Leave Reminder Application

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ABSTRACT

Employees' work-life balance is being impacted by the current Covid-19 outbreak and workplaces switching to work from home. The mental health of the employee is jeopardized. Employees may easily lose track of time and overwork as a result of the lack of a clear border between work and home. This produces a great deal of stress, dissatisfaction, and mental health issues among employees, and has a long-term impact on the company's productivity. In such a situation, taking adequate breaks to recover and rejuvenate is crucial. Our project, 'Leave reminder Application,' is a tool that can be used to help with the process and remind employees to take active leaves and detach from work on a regular basis.

Employees can focus on their lives outside of work when they take time off. Employees can plan breaks and organize their time away from work if they know how many yearly leaves they are entitled to, which they can do with the help of a leave reminder app.

This application contains a function that sends users monthly reminders if they haven't scheduled any planned leaves for the month. It also allows users to schedule their leaves from the app using the calendar that is available in the application. It also shows users how many leaves they have taken that year as well as how many leaves are still available, allowing them to plan their leaves properly.

I INTRODUCTION

The Covid-19 pandemic has changed our daily lives completely. With social distancing guidelines in place, most offices have shut down and working from home has become the new normal. While it has its own advantages, it also comes with a lot of challenges. As the boundary between work and home disappeared, one of the major issues that the employees deal with is loss of work life balance. With the workplace and home

being in the same environment, it becomes difficult to come out of the work mindset and employees end up overworking. While this may seem to be good for the company, overworking and stress caused by it has shown to negatively impact productivity over the long run. Working from home has three negative effects on our mental health. First, without the appropriate assistance, people appear to feel more alone. When workers are stressed or concerned, the sudden loss of physical connection might make them feel as though they have nowhere to turn. Forming a solid support network, which is critical for healthy mental health, becomes increasingly difficult.Second, there's the issue of adjusting to working from home, which might lead to an increase in workload. There's a temptation to work longer hours, and there's no separation between home and workplace life for those who don't have one. What is the difference between working from home and homing from work? Third, in a physical workplace, the trend of back-to-back virtual meetings would be impossible. Many workers are spending more time in these meetings as they have less opportunities for informal catch-ups. These virtual meetings can cause tiredness and leave participants feeling alienated, in addition to being time consuming. This problem is exacerbated in huge groups, since the speaker cannot see individual faces. You can read people's reactions and see if they're engaged in a physical room, but this isn't possible online, making it tough to perform your function as a leader. "It increases your psychological and emotional workload dramatically." All of this adds to employee stress and worry, which is terrible for staff health and productivity in the long run. So, how can employers

overcome it? This also affects the non - work relationships and social life of the employees and leads to a lot of unhappiness and mental health issues among them.

With travel restrictions all around the world, the number of vacations people are taking to unplug from work and relax has also reduced quite a lot. In such a scenario, taking leaves on a regular basis and spending some quality time with loved ones is quite important. Companies are strongly encouraging their employees to take leaves keeping their well-being in mind to prevent burnout during the pandemic.

This calls for a solution to actively remind the employees to take a leave on a periodic basis. Our proposed solution does exactly the same. It allows employees to configure and receive reminders when a planned leave is not scheduled in their calendar during the selected period of time. Such a tool ensures that the employees are reminded frequently to take leaves and results in a happy work environment.

Some of the reminder and notification apps developed in diverse domains are conferred in Section III. The methodology is discussed in Section IV, while section V puts light on deployment. Section VI talks about the discussions, and section VII concludes the research. Finally, section VIII consists of the references.

II MOTIVATION AND RELEVANCE

The coronavirus epidemic has had a significant psychological impact. According to a 2021 study by the Kaiser Family Foundation, a health policy research organization, stress associated with the epidemic has negatively damaged the mental health of 53 percent of American citizens. Coronavirus affected half a million more people in the UK than in a typical year, according to the Center for Mental Health.

Travel and social constraints have left everyone feeling alone and sad; those working from home have faced extra pressures; and the worry of contracting the virus has exacerbated concern for key workers.

Many employees have unintended mental health impacts as a result of mandated remote work, and it's crucial to be aware of this . Isolation and burnout are factors to consider. Many people are well aware of how the solitude of working remotely can affect mental health in many professions today, particularly in IT and business services. The move to remote work as a result of social distancing procedures during the Covid-19 pandemic produced a startling, even if slight, decline of mental health for those who are accustomed to and appreciate traditional "office life" and a consistent rate of social encounters at the office.

