JS Applications Exam – SoftWiki

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 **wiki articles**. The application allows visitors to **browse** and **read** articles on various topics in **four** programming-related **categories**. Users may **register** with an **email** and **password**, which allows them to **create** their own articles. Article 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.

3. Application Requirements

Navigation Bar (5 pts)

Navigation links should correctly change the current page (view). **SoftWiki** link should redirect to the Home page. **Guests** (un-authenticated visitors) can see the links to the **All Articles (Catalogue)** page, **Search** page as well as the links to the **Login** and **Register** pages. The logged-in user navbar should contain the links to **All Articles (Catalogue)** page, **Search** page, the **Create** page and a link for e **Logout** action.

Guest navigation example:

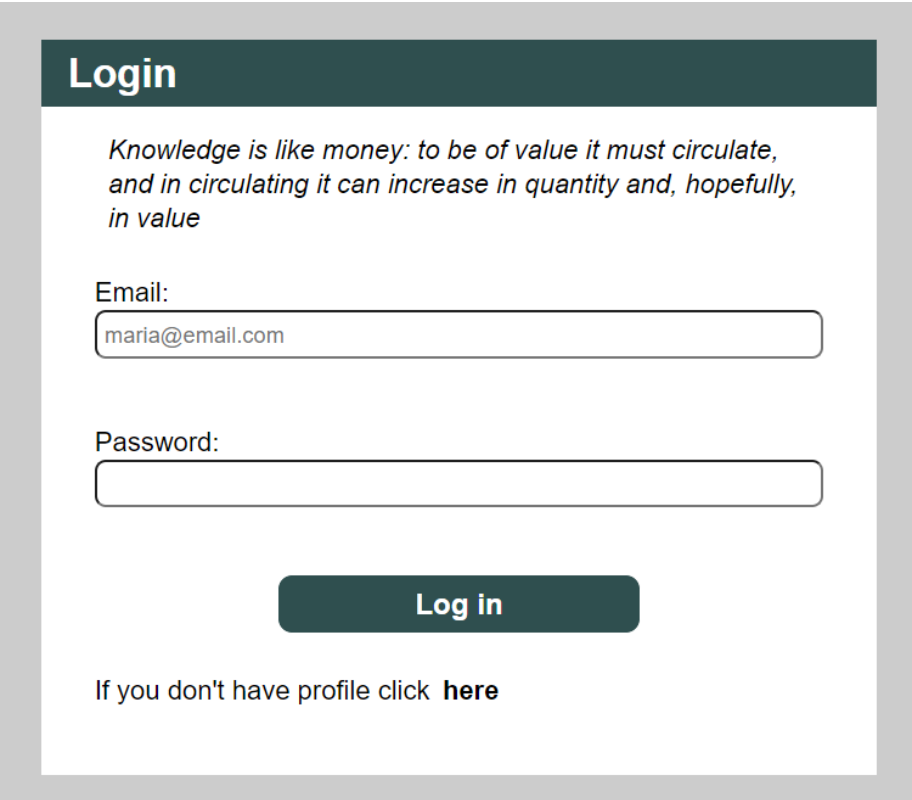
User navigation example:

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.



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:

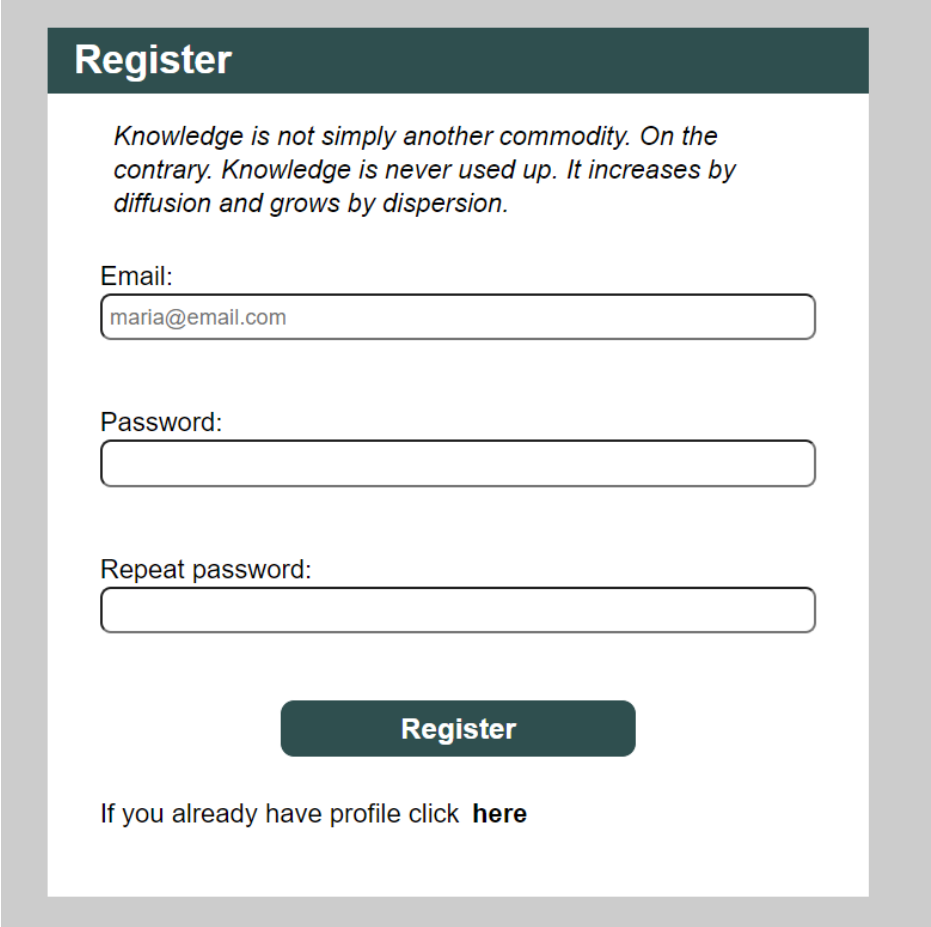
```
{
  email,
  password
}
```

Upon success, the **REST service** will return information about the existing user along with 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 **Home** page. If there is an error, display an appropriate error message, using a system dialog (**`window.alert`**).

