Project Name

Name	Function
Razan mohamed kamal	Activity, state chart diagram (2200367)
Yasmin Walid Gamal	Use case, component diagram (2200392)
Shahinaz Samy mohamed	Business use case, class diagram (2200369)
Hend mofreh Shafeek	Sequence diagram (2200030)
Aya Selim mohamed	Object, deployment diagram (2200382)

Explain the project:

I have a web and desktop program.

It is assumed that I have a user who will log in to the Web.

It is assumed that I have a user who will log in to the Web. If the user has an account, he will log in. If he does not have one, he can do a search and display the books only, and He can decide to create an account. The second thing is that the user who has an account can borrow a book, buy a session, offer, or give feedback. He can pay in two ways: in cash or by visa.

If he has a visa, he will make confirmation with the bank that he has an account and that the account has money and that he can withdraw the value of the price of the books to buy them.

still have this admin or manager that is supposed to be able to add a book or user, delete a book or user, or update He is the only one who does refund and Request for books and management issues.

I still have these staff who do it. They just calculate the money and the fine.

The publishing house provides the manager with books and then replies to the manager to say whether they have this book or not.

The user can also put a suggestion if he does not find the book he searched for, then he publishes by sending suggestions to the publishing house.

The driver works to deliver books to users or to get books from the publishing house.

Project Name

Determain the methodology of the project and why:

We use the waterfall model because:

This model is used only when the requirements are verywell known, clear and fixed.

Product definition is stable.

Technology is understood.

There are no ambiguous requirement sample resources with required expertise are available freely

The project is short.

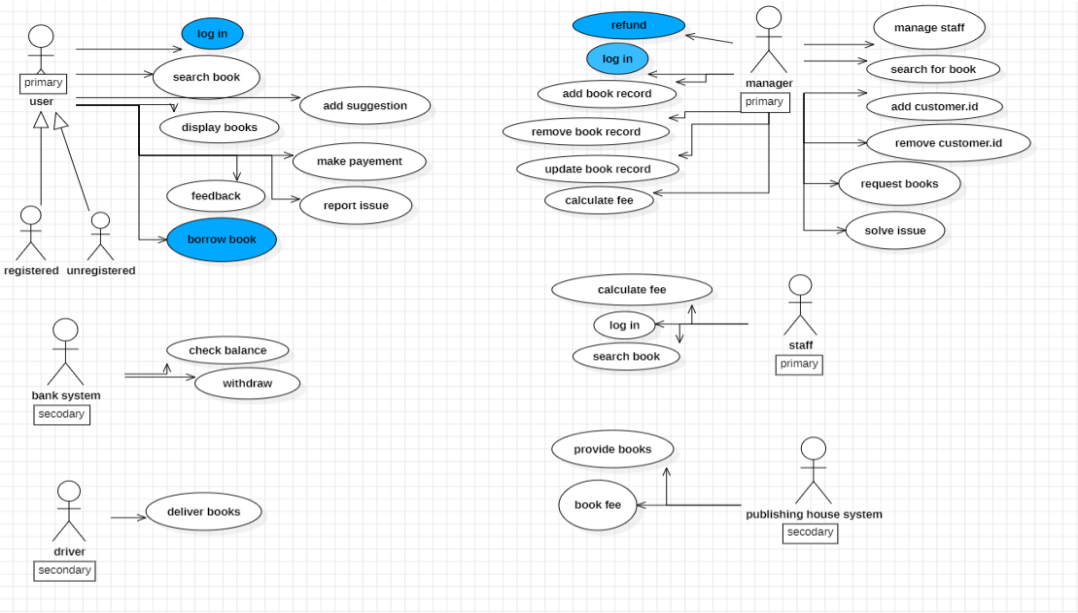
Function Requirement:

1:A user should be able to check out a book and return it in due time
2:A user should be able to reserve a book for checkout.
3: The library staff should be able to add new books to the Inventory.
4: The library staff should be able to generate reports about the library inventory.

