

# Software Requirements Specification & Analysis



Library Acquisition System

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# **1. Introduction**

## **1.1 Purpose**

This Software Requirements Specification (SRS) describes the functional and nonfunctional requirements for the Acquisitions Module of a Library System.

This SRS identifies requirements for an Acquisitions Module, currently under development as part of the Evergreen Library Automation System. The requirements were developed for Dhaka University Central Library System, but are believed to be suitable for many large, urban, multiple-branch, centralized library systems.

The requirements in this SRS presuppose the general data structures and functionality of full-fledged LS. The Acquisitions Module will replace and enhance the current capabilities of commercially available Library Systems, as well as add new functionality.

## **1.2 Document Conventions**

The SRS includes requirements, process flowcharts, and use cases. Requirements include a reference to a process flowchart where appropriate. Flowcharts generally indicate the current approach to Acquisitions processes at King County Library System, and should be considered to give contextual information rather than to prescribe or constrain new software development.

Use cases are included for some of the most frequently performed activities. They are intended to supplement the requirements and highlight activities that offer a great potential for increased efficiency and ease of use. Again, they should be considered to be contextual rather than prescriptive.

Because Serials Acquisition and Management are key, unique elements of a successful Library Acquisitions process, requirements related to Serials are included in a separate category.

## **1.3 Intended Audience**

This SRS is intended both for library managers and staff who may contribute additional requirements or commentary, and for software project managers and developers who will implement the requirements. As such, it aims for a high level of readability for a non-technical audience, while providing enough specificity to be useful to a software developer.

It is assumed that when software development occurs, it will be in a highly collaborative and iterative environment in which end-users have multiple opportunities to review and refine the user interface and software functionality.

It is also assumed that the reader has a general understanding of Library services and processes and does not require definition of common Library terminology.

## 1.4 Product Scope and Features

The Acquisitions Module facilitates the selection, ordering, receiving, processing, and invoicing of print and non-print materials at the Dhaka University Central Library System. Specifically, the Acquisitions Module supports the following activities, among others:

- Identifying existing materials that require additional copies or licenses to satisfy demand
- Identifying subject categories and formats of materials that require additional titles to satisfy demand
- Accepting new materials requests from library staff, patrons, and vendors
- Managing, reviewing, locating, and pricing items for possible acquisition
- Ordering items from a variety of vendors
- Receiving, processing, and distributing new materials
- Obtaining or creating bibliographic and item records
- Processing and payment of invoices
- Identifying materials for deletion and discarding

The acquisition and management of serials and periodicals is a special subcategory of Acquisitions and is included in the scope of this SRS.

The current specification presupposes the general functionality of LS and specifies only those requirements that directly or indirectly relate to Acquisitions activities. Later versions of this SRS will be expanded to include additional modules. Requirements for the Circulation (or Inventory Management) module are currently under development.

## 1.5 Overview

The next chapter, the General Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Specific Requirements section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

## 2. Overall Description

### 2.1 Product Perspective

This Software Requirements Specification (SRS) describes the functional and nonfunctional requirements for the Acquisitions Module of a Library System.

This SRS identifies requirements for an Acquisitions Module, currently under development as part of the Evergreen Library Automation System. The requirements were developed for Dhaka University Central Library System, but are believed to be suitable for many large, urban, multiple-branch, centralized library systems.

The requirements in this SRS presuppose the general data structures and functionality of full-fledged Library System. The Acquisitions Module will replace and enhance the current capabilities of commercially available Library Systems, as well as add new functionality.

### 2.2 Inception or Establishing the Groundwork

At project inception, establish a basic understanding of the problem, the people who want a solution, the nature of the solution that is desired, and the effectiveness of preliminary communication and collaboration between the other stakeholders and the software team.

Customer(s) or end users may be located in a different city or country may have only a vague idea of what is required, may have conflicting opinions about the system to be built, may have limited technical knowledge, and may have limited time to interact with the requirements engineer. None of these things are desirable, but all are fairly common, and you are often forced to work within the constraints imposed by this situation.

#### 2.2.1 Stakeholder Identification

|                              |   |
|------------------------------|---|
| <u>Departments</u>           | A Department is a customer of a library system, either possessing a library card or not, either on site of a community library or not, using, either print materials, media materials, or electronic resources. |
| <u>Acquisitions Staff</u>    | Acquisitions Staff include managers, librarians, library technicians, and library pages who select, order, unpack, receive materials.   |
| <u>Acquisitions Managers</u> | Acquisitions Managers include management staffs who oversee the Acquisitions processes.   |
| <u>Library Managers</u>      | Library Managers include Cluster and Site Managers who provide input to the Acquisitions processes and receive materials from the Acquisitions processes.   |

### **2.2.2 Recognizing Multiple Viewpoints**

Because many different stakeholders exist, the requirements of the system will be explored from many different points of view. The Librarian is interested in a wildcard search engine, Simple mail sending process.

### **2.2.3 Working toward Collaboration**

If five stakeholders are involved in a software project, you may have five (or more) different opinions about the proper set of requirements. Throughout earlier chapters, I have noted that customers (and other stakeholders) must collaborate among themselves (avoiding petty turf battles) and with software engineering practitioners if a successful system is to result. But how is this collaboration accomplished? The job of a requirements engineer is to identify areas of commonality (i.e., requirements on which all stakeholders agree) and areas of conflict or inconsistency (i.e., requirements that are desired by one stakeholder but conflict with the needs of another stakeholder). It is, of course, the latter category that presents a challenge.

### **2.2.4 Asking the First Questions**

Questions asked at the inception of the project should be “context free”. The first set of context-free questions focuses on the customer and other stakeholders, the overall project goals and benefits. We ask the questions given below:

- What is an acquisition Process?
- Who is behind the request for Acquisition Process?
- Who will use the solution?
- What will be the economic benefit of a successful solution?
- Is there another source for the solution that you need?

The next set of questions enables you to gain a better understanding of the problem and allows the customer to voice his or her perceptions about a solution:

- How would you characterize “good” output that would be generated by a successful solution?
- What problem(s) will this solution address?
- Can you show me (or describe) the business environment in which the solution will be used?
- Will special performance issues or constraints affect the way the solution is approached?

The final set of questions focuses on the effectiveness of the communication activity itself. Gause and Weinberg call these “meta-questions” and propose the following list:

- Are you the right person to answer these questions? Are your answers “official”?
- Are my questions relevant to the problem that you have?
- Am I asking too many questions?



- Can anyone else provide additional information?
- Should I be asking you anything else?

## 2.3 Eliciting Requirements

### 2.3.1 Collaborative Requirements Gathering

The goal is to identify the problem, propose elements of the solution, negotiate different approaches, and specify a preliminary set of solution requirements in an atmosphere that is conducive to the accomplishment of the goal. To better understand the flow of events as they occur, we present a brief scenario that outlines the sequence of events that lead up to the requirements gathering meeting, occur during the meeting, and follow the meeting. We go to the Dhaka University Central Library and discuss about their requirements.

### 2.3.2 Quality Function Development

*Quality function deployment* (QFD) is a quality management technique that translates the needs of the customer into technical requirements for software. QFD “concentrates on maximizing customer satisfaction from the software engineering process”. QFD identifies three types of requirements.

#### 2.3.2.1 Normal Requirements

REQ-101                      **Priority:** 3

**Name:** Individual and shared staff login accounts

**Description:** Support for individual and shared staff login accounts; access to modules is granted by use of "roles" or "privileges" that allow each account access to as many modules as needed.

REQ-102                      **Priority:** 3

**Name:** Keyboard macros and shortcuts

**Description:** Library System client supports administrator-programmable and user-programmable macros and/or keyboard shortcuts.

REQ-103                      **Priority:** 2

**Name:** Search on any field

**Description:** Ability to search on any field.

### 2.3.2.2 Expected Requirements

- REQ-201**                      **Priority:** 3
- Name:** Distribute Budget among Departments
- Description:** Librarian Distribute Budgets among the departments depending on number of students in the department.
- REQ-202**                      **Priority:** 3
- Name:** Selection list attributes
- Description:** Selection lists are collections of bibliographic records (short or full) that temporarily store book titles being considered for purchase. Selection lists can be shared between acquisitions staff and can be made visible to other staff members for collaborative input.
- REQ-203**                      **Priority:** 3
- Name:** Departments request processing
- Description:** Departments request status is tracked in Departments account; Departments receive notifications (by email and by account messages) when item is ordered or rejected, and when item is received.
- REQ-204**                      **Priority:** 3
- Name:** Order templates
- Description:** Order templates predefine specific field values in order record; templates can be created by each technician and can be shared between technicians; unlimited number of templates per technician. Templates may be applied to all ordering interfaces including Serials.
- REQ-205**                      **Priority:** 3
- Name:** Delete order record
- Description:** Ability to delete order record with appropriate privileges.
- REQ-206**                      **Priority:** 3
- Name:** Publishers interface

**Description:** Ability to interface directly with vendor databases; ability to initiate vendor searches directly from Library System; shared interface for all publishers; shared selection lists with items from multiple publishers; ability to query a list of items against selected publishers or all publishers; ability to de-duplicate between multiple publishers lists and between publisher lists and Library System; ability to configure and save publishers login credentials in Library System user account.

REQ-207

**Priority:** 3

**Name:** Batch sends orders to vendors

**Description:** Ability to send batches of orders to publishers, including orders for multiple accounts.

REQ-208

**Priority:** 3

**Name:** Materials receiving process

**Description:** All staff involved in receiving workflow should be able to process information from the same ACQ interface.

REQ-209

**Priority:** 3

**Name:** Receiving new item generates item records

**Description:** New items are received into the LS by scanning a barcode. Item records are created based on order record fields.

REQ-210

**Priority:** 3

**Name:** Transfer item records

**Description:** Ability to transfer item records from one bibliographic record to another.

### 2.3.2.3 Exciting Requirements

REQ-301                      **Priority: 2**

**Name: Order records include selection history**

**Description:** Order records include a field showing the history of decisions made with regard to selection or rejection. This history is accessible in selection lists and through queries and reports.

REQ-302                      **Priority: 2**

**Name: Publisher 'one-click' support**

**Description:** Support for publisher 'one-click' systems that allow easy download of publisher marc records; create bibliographic records and item records in catalog; accept data in 9XX tags to create order records and purchase order; encumber proper funds; accept publisher record identification in the marc file; accept ISBN search in a URL string so that ISBN lookup features work.