Register User (10 pts)

The **Register** page contains a form for new user registration. By providing an **email** and **password,** the app should register a new user in the system if there are no empty fields.



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 **Home** 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:

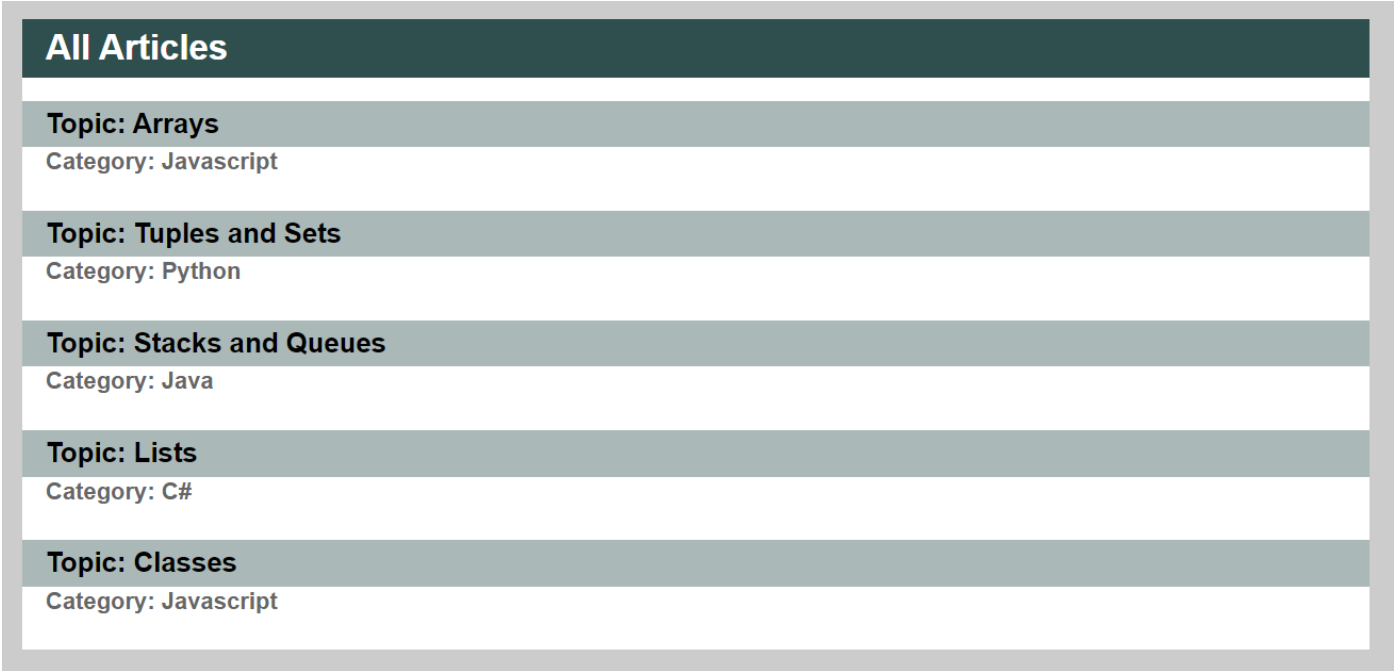
```
Method: GET
URL: /users/logout
```

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 **Home** page.

All Articles Page (Catalogue) (10 pts)

This page displays a list of all articles in the system, with their title and category. Clicking on any of the cards leads to the details page for the selected article.



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

No articles yet

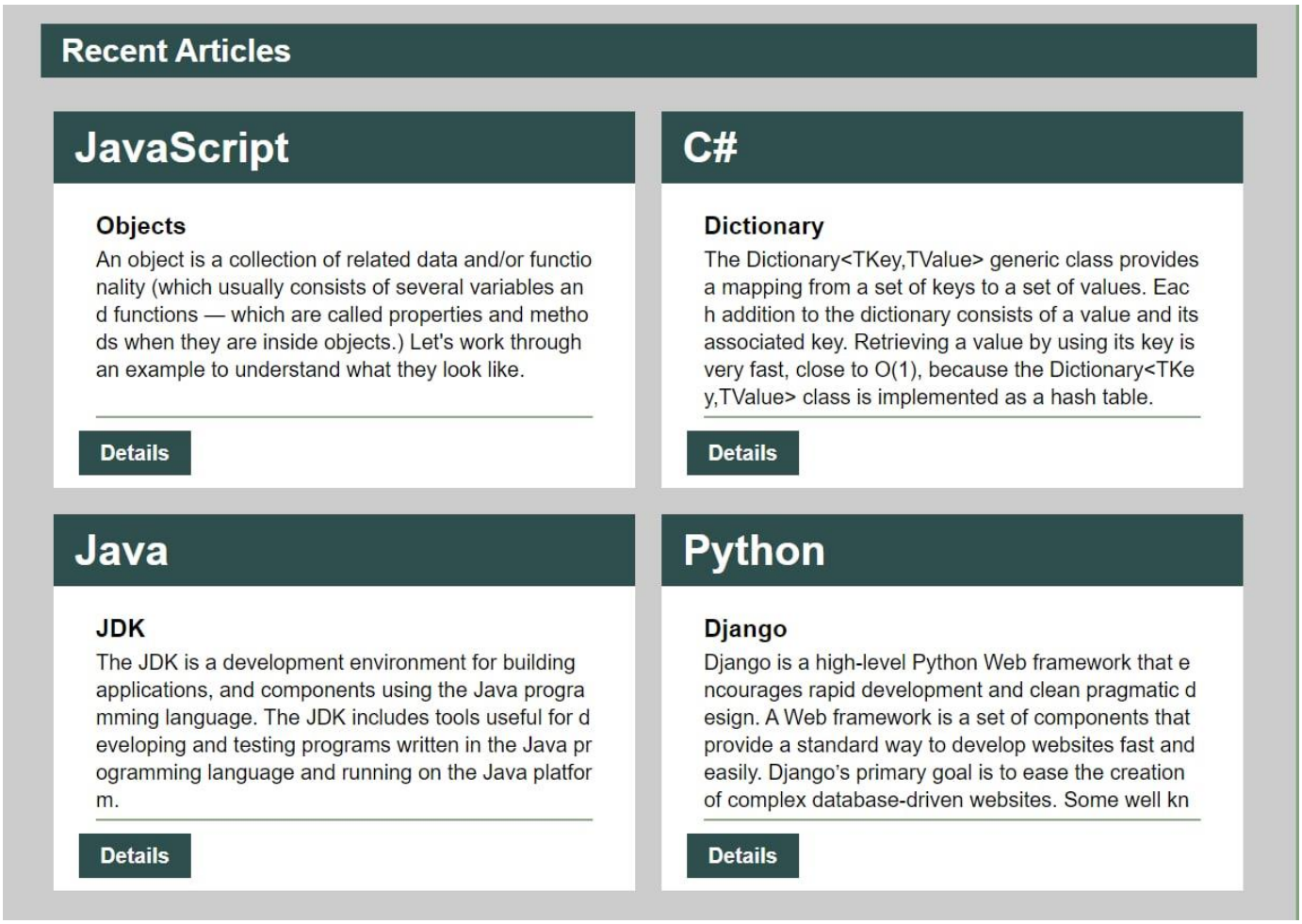
Send the following **request** to read the list of articles:

```
Method: GET
URL: /data/wiki?sortBy=_createdOn%20desc
```

