Fetching Data from a Third-party API with Vue.js and Axios

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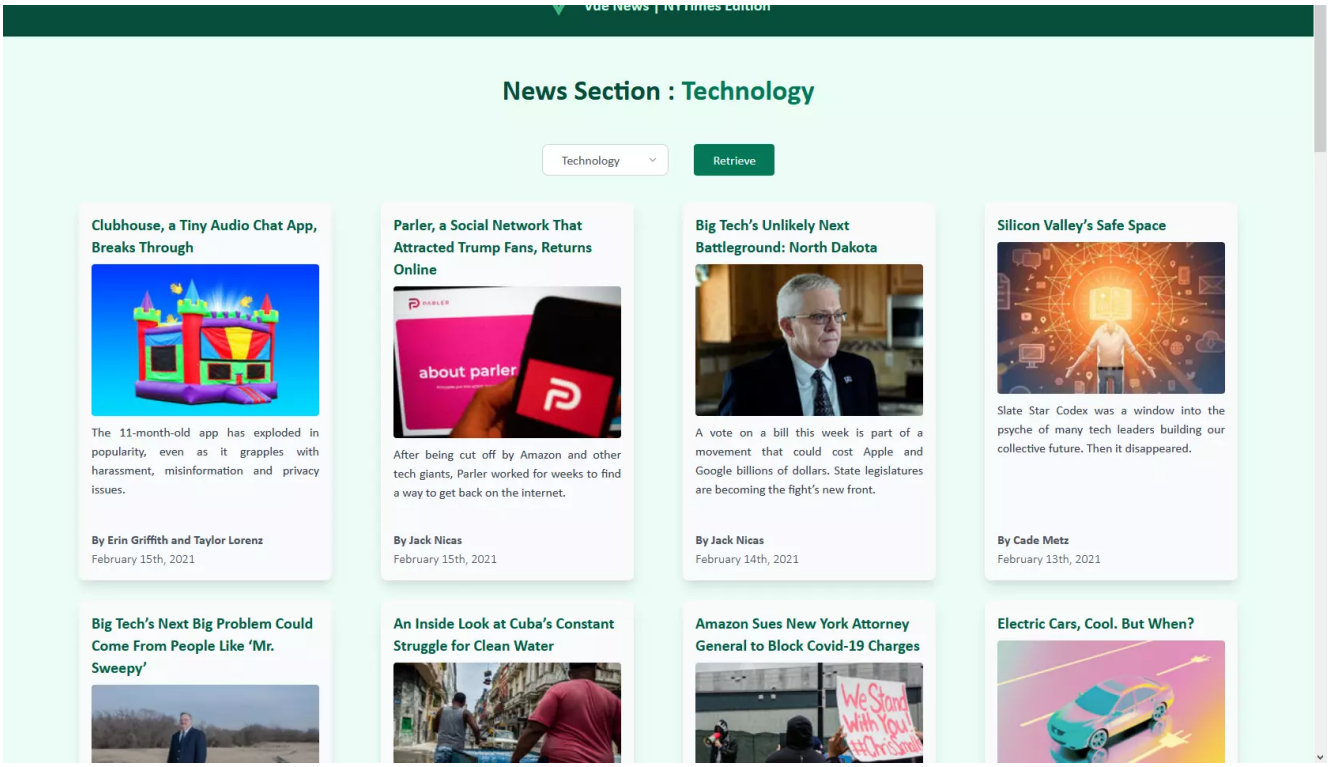
More often than not, when building your JavaScript application, you'll want to fetch data from a remote source or consume an API. There's lots of cool stuff that can be done with data from a range of publicly available APIs.

With Vue.js, you can literally build an app around one of these services and start serving content to users in minutes.

I'll demonstrate how to build a simple news app that will show the top news articles of the day, and that will allow users to filter by their category of interest, fetching data from the New York Times API. You can find the complete code for this tutorial here, and a live demo of the finished app here.

Here's what the final app will look like:



To follow along with this tutorial, you'll need Node.js and (optionally) Yarn installed on your machine. To install Node, you can either head to the official download page and grab the Node binaries for your system, or use a version manager instead.

