

Lifelines

Design and development
of the art and the visual components
of a First Person Adventure video game

Final Degree Project Report

LIFELINES

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ABSTRACT

Lifelines is a First-Person Adventure (FPA) game that narrates the last days of an old man who, after getting away from their loved ones, decided to spend his last moments in his parents' old boat and recall all his life memories.

This document aims to be an explanation of the process of creating a game with the game engine Unity 3D, focusing on sound and 3D design, but with programming and narrative parts.

Academically, this report consists of the final degree project report of the Video Games Design and Development bachelor's degree at the Jaume I University.

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INTRODUCTION

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When my friend Marc López and myself decided to do together the final degree work, we thought that an interesting thing to do was to create our version of a First-Person Adventure (FPA) game, this is, a narrative-focused game which main mechanics are to explore the environment where the player is and try to discover all the story that the game contains.

This video-game genre comes from the First Person Shooter (FPS) games, but its main mechanic is not the shooter one, this mechanic does not exist in most of this FPA games, its main mechanic is to walk. This has made that, colloquially, some people started to call this type of games as "walking simulators".

Some important examples of these games are "Dear Esther" (2012), from The Chinese Room (see Figure 1.1) [5], that was the video-game which creates this genre, and "Gone Home" (2013), from The Fullbright company (see Figure 1.2) [6], which established the bases and is considered the first successful FPA video-game.

After deciding the base of the video-game, we contacted Carlos Granell, who wanted to participate in the project, and we divided the project into three final work projects. Marc would focus on the programming part, but he would also do some 2D menu design, and Carlos would focus on the narrative and game script part. My work would be focused on sound and 3D design, but it contained some narrative support to Carlos Granell and programming parts that would be coordinated with Marc López.



Figure 1.1: Dear Esther



Figure 1.2: Gone Home

1.1 Work Motivation

The motivation of this project came from one year ago when we decided to make a Unity video-game for a class project but our inexperience in the game engine made that the game was not very polished, so we decided to start again with a new game with a more solid idea and all the knowledge that we learned from that first project and by our own.

The idea of taking the genre of the FPA games was because we needed something that we could manage well and could be easily limited to can polish all the game aspects. We wanted to talk about the feeling of travel without destination, so our first ideas were a car journey, maybe something like "Jalopy" (2016), from Excalibur games (see Figure 1.3) [17], or a train travel, but we discarded these ideas because we did not want to do a copy of any game and we did not have enough time to model and program all the people that could be in a train, respectively.

For these reasons, we decided to make a video-game about a boat journey, where the story was focused on an old man who has lost everything in this life and decided to do the last journey whit all his memories. The main objective that wanted to be accomplished was to offer the player the possibility of discovering the game story in any order, that is, he/she has access to every information regarding the story from the beginning of the game.



Figure 1.3: Jalopy

1.2 Objectives

The main objectives were to make a polish and finished FPA game, within our constraints of time and resources, and to document the game creation process and the game design into this final degree project report that allows us to finish our studies to obtain the Video Game Design and Development bachelors' degree.

My work at the project was more focused on the sound and 3D Design, nevertheless I helped at the narrative section of the game and I implemented several secondary mechanics to the game. These objectives can be classified as:

1. To create, to animate and to implement a completely functional character that the player can control.
2. To model, to animate and to implement a 3D scene, with a boat, a seagull and 3D objects which the player can explore freely.
3. To edit and to implement all the game soundtrack, including music, ambient sound effects and interactive sound effects.
4. To program optional mechanics, such as sleep, smoke or using the character's mobile phone, that add more diversity to the game experience.

1.3 Environment and Initial State

Our human team is composed by Marc López (focusing on the programming part), Carlos Granell (narrative art) and me (focusing on design part), so we decided to make a working plan that consists on four days each week, Marc and I would be working for four hours each of that days (because we have to combine this project with our external practice work) and, all Thursdays, Carlos would join us so he could tell us what he had done during the week and we could tell him what advances the video-game has done. Furthermore, every Monday, the programmer and I held meetings to decide how we were going to divide that week's work and how many hours we should spend on each task.

This work plan, allowed us to divide the work in weeks and to give some priority order to the work that we needed to finish. The communication was always made by Discord because it allowed us to work at home and to share in live some parts that require some coordination.

Every two weeks, the programmer and I held a meeting with our final degree project tutor, Diego Díaz, to tell him which advances we had done, to revise these new additions to the project and to decide which would be the best course to follow the next two weeks.

The initial state of the project was a white page, we had to sit one day and talk about what we want to do and start from nothing. However, at the very beginning, we found a free asset that had a base script to the player that fitted very well with what we wanted to our game [23], the first thing that we did was to modify it to adapt it to our game, but, in essence, we could say that this asset was our starting point.

PLANNING AND RESOURCES EVALUATION

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This chapter represents the technical part of the work. It contains the planning that was followed to finish the project and the programs and resources that were used to do the development of the project.

2.1 Planning

This table shows the different activities that were done during the project development and how many hours were spent in each of those tasks (see Table 2.1), these tasks are also shown in a Gantt chart too (see Figure 2.1). Most time of the project was spent making and animating 3D objects and characters, but there are also sound effects and programming tasks that took several days to complete. Furthermore, some hours were devoted to the project documentation such as the technical proposal, the analysis and design document or this final report.

Task	Type	Hours
To develop the game design	Design	5h
To write the technical proposal	Document	5h
To restrict the main character movement	Programming	2h
To create a 3D character base model	3D Design	8h
To animate the 3D character model	3D Animation	6h
To create and to implement the main character animator in Unity	Programming	4h
To write the analysis and design document	Document	5h
To improve the base model to the final version	3D Design	4h
To create a 3D base boat model	3D Designing	4h
To improve the boat model to the final version	3D Design	8h
To program a 2D mesh that imitates the ocean	Programming	6h
To create different 3D objects models for the game	3D Design	40h
To assign materials to the 3D models of the game	3D Design	12h
To animate some 3D objects	3D Animation	10h
To add all the 3D objects to the game and assign colliders to them	Level Design	6h
To program a sleeping mechanic	Programming	8h
To program a mobile controller system	Programming	9h
To create some 2D asset of the mobile	2D Design	8h
To model a 3D seagull character	3D Design	8h
To animate the 3D seagull	3D Animation	12h
To program a dialogue tree system	Programming	4h
To program a smoking mechanic	Programming	20h
To program a watering mechanic	Programming	16h
To program a life limiter system	Programming	4h
To search the sound track for the game	Sound	8h
To implement music and music transitions in the game	Sound	4h
To implement ambient sounds in the game	Sound	8h
To implement movement sounds in the game	Sound	4h
To implement interaction sounds in the game	Sound	4h
To program the pause menu	Programming	4h
To create a new typography for some diegetic documents	Design	4h
To make a final credit scene	Level Design	8h
To write the final report	Document	40h
To make the final presentation	Document	10h
Total hours	-	308h

Table 2.1: Task Table

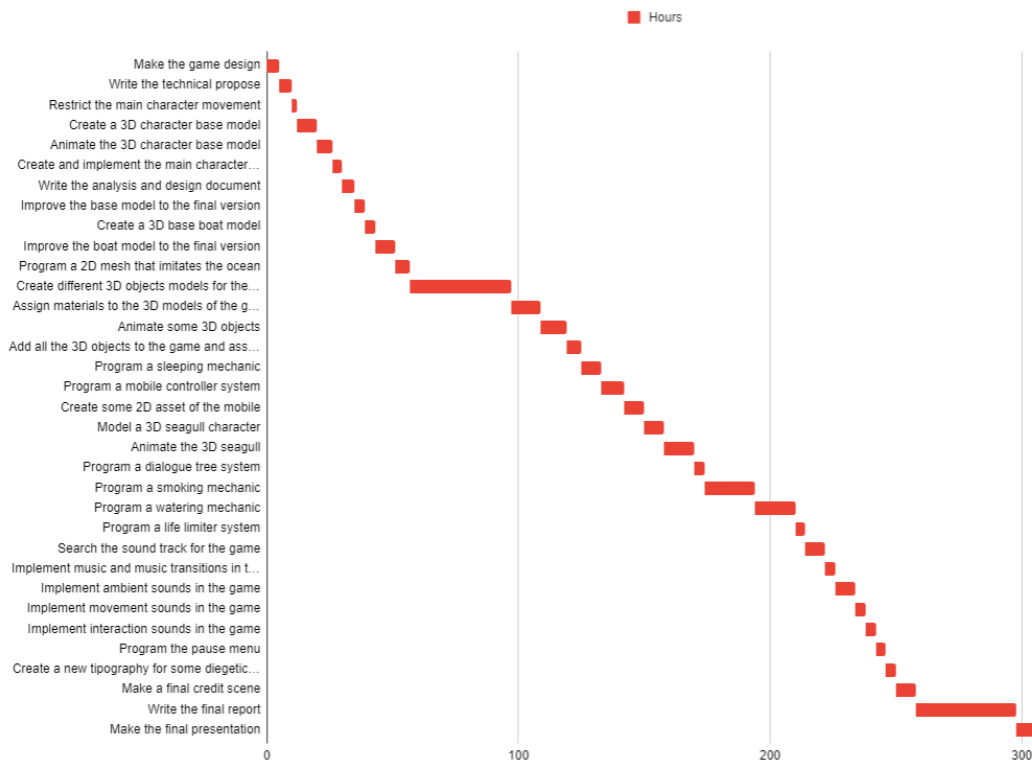


Figure 2.1: Gantt chart in hours (made with Google Docs)

2.2 Resource Evaluation

The resources of this project could be divided into three elements, first of all, the human cost (in time measure) should be about 2 people working four months and a third person two months for 20 hours a week each of them.