REQ-303                      **Priority: 1**

**Name: Order status notes**

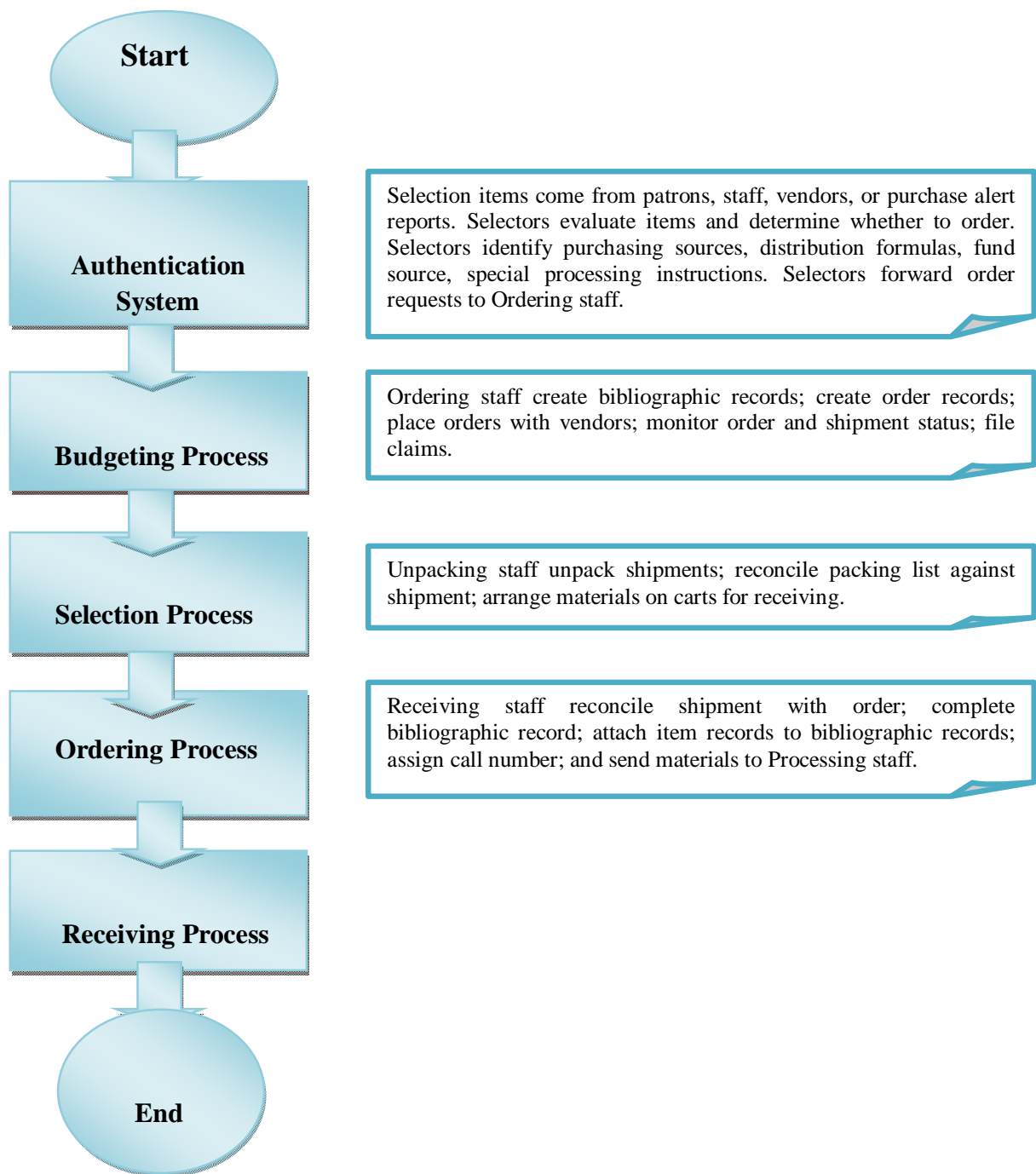
**Description:** Ability to store order status notes in the order record; e.g. if order status is 'canceled' we need to be able to store a reason like 'unrecognizable ISBN' or 'title has been postponed'.

REQ-304                      **Priority: 1**

**Name: Automated Receiving Process through Robots**

**Description:** Ordered books can be received automatically through robots.

## 2.4 Acquisition Process Master Flow-chart



**Figure: Acquisition System Master Flowchart**

## 2.5 Use Cases

### 2.5.1 Use Case List

We have written use cases for selected, frequently-performed activities. These are included to supplement the requirements, and to highlight places where good software could bring great improvements in efficiency and ease of use. The steps of the use cases should be considered suggestive rather than prescriptive.

| Use Cases             | Primary Actor     |
|-----------------------|-------------------|
| Authentication System | Librarian         |
| Budgeting Process     | Librarian         |
| Selection Process     | Librarian         |
| Ordering Process      | Librarian         |
| Receiving Process     | Acquisition Staff |

### 2.5.2 Authentication System

|                         |  |
|-------------------------|--|
| <b>Use case Name:</b>   | <b>Authentication</b>                              |
| <b>Use case No:</b>     | <b>4.1</b>   |
| <b>Primary Actor:</b>   | <b>Librarian</b>                                   |
| <b>Secondary Actor:</b> | Library staffs                                     |
| <b>Goal in Context</b>  | To keep the system safe and secure.                |
| <b>Precondition:</b>    | System needs a user id and password to get access. |
| <b>Trigger:</b>         | To use any process.                                |
| <b>Scenario</b>         | Enters password and user name.                     |
| <b>Exceptions</b>       | Incorrect password: Admin reenter password.        |

Table: Use Case of Authentication System

### 2.5.3 Budgeting Process

|                         |   |
|-------------------------|---|
| <b>Use case Name:</b>   | <b>Budget Automation</b>  |
| <b>Use case No:</b>     | <b>4.2</b>  |
| <b>Primary Actor:</b>   | <b>Librarian</b>  |
| <b>Secondary Actor:</b> | Library people.   |
| <b>Goal in context</b>  | To send mail to the departments for asking booklist.                  |
| <b>Precondition:</b>    | System must be logged in.   |
| <b>Trigger:</b>         | To use the system to send mail to department directors by logging in. |
| <b>Scenario:</b>        | 1. Admin: Write the email and send it to the departments.             |
| <b>Exceptions:</b>      | 1. Email not sent: Resend the mail.                                   |

Table: Use Case of Budgeting Process

### 2.5.4 Selection Process

|                         |   |
|-------------------------|---|
| <b>Use case Name:</b>   | <b>Selection process</b>  |
| <b>Use case No:</b>     | 4.3   |
| <b>Primary Actor:</b>   | Librarian   |
| <b>Secondary Actor:</b> | Library staff.  |
| <b>Goal in context</b>  | To prepare the final booklist for acquiring.  |
| <b>Precondition:</b>    | System needs a user id and password to get access and must have a id for each department.   |
| <b>Trigger:</b>         | To generate final booklist for issue E-tender.  |
| <b>Scenario:</b>        | <ol style="list-style-type: none"> <li>1. Admin: Verify the booklist which he will acquire by the reply mail from each department.</li> <li>2. Admin: Merge all separate booklists depending on priority.</li> <li>3. Admin: produce the final booklist.</li> </ol> |
| <b>Exceptions:</b>      | <ol style="list-style-type: none"> <li>1. Item already exist of enough amounts: cut the items name from the list.</li> </ol>  |

Table: Use Case of Selection Process

### 2.5.5 Ordering Process

|                         |   |
|-------------------------|---|
| <b>Use case Name:</b>   | <b>Ordering process</b>   |
| <b>Use case No:</b>     | 4.4   |
| <b>Primary Actor:</b>   | Acquisition staff   |
| <b>Secondary Actor:</b> | Library people.   |
| <b>Goal in context</b>  | To issue the E-tender for the selected books on the library website notice board.   |
| <b>Precondition:</b>    | System needs a user id and password to get access and the final booklist.   |
| <b>Trigger:</b>         | To issue E-tender for buy the selected books.   |
| <b>Scenario:</b>        | <ol style="list-style-type: none"> <li>1 Admin: prepare the e-tender notice.</li> <li>2 Admin: Include the notice in the library website notice board.</li> </ol> |
| <b>Exceptions:</b>      | Anything wrong in submission tender: Solve the problem.   |

Table: Use Case of Ordering Process

### 2.5.6 Receiving Process

|                        |   |
|------------------------|---|
| <b>Use case Name:</b>  | <b>Receiving process</b>  |
| <b>Use case No:</b>    | 4.5   |
| <b>Primary Actor:</b>  | Library staff.  |
| <b>Goal in context</b> | To produce a unique code number for each books to find it out easily and fast.                        |
| <b>Precondition:</b>   | Must receive all the books manually.  |
| <b>Trigger:</b>        | System needs a user id and password to get access<br>And produce a unique code number for each books. |
| <b>Scenario:</b>       | 1 Staff: receive all books according the final booklist.  |

Table: Use Case of Receiving Process

### 2.6 Use Case Diagram

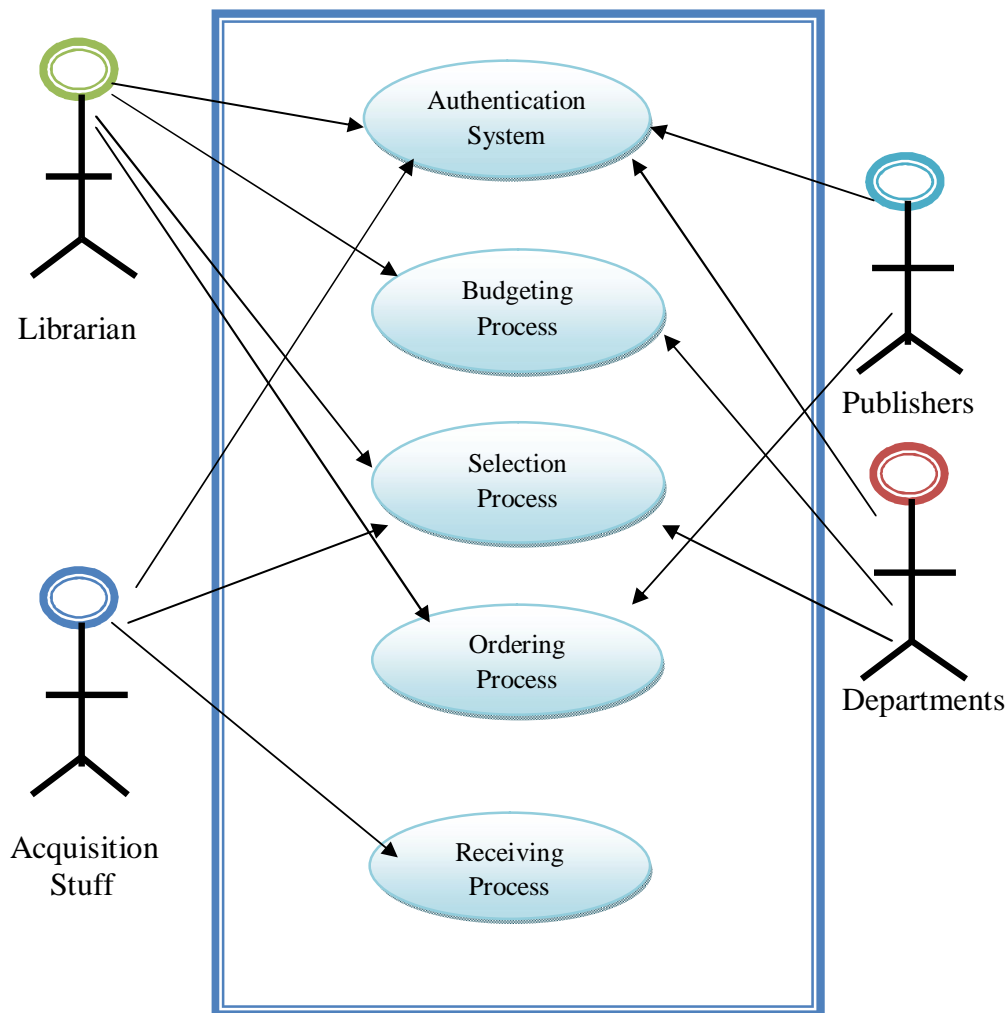


Figure: Use Case Diagram for Library Acquisition System



### 3. Use case Scenario

#### 3.1 Authentication System

**User case:** Authentication

**Actor:** Librarian, acquisition staff, Departments, publishers.

**Scenario:**

Liberian wants to use the system he/she must be logged in the system. Liberian uses this system for the first time so he must need to register in the system. For registration in the system he must fill the registration form. In registration form he enters username, password, mail address, address and working position. The info is not valid so he fills the form with the valid information. If he wants to login in to the system he must enter the username and password. The username and password is correct so he is logged in otherwise he need to reenter the username and password. He enters the username or password or both more than three times so he will be blocked. Then the admin unblock him. After that he enters in the system with the correct username and password.

#### 3.2 Budgeting Process

**Use case name:** Budgeting Process

**Actors:** Librarian, Acquisition Staff

**Scenario:**

The Acquisition Staff send notification e-mail containing letter to purchase books in the Library. The Acquisition Staff asks Departments about number of students. After getting the number of students in each department through e-mail from Departments, the librarian allocate budget for each department depending on number of students.

### 3.3 Selection Process

**Use case name:** Selection Process

**Actors:** Librarian, Acquisition staff, Departments

**Scenario:**

Librarian or Acquisition Staff sends E-mail to Departments that contains Budget information. The Acquisition staff also informs Departments to send required list of books name, E-Books name, Journals containing Author name, Number of copy, Edition, priority of the item those can be purchased within their budget amount. Acquisition Staff receives booklist from Every Departments and search for availability of those items in the library. If the items are not available in the library or the items have not requested number of copy in the library, the acquisition staff inserts those items in the booklist to purchase those items. Otherwise, the library system shows the available number of those items in the library and the Acquisition Staff remove the items from the book purchase list.

