Game Design Document

for Traffic Tricks

Name (student): Eric Li

Student number: 456873

Class: CMGT 2G

Teacher: Dennis

School: Hanze University of Applied Sciences

City and study year: Groningen, 2023/2024

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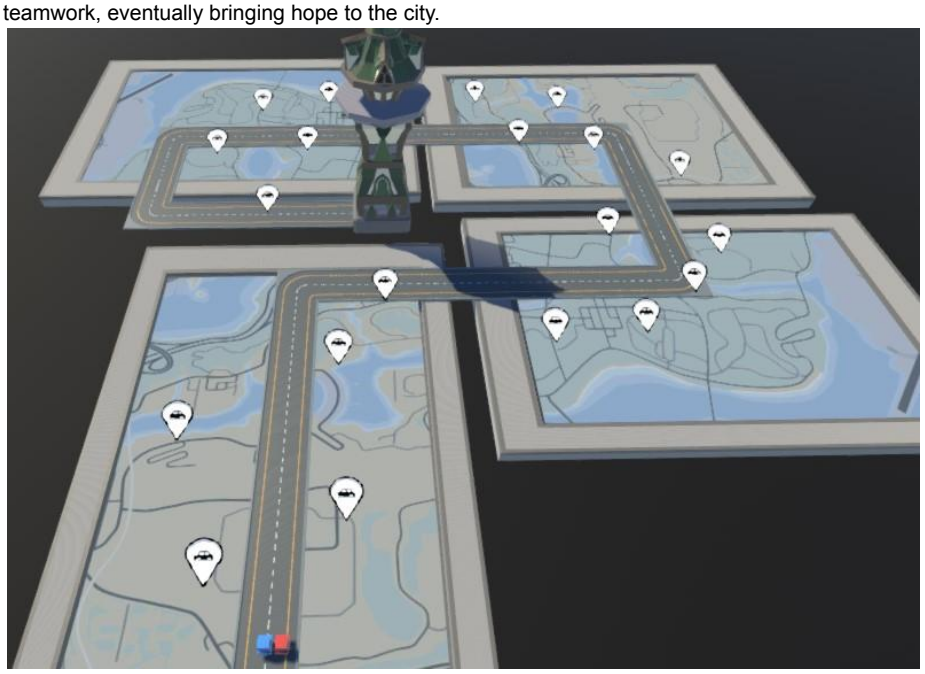
Concept

Game Concept

The game takes place in a future where AI technology allows cars to drive themselves. However, one day the city's major traffic tower breaks, making all cars unable to use their steering wheels or even brakes. The player controls two twin cars, Red and Blue, which are sent on a mission to check out the central traffic tower. Red can only move vertically, while Blue can only move horizontally. Unlike other out-of-control cars that race everywhere blindly, Red and Blue have the unique capacity to push each other in an effort to save the city. In the prototype version, there are 20 levels that the player needs to finish to master different road mechanics in order to get to the traffic tower. Each stage, which consists of five stages, introduces and develops the challenges with a unique gameplay style that players must learn to apply in order for the twin cars to overcome all the challenges through cooperation and teamwork, eventually bringing hope to the city.



External Goals

- I want to have a playable prototype with fun and joy to show my ability to finish a prototype within 8 weeks.
- I want to improve my programming skills by finishing all the coding on my own.
- I want to design exquisite levels in Unity to amaze my players.
- I want to finish a game design document to show my game design choices and evaluations.
- I want to publish the game later and get at least 20 downloads by the end of this year.
- I want the game and game design document to serve as solid evidence of my showcase portfolio.

Internal Goals

- Players would have a sense of achievement when finishing a “hard” level.
- Players would be excited to unlock more levels to explore new mechanics and content.
- Players need to think outside of the box to come up with solutions on the levels.
- Players feel they’re smart after finishing the game (complete complex levels or unlock hidden achievements).
- Players feel progression while playing the game.
- Players feel smoothly increasing difficulty between the levels.
- Players could be annoyed by the chaos and crowded traffic in the game.