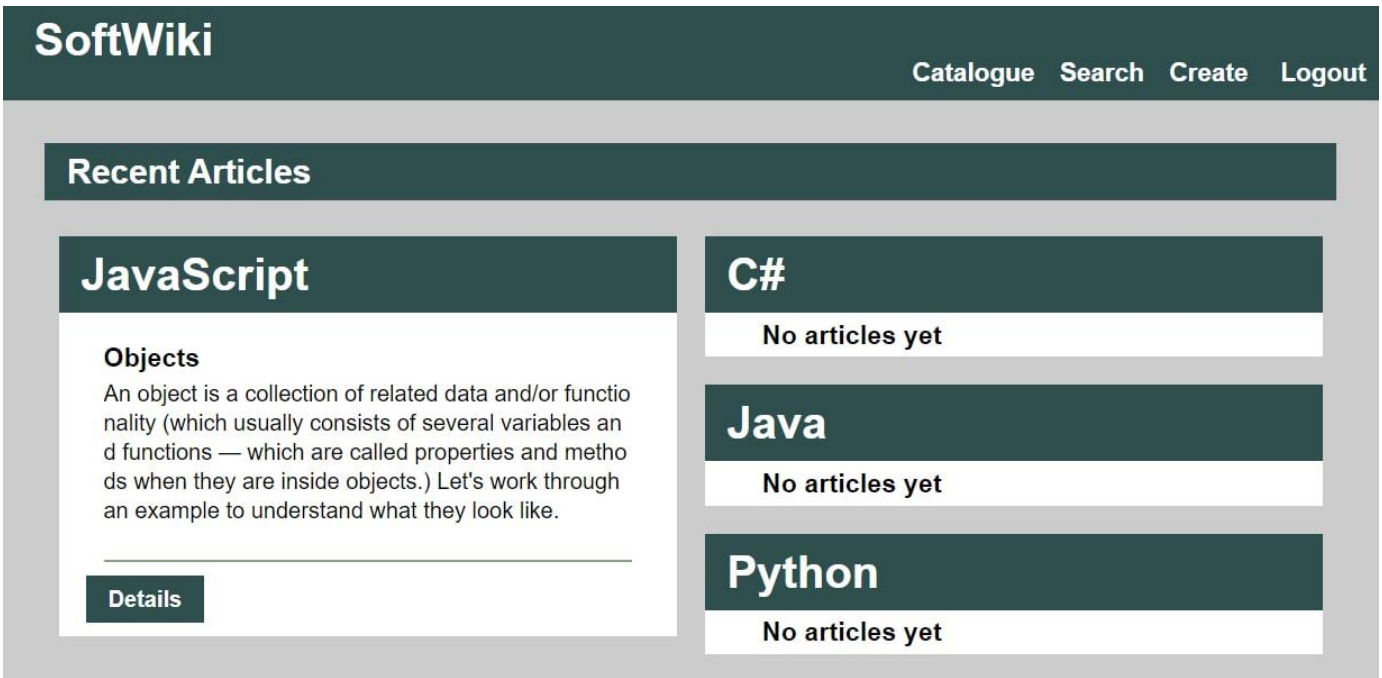
Required **headers** are described in the documentation. The service will return an array of articles.

Home Page (Recent Articles) (15 pts)

All users should be welcomed by the **Home page**, where they should be able to see the most recent article for each category. The categories are **JavaScript**, **C#**, **Java**, and **Python**. Clicking on the Details links leads to the details page for the selected article.



If any of the categories has no articles, display the text **"No articles yet"** in its section instead.



