**Success Alarm – Team Report**

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Github Team Page: [D-Rowland2/fantastic-broccoli: Repository for IoT Group Project](https://github.com/D-Rowland2/fantastic-broccoli)

**Data Gathering & Analysis 2.a**

We have not gathered any data on our project, we are also planning on adding a way to track sleep length via a button that will send a start and end time through an API which then will keep track of the data, this data will be sent to our server which will be authenticated through an api key.

Key data items we will collect will be length of sleep and sleep and wake times and then by analysing this data, our success alarm will determine if a shorter focus session would be more productive and will increase the length of the session in relation to how well and consistently the user slept, with the intent of optimising the users time to partake in productive tasks they choose.

For the final project some visual representation of this data could be presented to the user, allowing them to track their sleep over a long period of time.

**Security Analysis 2.b**

Using both data minimisation and encryption our project will protect our user's data. By not recording any personal data such as names or locations even in the case of a breach the impact to users would be minimal. We are using an encrypted connection to send data over to an api that is running on our personal server using C#. We have a personal virtual private server that we are both using to host a database to track data over time.

Using a firewall we can restrict access to the server to only the essential ports in this case we are going to restrict access to our server on port 443 and port 22 for SSH to perform administrative operations, by using these three strategies we can ensure we have taken reasonable precautions to minimise any impact a breach would have on our system or users.

**Problem 3.a**

Creating a device to optimise study and focus sessions based on the users sleep length and quality.

Modern society has us more pressed for time than ever and with an ever growing series of distractions to keep us well awake into the night, this Impact on our ability to perform at our best is hindered to a great degree, with the success alarm it will encourage us to track our sleep and in turn have more productive sessions during the day.

Our research into this topic found that there is a strong correlation between shorter sleep durations and impaired academic performance, by creating a device where a user can both monitor and track their sleep and that adjusts “focus” sessions based on this information well help students of all ages improve their outcomes in academic environments.

Li, S et all (2013) found that daytime sleepiness is connected to poorer performance and academic achievement, the solution in this study was to delay the start of school and found that this intervention improved “sleep duration and daytime sleepiness”.

There is also a strong correlation between sleep duration and sleep consistency with overall academic performance as found by Jalali, R. *et al.* (2020), we are hoping to integrate this information in our final project to enhance the usability and effectiveness of our project.

The duration of each session will loosely follow the structure of pomodoro technique, where there is a set interval and then a set amount of time for break, the research behind the pomodoro technique shows it is effective and useful for reducing distractions and mental fatigue promoting a more efficient study routine as found by Biwer, F. *et al.* (2023).

**References**

Li, S. *et al.* (2013) ‘Sleep, School Performance, and a School-Based Intervention among School-Aged Children: A Sleep Series Study in China’, *PLoS ONE*. Edited by Y.-H. Lai, 8(7), p. e67928. Available at: <https://doi.org/10.1371/journal.pone.0067928>.

Jalali, R. *et al.* (2020) ‘The Effect of Sleep Quality on Students’ Academic Achievement’, *Advances in Medical Education and Practice*, Volume 11(11), pp. 497–502. Available at: <https://doi.org/10.2147/amep.s261525>.

Biwer, F. *et al.* (2023) ‘Understanding effort regulation: Comparing “Pomodoro” breaks and self‐regulated breaks’, *British Journal of Educational Psychology*, 93(S2). Available at: <https://doi.org/10.1111/bjep.12593>.

**Solution 4.a**

Our project provides functionality to track, monitor and analyzes previous data to optimize study effectiveness and through this process of tracking relevant information for academic performance, By tracking a relevant metric in relation to study effectiveness and by using this to determine the length of study sessions our project will have the potential to have an impact on students success and help them improve both their sleep habits by making them aware of them and by secondary affect to provide optimal opportunities for learning.

**Project Requirements 4.a**

1. Calculate Sleep Time
2. Start/Stop Sleep Tracking
3. Adjust “focus” sessions based on data
4. Upload sleep time to API
5. Display Timer

**Implementation Plan 4.b**

Our project will use a button to determine when to start the sleep timer and will at the final project use a LCD display to show the “focus” session timer to the user so they can track their progress.

Our initial code design will use a button to send a time to our server and then again to mark the end of sleep, this will be tracked by a request sent to the api.