### 3.4 Ordering Process

**Use case name:** Ordering Process

**Actors:** Librarian, Acquisition Stuff, Publishers

**Scenario:**

The Acquisition Stuff prepares E-tender notice that contains purchasing booklist and budget amount to purchase those books. Then, he/she includes the notice in Library System notice-board. The publishers request for tender containing demand price and time to send books in the library. The Librarian selects some publishers who give word to sale books at low price and within less time. Then, the librarian check Publishers background records whether available or not. If the Publishers background records are available in the database then, it will be checked for whether the background record is good or bad. If good, then they will be added in Primary Selection List. Otherwise, the librarian rejects the Publishers request. If Publishers Background record is not available, they will be added in Primary Selection List. After Studying on the Primary Selection List, the Librarian creates Final Selection List and Orders those Publishers to Supply Books.

### 3.5 Receiving Process

**User case:** Receiving Process

**Actor:** Librarian, Acquisition staff.

When the books reach in the Library the library staffs check the arrived books depending on the final booklist. Then the library staffs manually set Bar-code and Accession Numbers in each and every book. Then add the book name, edition NO, number of books, accession number for each and every book in the system. About the unmatched books the Liberian notify the publishers. Then the library staff adds Publishers Bibliographical Record in the process and then exit from the process.

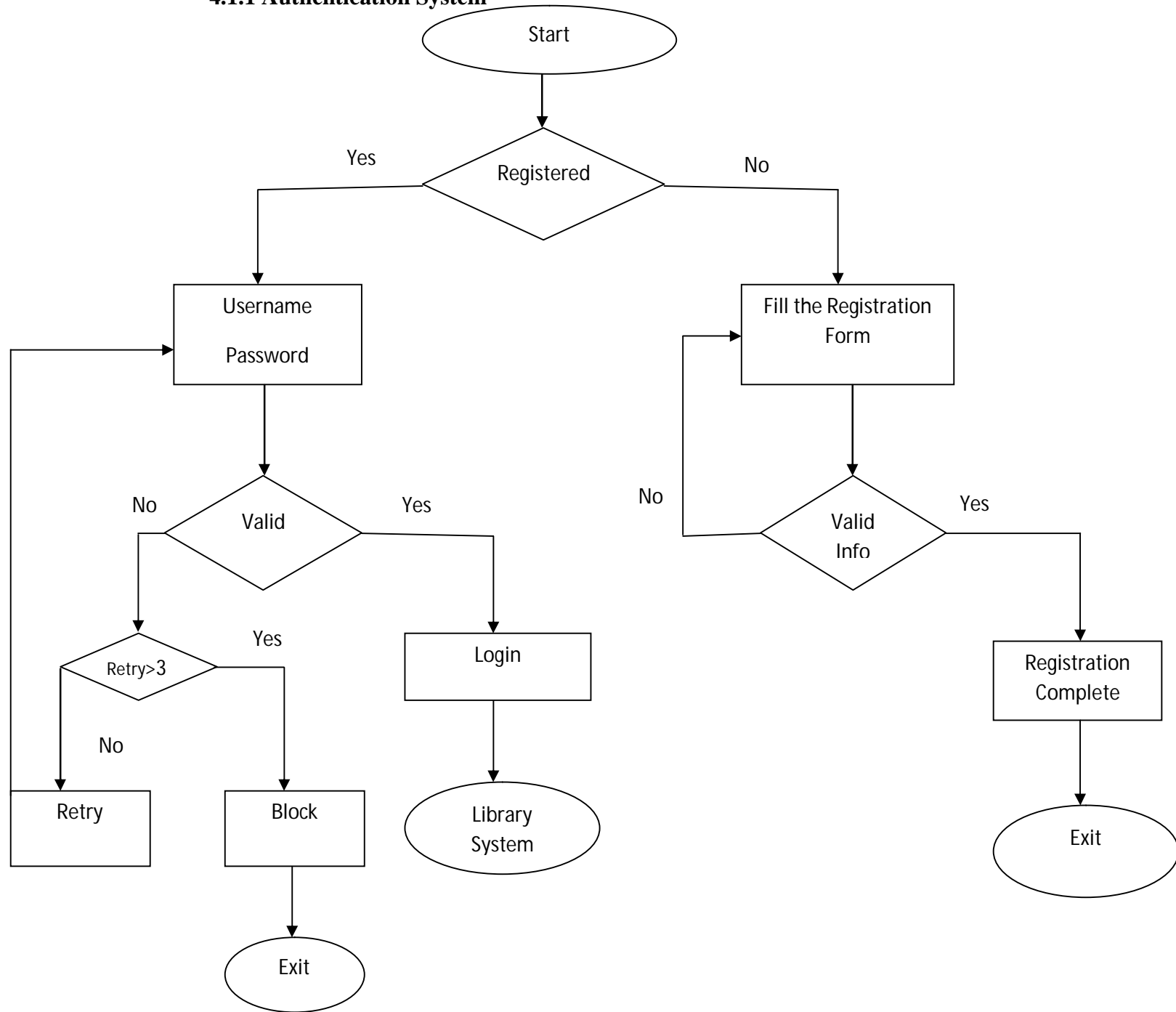
## 4. UML Diagrams

### 4.1 Activity Diagram

The activity diagram is a diagram that shows the activities in a system that is expected to take part. It shows all kinds of possible turnaround of the system.

In this diagram there are some special symbols like which means the starting position of the system. After that the symbol means the control flow of the system. The rounded rectangle means the activity nodes where the main operations are done. The symbol denotes the decision node where the decision is made where to go. And finally symbol denotes the end of the process.

#### 4.1.1 Authentication System



#### 4.1.2 Budgeting Process

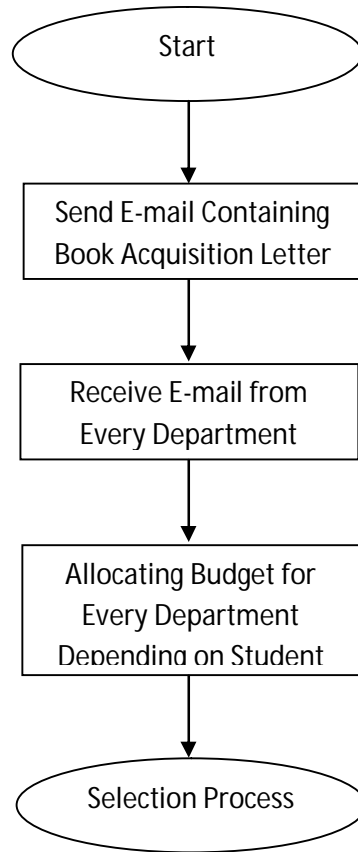
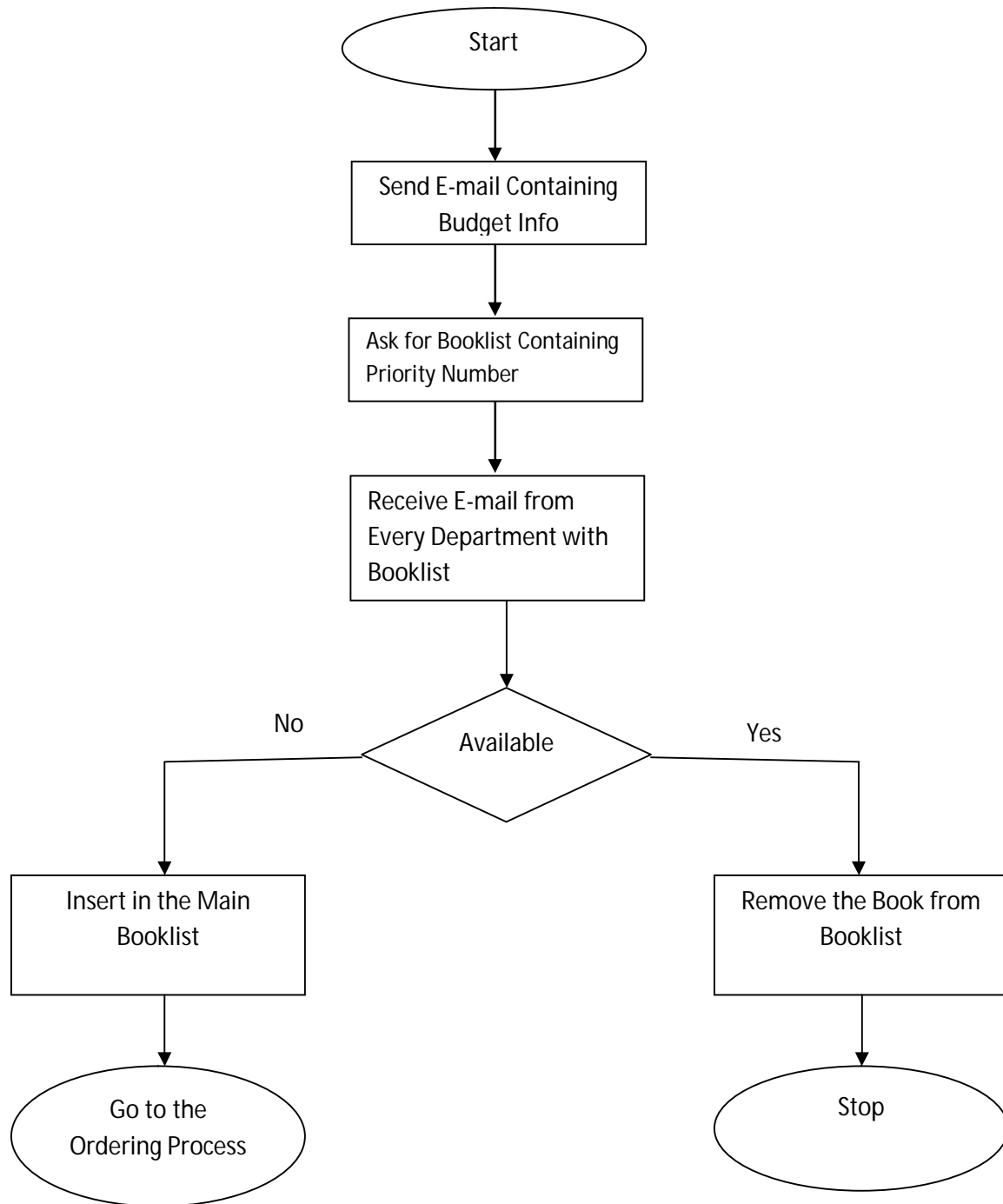
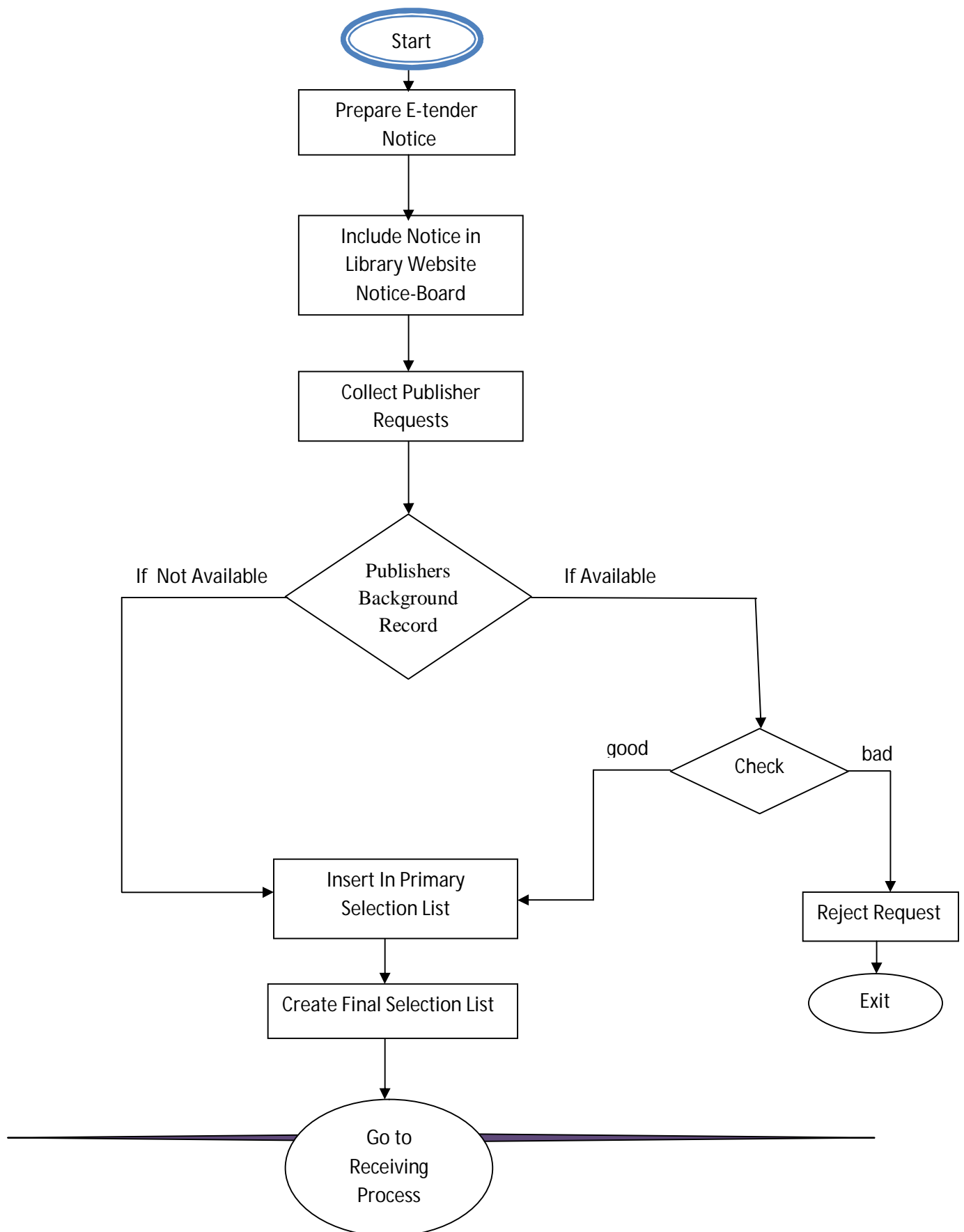