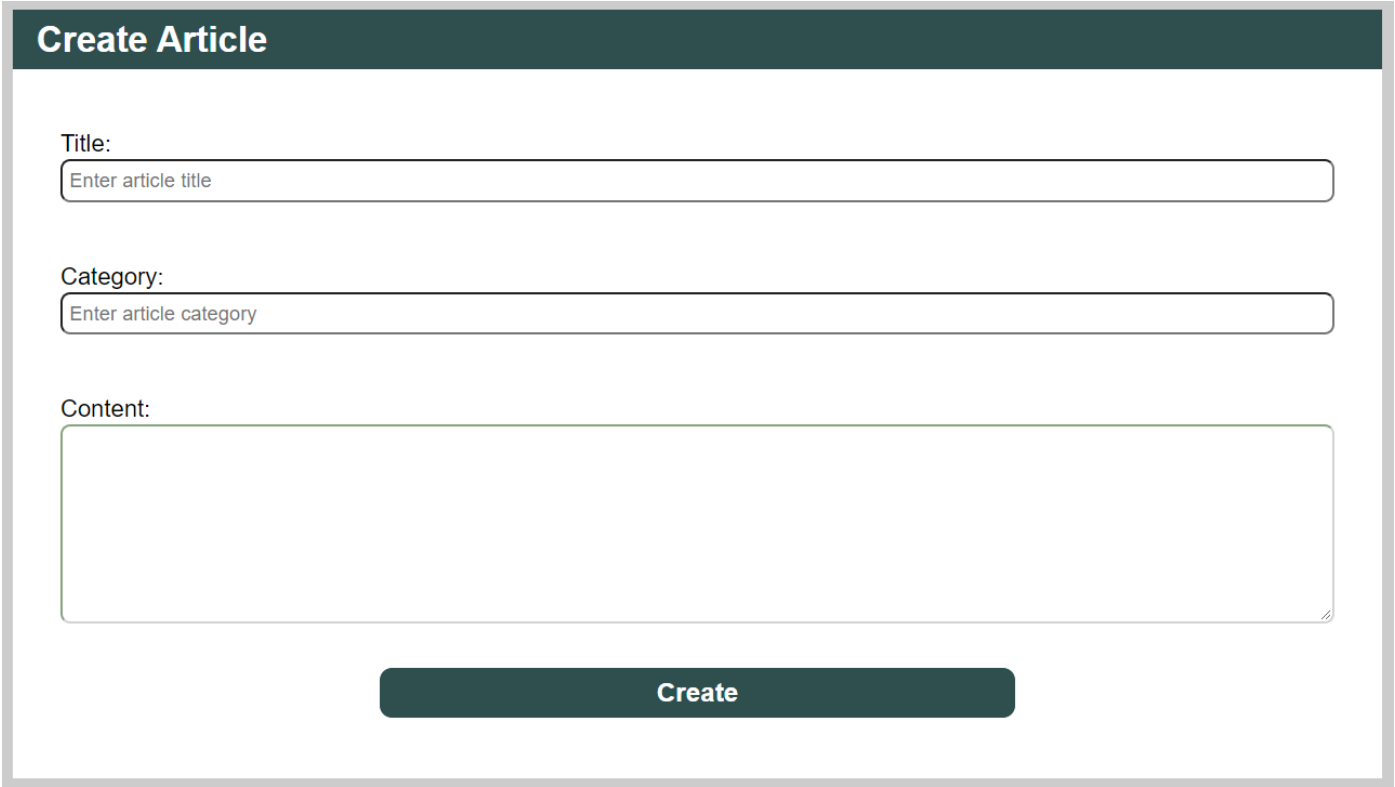
Send the following **request** to read the most recent articles:

```
Method: GET
URL: /data/wiki?sortBy=_createdOn%20desc&distinct=category
```

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

Create Article (15 pts)

The Create page is available to logged-in users. It contains a form for creating new articles. Check if all the fields are filled before you send the request. The category must be one of **"JavaScript"**, **"C#"**, **"Java"**, or **"Python"**.



To create an article, send the following **request**:

```
Method: POST
URL: /data/wiki
```

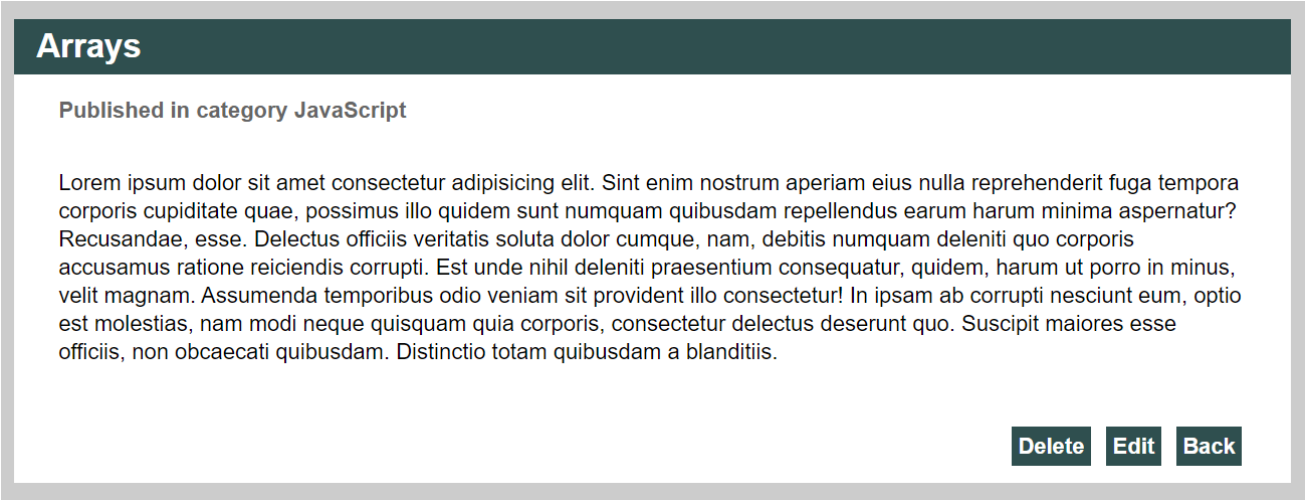
Required **headers** are described in the documentation. The service expects a body with the following shape:

```
{
  title,
  category,
  content
}
```

Required **headers** are described in the documentation. The service will return the newly created record. Upon success, **redirect** the user to the **Home** page.

