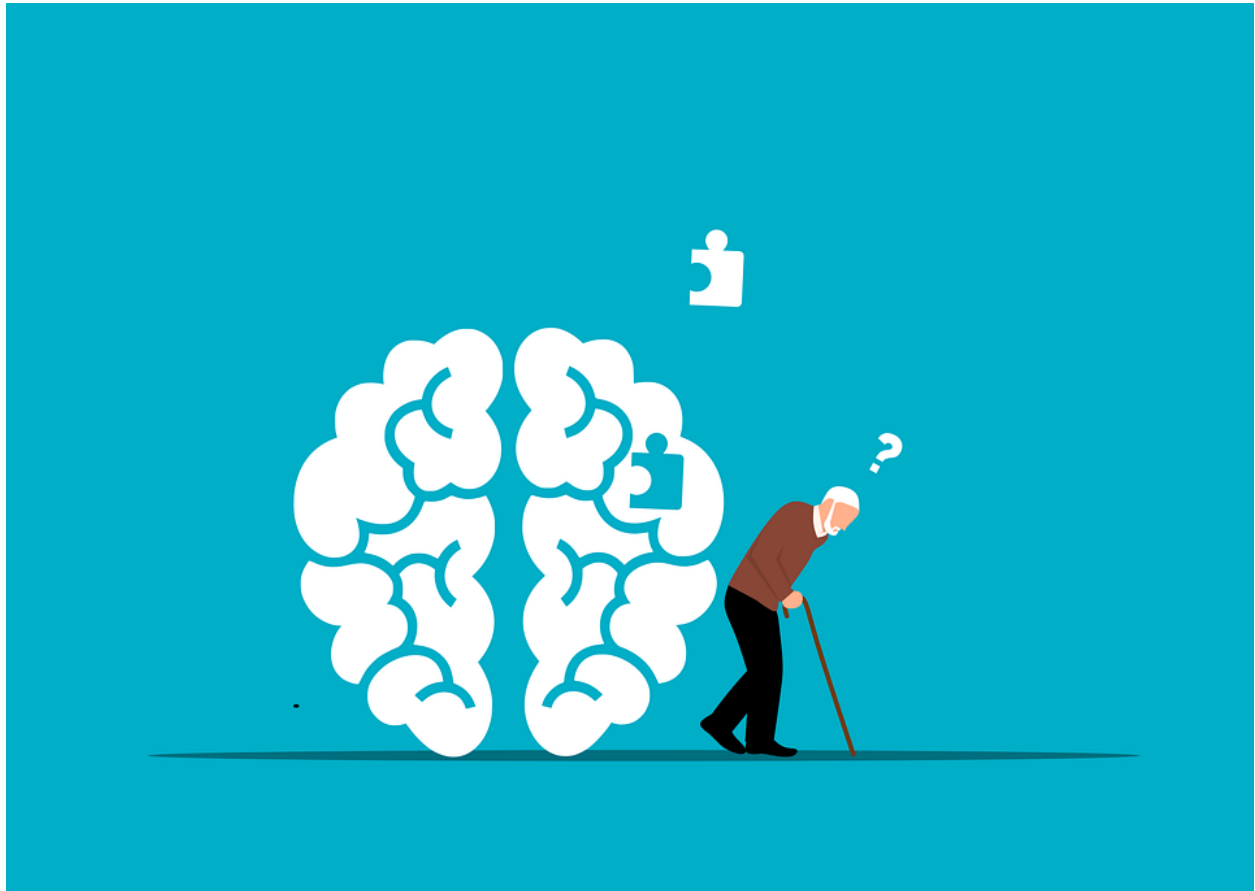


Alzheimer's Awareness Crypto Game



Prepared by
Tom Roller, Michael Jedziniak, Blaine Edwards, Ilyas Khaja
for use in CS 440
at the
University of Illinois Chicago