Gameplay Goals

- Players need to unlock new levels to get to the final traffic tower to recover the traffic system in the city.
- Players need to manage to make both red and blue cars to get to the exit to finish a level.
- Players need to make sure all the cars in the scene (including NPCs) are alive or they fail the level.
- Players need to learn different new mechanics in new maps to solve the problems.

Target Audience

Age Range: 18-30 years old
Gender: All genders
Occupation: Students, young professionals, or anyone with an interest in puzzle games.
Personality Traits:

- Enjoy lateral thinking and problem-solving.
- Open to challenges and intellectually stimulating experiences.
- Prefer games that require strategic planning.

Interests:
- Puzzles, brain teasers, and strategy games.
- Casual gaming for relaxation and mental stimulation.

Values:
- Appreciate creativity and unique game mechanics.
- Seek a sense of accomplishment and achievement in gameplay.
- Enjoy games that provide a break from routine with a touch of humor.

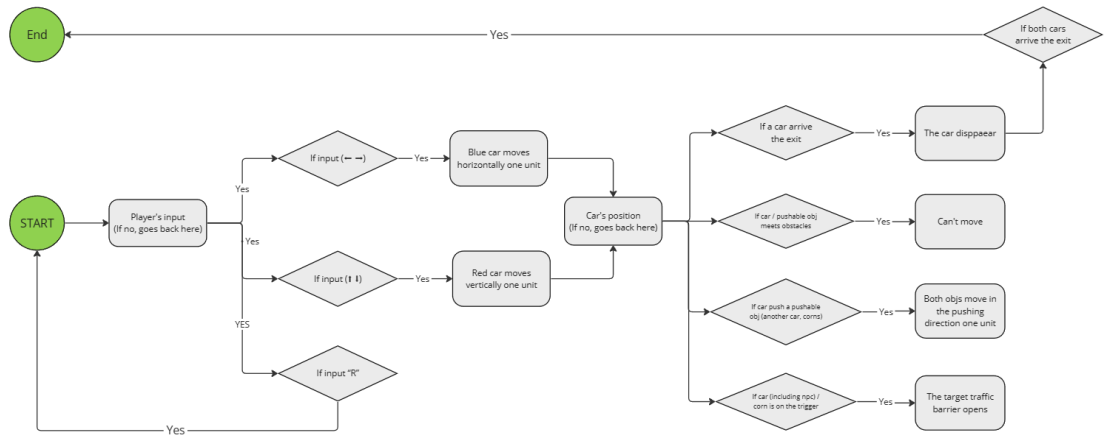
Genre
- Traffic Tricks is a 3D puzzle game with the combination of simple mechanics and creative problems.

Platform
- Main focus on PC - Windows, Mac, Linux.
- IOS and Android mobile versions for future implementation.

Development Tools
- Unity Engine.