Non-functional requirement:

1: Appearance: simple look and good feel to use
2: Availability: the system must be available 100% for the users
3: Reliability requirement: the system must be 100% reliable due the important of data

Project Name



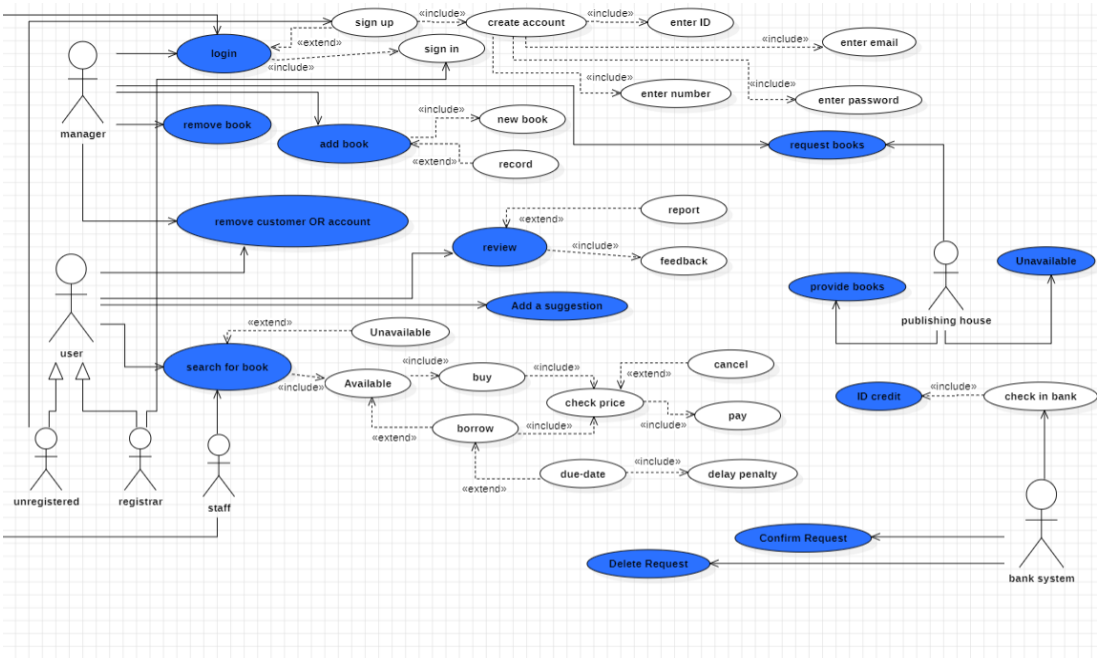
Business use case Diagram:

we are representing the library management system from the business perspective

In the business use case, there are primary actors which are: -A) user, and the user is inherited by [1) registered user 2) unregistered user] B) manager C) receptionist
And secondary actors which are: -A) bank system B) driver C) publishing house
The user can do number of functionalities which are: -A) logging into system B) searching for a book by name or author's name C) displaying books D) making payments via cash or credit E) reporting an issue to manager F) giving feedback on a book G) borrowing a book H) signing up I) can make book suggestions
Manager can do a number of functionalities which are:-A)logging into system B)maintaining books through: adding ,removing or updating a book record C)maintaining users specification through:-removing ,adding ,updating user information D)the manager is responsible for managing staff E)the manager is responsible for requesting books from a publishing house E)responsible for solving issues
F) the only person able to make refunds G) can calculate fee
The bank system does two functionalities which are:-A)checking the balance of the account that the user provided for transaction B)if the bank found sufficient balance for transaction it will proceed with withdrawing the amount
Driver:- it's function is to deliver books to users or to get books from the publishing house
Receptionist: -the receptionist can A) log into system B)calculate fee for use

Publishing house: -the publishing house does A) calculate fee for books being bought by the manager B) communicate with the manager to provide the books needed.

