

Web Application Programming
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Overview

The following report is meant to describe "The Imperial Book Database", a django-based web application following modern web programming trends.

It's main purpose is to serve users book reviews in a simple, not disturbing format, allowing them to focus on website content rather than eye-catching state-of-the art dynamic components. Thanks to multiple filtering options, one can search for their favorite book and later explore its reviews or deepen their knowledge about author and his / hers other creations and awards.

For technical detail, it uses django python library as a backend also serving front-end .html files generated via django's jinja-based template engine. It's designed to remain as efficient as possible, allowing for serving content to many users concurrently without extensive server-unkeep bills. Therefore, much effort was put to create objects following best sql-related practices, including creating indexes. To guarantee site stability, entire project is separated into 5 independent apps, each one has a 100% coverage in unitests and serves different purpose.

Project Requirements

The following requirements were requested:

- allow users login and password reset
- there are a normal user, manager and backend admin roles
- the application allows only the logged-in user to access restricted resources
- at least 2 tables with items browsable by the regular user, which can be filtered
- the application is aesthetically pleasing
- the application is responsive (i.e. adapted to at least two resolutions - e.g. computer and tablet or computer and smartphone)
- all forms data is validated
- the application allows you to save or modify records
- use of AJAX technology or similar technique
- The application follows good programming practices
- The application has no difficulty in deployment on a separate machine
- Automatic tests
- short report with idea outline, dataflow and main views screenshots
- source codes

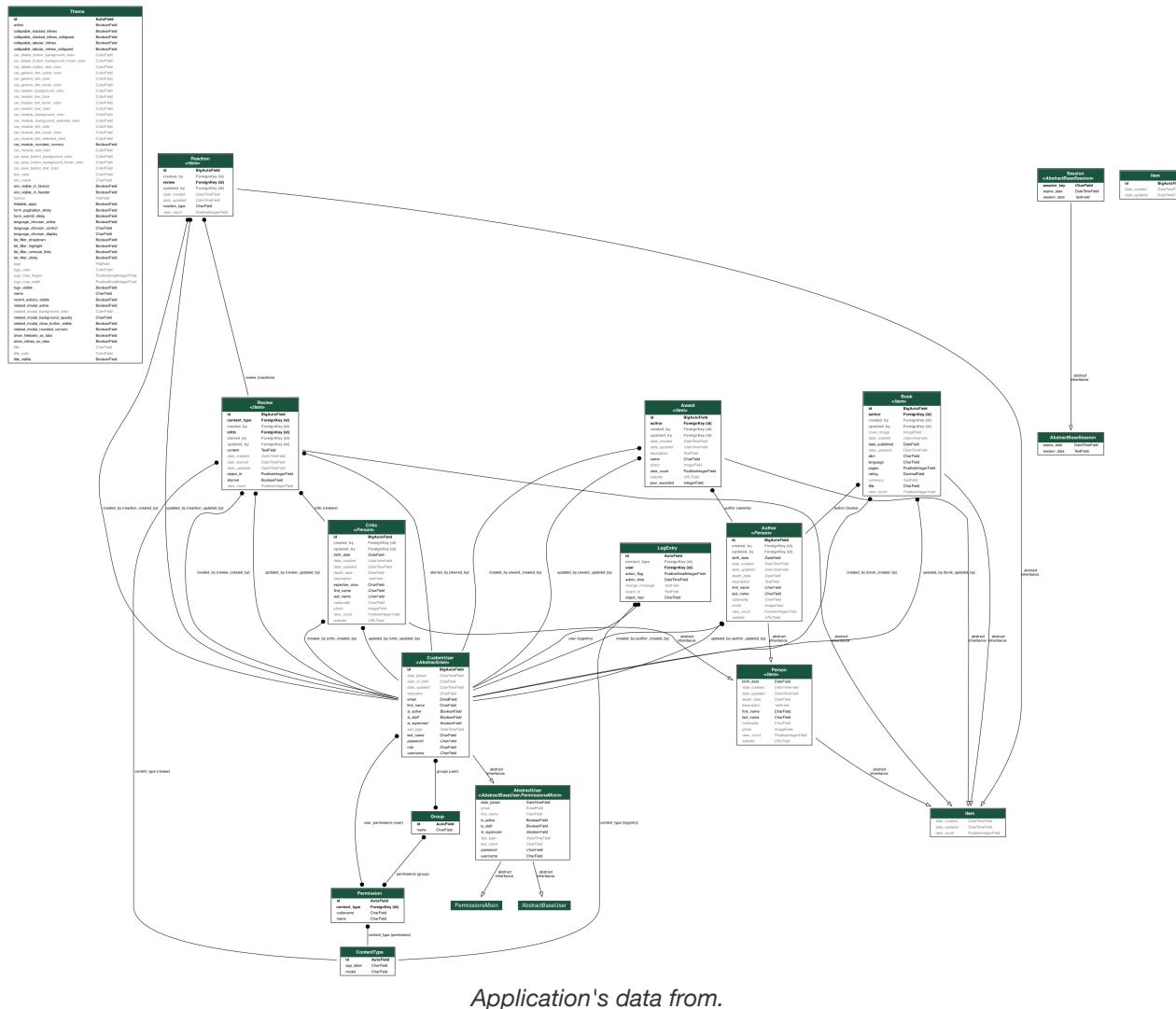
In the following examples, besides project usage documentation, the proof of their completion will be given.

