



Software Design Specification

Course Name: Software Engineering 1

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Project Name: Books Network

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CS251: Phase 2 – Team DS_3, Books Network Software Design Specification

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Document Purpose and Audience

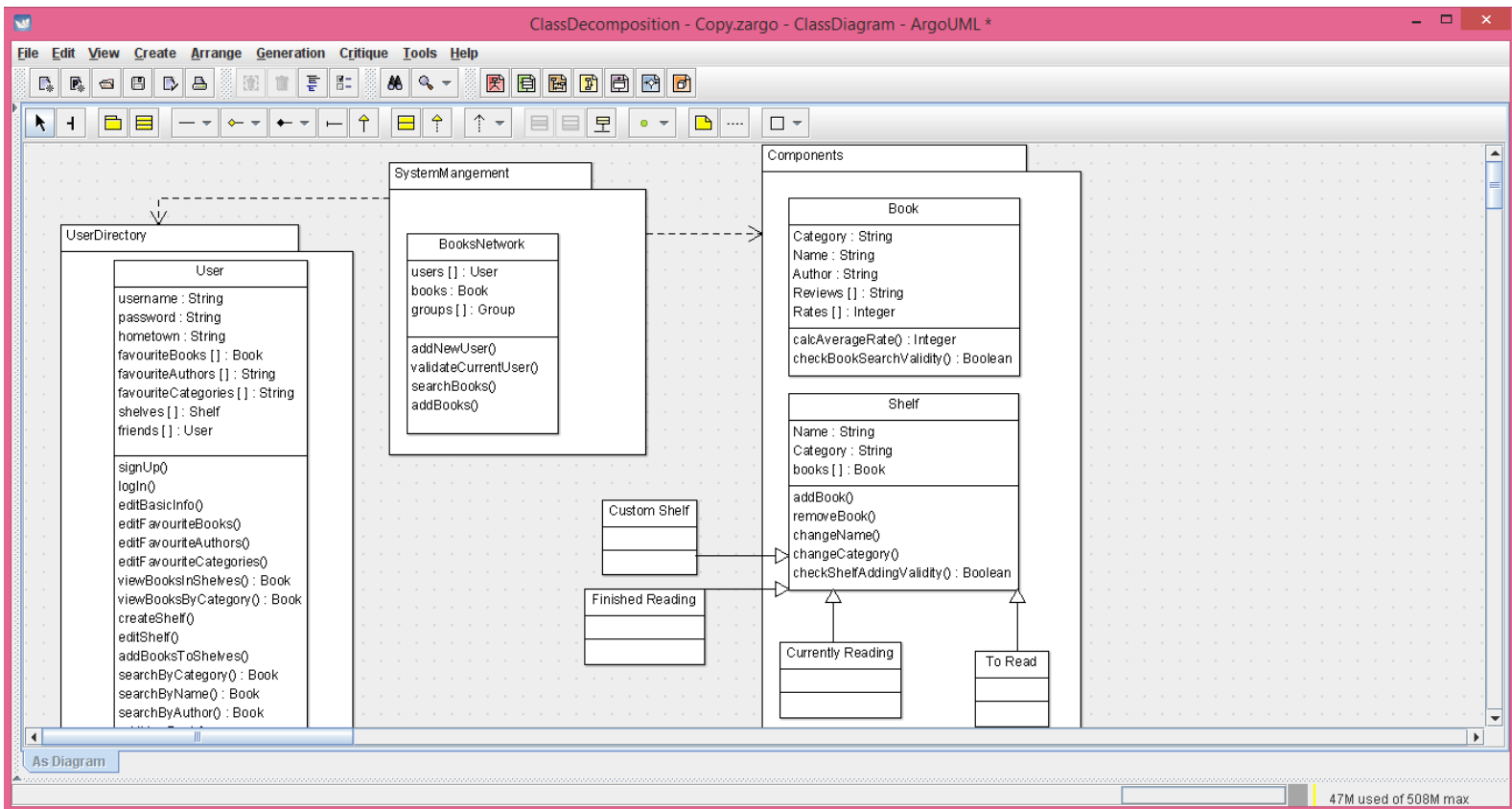
- **The purpose of this document:**
 - To give a brief overview about the design specifications of the “Books Network” system.
 - The design specifications that will be delivered are five important elements:
 1. The System Decomposition
 2. The Class Diagram
 3. The Sequence Diagram
 4. The Physical Entity-Relationship Diagram
 5. The User Interface Design
- **The target audience of this document:**
 - This document targets the client.
 - It will be proposed to the client to view, modify and approve it.