Project Name



Uce case diagram:

We have 5 actors:

1- manager

2-user (registrar, unregistered)

3-staff

4- bank system

5- publishing house

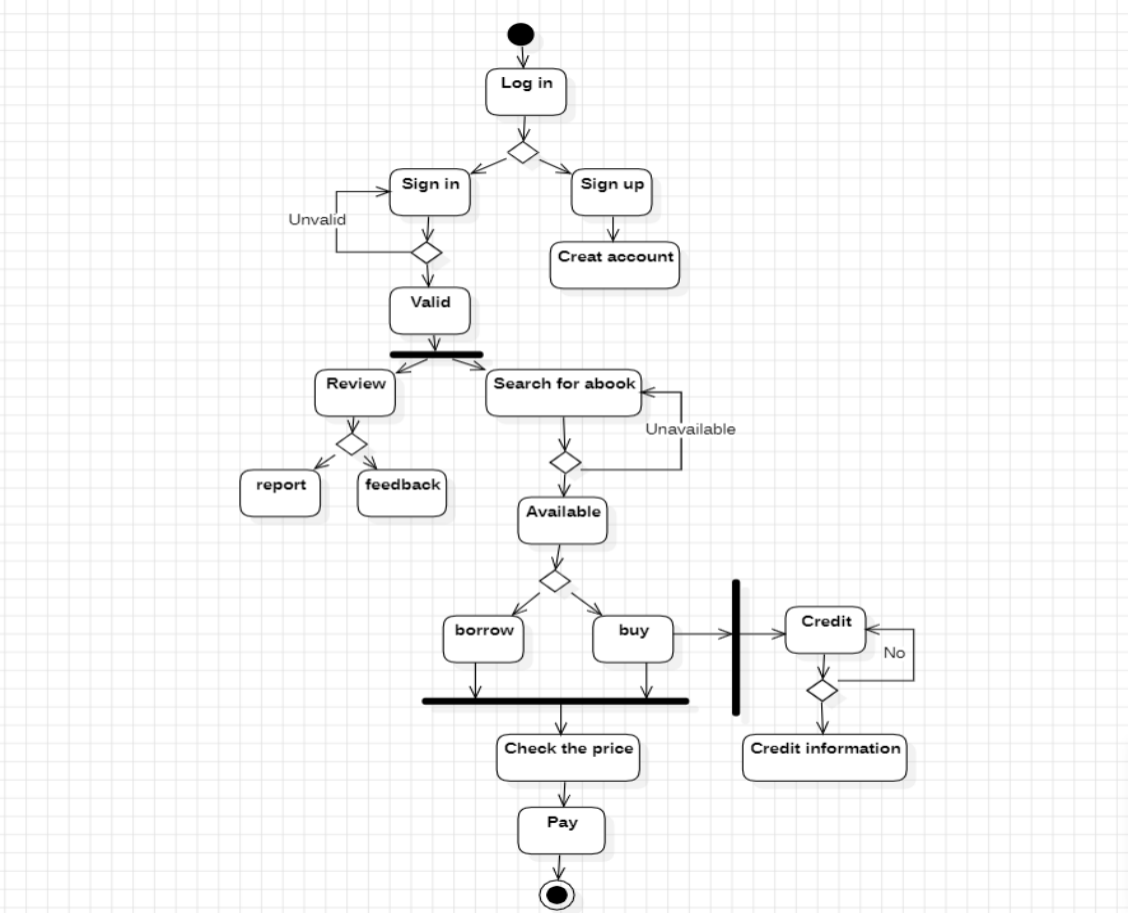
The manager will log into the system first. Afterward, he will have the right to add new books, whether they are on paper or recorded, and he can also delete them. He can view the suggestions list and add them to the book requests list, which will be sent to the publishing house.

The publishing house will respond after providing the books, and the manager will add them to the library system. The manager can also check the report list to resolve issues. Additionally, the manager can also delete the account of any customer from the library system.

Users are divided into unregistered user and registrar user. The unregistered user has the right to create a new account or quickly scroll browse (search) the library's website. The

registrar user must sign in, and he has the right to search for what he wants. If he finds it, he must choose either to buy or borrow. In both cases, he can check the price first, then choose the payment method either cash or credit. When choosing a credit, he must enter the ID credit for the bank to take it and verify the availability of sufficient funds to complete the payment. The bank sends a survey message to the library's website for acceptance, and if there is not enough balance, the bank sends a rejection message, and the payment process stops. In the case of immediate payment, the process ends with immediate payment.

