Work Well
An application for improved productivity of software engineers

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ABSTRACT

Overworking and procrastination are typical issues for software engineers, resulting in lower productivity, missed deadlines, burnout, and other bad results. Work Well, a web-based tool aimed to increase productivity, responsibility, and work-life balance, addresses these challenges. Work Well employs task reminders to keep users on target and in sync with their colleagues, as well as advising users to take frequent breaks to avoid burnout and promote physical and mental health. The program gives ergonomic reminders to urge users to maintain excellent posture and do physical health routines. Overall, Work Well attempts to boost productivity by increasing user efficiency and fostering a better work-life balance. The tool helps users remain on track and minimize procrastination by sending out regular reminders and notifications, as well as minimizing burnout and encouraging general well-being. Work Well employs user interface (UI) design and notification systems in their software design engineering to provide an intuitive and user-friendly experience. Work Well provides a comprehensive solution for software engineers aiming to improve their workflow and preserve their physical and mental health, with an emphasis on task management, breaks, ergonomics, and productivity.

CCS CONCEPTS

- Software and its engineering
- Software creation and management
- Designing software
- Software design engineering

KEYWORDS: Procrastination, Productivity, Task Reminders, Breaks,Ergonomics

1 INTRODUCTION

Software engineering is a difficult and challenging field that demands a high level of concentration and attention to detail. Working with sophisticated code, many programming languages, and software frameworks may need extra time throughout the development process. Furthermore, the collaborative nature of software development can present communication and coordination challenges.

Interruptions and distractions can reduce software engineer's productivity and make it difficult for them to remain focused on work. Research has shown that it can take up to 23 minutes to regain focus after a single distraction, and software engineers are bound to hundreds of distractions in a single day. Concentration applications or focus apps have become a popular solution for software workers to handle this challenge. These apps usually use techniques such as the Pomodoro, which involves breaking work into short, simple and focused intervals. This helps users maintain focus and avoid distractions as much as possible [1].

Work Well is an application that helps software engineers enhance their productivity by simplifying processes and providing tools to manage their time and tasks efficiently with a team. The application provides features such as task reminders, break reminders, and ergonomics features to help users maintain focus and avoid distractions. It helps the user to be more organized, focused, and productive and helps users avoid procrastination and be more focused. For software professionals who need to manage their time and keep on top of their tasks, task reminders can be immensely helpful.

The task reminders feature of the Work Well program benefits users in a variety of ways. By allowing users to establish task reminders based on their deadlines, the application supports users in prioritizing tasks based on their relevance and urgency. This functionality is extremely useful for software developers who typically have several jobs and deadlines to manage at the same time. Using Work Well, users can set reminders for specific activities, set deadlines, and receive notifications when deadlines are approaching. This helps users remain on top of their work and complete tasks on time. Overall, Work Well's task reminders feature is an effective tool for enhancing productivity and completing objectives.

A break is essential for all software developers. Users may specify their break times and receive break reminders on the Work Well application's breaks area, which will help them rest and rejuvenate. This page also displays users' impending break schedule, which helps them prioritize their work.

People today are generally seen as being unconcerned with their health and ergonomic situations. This can result in a variety of issues, including wrist, shoulder, and leg discomfort, which can be severe in the long run. Addressing these issues is crucial in order to preserve employees' health and well-being, especially in jobs such

as software engineering, where people spend long hours sitting in front of a computer screen.

The Work Well program helps software programmers realize the importance of ergonomics, which may benefit both users and their organizations. Poor ergonomics can lead to decreased productivity, higher absenteeism, and increased healthcare costs for businesses. By encouraging good posture and reminding users to stretch and take breaks, the Work Well application minimizes the likelihood of injury and enhances overall health and well-being. By integrating ergonomics features, the Work Well application can aid users in preventing or reducing the agony and misery associated with poor posture. With the program's assistance, users may maintain an appropriate posture and work environment, which can lead to increased productivity and energy levels. Good posture can increase general health and well-being in addition to minimizing the chance of injury and strain on the muscles and joints.

