Revised Project Proposal - LockedIn

Incorporated Feedback

From the original project proposal, multiple classmates suggested a few improvements to our application that we took into account.

- Making our design less broad, focusing more on a schedule planning for studying with ‘gamification’ rather than implementing scheduling, reward systems, digital practice exams, etc (from original proposal)
- Incorporating student focus group questions in regards to what type of reward system should be implemented as a more effective method. Since our app is aimed towards students, we plan to ask the user group what type of incentive system would be appealing to them as users.
- We received feedback regarding organizing exams based on priority and focusing on time management or study resources. Allowing users to preface which exam they wish to prioritize more and spend more time studying rather than based on the earliest exam.
    - We plan to allow the user to list the exams and order how they wish to prioritize studying as well as the length they wish to study before the test date.
- Some feedback mentioned incentivizing issues and how it might work. Our app is more focused towards people who are willing to work. In order for any method of studying to work it requires some level of willingness from the users. We still aim to use an incentive to motivate users to work during the scheduled times but cannot fully monitor that they study as it is outside the scope of what we are capable of doing. However, we decided to modify the actual incentive for users from badges to a personalized reward system users can manually input.
- Some had comments regarding the use of manual input and posing challenges of using a difficult algorithm for schedule generation. We plan to resolve it through use of schedule generating apis (list the specifics) which would do more of the work for us. If we want to curate a personalized app for users it requires user input so we can’t eliminate the need of user input but we can eliminate the brute work of creating and planning from the user that planners, notion and google calendar require from their users
    - We researched more thoroughly the types of API’s we can use to generate planners and a rough idea of how to accomplish our goal of curating a generated schedule for the user based on their preference input.

- We received multiple comments regarding the feasibility of our original app proposal and made modifications to the original application and overall project goal as well as more thorough research on different resources that could accomplish a large portion of the backend functionality of our app. (Further information in the feasibility section)

Need

Students frequently face significant challenges when preparing for exams due to procrastination, a lack of structured study habits, and difficulty maintaining motivation. Many struggle to balance academic demands with other commitments, which can lead to poor time management and last-minute cramming. This often results in ineffective study sessions that do not allow students to fully absorb and retain the material, impacting their exam performance.

One major issue is the lack of consistency in study routines. Inconsistent, unstructured study habits weaken students' ability to perform well under exam conditions. Research shows that regular practice is key to retention, with practice testing improving retention rates by up to 50% compared to passive methods like reading. However, many students do not engage in consistent practice due to distractions, poor planning, and difficulty staying focused during long study periods.

In addition to the academic pressure, many students experience stress that further undermines their study efforts. Over 56% of students report experiencing academic stress, with 25% stating that it significantly impacts their academic success. Without effective tools to manage this stress and develop consistent study routines, students are often left feeling overwhelmed and underprepared for their exams.

To address these challenges, students need a structured approach that helps them balance their academic workload with other responsibilities while ensuring regular, focused study sessions. A tailored study plan that takes into account individual preference–such as optimal study times and session lengths–can help students overcome procrastination and manage their time more effectively. Moreover, integrating elements that encourage consistent effort and reward progress can help students stay motivated and reduce the anxiety associated with exam preparation.

Evidence of Need Sources:

- https://www.insidehighered.com/news/student-success/health-wellness/2023/05/23/survey-stress-hurting-college-students
- https://www.linkedin.com/pulse/best-way-study-exams-statistical-deep-dive-conceptwriters-kjyqf

Existing Solutions

Google calendar offers digital scheduling with multiple calendars with custom notification settings and repeat behavior. Unlike planners it's a faster approach to physically create a schedule due the digital nature as well as event or task repeat option. But Google calendar just serves as a reminder app for events and tasks that are manually entered by users.

Notion is also a popular tool for students to plan schedules, assignment tracking and study notes and documentation. Notion can be customized by users and offers both free and for purchase templates users can use and modify to their liking.

While all of these tools provide curated scheduling and help people plan days, weeks, and months in advance, they often require time-consuming manual input for each week. This can lead to scheduled events being overlooked or missed due to distractions or unanticipated changes in priorities. If you schedule a block of time to study the real question typically is will you actually study?

Our original project incorporated multiple features like study habit tracking and the "badge system" to reward users for completing their tasks as well as practice exams and upload. However, we narrowed our application to a study planner specifically designed for exams and properly managing time. We aim to make the study planner focus on rewarding the user for following through on their pre planned goals.