September 2023

Table of Contents

List of Figures	4
List of Tables	5
I Project Description	6
1 Project Overview	6
2 The Purpose of the Project	6
2a The User Business or Background of the Project Effort	6
2b Goals of the Project	6
2c Measurement	7
3 The Scope of the Work	7
3a The Current Situation	7
3b The Context of the Work	7
3c Work Partitioning	8
3d Competing Products	8
4 The Scope of the Product	8
4a Scenario Diagram(s)	9
4b Product Scenario List	9
4c Individual Product Scenarios	9
5 Stakeholders	10
5a The Client	10
5b The Customer	10
5c Hands-On Users of the Product	10
5d Maintenance Users and Service Technicians	10
5e Other Stakeholders	10
5f User Participation	11
5g Priorities Assigned to Users	11
6 Mandated Constraints	11
6a Solution Constraints	11
6b Implementation Environment of the Current System	12
6c Partner or Collaborative Applications	12
6d Off-the-Shelf Software	12
6e Anticipated Workplace Environment	12
6f Schedule Constraints	12
6g Budget Constraints	12
7 Naming Conventions and Definitions	13
7a Definitions of Key Terms	13
7b UML and Other Notation Used in This Document	13
7c Data Dictionary for Any Included Models	13

8 Relevant Facts and Assumptions	13
8a Facts	13
8b Assumptions	13
II Glossary	14
III References / Bibliography	14

List of Figures

<i>Figure 1 - Context of Work</i>	7
<i>Figure 2 - Scenario Diagram</i>	9

List of Tables

<i>Table 1 - Work Partitioning</i>	8
<i>Table 2 - Product Scenario List</i>	9

I Project Description

1 Project Overview

Our application, Alzheimer's Awareness Crypto Game, will be a video game that brings awareness to Alzheimer's and Dementia. This will benefit the non-profit Alzheimer's Association and support its mission to cure/treat people suffering from Alzheimer's or Dementia by accelerating research, driving risk reduction and early detection, and maximizing quality care and support.

The Application will consist of 3 parts. An Alzheimer's Simulation Game where the user will experience what it is like to have Alzheimer's disease. An Alzheimer's Learning Mode where the user can learn about Alzheimer's and the latest research into this disease. A Cryptocurrency Mining Mode where the user (with their permission) can generate crypto that will be donated to support the Alzheimer's Association.

2 The Purpose of the Project

The main purpose of this project is to help grow awareness and donations for the Alzheimer's Association. While raising awareness does help the Alzheimer's Association become more well-known and therefore bringing it to the attention of more potential donors, we believe that giving everyday users the option to generate funds for Alzheimer's research would make a significant impact on donations given.

2a The User Business or Background of the Project Effort

The Alzheimer's Association is working towards finding a way to end Alzheimer's and other dementias through research and early detection, while also seeking to give quality care and support to patients and families. One aspect of the agency is its awareness initiatives. Early detection is very important and easier when more people know the signs of the disease.

Furthermore, as a non-profit organization, they are always seeking donations to drive their research and patient support. Unlike other companies, they are very open about where their dollars are being spent, and they have pledged to work with ethical companies and maintain their independence by not allowing other agencies or donors to sway any sort of the decision-making process.

2b Goals of the Project

We want to provide a convenient way for the average person to donate to the association without having to delve into their own pockets. Another goal of ours is to bring awareness to Alzheimer's Disease and make learning about it and the warning signs easier and more enjoyable to learn.

2c Measurement

On the website for the association and also in the game, we would like to show a ticker displaying the amount of crypto and dollars raised throughout the year. As well as a public Budget sheet to see how that currency was spent by the Alzheimer's Association.

