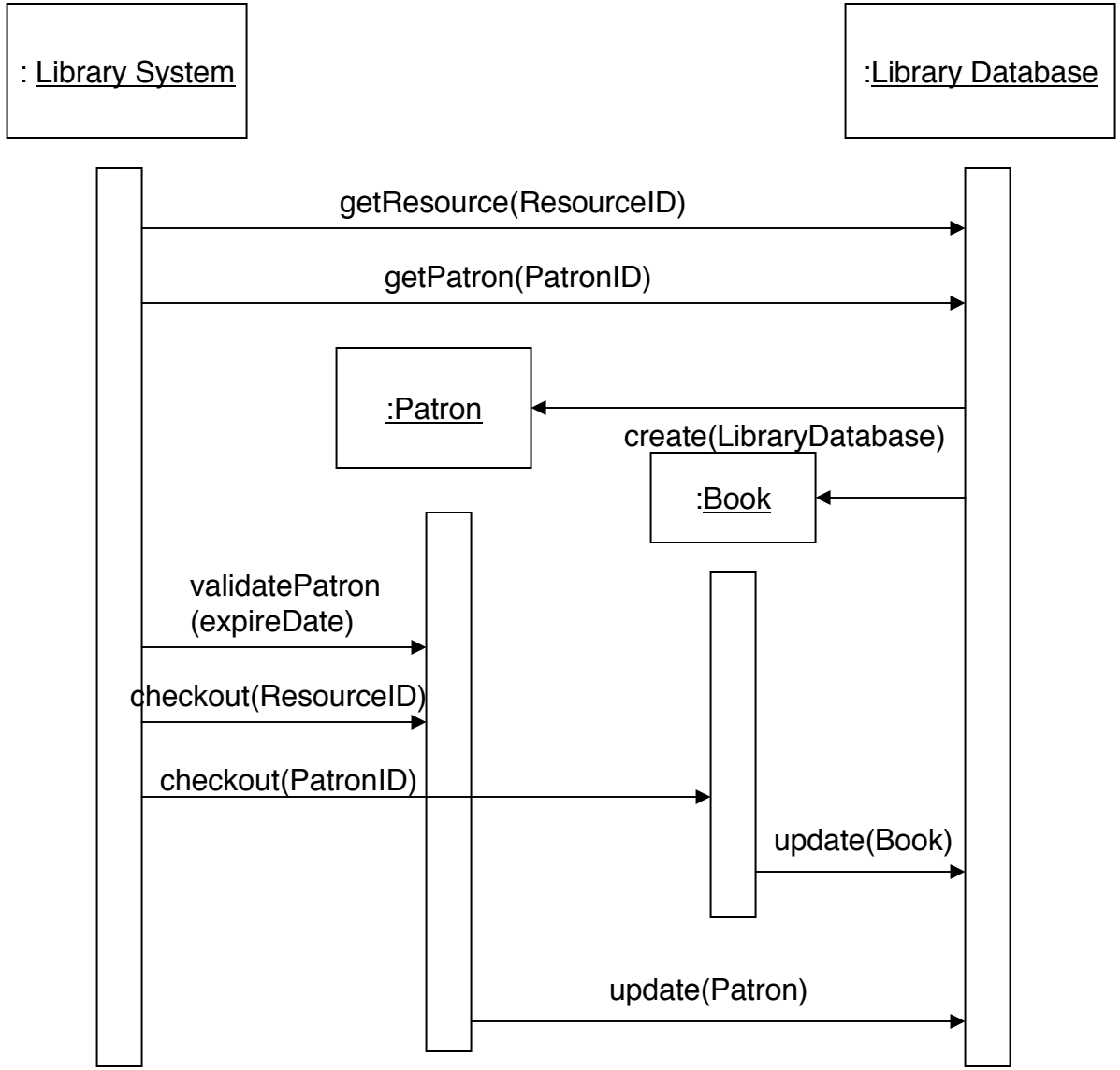
Class Diagram for ILS

Object Diagram for ILS

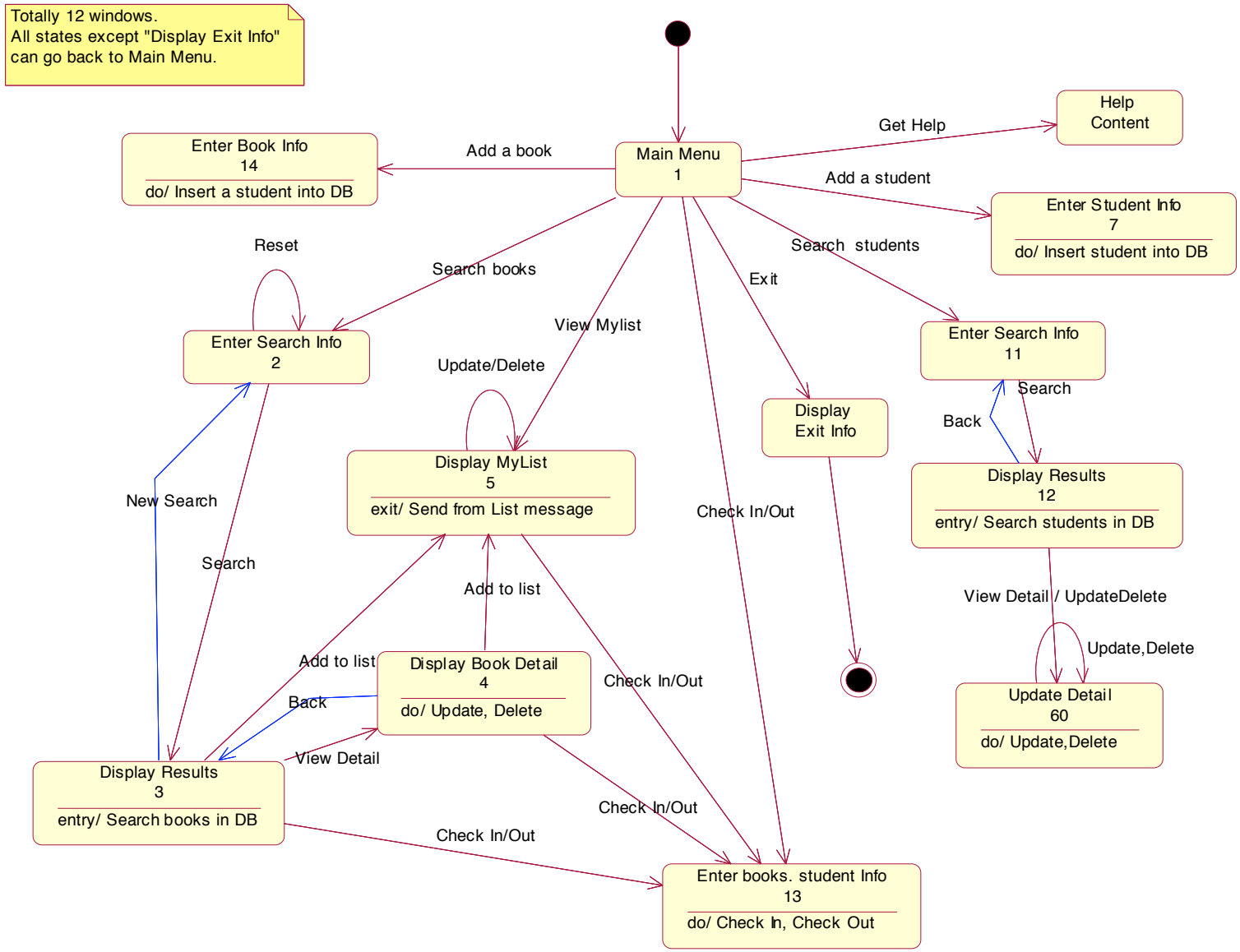


Check out resource Use Case





Sequence Diagram


Totally 12 windows.
All states except "Display Exit Info"
can go back to Main Menu.
Main Menu
1
Help
Content
Get Help
Add a book
Enter Book Info
14
do/ Insert a student into DB
Add a student
Enter Student Info
7
do/ Insert student into DB
Search students
Exit
Search books
Reset
View Mylist
Enter Search Info
2
Enter Search Info
11
Update/Delete
Search
Back
Display
Exit Info
Display MyList
5
exit/ Send from List message
Display Results
12
entry/ Search students in DB
New Search
Check In/Out
Search
Add to list
View Detail / UpdateDelete
Update,Delete
Add to list
Display Book Detail
4
do/ Update, Delete
Check In/Out
Back
View Detail
Update Detail
60
do/ Update,Delete
Display Results
3
entry/ Search books in DB
Check In/Out
Check In/Out
Enter books. student Info
13
do/ Check In, Check Out

Requirements of ILS

- Functional requirements
- Database requirements
- Performance requirements
- Hardware requirements
- Software requirements

Functional requirements for ILS

- A circulation system can be divided into borrower control, charges, renewals, discharges, blocks, holds, recalls, fines and fees, overdues, reserves, material booking and interlibrary communication subsystems.
