Production-Grade Vue

Frontend Masters

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BEN HONG

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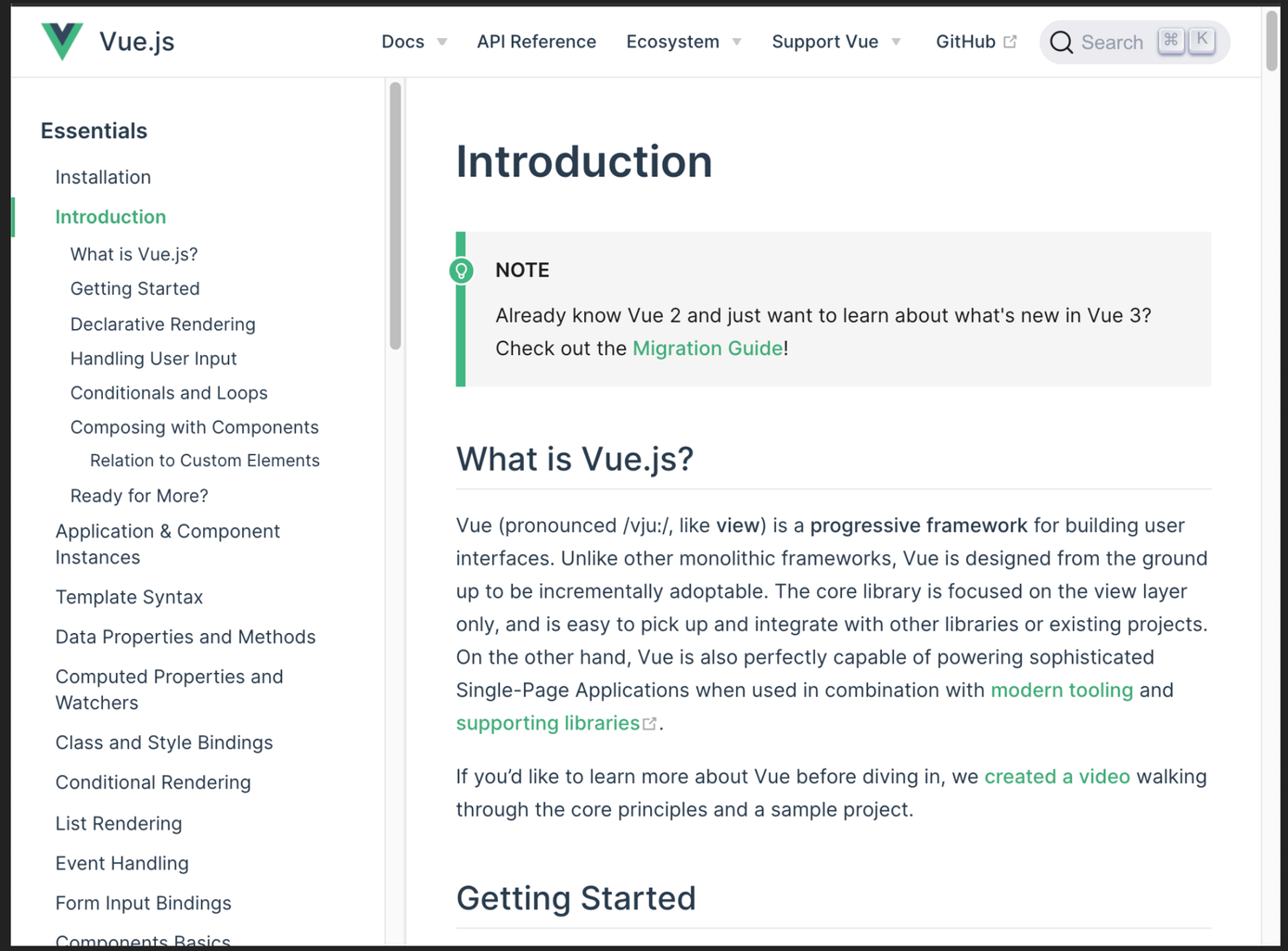
Netlify

@bencodezen



📅 SCHEDULE 📅

Time Slot (EST)	Event
9:30AM - 10:30AM	Part 1
10:30AM - 10:45AM	☕ Short Break ☕
10:45AM - 12:00PM	Part 2
12:00PM - 1:00PM	🥪 🌮 Lunch 🍱 🍜
1:00PM - 3:00PM	Part 3
3:00PM - 3:15PM	☕ Short Break ☕
3:15PM - 5:30PM	Part 4

Before we get started...

PARTICIPATION TIPS

Questions are **welcome**!

PARTICIPATION TIPS

All slides and examples will be **public**.

No need to hurry and copy down examples.

PARTICIPATION TIPS

If you need a **break**, please take one!

PARTICIPATION TIPS

Most things are applicable to Vue 2 and 3.

If there is anything Vue 3 specific, it'll be signified with:

PARTICIPATION TIPS

All code is **compromise**.

I encourage you to question and/or disagree.

Your opinion and experience matter.

Choose what works best for you and your team.

LANGUAGES

TOOL

Single File Components (SFCs)

TOOL

Single File Components (SFCs)

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>

<script>
export default {
  // ...
}
</script>

<style>
/* My Custom Styles */
</style>
```

BEST PRACTICES

JavaScript

DISCUSSION

JavaScript vs TypeScript

DISCUSSION

JavaScript vs TypeScript

- Majority of bugs encountered are **not** due to type violations
- TypeScript does **not** inherently guarantee type safety - it requires discipline
- Full type safety in a codebase can be a significant cost to a team in terms of productivity
- Most applications would benefit from better tests and code reviews

DISCUSSION

JavaScript vs TypeScript

- Progressive types can be added to a codebase with JSDoc comments
- If the application is in Vue.js 2, probably not worth upgrading to TypeScript
- Starting a new project with Vue.js 3 and the team is interested in trying it out TypeScript? Go for it!

Questions?

BEST PRACTICES

HTML

BEST PRACTICE

All HTML should exist in .vue files

in a <template> or render function

BEST PRACTICE

All HTML should exist in .vue files in a <template> or render function

- A benefit of doing this is that Vue has an opportunity to parse it before the browser does
- This allows for developer experience improvements such as:
  - Self-closing tags

BEST PRACTICE

All HTML should exist in .vue files in a <template> or render function

- Self-closing tags

```
<span class="fa fa-info"></span>
```

BEST PRACTICE

All HTML should exist in .vue files in a <template> or render function

- Self-closing tags

```
<span class="fa fa-info" />
```

BEST PRACTICE

All HTML should exist in .vue files in a <template> or render function

- Self-closing tags

```
<BaseIcon
  name="info"
  size="large"
  text="Information Icon"
/>
```

BEST PRACTICE

All HTML should exist in .vue files in a <template> or render function

- A benefit of doing this is that Vue has an opportunity to parse it before the browser does
- This allows for developer experience improvements such as:
  - Self-closing tags
  - Easy enhancement path if needed

TECHNIQUE

Template

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>

<script>
export default {
  // ...
}
</script>

<style>
/* My Custom Styles */
</style>
```

TECHNIQUE

Render Function

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>

<script>
export default {
  // ...
}
</script>

<style>
/* My Custom Styles */
</style>
```

TECHNIQUE

Render Function

MyFirstComponent.vue

```
<script>
export default {
  // ...
}
</script>

<style>
/* My Custom Styles */
</style>
```

TECHNIQUE

Render Function

MyFirstComponent.vue

```
<script>
export default {
  render(createElement) {
    return createElement('h1', 'Hello Frontend Masters!')
  }
}
</script>

<style>
/* My Custom Styles */
</style>
```

TECHNIQUE

Render Function

MyFirstComponent.vue

```vue
<script>
import { h } from 'vue'

export default {
  render(createElement) {
    return createElement('h1', 'Hello Frontend Masters!')
  }
}
</script>

<style>
/* My Custom Styles */
</style>
```

Vue.js 3

TECHNIQUE

Render Function

MyFirstComponent.vue

```vue
<script>
import { h } from 'vue'

export default {
  render() {
    return h('h1', 'Hello Frontend Masters!')
  }
}
</script>

<style>
/* My Custom Styles */
</style>
```

Vue.js 3

DISCUSSION

Template vs Render Function

DISCUSSION

Template vs Render Function

- Templates are the most declarative way to write HTML and is recommended as the default

- Render functions are a valid alternative to templates that are great for programmatic generation of markup

TECHNIQUE

```
v-bind="{ … }"
 v-on="{ … }"
```

When working with props and/or events consider...

```
<VueMultiselect
  v-bind:options="options"
  v-bind:value="value"
  v-bind:label="label"
  v-on:change="parseSelection"
  v-on:keyup="registerSelection"
  v-on:mouseover="registerHover"
/>
```

When working with props and/or events consider...

```
<VueMultiselect
  v-bind="{
    options: options,
    value: value,
    label: label
  }"
  v-on:change="parseSelection"
  v-on:keyup="registerSelection"
  v-on:mouseover="registerHover"
/>
```

When working with props and/or events consider...

```
<VueMultiselect
  v-bind="{
    options: options,
    value: value,
    label: label
  }"
  v-on="{
    change: parseSelection,
    keyup: registerSelection,
    mouseover: registerHover
  }"
/>
```

When working with props and/or events consider...

```
<VueMultiselect
  v-bind="{
    options,
    value,
    label
  }"
  v-on="{
    change: parseSelection,
    keyup: registerSelection,
    mouseover: registerHover
  }"
/>
```

When working with props and/or events consider...

```
<VueMultiselect
  v-bind="vmsProps"
  v-on="{
    change: parseSelection,
    keyup: registerSelection,
    mouseover: registerHover
  }"
/>
```

When working with props and/or events consider...