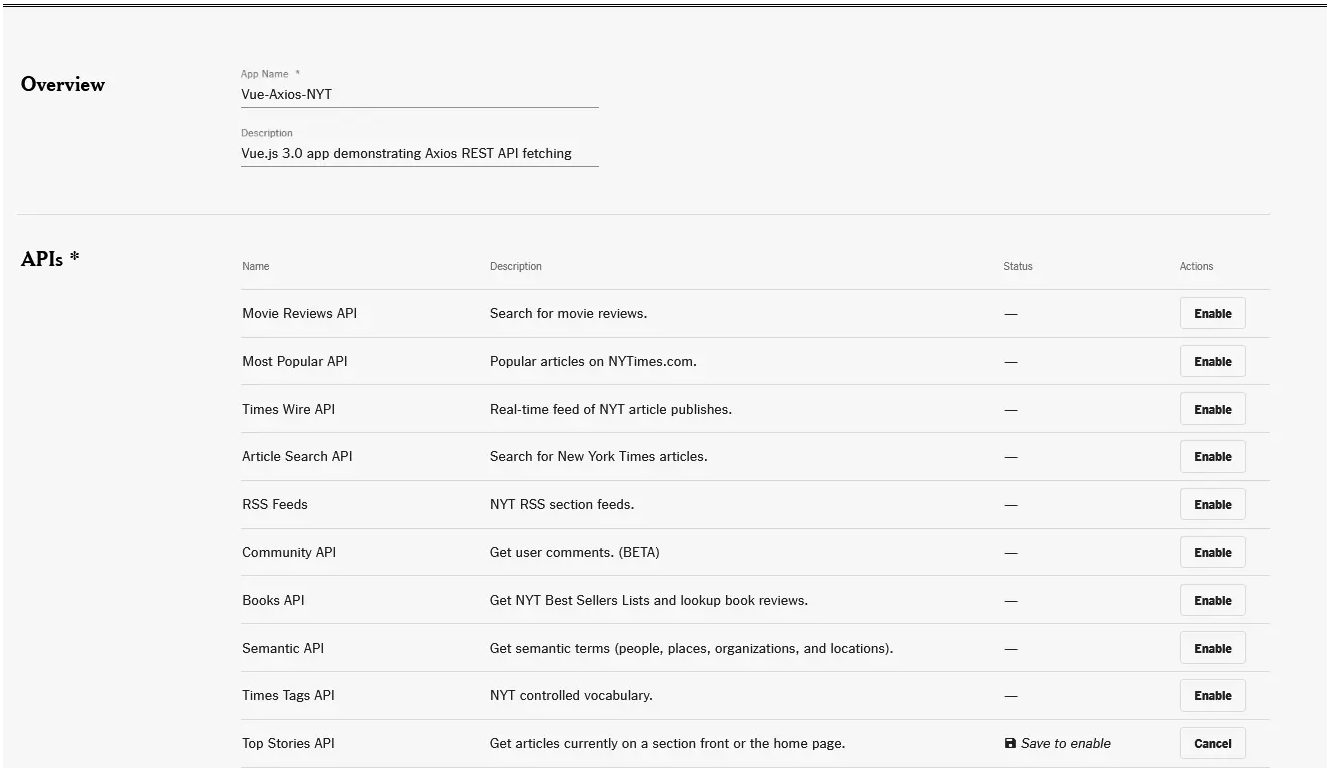
Once Node is installed, to pull in Yarn, run:

```
npm i -g yarn
```

You'll also require a basic knowledge of Vue.js. You can find a great getting started guide for that here.

Acquire an API Key

To make use of the NYTimes API, you'll need to get an API key. So if you don't already have one, head over to their signup page and register to get an API key for the Top Stories API.