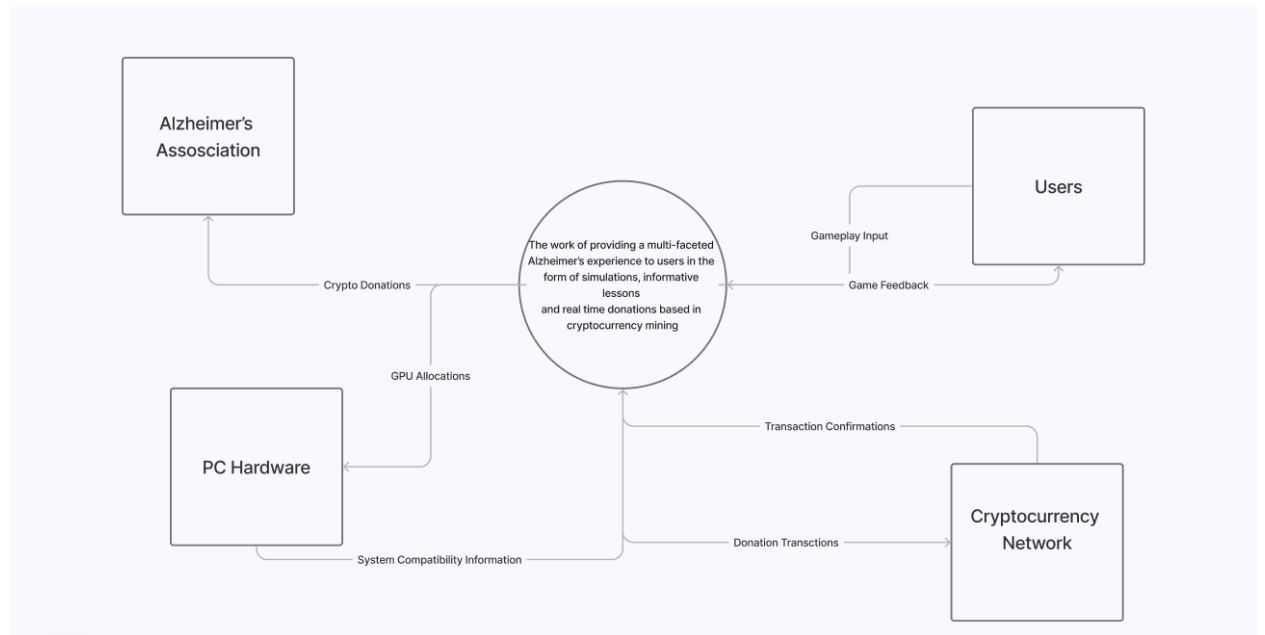
3 The Scope of the Work

The work would be described as community outreach and education with a hassle-free way to seek donations as well.

3a The Current Situation

Currently, the client is conducting this work through their website, alz.org, utilizing reading and fact pages as well as YouTube videos.

3b The Context of the Work



3c Work Partitioning

<i>EVENT NAME</i>	<i>INPUT/OUTPUT</i>	<i>SUMMARY</i>
User selects simulation	User selection (in), Sim environment (out)	Load selected simulation
User completes lesson	Completion Data (in), Updated dashboard (out)	Update user “XP” and show harder lessons
User mines crypto	Wallet fund increase (out)	Update total crypto mined
User donates crypto	Transfer funds from user wallet (out)	User wallet funds routed to beneficiary wallet
User defined duration to mine crypto is reached	Terminate mining process (in/out)	Synopsis of Mining session displayed (total crypto mined, estimated electricity bill, etc.)
User schedules automatic donations	Transfer funds from user wallet at scheduled time (in/out)	User wallet funds routed to beneficiary wallet at regular intervals
User fails task in simulation mode	Task result (in)	Provide feedback and options

Table 1 - Work Partitioning

3d Competing Products

As far as we are aware there aren’t any products that compete with ours at all. The only other games we can find are made for patients themselves to help with their cognitive decline.

4 The Scope of the Product

The work to be handled by the proposed product is the Simulation Mode, Learning Mode, and Mining Mode. The Simulation Mode will be a simulation of what it is like to live with Alzheimer’s disease, the Learning Mode will be an area for users to develop their understanding of Alzheimer’s disease and topics surrounding it, and the Mining Mode will allow users to generate funds for the Alzheimer’s Association as donations.

4a Scenario Diagram(s)