Documentation

Data Flow

Please keep in mind that even though the following chart looks complicated, many of these classes are django system - defined classes for managing admin theme, action's history and more.

Classes holding actual business data are Reaction, Review, CustomUser, Critic, Author, Award and Book.



Home page

Here is short project description with url link leading to [contact](#), encouraging users to share their thoughts and complains with website admins.

Underneath them there is a card with links to main content subpages, which are [books page](#), [authors page](#) and [critics page](#) with short encouraging description and stats on number of objects available in the database. Please note that database that will be deployed in provided .Dockerfile will have different amount of auto-generated, meaningless objects just to create simple website demo.

Website header is also straight-forward, with url links to all user-reachable subpages.

The screenshot shows the homepage of "The Imperial Book Database". At the top, there is a blue header bar with the logo "The Imperial Book Database" and navigation links for Books, Authors, Critics, Profile, About, Contact Us, Manager Panel, and Logout. Below the header is a large white box containing a "Welcome!" message. The message informs users about the website's purpose and encourages reporting bugs. Below this is a section with three cards: "Books", "Authors", and "Critics", each providing statistics and a link to more information.

Category	Total	First added	Last added
Books	46 books	Oct 09, 2024	Oct 09, 2024
Authors	31 authors	Oct 08, 2024	Oct 09, 2024
Critics	25 critics	Oct 09, 2024	Oct 09, 2024

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Home Page for unauthorised user. There are login and signup options. Profile and logout are hidden.

This screenshot is identical to the previous one, showing the homepage for an unauthorized user. The only difference is the absence of the "Profile" and "Logout" links in the top navigation bar.

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Home Page for normal user.

This screenshot is identical to the previous ones, showing the homepage for a normal user. The only difference is the presence of the "Manager Panel" link in the top navigation bar, which is only visible to logged-in administrators.

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Home Page for admin user. As he can access manager panel, link for it is displayed as well.

Welcome!

You arrived at the stunning website made to bring back the beauty of literature to the masses. You will be easily capable of searching for any book in our database, searching for their reviews, authors, and many more.

Please keep in mind that we're still under development. Report any bugs and contact us via the form [here](#).

Books

Explore our vast collection of books.

Total: 46 books

First added: Oct 09, 2024

Last added: Oct 09, 2024

→

Authors

Meet the brilliant minds behind the books.

Total: 31 authors

First added: Oct 08, 2024

Last added: Oct 09, 2024

→

Critics

Find out what critics have to say about the books.

Total: 25 critics

First added: Oct 09, 2024

Last added: Oct 09, 2024

→

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Home Page for admin user. As he can access admin panel, link for it is displayed as well.

