



# CodeSync: A Collaborative Coding Environment for Novice Web Developers

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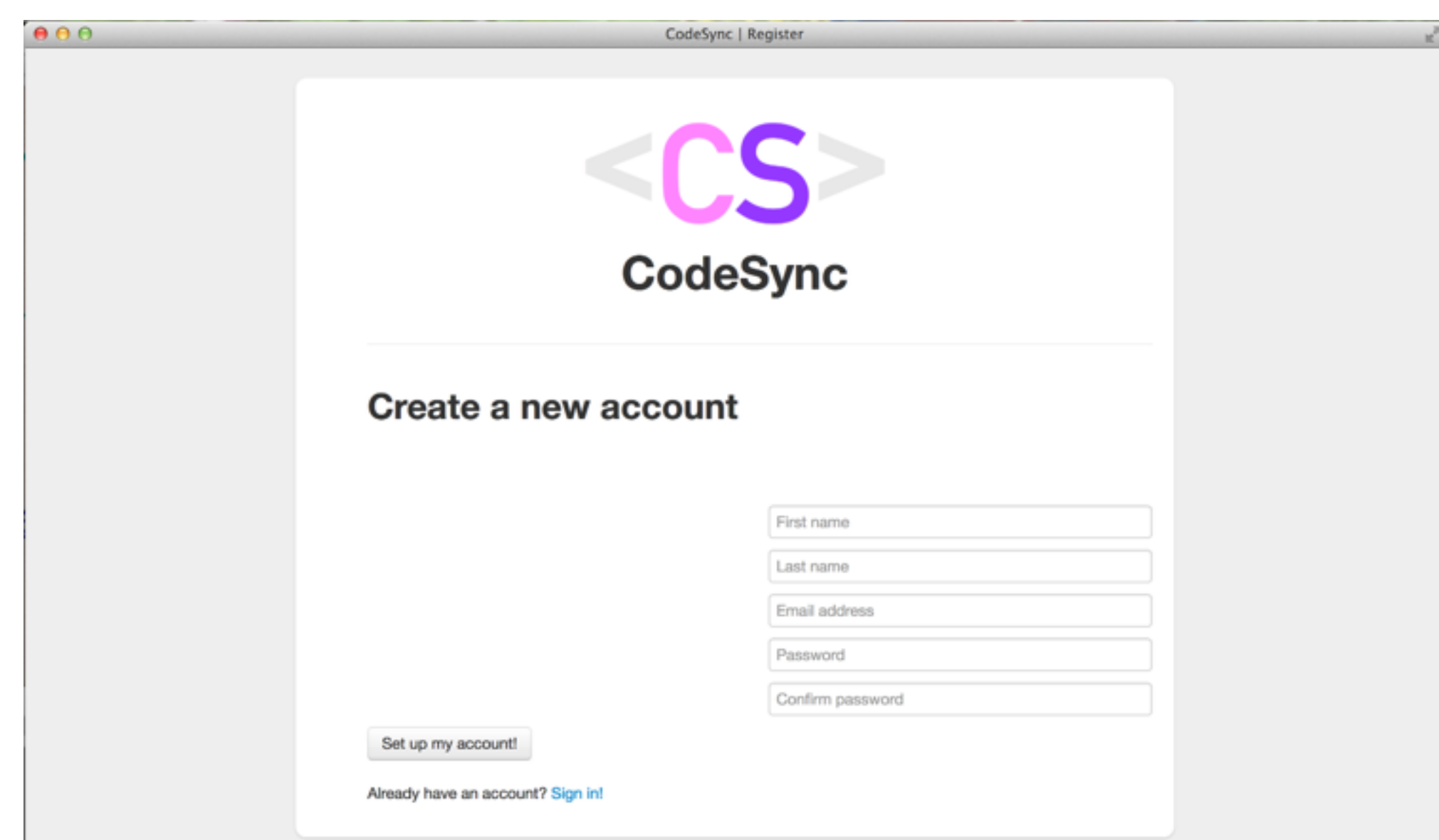


