

**POLITECNICO  
MILANO 1863**

HYPERMEDIA APPLICATION:  
WEB AND MULTIMEDIA

# **BOOKSTORE**

BOOKSTORE PROJECT

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## **Design Document**

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*Authors:*

Davide AVANZI:

davide1.avanzi@mail.polimi.it

Francesca BERNECICH:

francesca.bernecich@mail.polimi.it

Fabrizio CARSENZUOLA:

fabrizio.carsenzuola@mail.polimi.it

*Supervisor:*  
Franca GARZOTTO

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# 1 Introduction

## 1.1 Revision History

Version	Date	Authors	Summary
1.0	20/06/2019	Davide Avanzi, Francesca Bernechich, Fabrizio Carsenzuola	Final review
0.1	04/03/2019	Davide Avanzi, Francesca Bernechich, Fabrizio Carsenzuola	Living document

## 1.2 Abstract

This document describes the details of the proposed implementation of our “Bookstore” website as a project for the hypermedia application: web and multimedia course. Here we provide and explain all our design and implementation choices, starting from a general overview and then with a more in-depth analysis. The target audience of this document are the future developers of the system, as well as the project owner, prof. Garzotto.

The website is reachable at this address: <https://hyp.avanzi.dev/>

## 1.3 Reference documents

- “HYP\_2018\_19\_PROJECT\_SPECIFICATIONS.pdf”: Project assignments
- “PROJECT THEME HYP2018-19 - FRONT END TECH - Till July 2019.pdf”: Front-end document specifications / C-IDM
- “project-manual.pdf”: Back-end document specifications

## **2 Graphical representations**

Here we provide the C-IDM and the L-IDM schemas for our application, representing all the required topics/relations listed in the “DESIGN project topic” document. It behoves us to also note that our end product will have more features/topics than those listed in the IDM schemas, which follow closely the requirements from the said document.

## 2.1 C-IDM schema

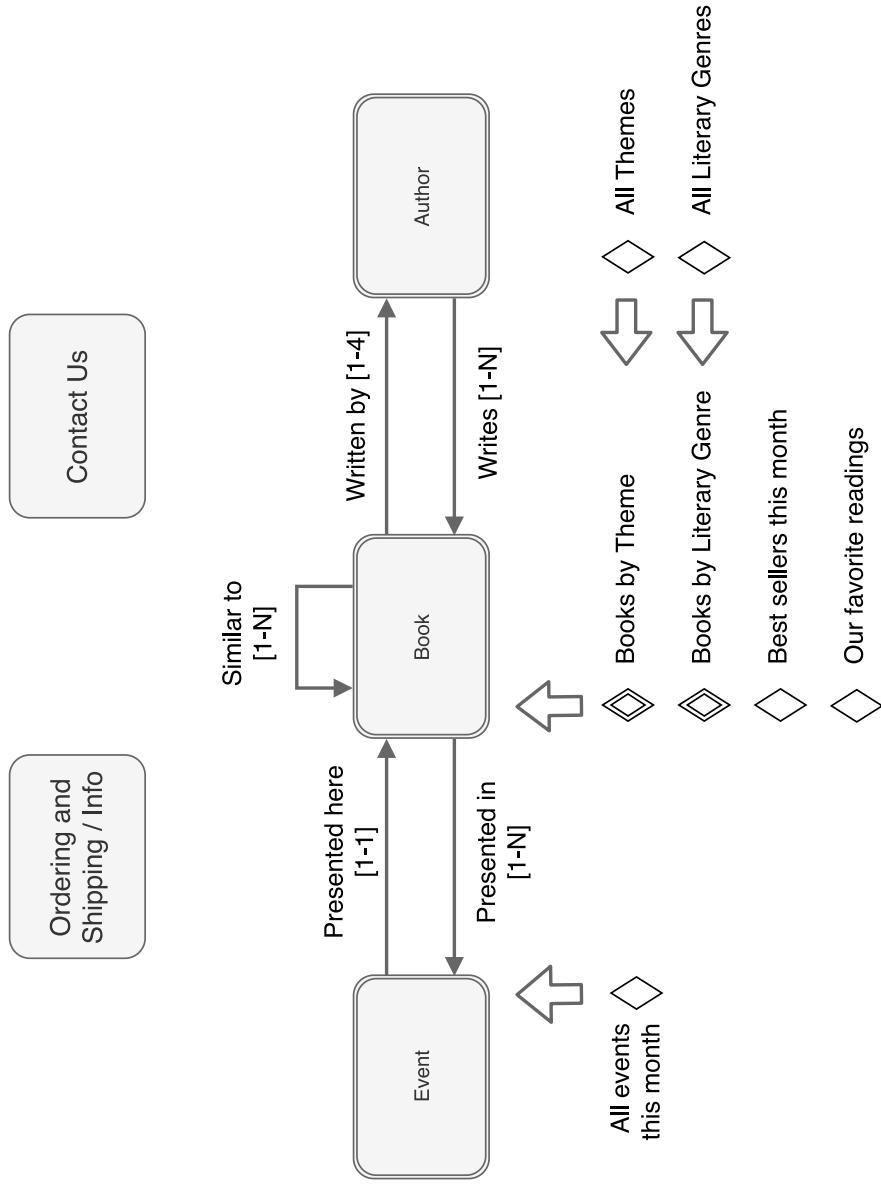


Figure 1: C-IDM

## 2.2 L-IDM schema

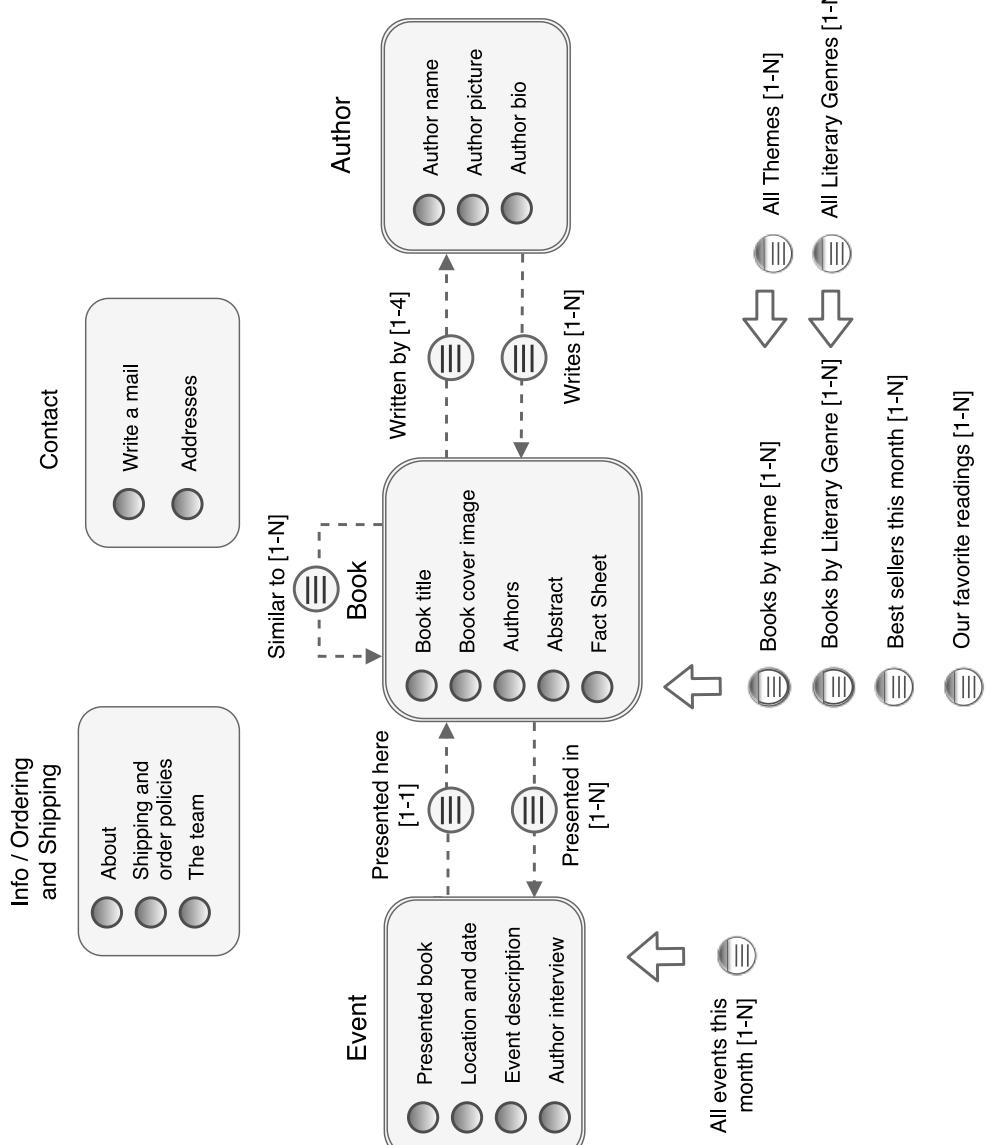


Figure 2: C-IDM

### 3 Scenarios

In this section we decided to analyze some scenarios for three of the most important feature of our website: user registration, user login and user cart management. All these feature have to deal with user authentication: this plays a major role in the user interaction flow with the system.

For each scenario, we provide:

- a sequence diagram of the interaction considered,
- the complete action flow highlighted in a serie of screenshots.

#### 3.1 User registration

Actors	Guest
Preconditions	The guest has a working Internet connection and he has not registered an account yet.
Events	<ol style="list-style-type: none"><li>1. The guest reaches the registration page</li><li>2. The system requires the guest to enter all his/her personal information</li><li>3. The guest types the requested information and presses the 'Next' button</li><li>4. The system verifies the uniqueness of the email</li><li>5. The system reports the registration and redirects the user to the login page</li></ol>
Postconditions	The user has signed up.
Exceptions	The email the guest typed has been already used. One of the mandatory fields (email and password) is empty. In these cases the system notifies the error and cannot complete the registration.

