NVM, React and Vite

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This readme shows:

1. Task1 - Handling Events in React
2. Task2 - State Management using React Hooks
3. Task3 - Asynchronous Data Fetching with AJAX
4. Reference - Github Repo
5. How to set up the environment for NVM, React and Vite.

1. Task1-Handling Events in React

> **Note**
>
> Requirements:
>
> a) Create a simple component with a button labeled “Toggle Message.”
>
> b) When the button is clicked, toggle a message on the screen that says “Hello, welcome to React!” This message should disappear when the button is clicked again.

1.1. Explanation

The file App.jsx is modified to complete the task:

a. Created a `<Button onClick={handleToggle}>Toggle Message</Button>` inside component App

b. The button is labelled “Toggle Message”

c. Using a state variable `showMessage` (`useState(false)`) to keep track of whether the message should be visible

d. The `handleToggle` function flips the value of `showMessage` each time the button is clicked.

e. Conditionally render the message, which ensures the message appears when `showMessage` is true and disappears when it’s false.

```
{showMessage && (
  <p>Hello, welcome to React!</p>
)}
```

1.2 Code for App.jsx

The code for the full App.jsx is as follows:

8part2 > src > App.jsx > ...

You, 6 minutes ago | 1 author (You)

```jsx
import { useState } from 'react'
import Button from 'react-bootstrap/Button'
import reactLogo from './assets/react.svg'
import viteLogo from '/vite.svg'
import beelogo from '/bees.png'
import './App.css'

function App() {
  const [showMessage, setShowMessage] = useState(false)

  const handleToggle = () => {
    setShowMessage((prev) => !prev)
  }

  return (
    <>
      <div>
        <a href="https://vite.dev" target="_blank">
          <img src={viteLogo} className="logo" alt="Vite logo" />
        </a>
        <a href="https://react.dev" target="_blank">
          <img src={reactLogo} className="logo react" alt="React logo" />
        </a>
        <a href="https://tbeehoon.wordpress.com/" target="_blank">
          <img src={beelogo} className="logo bee" alt="Bee logo" />
        </a>
      </div>
      <h1>Vite + React + Bee</h1>

      {/* Toggle Message Button and Message */}
      <div className="card">
        <Button onClick={handleToggle}>Toggle Message</Button>
        {showMessage && (
          <p>Hello, welcome to React!</p>
        )}
      </div>
      <p className="read-the-docs">
        "Do not React, learn to Respond."
      </p>
    </>
  )
}

export default App
```

```
import { useState } from 'react'
```

