

SPE FINAL PROJECT REPORT

ReadFeed Catalogue

BY

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Github Repository:

<https://github.com/mnkashif/ReadfeedCatalogue>

Docker Hub Repository :

https://hub.docker.com/repository/docker/mnkashif/spe_mini

Introduction and Background:

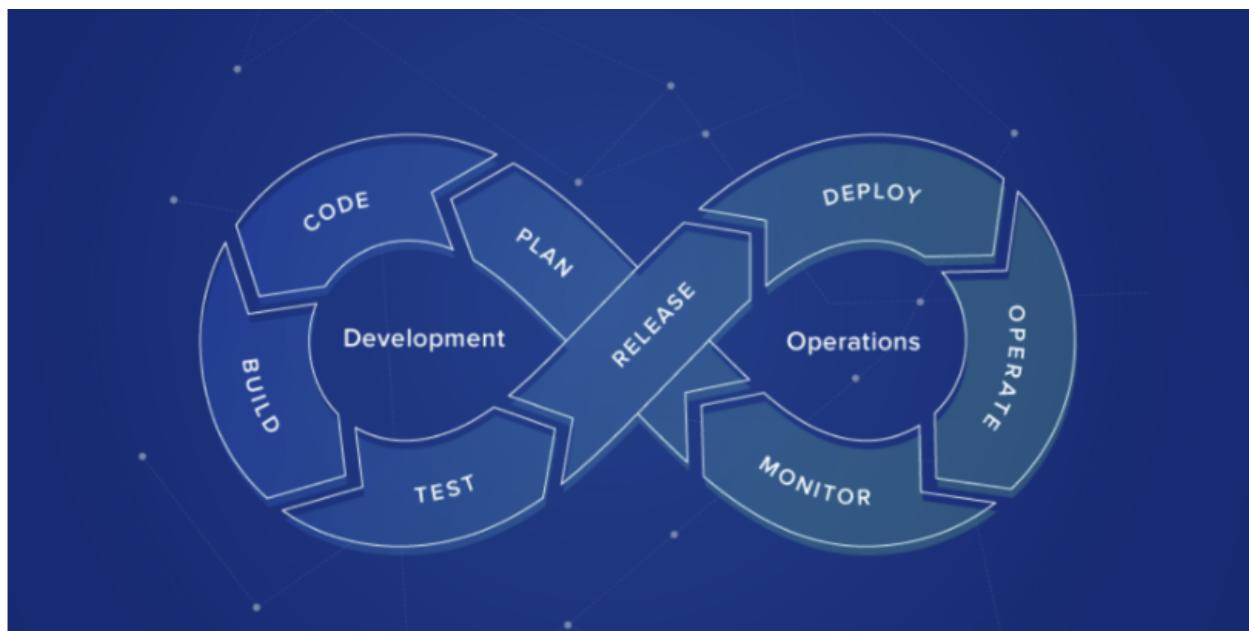
This project's main purpose is to use DevOps tools to create our ReadFeed Catalogue application. The goal is to study, understand, and apply DevOps tools to learn, understand, and implement Continuous Integration, Continuous Deployment, and Continuous Monitoring.

DevOps is a set of cultural concepts, practices, and technologies that improves an organization's capacity to produce high-velocity applications and services, allowing it to evolve and improve products at a faster rate than traditional software development and infrastructure management methods. Organizations can better service their clients and compete in the market because of this quickness.

Main principles of DevOps:

- Automation - Infrastructure as code
- Lean – Small batch sizes, focus on value for end user
- Measure – Measure everything; Show improvement
- Sharing - Collaboration between Dev and Ops

Devops Lifecycle:



Benefits of DevOps :

- Companies are more likely to stay up with technology innovations (such as the Internet of Things), and DevOps can help with market support for digital services. DevOps frees up resources for innovation as a result.
- Adaptability: Because tighter interaction leads to the production (and execution) of superior ideas, a flexible approach to enterprise-wide development is more efficient.
- IT and business integration. Another goal of DevOps is for corporate divisions to build mutual understanding in terms of innovation and digital transformation.
- Improving customer service and increasing customer satisfaction. One of DevOps' main objectives is to produce better software and deliver it to end users more quickly (which increases the loyalty of the latter)

About ReadFeed Catalogue:

- The ReadFeed Catalogue enables you to upload images of books and food that you have tried and review them.
 - It allows users to see what has been posted and see the reviews on food and books that have been given by the people already using the platform.
 - It has many features like the Login User, SignUp User, JWT authentication, Contact message notification on mail, Category Search, Search by a specific Keyword, Pagination, etc.
 - It is like a small community where people can share their opinions regarding specific books and food items. It will be particularly useful for communities like students from a specific college, school, or people belonging to the same local area.
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About Tech-Stack:

Back-End and Database:

We used the Django-REST framework for our backend and SQLite as our database. Django REST framework is a powerful and flexible toolkit for building Web APIs. WE chose Django-REST framework because of the following factors-

- It provides web-browsable APIs.
- Its authentication policies include packages for OAuth1a and OAuth2.
- It has serialization that supports both ORM and non-ORM data sources.
- It's customizable all the way down - just use regular function-based views if you don't need the more powerful features.
- It has extensive documentation, and great community support.
- It is used and trusted by internationally recognised companies including Mozilla, Red Hat, Heroku, and Eventbrite.

The REST framework requires Python and Django.

We used SQLite for our database as SQLite file format is stable, cross-platform, and backwards compatible and it is small, fast, self-contained, highly reliable, full-featured. Also, SQLite is by default configured by the Django-REST framework, with no extra installations.

Front-End:

We used React and Redux for our frontend.

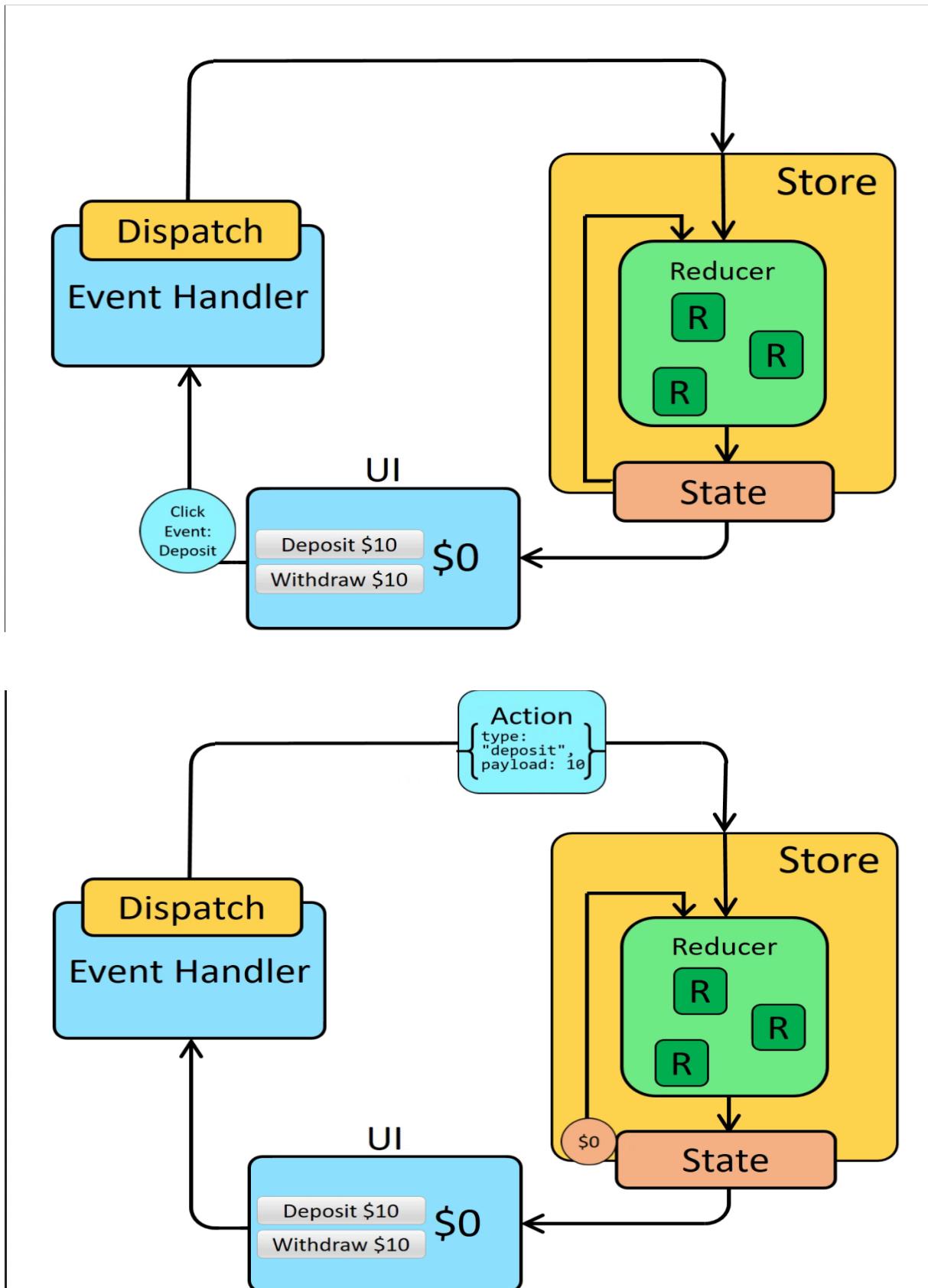
React makes it painless to create interactive UIs. Design simple views for each state in your application, and React will efficiently update and render just the right components when your data changes. We chose React because of the following factors-