Overview

App Name *
Vue-Axios-NYT

Description
Vue.js 3.0 app demonstrating Axios REST API fetching

APIs *

Name	Description	Status	Actions
Movie Reviews API	Search for movie reviews.	—	Enable
Most Popular API	Popular articles on NYTimes.com.	—	Enable
Times Wire API	Real-time feed of NYT article publishes.	—	Enable
Article Search API	Search for New York Times articles.	—	Enable
RSS Feeds	NYT RSS section feeds.	—	Enable
Community API	Get user comments. (BETA)	—	Enable
Books API	Get NYT Best Sellers Lists and lookup book reviews.	—	Enable
Semantic API	Get semantic terms (people, places, organizations, and locations).	—	Enable
Times Tags API	NYT controlled vocabulary.	—	Enable
Top Stories API	Get articles currently on a section front or the home page.	*Save to enable*	Cancel

We'll be using the top stories API endpoint to fetch data from. Take note that there are multiple sections such as "home", "travel", "arts" and "science" that this API provides. We'll need to build a filter that can allow users to select a section and load the stories within it.

Below are example calls:

```
https://api.nytimes.com/svc/topstories/v2/arts.json?api-key=yourkey
https://api.nytimes.com/svc/topstories/v2/home.json?api-key=yourkey
https://api.nytimes.com/svc/topstories/v2/science.json?api-key=yourkey
https://api.nytimes.com/svc/topstories/v2/us.json?api-key=yourkey
https://api.nytimes.com/svc/topstories/v2/world.json?api-key=yourkey
```

Feel free to use your favorite REST client (such as Hoppscotch or Insomnia) to test your API calls.

Project Structure

Let's quickly spin up a Vue 3 project using Vite, a dev server that runs faster than Vue CLI:

```
yarn create @vitejs/app vue-news-app --template vue

# Install package dependencies
cd vue-news-app
yarn install
```

Open `localhost:3000` in your browser. You should have the following view:

Next, let's install the TailwindCSS framework to provide some basic styling. You'll need to stop the server in order to perform this action:

```
yarn add -D tailwindcss@latest postcss@latest autoprefixer@latest

# Generate tailwind.config.js and postcss.config.js files
npx tailwindcss init -p
```

We'll need some additional package utilities to help us format dates and clamp the number of lines for the `abstract` field:

```
yarn add @tailwindcss/line-clamp date-fns
```

`@tailwindcss/line-clamp` is a plugin that needs to be included in `tailwind.config.js`. Below is the full configuration:

```
module.exports = {
  purge: ["./index.html", "./src/**/*.{vue,js,ts,jsx,tsx}"],
  darkMode: false, // or 'media' or 'class'
  theme: {
    extend: {},
  },
  variants: {
    extend: {},
  },
  plugins: [require("@tailwindcss/line-clamp")],
}
```

Next, create an `index.css` file in the `src` folder and add this code:

```
@tailwind base;
@tailwind components;
@tailwind utilities;

body {
  @apply antialiased text-green-900 bg-green-50;
  font-family: "Gill Sans", "Gill Sans MT", Calibri, "Trebuchet MS", sans-serif;
}

#app {
  @apply flex flex-col min-h-screen overflow-x-hidden;
}
```

the default theme of our application. We've also implemented a flex layout system to help us create a sticky header and footer for our application.

We'll need to import `index.css` in `src/main.js`:

```
import { createApp } from "vue"
import App from "./App.vue"
import "./index.css"

createApp(App).mount("#app")
```

Let's now go ahead and define our application layout. First, clear out any existing components in `src/components`. Next, within the same folder, create these three files:

- `Layout.vue`
- `Header.vue`
- `Footer.vue`

Copy the following code for each file:

src/components/Footer.vue:

```
<template>
  <footer
    class="px-4 py-8 text-sm font-bold text-center text-green-100 bg-green-900">
    <p class="text-sm tracking-wide">Copyright (c) 2021 SitePoint</p>
  </footer>
</template>
```

src/components/Header.vue:

```
<template>
  <header class="flex justify-center py-6 bg-green-900 place-items-center">
    <img alt="Vue logo" src="../assets/logo.png" width="32" />
    <span class="ml-4 text-lg font-bold text-green-100 md:text-xl">
      Vue News | NYTimes Edition
    </span>
  </header>
</template>
```

src/components/Layout.vue:

```
<template>
  <Header />
```

```
  <Footer />
</template>

<script>
import Header from "./Header.vue"
import Footer from "./Footer.vue"

export default {
  components: {
    Header,
    Footer,
  },
}
</script>
```

Finally, update `src/App.vue`:

```
<template>
  <Layout>
    <p>Main content goes here</p>
  </Layout>
</template>

<script>
import Layout from "./components/Layout.vue"

export default {
  components: {
    Layout,
  },
}
</script>
```

Execute `yarn dev`. The browser should refresh automatically.

