JS Applications: Exam Preparation 2 - Online Books Library

Link to contest: https://judge.softuni.org/Contests/Practice/Index/3044#0

You are assigned to implement a **Web application** (SPA) using JavaScript. The application should dynamically display content, based on user interaction and support user-profiles and CRUD operations, using a REST service.

1. Overview

Implement a front-end app (**SPA**) for viewing and managing **books**. The application allows visitors to browse through the posts catalog. Users may **register** with an **email** and **password** which allows them to **create** their own books. Post authors can also **edit** or **delete** their own publications at any time.

2. Technical Details

You are provided with the following resources:

- **Project scaffold**: A **package.json** file, containing a list of common dependencies. You may change the included libraries to your preference. The sections **devDependencies** and **scripts** of the file are used by the automated testing suite, altering them may result in incorrect test operation.

  > To **initialize** the project, execute the command `npm install` via the command-line terminal.

- **HTML and CSS files**: All views (pages) of the application, including **sample** user-generated **content**, are included in the file **index.html**, which links to CSS and other static files. **Each view is in a separate section** of the file, which can be identified by a **unique class name or id** attribute. Your application may use any preferred method (such as a **templating library** or manual visibility settings) to display only the selected view and to **navigate** between views upon user interaction.

- **Local REST service**: A special server, which contains **sample data** and supports **user registration** and **CRUD operations** via REST requests is included with the project. Each section of this document (where applicable) includes details about the necessary **REST endpoints**, to which **requests** must be sent, and the **shape** of the expected **request body**.

  > For **more information** on how to use the included server, see **Appendix A: Using the Local REST Service** at the end of this document.

- **Automated tests**: A complete test suite is included, which can be used to test the correctness of your solution. **Your work will be assessed, based on these tests.**

  > For **more information** on how to run the tests, see **Appendix B: Running the Test Suite** at the end of this document.

  > **Do not use CDN** for loading the dependencies because it can **affect the tests in a negative way**!

Note: When creating HTML Elements and displaying them on the page, **adhere as close as possible to the provided HTML** samples. Changing the structure of the document may **prevent the tests** from running correctly, which will **adversely affect your assessment grade**. You may **add attributes** (such as **class** and **dataset**) to any HTML Element, as well as **change "href"** attributes on links and add/change the **method** and **action** attributes of HTML Forms, to facilitate the correct operation of a routing library or another method of abstraction. You may also add hidden elements to help you implement certain parts of the application requirements.

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3. Application Requirements

Navigation Bar (5 pts)

Implement a **NavBar** for the app: navigation links should correctly change the current screen (view).

Navigation links should correctly change the current page (view). **Guests** (un-authenticated visitors) can see the links to the **Dashboard,** as well as the links to the **Login** and **Register** pages. The logged-in user navbar should contain the links to **Dashboard** page, **My Books** page, the **Add Book** page, **Welcome, {user's email address}**, and a link for the **Logout** action.

User navigation example:

Dashboard	Welcome, peter@abv.bg	My Books	Add Book	Logout

Guest navigation example:
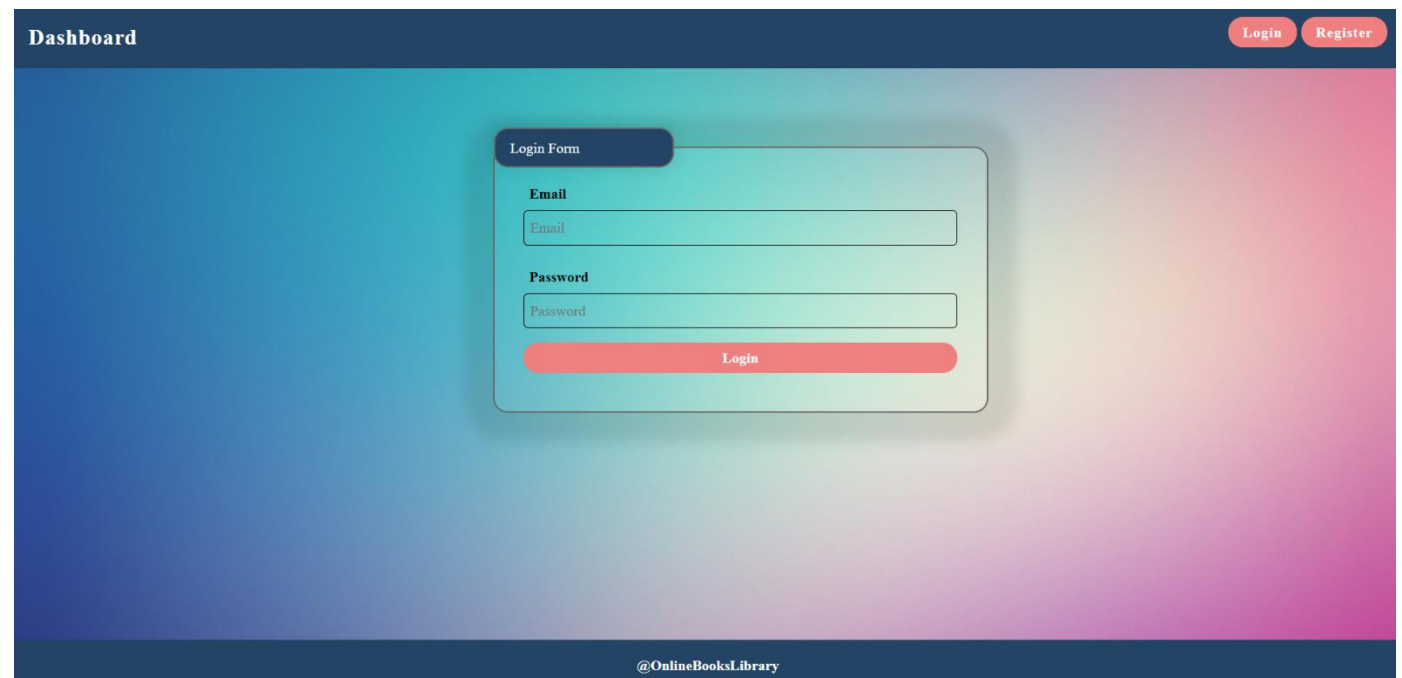
Dashboard	Login	Register

Login User (5 pts)

The **included REST service** comes with the following **premade** user accounts, which you may use for development:

```
{ "email": "peter@abv.bg", "password": "123456" }
{ "email": "john@abv.bg", "password": "123456" }
```

The **Login** page contains a form for existing user authentication. By providing an **email and password** the app should login a user in the system if there are no empty fields.

Dashboard		Login	Register

Login Form

Email

Email

Password

Password

Login

@OnlineBooksLibrary

Send the following **request** to perform login:

```
Method: POST
URL: /users/login
```

Required **headers** are described in the documentation. The service expects a body with the following shape:

```
{
```

```
    email,
    password
}
```

Upon success, the **REST service** will return the newly created object with an automatically generated **_id** and a property **accessToken**, which contains the **session token** for the user – you need to store this information using **sessionStorage** or **localStorage,** in order to be able to perform authenticated requests.