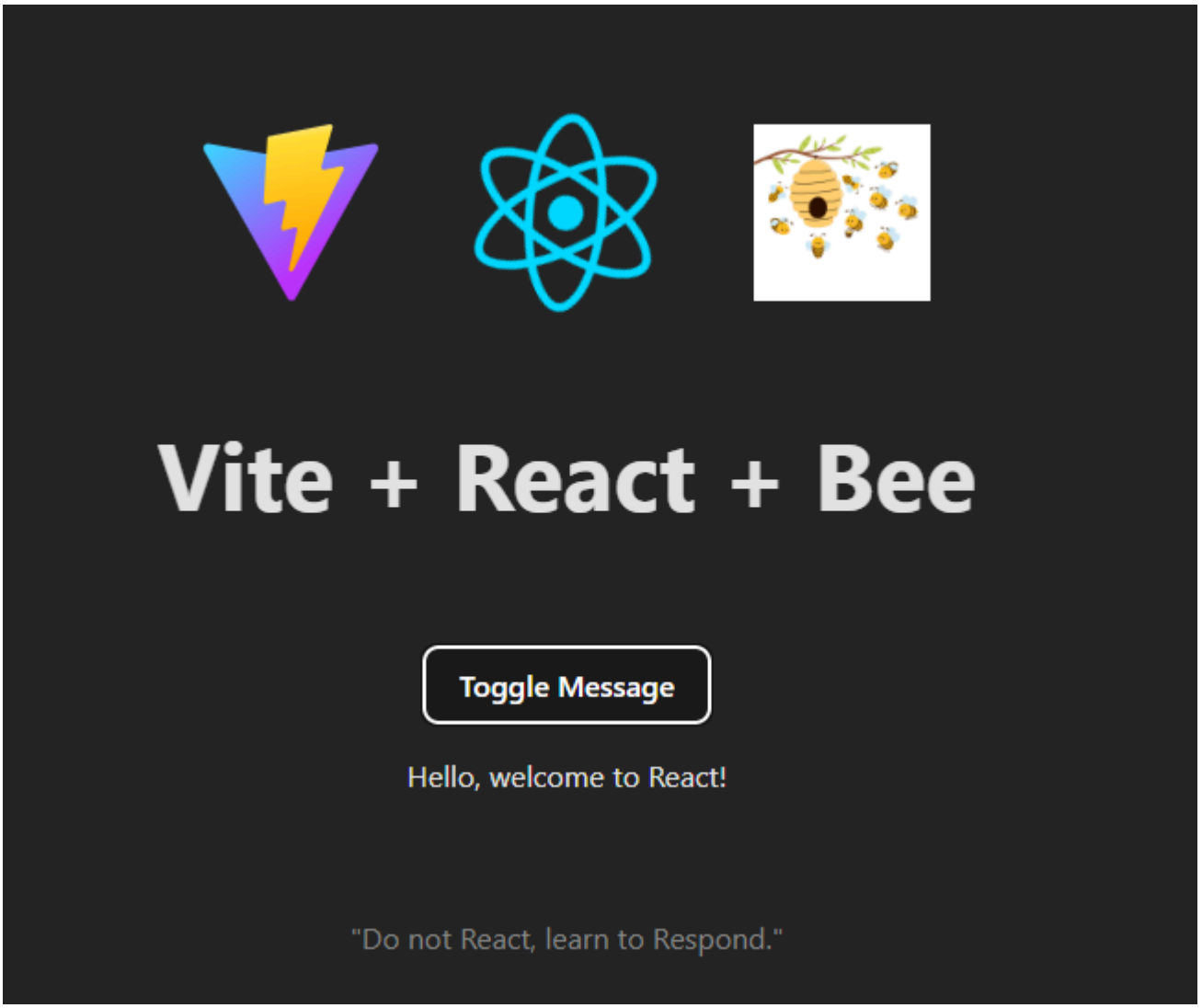
```
import Button from 'react-bootstrap/Button'
import reactLogo from './assets/react.svg'
import viteLogo from '/vite.svg'
import beelogo from '/bees.png'
import './App.css'

function App() {
  const [showMessage, setShowMessage] = useState(false)

  const handleToggle = () => {
    setShowMessage((prev) => !prev)
  }

  return (
    <>
      <div>
        <a href="https://vite.dev" target="_blank">
          <img src={viteLogo} className="logo" alt="Vite logo" />
        </a>
        <a href="https://react.dev" target="_blank">
          <img src={reactLogo} className="logo react" alt="React logo" />
        </a>
        <a href="https://tbeehoon.wordpress.com/" target="_blank">
          <img src={beelogo} className="logo bee" alt="Bee logo" />
        </a>
      </div>
      <h1>Vite + React + Bee</h1>

      {/* Toggle Message Button and Message */}
      <div className="card">
        <Button onClick={handleToggle}>Toggle Message</Button>
        {showMessage && (
          <p>Hello, welcome to React!</p>
        )}
      </div>
      <p className="read-the-docs">
        "Do not React, learn to Respond."
      </p>
    </>
  )
}

export default App
```

1.3 Output

Run the code:

```
npm run dev
```

The following is the resulting browser screen capture:



2. Task2-State Management using React Hooks

> **Note**
>
> Requirements:
>
> a) Build a component called ColorChanger. This component should have a text input where users can enter a colour name (e.g., “blue”).
>
> b) The component should display a box that changes colour based on the input.
>
> c) As the user types into the input, the box should automatically update to the new colour if it’s a valid colour name.

Two files are modified to complete the task:

2.1 Explanation

2.1.1 `App.jsx` – The Main Application Component

App.jsx is setup to "frame" the app, and import in ColorChange as a child component,

a. Import custom **ColorChanger**

```
import ColorChanger from './ColorChanger'
```

b. Render ColorChanger Component inside the styled card.

```
{/* ColorChanger Component */}
<div className="card" style={{ marginTop: 0 }}>
    <ColorChanger />
</div>
```

2.1.2 ColorChanger.jsx - Interactive Color Nox

This the component for the interactive color box.

