Development of Intuitive TODO Application: TaskTamer

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ABSTRACT

In the rapidly evolving digital age, professionals, notably software engineers, often try to manage their schedules efficiently. The workload coupled with the software industry makes it challenging to remember and follow schedules.

Organizing events, activities, and overall workflow is an important problem that many professionals face on a day-to-day basis. Lack of focus, disorganization, and hectic schedules can result in people forgetting important tasks that they must complete.

To address this issue, we introduce a TODO application tailored specifically for those who struggle with this issue: TaskTamer. This app not only allows users to list tasks but also sends timely reminders on various platforms to ensure tasks are completed as scheduled. By integrating advanced algorithms and user-friendly interfaces, the application seeks to optimize productivity and minimize the chances of missed deadlines or overlooked tasks. Through this solution, software engineers and other professionals can navigate their busy schedules with greater ease and efficiency.

Introduction

In the fast-paced and demanding world of professionals, managing time efficiently is crucial. The relentless stream of meetings, tasks, and deadlines can be daunting, often leading to a sense of being overwhelmed. Professionals immersed in complex activities, like coding intricate solutions, are particularly prone to losing track of time, forgetting about upcoming tasks, or missing critical deadlines. These lapses can have far-reaching consequences, impacting not only the individual but also their teams, projects, and potentially the entire organization.

The stakes are high, and a standard organizational tool won't suffice. These professionals require a bespoke solution, one that seamlessly integrates into their unique workflow. This solution must not only remind them of their commitments but also assist in effectively prioritizing tasks, ensuring nothing important falls through the cracks.

Recognizing this need, we have developed TaskTamer. This innovative application is specifically designed to address the challenges faced by busy professionals. TaskTamer stands out by sending multiple reminders and alerts, keeping the user informed about upcoming events and deadlines. Its proactive approach ensures that important tasks remain at the forefront, significantly reducing the likelihood of oversights.

Moreover, we understand the importance of accessibility and convenience in today's interconnected world. Therefore, TaskTamer is engineered to be compatible across a wide range of devices and platforms. Whether you're using iOS, Android, Windows, or Mac, TaskTamer is there to keep you notified. This cross-platform availability means that users can receive these vital notifications from multiple sources, whether they are at their desk or on the move.

TaskTamer is more than just a reminder tool; it's a comprehensive solution designed to adapt to the complex and dynamic needs of professionals. By integrating TaskTamer into their daily routine, professionals can navigate their busy schedules with greater confidence and efficiency, ensuring that no critical task is overlooked.

Motivating Example

Imagine a team of software engineers working on a critical project with tight deadlines. The project requires coordinated efforts across different modules, frequent updates, and regular meetings. Sarah, the team lead, juggles between coding, reviewing her team's work, and managing project timelines. Amidst this chaos, it's easy for her and her team to lose track of upcoming deadlines or overlook important meetings.

This is where TaskTamer becomes invaluable. Sarah set up TaskTamer to manage her team's workflow. Each team member receives personalized reminders about their specific tasks, upcoming deadlines, and meetings. For instance, John, a developer in Sarah's team, receives a notification reminding him of a pending code review due in two hours, which he had nearly forgotten amidst his focused coding session. Meanwhile, Sarah gets an alert about a critical team meeting later in the day, allowing her to prepare in advance.

TaskTamer also sends out reminders for shared milestones. As the project's release date approaches, the team receives collective notifications, ensuring everyone is aligned and aware of the remaining tasks and deadlines. This feature is particularly useful during the final stages of the project, where coordination and timely completion of tasks are crucial.

For software engineers like Sarah and her team, TaskTamer is more than just a reminder tool; it's an essential component of their project management. It helps prevent missed deadlines, forgotten tasks, and overlooked meetings, all of which are common in the high-pressure environment of software development. By keeping the team informed and on track, TaskTamer plays a key role in the successful and timely completion of their project, making it an indispensable tool for any software engineering team.

Related Work

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Engineering Processes

Our team is committed to employing the Agile Scrum methodology for the upcoming project. Scrum, a popular subset of the Agile approach, emphasizes iterative development and fosters collaboration across multifunctional teams. To maintain momentum and address potential obstacles, daily stand-ups will be held, ensuring that all team members remain synchronized in their efforts.

A prototype shows the steps of a UI interface of TODO applications. This software process of a prototype is beneficial in that the customer will have the ability to see our design. This means if any mistakes are made during our prototype, we as designers can revise and fix our problems in a fast and timely manner. This process will also follow an iterative process since prototypes require revision throughout the development.

Given the ever-evolving landscape of software development, being able to adeptly handle new requirements or changes is a must. Scrum facilitates this adaptability, allowing for swift course corrections while prototypes provide flexibility in the development of a TODO application.

Design Decisions

In our TODO application, We would use a three-layer architecture to ensure the protection of data and an easily understandable structured hierarchy. We would have a user interface layer for interacting with users, a business logic layer for handling tasks, priorities, and scheduling, and a data storage layer for storing task data. In our project, we used a viewer, controller, and model. This branches to our observer class from Low-Level Design.