Figure: Activity Diagram for Budgeting Process

#### 4.1.3 Selection Process



#### 4.1.4 Ordering Process



#### 4.1.5 Receiving Process

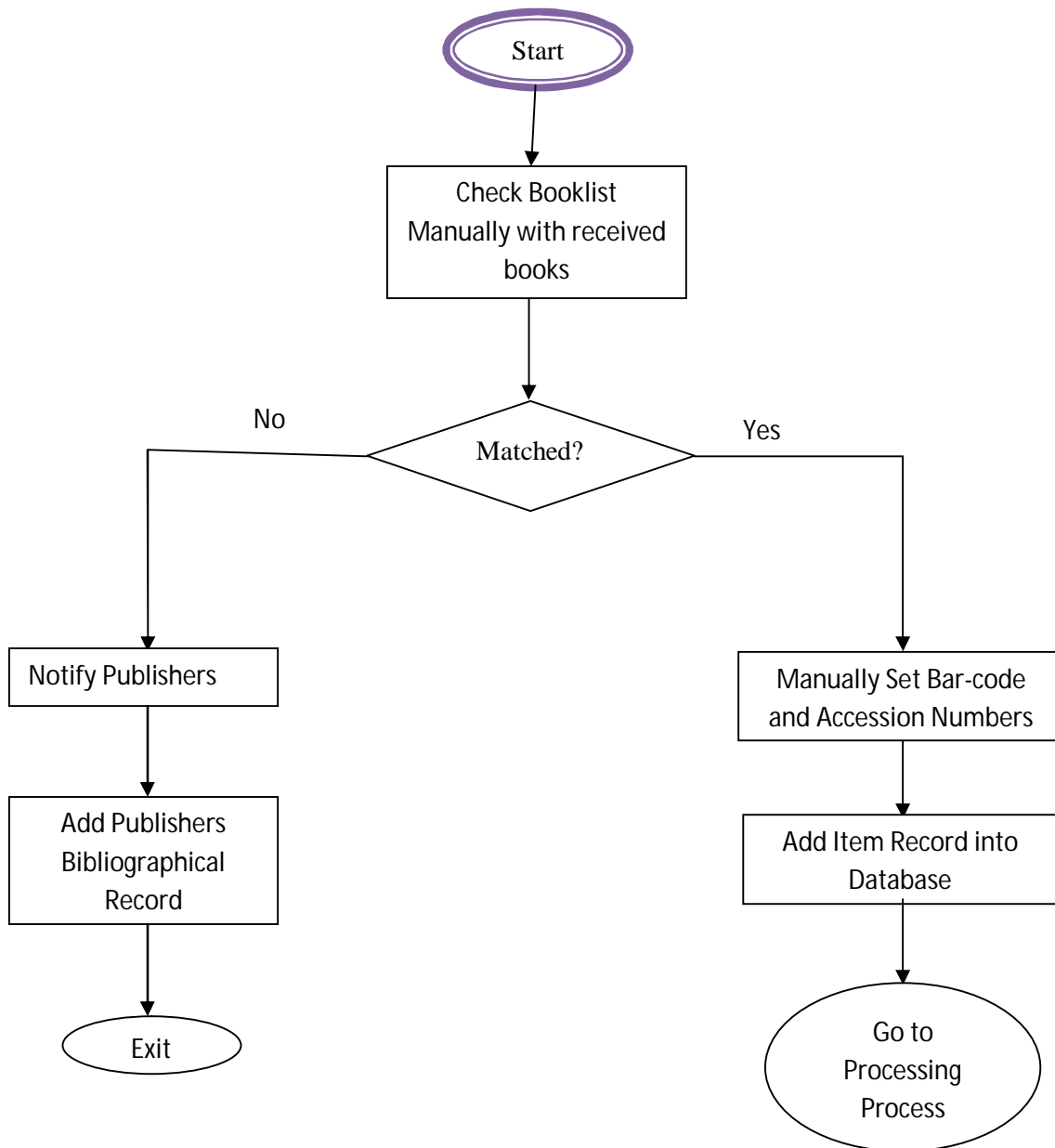
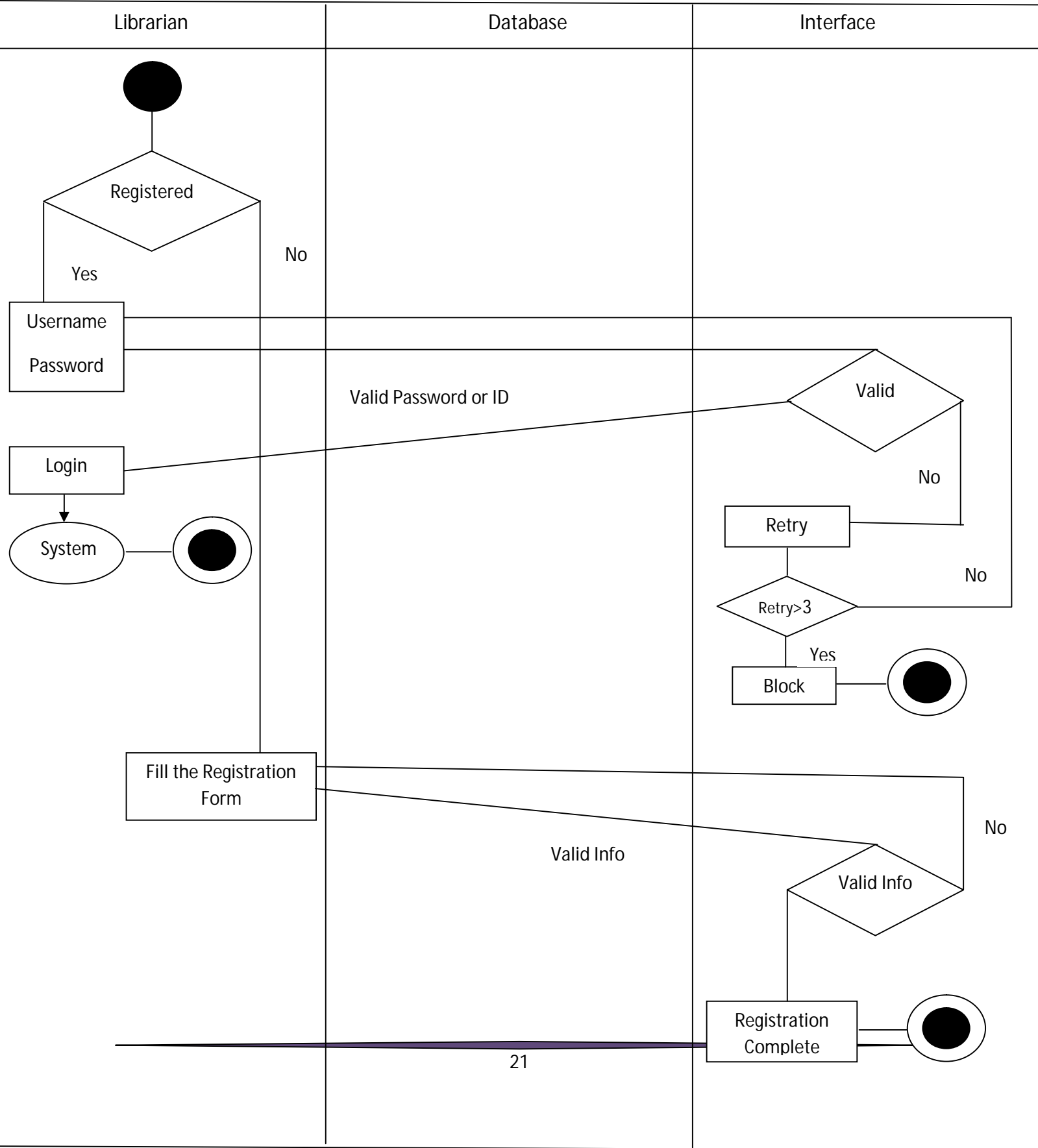