Contact Page

It allows to contact the website admins. If all fields get validated (restrictions are showed in smaller font under input fields), the mail will be set to predefined email address with filled in data. For simplicity of deployment and due to lack of sfmtp, for now these info will be just printed to a console.

Contact Us

Email*
Your e-mail
We'll try to contact you as soon as possible.

Subject*
Subject
Please make it as meaningful as possible. Up to 50 signs.

Message*
Your message
Please keep it straightforward, up to 4000 signs.

Contact Us

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Contact Page with simple form.

About Page

It is meant to familiarise the consumer with project's idea and goals.



About This Project

You arrived at the stunning website made to bring back the beauty of literature to the masses. You will be easily capable of searching for any book in our database, searching for their reviews, authors, and many more.

About Me

I am a Data Science student at the Warsaw University of Technology (WUT). This project is developed as part of my classes to apply the knowledge I've gained and to create a useful resource for book lovers. Through this website, I aim to combine my passion for literature with data science by providing an easy-to-use platform for exploring books and their reviews.

Official Info

Course Name:
Programming of WWW Applications course for DS studies in Winter 2024/25
Project Requirements:

About Page with 3 separate cards serving project's related informations.

Profile Page

Here user can govern his/hers profile and check personal data.

Personal Information	
Username	manager
First Name	Manager
Last Name	Manager
Email	manager@gmail.com
Date of Birth	Not provided
Role	user
Education	primary
Date Joined	Oct. 9, 2024, 12:38 p.m.
Last profile update date	Oct. 11, 2024, 3:25 p.m.

Account Actions

[Update Account](#) [Change Password](#) [Remove Account](#)

User Profile Page card. On the bottom 3 options are available, presented on following photos.

Update profile card, with all user editable fields available for change. Please note that after that user's 'Last profile update date' will be updated as well.

Set New Password

Old password*

New password

• Your password can't be too similar to your other personal information.
 • Your password must contain at least 6 characters.
 • Your password can't be a commonly used password.
 • Your password can't be entirely numeric.
 • Your password must contain at least one lowercase letter, one uppercase letter, one digit and one special character.

New password confirmation

Enter the same password as before, for verification.

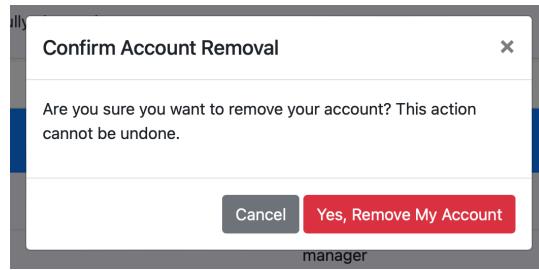
Set New Password

[Go back to profile.](#)

Set new password form. All password restrictions are shown.

User Profile	
Personal Information	
Username	manager
First Name	Manager
Last Name	Manager
Email	manager@gmail.com
Date of Birth	Not provided
Role	user
Education	primary
Date Joined	Oct 9, 2024, 12:38 p.m.
Last profile update date	Oct 11, 2024, 3:42 p.m.

Page after successful user's password update. Pay attention to success communicate and updates user's account update date.



Confirm account removal pop-up.

Objects Pages

As they have following structure, only one is described below.

Book List Page

It shows the table of all database's books available. If more than 10 books are stored, they will be presented in a pagination table. On the top filtering options are available. Books are listed in popularity-descending-order, where book with most views gets popularity of 10, and with no views - 0.

Table's rows are buttons redirecting to corresponding object's details subpages. If any of cells have a blue - hyperlink - text, it also leads to this cell's corresponding object's details subpage.

Book List

Title

Book title.

Author

Book's author.

Date Published
 CALENDAR
Book's publication date.

Language

Book's original language.

Rating

Book's rating.