Details (10 pts)

All users should be able to **view details** about articles. Clicking the **Details** link in of an **article** should **display** the **Details** page. If the currently logged-in user is the creator of the article, the **Edit** and **Delete** buttons should be displayed, otherwise only the **Back** button should be available, which redirects to the **Home** Page.



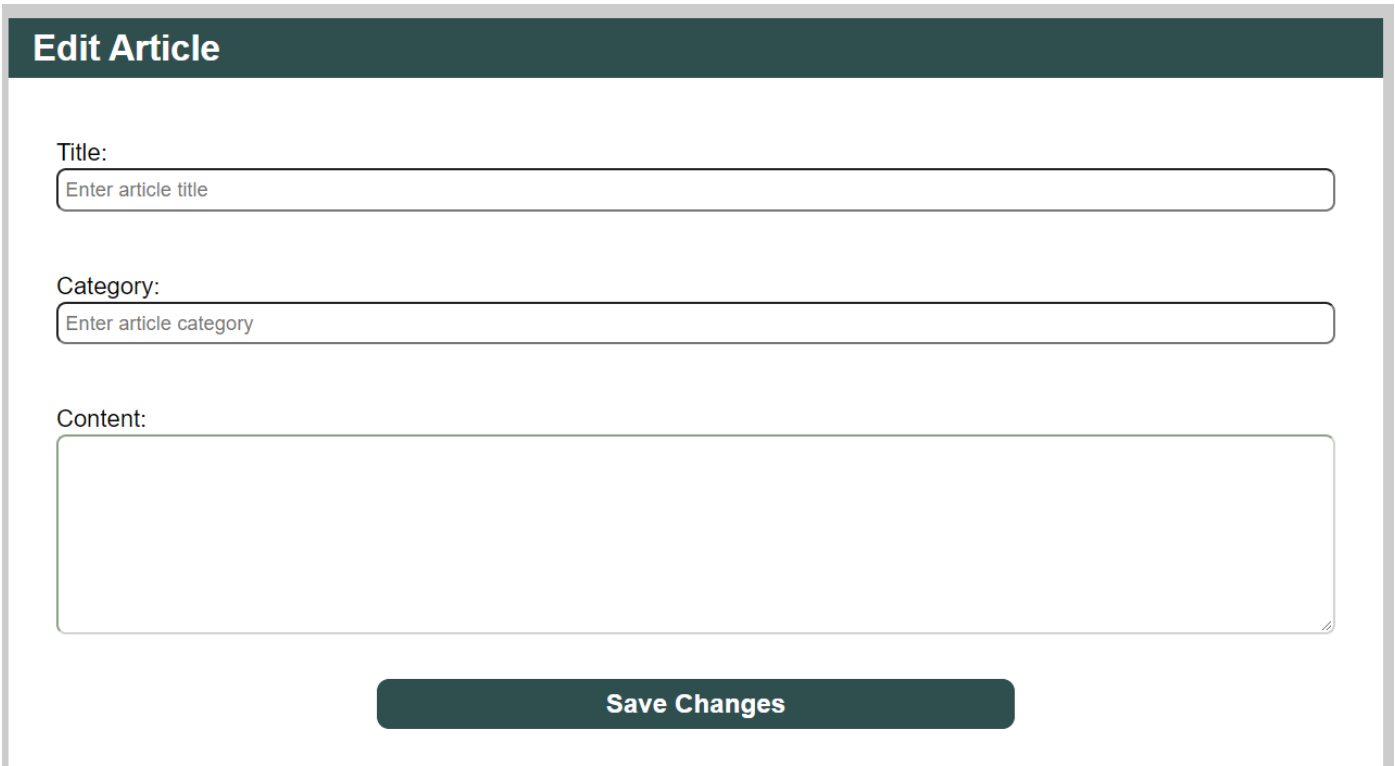
Send the following **request** to read a single article:

```
Method: GET
URL: /data/wiki/:id
```

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

Edit Article (15 pts)

The Edit page is available to logged-in users and it allows author to **edit** their **own** articles. Clicking the **Edit** link of a particular article on the **Details** page should display the **Edit** page. It contains a form with input fields for all relevant properties. Check if all the fields are filled before you send the request. The category must be on of **"JavaScript"**, **"C#"**, **"Java"**, or **"Python"**.



To edit an article, send the following **request**:

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

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

The service expects a body with the following shape:

```
{
  title,
  category,
  content
}
```

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

Delete Article (10 pts)

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

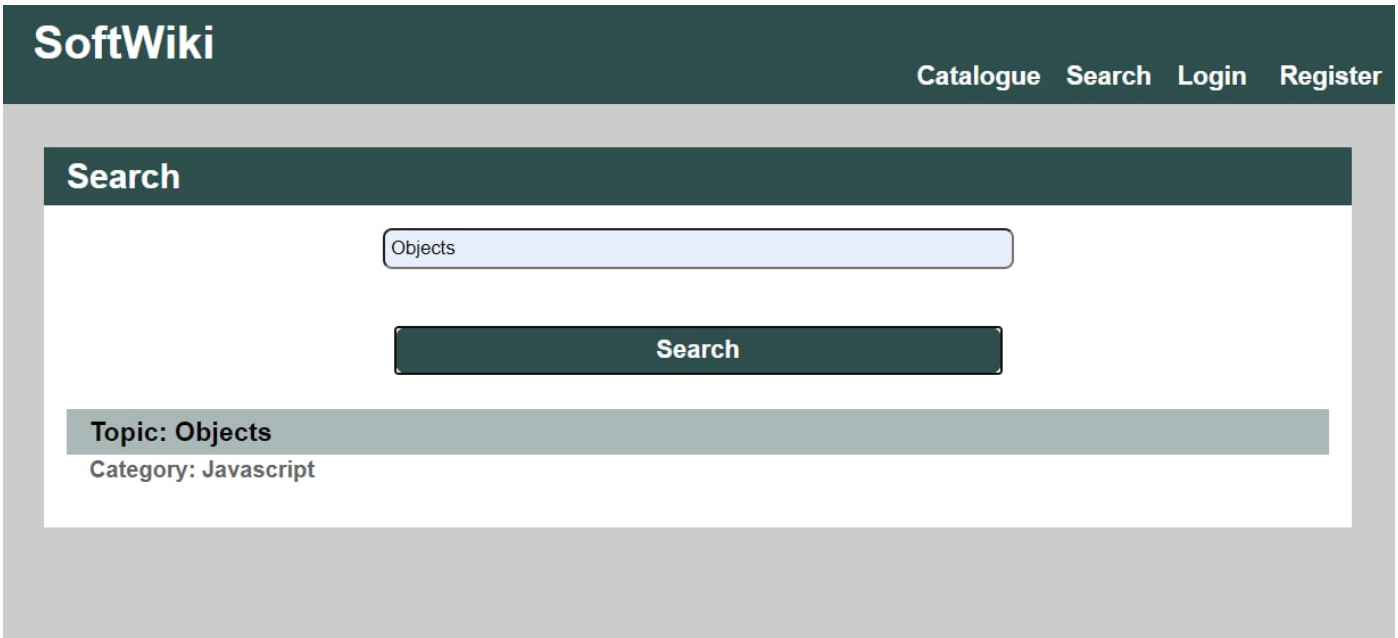
To delete an article, send the following **request**:

```
Method: DELETE
URL: /data/wiki/:id
```