The amount of money per person is different depending on each job.

- The designer dedicated 80 hours a month for four months, spending an amount of 320 hours earning 9.4 euros per each one on average [10], so its final cost would be 3008 euros.
- The programmer dedicated 80 hours a month for four months, spending an amount of 320 hours earning 9.4 euros per each one on average [11], so its final cost would be 2684.8 euros.
- The narrative responsible dedicated 80 hours a month for two months, spending an amount of 160 hours earning 10.25 euros per each one on average [4], so its final cost would be 1640.27 euros.

The amount of money that we would need to do this project would be 7333.07 euros.

The other type of resources is the software resources, these are the following ones:

- **Unity**, a free 2D/3D motor engine [21].
- **Visual Studio**, a free programming interface that belongs to Microsoft [15].
- **Blender**, a free 3D modeling program [9].
- **GitHub**, that allows us to share our advances in the project easily [13].
- **Google docs**, a free Google program that allows us to make online shared documents [12].
- **Overleaf**, a free online editor text [2].
- **Audacity**, a free program for sound edition proposes [20].
- **Krita**, a free 2D draw program [14].

The hardware resources are the used computer specifications, which has a price of about 900 euros:

- **CPU**: Intel i5-6600k.
- **GPU**: NVIDIA GeForce GTX1070 8GB.
- **RAM**: 16GB DDR5.

CHAPTER 

DESIGN

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In this section, it is going to be explained the design process that underlies the video game, the decisions that were made when the game was designed and how those ideas were developed. It will be divided into four different sections: the artistic design, the sound design, the game design and the interface design. All of these explanations only will be at a surface level, because at the fifth chapter there will be further explanations of all of these game parts.

3.1 Artistic Design

When the designer has to decide which art style do he/she wants to put into a video-game, the designer does not have to think which one looks more beautiful for him/her, he/she has to study the game and the narrative design before, so the designer can watch which one he/she thinks is going to fit better both of them.

The previous analysis of which artistic design would be started by analyzing which type of game was wanted to do and by looking for other FPA references. The main references that were taken for the art were "Jalopy" (2016), from Excalibur Games (see Figure 1.3) [17] and "Virginia" (2016), from Variable State (see Figure 3.1) [19]. Both of them are low poly video-games and this style fits well with the idea of minimalist space.

In general, all of the FPA games have some things in common, these are that most of them do not have a lot of pretentiousness and their colors are simple and clear, their immersive objective goes more in a realistic game-play representation than in a realistic art one.

However, it was not wanted that the game was a copy of other video-games art, so it was tried to add more circular effects to the objects, giving them a bit less rectangular form.



Figure 3.1: Virginia

The idea of how an object should be in the game normally is to think about how it looks in real life and how it is going to build it on Blender. This object is divided into separate segments, for example, the diary could be separated into three parts: the papers, the book covers and the circled left side (see Figure 3.2). A more rectangular low poly game would do that one as a brick, but it was thought that a circular effect on the lateral of the book would give a more vivid effect to this. The following part is the materials assignment, these ones are normally solid colors that make it easy to differentiate the various segments of any object and to the other objects of the scene. The last one could be the animation, in objects it is very simple, most of them being a unique simple action as it could be to open or to close a door.

The character design is more focused on a typical low poly character, with a clear separation between each of his different areas of the body and smooth movements. For example, the seagull has a clear division between the bill and the body, without any type of transition area between the two parts (see Figure 3.3).

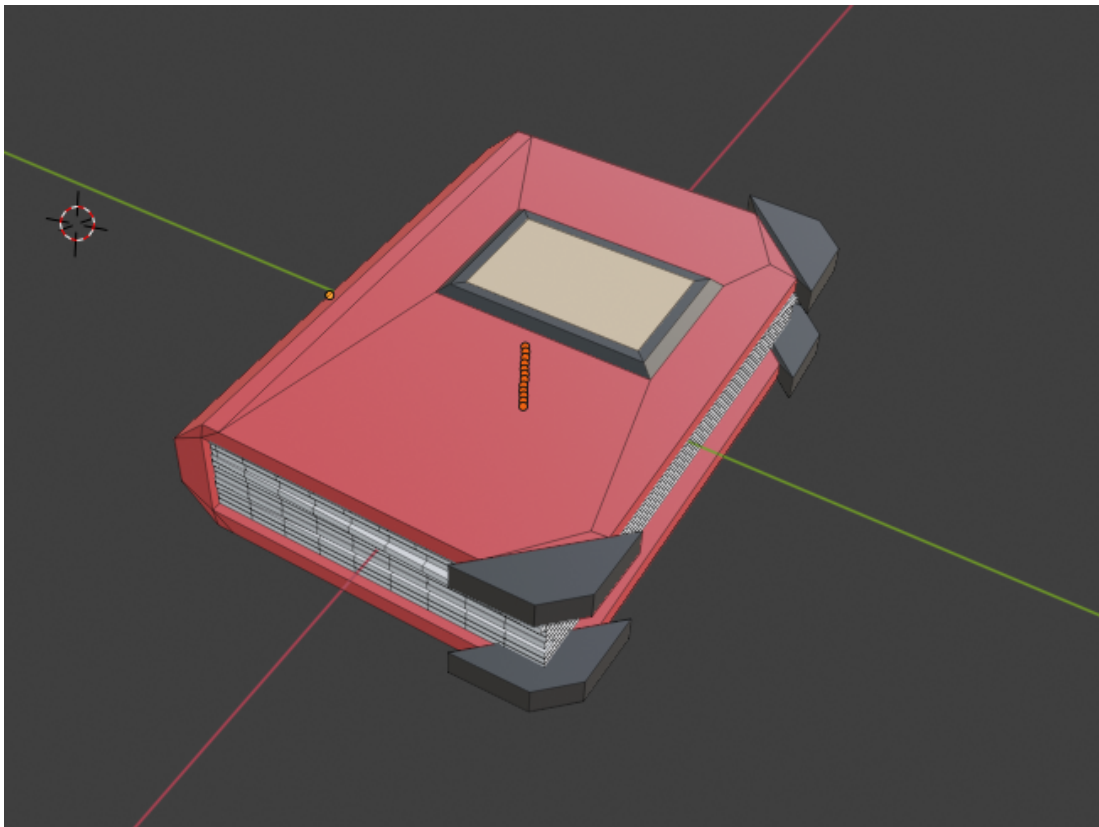


Figure 3.2: Book

3.2 Sound Design

The sound is a very important part in a video-game. A game without sound is like an empty egg, it has the form of an egg, but it has not any kind of life inside it. Besides, if a game designer wants to build a strong narrative game, the sound is, maybe, the most powerful tool that will make this narrative to transmit all the feelings and sensations to the player. The game's soundtrack contains different kinds of sounds and music.

On one hand, the music was planned as a quiet one and a game driver, this means, each track of music should tell in what moment of the main character's life is the player in.

On the other hand, the soundtracks are intended to give feedback to the player and a quiet ambient to the game. It is not wanted that there would always be a lot of sounds at the same time that overwhelms the player. It is wanted that each action has a clear and quiet sound that enhances the relaxing atmosphere of the game.