Figure: Activity Diagram for Receiving Process

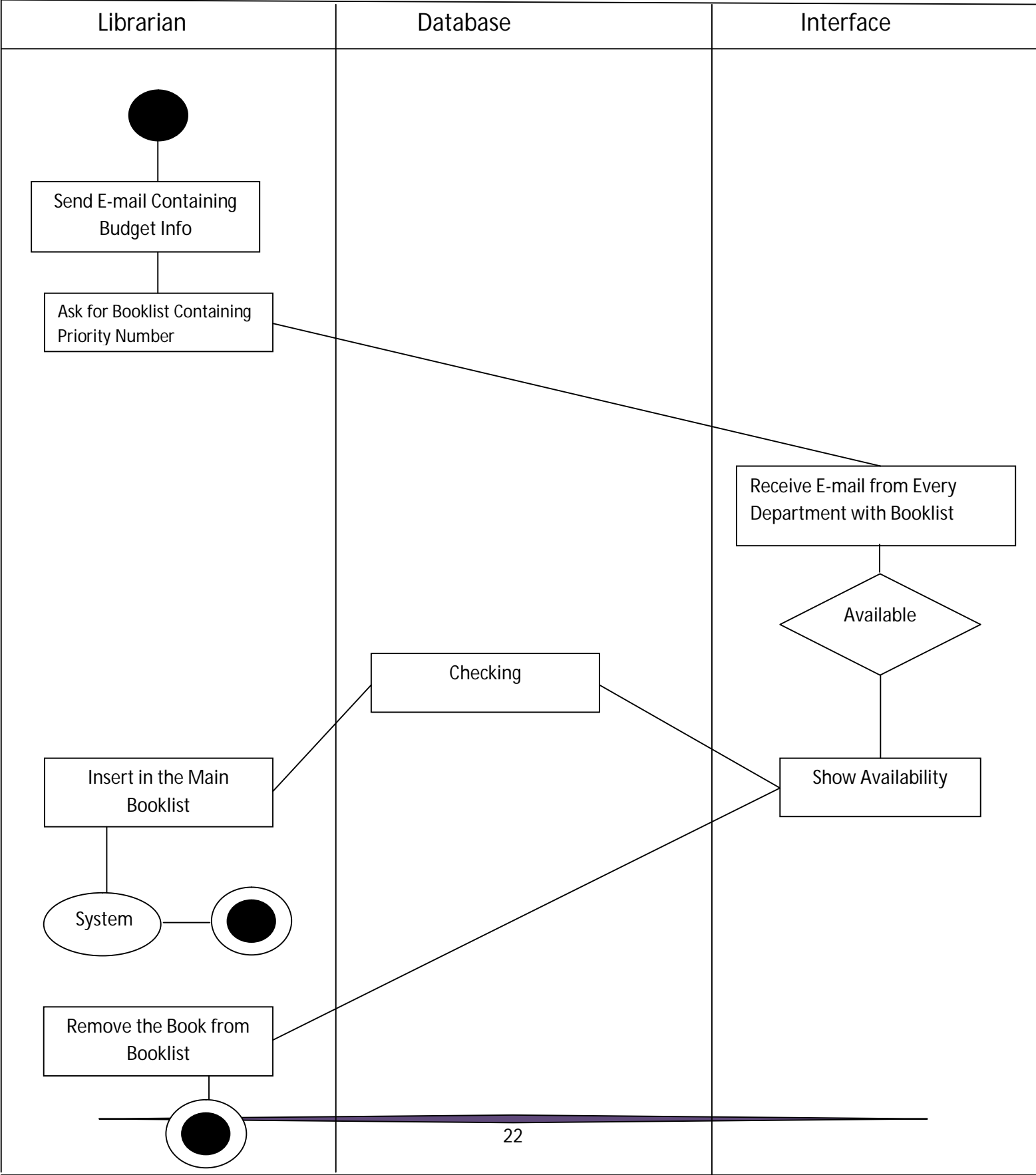


4.2 Swimlane Diagram

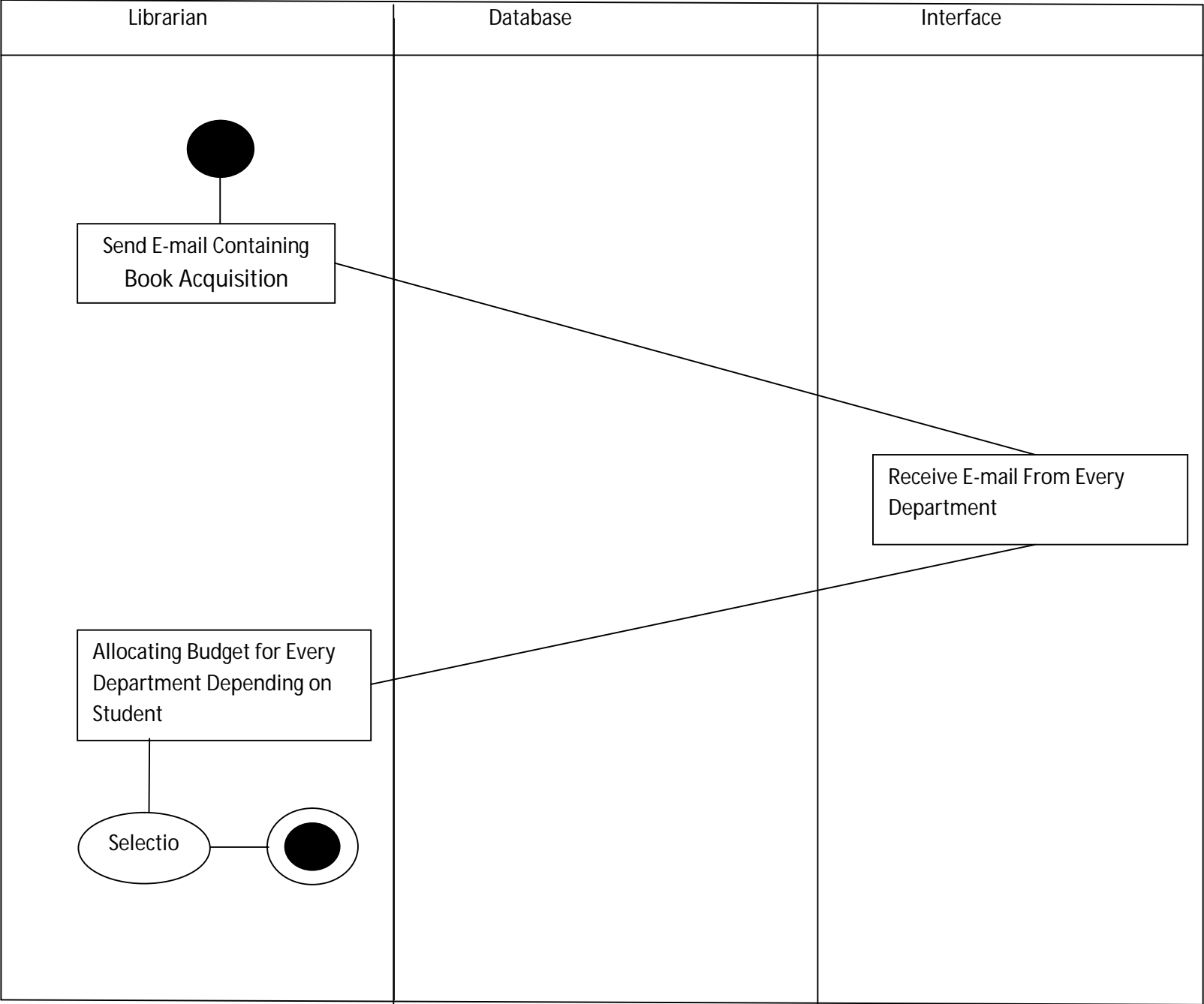
4.2.1 Authentication System



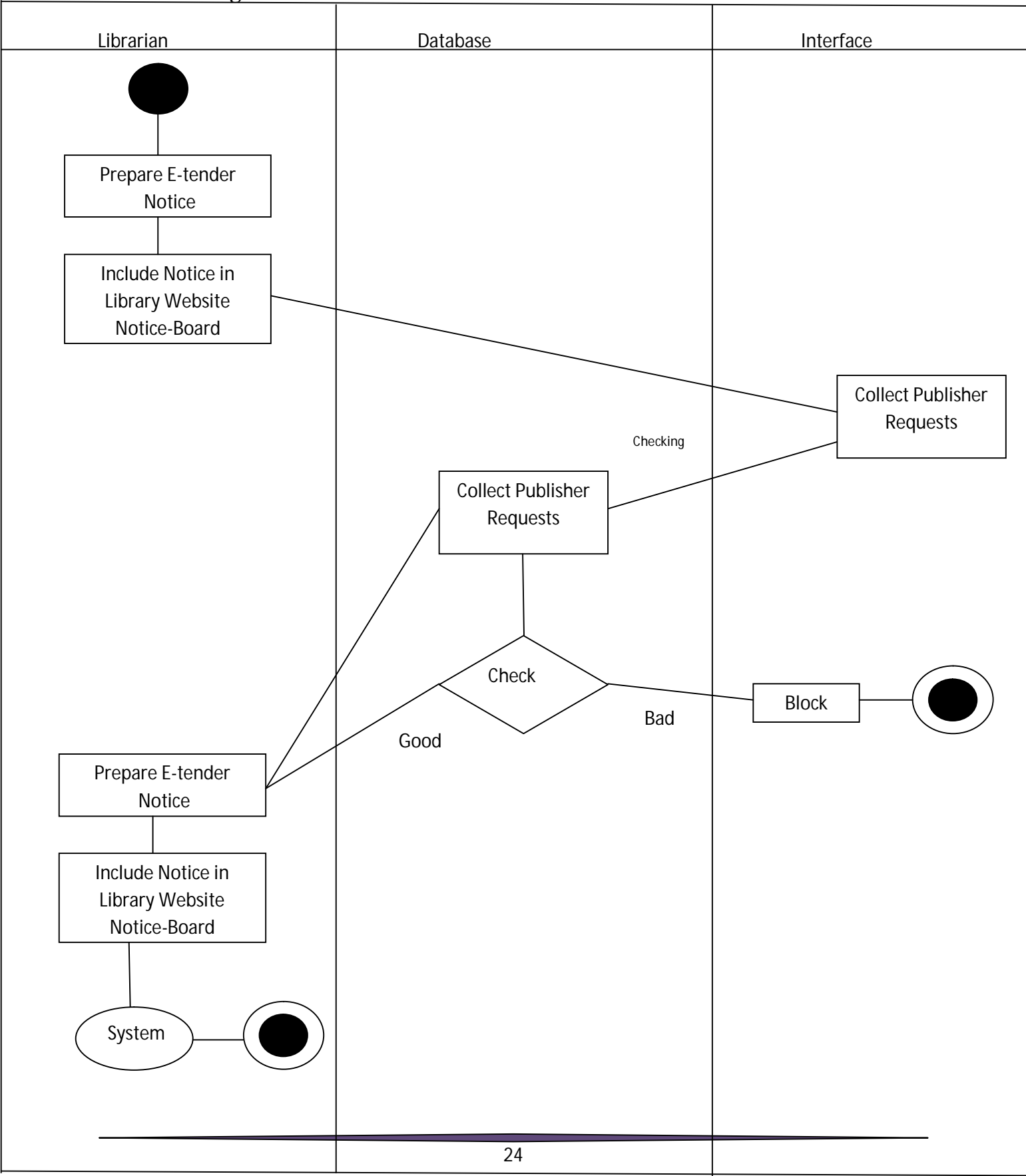
4.2.2 Budgeting Process



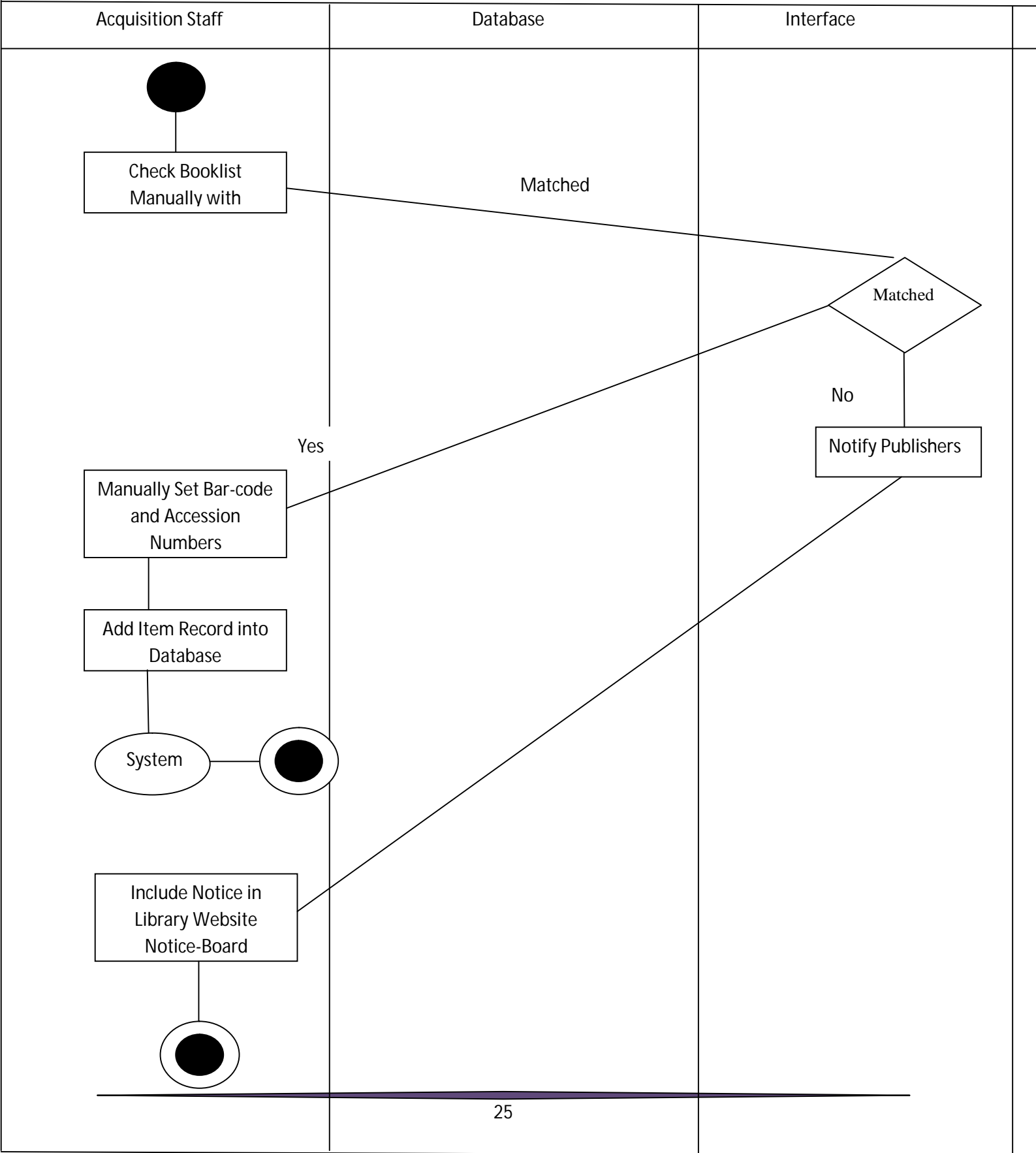
4.2.3 Selection Process



4.2.4 Ordering Process



4.2.5 Receiving Process



## 4.3 Class Based Modeling

### 4.3.1 Identifying Analysis Classes

- **External Entities:** Departments ,Publishers ,Database, System, Accession number
- **Things:** Notification E-mail, Letter, Books, Booklist
- **Occurrences or Events:** Budget, E-tender
- **Roles:** Acquisition Staff, Librarian
- **Organizations unit:** Departments
- **Places:** Library, Departments
- **Structures:** Bar code reader, Database

### 4.3.2 Potential Classes

Coad and Yourdon suggest six selection characteristics that should be used for each potential class. The six selection characteristics are:











1. Retained information
2. Needed services
3. Multiple attributes
4. Common attributes.
5. Common operations
6. Essential requirements








| Potential Class     | Characteristic Number That Applies |
|---------------------|------------------------------------|
| Departments         | Accepted: all apply                |
| Library Staff       | Rejected: 1,2 fails                |
| Publishers          | Accepted: all apply                |
| Database            | Accepted: 1,2,4,5 apply            |
| System              | Rejected: 1,5,6 fails              |
| Accession number    | Rejected: 3 fails                  |
| Notification E-mail | Rejected: 3,6 fails                |
| Letter              | Rejected: 3,6 fails                |
| Books               | Accepted: all apply                |
| Booklist            | Rejected: 1,6 fails                |
| E-tender            | Accepted: all apply                |
| Bar code reader     | Rejected: 1,3,4,5 fails            |
| Books ordering      | Accepted: all apply                |
| Authentication      | Accepted: all apply                |

### 4.3.3 Class Diagram

It includes potential class name, class attributes and methods.

**Class diagram of different classes are given below:**

| Departments   |  |
|---|--|
|  departmentName          |  |
|  departmentID            |  |
|  numberOfStudents        |  |
|  directorName            |  |
|  numberOfTeacher         |  |
|  DepartmentContactNumber |  |
|  receiveMail()           |  |
|  sendMail()              |  |
|  setDepartment()         |  |
|  getDepartment()         |  |










| Publishers   |  |
|--|--|
|  publisherName          |  |
|  publisherAddress       |  |
|  publisherLocation      |  |
|  publisherRating        |  |
|  publisherContactNumber |  |
|  tenderRequest()        |  |
|  sendMail()             |  |







| Books  |
|--|
| <ul style="list-style-type: none"> <li>✚ booksName</li> <li>✚ booksID</li> <li>✚ authoreName</li> <li>✚ booksEdition</li> <li>✚ publicationName</li> </ul> |
| <ul style="list-style-type: none"> <li>✚ uniqueIDGeneration()</li> <li>✚ setBooks()</li> <li>✚ getBooks()</li> </ul>                                       |

| E-tender   |
|--|
| <ul style="list-style-type: none"> <li>✚ contractorsName</li> <li>✚ contractorsMailAddress</li> <li>✚ tenderSubmissionDate</li> <li>✚ resultPublicationDate</li> </ul> |