Our regular encounters have been found to support our sense of well-being and community belonging; and with places like Los Angeles under lockdown, millions are being forced to not only work from home, but also stay at home, as bars, restaurants, and activities are shuttered until March 31. Loneliness and isolation have been demonstrated to be "twice as damaging to physical and mental health as obesity," even in "normal" times. According to

one survey, 19 percent of those who work remotely report feeling lonely. Loneliness is most dangerous when it is chronic, which may become a temporary reality for many single individuals as more people are recommended to stay at home during the coronavirus pandemic.

A top priority, especially for those who are energized by it, is the need to maintain relationships with co-workers and managers. This is critical not only to work performance, but to emotional and mental wellness. Technology can serve as a boost to aid in this communication and there are plenty of existing examples to prove it – since, as previously mentioned, many sectors already maintain a sizable remote workforce even when not enforcing social distancing. To alleviate feelings of isolation, some companies such as GitLab encourage setting 'virtual coffee breaks' during work hours for its remote-only team to foster collaboration and create a more comfortable work environment. Revelry have also dedicated a specific "watercooler" channel to encourage break-time chatter. Many methods to encourage interaction are "low-lifts" on behalf of the employer but should be thoughtfully implemented until employees are able to safely return to the office.

According to a 2019 survey by cloud infrastructure company Digital Ocean, 82 percent of remote tech workers in the United States are burnt out, with 52 percent working longer hours than their in-office counterparts and 40 percent feeling obligated to contribute more than their in-office counterparts. Employees who are new to remote work should be aware of this, as they may feel forced to work longer hours to prove that they can be effective from home – especially with fewer "extracurricular" post-work possibilities. Furthermore, even for professionals who are accustomed to working from home, the distinctions between personal and professional life will blur during the COVID-19 pandemic as an increasing number of schools close, resulting in children being at home and working parents struggle to separate responsibilities.

Take steps to maintain your mental health while safeguarding your and your family's physical health during this epidemic by creating a home workstation. This includes taking some time off from work.

Working from home at a scale never seen before is considerably different from conventional working from home under these new circumstances. The results of one poll of software professionals indicate signs of diminishing productivity and happiness [1]. They also discovered evidence of a disproportionately unfavorable impact on women, parents, and disabled persons. Another study indicated that depending on which measurements are used, working from home during the pandemic has various effects on software professionals' productivity [2]. The effects varied depending on the project type, size, and staff age. According to a research of GitHub activities, software workers' activity patterns may have repercussions for burnout [3]. Furthermore, the research reveals that the pace of work has changed since working days

have increased by up to an hour every day on both weekdays and weekends.

The majority of software developers now work from home, with 86 percent doing so full-time. Since the epidemic, the number of software engineers working remotely has increased dramatically, and at least two-thirds of developers want it to continue. Work-from-home culture is here to stay, and it's thriving in the development world.

It's been generally documented that working from home makes it difficult to break away from your computer at the end of the day. Software engineers already put in a lot of overtime, which is made worse by the inability to simply leave the office.

Studies have shown that loss of control increases stress. For instance, the passenger sitting in the front seat of the vehicle is experiencing higher stress than a driver, who keeps everything under control. For a C-suite transitioning to remote work means having less control and going through more stressful situations. The bigger company is, the harder it is to adapt to a COVID-19 season. For smaller companies, it is significantly easier to embrace those changes.

Working a million days in a row is the surest way to trigger an anxiety attack. Taking even one day off can help employees mentally reset, making it easier to return to work with a clear brain. Simply said, if you push yourself too hard for too many hours or days, your brain will rebel. Taking time off from work may appear to be an impossibility, but it is not! You've earned a break, and you've probably accrued some vacation days. So cash them in and take some well-deserved time off.

III RELATED WORK

People these days rely on personal task reminder apps to remind them of their tasks in various situations. Traditional paper-based reminders are still important, but they are difficult to arrange and have become obsolete in the digital age. As a result, electronic reminders (E-Reminders) are becoming increasingly common. Apps for reminders and notifications have been created for a variety of applications.

Elizabeth Koshy devised a mechanism for outpatients in the ophthalmology department to receive reminders following their initial consultation in 2008 [4]. According to [5, 7, 8], using smartphone reminders significantly reduced patients' FTA (failure to attend) rate. In [6] K. Stawarz proposes the design of a medical smartphone reminder to help patients remember to take their prescriptions and dosages on time.