With the application layout completed, we can now start building the core logic of our news app.

Building News App Components

Our application structure will be made up of three News components and one container, `src/App.vue`. The container will be responsible for fetching post data and populating the components.

First, we need to design the layout and look for these components. Hence we need some mock data to begin with. Create the file `src/posts.json` and populate it with the following data:

```
    {
      "title": "Stay Healthy When Exercising Outdoors",
      "abstract": "Cold weather workouts do bring unique risks, but a little planning and preparatio
      "url": "https://www.nytimes.com/2021/02/06/at-home/exercise-outdoors-cold-weather.html",
      "byline": "By Kelly DiNardo",
      "published_date": "2021-02-06T23:40:05-05:00",
      "thumbnail": "https://static01.nyt.com/images/2021/02/07/multimedia/07ah-OUTDOOREXERCISE/07ah-
      "caption": ""
    },
    {
      "title": "4 Skiers Killed in Avalanche in Utah, Officials Say",
      "abstract": "It was the third such deadly episode in days and the deadliest avalanche in the U
      "url": "https://www.nytimes.com/2021/02/06/us/avalanche-salt-lake-city.html",
      "byline": "By Michael Levenson",
      "published_date": "2021-02-06T20:22:39-05:00",
      "thumbnail": "https://static01.nyt.com/images/2021/02/06/lens/06xp-avalanche-photo2/06xp-avala
      "caption": "A helicopter returning to Millcreek Canyon after rescuing one of the four avalanch
    }
  ]
}
```


I'd encourage you to duplicate the records in order to better test our component design layouts, but I won't do that here due to space constraints.

Let's now start building our News components. In the `src/components` folder, create the following files:

- `NewsCard.vue`
- `NewsList.vue`
- `NewsFilter.vue`

Just to visualize how all these components come together, import them in `src/App.vue` and set them out as follows:

```
<template>
  <Layout>
    <h2 class="mb-8 text-4xl font-bold text-center capitalize">
      News Section : <span class="text-green-700">{{ section }}</span>
    </h2>
    <NewsFilter v-model="section" />
    <NewsList :posts="posts" />
  </Layout>
</template>

<script>
import Layout from "./components/Layout.vue"
import NewsFilter from "./components/NewsFilter.vue"
import NewsList from "./components/NewsList.vue"

import data from "./posts.json"
```

```
    NewsFilter,
    NewsList,
  },
  data() {
    return {
      section: "home",
      posts: data.posts,
    }
  },
}
</script>
```

Let's break down the code above:

- The `header` tag is where we display the current state value of `section`.
- The `NewsFilter` component will contain a dropdown input for users to select a different section. There will be a button they'll have to click in order to perform the fetch. We've bound the component to the state `section` to allow state synchronization.
- The `NewsList` component will display posts using the `NewsCard` component across a responsive grid.

Let's now start working with each individual News component. The `NewsCard.vue` component will present data for a single post. It requires one prop, `post`:

```
<template>
  <section class="p-4 rounded-lg shadow-lg bg-gray-50 w-80">
    <div class="h-96">
      <a
        class="text-xl font-bold text-center text-green-800 hover:text-green-600 hover:underline"
        :href="post.url"
        target="_blank"
        rel="noreferrer"
      >
        {{ post.title }}
      </a>
      <img
        class="w-full mt-2 rounded"
        :src="post.thumbnail"
        :alt="post.caption"
        height="140"
        width="210"
      />
      <p class="mt-2 text-justify text-gray-700 line-clamp-4">
        {{ post.abstract }}
      </p>
    </div>
    <div>
      <p class="mt-4 font-bold text-gray-600">{{ post.byline }}</p>
      <p class="font-light text-gray-600">
        {{ formatDate(post.published_date) }}
      </p>
    </div>
```

```
<script>
import { format } from "date-fns"

export default {
  props: {
    post: {
      type: Object,
      required: true,
    },
  },
  methods: {
    formatDate(strDate) {
      return format(new Date(strDate), "MMMM do, yyyy")
    },
  },
}
</script>
```