```
<VueMultiselect
  v-bind="vmsProps"
  v-on="vmsEvents"
/>
```

Questions?

BEST PRACTICES

CSS

BEST PRACTICES

CSS

- Limit global styles to App.vue whenever possible
- Scope all component styles with scoped styles or CSS modules

MyRedText.vue

```vue
<template>
  <p class="red">
    This should be red!
  </p>
</template>

<style>
.red {
  color: red;
}
.bold {
  font-weight: bold;
}
</style>
```

TECHNIQUE

Scoped Styles

MyRedText.vue

```vue
<template>
  <p class="red">
    This should be red!
  </p>
</template>

<style>
.red {
  color: red;
}
.bold {
  font-weight: bold;
}
</style>
```

MyRedText.vue

```vue
<template>
  <p class="red">
    This should be red!
  </p>
</template>

<style scoped>
.red {
  color: red;
}
.bold {
  font-weight: bold;
}
</style>
```

MyRedText.vue

```vue
<template>
  <p class="red" data-v57s8>
    This should be red!
  </p>
</template>
```

```vue
<style>
.red[data-v57s8] {
  color: red;
}
.bold[data-v57s8] {
  font-weight: bold;
}
</style>
```

TECHNIQUE

CSS Modules

MyRedText.vue

```vue
<template>
  <p class="red">
    This should be red!
  </p>
</template>

<style>
.red {
  color: red;
}
.bold {
  font-weight: bold;
}
</style>
```

MyRedText.vue

```vue
<template>
  <p class="red">
    This should be red!
  </p>
</template>

<style module>
.red {
  color: red;
}
.bold {
  font-weight: bold;
}
</style>
```

MyRedText.vue

```vue
<template>
  <p :class="$style.red">
    This should be red!
  </p>
</template>

<style module>
.red {
  color: red;
}
.bold {
  font-weight: bold;
}
</style>
```

MyRedText.vue

```vue
<template>
  <p :class="$style.red">
    This should be red!
  </p>
</template>

<style>
.MyRedText_red_3fj4x {
  color: red;
}
.MyRedText_bold_8fn3s {
  font-weight: bold;
}
</style>
```

MyRedText.vue

```vue
<template>
  <p class="MyRedText_red_3fj4x">
    This should be red!
  </p>
</template>
```

```vue
<style>
.MyRedText_red_3fj4x {
  color: red;
}
.MyRedText_bold_8fn3s {
  font-weight: bold;
}
</style>
```

TECHNIQUE

CSS Modules Exports

TECHNIQUE

CSS Modules Exports

```
<template>
  <p>Grid Padding: {{ $style.gridPadding }}</p>
</template>

<style module>
:export {
  gridPadding: 1.5rem;
}
</style>
```

Questions?

Practice

In the repo

- Rewrite the **DynamicHeading** component using the render function
- Refactor the #app styles to a CSS class and use CSS modules

In your app

- Look around to see if there are any components that might benefit from using the render method instead of templates
- Refactor a component to use CSS modules

VUE CLI

TOOL

Vue CLI

TOOL

Vue CLI - GUI Mode

PRO TIP

Vue CLI Modern Mode

PRO TIP

Vue CLI - Modern Mode

- Babel allows us to utilize all the newest language features in ES6+, but this usually meant it gets shipped to all users regardless of their needs
- Vue CLI products two versions of your app:
  - A modern bundle targeting browsers that support ES modules
  - A legacy bundle targeting older browsers that do not

PRO TIP

Vue CLI - Modern Mode

```
vue-cli-service build --modern
```

- Once it is enabled, no additional steps are needed!

DISCUSSION

Valid alternatives to Vue CLI

DISCUSSION

Valid alternatives to Vue CLI

- Micro-frontends
- Legacy migration
- Server-side rendering

Questions?

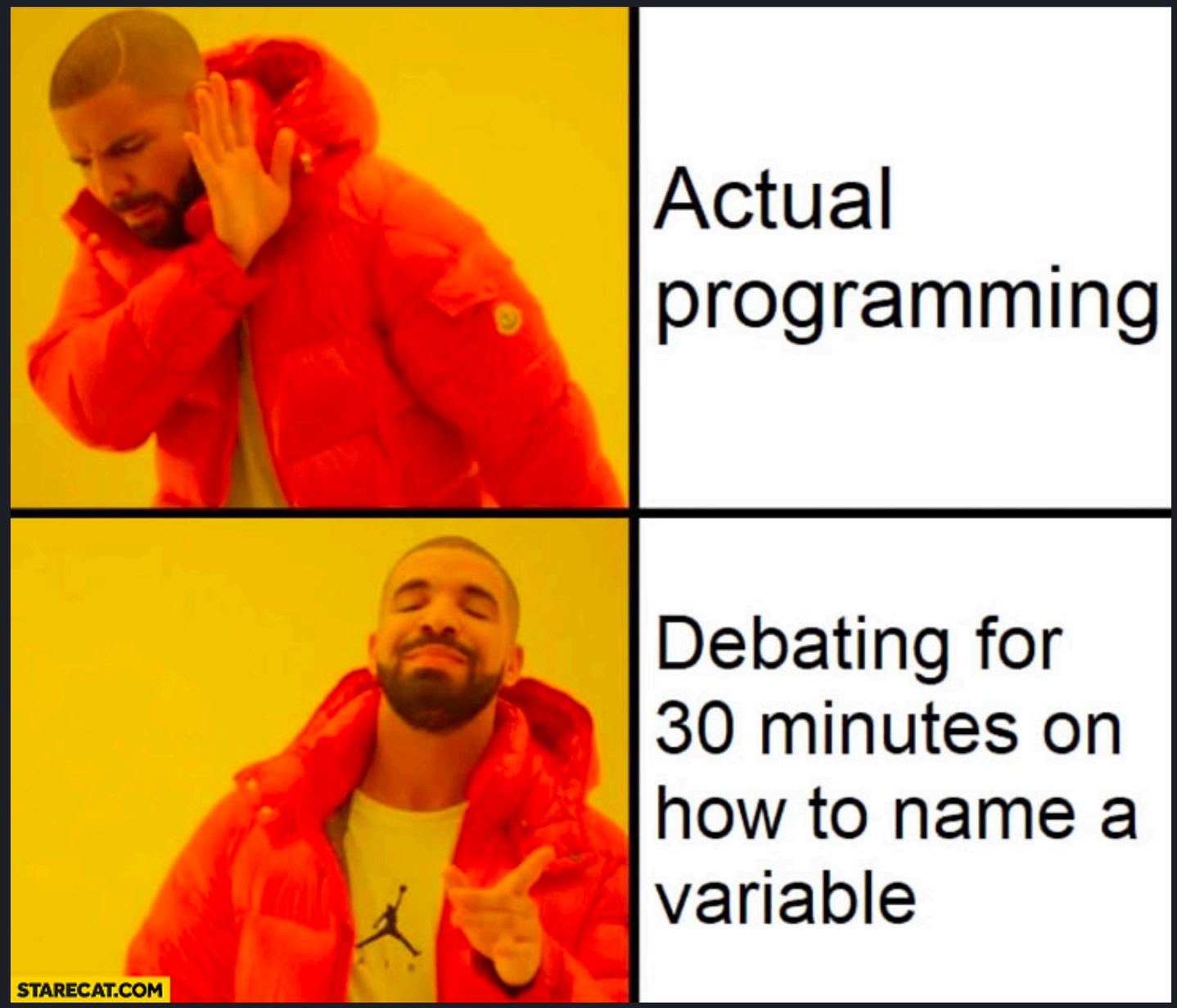
SHORT BREAK

Be back at 10:45AM!

COMPONENTS (PT. 1)

BEST PRACTICE

Naming Components


Actual programming
Debating for 30 minutes on how to name a variable
STARECAT.COM

BEST PRACTICE

Naming Components

Avoid single word components

~~Header.vue~~

~~Button.vue~~

~~Container.vue~~

BEST PRACTICE

Naming Components

AppPrefixedName.vue / **Base**PrefixedName.vue

Reusable, globally registered UI components.

`AppButton, AppModal, BaseDropdown, BaseInput`

ThePrefixedName.vue

Single-instance components where only 1 can be active at the same time.

`TheShoppingCart, TheSidebar, TheNavbar`

BEST PRACTICE

Naming Components

Tightly coupled/related components

TodoList.vue

TodoListItem.vue

TodoListItemName.vue

1. Easy to spot relation
2. Stay next to each other in the file tree
3. Name starts with the highest-level words

BEST PRACTICE

Naming Component Methods

BEST PRACTICE

Naming Component. Methods

Use descriptive names

❌ `onInput` ✅ `updateUserName`

Don’t assume where it will be called

```
updateUserName ($event) {
  this.user.name = $event.target.value
}
```

❌ Wrong

```
updateUserName (newName) {
  this.user.name = newName
}
```

✅ Correct

BEST PRACTICE

Naming Component. Methods

Prefer destructuring over multiple arguments

```
updateUser (userList, index, value, isOnline) {
  if (isOnline) {
    userList[index] = value
  } else {
    this.removeUser(userList, index)
  }
}
```

BEST PRACTICE

Naming Component. Methods

Prefer destructuring over multiple arguments

```
updateUser (userList, index, value, isOnline) {
  if (isOnline) {
    userList[index] = value
  } else {
    this.removeUser(userList, index)
  }
}
```

❌ Not recommended

```
updateUser ({ userList, index, value, isOnline }) {
  if (isOnline) {
    userList[index] = value
  } else {
    this.removeUser(userList, index)
  }
}
```

✅ Recommended

BEST PRACTICE

When to Refactor Your Components

Premature optimization is the root of all evil (or at least most of it) in programming.

- Donald Knuth

PRINCIPLE

Data Driven Refactoring

PRINCIPLE

Data Driven Refactoring

Signs you need more components

- When your components are hard to understand
- You feel a fragment of a component could use its own state
- Hard to describe what what the component is actually responsible for

PRINCIPLE

Data Driven Refactoring

How to find reusable components?

- Look for v-for loops
- Look for large components
- Look for similar visual designs
- Look for repeating interface fragments
- Look for multiple/mixed responsibilities
- Look for complicated data paths

Questions?

PRO TIP

SFC Code Block Order

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>


<script>
export default {
  // ...
}
</script>


<style>
/* My Custom Styles */
</style>
```

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>

<script>
export default {
  // ...
}
</script>

<style>
/* My Custom Styles */
</style>
```

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>

<script>
export default {
  // ...
}
</script>

<style>
/* My Custom Styles */
</style>
```

MyFirstComponent.vue

```vue
<template>
  <h1>Hello Frontend Masters!</h1>
</template>


<script>
export default {
  // ...
}
</script>


<style>
/* My Custom Styles */
</style>
```

MyFirstComponent.vue

```
<script>
export default {
  // ...
}
</script>

<template>
  <h1>Hello Frontend Masters!</h1>
</template>


<style>
/* My Custom Styles */
</style>
```