### 3.1.1 User registration sequence diagram

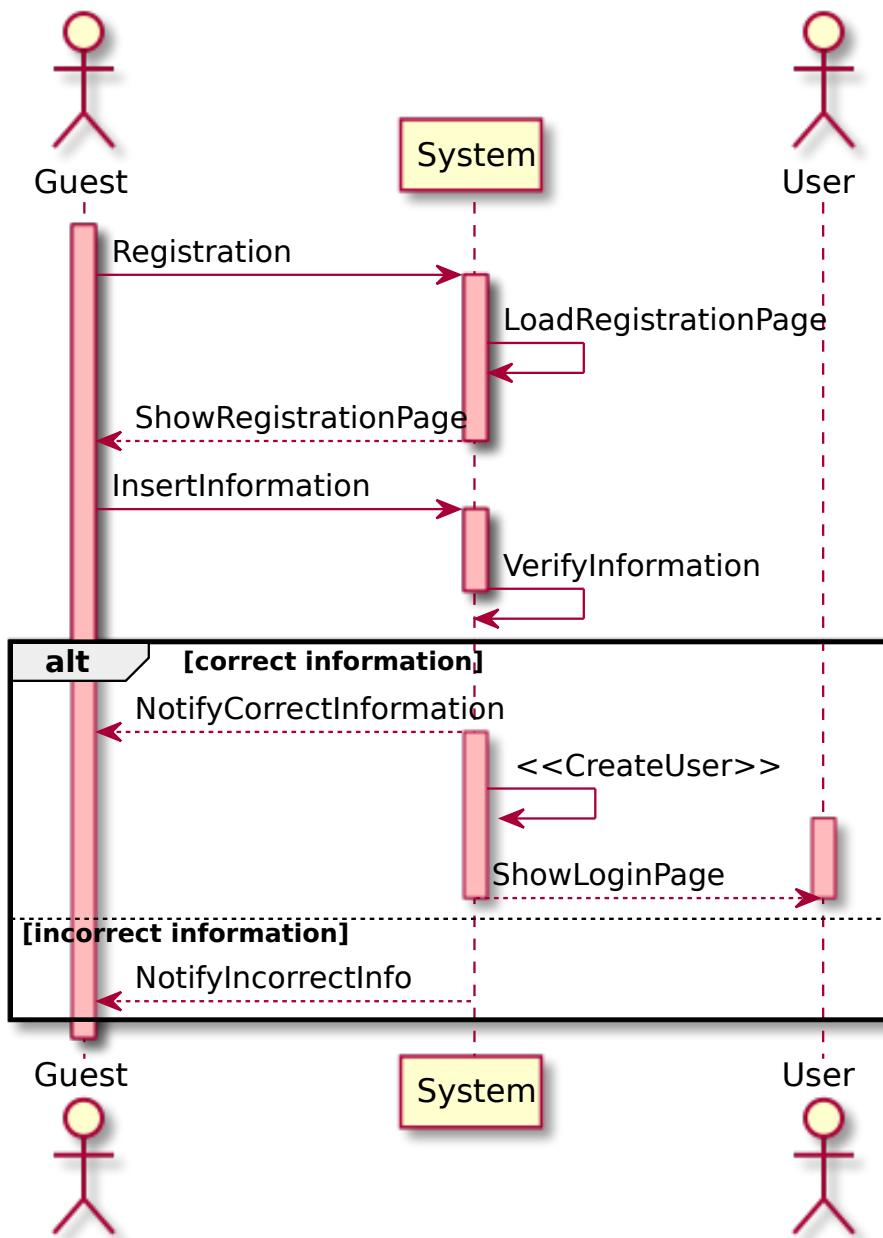


Figure 3: User registration sequence diagram

### 3.1.2 User registration screenshots

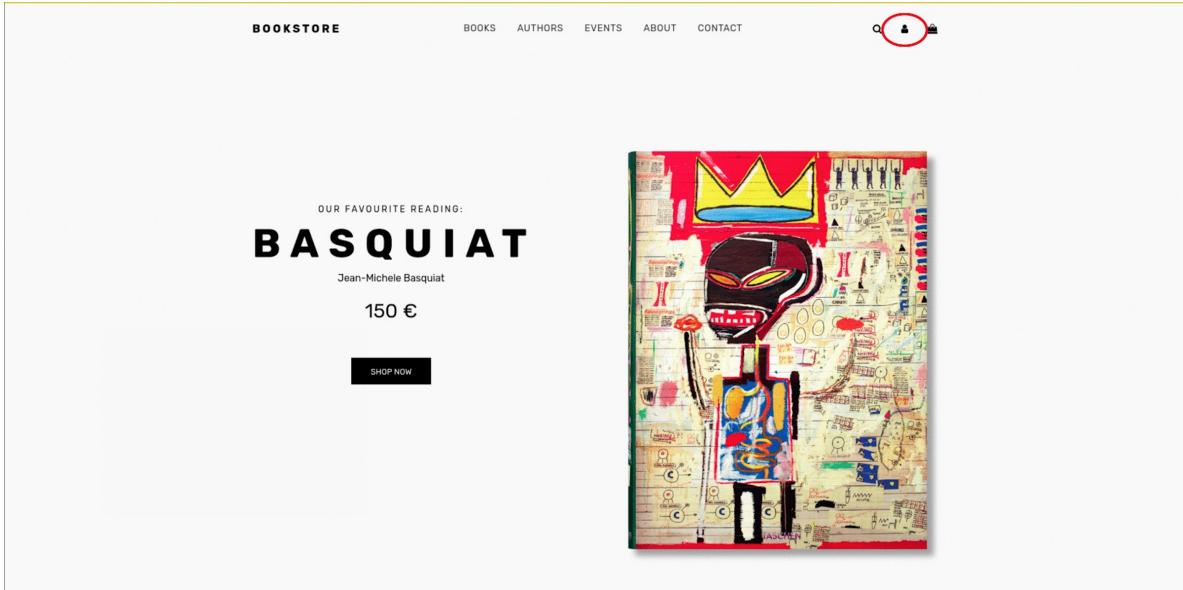


Figure 4: Select user page

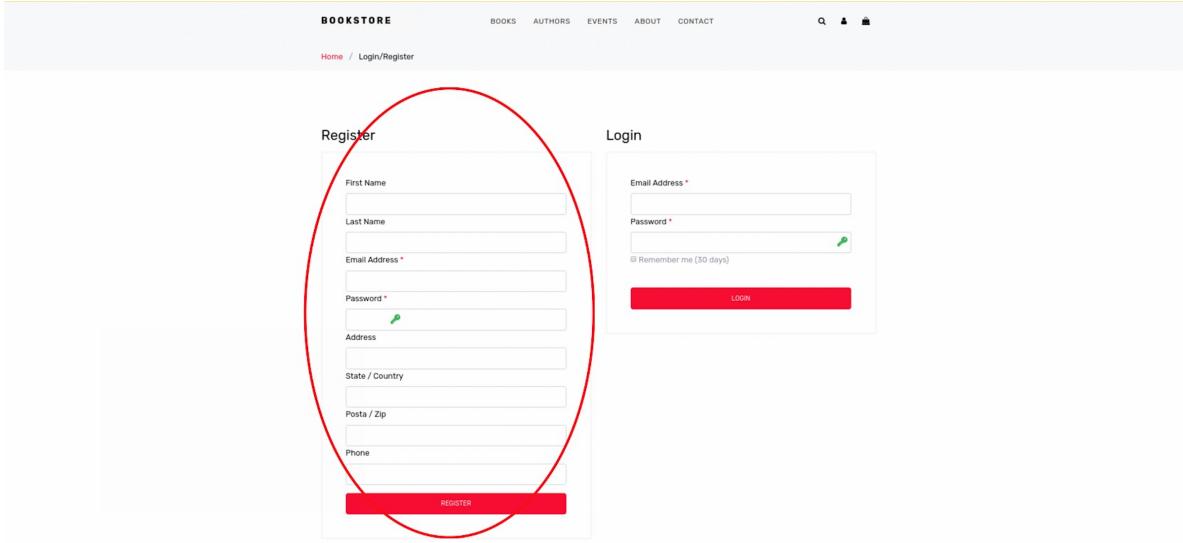


Figure 5: Insert register informations

BOOKSTORE

BOOKS AUTHORS EVENTS ABOUT CONTACT

Home / Login/Register

Register

First Name

Last Name

Email Address \*

Password \*

Address

State / Country

Postal / Zip

Phone

Login

Email Address \*

Password \*

Remember me (30 days)



Figure 6: Click on register button

## 3.2 User login

Actors	User
Preconditions	The actor has a working Internet connection and is already registered.
Events	<ol style="list-style-type: none"><li>1. The actor reaches the log in page</li><li>2. The system requires the actor to enter his email and password</li><li>3. The actor types the requested information and press the 'Log in' button</li><li>4. The system verifies the correctness of the email and password</li><li>5. The system redirects the actor to the main page</li></ol>
Postconditions	The actor is logged in.
Exceptions	<p>The email or the password the actor typed are not correct. One of the fields is empty.</p> <p>In these cases the actor can't complete the log in. The system notifies the error and cannot complete the login.</p>

### 3.2.1 User login sequence diagram

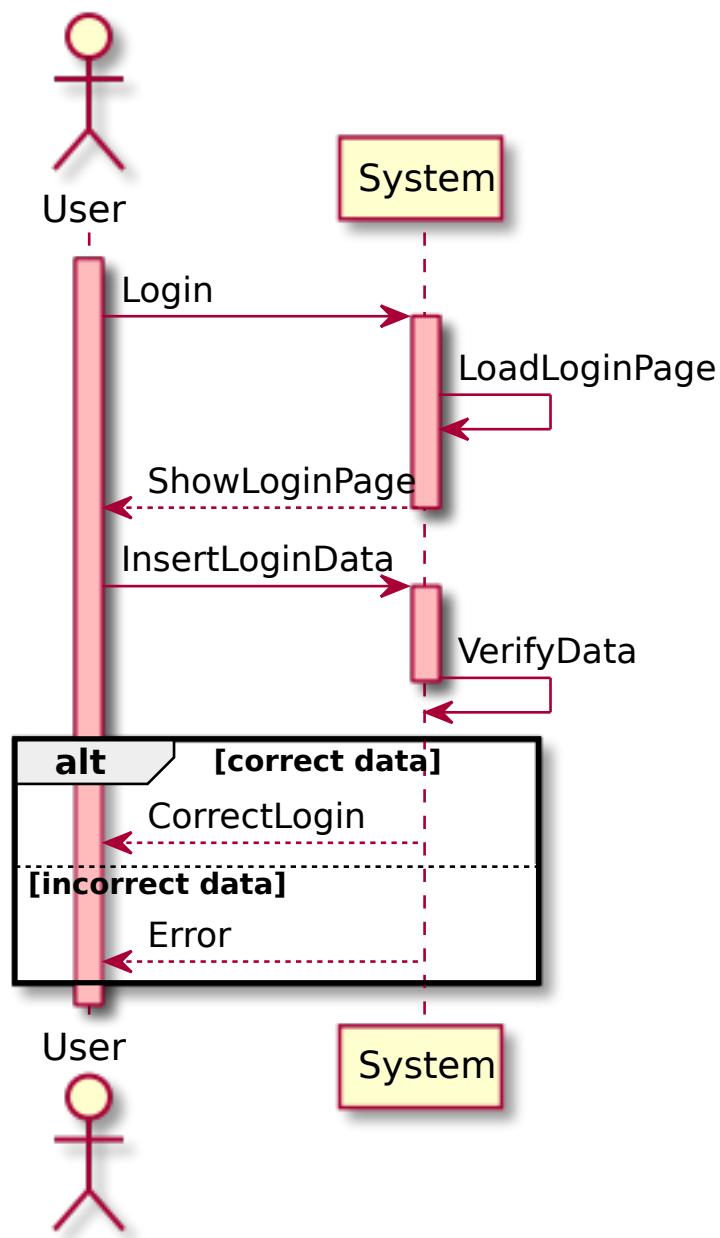


Figure 7: User login sequence diagram

### 3.2.2 User login screenshots

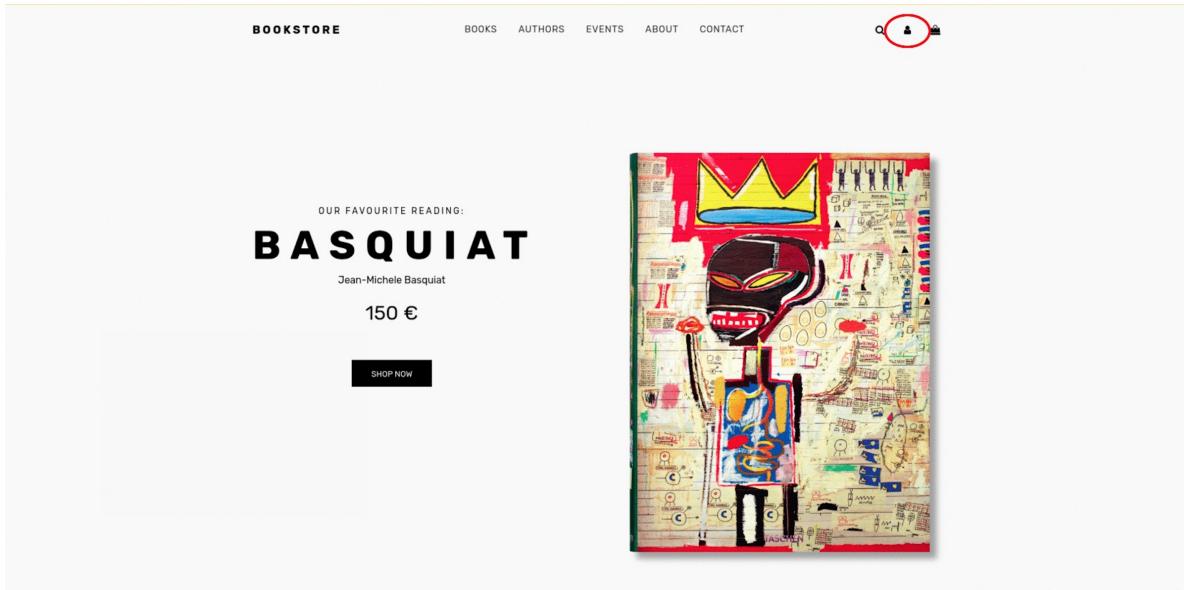


Figure 8: Select user page

A screenshot of the website showing two forms side-by-side: a "Register" form on the left and a "Login" form on the right. Both forms are enclosed in a light gray box. The "Register" form contains fields for First Name, Last Name, Email Address, Password, Address, State / Country, Posta / Zip, and Phone. A red "REGISTER" button is at the bottom. The "Login" form contains fields for Email Address and Password. There is also a checkbox for "Remember me (30 days)" and a red "LOGIN" button. A red oval highlights the Email Address field in the Login form.

Figure 9: Insert login informations

The screenshot shows a website layout for a bookstore. At the top, there is a navigation bar with links for BOOKS, AUTHORS, EVENTS, ABOUT, and CONTACT. Below the navigation bar, a breadcrumb trail indicates the current page is Home / Login/Register. The main content area contains two forms side-by-side: a "Register" form on the left and a "Login" form on the right. The "Register" form includes fields for First Name, Last Name, Email Address (marked with a red asterisk), Password (marked with a red asterisk), Address (with a green placeholder icon), State / Country, Posta / Zip, and Phone. A "REGISTER" button is at the bottom. The "Login" form includes fields for Email Address (marked with a red asterisk) and Password (marked with a red asterisk). It also features a "Remember me (30 days)" checkbox and a "LOGIN" button. A red oval highlights the "LOGIN" button on the "Login" form.

BOOKSTORE

BOOKS AUTHORS EVENTS ABOUT CONTACT

Home / Login/Register

Register

First Name  
Last Name  
Email Address \*  
Password \*  
Address  
State / Country  
Postal / Zip  
Phone

REGISTER

Login

Email Address \*  
Password \*  
Remember me (30 days)  
LOGIN

Figure 10: Click on login button

### 3.3 Add book to cart

Actors	User
Preconditions	The actor has a working Internet connection and is already login.
Events	<ol style="list-style-type: none"><li>1. The actor reaches the book page</li><li>2. The actor choose the amount of book that he/she want to put in him/her cart</li><li>3. The actor click on the add button</li><li>4. The system verifies the availability of the books (amount)</li><li>5. The system gives the user a notification that the operation has been successfully completed</li></ol>
Postconditions	The actor has in his/her cart the chosen amount of the book.
Exceptions	<p>The chosen amount of the book isn't available. In this case the system put in the actor's cart the maximum amount available.</p>