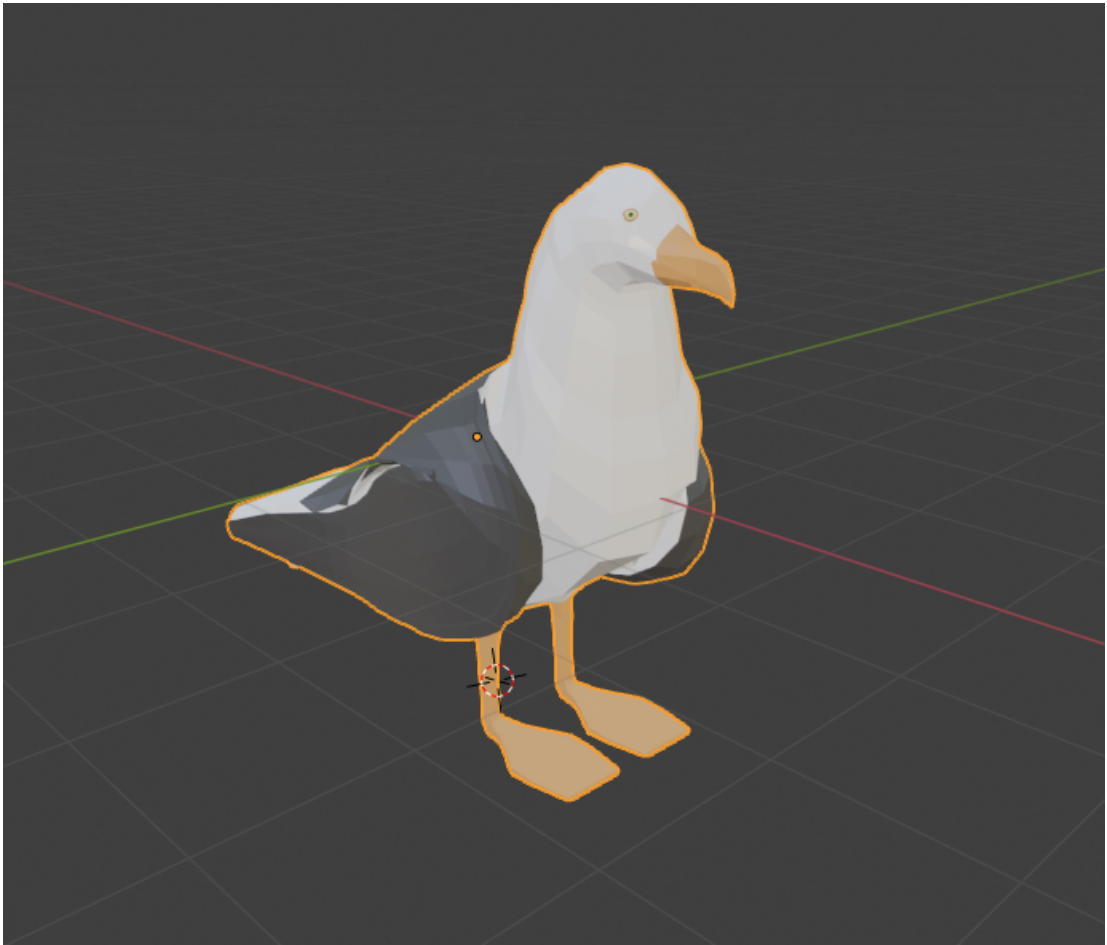


Figure 3.3: Seagull

3.3 Game Design

3.3.1 Mechanics

There are different mechanics in the game. Some of them were designed by the programmer, which are only going to be named, but the other ones are going to be explained deeper. There are two main mechanics in the game, but one of them could be widely broken down.

- **Movement.** These are the internal mechanics of the character, they contain its body movements, these walk and walk slowly. The reason for this limitation is because the main character is an old person, so a person with that age could difficultly run and crouch as a younger person could do. Its assigned buttons should be comfortable ones for anyone that has played some games before. For this reason, were assigned the WASD keys to their control and the SHIFT key

to change to the slow movement. To control the camera, the player should use his/her mouse.

- **Interaction.** This is the main big mechanic in the game and it changes depending on the object the player wants to interact with. This mechanic could be divided into different smaller ones:
 - **Examination (and read) mechanic.** When the player wants to observe an object closely, he/she must press the left click button to take it. The player can rotate the object to examine the different parts of this one and, in some cases, he/she could read the text that the object could contain pressing the F key.
 - **Activate objects mechanic.** Some objects has an action associated to them, these are self-closing, ergo, the action does not have more repercussion that the action itself. To activate this, the player must press the E key.
 - **Navigation mechanic.** The player has the option to manually control the boat, this indicates in which direction he/she wants to go with the boat, nevertheless, there is no possible place to arrive, so the only change is the boat orientation.
 - **Sleeping mechanic.** When night falls, the player could choose to sleep to skip the night, these mechanics also helps the player to keep the main character in a good living condition. This action serves to begin a new day, however, the night will finish if the player does not go to sleep, provoking that the character's life gets worst for each night the player does not go to sleep. The player, that only can sleep at night, could activate this action going to the bed and holding the E key.
 - **Smoking mechanic.** The main character can smoke, this action can only be done twenty-one times in a game because the character only gets one tobacco pack to his journey and, once it is finished, the player can not smoke anymore. The smoke mechanic has two separate actions, the first one is to take the cigarette, this could be done holding the E key looking at the tobacco pack, and the other one is the exhale action, when the player press the SPACE key, the character exhales until the player stops pressing the key. When the cigarette is over, the character throws the cigarette end (see Figure 3.4).
 - **Watering mechanic.** The character has a flowerpot full of tulips on the boat. At the very beginning it does not have any grown plant, however, the player can water them once a day and these would randomly grow each day. To do this, the player must get near the flower pot and hold the E key. In that moment, the character would take the watering can and start to water the flower pot (see Figure 3.5).

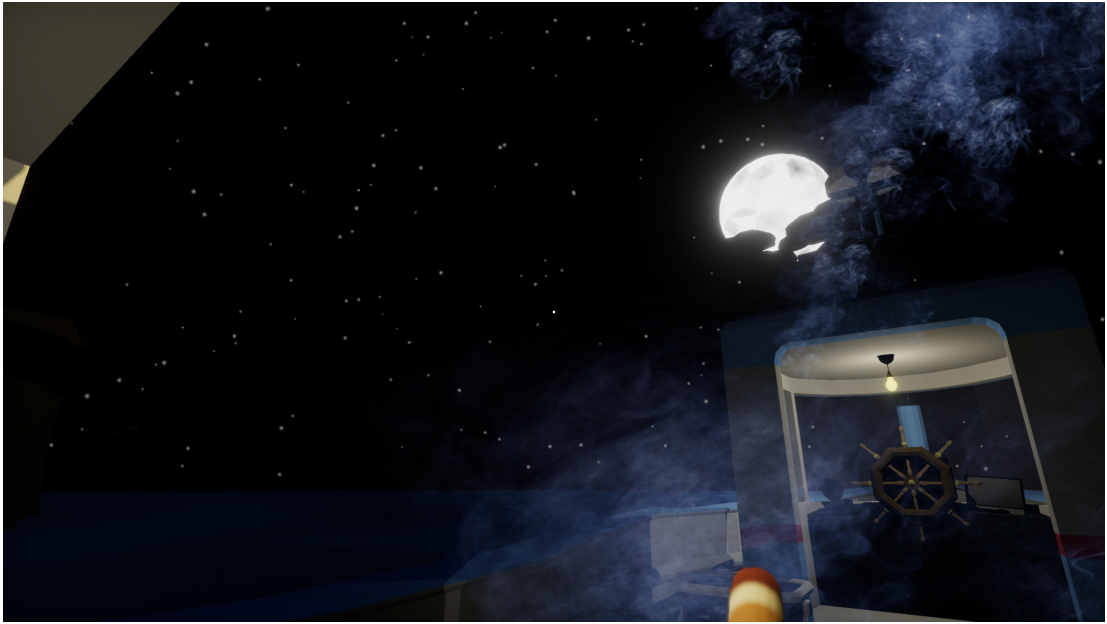


Figure 3.4: Smoking mechanic

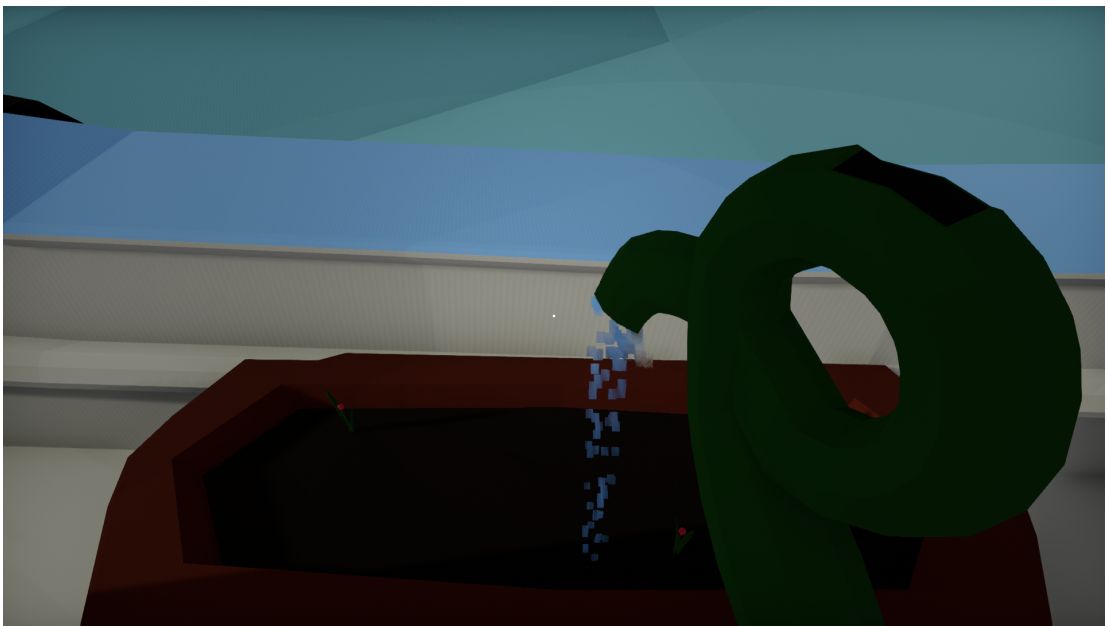


Figure 3.5: Watering mechanic



Figure 3.6: Boat area distribution

3.3.2 Game Feel

When the mechanics and the gameplay were thought, it was tried that all the actions in the game felt relaxing and optional, so the player could decide in each moment what to do and feel no pressure to him/her.

