

Hypermedia Applications (Web and Multimedia) Design document

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1 Abstract

This document is about the design part of the Hypermedia Applications project. The goal was to create a website for an on-line BOOK STORE and its multimedia contents are about paper-based books and their authors. The website also includes events where books are presented for promotional purposes by their authors. In addition it is possible for users to register and keep a cart with the saved books.

The name of the book store website is *BUUK* and the website is selling books of different themes and literary genres. Users can see similar books and details of books, authors and their events. Moreover it shows the most popular books of the month and the books we chose to be our favourites.

The graphical IDM representations and the *design in the small* section are created and annotated with screenshots of the interactive prototype developed with Sketch App on Mac.

The text and images used in the website are taken from Wikipedia or from personal pages of authors and for events they are both self-written and both taken from promotional materials.

The website is simple and user-friendly so that it is intuitive to use. Moreover it is responsive to every kind of device such as smartphone, tablet, pc and smart-TVs.

To visit the page it is possible to go on this website:

<https://hypermedia-app.herokuapp.com>

For trying extra functionalities like adding a book to the personal cart it is possible to create an account in the *Register Page* or by using an account we provide using these credentials:

- email: `teacher@hypermedia.com`
- password: `teacher`

2 Design in the Large: Graphic Representations

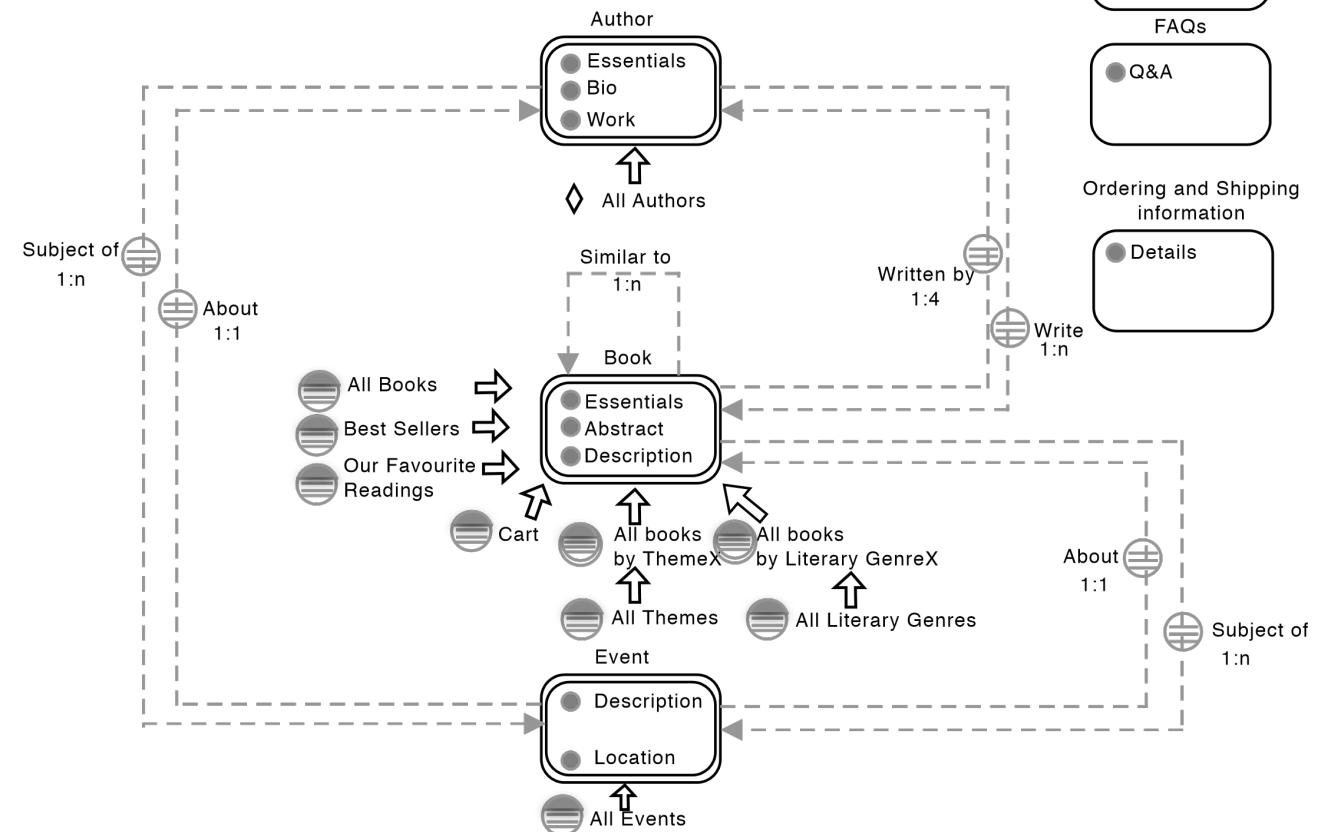
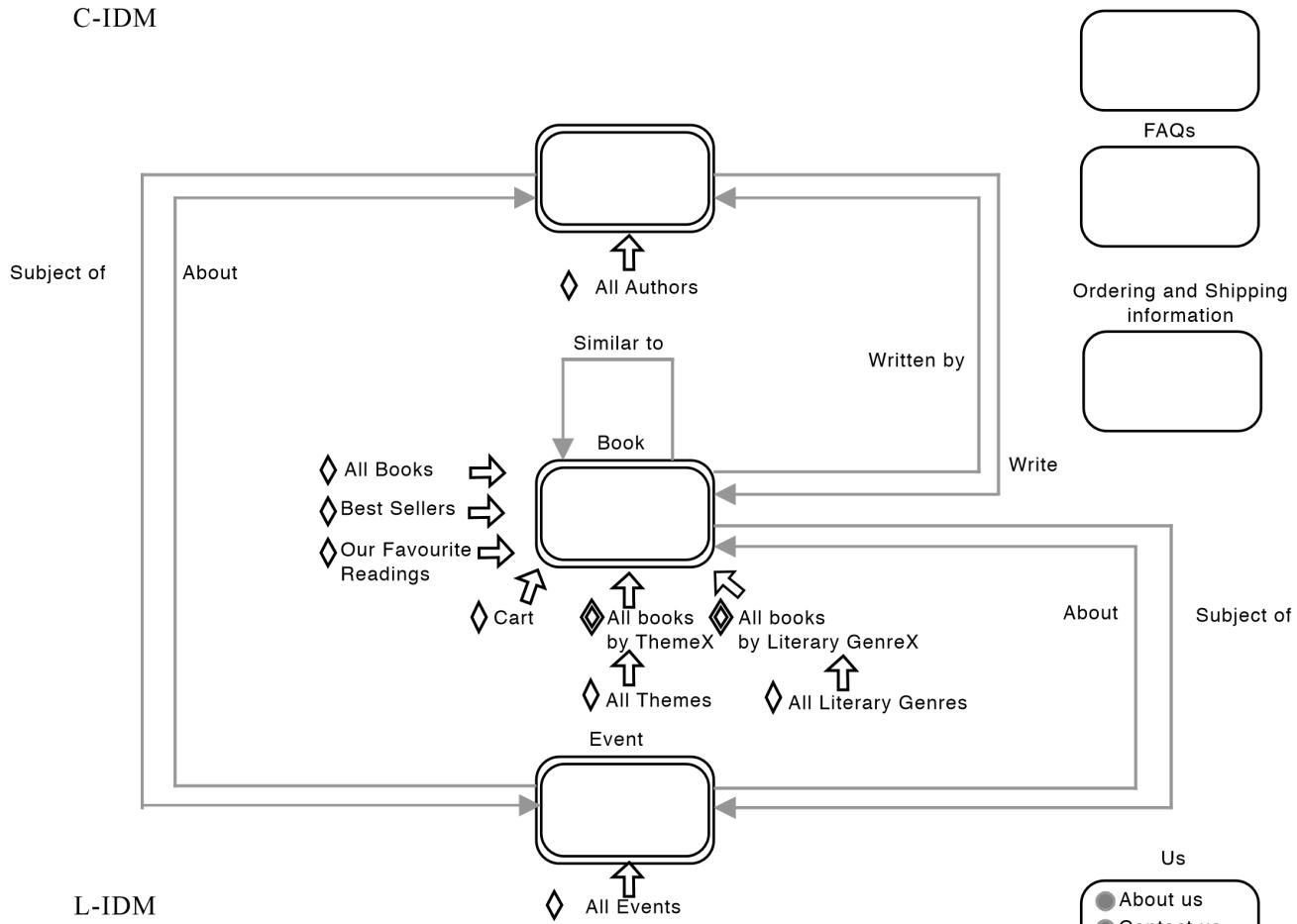
In the IDM diagrams we decided to merge some of the single topics, in order to decrease the application's complexity, avoid redundancy and make the navigation easier for the users while maintaining consistency about the context of merged topics. These are:

- **About us + Contact us + Find us:** all three topics give information about us, the introduction of website and where to access to us.
- **Ordering information + Shipping information:** both these topics give general information about how to place orders, delivery process, etc. Thus it is meaningful to merge them in order to provide a single page for users, who want to confirm the shipping of orders together after or before the book reservation.

The relevant relations among the books have been designed in order to let one book have more than one similar book. The relevant relations of the book and author allow one book to have more than one authors, with a minimum cardinality of 1, while the maximum is 4, also one author can have more than one book. The relevant relations of book and event have been designed in order to let one event only referred to one book, so that users have a clear mind of what the event is about.

