

one man band

Game Design Document

One Man Band was developed by group 8

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Game Abstract: *One Man Band* is a music puzzle game to be played by a single player. The game is set in a nightmarish world full of evil musical instruments and nerve-wrecking puzzles that the player, as a conductor, must overcome with the help of friendly-looking musical instruments. When these instruments join the conductor's party, the player becomes able to play melodies with them. Challenges and obstacles throughout the game can be overcome by mimicking the melody that is heard when near them. The player must also collect musical sheets along the way, in order to unlock passage onto the next areas.

1. Story

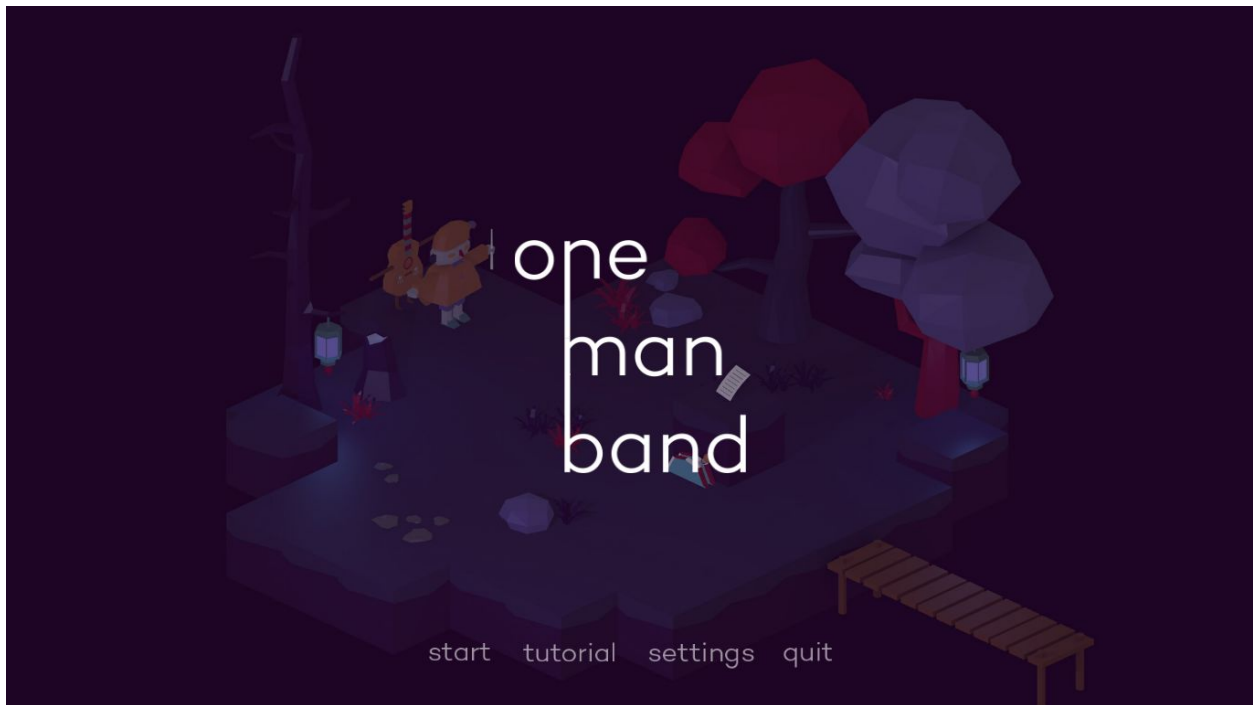
One Man Band is set in a magical world that is full of living musical instruments, nerve-wrecking puzzles and dangerous enemies. The main character is a conductor that was brought to this mysterious world alongside his musical instruments and musical sheets when he fell asleep the day before a very important concert. However, it seems that these instruments and sheets were lost along the way and are scattered in this new world! Furthermore, the instruments gained life of their own, and are willing to help the conductor overcome the obstacles that appear along the way.

The world the conductor was brought to is a musical nightmare filled with evil instruments and puzzles that can only be solved by playing music. With the help of the friendly instruments found along the way, he must overcome the various obstacles and find all the musical sheets so that he can go back to his real world. At the end of his journey on this mysterious world, the conductor must defeat the most dangerous enemy that controls it, the dreadful piano boss.

