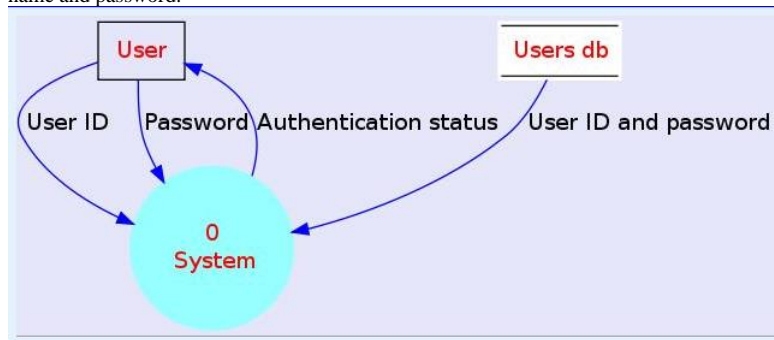


Draw a context-level DFD to depict the typical user authentication process used by any system. An user gives two inputs -- user name and password.



DFD for a Social Networking site

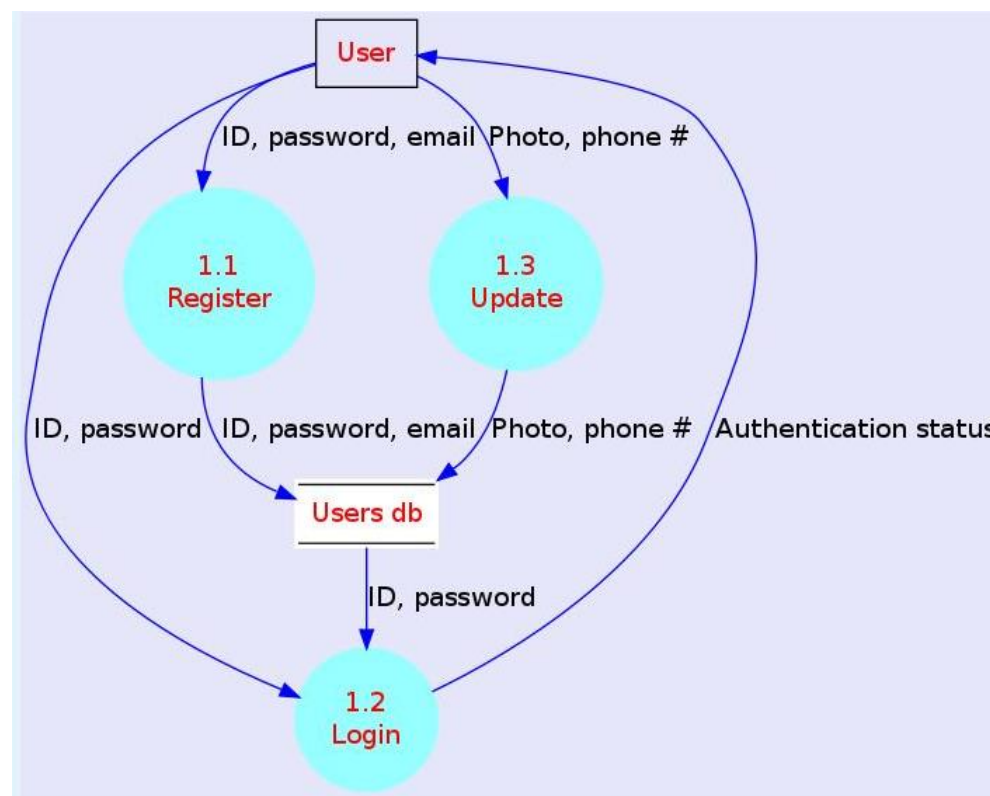
The Absolute Beginners Inc. is planning to launch a revolutionary social networking site, EyeCopy. You have been entrusted with designing a DFD for the proposed application. In particular, you have been asked to show the following scenarios:

User registration

User login

Profile update

Draw a Level 1 DFD to depict the above data flow and the corresponding processes. Should there be any data store in the DFD