If the login was successful, **redirect** the user to the **Dashboard** page. If there is an error, or the **validations** don't pass, display an appropriate error message, using a system dialog (**window.alert**).

Register User (10 pts)

By given **email, password** app should register a new user in the system. All fields are required – if any of them is empty, display an error.

Send the following **request** to perform registration:

```
Method: POST
URL: /users/register
```

Required **headers** are described in the documentation. The service expects a body with the following shape:

```
{
    email,
    password
}
```

Upon success, the **REST service** will return the newly created object with an automatically generated **_id** and a property **accessToken**, which contains the **session token** for the user – you need to store this information using **sessionStorage** or **localStorage,** in order to be able to perform authenticated requests.

If the registration was successful, **redirect** the user to the **Dashboard** page. If there is an error, or the **validations** don't pass, display an appropriate error message, using a system dialog (**window.alert**).

Logout (5 pts)

The logout action is available to **logged-in users**. Send the following **request** to perform logout:
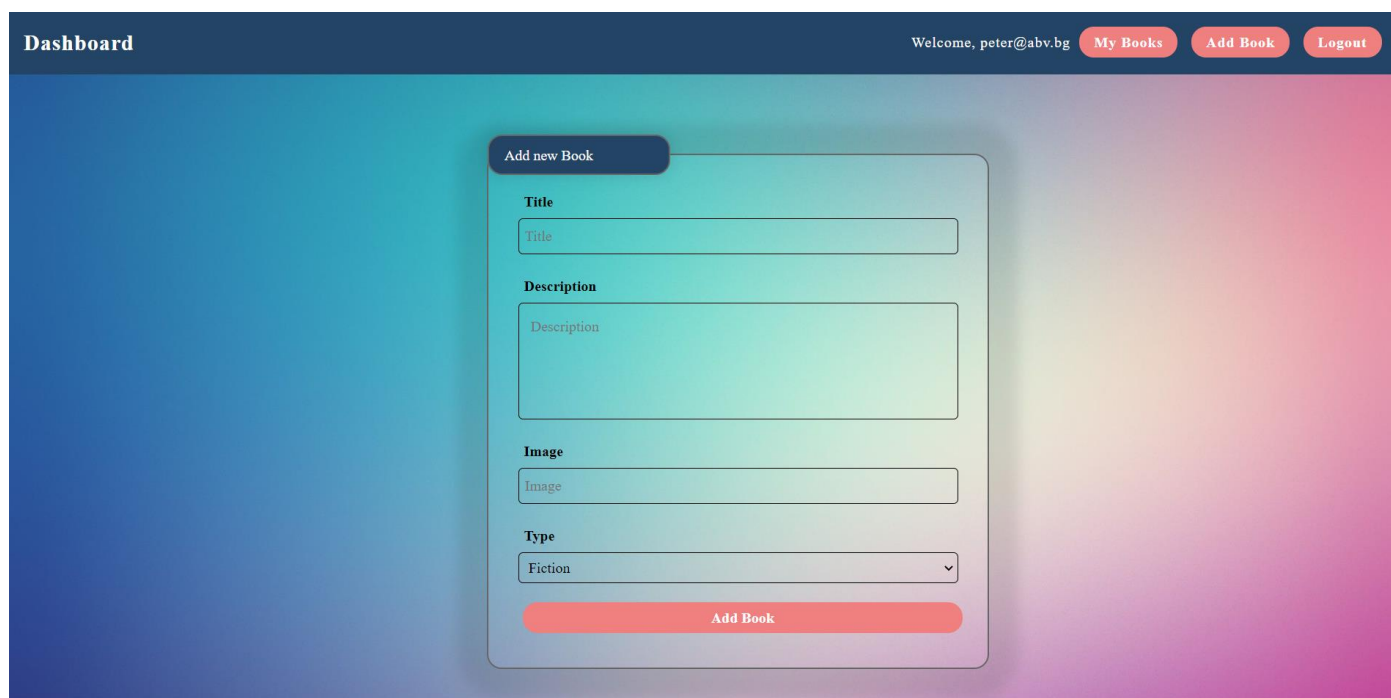
```
Method: GET
URL: /users/logout
```

Required **headers** are described in the documentation. Upon success, the **REST service** will return an **empty response**. Clear any session information you've stored in browser storage.

If the logout was successful, **redirect** the user to the **Dashboard** page.

Add Book Screen (15 pts)

The Create page is available to **logged-in users**. It contains a form for adding a new book. Check if all the fields are filled before you send the request.