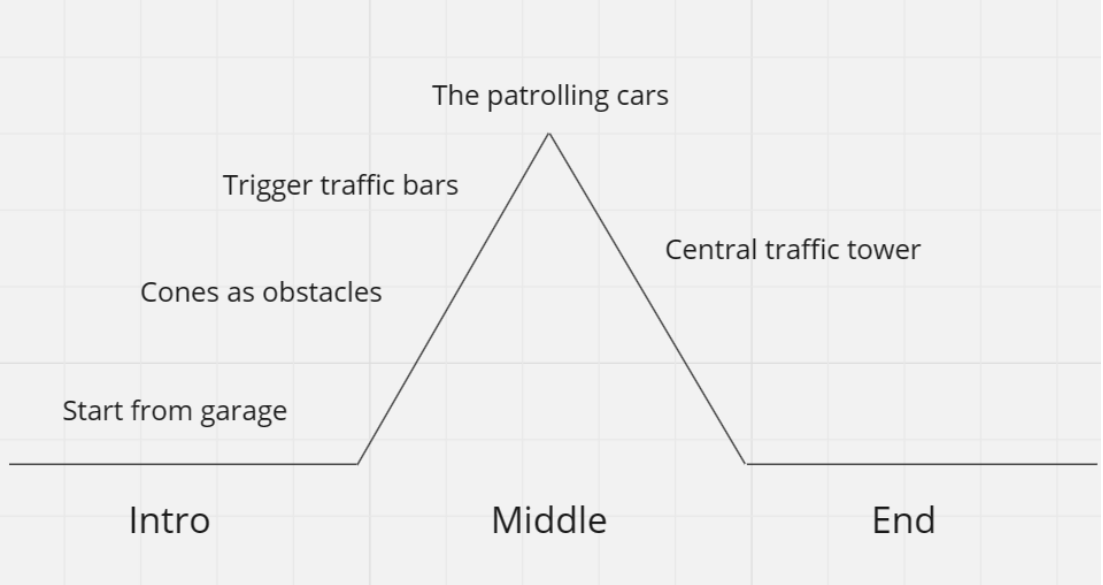
Game Overview
Core Gameplays
- The player controls 2 cars, one horizontally and another vertically.
- The player needs to control both cars (must keep the cars alive) to get to the end to finish each level.
- The player can use tools (cone, trigger, npc cars) in different stages to find the way out.
- The cars would crash as long as they touch npc cars.

Flow-chart



Gameplay Actions
- AD to control the blue car (horizontal).
- WS to control the red car (vertical).
- Push cones away to find the way out.
- Use a trigger to open the target traffic bar.
- Don't crash the car by analyzing the map.
- Push corns to NPC cars way so they alter the direction when colliding with the cones.

Structure
Linear structure:
In shaping the narrative structure for this puzzle game, I've chosen a linear approach to keep things simple and engaging. The decision is rooted in a desire for easy controls, straightforward mechanics, and a level-based puzzle design. This setup ensures that players can swiftly grasp the game's essence, enjoy the challenge, and progressively improve their skills. The aim is to provide a seamless and rewarding experience that balances accessibility with the thrill of puzzle-solving.
There are 20 levels in the prototype version and each 5 levels represent one stage, a new stage introduces a new story with a new mechanic in a new environment to hook players up as well as increasing the difficulty of the puzzles.



Story

In a future where smart cars handle all the driving, a city faces chaos as its main traffic tower breaks down. The result: a massive traffic jam, with confused cars unable to find their way.
Initial Levels: The early levels can serve as tutorials where the players learn to control Red and Blue Cars individually and do some simple corporations. These levels represent the start of their journey, and as they progress, they encounter the chaos caused by the malfunctioning Traffic Tower.
Mid-Game Levels: The player begins to understand the need to work both cars together. They must figure out how to push obstacles like cones (representing the city's supplies) and use these to trigger switches to clear paths.
Advanced Levels: Red and Blue Cars confront various obstacles and challenges, such as the malfunctioning Traffic Barriers (that can be controlled by pushing items onto switches).
Climax: The pair finally reaches the last stage before the heart of the city, the Traffic Tower. Here, they face the ultimate puzzle: repairing the malfunctioning Traffic Tower by solving a complex traffic jam of switches and traffic controls with the danger of crashing into other out of control patrolling cars.
Ending: When they restore order to the city, Red and Blue Cars become revered as heroes. In the final scene, the Traffic Crystal glows with the colors of their friendship, symbolizing the importance of teamwork.