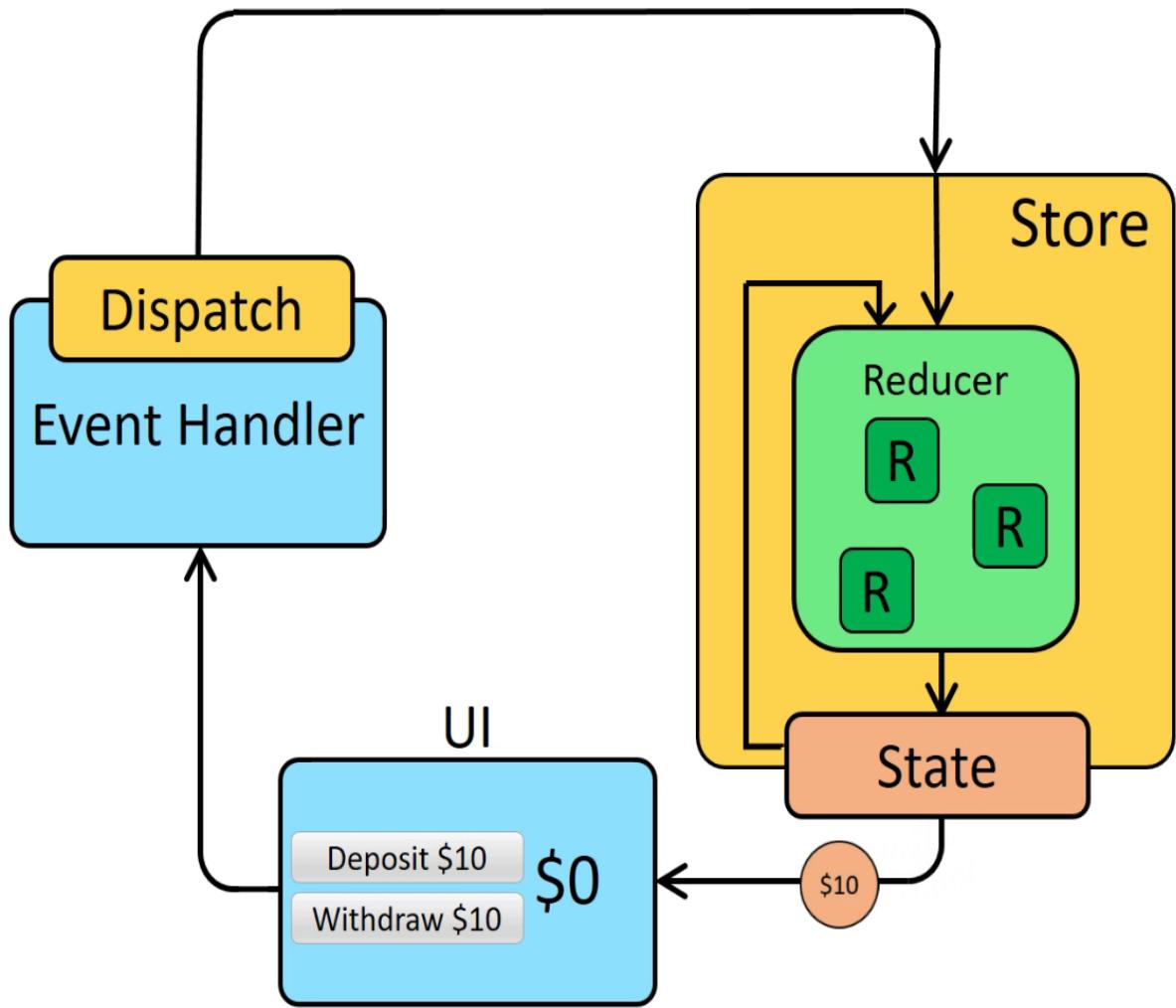
- It is declarative and declarative views make the code more predictable and easier to debug.
- We can build encapsulated components that manage their own state and then compose them to make complex UIs.
- Its Learn Once, Write Anywhere policy makes it a perfect fit for frontend as they don't make any assumptions about the rest of our technology stack, so we can easily develop new features in React without rewriting any of the existing code.
- React can also render on the server using Node that makes it even more powerful.