a. Start with State Management. The **color** variable stores the user input, initiated as empty (' ').

```
const [color, setColor] = useState('')
```

b. The color validation is done with variable **isValidColor**. It creates a temporary DOM style object and tries to set its `color`. If the browser recognizes the input (like `"red"`, `"#00ff00"`, or `"rgb(0,0,255)"`), it will be set. If it's invalid, it will remain empty.

```
const isValidColor = (col) => {
  const s = new Option().style
  s.color = col
  return s.color !== ''
}
```

c. The color box is styled with the the following:

- The main box is **320×100px**.
- Background is user's chosen color if valid. A dull grey (`#eee`) if not.
- Centered text with background transitions.

```
const boxStyle = {
  width: '320px',
  height: '100px',
  backgroundColor: isValidColor(color) ? color : '#eee',
  border: '1px solid #ccc',
  marginTop: '10px',
  transition: 'background 0.3s',
  display: 'flex',
  alignItems: 'center',
  justifyContent: 'center',
  color: '#222',
}
```

d. Rendering Logic is defined in two steps:

Step1 - User types a color name (like `"red"`) or a CSS color value. Updates the `color` state on change.

```
<input
    id="color-input"
    type="text"
    value={color}
    onChange={e => setColor(e.target.value)}
    placeholder="e.g. blue, red, green"
    style={{ marginLeft: '10px' }}
/>
```

Step2 - If the color is valid and not empty, displays the color's name inside the box. Otherwise shows the default message.

```
<div style={{ display: 'flex', justifyContent: 'center', marginTop: '10px' }}>
    <div style={boxStyle}>
      {isValidColor(color) && color ? color : (
        <>
            I am a boring box with no color. <br/>
            Please enter a color to make me colorful.
        </>
        )}
    </div>
</div>
```

2.2 Code for ColorChanger.jsx

The full code for ColorChanger.jsx is as follows:

e8part2 > src > ColorChanger.jsx > ColorChanger

```jsx
import { useState } from 'react'

function ColorChanger() {
  const [color, setColor] = useState('')

  // Check if the color is valid by trying to set it on a dummy element
  const isValidColor = (col) => {
    const s = new Option().style
    s.color = col
    return s.color !== ''
  }

  const boxStyle = {
    width: '320px',
    height: '100px',
    backgroundColor: isValidColor(color) ? color : '#eee',
    border: '1px solid #ccc',
    marginTop: '10px',
    transition: 'background 0.3s',
    display: 'flex',
    alignItems: 'center',
    justifyContent: 'center',
    color: '#222',
  }

  return (
    <div className="card">
      <label htmlFor="color-input">Enter a color name:</label>
      <input
        id="color-input"
        type="text"
        value={color}
        onChange={e => setColor(e.target.value)}
        placeholder="e.g. blue, red, green"
        style={{ marginLeft: '10px' }}
      />
      <div style={{ display: 'flex', justifyContent: 'center', marginTop: '10px' }
        <div style={boxStyle}>
          {isValidColor(color) && color ? color : (
            <>
                I am a boring box with no color. <br/>
                Please enter a color to make me colorful.
            </>
            )}
        </div>
      </div>
    </div>
  )
}

export default ColorChanger
```

