



Not E-Lone

MEET THE TEAM



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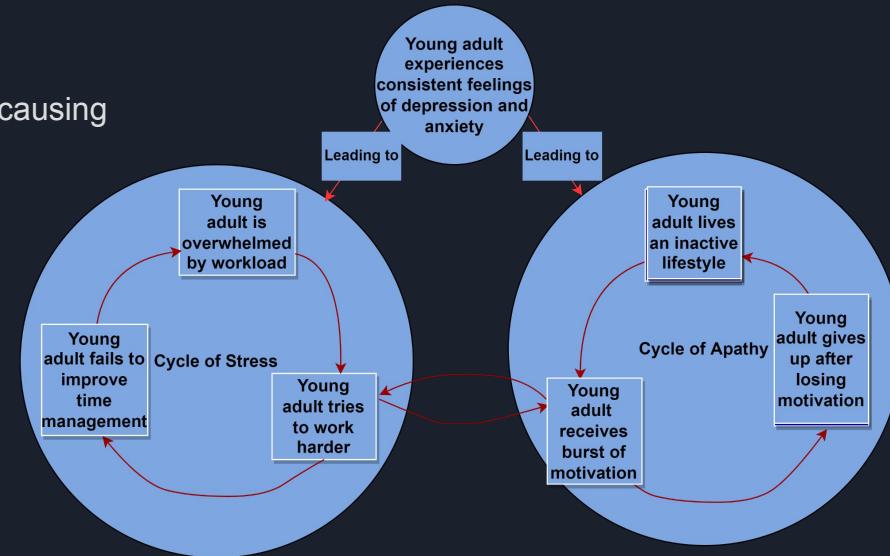
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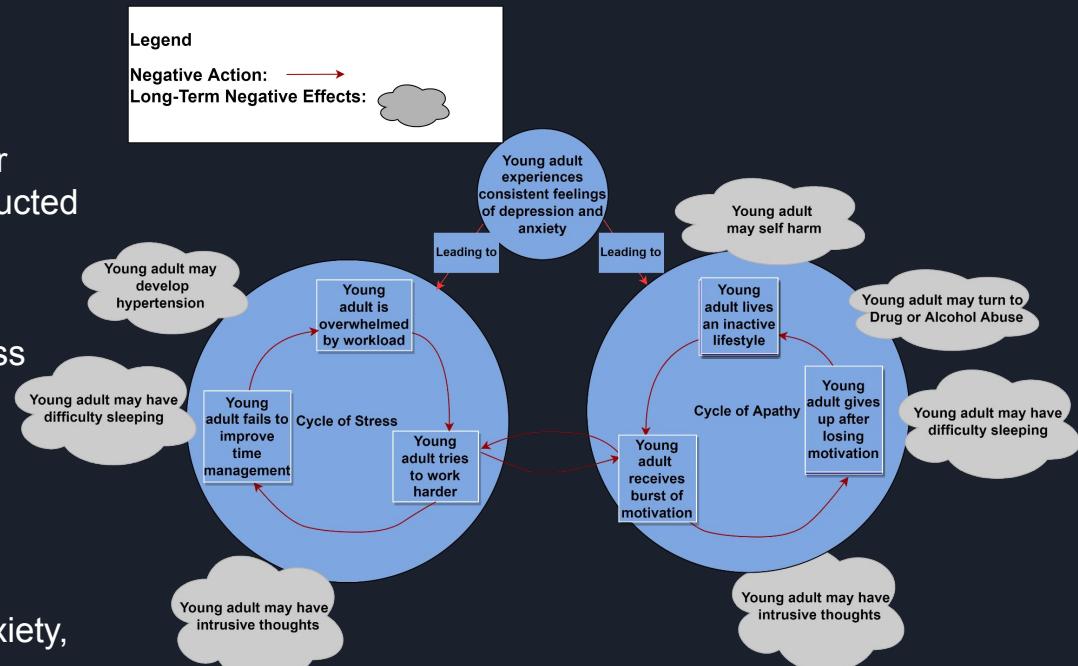
The Problem

Anxiety and depression can drain the motivation of a young adult, causing them to fail to complete their daily activities, and leading to further demotivation.



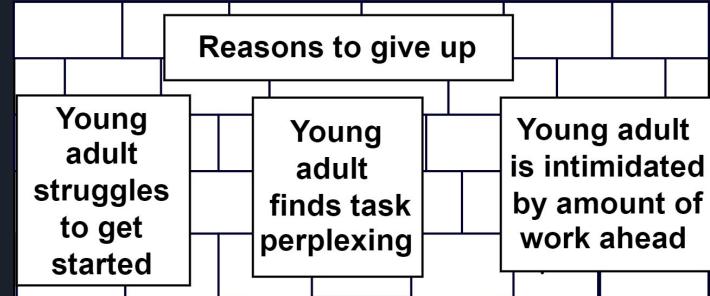
Background

- 48% of 18-25 year olds reported experiencing symptoms of anxiety or depression as part of a survey conducted in the summer of 2021[1].
- Immediate effects of feelings of stress include sleeplessness and difficulty focusing [2].
- If left untreated, these feelings can progress into physical and mental illnesses including hypertension, anxiety, and depression [2][3].

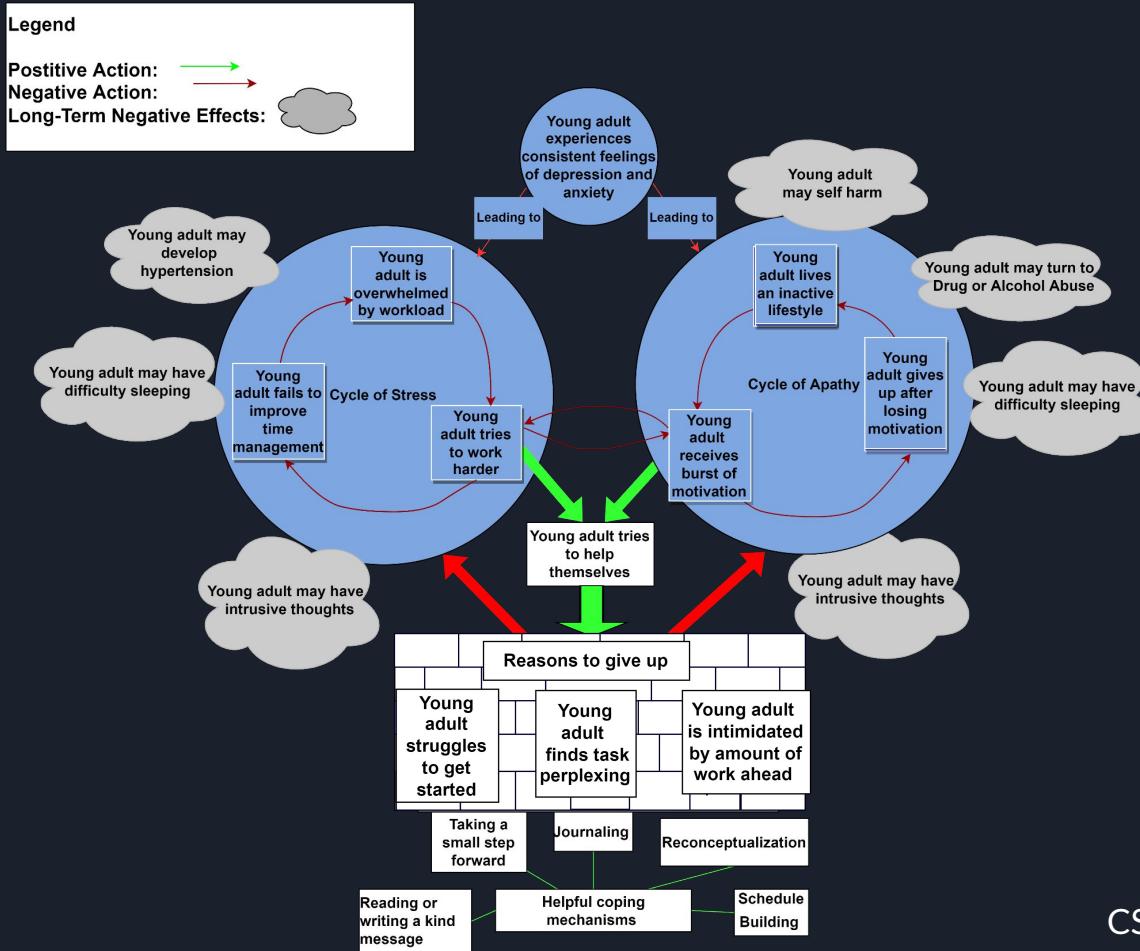


Problem Characterization

1. Conventional mental health solutions require money and meeting with a professional.
2. Young adults who have busy schedules may struggle to stay organized and complete their necessary daily tasks.
3. For Young adults who struggle to do anything at all, figuring out where to start can be overwhelming.

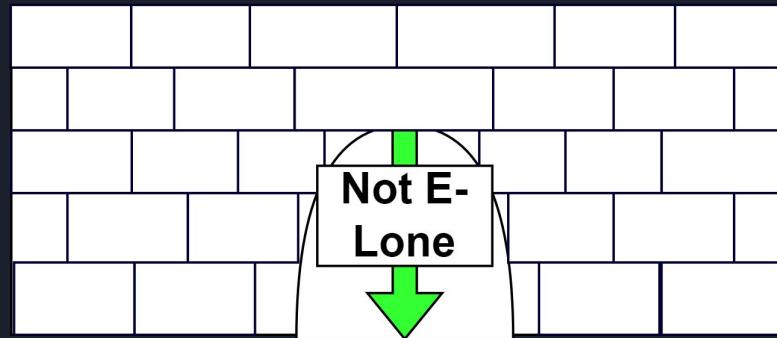


Current Process Flow



Solution Statement

The *Not E-Lone* app will provide a helping hand to young adults caught in a cycle of anxiety or depression, by presenting them with a choice between small, easy tasks that the young adults can complete immediately.



Solution Characteristics

Not E-lone will offer the following activities as part of a game:

- Note-passing
- First Step
- Journaling
- Reconceptualization
- Schedule Building



Note-passing

- Shifting a young adult's focus towards helping others can help reduce feelings of depression and anxiety [5].
- *Not E-lone* will encourage depressed or anxious young adults to write short, anonymous messages using a pool of words of support to randomly-selected young adults.
- The note-passing feature will also provide instant motivation to young adults by sending them messages of support throughout the day.

Improve
young adult's
mood

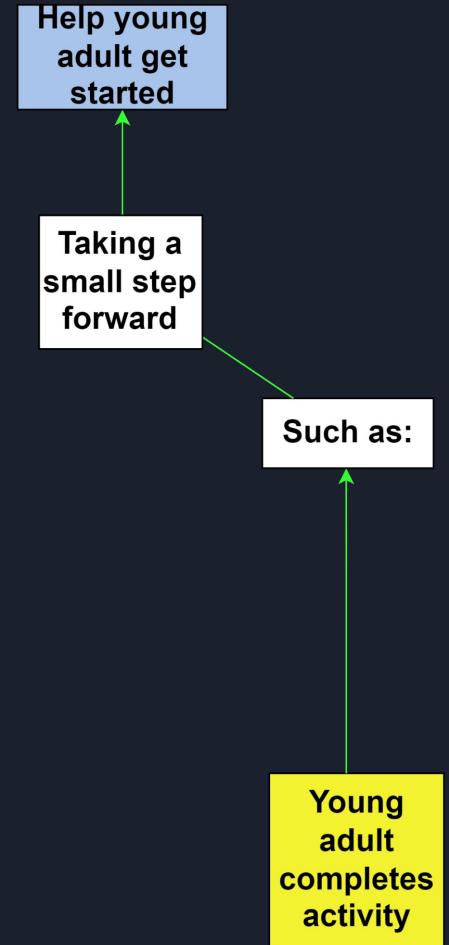
Reading
or writing
a kind
message

Such as:

Young
adult
completes
activity

First Step

- *Not E-lone's* First Step feature will help young adults struggling to complete their daily activities.
- Step-by-step templates for large problems will be provided to the young adult, helping them isolate and focus on completing one step at a time.
- The young adult will see a list of the tasks they have completed at the end of the day and feel a sense of accomplishment.
- *Not E-lone* can use the information to help generate suggestions in the young adult's schedule.



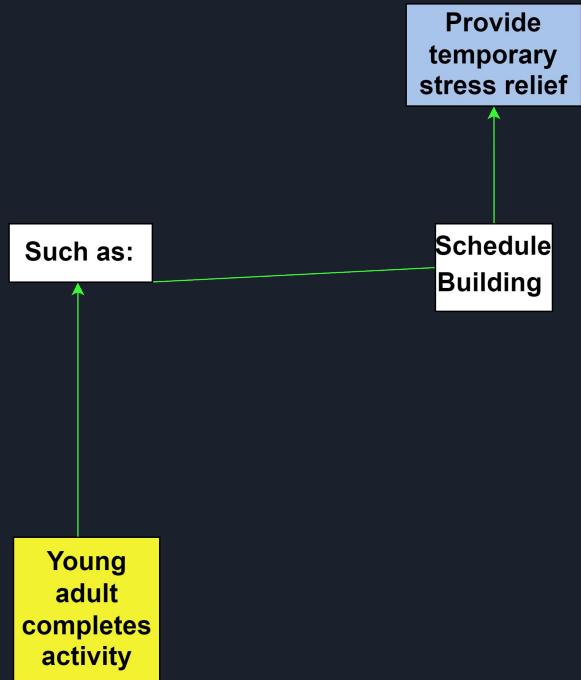
Journaling

- Not *E-lone's* journaling activity will incentivize self-expression, a common therapeutic technique shown to ease feelings of anxiety and depression [6].



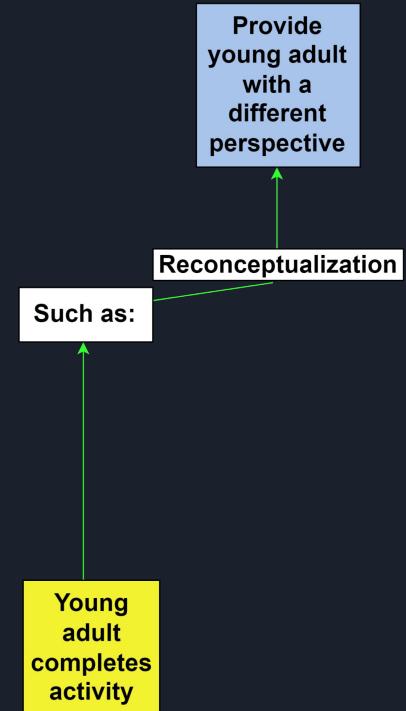
Schedule Building

- Not E-lone will streamline task management by providing those individuals with a quick schedule-builder.
- Focusing on completing a goal can sometimes increase a young adult's stress levels and reduce their ability to focus on that goal [7].
- Organizing a list of tasks can help relieve that stress by shifting the young adult's focus towards creating a plan to complete the overall goal, instead of thinking about how the tasks are unfinished [7].



