

Soft Drink: Total Carbon-Action

Game Design Document

Group 4

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Final Project

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Story

The game is set in the future in which humanity discovered the best way to generate propulsion is the release of pressure from carbonated drinks. This technology was used to begin exploring space. However, dependence on this fuel source caused Loca-cola and Bepis, the leaders of the soft drink market, to become the most powerful entities on Earth. They started a war that slowly destroyed the Earth, prompting a lot of people to escape to space. Our protagonist, Steven Up, is one of these people. Unfortunately, his ship crashed into a Loca-cola orbital research station, from which he must now steal the revolutionary Loca-cola 2 if he wishes to give his ship the power needed to take off again. The game starts, Steven fights his way through the research station, acquires the new product, and flees, hopefully never crossing paths with Loca-cola again.

Story Bible

April 1st, 2030. The eccentric billionaire Alan Mousse managed to send his 13th car to space. This time, however, he did not use any regular old fossil fuel powered rocket... no, he propelled his beloved vehicle using only the force derived from the relief of pressure from a gigantic champagne bottle.

As the entire world laughed at the rich oddball's most recent prank, a pair of rivals saw instead an opportunity. They were the two most successful soft drink companies, Loca-cola and Bepis. Having been equally matched for years, they understood that Alan's discovery could give them the edge needed to bring the other company down.

Over the following 20 years, the two rival companies would set up space travel agencies which gave humanity the chance to reach places further and further away from Earth. Holding an undisputed stranglehold over the carbonation market, they would become the most powerful entities on the planet. However, after consistently matching each other's exploits, they grew increasingly impatient.

On the 8th of May 2050, feeling confident in the advanced armaments afforded by the new technology, Loca-Cola and Bepis decided to attack each other directly. Unfortunately, as everyone but themselves predicted, they were equally matched, and that trend continued for 26 years, throughout which the Earth was progressively withered and ravaged.

This left many people thinking there was no hope for a future on their planet. Thankfully, humanity was shown another choice, presented by Alan Mousse, the old billionaire that started it all. On the 1st of April 2076, he set up a way for commoners to engage in space travel so they might find a new life among the cosmos.

Many of the survivors started leaving their home planet behind. Others chose to stay, though: the hopeful, the brave, the stubborn, the opportunists, the people personally invested in the war. Steven Up is not one of these people. He escaped Earth on one of Mousse's cork ships.

However, as fate would have it, he could not make it far, as his ship crashed directly into a massive orbital research station belonging to Loca-cola. He survived, but his landing hurt a Bepis spy who had been infiltrated for years to thwart the scientific advancement of the Loca-cola company. Lately, they had finished developing the revolutionary Loca-cola 2, an incredibly powerful fuel.

Steven could not leave the station, as his ship's fuel could not generate enough propulsion to take off. This presented an opportunity for the spy. He would have Steven steal the Loca-cola 2 in his stead. This way, it would keep it off his employer's rival's hands and give the unfortunate passerby a powerful enough fuel source to escape.

Of course, Steven cannot do that unhindered, he must fight the security of the station on his way to the coveted item. Luckily, he succeeds in robbing Loca-cola of their new product and using it to power his little ship. He flees hoping to never encounter that company again.

Art Design

Concept Art

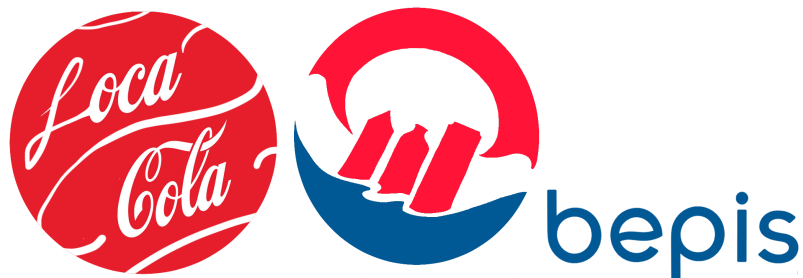
The desired art style had to take into account the unique setting of the game. The game is set in the future and in space, so a sci-fi feel was obligatory. However, the utilization of beverages as fuel allows for the implementation of steampunk elements in the art style.