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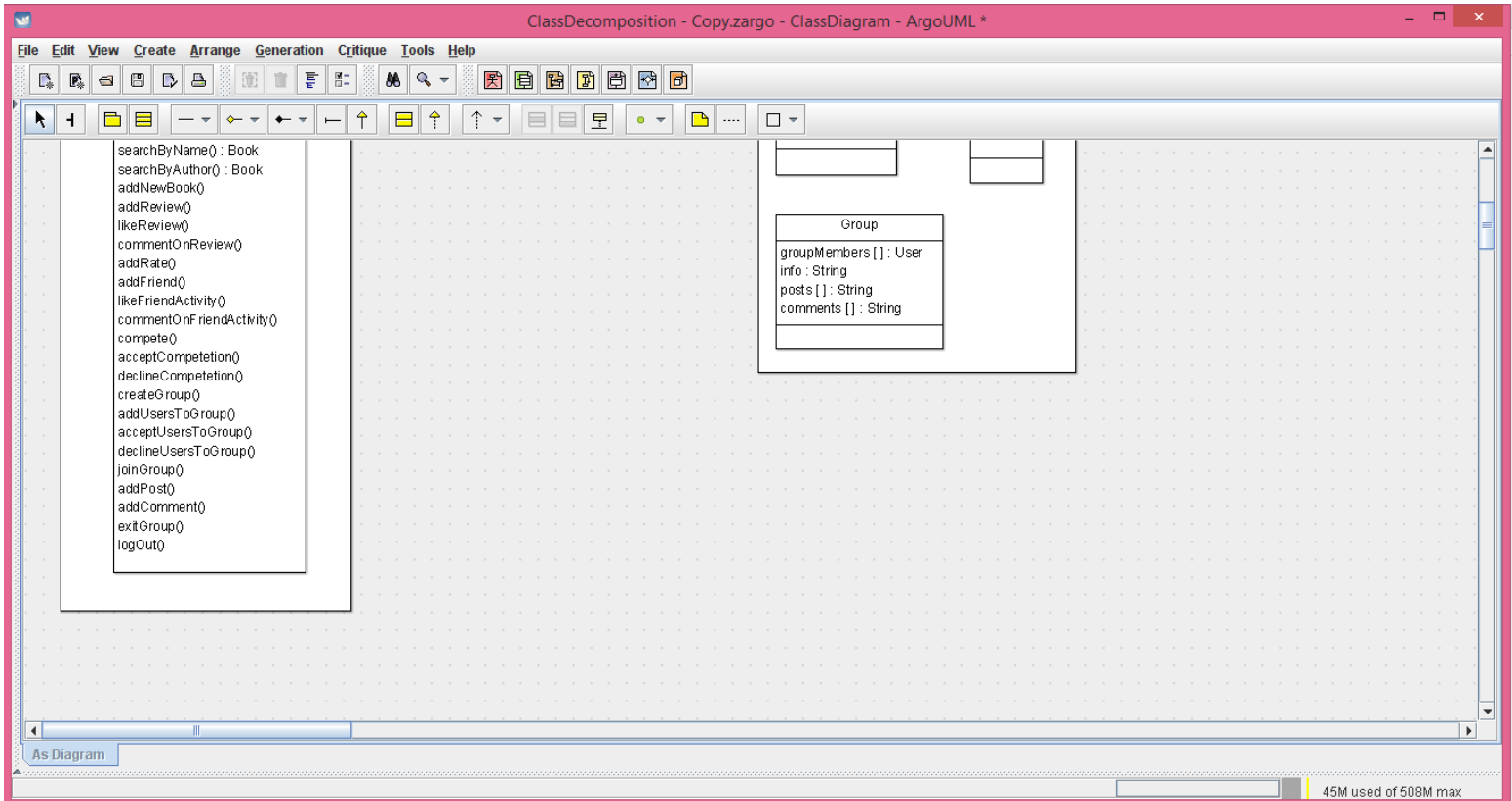
System Models