Reconceptualization

- Reconceptualization involves presenting a person with a different way of thinking, and is another tool used by therapists to treat their clients [8].
- *Not E-lone* will provide young adults with parables and analysis from different schools of thought.



Gameplay

Not E-lone will present each activity as part of a game, with a system of challenges and rewards for completing each activity. This system will help attract young adults who would normally find these activities unappealing, as well as give them a reason to practice each activity on a regular basis.

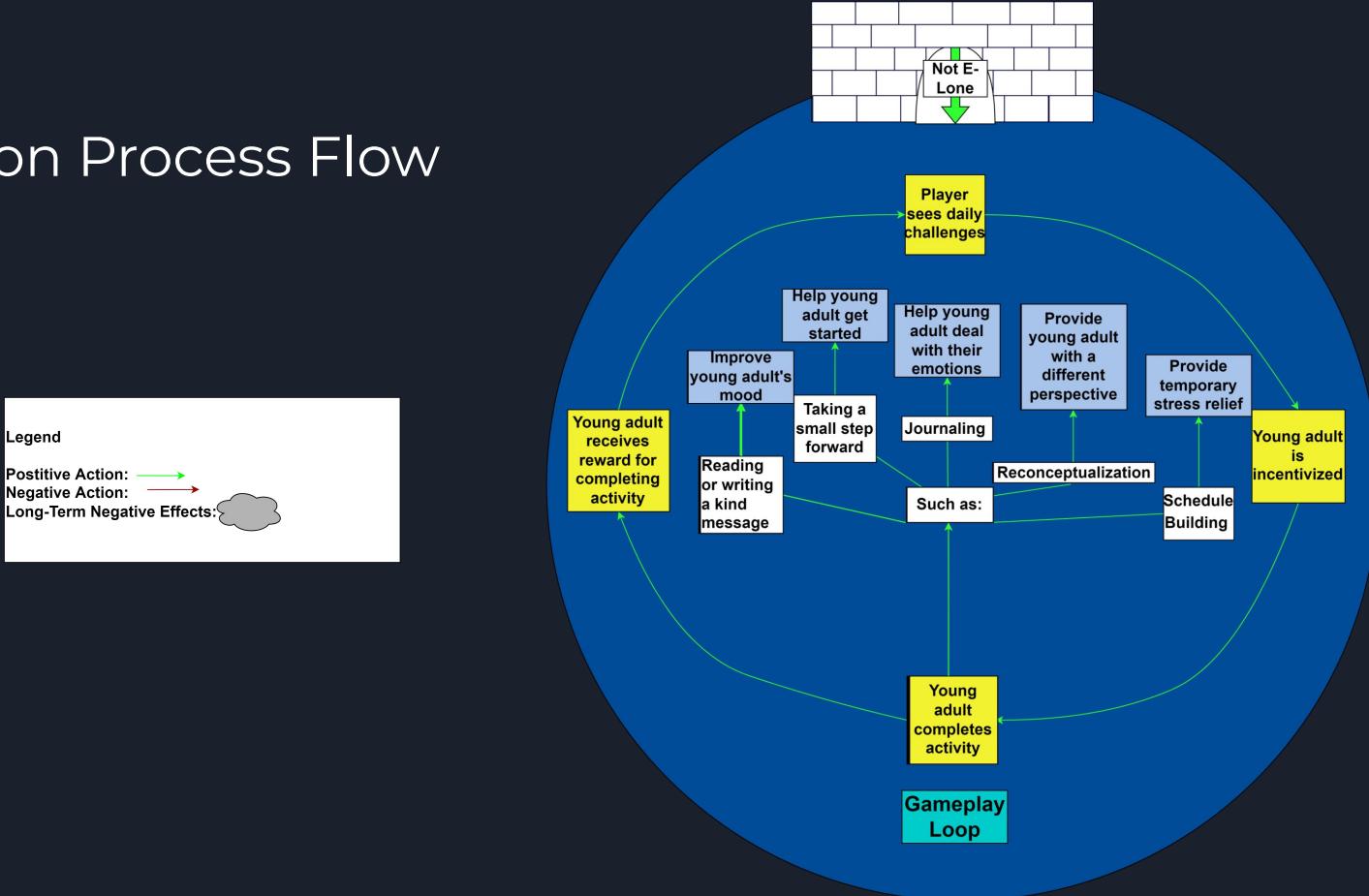


What Not E-lone Will Not Do:

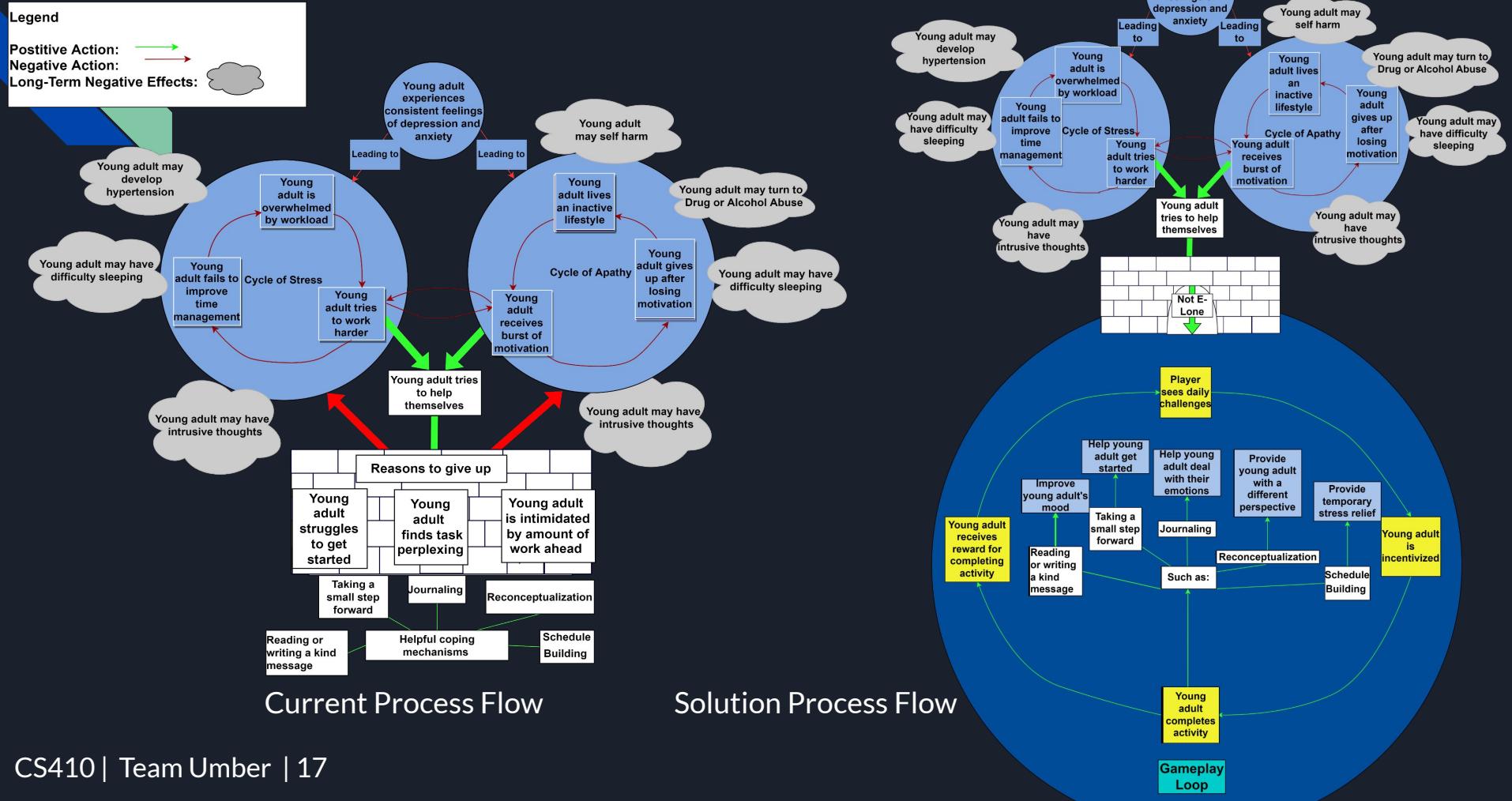
- Not E-lone will not serve as a replacement for professional psychological help.
- Not E-lone will not provide emergency services.
- Not E-lone will not collect information without consent.



