Async assignment in JavaScript

Introduction

This project showcases different methods of handling asynchronous operations in JavaScript — including callbacks, promises, and async/await. Each method is implemented in a separate HTML page, and all examples involve fetching data from an external API (`https://dummyjson.com/posts`) and displaying it dynamically.

The goal is to demonstrate how asynchronous code works in JavaScript, how to manage delays, handle responses, and deal with errors effectively.

🔗 GitHub Repository:

https://github.com/kvsahithi/fetch-posts

Callback Example

In the **Callback Example**, I demonstrated the use of a traditional callback function with a simulated delay using `setTimeout`.

What I Did:

In `callbacks.html`:

- Created a basic HTML structure with proper `DOCTYPE`, `head`, and `body` tags.

- Included a title and linked an external **favicon** (`favicon.png`) to enhance the visual identity of the page.

- Linked the **CSS file (`styles.css`)** for consistent styling.
- Added a **button** inside a `.button-container` div to trigger the callback-based function.
- Included a `.container` div that contains a heading and an empty `<div id="output">` where the posts will be displayed.
- Linked the external **JavaScript file (`script.js`)** at the bottom.

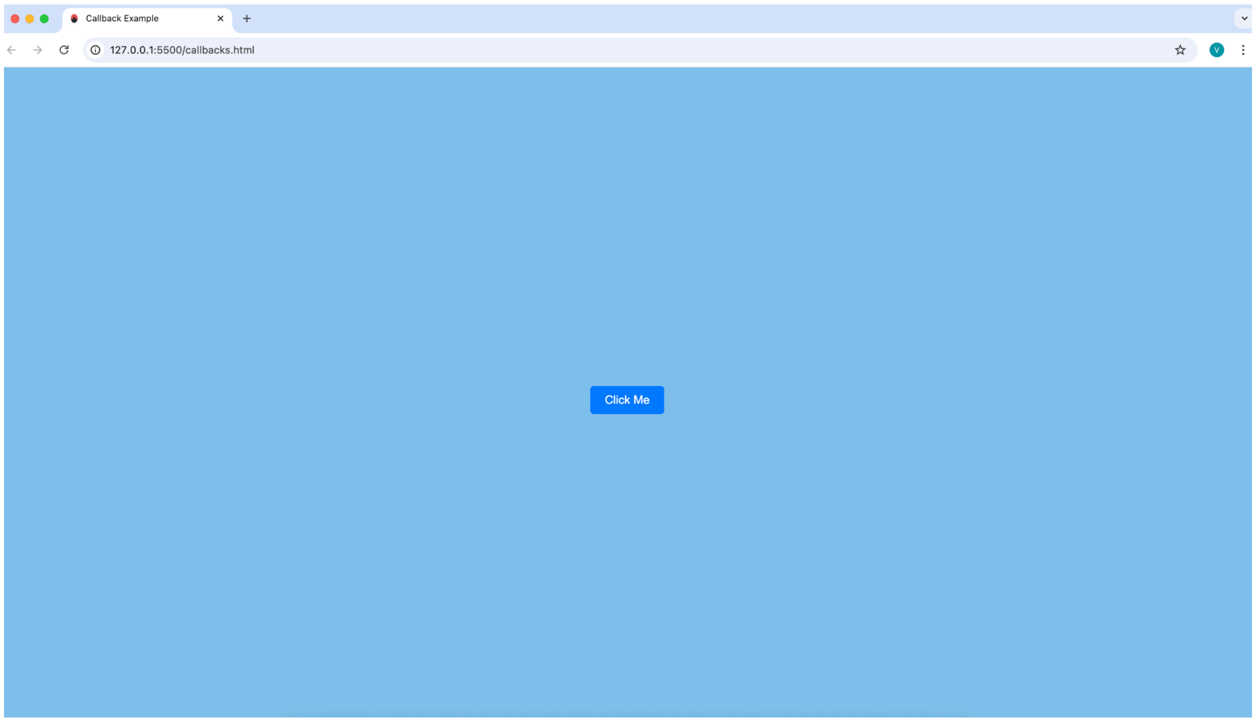
In `script.js`:

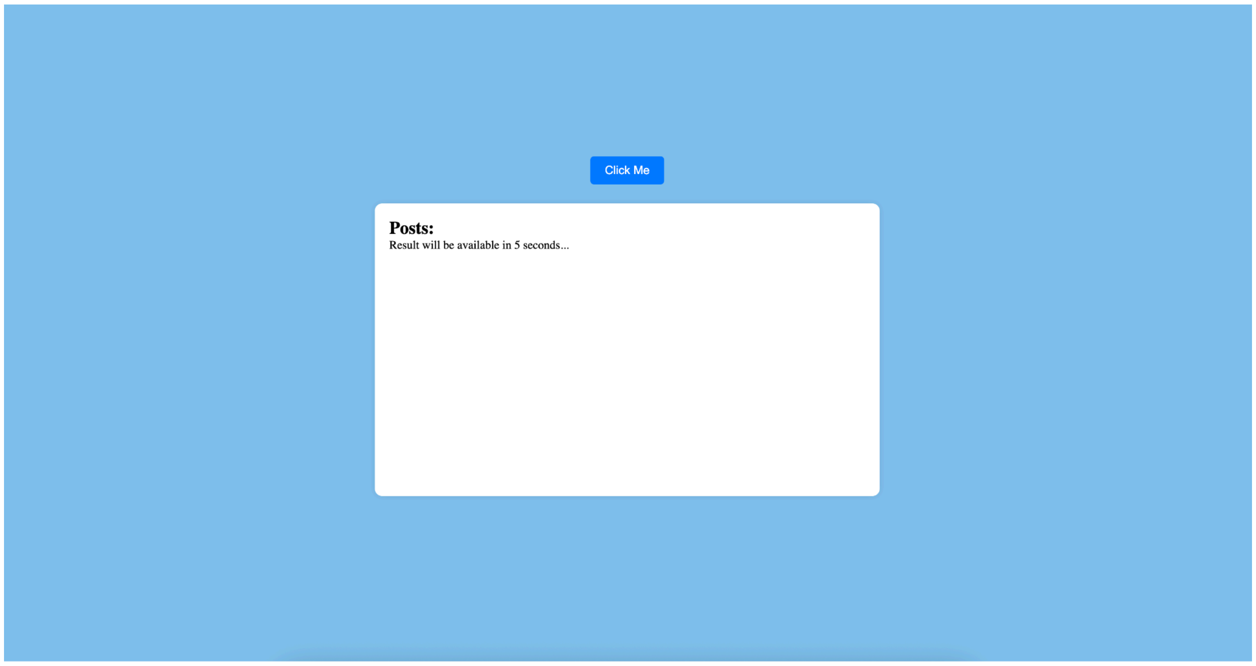
- Defined a function `delayedCallback()` using `setTimeout()` to simulate a 5-second delay before executing a callback function.
- Inside `executeCallback()`, used the delay function and then fetched data from the Dummy JSON Posts API.
- After 5 seconds, the callback triggers a `fetch()` request.
- Retrieved and parsed JSON data and dynamically displayed the **post titles** inside a `<ul>` list in the `#output` div.
- Handled API errors and displayed a friendly error message in case of failure.