Filter

Title	Author	Date Published	Pages	Language	Rating
Threat sing the.	Thomas Harris	March 19, 2022	202	Ganda	0.10
Campaign artist answer.	James Clark	June 17, 2023	393	Sango	3.68
The Book	John Kowalski	October 9, 2024	12	N/A	4.00

Books list page with its form and content table.

Authors List Page

Authors List

Name

Person's name.

Nationality

Person's nationality.

Birth Year
 Enter a valid year
Person's birth year.

Website

Person's official website or portfolio link.

Filter

Name	Popularity	Publications Number	Awards Number	Most popular book
James Clark	10.00	3	2	Campaign artist answer. by James Clark
Eric Hayes	4.26	3	0	Left name official author. by Eric Hayes

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Authors list page with its form and content table.

Critics List Page

Critics List

Name <input type="text" value="Enter name"/> Person's name.	Nationality <input type="text" value="-----"/> Person's nationality.
Birth Year <input type="text" value="YYYY"/> Person's birth year.	Website <input type="text" value="https://example.com"/> Person's official website or portfolio link.
Filter	

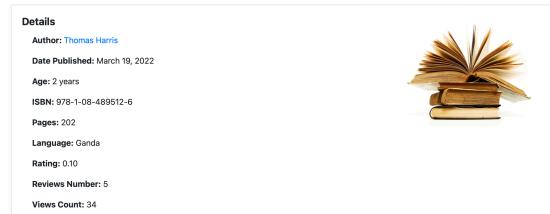
Name	Popularity	Publications Number
Melinda Phillips	10.00	
Sue Hall	3.04	

Critics list page with its form and content table.

Object's Detail Pages

Book Page

Represents all information available about the book of choice. Object's reviews are forbidden for unauthorized user access. Below mentioned likes are created via api calls using js and jQuery, they update dynamically (after logged user action), without the need of refreshing.

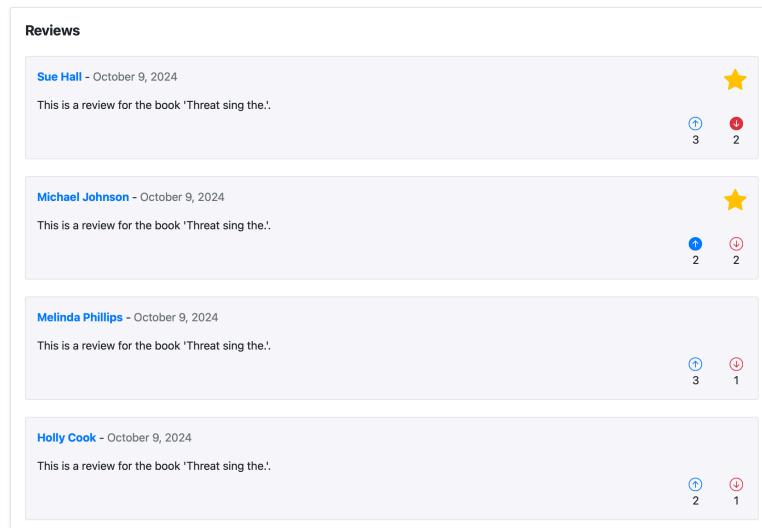


Basic info. Pay attention to metrics of "view count", "reviews count". To the right - book's default photo, displayed if manager creating this entry did not provided one.

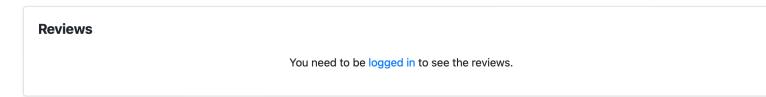
Summary

Pass industry them bad him because rich. Dream how human same.

Summary card. Represented by text field, so summary can be as long as it is needed.



Reviews Card. Each review has its author name with a hyperlink to his/hers detail subpage, star - if given - and a like and dislike count. Reviews are ordered (starred, net like count = likes - dislikes, -likes). If currently logged user has reacted to a review, his reaction is indicated by filled-in circle as 2 first on the picture.



Review card for unauthorised user.