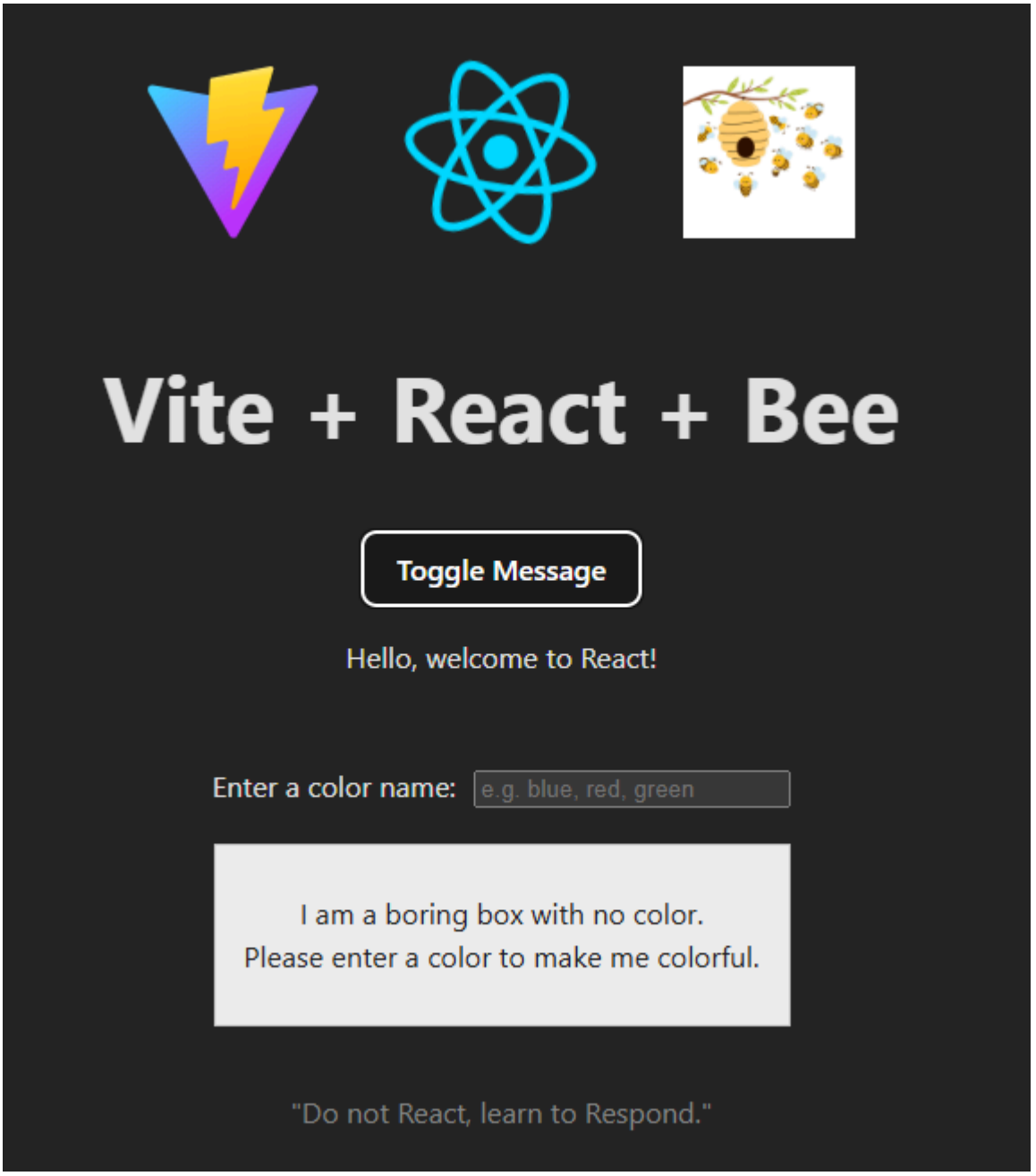
```
import { useState } from 'react'

function ColorChanger() {
  const [color, setColor] = useState('')

  // Check if the color is valid by trying to set it on a dummy element
  const isValidColor = (col) => {
    const s = new Option().style
    s.color = col
    return s.color !== ''
  }

  const boxStyle = {
    width: '320px',
    height: '100px',
    backgroundColor: isValidColor(color) ? color : '#eee',
    border: '1px solid #ccc',
    marginTop: '10px',
    transition: 'background 0.3s',
    display: 'flex',
    alignItems: 'center',
    justifyContent: 'center',
    color: '#222',
  }

  return (
    <div className="card">
      <label htmlFor="color-input">Enter a color name:</label>
      <input
        id="color-input"
        type="text"
        value={color}
        onChange={e => setColor(e.target.value)}
        placeholder="e.g. blue, red, green"
        style={{ marginLeft: '10px' }}
      />
      <div style={{ display: 'flex', justifyContent: 'center', marginTop: '10px' }}>
        <div style={boxStyle}>
          {isValidColor(color) && color ? color : (
            <>
                I am a boring box with no color. <br/>
                Please enter a color to make me colorful.
            </>
            )}
        </div>
      </div>
    </div>
  )
}

export default ColorChanger
```

2.3 Output

Run the code:

```
npm run dev
```

The resulting browser screen is shown below:



3. Task3-Asynchronous Data Fetching with AJAX

> **Note**
>
> Requirements:

> a) Create a UserProfile component that fetches user data from an API (for example, https://jsonplaceholder.typicode.com/users/1) and displays the user's name, email, and address on the page.
>
> b) Display a loading message while data is being fetched.