2. Game Interface

a. start menu

When the player starts the game, they will be able to see the start menu, as shown in **image 1**:



1. Game's start menu

Here, the player can either start the game (which starts with the tutorial level) by clicking on “start”, see the game’s basic instructions on “tutorial”, change the settings of the game on “settings” or quit the game on “quit”. In the settings of the game, the player can change the background music’s volume or difficulty of the game.

By changing the sound settings, only the volume of the background music will be affected, ie, the volume of the melodies and misc sounds will not be affected, which means that the player will be able to listen to the melodies more clearly.

The difficulty of the game is **medium** by default, but the player can change it to **easy** or **hard**. By changing the game difficulty, the player is able to change the margin by which he can err in the timing when mimicking the melodies played by enemies or

spotlights, ie, the more difficult the game is, the more precise the player needs to be when playing the required melodies. Modifying the difficulty of the game also affects the attack speed of the enemies, being the attacks faster and more difficult to dodge the harder the difficulty.

b. gameplay mechanics



2. Conductor moving

→ **Moving** - The character the player will be able to control is the conductor shown to the left. To move the conductor, the player needs to use either the WASD keys or the arrows on the keyboard. To move forward press **W** or the **Up Arrow**, to move backwards press **S** or the **Down Arrow**, to move left press **A** or the **Left Arrow** and to move right press **D** or the **Right Arrow**.



3. Conductor next to guitar

→ **Add instrument to party** - When next to a friendly instrument, add it to the conductor's party by pressing **E** and you will see him following around the conductor in a queue. You can add up to 3 instruments to the conductor's party. The party instruments in our game are guitar, piano and drums.



4. Conductor playing

→ **Play melody** - As the player adds different instruments to the party, he becomes able to play the party instruments by pressing **1, 2, 3** and **4**. By mimicking the melody heard near the enemies and in the spotlights, the player becomes able to defeat the enemies and solve puzzles. It's also important to mention that the **skill 1** allows the player to **play drums** when he adds the drums to the party and the **skills 2, 3 & 4** allow the player to play different notes of the guitar and/or piano, when they are added to the party. Note that the piano and guitar can be played both together or separately.

→ **Play melody: fight enemies** - As it was mentioned before, the player will be able to defeat enemies by mimicking their melody. To do that, the player must go to the evil instrument's island in which he will hear the enemy's melody playing every few seconds. While the melody plays, the enemy will also be attacking the conductor with white glowing projectiles (as shown in **image 5**). The player should try to mimic the enemy's melody while escaping the enemy's attacks. Once the player manages to get the sequence of notes played right, and the timing of the conductor's playing is similar enough to the enemy's melody, the enemy will be killed and the bridge to the next island will unlock (note that until the player defeats the enemy in the island, that island will be blocked from passage). The enemies in our game are guitar, piano and bongo, the evil counterparts to the friendly instruments.



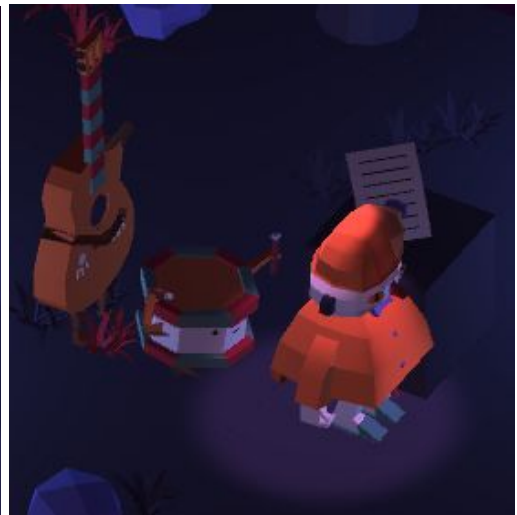
5. Enemy attacking conductor

→ **Play melody: solve puzzles** - All the puzzles in our game are linked to spotlights (see **image 6**) near levers that when properly triggered will result in some change in the map's configuration that will allow the player to catch sheets, reach a