Implementing ergonomics in the workplace can provide psychological benefits in addition to physical benefits. Employees are more likely to be motivated, engaged, and productive when they are comfortable and pain-free. This can lead to increased work satisfaction and improved mental health. Work Well's ergonomic features include reminders to stretch and take breaks, posture correction tools, and advice on how to set up an ergonomic office. The training can assist software developers enhance their overall health and well-being by teaching them how to maintain proper posture and prevent pain.

2 MOTIVATION AND RELEVANCE

The discipline of software engineering is demanding, and the engineers are frequently under pressure. They are under continual pressure to perform under duress and fulfill deadlines, which causes burnout. This may have an effect on the software developers emotionally and professionally, which makes it challenging if they miss deadlines. The pressure to perform well, fulfill deadlines, put in long hours, and handle pressure is constant for software developers. It might be difficult to strike the perfect balance between speed and quality. Software developers may miss deadlines and experience project delays that annoy their clients. The IT industry is particularly demanding since software developers must pay close attention to detail, keep track of deadlines, and be able to multitask.

It is imperative that engineers have a tool that allows them to create reminders for the jobs they must do in order to meet deadlines. This will make it easier for engineers to prioritize their jobs and maintain concentration. The software engineers must also do a number of jobs before the deadline. It's crucial to prioritize the vital jobs and finish them before the deadline. Software engineers frequently forget about planned meetings, which prevents them from collaborating and communicating with their coworkers [5]. They may prioritize key work and be reminded of deadlines and impending meetings by using the reminders tool.

A reminder tool is a quick and efficient way to address the issue of software engineer's management of tasks, prioritization and missing of deadlines. The engineers can schedule notifications to remind them of upcoming deadlines using the reminders tool and this helps them to plan their work in advance and ensure they are available for the meetings and plan accordingly.

Ergonomics is one of the most important considerations for software developers since it may negatively affect their physical and mental wellbeing. It has an influence on both their personal and professional lives. Software engineers must take good care of their ergonomics. Repetitive work and bad posture among software developers are the main causes of repetitive strain injuries (RSIs). Back discomfort, eye strain, neck, vision issues, wrist, headache, finger, and shoulder pain are all symptoms of poor ergonomics. The software developers may have long-term incapacity and poor performance if necessary precautions are not adopted. Furthermore, poor ergonomics may contribute to mental health problems. Working without taking sufficient care of ergonomics might result in stress, anxiety, and depression. This leads to low performance and decrease in quality of work.
It is important to have a solution that addresses all the psychological and physical issues that software developers experience.

3 RELATED WORK

There has been a rapid increase in the creation of productivity tools for software developers in recent years. Many applications have been developed to assist software professionals in better managing their tasks and time, while also promoting healthy work habits. In this section, we examine similar work in the industry and emphasize the unique aspects of our web application.

Several task management applications are already available on the market, including Trello, Asana, and JIRA. Users may use these tools to plan projects, establish deadlines, and track progress. These applications, however, lack break reminders and ergonomic features at one place.

Time management applications such as Harvest, Toggl, and RescueTime allow users to track the amount of time they spend on various jobs and activities. While these programs can help users better understand their work routines and increase efficiency, they do not provide task or break reminders. Applications like Stretchly, Time Out, and BreakTimer provide break reminders to users. However, they lack task management features and ergonomic features. For instance, Workrave, StretchClock, and Eyes Relax provide ergonomic features including stretching routines, eye exercises, and posture reminders. However, they lack task management and break reminders [4].

Work Well is a productivity application for software engineers that incorporates task management, break reminders, and ergonomic features. The task management capability allows users to create, prioritize, and assign tasks with reminders. Break reminders ensure that users take frequent breaks, which promotes good work habits. The ergonomic function provides exercises, reminders, and suggestions to help you keep physically healthy while working long hours.

Our application provides a one-of-a-kind and comprehensive solution for enhancing software developer productivity and fostering healthy work habits. Our application is distinguished from other productivity tools by its mix of task management, break reminders, and ergonomic features.