3.1 Explanation

Two files are modified to complete the task:

3.1.1 `App.jsx` – The Main Application Component

App.jsx is setup to "frame" the app, and import in **UserProfile** as a child component,

a. Import custom **UserProfile**

```
import UserProfile from './UserProfile'
```

b. Render **UserProfile** Component inside the styled card.

```
{/* UserProfile Component */}
<div className="card" style={{ marginTop: 0 }}>
    <UserProfile />
</div>
```

3.1.2 `UserProfile.jsx` – Fetching and Displaying User Data

This component demonstrates how to fetch asynchronous data in React using the `useEffect` and `useState` hooks. It loads a fake user profile from the public API `https://jsonplaceholder.typicode.com/users/1` and displays the user's information.

a. State Management

The component manages three pieces of state:

- `user` : holds the fetched user data (initially `null`).
- `loading` : a boolean that tracks whether the fetch is in progress (initially `true`).
- `error` : stores any error message if the fetch fails (initially `null`).

```
const [user, setUser] = useState(null)
const [loading, setLoading] = useState(true)
const [error, setError] = useState(null)
```

b. Data Fetching with `useEffect`

The `useEffect` hook triggers when the component mounts. The process:

- Set `loading` to `true` before fetching.
- Use `fetch` to call the API.

- If the response is OK, convert it to JSON and update `user`.
- If the response is invalid, throw an error.
- Catch any errors, set `error`, and stop loading.

```
useEffect(() => {
    setLoading(true)
    fetch('https://jsonplaceholder.typicode.com/users/1')
      .then((res) => {
        if (!res.ok) throw new Error('Network response was not ok')
        return res.json()
      })
      .then((data) => {
        setUser(data)
        setLoading(false)
      })
      .catch((err) => {
        setError(err.message)
        setLoading(false)
      })
}, [])
```

c. Conditional Rendering

The component displays different UI states based on the fetch status:

- If `loading` then Show *"Loading user profile..."*
- If `error` then Show the error message
- if `!user` then Return null, meaning don't render anything for this component

- If `user` is available then Render the profile details (refer to next section)

```
if (loading) return <div className="card">Loading user profile...</div>
if (error) return <div className="card">Error: {error}</div>
if (!user) return null
```

d. Display User Data

Once the API returns data, the component displays the user's **name**, **email**, and **full address** inside a styled card.

```
return (
    <div className="card">
      <h3>User Profile</h3>
      <div><strong>Name:</strong> {user.name}</div>
      <div><strong>Email:</strong> {user.email}</div>
      <div>
        <strong>Address:</strong> {user.address.street}, {user.address.suite},
{user.address.city}, {user.address.zipcode}
      </div>
    </div>
  )
```

3.2 Code for UserProfile.jsx

The full code for **UserProfile.jsx** is as follows:

```
import { useEffect, useState } from 'react'

function UserProfile() {
  const [user, setUser] = useState(null)
  const [loading, setLoading] = useState(true)
  const [error, setError] = useState(null)

  useEffect(() => {
    setLoading(true)
    fetch('https://jsonplaceholder.typicode.com/users/1')
      .then((res) => {
        if (!res.ok) throw new Error('Network response was not ok')
        return res.json()
      })
      .then((data) => {
```

```
        setUser(data)
        setLoading(false)
      })
      .catch((err) => {
        setError(err.message)
        setLoading(false)
      })
  }, [])

  if (loading) return <div className="card">Loading user profile...</div>
  if (error) return <div className="card">Error: {error}</div>
  if (!user) return null

  return (
    <div className="card">
      <h3>User Profile</h3>
      <div><strong>Name:</strong> {user.name}</div>
      <div><strong>Email:</strong> {user.email}</div>
      <div>
        <strong>Address:</strong> {user.address.street}, {user.address.suite},
{user.address.city}, {user.address.zipcode}
      </div>
    </div>
  )
}

export default UserProfile
```