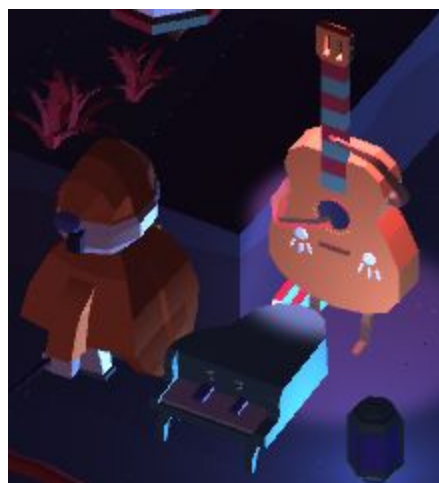
friendly instrument, progress further in the map, etc. To trigger these levers, the player needs to approach the spotlights and listen to the melody played in these. Notice that the surroundings darken (see **image 7**) and the volume of background music decreases significantly so that the player can focus solely on the melody being played. The player only needs to repeat the melody he listens to in each of these spotlights to trigger the corresponding lever. There's also another unique aspect to these spotlights - the player may focus a particular instrument in one of these. For example, if the player has a guitar and piano in its party, he can play only the guitar if he positions the guitar in the spotlight (see **image 8**).



6. Player near spotlight



7. Player in a spotlight



8. Guitar in a spotlight

→ **Play melody: fight boss** - The final boss is similar to normal enemies, in that it attacks the player when he is within range and the player needs to play melodies to defeat it, but the fight is much more challenging. The final boss has a health bar of four hearts and there's a different melody depending on the health of the boss, ie, depending on whether the boss has 1 out of 4 hearts, 2 out of 4 hearts, 3 out of 4 hearts or 4 out of 4 hearts. The boss will only be defeated when the player manages to get all the four melodies right while trying to escape the attacks of the boss.



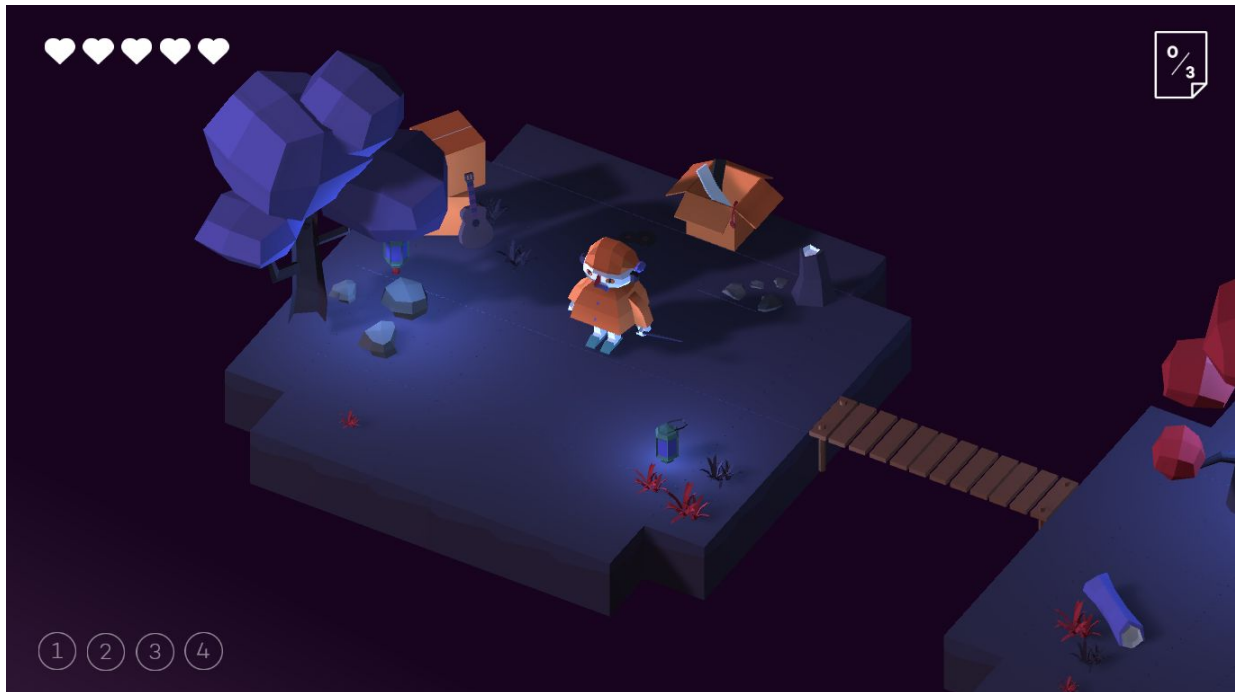
9. Final boss fight

→ **Ditch an instrument** - When the player no longer wants an instrument in their party, they can ditch them behind, by pressing **Space**. This action may be useful to play some melodies in which he may need to play either the piano or the guitar by itself. For example, if the enemy is an evil guitar playing a guitar melody, and the player's party has both the friendly piano and guitar, then the player will have to ditch the piano to play the guitar's melody (since the skills that play the piano also play the guitar as well - skills 2, 3 & 4).