If he chooses to borrow the book instead of buying it, he must adhere to the deadline for returning the book, or else there will be a late fee. The user can also add a suggestion in case the book he is looking for is unavailable on the library's website. He can express his opinion, whether positive or negative, and he can also delete his account from the library's website



Activity Diagram:

Here we are Creating an activity diagram for a library system involves illustrating the various activities or processes that occur within the system.

So first the user will enter his data. If he does not have an account, he will create one, and if he does, we will ensure that the data is correct, and if there is a problem, we will ask him to enter the correct data.

When the data is correct, he will have two options: he wants to search for a book or

review something, such as giving feedback on something or reporting something.

When he searches for a book, we will check whether it exists or not.

If the book exists, we will ask him if he wants to buy it or borrow it.

If he wants to buy the book with the credit, the credit data will be entered to ensure its validity. If the data is not correct, the transaction will be rejected, and will be asked about the correct data. The user then decides whether he wants to buy or borrow, and the process is Completed.

Class Diagram:

In the class diagram we are going to explain the static view of the system, the executable code for the system, showing the communication of elements among data and describing the functionality performed by the system

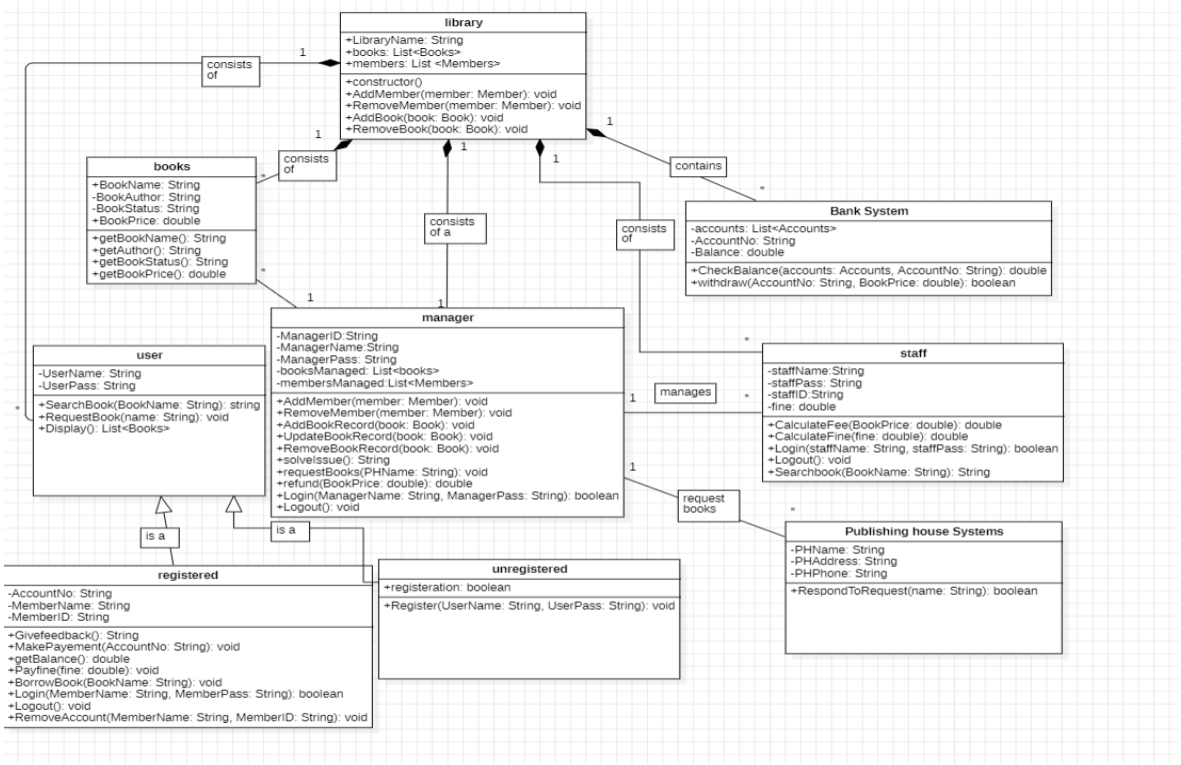
We have a library management system consisting of books, a manager, publishing house system, bank system and users that can be registered and unregistered. Each one of these components are considered classes.
A) the relationship between the library system and the books are of one-to-many relationship the books have attributes of: -name, author's name, book status that says if the book is available, book price.
Also, it has number of functions that helps maintain the data about the books which are: -getting the book name, getting author's name, getting book status and book price.
The attributes are private and only accessible through the public methods that help maintain the integrity of book data.
B) the relationship between manger and the library system is one-to-one relationship having attributes: -manager id, name, password and member array list so he can add and remove members easily.
Also a few functions which are: adding or removing or updating a member record, adding or removing or updating a book record, logging into system, solving issues or requesting books from the publishing house or making a refund.
The attributes are private, and functions are public so it can hide the important data and functions and make the manager the only one accessing it.