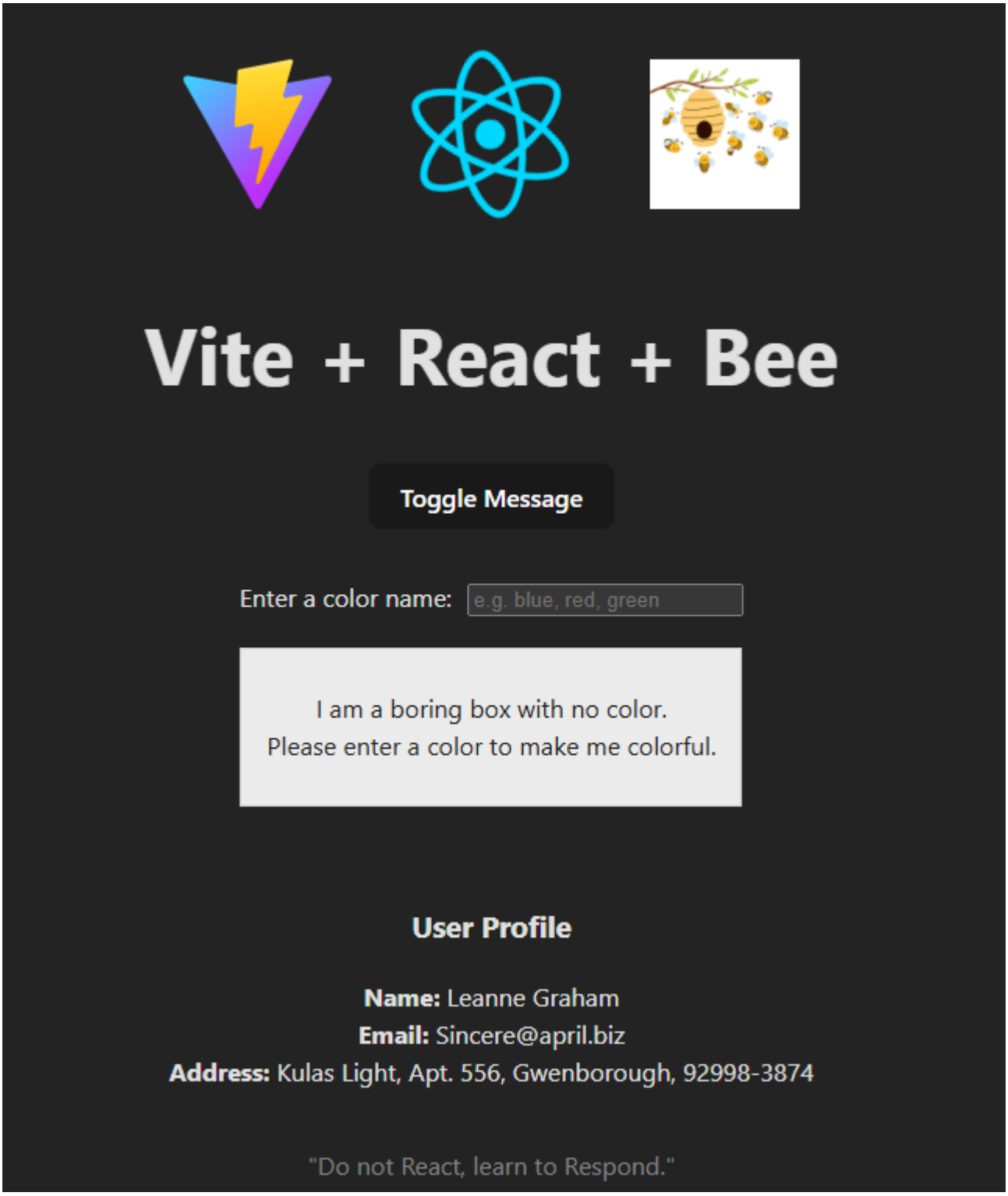
```
le8part2 > src > UserProfile.jsx > UserProfile
import { useEffect, useState } from 'react'

function UserProfile() {
  const [user, setUser] = useState(null)
  const [loading, setLoading] = useState(true)
  const [error, setError] = useState(null)

  useEffect(() => {
    setLoading(true)
    fetch('https://jsonplaceholder.typicode.com/users/1')
      .then((res) => {
        if (!res.ok) throw new Error('Network response was not ok')
        return res.json()
      })
      .then((data) => {
        setUser(data)
        setLoading(false)
      })
      .catch((err) => {
        setError(err.message)
        setLoading(false)
      })
  }, [])

  if (loading) return <div className="card">Loading user profile...</div>
  if (error) return <div className="card">Error: {error}</div>
  if (!user) return null

  return (
    <div className="card">
      <h3>User Profile</h3>
      <div><strong>Name:</strong> {user.name}</div>
      <div><strong>Email:</strong> {user.email}</div>
      <div>
        <strong>Address:</strong> {user.address.street}, {user.address.suite}, {user.address.city}, {user.address.zipcode}
      </div>
    </div>
  )
}

export default UserProfile
```

3.3 Output

Run the code:

```
npm run dev
```

The resulting browser screen is shown below:



4. Reference - Git Hub Repo

Final git push for module8part2 app is pushed to the following github repo:

https://github.com/tbeehoon/module8part2/tree/main

5. How to set up the environment

5.1 Install NVM (Node Version Manager)

If NVM is not installed yet, download the latest `nvm-setup.exe` from the releases page: https://github.com/coreybutler/nvm-windows/releases

> **Tip**
>
> Avoid installing the "global" Node.js from nodejs.org if using NVM.

