Class 8: Installable Prototype App

- Review: Last Class
- Prototyping Functionality
- Libraries / Packages
- Source Code Inspection
- Installable Prototype App
- Summary

Review: Last Class

Review: `v-model` Directive

The `v-model` directive creates a two-way binding between a form input element and a data property in your Vue.js component.

```
<script setup>
import { ref } from 'vue'
const message = ref('hello')
</script>

<template>
  <p>Message is: {{ message }}</p>
  <input v-model="message" />
</template>
```

Review: Attribute Bindings (`v-bind`)

Use the `v-bind` directive (`:` shorthand) to bind HTML attributes to data properties in your Vue.js component.

```
<script setup>
import { ref } from 'vue'
const isDisabled = ref(true)
</script>

<template>
  <button :disabled="isDisabled">Submit</button>
</template>
```

Review: Custom Events

Declare custom events and emit them from child components to allow parent components to listen for and respond to specific actions or changes.

Counter.vue

```
<script setup>
import { ref } from 'vue'
defineEmits(['countIncremented'])

const count = ref(0)
function incrementCount() {
  count.value++
  emit('countIncremented', count.value)
}
</script>
```

App.vue

```
<script setup>
function handleCountIncremented(newCount) {
  console.log(
    'Count incremented to:',
    newCount)
}
</script>

<template>
  <Counter
    @countIncremented="handleCountIncremented" />
</template>
```

Libraries / Packages

Prototyping Functionality

When prototyping, you may need to implement functionality that is complex or time-consuming to implement on your own.

Common methods:

- Generative AI (i.e. GitHub Copilot)
- Programming libraries / packages
- Online code snippets (e.g. StackOverflow)
- Tutorials (e.g. YouTube, blogs, etc.)
- Write it yourself from scratch

Prototyping Functionality Pros & Cons

Method	Pros	Cons
Generative AI	Fast and works for a wide variety of tasks.	Accuracy is suspect. It may take longer to validate the code is correct.
Programming Libraries / Packages	Often saves time and effort for common tasks.	Generally, popular libraries are often accurate.
Online Code Snippets, Tutorials	Solution may solve your exact problem.	May be time-consuming to get it working with your problem.
Write it yourself from scratch	You have full control over the code.	Time-consuming.

Activity: GenAI Contrast Calculation

1. Stage, commit, and push your work in your Homework 3 repository.
2. Remove the `ColorContrastLibrary` from your `ContrastRatio` component.
3. Ask GitHub Copilot to write a function that calculates the contrast ratio between two colors. (You can ask it to write the function in JavaScript or TypeScript.)
4. Verify that the function is correct.

Libraries / Packages

Programming Library / Package

A programming library (or package) is a collection of pre-written code that provides specific functionality or features that can be integrated into your own projects.

Libraries / packages are designed to save developers time and effort by providing reusable code for common tasks.

Prototyping with Libraries / Packages

When prototyping, you can use libraries / packages to quickly add functionality to your prototype without having to write the code from scratch.

Generally, use popular libraries / packages that are well-maintained and have good documentation to ensure that the code is accurate and reliable.

If a library / package is not available, use generative AI to write the code for you, and then validate that the code is correct.

Tip: Poor Library / Package Documentation

When using a library / package, you may encounter poor documentation that makes it difficult to understand how to use the library / package effectively.

In these cases, **inspect the source code** of the library / package to understand how it works and how to use it in your project.

Demo: Source Code

Repository / Source Code for: `color-contrast-checker`

Activity: Inspecting Source Code

Working with your peers (2-4), complete the handout.

1. Inspect the source code for: https://www.npmjs.com/package/color-contrast-checker
2. Answer the questions in the handout.

Installable Prototype App

Progressive Web App

A Progressive Web App (PWA) is a type of web application that is installable on a user's device and can work offline or with a poor network connection.