To create a post, send the following **request**:

```
Method: POST
URL: /data/books
```
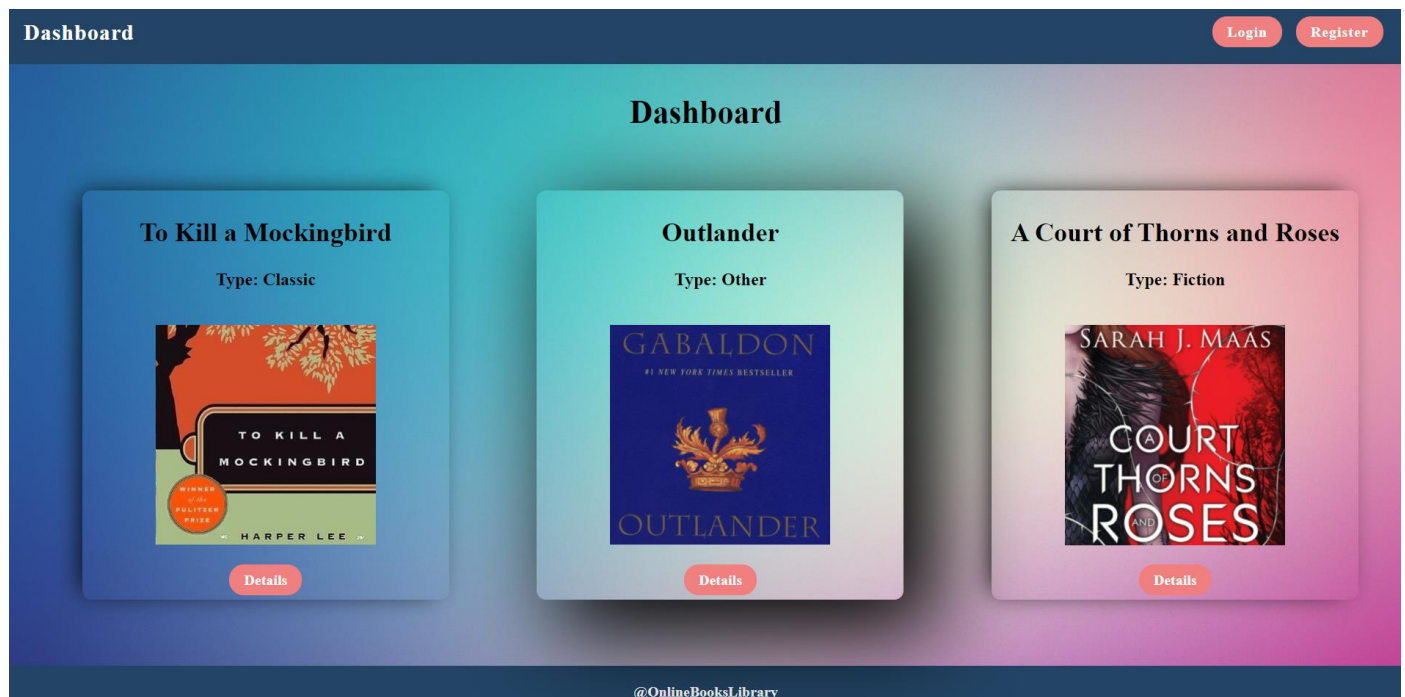
Required **headers** are described in the documentation. The service expects a body with the following shape:

```
{
  title,
  description,
  imageUrl,
  type
}
```
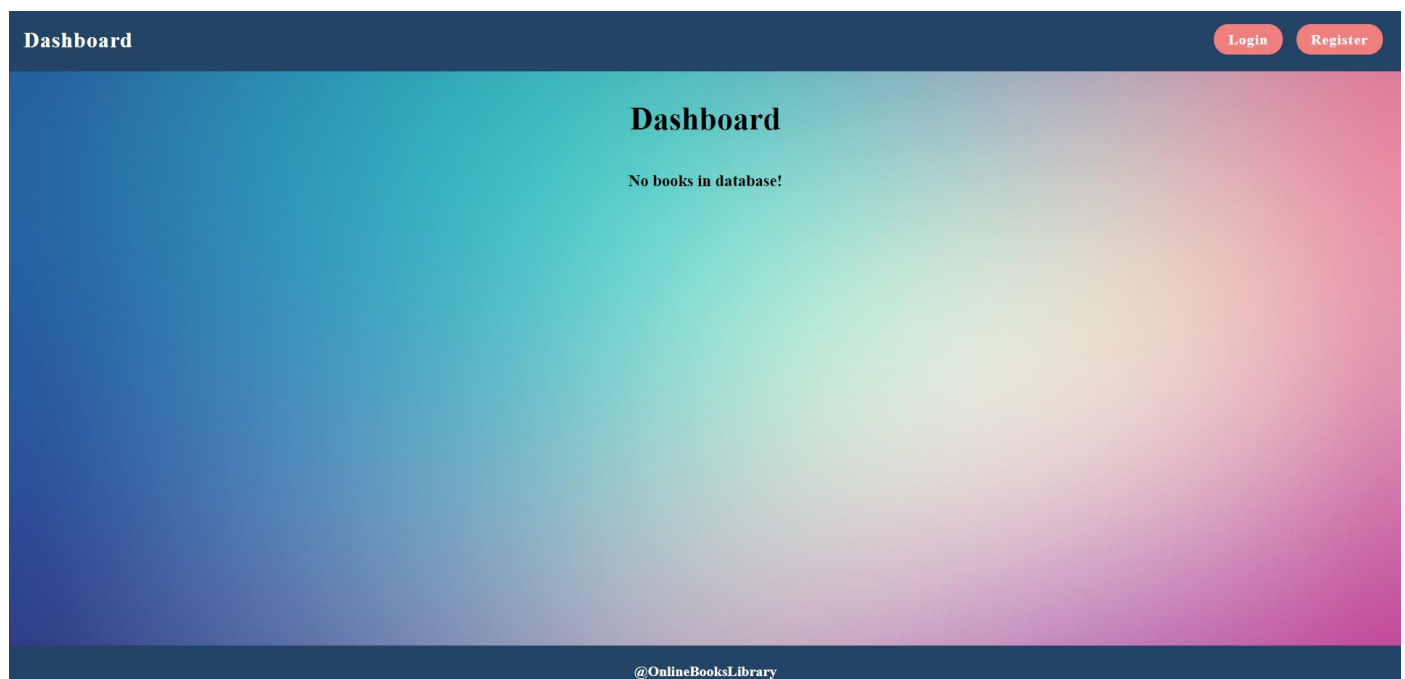
Required **headers** are described in the documentation. The service will return the newly created record. Upon success, **redirect** the user to the **Dashboard** page.

Dashboard (15 pts)

This page displays a list of all books in the system. Clicking on the details button in the cards leads to the details page for the selected book. This page should be visible to guests and logged-in users.

If there are **no books**, the following view should be displayed:

Send the following **request** to read the list of ads:
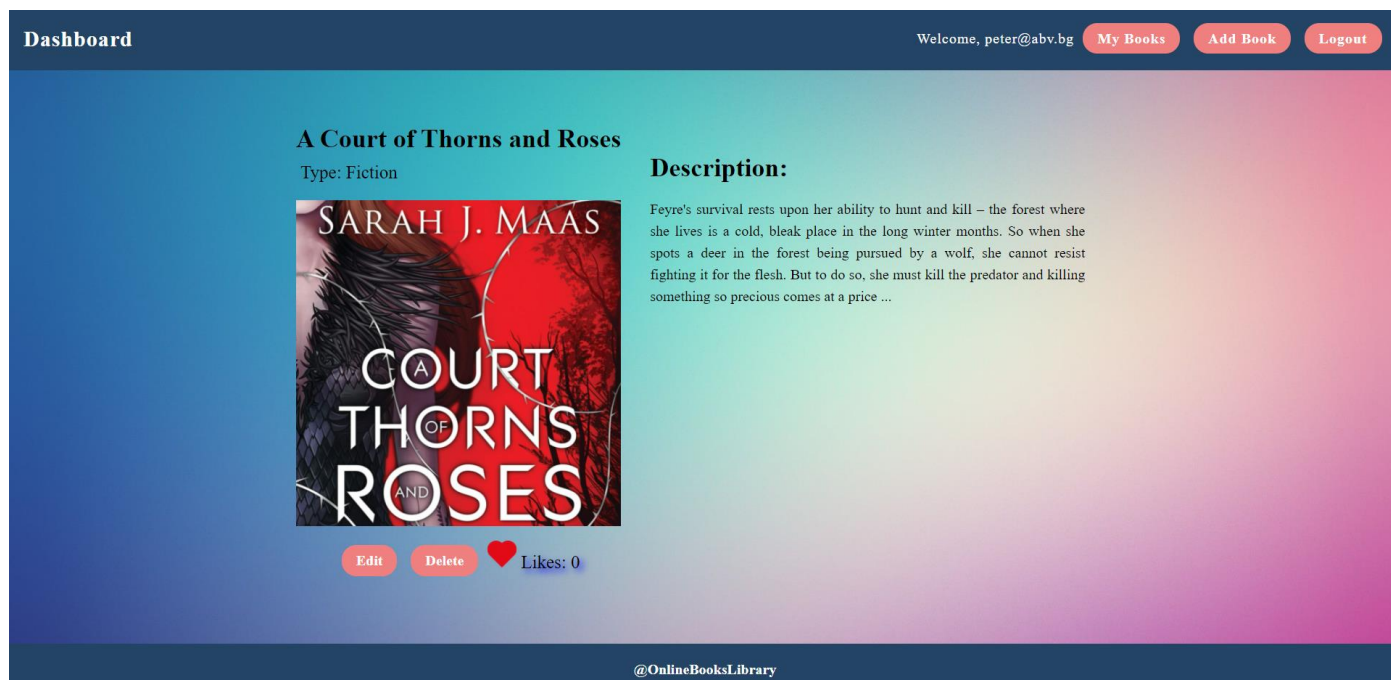
```
Method: GET
URL: /data/books?sortBy=_createdOn%20desc
```