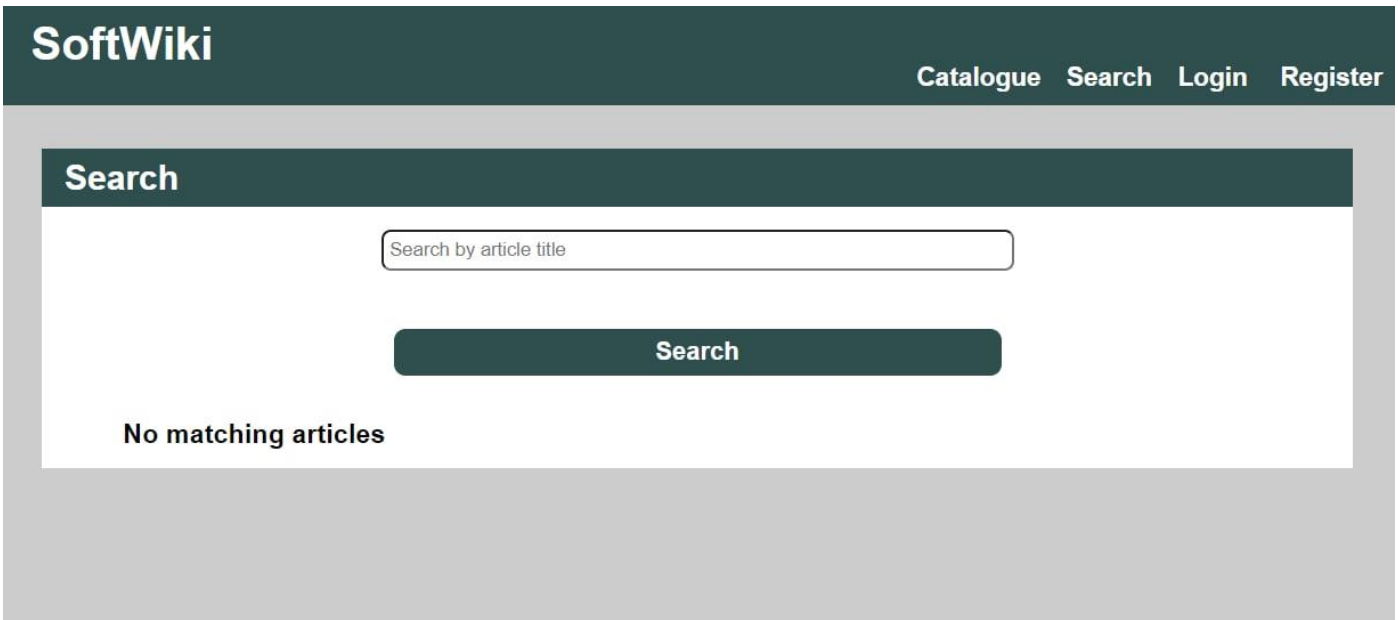
Where ***:id*** is the **id** of the desired article. Required **headers** are described in the documentation. The service will return an object, containing the deletion time. Upon success, **redirect** the user to the **Home** page.

(BONUS) Search (5 pts)

The Search page allows users to filter articles by their title. It contains an input field and, upon submitting a query, a list of all matching articles.



If there are no results the following message should be displayed:



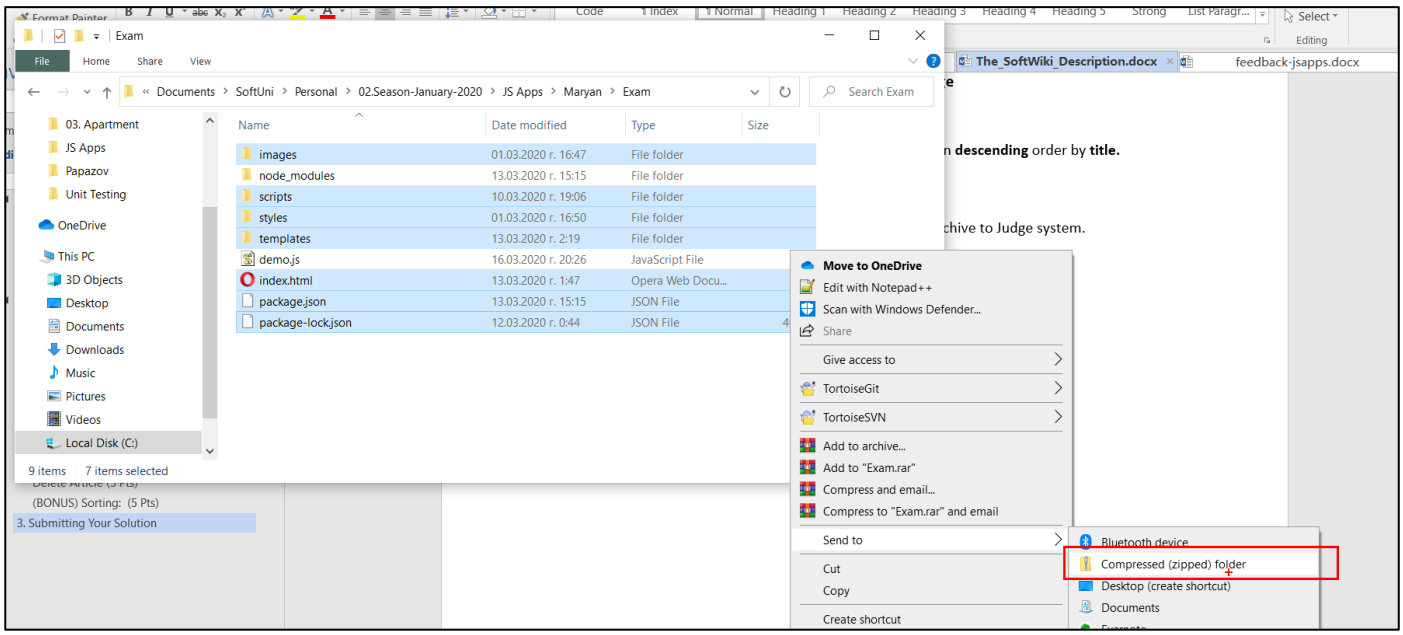
Send the following **request** to read a filtered list of articles by their title:

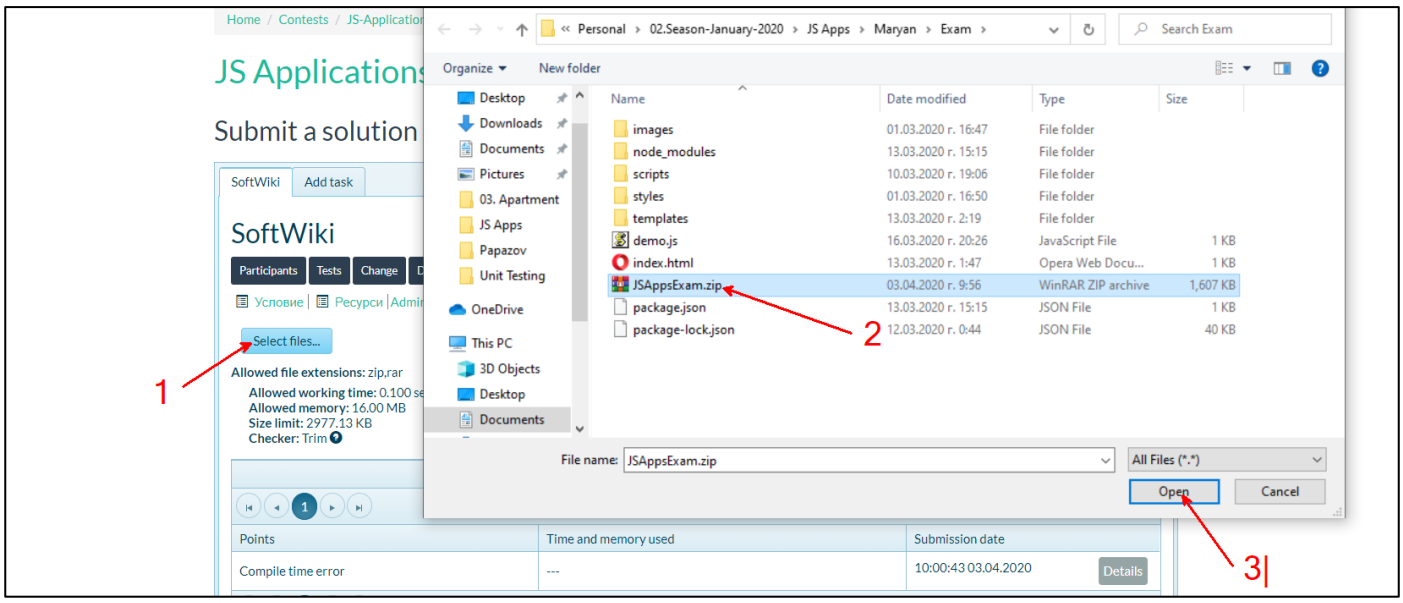
```
Method: GET
URL: /data/wiki?where=title%20LIKE%20%22{query}%22
```