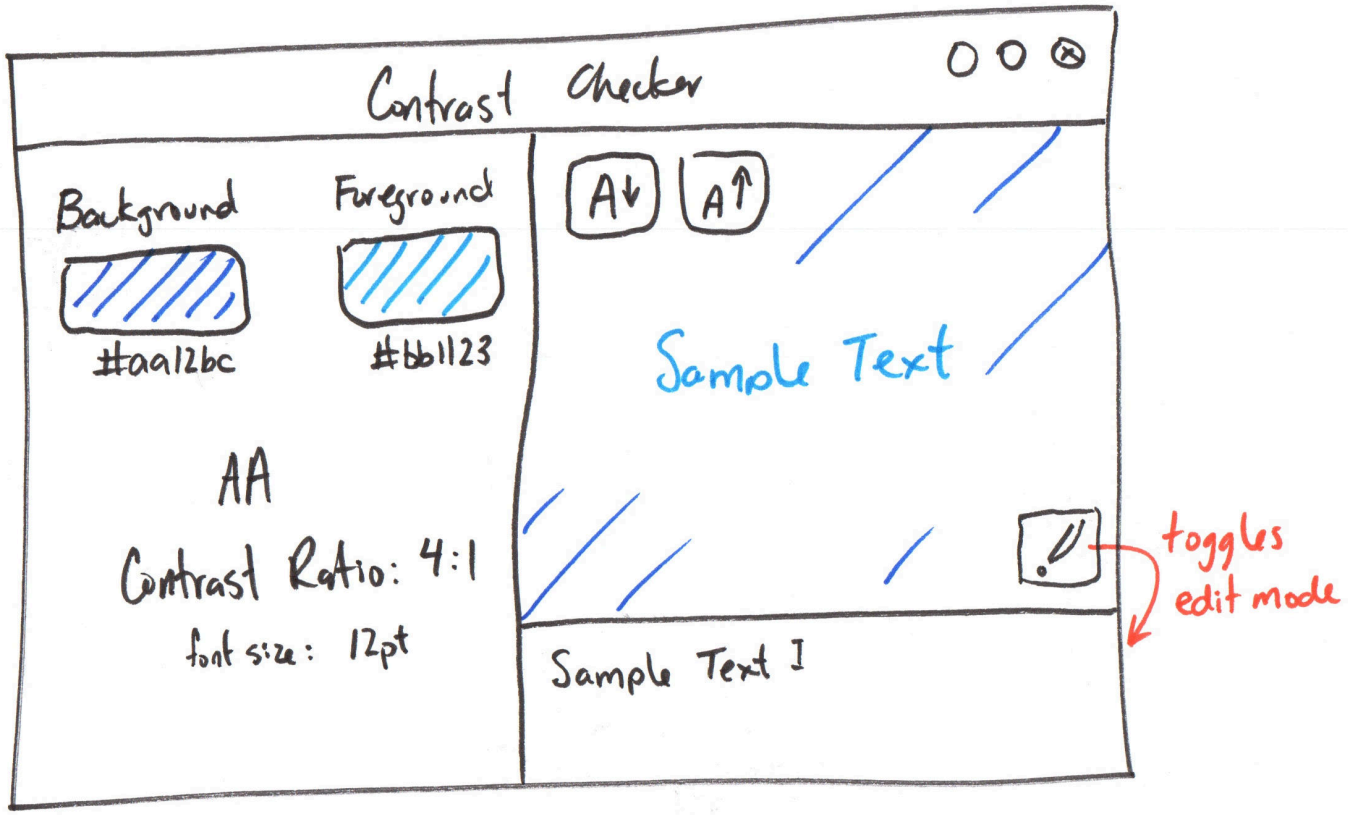
PWA requirements:

- A manifest (provides metadata about the app)
- A service worker (enables offline functionality)
- HTTPS (for security)

Activity: Installable Prototype App

Together, let's create a PWA from your Homework 3 prototype app.

Studio: Homework 3



Tips: Unable to Install PWA

First try: Hard refresh in your browser

Codespace:

- Stop your dev server
- `npm install` again

GitHub Pages:

- `npm run build` and `npm run publish-pwa`
  (`Ctrl + Shift + R` on Windows, `Cmd + Shift + R` on Mac)
- In `github.com` **Pages** setting for repo, set **Branch** to none. Save. Then set to `gh-pages`. Save.

Discussion: Homework 3 Deadline

Summary

- Prototype functionality using libraries / packages or generative AI.
- Avoid writing functionality from scratch when prototyping.
- Inspect source code of libraries / packages when documentation is poor.
- Progressive Web Apps (PWAs) are installable web applications that can work offline.
- To create a PWA, you need to include a manifest, a service worker, and serve the app over HTTPS.

What's Next?

Next Class: Rendering Components with Complex Data (Arrays)

Homework: Homework 3
(No class preparation)