4 IMPLEMENTATION

4.1 Design

Work Well application needs to keep track of deadlines and reminders within the system and notify users as needed, the layered architectural pattern is the most helpful. Consequently, this type of design would be more beneficial for an application whose main objectives are data storage and user interface.
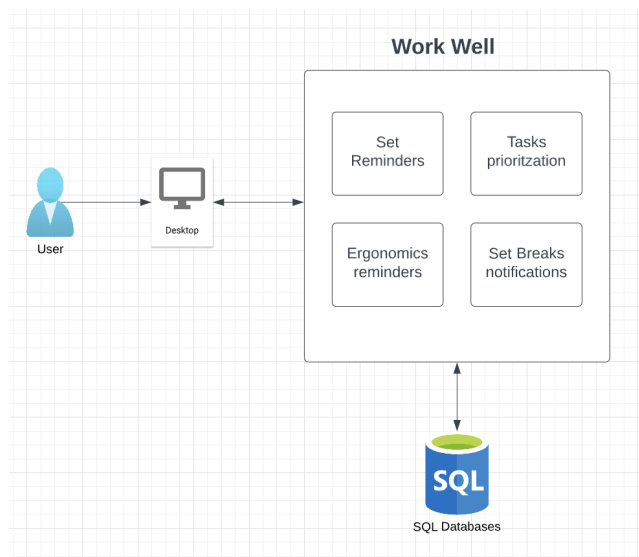

Figure 1: Design Process

To begin, The user must first enter their registered email address and password in the corresponding fields. We verify that the email address was entered accurately. This is required to verify your account and make sure that only those with the proper authorizations may see your information.

To go on to the following page after entering their login information, users need to click the "Submit" button. They will be sent to the application's home page, where they may access all of the features and account settings, if the login information is accurate. The user can register by clicking the "Sign up here" link if they don't already have an account. After that, users will be sent to a screen where they may create an account and start using the application.

To Signup, Users must join up by providing their first name, last name, team name, email address, and password. The team name field may be helpful when signing up on behalf of a group or company. The user must provide a correct email address since it will be used to deliver important updates and notifications as well as to

verify your account. The password has to be unique and strong, including a mix of capital and lowercase letters, numbers, and special characters. Once they have entered the information, click on the "Sign Up" button to create new account. If all of the required fields are completed correctly, user account will be created successfully and inserted in to the database. If user already has an account, they can click on the "Login here" link to access the login page. This will allow the user to enter email address and password and access the application.

The Reminder page is designed to help users keep track of their tasks and deadlines. It displays all the reminders that the user has set up in an organized manner for easy access. The page has a simple and intuitive user interface that is easy to navigate.

At the top of the page, users may see their name and a menu that directs them to other program pages. The reminders portion of the website displays every reminder that the user has posted. Each reminder is shown as a card that includes a brief explanation and the task's name. The cards are arranged in reverse chronological order, with the most recent reminders appearing first. To add a new reminder, users can simply click on the plus button located in the top right corner of the page. This will open up a form where they can enter the task name, description, and any other relevant information. Once the user has entered all the necessary information, they can click the "Save" button to add the new reminder to the list.

Overall, the task reminder page is a simple and effective feature for keeping track of important tasks and deadlines. It provides users with a clear overview of their tasks and allows them to add new reminders easily.

The majority of human time is spent in front of computers, whether it is for job or enjoyment. Long periods of sitting, however, can lead to a range of health issues, such as neck pain, back pain, and eye strain [3]. As a result, taking regular breaks is essential to maintaining our health. A helpful strategy to ensure we take regular breaks is to utilize the break reminder on Work Well. On this website, you may choose a time after which you'll receive a reminder with a message encouraging you to take a break. The messages may be customized based on the type of break you wish to take. A helpful strategy to ensure we take regular breaks is to utilize a break reminder website. On this page, you may choose a time after which you'll receive a reminder with a message encouraging you to take a break. One of the messages, for example, may be 'take a break,' urging you to get up and stroll about for a few minutes. Moving about promotes blood circulation and reduces muscle tension. Another message that you may receive is 'stretch your arms and legs,' which urges you to perform some easy stretching exercises.