### 3.3.1 Add book to cart sequence diagram

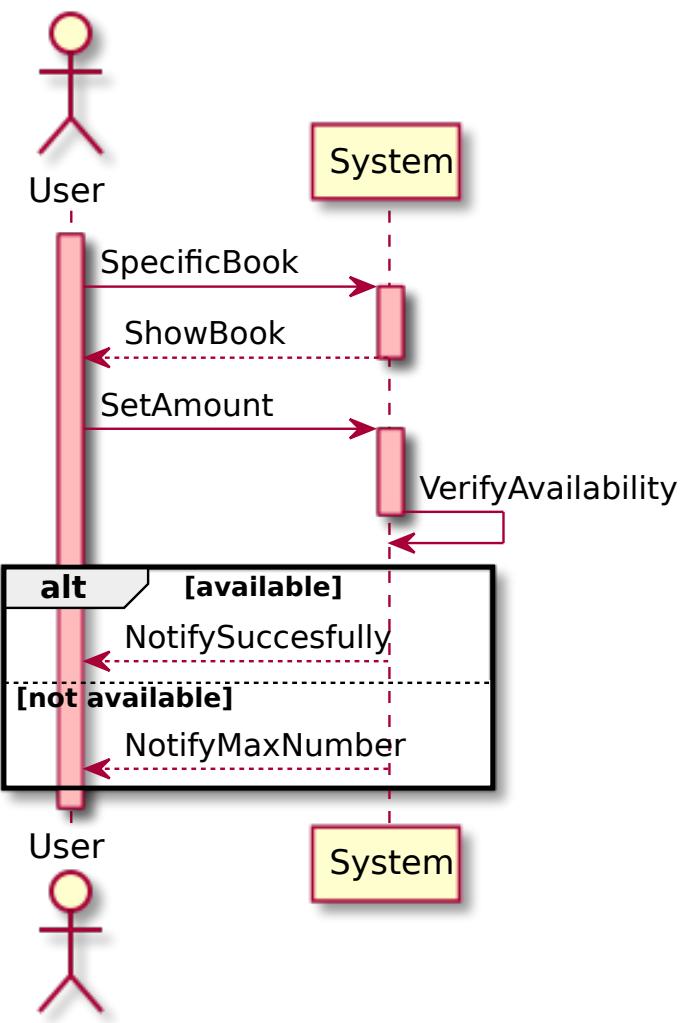


Figure 11: Login Sequence Diagram

### 3.3.2 Add book to cart screenshots

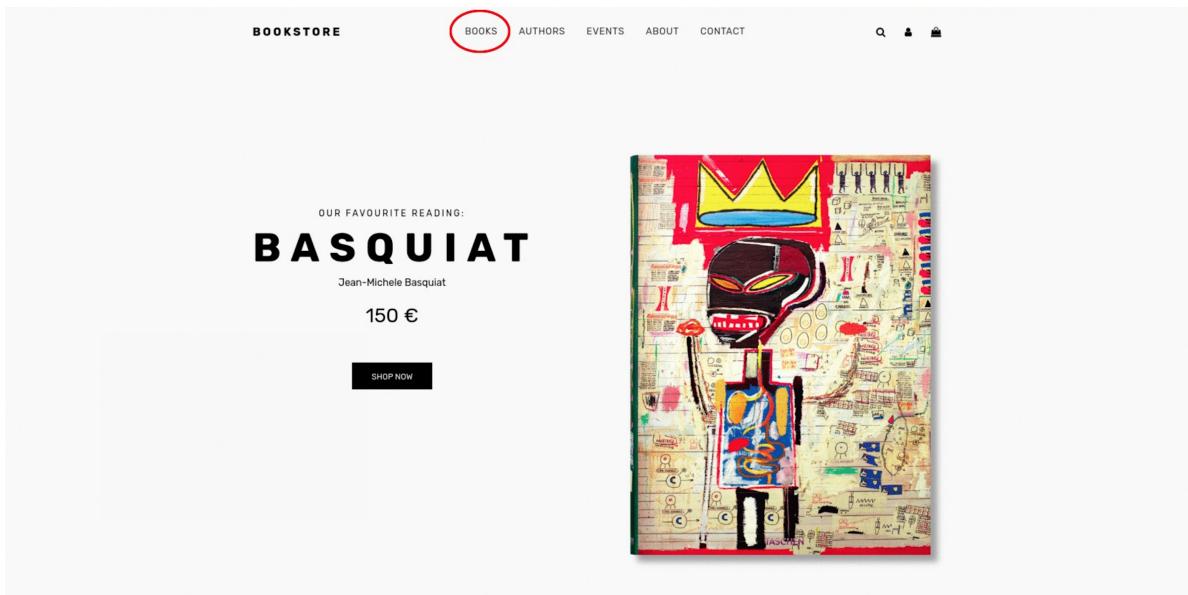


Figure 12: Select books page

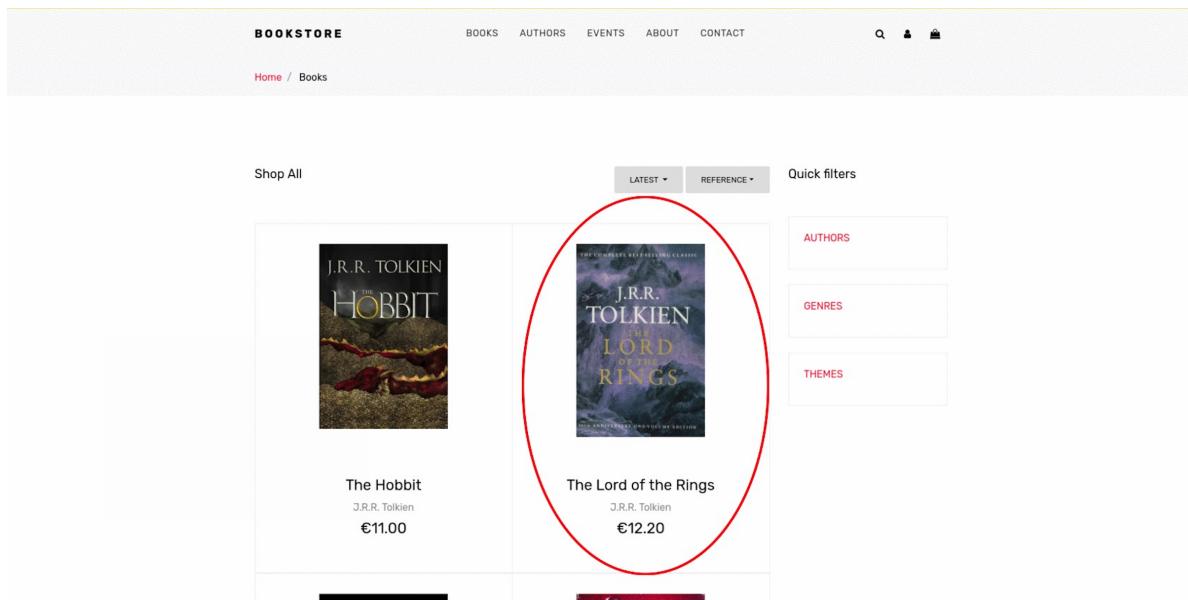


Figure 13: Select one book

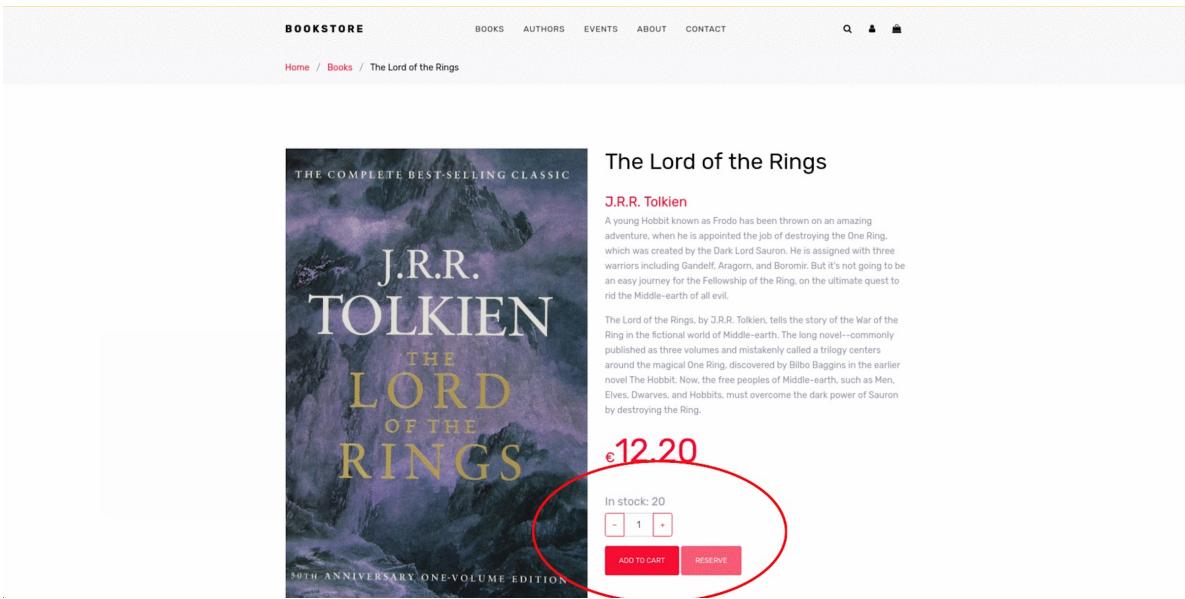


Figure 14: Select the desired amount and press add to cart button

## 4 Design-in-the small

In this section we'll include all the material we prepared to help us crafting the final web application: starting from hand-made sketches, to low fidelity wireframe (commented in order to display the page structure) to high fidelity wireframes, whose accurately depict the final result.