The camera has some elements that help to the immersion. These are the smooth camera displacement, which tries to create a nice sensation to the player when he/she moves the camera, and the automatic camera movement, this is a little movement that the camera does when the player is not moving it, this represents the slight movement of the player that is provoked by the ocean colliding with the boat.

Also, it was tried to implement a satisfactory feeling in the optional activities in the game, these are smoking and watering the plants. When the player is smoking, he can realize all the other activities in the game (even sleeping), so, all the players that want to make his/her character a smoker one, could do easily in any way that they want. This idea is wanted to be brought because the most of the game the player would be reading notes, the diary or the mobile phone, but, on real life, a lot of people usually smoke, listen to music or do other activities like these that do not require a lot of attention, so, as it would be very difficult to collect or compose a lot of songs, it was decided to implement this smoking mechanic. Furthermore, the watering mechanic was an attempt to give the player a feeling that his actions have some consequences, not only in himself/herself but also in the character environment.

In the same line that the last mechanic, the addition of other living beings to the video-game was also complemented by the apparition of the seagull. This bird is not at the very beginning of the game, but, when a few days passed, it appears to accompany to the character. The player could ignore or pay more attention to it, but, if the player decide to do the last one, the seagull would allow a nearer approach of the character.

Nevertheless, someday, the seagull would leave the player alone again.

Last, when the character's life started to run out, the vision would start to be more reduced making the edges darker. At the beginning it would be faint, but each time the edges would be darker and darker.

3.3.3 Level Design

One of the first ideas was that it was wanted to make a level design that would be friendly to the player and one that allows the player to access to all the game possibilities from the very beginning of the game, so it was needed to divide the boat into separate parts that contain all the information and activities of the game. These sections are: the stateroom, the command post and the boat deck (see Figure 3.6). The command post would work as a transition between the other ones.

The game has a main menu level design too. There are two main menus, one of them could only be accessible the first time the player starts the game (or when he/she wants to start a new game). This is a table where the character wrote his farewell letter. And the second one is when the player has a saved game, so, this means that he/she is already on the boat and the main menu became in a boat scenery one (see Figure 3.7).

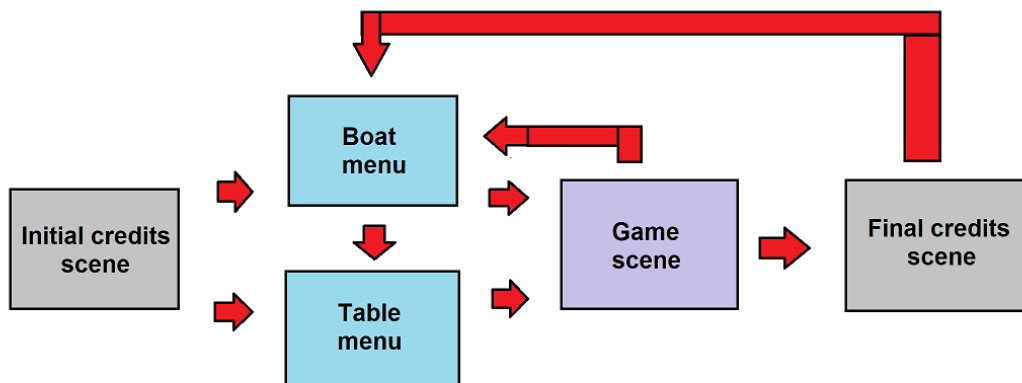


Figure 3.7: Scene work flow

3.4 Interface Design

The idea of the game interface was, like the rest of game aspects, as minimalist as possible. All the extra information that was given directly to the player is the save icon, that appears when the character sleeps. This responds more to a practical effect that a game-play one, because, if the player closes the game when it is saving, the save file could suffer some problems.

The other interface elements are black screens or similar. These are the sleep and transition screen, which is a black screen that indicates that the player is sleeping or waken up. The blurred screen shown when the main menu appears when the player is wakening up and when the character is examining some object, the read screen, which shows what things are written on a document that the player is examining, and the black life screen, which shows how deteriorated is the main character in that moment.

There are some subtitles in-game, these appear the first time that the player does not realize a vital action in the game as sleep or eat. It was decided to put this because some people that played the game ignored all the vital actions and die too early without knowing why, so these subtitles act like a tutorial guide at the start of the game.

GAME DESIGN DOCUMENT

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4.1 Game Overview

4.1.1 Game Concept

This game narrates Oscar’s last journey, an old man who has lost everything and decides to do a final trip on his parents’ old boat. During this journey, he will recall his memories from his childhood to the present, reminiscing all the turning points in his life that have led him to his current situation.

The whole game will take place on Oscar’s boat which contains his diary, some old cards, his mobile phone and some notes that explains fractured pieces of his pasts. On the boat he could do other activities such as smoke cigarettes or water plants that make his days easier. Besides, there will be a seagull that accompanies him during most of his days on the boat.

All Oscar’s memories are accessible since the very beginning of the game regardless of their actions.

4.1.2 Genre

First Person Adventure. This genre takes the First Person Shooter games model one and subverts its formula from a frenetic action to a quiet one. The FPA games focus on the relation player-narrative getting rid of the requirement of mastering the mechanics to play correctly to the game replacing this for a more user friendly ones. "Firewatch" (2016), from Campo Santo (see Figure 4.1) [18], is an example of this genre.



Figure 4.1: Firewatch

4.1.3 Target Audience

Young people (+16 years old) and adults. This classification is due to the game contains the use or glamorization of alcohol and drugs, depictions of references to sexual behavior and offensive language.

4.2 Gameplay and Mechanics

4.2.1 Gameplay

Game Progression

The game progression is focused on the character's life. Each day the character would lose a bit of health. The amount of health that the player loses is directly related to his actions. If the character does not sleep, does not eat or smokes a lot, he would die earlier than if he has a healthy routine.

The game indicator, which lets the player know the character's health status, is his field of view. The less life the character has, the smaller the field of vision.

When the character dies, the screen turns black and the game is over.

Play Flow

For most of the game, the player can control the player's actions freely without limitations. The player can move, read or smoke, among others, when he/she wants.

If the character does some action, the player control would be focused on that, for example, if the player takes the mobile phone, he/she can rotate it or use it, but the player can not move until he/she drops the object.

When the character goes to sleep is the only time where the player can not control the player until the character wakes up.

4.2.2 Mechanics

Movement in the game

The movement in the game is limited by the boat. The player can only move for the area that the boat allows. Besides, there are only two different types of movements in the game. These are the normal movement and slow movement. The slow movement allows the player to approach the seagull without alarm.

It is not possible to run or to crouch in the game. This is due to the character is an old man. To allow this movement would make the game less realistic and immersive.

Actions and interactions with objects

In the game there are two different types of objects. Some objects could be taken and other ones have interactions. An object could be both types at the same time.

The player can take an object by looking at it and pressing the left mouse button to examine it. Once the player has taken it, he/she can rotate it with the central mouse button, let it on the ground with the left mouse button and, if the object can be read, the player can read it by pressing the F key button.

The objects could be interacted holding or pressing the E key button. The interaction result depends on the object. For example, if the object is the closet, its door would be opened or closed.

Screenflow

The game has two different mains menus, the game scene and two credits scenes (see Figure 3.7). The difference between the mains menus is that one would be shown the first time that the player initiates the game and the other one would be shown all the other times.

The credits scenes are the initial credits scene, that would be shown every time that the game is executed, and the final credits scene, which is shown when the game ends.

There is only one game scene because the whole game happens at the same scene to do not interrupt the pace of play.

Saving

Every time the character goes to sleep, the game does autosave. This is indicated by a sprite of a rudder. The game can not be manually saved.

The game saves the number of cigarettes that the character has smoked, the character's health status, the flower pot progress and the confidence that the player has obtained with the seagull.

When the player loads an old game, the game would start at the beginning of the day that it was when he left the last time.

4.3 Story, Setting and Character

4.3.1 Story and Narrative

The game starts with an old person taking his boat to do a journey through the sea. When he leaves his house, he takes some old objects with him and starts his last journey remembering all his life with the player. His story can be read in his diary, on different notes, in some draws and on his mobile phone, representing each one a different part of his life.

The main character story started when he was a child and he went with his parents in the boat where he grew up and started to make his first friends. He met a girl that was his first love until he finished obligatory school and he started to work. During some time, he had different little jobs and a lot of short intimate partners until he met again with his first love. They got married, had a child and set up a business. At one moment, he cheated on his wife and all his life seriously changed, leaving him alone without a wife, child and business, so he decided to do a last trip with his parents' boat.

4.3.2 Game World

The game world is mainly formed by the ocean and the boat. The ocean wants to transmit a quiet feeling that represents the calm that the character was looking for when he decided to do this journey. On the other side, the boat is the area where the player can discover the character's story, so it has more objects and visual information inside it.