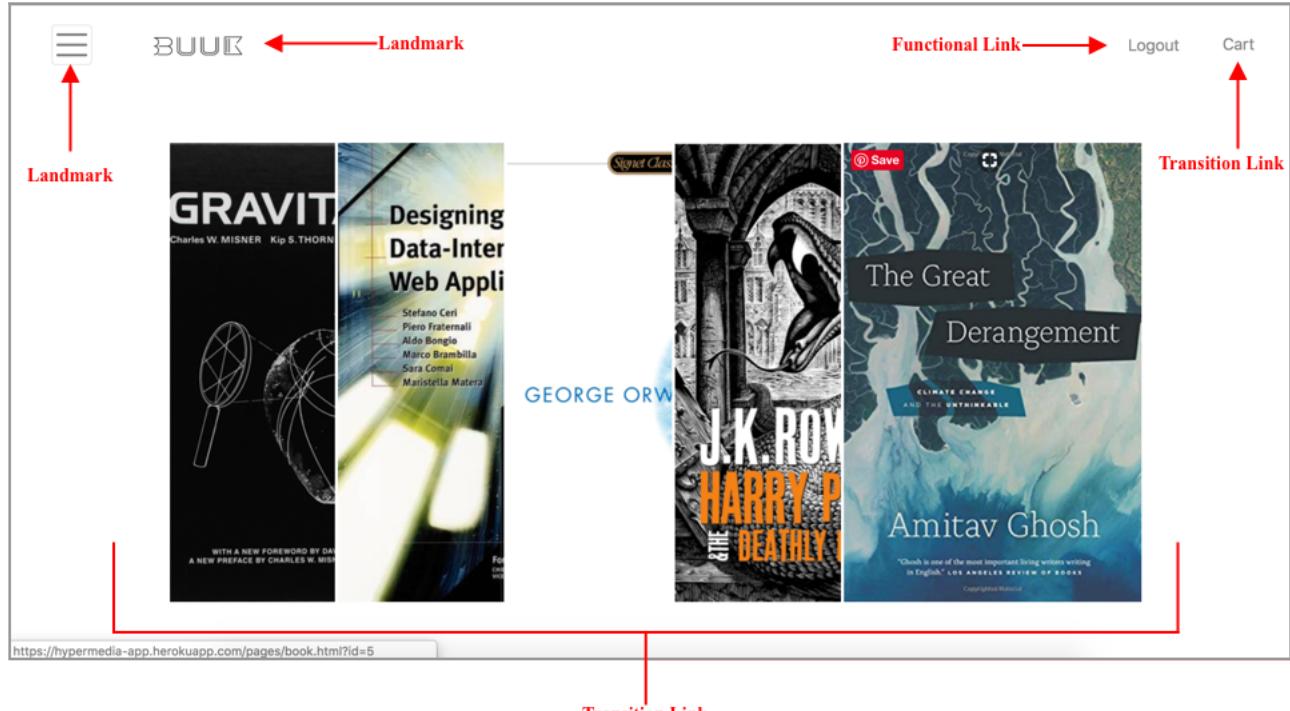
The books are provided with different groups of topics, including best sellers this month, our favourite readings, all events this month, all themes, all literary genres and all authors. They are shown inside the menu and displayed in each of the pages so that it is convenient for users to navigate.

C-IDM



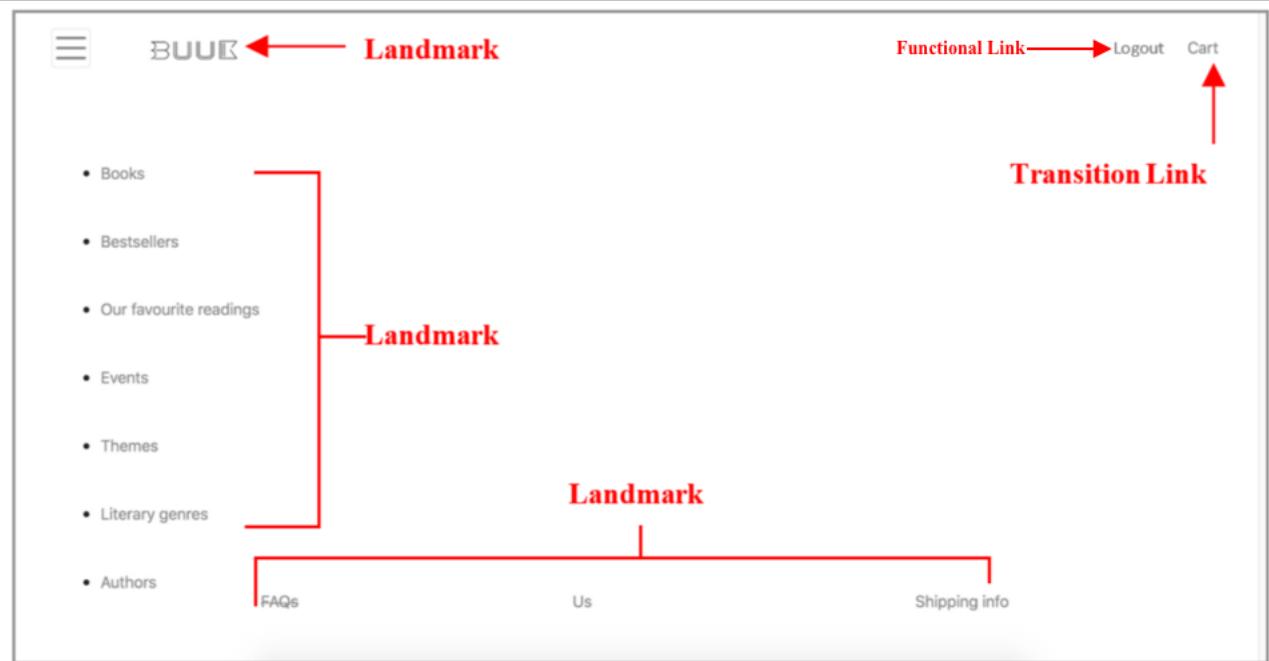
3 Design in the small

3.1 Home Page



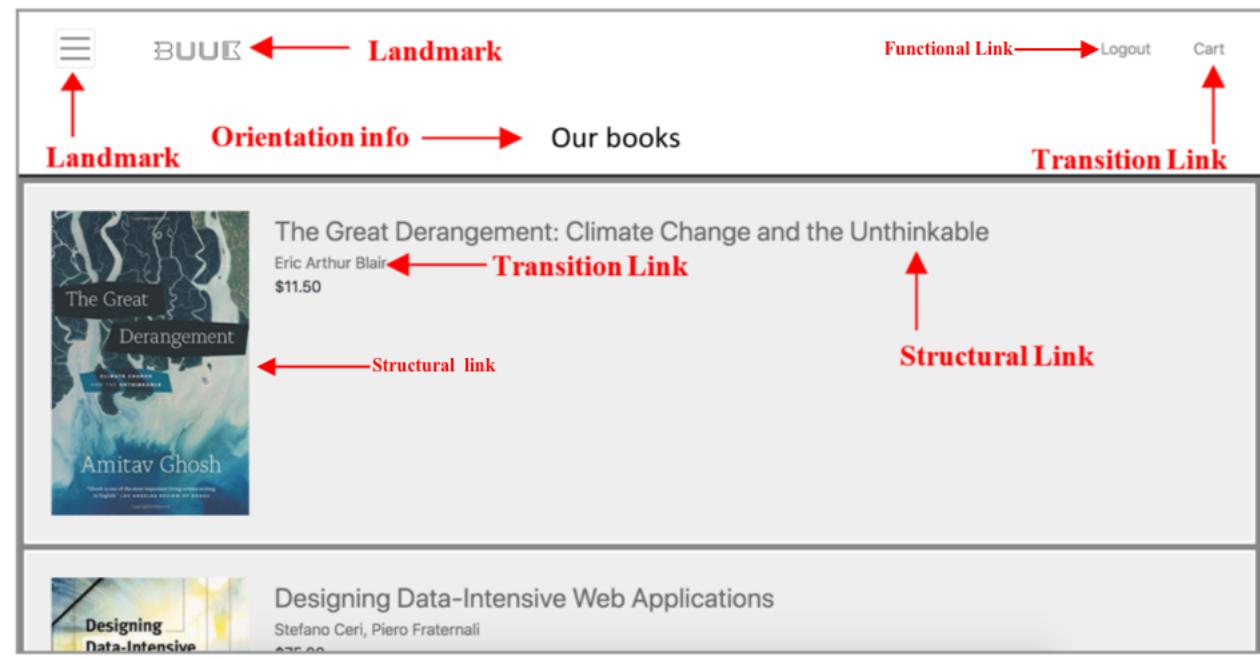
The *Home Page* features a minimal layout, so that at the first sight it is possible to understand that the main content of the website are books. That is why there are shown five out of all the book covers in the store, with respectively the transition links for each single book's information page. At the top there is a navigation bar that is preserved through the whole website, composed of a menu button (shown in *Menu Page* paragraph), the website's logo that will always bring to this page and two links that allow to logout or go to the personal cart (shown in *Book Reservation Page* paragraph). When the user is not logged in the website there will be only one transitional link that allows the user to login through the *Login Page* (explained in the *Login Page* paragraph). From now on we will consider the user logged.