Sitting for extended periods of time can strain the eyes, causing dry eyes, headaches, and visual impairment. The break reminder web page may be helpful in this situation since it will prompt you to look away from the screen and focus on a distant object by displaying text like "Relax your eyes for a while." This routine keeps your eyes healthy and reduces eye strain. To be healthy, you need
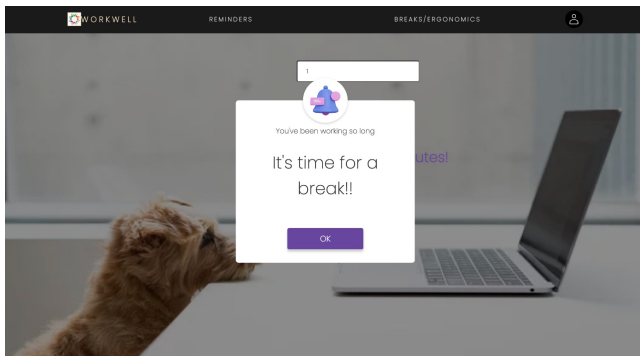
Figure 2: Break Reminder

to drink water frequently. Dehydration can cause headaches, dry lips, and weariness. This is why it's important to include a message like "have some water" on your break reminder homepage. This message is a reminder to drink water, which can also keep you hydrated, give you more energy, and help you focus.
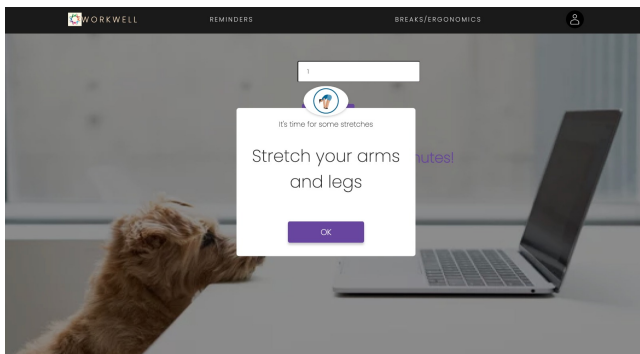

Figure 3: Ergonomics

Setting the time intervals at the right intervals is crucial if you want to get the most of the break reminder feature. Typically, depending on how hard you're working, it's advised to take a break every 20 to 30 minutes. You will feel less tired, more focused, and more energised all day long as a result. This is an efficient tool that can help you maintain excellent health, lower the risk of injury, and boost productivity is the break reminder function when paired with ergonomics. You may make sure that you take frequent breaks and remain healthy and productive by utilizing personalized messages like "take a break", "stretch your arms and legs" "Relax your eyes for a while" and "have some water".

4.2 Tech Stack and Implementation

Web page content and structure are created using HTML (Hypertext Markup Language). The styling of the web page is done using CSS (Cascading Style Sheets) which is a tool for defining the visual appearance of HTML elements. The interactivity to websites and to create engaging user Interfaces Javascript has been used.

Stack of back-end technologies which are used is A server-side programming language called PHP (Hypertext Preprocessor) is used to create dynamic content for web pages. MySQL is a well-liked relational database management system that is open-source that is used to store and manage data. The front-end technologies (HTML, CSS, and JavaScript) are in charge of rendering the user interface and delivering an interactive experience when a user accesses a website. On the other hand, the server-side logic, including data processing, storage, and retrieval, is handled by the back-end technologies (PHP and MySQL). We have used PHP and MySQL for the backend technologies. When PHP and MySQL are running, the server will receive a request from user's browser and retrieves the data dynamically and creates the web pages based on the inputs given on the browser. To modify any data and produce the HTML content on the screen, the PHP code will interact with the MySQL database.

4.3 Testing

The goal of the test phase is to ensure that the software built and tested in the development phase meets all requirements and design specifications. The testing methodology used to test the Work Well application is Blackbox testing. Below listed are the test cases.