We also used Redux that acts as a state container for our application.

We used Redux because of the following factors-

- Redux helps us write applications that behave consistently, run in different environments and are easy to test.
- It helps in centralizing the application's state and logic that in turn enables capabilities like undo/redo, state persistence etc.
- The Redux DevTools make it easy to trace when, where, why, and how your application's state changed.
- Redux works with any UI layer, and has a large ecosystem of addons to fit our needs. In fact this was one of the main reasons that made us choose Redux.





Postman:

We used Postman for testing the API and checking the response.

The screenshot shows the Postman application interface. On the left, there's a sidebar with 'My Workspace' containing 'Collections' (ReadFeed), 'APIs', 'Environments', 'Mock Servers', 'Monitors', 'Flows', and 'History'. The main area shows a 'POST Create User' request under 'ReadFeed'. The request details are as follows:

- Method: POST
- URL: http://127.0.0.1:8000/api/accounts/signup
- Headers (12): (This section is collapsed)
- Body (selected): JSON
- Body content:

```
1 {"name": "Kashif",
2   "email": "kashif@gmail.com",
3   "password": "password",
4   "password2": "password"
5 }
```

Below the request, the response is displayed:

- Status: 200 OK
- Time: 16 ms
- Size: 349 B
- Save Response
- Body (Pretty):

```
1 {
2   "error": "Email already exists"
3 }
```

Main Features of our application:

SignUp User:

Allow all new users to make a new account.

The screenshot shows a web browser window with the URL `localhost:3000/signup` in the address bar. The page has a header with a teal background. On the left, it says "ReadFeedCatalogue". On the right, there are "Login" and "Sign Up" buttons. Below the header is a green navigation bar with three items: "Home", "Listings", and "Contact". The main content area has a white background. It features a large blue "Sign Up" heading and the subtext "Create your Account". Below this are four input fields: "Name", "Email", "Password", and "Confirm Password". At the bottom of the form is a blue "Register" button. At the very bottom right of the page, there is a small link "Already have an account? [Sign In](#)".

Login User:

Allow existing users to login.

The screenshot shows a web browser window with the URL `127.0.0.1:8000/login` in the address bar. The page has a blue header with the text "ReadFeedCatalogue". In the top right corner of the header are "Login" and "Sign Up" buttons. Below the header is a green navigation bar with three links: "Home", "Listings", and "Contact". The main content area is titled "Sign In" in large blue text, followed by the sub-instruction "Sign into your Account". There are two input fields: one for "Email" and one for "Password", both with placeholder text. Below these fields is a blue "Login" button. At the bottom of the form, there is a link "Don't have an account? [Sign Up](#)".

Listings:

Display all the books and food reviews at one place.

Screenshot of a web application interface titled "ReadFeedCatalogue".

The top navigation bar includes links for "Home", "Listings" (which is the active page), and "Contact". There are also "Login" and "Sign Up" buttons.

The main content area displays three book listings:

- CLRS**: Book cover for "INTRODUCTION TO ALGORITHMS" (THIRD EDITION) by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein. Category: COMPUTER SCIENCE. Includes a "View Listing" button.
- Harry Potter and the Chamber of Secrets**: Book cover for "HARRY POTTER and the Chamber of Secrets" by J.K. Rowling. Category: FICTION. Includes a "View Listing" button.
- Romeo and Juliet**: Book cover for "ROMEO AND JULIET" by William Shakespeare. Category: LITERATURE. Includes a "View Listing" button.

Pagination controls at the bottom left indicate pages 1 and 2 are selected.

Pagination:

Pagination for handling too many reviews page by page.