Required **headers** are described in the documentation. The service will return an array of books.

Book Details (10 pts)

All users should be able to **view details** about books. Clicking the **Details** link in of a **book card** should **display** the **Details** page. If the currently **logged-in user** is the **creator**, the **Edit** and **Delete** buttons should be displayed, otherwise they should not be available. The view for the **creators** should look like:

The view for **guests** should look like:

Send the following **request** to read a single book:

Method: GET

URL: /data/books/*:id*

Where *:id* is the **id** of the desired card. Required **headers** are described in the documentation. The service will return a single object.

Edit Book Screen (15 pts)

The Edit page is available to logged-in users and it allows authors to **edit** their **own** book. Clicking the **Edit** link of a particular book on the **Details** page should display the **Edit** page, with all fields filled with the data for the book. It contains a form with input fields for all relevant properties. Check if all the fields are filled before you send the request.

To edit a post, send the following **request**:

```
Method: PUT
URL: /data/books/:id
```

Where *:id* is the **id** of the desired card.

The service expects a **body** with the following shape:

```
{
  title,
  description,
  imageUrl,
  type
}
```

Required **headers** are described in the documentation. The service will return the modified record. Note that **PUT** requests **do not** merge properties and will instead **replace** the entire record. Upon success, **redirect** the user to the **Details** page for the current book.

Delete Book (10 pts)

The delete action is available to **logged-in users**, for books they have created. When the author clicks on the Delete action on any of their book, a confirmation dialog should be displayed, and upon confirming this dialog, the book should be **deleted** from the system and user should be **redirect** to the **Dashboard** page.

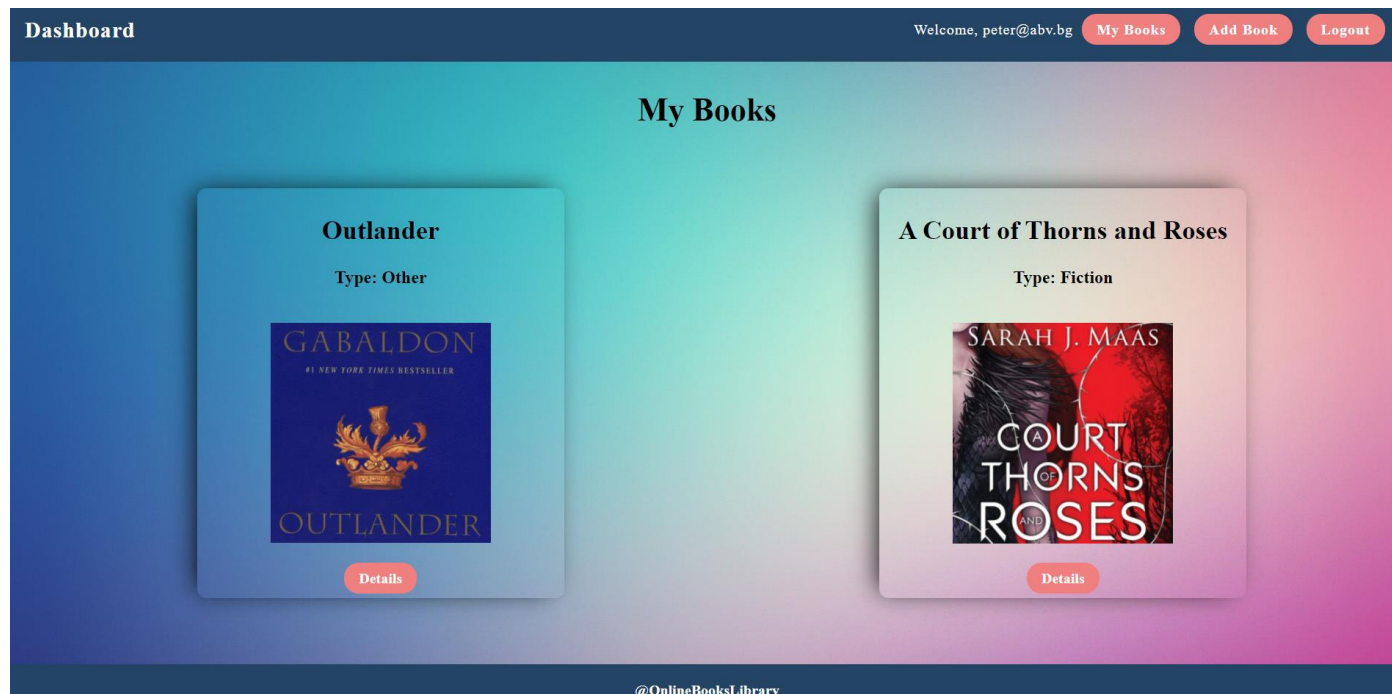To delete a book, send the following **request**:
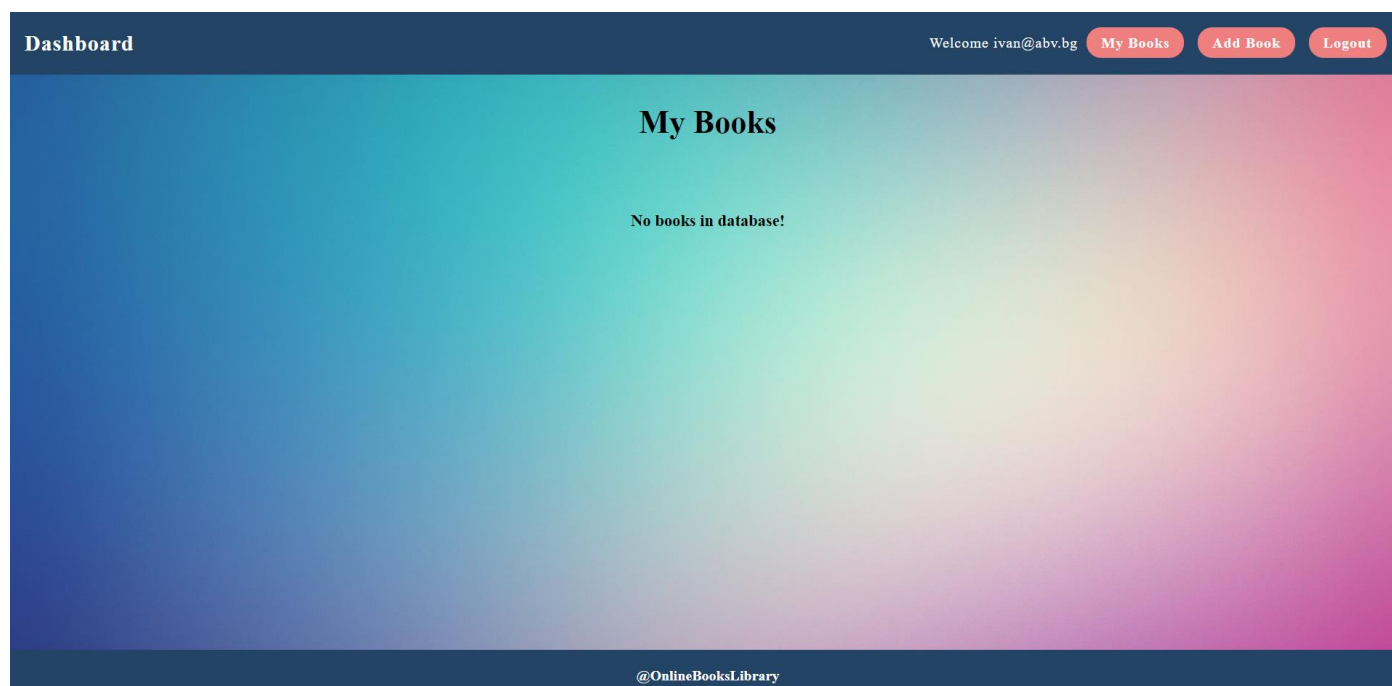
Method: DELETE
URL: /data/books/*:id*