Since this project is based on an outlandish scientific advancement, the discovery of the propulsion potential of carbonated beverages, that had a reflection on the game from very early on in development. The shopkeeper was the first piece of concept art created, followed by the protagonist.



The protagonist, Steven, wears a white and orange space suit, presumably given to him so he could board the escape ship. He was made to look quite average, as he is supposed to be a normal man caught in an unfortunate situation. The shopkeeper was modeled after the famous Pepsi Man, but with some significant modifications such as having a noticeable nose, pop tabs for eyes, and wearing a green hat and trenchcoat.

As the action specifically takes place on a Loca-cola space station, a logo was created for that company, as well as Bepis, to emulate the branding tyrannical magnates would plaster all over their possessions.



Cutscenes

The cutscenes are pieces of digital art drawn on Clip Studio Paint. They start by being framed in Steven's tablet before he drops it to board an escape ship.

The ships seen in the cutscenes are modeled after elements of the containers of typical carbonated beverages. The ones in the infomercials are based on a typical soda bottle and can. The one boarded by Steven is a cork shot out of a giant champagne bottle and propelled further by smaller bottles strapped to its sides. The giant space station is a metal bottle cap with a telescope on top to emphasize that it is a research facility.

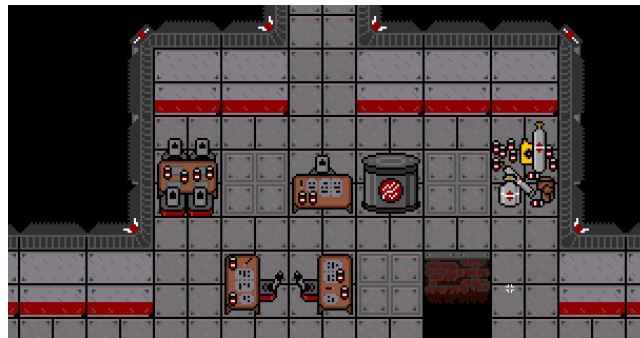


Tiles and Sprites

The in-game art adheres to a “pixel art” style, using level tiles and sprites created with Aseprite.

The tiles are the building blocks of the level, made to fit into a grid of 32x32 px spaces, some objects having to be divided between separate tiles.

They were designed to emulate the interior of a space station, with metallic corridors, gaps that reveal the piping beneath the floor, piles of small canisters and other containers, and big Loca-cola branded spare fuel tanks. Some consideration was given to the staff, as desks for work and tables for meals with plates were also developed. This variety to objects that are encountered helps bring the space to life.



The sprites represent the characters that can be interacted with. There are 2 enemies, 2 NPC, and the protagonist.

The enemies are the security of the station. They all have animations for walking in 6 directions and for dying. Since they work for Loca-cola, red is their main colour. There are 2 varieties: the ones we nicknamed Scotts are regular guards, sporting a uniform, a crew cut and a pair of sunglasses. The ones we called cans are annoyed-looking men who wear a mascot suit of a happy can (although they also shoot the player).

The NPC are a spy for Bepis, who is disguised as a regular security guard and the shopkeeper mentioned earlier, who sits behind a crudely made cardboard shop front. The spy is sitting down because of his wounds, and some steps were taken to differentiate him from the Scotts, such as giving him green eyes and paler skin. The player character is Steven, adapted into the in-game style, with 6 walking animations.



Game Interface

For the game's user interface, the main concern was to maintain consistency with the "pixel art" style that was being developed for the levels, despite the usage of different tools.

Adobe Illustrator was originally used to create any icons and images, as the designated team member was more familiar with this tool. He worked with an artboard size of 32x32, just like the sprite work done by other team members for the game. This way, by converting from vector graphics to bitmaps and scaling the resulting images inside Unity without any filtering, the results would remain roughly consistent with the sprites developed for the levels. Out of all the UI elements developed during this stage, only the crosshair and the weapon display on the HUD remained in the final version of the game. For everything else, we repurposed a few of the sprites created by the other team members.

Regarding the text elements in the menus and the heads-up display (or HUD), we discovered and decided to use a font called "Forced Square": its blocky style made it a good fit when considering our game's visual design and the fact that it was released under a Creative Commons license made it an easy choice for our purposes.