What Is Shown on the Webpage:

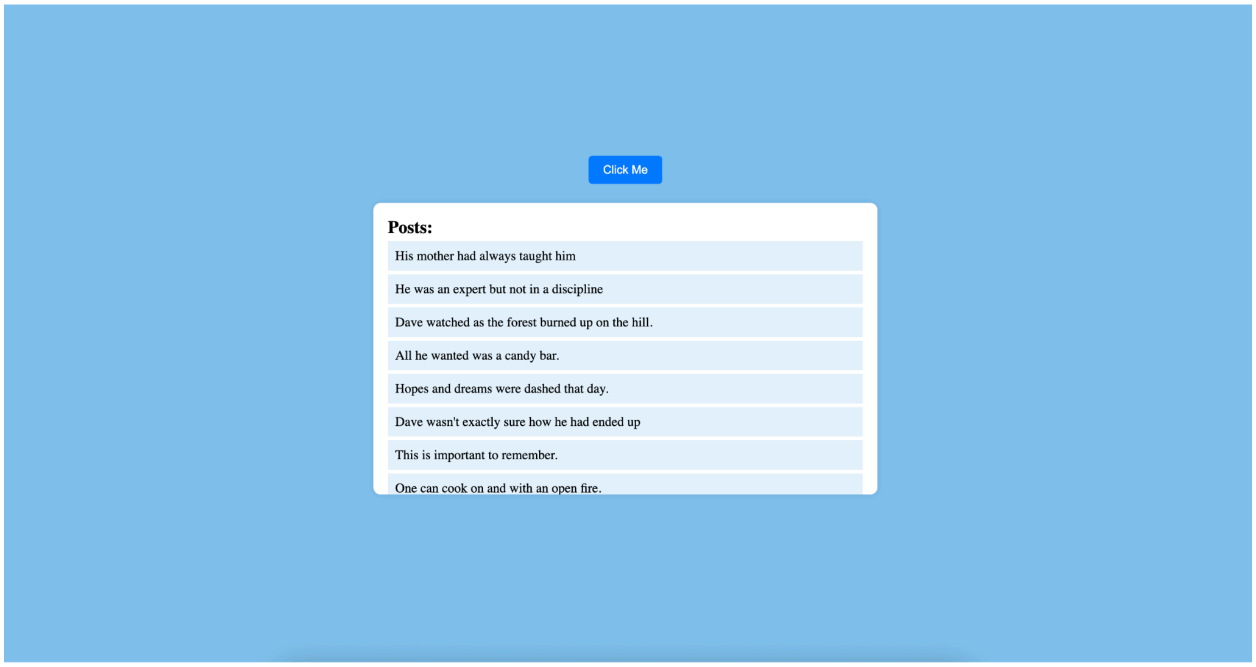
- A button labeled **"Click Me"**.
- When clicked, the user sees a message: **"Result will be available in 5 seconds..."**

- After the delay, the **titles of all posts from the API** are displayed in a styled list.
- If there's a network issue, a red error message appears.





Posts:
Result will be available in 5 seconds...



Posts:

His mother had always taught him

He was an expert but not in a discipline

Dave watched as the forest burned up on the hill.

All he wanted was a candy bar.

Hopes and dreams were dashed that day.

Dave wasn't exactly sure how he had ended up

This is important to remember.

One can cook on and with an open fire.

Promises Example

In the **Promises Example**, I demonstrated how to handle asynchronous operations using **JavaScript Promises**, including handling of loading states, successful API responses, and timeout errors.

What I Did:

In `promises.html`:

- Created a basic HTML file with the basic structure of an HTML document.
- Included a page title and linked the **favicon** to maintain visual consistency across all pages.
- Connected the shared **CSS file (`styles.css`)** for layout and design.
- Added a **button** inside a `.button-container` to trigger the Promise-based function.

- Included a `.container` with a heading and a `<div id="result">` to show the fetched posts.
- Linked the **external JavaScript file (`script.js`)** at the bottom of the body.

In `script.js`:

1. Defined the function `fetchDataWithPromise()`

- Starts by displaying **"Loading..."** in the `#result` div to inform the user that data fetching has started.