→ **Catch a musical sheet** - When next to a musical sheet, the player can catch it by walking through it.

c. HUD

In **image 10**, the user interface of our game will be shown:



10. Game's user interface

The hearts on the upper left of the screen are the **health bar** of the conductor. In the image, the conductor has full health represented by the five full hearts, but as the conductor takes damages these hearts will become empty. Note that each attack of the enemies takes half an heart to the health of the player.

When all hearts become empty, the conductor dies and the player loses the game. When the player loses, a game over screen will be shown, as it is shown in **image 11**:



11. Game over screen

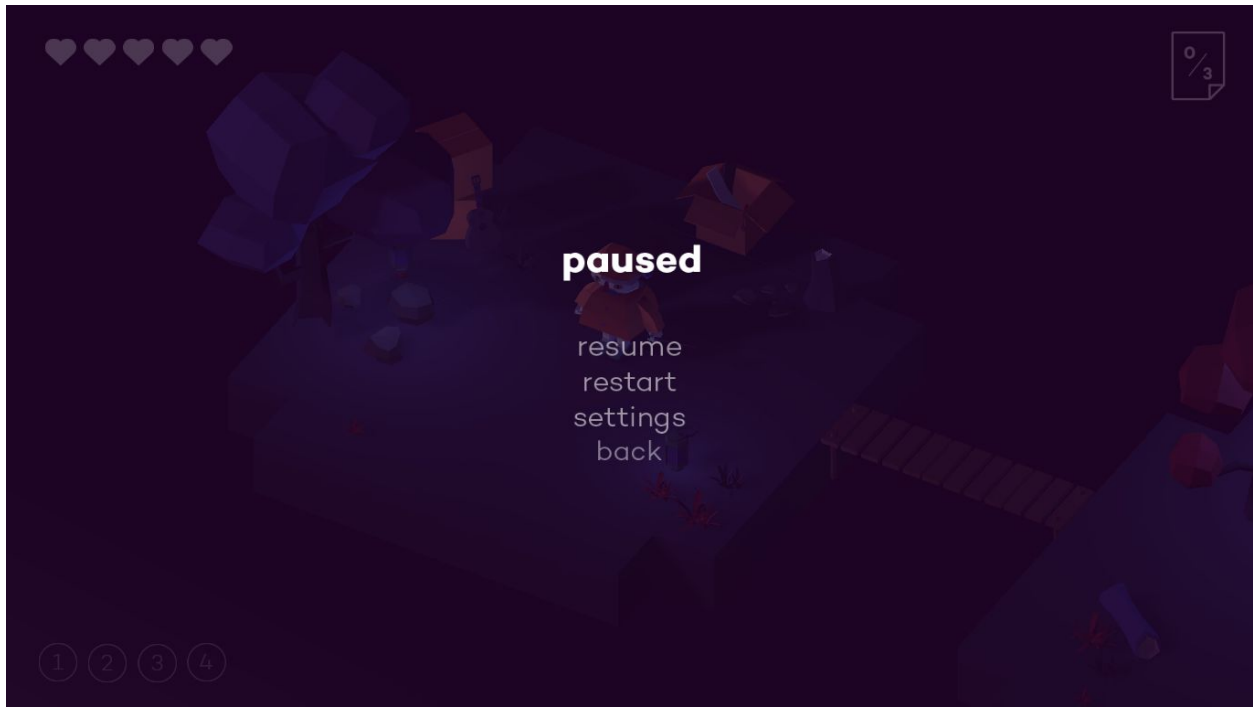
The sheet with the numbers on the upper right of the screen tell the player **the number of musical sheets** he has collected until now. In **image 10**, the conductor has collected zero out of three sheets. As he collects more, this number will increase. The player will only be able to advance to the next level (in the tutorial) or fight the final boss (in level one) if he collects all the three required musical sheets.

The skills on the bottom left of the screen of **image 10** represent the skills the player is able to play. As of now, the skills are grayed out since the player doesn't have any instrument, which means he can't play any melodies. As the player adds different instruments to the party, these skills will become highlighted on the HUD and the player will be able to use these skills by pressing **1, 2, 3** or **4**. Note that when the player plays one of the highlighted skills, he will be able to see the numbers on the HUD "blinking" as he presses them.

