LAB 1 – NOT-ELONE PRODUCT DESCRIPTION

Aaron M. Rapcavage

Old Dominion University

CS410, Fall 2022

Professor S. Zeil

12/11/2022

Version 1

Table of Contents

1 Introduction

1.1 Problem Background

Anxiety and depression were the two most common mental illnesses reported by young adults between the ages of 18 and 25 during the summer of 2021, a 7% increase compared to 2019 (Adams et al., 2022). In the short term, feeling stressed or depressed can make it difficult to sleep or focus on certain activities, and in severe cases, these feelings can lead to physical illnesses such as high blood pressure and heart disease (American Psychological Association, n.d.). As these emotions persist, they can lead to a young adult developing depression or anxiety(U.S. Department of Health and Human Services, n.d.). The effects of feelings of stress or depression can make it harder for a young adult to deal with their emotions. Some young adults can overcome these temporary effects by using coping mechanisms or addressing the cause of their feelings; for many others, these effects can develop into a cycle that is difficult to escape.

1.2 Problem Description

Three of the most common obstacles young adults often face when dealing with feelings of depression or anxiety are financial costs, inflexible schedules, and a lack of resources that ease them into getting help. Even when a young adult has the will to try to seek help, they can find themselves overwhelmed or confused, exacerbating their feelings of depression or anxiety.

1.3 Solution Description

Not E-lone addresses these problems by providing a straightforward set of activities that are used to help treat anxiety and depression. These activities are used by therapists to treat

anxiety, depression, and other mental illnesses. Completing activities intended to mitigate or counter those feelings and symptoms as part of a routine can improve a young adult's overall mood.

2. Not E-lone Product Description

Not E-lones activities include writing a kind message to another young adult, focusing on the first step to accomplish a task, writing and reflecting on their thoughts, considering a different way of viewing their situation, and planning a way to organize their busy schedule. Not-Elone will also provide rewards for completing activities, as well as daily quests to encourage the young adult to complete these activities regularly.

2.1 Key Product Features and Capabilities

Some techniques used to treat anxiety and depression are focused on changing the sufferer's thought patterns to provide temporary or long-term relief. Note-passing is meant to redirect a young adult towards helping another person experiencing similar feelings to their own. In some cases, a person who focuses on helping another person instead of on helping themselves can experience reduced feelings of depression and anxiety (Erickson et al., 2017).

For young adults who struggle to get started due to feeling overwhelmed by a large amount of work, Not E-lone will offer an activity to help them isolate and focus on a single task or step. The young adult will only be able to add to the list of tasks once they have the current one as complete. A list of completed tasks will be displayed after finishing an objective to show the young adult how much progress they have made.

Another common activity used to help reduce symptoms of anxiety and depression is journaling. Not E-lone's Creative mode journaling activity will not force the young adult to think about specific things but to simply write what is on their mind. At the end of a journaling session, the young adult will be asked how they feel about what they wrote. If they feel worse, Not E-lone will suggest that they seek further help either through talking with a close friend or family member, or through a mental health professional. Not E-lone will also offer a Survival mode activity, where writing prompts will be offered for young adults who struggle unable to come up with topics. Both free writing and prompt-based writing have been shown to have short-term positive effects on people with depression and anxiety (Chan & Horneffer, 2006).

Not E-lone will offer a quick and easy method for young adults to plan their day. Organizing a plan to achieve a goal or a set of goals, can offer a short-term reprieve from feelings of anxiety or depression, by taking the young adult's focus away from how they feel about those tasks (Masicampo & Baumeister, 2011). Not E-lone aims to use machine learning to suggest activities in the empty time slots of the young adult's day.

Not E-lone's reconceptualization activity provides a young adult with a parable, to change the way the young adult views their current circumstances. This activity is named after a technique used in cognitive behavioral therapy which has been shown to help ease a wide variety of mental and physical symptoms (Gatchel & Rollings, 2008). Young adults will be able to provide feedback on the parable, which will be used to help Not E-lone decide whether to suggest similar stories in the future.

Optional quests will be provided to young adults to encourage daily use of Not E-lone's activities. Rewards will also be given to help the young adult feel a sense of accomplishment after completing an activity, and further boost their mood.

