Chapter 1 - Introduction to Vue3 Composition API and Dev Tools

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หลักการและแนวปฏิบัติการใช้เครื่องมือปัญญาประดิษฐ์ในรายวิชา

- รายวิชาสนับสนุนให้นักศึกษามีความรู้ความเข้าใจและสามารถใช้เครื่องมือทางปัญญาประดิษฐ์ (AI Tools) เป็นแหล่งหนึ่งของการเรียนรู้ ค้นคว้า เพื่อช่วยส่งเสริมความรู้และทักษะด้านการเขียนโปรแกรม และไม่สนับสนุนหรือแนะนำให้ใช้เพื่อทำการหาผลลัพธ์ของโปรแกรมโดยขาดความรู้ความเข้าใจ
- การใช้เครื่องมือทางปัญญาประดิษฐ์หรือแหล่งอ้างอิงอื่น ๆ ในงานที่ได้รับมอบหมาย ต้องระบุแหล่งอ้างอิงทุกครั้ง
- รายวิชาไม่อนุญาตให้มีการใช้เครื่องมือปัญญาประดิษฐ์ทุกรูปแบบในการสอบทั้งที่ติดตั้งใน Editor หรือใช้บนบราวเซอร์ หรือบนแอปพลิเคชันใด ๆ ให้ถือการใช้เครื่องมือปัญญาประดิษฐ์ เป็นการกระทำการทุจริตและจะถูกพิจารณาโทษตามที่มหาวิทยาลัยกำหนด

Client-Side Technology Stack

JavaScript Framework, Libraries, and Tools

- Vue.js: *The current latest stable version of Vue is v3.4.3.*
- Composition API Style (*script setup syntax*) (*Single-File Components format*)
- Vite Build Tool
- Vue Router
- Pinia store library for state management

CSS Framework

- TailwindCSS Framework (Recommend)
- daisyUI components (Recommend)
- Bootstrap Framework

Other dev tools

- VsCode Editor
- Vue Browser Devtools
- Git version control

About Vue.js

- Vue.js: The Documentary

https://youtu.be/OrxmtDw4pVI

- Why Vue is the best JavaScript Framework for 2023

https://youtu.be/VP01sRP8Nz0

- Learn Vite with Evan You

https://youtu.be/DkGV5F4XnfQ?si=XguRyVOEypqpGX4B

Vue.js

- Vue (pronounced /vju:/, like view)
- A JavaScript Framework for building user interfaces
- It builds on top of standard HTML, CSS and JavaScript, and provides a declarative and component-based programming model that helps you efficiently develop user interfaces, be it simple or complex.
- The Vue official guide assumes intermediate level knowledge of HTML, CSS, and JavaScript.
- If you are totally new to frontend development, it might not be the best idea to jump right into a framework as your first step

https://vuejs.org/

Single File Components

- Vue Single File Components (aka *.*vue* files, abbreviated as **SFC**) is a defining feature of Vue as a framework, and is the recommended approach for using Vue
- SFC is a special file format that allows us to encapsulate
  - **template *(HTML)***
  - **logic *(JavaScript)***
  - **styling *(CSS)***

  in a single file.

```
//Single File Components

<script setup>
//JavaScript Variables, functions, Vue libraries
</script>

<template>
//html
</template>

<style>
//styling
</style>
```

https://vuejs.org/guide/introduction.html#single-file-components

API Styles: Composition API

- With Composition API, we define a component's logic using imported API functions.
- The Composition API is centered around declaring reactive state variables directly in a function scope and composing state from multiple functions together to handle complexity.
- It is more free-form and requires an understanding of how reactivity works in Vue to be used effectively. In return, its flexibility enables more powerful patterns for organizing and reusing logic.

https://vuejs.org/guide/introduction.html#composition-api

Composition API : *<script setup>*

- In SFCs, Composition API is typically used with *<script setup>*.
- The setup attribute is a hint that makes Vue perform compile-time transforms that allow us to use Composition API with **less boilerplate**.
- For example, imports and top-level variables / functions declared in *<script setup>* are directly usable in the template.
- Go with Composition API + Single-File Components if you plan to build full applications with Vue.