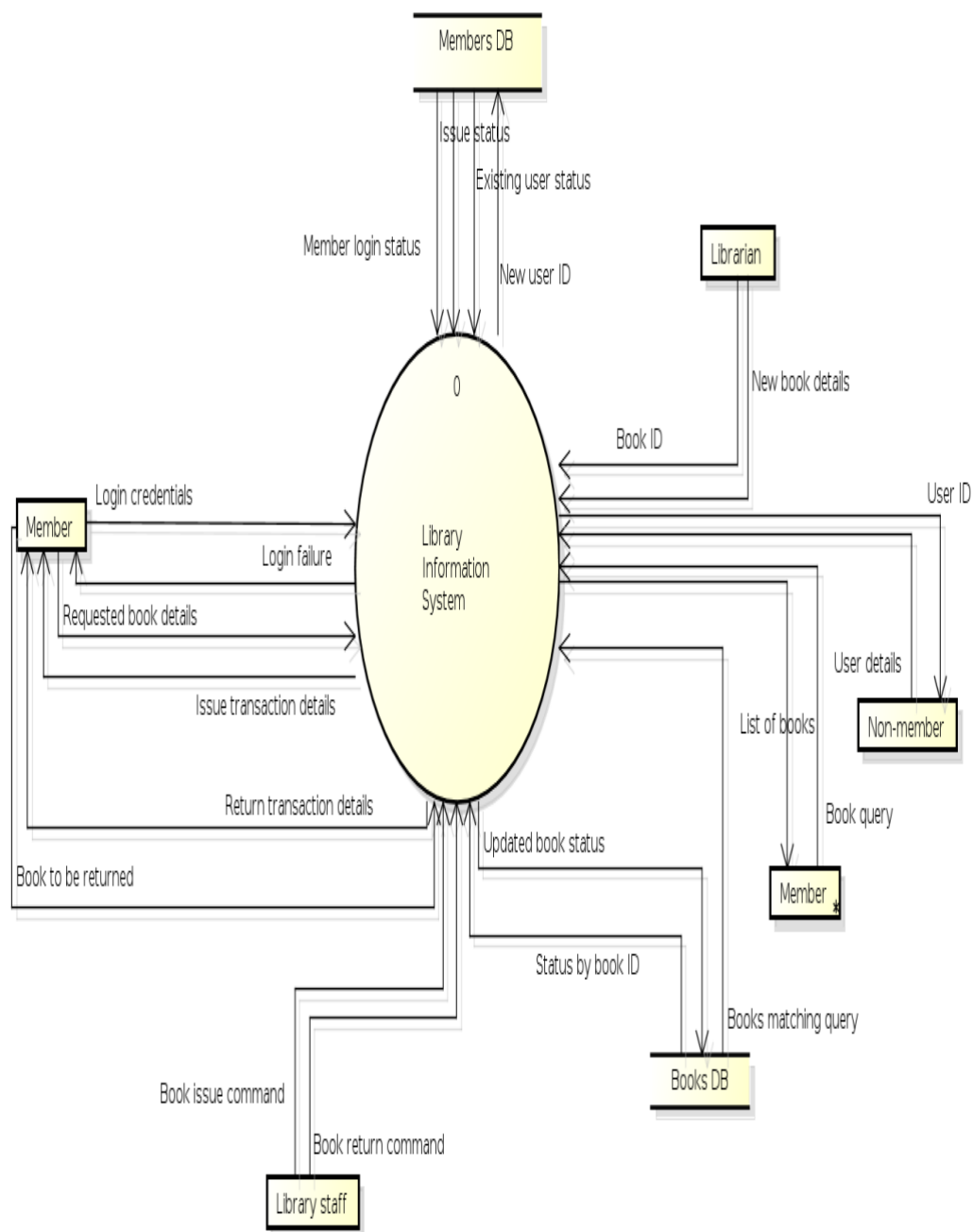


Figure . Context-level DFD for Library Information System

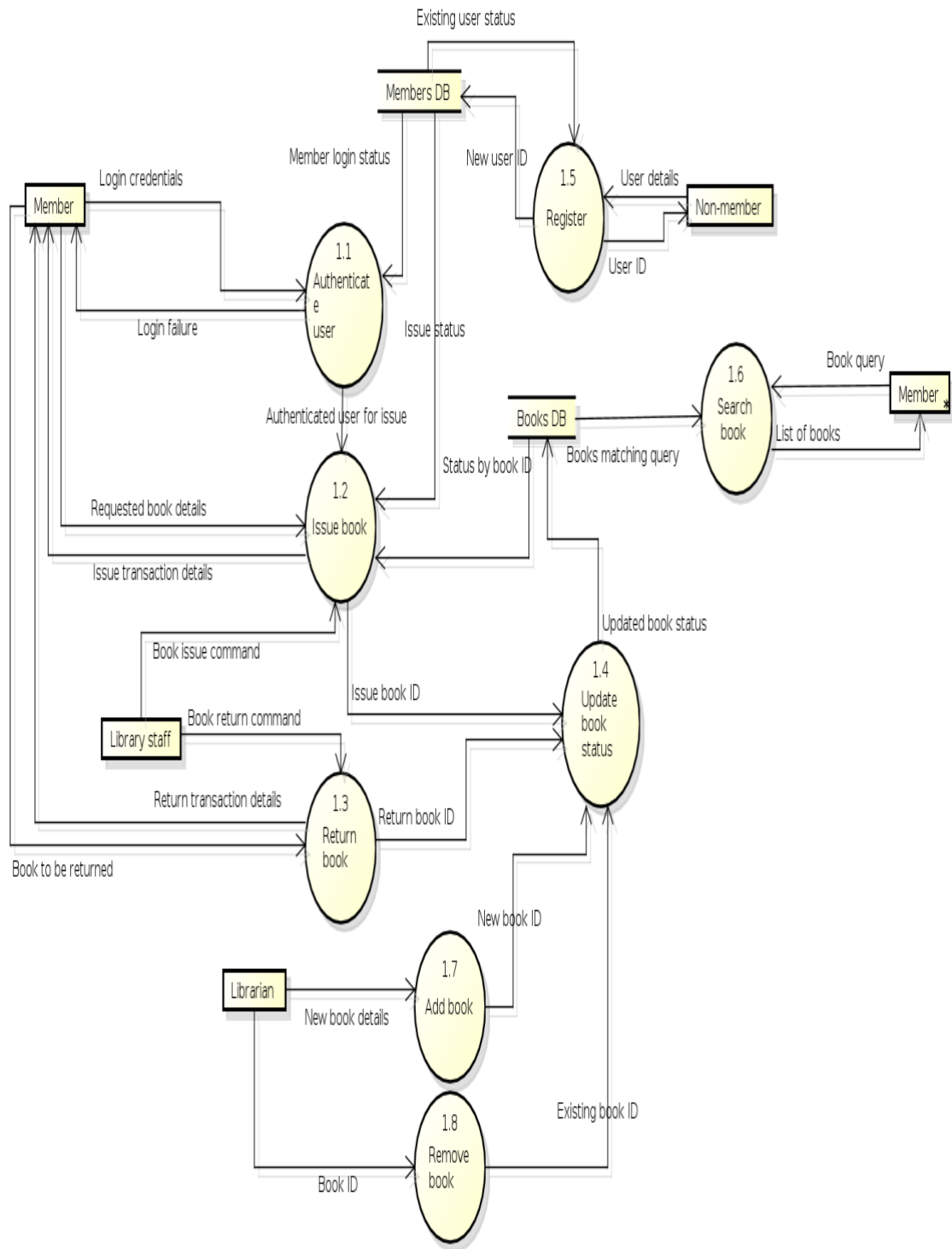


Figure . Level 1 DFD for Library Information System

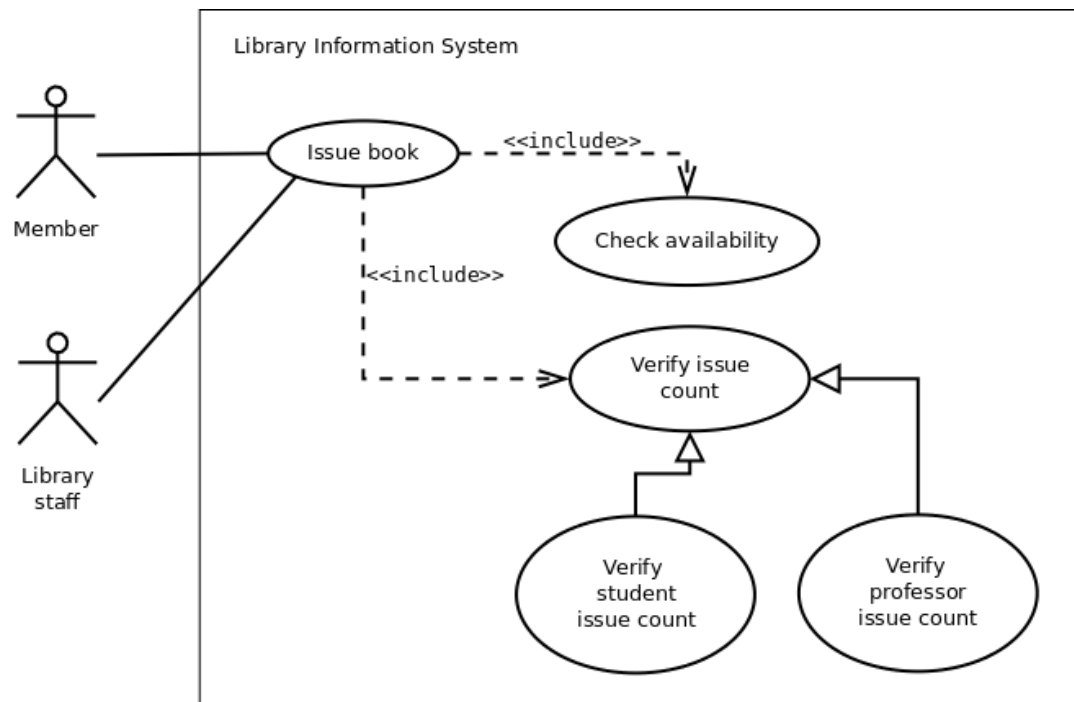


Figure . Use case diagram showing "Issue book" use case

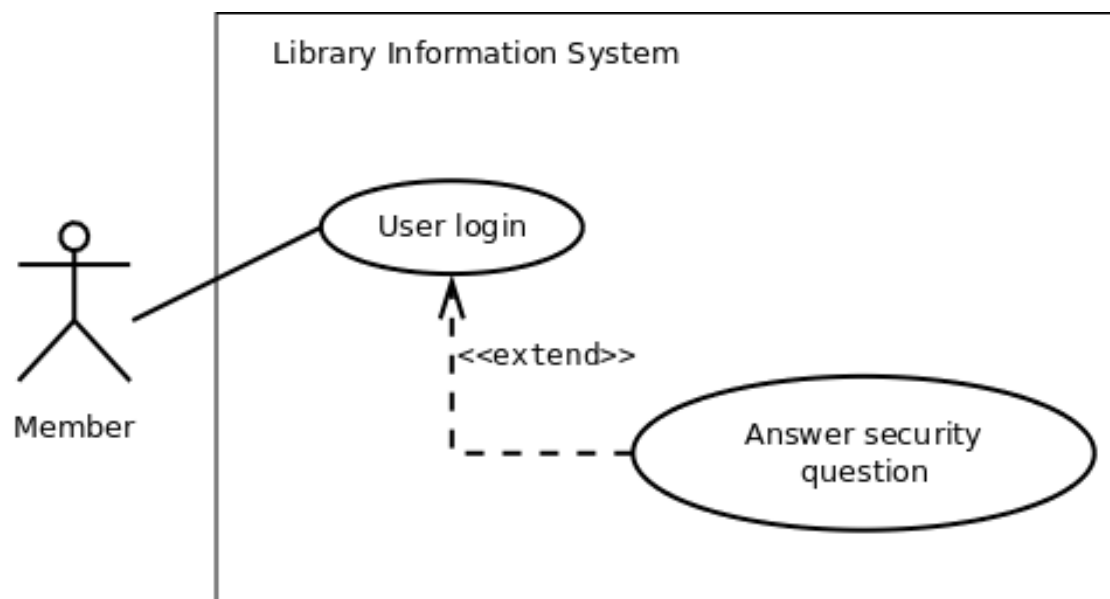