2. Created a custom Promise to:

- **Fetch post data** from the API: `https://dummyjson.com/posts`
- **Simulate a 5-second timeout** using `setTimeout`. If the request takes too long, the fetch is aborted using an `AbortController`, and the promise is rejected with the message `"Operation timed out."`

3. On successful resolution:

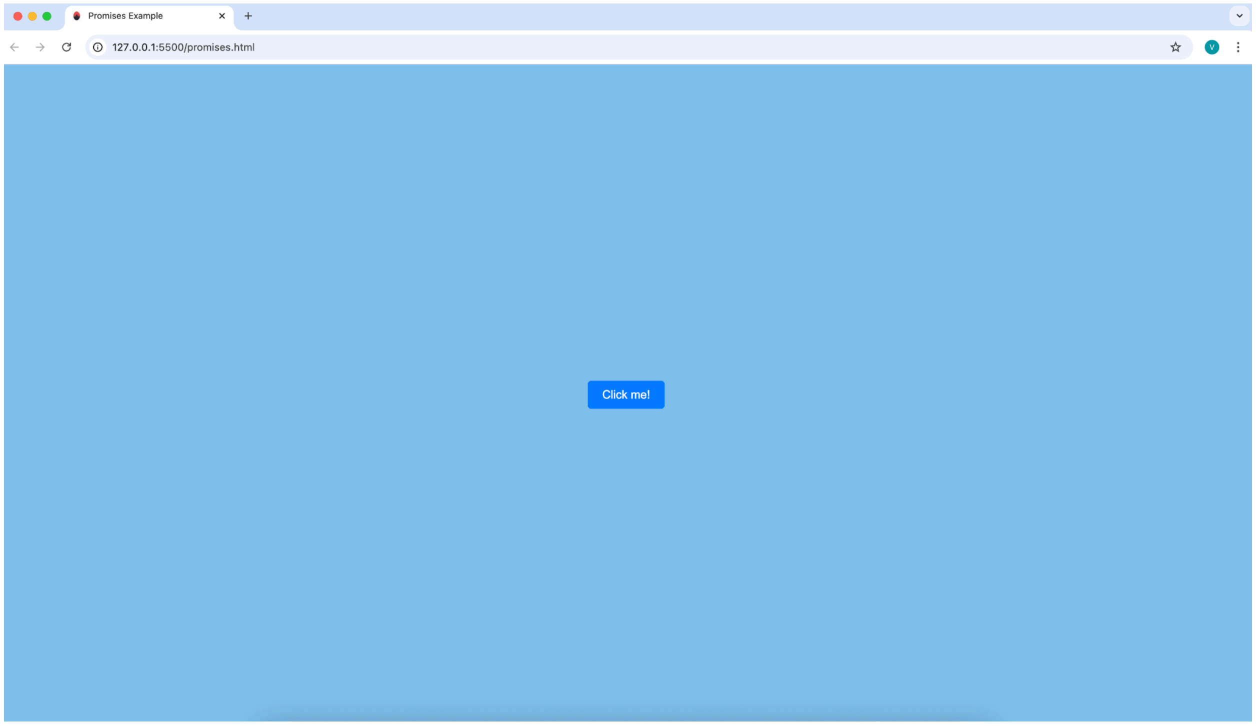
- Extracted the post titles from the JSON response (`data.posts`)
- Dynamically created a `<ul>` list and inserted each post title as a `<li>` item inside the `#result` div

