Object Constrain Language (OCL)

1-The Normal User must have an account to be able to login on the system.

  Context Normal User

 inv:

    Self. IsLoggedIn() implies Self. IsRegistered()

2-The Normal User can not loggedIn until the Librarian approve his registered.

  Context Normal User

 inv:

    Self. IsLoggedIn() implies Self. account approved by Librarian

3-The Normal User must make sure that the book is available before it is borrowed.

 Context Normal User

 inv:

    Self. borrow book() implies Book.is available

4-The Normal User must send the request to the Librarian, and wait until the Librarian accept or reject his request.

 Context Normal User

 inv:

    Self. requests->notEmpty() implies self.requests->forAll (req | req. isAccepted or req. isRejected by the Librarian)

5-The Normal User must return the book on time.

 Context Normal User

 inv:

   Self. borrowed books ->notempty() implies Self. borrowed books ->forAll (b|b. return Date >= Self. current Date)

6-The Normal User must return the book on time, otherwise he will have to pay the fine.

 Context Normal User

 inv:

   Self. borrowed books ->forAll (b|b. return Date < Self. current Date implies Self. fine>0)

7-Each Book must has unique ISBN.

 Context Book

 inv:

   Book. ISBN ->forAll (b1.b2 | b1 <> b2 implies b1.ISBN <> b2.ISBN)

8-The Normal User must adhere to the number of books that the Librarian limited it.

 Context Normal User

 inv:

   borrowed books ->size() <= Librarian. borrow limit