Figure . Use case diagram showing "New user registration" use case

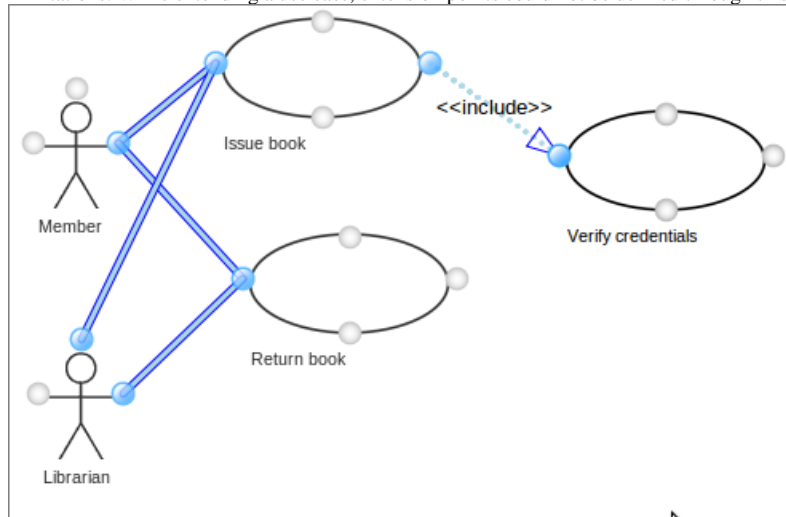
Consider a library, where a member can perform two operations: issue book and return it. A book is issued to a member only after verifying his credentials. Draw a use case diagram for the problem.