The image shows a search form for books. It includes fields for "Title" (with placeholder "Enter book title"), "Author" (with placeholder "Author James Clark"), "Date Published" (with placeholder "10/11/2024"), "Language" (with placeholder "georg"), and "Rating" (with placeholder "-----"). A "Filter" button is located at the bottom of the form. Below the form is a table with the following data:

Title	Author	Date Published	Pages	Language	Rating
More somebody.	James Clark	June 22, 2023	328	Georgian	2.29

Example filter usage.

Author Page

Besides to cards common with book page - such as Details and summary (displayed as short story), author can receive rewards. If they have one, their 'awards-stats' will be displayed as well. Some statistic are also calculated for their publication, displayed in different card. Same as in book (and later in Critic), if no author's photo is provided, default will be displayed.

Author's publications

Publications Number: 3

First Publication Date: Jan. 28, 2020

Last Publication Date: Nov. 16, 2023

Career Span: 3 years

Mostly viewed book: [Left name official author.](#)Best rated book: [Left name official author.](#)Mostly reviewed book: [Left name official author.](#)

Authors publications statistic. Career span is date difference between last and first publication.

Author's awards summary

Awards Number: 2

Firstly awarded at: 2003

Lastly awarded at: 2016

Authors awards statistic.

Author's Awards**Pm Award** - 2016

Ability watch local. Stop way trial role.

**Push Award** - 2003

Third event one source national because. Draw behind could direction. Billion give however phone so ...



Authors awards with short description. Arrow on the right is a button redirecting to award's detail page.

Author's Reviews

No reviews available for this author.

Author's Awards

No awards available for this author.

If no data is available, user will be notified. Awards are also restricted only to authorised users.

Award Page

"Pm Award"

Details**Name:** Pm Award**Year awarded:** 2016**Receiver:** [Rachel Thomas](#)**Website:** No website available**Views Count:** 3**Description**

Ability watch local. Stop way trial role.

Award page with default award images/image. It has back-leading hyperlink to receiver - either Author or Critic

Critic Page

Sue Hall

Details

First Name: Sue
Last Name: Hall
Birth Date: Jan. 1, 1975
Age: 49 years
Nationality: Saudi Arabia
Website: <https://elliott.com/>
View Count: 8
Expertise Area: perform



Critic's reviews summary

Publications Number: 5
First Publication Date: Oct. 9, 2024, 2:24 p.m.
Last Publication Date: Oct. 9, 2024, 2:24 p.m.
Career Span: 0 years
Mostly liked review: [Review on Threat sing the.](#) by Thomas Harris
Mostly disliked review: [Review on Author Thomas Harris](#)

Top of the Critic page. If he/she is dead, instead of age the death date will be displayed (same goes for Author).

Critic's Reviews

Veronica Jones reviewed "["Threat sing the."](#) by Thomas Harris - October 9, 2024

This is a review for the book "Threat sing the.".

(3) (2)

Veronica Jones reviewed "["Security indeed."](#) by Thomas Harris - October 9, 2024

This is a review for the book "Security indeed.".

(2) (1)

Veronica Jones reviewed [Author Thomas Harris](#) - October 9, 2024

This is a review for Thomas Harris.

(1) (0)

Critic's reviews. We can easily see whether it is about book (and its author) or just about author, with hyperlink to corresponding detail page.

Manager Panel

It is a highly customized django admin panel. Allows for creation of all objects, their deletion and modification.

Manager can also view more system-based fields than are normally displayed to user (like objects creation date or who lastly modified it).

Select award to change ADD AWARD +

Search

ADD AWARD +

Action: ----- Go 0 of 8 selected

ID	NAME	YEAR AWARDED	AUTHOR	VIEW COUNT
3	Late Award	2019	Ray Rodriguez	0
8	Loss Award	2019	James Clark	6
1	Pm Award	2016	Rachel Thomas	3
7	Work Award	2012	James Clark	1
6	Wall Award	2012	Thomas Harris	4
4	By Award	2009	Ray Rodriguez	0
5	Him Award	2006	Thomas Harris	0
2	Push Award	2003	Rachel Thomas	0

FILTER

By year awarded

All

By first name

All

By last name

All

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Awards management. Manager can easily filter and order awards from there.