### 4.1 Sketches

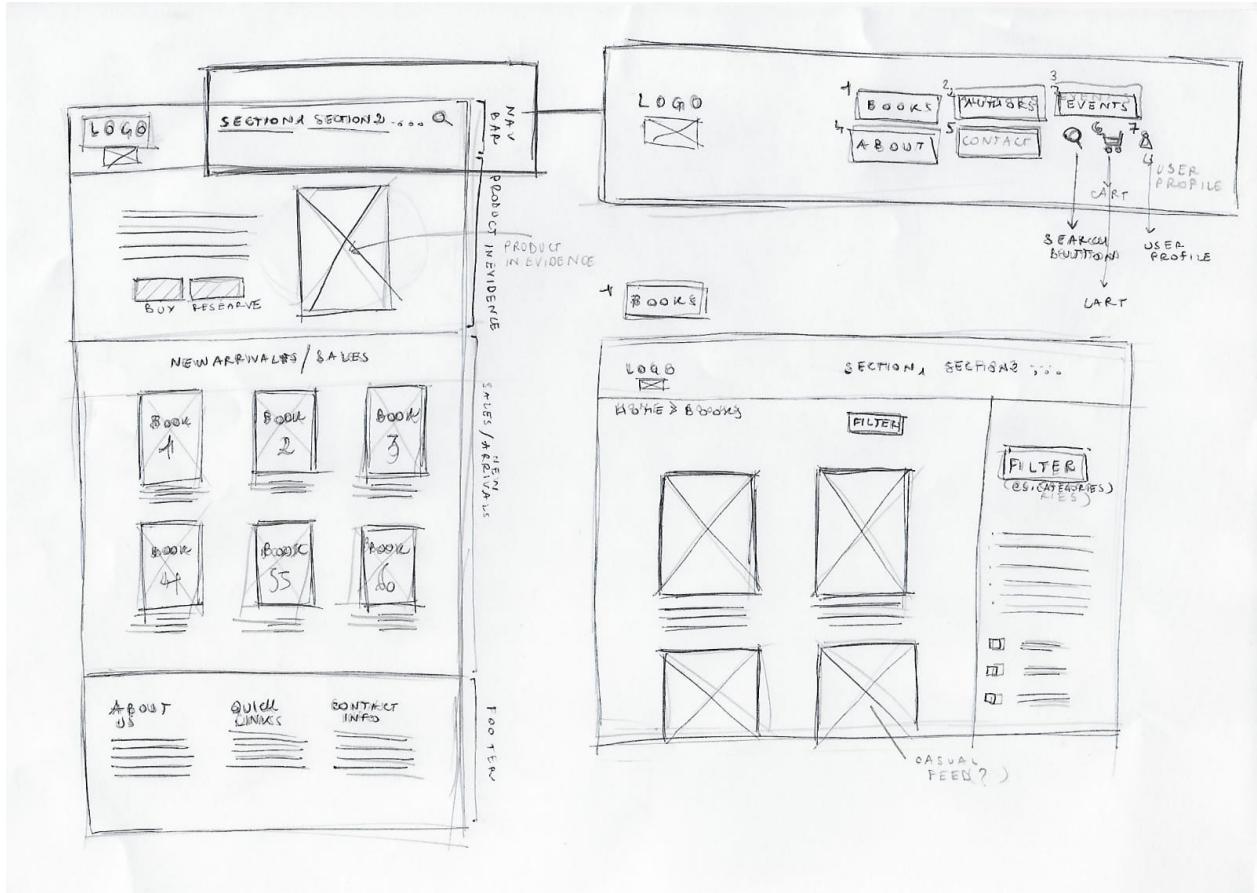


Figure 15: Home/Books Pages

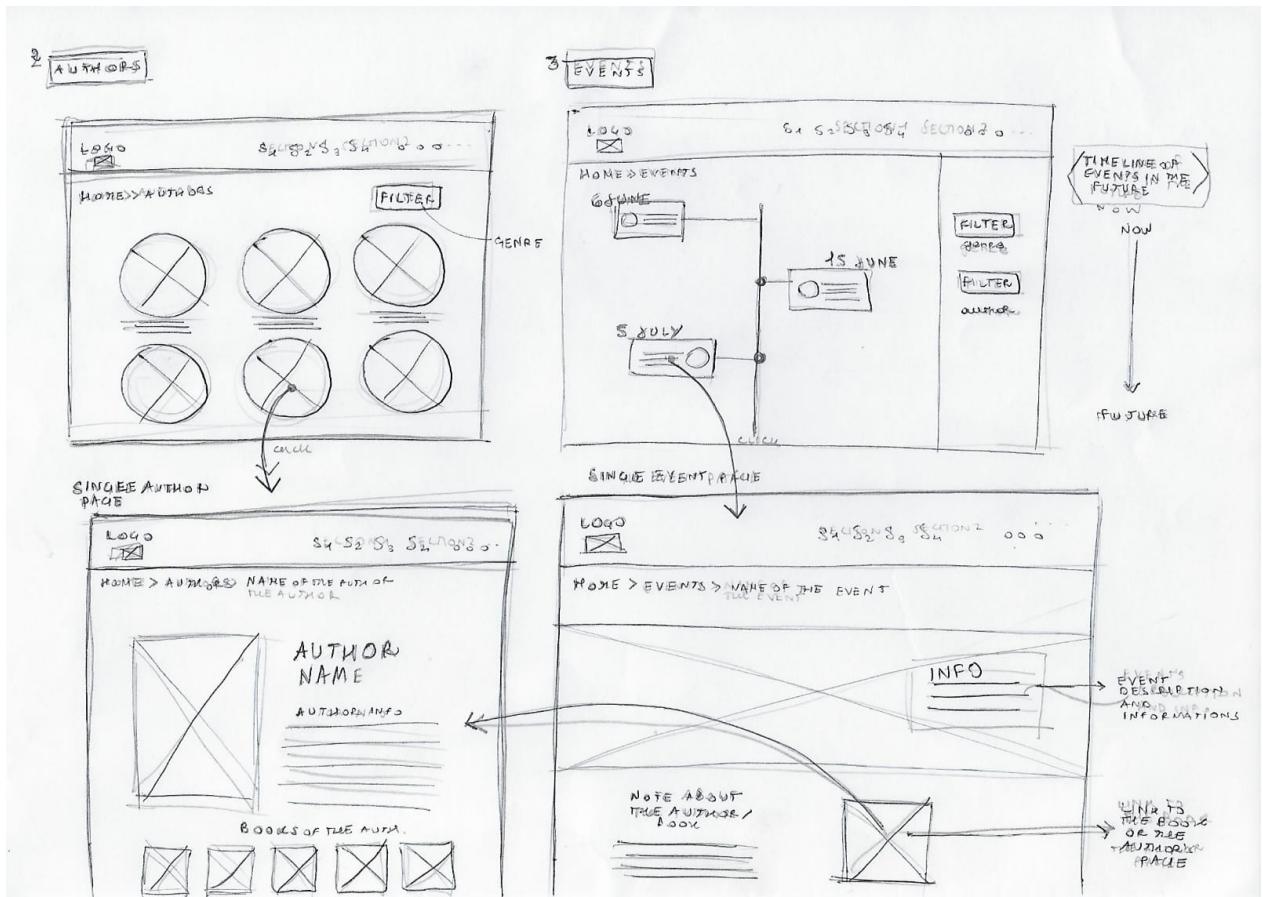


Figure 16: Authors/Events Pages

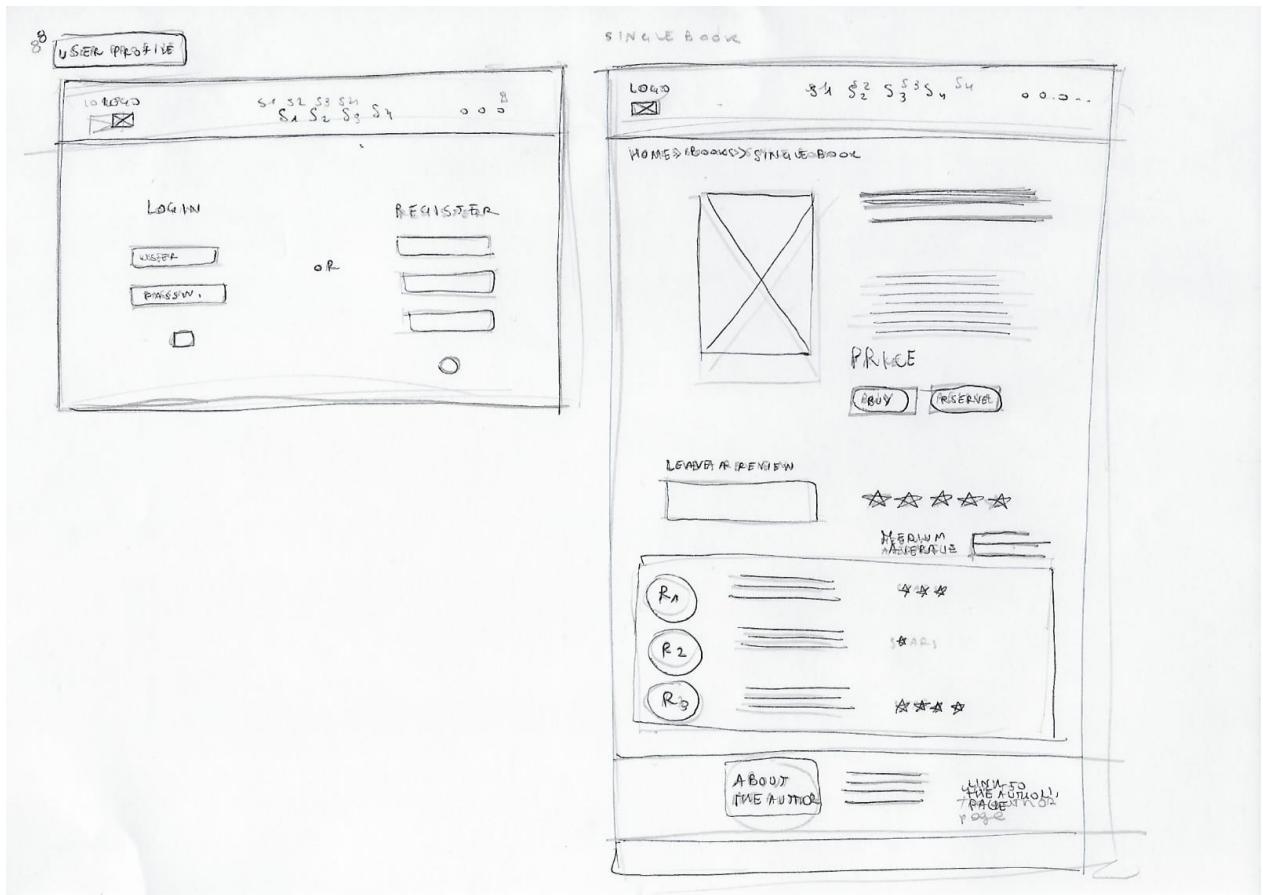


Figure 17: Single Book/User Pages

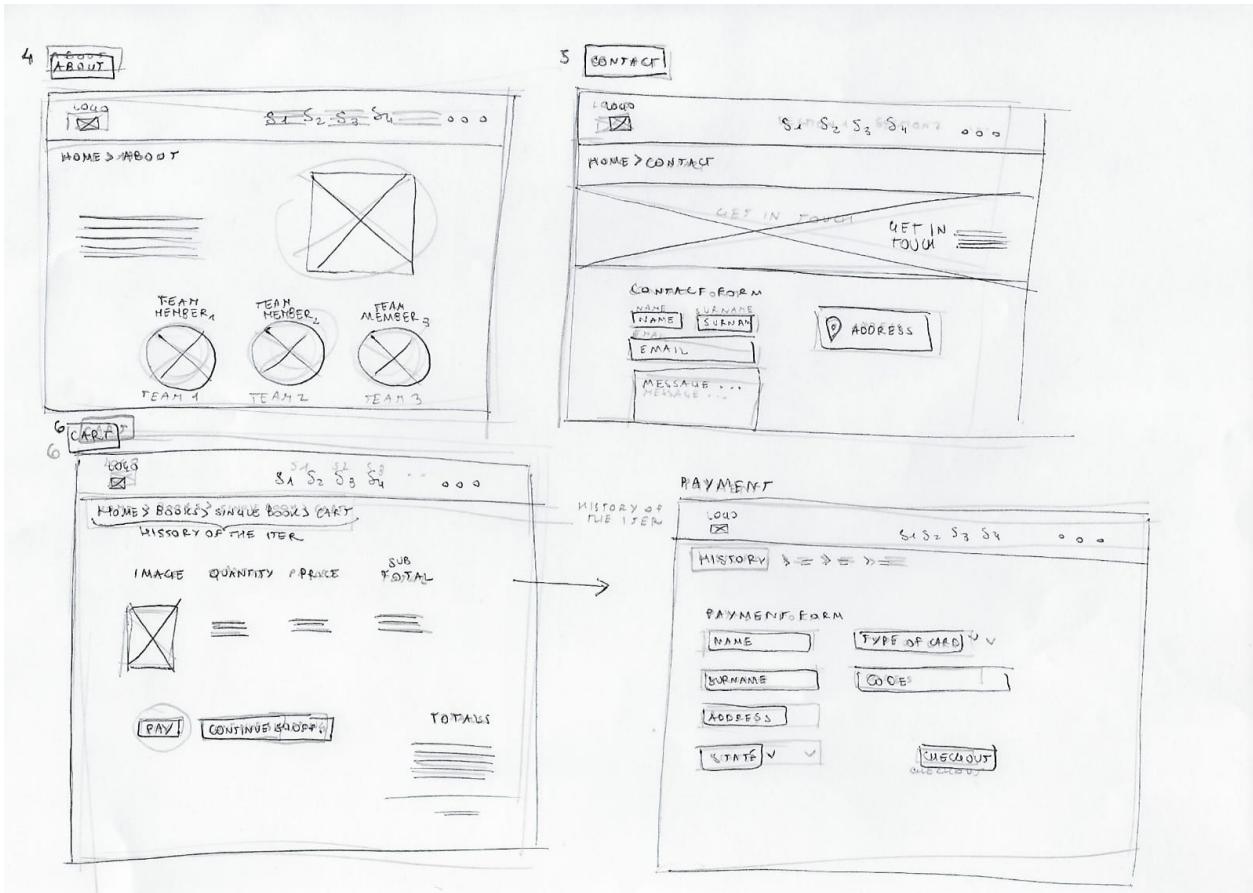


Figure 18: About/Contact/Cart/Payment Pages

## **4.2 Navigation map**

The navigation map shows the possible paths that an user can take while visiting the website: this defined the whole navigation flow and helped us in building the website.

## Navigation map

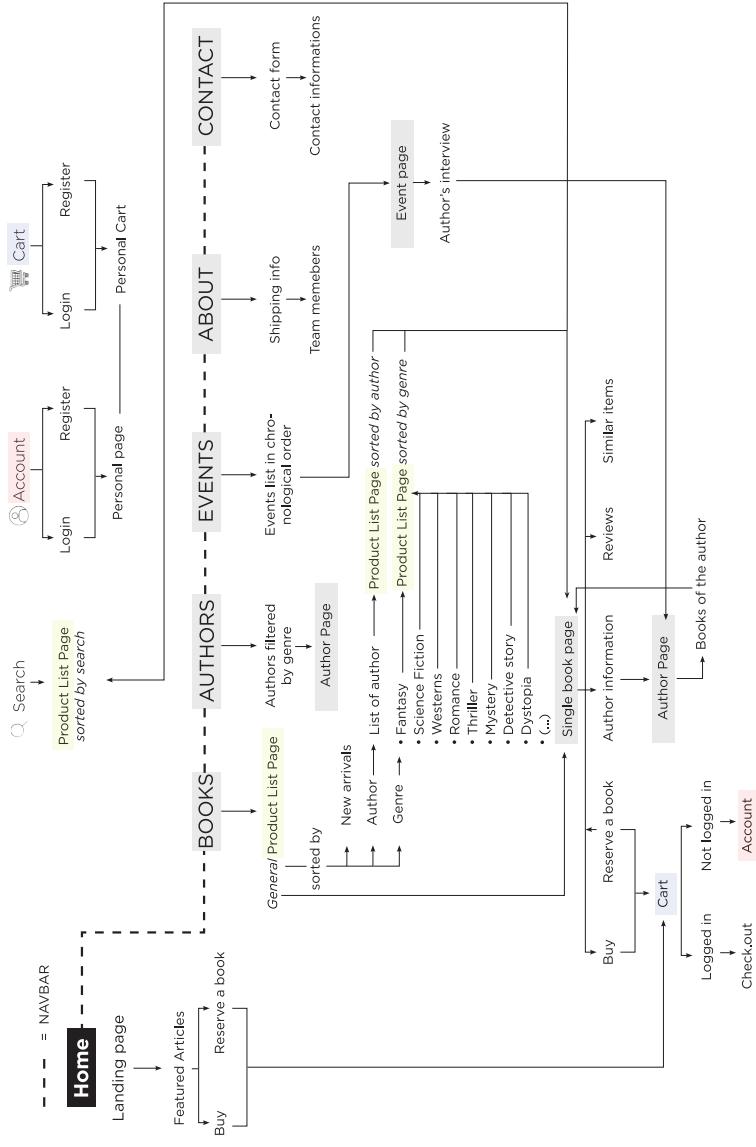


Figure 19: Navigation Map

## **4.3 Low fidelity wireframes**

### **4.3.1 All-in-one**

the following wireframe shows the complete structure of our website, highlighting the user navigation between pages.

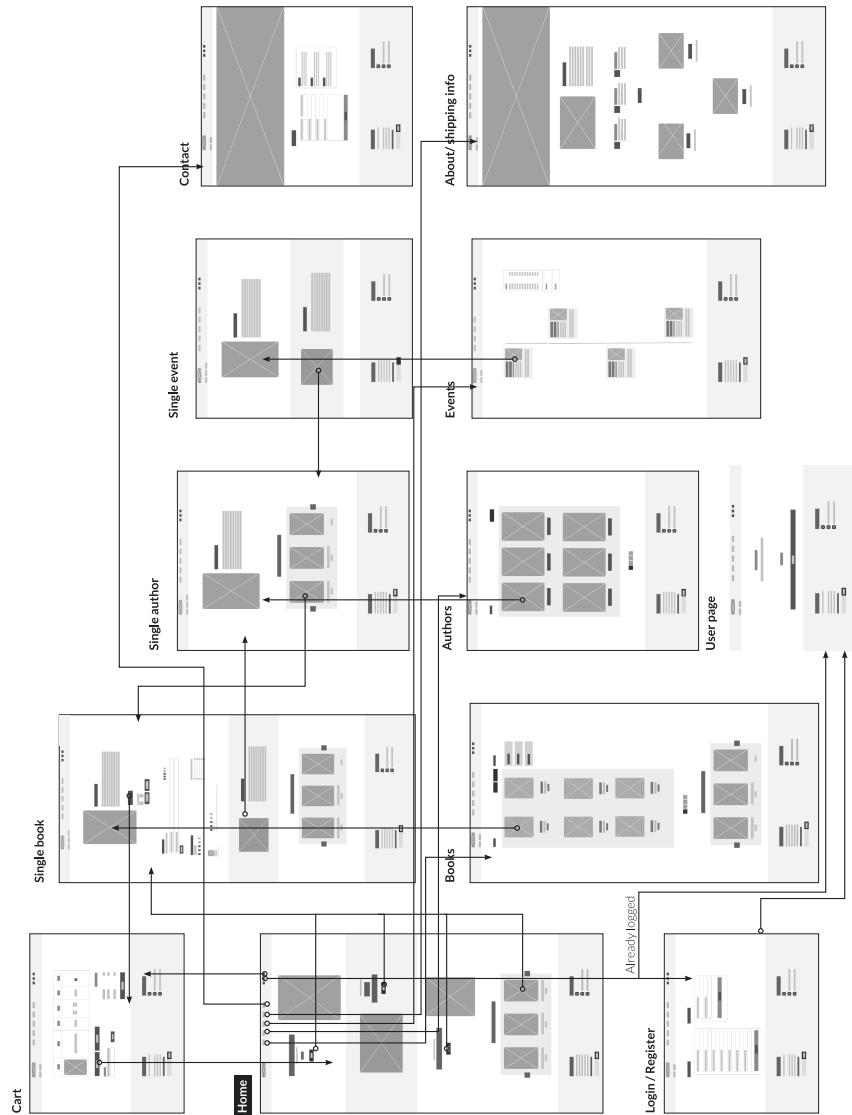


Figure 20: Wireframe of the whole website

#### **4.3.2 Page by page**

Here is a list of low fidelity wireframes for all our pages, highlighting the structure of each considered page.