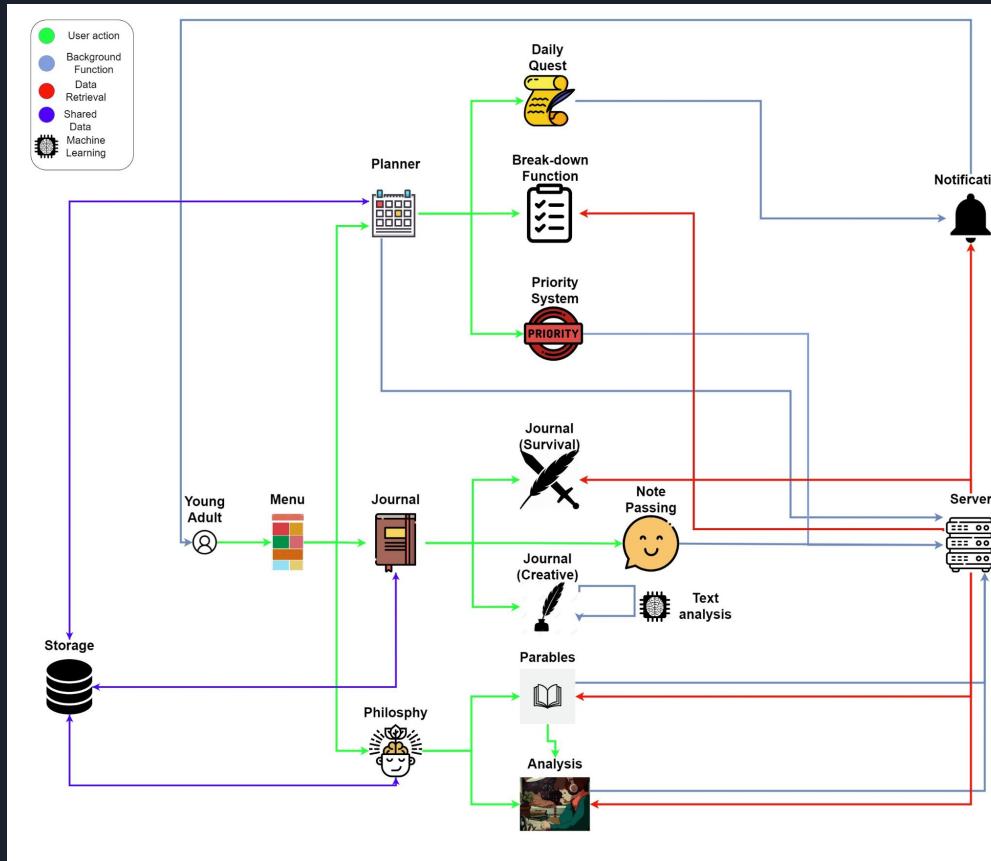
Solution Process Flow



Current Process Flow vs Solution Process Flow

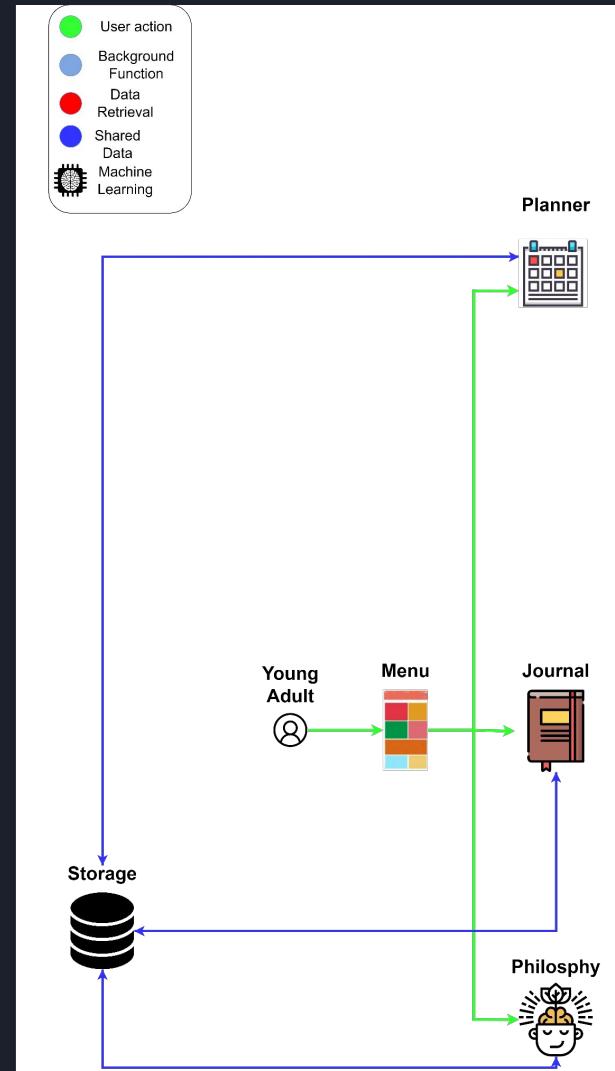


Major Functional Component Diagram



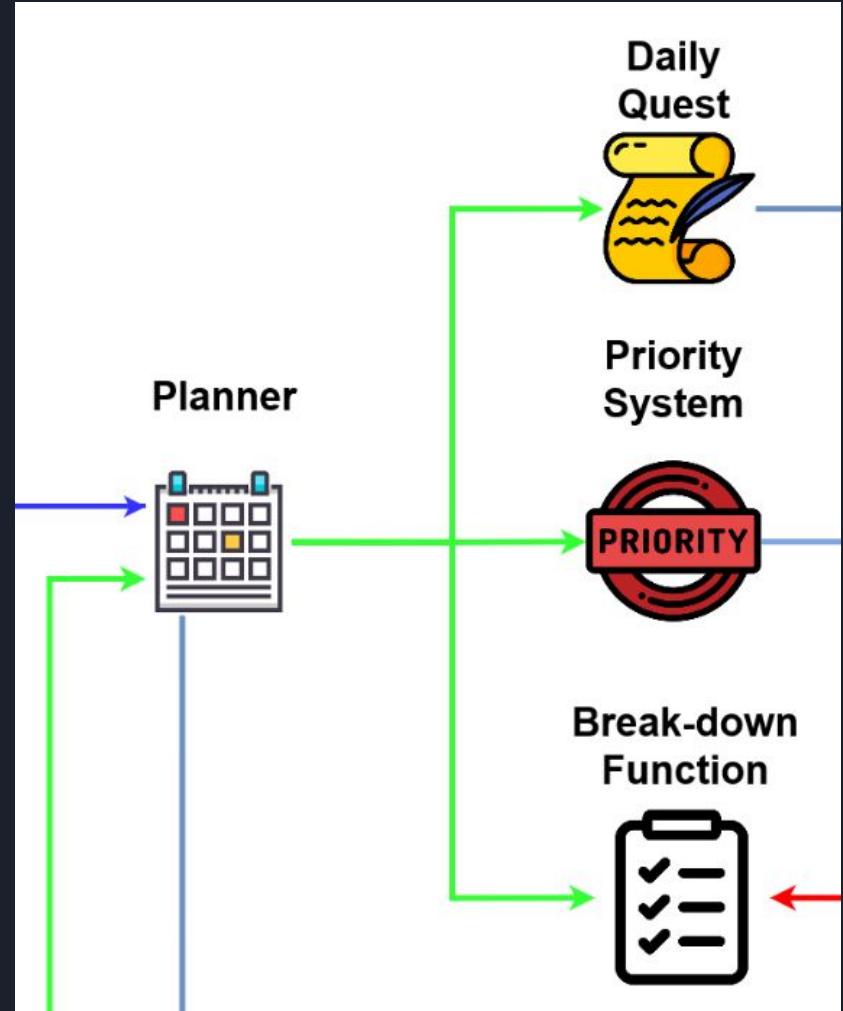
Core Functions

- 3 Options from the Menu
- All functions share data for individualized Experience
- All of it will be presented in a game-like format



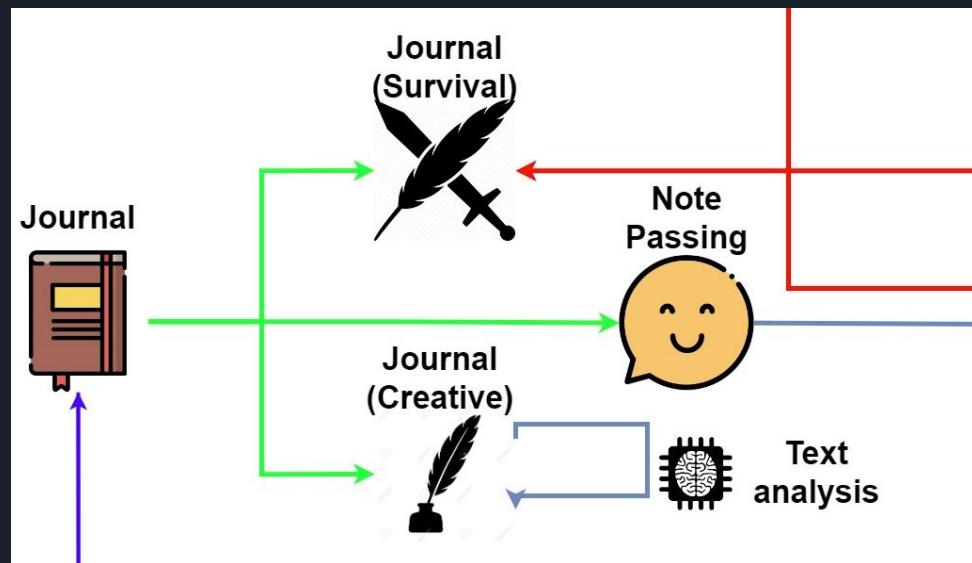
The Planner

- Planner is a teacher, not a tool
- *Daily Quest* encourages a random task
- Priority System dominates visuals
- *Break Down Function* assists with multi-step problems



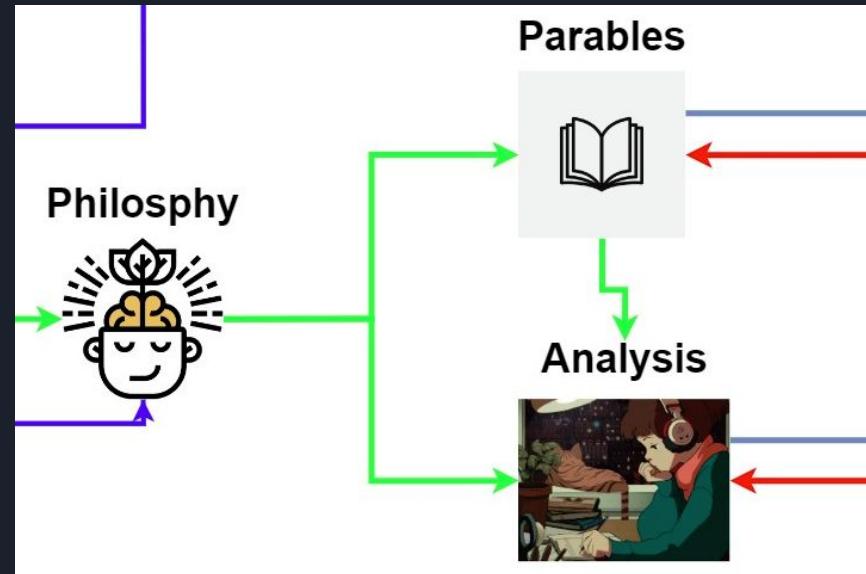
Journal

- Journal's main goal is to encourage Free writing
- *Survival mode* gives a random Prompt
- *Creative mode* will analyze text for future use
- *Note Passing* for random acts of kindness



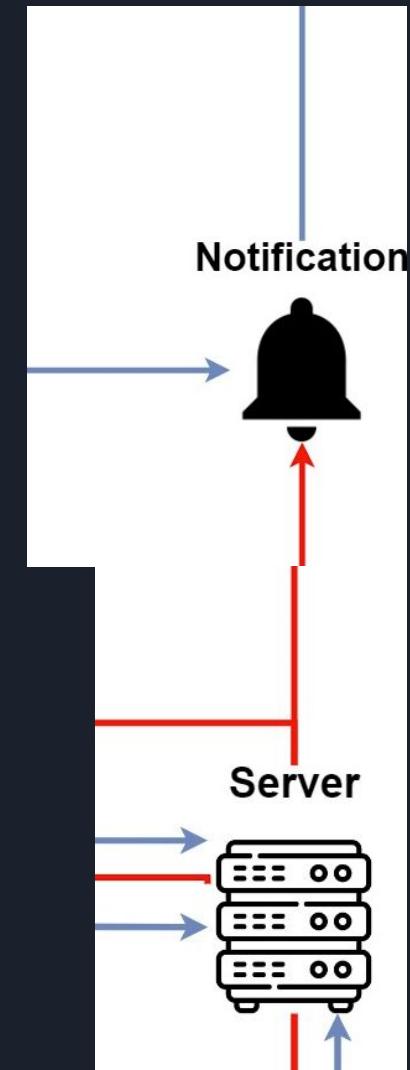
Reconceptualization

- *Parables* offer short stories with Associated philosophy themes
- *Analysis* allows for further exploration in specific branches of philosophy

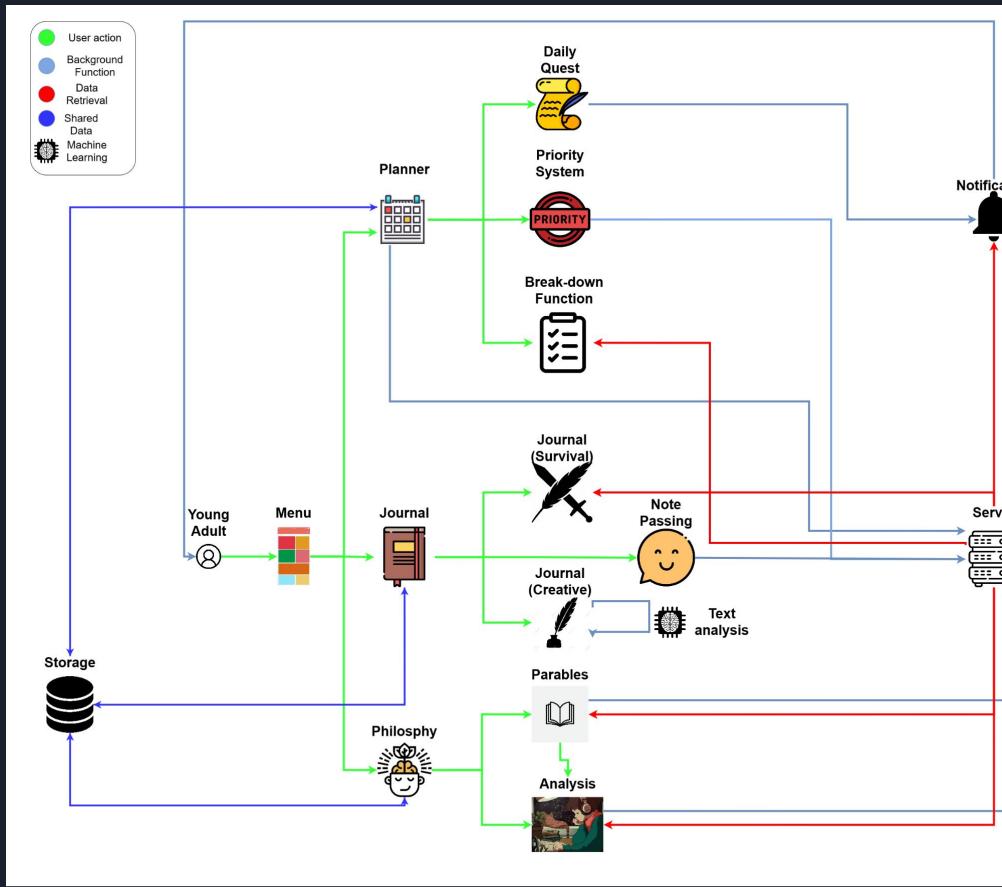


Server and Notifications

- The server will restrain from holding onto personal information
- Main use is for notifications or to retrieve data
- Possible Uses to share planning templates or questionnaires to improve machine learning capabilities
- Most information communicated to the server will be tagged



Major Functional Component Diagram



Risk Matrix (Consumer)

| Risk Matrix | | Impact | | | | |
|-------------|-----------|----------|-----|--------|------|-----------|
| | | Very Low | Low | Medium | High | Very High |
| Likelihood | Very High | | | | | |
| | High | | | C3 | C2 | |
| | Medium | | | | C1 | |
| | Low | | C1M | C3M | C2M | C4 |
| | Very Low | | | | | C4M |

Consumer Risks:

- C1: Consumers feel the application set up is too complex
- C2: Consumers become less motivated to keep software in use
- C3: Application doesn't encourage consumers enough to maintain entire routine
- C4: Inspirational message function is used maliciously

Risk Mitigations:

- C1M: Application will provide an option for "generic" preferences that allow consumers to bypass detailed schedule customization
- C2M: Push notifications and game "rewards" offered to consumer if they repeatedly use the application
- C3M: Application rewards users for each consecutively completed tasks, and penalizes consumer's game progress if a task is missed
- C4M: Have messages be selected from a pool of approved words

Risk Matrix (Technical)

| Risk Matrix | | Impact | | | | |
|-------------|-----------|----------|-----|--------|------|-----------|
| | | Very Low | Low | Medium | High | Very High |
| Likelihood | Very High | | | | | |
| | High | | | | | |
| | Medium | | | T2, T3 | | |
| | Low | T1 | T3M | | | |
| | Very Low | T1M | | T2M | | |

Technical Risks:

- T1: Consumer doesn't possess technical skills needed to operate the app
- T2: Auto generated scheduling algorithm ignores some consumer preferences
- T3: Quests and goals may add to stress instead of relieving it

Risk Mitigation:

- T1M: Application will provide a full tutorial on how to properly set up the application
- T2M: Ensure algorithm re-evaluates all preferences before posting consumer schedule
- T3M: Users can earn a "pass on this quest" voucher, allowing them to take a break when needed

Competition Matrix

| | Not E-lone | Superbetter | Habitica | Habitify | Fabulous | HabitBull |
|--|------------|-------------|----------|----------|----------|-----------|
| Targeted towards people experiencing feelings of depression and anxiety | | | | | | |
| Uses game mechanics such as challenges and rewards for completing activities | | | | | | |
| Encourages people to write uplifting messages to one another | | | | | | |
| Offers stories to help give the person a new perspective | | | | | | |
| Promotes self-expression through journaling | | | | | | |
| Provides a way to help the person focus on a single task | | | | | | |
| Sends motivational quotes to person | | | | | | |
| Tracks progress, habits, and goals through a schedule | | | | | | |
| Uses reminders | | | | | | |