==the manager manages the staff
==the manager requests books from publishing house

C)the relationship between the library and bank system is one-to-many as the library system can work with more than one bank
It will have the array list containing all the accounts of users, the account number that I will use to make the transactions and the balance
It has two functions: -it will check the balance of the account number that wants to purchase the book and return if there is an enough balance and a withdraw function that will take the book price and subtract it from the account balance.
D)the relationship of the library system with the staff is one-to-many having attributes:-name , password, id, fine
And functions:-calculate fine that calculate a fine if a customer borrowed a book, calculates fee, logs into system and searches for a book
The attributes of staff is private to keep their information hidden.
E) the relationship between the library system and the publishing house systems is one-to-many having attributes: -name, address, phone number
It does one function only:-responding to the the request of the manager when he asks for books whether it is available or not.
F) the relationship between the library system and the user is one-to-many and the user is either is a registered user or is a unregistered user

The user whether registered or unregistered can display or search for a book or request a book if it wasn't available
The registered user must have attributes :-an account number for the bank to check and a member name and id and password;
it's functions are:-they can give a feedback on a book ,make payment through the bank or cash, paying fine if they borrowed a book ,borrowing a book, logging into system
the unregistered user has attribute of registration to see if he wants to register
the functions he can do:-search for a book, display books, request book and register that will require hi to put name and password.
==the registered and unregistered inherit from the user.

Project Name



Object Diagram:

Assume we have the following classes:

1. Library:

2. Books:

3. Manager:

4. Staff:

5. User:

9. unregistered:

6. Bank:

7. publishing houses:

8. Registered:

In this object diagram: I gave a default values to each variable of the attributes and the methods which have a return type.

Project Name

1- Book:

attributes:

Name "The old man and the sea

Author "Ernest Hemingway"

Status "available"

Price" 300 LE"

Methods:

get Name() it returns the book name.

get Author (): ir returns the bookAuthor.

get Status(): it shows the book is available or booking.

get Price:(): it returns book price such as " 300 LE ".

2-Library:

+ttributes:

Name "Alex Library:

List of books: The old man and the sea - number of star - the giver - peter pan

list of member." Amira Anas-Sara Omar"

Methods:

Add member (): it allows to add new member

Remove member(): it allows to remove member from library system.

Add book (): it allows to add new book

Remove book (): it allows to remove book from library system.

3-User:

attributes:

Name:" Aya"

User pass:" yoyo 123456"

methods:

SearchBook ();" it search for the book wich user wants "

Request Book: " it allows user to request the book he wants"

Display (): it shows the list of books to user".

user may be :

1- unregistered; if registration is false

2-registered if registration is true

attributes:

Account No: "1660120000007060

Name:" Aya"

ID: 2500199"

methods;

Give Feedback(): allow user to give feedback about the service ".

Make Payment():" it completes the payment process"

Remove Account:" It allows the user to delete his/her account.

4- Manager:

attributes:

ID: "2500391"

Name:" Ahmed"

Pass:" Ahmed268"

Books managed;" The old man and the sea - number of star - the giver - peter pan

Member managed: Amira-Anas - Sara - Omar

methods:

solve issue(): show did the problem solved or not

Login(): check manager attributes true or false. If it is true he can access the system.

Logout(): allows the manager to leave the system.