Where *:id* is the **id** of the desired book. Required **headers** are described in the documentation. The service will return an object, containing the deletion time. Upon success, **redirect** the user to the **Dashboard** page.

My Books (10 pts)

Each **logged-in user** should be able to view his own books by clicking [**My Books**]. Here should be listed all books added by the current user.

If there are **no books**, the following view should be displayed:

Send the following **request** to read the list of ads:

Method: GET

```
URL: /data/books?where=_ownerId%3D%22{userId}%22&sortBy=_createdOn%20desc
```

Where *{userId}* is the **id** of the currently logged-in user. Required **headers** are described in the documentation. The service will return an array of books.

BONUS: Like a book (15 Pts)

Every logged-in user should be able to **like other books**, but **not his own**. By clicking on the **[Like]** button, **the counter of each book increases by 1**.

The view when the user did not press **[Like]** button should look like:
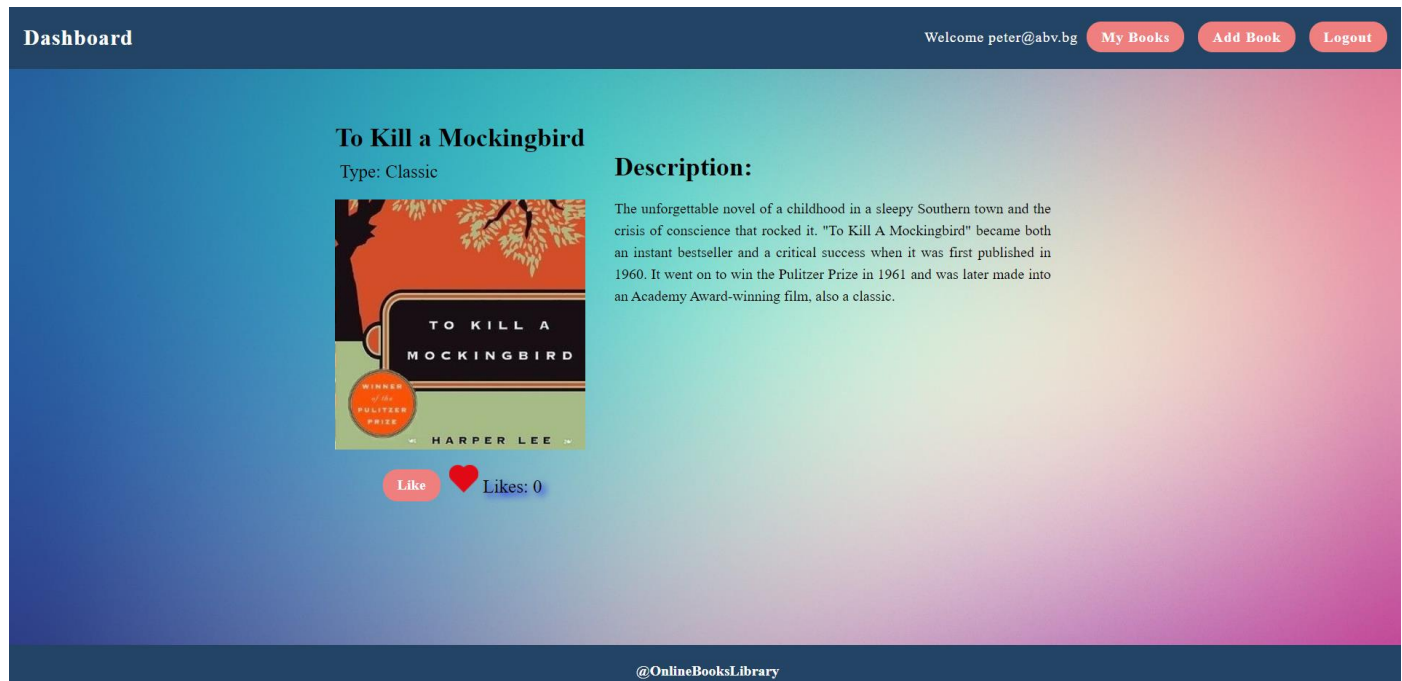
When the user **Liked** the book the **[Like]** button should not be available and the counter should be increased by 1.