The `NewsList.vue` will loop through a posts array and populate `NewsCards` across a responsive grid:

```
<template>
  <div
    class="grid grid-cols-1 gap-6 mt-4 md:grid-cols-2 lg:grid-cols-3 2xl:grid-cols-4 justify-items-c
  >
    <NewsCard v-for="(post, index) in posts" :key="index" :post="post" />
  </div>
</template>

<script>
import NewsCard from "./NewsCard.vue"
export default {
  props: {
    posts: {
      type: Array,
      required: true,
    },
  },
  components: {
    NewsCard,
  },
}
</script>
```

Next, we have the `NewsFilter` component, which will allow users to load posts from different sections. First, we need a content file to store all the sections supported by the Top Stories API endpoint. Create the file `src/components/sections.js`:

```
const sections = [
  "home",
  "arts",
  "automobiles",
```

```
  "food",
  "health",
  "insider",
  "magazine",
  "movies",
  "nyregion",
  "obituaries",
  "opinion",
  "politics",
  "realestate",
  "science",
  "sports",
  "sundayreview",
  "technology",
  "theater",
  "magazine",
  "travel",
  "upshot",
  "us",
  "world",
]

export default sections
```

Let's now create our `NewsFilter.vue`, which contains a dropdown select input and a button. We'll need to use `v-model` to bind the state `section` in a way that syncs up with the state in `App.vue`:

```
<template>
  <div class="flex justify-center p-4 rounded">
    <!-- Start of select dropdown -->
    <div class="relative inline-flex">
      <svg
        class="absolute top-0 right-0 w-2 h-2 m-4 pointer-events-none"
        xmlns="http://www.w3.org/2000/svg"
        viewBox="0 0 412 232"
      >
        <path
          d="M206 171.144L42.678 7.822c-9.763-9.763-25.592-9.763-35.355 0-9.763 9.764-9.763 25.592 0
          fill="#648299"
          fill-rule="nonzero"
        />
      </svg>
      <select
        class="h-10 pl-5 pr-10 text-gray-600 bg-white border border-gray-300 rounded-lg appearance-n
        v-model="section"
      >
        <option
          v-for="(section, index) in sections"
          :key="index"
          :value="section"
        >
          {{ capitalize(section) }}
        </option>
      </select>
```

```
      <button
        class="px-6 py-2 text-white bg-green-700 rounded hover:bg-green-900"
      >
        Retrieve
      </button>
    </div>
  </div>
</template>

<script>
import { computed } from "vue"
import sectionsData from "./sections"

export default {
  props: {
    modelValue: String,
  },
  setup(props, { emit }) {
    const section = computed({
      get: () => props.modelValue,
      set: value => emit("update:modelValue", value),
    })

    return {
      section,
    }
  },
  data() {
    return {
      sections: sectionsData,
    }
  },
  methods: {
    capitalize(value) {
      if (!value) return ""
      value = value.toString()
      return value.charAt(0).toUpperCase() + value.slice(1)
    },
  },
}
</script>
```

The article "Vue 3: Data down, Events up" best explains the strategy we are using to bind `section` state to the `NewsFilter` component. Basically, this allows child components to update props and sync with the parent component.

Below is a screenshot of the current state of the application:

Using Axios to Fetch Remote Data

browsers, and some other subtleties.

To install axios, run:

```
yarn add axios
```

The UI development of our application is complete. We now only need to implement remote fetching logic. Below is an example of the full URL format that NYTimes API service expects:

```
https://api.nytimes.com/svc/topstories/v2/home.json?api-key=your_api_key
```

First, let's store our API key in a `.env` file at the root of our project. Save in the following format:

```
VITE_NYT_API_KEY=####
```

Replace the hashes with your actual API key.

Since we're using Vite, we need to comply with Vite's manual on loading environment variables. Vue/CLI has its own instructions for doing the same.