System Decomposition





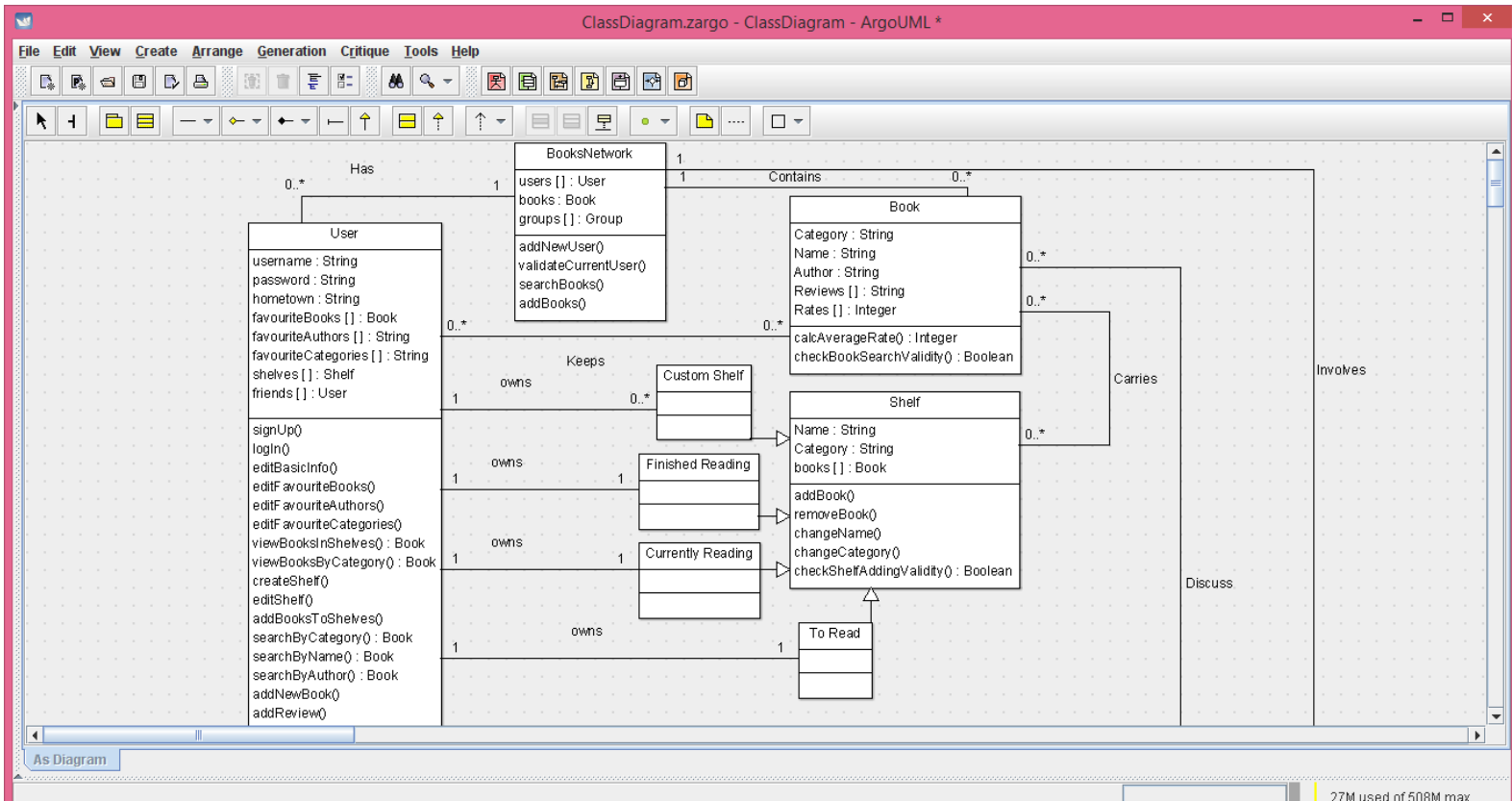
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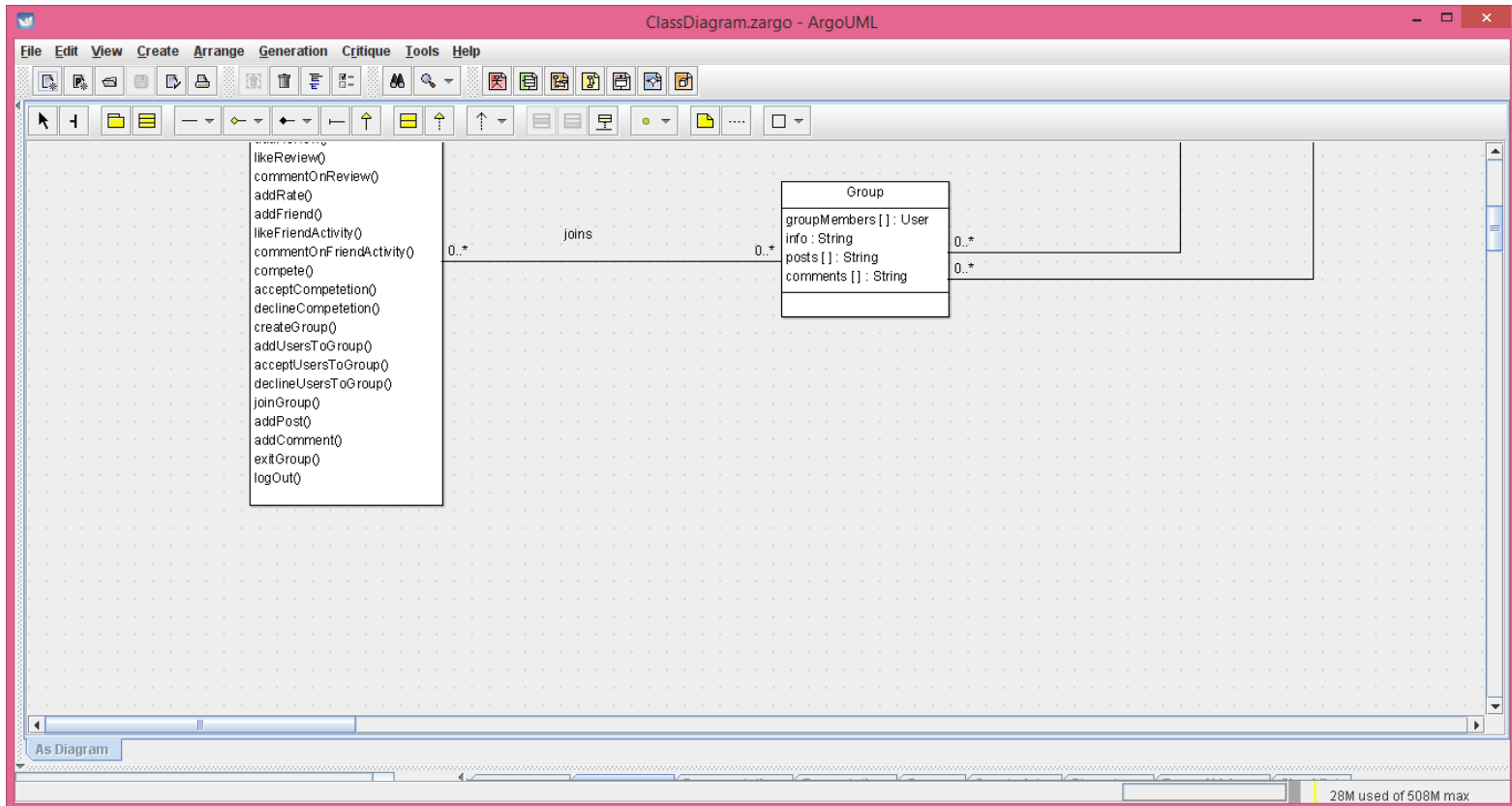
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Class Diagrams