https://vuejs.org/guide/introduction.html#composition-api

Vite (Veet)

- A build tool that aims to provide a faster and leaner development experience for modern web projects.
- Vite improves the dev server start time by first dividing the modules in an application into two categories
  - **Dependencies** are mostly plain JavaScript that do not change often during development. Some large dependencies (e.g. component libraries with hundreds of modules) are also quite expensive to process.
  - **Source code** often contains non-plain JavaScript that needs transforming (e.g. JSX, CSS or Vue/Svelte components), and will be edited very often. When a file is edited, Vite only needs to precisely invalidate the chain between the edited module and its closest HMR boundary (most of the time only the module itself), making HMR updates consistently fast regardless of the size of your application.

https://vitejs.dev/

Vite Requirement

1. Install node.js, https://nodejs.org/en/

```
>node -v
```

2. npm package manager

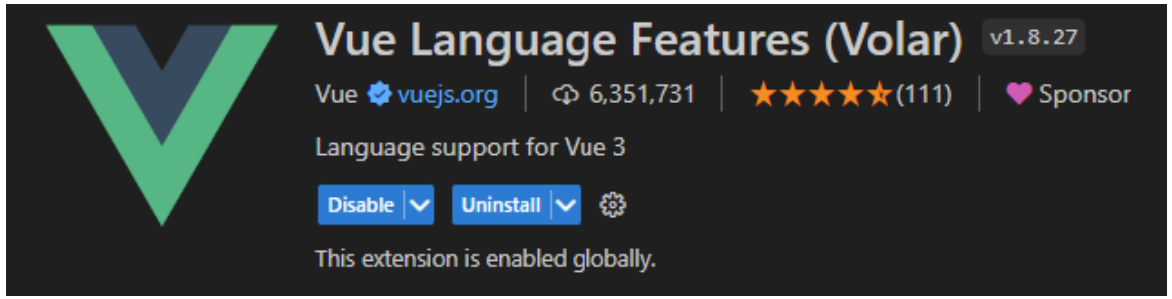
```
>npm -v
```

Compatibility Note

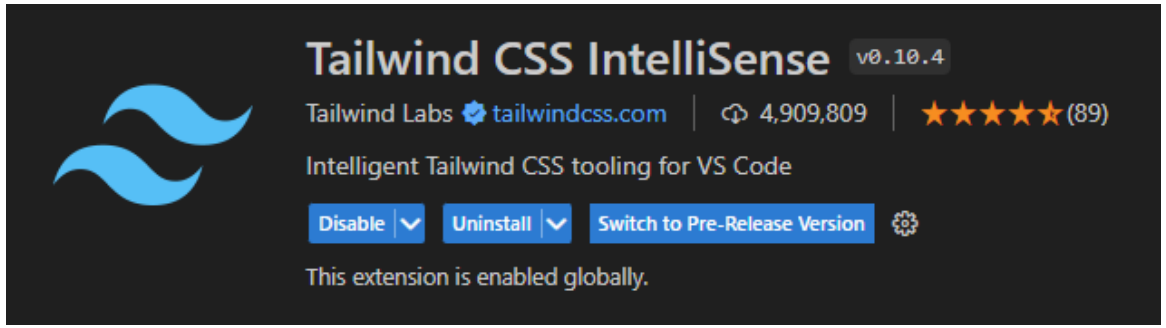
Vite requires Node.js version 18+. 20+. However, some templates require a higher Node.js version to work, please upgrade if your package manager warns about it.