Habitica is a gamified task-manager roleplaying application that instills habit-building and productivity. The application allows users to create an avatar and add tasks, chores, goals they wish to accomplish. When the user completes the task in real life and checks it off, the user receives gold and items to be used in the game. The app offers repeating tasks, habit tracker and streak counter to see how tasks are progressing. The application allows parties to allow friends to play in different labels and challenges with one another. The application is open source run by a small team of volunteers resulting in code that may have bugs in the program as the game uses heavy design. Additionally, the application is roleplaying centered relying heavily on a built community and multiple users.

While the application offers a great incentive towards achieving goals to unlock features, the key demographic is geared towards those who enjoy role playing games and accomplishing small daily tasks as opposed to long term plans like studying for exams.

Reddit Threads regarding some issues users have with the application while also discussing how when using the application it did benefit them with completion of their tasks and goals

- https://www.reddit.com/r/habitica/comments/10qqank/whats_the_problems_with_habitica/
- https://www.reddit.com/r/habitica/comments/17hhmk5/hows_habitica_so_far/

Our app focuses on offering rewards for accomplishing tasks as ‘brain break’ for accomplishing specific tasks given the user preferences for scheduling and upcoming exam plans. Our proposed application is geared towards exam and proper study techniques as well as healthy behaviors. We plan to integrate blocks into our design so users cannot schedule extensive study periods, still receive 8 hours of scheduled sleep and effectively balance both breaks and studying. Habitica allows their users to set multiple tasks and reminders but does not gear towards healthy habits as the user can continue playing the game with their friends and ignore the tasks and rewards unless they wish to upgrade.

User Audience

The app's primary audience consists of students at all educational levels (high school, college, graduate students, etc.) who are preparing for tests. These users frequently struggle to balance their study time with other obligations, such as extracurricular activities, part-time jobs, or personal duties. They look for effective time management solutions to minimize last-minute cramming, stress and boost their academic achievement. Users desire to construct planned, reasonable study plans that integrate into their regular habits and help them be motivated.

The study app is designed for students who struggle with motivation and self-discipline during their study sessions yet respond well to reward-based programs. These students often struggle to maintain consistent study habits, but they are motivated by external rewards and progress tracking. The software keeps participants on track by assigning daily targets, rewarding them for completing study sessions, and providing tools to track their progress in understanding exam subjects. The software encourages users to stay focused and disciplined in their studies by including features such as tailored study timetables, progress tracking, and rewards for completing milestones. It is ideal for students who require an extra push to stay focused and are motivated by actual success markers, allowing them to enhance their academic performance and achieve their goals before exams.

Context

Our main focus is on encouraging good study behaviors—specifically through improved study methods and effective time management. The app will achieve this by generating personalized study schedules and incorporating a reward mechanism. After users input their information, they will be prompted to engage with the app in brief bursts, allowing them to accept or decline the proposed schedule, check their planned study sessions, view progress bars and rewards, modify existing plans, and start or end timers for their study sessions. These interactions will occur in real time, with updates provided whenever events occur, helping to remind users of their upcoming sessions. Users can also choose their study environment while using the app, whether studying individually at home or collaborating in study rooms as a group. By encouraging users

to interact with the app during designated time blocks, we aim to create an optimal studying experience that fosters consistent engagement and productivity.

While the app focuses on encouraging good study plans and following them, it doesn't guarantee that users will stay focused as intended. The app's effectiveness may diminish if users have additional responsibilities not reflected in their Google Calendar, such as family emergencies, leading to inaccurate study time suggestions. Additionally, since this is a mobile app, users may find it all too easy to access social media and entertainment, which can compete for their attention.

Project Idea

Description

Our app **LockedIn** aims to help students organize their exam preparation by creating personalized study plans. LockedIn will integrate with a user's calendar and take into account their availability and study habits to improve productivity. Completion of study sessions gives users a chance to unlock a reward. This gamification approach is meant to encourage users and keep them incentivized to stick to their study plans and stay motivated.

Project Goals

- **Healthy Habits:** Promote balance by allowing users to block sleep and wake-up times to avoid scheduling study sessions during rest period**s.** The rewards are also meant to remind the users that they've studied for a considerable amount of time and deserve a break.
- **Productivity**: Plan and allocate student study hours that do not interfere with other commitments. The app will also monitor progress and completion of study sessions.
- **Reward-based Learning:** Encourage users to set achievable study goals and earn rewards for meeting them. The rewards will be chosen from an editable list of activities like watching an episode of a Netflix show, going to the gym etc.