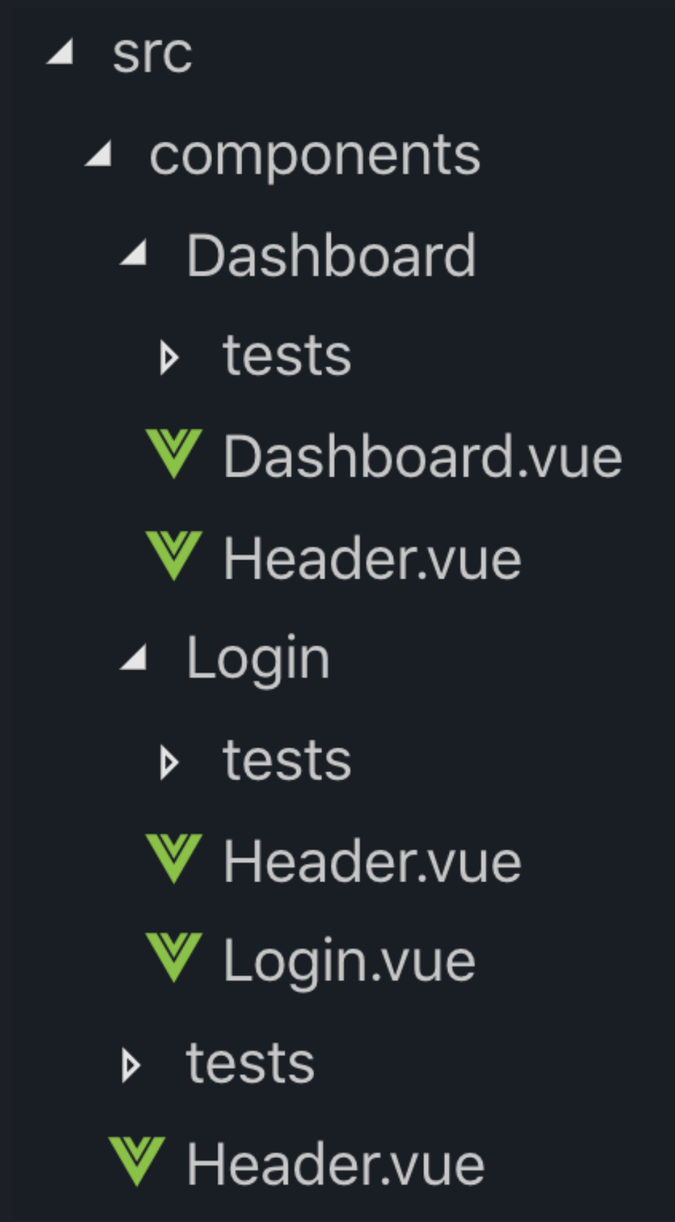
MyFirstComponent.vue

```vue
<script>
export default {
  // ...
}
</script>

<template>
  <h1>Hello Frontend Masters!</h1>
</template>

<style>
/* My Custom Styles */
</style>
```

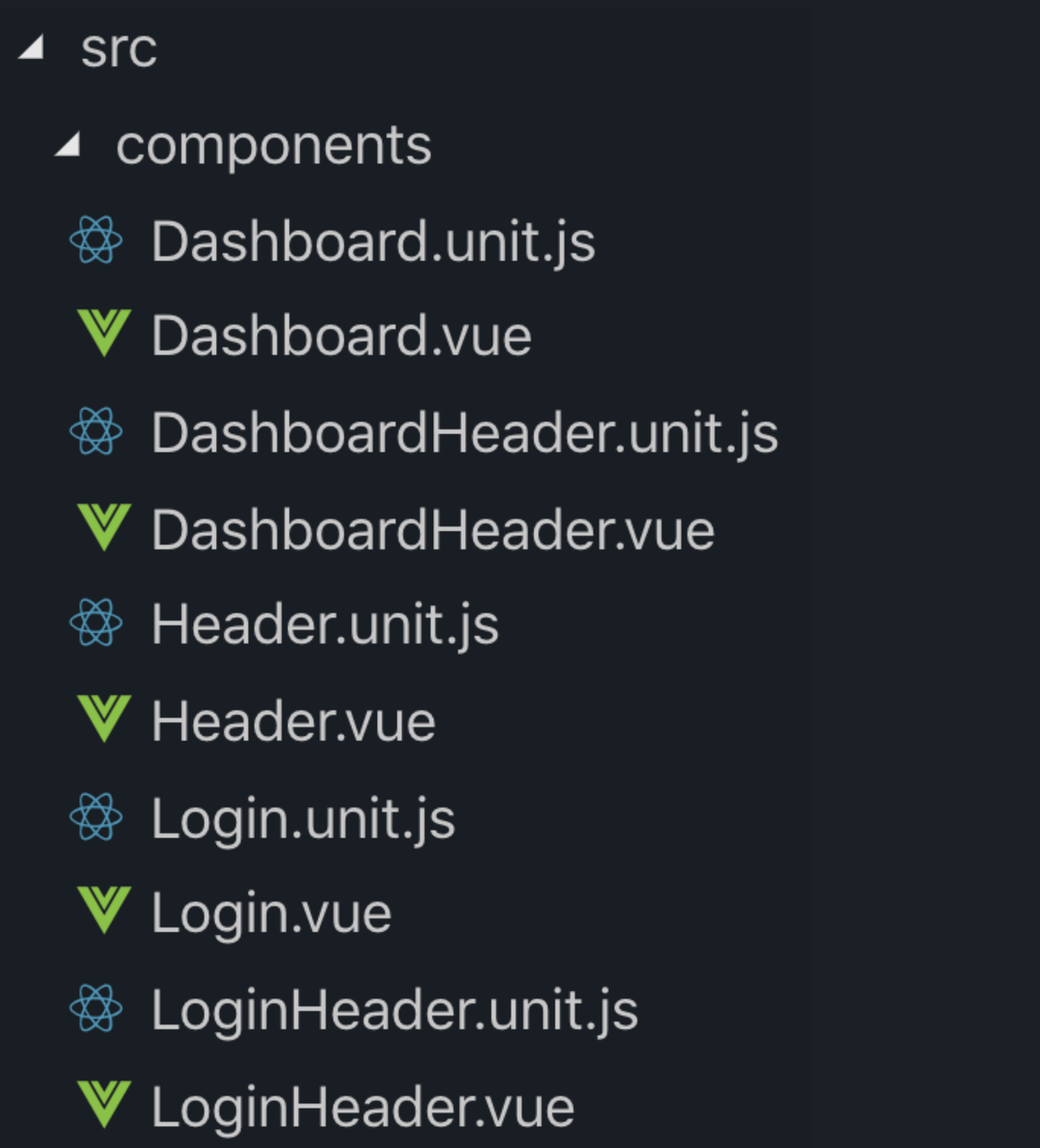
PRO TIP

Component File Organization

Nested Structure



Flat Structure



- src
  - components
    - Dashboard
      - tests
      - Dashboard.vue
      - Header.vue
    - Login
      - tests
      - Header.vue
      - Login.vue
    - tests
  - Header.vue

VS

- src
  - components
    - Dashboard.unit.js
    - Dashboard.vue
    - DashboardHeader.unit.js
    - DashboardHeader.vue
    - Header.unit.js
    - Header.vue
    - Login.unit.js
    - Login.vue
    - LoginHeader.unit.js
    - LoginHeader.vue

PRO TIP

Component File Organization

Flat makes refactoring easier

No need to update imports if components move

Flat makes finding files easier

Folders often leads to lazily named files

because they don’t have to be unique

PRO TIP

Register base components globally

PRO TIP

Register base components globally

Instead of every component having:

```
import BaseButton from './components/BaseButton.vue'
import BaseIcon from './components/BaseIcon.vue'
import BaseInput from './components/BaseInput.vue'
```

Use this epic script by Chris Fritz:

https://vuejs.org/v2/guide/components-registration.html#Automatic-Global-Registration-of-Base-Components

Questions?

LUNCH BREAK

Be back at 1:00PM!

COMPONENTS (PT. 2)

TECHNIQUE

Props

NavItem.vue

```
<script>
export default {
  props: ['label']
}
</script>

<template>
  <li class="nav-item">
    <a :href="`/${label}`">
      {{ label }}
    </a>
  </li>
</template>
```

NavItem.vue

```vue
<script>
export default {
  props: ['label']
}
</script>

<template>
  <li class="nav-item">
    <a :href="`/${label}`">
      {{ label }}
    </a>
  </li>
</template>
```

Navbar.vue

```vue
<template>
  <ul>
    <NavItem label="Home" />
    <NavItem label="About" />
    <NavItem label="Contact" />
  </ul>
</template>
```

NavItem.vue

```
<script>
export default {
  props: ['label']
}
</script>

<template>
  <li class="nav-item">
    <a :href="`/${label}`">
      {{ label }}
    </a>
  </li>
</template>
```

Navbar.vue

```
<template>
  <ul>
    <NavItem label="Home" />
    <NavItem label="About" />
    <NavItem label="Contact" />
  </ul>
</template>
```

NavItem.vue

```
<script>
export default {
  props: ['label']
}
</script>
```

NavItem.vue

```
<script>
export default {
  props: {
    label: {
      type: String,
      required: true,
      default: ‘Home'
    }
  }
}
</script>
```

NavItem.vue

```
<script>
export default {
  props: {
    label: {
      type: String,
      default: 'Home'
    }
  }
}
</script>
```

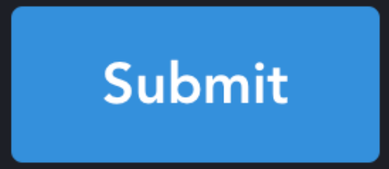
NavItem.vue

```
<script>
export default {
  props: {
    label: {
      type: String,
      default: ‘Home’,
      validator: (value) => {
        return ['Home', 'About'].indexOf(value) !== -1
      }
    }
  }
}
</script>
```

Let’s do a Coding Experiment

Task 1

Create a button component that can display text specified in the parent component



Task 2

Allow the button to display an icon of choice

on the right side of the text

Submit →

```
<AppIcon icon="arrow-right" class="ml-3"/>
```

This is the code responsible for displaying an arrow.