Desired Experience

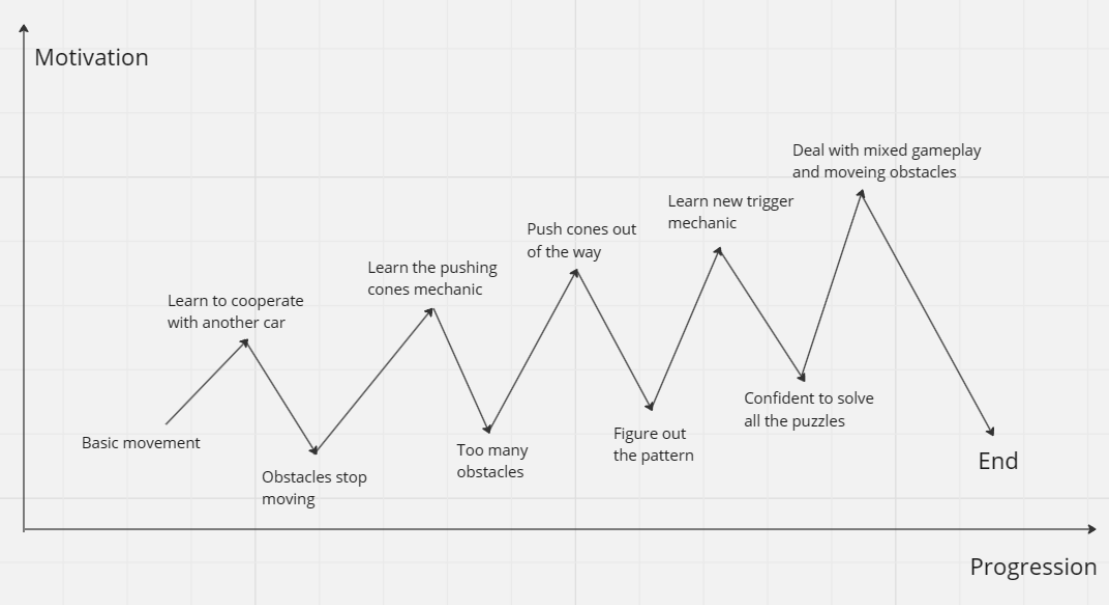
One-pager

Setting

The game story happens in the future where smart cars are doing all the driving. But there's a problem in a city – the main traffic tower is broken. Now, the cars can't figure out where to go, and the whole city is stuck in a big traffic jam.

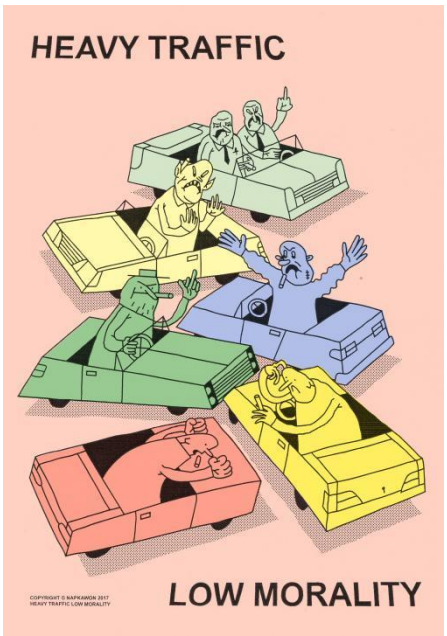
Pacing

The pacing in Traffic Tricks are served to hold the motivation and attention of the players so they don't give up too soon before finishing the game.
Motivation Curve