VSCode Extension Recommendation

- **Prettier -** Code Formatter
- **Vue Language Features** - Vue3 Syntax Highlight and Auto Complete



- **Tailwind CSS IntelliSense**



- **Live Share** – Real-time Collaborative Development

VSCode Snippet SFC

File > Preferences >Configure User Snippets > Vue.json

```
{
  "Vue SFC Script Setup": {
    "prefix": "sfc",
    "body": [
      "<script setup>",
      "$1",
      "</script>",
      " ",
      "<template>",
      "<div>",
      "$2",
      "</div>",
      "</template>",
      " ",
      "<style scoped>",
      "$3",
      "</style>"
    ],
    "description": "Making simple Vue SFC Script Setup"
  }
}
```

https://code.visualstudio.com/docs/editor/userdefinedsnippets#_create-your-own-snippets

Vue.js Browser devtools

https://devtools.vuejs.org/guide/installation.html

- Get the Chrome Extension

  https://chrome.google.com/webstore/detail/vuejs-devtools/nhdogjmejiglipccpnnnanhbledajbpd

- Get the Firefox Addon

  https://addons.mozilla.org/en-US/firefox/addon/vue-js-devtools/

- Get on Edge

  https://microsoftedge.microsoft.com/addons/detail/vuejs-devtools/olofadcdnkkjdfgjcmjaadnlehnnihnl

https://devtools.vuejs.org/guide/installation.html

Your First Vue Project

*use kebab-case to your project name Ex., hello-vite, basic-vue-comp

```
>npm create vue@latest <your-project-name>
>cd <your-project-name>
>npm install
>npm run dev
```

This command will install and execute *create-vue*, the official Vue project scaffolding tool. You will be presented with prompts for several optional features such as TypeScript and testing support.

Creating a Vue Application

ⓘ Prerequisites

- Familiarity with the command line
- Install Node.js version 18.0 or higher

The created project will be using a build setup based on *Vite* and allow us to use *Vue Single-File Components (SFCs).*

https://vuejs.org/guide/quick-start.html#creating-a-vue-application

The Application Instance

- Every Vue application starts by creating a new **application instance** with the *createApp* function:

```
//main.js
import { createApp } from 'vue'
// import the root component Application
import App from './App.vue'
createApp(App).mount('#app')
```

```
<!—index.html-->
<body>
  <div id="app"></div>
  <script type="module" src="/src/main.js"></script>
</body>
```

- The object we are passing into ***createApp*** is in fact a component. Every app requires a **"root component"** that can contain other components as its children.
- An application instance won't render anything until its **.mount()** method is called.

CSS Frameworks: Tailwind CSS

- tailwindCSS
  https://tailwindcss.com/

- Install Tailwind CSS with Vue 3 and Vite (*Start at step 2*), https://tailwindcss.com/docs/guides/vite#vue
  - In case you create `./src/style.css` file to add `@tailwind` directives , do not forget to import `'./style.css'` at `main.js`.
  - In case you replace an original CSS with `@tailwind` directives in your `./assets/main.css` file, do nothing.

- daisyUI, Tailwind CSS Components
  https://daisyui.com/docs/install

CSS Frameworks: Bootstrap

Install Bootstrap in your Node.js with the npm package:

https://getbootstrap.com/docs/5.0/getting-started/download/#npm

```
>npm install bootstrap
```

```
//main.js
import 'bootstrap/dist/css/bootstrap.min.css'
```

Two Core features of Vue

- **Declarative Rendering**: Vue extends standard HTML with a template syntax that allows us to declaratively describe HTML output based on JavaScript state.
- **Reactivity**: Vue automatically tracks JavaScript state changes and efficiently updates the DOM when changes happen.

Build Your First Counter Application

Official Web Resources

- JavaScript
  https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference
- Vue3
  https://vuejs.org/
- Single File Components <script setup>
  https://vuejs.org/api/sfc-spec.html
  https://vuejs.org/api/sfc-script-setup.html
- Vue Devtools
  https://devtools.vuejs.org/guide/installation.html
- Vite Build Tool
  https://vitejs.dev/
- Vue Router
  https://router.vuejs.org/
- Pinia store library for Vue
  https://pinia.vuejs.org/introduction.html
- CSS Framework
  https://tailwindcss.com/
  https://daisyui.com/
  https://getbootstrap.com/
- Images
  https://picsum.photos/
  https://unsplash.com/
- Icons
  https://material.io/resources/icons/?style=baseline
  https://heroicons.com/
  https://icones.netlify.app/
- Emoji
  https://emojipedia.org/
- Colors
  https://coolors.co/

INT203 GitHub

https://github.com/umaporn-sup/2-2566-Vue-Resources.git