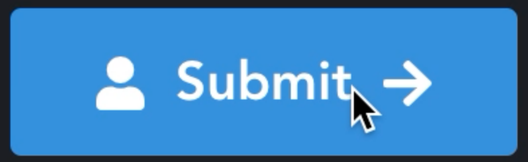
Task 3

Make it possible to have icons on either side or even both sides

Submit

Task 4

Make it possible to replace the content with a loading spinner

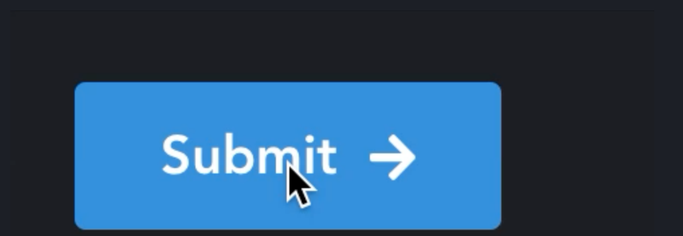



```
<PulseLoader color="#fff" size="12px"/>
```

This is the code responsible for displaying a spinner.

Task 5

Make it possible to replace an icon with a loading spinner



Possible solution

```
<template>
  <button type=“button" class=“nice-button“>
    {{ text }}
  </button>
</template>

<script>
export default {
  props: [‘text']
}
</script>
```

```
<template>
  <button type=“button" class=“nice-button“>
    <PulseLoader v-if="isLoading" color="#fff" size="12px">
    <template v-else>
      <template v-if="iconLeftName">
        <PulseLoader v-if="isLoadingLeft" color="#fff"
size="6px">
        <AppIcon v-else :icon=“iconLeftName"/>
      </template>
      {{ text }}
      <template v-if="iconRightName">
        <PulseLoader v-if="isLoadingRight" color="#fff"
size="6px">
        <AppIcon v-else :icon=“iconRightName”/>
      </template>
    </template>
  </button>
</template>

<script>
export default {
  props: ['text', 'iconLeftName', 'iconRightName', ‘isLoading’,
'isLoadingLeft', 'isLoadingRight']
}
</script>
```


OMG
PROPS EVERYWHERE!

```
<template>
  <button type=“button" class=“nice-button“>
    <PulseLoader v-if="isLoading" color="#fff" size="12px">
    <template v-else>
      <template v-if="iconLeftName">
        <PulseLoader v-if="isLoadingLeft" color="#fff"
size="6px">
        <AppIcon v-else :icon=“iconLeftName"/>
      </template>
      {{ text }}
      <template v-if="iconRightName">
        <PulseLoader v-if="isLoadingRight" color="#fff"
size="6px">
        <AppIcon v-else :icon=“iconRightName”/>
      </template>
    </template>
  </button>
</template>

<script>
export default {
  props: ['text', 'iconLeftName', 'iconRightName', ‘isLoading’,
'isLoadingLeft', 'isLoadingRight']
}
</script>
```

Let’s call it the props-based solution

props-based solution

Is it wrong?

props-based solution

Is it wrong?

No.

It does the job.

props-based solution

Is it good, then?

props-based solution

Is it good, then?

Not exactly.

props-based solution

Problems

props-based solution

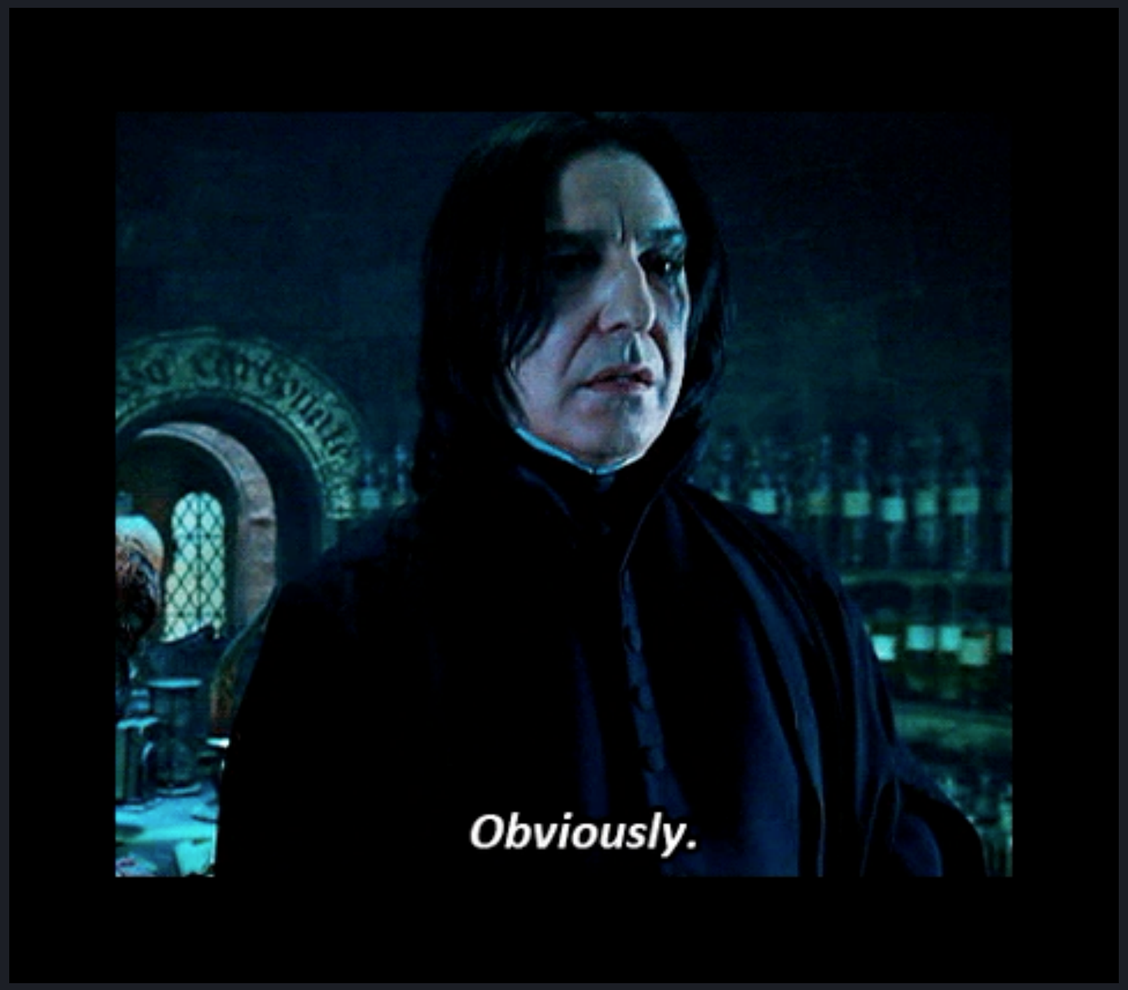
Problems

- New requirements increase complexity
- Multiple responsibilities
- Lots of conditionals in the template
- Low flexibility
- Hard to maintain

Is it good, then?

Not exactly.

Is there a better another alternative?



Is there a better another alternative?

Recommended solution

```
<template>
  <button type="button" class="nice-button">
    <slot />
  </button>
</template>
```

PROBLEM

How to dynamically switch components based on data?

TECHNIQUE

<Component :is=”name”>

```
<template>
  <div>
    <Component :is=“clockType" v-bind=“clockProps”/>
  </div>
</template>

<script>
export default {
  components: { DigitalClock },
  computed: {
    clockType () {
      if (this.selectedClock === 'analog') {
        this.clockProps = {
          …analogProps
        }
        return () => import(`./components/${this.compName}`)
      } else {
        return 'DigitalClock'
      }
    }
  }
  // ...
}
</script>
```

<Component :is>

Becomes the component specified by the **:is** prop.

Pros

- Extremely powerful and flexible
- Easy to use
- Can accept props
- Can accept asynchronous components
- Can change into different components
- You can make a router-view out of it

Cons

- Got to handle props carefully

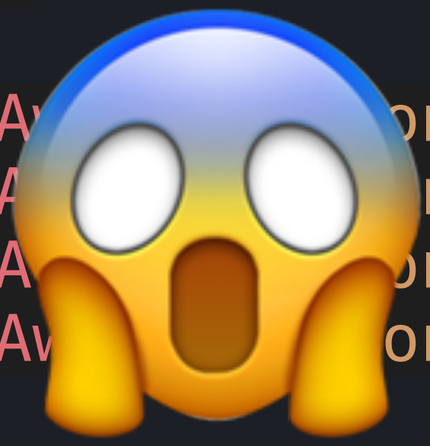
```
<template>
  <div>
    <Component :is="clockType" v-bind="clockProps" />
  </div>
</template>

<script>
export default {
  components: { DigitalClock },
  computed: {
    clockType () {
      if (this.selectedClock === 'analog') {
        this.clockProps = {
          …analogProps
        }
        return () => import(`./components/${this.compName}`)
      } else {
        return 'DigitalClock'
      }
    }
  }
  // ...
}
</script>
```

DESIGN PATTERN

Vendor Components Wrapper

```
<template>
  <p>
    <FontAwesome icon=“water” />
    <FontAwesome icon="earth" />
    <FontAwesome icon=“fire" />
    <FontAwesome icon="air" />
  </p>
</template>
```

```
<template>
  <p>
    <FontAwesome icon=“water” />
    <FontAwesome icon="earth" />
    <FontAwesome icon=“fire" />
    <FontAwesome icon="air" />
  </p>
</template>
```



```
<template>
  <p>
    <FontAwesome icon=“water” />
    <FontAwesome icon="earth" />
    <FontAwesome icon=“fire" />
    <FontAwesome icon="air" />
  </p>
</template>
```

```
<template>
  <p>
    <FontAwesome icon=“water” />
    <FontAwesome icon="earth" />
    <FontAwesome icon=“fire" />
    <FontAwesome icon="air" />
  </p>
</template>
```

BaseIcon.vue

```
<template>
  <FontAwesomeIcon
    v-if="source === 'font-awesome'"
    :icon="name"
  />
  <span
    v-else
    :class="customIconClass"
  />
</template>
```

```
<template>
  <p>
    <BaseIcon icon=“earth” />
    <BaseIcon icon="fire" />
    <BaseIcon icon="water" />
    <BaseIcon icon=“air" />
  </p>
</template>
```

DESIGN PATTERN

Transparent Components

When passing props, listeners, and attributes...

```
// BaseInput.vue
<template>
  <div>
    <input
      type="text"
      v-bind=“{ …$attrs, …$props }”
      v-on=“$listeners"
    />
  </div>
</template>
```

When passing props, listeners, and attributes...

```
<BaseInput
  @input="filterData"
  label="Filter results"
  placeholder="Type in here..."
/>
```

```
// BaseInput.vue
<template>
  <div>
    <input
      type="text"
    />
  </div>
</template>
```

When passing props, listeners, and attributes...

```
<BaseInput
  @input="filterData"
  label="Filter results"
  placeholder="Type in here..."
/>
```

```
// BaseInput.vue
<template>
  <div>
    <input
      type="text"
    />
  </div>
</template>
```

When passing props, listeners, and attributes...

```
<template>
  <div>
    <input
      type="text"
      v-bind="{ ...$attrs, ...$props }"
      v-on="$listeners"
    />
  </div>
</template>
<script>
export default {
  inheritAttrs: false,
  // ...
}
</script>
```

Both props and attributes, as well as all listeners will be passed to this element instead.