The screenshot shows a form for changing an award entry. At the top right is a "HISTORY" button. The form fields include:

- Name:** Late Award (input field)
- Name:** Name of the award.
- Year awarded:** 2019 (input field)
- Year awarded:** Year the award was received.
- Author:** Author Ray Rodriguez (input field)
- Author:** Author who received the award.
- Details:** A large text area containing a placeholder text about a movie.
- Description:** Could ago three executive. Gun film share interesting choice none that. Nation about along find good. Project nearly leave crime huge simple.

Awards change view. Manager can update editable object's fields from here. Some of read-only fields are in System section, that is by default closed.

The screenshot shows the "System" section of the award entry. It includes the following fields:

- Created by:** Pablo (User who created this award entry)
- Date created:** Oct. 9, 2024, 2:23 p.m.
- Updated by:** - (User who last updated this award entry)
- Date updated:** Oct. 9, 2024, 2:23 p.m.
- ID:** 3
- View count:** 0 (Number of times this award entry has been viewed)

System read-only fields. Applicable to all of used models.

The screenshot shows a list of authors with a modal overlay titled "Delete selected Authors". The modal contains a checkbox and a "Delete" button. The list table includes columns: ID, NAME, PUBLICATIONS NUM, AWARDS NUM, POPULARITY, ALIVE, and VIEW COUNT. The "ALIVE" column uses green checkmarks for living authors. The "VIEW COUNT" column shows values like 0, 0, 0, etc. To the right is a "FILTER" sidebar with dropdowns for nationality, alive status, awarded status, has published status, popularity, and birth date range, along with "Search" and "Reset" buttons.

ID	NAME	PUBLICATIONS NUM	AWARDS NUM	POPULARITY	ALIVE	VIEW COUNT
13	Andrew Alvarez	0	0	0.0	✓	0
10	Michael Anderson	0	0	0.0	✓	0
4	Paul Chavez	0	0	0.0	✓	0
28	James Clark	3	2	10.0	✓	69
19	Michelle Clark	3	0	0.2898550724637681	✓	2
8	Donna Edwards	0	0	0.0	✓	0
26	Connie Ellis	3	0	0.14492753623188406	✓	1
25	James Friedman	3	0	0.0	✓	0
27	Thomas Harris	3	2	0.5797101449275363	✓	4
31	Barbara Hayes	3	0	1.0144927536231885	✓	7
17	Eric Hayes	3	0	4.63768115942029	✓	32
21	Monique Higgins	3	0	0.14492753623188406	✓	1
24	Carl Jones	3	0	0.14492753623188406	✓	1
6	Elizabeth Jones	0	0	0.0	✓	0

Author's list. Manager can reset author's view count via custom action

Select review to change

Action: -----

Delete selected Reviews
 Star selected reviews
 Unstar selected reviews

ID	TYPE	OBJECT ID	STARRED	LIKE COUNT	DISLIKE COUNT	VIEW COUNT
25	Items book	34	✗	2	1	0
20	Holly Cook	Items book	33	✗	2	1
15	Holly Cook	Items book	32	✗	1	2
21	Sue Hall	Items book	34	✓	3	2
16	Sue Hall	Items book	33	✗	2	2
11	Sue Hall	Items book	32	✗	2	0
24	Michael Johnson	Items book	34	✓	2	2
19	Michael Johnson	Items book	33	✗	2	1
14	Michael Johnson	Items book	32	✗	2	1
22	Veronica Jones	Items book	34	✗	3	2
17	Veronica Jones	Items book	33	✗	2	1
12	Veronica Jones	Items book	32	✗	1	2
23	Melinda Phillips	Items book	34	✗	3	1
18	Melinda Phillips	Items book	33	✗	0	3

ADD REVIEW +

FILTER

By Content Type
All

By first name
All

By last name
All

By starred
All

By first name
All

By last name
All

By object id
All

Reviews's list. Manager can easily star and unstar it via custom action

Admin Panel

Admin can also can view all users and deactivate selected one. Being admin does not means being manager.