5- Staff:

attributes:

Staff name:" Mahmoud Sandy - Menna

Staff Pass: om12345-memo12235-sandy98765"

Staff ID: " 2500372-2200381-2200394"

Fine:" 200 LE"

methods:

Calculate fee(): it calculates user's fee.

Calculate fine(): it calculate user's fine.

Searchbook(); it allows to make search about the book which user wants

6- Bank:

attributes:

Accounts: National Bank of Egypt - Arab African - International Bank"

Account No: 1660120000007060"

Methods

Check Balance():" It check user's balance of his/her account".

7- Publishing House:

Project Name

attributes:

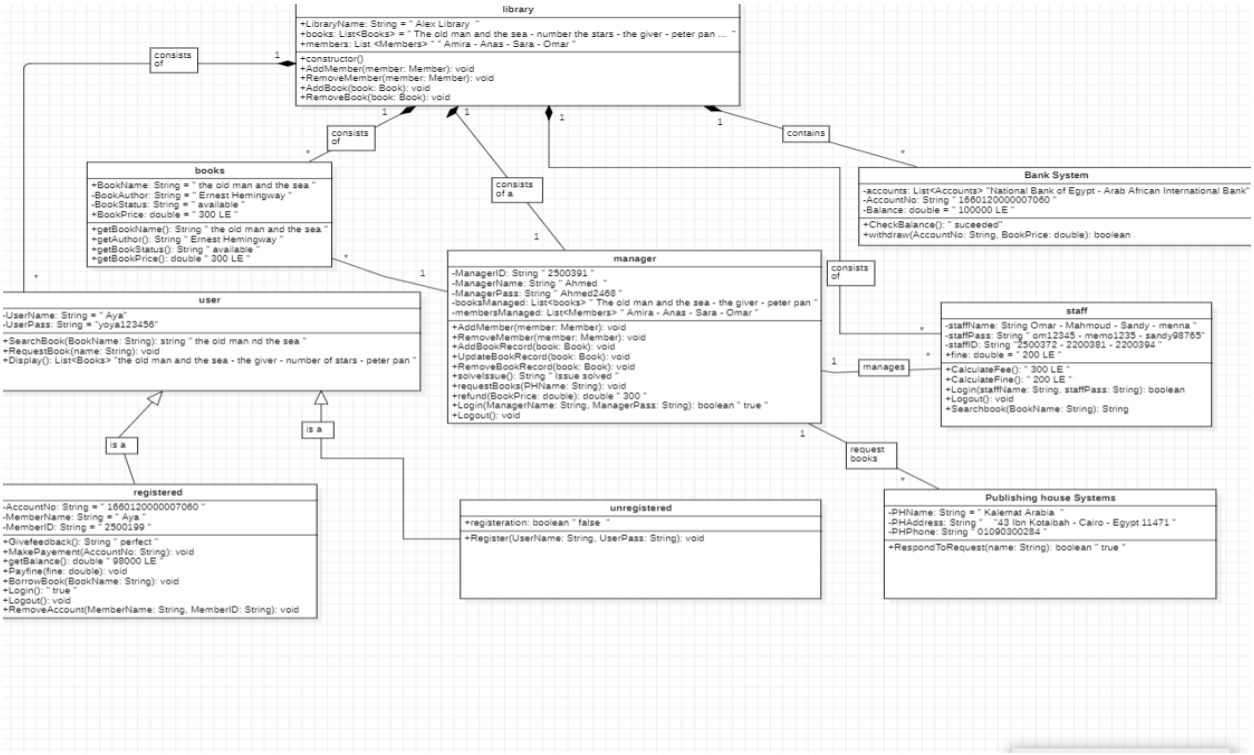
Name:" Kalemat Arabia "

Address:" 43 Ibn Kotaibah - cairo - Egypt11471"

Phone: 01090300284"

methods:

Respond To Request():