Creator should not be able to see the **[Like]** button. The view should look like:
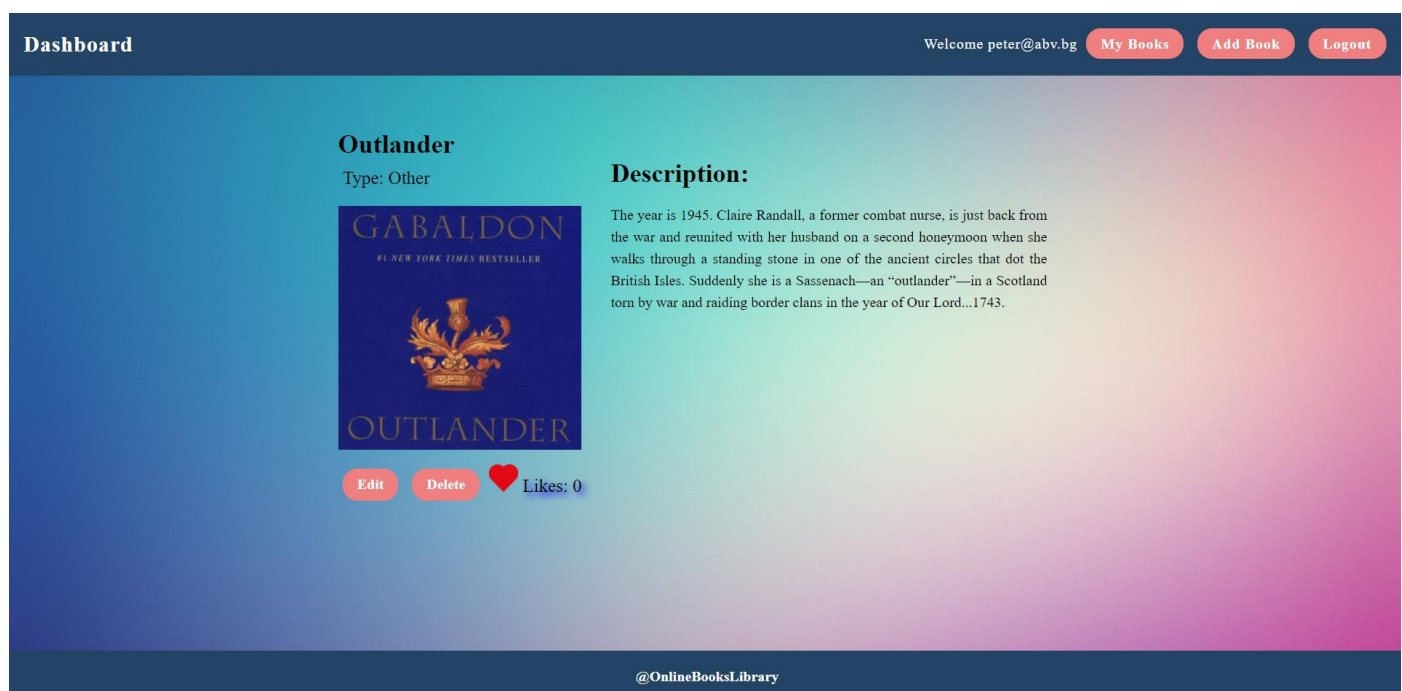
Guest should not be able to see the **[Like]** button. The view for **guests** should look like:

Follow us:

Send the following **request to add a like:**

```
Method: POST
URL: /data/likes
```

The service expects a **body** with the following shape:

```
{
   bookId
}
```

Required **headers** are described in the documentation. The service will return the newly created record.

Send the following **request to get total likes count for a book**:

```
Method: GET
URL: /data/likes?where=bookId%3D%22{bookId}%22&distinct=_ownerId&count
```

Where *{bookId}* is the **id** of the desired book. Required **headers** are described in the documentation. The service will return the **total likes** count.

Send the following **request to get like for a book from specific user**:

```
Method: GET
URL:/data/likes?where=bookId%3D%22{bookId}%22%20and%20_ownerId%3D%22{userId}%22&count
```

Where *{bookId}* is the **id** of the desired book and *{userId}* is the **id** of the currently logged-in user.
Required **headers** are described in the documentation. The service will return either **0** or **1**. Depends on that result the **[Like]** button should be displayed or not.

4. Subtmitting Your Solution

Place in a **ZIP** file your project folder. Exclude the **node_modules** folder. Upload the archive to Judge.