3.2 Menu Page



The *Menu Page* includes the landmarks of groups and multiple topics on the left and single topics on the bottom. It is possible to open and close this menu on every page by clicking on the top left menu button.

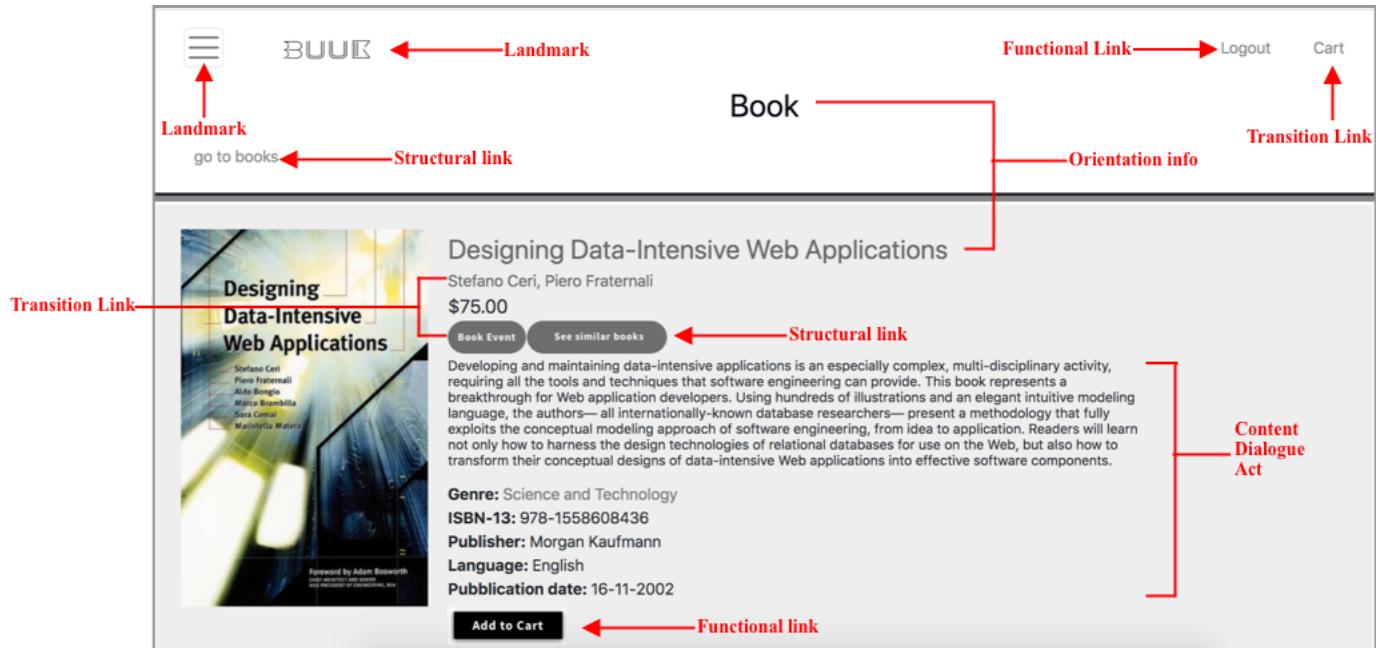
3.3 All Books Page



This page allows to see all the books that are available in the store. Every book section contains a picture and the title of the book which contain a structural link that brings to the single book page (explained in *Book Information Page* paragraph). Under the title there is also a transition link that brings to the single author page (see *Author Information Page* paragraph), to have a direct transition to it.

The *Our favourite readings* and *Bestsellers* pages are similar to this page, but they differ in the content (showing different kind of books) and in the orientation info placed on top, showing respectively *Our favourite readings* and *Bestsellers*.

3.4 Book Information Page

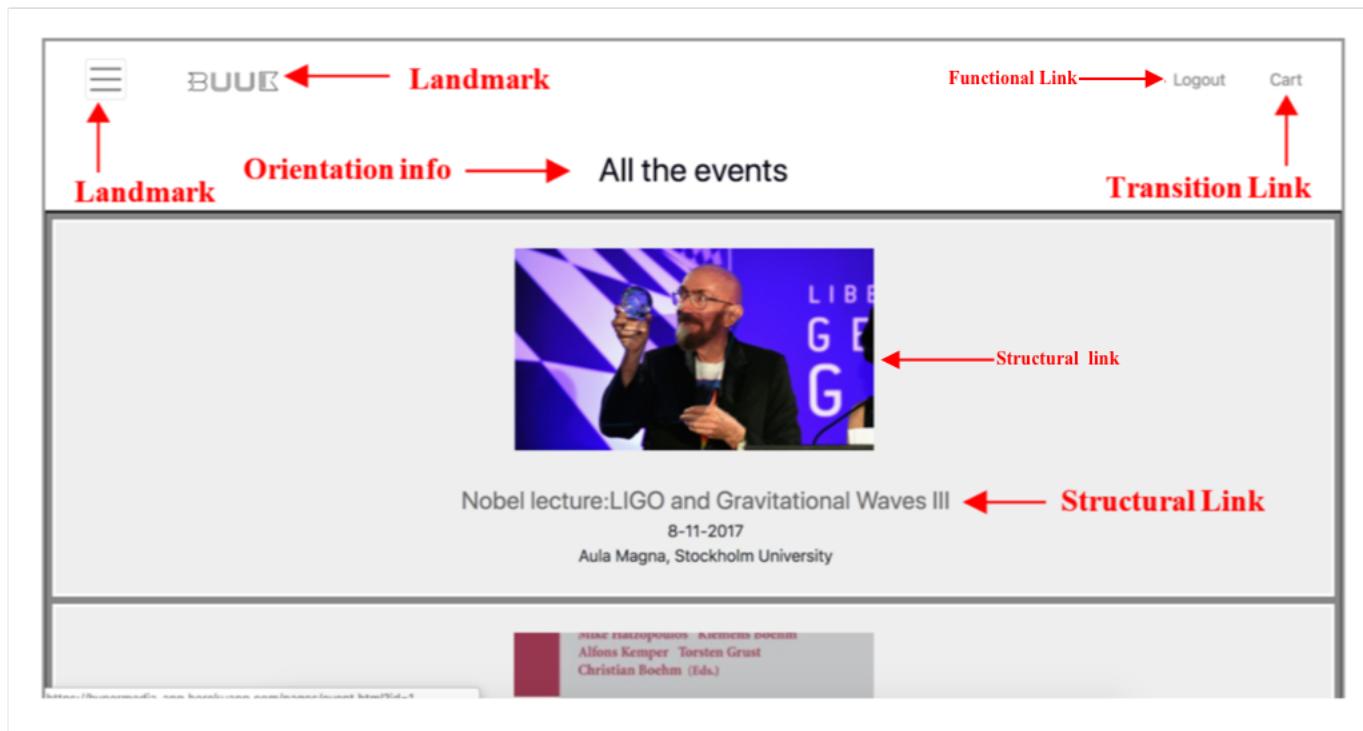


The *Single Book Information Page* includes orientation info with the title of the book and the content information with the authors. When an event for the book is available then there is also a clickable button that brings to that event(*Event Information Page* paragraph). In addition there is also a button that brings to a page with books that are similar to the current one (the structure of that page is almost the same as the *All Books Page* explained in detail in the *All Books Page* paragraph). We decided to consider the similarity based on the genre of the book.

Then there are all the useful information about the book like a little description, the genre of the book that brings to other books of that genre and other details regarding the book.

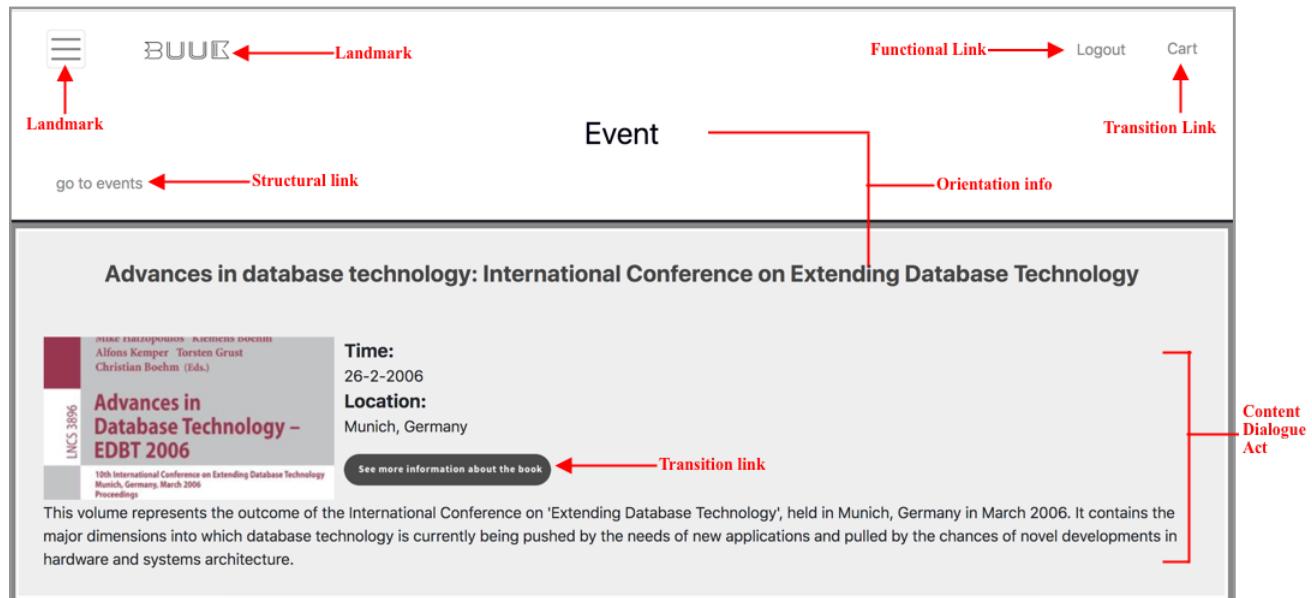
When the user is logged, an *Add to Cart* button appears, that allows to put this book to the users cart and in future he can buy it.