According to studies [9, 10], location-based reminder apps can generate reminders based on a person's physical location. Fahim [11] has created an android software for constructing a smart home that allows users to schedule laundry, cleaning, cooking,

and other household tasks. Reminder apps created for non-behavioral tasks are no longer an exception. Table No.1 shows the top reminder applications according to Android Authority [12]. Thousands of such EReminder apps have been designed and developed by various developers and researchers, and are used by Android users; however, the current state-of-the-art, to the best of our knowledge and literature review, the lacking feature is that they require human intervention to manually add reminders for any appointments, activities, and events, whether geo-based or time-based.

Apart from this; there are also some applications that assist in locating monthly based leaves, such as how many leaves are left or taken. In general, the user must constantly navigate to the portal and select each leaf. We also came across some excel sheet templates that assists the user in tracking his sick leaves, personal leaves, and various types of leaves, as well as keeping track of the leaves taken. This template can also be used to plan ahead of time for a leave of absence. It keeps track of years' worth of data. This prompts the user to open the excel sheet and search for his leaves.

As part of our project, we strived to enhance these types of applications by doing some necessary work, such as displaying the remaining amount of leaves for that month. The total amount of leaves he/she can take in a year is also shown. We have fixed the required number of leaves for a month to be as it helps in reducing the mental stress and could give some time for their family. If the user has not scheduled any leaves for that month and when he tries to open this web application, he receives a reminder that he has not scheduled any leaves for that month. If the user has already scheduled a leave, he or she will receive a reminder that one more leave needs to be scheduled. If a person has planned two leaves for a month, he or she will not be able to see the remaining leaves.Even if there are currently two leaves scheduled, the user can schedule further leaves. This way it helps the user to maintain work life balance which is very important for every person.
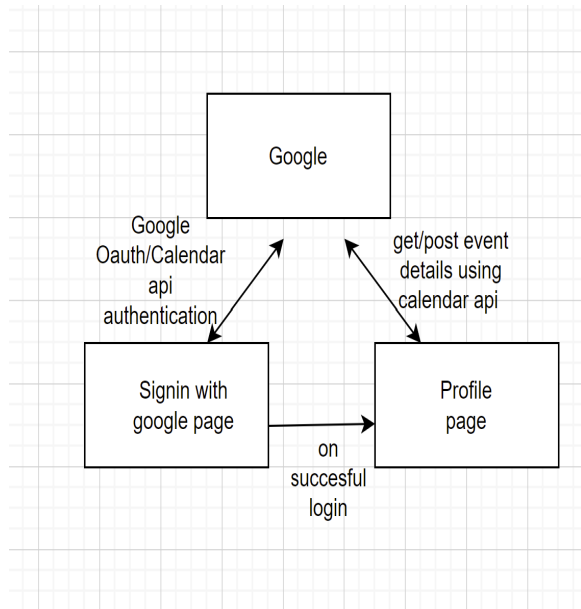
IV IMPLEMENTATION

Design

Our proposed solution is to create a web based application that can remind users whenever they miss to schedule leaves for a particular month by sending reminder notifications. To implement this solution discussed above we have included the following components in our project. i) User Signin page ii) User Profile page and iii) OAuth and Calendar API connection with google. When the user first opens the website, they are shown the login page where they can sign in with google. This authenticates with google and logs in with the user's google account and automatically all the calendar and personal details of the users are fetched using the calendar api. They are then redirected to the profile page where they can see the notifications for leaves which

are calculated based on the events in the user's calendar fetched using a get request. The users are also allowed to schedule leaves from the app, and the events are created using a post call to the calendar. This way the user is able to interact in the application

Tech stack and implementation

The implementation of the project is heavily dependent on the Google calendar API which is used for tracking and retrieving leaves of a particular user. The project is developed using Javascript and Python. Javascript is the main language that is used for making api calls to the google calendar API. And python is used to host the server. Since all the calls are made to the google calendar api on logging in, we no need to store the information in a database. Users also do not have to create an account as they can simply sign in with their google account which we have done using the google oauth integration. Any available events on the calendar the fetched using a get call to the calendar api with a search text 'Leave' and these leaves are calculated and the leaves remaining details are updated accordingly. If the user schedules a leave using the schedule now button on the app, the events are created using a post call.