INTRODUCTION TO
ALGORITHMS
THIRD EDITION
COMPUTER SCIENCE

View Listing

THE TOWER OF FIRE

FICTION

View Listing

WILLIAM SHAKESPEARE

LITERATURE

View Listing

Previous 1 2 Next

Hardy Boys

THE HARDY BOYS #1

THE TOWER TREASURE

FRANKLIN W. DIXON

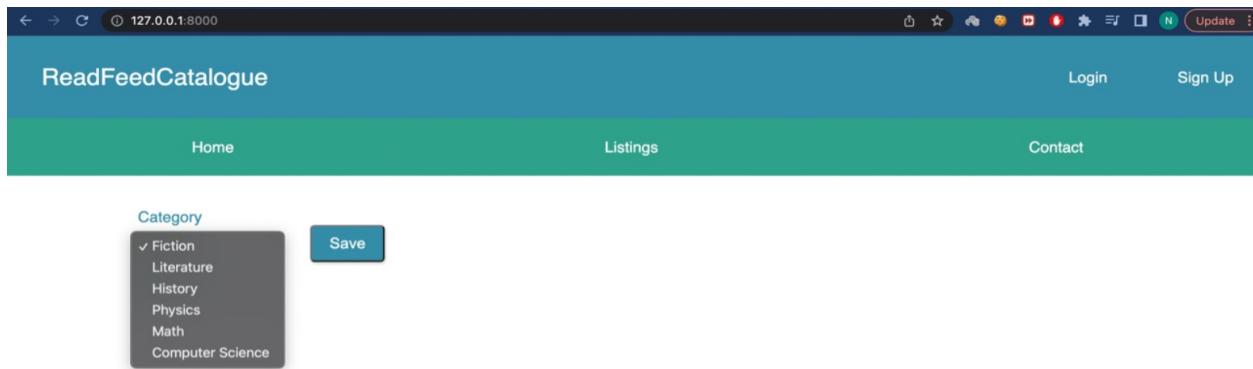
FICTION

View Listing

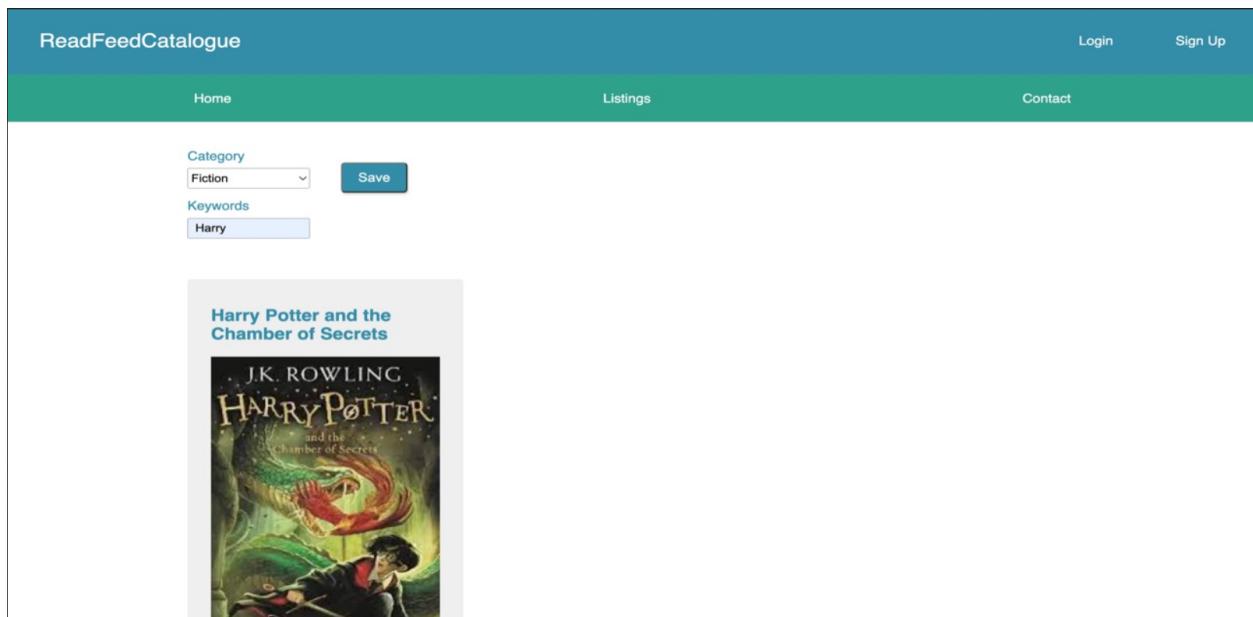
Previous 1 2 Next

Category Search:

We can categorize the reviews for food and books. We can even further subcategorize the books into their genre (like fiction, history, math, etc.)