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Software Design Specification

Class ID	Class Name	Subsystem ID	Description
C_1	Books Network		<p>This is the controller class of the system.</p> <p>It has an array of users, an array of books, and an array of groups.</p> <p>It has some methods that are performed by the system which are:</p> <ol style="list-style-type: none"> 1. addNewUser: it is performed when a new user sign up to the system. 2. validateCurrentUser: it is performed when a user log is using his username and password to check that he has an account on the system and that his username and password are correct. 3. searchBooks: it is performed when a user searches for a book in the public books list, so it will be called by the three different methods of searching (by name, by category, by author). 4. addBooks: it is performed when the user doesn't find a book that he wants, so he will add this book manually into the public books list.



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Software Design Specification

Class ID	Class Name	Subsystem ID	Description
C_2	Book		<p>This is an entity class.</p> <p>It is responsible for all books and their attributes and functions.</p> <p>Each book has a category, name, author, an array of reviews (a list of different reviews), and an array of rates (a list of different rates by different users).</p> <p>It has two methods:</p> <ol style="list-style-type: none"> 1. calcAverageRate: it is performed whenever a user enters a new rate, it sums all the different rates by different users and divides them by their number to give the average rate for the given book. 2. CheckBookSearchValidity: it is a Boolean function performed when a user searches for a book and returns true if the book was found in the public books list, or false if no results were found.



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Software Design Specification

Class ID	Class Name	Subsystem ID	Description
C_3	Shelf		<p>This is an entity class.</p> <p>It is responsible for all the user's shelves and their attributes and functions.</p> <p>Each shelf has a category, name, and an array of books (The list of books it carries).</p> <p>It has five methods:</p> <ol style="list-style-type: none"> 1. addBook: it is performed whenever a user adds a new book to the shelf. 2. removeBook: it is performed whenever a user removes a book from the shelf. 3. changeName: it is performed when a user wants to edit any shelf of his own by changing its name. 4. changeCategory: it is performed when a user wants to edit any shelf of his own by changing its category. 5. checkShelfAddingValidity: it is a Boolean function performed when a user adds a book and returns true if the book can be added to the shelf or false if the user entered a shelf that doesn't exist.
C_4	Custom Shelf		<p>This is the class where the user can create a new shelf for a desired category with a desired name.</p>
C_5	Finished Reading		<p>This is the class that handles the "Finished Reading" shelf of the user.</p> <p>The "Finished Reading" shelf is a default shelf that exists by default to every user.</p>
C_6	Currently Reading		<p>This is the class that handles the "Currently Reading" shelf of the user.</p> <p>The "Currently Reading" shelf is a default shelf that exists by default to every user.</p>



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Class ID	Class Name	Subsystem ID	Description
C_7	To Read		<p>This is the class that handles the “To Read” shelf of the user.</p> <p>The “To Read” shelf is a default shelf that exists by default to every user.</p>
C_8	Group		<p>This is an entity class.</p> <p>It is responsible for all the groups that are involved in the system</p> <p>Each group has an array of members (The list of users that are members of this group), information about it, an array of posts, and an array of comments.</p>



