

CVWO Final Submission Write-up

As someone largely from the C++ world, this assignment has been my first taste of web development. With little prior experience, I dedicated almost the entire winter holiday to learning web development with Ruby on Rails. I read the first 11 chapters of the Rails Guide thoroughly, tested every single given example, and wrote some toy application as practices. Though perplexed at the beginning, I can confidently say now that I have gotten a firm grasp of the core concepts in web development, especially those used extensively in Ruby on Rails.

When I finally started developing the app, I did not take it merely as an assignment, but an app that I will willingly use daily as my own to-do manager. As such, not only did I spend a lot of time making a robust and efficient back-end, but I also tried my best to design the features that a user might desire (instead of just fulfilling the assignment requirement) and implemented them as intuitively as possible.

Accomplishments

1. Obtained an overview of a web development cycle

Through this assignment, I have gained a helicopter's view of web development, namely ideation, architecture design, implementation, followed by maintenance. Though it might be tempting to start coding straight away, the first two phases are arguably far more important than coding itself. For example, initially, almost all my functionalities were lumped on the back-end. This did not only waste server-side resources but also slowed down the performance, worsening the user experience. Fortunately, I realised this early enough to migrate some of the features to the front-end, greatly improving the user experience and making the back-end less clumsy. Therefore, in my future development opportunities, I will give more attention to the ideation and design phases in order to minimise wasted work once I start coding.

2. Obtained the skills needed for web programming

During this assignment, I have picked up many languages and frameworks used in web development. Although I have taken CS1101S and am familiar with JavaScript syntax, I have never used it to write any non-trivial programme or used it for web development. The rest were all new to me. Below are some of the takeaways from this assignment:

- Ruby (I am amazed by its elegance and friendliness)
- Rails (almost declarative)
- SQL, SQLite, PostgreSQL
- HTML with Embedded Ruby
- CSS (the single largest source of frustration during this assignment), SASS, Bootstrap

- JavaScript (event-driven programming), CoffeeScript, jQuery and other libraries (momentjs, js.cookie, etc.)

User Manual

The product works well on both desktops and mobile devices and comes with many features that are non-essential but greatly improve the user experience. Below is a walk-through of its basic features:

First Step

First-time users will be directed to a welcome page. Click on the blue button to start using To-Do List.

The Homepage

The homepage consists of several components:

Navigation bar

Click on the words 'To-Do List' to see current tasks.

Click on 'New Task' to open the task creation page and click on 'Manage Tags' to, well, manage your tags (more on these later).

Search Bar

When you click on the search bar, a list of all your tags will appear below it to assist you.

Type in the tag names that you want to search, separated by commas, and tasks associated with these tags will appear as you type.

Tags that you have typed in will be highlighted throughout the page.

Click on the cross to clear the search bar and display all tasks again.

Buttons to reorder tasks

There are three ways to order your tasks: default order (by time updated), by deadline, or by title. Click on one of them and tasks will be reordered immediately. The order will be remembered the next time you visit the page.

Ongoing tasks and completed tasks

Your ongoing and completed tasks will be listed here. For ongoing tasks, the orange hourglass icon and the red calendar icon, as well as the numbers beside them indicate the number of tasks that are urgent (due within one day) or overdue, respectively.

Both groups can be collapsed by clicking on the words 'Ongoing' or 'Completed'.

Tasks

Each task will be shown within a box, along with its description, deadline, and tags, if there are any.

Click on the empty circle (or the checked circle for completed tasks) to mark it complete (incomplete). Click on the tags to toggle between showing all tasks and only tasks associated with this tag (hint: you can view multiple tags concurrently, and only tasks associated with all those tags will remain visible).

Click on the 'edit' or the 'delete' icons to, well, edit or delete the task.

Task Creation/Edit Page

Only the title is required. Description, deadline, and tags are all optional and can be keyed in once you click the 'Add' buttons. A friendly date and time selector is provided to save you the trouble of keying in date and time manually. When adding tags, you can press 'Enter' to finish typing the current tag and a new input box will open for you to type in the next tag.

Tags Management Page

All tags will be listed on this page. The number of tasks associated with each tag will be shown in brackets after each tag. You can click on the 'delete' icon to delete a tag (this does not delete its tasks).

Conclusion

Two months is not a long time. I did not have enough time to learn everything I needed and did not implement all the features that I would like to see in the app. However, of all those that I did learn or implement, I constantly reminded myself to get a deep understanding of them instead of using them on a one-off basis. As a result, I can confidently say that I have built a solid foundation in web development and am ready to move on to learn more. Moving forward, I plan to learn front-end frameworks like Angular and React to further expand my skill-set.

Learning, applying, and seeing my app grow from nothing to a fully-functional product has been an exciting experience. No matter whether I will eventually be selected for CVWO, I would still thank CVWO for giving me this wonderful opportunity for me to take my first step into web development.