Mindverse

by

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Table of Contents

Abstract

Many programs today that encourage emotional intelligence don't engage young people. This has caused the youth of today to have dysfunctional relationships, unhappiness, and confusion with both themselves and those around them. To teach emotional intelligence and provide a fun, engaging resource to learn such concepts, Mindverse was a game developed to tackle the tough questions of where emotions come from and what is the proper way to deal with them. The tools used to create this game include the Unity Engine and Photoshop. In Unity, C# scripts were wired to the features of the game and the Unity build settings were used to link each game scene together. Through dialogue trigger/manager, the game utilized a choice system where the choices the player makes affect both the game and the characters around them, showing the consequences of choosing certain emotional responses over others that reflect real world scenarios. With this, emotional situations were simulated to walk the player through choices that are in their best interest and can be applied to their relationships and real life.

Introduction

Project Summary:

This is a game about emotions. Why do people feel the way they do? Where do these feelings come from? How do they deal with them? This game involved storytelling and problem-solving where the player confronted the personification of emotions where the goal was for them to find the answers mentioned above. The target audience were players who enjoyed casual story-driven games.

Problem Statement:

Often the education system lacks programs that promote and teach emotional health in youth, which results in dysfunctional relationships, unhappiness, and confusion with themselves and those around them (Goleman, 1996). The concept of this game gave players an unfamiliar perspective and gave them emotional take-aways that would improve introspection and emotional intelligence.

Solution:

One solution for this problem was a game that shows the diverse types of emotions represented at different game levels. It gave a new perspective on understanding emotions, how to react to them and where they come from, as this is an essential part of developing and understanding oneself. This was the best way to solve this because it took a different approach, and it was a creative way of educating emotional intelligence since this is a subject matter that is not covered in the school system.

The approach was to create a storyline that centers around a pre-teen that is going through different obstacles that would be represented by scenarios and each game level would cover a specific emotion. Within the game level, the player will figure out how to handle different situations which consequently will help them understand their emotions.

Project Source:

This idea was originally conceived by Jeanette Kootin- Sanwu. She had the idea while watching the well-known movie: Inside Out. All group members listed on this report conducted the requirements analysis together. This project team was formed on Teams without any original project concept in mind.

Discussion

Project Objectives/Goals:

Features:

- Well animated graphics that develop dynamically throughout the game
- Multiple endings depending on how well the user progresses through the game
- Easy to use gaming interface
- Color schemes will have an impact on the users' emotions (gray areas will be more depressed emotions, and happiness will be more colorful)
- The game can appeal to a general audience

Impact:

- Appeals to the players emotions which will progressively build in difficulty
- Players will have to make tough decisions that can change the outcome of the game
- Players will improve their responses under emotional pressure.

Project Scope:

The team developed a Unity game that enabled the player to understand their emotions given different scenarios by utilizing the following features and functionalities:

- Interactive dialogues with NPCs
- Realistic scenarios that require active participation from the player and critical thinking to achieve an optimal ending
- Engaging storyline features that help the player to be engaged with the different obstacles they must defeat
- Color schemes will have an impact on the users' emotions (gray areas will be more depressed emotions, and happiness will be more colorful)
- Multiple endings depending on how well the user progresses through the game
- Fun fact blurbs within the different levels about the brain which can include where what part of the brain the emotion comes from, a definition of the psychological term, etc.
- Simplistic characters that only gain detail when you develop your emotional intelligence every "level"
    - When the player accepts the emotion as part of themself, the rough shape or sketch gets more detail, and the player will understand the intended emotion
- Game assets the player picks up within level (i.e., keys) that would be related to the player conquering an emotion

Quick Project Timeline:

Table 1 Project Timeline

Task Name	Duration	Start Date	End Date
Storytelling/Design	7 Days	9/20	9/27
Script/ Plot of the Story	7 Days	9/27	10/4
Sprint 1- Beginning Production • Developing core structure of the game (map development) • Developing player mobility/actions throughout the game	3 weeks	10/4	10/25
Sprint 2- Implementation/ Interactivity • Creating a point system for the player • Developing the game style (including implementing assets, creating cut scenes, and player dialogue)	3 weeks	10/25	11/15
Sprint 3- Bug Testing/ Demo Prep • Alpha testing • Debugging and fixing any errors • Running in a non-production environment • Player feedback (collecting responses through a Google form) • Format Game Packaging (Installation)	2 weeks	11/15	11/29
Send Alpha/Demo Version to Testers and Gather Feedback • Player feedback form for instantaneous bug reporting • Menu, exe file, icon • Player feedback for overall user experience/opinions	5.5 Weeks	12/1	1/10
Discuss Feedback and Adjust Milestones, Requirements, etc. as needed	3 Days	1/10*	1/13*
Production Phase (Beta)	2 Months	1/13*	3/13