3.5 All Events Page



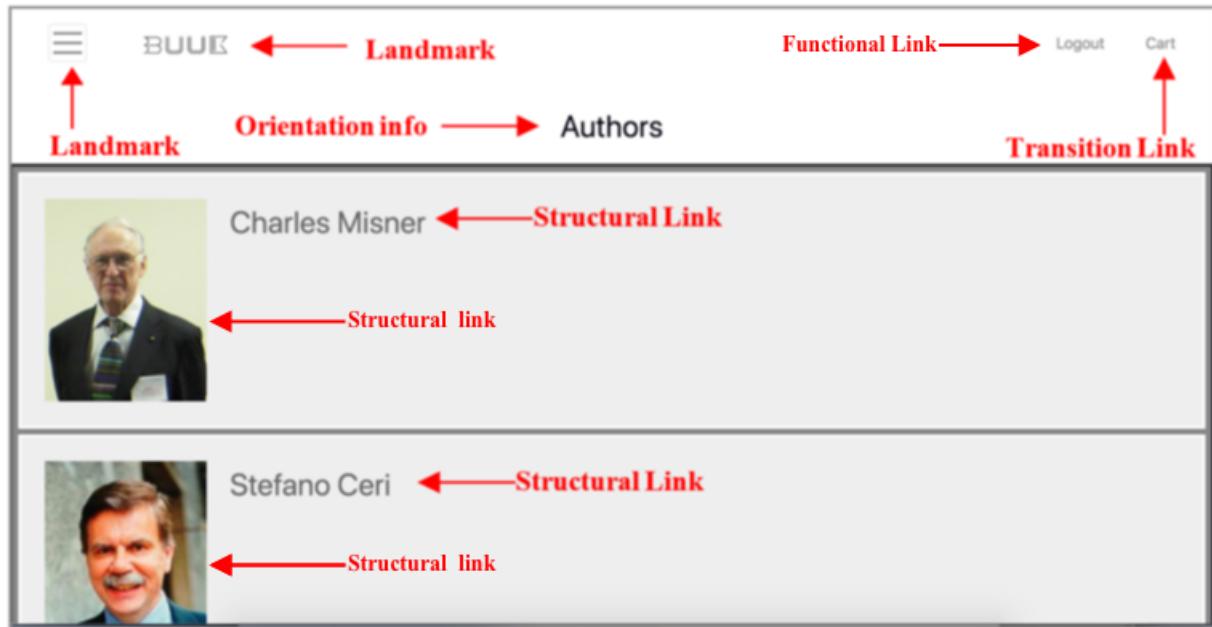
The *All Events Page* can be scrolled down to see all the events, with the title of each event clickable to see the detailed information page of that event.

3.6 Event Information Page



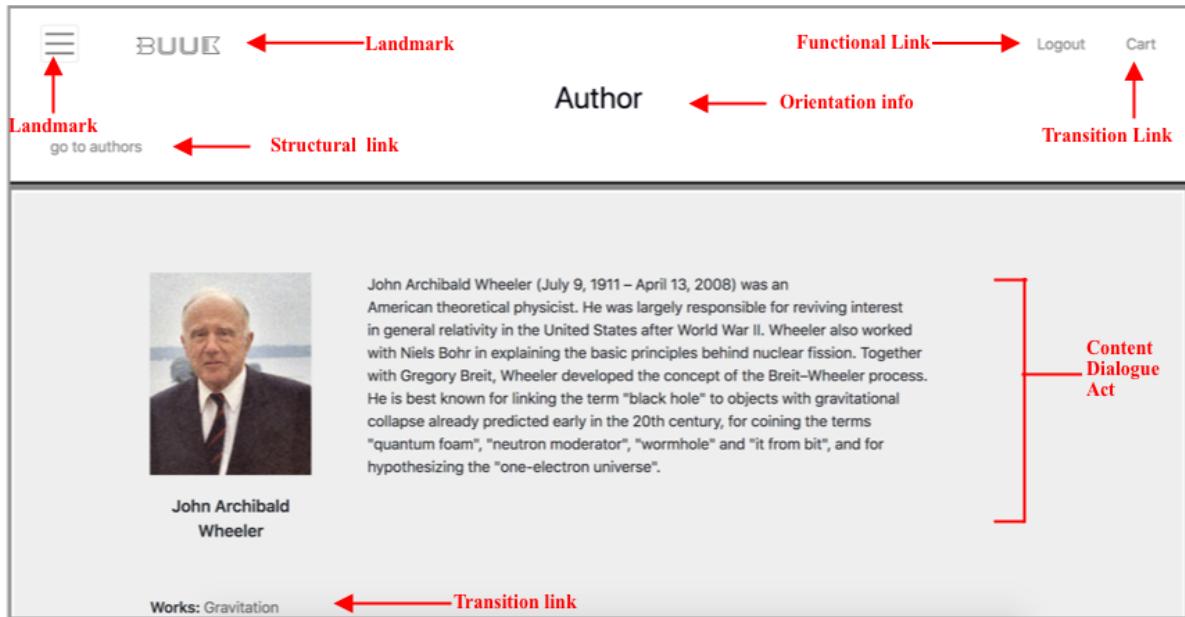
The *Event Information Page* includes the orientation info, which is the title of the event to instruct users to read more about in the underneath description. The transition link button allows to see the book that the event is sponsoring, bringing to the *Book Information Page* (*Book Information Page*).

3.7 All Authors Page



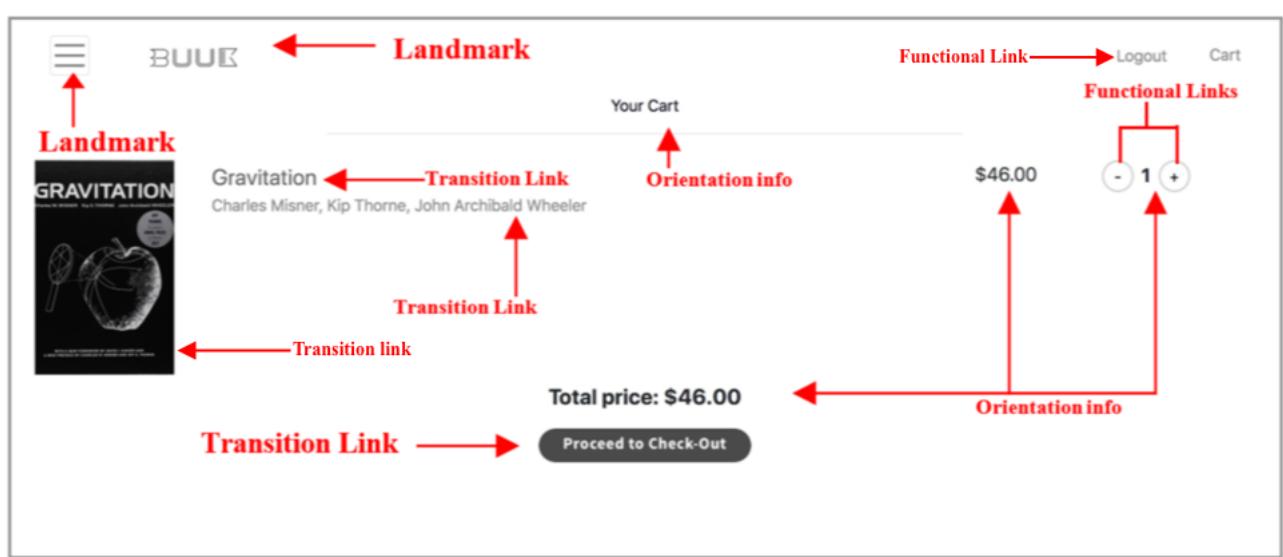
The *All Authors Page* can be scrolled down to see all the authors of all the books they wrote with the structural links to see the details of the authors' information, bringing to the detailed page (*Author Information Page* paragraph).