Figure 1. Registration form

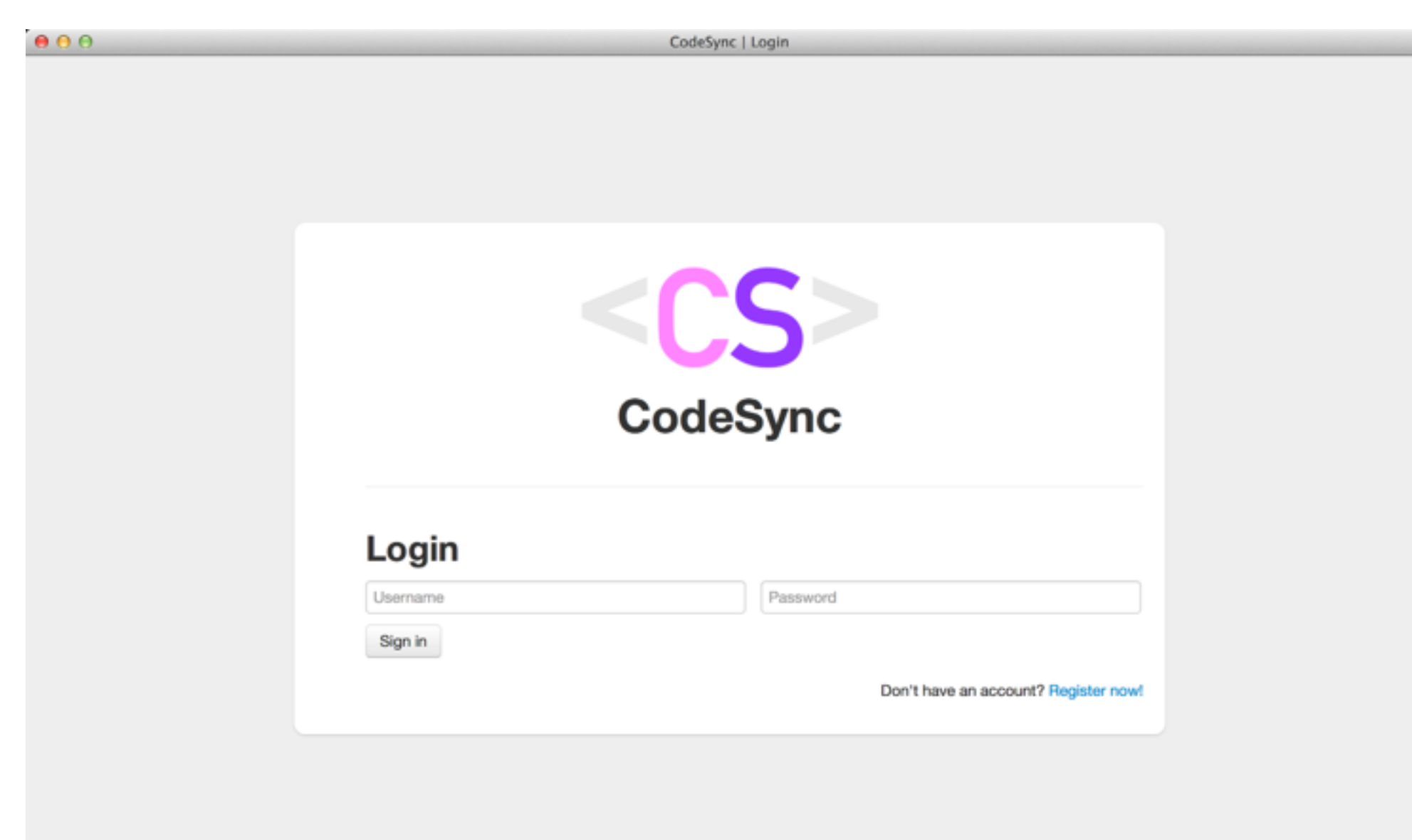


Figure 2. Login form

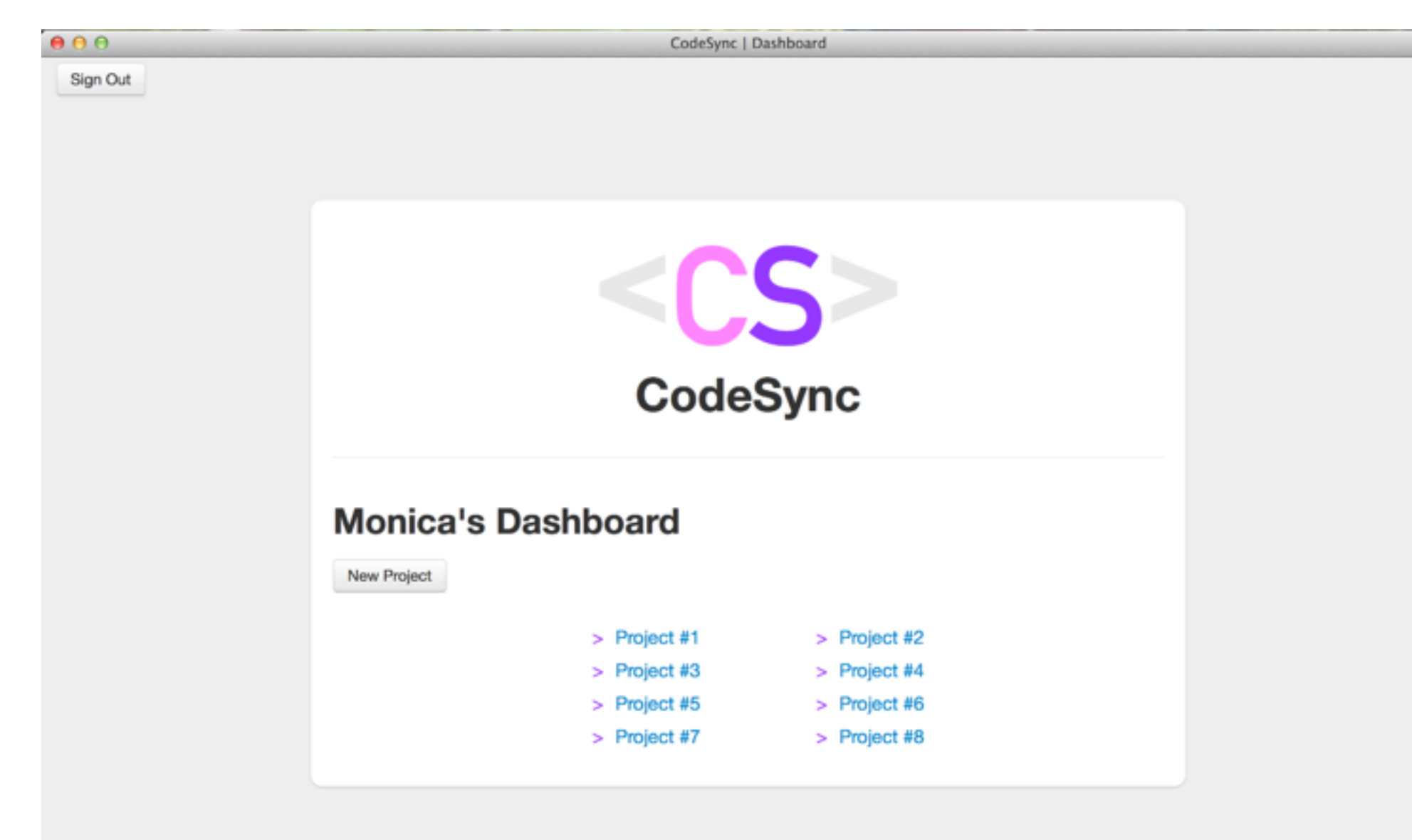


Figure 3. User Dashboard

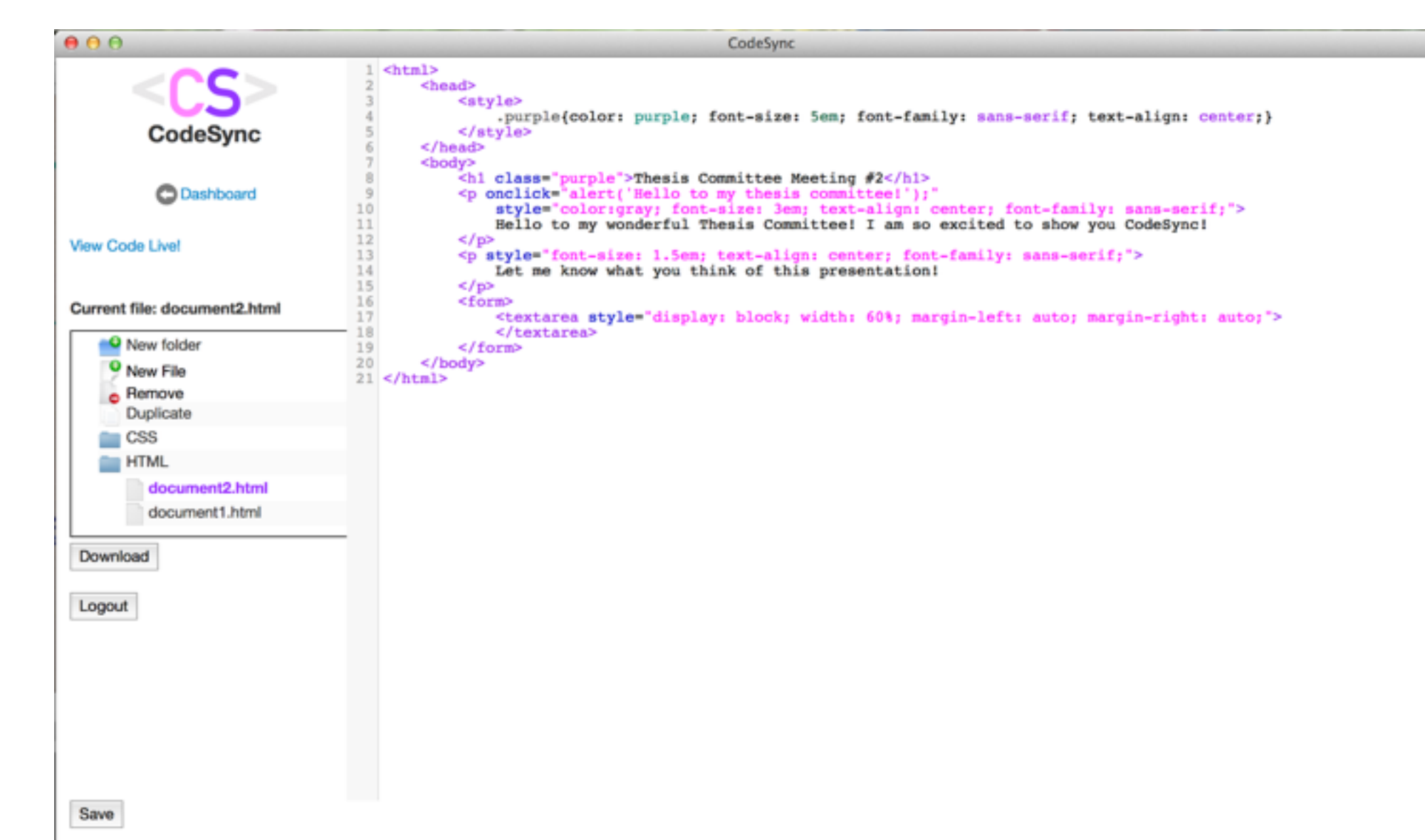


Figure 4. Text Editor

## What is CodeSync?

CodeSync is a collaborative coding environment geared toward beginning web development students. CodeSync is modeled off of Google Docs, where editing is done in a web browser and automatically saved to a cloud-based document. More than one person can edit it simultaneously.

## Goals

Many studies (particularly that of Elizabeth Koh and John Lim) have shown that collaboration is beneficial to education; however the current tools don't support collaboration between beginning-level web developers. For example, Wellesley College's CS110 uses Fetch and TextWrangler. This system is not intuitive, nor is it easy to use, and partners risk overwriting each others' code. CodeSync is meant to mitigate these issues and thus support collaboration.

## Implementation

Node.js (server side JavaScript), MongoDB (a NoSQL Database), Ajax (a technique allowing for asynchronous data transfer), and CodeMirror (a versatile in-browser text editor) are the driving technologies of CodeSync. See Figure 5 to see how these components interact with each other.