Debugging/Polishing	3 Weeks	3/14	4/5
Master Release Ready/Start Prepping for Expo	3 Days	4/9	4/12

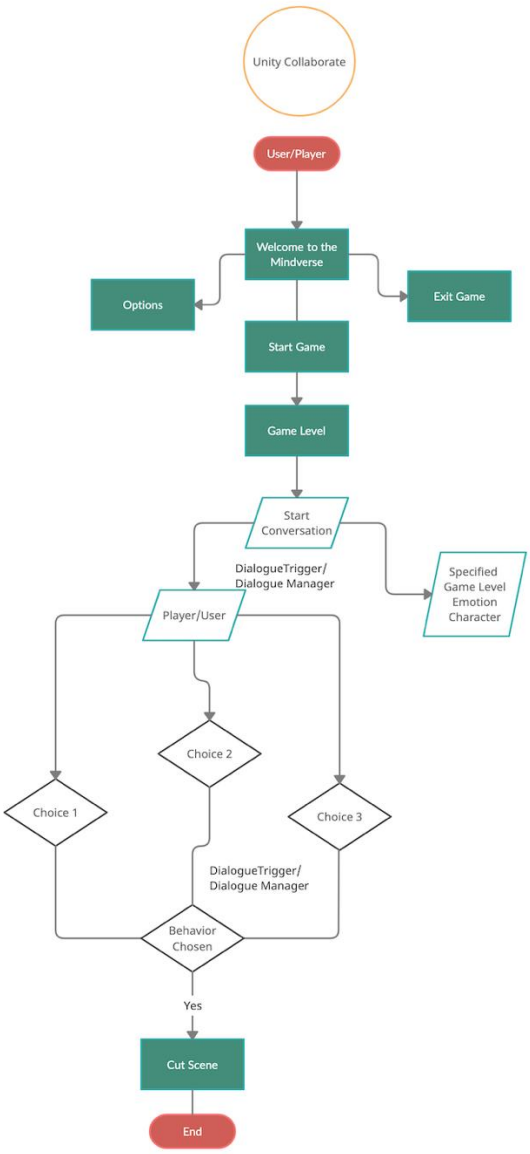
Technologies Used:

- Microsoft Teams – used to communicate with our advisor and share files in between group members
    - This allows for easy file collaboration that other applications couldn't do and synchronous collaboration on those files
- Unity – used to create a video game, has free assets to utilize for game features, and capabilities to enhance our game
    - This allows for creating a functioning game that encompasses all the features that are needed for implementation
- GitHub – used for a shared repository for all the team members to share code and tasks with one another
    - This allows for efficiency with the most up to date code and to stay on task with each team member's work.
- Trello – used to track and manage individual tasks amongst group members
    - This allows for cohesiveness within the group and to have tangible items for the weekly progress reports
- Discord – used to communicate with one another while brainstorming ideas, setting up meeting times, and general communication to keep each other up to date
    - This allows for well-organized and effective communication when going about different phases of the project

Technical Architecture Diagram:

The diagram below depicts how any level will be laid out. After starting the game and picking the game level, the conversation will begin where the Player will make choices that affect dialogue options, keeping a count of the behavior chosen, before resulting in one of three endings for that level.

Figure 1: Technical Architecture Diagram



User Personas:

Tables 2-4 User Persona Table

User Persona: 1

	Player
	John Doe
	14
	Male
Behavior	Erratic behavior. Troubling in school
Pain	Unable to properly express emotions
Needs & Goals	Needs an outlet to figure out how to properly resolve emotions. The goal is to progress through the game and get the ideal ending which signifies knowledge of proper conflict resolution and emotional smarts.

User Persona: 2	
	Young Student (Middle-Highschool)
	Jesse Doe
	17
	Male
Behavior	Gets mad easily in a competition. Pushes friends away.

Pain	Lashes out at friends and family
Needs & Goals	Needs an outlet to figure out how to properly resolve emotions. The goal is to properly form relationships with others and to be less toxic during competitions.
User Persona: 3	
	Young Student (Middle-Highschool)
	Jessica Doe
	13
	Female
Behavior	Popular at school. Has meaningful healthy relationships with classmates and family. Likes to spend free time online.
Pain	No Pain.
Needs & Goals	Desires entertainment while out of the classroom. An alternative to experiencing meaningful storytelling outside of movies and social media.