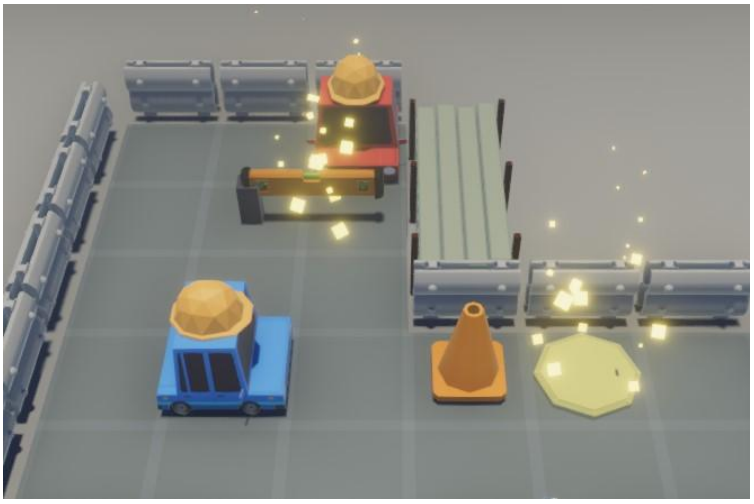


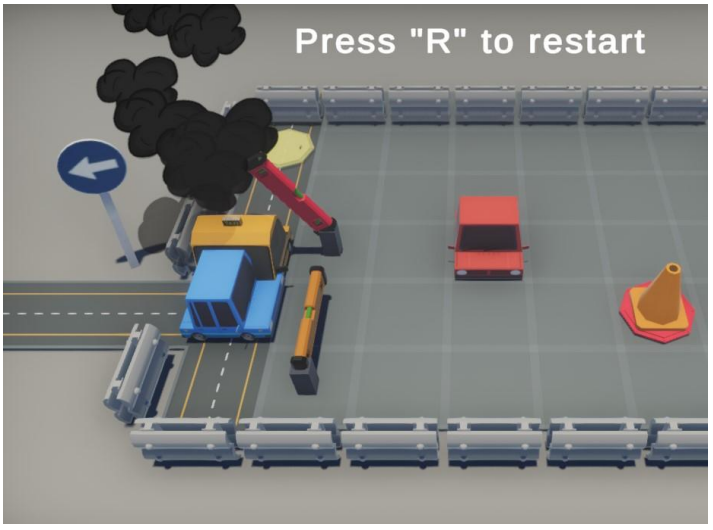
Visual Experience

To inspire players to be creative and let them have fun when solving the puzzles, The color palette should be bright and high contrast.
The interactable items are scaled bigger than usual to let the player intuitively understand the use of them.



Visual Instructions





User Interface

World Building

Rules:

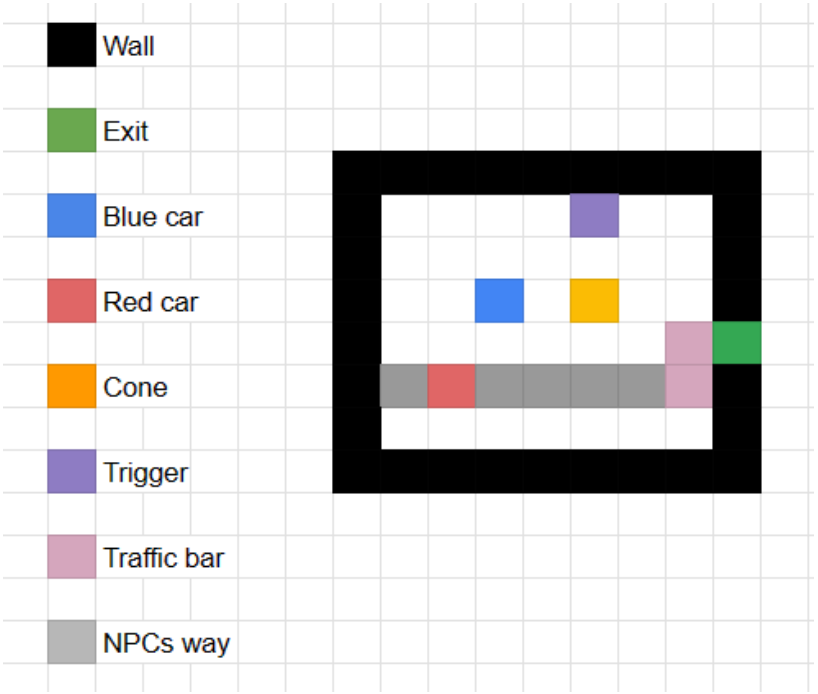
- Cars can't change direction, they can only follow a straight path.
- Only the player's cars have the power to push each other and corn.
- NPC cars alter their path when they hit corn.
- Corn and player's cars can trigger the traffic level.
- If an NPC car crashes into any car, the player fails the level
- Pushing items is blocked if there's something in the way (another car, corn, or a wall).
- Unlocking the next level requires completing the previous one.
- Each island completion triggers a special story event.
- Unique Landmark: A massive traffic control tower marks the map's center, symbolizing the final destination.
- Cars are obviously bigger scale then the environment since they're the main characters in the game