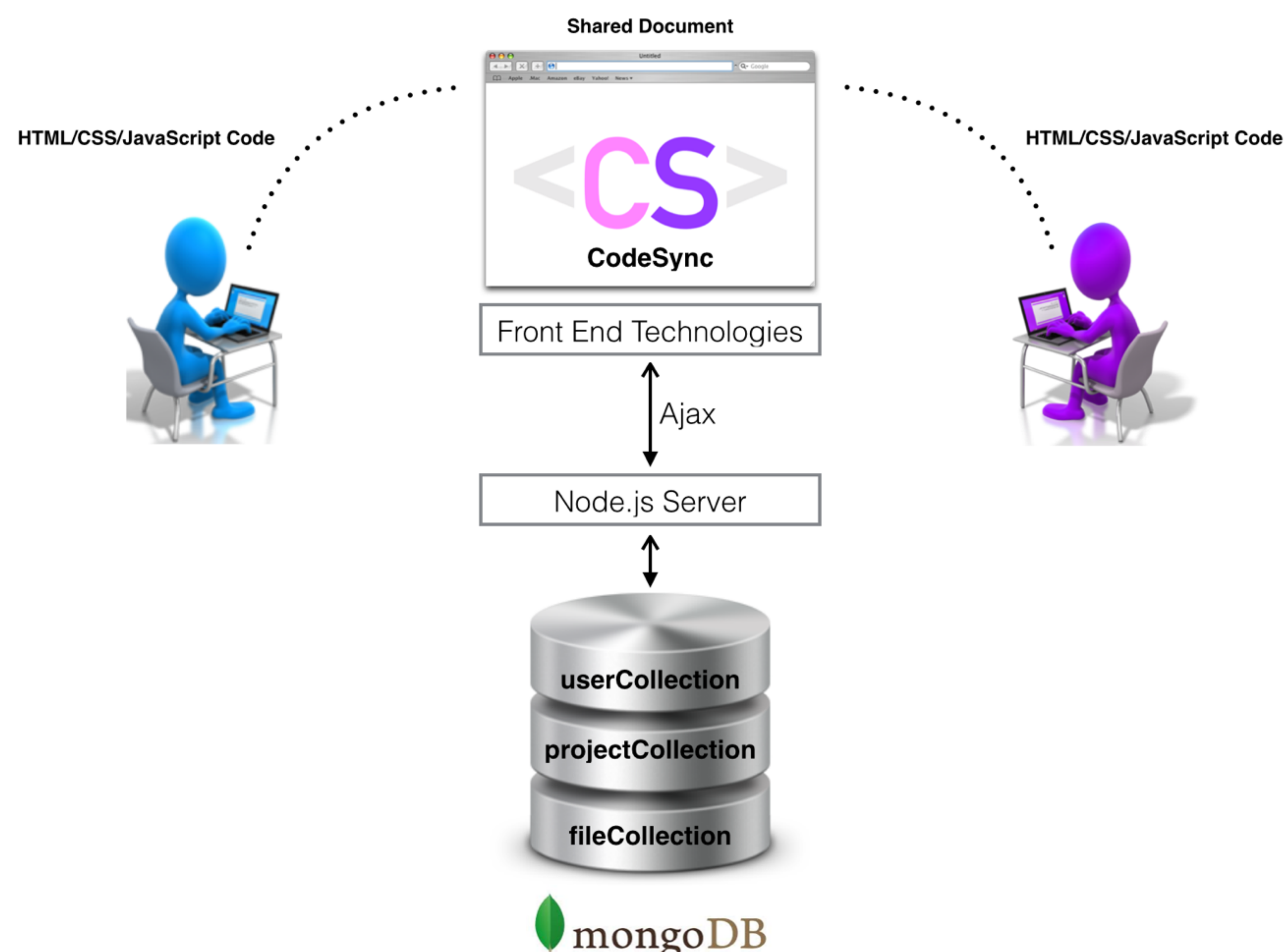


Figure 5. A high level understanding of CodeSync

## Evaluation

We will determine whether CodeSync enhances collaboration and whether students find that by using CodeSync, collaborative coursework is easier, more reliable, and more enjoyable.

To test this, we will conduct a user study with the help of current CS110 students, who have a few weeks experience with TextWrangler and Fetch, by asking them to perform a simple task using CodeSync. The task will be crafted to avoid a lot of text entry, but involves editing several HTML and CSS files, thereby testing whether people can collaborate with simultaneous editing or whether it gets in the way. After the task, we will interview the users and they will answer a standard set of questions.

## Future Directions

CodeSync may eventually:

- Show which user is making the changes in real time
- Generate a log of edits made to each file
- Allow collaborators to chat with each other via message
- Provide additional native validation options
- Allow for users to create to do lists and milestone calendars for each project