2.2 Major Components(Hardware/Software)

One of Not E-lone's goals is to be convenient for young adults with severe feelings of anxiety or depression, for this reason, the application will be available on Android and iOS devices. The software will be written in the Java programming language, using the Eclipse and Atom IDEs, Gradle for build management, Github for its version control and collaboration tools, Trello for project management, and Discord for team communication. Not E-lone will use SQL for database management to maintain the note-passing, parable, journal, and planner features, as well as account information.

User preferences, account information, and birthday will be stored on the young adult's device. The planner, journal, and feedback information will not be collected for use by Not E-lone without the young adult's permission. If the young adult chooses to provide this data, it will be anonymized and encrypted. Quests and notifications will also be optional. The young adult will be presented with the choice of the planner, journal, or parable menus upon logging in. They will also be able to access settings, quests, and notification from here. Under the planner menu they can select the First Step activity or planner activity. Under the journal menu the young adult will able to select Survival mode, Note-Passing, or creative mode (Figure 1).

The machine learning algorithm used for parable, prompt, and activity suggestion in the

planner will be training using the Java ML framework. Young adults will be able to opt out of

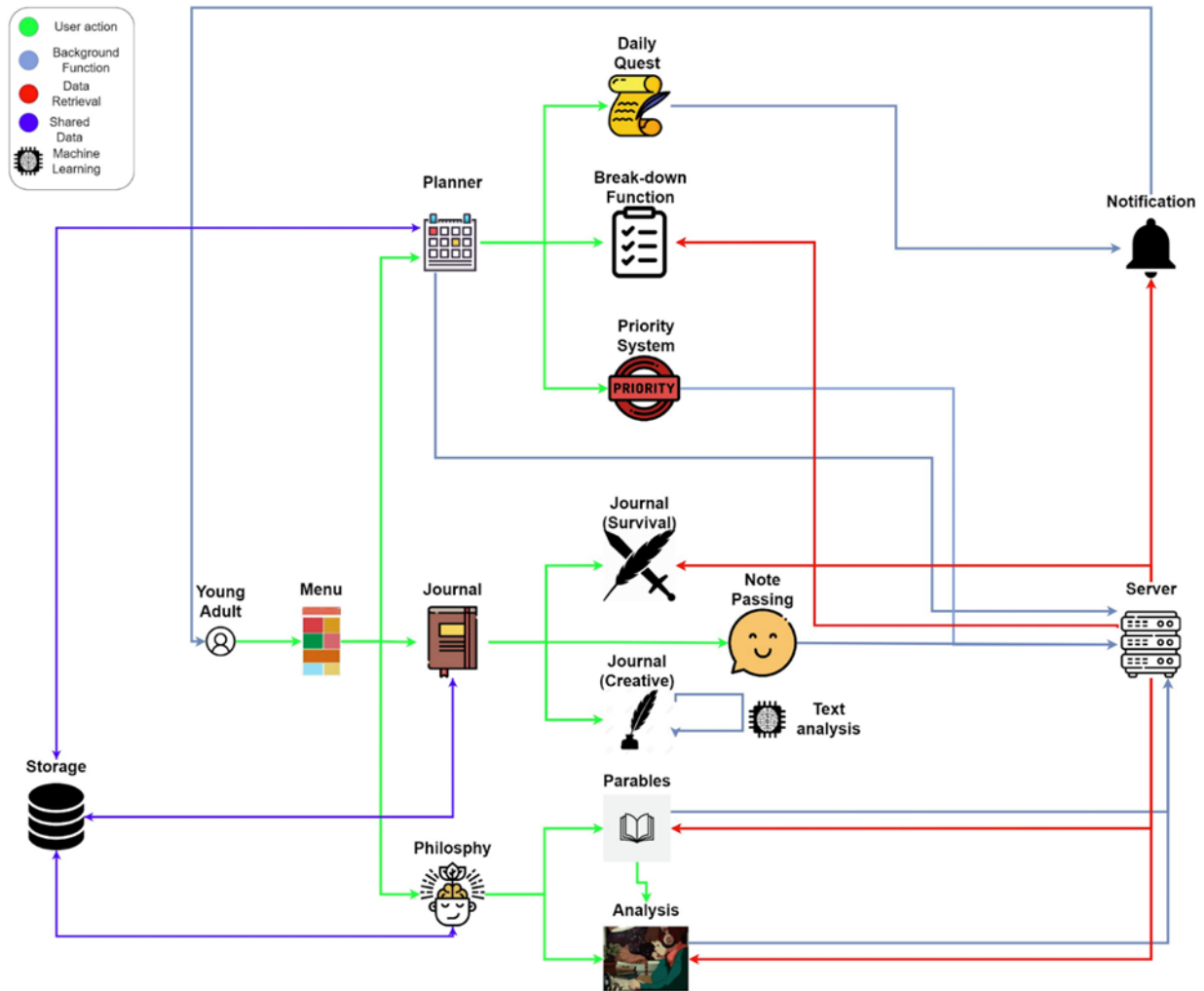having their information collected for the purpose of training to the machine learning algorithm.

