

CIS 371 Web Application Programming

VueJS 3.x (Vue3) III

Declarative Component-Based UI Framework



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Review

- Two-Way Data Binding (v-model) :
 - .lazy, .number,
 - color, and date picker
 - radio buttons & dropdown list & checkbox list
- Event Handling:
 - v-on:domEvents="function"; @domEvents="function"
 - Event Names: keypress, keydown, keyup, wheel, click, blur, focus, mousedown, mouseenter, mousemove, mouseup, ...
 - Key Modifiers: .enter, .tab, .delete, .esc, .space, .up, .down, .left, .right, ...
 - System Modifiers: .alt, .ctrl, .meta, .shift,
 - .prevent, .stop, .capture, .self, ...
 - .exact modifier

Exercise from the previous class

Two-Way Data Binding (v-model)

Answer

Defining and Using Components

Defining and Using Components

ThumbsUp.vue

```
<template>
  <span>👍</span>
</template>
<style>
span {
  font-size: 200%;
}
</style>
```

Sample.vue

```
<script setup lang="ts">
import { ref } from "vue";
import ThumbsUp from "../ThumbsUp.vue";
const msg = ref("Hello World!");
</script>

<template>
  <h1>Component Demo</h1>
  <ThumbsUp></ThumbsUp>
  <h2>{msg}</h2>
</template>
```

Demo

Defining and Passing "Argument"

```
<script setup lang="ts">
import { ref } from "vue";
import ThumbsUp from "../ThumbsUp.vue";
const numThumbsUp = ref(1);
</script>
```

```
<template>
  <h1>Component Demo</h1>
  <p>
    Pick a number
    <input type="range" v-model.number="numThumbsUp" min="1" max="20" />
  </p>
  <ThumbsUp :repeat="numThumbsUp"></ThumbsUp>
</template>
```

Sample.vue

ThumbsUp.vue

```
<template>
  Can you show {{ props.repeat }} thumbs?
  <span v-for="k in props.repeat">👍</span>
</template>
<script setup lang="ts">
type ThumbProp = {
  repeat: number;
};
const props = defineProps<ThumbProp>();
</script>
<style>
span {
  font-size: 200%;
}
</style>
```

Demo

Simple Timer

```
<script setup lang="ts">
import { ref } from "vue";
const seconds = ref(0);
const minutes = ref(0);
let timerInterval: number | null = null; // This variable will hold the interval ID

function twoDigitSeconds() {
  return seconds.value.toLocaleString("en-US", { minimumIntegerDigits: 2 });
}

function updateTime() {
  seconds.value++;
  if (seconds.value === 60) {
    minutes.value++;
    seconds.value = 0;
  }
}

function runTimer() {
  if (!timerInterval) {
    // Check if the timer isn't already running
    timerInterval = setInterval(updateTime, 1000);
  }
}

function stopTimer() {
  if (timerInterval) {
    clearInterval(timerInterval);
    timerInterval = null;
    minutes.value = 0;
    seconds.value = 0;
  }
}
</script>
```

```
<template>
  <div id="timer">
    <div id="timedisplay">{{ minutes }}:{{ twoDigitSeconds() }}</div>
    <button @click="runTimer">Start</button>
    <button @click="stopTimer">Stop</button>
  </div>
</template>
```

[Demo](#)

Setting Default Value on Properties

```
<script setup lang="ts">
import { defineProps } from "vue";
type TimerProp = {
  updateInterval: number;
};
const props = defineProps<TimerProp>();
// more code here
</script>
```

set default value

```
<script setup lang="ts">
import { defineProps, withDefaults } from "vue";
type TimerProp = {
  updateInterval: number;
};
const props = withDefaults(defineProps<TimerProp>(), {
  updateInterval: 1000,
});
// more code here
</script>
```

Customization of Components Via Props

- Injection into component variable(s):
 - Timer update speed vs. Timer update speed with default value
- Injection into UI <template> & <style>: Stylish Timers
- what else?

VueJS Reactive Reference + TypeScript Typing

The TS compiler infers the type from the surrounding context

```
import { ref } from "vue";  
const name = ref(""); // name.value is implicitly a string  
const year = ref(2001); // year.value is implicitly a number  
const names = ref([]); // names.value is an array of UNKNOWN type
```

```
const name: string = ref("");
```



Is this correct?