A screenshot of a web browser displaying the 'ReadFeedCatalogue' application. The URL in the address bar is 127.0.0.1:8000. The page has a dark blue header with the title 'ReadFeedCatalogue' and links for 'Login' and 'Sign Up'. Below the header is a green navigation bar with links for 'Home', 'Listings', and 'Contact'. The main content area features a sidebar on the left containing a 'Category' dropdown menu with options: Fiction (selected), Literature, History, Physics, Math, and Computer Science. To the right of the dropdown is a blue 'Save' button.



A screenshot of the 'ReadFeedCatalogue' application showing a search result. The interface is similar to the previous screenshot, with a dark blue header, green navigation bar, and a sidebar for categories. In the main content area, there is a search form with a 'Category' dropdown set to 'Fiction' and a 'Keywords' input field containing 'Harry'. Below the form, a book listing for 'Harry Potter and the Chamber of Secrets' by J.K. Rowling is displayed. The listing includes the book's title, author, and a thumbnail image of the book cover, which features Harry Potter and a red凤凰 (Fawkes).

Search by a specific keyword:

If you want to search the review by entering a part of its title this feature will help you.

This feature also supports partial keyword search for our application.

ReadFeedCatalogue

Login Sign Up

Home Listings Contact

Category
 Save

Keywords

Harry Potter and the Chamber of Secrets





FICTION

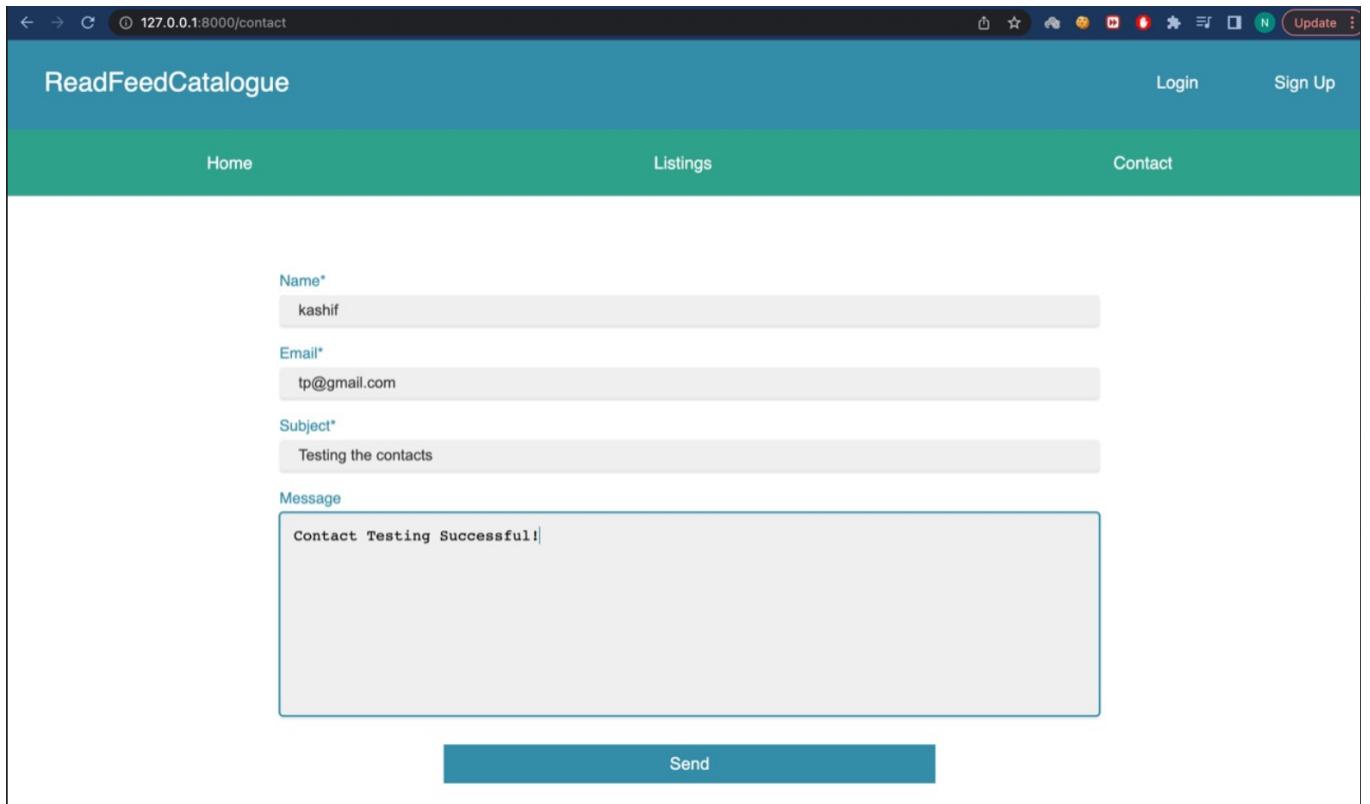
[View Listing](#)

[Previous](#) 1 [Next](#)

Contact Message Notification on Mail:

Any user can send an email to us using this feature. It's for contacting us directly. If someone is facing any problem on the app or even bug reports, etc. can directly be communicated with us.