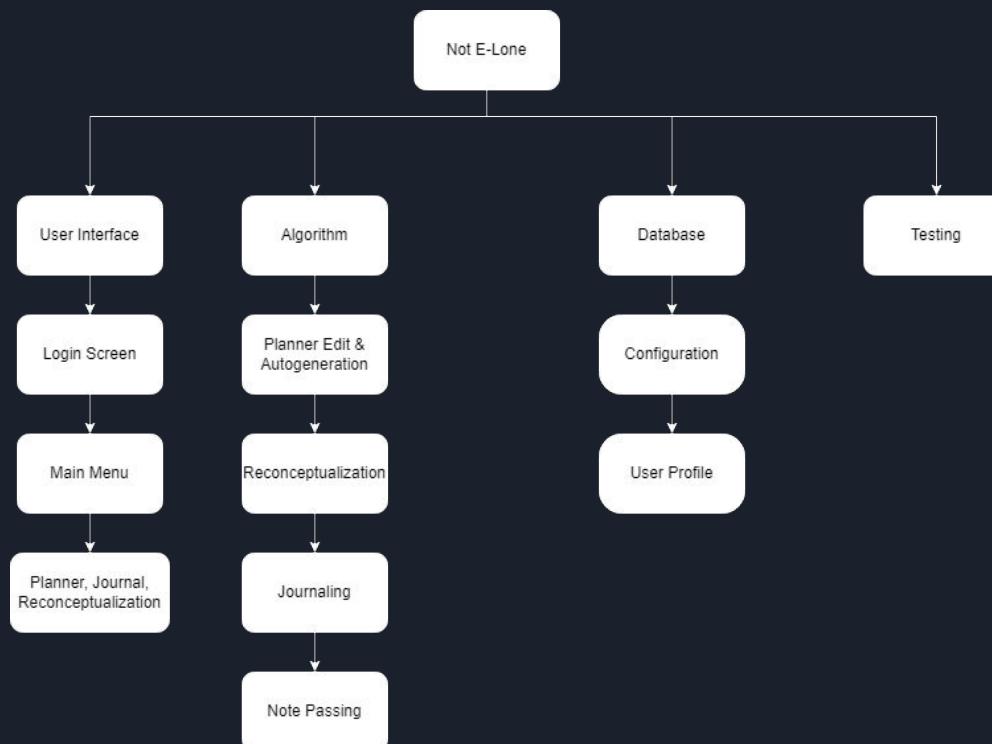


: Competitor has a feature

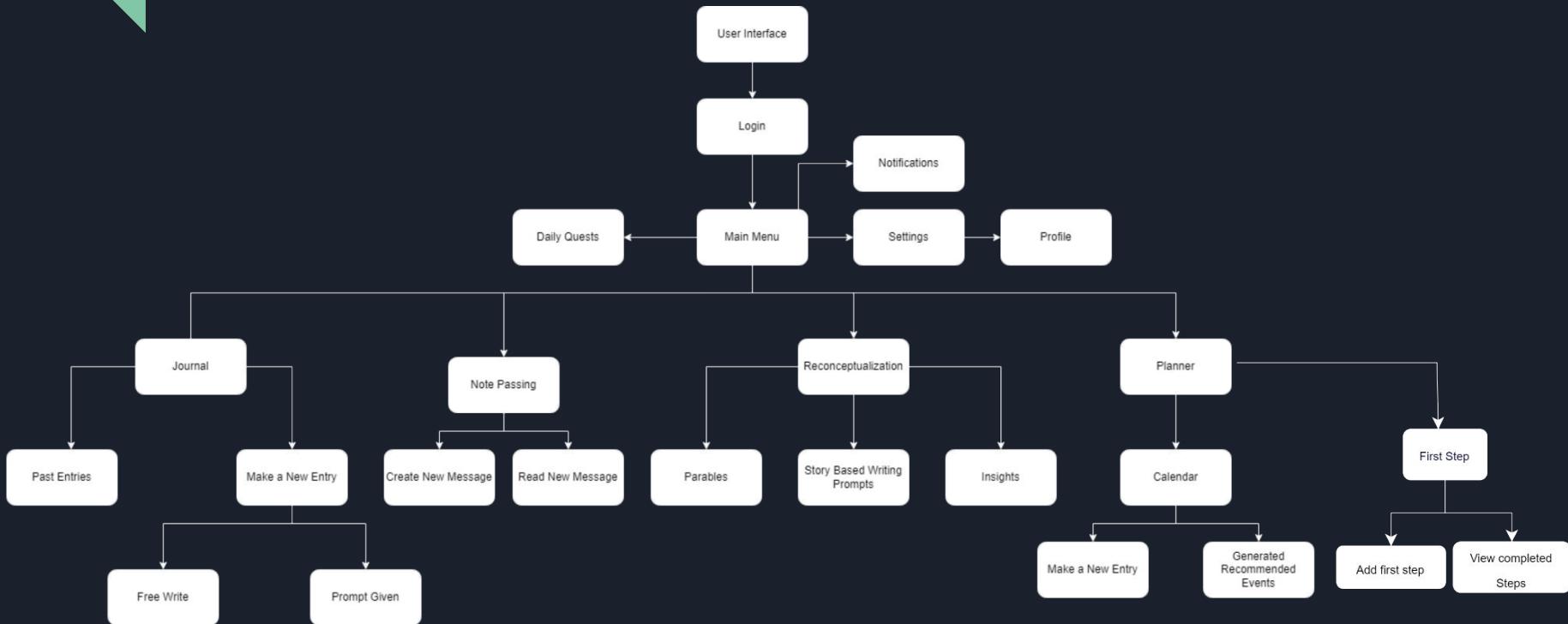


: Competitor lacks a feature

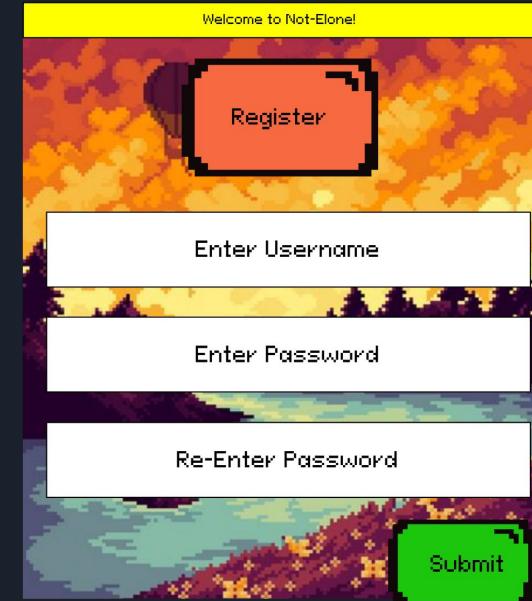
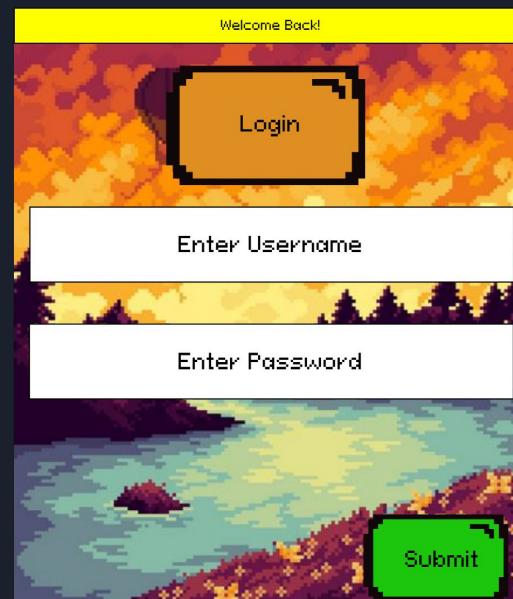
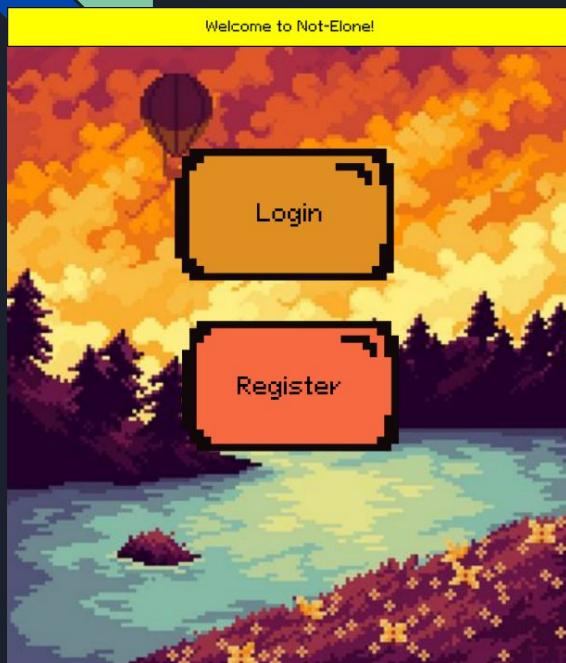
Work Breakdown Structure - Overview



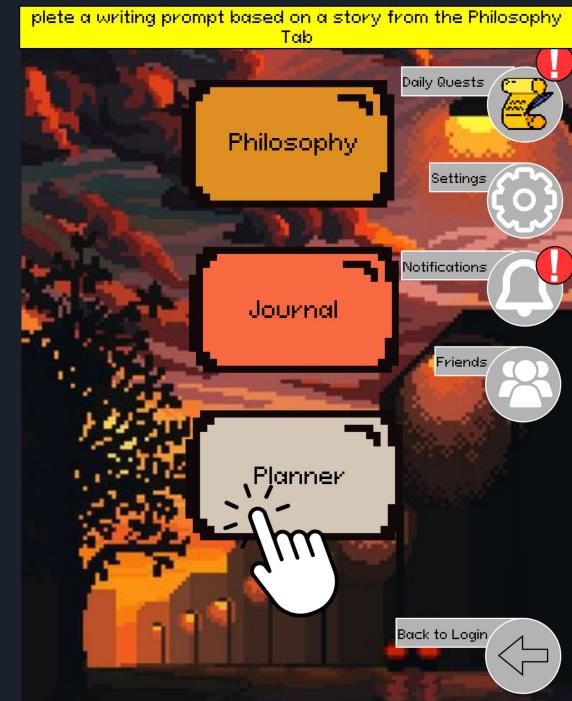
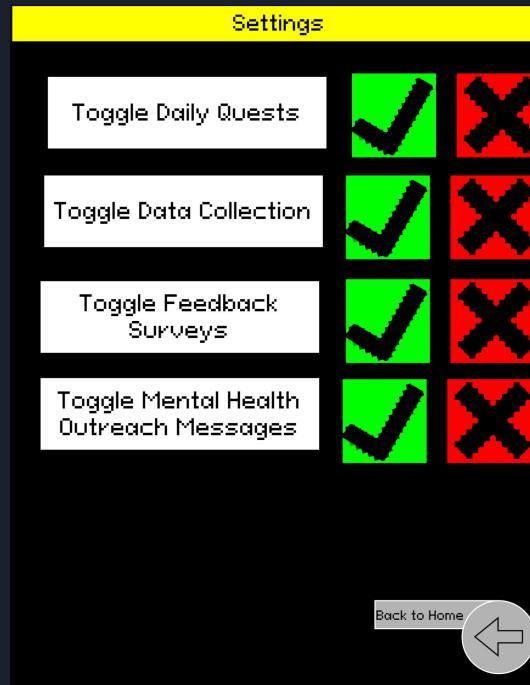
Work Breakdown Structure(User Interface)



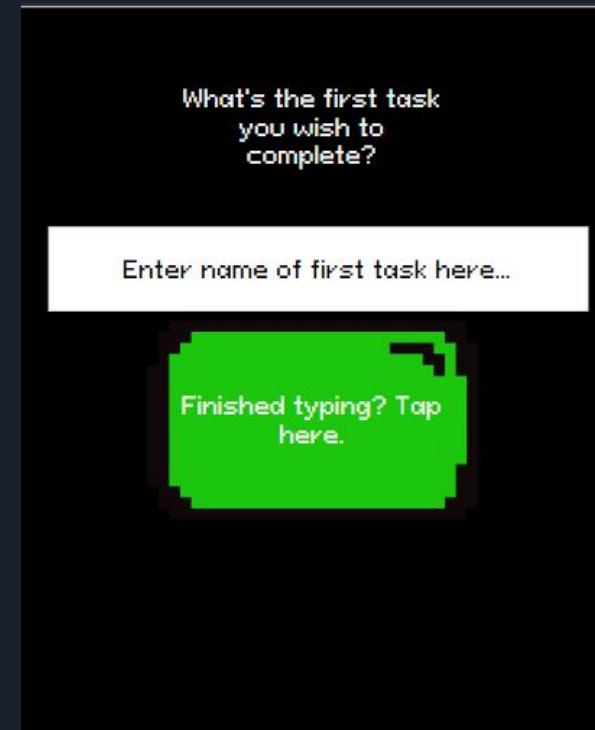
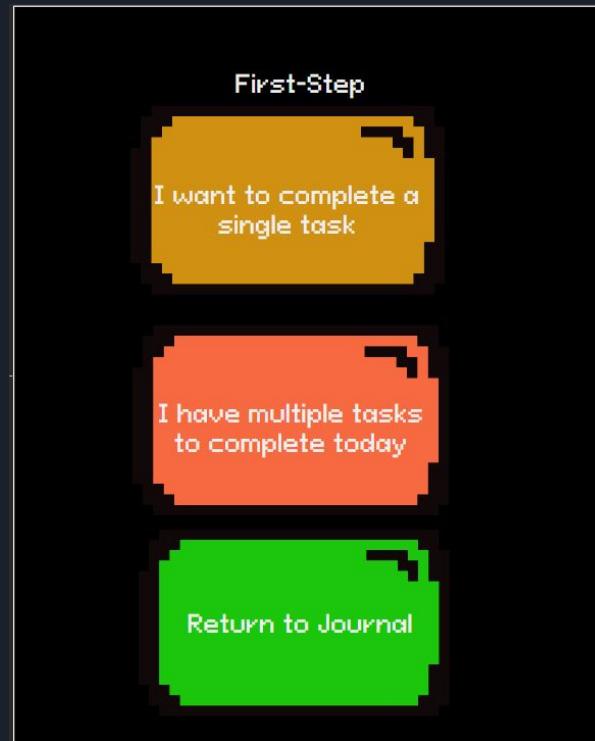
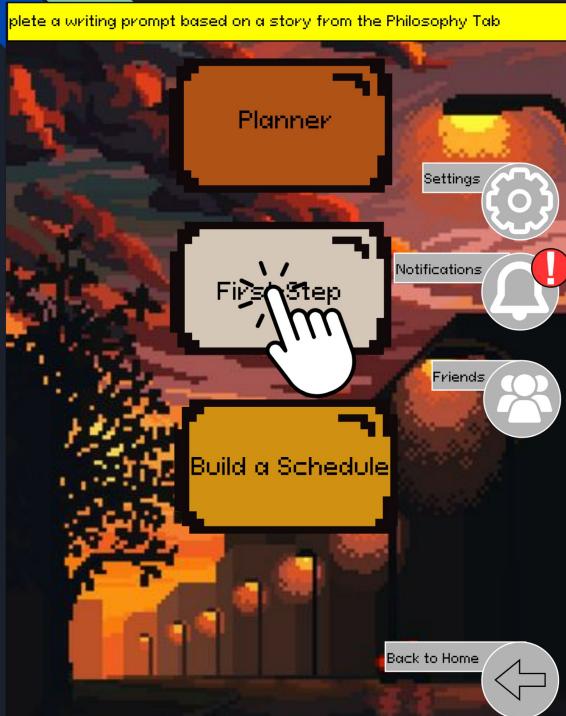
UI Mockups - Login



