TaskMaster

Keep Software Engineers on Task

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ABSTRACT

Software engineers, engineers, and workers in general often have a difficult time staying on task. Whether it is due to distractions, disorganization, or apathy, many project hours are not being spent working on project milestones.

Our team plans to design software called TaskMaster that will help keep software engineers on task. There will be displayed tasks that guide software engineers as well as other helpful features that champion efficiency.

INTRODUCTION

Distractions, which are especially easy for software engineers to encounter because they are on computers for most of their job, can lead to significant inefficiency. Also, software engineers are assigned several tasks and can become distracted by their own multitasking management.

According to Harvard Business Review, the average employee gets distracted about 50 to 60 times a day. Consequently, employees spend little time in "the flow state" of mind, which makes people up to five times more productive[1]. Trying to multitask breaks the flow because the brain must keep shifting mental gears between different tasks. The active decision to switch tasks itself even contributes to inefficiency[2].

To regulate this issue of task distraction, something must help guide software engineers with their tasks. TaskMaster is our software solution to keep software engineers on task, as it will reduce the distraction of task management by taking the responsibility away from the software engineer and promoting "the flow state."

TaskMaster will track task history and assigned tasks on both the individual and team levels. A Pomodoro timer will be integrated into the application, as small breaks promote efficiency. A website blocker will work alongside the Pomodoro timer. TaskMaster will also provide reminders for tasks and deadlines. For workers with higher authority, there will be a feature included that allows them to easily detect if potentially distracted workers are on task. As a special feature, there will be a motivational support button that the worker can click for a motivational quote.

The user interface will consist of sticky notes containing detailed task information that will persist on screen. There will also be a small digital clock icon serving as the Pomodoro timer that times working and breaks. For higher authority workers who suspect that workers are off task, there will be a button on screen that can be clicked. This will pull up a screen with toggle switches for the higher authority worker's assigned workers. When a switch is on, periodic updates will be sent to the higher authority worker on the lower authority worker's computer activity.

The non-functional requirements for TaskMaster will be listed. The usability requirement is that text must be visible a meter away from a typical monitor screen. Any colors used must be high contrast and labels must use intuitive icons. For reliability, the software should have at most one failure every 14 days. Functionality and data must be able to be restored within 8 hours. In terms of performance, the program should not take more than 2GB of RAM at any given time, thus not causing a noticeable performance reduction on modern machines. The supportability requirement for TaskMaster is that it should easily be configured and customizable for different project types and teams. For the implementation/constraint requirement, TaskMaster must be able to run on Windows 10/11, MacOS 12 Monterey/13 Ventura, and Linux.

RELATED WORK

A lot of task management software exists. Jira, for example, is widely used by software engineers. Jira's main function is to track tickets for tasks. A ticket indicates the status of a task, whether it needs to be done, is in progress, is in testing, or another phase. Jira also makes it easy to divide tasks among a team. Story points are assigned to tickets to indicate their importance and/or how much work they will take to complete. Prioritization of tickets can also easily be done.

GitHub Issues is another mechanism to track tasks. It aims for simplicity. A user can create an issue from a repository, a task list item, a project note, a comment in an issue or a pull request, a particular line of code, or a URL query. A user can also create an issue on several platforms, such as GitHub Desktop and GitHub CLI. Task lists allow for the organization and prioritization of several tasks related to one project[3].

With so much task management software already existing, one might wonder what sets TaskMaster apart. TaskMaster's special feature is that it is highly active during the user's working activity. Rather than being something to reference, TaskMaster actively engages the software engineer. Additionally, TaskMaster has a lot of features that directly serve to focus and motivate the user.

SOFTWARE ENGINEERING PROCESS

Our team plans to use the Prototyping software engineering process to implement TaskMaster. The Prototyping model is useful for any project where the product will have frequent interactions with end users, as is the case with TaskMaster's "sticky note" type interface. This allows us to quickly refine how we want the system to look and feel when in the user's hands, without overinvesting our limited resources into each iteration.

Additionally, while we know the general design and features that TaskMaster will have, we do not yet have clearly outlined, precise, and stable requirements necessary to build it. As such, this is another important reason to consider a more flexible scheme like prototyping as opposed to a V-model or Waterfall process structure.

REFERENCES

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