| <ul style="list-style-type: none"> <li>✚ sendMail()</li> <li>✚ receiveMail()</li> </ul>  |

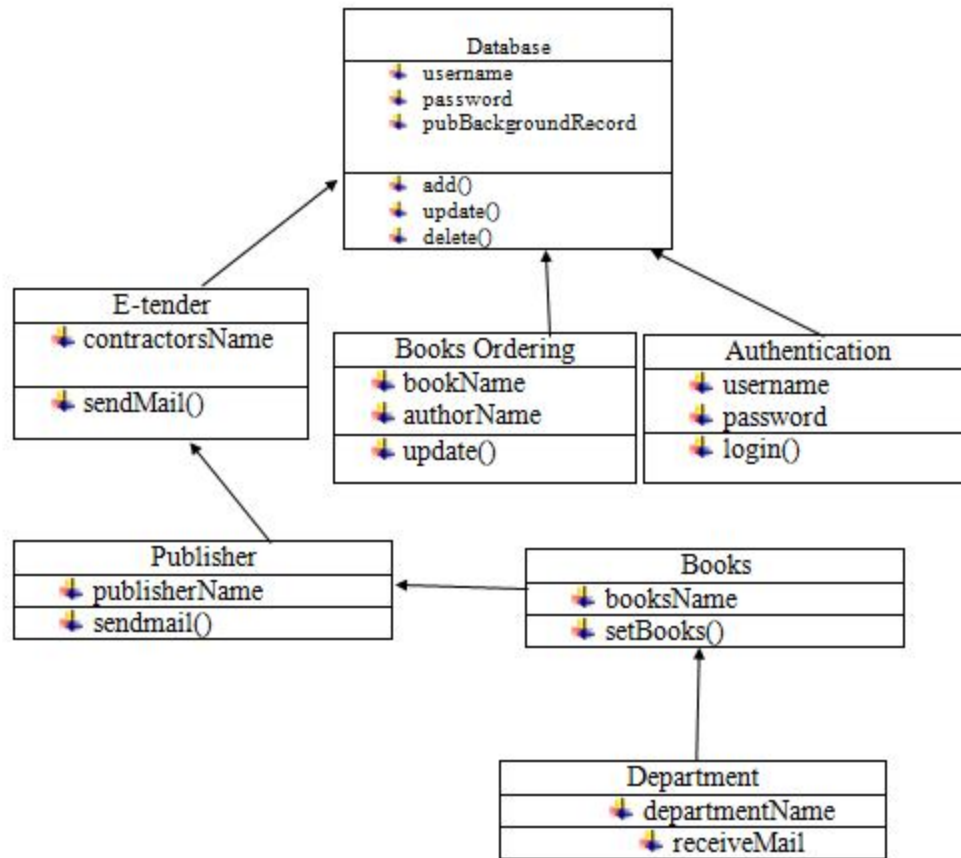
| Authentication  |
|---|
| <ul style="list-style-type: none"> <li>✚ username</li> <li>✚ userID</li> <li>✚ password</li> <li>✚ post</li> <li>✚ mailAddress</li> </ul> |
| <ul style="list-style-type: none"> <li>✚ registration()</li> <li>✚ login()</li> <li>✚ logout()</li> </ul>                                 |



| Books ordering  |               |
|---|---------------|
|  | booksName     |
|  | publisherName |
|  | authorName    |
|  | uniqueID      |
|  | edition       |
|  | update()      |
|  | search()      |
|  | insert()      |
|  | delete()      |

| Database  |                     |
|---|---------------------|
|    | username            |
|   | password            |
|  | pubBackgroundRecord |
|  | add()               |
|  | update()            |
|  | delete()            |

#### 4.3.4 CRC Diagram



#### 4.3.5 CRC Model Index Cards

|   |                       |
|---|-----------------------|
| Class: Database                         |                       |
| Description                             |                       |
| Responsibilities:                       |                       |
| Insert bar code in the database         | Collaborator:         |
| Store previous record                   |                       |
| Store information in the database       | <b>Authentication</b> |
| Update books in the database            | <b>Books Ordering</b> |
| Budget for tender store in the database | <b>E-tender</b>       |

## 4.4 Data Modeling

In data modeling, a software engineer or analyst defines all data objects that are processed within the system, the relationships between the data objects, and other information that is pertinent to the relationships. The *entity-relationship diagram* (ERD) addresses these issues and represents all data objects that are entered, stored, transformed, and produced within an application.

**Data object:** A data object is a representation of composite information that must be understood by software.

Data in our Use case Scenario

1. Librarian
2. Database
3. Departments
4. Books
5. Booklist
6. Publishers
7. Selected Publisher

**Data Attributes:** *Data attributes* define the properties of a data object and take on one of three different characteristics. They can be used to (1) name an instance of the data object, (2) describe the instance, or (3) make reference to another instance in another table.

Here our common Data and attributes are

| Librarian   | Selected Publishers  |
|---|--|
| Attributes  | Attributes   |
| <ol style="list-style-type: none"> <li>1. Name</li> <li>2. Age</li> <li>3. Gender</li> <li>4. Contact number</li> <li>5. E-mail address</li> <li>6. Permanent address.</li> </ol> | <ol style="list-style-type: none"> <li>1. publisherName</li> <li>2. publisherAddress</li> <li>3. publisherLocation</li> <li>4. publisherRating</li> <li>5. publisherContactNumber</li> </ol> |

### Database

#### Attributes

1. PublisherName
2. BookTitle
3. AuthorName
4. AccessionNumber
5. AvailableBook
6. Edition

### Departments

#### Attributes

1. DepartmentName
2. DirectorName
3. Numberofstudents
4. FacultyName

### Book List

#### Attributes

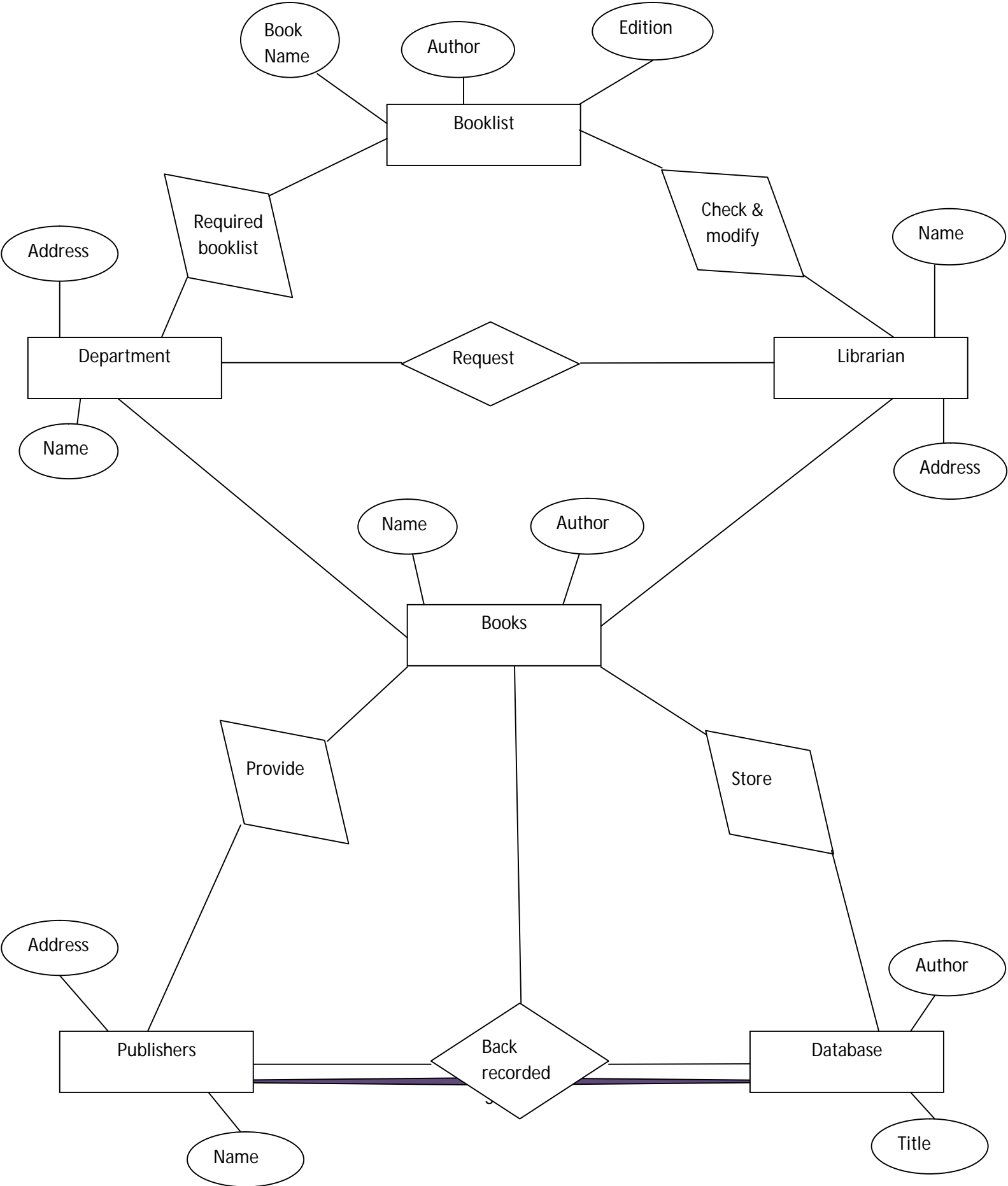
1. booksName
2. authoreName
3. booksEdition
4. publicationName
5. **numberOfEveryBook**