After defeating the final boss of the game, the player can see a screen saying "The end" and prompting him to go back to the start menu.

d. ingame menu

In **image 12**, the ingame menu will be shown:



12. Ingame menu

In this menu, the player can either resume the game by clicking on “resume”, restart the current level by clicking on “restart”, change the volume of background music and/or change the difficulty of the game by clicking on “settings” or go back to the start menu by clicking on “back”.

Note that the settings of the game in the ingame menu work exactly like the settings in the start menu.

3. Character Abilities and Items

a. Main character



13. Conductor

Image 13 shows the main character of the game and the character the player is able to control, the conductor. The conductor is a stressed, weared-out man who just wants to be good at his profession but his lack of confidence in his abilities makes him dread his own shows and he has constant nightmares surrounding music.

b. Allies

Images 14, 15 & 16 show the conductor's most trust allies, his musical instruments: drums, guitar and piano. In this world, they have gained life of their own and they are all willing to help his master as much as possible, so that he can go back safely to his real world.



14. Friendly drums



15. Friendly guitar



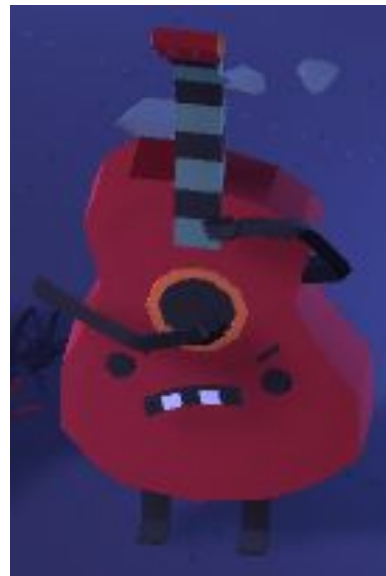
16. Friendly piano

c. Enemies

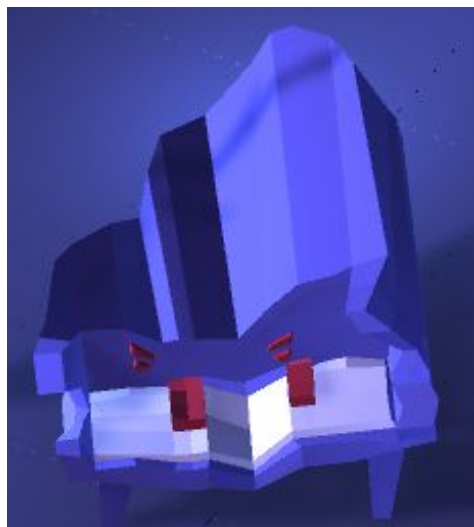
Images 17, 18 & 19 show the enemies in our game, the evil counterparts to the friendly instruments: bongo, guitar and piano. These evil instruments will do anything in their power to hinder the progress of the conductor, being the evil piano the most powerful one. The evil piano is also the one who commands this nightmarish world and is the final boss of the game.



17. Evil bongo



18. Evil guitar



19. Evil piano

d. Items



20. Musical sheet

Image 20 shows a musical sheet, a collectible item in our game. The conductor must collect all of the musical sheets so that he can progress further in this world and go back to the real world.



21. Lever

Image 21 shows a lever besides a spotlight. These levers are the mechanisms behind solving the puzzles in our game and they are usually connected to a moving block.

4. Game World

The game world consists of isolated areas of terrain, islands, linked to each other through bridges. In each island, the player is met with a task they should solve in order to lower the bridge, thus allowing the player to cross to the next island. These tasks or challenges, are usually presented in the form of puzzles, enemies or bosses. Each island is unique, either in its challenge or even in its style - there are no two island alike. There are also multiple objects scattered around, with a special focus on sheets. Sheets are collectable items, usually hard to find, that give the player a secondary goal, besides the obvious puzzle solving and defeating enemies. These sheets are also connected to the level completion. In order to complete a level and advance to the next one, the player must not only solve all puzzles and defeat all enemies, they should also find all the collectibles. In the second level, there's also a boss waiting at the last island. Solving all the challenges and finding all the collectibles up to this point, lowers the bridge to the boss. But in order to complete the level, the player must defeat it!