Another concept we learned is how Low-Level Design allows designers to decide on classes, interfaces, and the implementation before running code. Our TODO application involves various interactions and responsibilities between classes or objects. One example used in our project is a pattern within the Behavioral Family. Potentially, this can be implemented within the Observer class, which would provide a way to notify several classes about changes. This small example is what is used in our project, a Task and TaskCompletion Class. Where an interaction/Association from TaskCompletion is made to Task Class."

In class, we have learned how Functional Requirements lead to the use of Use cases. This concept is important because in our project we have gone through requirements to set a goal that needs to be performed by our TODO application. Such as display, schedule, create, delete, and edit tasks.

Testing Approach

Through using key concepts such as unit testing, we can ensure our application will stay running and go through rigorous testing.

To overview, the functional requirement will allow our development team to process implementations promptly. This concept allows implementations to stay on track. Black box testing will also show testing options needed to make our application run smoothly. Low-level design ensures classes such as completing tasks and observers will behave timely and correctly after completing our TODO Application. Lastly, the three-layer architecture will increase security measures for our application. This means in the long run schedules will be controlled and kept safe as long as undefined behavior is not reached at some point after development. This can not be guaranteed, unfortunately.

If Actually Bringing TaskTamer To The World…

If we were implementing this TaskTamer in the real world, there were some useful techniques we'd found from the class materials that could help us build this application. For example, in deployment, we believe canary deployment would be beneficial because it could minimize a predictable issue: a huge range of data loss. While in maintenance, we found that adaptive and perfective would be the best maintenance techniques, since we want to provide flexibility and at the same time, attract the user to stay using TaskTamer.

Our Deployment Strategy Decision,

First of all, canary deployment is a strategy that will break down the update phases, and release the application update to a subset of users. We believe TaskTamer will become a crucial daily assistance for users when released, so we want to make sure we reduce the possibility of data loss issues. Instead of updating the whole application at once, and potentially causing a huge data loss issue, by breaking down the update phases, we can use a small amount of the user base to test our new functionality or discover bugs. This could prioritize the stability of user data, preventing the loss of important task progress. If a data loss issue does occur, due to this small user base, we can fix the problem faster and more efficiently (for example, by system data rollback). This not only reduces our maintenance costs but also increases user confidence in our TaskTamer app, making them more likely to stay with our application.

Our Maintenance Strategies Decision
Secondly, we pick adaptive maintenance because it provides flexibility, and perfection because it increases the application's attraction.

For adaptive software maintenance, since we want TaskTamer to be an application that doesn't get limited on the platform, adaptive software maintenance would be a good option to help us achieve our goal. Adaptive software focuses on fixing non-functional aspects of the software, which include making the application compatible with different platforms and hardware. Furthermore, adaptive also takes care of policies and rules, which is also an important thing to daily task management software. Data privacy is significant nowadays. More and more people start worrying about their privacy. We believe if we could create an application that has strong adaptability and a safe environment for users, it would make TaskTamer a lot more user-friendly compared to other applications.

For perfective software maintenance, it involves updating and improving the application to better meet user needs, ensuring that the software remains competitive and relevant within its category. This maintenance strategy would put its key point on adding new features and removing functions that are not useful. This strategy allows TaskTamer to keep its focus on the users. It always ensures that user feedback is taken into account to provide the most efficient features. Then, it creates an application that is far superior to other similar products, helping TaskTamer gradually become the top choice in the minds of the public.

Limitations:
We encountered a lack of availability to add more features to this project. Time is a big constraint here, preventing us from creating the perfect app we wanted. Furthermore, the financial burden of continuing this project was felt heavily by us all. However, our final product excels in its functions and provides users with an experience they'll never forget. Additionally, we still plan on introducing new features.

Future work
We want to Introduce new AI-powered technology into this system. This intelligent tool learns from your scheduling habits and automatically generates reminders for frequently scheduled events. Also when you first download the app it walks you through the entire process of creating reminders.

But we're not stopping there. We understand that people have different preferences so that is why we're rolling out increased customization options. You can now personalize the layout, choose from a plethora of colors, and even select your preferred notification sounds. We want to emphasize it is your to-do app.

Now, let's talk about community. We're introducing a chat board feature, turning our app into more than just a tool—it's a collaborative space. This community-driven platform allows users to share ideas, collaborate on new features, and collectively identify and squash bugs. We want your feedback to shape the future of our app.

Speaking of the future, affordability is something that is important to us so we have plans for an affordable subscription model. This model will unlock a wider range of premium features, making our app even more powerful while keeping it accessible to all.

Also, we’re introducing a search and filtering feature so you don’t have to continuously scroll through tasks trying to find and reschedule old ones. You can effortlessly locate and reschedule tasks, saving you time and making task management a breeze.

But that's not all. We understand the importance of playing well with others. That's why we're integrating with popular platforms like Canvas and Google Calendar. Now, your reminders from these platforms seamlessly integrate into our app, creating a unified experience.

Last but certainly not least, for those with long-term goals, we're introducing a goal/objective feature. You will be able to visualize your progress and get that extra boost of motivation as you work towards completing those tasks.

Conclusion

We're taking our to-do app to new heights with AI intelligence, enhanced customization and community engagement, and many more new features. I hope you’ll join us on this journey.

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