Testing

We used blackbox testing with different cases. which are listed below:

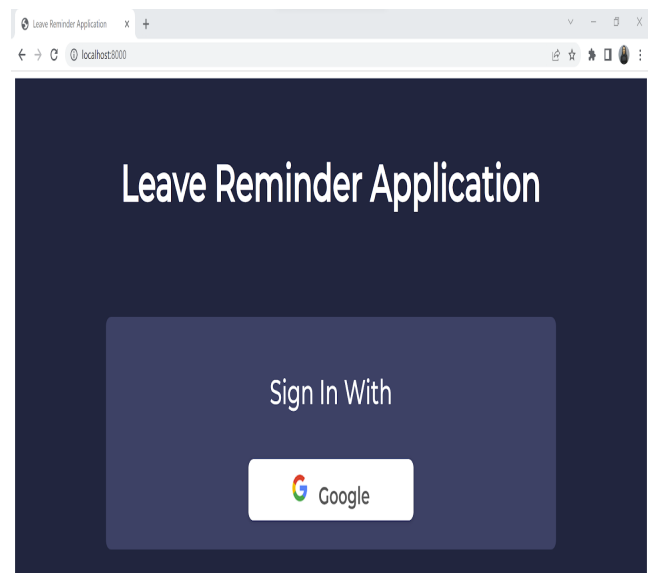| Test ID	Description	Results
BT01 Login Test (Black Box Test)	Preconditions: User has a Google account Steps: 1. Open the login page and click on Login with Google. 2. Enter username and password. 3. Click on Login	If the login details are correct, user is logged in to the web application and can see his profile. If the login details are incorrect, user should see a message that login has failed.
BT02 Check leave availability Test (Black Box Test)	Preconditions: User is logged in and has configured total number of leaves in that calendar year Steps: 1. Click on check available leaves tab.	User should see the number of leaves available in that calendar year calculated based on the total number of leaves and number of leaves taken by the user until then.
BT03 Enable Reminder Test (Black Box Test)	Preconditions: User has logged in and leaves are available. Steps: 1. Click on the settings option on the top right. 2. Check the checkbox for enable reminders. 3. Do not apply any leaves for the current month.	User should receive a reminder on the first day of the month to take leaves.

Results

Users don't need to create ana account, they can just have the google account to sign in to the application. This is the upfront page.

LEAVE REMINDER APPLICATION
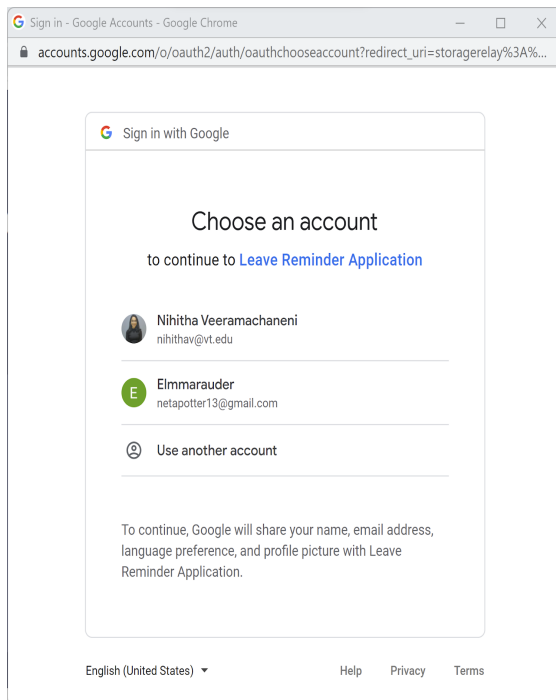
After clicking the google button on the front page, the user can see the above page where the user can choose the account from the google account available on the system.
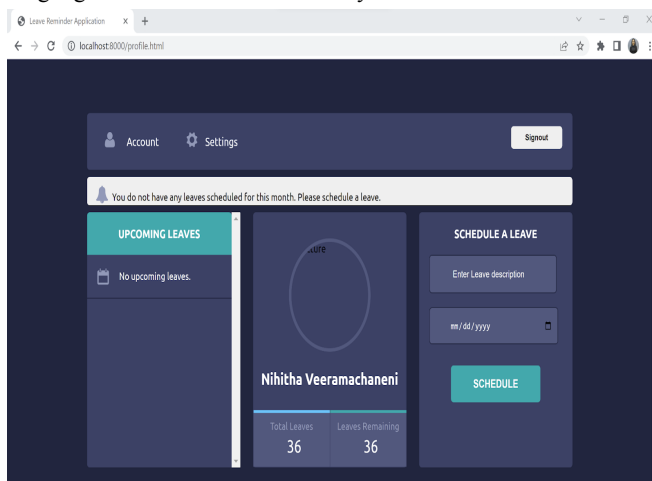
In the above picture we can see that the total number of leaves per year is 36 and also the number of leaves available are 36. We can see a reminder that there are no leaves scheduled in that particular month. We can create a leave by adding the description on the right of the page and add the date below. This will directly reflect in the user's calendar and reminds him regarding the leave.
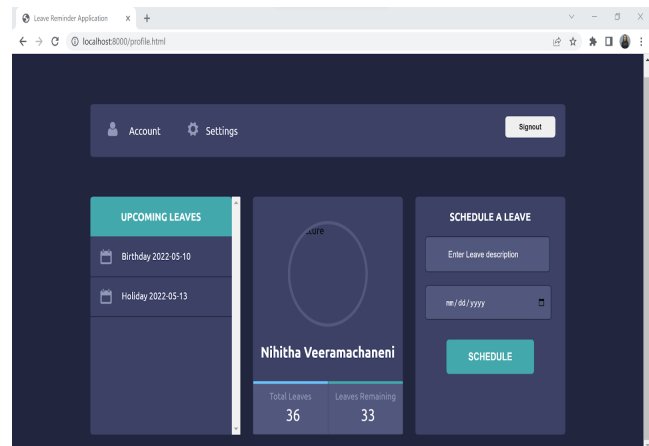
In the above case there are two leaves scheduled in it.You can also see that the number of remaining leaves are reduced to 33 as the user has already scheduled 3 planned leaves. And the user cannot see any reminder as the 2 number of leaves per month is a good practice for maintaining work/life balance.