Use Cases:

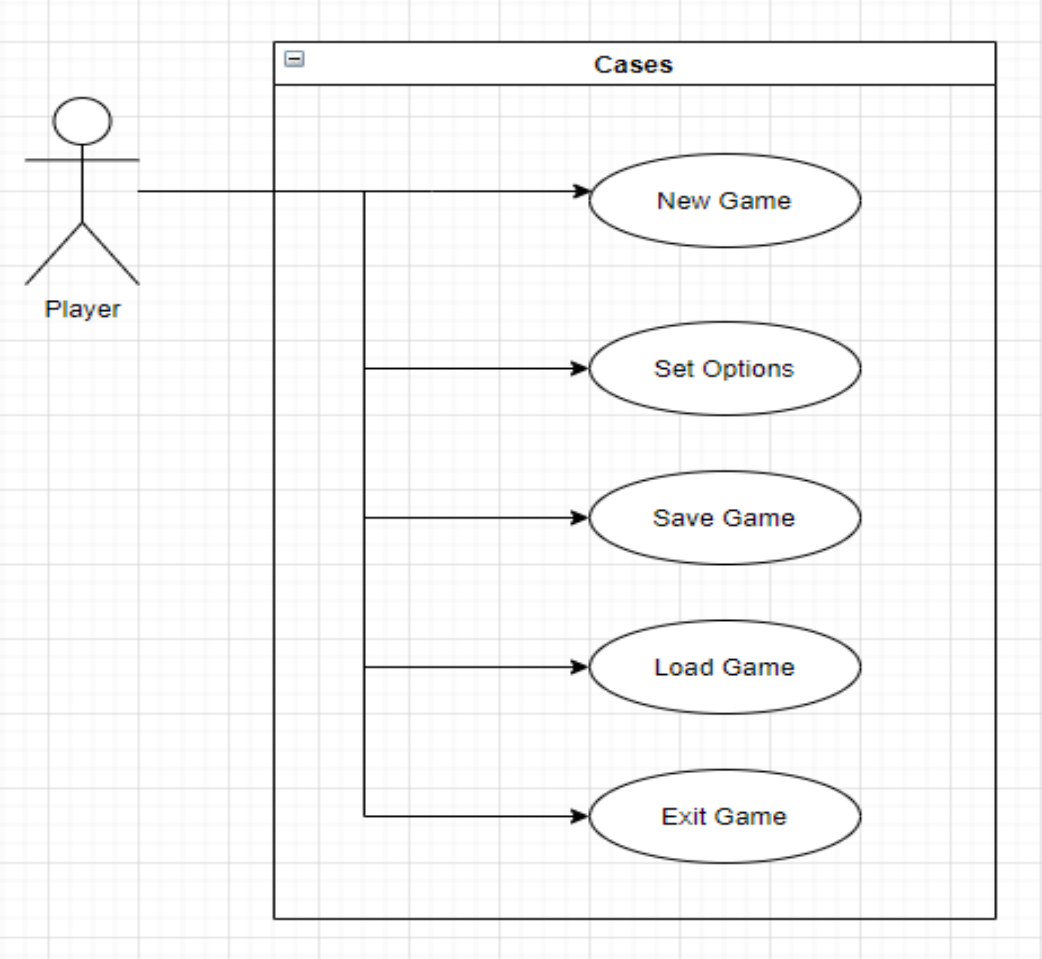
Table 5 Use Case Table

Use Case ID	Player_001
Use Case Name	Playing Game
End Objective	They understand their emotions and they have a better handle on challenging situations
User/Actor	John Doe (Player)
Trigger	The user decides what game level to play, while deciding what obstacles to overcome
Frequency of Use	Games save after each level

Preconditions	Need to have computer setup to play game. Have a familiarity with how to play games. May also have behavioral issues such as erratic behavior or troubling fitting-in in school
Basic Flow	The user decides to play a new game, change any options they want, and finish the game if they choose
Alternate Flow	The user wants to save the game and finish it later User chooses to go back to main menu and restart the game from the beginning.
Postconditions	Able to understand his emotions and the others around him. Better developed emotional intelligence.

Use Case Diagram:

Figure 2 User Persona Table



Testing Plan:

Overview

The user tested the different functionalities and capabilities within the game. The goal was for the user to do a walkthrough of the game and build an understanding of what it is about. The purpose was to gauge user experience and gather feedback on whether new users understood the controls, interface, gameplay elements, and level/reward system.

Methodology

At the conclusion of coding/manual bug finding process for each level, the team sent the level to test users and used gathered feedback iteratively on each level, and then had a final phase of feedback for the whole game with all improvements put together. Since the game is story-heavy, the team chose a similar approach to how writers will send their chapters to beta readers for novels.