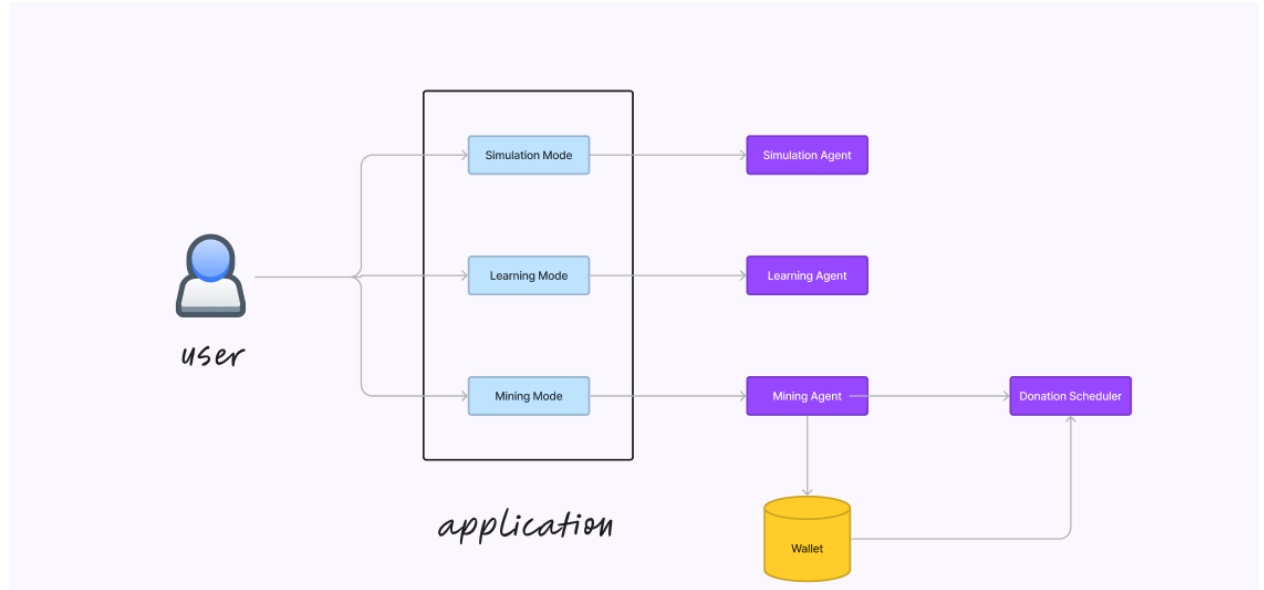


Figure 2: Scenario Diagram

4b Product Scenario List

<i>Scenario Name</i>	<i>Participating Actors</i>
<i>Alzheimer's Simulation Mode</i>	<i>Alzheimer's Awareness Crypto Game users</i>
<i>Alzheimer's Learning Mode</i>	<i>Alzheimer's Awareness Crypto Game users</i>
<i>Crypto Mining Mode</i>	<i>Alzheimer's Awareness Crypto Game users</i>

Table 2 - Product Scenario List

4c Individual Product Scenarios

- Alzheimer's Simulation Mode: The player initiates this mode by selecting it from the main menu. The system explains what this mode is about and instructions on how to navigate the simulation. After the player has understood the instructions, they will be able to navigate the simulation via keyboard/controller input and be able to interact with the game world environment.
- Alzheimer's Learning Mode: The system displays an opening screen explaining the educational purposes of this mode to the player. The player can navigate through different sections such as: "What is Alzheimer's?", "How to support someone with Alzheimer's?", etc.

- **Crypto Mining Mode:** Upon entering this mode, the system explains that any mined currency will automatically be donated. The user can then select how many GPUs they want to use, how long they want the miner to run, and other settings. The system starts the mining process, displaying a counter of the amount mined.

5 Stakeholders

5a The Client

The client for this application will be the Alzheimer's Association. They'll work closely with the developer team to ensure that their guidelines are met with the final product. With the cooperation of this non-profit organization, their goals of spreading awareness of the disease will be met.

5b The Customer

Upon completion of the application, the customers will be any Online Video Game Distributors such as Steam, Epic Games Store, iOS App Store, or Google Play Store. With the application being on these Game Distribution platforms, the entire product will be seen by more users.

5c Hands-On Users of the Product

The users of this application could be anyone with an applicable machine and access to Steam or another gaming client as well as anyone with an interest and a smartphone. The target demographic is ideally every human on earth so that education on the topic can be as widespread as possible.

5d Maintenance Users and Service Technicians

Installation of the game will be handled by the user themselves. Maintenance will be handled by the updates team who will handle server upkeep and any changes to what crypto is being mined as requested by the client.

5e Other Stakeholders

Other stakeholders that this application would need to include would be:

- **Testers**
 - Testers will be needed in being in the place of the user during development. They will need skills in debugging and test cases to provide technical feedback with the developing application.
- **Marketing**
 - To ensure the application brings more Awareness to Alzheimer's, a team of individuals with experience in advertising or who have high influence on the market will be needed to accomplish this goal. They will need to be proficient in using Social Media and other Marketing tools.

5f User Participation

Users can participate in various alpha/beta tests of the game if enough of the application has been implemented so as to be playable. Upon their participation, they can provide feedback and criticism to the application before the final product is pushed out.