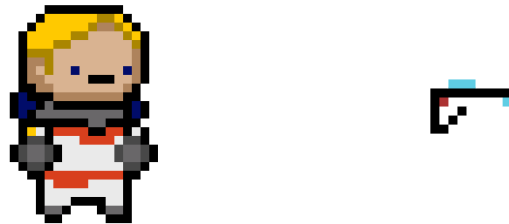
Character Bible

(Steven-Up)

In this game, we play as Steven Up, a fugitive from earth whose objective is to navigate through a Loca-Cola spaceship and steal the formula for Loca-Lola 2 so he can escape. Steven moves at a fast pace (faster than his enemies) and wields a high-pressure gas gun that fires pressure bullets at very high speeds. He starts the game with 5 Beer Jugs for health (jugs being the health system) and being shot results in the loss of one Beer Jug. After being shot, Steven will be in an invulnerability state for 3 seconds and won't be able to

suffer any damage. One hit from an enemy bullet removes a Beer Jug from the player and once this number is reduced to zero, the game will be lost and the player will be transported to the beginning of the dungeon with zero progress. The Beer Jugs can be replenished at the Shopkeeper.

To control Steven, the player must use the classic WASD system for movement and the mouse to point and shoot with the left-click. The shooting is limited by ammo clips that are full at 10 bullets and are depleted at zero. Once they are depleted, the reload sequence is immediately triggered, and once it is finished the clip goes back to 10. During this sequence, the player cannot shoot.



Scotts and Cans

Loca-Cola enemies will try to stop the player by shooting at him with their own guns, these characters are Scotts and Cans. They don't present any mechanical differences between each other, only graphical. They are roughly the same size as Steven-Up and move at slower speeds.

Their movement is script controlled, using the distance between them and the player, each having an activation distance (distance at which they will notice the player and initiate action), a stopping distance (distance at which they will stop) and a retreat distance (distance at which they will begin retreating). These three distances can differ individually, depending on the stage and enemy position.

The default action for the enemies is to move towards the player, shooting in his direction at a speed that is also script controlled and can also differ individually. Their guns have infinite ammo and shoot one bullet at a time, without reloading stops, dealing one damage on hit (removing one Beer Jug from the player).

The enemy bullets will not harm other enemies and will collide with objects and walls, giving the player an opportunity to hide behind obstacles. They will also collide with player bullets, so the player can actually defend himself from enemy bullets by shooting, not always having to rely on hiding.



Big Scott

Big Scotts are the minibosses at the end of the first and second stages. He is identical to regular Scotts in almost every way, only being different in terms of size and health (he is bigger and has a lot more health). Once defeated, a portal will be opened to the next level.



The Big Scary Can

The Big Scary Can is the final boss at the end of the third level. Although its appearance is similar to regular enemy cans, he is much more powerful (and scary). It shares the movement script of regular enemies, only noticeably faster. As for weapons, they are quite different. The Big Scary Can has two weapons: the Big Bubble Shooter and the Fizz Spray. The Big Bubble shooter will be shooting big bubbles, at slower speeds than regular enemy bullets (as they are bigger) but at roughly the same rate dealing 1 jug worth of damage on a hit. Additionally, even when the shooting sequence is active, every 5 seconds the Big Scary Can will release a Fizz Spray, which is an AOE attack that begins at the center of the can. On contact with the player, this spray will deal 1 jug worth of damage. The Fizz Spray is made using Unity's particle system with colliders and triggers. It is a circular emission and has effect within a specific radius, dissipating about 3 seconds after its activation.

Shopkeeper

The shopkeeper appears every once in a while during a stage. He is a Bepis agent and so is not an enemy and cannot be shot or killed by either enemy bullets or player bullets. His sole purpose is to sell Beer Jugs to the player. The player can click on top of the shopkeeper when close to him to activate the shop menu. Here he can buy 1 jug or replenish his entire stock of jugs at once. The shopkeeper does not move or shoot.



Level Design

Composition of the levels:

The levels are composed of several rooms and enemies in those rooms. Each level must have a shop where the player can buy HP, and a harder enemy, the boss, at the last room of the level.



