Project 6

Deliverable 1: Design objective

Our assignment was to create a game that would persuade players to take actions in their daily lives that would reduce their CO_2 emissions to help keep the planet healthy. We decided on the act of carpooling, where individuals can save on fuel, helping both the planet and their wallets, when friends can drive each other to an event instead of everyone driving their own car to events.

To achieve this, our game design focused on a driving simulator where you drive around and pick up friends, and eventually drive to a final destination after picking up all your friends. The player would also need to make sure to keep an eye on their fuel gauge, that way they stay at least keep in mind how much fuel is being consumed.

As for difficulty and gameplay, the challenge was ensuring that you safely drive to pickup all your friends without running out of gas. To help with this, the player had access to a minimap and an expandable large map to help plan a route that would most effectively reach all destinations without running out of fuel.

Deliverable 2: Intended Experiences and Desired Outcomes

- Fuel Conscious
    - At Least keep in mind how much fuel is being used, and try to use less
- Good Samaritan
    - Feel like a good friend, offering to and picking up friends to go hang out
- Safe Driver
    - Feel obliged to be a safe driver
- More likely to carpool
    - See that carpooling can save on fuel and be fun with friends, so more likely to carpool more

Deliverable 3: Game Development Process

The process to develop the game described above required a variety of approaches. Using Unity 3D as our main editor and using C# for our programming language, we had to develop a driving simulator where objectives were at least somewhat randomized to assist with replayability. To help with cohesion across the team, we used sprint planning to divide and conquer.

We designed maps and added a system that would randomly generate the individuals that the player would need to pick up. To assist with difficulty, we also made a system that would randomly place roadblocks, so the player couldn't use the same paths every time. This randomization meant we got more out of the few levels we made, instead of putting in large amounts of time to create several levels and focus on other areas as well. The tutorial was a bit different, as it was far more linear and wouldn't work as a randomized level. Using a variety of trigger zones, it allowed the tutorial to toggle multiple control and objective tips to teach the player in a progressive matter.

We also made a menu system that utilized singletons which made it easy to pause the game and switch between levels. Originally, we allowed the player to select levels, but we later made a system that would randomly select and load levels endlessly, allowing the player to rack up a high score until they reach a game over situation.

To help with the theming, we added subtitles to characters when they were picked up, and also mentioned some of the benefits reaped from carpooling on the endscreen.

To create the player, we initially used a movement system that worked but was very buggy. We swapped over to a car controller which, after lots of experimentation, turned into the player controller in the game now. It acts like a real car, where the player needs to be cautious about their speed, otherwise they could flip and crash when they turn. To help with player controllability, a break feature was added which made it even more car like. For the map, we used multiple cameras that looked down on the map, and added several screens that the player could swap between to choose which map to use.

Deliverable 4: Playtesting Experience

When playtesting this game, we worked with multiple members from another team that helped give us an players perspective. Each member was given a few minutes to play the game and give feedback both in person and through an anonymous questionnaire.

The questionnaire asked about some generic information such as how the players through the difficulty was handled, esthetics and overall experience. We also added additional questions that focused on how they thought of our games theming and if it came through or not. To see the questions we asked, see the link at the end of this section.

We had each player go through the tutorial to learn the game and then play the one level we had available at the time. Even though there was only one level, players enjoyed being able to play through it multiple times thanks to the randomized spawn locations of the individuals to pick up. The overall experience was positive and provided much data to help make the game more enjoyable. Details about the feedback are covered in the next few deliverables.

Playtest Questionnaire:
https://docs.google.com/forms/d/e/1FAIpQLSd3yYFPNMvOY2qmtugOVz7FVLLn6Cz_7HXTmHQzbIbtFJoKCQ/viewform

Deliverable 5: Playtest Observation Notes

Here is a list of notes that we took while playtesting the game:

- Add fuel icon over the fuel icon / fuel was communicated too late in the tutorial
- Low framerate on x1 participant (On chrome, others work well)
- Likes the minimap / megamap
- Compass arrow sometimes clips into buildings
- Likes the driving but feels fidgety
- Map borders could be better defined/implemented

- Participant 1 liked it overall, felt fuel was well balanced
- One participant felt the hitboxes on buildings were a bit off
- One idea of having a score board that displays friends remaining
- Hide mouse during gameplay
- Maybe add infographic showing how much fuel saved by carpooling

Deliverable 6: Summary of Questionnaire
Questionnaire Results:
https://docs.google.com/forms/d/1attAQDWQstS5hREb7XArt_byOqFjBT1gg1oUCjD2QI4/viewanalytics