The game world is not a danger to the player, it is quiet. The only change that it suffers is caused by the night and day cycle.

4.3.3 Characters

- Oscar. The main character of the game.
- Camilla. The character's wife.

- Son. The character's son.
- Father. The character's father.
- Mother. The character's mother.
- Friends. Secondary character's that have no name. They are the main character's childhood friends.
- Sofia. The person who sleeps with the protagonist.

4.4 Interface

4.4.1 Visual System

The game point of view is a first person one. Due to it is wanted to transmit an immersive feeling to the player, there will not be an excessive amount of HUD elements apart from a white point that indicates the center of the screen, some indicators that help the player to know when an object is intractable or not and a black screen that will be shown when the player goes to sleep. Besides, when the player wants to read a note or some page of the diary, the black screens and the text attached to the object appear.

There is also a pause menu that allows the player to change the game settings. It also lets to navigate between the main menu and the game scene or to close the game.

4.4.2 Control System

The character can be moved with the W, A, S and D keys and the camera could be controlled with the mouse. If it is wanted to move the character slowly, the player could press the shift key button. The player could also take and drop objects pressing the left mouse button.

If the character has taken some object, the player can rotate it with the central mouse button and, if the object has some text attached to it. The player can read it with the F key button. The same key is used to unlock and lock the mobile phone, which can be navigated with the left mouse button.

Some objects have some interactions. To activate them, the player should hold or press the E key button. Some of these objects are cigarettes. These have his mechanic that allows the player to inhale smoke pressing the space button, exhaling the smoke when the player releases that button.

The rudder and the diary pages could be controlled with the left and right key buttons to turn the page and move the boat, respectively.

The pause menu could be activated with the escape button.

4.4.3 Audio, music, sound effects

There are different sounds attached to most of the game objects. These sounds are used to give some feedback to the player, such as known where a door is opened or when the night falls.

There are also ambient sound effects, this is the character's breath and the ocean sound to create a quiet atmosphere in the game. All these are looping sounds that need not be stressful to do not cause fatigue to the player.

The character movement has also sounded. These are the footsteps sounds which will sound when the character would be walking.

Finally, there are three different songs in the game. The first song sounds at the main menu screen; the second one is for the final credits scene; and the third one is the song that would be sounding during the whole game.

4.5 Artificial Intelligence

The game has one unique AI that is a seagull that will arrive at the mid-game and leaves the player in a determinate moment. It will have its own behavior depending on the character position and actions. Even if it is not a complex AI, it still accomplishes its objective of being a companion for the main character.

4.6 Game Art

The visual aesthetics of the game is a 3D low poly art. It is an artistic style that is characterized by the use of a few polygons and solid colors in its 3D models. It was decided to use this art to give a sense of ease and to relieve the pressure to the player in line with the game feel.

Besides, the art is focused on representing a realistic scene, getting away from strange and unrealistic forms that could create a sense of confusion to the player. All the objects that were created were realistic ones that any person could have and recognize. The main objective was to make a game scene where the player could easily know the functionalities that all the objects have without any kind of previous explanation.

Also, this game art improves the performance of the game, removing a big amount of polygons, making this game more accessible to older computers that could not run the game with its system components.

The 2D design of the game is a simple one in line with the 3D design to avoid causing an inconsistency between the two types of art. It uses polygonal forms and details that are not complex and easy to recognize for the player.

4.7 Additional information

4.7.1 Key words

- Video game.
- First Person Adventure.
- Low-poly art.
- 3D Design.
- Sound editing.

4.7.2 Related subjects

- Video game art (VJ1223)
- Character design and animation (VJ1226)
- Hypermedia narrative and video game analysis (VJ1218)
- Production techniques and sound realization (VJ1236)
- 3D Design (VJ1216)

WORK DEVELOPMENT AND RESULTS

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In this chapter, it is going to be explained the process that was followed to do all the tasks these months. There are some ideas that we had at the beginning of the project that were no time to implement, so since it was wanted to continue the project after the final degree one, these ideas would be explained with more detail in chapter 6.

5.1 Work Development

In this section, it is going to be talked about how the 3D characters and objects were modeled, how they were animated and why the materials were decided to be assigned where they finally are. Besides, it is also going to be explained how the mechanics that were programmed were implemented in the game and how the different sounds in the game were edited and managed.

5.1.1 Artistic development

The 3D art has a low-poly style, so it was decided to use Blender as my program to model in. All the objects in the game could be divided into two groups: the characters and the objects. The characters group only contains the main character and the seagull. Besides, the objects group collects all the boat objects and the boat itself. The process that was followed to each object and character was quite similar, so it will only be commented on the boat and the seagull, which are the more complex ones in the game, but those

explanations could be extrapolated to all the other game objects since they are quite simple.

3D Boat

The boat is the central part of the main scene. It is where all the objects are positioned and the unique area where the player can move the character. This means that the boat should be made quickly to start to implement other things in the game. For this reason, instead of doing the final version quickly and wrong, a test version of the boat was made (see Figure 5.1).

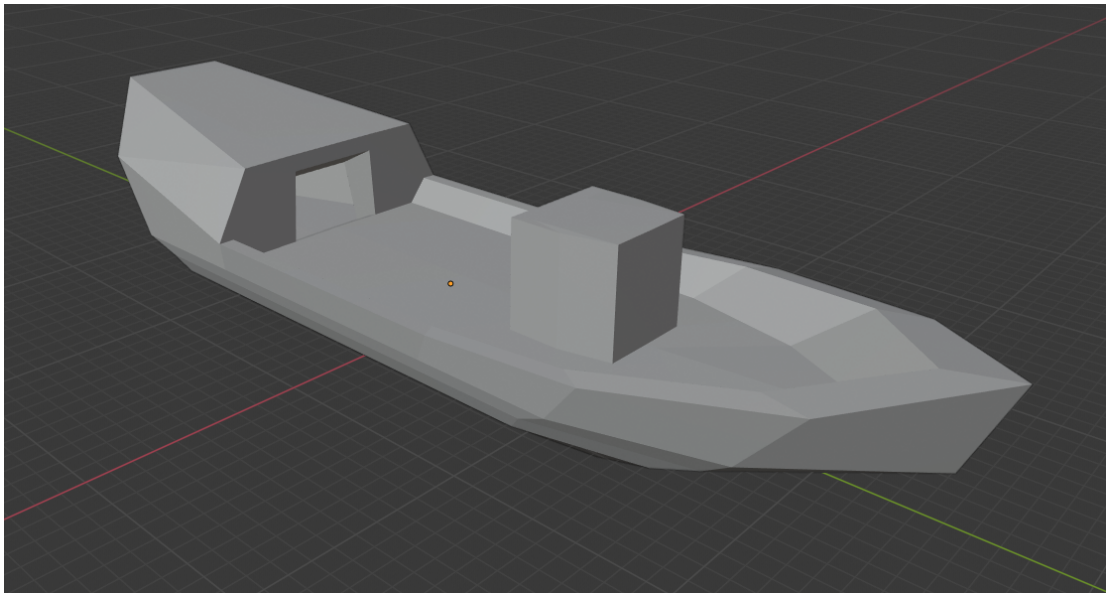


Figure 5.1: Test version of the boat

It has not any kind of materials, windows, obstacles or anything like that. It only has the boat deck and two rooms, that represent the three boat sections. To do this first version, it was started with a cube and it was modified until it represented the base of the boat. After this, the boat's railing and the two rooms' walls were extruded. Finally, it was only needed to create some stairs as a transition between the three sections of the boat.

Once the first boat model was finished, this works as a reference to the final model. This one should have all the things that the original one has, but without so many square edges and more circular ones. Besides, it was needed to put more details on it, like two windows at the stateroom, tow ship masts and a desk in the cabin. This model was started with a plane because the most important part was the external part and not only the desk. This form should have more details as wheels on both sides. Later, the work was focused on creating a good desk, that has a flat ground with two unevenness and two stairs that could not cause problems on the game.

Once all the boat base was created, the stateroom area was modeled, focusing on creating a big area that could contain more objects inside and added some extra details like the windows. The same method was used to make the boat cabin, so the whole boat was plenty functional. After testing its new parts, the masts and other details were finally modeled to give more life to the 3D boat.

Finally, all the materials were assigned (see Figure 5.2). For this task, some visual references have been searched to observe what kind of colors are more typical to this type of boats and, as it was seen, most of them have blue, red and white colors mainly. Also, it was added some glass materials to some parts of the boat and some gold color details. To be in line with the low poly style, the colors had no different tones and they are spot.



Figure 5.2: Boat

3D Seagull

In a different way than the boat, the final version of the seagull character directly made. For this, some seagull references were looked for [1]. This helped to create the animal outline. This will lead to an easy part when it was only needed to extrude and sculpt the seagull body until it had a good form. Once all the settings were done, the legs and the bird's beak modeled and attached to the body.

After this, it was needed to create the wings accurately, because, if it would not have been paid attention to the detail, it would have been had a lot of problems with their animations, so, these wings were divided into small sections that allow a free movement (see Figure 5.3).