Prevent Vue from assigning attributes to top-level element

When passing props, listeners, and attributes...

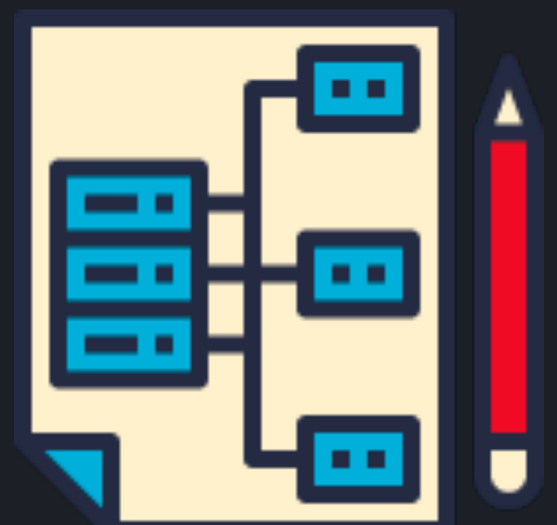
```
<template>
  <div>
    <input
      type="text"
      v-bind="{ …$attrs, …$props }"
      v-on="$listeners"
    />
  </div>
</template>
<script>
export default {
  inheritAttrs: false,
  // ...
}
</script>
```

When passing props, listeners, and attributes in v3...

```vue
<template>
  <div>
    <input type="text" v-bind="$attrs" />
  </div>
</template>

<script>
export default {
  inheritAttrs: false,
  // ...
}
</script>
```

Vue.js 3

Questions?



REUSABILITY
& COMPOSITION

PROBLEM

How to share the functionality across different components?

TECHNIQUE

Mixins

https://vuejs.org/v2/guide/mixins.html

A mixin

```
const myMixin = {
  data () {
    return {
      foo: 'bar'
    }
  }
}

export default {
  mixins: [myMixin],
  // component code
}
```

Mixin as a function

```
const myMixin = (count) => ({
  data () {
    return {
      currentCount: count
    }
  }
})

export default {
  mixins: [myMixin(10)],
  // component code
}
```

Cons

- Possible properties name clashes.
- Can’t share template fragments
- Gets harder to track where things are coming from once there are more mixins

Should you never use mixins?

No.

Pros

- Relatively easy to use
- Good for refactoring

TECHNIQUE

Provide/Inject

https://vuejs.org/v2/api/#provide-inject

Provide/Inject

```
export default {
  provide () {
    return {
      width: this.width,
      key: ‘name’,
      fetchMore: this.fetchMore
    }
  },
  data() {
    return {
      width: null,
    }
  },
  methods: {
    fetchMore () {
      // ...
    }
  }
}
```

Provide/Inject

```
export default {
  inject: ['width', 'key', ‘fetchMore'],
  props: {
    optionKey: {
      type: String,
      default () {
        return this.key
      }
    }
  }
}
```

Injected values can be used as

default props and data values

Pros

- Easy sharing data and methods with descendants
- Helps avoiding unnecessary props
- Components can choose which properties to inject
- Can be used to provide default props and data values

Cons

- There are some reactivity caveats when it comes to usage in Vue 2

- Creates a tight relationship between two components that is not immediately apparent

- There is ambiguity when it comes to what is coming from where

Provide and inject are primarily useful for advanced plugin / component library use cases. It is NOT recommended to use them in generic application code.

🎉 **NEW FEATURE**

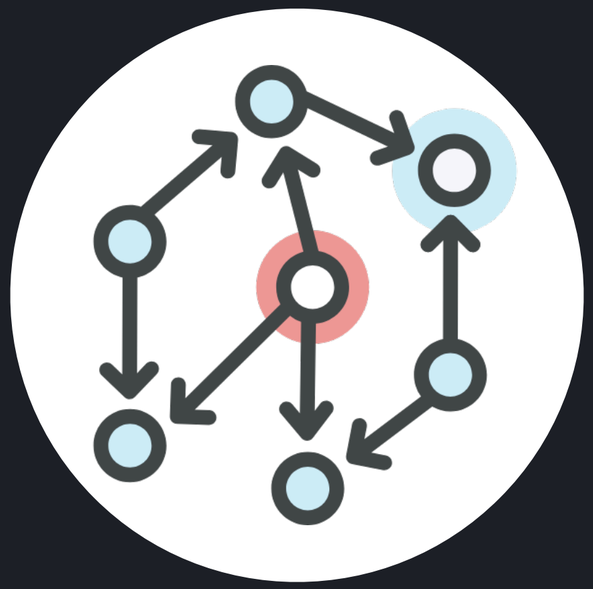
Composition API

Vue 3.0 is here!

Also available in Vue 2!

https://github.com/vuejs/composition-api

Questions?



STATE MANAGEMENT

BEST PRACTICES

Vuex

BEST PRACTICES

Vuex

What data to put into Vuex?

- Data shared between components that might not be in direct parent-child relation
- Data that you want to keep between router views (for example lists of records fetched from the API)
  - Route params are more important though (as a source of truth)

BEST PRACTICES

Vuex

What data to put into Vuex?

- Any kind of global state
  - Examples: login status, user information, global notifications
- Anything if you feel it will make managing it simpler

BEST PRACTICES

Vuex

What data to **avoid** putting into Vuex?

- User Interface variables
  - Examples: `isDropdownOpen, isInputFocused, isModalVisible`
- Forms data
- Validation results
- Single records from the API

BEST PRACTICES

Vuex

Do I need to **always** use a **getter** to return a simple fragment of state?

No.

Feel free to access state directly

```
this.$store.state.usersList
```

Use computed properties to return computed state

```
activeUsersList () {
  return this.$store.state.usersList.filter(
    user => user.isActive
  )
}
```

BEST PRACTICES

Vuex

If you need to share derived Vuex state between components, make it a getter.

You should weigh the trade-offs and make decisions that fit the development needs of your app.

PRO TIP

Avoid calling mutations directly in components

PRO TIP

Use built-in map helpers

(except mutations)

PRO TIP

Use built-in map helpers (except mutations)

```
computed: {
  ...mapState({
    userName: state => state.user.name
  }),
  ...mapGetters([
    'activeUsersList'
  ]),
},
methods: {
  ...actions([
    'updateUserName'
  ])
}
```

BEST PRACTICES

Always use namespace modules

DISCUSSION

With the Composition API, do we even need Vuex?

ROUTING

BEST PRACTICES

Routing

BEST PRACTICES

Routing

- There are three main categories of routing:
  - **View Components** - Definition for page level components (i.e., Home, About, Dashboard)
  - **Layout Components** - Markup shared between pages (i.e., header, sidebar, etc.)
  - **Routes** - Define how paths map to view components

TECHNIQUE

Add a dynamic key to all router-view components

TECHNIQUE

Add a dynamic key to all router-view components

```
<router-view :key="$route.fullPath" />
```

Ensures that the page re-renders every time.

TOOL

vue-meta

https://github.com/nuxt/vue-meta

TOOL

vue-meta

```
export default {
  metaInfo() {
    return {
      title: this.user.name,
      meta: [
        {
          name: 'description',
          content: `The user profile for ${this.user.name}.`,
        },
      ],
    }
  },
  // ...
}
```

TECHNIQUE

Lazy load routes

TECHNIQUE

Lazy load routes

```
const routes = [
  {
    path: "/",
    name: "Home",
    component: Home
  },
  {
    path: "/about",
    name: "About",
    component: () =>
      import(/* webpackChunkName: "about" */ "../views/About.vue")
  }
];
```