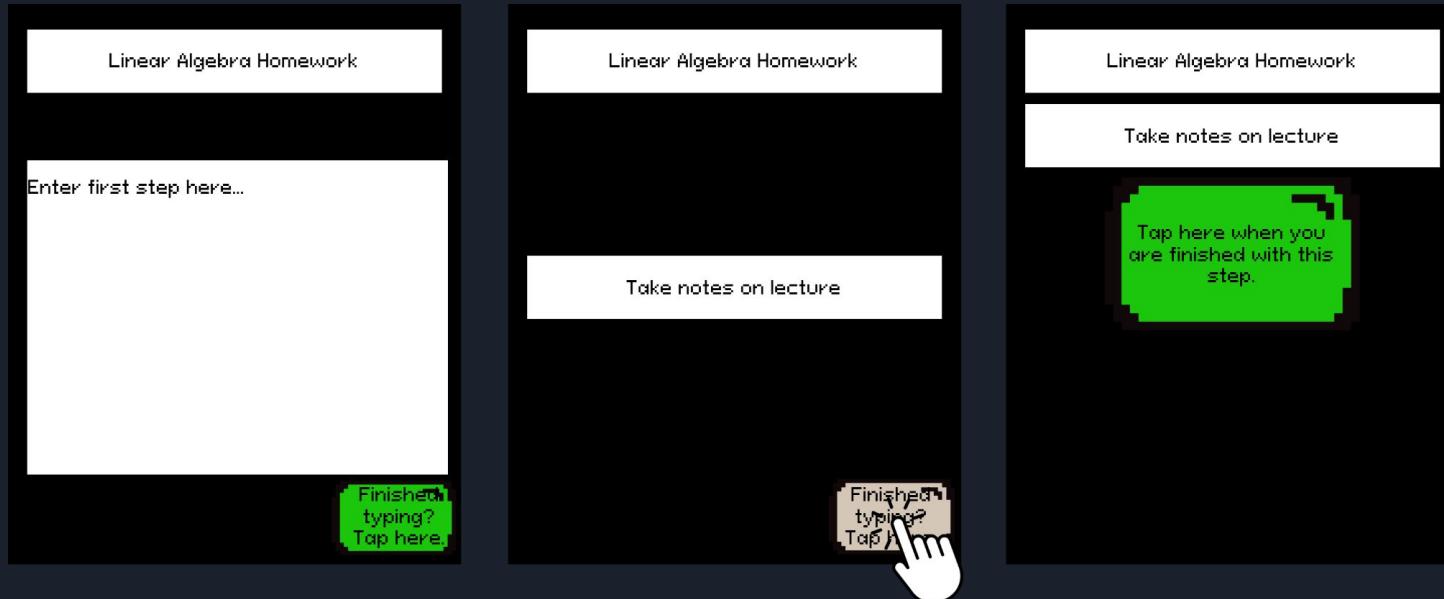
UI Mockups - Home Screen



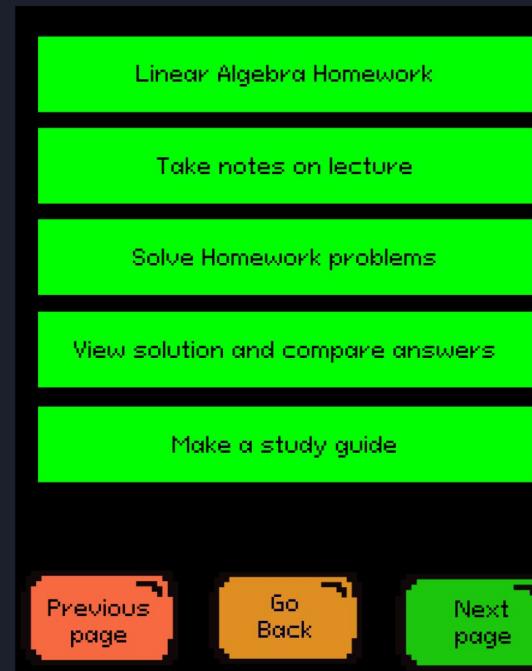
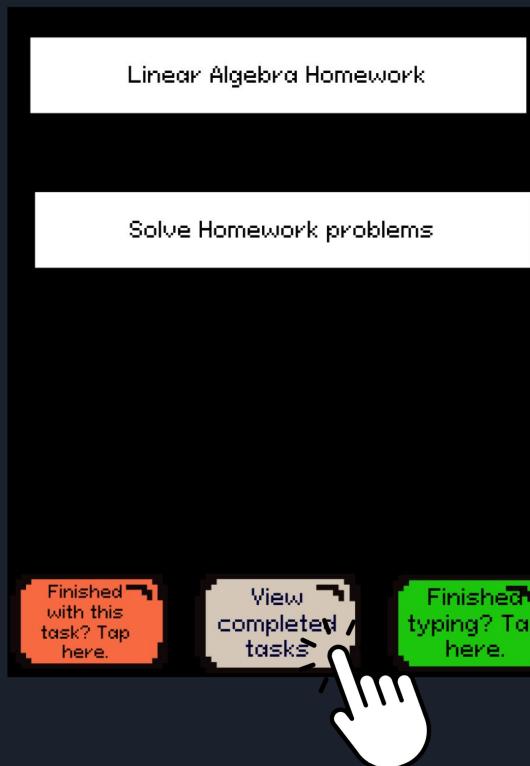
UI Mockups - First Step Submenus



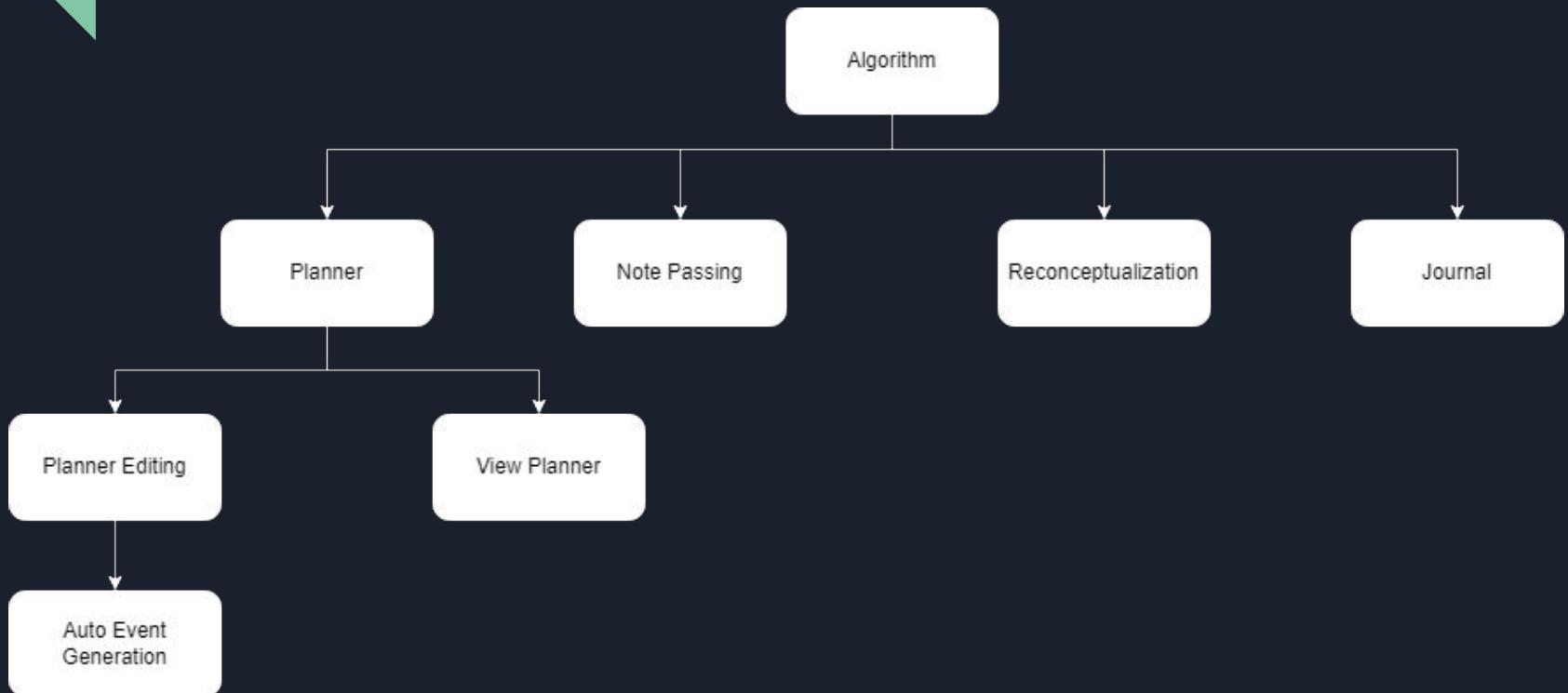
UI Mockups - First Step Continued



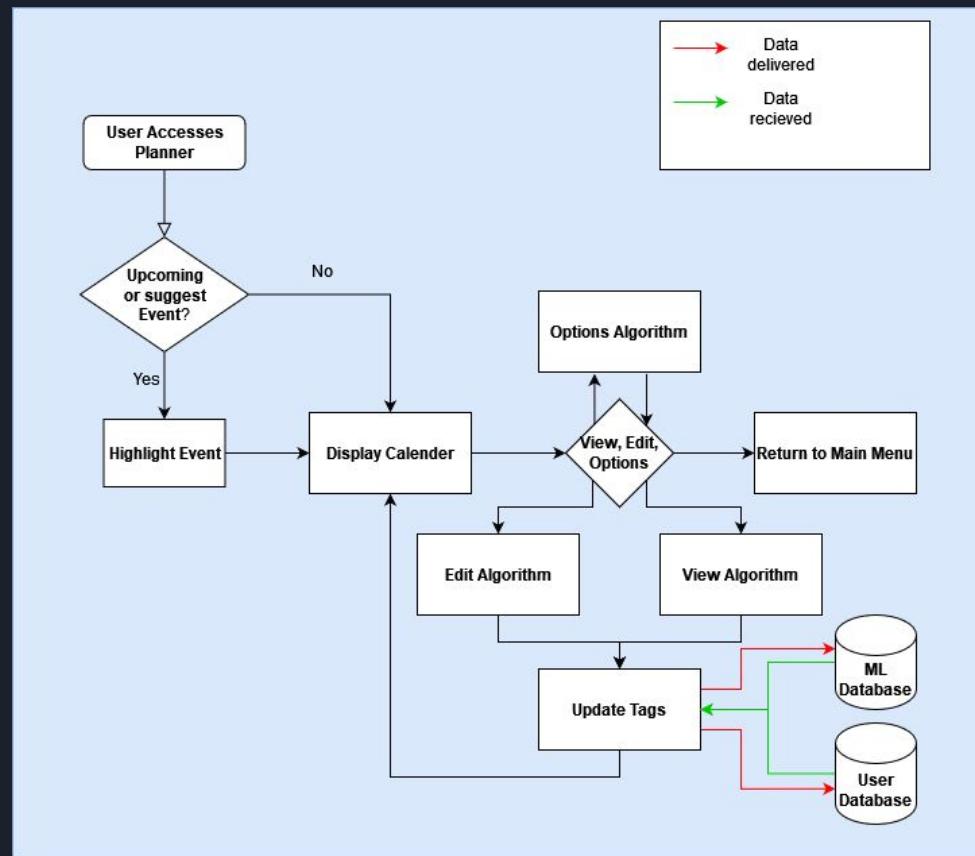
UI Mockups - First Step Continued



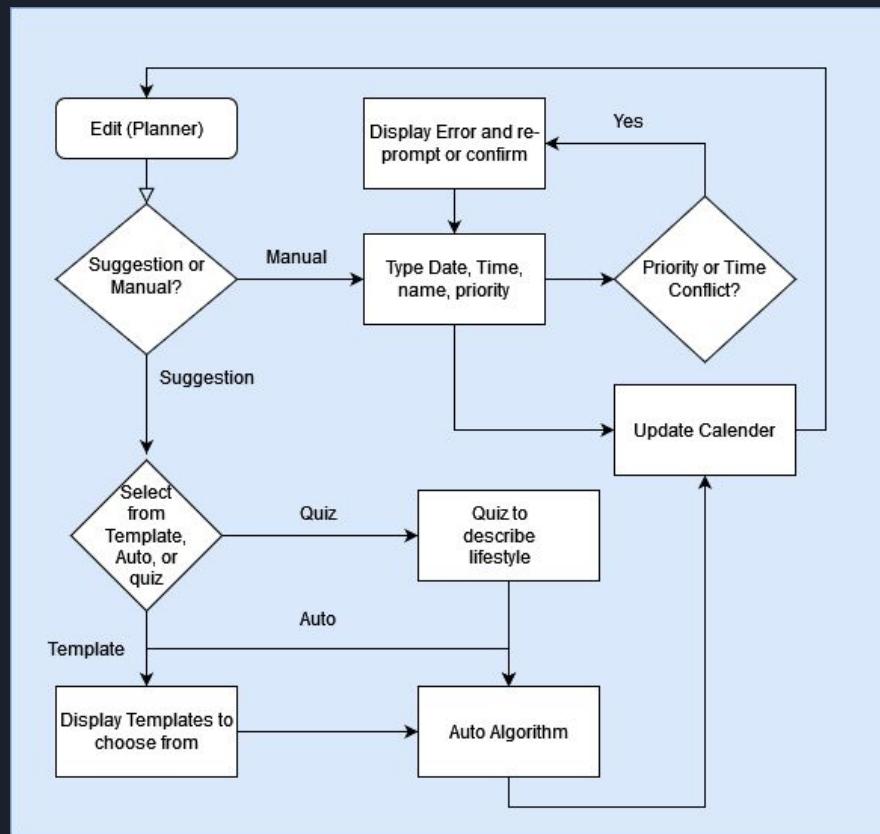
Work Breakdown Structure (Algorithm)