### Publishers

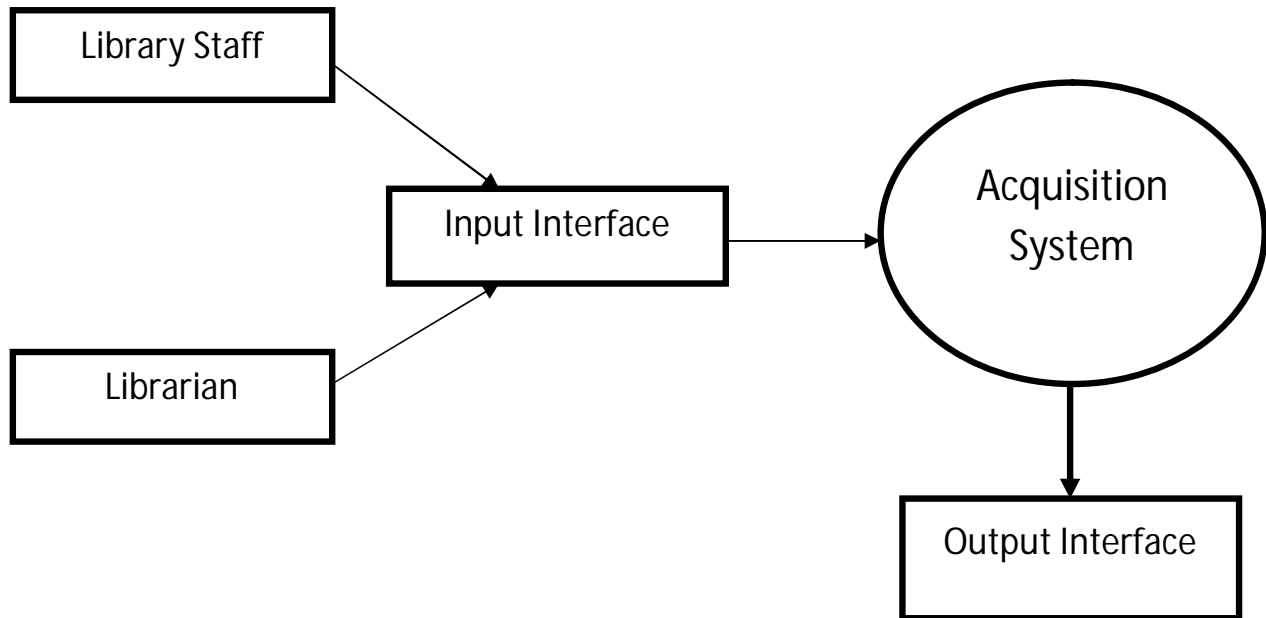
#### Attributes

1. publisherName
2. publisherAddress
3. publisherLocation
4. publisherRating
5. publisherContactNumber

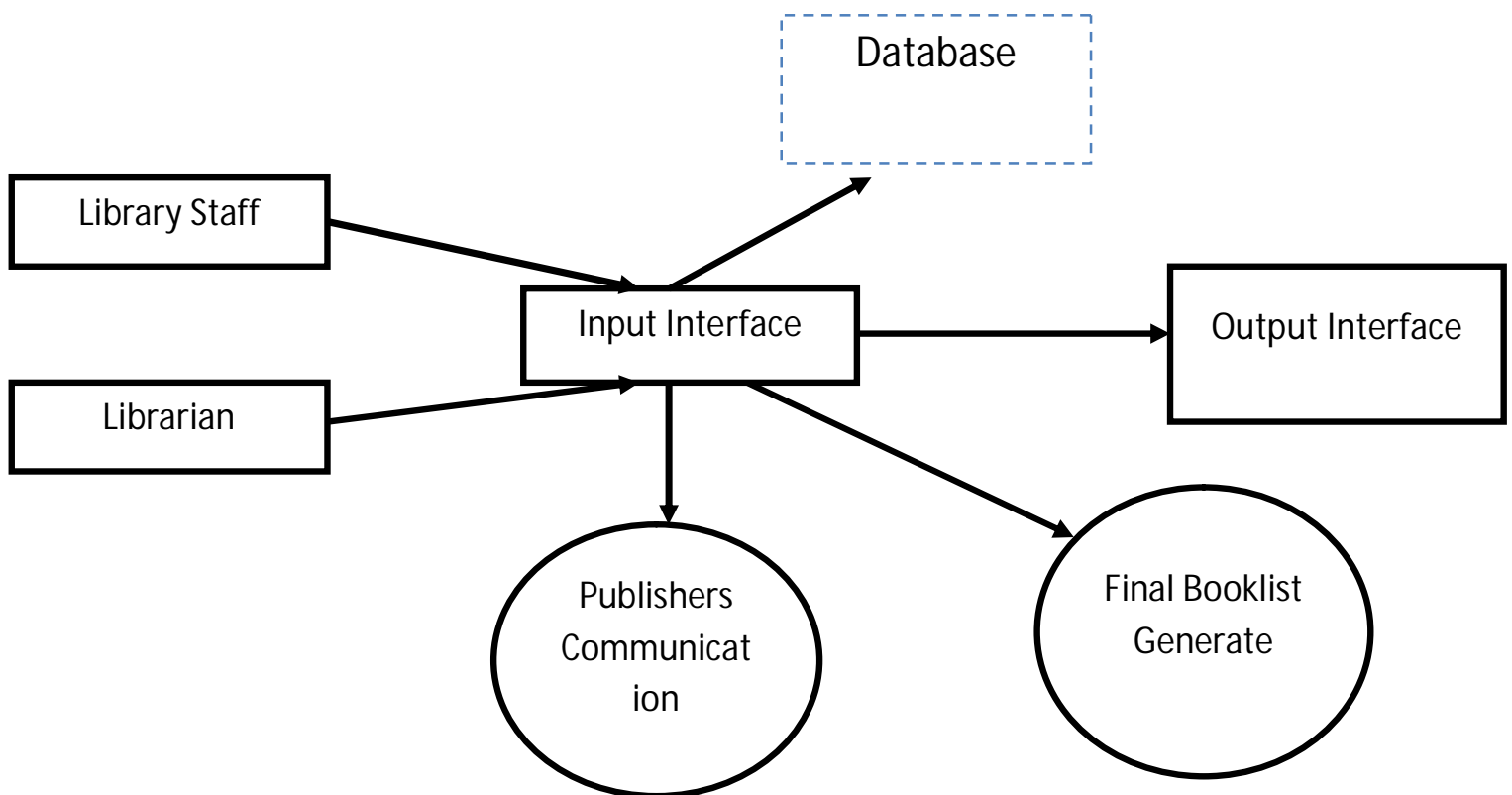
4.5 E-R Diagram of Acquisition System



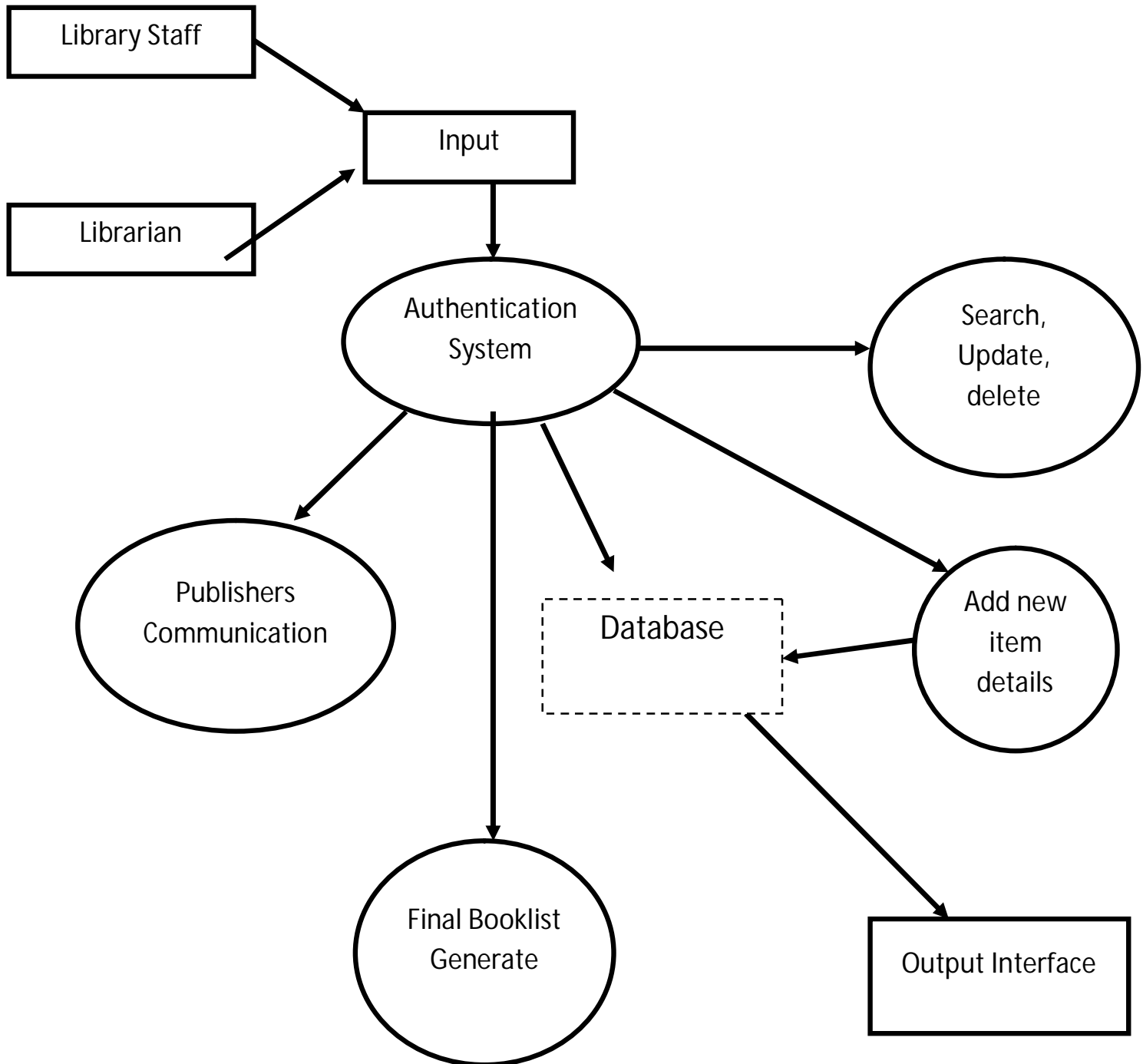
#### 4.6 Data Flow Diagrams (DFD)