First Level

The first level is the smallest and had to teach the player how to interact and to play the game, it was essential to show an introductory NPC (Bepis Spy) to let the player know he could interact with NPC's. That first NPC also tells the player that he can use a store in the game to regain his life at the cost of the in-game currency.

After the first room, the player encounters his first enemy in the second room. This encounter helps the player understand that he has to dodge enemy bullets and has to either run away from them or kill them to advance in the level.

Second level

In the following levels, the player has a combination of harder encounters and easier ones too. The easier ones have the aim to not tire the player too much.

Third level

In the third level, it is introduced to new types of enemies, one that has more health points but shoots slower and another type of enemy that is stationary but shoots much faster.

This level also introduces a new boss with different mechanics than the previous bosses, challenging the player in a different way.

Animation Programming

The player and the enemies have at least 7 different animations for their movement.

Usually, animations are done using Unity's build-in animator conditions and booleans, but in order to have a more clean approach, it was opted to program the animation triggers in the movement scripts, therefore, the animations are dependent on which angle the player or the enemy is looking at and if they are moving or not.

The player is always looking at the position of the cursor and the enemy is always looking at the player, for example, if the player is looking downwards and to the right, the right front animation must be playing.

Cutscenes and Dialog Programming

For the storytelling of the game, we used some art to explain the main plot and what was the main objective of the game for the player.

To explain some game mechanics, for example, the ability that the player has to buy things, we also added a dialog system that can play lines of a dialog of the NPC

Game Mechanics Programming

For the portal, we control the state of the sprite renderer, so that it is only active after the level boss is killed. This means that the portal only appears at that point in the game. Once the portal is visible, a "trigger" is used to detect when the player reaches it. When that happens, the game loads the Unity scene for the next level. The portal is animated through a script that switches the active sprite at a predetermined pace, alternating between the two frames that were created for this purpose.

The shooting mechanic is controlled by the mouse movement and left click. Every mouse click instantiates a bullet object with a certain velocity in the direction of the cursor. Additionally, it reduces the magazine bullet count by one. Once it reaches 0 it initiates a reload sequence controlled by a coroutine to reload the clip, in which the player must wait 3 seconds before he can shoot again.

Player movement is controlled by the WASD keys, and was designed using Unity's input system and the rigidbody MovePosition function.

The enemy movement is controlled by an AI script based on the player's location. It calculates the distance between the enemy and the player and moves according to it, having three distinct distance thresholds: activating distance (distance at which the enemy will detect the player and initiate action), stopping distance (distance at which the enemy will stop) and retreat distance (distance at which the enemy will begin moving away from the player). Enemies present different thresholds depending on the level and their position.

Their movement is controlled by the MoveTowards function and the shooting is roughly the same as the player's, however it is controlled by a timer. The fire rate of enemies also varies with level or position.

UI Programming

When it came to programming the menus and HUD, we relied on Unity's stock UI functionalities. There is a general script named "User Interface" which groups all code that is used between both of the aforementioned elements of the user interface (such as activating and deactivating GameObjects, which is used to open menus or the "game over" text), whereas specific functionality for each is written in separate scripts with the same names as those elements (such as "HUD" or "PauseMenu").

Additionally, some functions from other scripts are used to stop some game mechanics from running while the player is focusing on a menu. One such example is the "Shooting" script, in which we wrote functions so that the player's gun doesn't fire while the player is clicking on a menu's on-screen buttons (something which uses the same mouse button).

For the crosshair, we are changing Unity's cursor image through a script, as that was a safer method development-wise than changing the mouse cursor's image in the project settings.

Music and SFX

Soft Drink Saga - Total Carbon-Action is about soft drinks and other delicious carbonated beverages. As such, all of the action sound effects present were derived from real life samples of gaseous drink related foley, such as can openings, drink pouring, the popping of bottle corks, bubbles and more. For example, the shooting sound for Steven's weapon is a cork pop, the death sound for the enemies is soft drink fizz and the particle jet in the boss fight is accompanied by the sound of someone blowing bubbles.

The main combat theme was created so that it would fit the fast pace of the action, giving the player a good level of adrenaline, never forgetting about the overlaying theme of the game – drinks! It was inspired in heist movie scenes and spacey electronic genres and it was mixed with samples from soft drinks (can opening and pouring).