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Class ID	Class Name	Subsystem ID	Description
C_9	User		<p>This is the boundary class of the system (It deals directly with the user).</p> <p>It has the basic information of the user and his profile as: his username, his password, his hometown, his list of favorite books (array of type Book), his list of favorite authors (string array), his list of favorite categories (string array), his list of his shelves (array of type Shelf), his list of friends (array of type User).</p> <p>It has some methods that can be performed by the user which are:</p> <ol style="list-style-type: none"> 1. SignUp: It is performed when a new user wants to create an account on the system. He/she can sign up to the system by a unique username, email address and password. 2. LogIn: It is performed when a current user wants to log into his account on the system using his email address and password. 3. editBasicInfo: it is performed when a new wants to edit his basic information (change his/her username, his/her hometown where he/she lives, his/her profile picture...) 4. editFavoriteBooks: it is performed when a user wants to change his/her favorite books by changing their rate. 5. editFavoriteAuthors: it is performed when a user wants to change his list of favorite authors. He can either add a new author that he/she likes or remove an author that he/she doesn't like anymore. 6. editFavoriteCategories: it is performed when the user wants to add a new books category that he/she likes or delete a category that he/she doesn't like anymore. 7. viewBooksInShelves: it is performed when the user wants to view the books that are in any of his shelves. 8. viewBooksByCategory: it is performed when the user wants to view the books sorted by their category. 9. createShelf: It is performed when a user wants to create a new shelf for a desired category with a desired name.



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Class ID	Class Name	Subsystem ID	Description
			<p>10. editShelf: It is performed when a user wants to change a shelf by changing its category or its name.</p> <p>11. addBooksToShelves: It is performed when a user wants add a book that he found to any of his/her shelves (one of the three default shelves or any other specific shelves that the user has).</p> <p>12. searchByCategory: It is performed when a user wants to search for books by its category so the function will return an array of all the books in the public books list that are of this category.</p> <p>13. searchByName: It is performed when a user wants to search for books by its name so the function will return an array of all the books in the public books list that contains this name.</p> <p>14. searchByAuthor: It is performed when a user wants to search for books by its category so the function will return an array of all the books in the public books list that this author has written.</p> <p>15. addNewBook: It is performed when a user wants to add a book to the public books list that doesn't exist in it.</p> <p>16. addReview: It is performed when a user wants to add a review about a book that he/she has already read.</p> <p>17. likeReview: It is performed when a user wants to like a user's review on a book.</p> <p>18. commentOnReview: It is performed when a user wants to comment on a user's review on a book.</p> <p>19. addRate: It is performed when a user wants to rate a book from 1 to 5.</p> <p>20. addFriend: It is performed when a user wants to add another user as a friend.</p> <p>21. likeFriendActivity: It is performed when a user wants to like a friend's activity.</p> <p>22. commentOnFriendActivity: It is performed when a user wants to comment on a friend's activity.</p> <p>23. compete: It is performed when a user wants to compete on a book with a user.</p> <p>24. acceptCompetition: It is performed when a user wants to accept a competition request on a book that another user has sent him/her.</p> <p>25. declineCompetition: It is performed when a user wants to decline a competition request on a book that another user has sent him/her.</p>



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Software Design Specification

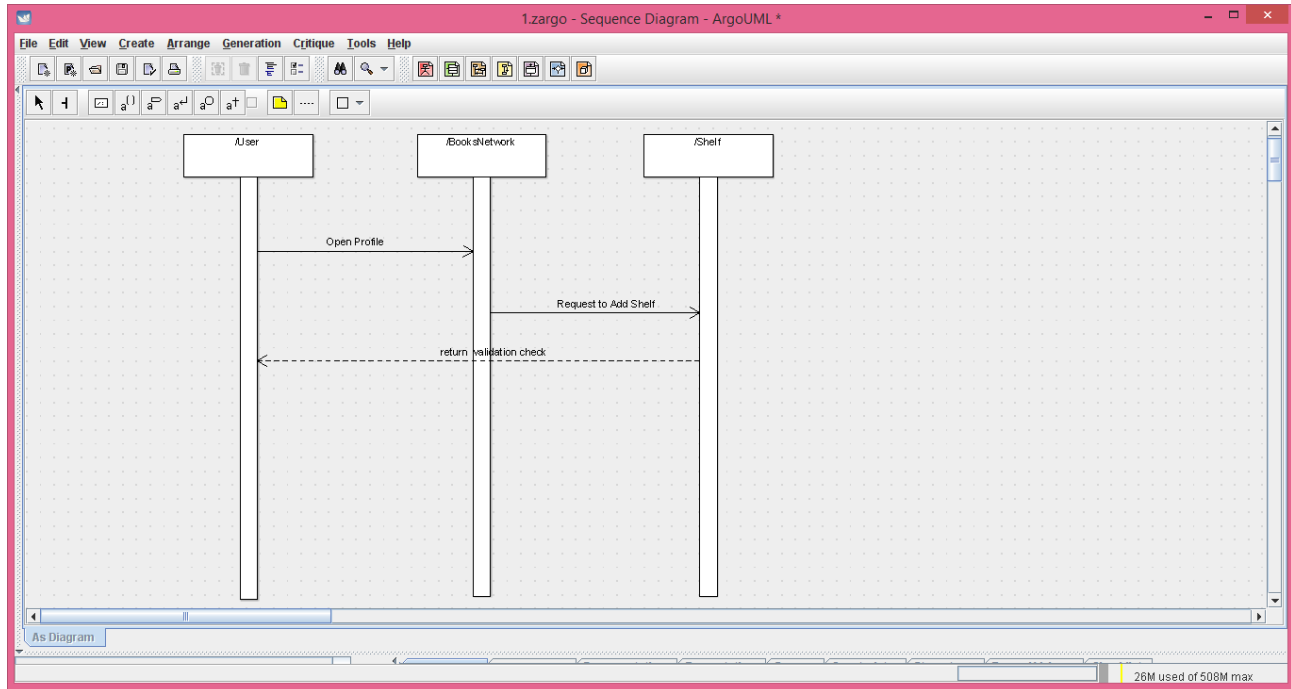
Class ID	Class Name	Subsystem ID	Description
			<p>26. createGroup: It is performed when a user wants to create a group on the system.</p> <p>27. addUsersToGroup: It is performed when a user wants to add a user to a group that he manages.</p> <p>28. acceptUsersToGroup: It is performed when a user wants to accept a user's join request to a group that he manages.</p> <p>29. declineUsersToGroup: It is performed when a user wants to decline a user's join request to a group that he manages.</p> <p>30. joinGroup: It is performed when a user wants to join a group that he doesn't manage.</p> <p>31. addPost: It is performed when a user wants to write a post in a group.</p> <p>32. addComment: It is performed when a user wants to comment on a post in a group.</p> <p>33. exitGroup: It is performed when a user wants to leave a group.</p> <p>34. logout: It is performed when a user wants to log out of his account on the system.</p>