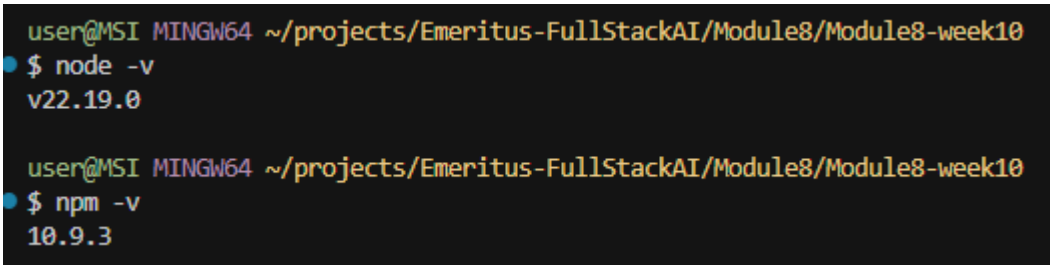
5.2 Install Node.js via NVM and set a default

Install the version required (LTS recommended):

```
# Install latest LTS
nvm install lts

# Use it now
nvm use lts
```

Do verification:

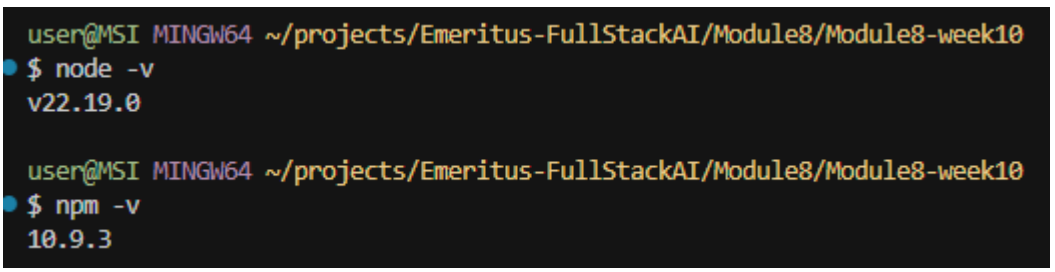
```
# Verify
node -v
npm -v
```



5.3 Create a new React app with Vite

From any workspace folder in your terminal:

```
npm create vite@latest module8part2
```