- An acquisition system can be divided into selection entry and review, verification and searching, purchase order preparation, receiving, claims and cancellations, vendor records maintenance and fund accounting subsystems.
- An online public catalog system can be divided into database creation and maintenance, authority control, searching/inquiries, search results, and index creation and maintenance subsystems.

Performance requirements for ILS

- The system shall have an average response time of six seconds or less for data input and edit operations.
- The system shall have maximum average response time of six seconds for file inquiries by subject.
- The system shall complete each step of charge, renewal, discharge, and other circulation functions within two seconds after entry of the required data.

Hardware requirements for ILS

- The CPU shall have a console with keyboard and a visual display unit.
- The CPU shall have sufficient internal memory to perform the library's excepted workloads and to allow concurrent operation of the required peripherals within the required response times.
- The CPU shall be capable of accepting modular additions to memory up to twice the installed memory without reprogramming.
- The system shall be expandable in the future to at least double the disk storage capacity without changing the basic hardware or software, except for adding new drives.

Software requirements for ILS

- The system shall allow concurrent operation of more than two tasks.
- The system shall process jobs in accordance with established priorities, by scheduling jobs, overlapping jobs requiring no external intervention.
- A system of passwords and/or other security mechanisms shall be provided.
- Software shall be provided which will perform back-ups of all application and system software and all data files and transactions onto some removable magnetic storage medium.
- Procedures shall be provided which will enable fast recovery form hardware and/or software failure.

GUI’s for Integrated Library System

View Utilities Orders *Services Help ?

ADM Sys No.

Order number

[1] Functional [2] Overview

- [L] Order List
- [O] Order
  - [E] Encumber
  - [I] Invoice
  - [A] Arrival
  - [S] Items/Subscriptions
  - [C] Claims
  - [G] Order Log
- [B] Bibliographic Info.
- [T] Trigger List

Order List

Add

Duplicate

Delete

Print/Cancel

Send

1. Order Display | 2. General | 3. Vendor | 4. Quantity and Price

View Patrons Items Circulation Requests Reports *Services Help

Patron Activity
- [L] Loans
- [C] Cash
- [H] Hold Requests
- [P] Photocopy Requests
- [I] ILL Requests
- [X] Proxies/Sponsor
- [R] Reading Room
- [U] Routing Lists
- [Z] Circulation Log
- [K] Booking List
- [A] Title Req

Patron Registration
- [G] Global Patron Information
- [O] Local Patron Information
- [D] Address Information
- [T] Additional IDs

List of Loans

Renew Marked
Renew All
Delete
Item List
Change Date
Loan Notes
Lost
Claim Return
Circ Log

Sort Type

1. Loan Details | 2. Renew All Log