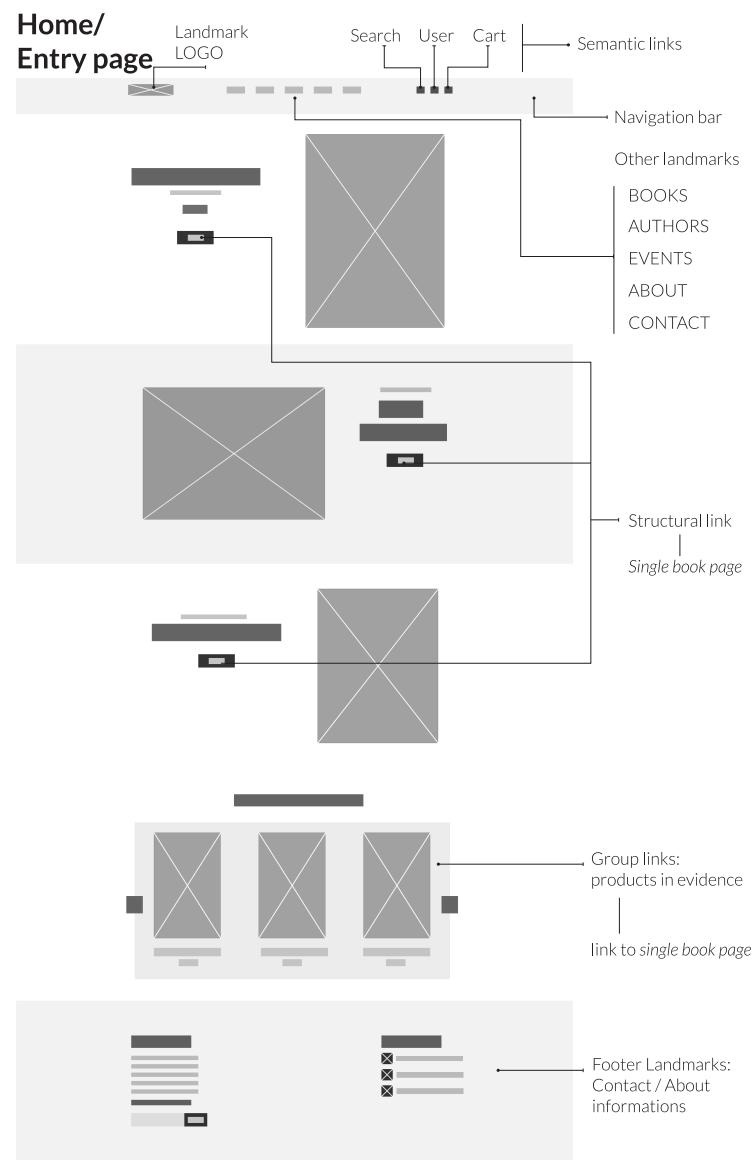


Figure 21: Home page wireframe

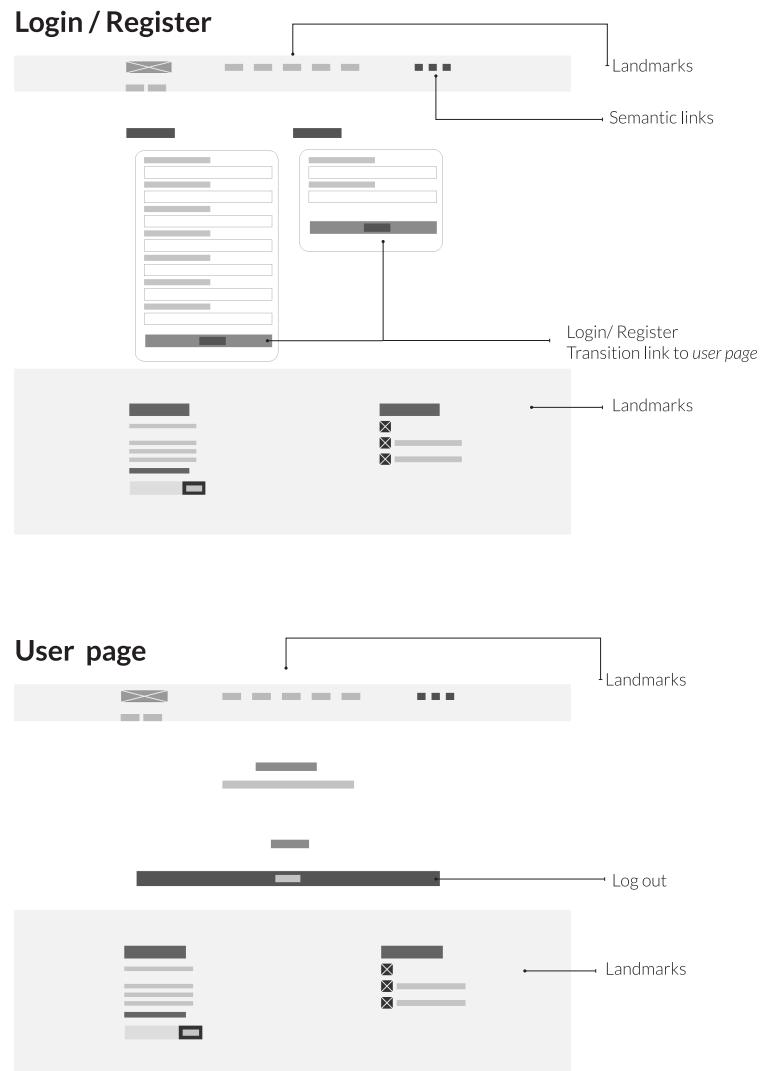


Figure 22: Login/Register - User page wireframe

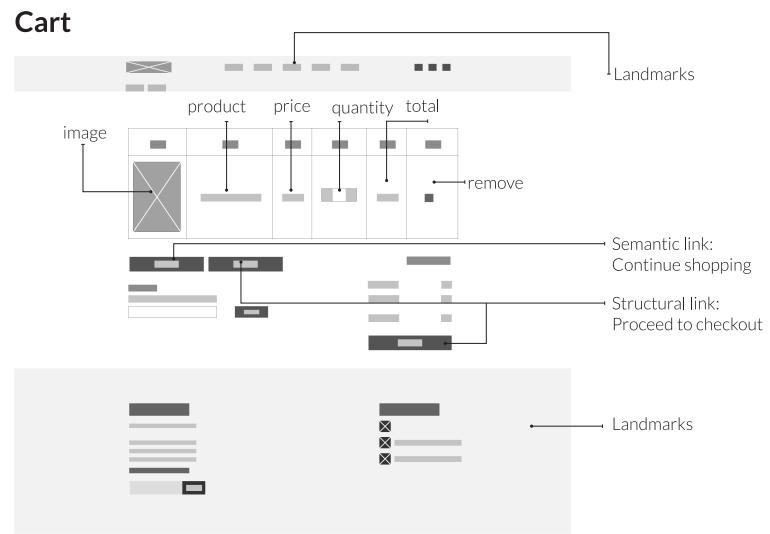


Figure 23: Cart pagewireframe

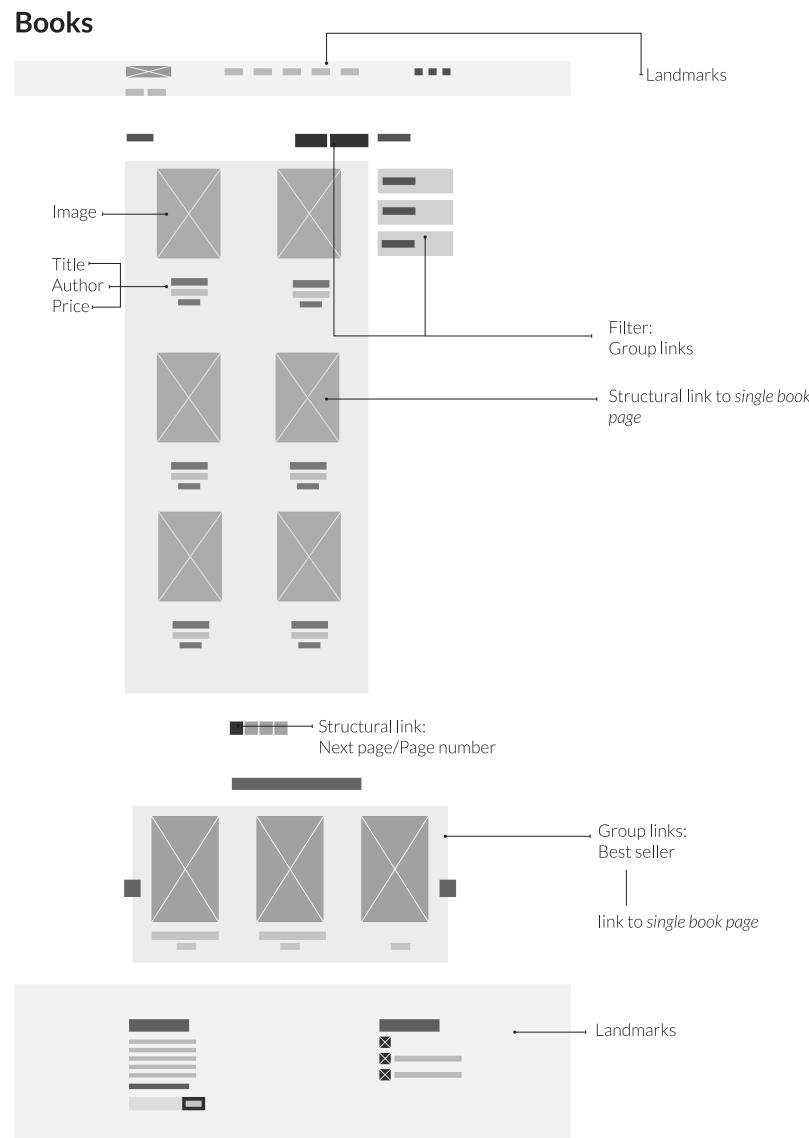


Figure 24: Books page wireframe

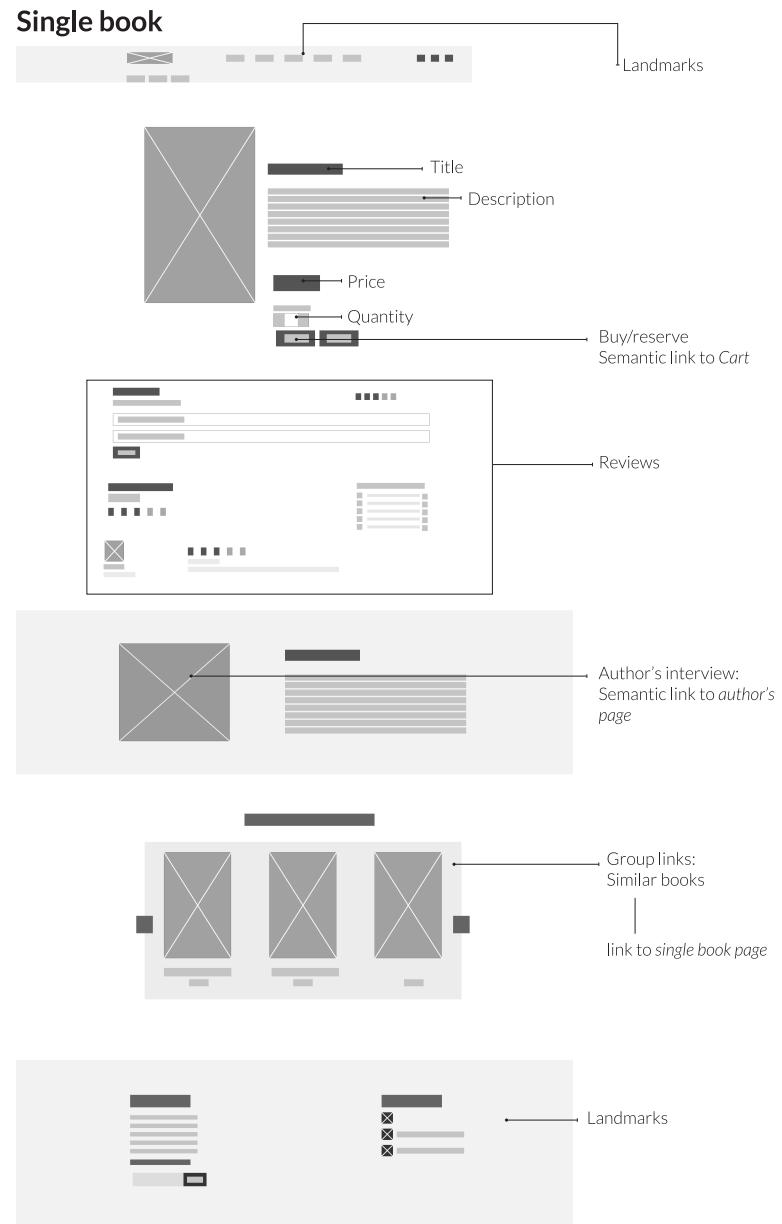


Figure 25: Single book page wireframe

## Authors

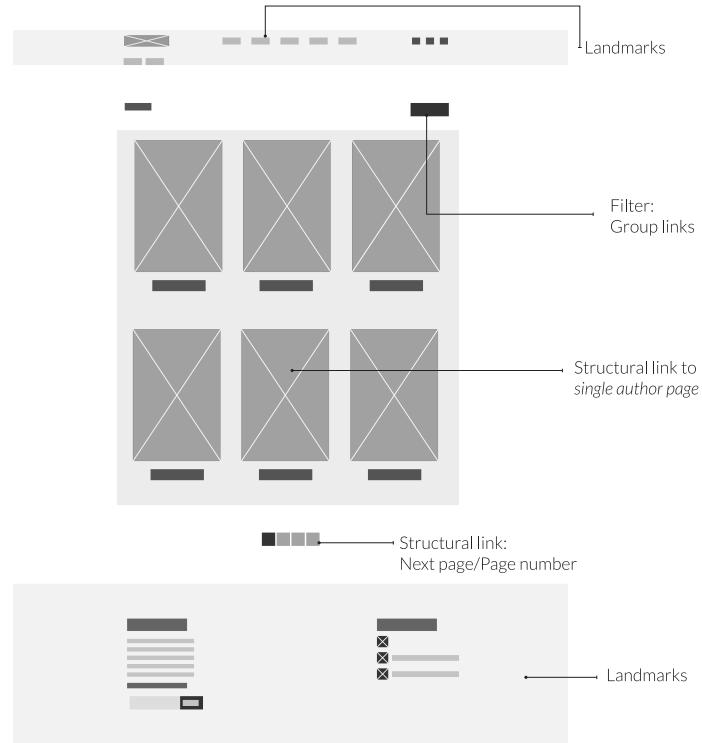


Figure 26: Authors page wireframe

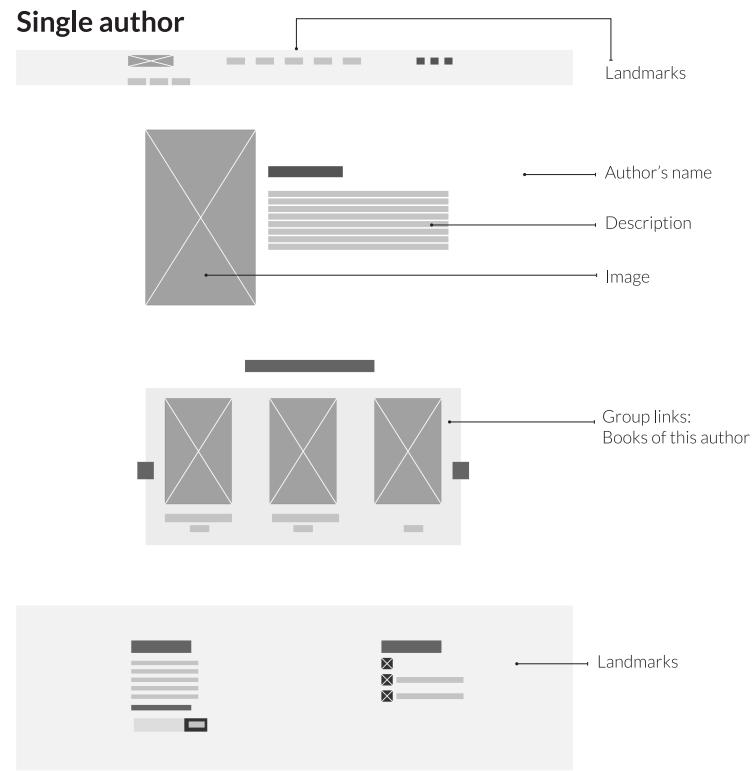