The puzzles of our game are linked to levers that, when triggered, cause a change to the map of the game. These changes to the map are usually caused by moving blocks that can either ascend or descend. Some of these blocks can descend only to move back to their original place in a few seconds, which hinders the solving of some puzzles in which more than one moving block are connected to each other and the player must trigger the sequential levers as fast as he can. As for the triggering of the levers, this is caused by the player mimicking the melody he hears in the spotlight near the lever. It is also important to note, that the player and its party can "jump" from blocks as long that there's a ground below.

At last, it's important to say that our game has currently two levels: the tutorial and level one. The main purpose of the tutorial is to teach the player the basic mechanics of the game: catching musical sheets, making friendly instruments join the party, defeating enemies and solving (basic) puzzles through the use of spotlights. As for level one, it takes these mechanics to the next level, having much more complex puzzles to solve and even a boss to defeat!

5. Game Engine

The game was developed using the Unity engine. In order to ease our work in creating the 3D space, we used ProBuilder and ProGrids - plugins available through Unity Asset Store.

6. Concept Art

The concept art was developed with the purpose of inducing a sense of wonder, magic and mystery through the environment and characters, in order to better represent the maestro's inner dreamscape.

We opted for a low poly style with a reduced polygon count. Below we will show the concept art for the world of our game and characters.

a. Game world



22. Concept art of the game's islands



23. Early sketch of the game's world



24. Sketches of the island's trees

b. Main character



25. Early sketches of the conductor (pt. 1)



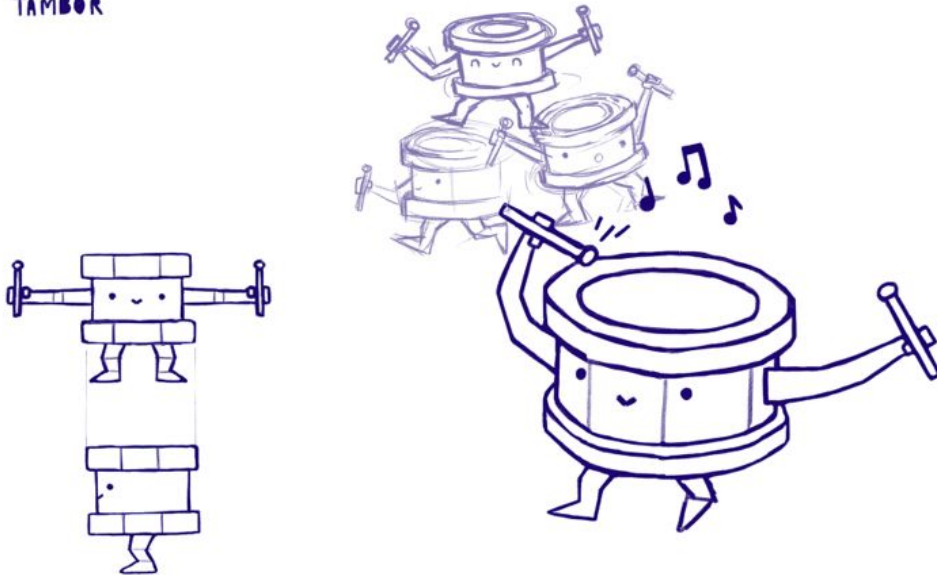
26. Early sketches of the conductor (pt. 2)