Learning Objectives:

Identify the actors and use cases

Associate the use cases with the actors by drawing a simple use case diagram

Limitations: While extending a use case, extension points could not be defined through this interface



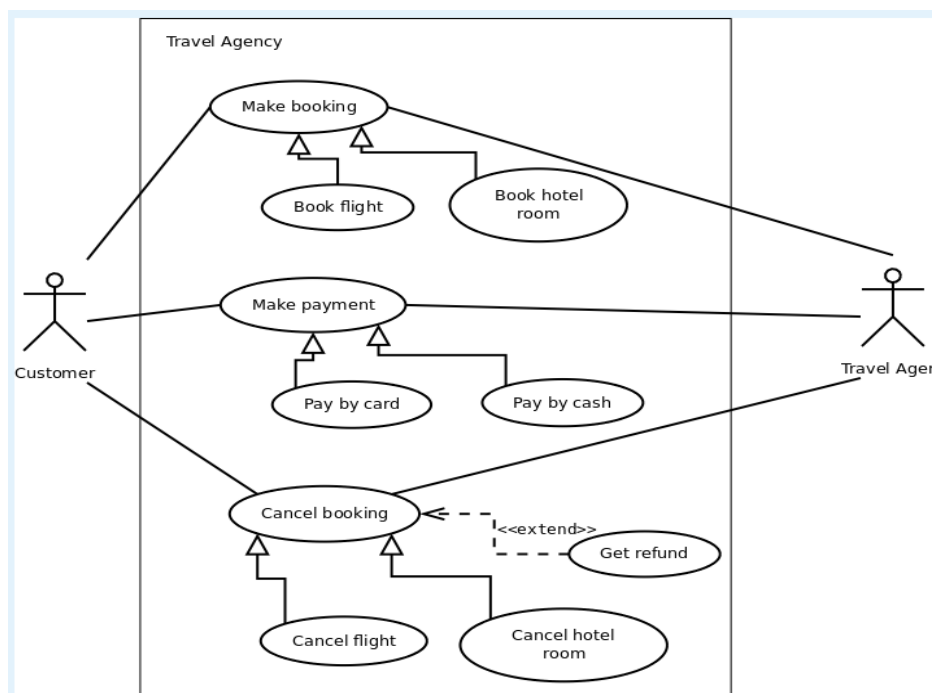
Consider your neighbouring travel agent from whom you can purchase flight tickets. To book a ticket you need to provide details about your journey i.e. on which date and at what time you would like to travel. You also need to provide your address. The agency has recently been modernized. So you can pay either by cash or by card. You can also cancel a booked ticket later if you decide to change your plan. In that case you need to book a new ticket again. Your agent also allows you to book a hotel along with flight ticket. While canceling a flight ticket you can also cancel hotel booking. Appropriate refund as per policy is made in case of cancellation.

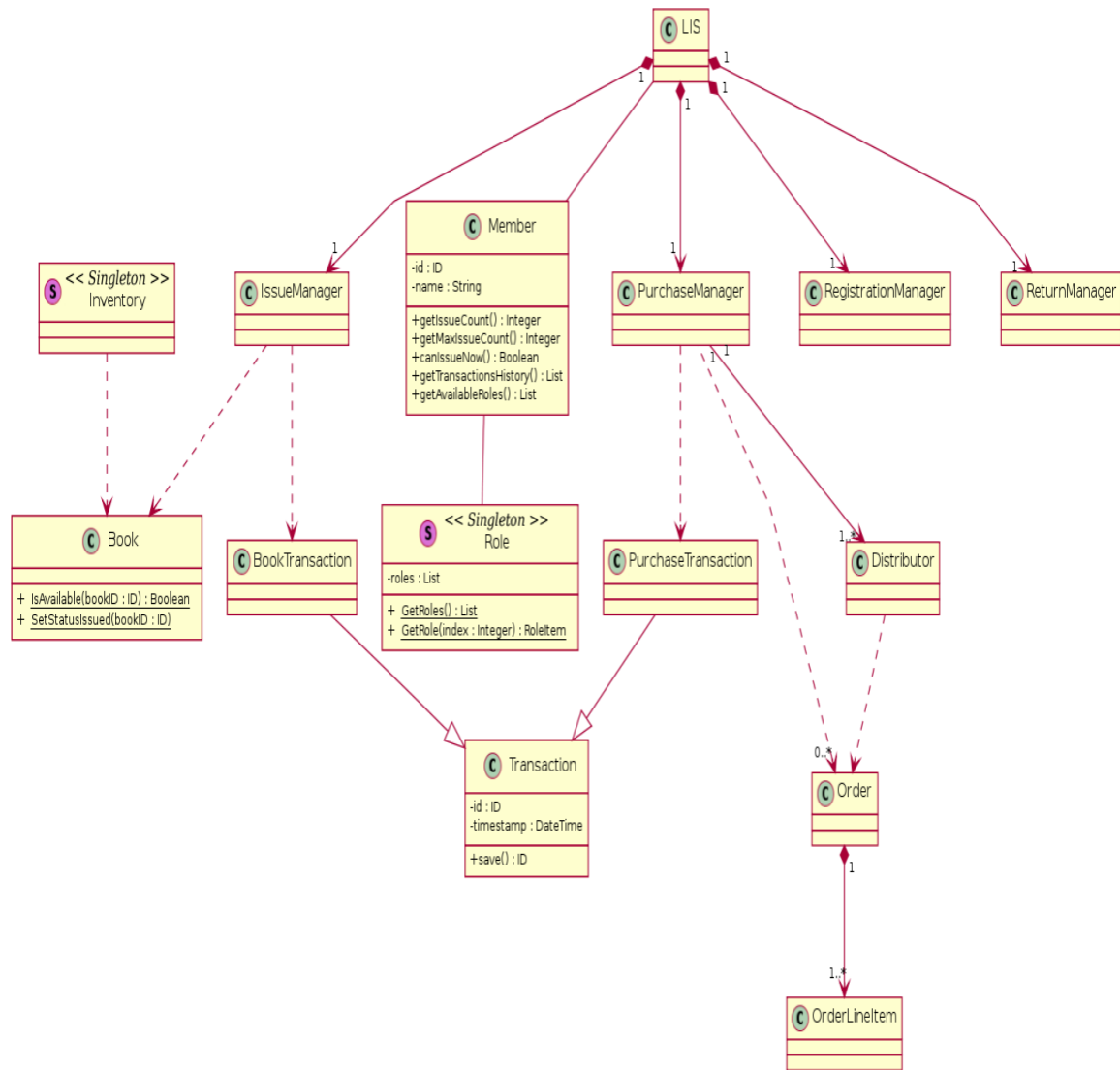
Learning Objectives:

Identify the use cases from a given non-trivial problem statement

Identify the primary and secondary actors for a system

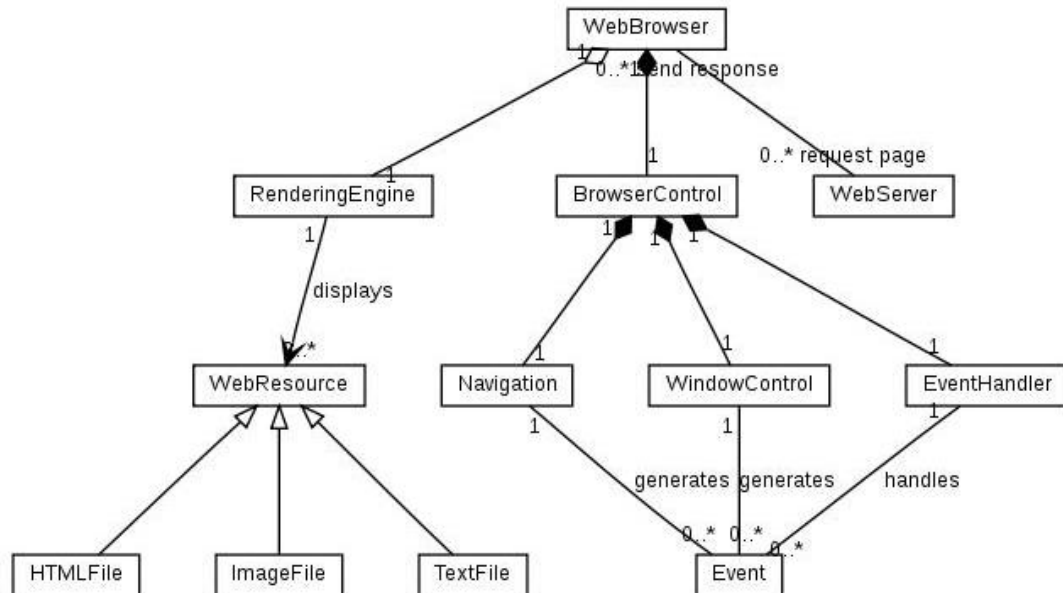
Use to generalization of use cases and «include» stereotypes to prevent redundancy in the coding phase