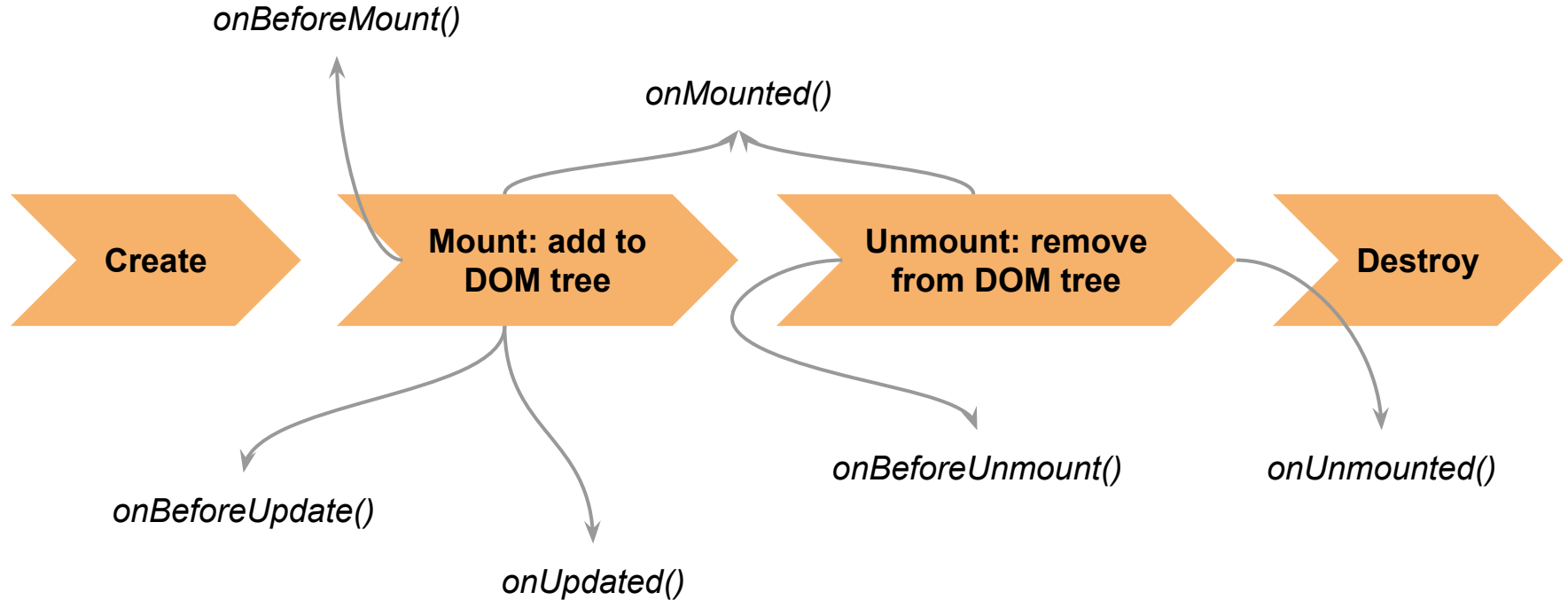
VueJS Reactive Reference + TypeScript Typing

The TS compiler infers the type from the surrounding context

```
import { ref } from "vue";  
const name = ref(""); // name.value is implicitly a string  
const year = ref(2001); // year.value is implicitly a number  
const names = ref([]); // names.value is an array of UNKNOWN type
```

```
import { ref, Ref } from "vue";  
const name: Ref<string> = ref("");  
const name1 = ref<string>("");  
const year: Ref<number> = ref(2001);  
const year1 = ref<number>(2001);  
const names: Ref<string[]> = ref([]);  
const names1 = ref<string[]>([]);
```

Vue3 Lifecycle Functions



Practical Use of Lifecycle Hooks

Opposite Actions	Function	Description	Sample Usage
	onBeforeMount()	Component will appear	Restore UI from persistent storage (user prefs)
	onMounted()	Component appeared	Start timer to monitor user engagement
	onBeforeUpdate()	Properties will be updated	Any necessary logic needed • to save any data related to the old props • to restore data related to the new props
	onUpdated()	Properties updated	
	onBeforeUnmount()	Component will disappear	Stop timer
	onUnmounted()	Component disappeared	Save UI details to user preferences

[Demo](#)

Using Multiple Vue Components



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68 views • 4 weeks ago



Philly on the Street - 2023 move-in
423 views • 1 month ago

video cover



coverImage

videoDuration

Philly on the Street - 2023 move-in *videoTitle*

423 views • 1 month ago

releaseDate

numberOfViews



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423 views • 1 month ago

<template>

<div>

```
<YouTubeCover v-for="z in availableVideos" :key="z.id"
  :coverImage="z.imgURL"
  :title="z.videoTitle"
  :duration="z.videoDuration"
  :views="z.numberOfWorks"
  :release="z.releaseDate" />
```

</div>

</template>

<script setup lang="ts">

import { ref } from 'vue';

import YouTubeCover from './YouTubeCover.vue';

const availableVideos = ref([

{

id: 1,

imgURL: 'http://img1',

videoTitle: 'First Video',

videoDuration: '12:34',

numberOfViews: 123456,

releaseDate: '2021-01-01',

},

{

id: 2,

imgURL: 'http://img2',

videoTitle: 'Second Video',

videoDuration: '5:67',

numberOfViews: 78910,

releaseDate: '2021-02-02',

},

// more video objects

]);