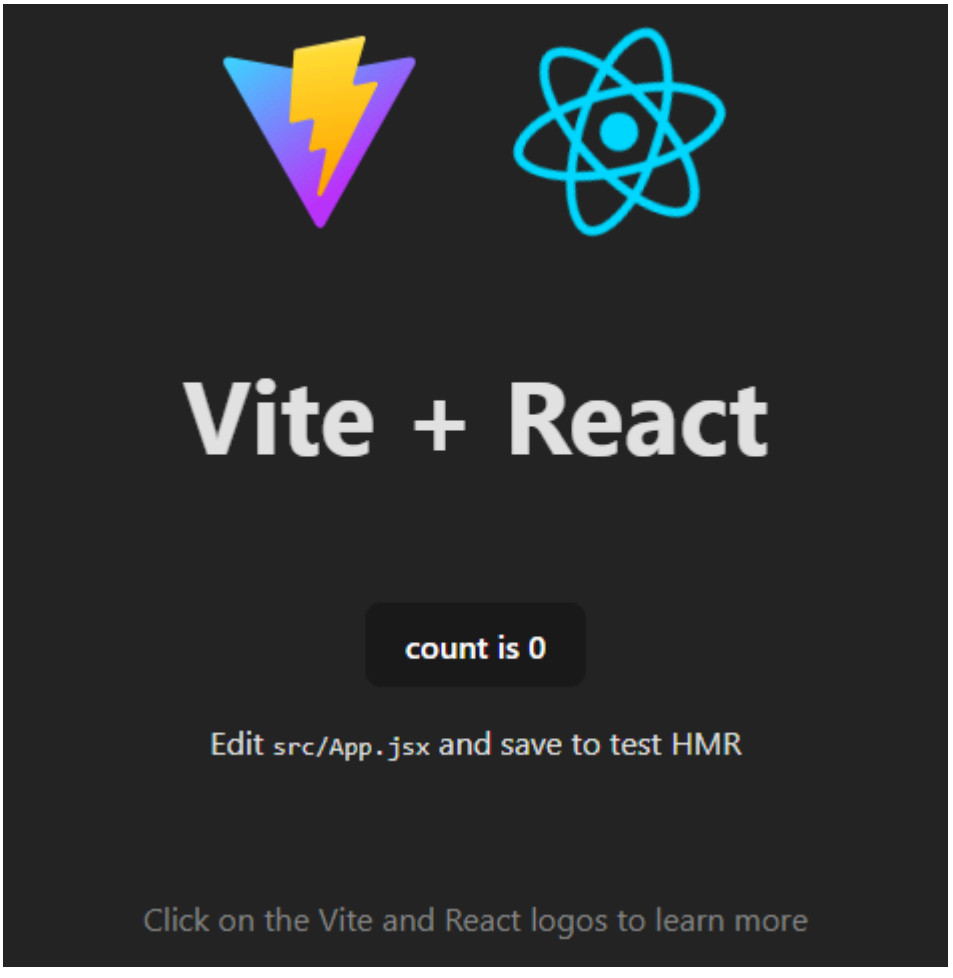
Then install dependencies and run the dev server:

```
cd my-app
npm install
npm run dev
# Vite typically starts at http://localhost:5173
```

> **Tip**
>
> Ctl-C to exit

```
user@MSI MINGW64 ~/projects/Emeritus-FullStackAI/Module8/Module8-week10/module8part2
$ npm run dev

> module8part2@0.0.0 dev
> vite


  VITE v7.1.5  ready in 910 ms

  ➜  Local:   http://localhost:5173/
  ➜  Network: use --host to expose
  ➜  press h + enter to show help


user@MSI MINGW64 ~/projects/Emeritus-FullStackAI/Module8/Module8-week10/module8part2
$
```

The following is the default browser screen upon installation:



5.4 Add Bootstrap to the React project (Optional)

Install Bootstrap and its dependencies:

```
npm install bootstrap react-bootstrap
```

Import Bootstrap styles in src/main.jsx `(or` src/main.tsx` for TypeScript):

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

Ready to use Bootstrap classes and React-Bootstrap components in app.

Example in `App.jsx`:

```
import Button from 'react-bootstrap/Button'

function App() {
return (
<div className="p-4">
    <h1>Hello, Bootstrap + React + Vite!</h1>
    <Button variant="primary">Click Me</Button>
</div>
)
}

export default App
```

5.5 Add Routing to the React project (Optional)

Install Router and its dependencies:

```
npm install react-router-dom
```

Ready to use React Routing in app.

Example in `App.jsx`:

```
import { BrowserRouter as Router, Routes, Route, Link } from "react-router-dom";
import Home from "./Home";
import About from "./About";

function App() {
  return (
    <Router>
      <nav>
        <Link to="/">Home</Link> | <Link to="/about">About</Link>
      </nav>
      <Routes>
        <Route path="/" element={<Home />} />
```

```
        <Route path="/about" element={<About />} />
      </Routes>
    </Router>
  );
}

export default App;
```

5.5 Initialize Git

Version control the project using Git.

```
# Initialize a git repository
git init

# Add all project files
git add .

# Commit the files
git commit -m "Initial commit: setup project"
```

To add to Github.

```
# Add remote
git remote add origin https://github.com/tbeehoon/module8part2.git

# Push changes
git branch -M main
git push -u origin main
```

> **Tip**
>
> In case identity need to be authenticated:

```
git config --global user.email "you@example.com"
git config --global user.name "Your Name"
```

5.6 Setup .gitignore

Add a `.gitignore` file in the root of the project to exclude files and folders not required in version control. Some examples of items to include:

```
# dependencies
/node_modules

# production build
/dist
```

```
# logs
npm-debug.log*
*.log

# environment variables
.env
.env.local
.env.*.local

# IDE/editor folders
.vscode/
.DS_Store

# Vite cache
.vite/
```

@Q.E.D.