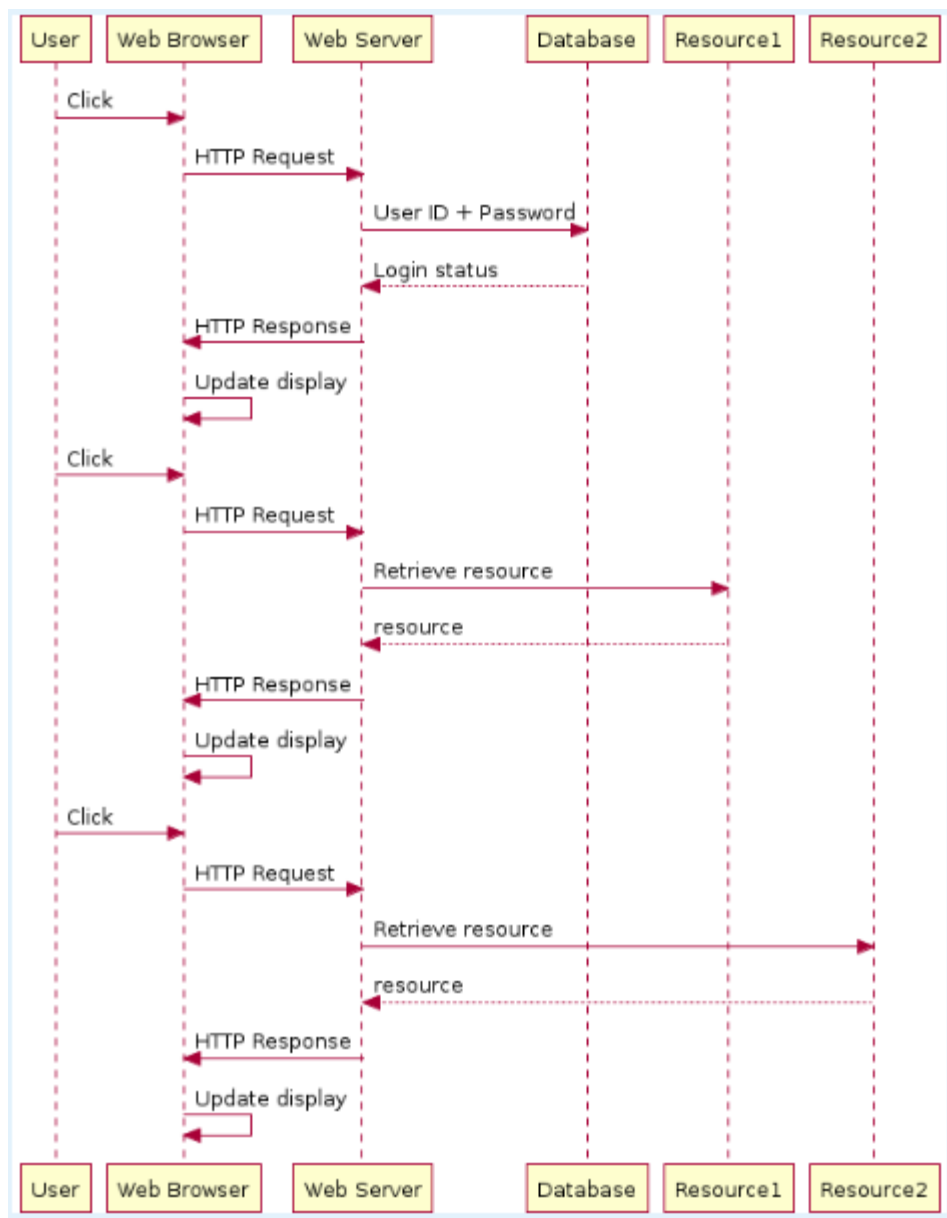
Class diagram for Library Information System

A web browser is a software that helps us access a resource (web page) available on the World Wide Web and identified by a URL. A web browser consists of different sub-components, which can be primarily categorized into browser rendering engine, and browser control.



The Web traditionally worked in a client-server model, where a web browser would send a HTTP request to the web server, and the server would send back a HTTP response to the browser. The HTTP request actually encapsulates the contents of the requested resource in some format. In cases where access to a resource is restricted or say, it requires a user authentication, the HTTP request encapsulates the login credentials and sends to the server. The server then checks with the database server if the credentials are correct. The status of verification is then send back to the browser.

In the recent years there has been a shift from the traditional way of how HTTP works. A new technique has been proposed, popularly know as AJAX, that lets asynchronous communication between a browser and web server. In traditional model, the browser used to send a HTTP request, and then wait for a HTTP response. The next HTTP request was usually sent after getting response from the server.



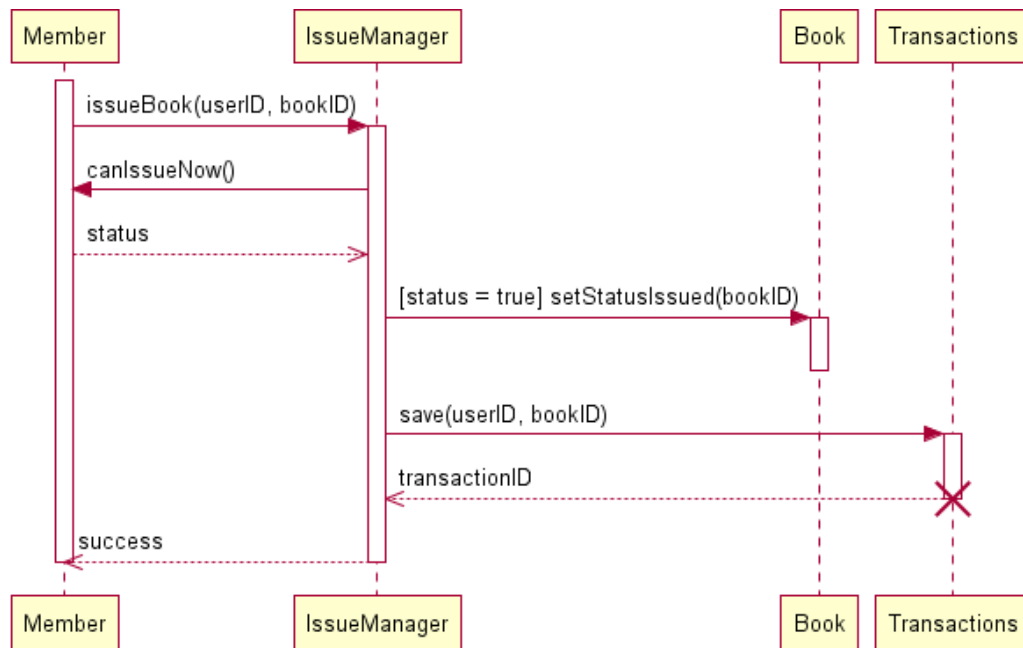


Figure . Sequence diagram for "Issue Book"