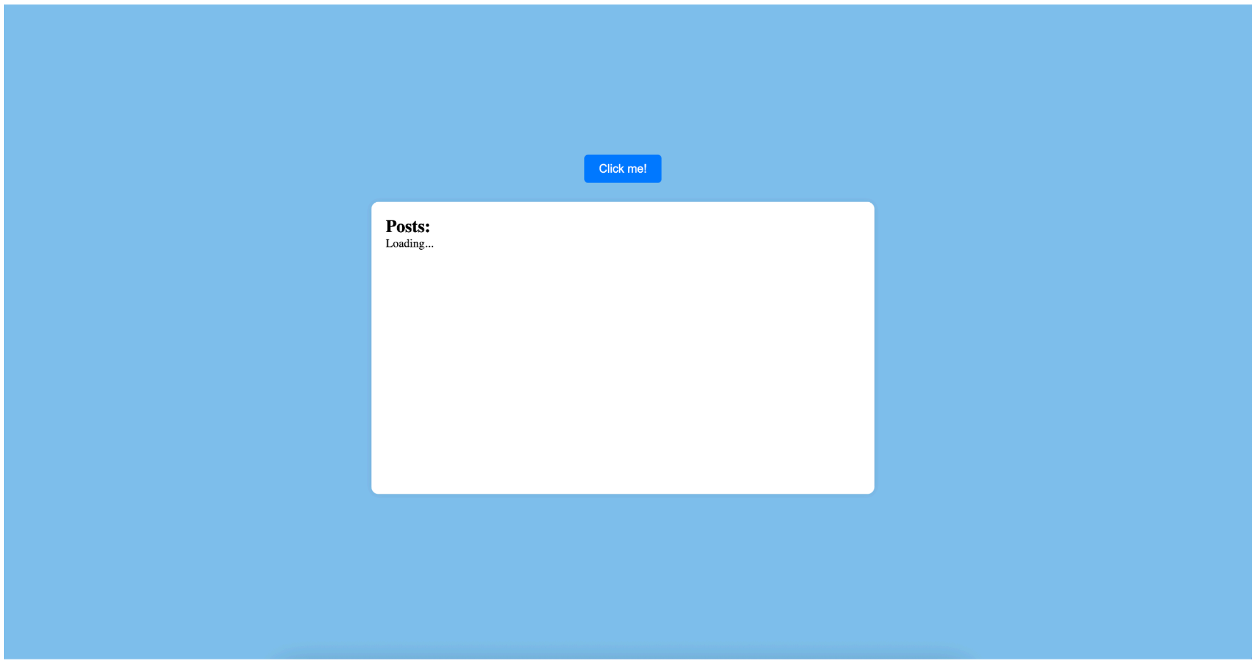
4. On error or timeout:

- Displayed an appropriate error message in **red text** (`.error` class)
- Logged the error to the console for debugging

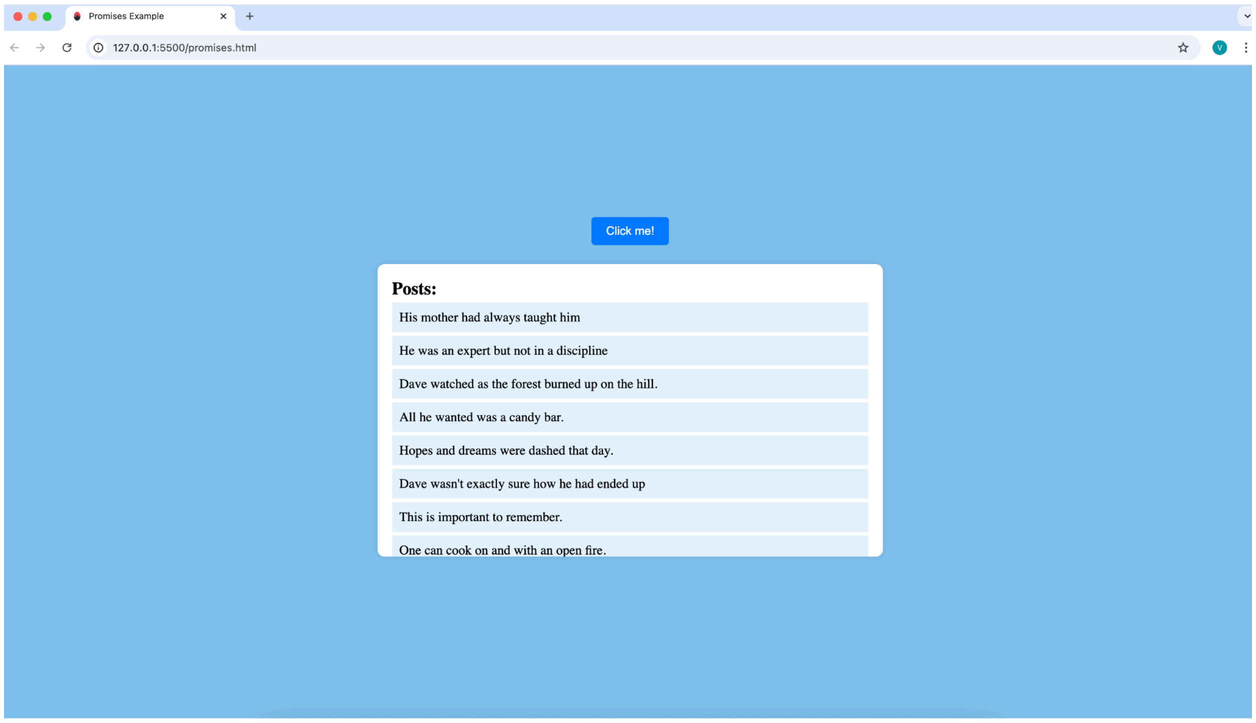
What Is Shown on the Webpage:

- A button labeled **"Click me!"**
- When clicked, the text **"Loading..."** appears while the request is pending.
- If successful, the post titles are shown in a scrollable and styled list.
- If the request fails or takes longer than 5 seconds, a red error message such as **"Operation timed out."** is shown.





Posts:
Loading...



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Async/Await Example

This example demonstrates the use of the **`async/await`** syntax to handle asynchronous operations in a more readable and cleaner way compared to callbacks or traditional Promises.

What I Did:

In `async-await.html`:

- Created a well-structured HTML document with:
  - A descriptive `<title>` tag.
  - Linked a **favicon** to visually brand the page.
  - Linked an external **CSS file (`styles.css`)** for consistent design.

- Included a **button** labeled **"Click me!"** which calls the `fetchDataWithAsync()` function when clicked.
- Added a `.container` section to display the fetched post data.
- Linked the **JavaScript file (`script.js`)** just before the closing `</body>` tag.

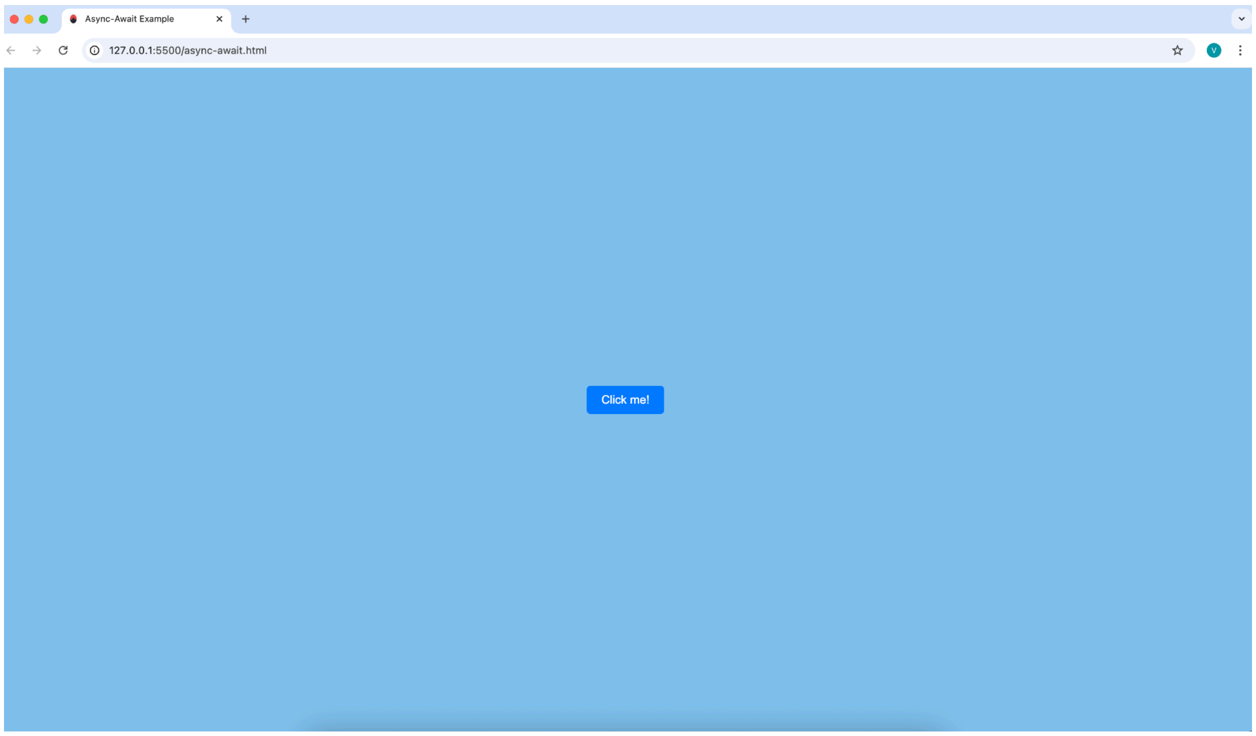
In `script.js`:

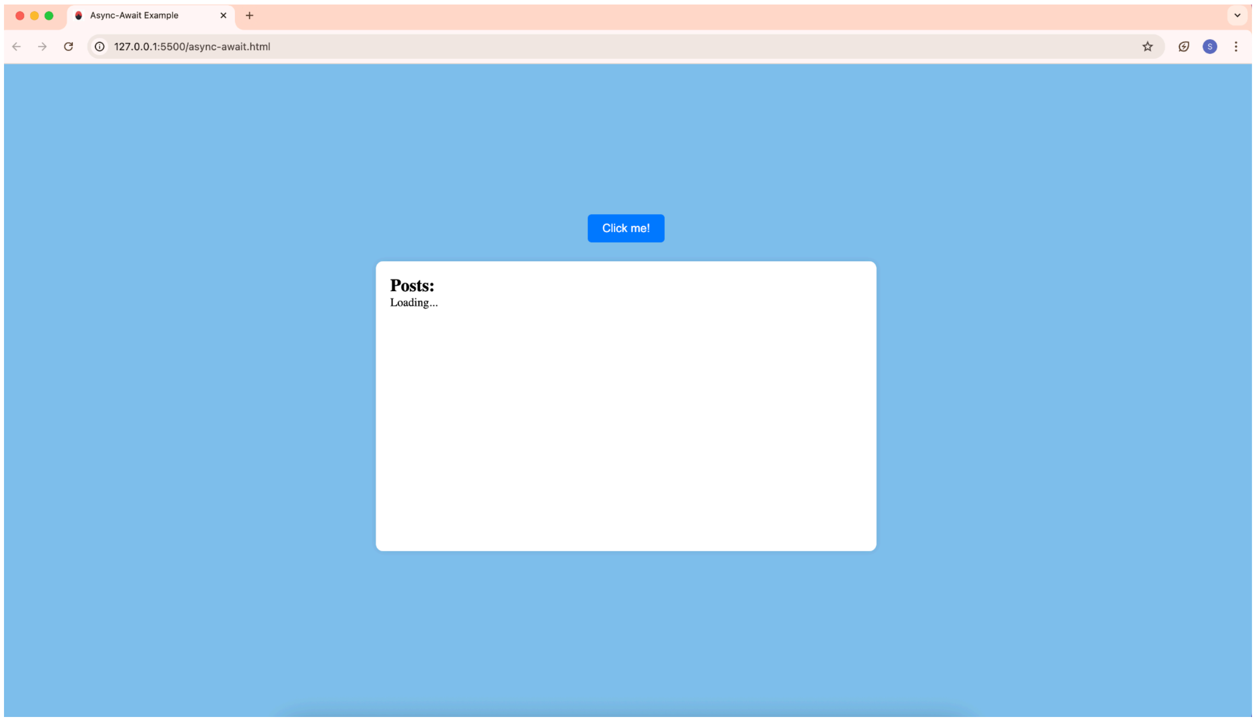
- Defined an `async` function `fetchDataWithAsync()` to fetch post data from the API:
  https://dummyjson.com/posts
- Displayed a **"Loading..."** message while waiting for the response.
- Used **`AbortController`** to automatically cancel the request if it takes longer than **5 seconds**, satisfying timeout handling.
- On success, the function:
  - Parses the returned JSON.
  - Calls `displayPosts()` to render post titles in a clean list.
- On failure (including timeout), it:
  - Catches the error.
  - Displays an appropriate error message inside the output div.
- `displayPosts()` is a helper function that:
  - Loops through the `posts` array.