27. Sketch of conductor (closer to final version)

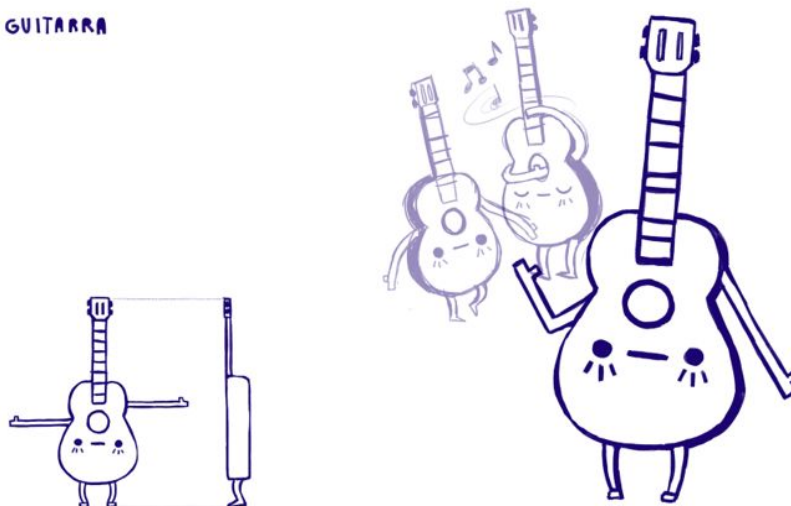
c. Allies

TAMBOR

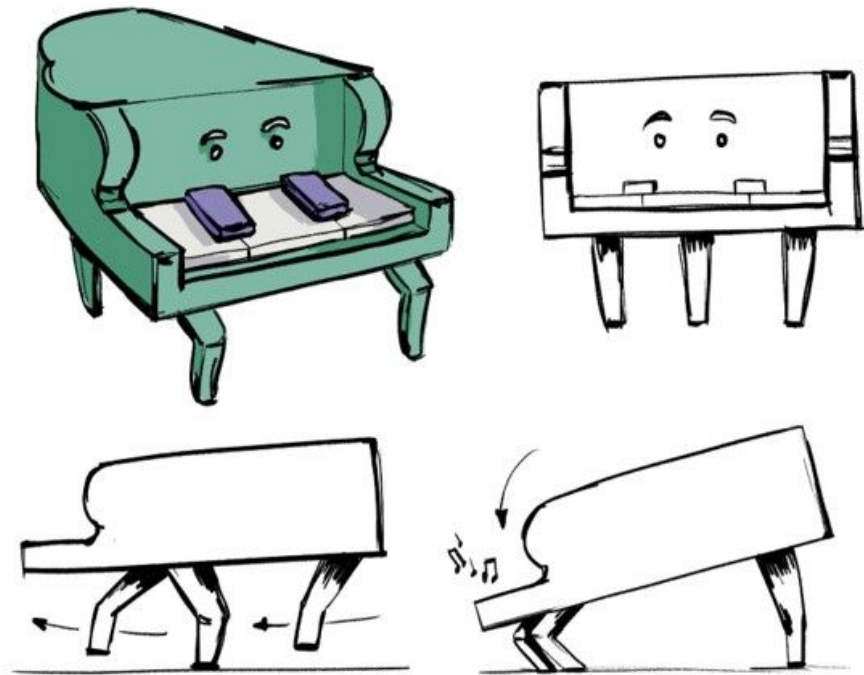


28. Sketch of friendly drums

GUITARRA



29. Sketch of friendly guitars



30. Sketch of friendly piano

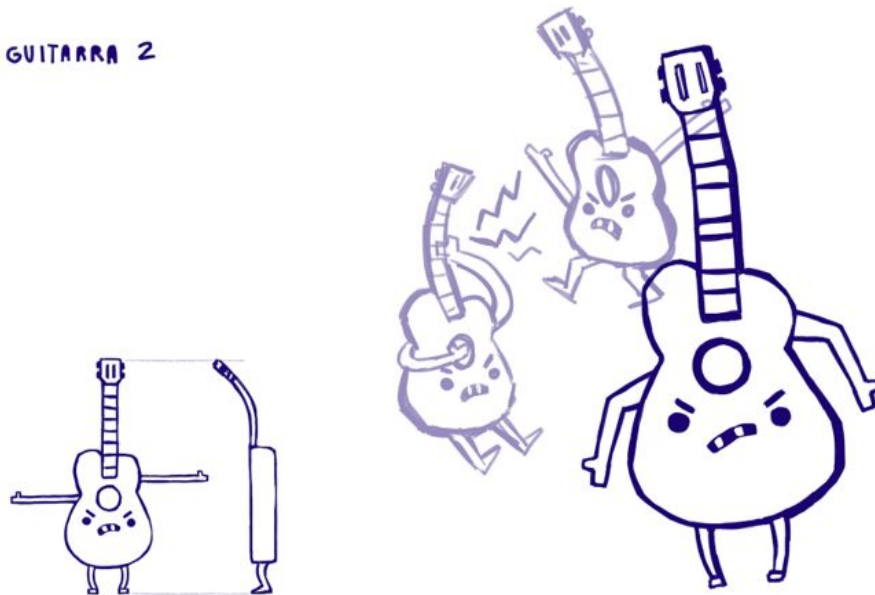
d. Enemies

BONGO



31. Sketch of evil bongo

GUITARRA 2



32. Sketch of evil guitar



33. Sketch of evil piano

7. Sound

The soundtrack of the game One Man Band was developed in Ableton Live using several types of sound such as synthesised by the music devs, synthesised by Live and recorded sounds (both played by us or downloaded from the internet).