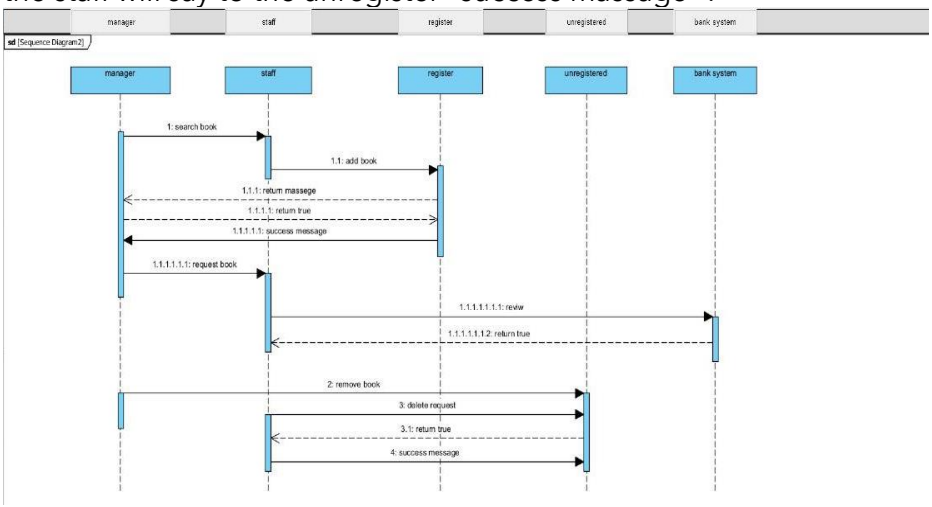


Sequence Diagram:

We're going to use life line to create a sequence diagram that will describe how a library management system operates.

the manager will search for book for the staff the system to see if the book is available. This means an interaction with the manager object in the staff.
so we'll need at least five elements basic elements: Manager, staff , register, un register and bank system.
The staff will send a massage to the register "add book" register will reply to the manager "return massage "if the massage is correct send "return true"register will say the manager "success massage ".

The manager will send a massage to the staff “request book” .
The staff will send a massage to bank system make review to the add book when I add .
the bank system will reply to staff ”return true”
The manager send massage unregister “remove book”.
Staff send massage to un register “delete request “, un register will reply “return true". Then the staff will say to the unregister “success massage “.



State chart Diagram:

A state diagram is a visual representation of the states of an object or system and the transitions between those states. In the context of a library system, we can create a state diagram to illustrate the various states that a library entity might go through and how it transitions between those states:

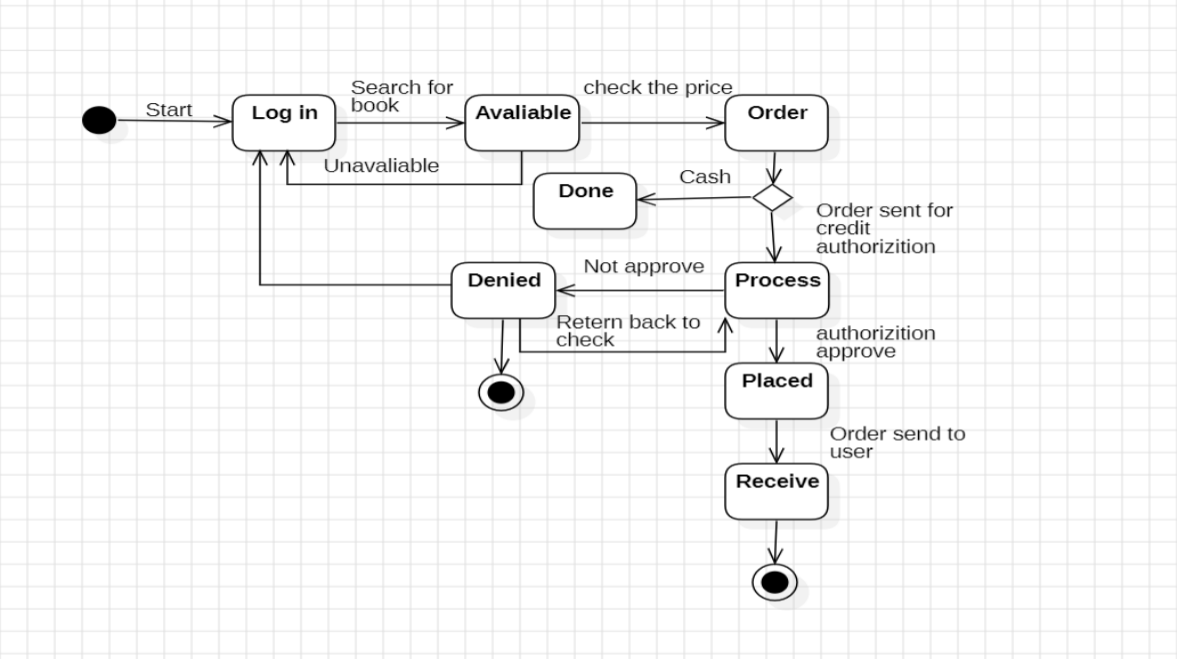
First, the user will enter the system and log in, and then he will search for the book he wants, and the book will be available or not available.