</script>

src/YouTubeApp.vue

```
<template>
  <div>
    <YouTubeCover v-for="z in availableVideos" :key="z.id"
      :coverImage="z.imgURL"
      :title="z.videoTitle"
      :duration="z.videoDuration"
      :views="z.numberOfViews"
      :release="z.releaseDate" />
  </div>
</template>

<script setup lang="ts">
import { ref } from 'vue';
import YouTubeCover from './YouTubeCover.vue';

const availableVideos = ref([
  {
    id: 1,
    imgURL: 'http://img1',
    videoTitle: 'First Video',
    videoDuration: '12:34',
    numberOfViews: 123456,
    releaseDate: '2021-01-01',
  },
  {
    id: 2,
    imgURL: 'http://img2',
    videoTitle: 'Second Video',
    videoDuration: '5:67',
    numberOfViews: 78910,
    releaseDate: '2021-02-02',
  },
  // more video objects
]);
</script>
```

Parent Component

src/components/YTCover.vue

```
<template>
  <div>
    <!-- UI design goes here -->
    
    <h1>{{ title }}</h1>
    <p>Duration: {{ duration }} minutes</p>
    <p>Views: {{ views }}</p>
    <p>Released: {{ release }}</p>
  </div>
</template>

<script setup lang="ts">
type VideoBlock = {
  coverImage: string;
  title: string;
  duration: string;
  views: number;
  release: string;
}
defineProps<VideoBlock>()
</script>
```

Child Component(s)

Demo

Slots

In some cases, we may want to pass a template fragment to a child component, and let the child component render the fragment within its own template.



```
<div class="container">
  <header>
    <!-- We want header content here -->
  </header>
  <main>
    <!-- We want main content here -->
  </main>
  <footer>
    <!-- We want footer content here -->
  </footer>
</div>
```



```
<template>
  <div class="container">
    <header>
      <slot name="header"></slot>
    </header>
    <main>
      <slot></slot>
    </main>
    <footer>
      <slot name="footer"></slot>
    </footer>
  </div>
</template>
```

Slots (v-slot)

BaseLayout.vue

```
<template>
  <div class="container">
    <header>
      <slot name="header"></slot>
    </header>
    <main>
      <slot></slot>
    </main>
    <footer>
      <slot name="footer"></slot>
    </footer>
  </div>
</template>
```

App.vue

```
<script setup>
import BaseLayout from './BaseLayout.vue'
</script>

<template>
  <BaseLayout>
    <template v-slot:header>
      <h1>Here might be a page title</h1>
    </template>
    <p>A paragraph for the main content.</p>
    <p>And another one.</p>
    <template #footer>
      <p>Here's some contact info</p>
    </template>
  </BaseLayout>
</template>
```

Demo

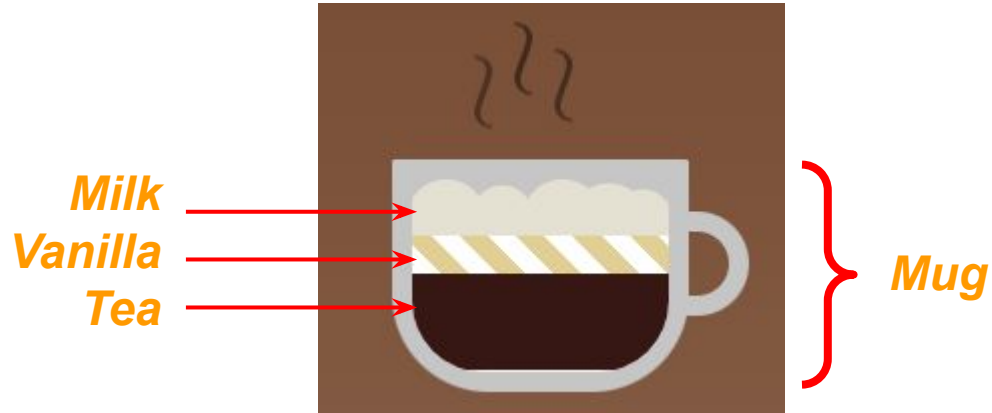
kebab-case vs. camelCase

kebab-case (in HTML)	camelCase (in TypeScript)
<code>image</code>	<code>image</code>
<code>cover-image</code>	<code>coverImage</code>
<code>cover-image-url</code>	<code>coverImageUrl</code>

Example: Beverage: London Fog



London Fog



```
<Mug>  
  <Milk></Milk>  
  <Vanilla></Vanilla>  
  <Tea></Tea>  
</Mug>
```

London Fog



Hot



Cold

[Code](#)

[Demo](#)