Important Algorithm



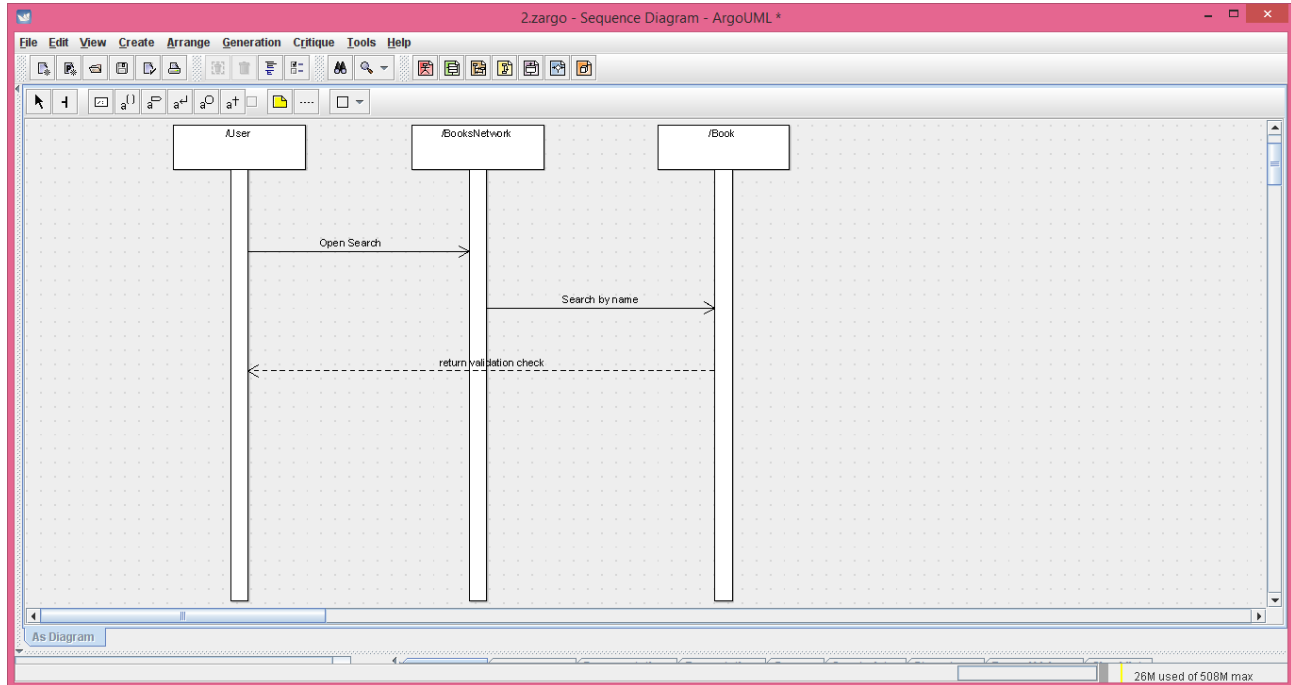
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Sequence diagrams