TESTING

PRINCIPLE

The Pareto Principle

PRINCIPLE

The Pareto Principle

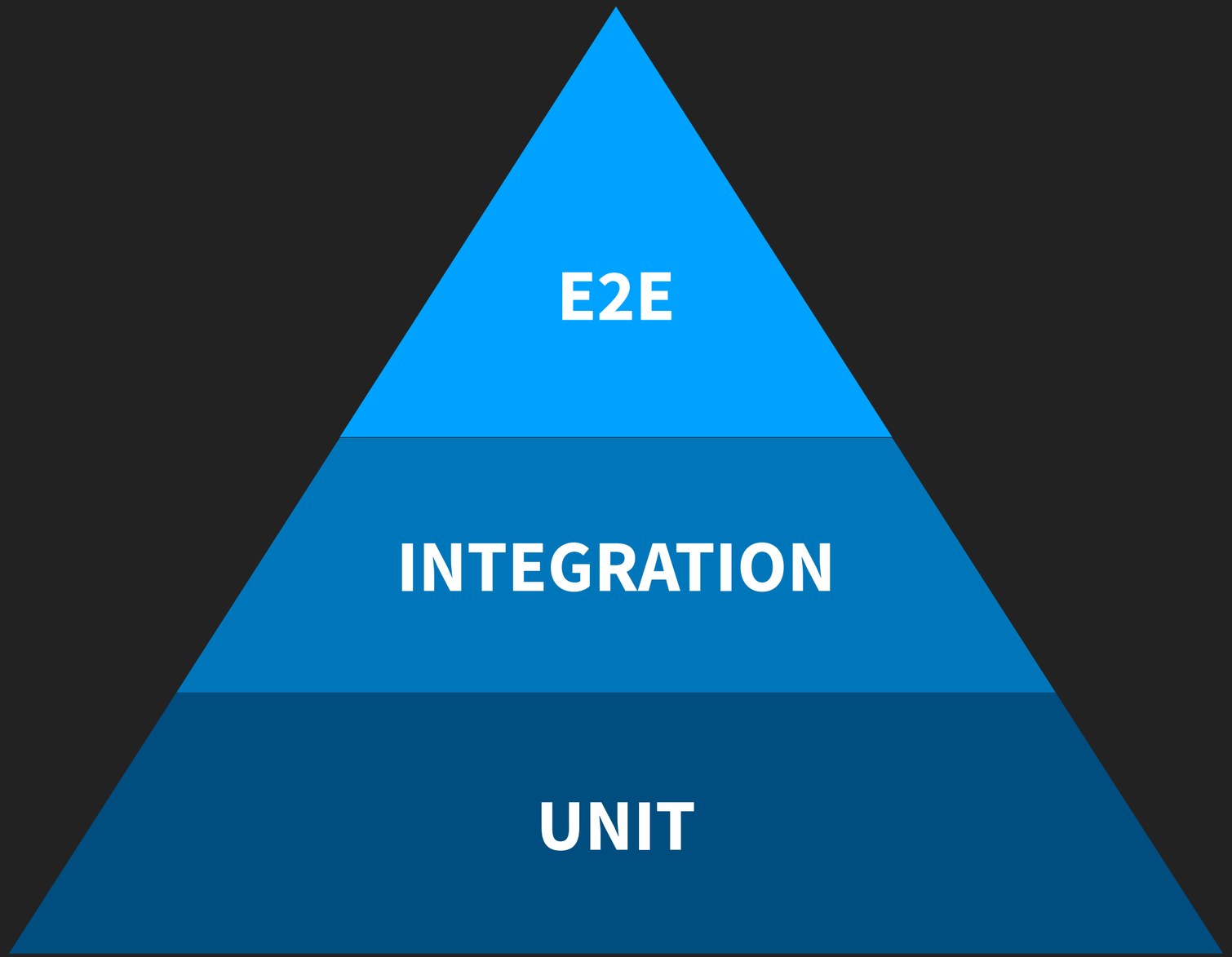
The 80-20 Rule

20% EFFORT


20% EFFORT
80%
RESULTS

BEST PRACTICES

Testing


E2E
INTEGRATION
UNIT

UNIT

UNIT

Jest

UNIT

What about Vue Test Utils?

COMPONENT

Testing Library

https://testing-library.com/

COMPONENT

Testing
Library

Cypress

BEST PRACTICE

Writing unit tests

- **Don't test that Vue works**
  - Examples: Checking that a data, computed, etc property exists
- **Primarily stick with shallow rendering**
  - Otherwise a problem in a common component can break many tests
- **Build unit tests into generators**

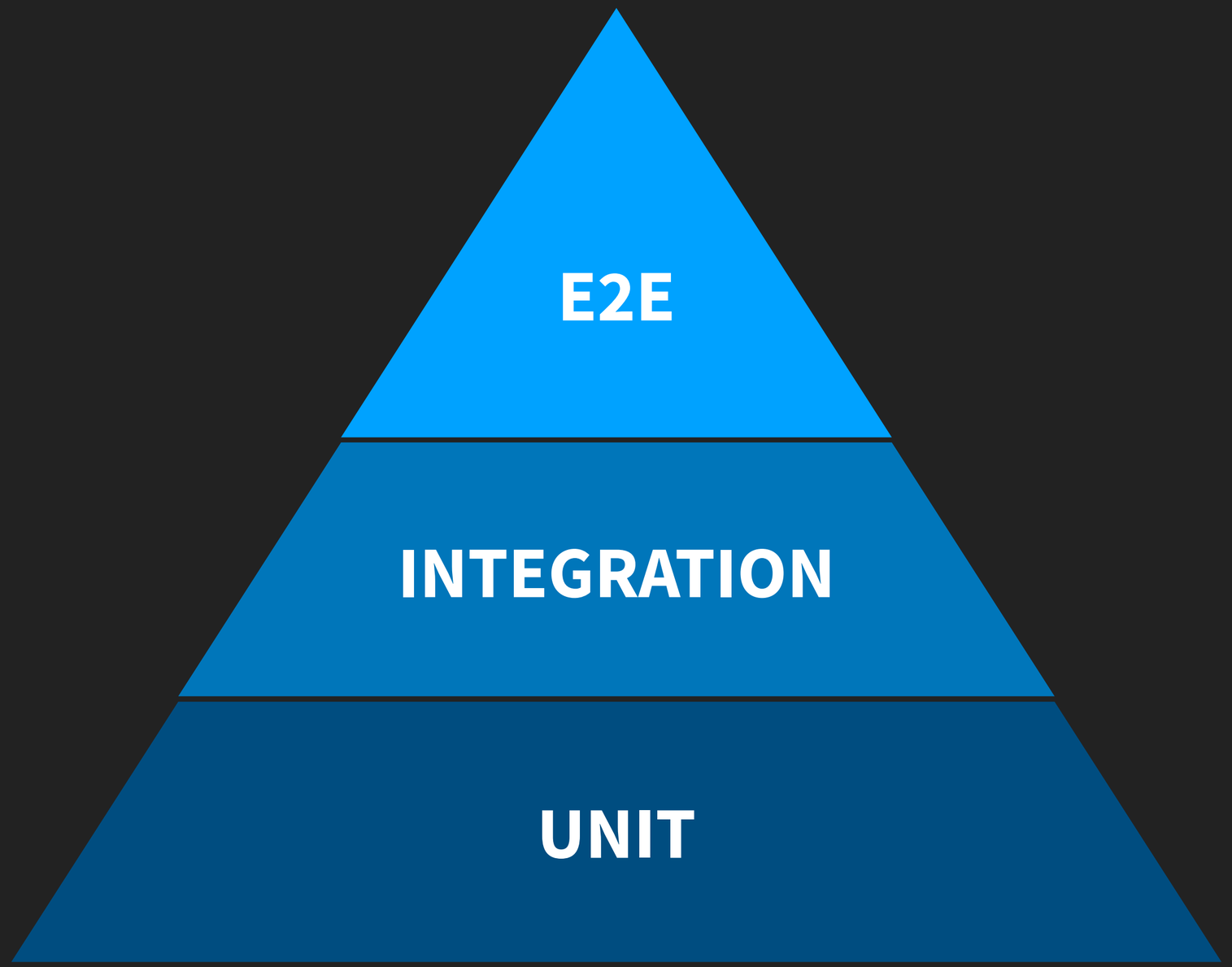
Unit tests are great, but they're often not the 20% we should often be focusing on

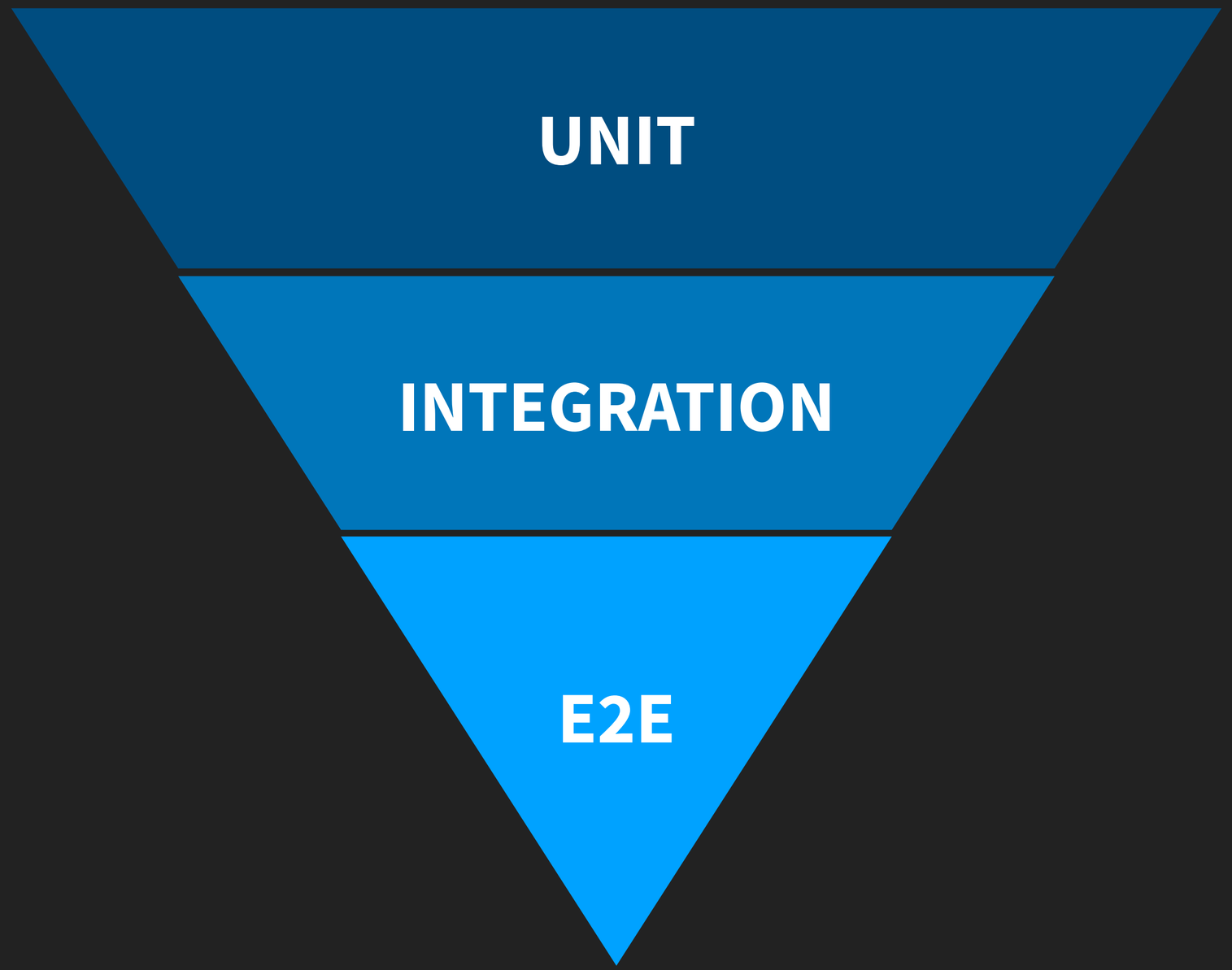
If you can only have two tests for your application...

If you can only have two tests
for your application...

#1. Can the user login?

#2. Can the user pay us?


E2E
INTEGRATION
UNIT


UNIT
INTEGRATION
E2E

Most teams avoid E2E tests because...