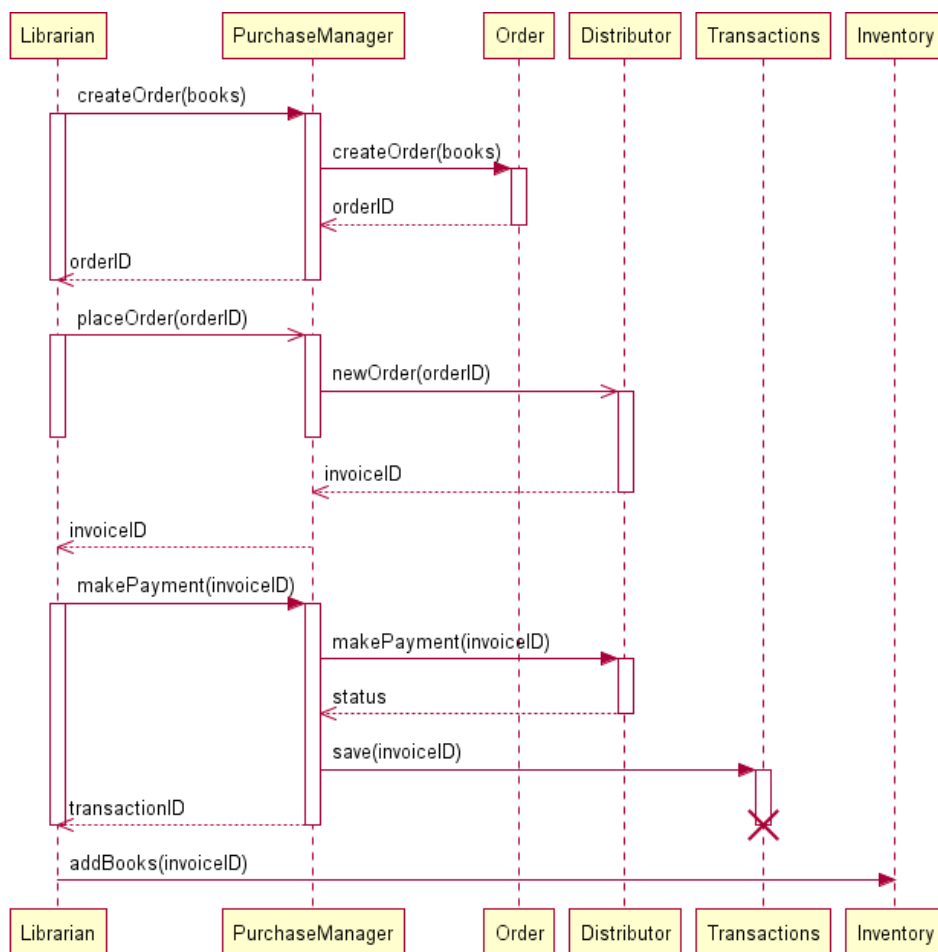
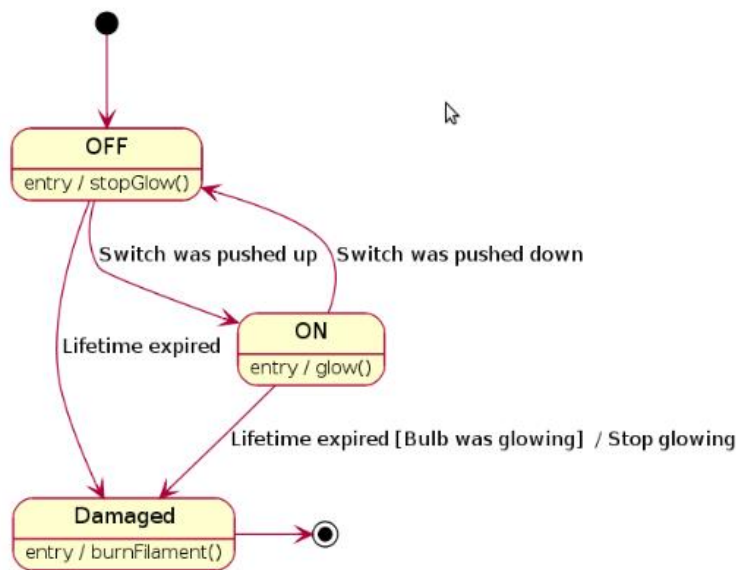


Figure . Sequence diagram for "Purchase Books"

Draw a statechart diagram to graphically represent the following system

Consider a bulb with a push down switch. The bulb initially remains off. When the switch is pushed down, the bulb is on. Again when the switch is pushed up, the bulb turns off. The lifecycle of the bulb continues in this way until it gets damaged.



Draw an activity diagram to graphically represent the following workflow

Let us consider the development activities of SE Virtual Labs. The process begins by checking out the code from Subversion repository. Necessary modifications are then made to the checked out code (local copy). Once the developer is done with his changes, the application has to be tested to verify whether the new functionality are working fine. This test has to be performed with two of the more popular web browsers: Firefox and Internet Explorer, to support cross-browser accessibility. If testing fails in at least one of the two browser, developer goes back to his code, and fixes it. Only when all the browsers pass the test, a patch is generated from the local copy, and applied to the production code. The local copy is then committed resulting in update of the SVN repository. Note that, if the local copy is committed before generating a patch file, then local changes would get registered, and one won't be further able to generate the patch file.

Note: For further clarification, at any point of time there exists three versions of the source code: Production copy, local copy, and copy in SVN repository.