---
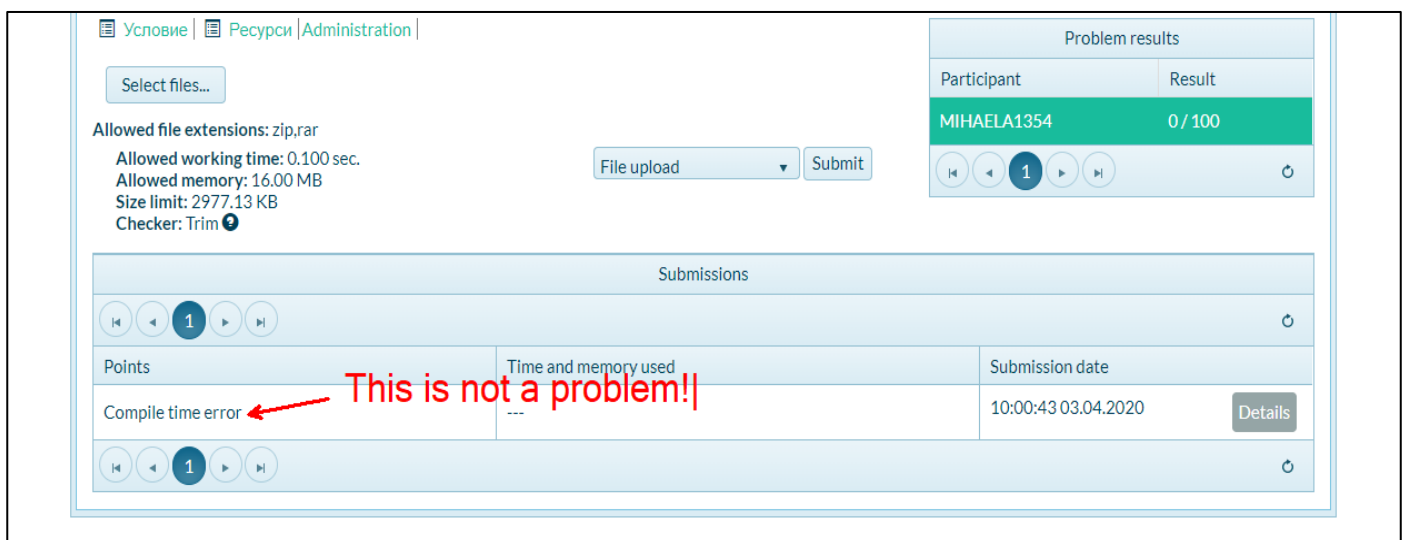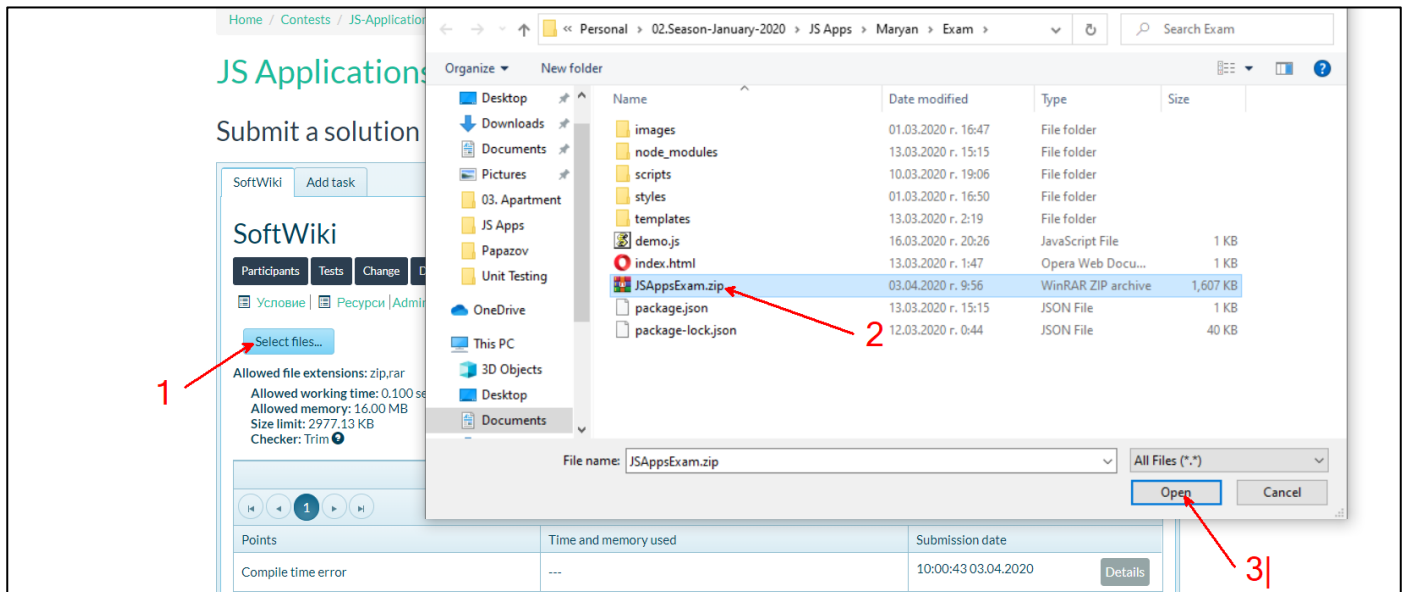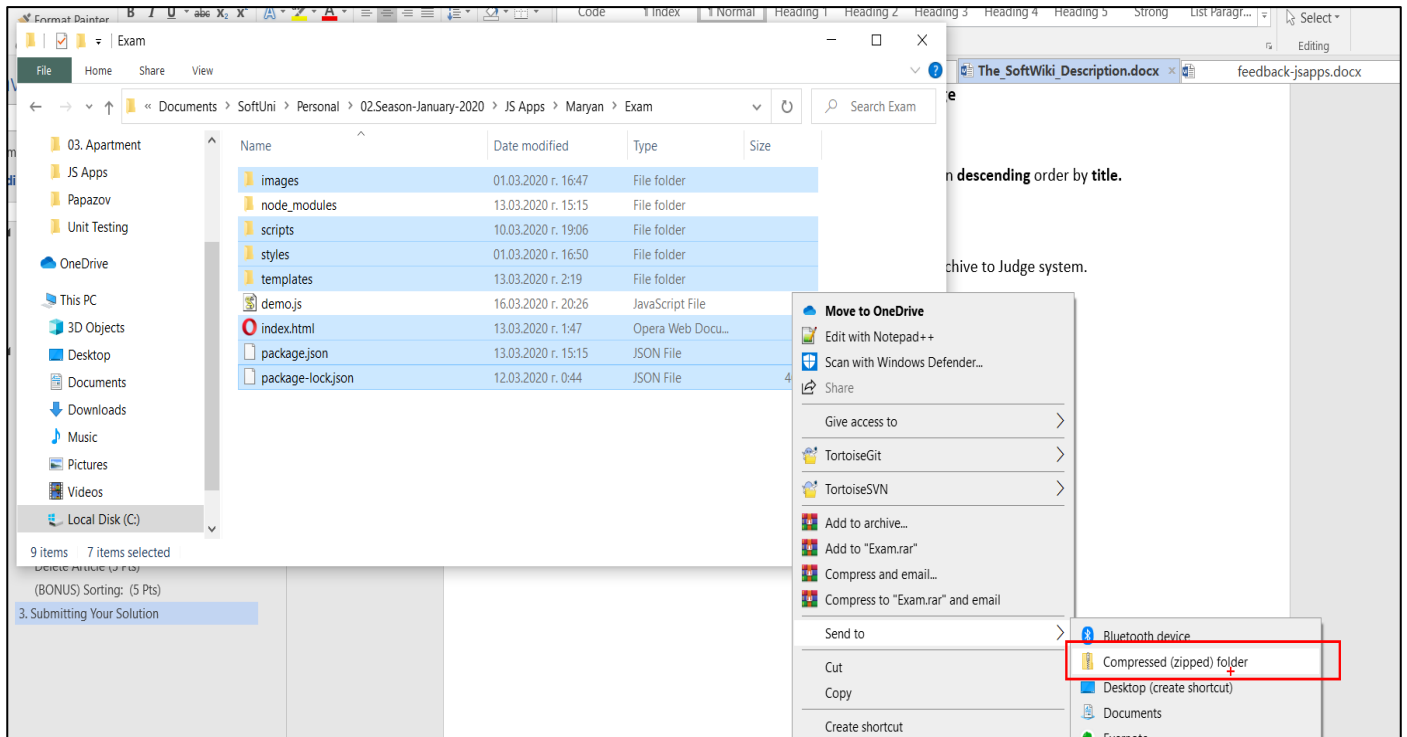
5. Appendix A: Using the Local REST Service

Starting the Service

The REST service will be in a folder named "server" inside the provided resources archive. It has no dependencies and can be started by opening a terminal in its directory and executing:

```
node server.js
```

If everything initialized correctly, you should see a message about the **host address and port** on which the service will respond to requests.

Sending Requests

To send a request, use the **hostname** and **port**, shown in the initialization log and **resource address** and **method** as described in the **application requirements**. If data needs to be included in the request, it must be **JSON-encoded**, and the appropriate **Content-Type header** must be added. Similarly, if the service is to return data, it will be JSON-encoded. Note that **some requests do not return a body** and attempting to parse them will throw an exception.

Read requests, as well as login and register requests do not require authentication. All other requests must be authenticated.

Required Headers

To send data to the server, include a **Content-Type** header and encode the body as a JSON-string:

```
Content-Type: application/json

{JSON-encoded request body as described in the application requirements}
```

To perform an authenticated request, include an **X-Authorization** header, set to the value of the **session token**, returned by an earlier login or register request:

```
X-Authorization: {session token}
```

Server Response

Data response:

```
HTTP/1.1 200 OK

Access-Contrl-Allow-Origin: *

Content-Type: application/json

{JSON-encoded response data}
```

Empty response:

```
HTTP/1.1 204 No Content

Access-Contrl-Allow-Origin: *
```

Error response:

```
HTTP/1.1 400 Request Error

Access-Contrl-Allow-Origin: *

Content-Type: application/json

{JSON-encoded error message}
```

More Information

You can find more details on the [GitHub repository of the service](#).