- Take a long time to run
- "Flakey" (i.e., unreliable)

As a result, there are often no E2E tests at all...

E2E


E2E

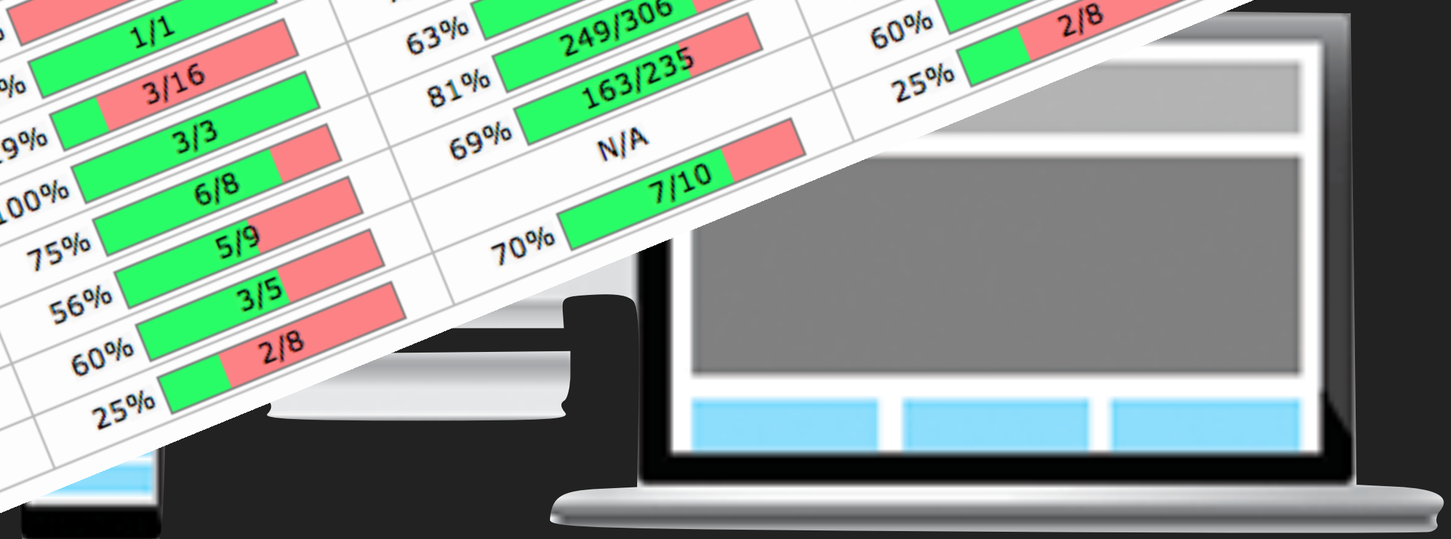
E2E

Project Coverage summary

Name	Classes	Conditionals	Files	Lines	Packages
Cobertura Coverage Report	45% 23/51	74% 469/630	45% 23/51	28% 1450/5222	88% 7/8

Coverage Breakdown by Package

Name	Classes	Conditionals	Files	Lines
Stop-tabac	0% 0/1	N/A	0% 0/1	0% 0/5
Stop-tabac.Classes	100% 1/1	47% 8/17	100% 1/1	27% 58/213
Stop-tabac.Classes.Controller	19% 3/16	73% 22/30	19% 3/16	5% 120/2665
Stop-tabac.Classes.Manager	100% 3/3	63% 20/32	100% 3/3	65% 103/158
Stop-tabac.Classes.Model	75% 6/8	81% 249/306	75% 6/8	77% 669/869
Stop-tabac.Classes.Service	56% 5/9	69% 163/235	56% 5/9	47% 388/830
Stop-tabac.Classes.Utils	60% 3/5	N/A	60% 3/5	59% 74/126
Stop-tabac.Classes.View	25% 2/8	70% 7/10	25% 2/8	11% 38/356



E2E

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E2E

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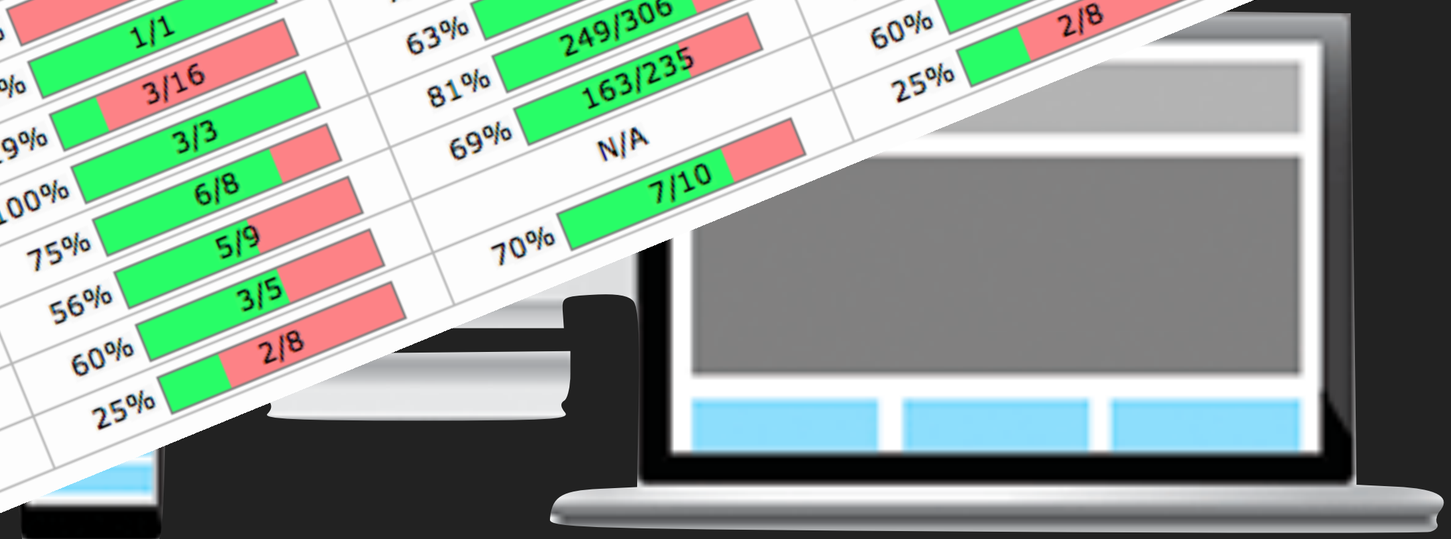



E2E


E2E

E2E

E2E

Cypress

TestCafe

BEST PRACTICE

Writing e2e tests

- **Don't maintain state between tests**
  - Tests should be able to run independently of one another
- **Don't select elements with classes**
  - Think from the user's perspective, or select elements by their intent

Questions?

MAKING IT EASY TO FOLLOW BEST PRACTICES

DISCUSSION

Why are “best practices” important?

DISCUSSION

Why are “best practices” important?

- What do we all want at the end of the day?
    - Faster development
    - Fewer bugs
    - More opportunities for learning
- Instead of best practices, think of them as chosen conventions instead.

DISCUSSION

What makes a convention “good”?

DISCUSSION

What makes a convention “good”?

- There are two main factors that contribute to whether a convention is good or not:
  - They enable developers to write great code with a low barrier of entry
  - They are easy to refactor and/or abandon

DISCUSSION

How to choose conventions

DISCUSSION

How to choose conventions

- There are three main stages to implementing chosen conventions:
  - Selection
  - Implementation
  - Maintenance

DISCUSSION

Phase: Selection

- Define the problem
  - Things are rarely objective and absolute
- Avoid bike-shedding
  - Time-constrained voting
  - Disagree and commit
  - 3 month discussion freezes

DISCUSSION

Phase: Implementation

- Automate everything
  - Linters (i.e., eslint, stylelint, markdownlint)
  - Formatters (i.e., prettier)
  - Image Optimization (i.e., image-min)
  - Generators (i.e., hygen/plop)
  - Code Snippets (i..e, VS Code)

DISCUSSION

Phase: Maintenance

- Build emotional safety and awareness
    - Don't blame individuals
    - Find systematic solutions
    - If you have power, protect your devs

DISCUSSION

Phase: Maintenance

- The Jidoka principle
  - Discover an abnormality
    - Stop the process
    - Fix the immediate process
    - Investigate and solve the root cause
- The Andon Cord

Questions?