V DEPLOYMENT PLAN AND MAINTENANCE

Most IT organizations and software developers today use a combination of human and automated processes to deliver software updates, fixes, and new applications. Application deployment is also known as software deployment, which is indeed the process of installing, configuring, and enabling a specific application or combination of applications to a certain URL on a server, through an application manager or software management system. The application becomes publicly accessible on the URL once the deployment procedure is completed. It also includes all of the stages, processes, and activities required to make a software system or upgrade available to its intended customers. Many application developers to this day prefer to host applications on-premises, cloud service providers such as Amazon Web Services (AWS), Google Cloud Platform, and Microsoft Azure now offer IT Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) products that allow development teams to deploy applications into live environments without the added financial and administrative responsibility of having their own storage and virtualization servers.

We in this project/work tried to deploy using GitHub which is also a good platform for deploying. We chose GitHub because it keeps track of the numerous modifications made to each iteration of your source code projects in a variety of programming languages. Firstly we need to create a GitHub account and login in to it. Now we need to create a new repository. If needed we can also choose a theme.

During the maintenance, these activities complement each of the phases that follow:

Identification and tracing entails actions related to determining the need for change or maintenance. It is either generated by the user or reported by the system via logs or error messages. The sort of maintenance is also classified here. Then analysis is done, The modification's influence on the system, particularly its safety and security implications, is assessed. Alternative solutions are sought if the likely impact is severe. The required modifications are then manifested into specification requirements. The cost of modification and maintenance is calculated and estimated.

New modules that need to be replaced or updated are designed according to the requirements established in the preceding stage. Validation and verification test cases are built.The new modules are coded using the structured design that was generated during the design phase. Unit testing is expected of every coder in parallel.

Integration testing is done among newly built modules during system testing. New modules and the system are also subjected to integration testing. Finally, the entire system is tested using regressive testing methodologies.
After internal testing, the system is put to the test with the help of users. If the user has any difficulties at this point, they will be fixed or documented for the future edition.

After passing the acceptance test, the system is disseminated throughout the organization, either as a tiny update package or as a new installation. The client conducts the final testing.After the software is delivered, final testing is done at client end.In addition to the hard copy of the user handbook, a training facility is available if needed and at last, Configuration management is a critical component of system upkeep. It makes use of version control tools to manage versions, semi-versions, and patches.

When there is an update in the application, we are planning to use Software Reverse Engineering. It permits a programmer or developer to add new features to existing software without having to know the source code.Reverse engineering is also essential in software testing since it allows testers to examine virus and malware code.