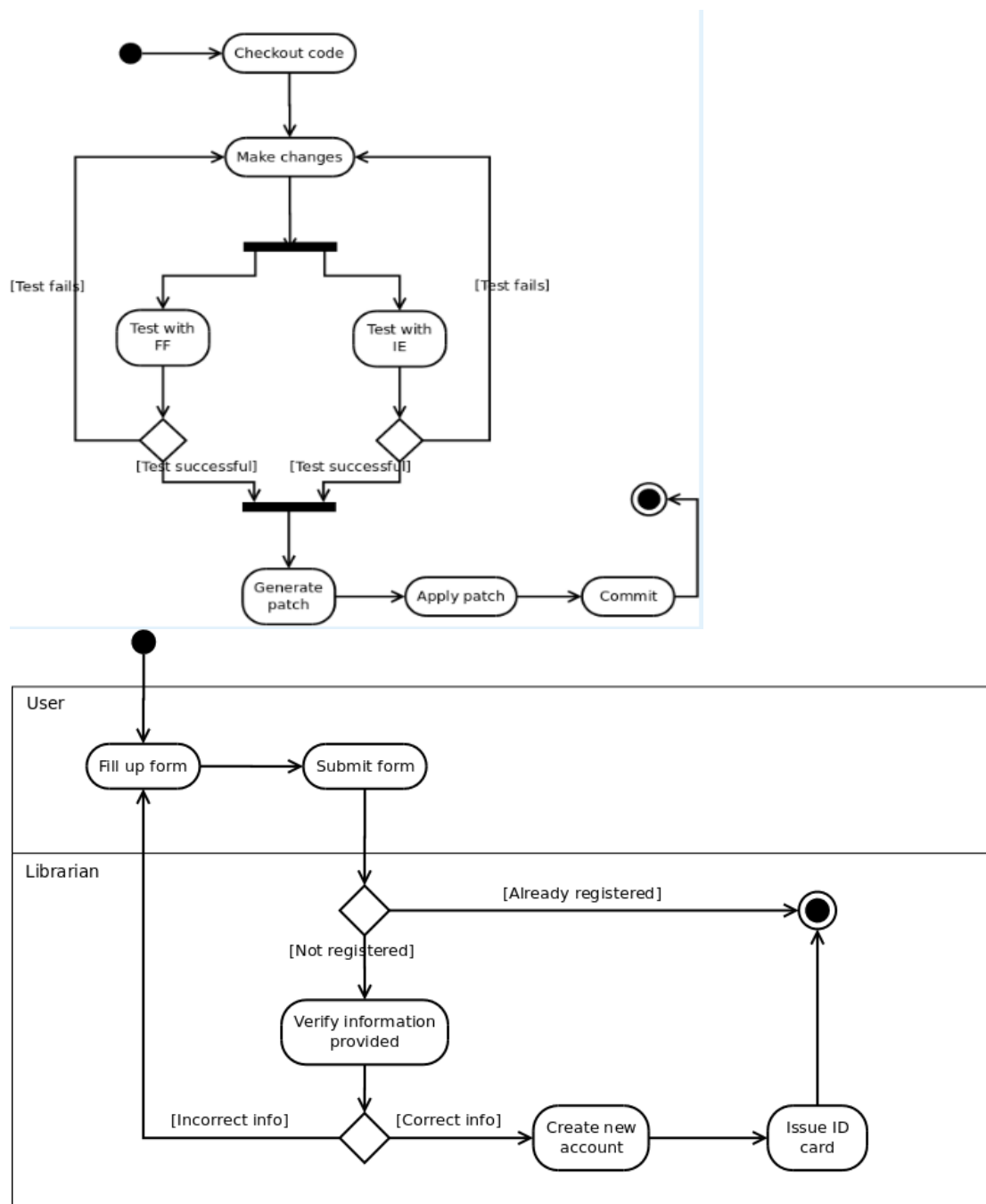


Figure .Activity diagram for new user registration

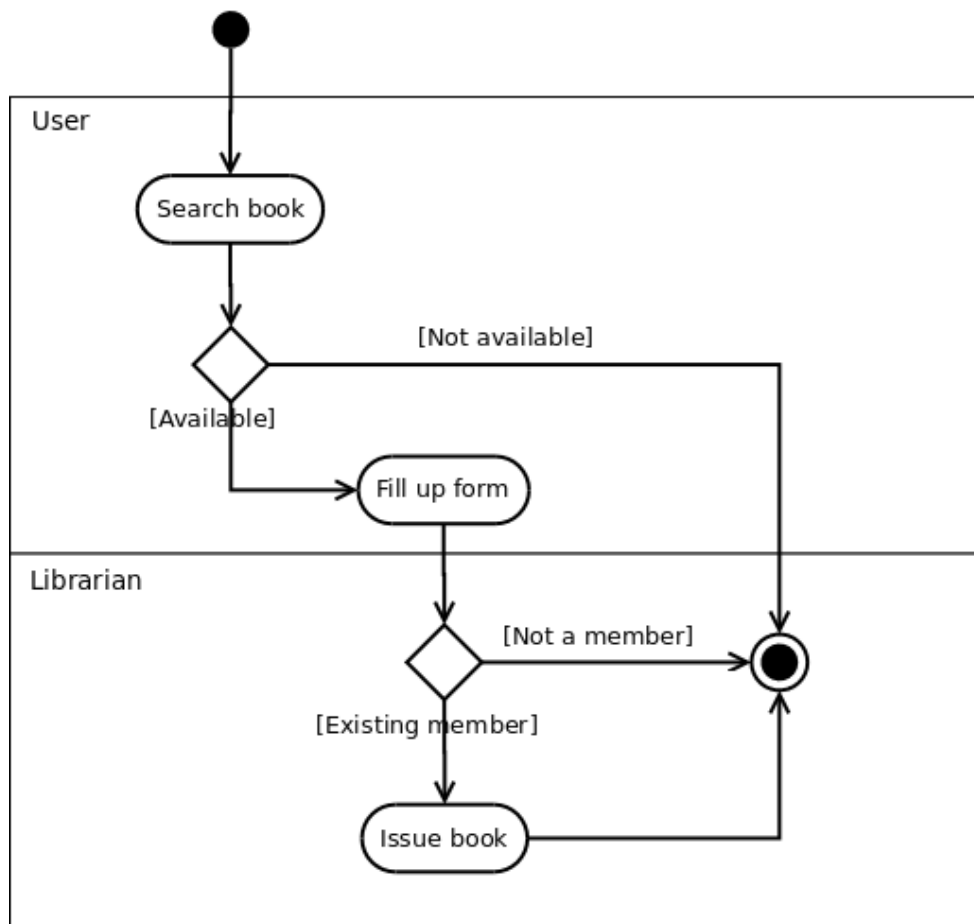


Figure. Activity diagram for issuing books