A Focus Extension: An application to Increase Productivity and Streamline Work*

Within the Google Chrome Web Browser

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ABSTRACT

Individuals utilize many different applications for productivity in the modern world that do not interface well and can lead to less streamlined work. This proposal presents a solution in the form of a single application to handle the interactions between all relevant extensions and applications to provide a seamless experience on the Chrome web browser.

INTRODUCTION

Within the current internet-driven world, there are many different applications that individuals utilize to get their work done. Mail, calendar, reminders, TODO lists, productivity tools such as Pomodoro timers, adblockers, and password managers, are all examples of the myriad different tools that we use as a part of our daily experience on the internet to make it more enjoyable and productive.

However, one issue that threatens to undo all of the productivity gains from using these different apps is switching and interfacing between all of them. Setting an event on your Calendar that doesn't synchronize to your Reminders can leave you out to dry when no notifications remind you of the event and it happens without you. Pomodoro timers that are interrupted by notifications that break your focus. Needing to turn on and off multiple different extensions depending on the page you are on. It can all add up to becoming a significant hurdle to seamless, streamlined productivity.

At the current moment in time, there isn't a single consolidated solution like the one proposed. At most, the offerings will combine only one or two of the above applications into one platform, such as the ClickUp extension for Chrome, which combines mail and TODO lists (1). However, to achieve the productivity savings that are desired, one single place to access all of these tools is necessary. For example, a simple Google search will reveal that many of the lists of top Chrome productivity tools will only address one single component of productivity. In the long run, trying to utilize all these various tools with different interfaces will only lead to less productivity, as more and more time is spent navigating them and less time is spent doing work and enjoying the benefits of said tools.

This proposal presents a potential solution to this problem of disunified productivity tools. By creating one single extension that can interface with all other productivity applications and extensions, this solution aims to consolidate all of the complicated productivity tools that individuals use into one streamlined application. For example, one could imagine one single extension that brings up a small window, with options to open a unified calendar/task/TODO application, and on/off buttons for each of the other extensions that an individual utilizes. One could even imagine a way to add any number of different applications to be controlled centrally through the main extension, rather than a pre-set list of them, to allow for the most possible flexibility. There are many different implementations for a concept like this, which will be coordinated as the project is more fully fleshed out and understood, but the overall goal will still assist greatly in the productivity of those in the Computer Science space and beyond.

RELATED WORK

As mentioned before, there are some already existing productivity tools available for the Chrome browser. However, most of these extensions only focus on one specific feature. Some of the examples include Todoist, StayFree, Google Keep, and Just Read. Todoist is, as its name implies, a simple to-do list and task manager that gives reminders when a task is due. StayFree is an application that blocks distracting websites. Google Keep is a note-taking service and Just Read is an extension for removing ads, pop-ups, comments, and distracting styling when reading articles and documents online.

There is one extension that combines some of the features and that is the ClickUp extension. For one, this extension has a task manager that can link tasks with emails. It also allows users to jot down notes and it has a timer that tracks how much time is being spent on a certain task. While this is a good start, the Click Up

extension is still not comprehensive enough to meet all a user's productivity needs in one app, which is what this project seeks to do.

DESIGN, IMPLEMENTATION, AND TESTING

For the high-level design, the team is using the Model-View-Controller architecture. This architectural pattern is used in most modern web applications. It is focused on providing a UI for the user to interact with. Essentially, users interact with a controller, which is usually a graphical user interface, which then updates the model of the system. The model is the application's back end that does the work the application is trying to do. This model then updates the view for the user, basically running whatever process is necessary given the user's actions and input to provide an experience that satisfies the user's needs.

In this project, the user would be interacting with a controller in many ways. These interactions include adding tasks to their to-do list, setting up events on their calendars, creating a list of distracting websites to block when working, running Pomodoro timers for work sessions, and jotting down notes. When it comes to adding tasks and setting up events, the model would take in the user's input and then add these objects to its database. The view for the user would then be updated by giving them reminders of events, notifications for tasks, and alerts for deadlines passed. For creating a list of distracting websites to block and run Pomodoro timers, the model would take in the URL of the websites the user wants to restrict access to. Then, when the user is doing intensive work and running a Pomodoro timer, access to these URLs will be blocked for 25 minutes, or the time the user prefers. Once the timer has finished, the websites will then be unblocked for the user. Given this kind of experience, the Model-View-Controller architecture is the natural choice for high-level design.

The implementation process that is suitable for this project is behavior-driven development. This implementation's combination of feature-driven development and test-driven development works because FocusExtension needs to do very specific behavior. The use of acceptance criteria in use cases helps with ensuring the application behaves as expected. Consequently, starting with behavioral specifications to check for desired behavior is the best way to implement the application, so behavior-driven development is the ideal implementation process.

Similarly, black box testing is the proper testing process for this project due to its focus on I/O behavior. A black box test plan can provide an idea of what behaviors should produce and what results, enhancing the testing process to catch possible faulty inputs. This is especially useful when it comes to the boundary value analysis in black box testing. Many of the inputs the user would be giving involve creating a deadline, such as setting up tasks on the to-do list and events on the calendar that are due at specific times. Black box tests can be caught if the user is putting in a number of hours or days (e.g. putting the 25th hour of a day or the 31st day of a month that only has 30 days) to ensure proper inputs.

DISCUSSION

When asked what we would do if we had more time to work on this project, we discussed it as a group and decided that we would like to see our extension reach a larger audience. Firstly, we would have wanted to see this project on different browsers besides Google Chrome. This would include browsers such as Firefox and Edge and help us reach a much larger audience, not just those using Chrome as their main browser. We would have also liked to create an app version that can help boost productivity on your mobile devices. Mobile devices are a large source of distraction in the workplace and limiting a person's ability to get off task could greatly improve productivity overall.

Finally, we discussed adding group collaboration features. This included features such as team leds being able to block certain websites as well as see the search history of their subordinates during work hours. They could also schedule out specific times of the day where their team should be on task as well as break times to allow them a break. Overall, these changs would make our app much more comprehensive, add to productivity and help us reach a much larger audience, all oof which are extremely important to long term success.

CONCLUSION

The requirements phase found that users would prefer having a single productivity tool and that a Chrome extension was a good place to start due to its prevalence. Focus Extension addresses this by providing a single extension that combines a calendar, a to-do app and a Pomodoro timer to improve productivity.

Despite this, the extension is not without its limitations. Providing support over a wider range of platforms instead of limiting it to Chrome would be a large step forward, and the first thing to be addressed in future works. This includes other browsers as well as a mobile app. A large part of productivity is also collaborating with others, and another improvement in future work could be adding team collaboration features. This includes features such as shared to-do lists and calendars, as well as ways to coordinate meetings with others.

REFERENCES

[1] "The ClickUp Chrome Extension for Tasks, Time Tracking & Screenshots," *Clickup.com*, 2024. https://clickup.com/chrome-extension (accessed Sep. 24, 2024).
[2] A. Boulette, "The 15 best productivity extensions for Chrome in 2024," *Zapier.com*, Oct. 27, 2022. https://zapier.com/blog/productivity-extensions-for-chrome/?msockid=37c35c48beec61f81c334fd7bffe607a (accessed Sep. 24, 2024).