3.8 Author Information Page



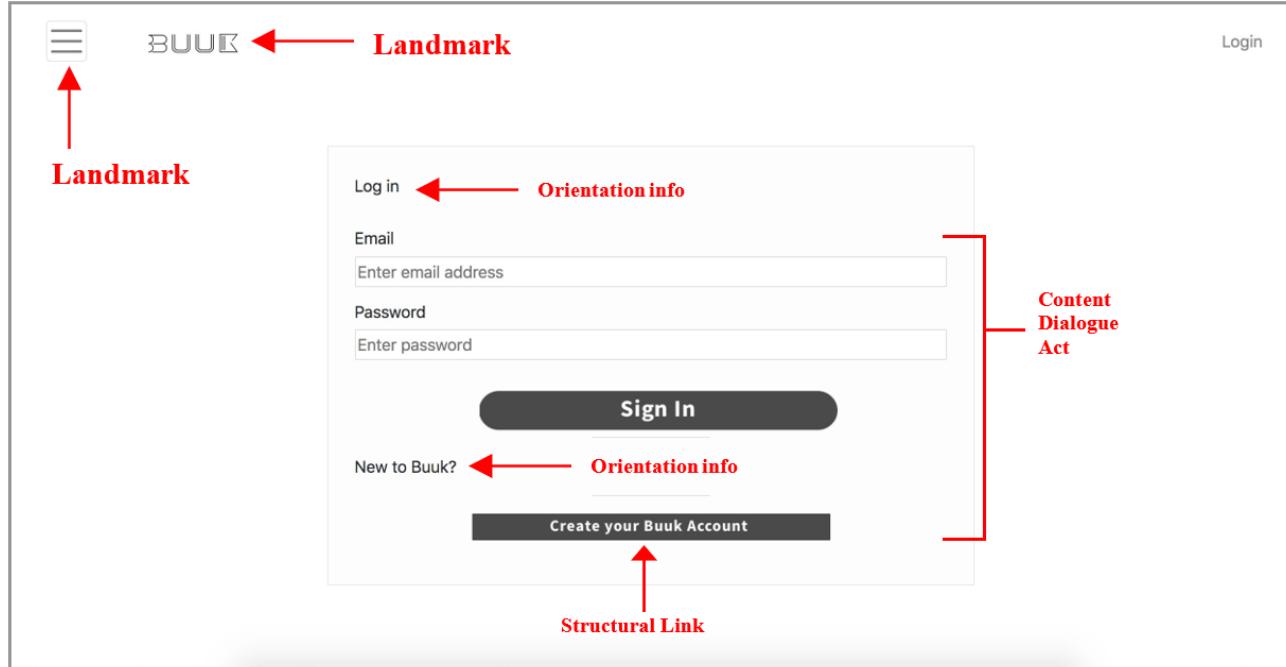
The *Author Information Page* includes the details of the author in the content. In addition there is also a transition link to all the books the author has written.

3.9 Book Reservation Page



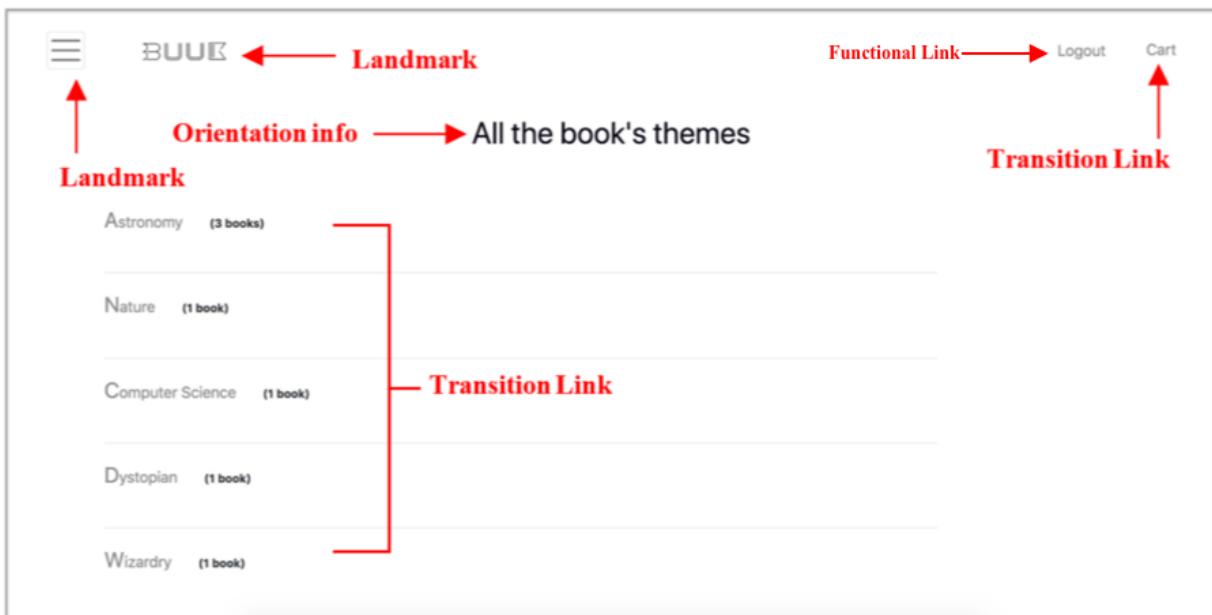
The *Book Reservation Page* appears when the user is logged and when he clicks on the cart button, top right of the page. If the user has added some books, they will be visible in this page. It is possible to add or remove books with the plus and minus buttons. The transitional links bring to the single book page or to the single author page. The *Proceed to Check-Out* button is a transitional link that empties the cart and brings to the home page.

3.10 Login Page



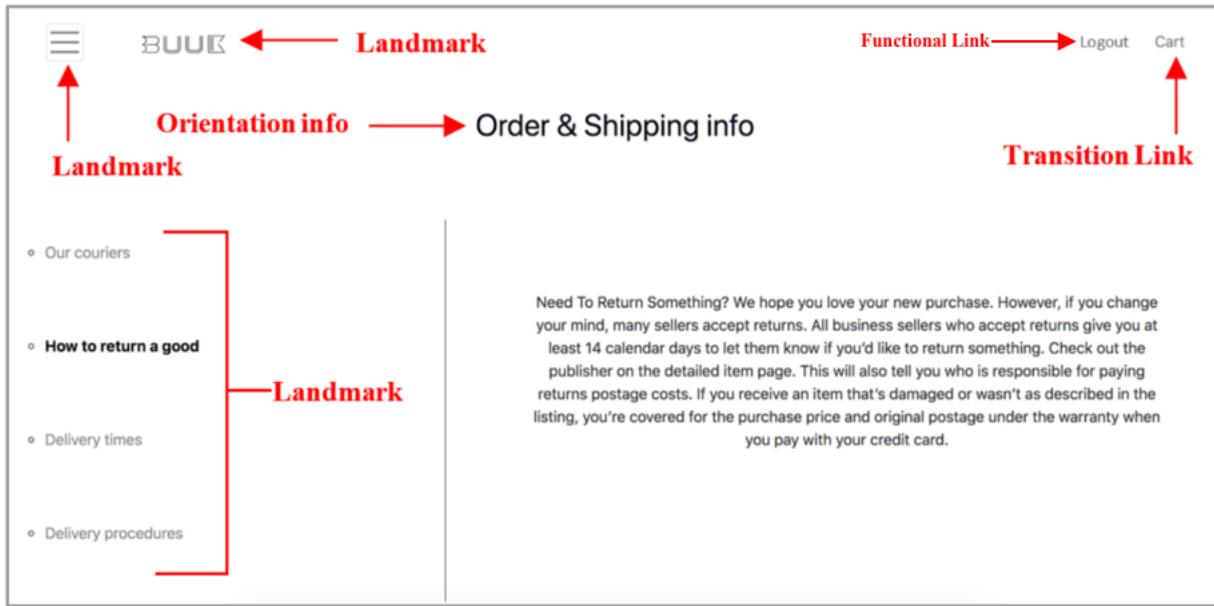
The *Login Page* allows the user to enter his credentials, with an orientation info that changes and displays 'WRONG CREDENTIALS' when the user fails to login. If the user is new to the website, he can click the *Create your Buuk Account* button to move to the *Create Account Page*. So in this case there is a dedicated *Registration Page* that includes orientation info changing into 'ERROR - email already exists' when the email has already been registered previously in the database.

3.11 All Themes Page



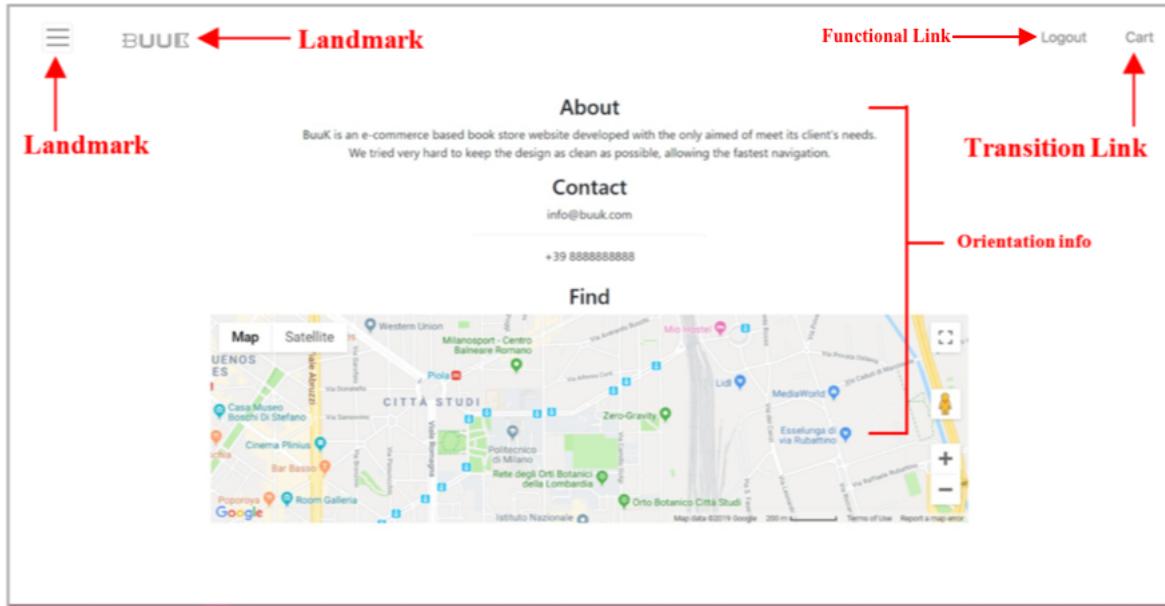
The *All Themes Page* includes the themes that the books can have in the store. There is also the *All genres page* that is structural the same as this page but shows all the possible genres that the books have in the store. In both pages when clicking on the theme or on the genre it brings to similar looking pages as the *All Books Page* (see *All Books Page* paragraph).