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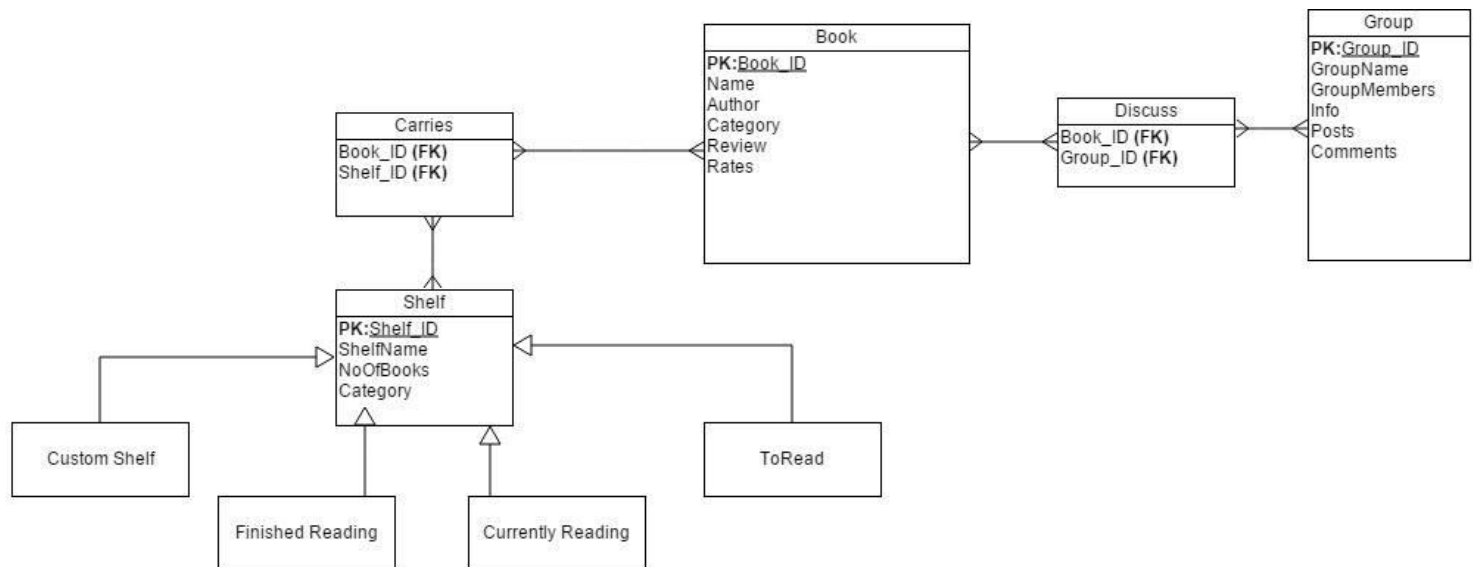
Class - Sequence Usage

Class Name	Sequence Diagrams	Overall used methods
Books Network	1,2	searchByName() createShelf()
Book	2	checkBookSearchValidity()
User	1,2	searchBooks()
Group	None	None
Shelf	1	checkShelfAddingValidity()



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Physical Entity-Relationship Diagram