Test Id	Description	Results
BT01 Login Test Black Box Test	Preconditions: User account has been signed up into the WorkWell application Steps: 1. Opens login Page 2. Enters Username and password 3.Clicks login	If the login credentials are correct then the user will be able to login into WorkWell if the login credentials are incorrect then the user will not be able to login into WorkWell will see login failed message.
BT02 Reminders setup Test Black Box Test	Preconditions: User is logged into the WorkWell application Steps: 1. Clicks on the reminders tab 2.User clicks on the ' + ' icon 3.User enter the desired reminder 4.User clicks on the submit	User should see the reminder setup under the reminders tab. users will be able to perform two actions one is to finish a task if completed and the other is to delete the reminder if needed.
BT 03 Breaks setup Black Box Test	Preconditions: User is logged into the WorkWell application. Steps: 1.User navigates to the Breaks tab 2.User enters the break frequency 3.User enters the break length 4.User clicks on the submit button	User should see the timer running with entered amount of time on the screen.

Figure 4: Test Cases

4.4 Results

Once the user registration is completed, the users can login into the Work Well application by logging in. The user has to enter their registered email id and password.

If the user is not registered the web page will throw a popup error message which says that the username or password which entered is wrong. The user may try to login with the correct credentials or the user may try to register.

After logging into the Work Well application, users can navigate to the reminders tab. Here users can setup the reminders by selecting the '+' icon on the right side of the web page. Upon clicking the '+' icon, the user can enter the desired reminders.
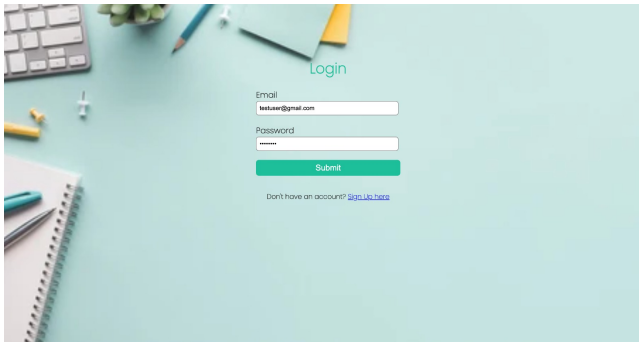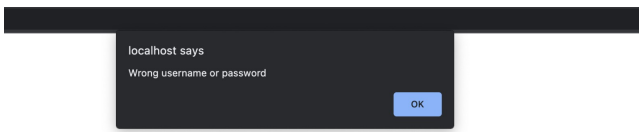
Figure 5: Login Page

Figure 6: Error Message

In the Figure 7, we can see some reminders which have already been added by the user. If the user task has been completed, the user can then remove the task setup by simply clicking in the finish button. Upon clicking on the finish button, the reminder task on the screen will be striked off. If the reminder task needs to be deleted then the user can simply click on the delete button which will delete the reminder task.
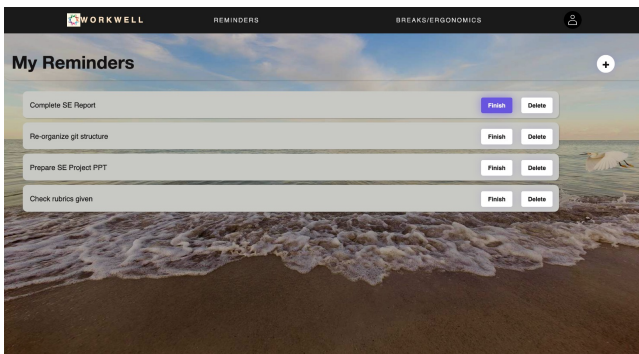

