Online Code Editor with Live Preview

Introduction

The demand for online code editors has increased rapidly as learners, developers, and educators require lightweight environments for writing and testing code instantly. An online code editor with **live preview** provides the ability to write HTML, CSS, and JavaScript in one place while instantly visualizing the results in a browser window.

This project implements a **browser-based IDE** using **React** and **Monaco Editor** (the editor powering VS Code), with a real-time preview pane. It is designed to be lightweight, responsive, and user-friendly, making it suitable for students, developers, and instructors.

Abstract

The project **Online Code Editor with Live Preview** is a web application that allows users to write, edit, and execute code snippets in **HTML, CSS, and JavaScript**. The editor supports syntax highlighting, a clean user interface, and a real-time rendering environment where the output is shown in an iframe preview pane.

The system is built using **React.js** as the frontend framework and leverages **@monaco-editor/react** for the editor functionality. The project's modular structure separates the editor panes, preview window, and toolbar, making the application easy to extend with features like templates, code sharing, and cloud storage.

Tools Used

1. **React.js** → JavaScript library for building the UI.
2. **Monaco Editor (@monaco-editor/react)** → Code editor with VS Code features (syntax highlighting, autocompletion).
3. **HTML5, CSS3, JavaScript (ES6)** → Core web technologies for rendering and styling.
4. **React Scripts** → For project setup, development, and build process.
5. **Node.js & npm** → Runtime and package manager for installing dependencies and running the project.
6. **Browser iframe** → To render the live output of the code written by the user.

Steps Involved in Building the Project

Step 1: Project Setup

- **Install Node.js and npm.**

- **Create a React app:**

```
npx create-react-app online-code-editor

cd online-code-editor

npm install @monaco-editor/react
```

Step 2: Create the UI

- Build EditorPane.jsx using Monaco Editor.

- Create PreviewPane.jsx with an iframe to display live output.

- Add Toolbar.jsx for the project title (and optional future buttons like Run, Clear, Save).

- Style layout in styles.css (split editor and preview vertically).

Step 3: Logic Implementation

- Use React's useState hooks in App.jsx to manage HTML, CSS, and JS code.

- Construct a dynamic srcDoc that injects the HTML, CSS, and JS into the iframe.

- Ensure the editor updates the preview in real time when code changes**.**

Step 4: Testing

- Test the application locally using:

  npm start

- Verify:

  o HTML editor updates instantly in preview.

  o CSS styling applies correctly.

  o JavaScript runs in console and page.

Step 5: Deployment (Optional)

- Deploy to Netlify, Vercel, or GitHub Pages for online access.

- Run:

  npm run build

and upload the build folder.

Conclusion

The **Online Code Editor with Live Preview** successfully demonstrates how modern frontend tools can replicate IDE functionality in the browser. With React and Monaco Editor, the system provides a smooth coding experience with real-time feedback.

This project can be further enhanced by:

- Adding **code templates** (e.g., Bootstrap starter, HTML boilerplate).

- Supporting **cloud storage** for saving and loading snippets.

- Enabling **multi-file projects** or **collaborative editing**.