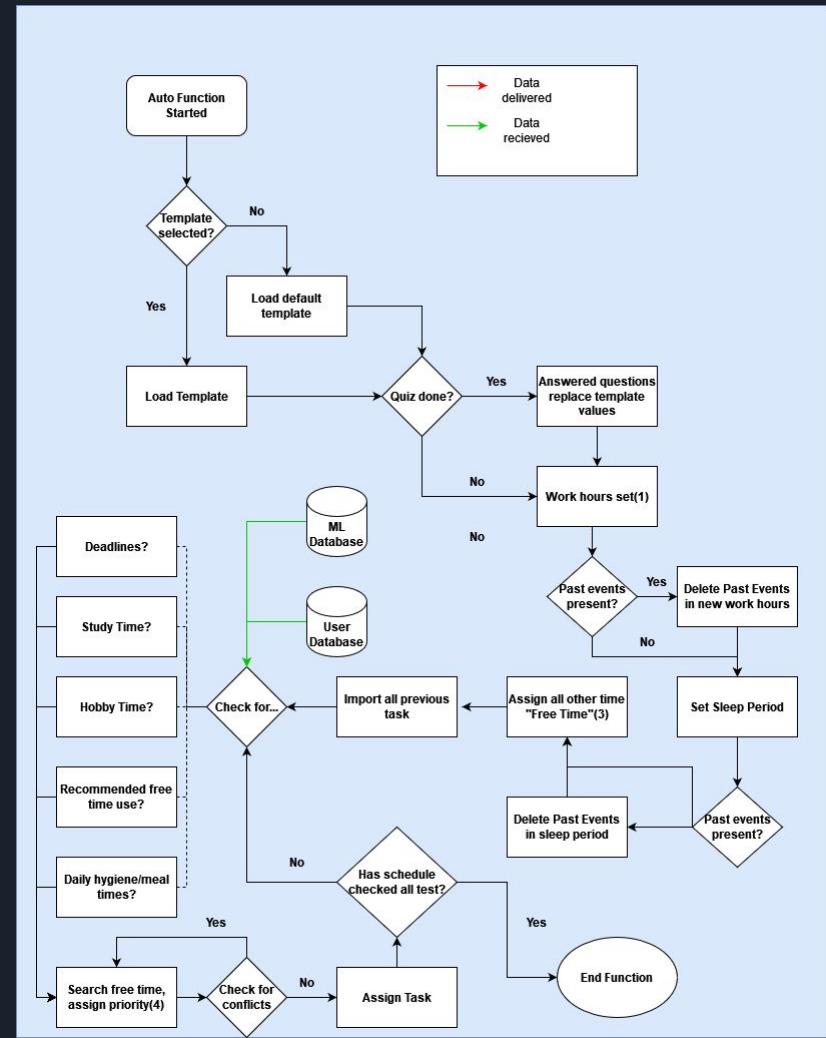
Planner Algorithm

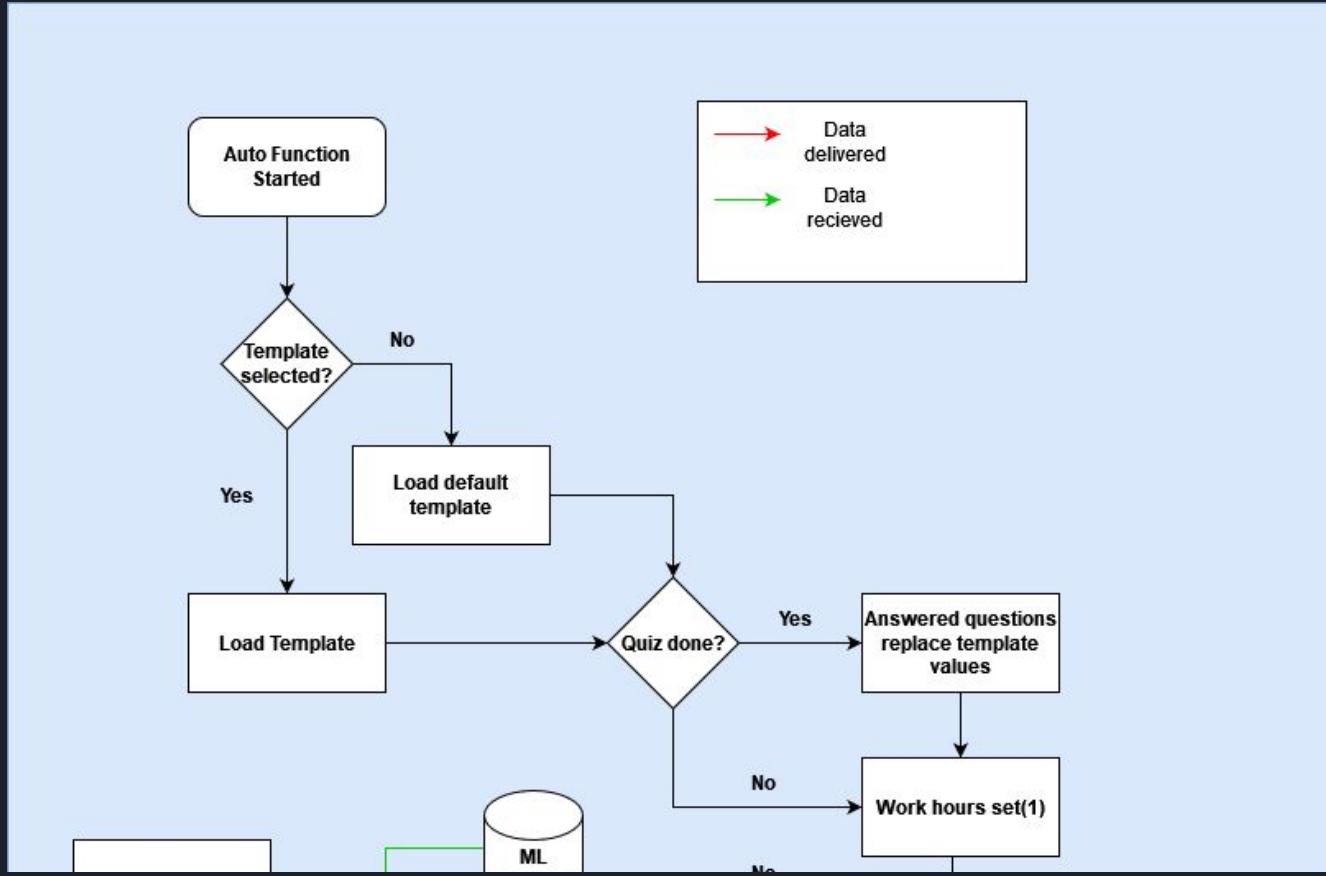


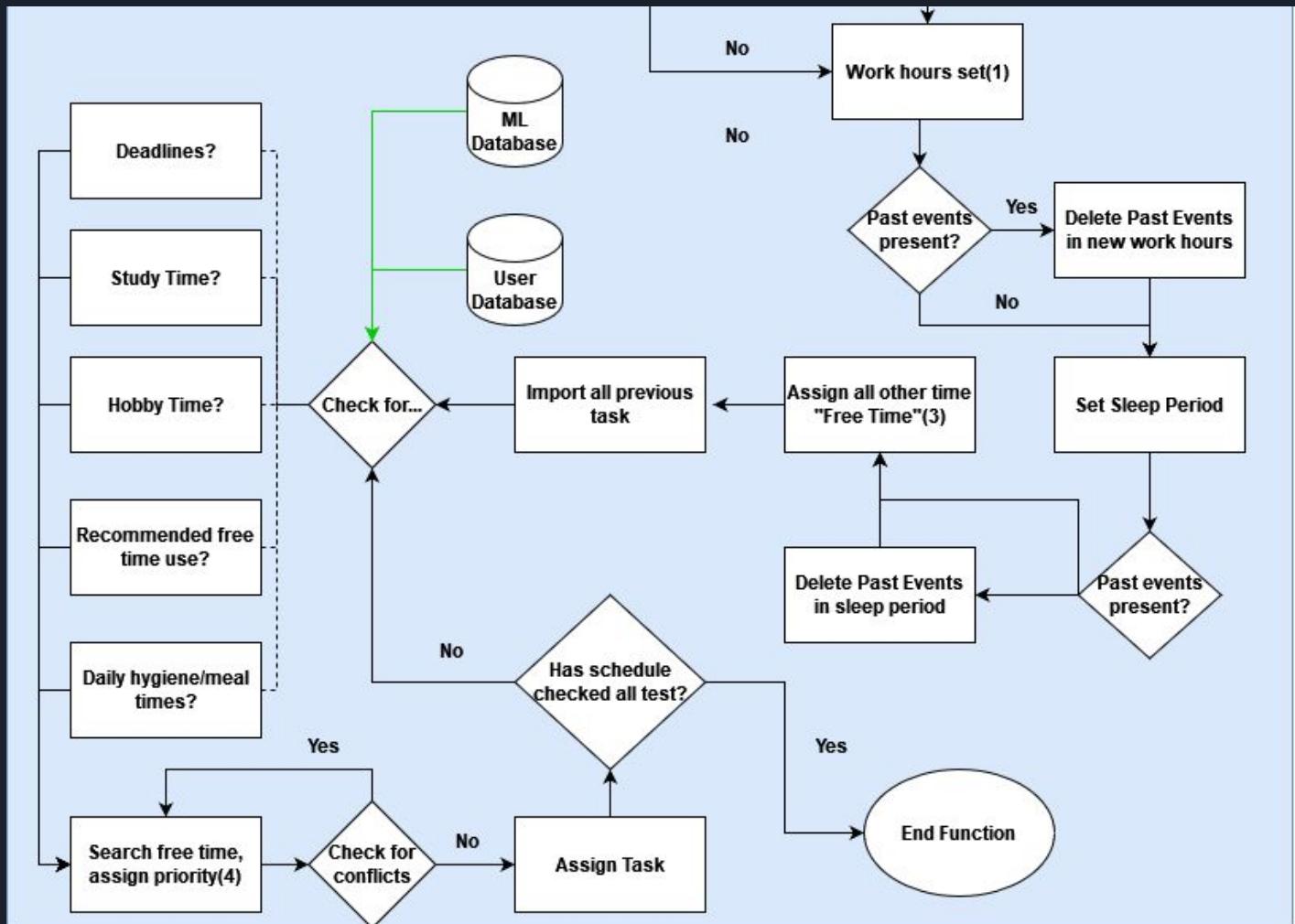
Edit Algorithm



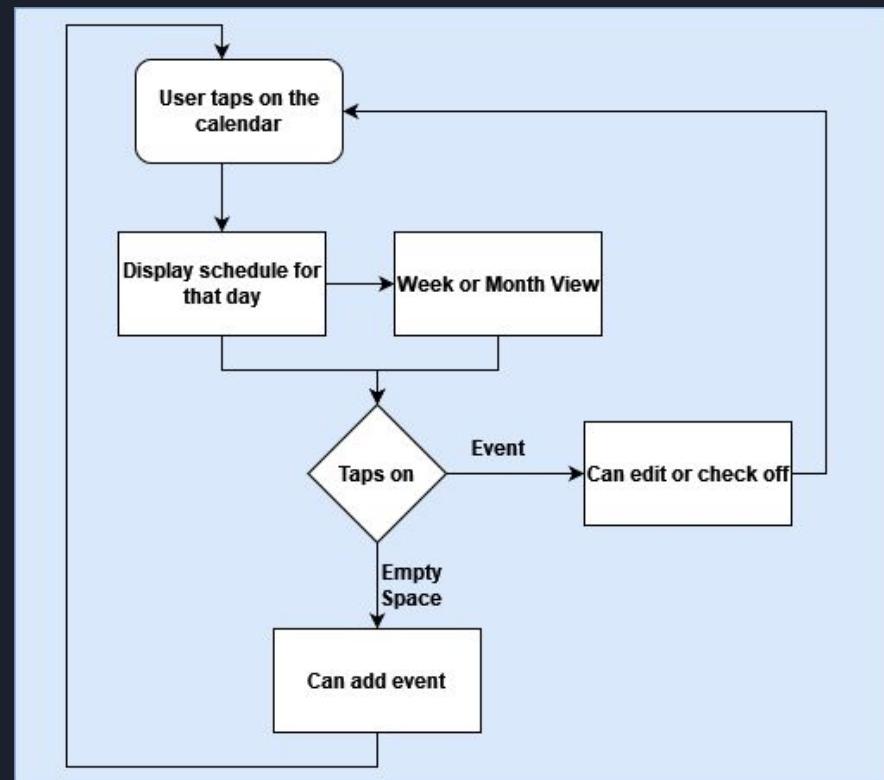
Auto Event Generation Algorithm



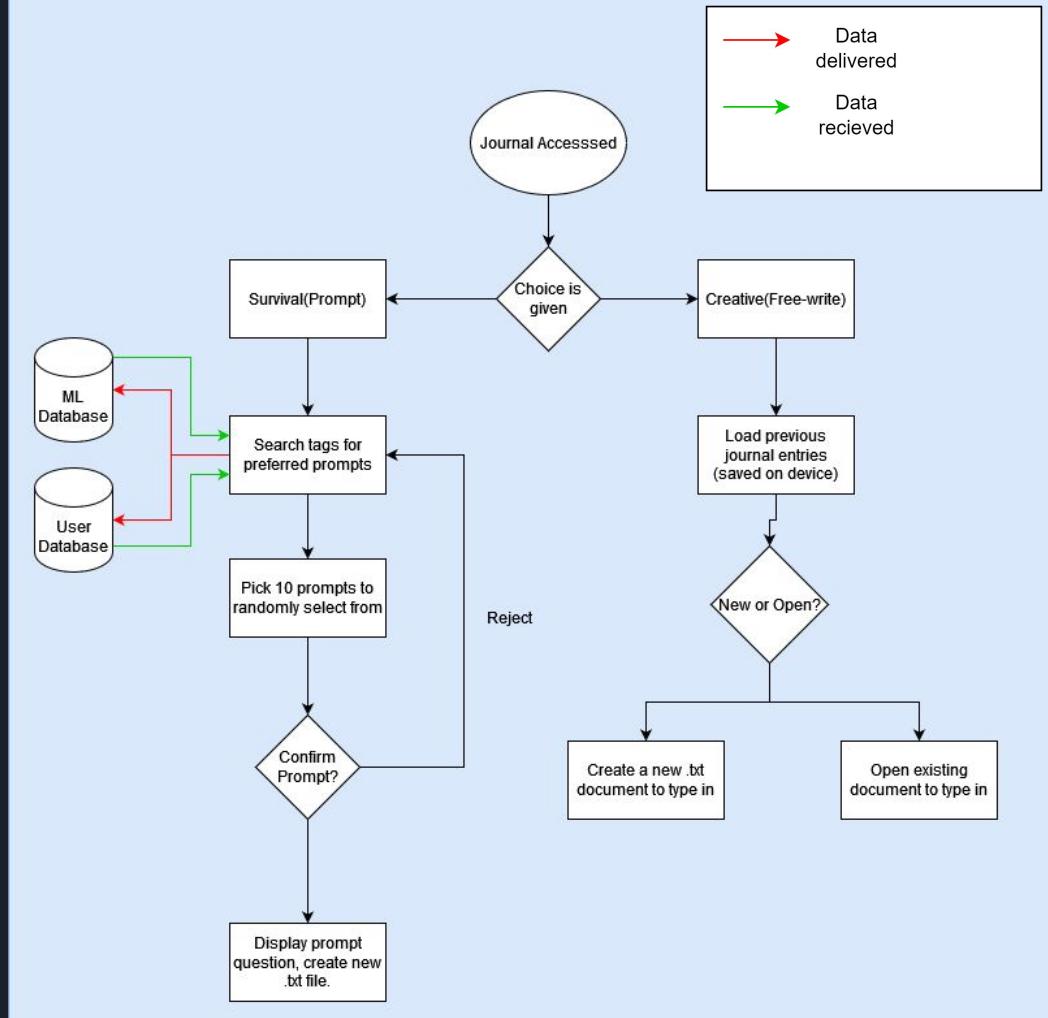




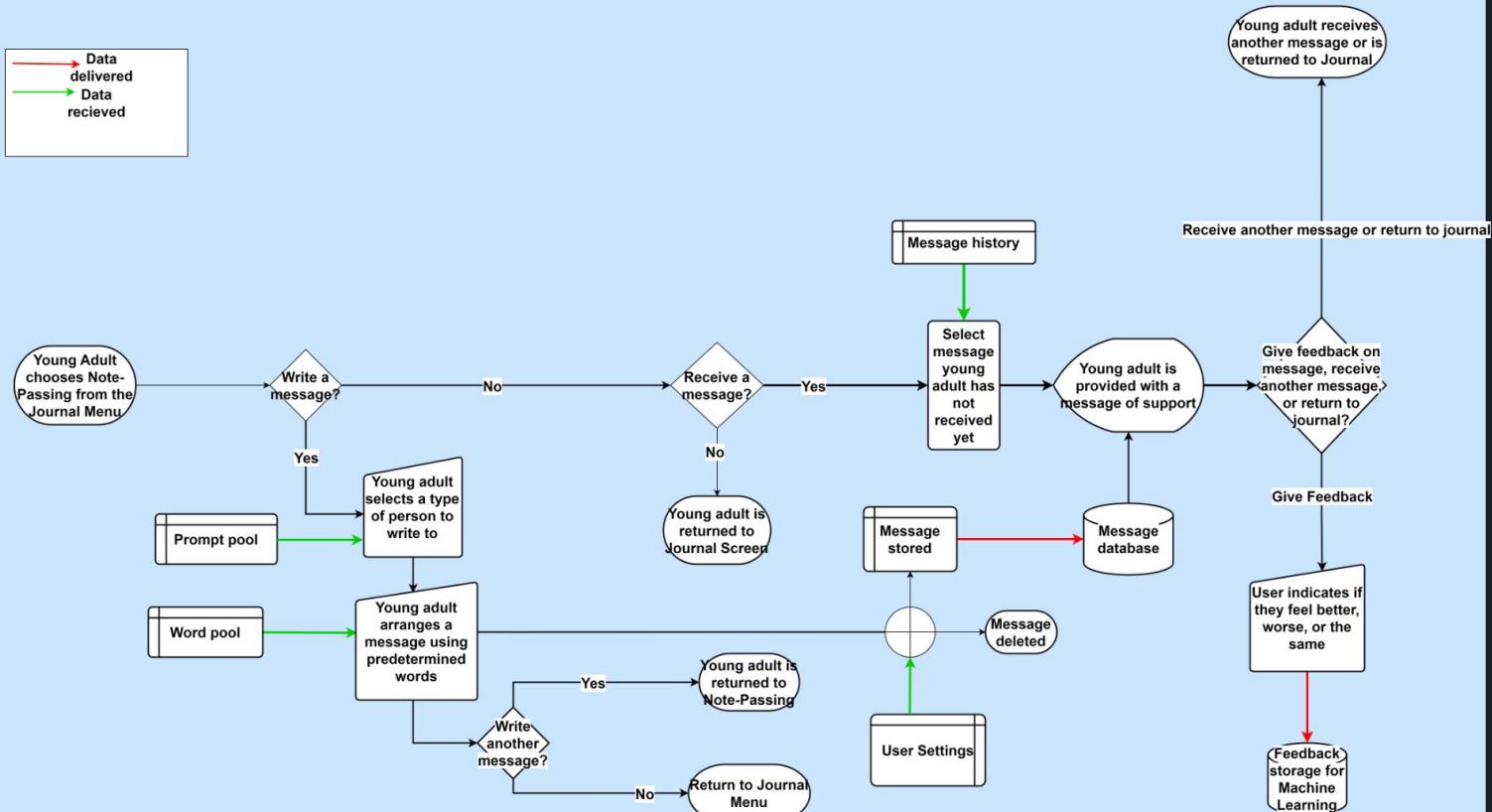
View Algorithm



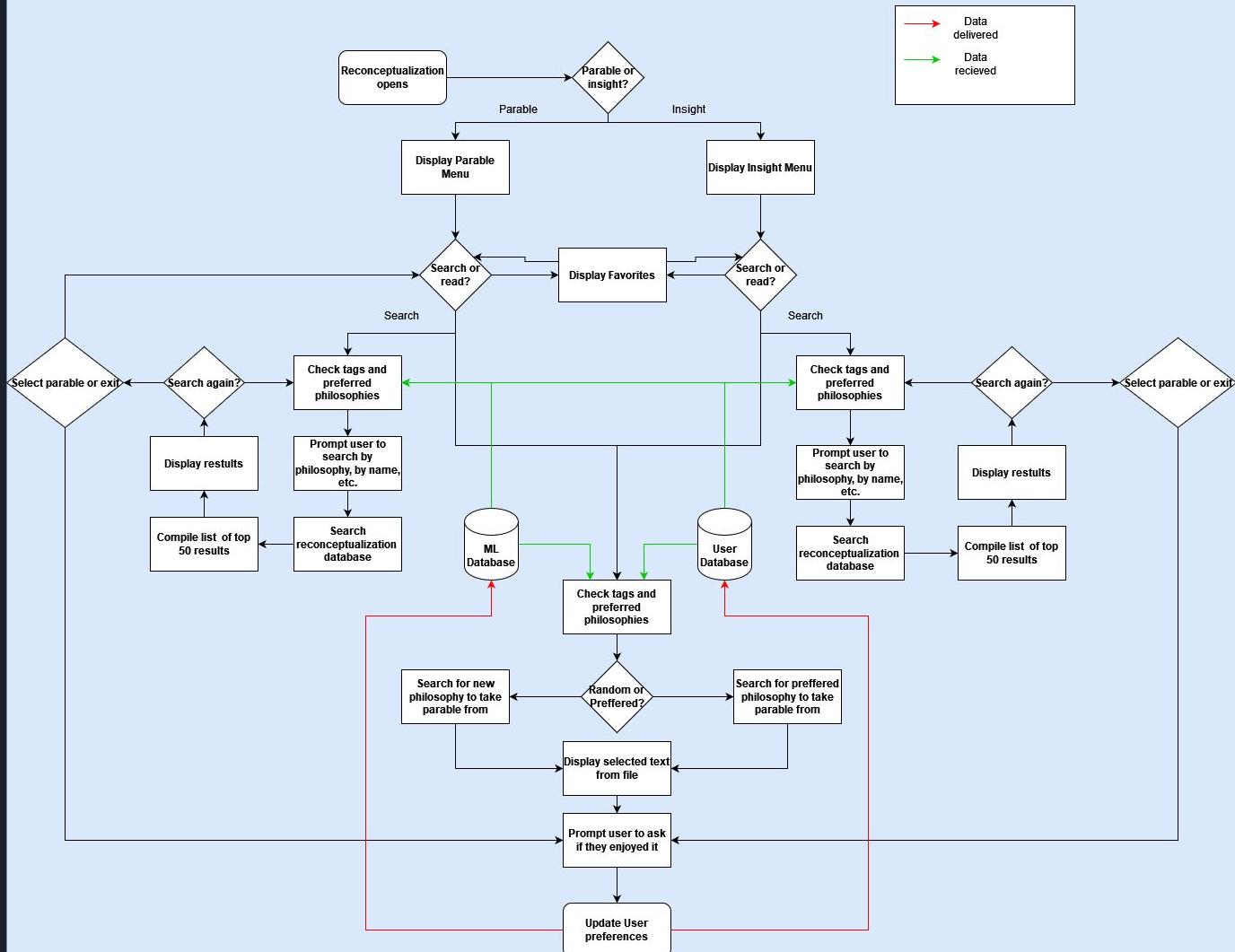
Algorithms - Journaling

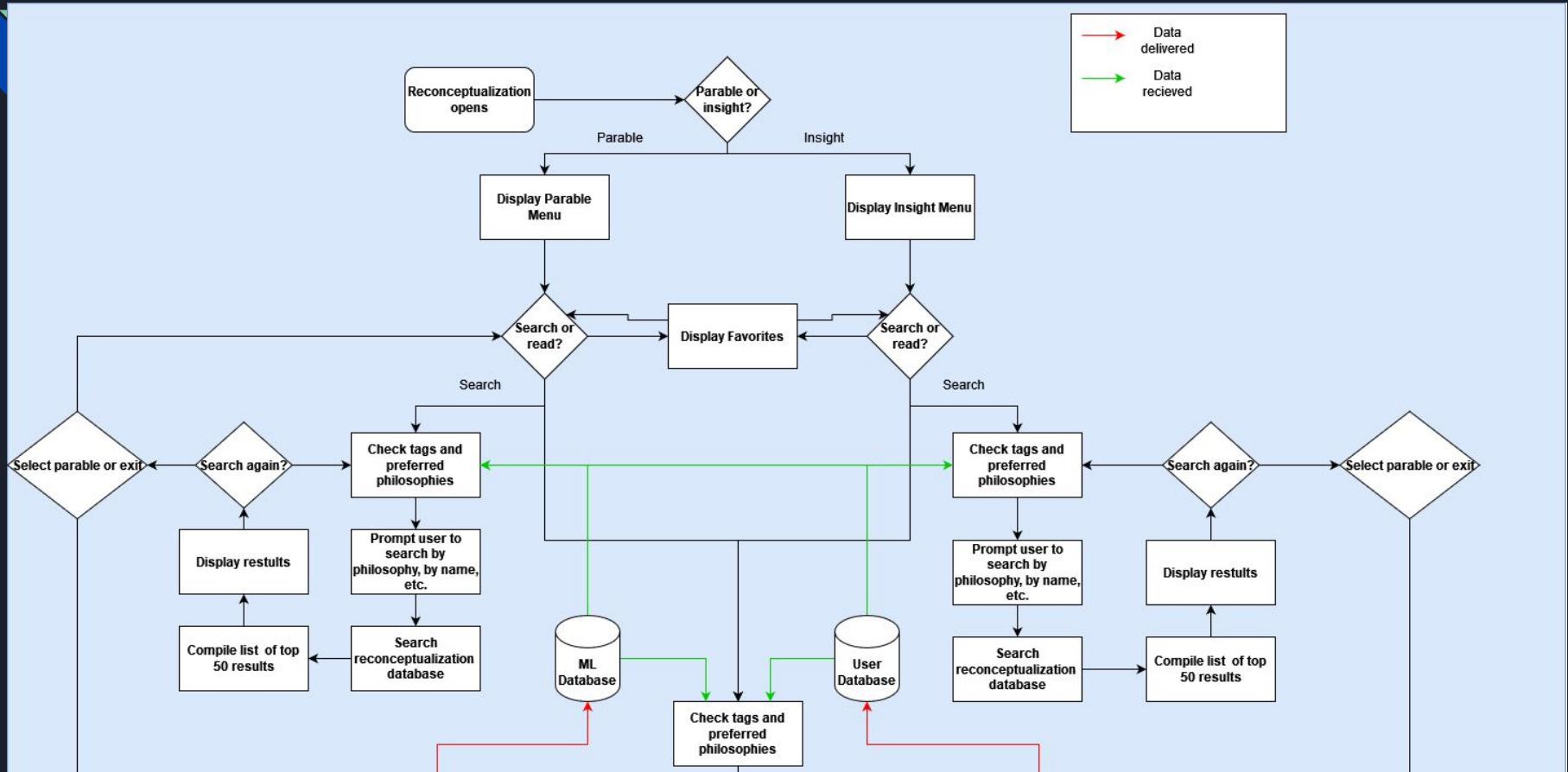


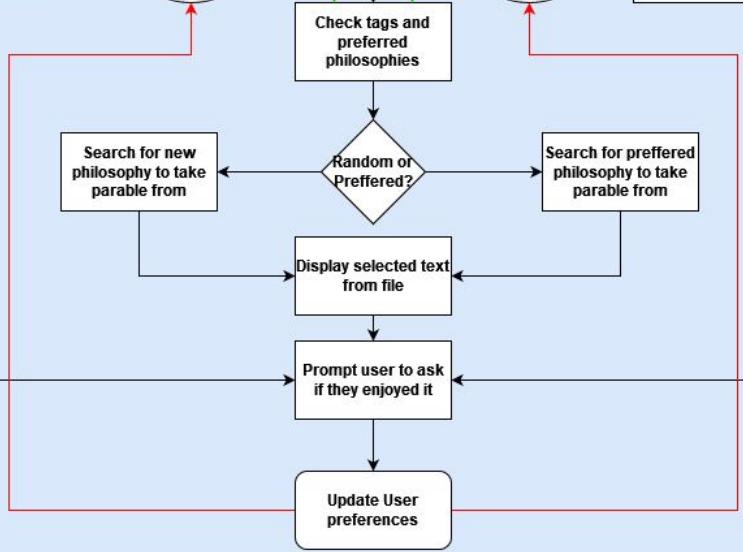
Algorithms - Notepassing



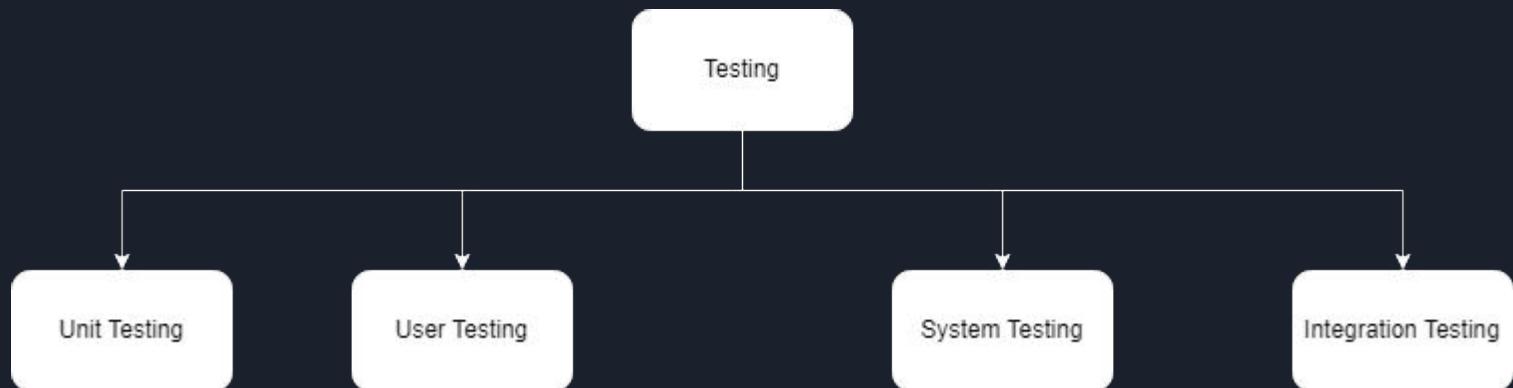
Reconceptualization Algorithm



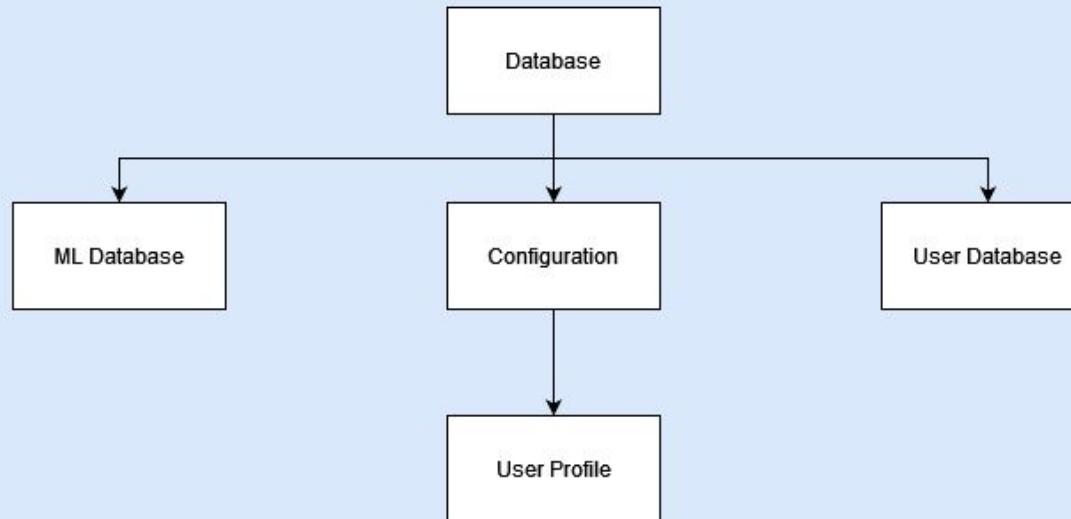




Work Breakdown Structure (Testing)



Work Breakdown Structure (Database)





Data Management

Data Sources:

- User Input
- Administrator Input
- Software generated data

Data Collected:

- User Account Information
- User Feedback
- Tags and definitions
- Planner Templates
- Parables
- Note Passing

Stored Locally:

- User's real name/birthday
- User's untagged schedule
- User's Journal entries

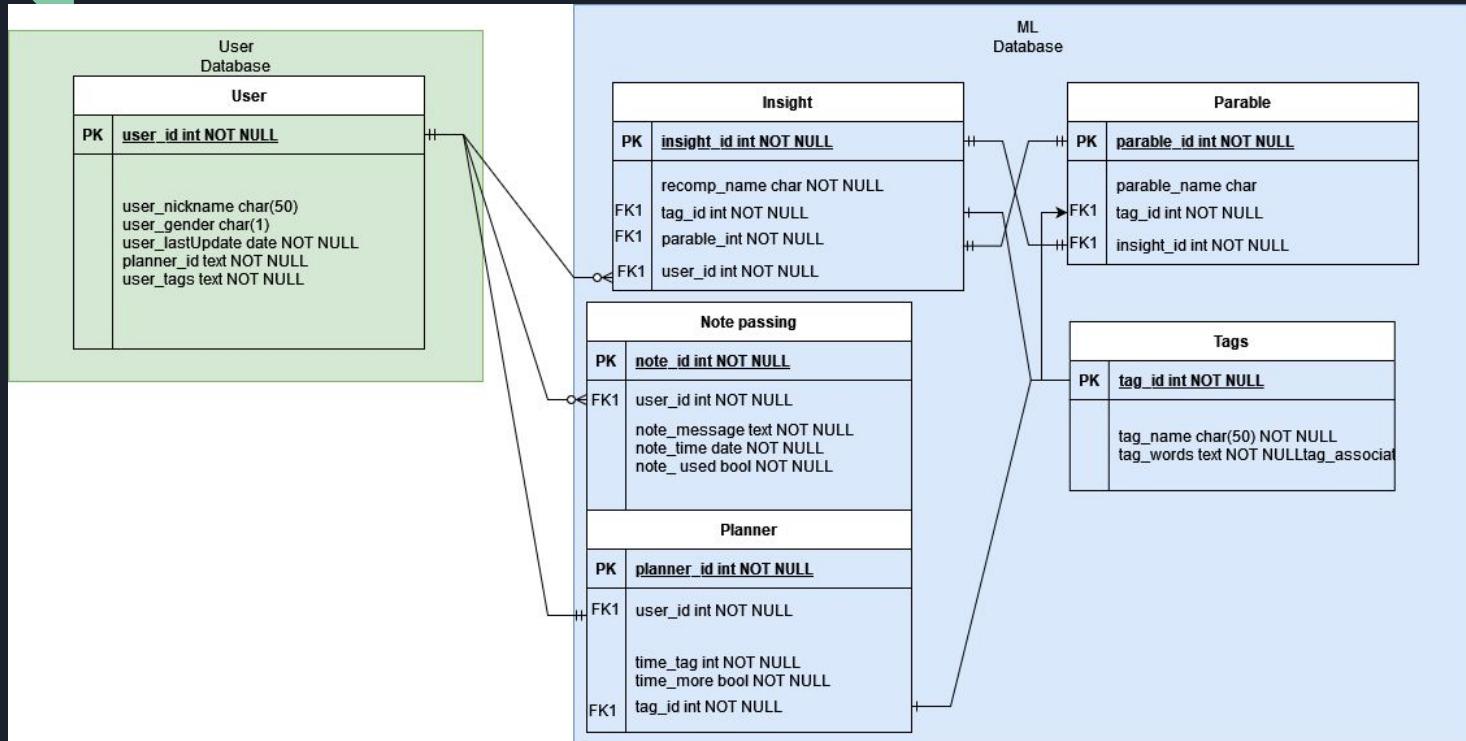
ML Database:

- Definition for tags
- Parables (tagged)
- Note Passing messages
- Software generated data
- Prompts(tagged)

User Database:

- User account information
- User feedback
- Tagged schedule
- Tagged preferences

Entity Relationship Diagram





Hardware & Software Components

Software:

- Languages
 - Java (Mobile Application)
 - SQL (Database)
- Libraries
 - Java-ML
 - Java.net*
- 3rd Party Software
 - Gradle (Testing)
 - MySQL (Database)
 - Eclipse, Atom (IDEs)
 - Github (Code Repository & Version Control)
 - Trello (Project Management)
 - Discord (Team Communication)

Hardware:

- Mobile Devices
 - Android OS Devices
 - iOS Devices



Development Method

Agile Software Development Methodologies

- Provides iterative approach
- Allows work to be done on specific features one at a time
 - Mobile application development from ground up
- Special attention is paid to each individual application feature
- Incremental development & testing
 - Efficient debugging & overall code



Initial Sprint Breakdown

Sprint 1

- Development set up
- Focus on application foundations
 - User Interface
 - User Profile and Preferences

Sprint 2

- Creation of first half of algorithms needed for application features
 - Planner (foundations for editing/viewing)
 - Journaling
 - Reconceptualization

Sprint 3

- Completion of second half of algorithms
 - Note Passing
 - Auto-generation Algorithm
 - Used within the planner
- User story requirements met
- Notification settings
- Application Refinement



Appendix, Glossary & References



As a young adult experiencing feelings of depression and anxiety...

- I would like to be able to build a schedule to help get started on my daily tasks.
- I would like to have a schedule built for me to make it easier to build a planner.
- I would like to have a template to more easily to build a planner.
- I would like to receive messages of kindness to improve my mood.
- I would like to be able to write messages of kindness to improve my mood.
- I would like to be able to read stories to gain a new perspective to help cope with my feelings.
- I would like to be able write a journal entry to better deal with my feelings.