Let's now implement the logic that will fetch actual posts from the NYTimes REST API endpoint. Simply update `src/App.vue` accordingly:

```
<template>
  <Layout>
    <h2 class="mb-8 text-4xl font-bold text-center capitalize">
      News Section : <span class="text-green-700">{{ section }}</span>
    </h2>
    <NewsFilter v-model="section" :fetch="fetchNews" />
    <NewsList :posts="posts" />
  </Layout>
</template>

<script>
import Layout from "./components/Layout.vue"
import NewsFilter from "./components/NewsFilter.vue"
import NewsList from "./components/NewsList.vue"

import axios from "axios"
const api = import.meta.env.VITE_NYT_API_KEY

export default {
  components: {
    Layout,
    NewsFilter,
```

```
  return {
    section: "home",
    posts: [],
  }
},
methods: {
  // Helper function for extracting a nested image object
  extractImage(post) {
    const defaultImg = {
      url: "http://placehold.it/210x140?text=N/A",
      caption: post.title,
    }
    if (!post.multimedia) {
      return defaultImg
    }
    let imgObj = post.multimedia.find(
      media => media.format === "mediumThreeByTwo210"
    )
    return imgObj ? imgObj : defaultImg
  },
  async fetchNews() {
    try {
      const url = `https://api.nytimes.com/svc/topstories/v2/${this.section}.json?api-key=${api}`
      const response = await axios.get(url)
      const results = response.data.results
      this.posts = results.map(post => ({
        title: post.title,
        abstract: post.abstract,
        url: post.url,
        thumbnail: this.extractImage(post).url,
        caption: this.extractImage(post).caption,
        byline: post.byline,
        published_date: post.published_date,
      }))
    } catch (err) {
      if (err.response) {
        // client received an error response (5xx, 4xx)
        console.log("Server Error:", err)
      } else if (err.request) {
        // client never received a response, or request never left
        console.log("Network Error:", err)
      } else {
        console.log("Client Error:", err)
      }
    }
  },
},
mounted() {
  this.fetchNews()
},
}
</script>
```

Here we've created a function called `fetchNews` that contains logic for performing the fetch logic. This function will be called from two places:

Let's break the function down to make sure we understand what is going on:

- We're using async syntax, since it's cleaner than using regular `Promise` callback syntax.
- Since we're about to perform a network call, many things can go wrong. We've wrapped the function's code within a `try...catch` block. Otherwise, users will be met with a non-descriptive Promise error if one occurs.
- Using ES6 template literals, we're able to build a URL string that automatically gets updated whenever the user changes the news `section` via the `NewsFilter` component. Note that the API key has been included in the URL string as well.
- After fetching results using the `axios.get()` function, we need to parse the results and format them in a way that's compatible with our UI, specifically the `NewsCard` component. We do this using JavaScript's `Array.map` function to create a new array with our formatted data.
- Extracting image data is a little tricky. Some posts lack the `multimedia` field, and even if they do have it, there's no guarantee that the media format we need is present. In such a case, we return a default image URL — `http://placehold.it/210x140?text=N/A` — and use the post's title as the caption.
- In the error block, we're checking the presence of specific error properties to determine what kind of error has occurred. You can use this information to construct a helpful error message.

Now, take a look at the template section and observe that we've included a new prop called `fetch`, which links to the `fetchNews` function. We need to update `src/components/NewsFilter.vue` to accept this prop. Below, I've highlighted only the code sections you should change:

```
<template>
  ...
  <button
    class="px-6 py-2 text-white bg-green-700 rounded hover:bg-green-900"
    @click="fetch"
  >
    Retrieve
  </button>
  ...
</template>

<script>
export default {
  props: {
    modelValue: String,
    fetch: Function,
  },
}
</script>
```

You'll probably need to restart the dev server in order to properly load the axios library and the API key. Once you've done that, you should have a view of actual posts. Below is the current state of the application.

Final Touches and Demos

I decided to add some minor (optional) touches to make the app experience a little bit better, like introducing a loading image.

You can see a demo in the StackBlitz below (limited functionality):

Alternatively, you can view a live version here.

Conclusion

In this tutorial, we've learned how to start a Vue.js project from scratch, how to fetch data from an API using axios, and how to handle responses and manipulate data using components and computed properties.

- Automatically queue social media posts from a category using the Buffer API
- Mark posts to be read later, using the Pocket API

… and so on.

The entire code for this project is also hosted on GitHub, so you can clone, run, and make any improvements you fancy.

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