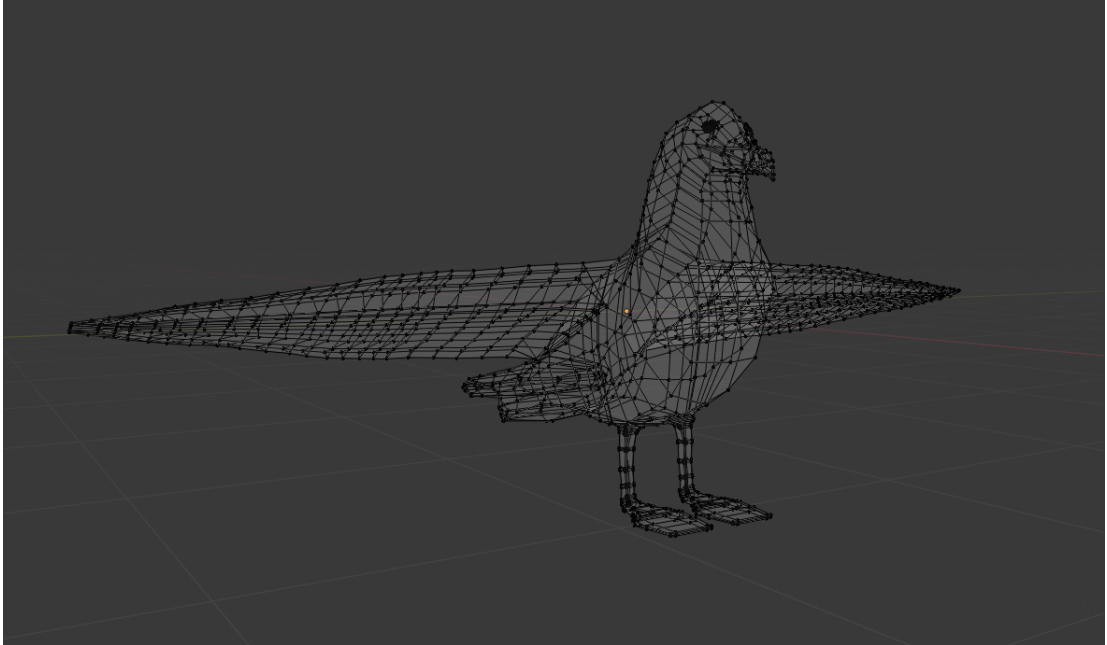


Figure 5.3: Seagull's wire-frame

Finally, the only thing left was making the eyes. This was the worst part of all the seagull. There were three different versions until the final one. It was very difficult to create eyes that look like a low poly style and do not make a child version of the bird. At the end, it was decided to sacrifice a bit of the low poly style and model more realistic eyes to have a better final result (see Figure 5.4).

The second part was to assign all the materials, this was so similar to the boat so it would not be entered in more detail here. The colors that were used for the seagull were white, black, orange, red and a bit of yellow.

The seagull had one step that the boat did not have, this is the animation part. To animate some objects, it is needed to create and assign bones to the different segments of the object. The seagull has in most of the body a clear separation for the bones, the parts that more bones had were the wings, that had a bone for each segment of it. This was done because birds move their wings a lot and they are not like a human arm that only has the shoulder, the elbow and the wrist.

When the bones are assigned, the body can be moved to these. The last part is the animation itself, six different animations were created for the seagull. These are three idles animations, one to fly, one to take off and one to land (see Figure 5.5). The most important part when these animations were made was that all of them should be



Figure 5.4: Seagull's eyes

correctly interconnected. For this, the end of each animation should fit with all the animations starting. To do this, the bones position should be the same in both cases.

5.1.2 Programming Development

During the whole project, it has been worked in some little mechanics that, in general, were something like "auto-conclusive" ones. This means that they exist in the game world, but have no sub mechanic attached to them. For this reason, the general game flow would be not explained, because this was my teammate's work. The different elements that it would be described in detail here would be the animator of the main character, the 2D ocean mesh, the mobile system, the dialogue tree system, the sleeping mechanic, the smoking mechanic and the watering mechanic. The only part that it is going to be ignored is the pause menu because it is a very simple thing that only consists of stopping the game time and to make the menu appear.

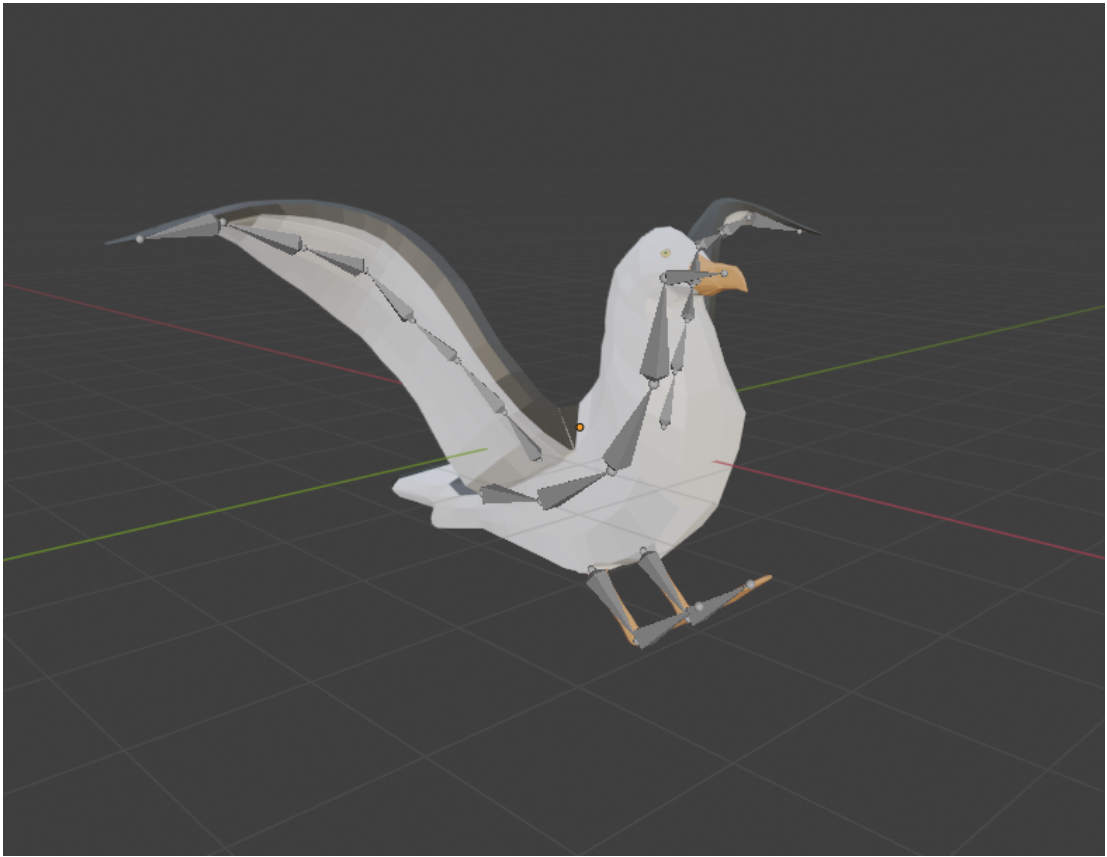


Figure 5.5: Seagull's bones

Character animator

Once it was made the character model and animations, they have been brought to Unity. In Unity, the designer can make an animator to group all the animations clip that an object has and manage all of them together. The main character animator is very interconnected because it contains an idle animation and eight walking animations depending on which direction is the player moving the character to (see Figure 5.6). The transitions between them were managed by tracking the speed on the X and Y-axis of the character and the camera direction, when the player stops, the running animation changed to the idle one.

2D Ocean Mesh

The operation of the ocean mesh it is not very complicated. It is an overall grid that, with random numbers, changes its vertex highness to positive or negative values at a slow speed. There are different timers for each vertex, this means that all the vertex do not go at the same Y-axis point always, its times' variate between each of them so it

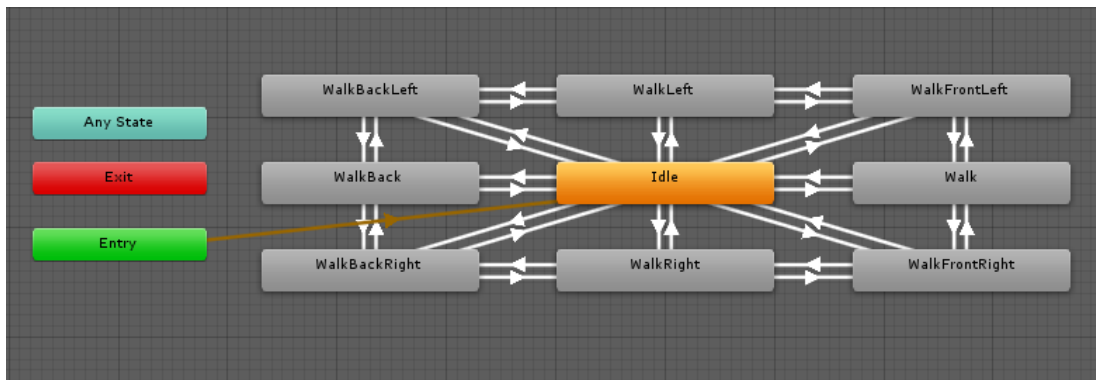


Figure 5.6: Character animator

results in a more realistic ocean movement (see Figure 5.7).