3.12 Ordering and Shipping Information Page



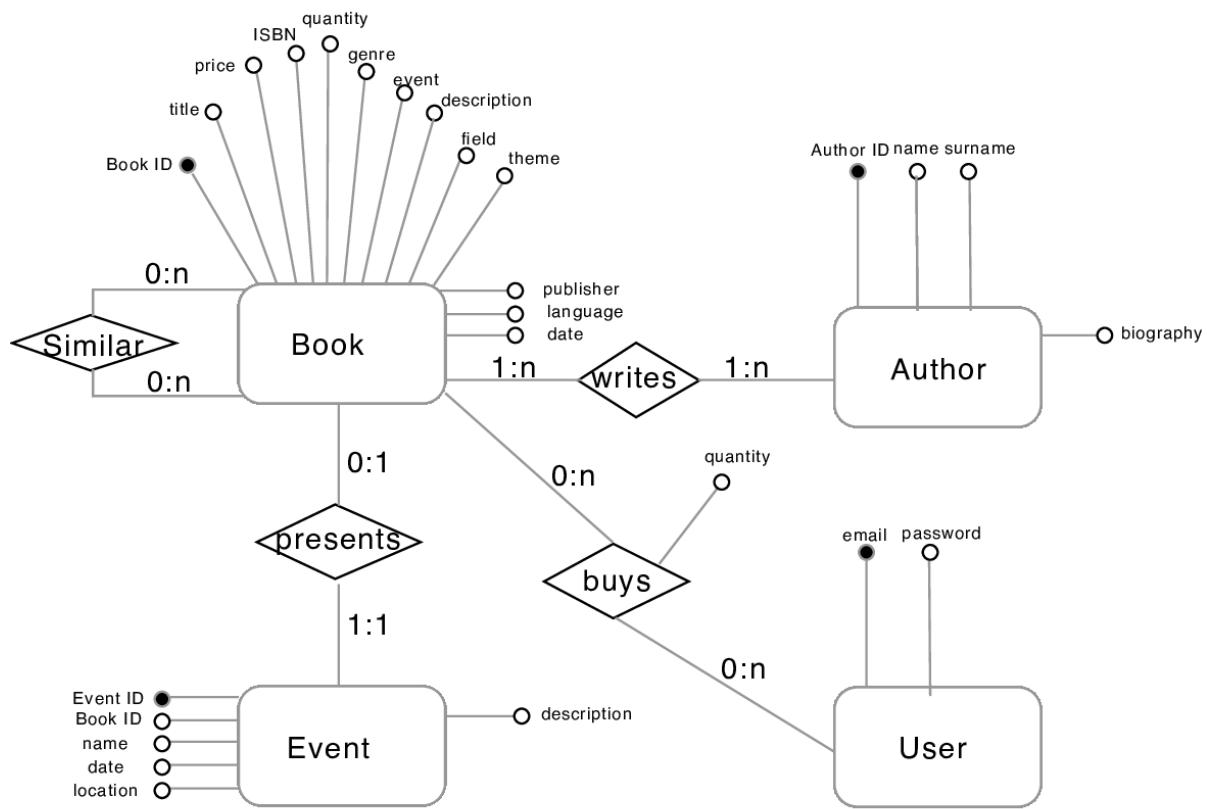
The *Ordering and Shipping Information Page* includes four landmarks which guide the users to understand the details about delivery of the goods.

3.13 Find Us Page



The *Find Us Page* gives users the orientation information about the website itself , the contact and the location of the developers.

4 Database Design



BOOK (Book ID, title, price, ISBN, quantity, genre, event, description, field, publisher, language, date)

AUTHOR (Author ID, name, surname, biography)

EVENT (Event ID, Book ID, name, date, location)

USER (email, password, quantity)

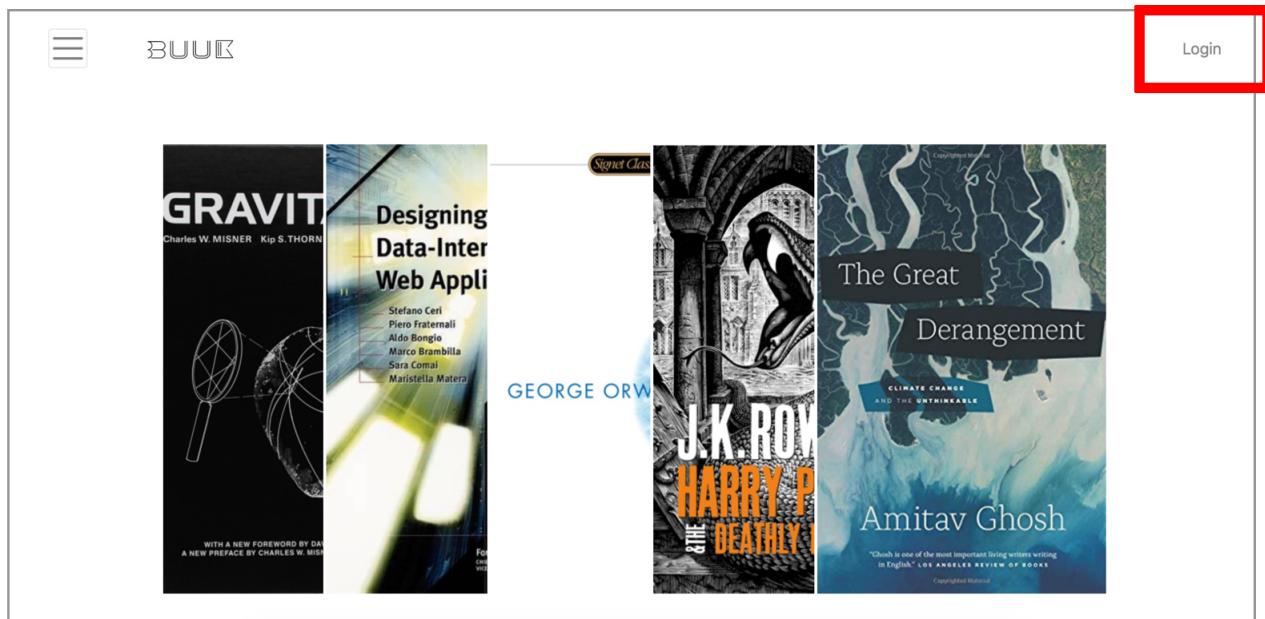
The application should provide data such as: all the books that are available in the store, all the events in which a book can eventually be involved, all the authors that have written the books and all the users that register into the store. In addition, it manages the logged users and the books they put into their cart.

To map the books to their authors and vice versa there is a helper table called *writes* to associate a single book to all its authors and the single author to all the books he wrote. Similarly, there is also a unidirectional table called *presents* that allows to associate a book to its dedicated event (we assumed, for now, that there is only one event per book). For the users there is a table called *buys* that allows to set the books the user wants to add to his cart with a specified amount of the book he chose, since he can add more than one book with the same ID (primary key for books). The books the user added to his cart are visible only if he is currently logged, otherwise no cart will be visible.

5 Possible Scenarios

5.1 Scenario 1

Mario Incandenza is a university student enrolled in a software engineering degree and it is mandatory for him to learn about the knowledge of web application development. He was recommended a book called *Designing Data-Intensive Web Applications* and wants to buy this book online.