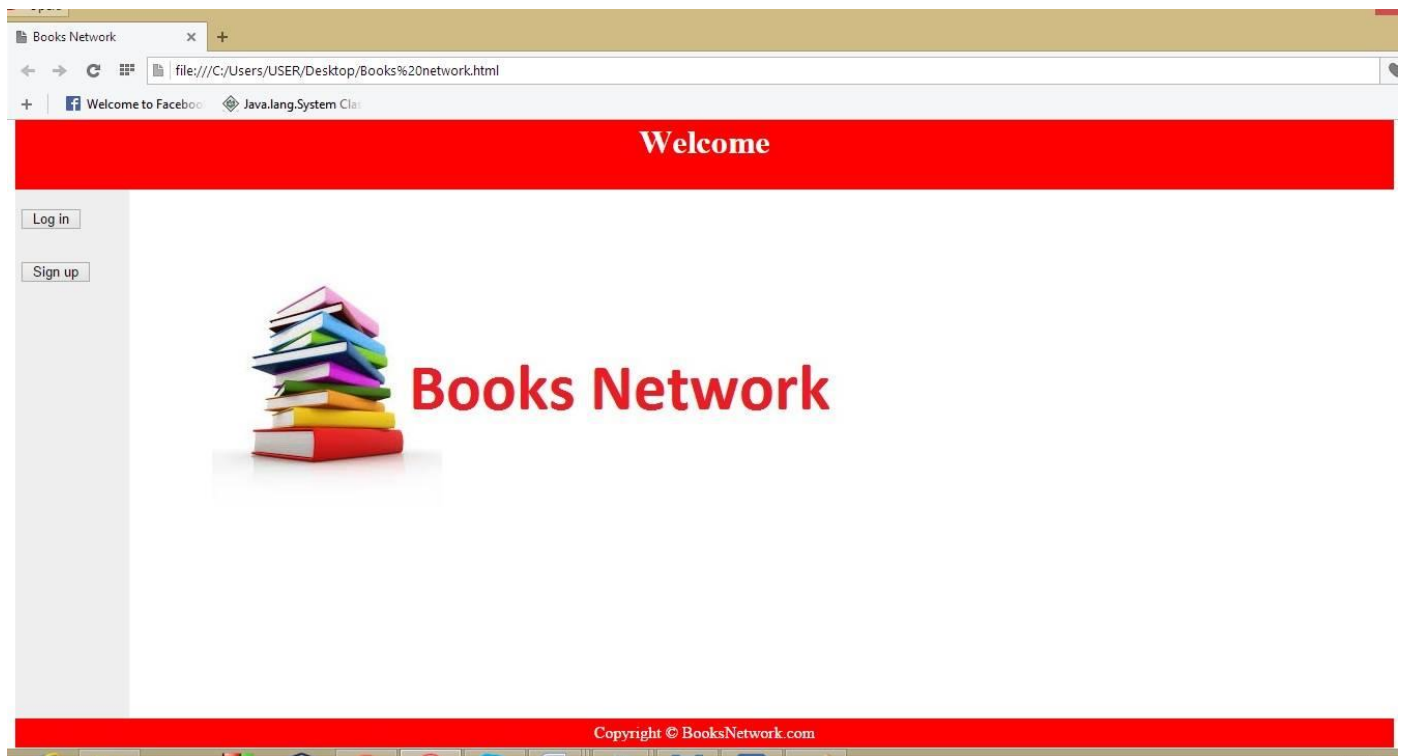




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User Interface Design

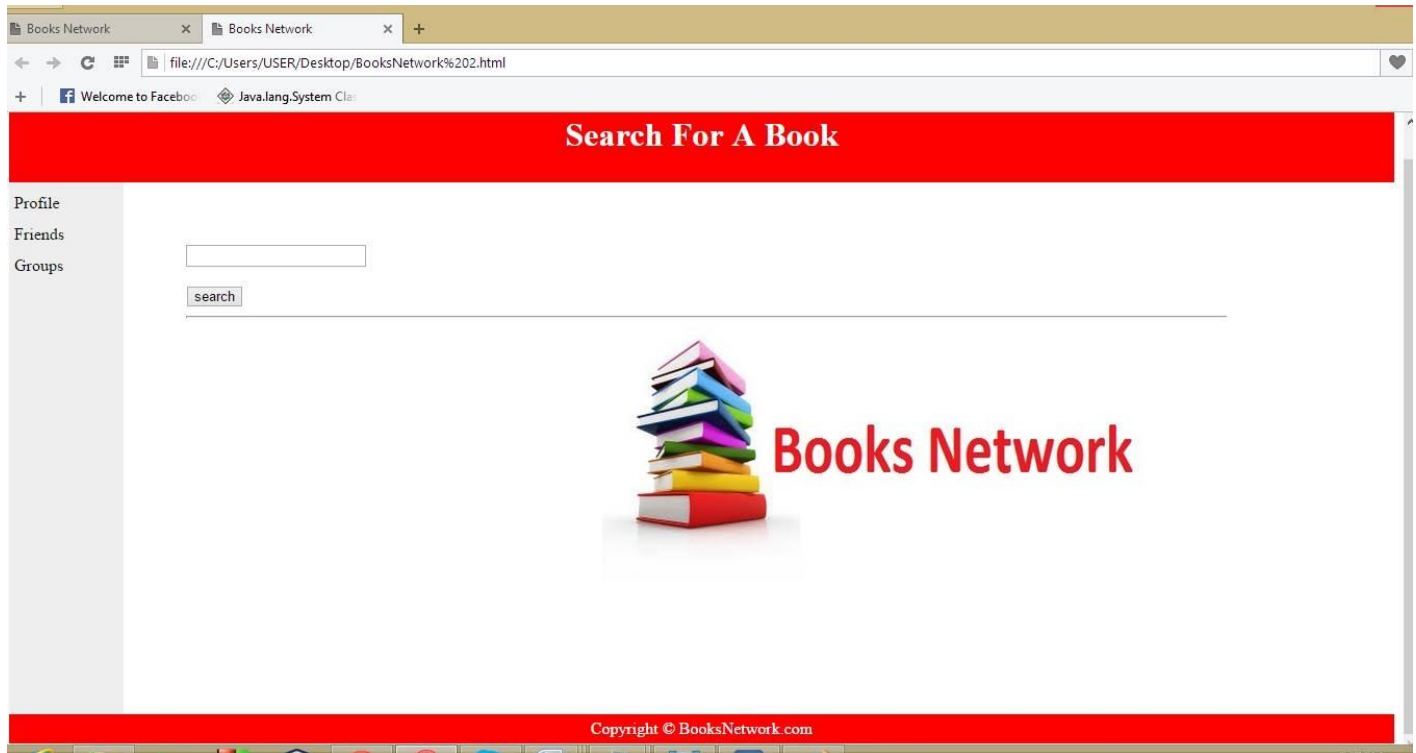
Screen 1 – Main Interface





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Screen 2 – Search Screen





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Ownership Report

Item	Owners
<ul style="list-style-type: none">Sequence Diagram	Hussien Mohamed
<ul style="list-style-type: none">System DecompositionClass Diagram	Yousra Mohamed
<ul style="list-style-type: none">ERD DiagramUI Design	Farida Mohamed