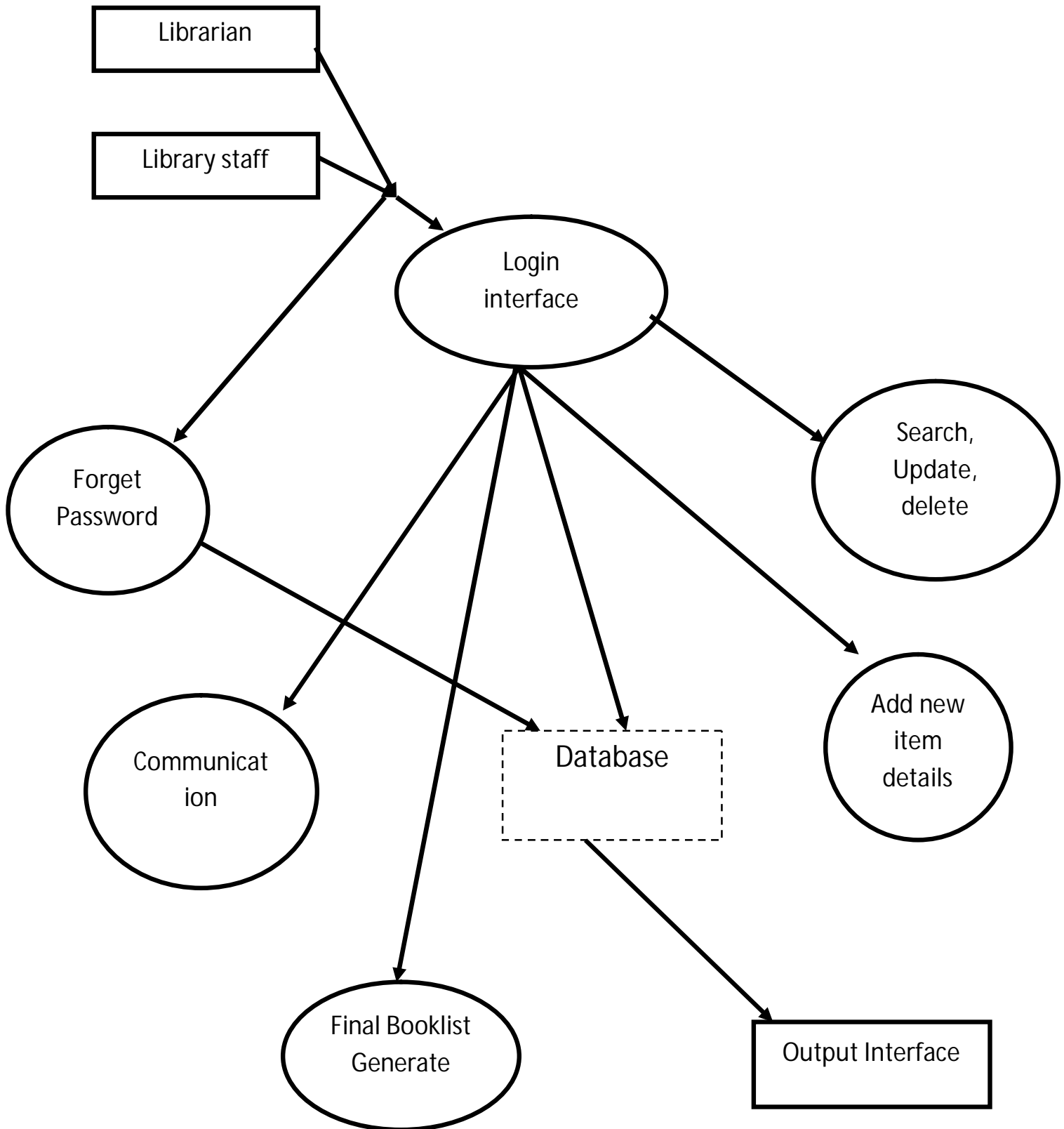
**Figure: Level-0 DFD**



**Figure: Level-1 DFD**



**Figure: Level -2 DFD**



**Figure: Level-3 DFD**



## 4.7 State Diagram

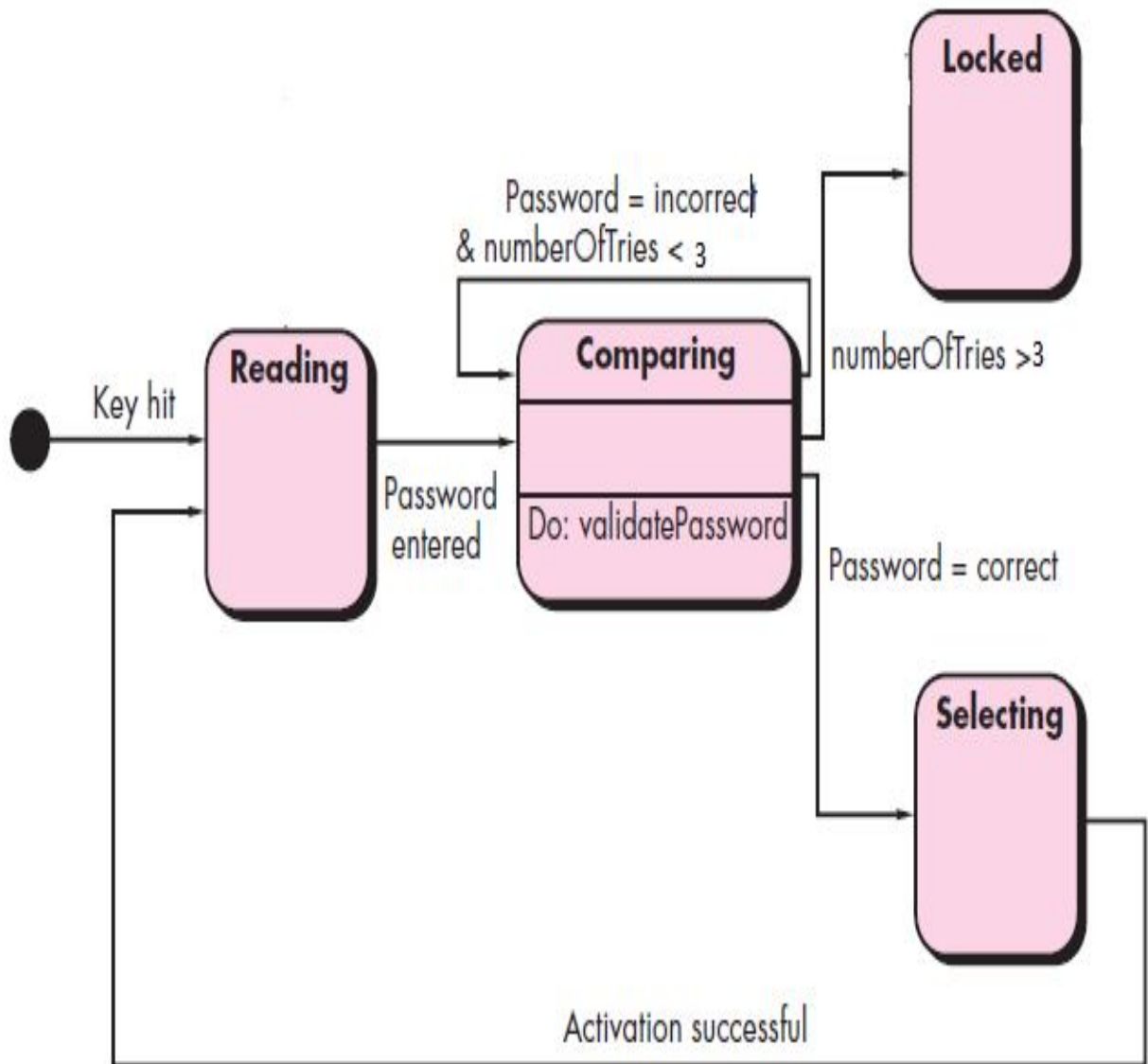
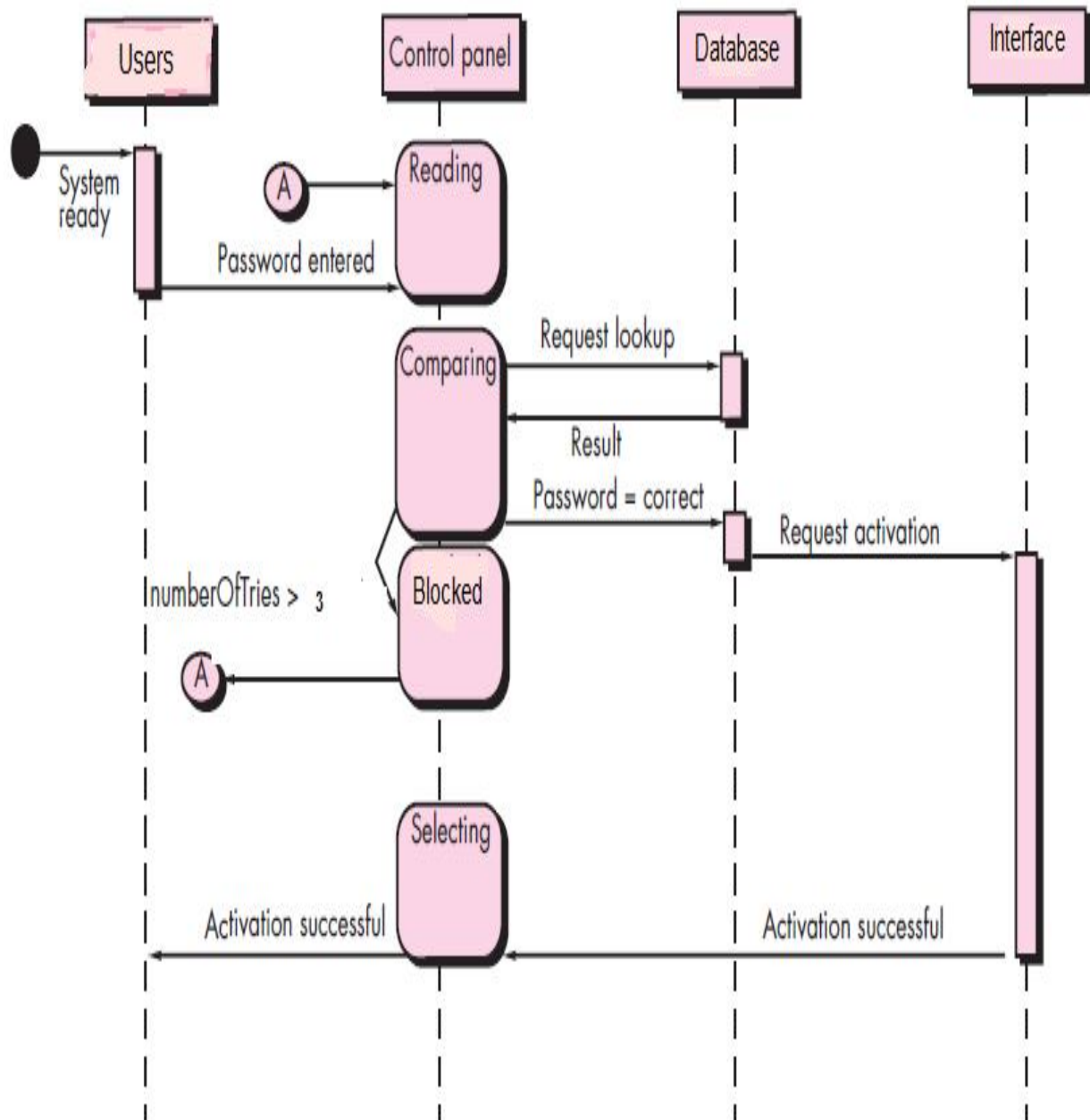


Figure: State Diagram for Authentication System

## 4.8 Sequence Diagram



**Figure Sequence Diagram for Authentication System**