Superadmin is a website super-admin with full access to its customization and users. Can delete them or change their roles. No role is more powerful than that. He can also add custom groups and assign them permission, then give them to selected users. Only one is created by default by django.

Change group

Staff

Name:

Available permissions ?

Filter

- Administration | log entry | Can add log entry
- Administration | log entry | Can change log entry
- Administration | log entry | Can delete log entry
- Administration | log entry | Can view log entry
- Admin Interface | Theme | Can add Theme
- Admin Interface | Theme | Can change Theme
- Admin Interface | Theme | Can delete Theme
- Admin Interface | Theme | Can view Theme
- Authentication and Authorization | group | Can add group
- Authentication and Authorization | group | Can change group
- Authentication and Authorization | group | Can delete group
- Authentication and Authorization | group | Can view group
- Authentication and Authorization | permission | Can add permis...
- Authentication and Authorization | permission | Can change per...
- Authentication and Authorization | permission | Can delete per...
- Authentication and Authorization | permission | Can view permis...

Choose all ?

Hold down "Control", or "Command" on a Mac, to select more than one.

Chosen permissions ?

Filter

- Items | award | Can change award
- Items | award | Can delete award
- Items | award | Can view award
- Items | book | Can add book
- Items | book | Can change book
- Items | book | Can delete book
- Items | book | Can view book
- People | author | Can add author
- People | author | Can change author
- People | author | Can delete author
- People | author | Can view author
- People | critic | Can add critic
- People | critic | Can change critic
- People | critic | Can delete critic
- People | critic | Can view critic
- Reviews | reaction | Can delete reaction

Remove all

Staff - manager group - permissions view from super admin panel. Accessible only for admins.

Technical Appendix

Deploying

Using docker

```
# in the same dir as readme
docker build -t "book-shop" .
docker run -p 8000:8000 "book-shop"
```

Natively

```
# in the same dir as readme
pip install -r requirements.txt

# in book_shop home dir (one with manager.py)
# python manage.py makemigrations
python manage.py migrate
python manage.py collectstatic

echo "from django.contrib.auth import get_user_model; \
User = get_user_model(); \
User.objects.filter(username='admin').exists() or \
User.objects.create_superuser('admin', 'admin@example.com', 'admin', first_name='admin', last_name='a
| python manage.py shell

python manage.py shell < book_shop/generate_examples.py
gunicorn --timeout 120 --workers 2 --threads 3 --bind 0.0.0.0:8000 book_shop.wsgi:application"
```

Tests

For each app there is a set of tests defined, checking weather access restrictions, forms validation, models restrictions, views behaviour and many more works properly. To launch them you need to run `python manage.py test` command in project root directory. This will yield following response:

```
book_shop % python manage.py test
Found 122 test(s).
Creating test database for alias 'default'...
Group "Staff" created successfully.
Group "Admin" created successfully.
System check identified no issues (0 silenced).
```

```
Ran 122 tests in 8.115s
```

```
OK
```