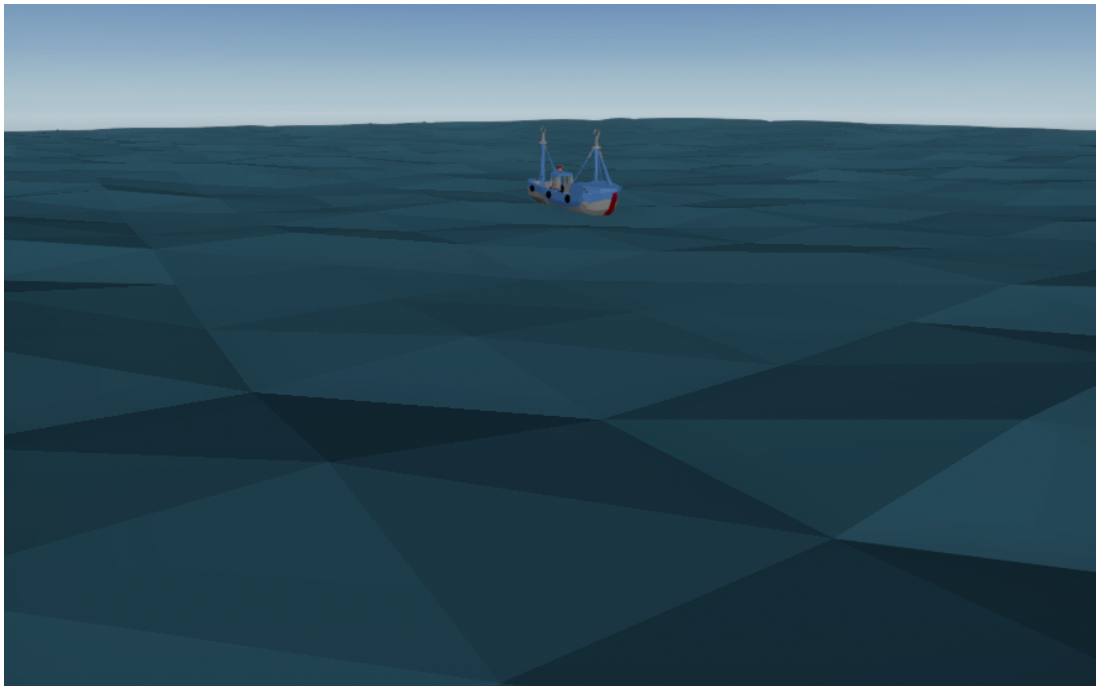


Figure 5.7: 2D Ocean Mesh

Mobile System

The mobile system works like a menu system. It appears once the player takes the mobile phone and turn it on. It consists of five different screens, where the player can watch some photos, old mobile conversations and old personal notes. The mobile flow is very

simple (see Figure 5.8), it has a lock screen that always appears when the player turns on the mobile phone, there is also the main screen which allows the player to decide which mobile app he/she wants to open, each one of these three apps has its screen.

The player can also go back since any of the existing apps to the menu screen pressing the back button. To navigate inside each of the mobile apps, the player could use the mobile phone as it was his own finger scrolling the screen.



Figure 5.8: Mobile

Tree Dialogue System

The dialogue system was made for the main menu letter, this is for a letter that the main character, with the player helps, did when he decided to start his boat journey. This system consists of a two options tree, where the player should choose which one prefers. His/her answer will bring to another two options decision until the letter is finished (see Figure 5.9).

To implement this, it has been used a manager script, whose work is to get which of the two decisions has made the player, write the result on the letter and show the new options, and a dialogue script, that contains all the possible options that the player would have to choose in the letter event.

The sleeping mechanic and the credits scene

This mechanic is a base mechanic of the game. It allows the player to rest and skip the night. When the player activates this option getting near the bed and interacting with



Figure 5.9: Tree Dialogue System

it, the screen turns black and all the internal calculations, such as, the save system (that was implemented by my teammate), the decrease of the character life (and its field of view) and some minor things like the appear or disappear of the seagull, happens.

Once all these calculations have been made, the black screen begins to disappear with an initial blur image that imitates the initial disorientation when someone wakes up (see Figure 5.10). This is connected with a watch that is in the stateroom, which sounds at the same time until the player gets closer to it and stop it.

When the character's life arrives to the end, the character will not wake up and the transition to the final credits scene begins. It is a quiet transition, with no difference between the wake up one.

The credit scene is the last scene in the game. It has a simple animation that shows all the people that have worked or helped in the project in some way, the game name and other things like the acknowledgments. When all this has happened, a Unity event moves the scene from the credits one to the main menu.

The smoking mechanic

The smoking mechanic is a secondary mechanic, which is not an obligatory one and there are limited times when the player can do it. There are 21 cigarettes in the character's cigar box and it can not be replenished. If the player wants to smoke, he/she must go to the stateroom, where the cigar box is, and take a cigarette like any other interaction in the game.

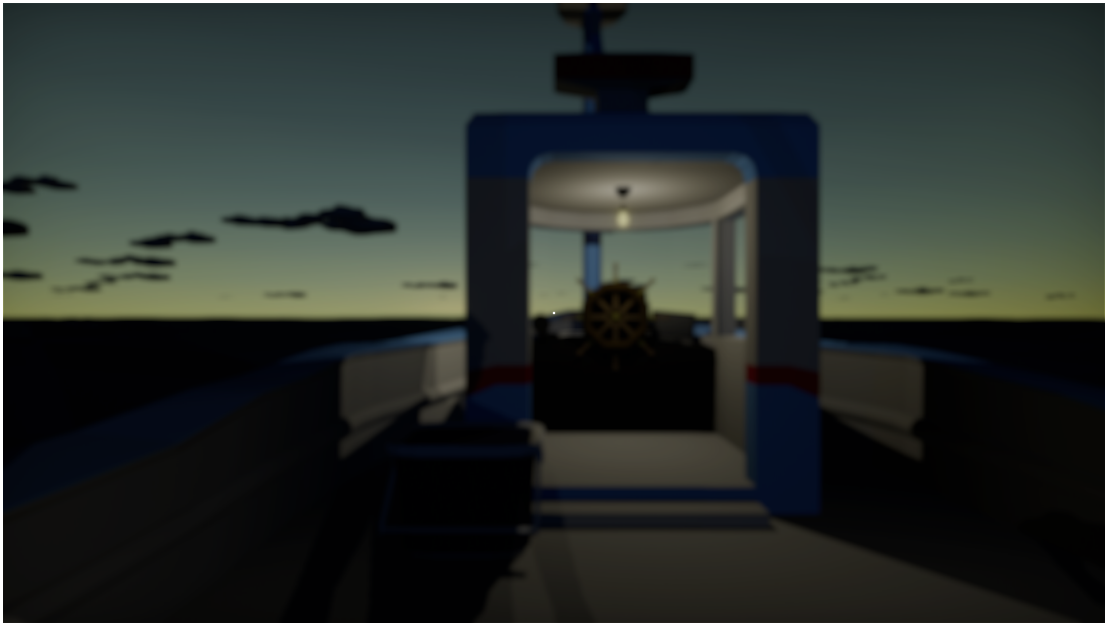


Figure 5.10: Blur filter

When the player takes one, the character lights a cigarette with the lighter and starts to smoke. The smoke rhythm is a total player choice, he/she decides when the character inhales and exhales the smoke.

The cigarette is continuously consuming, but, when the character is inhaling, it consumes quicker and when the cigarette is over, the character throws the cigarette end and the player can take another cigarette if he/she wants.

Each cigarette has its own smoke particle system. It is always showing a bit of smoke going out the cigarette while it is lightened. On the other hand, the character has his own smoke particle system that appears each time the player exhales the smoke. To complement these particle systems, there is a wind zone, which is a Unity component, that moves the smoke in a realistic way at the scene.

The watering mechanic

This mechanic is the last one that it was implemented. It is focused on a flower pot that is at the boat deck. In this flower pot, there is a total of thirteen points where the tulips can grow. The player can water once per day and, each time he waters, three tulips "level up".

The tulips have four different states: seed, level 1, level 2 and level 3. There are animations between these levels that made the visual transition nicely. The selection of which plants grows up each day is totally random. One plant could be a level 3 while another plant has not grown yet.

To water, the player must get closer to the flower pot and interact with it, the character will take the watering can and use it for some seconds. To avoid problems such as the player decides to turn back and the character waters the ground, when the player decided to water, the camera movement and the player movement get temporally disabled until the animation is finished.

The watering can have a water particle system attached to itself, that throws water when the character is watering the plants. The water disappears once the drops touch the ground.

5.1.3 Sound Development

Once all the programming tasks were finished, the work was focused on the sound ones. These could be divided into the music and the normal sound ones, but, apart from these two, it is going to be explained how some of them were modified when it was not found exactly the sound that it had been looking for at the online libraries.