Figure 7: Reminders page

After clicking on the breaks tab, the user can enter the length of the break and also the frequency of the breaks. User can click on submit button once all the details have been entered. The screen shows the timer setup for the next break. In above image, we can see the timer showing the time left for next break.
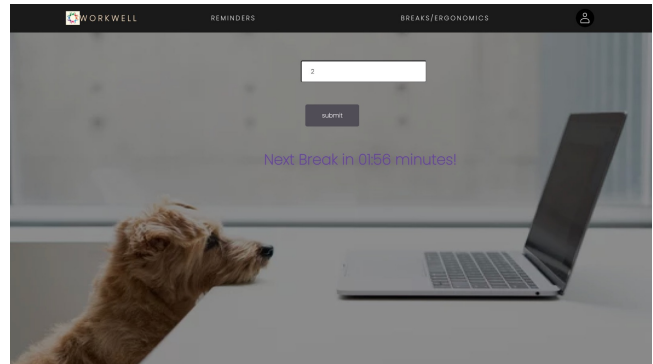

Figure 8: Breaks Setup

5 DEPLOYMENT PLAN AND MAINTENANCE

5.1 Deployment

To achieve a smooth release of our web application for task reminders, breaks, and ergonomics without annoying our users, our team employed the Canary deployment strategy. A limited number of users is provided access to a new version of the software via the "canary" deployment method, while the remainder of the users continue to use the older version. By using this method, any problems with the new version can be found and fixed before being made available to all users. First, a separate environment was made for the updated web application. As a result, we were able to test the new application version without compromising the current one. Before moving on to the next stage, we made sure the new version was fully functioning and satisfied all the requirements. We then established a small set of users who would have access to the updated application. We selected a sample of people who were eager to try the updated version and offer suggestions. We made sure to clarify the test's goal and any potential hazards to this particular group of users in advance. Then, we made the new program version available to this select group of users. To make sure the application was performing as planned, we closely watched it. If any problems were found, we fixed them right away and carried on. We gradually raised the number of users who had access to the new version after determining that it was reliable and completely working.

Each stage of this process only included a small portion of the total user population. We kept attentively watching the program and fixed any problems that appeared. We kept in touch with our users throughout the entire process, alerting them of the deployment procedure and any potential problems that might occur. Additionally, we urged users to offer comments on the updated application. We diligently watched the application for a few days after giving all users access to the updated version to make sure there were no significant problems. Additionally, we kept urging users to comment on the new version. Overall, using the Canary deployment approach to roll out our web application for work reminders, breaks, and ergonomics was successful. It enabled us to smoothly launch the latest version of the program without upsetting our users. Additionally, it enabled us to find and fix any problems with the new version prior to its distribution to all users. Staging was the initial

step in our deployment procedure.

A development environment called staging was made to mimic a real-world setting. To test the new version of the program without affecting the current version, we developed a separate environment for it at this point. Before moving on to the next stage, this stage allowed us to find any problems with the new version and make sure it was fully operational. Following the completion of the staging phase, we entered the building phase. At this stage, the web application was constructed using HTML, CSS, and PHP. As a database management system to store data, we also used MySQL. We made sure that the performance and security of the application code were optimized. We also made sure the program could scale to accommodate more users and traffic. The pipeline's building stage involved compiling and creating an executable file from the application code. The automated test suite was run during the testing phase to make sure the application was operating as intended. Unit tests, integration tests, and end-to-end tests were all included in the test suite. Test failures were reported to the development team so they could be fixed. Following the pipeline's testing phase, we entered the deployment phase.

The new version of the program was released to the production environment during the deployment stage. Before making the new version available to everyone, we used the Canary deployment method to roll it out to a select number of people. We were able to find and fix any problems with the new version using this technique before it was made available to all users. To make sure the application was operating as intended, we employed test automation throughout the deployment process. Every step of the process, including testing and deployment, was subjected to automated testing. The test suite was created to cover all of the application's essential features. The program was made sure to be totally functioning and error-free through the usage of automated testing. These steps made that the application was error-free, completely functioning, and optimized for performance and security. The latest version of the program was released without any issues for our users thanks to the utilization of the Canary deployment strategy [2].

5.2 Maintenance

The process of improving and updating software in order to enhance performance, address issues, and accommodate shifting user needs is known as maintenance, and it is a crucial component of software development. For our project, our team employed the perfective maintenance technique. Perfective software maintenance, sometimes referred to as enhancement maintenance, focuses on enhancing the functioning of the software or including new features.