Figure 27: Single author page wireframe

## Events

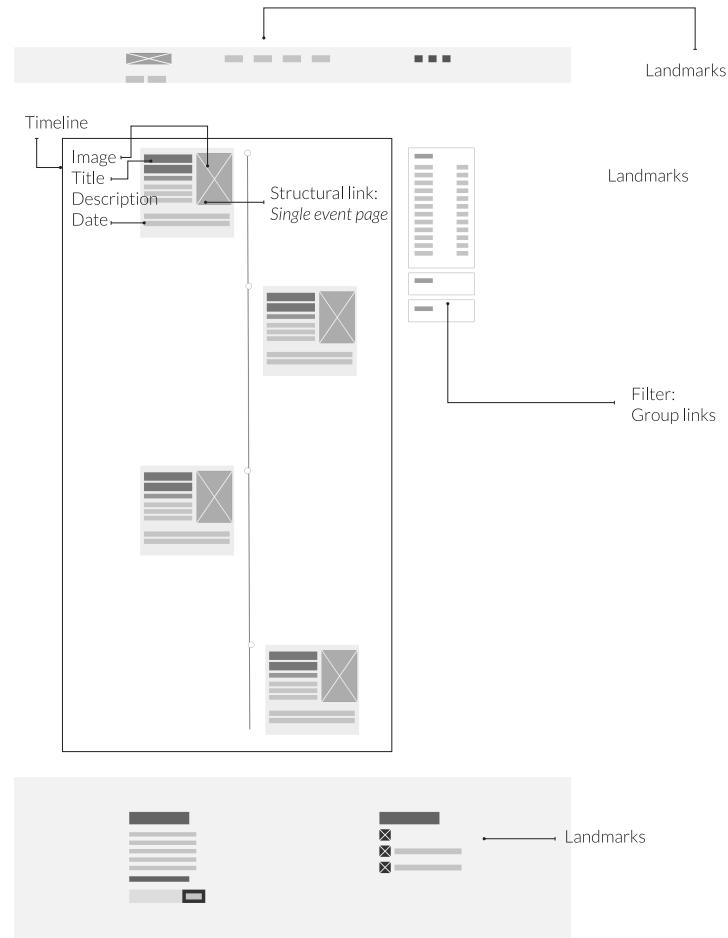


Figure 28: Events page wireframe

## Single event

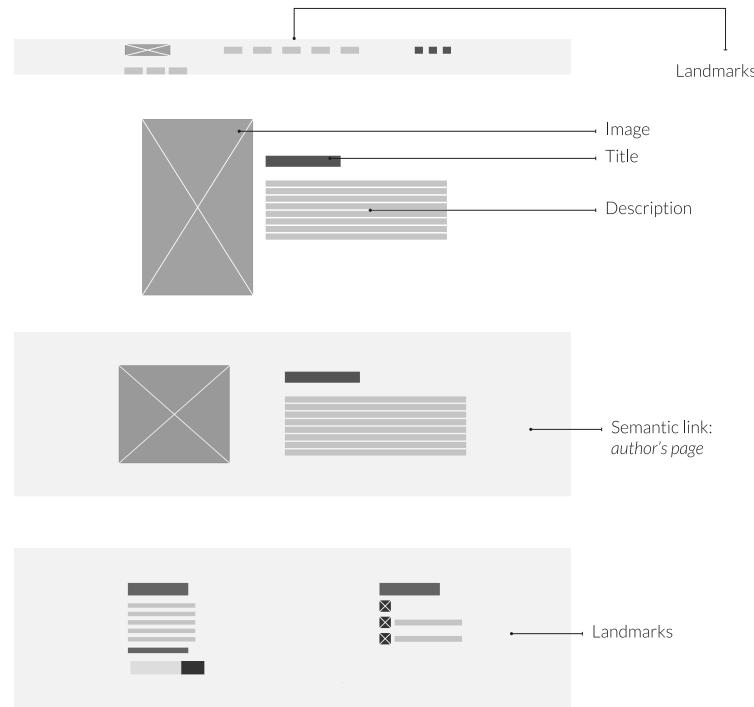


Figure 29: Single event page wireframe

## Contact

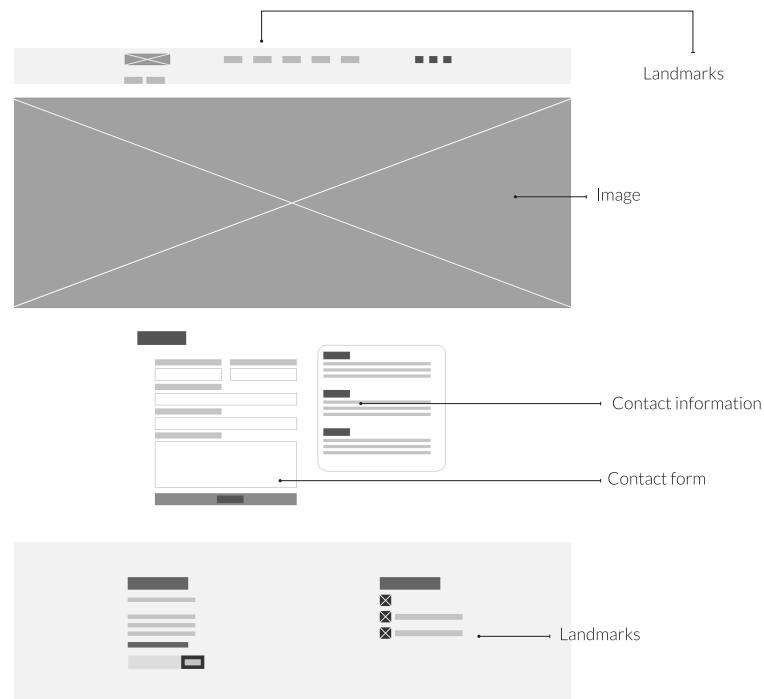


Figure 30: Contact us pagewireframe

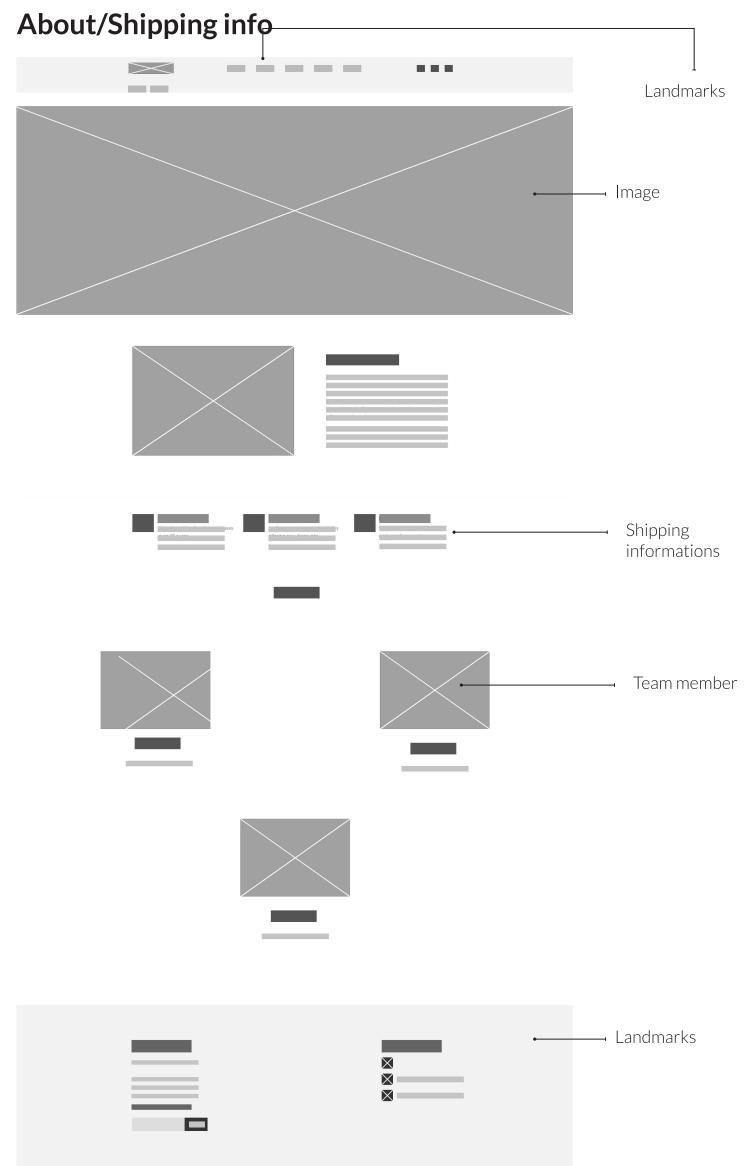


Figure 31: About/Shipping info page wireframe

#### **4.4 High fidelity wireframes**

These wireframes depict the real application, giving informations about its structure.