- I would like the messages of kindness to not be able to be abused.



As a young adult experiencing feelings of depression and anxiety...

- I would like to be able to opt out of having my information collected.
- I would like any information collected to be anonymized.
- I would like to be assured that any information I give will not be reported to my place or work or school.
- I would like to be encouraged to talk to my family and friends about my feelings.
- I would like to be encouraged to use appropriate mental health resources, such as the national suicide hotline or professional therapy, when I may need more help.
- I would like to be able to connect with my family and friends through the app.



As a data analyst...

- I would like to be able to collect information about how the people using our system are scheduling their day in order to identify common daily activities to build recommendations and templates for them.
- I would like to collect information about the overall happiness of users to see the effects of Not-Elone.
- I would like to be able to collect information on what parables and schools of thought are preferred by users to better recommend resources.
- I would like to be able to collect information on what journal prompts and daily quests receive the most feedback from users to better recommend suggestions.



As an Administrator...

- I need to be able to create a user account.
- I need to be able to delete a user account.
- I need to be able to view individual user accounts so that I can manually view and update user information.
- I need to be able to see a list of existing accounts.
- I need to ensure that all personal information is protected by encrypting all user data.
- I would like to be able to train the machine learning algorithm with new data.
- I need to be able to enforce app policies to ensure that any offensive content or users are removed.
- I need to be able to prevent underage users from creating an account.



Glossary

Android: Mobile operating system.

Amazon RDS: Cloud-based Amazon relational database service.

Creative Mode: A gameplay mode within the journaling feature that allows the young adult to express their thoughts.

Daily Quest: An objective provided to the young adult to encourage continuous use of Not-Elone and its activities.

Depression: A mood disorder that causes a persistent feeling of sadness and loss of interest

Database: An organized collection of data stored and accessed electronically

Eclipse: an integrated development environment used in computer programming

First Step: A Not E-Lone activity that allows a young adult to focus on a single goal.

Gitlab: Provides version control and repository for software development projects.

Gradle: An open-source build automation tool that is designed to be flexible enough to build almost any type of software.

GUI: Graphical user interface.

IDE: Integrated development environment.

Java: High level object oriented programming language

Java-ML: Java Machine Learning Library

Java.net*: Java package used for communicating with networks through URLs.

Journaling: A Not E-lone activity where the young adult will be able to type their thoughts and feelings.



Glossary (Cont.)