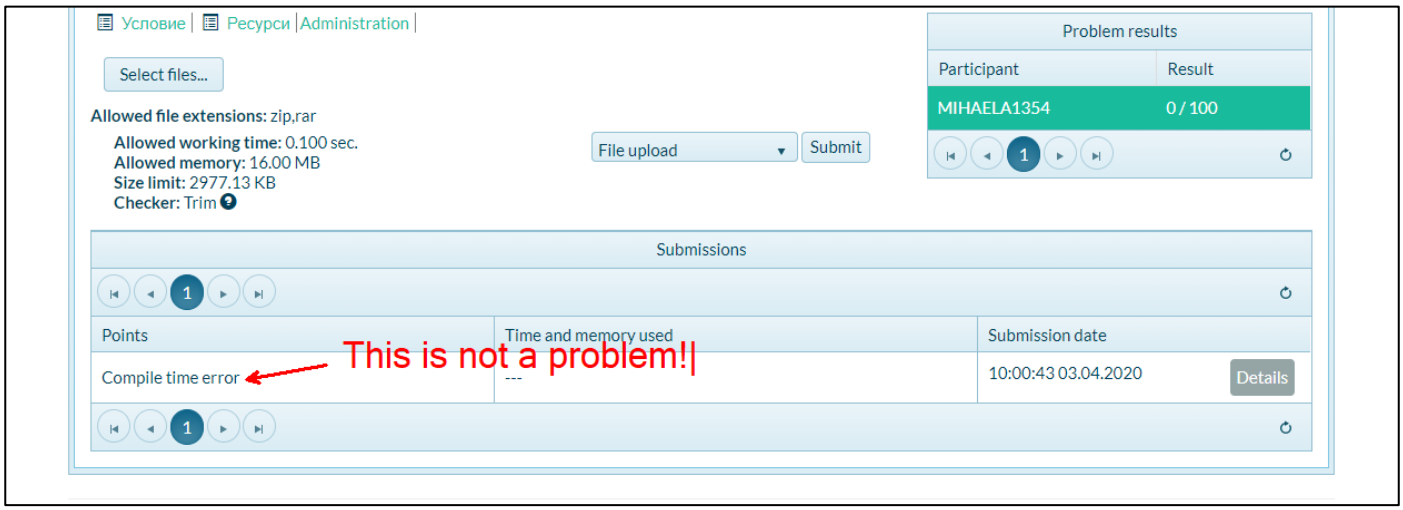
Where ***{query}*** is the search query that the user has entered in the input field. Required **headers** are described in the documentation. The service will return an array of articles. If there are no matches, display the text **"No matching articles"** instead.

4. Submitting Your Solution

Exclude the **`node_modules`** folder and ZIP your project. Upload the archive to Judge system.







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](#).

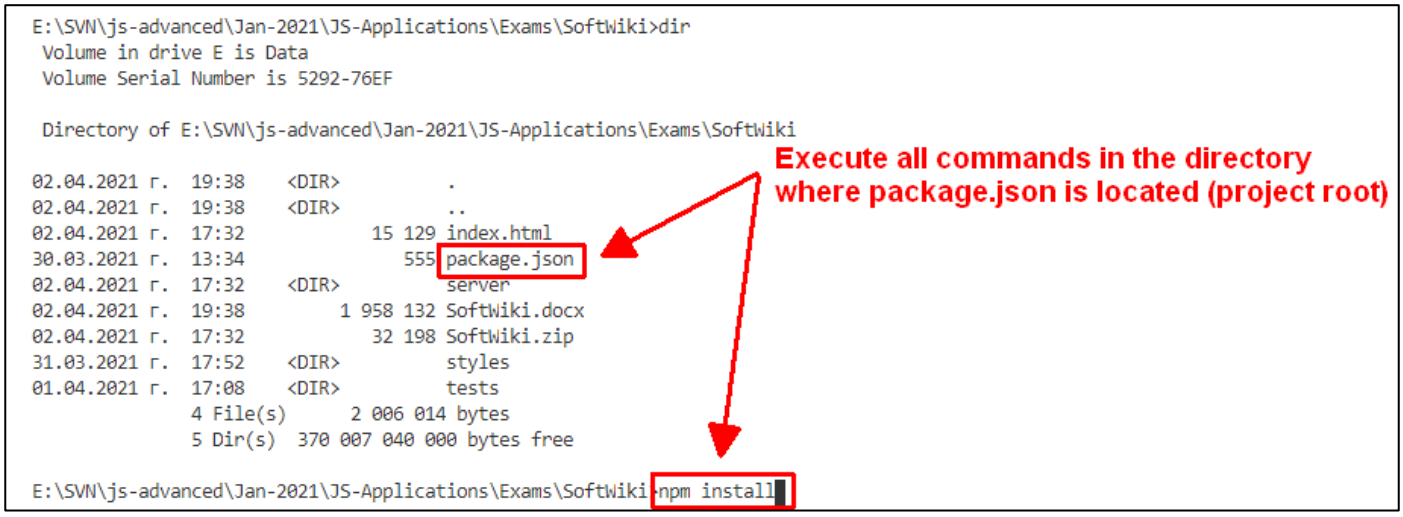
6. Appendix B: Running the Test Suite

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.



Executing the Tests

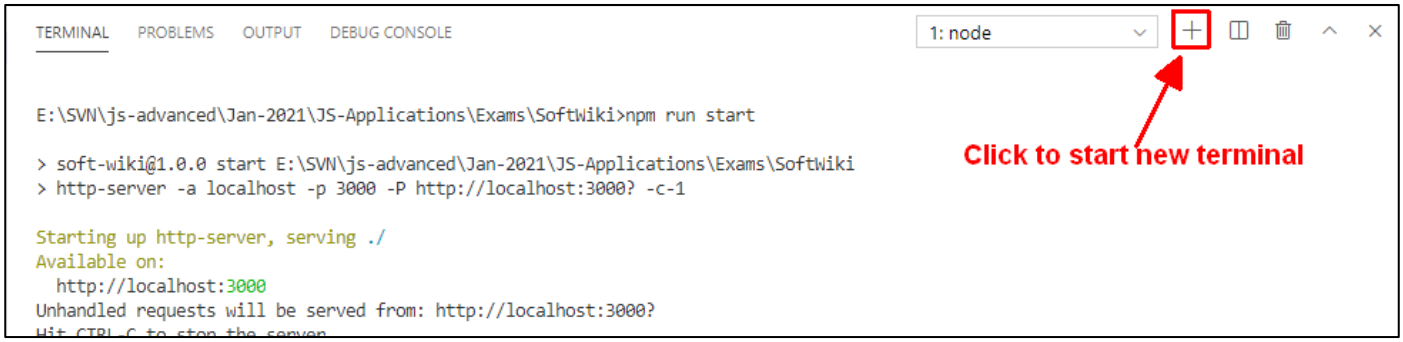
Before running the test suite, make sure a web server is operational, and the application can be found at the root of its network address. To start the included dev-server, open a terminal in the folder containing **`package.json`** and execute:

```
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
```



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;
```

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
     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)
```

Test failed at row 229