Item placement:

The items in the game are wall, corn, traffic level, trigger. In order to make players fully learn the mechanics, the items should be placed right in front of the players in the early levels in each island to let players interact (push) and experiment with the new items, in the final levels, the amount of items increases and they should be placed in different area to let players think of solutions ahead.
The street sign points at the exit to show where to win the level.

Level Design

Annotated Map

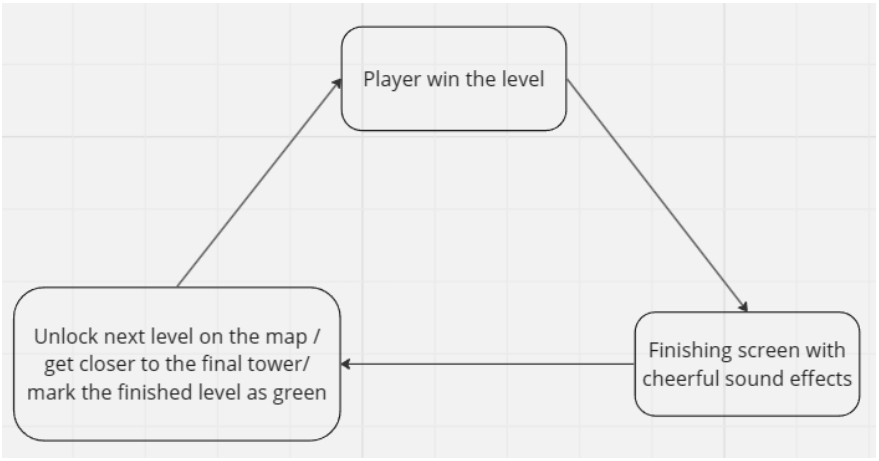


Beat Chart

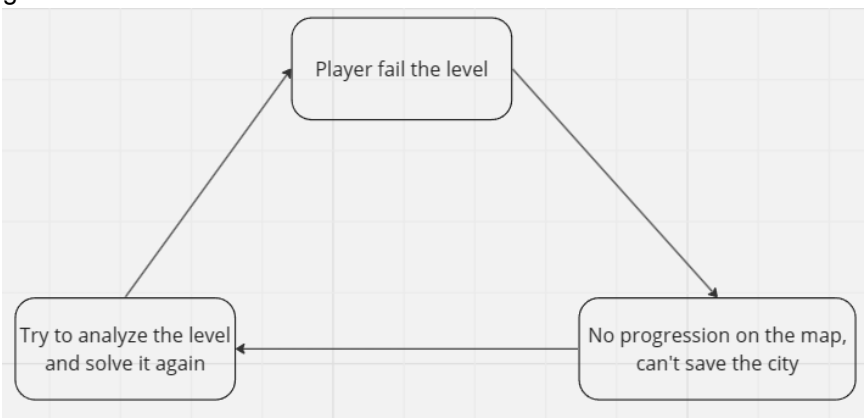
	Stage 1	Stage 2	Stage 3	Stage 4
Location	Garage	City District	Construction Field	Central Tower Area
Gameplay	Basic movement	Push cone(s)	Use cones to trigger the traffic bars	Use the mechanics together and avoid from NPC cars
Game Objectives	Both cars go to the exit	Both cars go to the exit	Both cars go to the exit	Both cars go to the exit / Don't crash NPC cars
(new) Obstacles	Wall boundary	Objects in front of corns	Traffic barriers	Patrolling NPC cars
NPCs	X	X	X	Police car and Taxi

Feedback Loops

Positive



Negative



Emotions

- A huge satisfaction from recovering the traffic system to save the city.
- Simple joy of helping each other in different stories.