5g Priorities Assigned to Users

The key users for this application will be younger avid video game players who want to support the Alzheimer's Association or learn more about Alzheimer's and how detrimental the disease is. The secondary users will be other video game players who are just looking for a new game to play. They may or may not care about the cause, but with their help, they are still able to support it via the Crypto Miner. The unimportant users will be people who do not play/like video games or are not skilled in Computers/Technology. This application is more tailored to the user group that enjoys playing video games.

6 Mandated Constraints

6a Solution Constraints

Description: The final product will be a desktop application that can run on a PC as well as a mobile application.

Rationale: The crypto miner will need to be run on a robust system more advanced than a mobile device, however, a slimmed-down version of the game being available for mobile users will allow a wider audience to be reached.

Fit Criterion: The game must be available for download online or from other game clients such as Steam as well on the Apple App Store and Google Play.

Description: The crypto miner needs to take precedence over other processes on the machine.

Rationale: The bread and butter of the system is the crypto miner, without that client will be missing out on valuable donations. If the game will only run on extremely robust machines then the education of as many people as possible will be hindered.

Fit Criterion: Playing the game modes can't be too taxing on the system so as to take away from the crypto miner, or too demanding overall so that users with average pc specs are prohibited from playing.

Description: Wallet security concerns.

Rationale: If a hacker gains access to the crypto wallet or otherwise diverts the crypto from ending up in the correct place, half of the client's expectation from the application will be unfulfilled.

Fit Criterion: Security experts will need to be hired along with special clearance for devs working on specific aspects of the application.

6b Implementation Environment of the Current System

The product will be designed to work as a desktop application catering to PC users as well as a slimmed-down version for mobile users. The product will run on all major PC operating systems as well as all major mobile platforms.

6c Partner or Collaborative Applications

This product must be compatible with the current Unity Engine.

6d Off-the-Shelf Software

There is no commercial off-the-shelf (COTS) software that must be included in the final product.

6e Anticipated Workplace Environment

Content

The product is designed to be used anywhere a PC or mobile device can be used.

Motivation

The client wants as widespread use of the application as possible so constraints on ability of use must be minimalized as much as possible.

Examples

Power consumption might be greater due to the miner and needs to be explained to the user.

6f Schedule Constraints

There are not any deadlines unless given by the client.

6g Budget Constraints

Since the product will essentially be handling money it will be in the team's best interest to create a high-quality product using skilled security experts. The only budget constraint would be the expected salary of the development team for the expected development timeframe.

7 Naming Conventions and Definitions

7a Definitions of Key Terms

Alzheimer's: A progressive neurodegenerative disorder characterized by a decline in cognitive functions.

Cryptocurrency: A digital currency in which transactions are verified and records maintained by a decentralized system.

Coins: A digital currency native to its blockchain, storing value and acting as a medium of exchange.

Blockchain: A decentralized and public ledger which is used to record transactions between different computers.

Mining: the process used to generate new cryptocurrency coins and verify new transactions.

7b UML and Other Notation Used in This Document

The Report follows the Version 2.0 OMG UML standard, as described in, M. Fowler, UML Distilled, Third Edition, Boston: Pearson Education, 2004. Exceptions are noted in their given cases.

7c Data Dictionary for Any Included Models

Due to the nature of this application being a video game, there are no included models needed at the moment.

8 Relevant Facts and Assumptions

8a Facts

6.7 million Americans are living with Alzheimer's and that number is expected to increase to 13 million by 2050.

Alzheimer's and other dementias will cost the US \$345 billion in 2023 rising to \$ 1 trillion by 2050.

8b Assumptions

Assuming users have basic computer proficiency.

Assuming developers will be able to code in necessary environments.

Assuming the cryptocurrency is still available to mine.

Assuming users will have devices that meet our minimum requirements.

II Glossary

Alzheimer's: A progressive neurodegenerative disorder characterized by a decline in cognitive functions.

Cryptocurrency: A digital currency in which transactions are verified and records maintained by a decentralized system.

Coins: A digital currency native to its blockchain, storing value and acting as a medium of exchange.

Blockchain: A decentralized and public ledger which is used to record transactions between different computers.

Mining: the process used to generate new cryptocurrency coins and verify new transactions.

III References / Bibliography

[1] Alzheimer's Association, "Alzheimer's Disease Facts and Figures".