Machine Learning: Artificial Intelligence designed to solve problems in a similar way to how humans solve problems.

MySQL: IDE for database coding in SQL.

Note Passing: A Not E-lone activity where the young adult is able to write a message of support to another young adult.

Notification System: A system based on preferences that push certain notifications to the mobile device

Parable: A simple story used to illustrate a moral or spiritual lesson, as told by Jesus in the Gospels

Planner: A Not E-lone activity that allows a young adult to plan their day.

Priority System: Method used to determine what events you can and can't skip out on, used both for recommendations and the user.

Reconceptualization: conceptualizing a topic in a new or different way

Survival Mode: A gameplay mode within the journaling feature that gives a writing prompt to the user.

Stress: A feeling of emotional tension.

SQL: Structured Query Language, a programming language made for manipulating databases.

Trello: A collaborative project management tool.

User: Young adult experiencing feelings of depression, stress, or anxiety.

User Interface: An interface that allows the user to interact with the software.

Young Adult: A person between the ages 18 to 25

References

- [1] S. H. Adams, J. P. Schaub, J. M. Nagata, M. J. Park, C. D. Brindis, and C. E. Irwin, "Young adult anxiety or depressive symptoms and mental health service utilization during the COVID-19 pandemic," *Journal of Adolescent Health*, vol. 70, no. 6, pp. 985–988, 2022.
- [2] "How to help children and teens manage their stress," *American Psychological Association*. [Online]. Available: <https://www.apa.org/topics/child-development/stress#:~:text=Prolonged%20stress%20can%20cause%20high,becoming%20more%20common%20in%20youth>. [Accessed: 22-Sep-2022].
- [3] "I'm so stressed out! fact sheet," *National Institute of Mental Health*. [Online]. Available: <https://www.nimh.nih.gov/health/publications/so-stressed-out-fact-sheet#pub3>. [Accessed: 22-Sep-2022].
- [4] Beck, Arne, et al. "Severity of Depression and Magnitude of Productivity Loss." *Annals of Family Medicine*, American Academy of Family Physicians, 2011, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3133577/>.
- [5] T. M. Erickson, M. T. Granillo, J. Crocker, J. L. Abelson, H. E. Reas, and C. M. Quach, "Compassionate and self-image goals as interpersonal maintenance factors in clinical depression and anxiety," *Journal of Clinical Psychology*, vol. 74, no. 4, pp. 608–625, 2017.
- [6] K. M. Chan and K. Horneffer, "Emotional expression and psychological symptoms: A comparison of writing and drawing," *The Arts in Psychotherapy*, vol. 33, no. 1, pp. 26–36, 2006.
- [7] E. J. Masicampo and R. F. Baumeister, "Consider it done! plan making can eliminate the cognitive effects of unfulfilled goals.,," *Journal of Personality and Social Psychology*, vol. 101, no. 4, pp. 667–683, 2011.
- [8] R. J. Gatchel and K. H. Rollings, "Evidence-informed management of chronic low back pain with cognitive behavioral therapy," *The spine journal : official journal of the North American Spine Society*, 2008. [Online]. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3237294/>. [Accessed: 30-Sep-2022].