Scope

a. Experience of Downloading/Launching Game
b. Saving/Loading Features
c. Options Menu
d. Choices being saved and being reflected later in the story line
e. Feedback on flow of story/characters/endings
f. When and Why users drop off from games
a. Each Level and its design
b. How players react to (specific?) bugs

Objectives

a. All major features and use cases need to be accounted for
b. All use cases must account for all the user roles
c. All bugs need to be resolved before IT Expo

Test Logs and Procedures

Table 6 Project Budget

Date	2/8	2/8
Test Case #	001	002
User	Nan Yeboah	David Hanson
Role	tester	tester
Expected Output	The user should be able to progress through the scenes within the game	The user should be able to progress through the scenes within the game
Actual Output	She encountered a few bugs with reading the options	He encountered a few bugs while reading some of the options but was able

	but could follow along with the story	to get what the game was conveying. He said design wise the setup could be better.
Pass/Fail	Pass	Pass
Reason for Failure/Success	It was a success for her to understand the point of what we were trying to get across but still found some bugs to work through	It was a success for him to understand the message of what the game conveyed while also receiving feedback for improvements

Change Management Plan:

Any member could request a change if it applies to either a fundamental or supplementary aspect of the project. There would be a group meeting to discuss the pros/cons and it was held to a majority vote. If the change impacted the game on a fundamental level on the coding end, it took the highest priority. If it is supplementary but geared to make the game more entertaining/a better experience for players (a new feature, story feedback, etc.), then it would be given a medium-tier priority. The lowest priority was reserved for aesthetic/artistic changes to the game. When a change has been agreed upon, the advisor would be notified via teams or in a meeting about the change and the process leading to it.

Budget:

The budget developed below included labor and Microsoft 365 Basic Business suite. Although the group used software such as Unity and art development software, these were free resources to the public and required no payment. Microsoft 365 was paid for by the University of Cincinnati and was used mainly for Teams, for which the group collaborated, along with the Office Suite of software. Labor was calculated based on the average number of hours the group worked in each week.

Table 7 Project Budget

Estimated Cost Rough Order of Magnitude:

	Rate Per/Hr	Work Effort (Hours)	1 X Costs	Ongoing Annual		
				Rate Per/Hr	Work Effort (Hours)	1 X Support Cost
Labor - IT	20	22	$ 440.00	20	590	$ 11,800.00
Labor - External	0	0	$ -		0	$ -
Software - External			$ 300.00			
Hardware - External						
Misc.			$ 9,250.00			
TOTAL			$ 9,990.00			$ 11,800.00

Problems Encountered and Analysis of Problems Solved:

1. Learning Unity/ Unity Collaborate
    a. This was solved through the developers taking time to watch different YouTube tutorials and getting a handle on software while learning the different tools that it has to offer
2. Functionalities within Unity
    a. These issues arose as the group discovered new functions within Unity, however, through using sites such as Stack Overflow and the Unity forum, they could find solutions to problems with the Unity functions
3. Time Management
    a. Each member had a busy schedule, so time management was a recurring theme as they were progressing through the project. Through using their Discord channels, they were able to create a system where they would update each other on their progress. Unity collaborate was linked to the Discord so each member could see when changes had been made. Also, having an individual to-do list helped them stay on task.
4. Conceptualization
    a. To create a game that has emotional depth, it needs to rely a lot on storytelling as well as gameplay. A slow point was figuring out how the story would flow and how that would play out in a game format that would be both engaging and educational.

Conclusion

- Communication
    - Despite being a large group, the group was able to communicate several times a week and worked together on tasks. This made it easier for each person as it was not as though they were completely split up, but their tasks blended so that each portion of this project was a collaborative effort from all involved.
- Game Design
    - When conceptualizing the game, members had to learn what the proper steps of game design and development were so that they could effectively manage their tasks for this semester. They had various games that served as inspiration and had to be realistic with what they could implement since members were learning Unity at the beginning of the fall semester. This led to a lot of collaborative talks as they fleshed out how the game levels would be organized, where there would be gameplay and where there would be cutscenes, and how they could make it all work effectively so that Mindverse could convey the message they wanted it to.
- Game Development
    - When creating with Unity Collaborate, they were able to take different images that were created and make game scenes. The UI is based upon a pre-teen in a classroom. The creation came from an ideal classroom. The functionality came

from using C# in Visual Studio and wiring that to the game scenes for the player to be able to interact within the game. The dialogue was for the player to be able to experience different ways of processing/understanding their emotions. The Dialogue Trigger and Manager were the components that made this possible as the player can communicate with the mentor character in that game level.

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