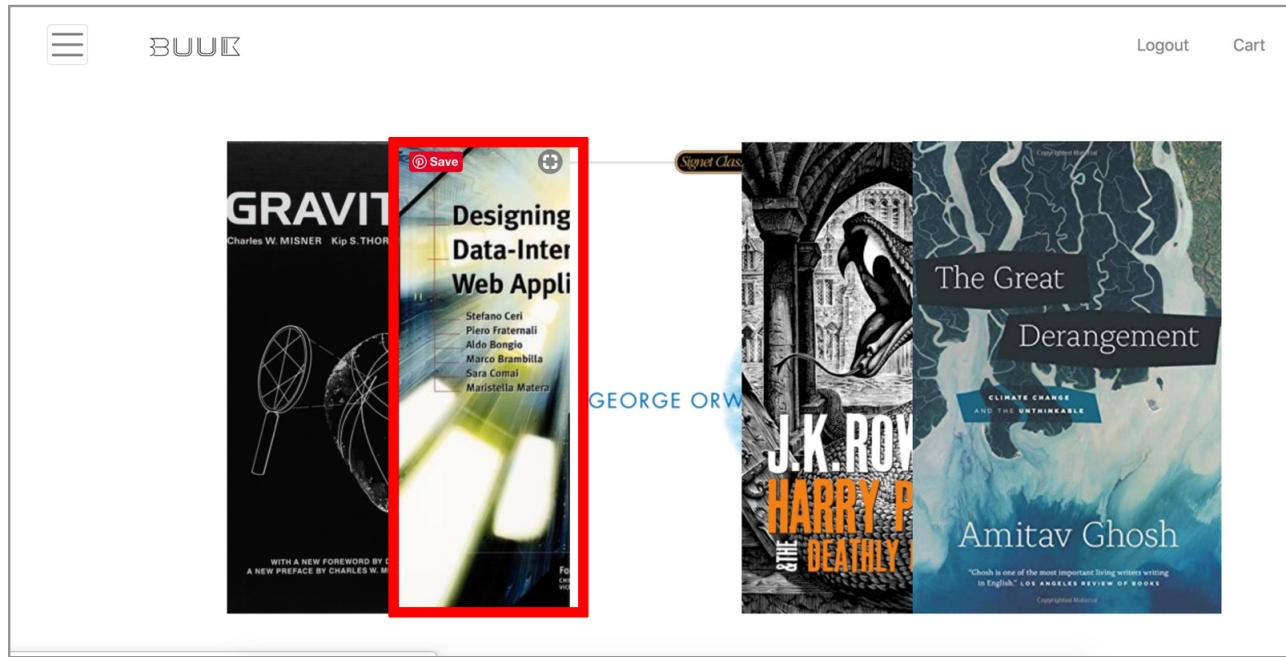
Mario found *BUUK*, an online book shop, in the first positions on Google, so he opens the website and the home page is shown. He wants to add books to his personal cart, therefore he decides to login and to do so he clicks on the login link placed on the top right of the homepage.

The screenshot shows the Buuk login page. At the top right is a 'Login' link. Below it is a 'Log in' form with fields for 'Email' (placeholder: Enter email address) and 'Password' (placeholder: Enter password). A large dark grey 'Sign In' button is centered below the fields. Below the sign-in area, a red box highlights a 'Create your Buuk Account' button.

Since he is new to the website, he clicks the create Your Buuk Account button and enters the account information to continue the registration process.

The screenshot shows the Buuk account creation page. At the top right is a 'Login' link. Below it is a 'Create account' form with fields for 'Email' (mario_incadenza@gmail.com) and 'Password' (redacted). A large dark grey 'Create Account' button is centered below the fields. Below the button, a red box highlights the 'Create Account' button.

When he finishes the registration, the page brings him back to the homepage and Mario can be sure that his data will be securely stored and encrypted in the Buuk's database.



He notices that the cover of the second book in the page is just what he wants, after clicking on it, he is brought to a page with the details of the book's information.

Designing Data-Intensive Web Applications

Stefano Ceri, Piero Fraternali
\$75.00

[Book Event](#) [See similar books](#)

Developing and maintaining data-intensive applications is an especially complex, multi-disciplinary activity, requiring all the tools and techniques that software engineering can provide. This book represents a breakthrough for Web application developers. Using hundreds of illustrations and an elegant intuitive modeling language, the authors—all internationally-known database researchers—present a methodology that fully exploits the conceptual modeling approach of software engineering, from idea to application. Readers will learn not only how to harness the design technologies of relational databases for use on the Web, but also how to transform their conceptual designs of data-intensive Web applications into effective software components.

Genre: Science and Technology
ISBN-13: 978-1558608436
Publisher: Morgan Kaufmann
Language: English
Publication date: 16-11-2002

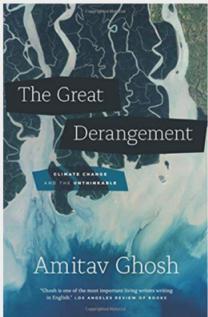
[Add to Cart](#)

Mario starts reading the introduction of the book and realises that it is worth buying it. After adding this book to his personal cart, Mario is curious to see other books that are similar to that one so he clicks on the *similar books* button that brings him to a page with other books that have all the *Science and Technology* genre.

BUUK

Logout Cart

Similar to: Designing Data-Intensive Web Applications



The Great Derangement: Climate Change and the Unthinkable
Amitav Ghosh
\$11.50

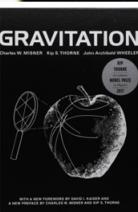


Gravitation
Charles Misner, Kip Thorne, John Archibald Wheeler
\$46.00

He notices a book called *Gravitation* which he would like to read in future.
So he decides to buy both books and add them to his personal cart

BUUK

Logout Cart

	Designing Data-Intensive Web Applications Stefano Ceri, Piero Fraternali	\$75.00	<input type="button" value="-"/> 2 <input type="button" value="+"/>
	Gravitation Charles Misner, Kip Thorne, John Archibald Wheeler	\$46.00	<input type="button" value="-"/> 1 <input type="button" value="+"/>

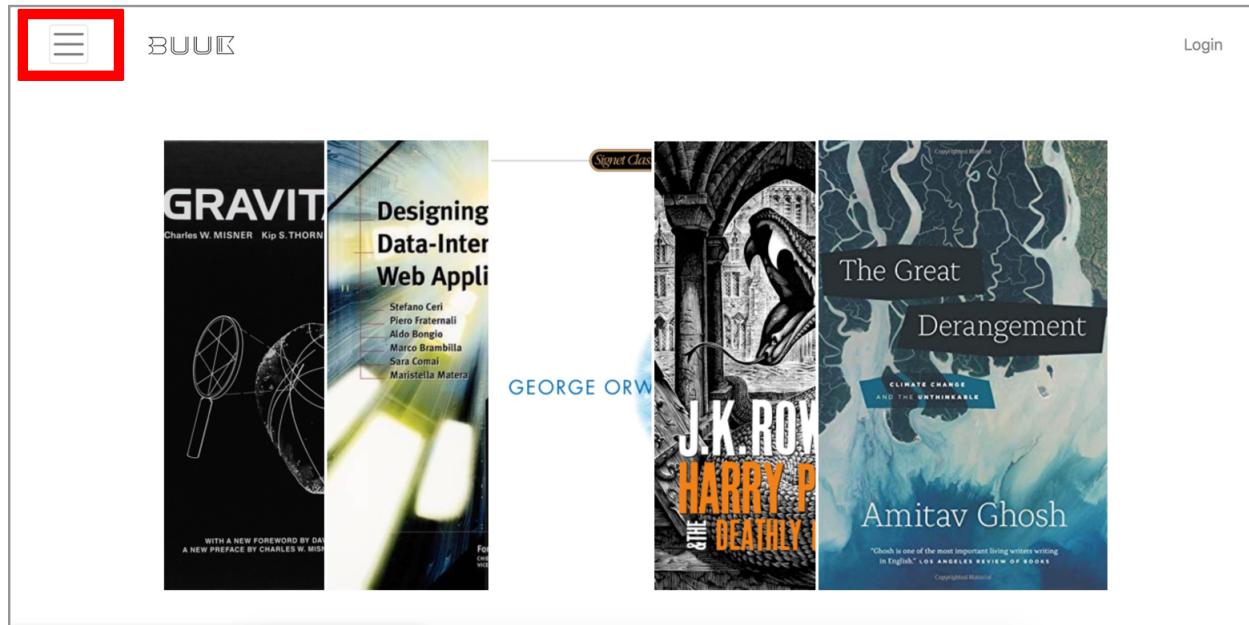
Total price: \$196.00

Proceed to Check-Out

Finally he moves to the cart page by clicking the cart button on the top right of the webpage. He adds one more book of *Designing Data-Intensive Web Applications* for his classmate, and clicks on *Proceed to Check-Out* to finish his buying process.

5.2 Scenario 2

Katherine Gompert is a teacher in the astronomy science academy and she is interested in bringing her students to some lectures about contemporary *Science and Technology* related to her lectures. She wants to introduce some books that are written by Stephen Hawking, who is one of the most famous scientists majoring in this field. So she surfs on the website to find more information of Stephen Hawking and his books.



The screenshot shows the homepage of the BUUK website. At the top left is a blue square icon with three horizontal lines. To its right is the word "BUUK". On the far right is a "Login" link. Below the header is a vertical list of categories: Books, Bestsellers, Our favourite readings, Events, Themes, Literary genres, and Authors. The "Authors" item is highlighted with a red square box around it. At the bottom of the page are links for FAQs, Us, and Shipping info.

- Books
- Bestsellers
- Our favourite readings
- Events
- Themes
- Literary genres
- Authors

FAQs Us Shipping info

She opens the website and clicks on the menu button top left of the page, landing on a page containing a list of information that the website can provide. As she is only interested in authors, she clicks on the authors and enters to the *Authors Page*, she scrolls down the page and she finds Stephen Hawking at the bottom.

The screenshot shows the "Authors" page. At the top center is the word "Authors". Below it are two profiles. The first profile features a portrait of Charles Misner, a man with glasses and a suit, with his name "Charles Misner" to the right. The second profile features a portrait of Stefano Ceri, a man with a mustache and dark hair, with his name "Stefano Ceri" to the right.