The email is being sent to us on gmail through SMTP(Simple Mail Transfer Protocol).



A screenshot of a web browser window showing a contact form submission. The URL in the address bar is 127.0.0.1:8000/contact. The page title is "ReadFeedCatalogue". The navigation menu includes "Home", "Listings", and "Contact". The "Contact" section contains fields for Name*, Email*, Subject*, and Message. The Name field has "kashif" entered. The Email field has "tp@gmail.com" entered. The Subject field has "Testing the contacts" entered. The Message area contains the text "Contact Testing Successful!". A blue "Send" button is at the bottom of the message area.

Name*
kashif

Email*
tp@gmail.com

Subject*
Testing the contacts

Message
Contact Testing Successful!

Send

After clicking the send button:

The screenshot shows a web application interface with a blue header bar containing the title "ReadFeedCatalogue". Below the header is a green navigation bar with links for "Home", "Listings", and "Contact". A green success message bar at the top states "Message Sent". The main form area contains fields for "Name*", "Email*", "Subject*", and "Message". The "Name" field has "kashif" entered, "Email" has "tp@gmail.com", "Subject" has "Testing the contacts", and the "Message" field contains "Contact Testing Successful!". A "Send" button is visible at the bottom of the form.

We receive the above subject and message in our email:

The screenshot shows a Gmail inbox with 1,197 messages. The message list includes one from "nkash2000@gmail.com" with the subject "Testing the contacts". The message details show the recipient as "to me", the name as "kashif", the email as "tp@gmail.com", and the message content as "Contact Testing Successful!". The Gmail interface includes a sidebar with navigation links like "Compose", "Inbox", "Starred", "Snoozed", "Important", "Sent", "Drafts", "Categories", "Personal", "Meet", "Hangouts", and a search bar at the top.

JWT Authentication:

For safely authenticating the user that is using the application.

The screenshot shows the Postman application interface. The left sidebar contains sections for Home, Workspaces, API Network, Reports, and Explore. Under My Workspace, there is a 'ReadFeed' collection with several items: 'POST Create User', 'POST token' (which is selected), 'GET Book Listings', and 'POST Book Search'. The main workspace shows a 'POST ReadFeed / token' request. The request URL is `http://127.0.0.1:8000/api/token/`. The 'Body' tab is active, showing a JSON payload:

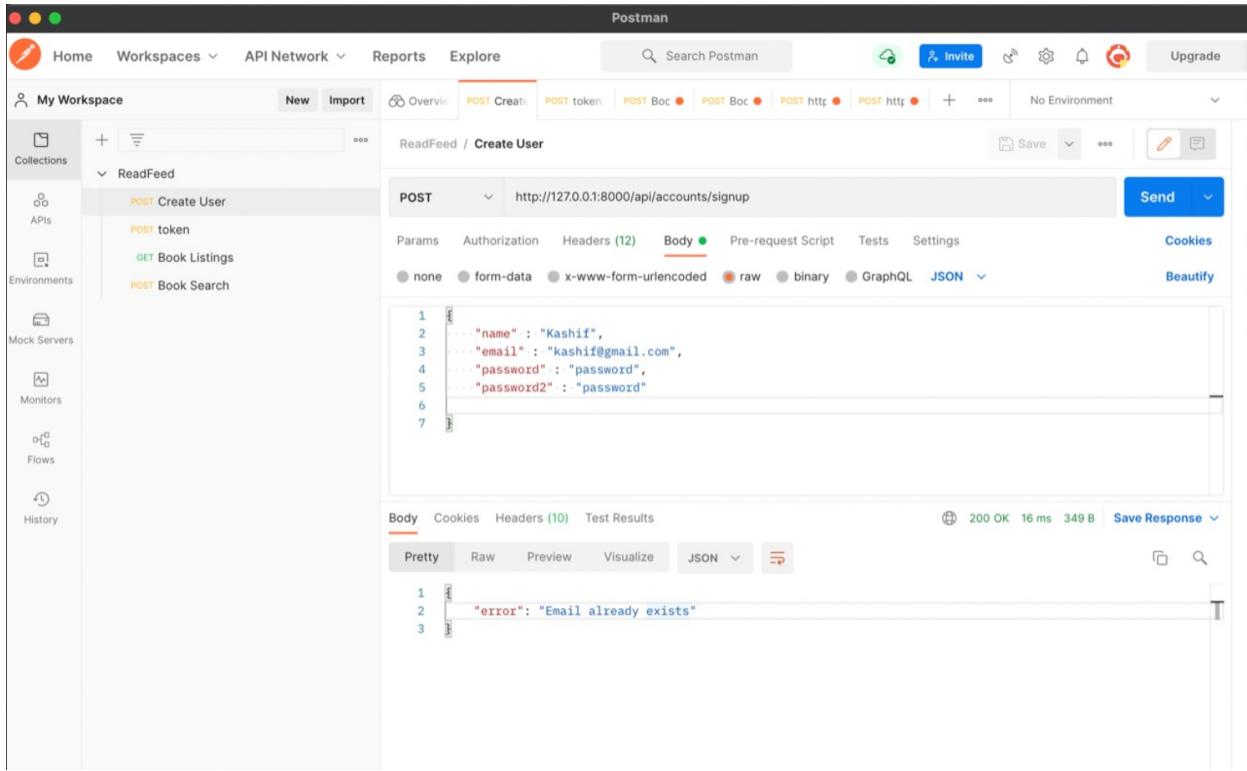
```
1 {
2   ...
3     "email" : "tp@gmail.com",
4     "password" : "user1234"
```