CORE PRINCIPLES

PRINCIPLE

Impact over intent

PRINCIPLE

Context is everything

PRINCIPLE

All code is compromise

FINAL THOUGHTS

DISCUSSION

Migrating from Vue 2 to Vue 3

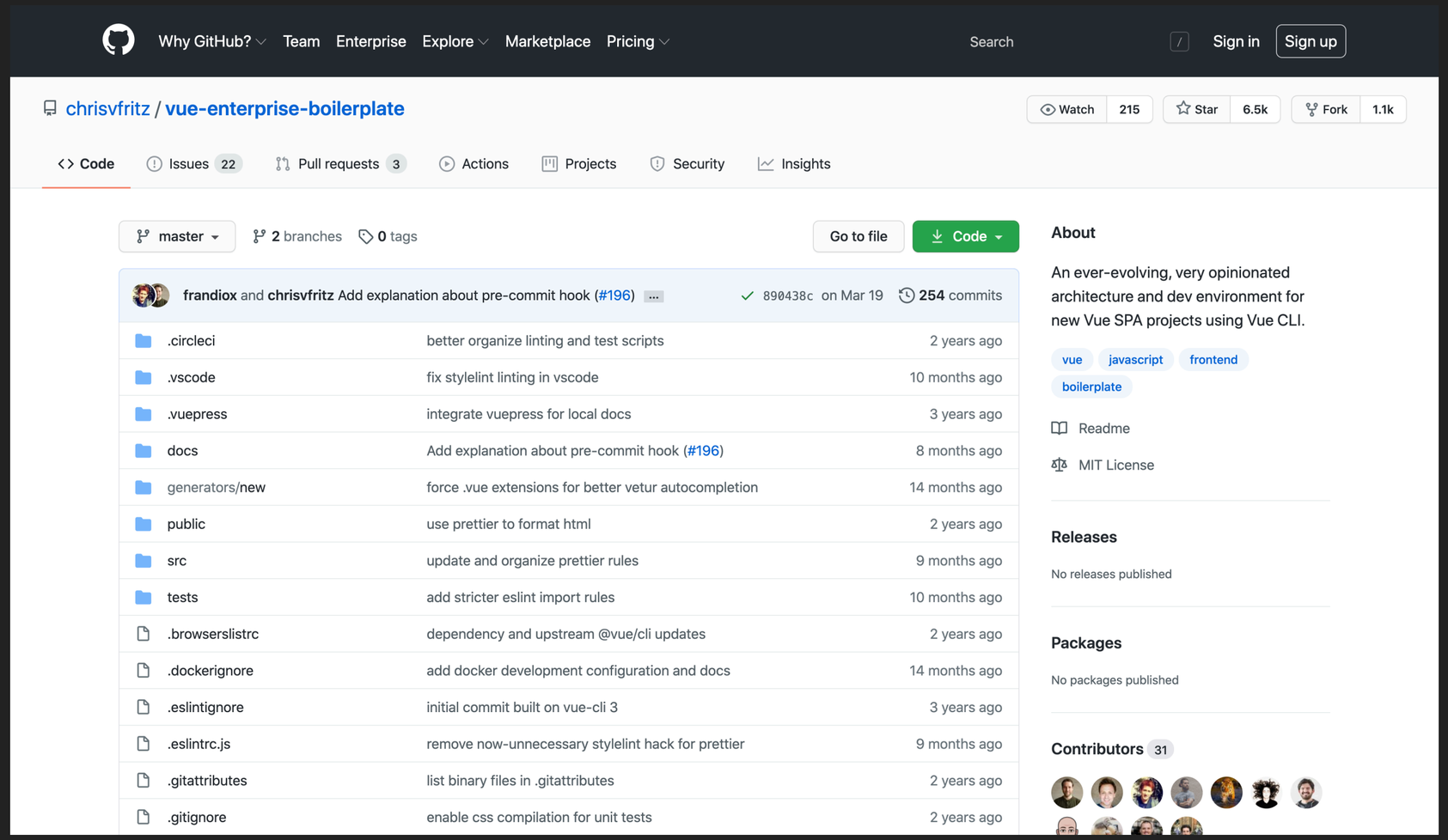
DISCUSSION

Migrating from Vue 2 to Vue 3

- Vue 3 is ready for new projects that don’t need IE11 support.
- If you have lots of dependencies, wait until those are officially migrated
- Migration tool and IE11 combat build should be ready by the end of the year

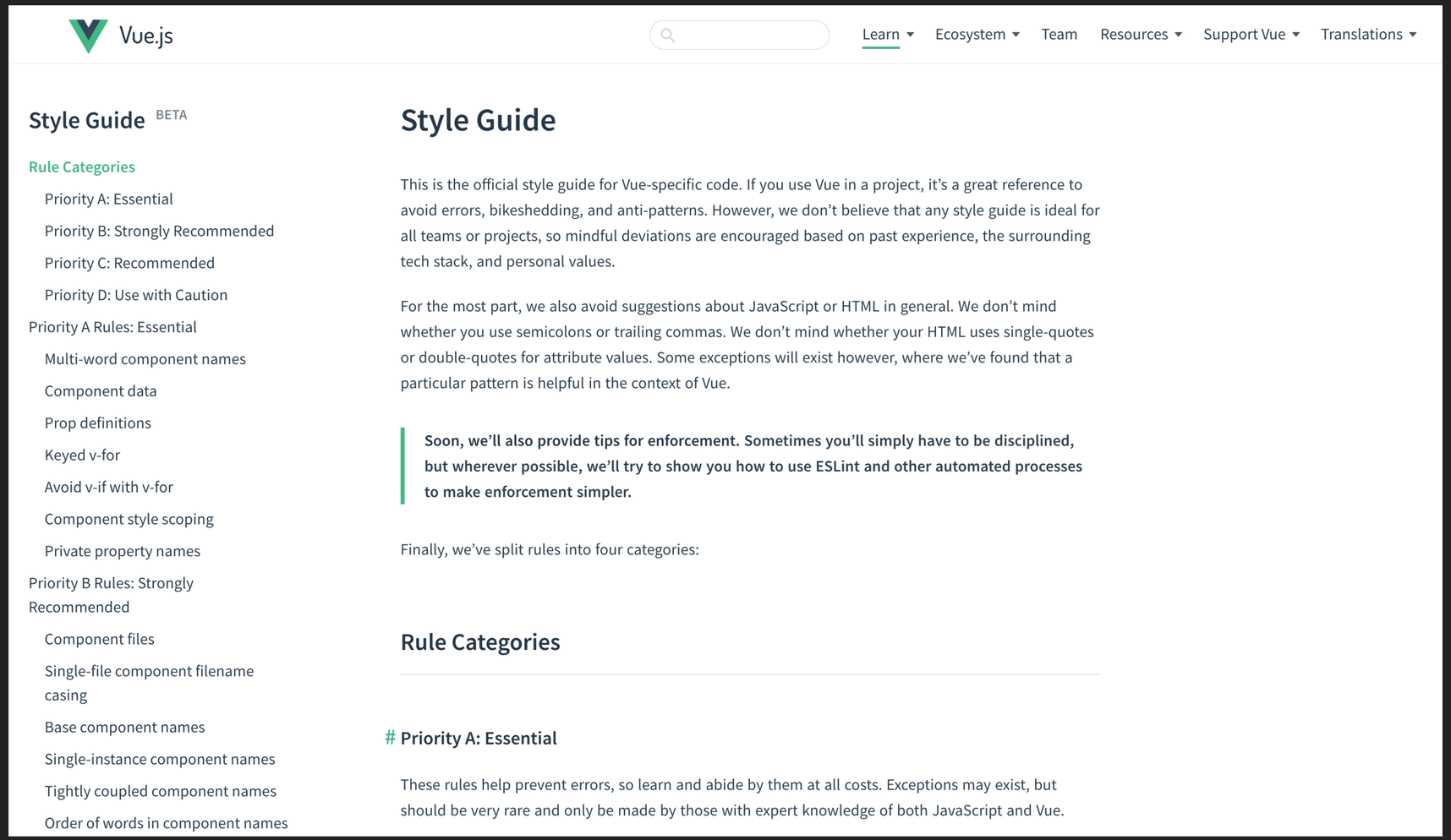
OPEN Q&A

Vue Enterprise Boilerplate



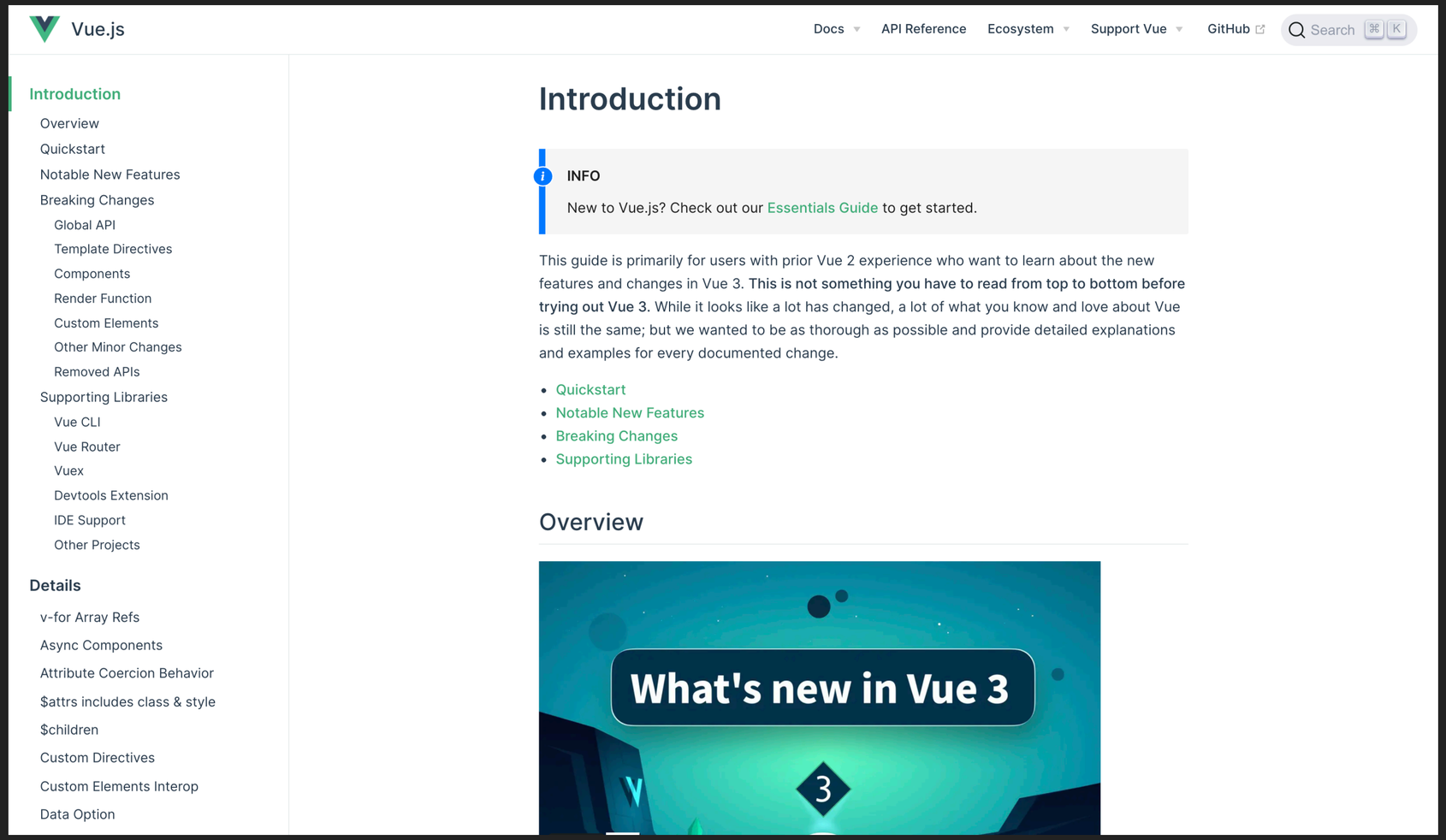
https://github.com/chrisvfritz/vue-enterprise-boilerplate

Vue.js Style Guide



https://vuejs.org/v2/style-guide/

Vue.js 3 Migration Guide



https://v3.vuejs.org/guide/migration/introduction.html

🎊 CONGRATULATIONS! 🎊

Thanks everyone!