6. Appendix B: Running the Test Suite

Project Setup

The tests require a web server to deliver the content of the application. There is a development web server included in the project scaffold, but you may use whatever server you are familiar with. Note that specialized tools like **BrowserSync** may interfere with the tests. To initialize the project with its dependencies, open a terminal in the folder, containing the file `package.json` and execute the following:

```
npm install
```

Note that if you changed the section **devDependencies** of the project, the tests may not initialize properly.

```
E:\SVN\js-advanced\Jan-2021\JS-Applications\Exams\SoftWiki>dir
 Volume in drive E is Data
 Volume Serial Number is 5292-76EF

 Directory of E:\SVN\js-advanced\Jan-2021\JS-Applications\Exams\SoftWiki

02.04.2021 г.  19:38    <DIR>          .
02.04.2021 г.  19:38    <DIR>          ..
02.04.2021 г.  17:32            15 129 index.html
30.03.2021 г.  13:34               555 package.json
02.04.2021 г.  17:32    <DIR>          server
02.04.2021 г.  19:38         1 958 132 SoftWiki.docx
02.04.2021 г.  17:32            32 198 SoftWiki.zip
31.03.2021 г.  17:52    <DIR>          styles
01.04.2021 г.  17:08    <DIR>          tests
               4 File(s)      2 006 014 bytes
               5 Dir(s)  370 007 040 000 bytes free

E:\SVN\js-advanced\Jan-2021\JS-Applications\Exams\SoftWiki>npm install
```

Execute all commands in the directory where package.json is located (project root)

Executing the Tests

Before running the test suite, make sure a web server is operational, and the application can be found at the root of its network address. To start the included dev-server, open a terminal in the folder containing `package.json` and execute:
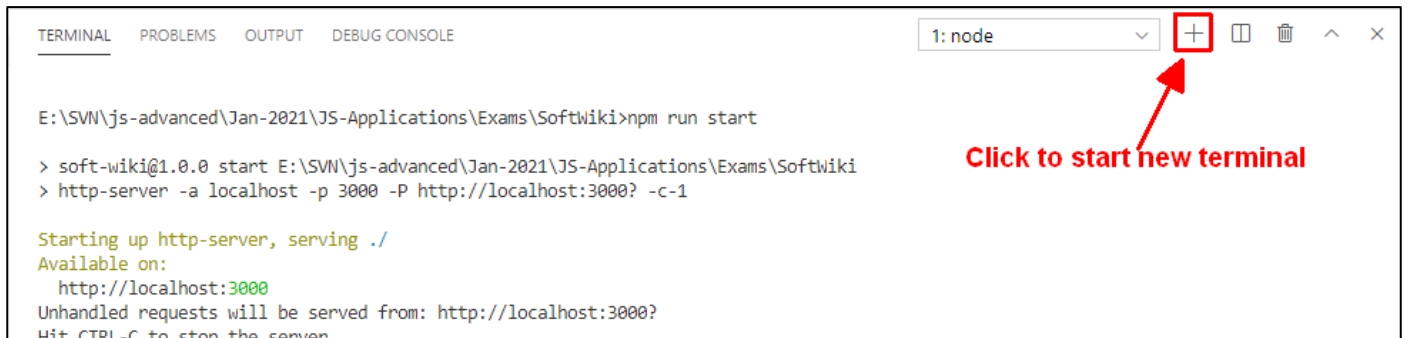
```
npm run start
```

This is a one-time operation unless you terminate the server at any point. It can be restarted with the same command as above.

To execute the tests, open a new terminal (do not close the terminal, running the web server instance) in the folder containing `package.json` and execute:

```
npm run test
```

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```
TERMINAL    PROBLEMS    OUTPUT    DEBUG CONSOLE                                    1: node        ∨   +  ▯  🗑  ∧  ✕

E:\SVN\js-advanced\Jan-2021\JS-Applications\Exams\SoftWiki>npm run start

> soft-wiki@1.0.0 start E:\SVN\js-advanced\Jan-2021\JS-Applications\Exams\SoftWiki
> http-server -a localhost -p 3000 -P http://localhost:3000? -c-1                  Click to start new terminal

Starting up http-server, serving ./
Available on:
  http://localhost:3000
Unhandled requests will be served from: http://localhost:3000?
Hit CTRL-C to stop the server
```

Test results will be displayed in the terminal, along with detailed information about encountered problems. You can perform this operation as many times as it is necessary by re-running the above command.

Debugging Your Solution

If a test fails, you can view detailed information about the requirements that were not met by your application. Open the file **e2e.test.js** in the folder **tests** and navigate to the desired section as described below.

This first step will not be necessary if you are using the included web server. Make sure the application host is set correctly:

```
5    const host = 'http://localhost:3000';  // Application host (NOT service host - that can be anything)
6    const interval = 300;
7    const timeout = 6000;
8    const DEBUG = false;
9    const slowMo = 500;
```

The value for **host** must be the address where your application is being served. Make sure that entering this address in a regular internet browser shows your application.

To make just a single test run, instead of the full suite (useful when debugging a single failing test), find the test and append **.only** after the **it** reference:

```
62        it.only('register makes correct API call [ 5 Points ]', async () => {
63            const data = mockData.users[0];
64            const { post } = await createHandler(endpoints.register, { post: data });
65
```

On slower machines, some of the tests may require more time to complete. You can instruct the tests to run more slowly by slightly increasing the values for **interval** and **timeout**:

```
5    const host = 'http://localhost:3000';  // Application host (NOT service host - that can be anything)
6    const interval = 300;
7    const timeout = 6000;
8    const DEBUG = false;
9    const slowMo = 500;
```

Note that **interval** values greater than 500 and **timeout** values greater than 10000 are not recommended.

If this doesn't make the test pass, set the value of **DEBUG** to **true** and run the tests again – this will launch a browser instance and allow you to see what is being tested, what the test sees and where it fails (or hangs):

```
5    const host = 'http://localhost:3000';  // Application host (NOT service host - that can be anything)
6    const interval = 300;
7    const timeout = 6000;
8    const DEBUG = true;
9    const slowMo = 500;
```

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If the actions are happening too fast, you can increase the value of **slowMo**. If the browser hangs, you can just close it and abort any remaining tests by focusing the terminal window and pressing **[Ctrl+C]** followed by the letter "y" and **[Enter]**.

The final thing to look for is the exact row where the test fails:

```
1) E2E tests                          Test failed at row 229
    Catalog [ 20 Points ]
      show details [ 5 Points ]:

    AssertionError: expected true to be false
    + expected - actual

    -true
    +false

    at Context.<anonymous> (tests\e2e.test.js:229:79)
```

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