Using HTML, CSS, PHP, and MySQL to create a web application for task reminders, breaks, and ergonomics, perfective maintenance entails improving the application's features and functionalities to improve user experience. Perfective maintenance has a number of advantages, one of which is that it keeps software current and responsive to users' evolving needs. There may be a need to add new features or adjust current ones as the application becomes more popular and more users begin to utilize it in order to satisfy

their changing needs. Furthermore, perfective maintenance can help to guarantee that the application remains compatible with the newest technologies and platforms when new technologies and development processes arise.

Perfective software maintenance required a number of steps, such as requirements collecting, analysis, design, implementation, and testing. In the development phase, the team determined the precise improvements or features that are required during the requirements collecting phase. In the analysis step, the current system is examined to find any potential problems or restrictions that could need to be fixed. The design step entails creating a strategy for putting the improvements into practice, including any modifications that should be made to the application's architecture or design. Making the changes to the software takes place during the implementation stage, while testing ensures that the modifications are effective and don't cause any new problems or errors.

The maintenance strategies that we followed ensured that the project remains current and practical for users throughout time. We tried to ensure that the improvements are successful and do not add any new problems or bugs by following a structured process that involved requirements collecting, analysis, design, implementation, and testing.

6 DISCUSSION

6.1 Limitations

Though our system is robust and fully functional, there are some limitations. The user may register and sign in to the work well application. There, the user may manually add reminders and remove them. We attempted to build the feature whereby users are immediately added to the software teams inside the company, and his supervisors also set reminders and work lists for him. Additionally, they have the ability to change the reminders, and when a job is completed within the specified time frame, it is immediately erased. Due to time restrictions, this feature has not been developed since it requires many accounts to be taken into account, which calls for several SQL database operations and the participation of numerous components. To guarantee their proper functioning, several system components are needed, and they must be interconnected. To guarantee that the new feature is operating as planned and does not bring any unforeseen effects or security risks, the development team would also need to properly test the new feature. This may be a labor-intensive operation that uses a lot of time and money. This has not been developed because of the complexity of the functionality and the time constraints.

6.2 Future Work

Integration with other tools: Another potential area where the application can be enhanced is to integrate the application with other tools that software engineers commonly use. It could be project management tools like Jira or Trello, or with code review tools like GitHub. By integrating with these tools, we could make it much easier for users to manage their tasks and stay organized.

Mobile app: A mobile app version of the web application could be created. Mobile app would facilitate users to access the app instantly on their mobile devices, which could be more convenient and easy for them. This could increase accessibility and user management.

Analytics: Incorporating analytics tools into the web application could be another area for future improvement. This would measure how frequently users complete their duties on schedule, how frequently they take breaks, and how frequently they use the ergonomics function. This will enable the application to get insights on user behavior and identify areas for improvement.

Feedback mechanism: Providing a feedback option for users to provide comments and feedback on the application. This would aid developers in making the application more user-friendly and effective depending on user input.

7 CONCLUSION

A wonderful tool for software developers to increase their general productivity and wellbeing is the work well application. The Work Well application's features, such as reminders, breaks, and ergonomics, provide software developers a wonderful way to prioritize their work, optimize their productivity, and lower their risk of burnout and health issues. The breaks feature of the Work Well app is one of its key components since it encourages software engineers to take breaks and look after themselves. The timer may be configured so that users can take breaks for whatever long they choose. By advising the user on posture, eye contact, and a few desk-based movements that decrease stress, it also assists the user in setting up their ergonomics. The consumers benefit most from having all of these capabilities in one application since it relieves their physical and emotional stress and encourages a healthy work-life balance. Work Well may assist software developers in increasing their attention and productivity by fostering healthy behaviors and lowering stress. This may lead to higher-quality work being produced more quickly. This may result in better physical and mental wellness. Software developers can avoid physical stress and long-term ailments brought on by extended sitting by heeding this recommendations.They become more productive and avoid burnout as a result.

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