Figure 1

3. Identification of Case Study

3.1 Who is Not E-Lone for?

Not E-lone is intended for young adults between the ages of 18 and 25, along with their close friends and family if they feel comfortable sharing their thoughts and feelings with them.

3.2 What will Not E-Lone be used for?

Not E-lone will be used to provide young adults with helpful coping mechanisms that may help them deal with their feelings of stress or anxiety, and encourage them to seek out further help from mental health professionals, close friends, or family members if necessary.

3.3 Who else might Not E-Lone benefit?

Not E-lone will not inform the young adult's school or place of work about their use of the application, but the young adult may feel comfortable sharing their activities with guidance counselors or therapists who can provide further help to the young adult. Schools and workplaces may also indirectly benefit from Not E-lone, by improving the mental health of young adults in general, as well as their students and employees.

4. Not E-lone Product Prototype Description

4.1 Prototype Architecture (Hardware/Software)

4.2 Prototype Features and Capabilities

4.3 Prototype Development Challenges

5. 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-Elone 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-Elone activity where the young adult will be able to type their thoughts and feelings.

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-Elone 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-Elone 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

6. References

Adams, S. H., Schaub, J. P., Nagata, J. M., Park, M. J., Brindis, C. D., & Irwin, C. E. (2022). Young adult anxiety or depressive symptoms and mental health service utilization during the COVID-19 pandemic. *Journal of Adolescent Health*, *70*(6), 985–988. https://doi.org/10.1016/j.jadohealth.2022.02.023

American Psychological Association. (n.d.). *How to help children and teens manage their stress*. American Psychological Association. Retrieved September 22, 2022, from

https://www.apa.org/topics/child-development/stress#:~:text=Prolonged%20stress%2
0can%20cause%20high,becoming%20more%20common%20in%20youth.

U.S. Department of Health and Human Services. (n.d.). *I'm so stressed out! fact sheet*.
National Institute of Mental Health. Retrieved September 22, 2022, from
https://www.nimh.nih.gov/health/publications/so-stressed-out-fact-sheet#pub3

Beck, Arne, et al. (2011) "Severity of Depression and Magnitude of Productivity Loss."
Annals of Family Medicine, American Academy of Family Physicians,
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3133577/.

Erickson, T. M., Granillo, M. T., Crocker, J., Abelson, J. L., Reas, H. E., & Quach, C. M.
(2017). Compassionate and self-image goals as interpersonal maintenance factors in
clinical depression and anxiety. *Journal of Clinical Psychology*, *74*(4), 608–625.
https://doi.org/10.1002/jclp.22524

Chan, K. M., & Horneffer, K. (2006). Emotional expression and psychological symptoms:
A comparison of writing and drawing. *The Arts in Psychotherapy*, *33*(1), 26–36.
https://doi.org/10.1016/j.aip.2005.06.001

Masicampo, E. J., & Baumeister, R. F. (2011). Consider it done! plan making can eliminate
the cognitive effects of unfulfilled goals. *Journal of Personality and Social
Psychology*, *101*(4), 667–683. https://doi.org/10.1037/a0024192

Gatchel, R. J., & Rollings, K. H. (2008). *Evidence-informed management of chronic low
back pain with cognitive behavioral therapy*. The spine journal : official journal of
the North American Spine Society. Retrieved September 30, 2022, from
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3237294/