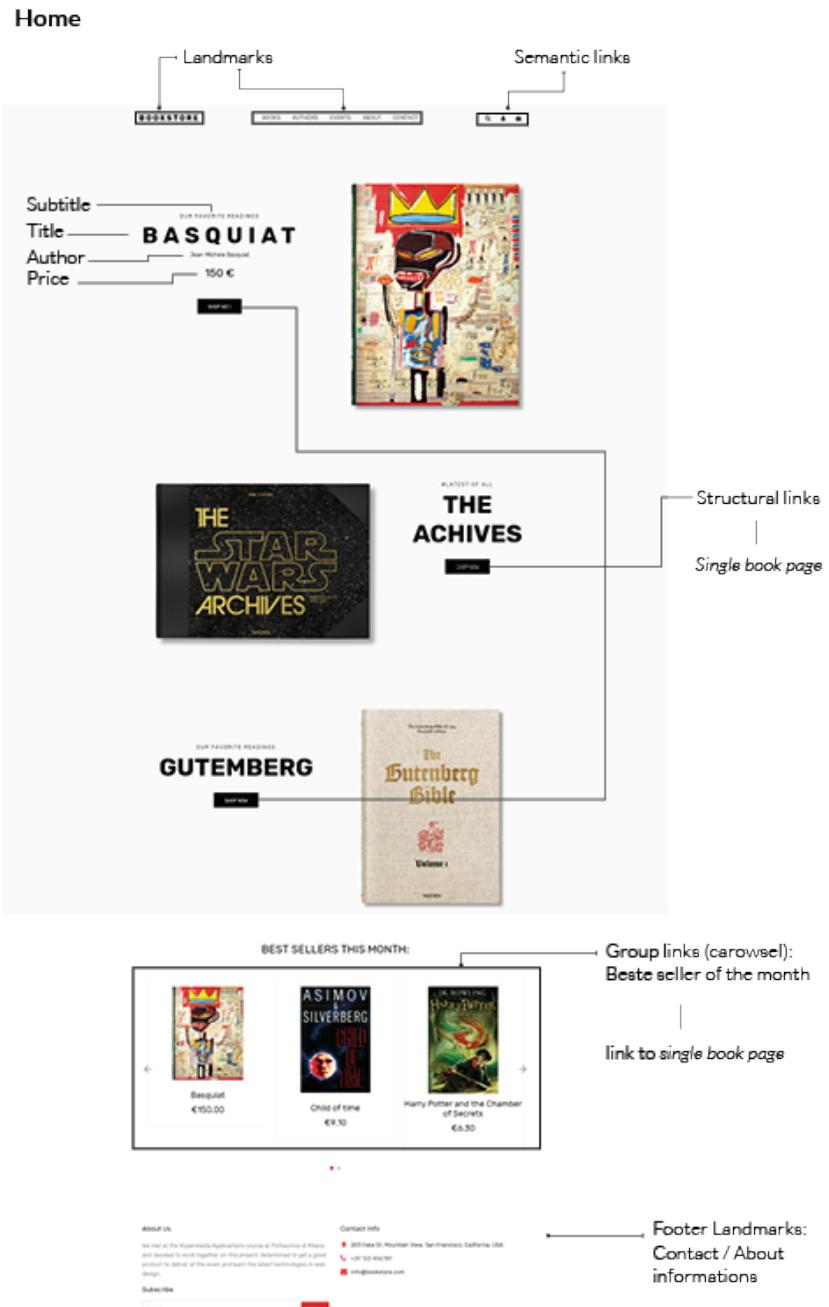


Figure 32: Home page wireframe  
38

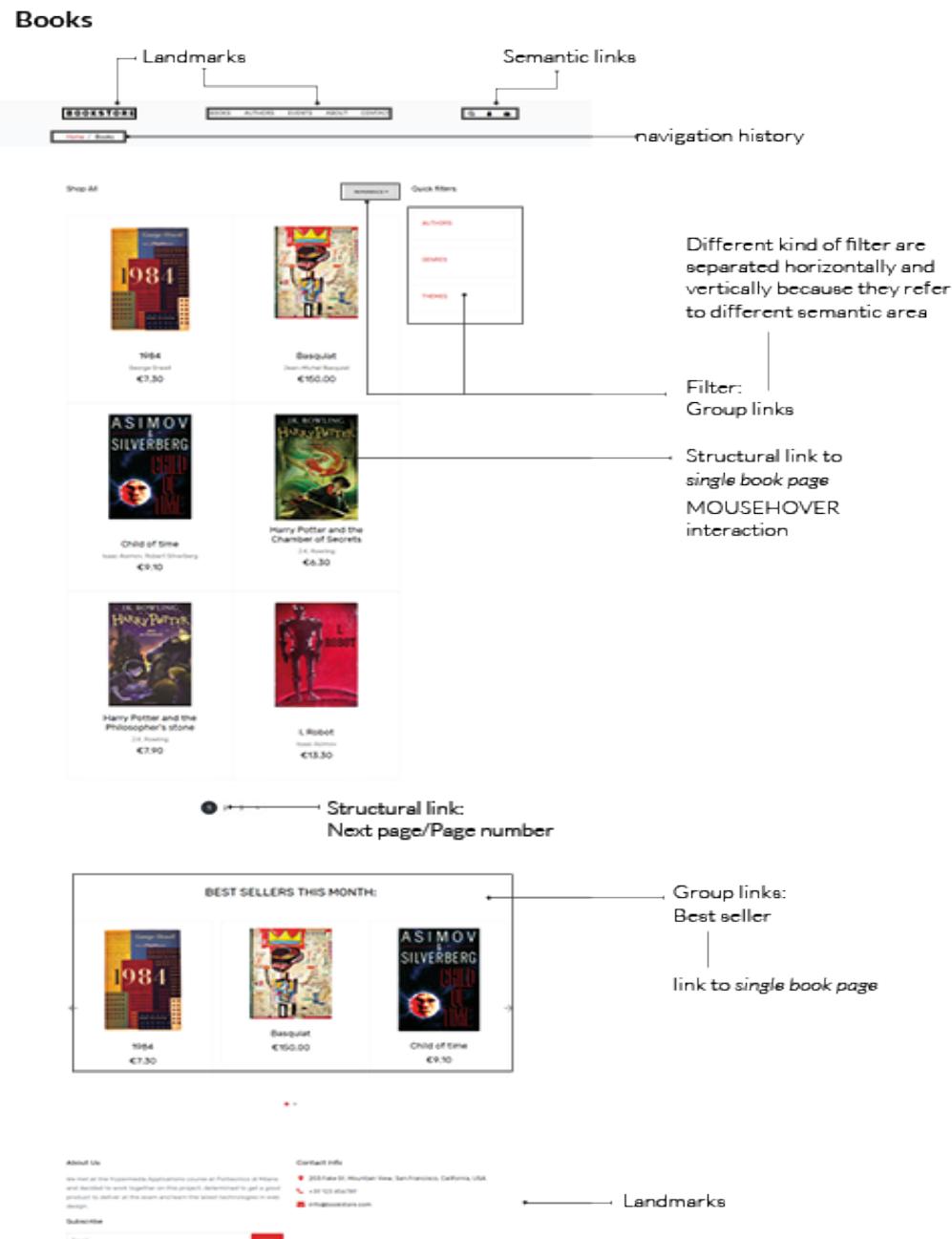


Figure 33: Books page wireframe  
39

### Single book page

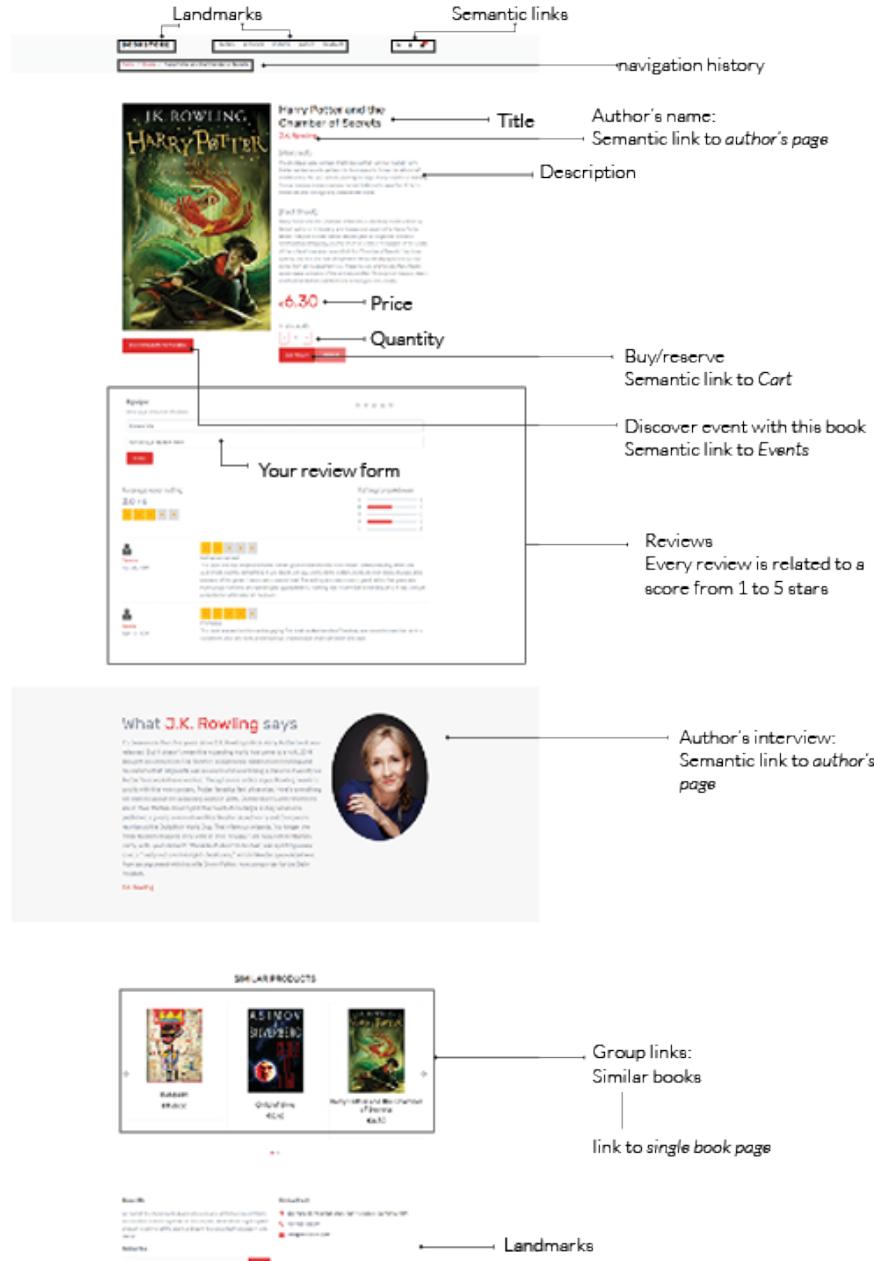


Figure 34: Single book page wireframe  
40

## Authors

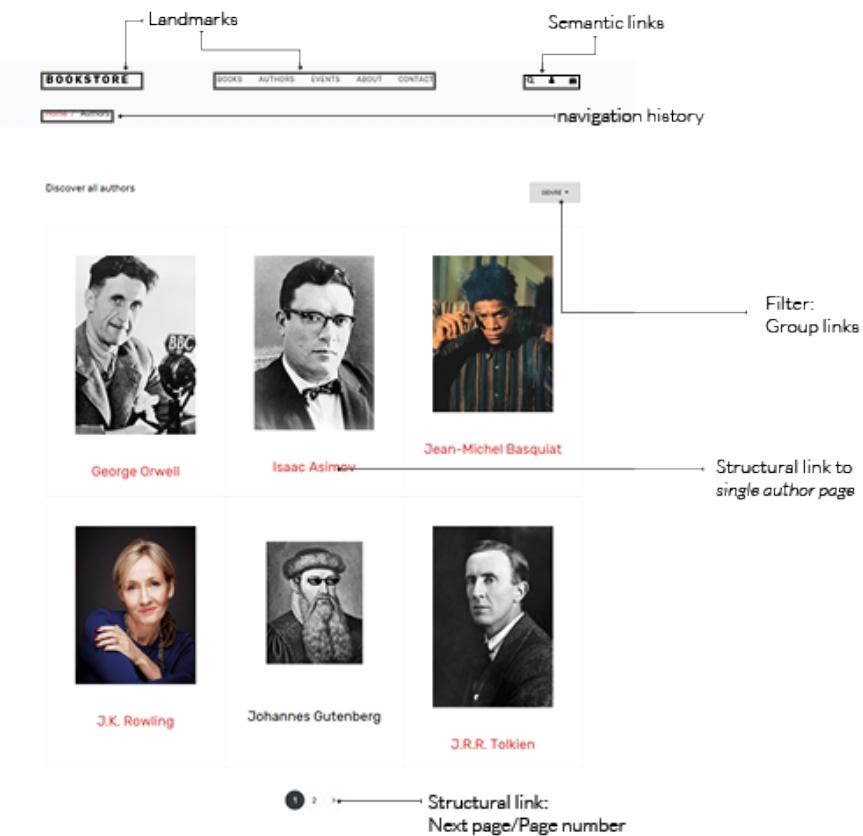


Figure 35: Authors event page wireframe  
41

## Single author page

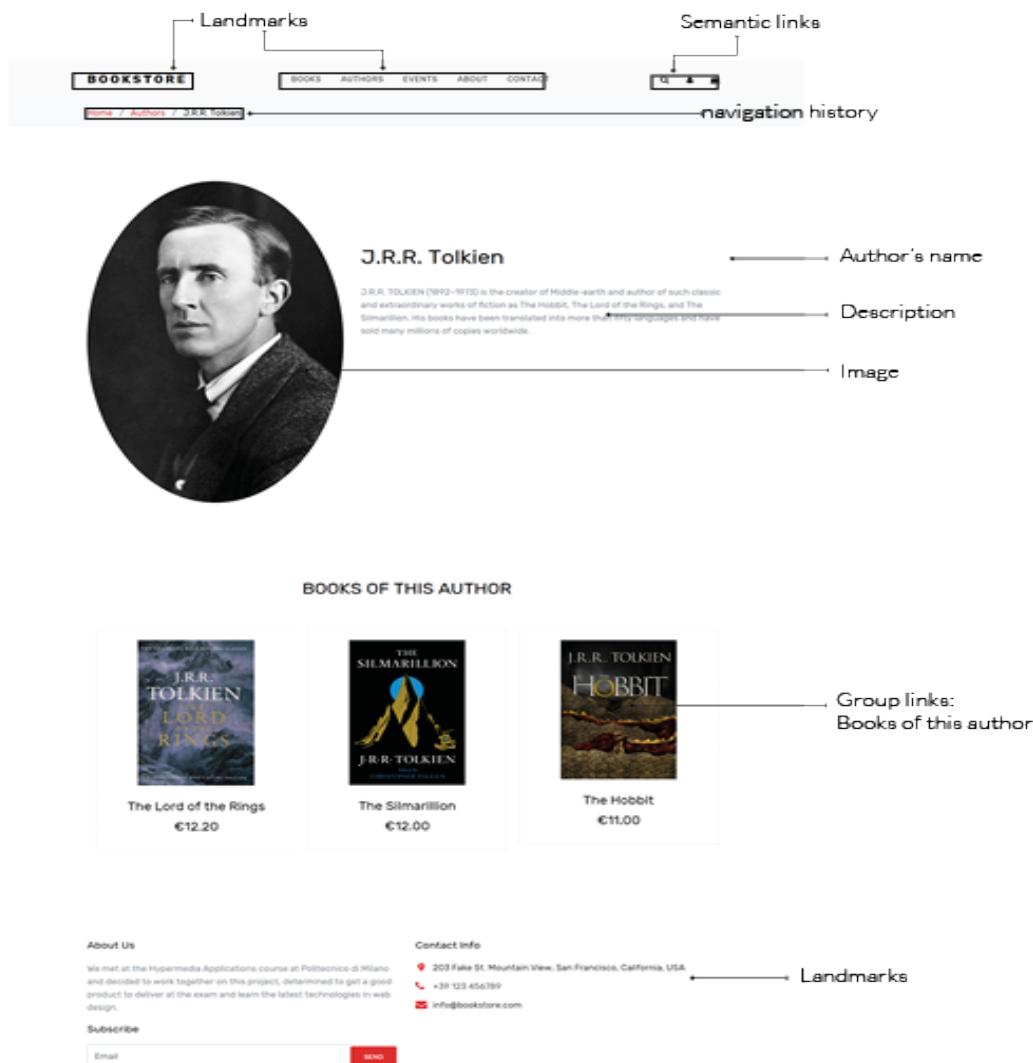


Figure 36: Single author page wireframe  
42

## Events

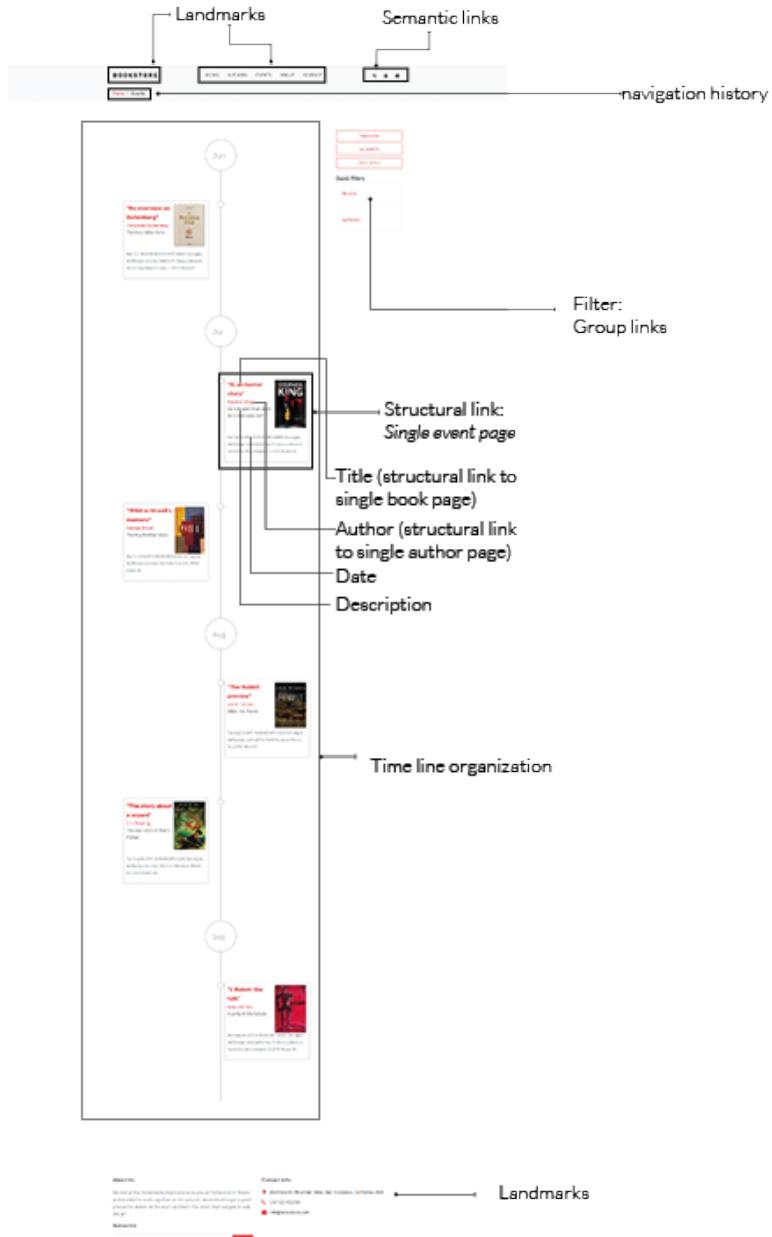


Figure 37: Events page wireframe  
43

## Single event page

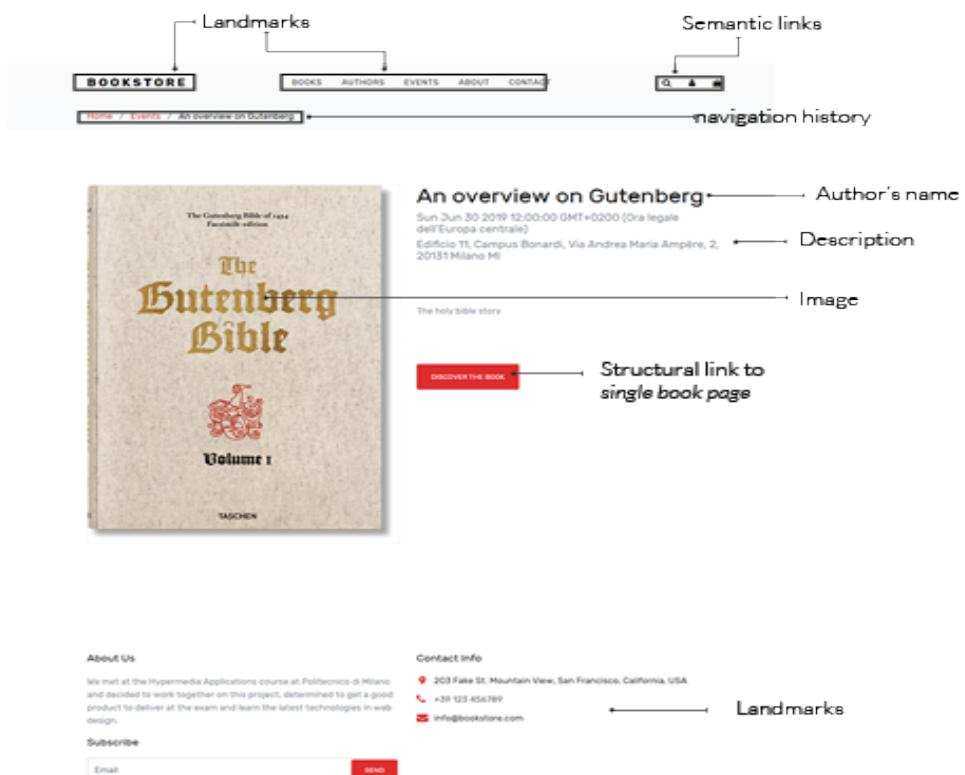


Figure 38: Single event page wireframe  
44

## About

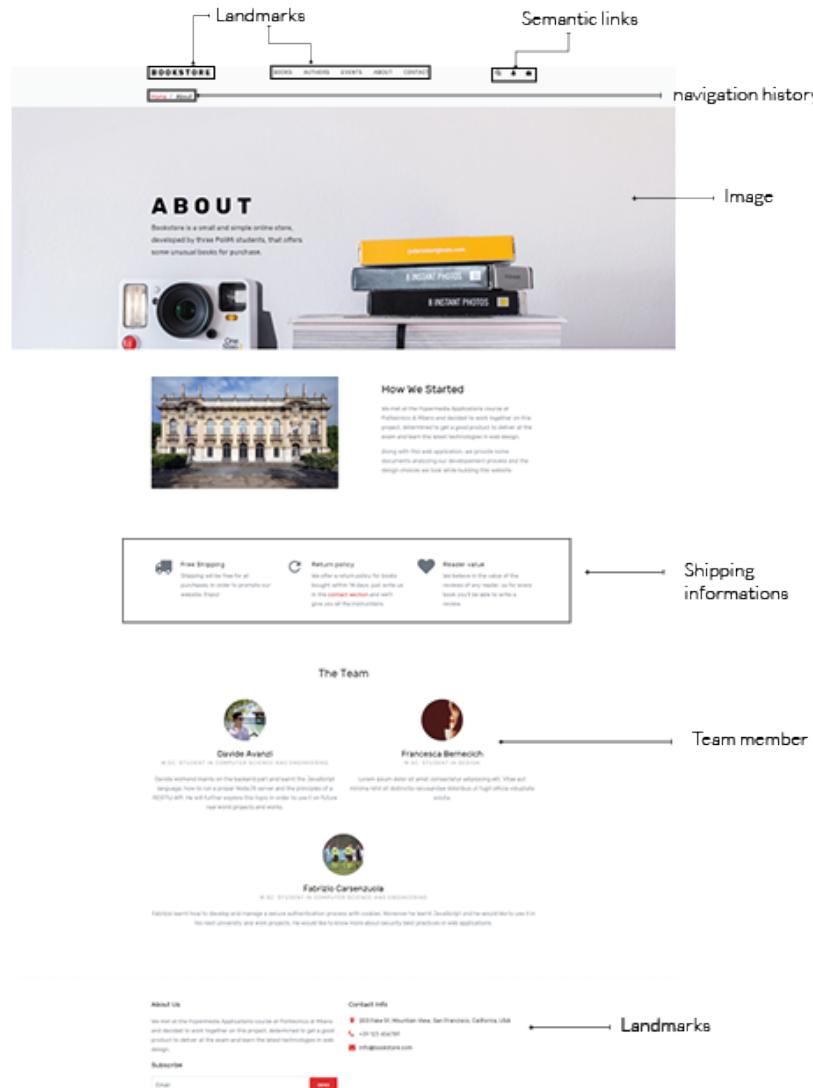


Figure 39: About page wireframe  
45

## Contact

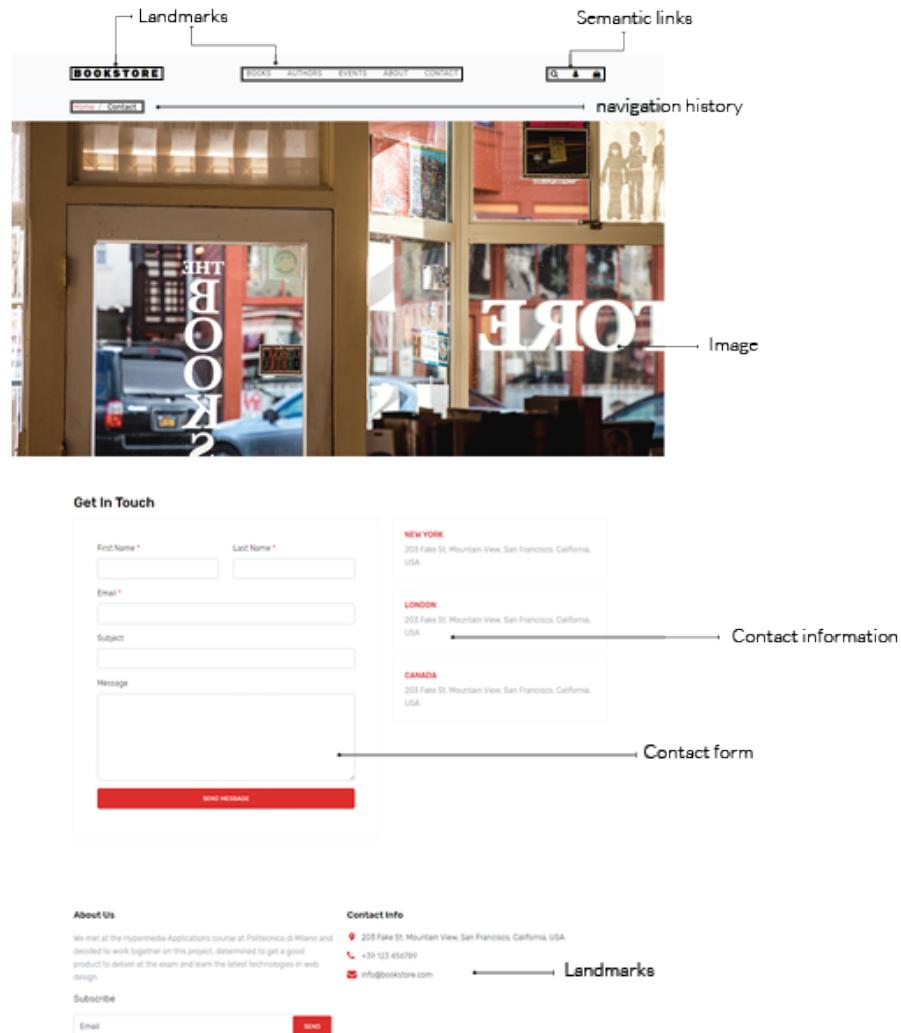


Figure 40: Contacts page wireframe  
46

## Login/Register

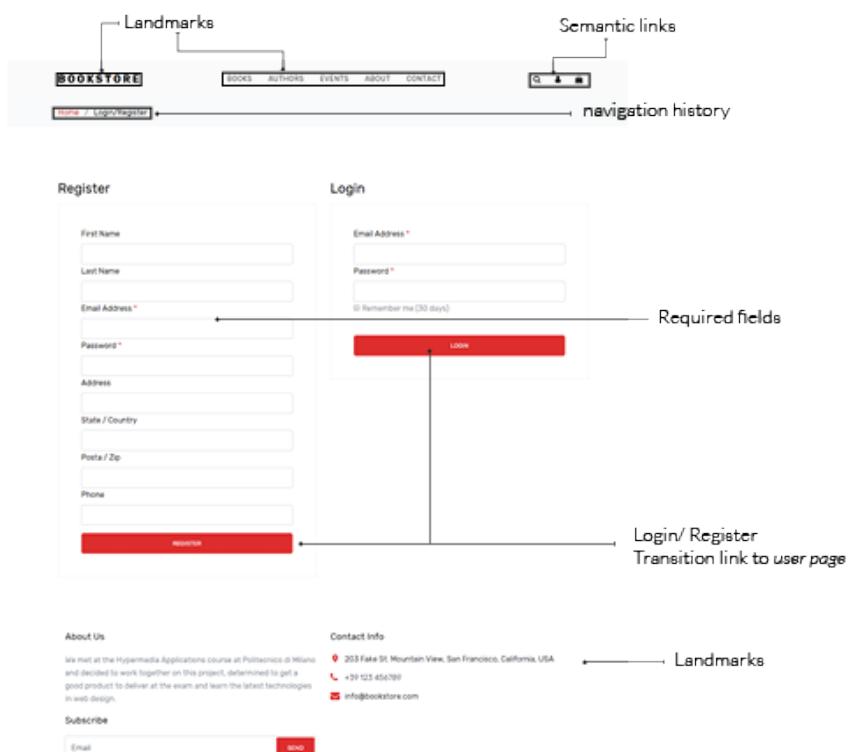


Figure 41: Single event page wireframe

## Cart

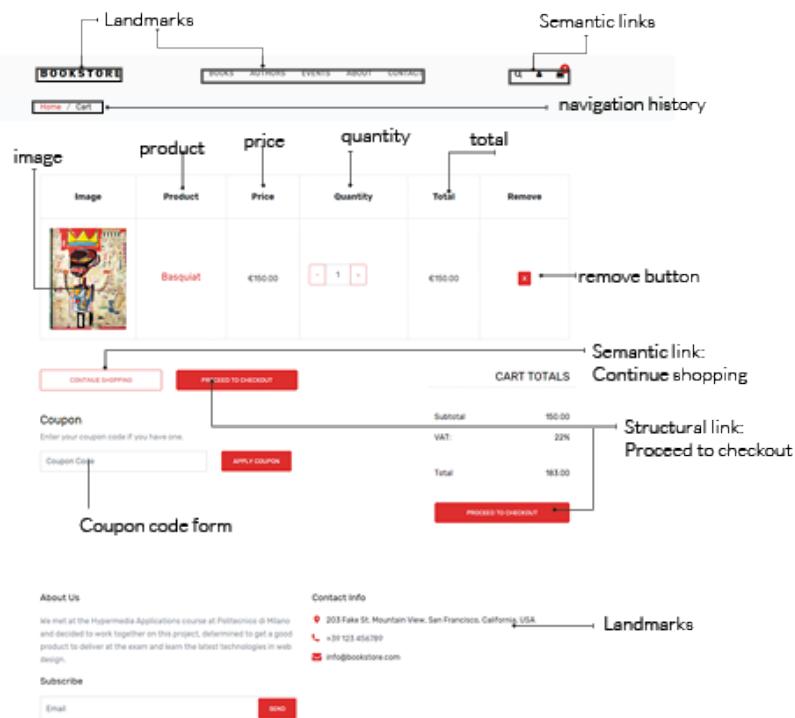


Figure 42: Cart page wireframe