To store the application, create an inventory.The inventory is a spreadsheet model that contains information that describes each active module in an application in detail. Resources can be assigned to developer applications for re-engineering work by sorting this information according to longevity, current maintainability, and other critical criteria.

A system's documentation might assist in describing how it works or how to utilize it. It is necessary to update documentation. It may not be necessary to completely re-document an application.

Rather, the parts of the system that are changing right now are thoroughly documented. A collection of valuable and relevant documentation will emerge over time. Design recovery will be accomplished by reverse engineering. From an existing software, reverse engineering tools retrieve data, architectural, and procedural design information.

A restructuring tool is used to analyze the source code in order to achieve code reorganization. Code is restructured after violations of structured programming constructs are identified.The rearranged code is then inspected and tested to ensure that no problems have arisen. Documentation for internal code will be changed.

Reverse engineering is the first step in data rearrangement.
The current data architecture will be examined, and data models that are required will be defined.Existing data structures will be reviewed for quality, and data objects and attributes will be identified.

Finally, forward engineering, sometimes known as renovation or reclamation, will be carried out. It uses current software to recover design information. It uses this information to improve the overall quality of the system by altering or reconfiguring it.

The importance of software maintenance is enormous. Following the execution of software, software maintenance has become an integral aspect of its evolution. Software maintenance eliminates a number of issues that previously existed because of hardware changes. Software maintenance fixes defects or problems that might occur when software is created or attacked. To summarize, the stage of software maintenance is critical for the software's continued proper operation, and no other component can compare to the benefits provided by software maintenance.

VI DISCUSSIONS

Discussions

Limitations: Whenever a user opens our web application, they can see the total number of leaves in a working year as well as the number of leaves left. A characteristic of this web program is that it sends users email reminders about their leaves. We attempted to incorporate a functionality such as sending an email reminder to the user regarding his/her leaves, but due to Google account access restrictions, we were unable to do so. As our web application is linked to the user's Google account, when we attempted to set up the email reminder, we were alerted that we needed to disable two-factor authentication, which is not advised. We can try to solve this problem by developing our own calendar API.

Future Work: As of now, if a user tries to open our web application firstly the user needs to authorize and login into the web application. and schedules a leave according to his monthly plan. The user can now schedule a leave according to his monthly plan. Once a user schedules a leave he/she can see their leave

scheduled on the dashboard. Then if the user tries to close the web application and tries to reopen next time to schedule a leave, he/she might again need to authorize. This seems to happen every time a user tries to open the web applications. Always authorizing the account will not be useful to the user. As a future work, one can develop their own calendar API and connect it to the web application and make sure that once a user gets authorized, he/she should not repeatedly authorize his/her account until he/she deletes their account information.

Users might not take their leaves in a particular pattern every month. For example, in the month of january he might take two leaves for his work life balance and in the month of february he might have some vacation and took a leave for say 1 week. So the graph of taking the leaves might change according to their schedule. So to keep a track of the user's past leaves we can develop a dashboard which will be helpful for the user.

Building a calendar API and connecting it to the online application could be the future work. When a user tries to plan a leave and wants to send an email reminder after linking it to the program, the user may successfully receive a reminder regarding the leaves because the application is not yet connected to the Google calendar. It may also be necessary to establish two-factor authentication, which is recommended.

VII CONCLUSION

The Covid-19 pandemic has changed our daily lives completely. With social distancing guidelines in place, most offices have shut down and working from home has become the new normal. With the workplace and home being in the same environment, it becomes difficult for an employee to come out of the work mindset and employees end up overworking. While this may seem to be good for the company, overworking and stress caused by it has shown a negative impact on productivity over the long run. Not only productivity but also mental health of the employee is negatively affected. The leave reminder application we built helps employees to take time-off from their work by sending the leave reminders to the users. Taking time-off from work has many benefits. It allows employees to re-energize and enjoy time away from the office. If employees believe they are encouraged to use up their vacation or annual leave allowance, taking a break could boost their esteem for management. Employees will be able to spend their attention on other things such as their family, friends, and a pastime. Application encourages employees to take time off in order to maintain a healthy work/life balance and avoid burnout from work. Taking time off from work allows you to be more productive and focused at work while also allowing you to spend more time with loved ones and boost your happiness. It allows employees to spend time with their loved ones, which is crucial in keeping them happy. It's also been argued that persons who have a lot of social support are better able to cope with mental and physical difficulties. When the person returns to the office, this will help to enhance productivity.

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