    - Creates a styled list of post titles and injects it into the page.

🌐 What Is Shown on the Webpage:

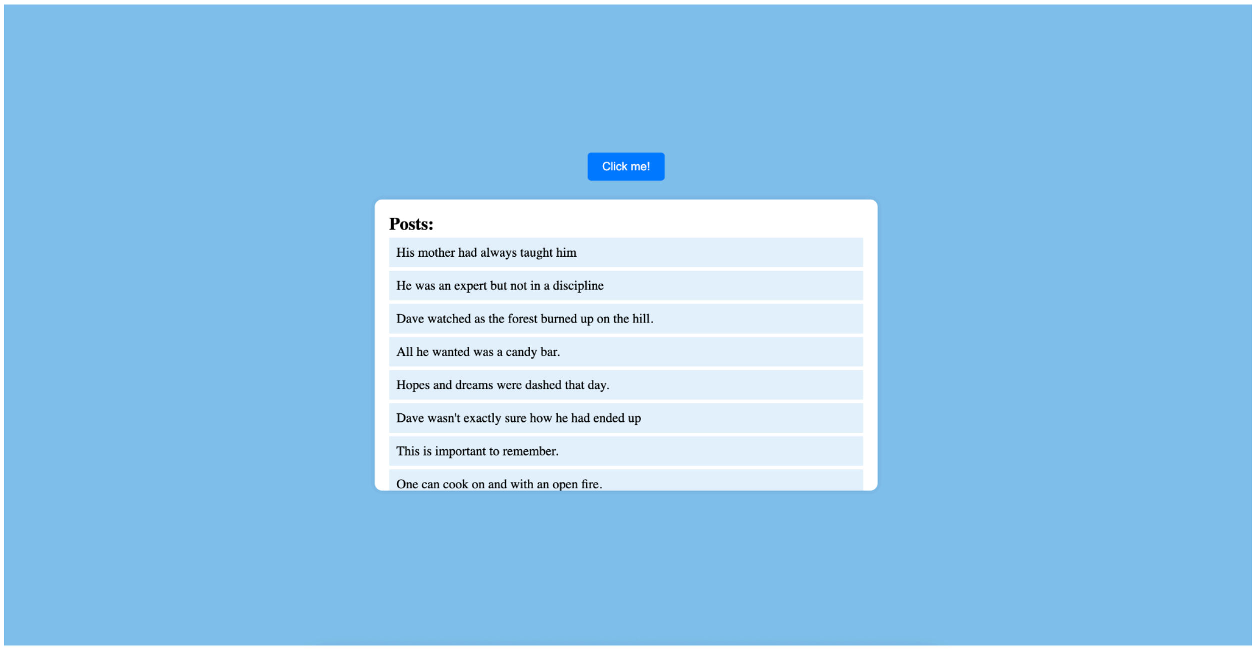
- A **button** that initiates the data fetching process.
- When clicked:
    - Shows **"Loading..."** immediately.
    - After the data is successfully fetched, it displays a list of **post titles** from the API.
    - If an error or timeout occurs, a clear error message (in red) is shown.





Posts:

Loading...



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This completes the assignment. All tasks were done as per the given instructions using callbacks, promises, and async/await.