The response at the bottom indicates a 200 OK status with 102 ms latency and 801 B size. The response body is also shown in JSON format:

```
1 {
2   ...
3     "refresh": "eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.
4       eyJ0b2tlbl90eXB1IjoicVmcmVzaiCisInV4cCi6MTY1mjY5ODYwMiwiwF0IjoxNjUyNjEyMjAyLCJqdGk1oIz0d5YTBiMjU1ZGV0YmVmJlZDq3ZQ0NzgwYTFINCisInVzXZjfaWQioj39.TddX6KRTrL2HHeJG8ojsMDhmWxhVAErgizzYCKv-1xs",
5     "access": "eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.
6       eyJ0b2tlbl90eXB1IjojNjZXNzIiwiZXhwIjoxNjUyNjEyNTAylCjpxQYQiOje2NTI2MTIyMDIsImp0aSI6IjcyOGQ4ZDA3NTU1YTRkNzc5YTNjMmE4NTQyMGYxMjhjIiwiidXNlc19pZCI6Mn0.yZpzsGaximx7A90hp0mxjbABTtJFejBW-lj3w-v1B6k"
```

The screenshot shows the Postman application interface. The left sidebar includes sections for Home, Workspaces, API Network, Reports, Explore, Collections, APIs, Environments, Mock Servers, Monitors, Flows, and History. The main workspace is titled "ReadFeed / Book Listings". A GET request is selected with the URL `http://127.0.0.1:8000/api/book_listings/romeo-and-juliet`. The Headers tab is active, showing an Authorization header with the value `Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI...`. The Body tab displays a JSON response with fields: title, summary, category, image, and slug. The response status is 200 OK with 10 ms latency and 497 B size.

```
1   "title": "Romeo and Juliet",
2   "summary": "A tragic love story",
3   "category": "LITERATURE",
4   "image": "http://127.0.0.1:8000/media/romeo_juliet_3sClgX4.jpeg",
5   "slug": "romeo-and-juliet"
```



JSON Web Token (JWT) defines a compact and self-contained way for securely transmitting information between parties as a JSON object. This information can be verified and trusted because it is digitally signed. JWTs can be signed using a secret (with the HMAC algorithm) or a public/private key pair using RSA or ECDSA.

Below are the reasons for which we should use JWT:

- Authorization: This is the most common scenario for using JWT.

Once the user is logged in, each subsequent request will include the JWT, allowing the user to access routes, services, and resources that are permitted with that token. Single Sign On is a

feature that widely uses JWT nowadays, because of its small overhead and its ability to be easily used across different domains.

- Information Exchange: JSON Web Tokens are a good way of securely transmitting information between parties. Because JWTs can be signed—for example, using public/private key pairs—you can be sure the senders are who they say they are. Additionally, as the signature is calculated using the header and the payload, you can also verify that the content hasn't been tampered with.

We implemented JWT using the simpleJWT library from Django.