If the book is available, the user will start inquiring about its price and if the book is not available, it will be returned for log in

When he knows the price, he will have two options for payment, which will be cash or Credit.

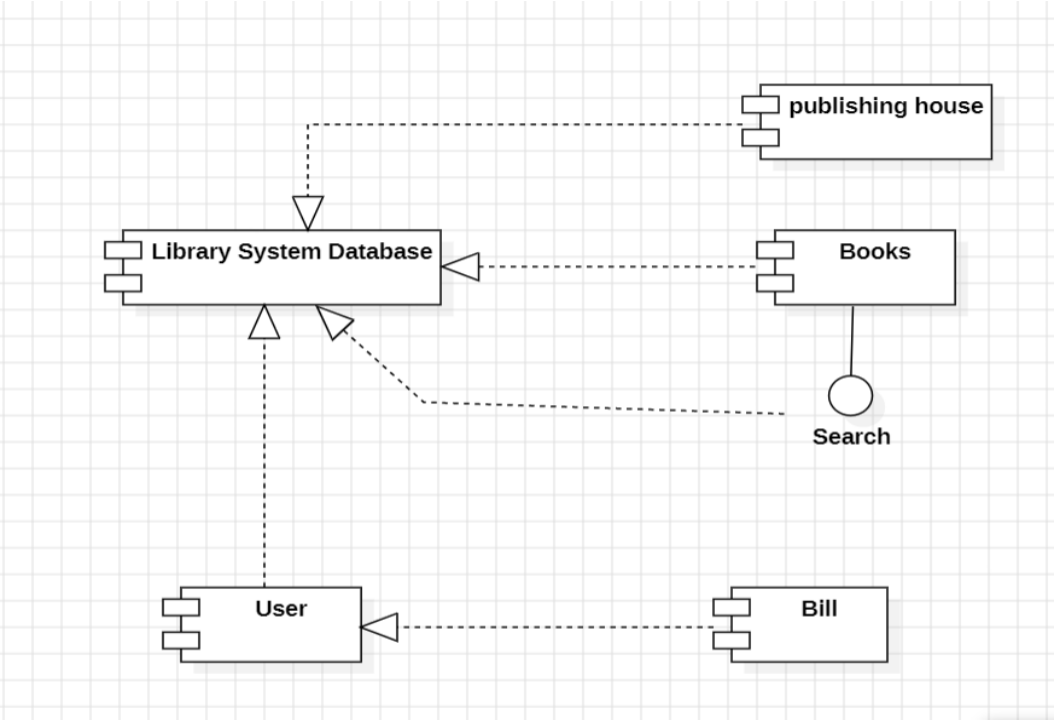
The user will enter the credit data, Then the data confirmation process takes place

If there are errors, the system will reject it and return to verify the accuracy of the data If it is correct, the procedures will be completed, and the order will be sent to the user, and it will be confirmed that it has been received.



Component Diagram:

There is a component Library System Database associated with component book, inheriting the search related to the library system database. There is also a component publishing house referred to along with the component user, indicated by the component bill as the final step after completing the buying or borrowing process.



Deployment Diagram:

The deployment diagram for the library shows how software components are deployed on hardware nodes. It includes nodes such as server, database, client and devices.

Database Server Node: connects to the server
and contains information about books, users, manager, etc.
Client node: represents the devices like smartphone, laptop and pc and connects to server for accessing and interacting with the system.

Project Name