Sound Editing

Some of the audios that were found did not match exactly as it wanted to be, so, it was needed to edit them. To edit the sounds, it was used Audacity. This is a free sound editor that allows to cut, to change some parameters and other things of the sound (see Figure 5.11).

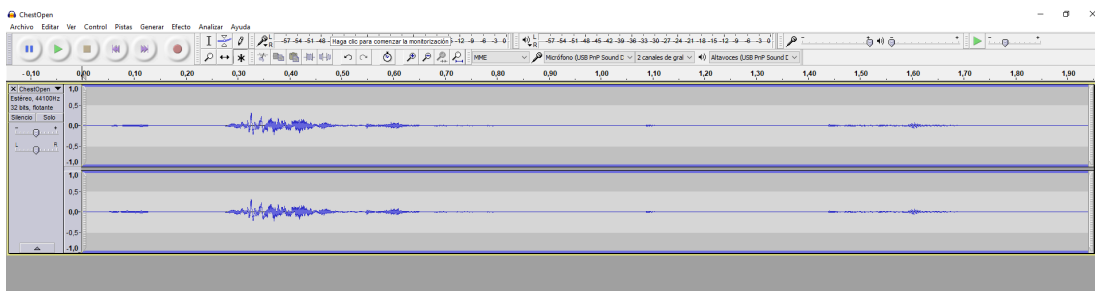


Figure 5.11: Audacity

Music

When the project was started, the first idea was to learn to use FMOD, a software to create music and control it on Unity. However, it had been no enough time to do this, so some pages were looked for to find free music that could be used. Finally, it was found a page [22] that allows to use music if they are credited.

In the game, there are three different pieces of music, these ones are "Better days", "Tomorrow" and "Relaxing". The first one is for the end of the game. It exclusively sounds at the final credits scene and its rhythm is more nostalgic than the other ones.

"Tomorrow" is the main menu theme. It has a more peaceful sound. The last one is the game sound, it repeats on loop for all the game. For this reason, the song should not be too noisy, it should be quieter and relaxing (as its name says).

Objects Sounds

Each sound that was found was in ZapsPlat, a free online audio library [3].

Most of the objects in the game have some type of sound assigned to them, this was done because every player interaction should have some audible feedback. The sound starts when the player interacts with them and, depending on the object position, it will sound stronger or lower. All these things are managed on the Unity Audio Source of each one (see Figure 5.12), where some parameters such as the volume or the 3D sound could be assigned to them. This means that the sound should sound in its real position or the player position as a 2D sound.

All the audios should have a general manager, so it was created an Audio Manager script that allowed to control their general volume and stop them when it was needed, for example, when the player goes to the pause menu.

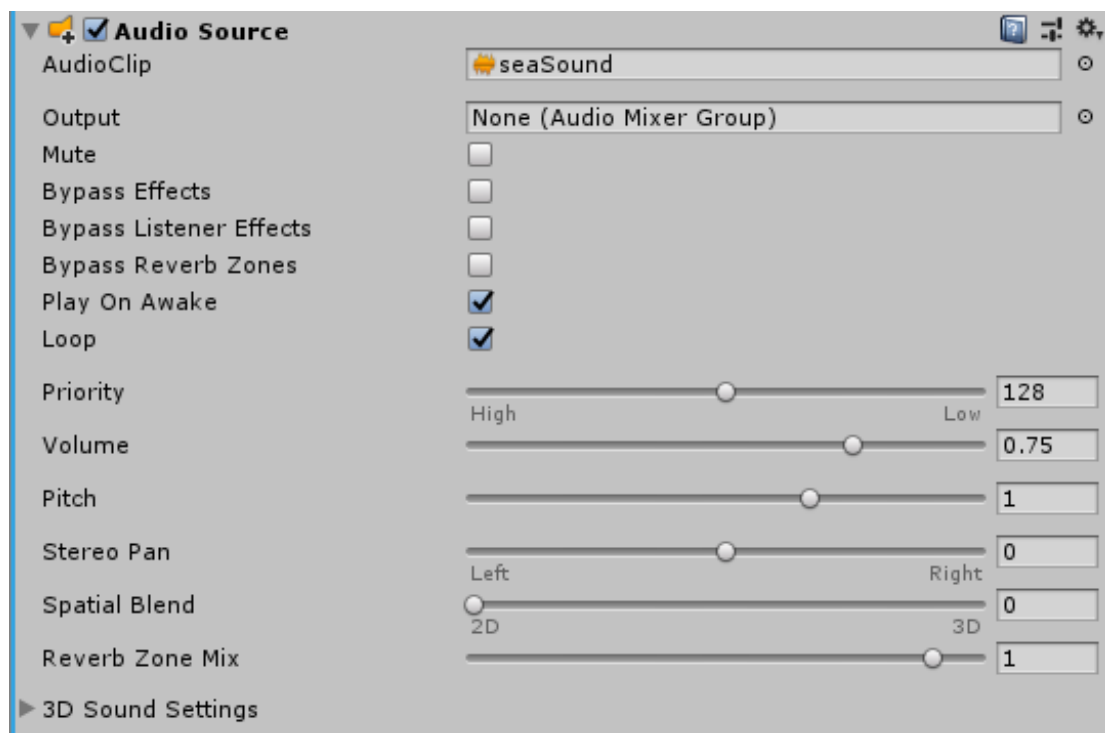


Figure 5.12: Unity Audio source

Movement and Ambient Sounds

These sounds are similar to the objects ones. They also participate in some way in the audio manager, but its sound is always 2D (except for the footsteps). Some of these audios are the sea, the exhale and the inhale.

The footsteps are a bit different because they alternate depending on which foot the character set, the sound would be more at the right side if he set the right foot and vice-versa.

5.2 Results

After all these tasks, with the programmer and the narrative responsible, it was achieved a fully complete game that has solid mechanics. Besides, his base mechanics and his texts are fully expandable, so, any possible changes that could be wanted to realize in them would not be so difficult to implement.

The base idea of the game that were thought of the initial planning did not changed a lot during the project realization. There were a few things that were added like the smoking and the watering mechanic, but there were other ones that had been removed such as the music composition or the dynamic climatic events.

After the project, it was noticed that the secondary mechanics, such as smoking, helps a lot for the player immersion. For this reason, the focus of the game development turns in that direction, trying to help the player to relax when he/she decided not to read the game documents that are distributed on the scenery.

If the initial planning is compared with the final result, it could be checked that some tasks took longer than it was expected. This caused the end of the project, which was planned to be finished in early April, was prolonged until mid-May.

The tasks that extended this first planned date were:

- The creation and animation of 3D objects because it was needed to make more models for the boat to do a richer environment instead of a more basic one.
- The implementation of music and music transitions because of the addition of new objects to the game.
- The programming of the 2D mesh that imitates the ocean because there were two unsuccessful attempts before the final version was implemented.

CONCLUSIONS AND FUTURE WORK

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6.1 Conclusions

These months have been a bit strange, I was since January working eight hours each day, four hours for the external practices and four hours for the final degree project, like a full working time. This was a new situation for me, at the very beginning I was a bit stressed because I had no time to do any other things apart from working or sleeping because when I had finished my day's work I felt very tired. However, this only happens in the first weeks.

During all the projects, I have had a good relationship with both of my teammates. We usually talk and comment on some aspects of the project and, in general, our idea was very similar. There were some discrepancies in a few points, but they were quickly solved.

6.2 Future work

From the beginning of the game development, we knew that four months were not enough to finish all the things that we wanted to do. For this reason, we decided to try to achieve most of the mechanics that we designed at the start of the process and the things that we could not implement now would be continued after the final degree project presentation.

These elements include more narrative elements, such as more letters, audio recordings, more mobile conversations or more photographs, some secondary mechanics as fishing, playing some little game at the character's mobile or more interactions with the seagull, an event system that could include the climatic changes, some interesting boat changes or things like that, and an initial scene that shows how the character leaves his house and starts his last journey. Besides, we want to create our music and sounds for the game, fill the boat with more 3D models and polish different elements of the game that could get better.

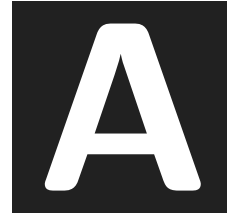
All of these game elements, require programming tasks, narrative efforts and 3D and 2D design, so, all of the project members could contribute to its post-presentation development. Furthermore, some friends have shown us their interest in participating in the project in some way. This could help us in the music area, the 2D Design or some programming support.

The final objective of this project is to create a complete video-game that could be uploaded in some digital games pages, such as, Steam [7], Epic Games [8] or Nintendo eShop [16]. This could look a bit difficult to achieve and it is. But, we think that having a finished video-game published in some of these stores could help us a lot in our future professional career.

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OTHER CONSIDERATIONS

A.1 Source code

Due to the nature of the project, to show directly screenshots of the scripts of the game would surpass the maximum number of pages that are allowed to this final degree project memory, so, here is the GitHub repository of the project: <https://github.com/marklg5/TFG>

The game executable can also be downloaded: <https://drive.google.com/open?id=1IsYQhsjtTMX5TJbc11n0XtrD08RPig9k>