## 5 DB Design

In this section we provided the diagrams we developed before building the backend application: this is the structure of our database and how the entities are related to each other in our design.

Some note on the below diagrams:

- We added some tables in blue color. These tables are there to make the system scalable and for a possible future implementation. In particular the ORDER table will contain all the past orders made by the users (each row represents one order with the date and the id of the user that made it). The GIFT CARD table should be implemented to manage the possibility to have gift card (thought as promo code). The RESERVATION table is thought to contain the orders of books that are not available (out of stock).
- The CART table has only one column (the foreign key id\_user). At the moment it could be removed, but in the future, when the GIFT CARD table will be added, a specific gift card will be linked to a specific cart. So we decided to keep it, to make the system scalable and easier to add further feature to it in future.

## 5.1 E-R diagram

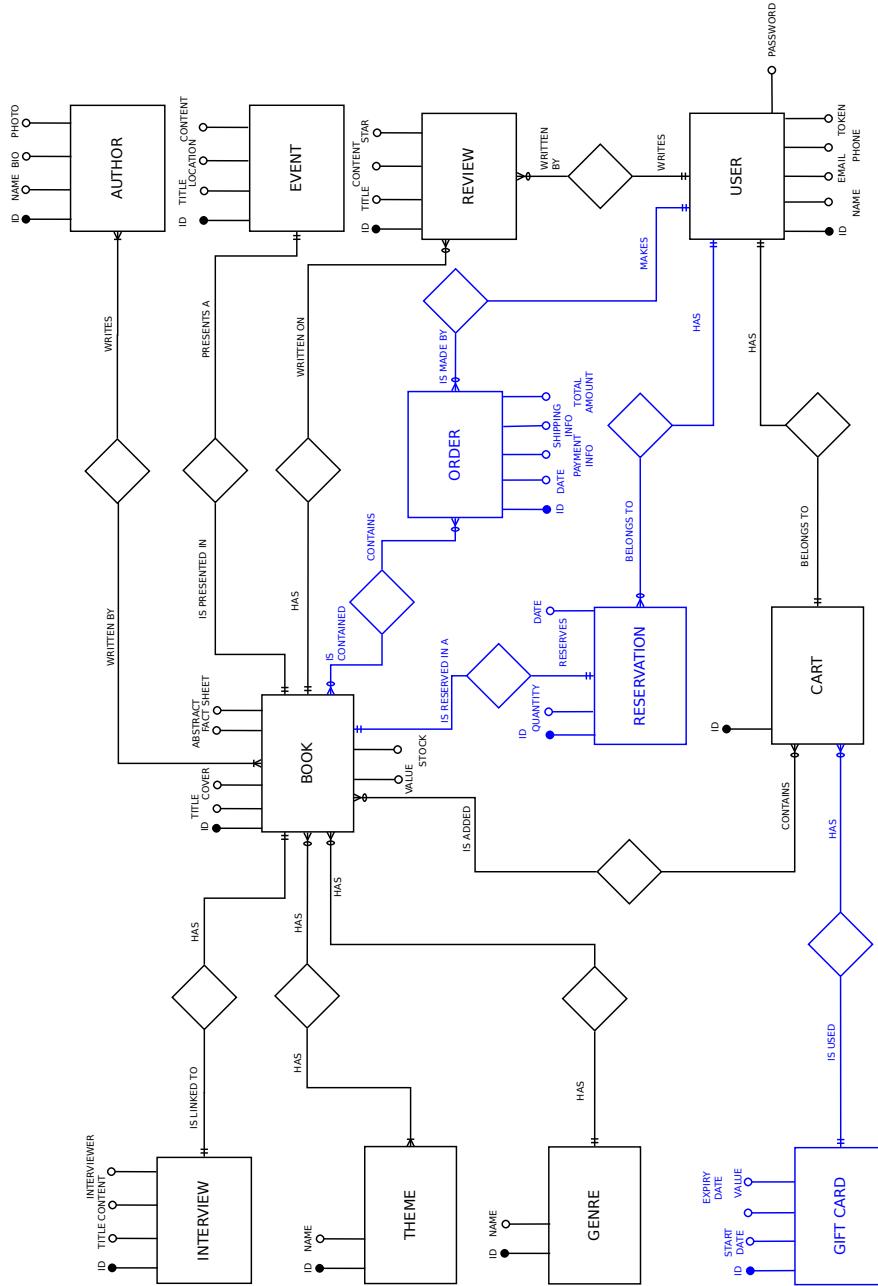


Figure 43: E-R Diagram

## 5.2 Relational Tables

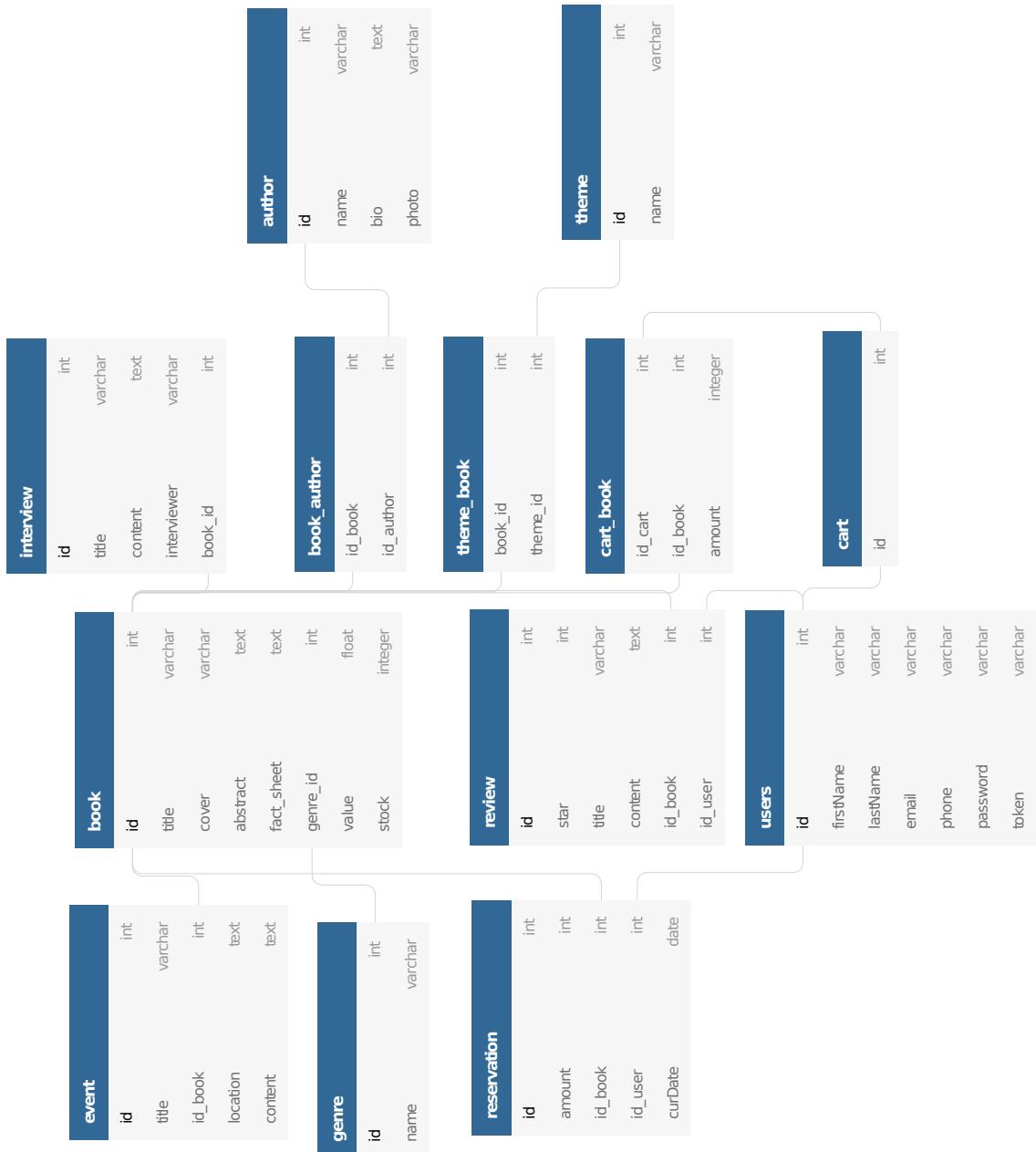


Figure 44: Relational Table Diagram