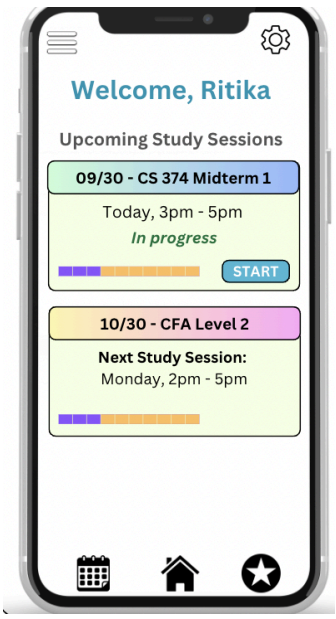
App Flow:

1. **Google Calendar Integration:** Students can link their personal or work calendars to the app. This will help the app identify free time slots for study or exam prep sessions.

2. **Study Habits Survey:** A brief survey that asks students about their preferred study methods. This information will be taken when a new user signs-up. For example, we might ask:
    - How long do you want your study sessions to be → 1, 2, 3 or/and 4 hours
    - What time(s) of day do you feel most productive studying? → Morning, Afternoon, Evening or/and Night
    - When do you typically go to sleep and wake up?
        - This question aims to prioritize user health by ensuring that study sessions don't interfere with essential rest periods
3. **Exam Setup:** Students input date and time for their upcoming exam and how many total hours they want to study for it.
4. **Study Plan Generation:** Based on the calendar, survey and exam setup a tailored schedule is generated. Users can choose to accept or reject study times.
5. **Study Time:** When the study session approaches, it's time to get locked in and start studying!
6. **Gamification:** Completing study sessions unlocks a reward!

Visual Sketch

Here's a basic sketch of what the home page/dashboard of our app will look like:



How We Address User Need Better than Existing Solutions:

- **Deeper Personalization:** Unlike other study planners (Google Calendar, Notion) that require manual input, LockedIn factors in parameters like your availability, individual study habits, preferred session durations and sleep cycle.

- **Gamification:** While many apps lack motivational features, LockedIn incorporates rewards to keep students engaged and encourage consistent study habits. While Habitica does have a rewards-based approach as well, it is a daily task manager and is not focused on the student and their study needs.

- **Promotion of Healthy Habits:** LockedIn prioritizes well-being by allowing users to block out sleep and rest periods, ensuring study schedules support a healthy lifestyle—something not emphasized in tools like Notion or Habitica.

Feasibility

- Google Calendar API Integration
    - This API allows us to pull preliminary user data such as existing events and free time slots, without requiring the user to manually input everything. By combining this data with user-provided study goals and criteria, we can automatically locate time blocks available for studying. This approach minimizes user effort and accelerates the development process by reusing existing infrastructure.
- Scheduling Libraries
    - OptaPlanner & OR-Tools
        - OptaPlanner is an embeddable planning engine which allows us to apply constraints on the calendar and create the 'scheduled blocks' and does not require any mathematical equation of the input.
        - OR-Tools is specifically Open source developed by Google that offers the capacity to find the best schedule for a set of tasks on a limited number of resources and take into account the dependencies between tasks. It allows for constraint programming like OptaPlanner and might be easier to integrate with the google calendar since it is developed by google as well.
- Scheduling APIs that work with Google Calendar
    - Nylas
        - The platform would allow us easier connectivity to the google calendar without requiring setup with google calendar's GCP and authentication. This is a possible route we have considered using to implement the scheduling functionality.

- We will monitor the user's studying and the hours they have accomplished from their total goal and use it to send a reminder to the user to take a break and send a reward to them to do.

We narrowed our original proposed app design to a simple exam study planner with an integrated rewarding system. The primary core functionalities that require the most work is connectivity with the user's calendar and integrating with their preferences and applying it. With the above resources we plan to look more in depth to which course may be more applicable and manageable for our application in the given time we have to accomplish the project.

After our presentation we still believe utilizing an API to create and manage scheduling would be a more effective tool for our application. Nylas has the ability to connect to the calendar as well as take in the user information for us so users can see the interaction between their preferences and the application.