Deliverable 7: Findings from playtesting
- **Highlight 1:** Replayability
    - Players enjoyed playing the level multiple times since the individuals to pickup were randomly placed
    - Players replayed the level multiple times in playtesting, even though there was just one level
    - Add more randomization, such as roadblocks
- **Highlight 2:** Maps
    - Players were fans of the two added maps. They enjoyed the arrow on the minimap, and the size of the mega map that allowed them to plan out routes
    - They commonly used these maps and mentioned their fondness of them during playtesting
    - Polish the maps, possibly with keys or ensuing the minimap arrow does not clip into buildings
- **Highlight 3:** Aesthetics
    - Players were fans of the overall looks of the game. Even though they were all free assets, they all fitted into each other very well
    - Many mentioned they liked the visuals of the game, as it was very colorful and fit together
    - Nothing except maybe adjusting lighting

- **Issue 1:** Player controller
    - Priority: 1
    - Player felt slow and would violently shake to the side.
    - We and playtesters experienced this issue.
    - Adjust player controller to be smoother, adjust camera so its not shaking at every bounce
- **Issue 2:** Theming
    - Priority: 3

    - The theming of the game, carpooling, wasn't very obvious for many players
    - Evidence noted in playtesting questionnaire
    - Add an endgame screen. Adjust size and font of subtitles, add additional effects
- **Issue 3:** Audio
    - Priority: 2
    - The game has no audio, feeling quite dead.
    - Evidence is the game has no audio
    - Add audio, from music, car sounds, cheering on pickup, etc
- **Issue 4:** Level Variety
    - Priority: 3
    - Even though the single level can be randomized, we only have one level outside the tutorial
    - Evidence: Only one level
    - Create an additional level
- **Issue 5:** Difficulty balance
    - Priority: 4
    - While some players enjoyed the balance of the game, some players didnt feel challenged
    - Even though many players mentioned they enjoyed the games difficulty, they never actually triggered a game over
    - Add additional difficulty. This can be done with random roadblocks, ability to flip the car as a result of careless driving, changing fuel consumption rate, and increasing how many people are added.
- **Issue 6:** Building collisions
    - Priority: 1
    - Buildings have wonky collision boxes
    - Evidence: mentioned in playtesting and questionnaire
    - Modify collision boxes to be more realistic with building boundaries
- **Issue 7:** Map Borders
    - Priority: 1
    - Players can exit map
    - Evidence: Some players broke out the map while playtesting
    - Add mountains in the back to act as map boundaries

Deliverable 8: Sprint Retrospective

Sprint Retrospective for Week 5 (11/9)

- Ben - Done - Improved tutorial, spaced out wording, various bug fixes
- Logan - Done - Created a new level
- James - Done - Added an initial title picture on main menu and subtitles to the game after picking up individuals

- Jerod - Done - Created a new player controller utilizing the wheel collider

Sprint Retrospective for week 6/7 (11/16-11/30)

- Ben - Done - Fixed and optimized player controller. Changed camera to be smoother. Did not create third level due to time constraints
- Logan - Done - Added variation difficulties through roadblocks
- James - Done - Added additional theming
- Jerod - Done - Found several audio files to use for the game

Deliverable 9: Sprint Planning

Sprint Planning for Week 6/7 (11/16-11/30)

- Ben - Look into character controller, look into third level
    - Try to fix the violent shaking while driving, remove its vertical force when y axis is locked
    - Also look into creating a third level we can use as hard
- Logan - Create level variations, add additional difficulty
    - Create additional variations of the level, look into difficulty balance
    - Look into linking additional levels together
- James - Improve theming items
    - Improve subtitles, maybe additional feel good aspects
- Jerod - Game audio
    - If adding audio, look for things like running engines, reward pings, breaking screeches, basic background music loop, etc.

Sprint Planning Week 8 (12/07)

- Ben - Add restart, Update building colliders
    - Make it so player will get game over, or is told to restart through menu when car flips and softlocks player
    - Update colliders on buildings in levels
- Logan - Work on level variation, add map boundaries
    - Add randomly generated roadblocks, add ‘mountains’ for map boundaries
- James - Add ‘campaign’
    - Add a system that when play game selected, it jumps between levels randomly
    - Keep track of levels completed and friends picked up
    - When player loses or clicks end game, show an endgame screen that will say congrats, and mention without carpooling, (friend amount) times more fuel would’ve been wasted, return to main menu
- Jerod - Game Audio Cont.
    - Finish finding audio and implement into game

Deliverable 10: Post-Playtesting Plan

Action Item	Description	Priority	Status
Add additional level	Self explanatory	3	Done
Audio	Add various audio	2	In progress
Player Controller	Make player controller more enjoyable	1	Done
Roadblocks	Add randomly placed roadblocks	3	In progress
String together levels	Allow an endless mode where the player can rack up a high score	4	In progress
Adjust theming	Adjust theming to make allow the message to be more obvious	2	In progress
Varying characters	Randomly select how many people are added, for additional difficulty	3	In progress
Fix building collisions	Fix collision boxes with buildings	1	In progress
Fix map boundaries	Add mountains around border of maps to act as final map boundaries	1	In progress

Deliverable 11: Final Team Project Game

Github Repo: https://github.com/LoganRossBradley/CIS-497-Project-4

Simmer.io: https://simmer.io/@bschuster/acquaintances