Charles Misner

Stefano Ceri

BUUK

Login



Piero Fraternali



Stephen Hawking

BUUK

Login

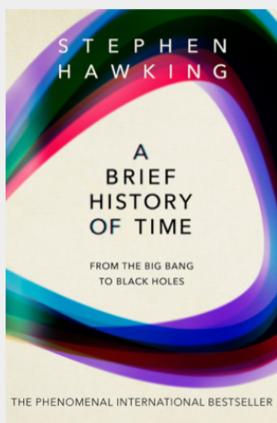


Stephen Hawking

framework of general relativity and the theoretical prediction that black holes emit radiation, often called Hawking radiation. Hawking was the first to set out a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics. He was a vigorous supporter of the many-worlds interpretation of quantum mechanics. Hawking achieved commercial success with several works of popular science in which he discusses his own theories and cosmology in general. His book *A Brief History of Time* appeared on the British Sunday Times best-seller list for a record-breaking 237 weeks. Hawking was a Fellow of the Royal Society (FRS), a lifetime member of the Pontifical Academy of Sciences, and a recipient of the Presidential Medal of Freedom, the highest civilian award in the United States. In 2002, Hawking was ranked number 25 in the BBC's poll of the 100 Greatest Britons. In 1963, Hawking was diagnosed with an early-onset slow-progressing form of motor neurone disease (MND; also known as amyotrophic lateral sclerosis "ALS" or Lou Gehrig's disease) that gradually paralysed him over the decades. Even after the loss of his speech, he was still able to communicate through a speech-generating device, initially through use of a hand-held switch, and eventually by using a single cheek muscle. He died on 14 March 2018 at the age of 76, after living with the disease for more than 50 years.

Work: [A Brief History of Time](#) [The Universe in a Nutshell](#)

She clicks on the name and sees the page with more details, with a particular interesting introduction of Hawking's life and achievements. She finds that there are works written by him at the bottom of the page, so she clicks on one of them, *A Brief History of Time*.



A Brief History of Time

Stephen Hawking

\$21.00

[See similar books](#)

In A Brief History of Time, Hawking writes in non-technical terms about the structure, origin, development and eventual fate of the universe, which is the object of study of astronomy and modern physics. He talks about basic concepts like space and time, basic building blocks that make up the universe (such as quarks) and the fundamental forces that govern it (such as gravity). He writes about cosmological phenomena such as the Big Bang and black holes. He discusses two major theories, general relativity and quantum mechanics, that modern scientists use to describe the universe. Finally, he talks about the search for a unifying theory that describes everything in the universe in a coherent manner.

Genre: Science and Technology

ISBN-13: 978-0553109535

Publisher: Bantam Dell Publishing Group

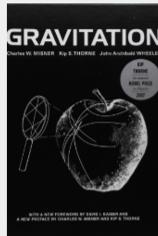
Language: English

Publication date: 18-5-1988

She notices in the information content that it belongs to the literary genre of *Science and Technology* which is the topic of her lecture. So she clicks *Science and Technology* and she finds all the books related to the same topic in this page.



Science and Technology



Gravitation

Charles Misner, Kip Thorne, John Archibald Wheeler

\$46.00



A Brief History of Time

Stephen Hawking

\$21.00



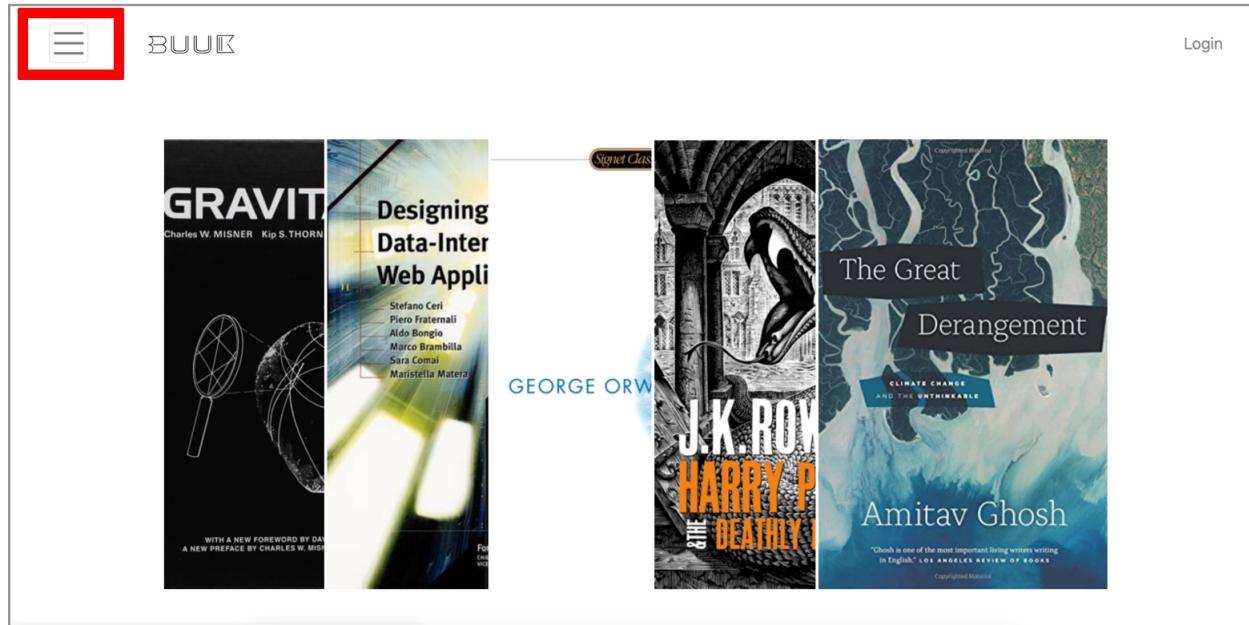
The Great Derangement: Climate Change and the Unthinkable

Amitav Ghosh

\$11.50

5.3 Scenario 3

Gerhardt Schtitt is a big fan of Harry Potter's series, he heard about a wonderful event of it from his friends and he wants to know more information about it, so he surfs on *BUUK*, which is known to provide also good events related to books.



When he opens the website, there is one of the books' covers about Harry Potter that appears in the center of the home page, so he is pretty sure that this website has more information about Harry Potter, maybe the newest events.

 BUUK

Login

- Books
- Bestsellers
- Our favourite readings
- Events**
- Themes
- Literary genres
- Authors

FAQs Us Shipping info

He tries to click on the menu button and finds exactly the events link, so he clicks on it.

 BUUK

Login

All the events



Nobel lecture:LIGO and Gravitational Waves III
8-11-2017
Aula Magna, Stockholm University

ΜΙΚΗ ΜΑΖΟΠΟΥΛΟΣ ΚΛΙΜΕΝΤΟΣ ΔΟΞΗΝ
Alfons Kemper Torsten Grust
Christian Boehm (Eds.)



Welcome to harry potter: the exhibition

27-3-2019

Ciudad de las Artes y las Ciencias, Av. del Professor López Piñero, 7, 46013 València, Spain



He scrolls down the *All the events* page and sees an event called ‘Welcome to Harry Potter: the exhibition’.

 BUUK Login

Event

Welcome to harry potter: the exhibition



Time:
27-3-2019
Location:
Ciudad de las Artes y las Ciencias, Av. del Professor López Piñero, 7,
46013 València, Spain

[See more information about the book](#)

In this amazing exhibition, guests will get an up close and personal look at the artistry and craftsmanship that went into creating the iconic props and costumes that appeared throughout the Harry Potter™ films. These authentic artifacts will be displayed in elaborate settings inspired by locations from Hogwarts™ School of Witchcraft and Wizardry including the Gryffindor™ common room, Hagrid's hut and the Great Hall.

This caught his attention and he clicks the title to see the details including the introduction of the exhibition, the time and location. He notices that there is a button *see more information about the book*, as he is also interested about the newest book of J.K.Rowling, so he clicks on it.

The screenshot shows a book listing for "Harry Potter and the Deathly Hallows" by Joanne Rowling. The book cover is visible on the left, featuring a black and white illustration of a snake. The title and author's name are displayed above the cover. To the right of the cover, the book's title is shown in large letters, followed by the author's name. Below the title, the price is listed as \$17.50. There are two buttons: "Book Event" and "See similar books". A detailed description of the plot follows, mentioning Harry's final journey and confrontation with Voldemort. Below the description, several metadata fields are listed: Genre: Fantasy; ISBN-13: 978-1408865453; Publisher: Bloomsbury Publishing; Language: English; Publication date: 13-7-2015. The top right corner of the page has a "Login" link.

However it is exactly the book appeared in the front page of the website which he owns already, so he decides not to buy it.

6 Conclusions

The initial idea of the website has been designed using simple wire-frames and during the development we realised that we could add some more information, links or pictures, but also remove some. After designing we started coding a website that could be easy to use, so that the user has a clear interface and can navigate through the whole website without getting lost. It was possible to manage this using several strategies, we list some here:

- in all the pages there is a menu button that can help the user to jump to another topic;
- the pages are so designed that there are only the strictly necessary information that can be useful for the user;
- in the pages where there are books, authors or events both the picture and the title are clickable and bring to the same page, so the user can click what is more comfortable for him;
- the credentials needed for logging into the website are just email and password, so the user does not need to input all his information and we avoid to store sensible data into the store.

This project allowed us to give a deeper look into the creation of a website starting from scratch. We faced many interesting aspects in web development with cooperation of designers and engineers.