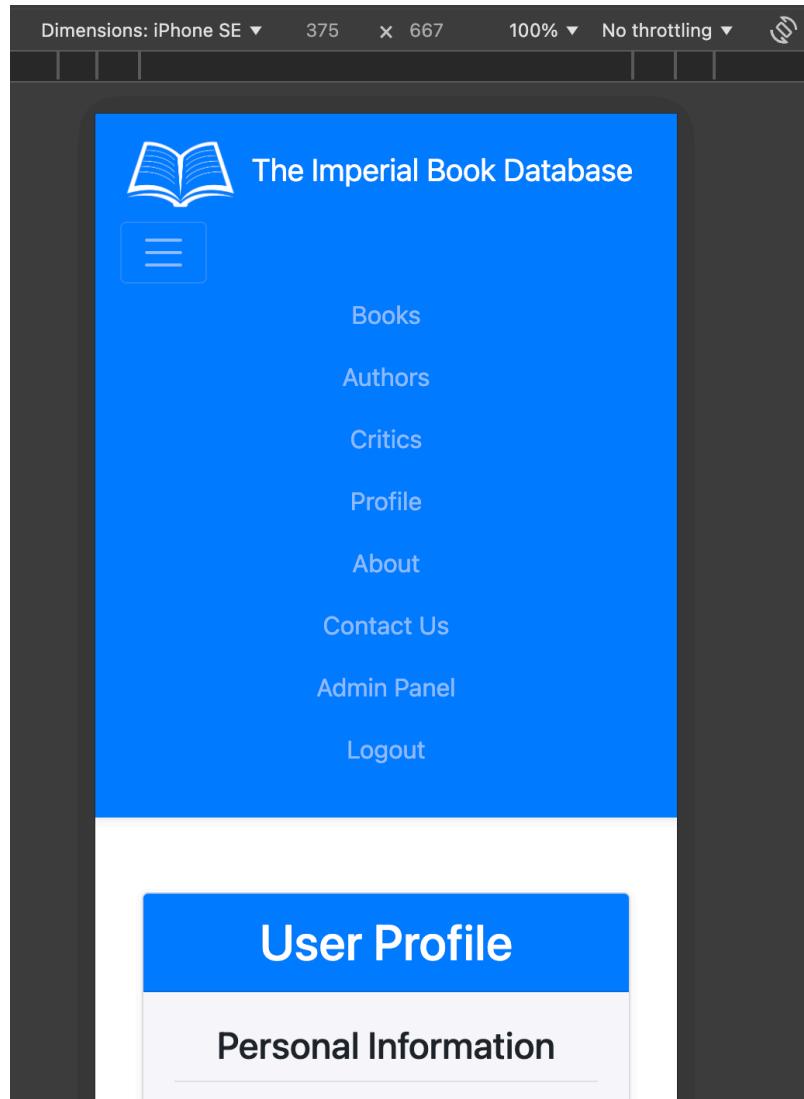
```
Destroying test database for alias 'default'...
```

Database and static content serving

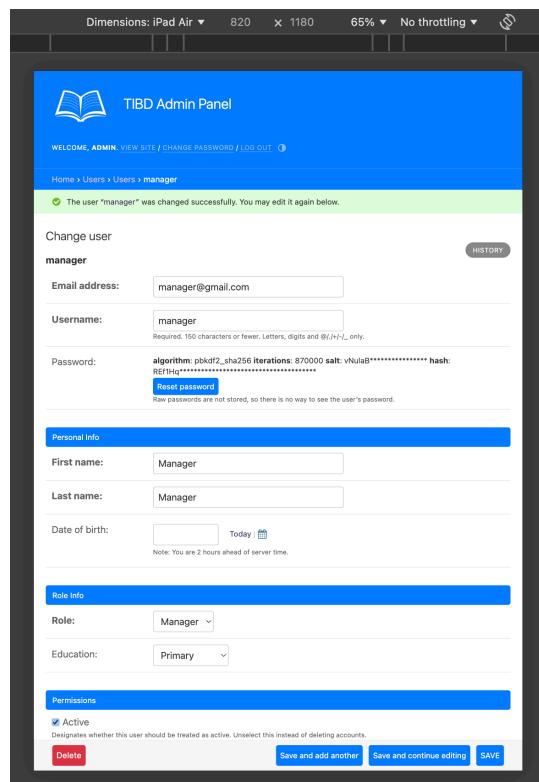
For example purposes we use django's build-in database, but it's pretty straightforward to replace it with any - also remote - sql database provider. For same reason we run server with `--insecure` option, as it also serves static and media files (that again, can be easily migrated to remote provider).

Support for no-pc devices

Thanks to bootstrap and jQuery, my app remains pretty and responsive regardless to device resolution.



Profile page on iPhone-SE simulated by Google Chrome.



Admin page on Ipad Air simulated by Google Chrome.