All the sounds fall into one of these Categories:

- **Background Music:** This is the sound played while playing the game. Consisting mainly of synthesized instruments with some effects and automation applied throughout.
- **Buddies Background Music:** These are the sounds added to the background music that play sometimes if the player has a specific instrument (ex. If the player catches the drums there is a 20% chance that a small sequence of drums will play synchronized with the soundtrack). This helps create a more dynamic environment for the player. These use both recorded sounds as well as synthesized ones.
- **Buttons Power / Puzzle Combos:** These are the sounds used when the player presses a button to play a note or a beat. It is also the sound played by the enemies/puzzles in a sequence for the player to repeat, also synchronized with the soundtrack. They use both recorded and synthesized sounds.
- **Misc Sounds:** These are the sounds that play instantaneously when the player finds a buddy, a music score or has no instrument available to play. These use synthesized and recorded sounds as well.

All the synthesized sounds are recorded in MIDI to simplify synchronization.

In order to better understand the Game structure there is a small preview of each important moment of how the game works. These can be consulted in the following link:

<https://drive.google.com/drive/folders/1lPhBwJeuX8i3HK0bXjIsURpMr-Doraf>

- The **Intro Menu** is the first part of the game. It has a 4min clip that loops until the player exits the menu.
- The **Tutorial** and **Level 1** have two moments. The intro - 30s clip - that always plays at the beginning and the Themes (A or B). After playing the Intro the algorithm randomly chooses a block from theme A or B. These blocks have always

16 seconds. When finishing playing a block the algorithm randomly selects the next one, and so on. To add some coherence the algorithm always plays at least three blocks from the same theme and then advances to the next one, or stays in same. The blocks chosen inside each theme are completely random. The blocks are made so the sequence of each one is irrelevant. This helps create a more alive and less boring environment for the player.

- The **Boss** available at the end of Level 1 has a 4-stage implementation. When the player advances the last bridge, a small 8s Intro is played. After that, the stage 1 block starts playing in loop (with an 8s duration). After the player defeats stage 1 of the boss, the soundtrack shifts to a darker version of the soundtrack for stage 2 (also with 8 seconds). The soundtrack goes darker and darker throughout stage 3 and 4 until the boss is defeated and the end sequence plays.

As mentioned before, the blocks of the soundtrack have a 16s duration that plays randomly while playing the game. For the implementation of the game, a clock starts at 0 every time the clips starts, going from 0 to 16.

After catching an instrument (buddie) these have a chance of playing with the soundtrack. Since all these clips have an 8s duration, these blocks will only play when the clock is equal to 0 or 8. These blocks were composed so that they fit with the soundtrack in all occasions with every block. If the player has several instruments the blocks for each instrument can be played at the same time or not, randomly decided by the algorithm.

The blocks for each puzzle or enemy all have a 4s duration. In order to synchronize with the game, they will only play when the clock is equal to 0, 4, 8 or 12. They will also be muted if the player is attempting to play notes in order to avoid confusion - this helps connect all the environment with the game itself, when all the musical aspects are engaged with each other.

Finally, the misc sounds such as finding a buddie, or collecting a page will be played instantaneously to give the player feedback of the action in the moment.

8. Project Plan

In order to develop the game, we followed an incremental approach. First, we decided to implement the main mechanics (such as movement, and catching / ditching party members). Then we moved into the next core mechanics - triggering levers and dynamically changing the terrain. Once that was done, we branched out, with some members of the group working on the enemy AI, others working on the level design, and others working on the gameplay. It was around this time, when all the core mechanics were already implemented, that we started working more closely with the art and sound team (we had been using default assets, such as cubes and spheres up until this point). And this lead to the final stages of development, where we were constantly communicating with the different teams, importing art and sound assets, integrating them into the gameplay, thus giving the game an actual personality, or a style of its own.

9. Test Plan

The tests were mainly run by ourselves. We were constantly test driving the game, looking for bugs, for ways to improve the gameplay, and to check if the puzzles and enemies were in line with the difficulty we had in mind. This was an iterative process, where we were constantly testing, adjusting the settings, and testing again. The final stages of development consisted mostly of testing the game, fixing bugs and adjusting its difficulty, trying to create a balance between fun and frustration.