Rewards

- Every time the player finishes a level, show a map and where you are, which gives players a sense of getting closer and closer to the destination.
- Beautiful cutscene and meaningful link between cars every 5 levels as reward,
- Gain gold to buy more cars (skins) or even cute anime girl drivers.

Immersion

Immersion through work

- Immersed in the progression of helping to recover the traffic in the city.
- To not break the immersion while players are solving the problems, the difficulty should increase smoothly between the levels.

Immersion through visuals

- The environment is different in different stages to match the new content and stories.

Magic circle

- The player adjusts the mind to this unique control as long as they’re in the game.

Puzzles

Lateral Thinking:

- Anticipate the cars' movements to make strategic decisions. Predict their paths and plan moves ahead.

Pattern Recognition:

- Identify recurring patterns in car positions amid more intricate environments. Master the evolving challenges through pattern recognition.
- Analyze the patrolling NPC cars paths to make use of them to finish the level.

Hand-Eye Coordination:

- Manage two cars—one confined to vertical movement, the other to horizontal. Coordinate their actions to navigate the puzzle successfully.
- Get the suitable timing to go through the traffic bar when NPC cars trigger it.

Memory Usage:

- Learn from mistakes. After NPC car collisions, remember to use corn strategically from the outset for immediate protection.

Challenges

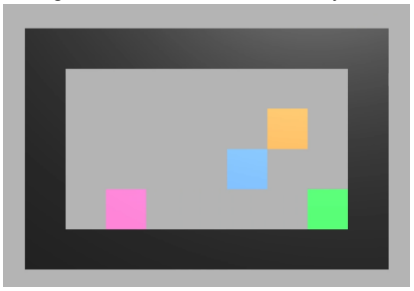
- How to move both cars in different directions.
- How to make cones out of the cars' way.
- How to trigger the traffic level to let cars pass.
- How to make use of the NPC cars and avoid them from crashing.

Testing and Iterations

Test1:

Test plan: Simply let people play around with the prototype and figure out the puzzle to see if it's a fun concept to develop.
Testers: 3
Goals:

- Test out if the gameplay concept is interesting.
- Get general feedback on what they think would be cool in the game.



(Yellow and blue squares represent 2 knights, the pink square is the princess and the objective is to push her to the green exit.)
Results:

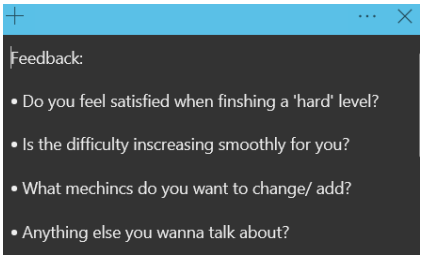
- Only 1 player finished all 10 levels, the other 2 stopped at 4th level.
- Player doesn't get the story of playing as knights to save a princess

Insights:

- The difficulty increased too fast
- The control is confusing at first
- The design of puzzles are challenging but they felt satisfied when finishing the hard levels.

Test2:

Test plan: With the version with better visuals and more levels, I wanted to know if the player still finds it too hard to play and how they feel about the story from the 2d art and environment.
Testers: 7



Goals:

- Find out if the environment build shows the story
- Find out if the difficulty gaps are almost even
- Try to get player's emotion changes while playing


There are 20 levels and each 10 with its environment style (plain and cave). The new mechanic is introduced at level 11.
Results:

- Players like the environment build and how it slightly changes to the next between levels
- Players found the gameplay simple but interesting
- Players still found it too hard at the last levels, most of them gave up around the 12th level.
- Some exits are not clear and the ‘fancy’ environment can be confused, they thought some items are intractable.

Insights:
- Add a more dynamic gameplay to it.
- Instead of designing the complex puzzles with these 2 main gameplay, try to involve more interesting mechanics.
- Create a world map to show the player's progress to form a positive feedback loop.
- Cutscenes or dialogues could be the way to tell the stories.

Test3:

Test plan: I developed this new version with different assets and level designs, now I introduced a new mechanic each 5 level (movement, push box, shoot arrows, patrolling enemies), I wanted to see how players react to the new mechanics, new visuals (since I add animation to all the characters in the scene and highlight the exit) and dialogue system.

Testers: 5

Goals:
- Find out if the visual is better than the last version or the problems with that.
- Find out if the new mechanics are fun and fit in the previous ones.
- Find out if the dialogues help to understand the game story and gameplays.
- Find out which levels are too hard to play for the first-time players.

Add 2 new mechanics and make the exits easier to find. (also less fancy environment)

Results:
- The new characters look like they have penises in front of them.
- It was frustrating for testers who played the first time because they weren’t used to the controls.
- The new mechanics (shooting and moving enemies) are well mixed with previous mechanics.
- The dialogue was a bit annoying and players don’t really give a F about the stories..
- The environment is too dark and it’s not good for a puzzle game.

Insights:
- There needs to be something to show the player's progress so they wouldn’t give up that fast.
- There can be some choices for players so they have a feeling of control.
- Players can’t get the satisfaction from the story of saving another NPC who doesn’t do anything.
- I still need to adjust the placement of assets to inform players of correct and clear information (The direction of characters is not clear, the interactable items and).

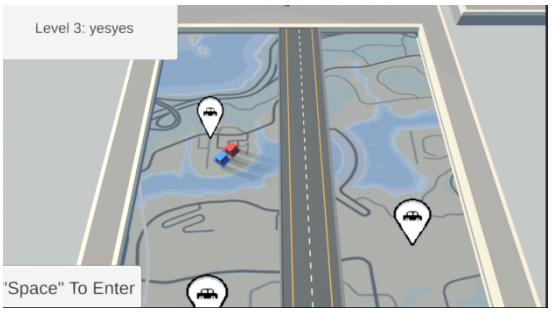
Test4:

Test plan: I changed the whole game from 2D to 3D and the concept is no longer saving a princess in each level, instead the player controls 2 cars to escape from each level.

Testers:9

Goals:
- To see if the car concept fits better with the mechanics.
- To see if the world map is adorable.
- To see how much time the player takes in each level and adjust the longer ones’ levels.
- To see if it’s still too hard for the testers who played it for the first time.

How: Add a timer to record how long it takes for players to win each level.



The player goes back to the world map every time they win the level to unlock new levels and maps.

Results:
- Most testers can finish the all the levels but they were not that satisfied when figuring out the puzzles.

- The levels with rotating traffic bars could be confused and testers don't like how they need to be fast to pass them.
- A lot of feedback on adding sound effects.
- None of the testers like the control of the cars in the world map (it's hard to control to enter the levels for them)

Insights:
- The levels that force players to be fast are unacceptable in puzzle games.
- The world map is good but should be improved to show more clear progression and destination.
- 3D assets are better than previous 2D assets because it makes more sense for players to understand why each car can only move in one direction, and how the interactable items work in the gameplay.

Future Improvements

- I already got a lot of feedback that Traffic Stuck could be a very enjoyable casual mobile puzzle game and I would like to look into mobile game design choices to develop it further on that.
- The prototype already has 20 good levels but still lacks instructions or tutorial sessions. I want to come up with some fun ways to teach players the gameplays.
- The visual of the prototype could be more cohesive and even simpler so the player can totally concentrate on the puzzles which also gives an immersion to the process of solving problems.
- There are some bugs that I don't have time to fix in a short period of time, like the collision of patrolling cars, I definitely would like to find the solutions so it doesn't break the immersion from the players.
- I didn't look into a lot of UI design decisions but I feel like it would be very helpful to a puzzle game.
- I want to have some funny stories in the game and well mixed with the levels.
- There can be more levels with different environments as well as the mechanics in them.

Reference

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