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Design of a Portuguese Videogame as a Cultural Artefact

Dissertation in the context of the Master in Design and Multimedia, advised by Professor Licínio Gomes Roque and by Professor Luís Lucas Pereira and presented to Faculty of Sciences and Technology / Department of Informatics Engeneering.

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Abstract

Design of a Portuguese Videogame as a Cultural Artefact, stands as a both theoretical and practical project that intends to take advantage of the recent growing popularity and influence of video games. In order to design a video game demo that becomes a cultural artefact, that connects to Portuguese Culture, with the objective to demonstrate the compatibility between the two.

This dissertation starts by collecting insights on video games becoming part of culture, by going through the meaning of culture, play, cultural artefacts and video games, while also mentioning the impact of video games on the wider culture and society. Furthermore, the project then delves into two mainstream video games, these being the Yakuza series and Kingdom Come: Deliverance, and uses them as examples of how video games can resonate with cultural elements or patterns. Moreover, a number of Portuguese made games that have Portuguese history and culture as inspiration are discussed. Finally, a reflection about Portuguese culture is written as an attempt to define it.

The design of the video game demo will follow a number of game design techniques and methods. The process of developing the prototype will be a documented learning process about the various areas that complement game design, and tools like the Godot game engine, in which the demo will be developed. After a stable version is produced, User Experience tests will be applied, during playtesting sessions with the prototype. The results gathered from these will then be rigorously analysed and discussed, in order to confirm if the project succeeds in its goal.

Keywords

Game Design, Portuguese Culture, Video Games.

Resumo

Design de um Videojogo Português como Artefacto Cultural, assume-se como um projeto teórico e prático que pretende tirar partido da recente popularidade e crescente influência dos videojogos. Com o objetivo de conceber uma demo de videojogo que se transforme num artefacto cultural, que se conecte à Cultura Portuguesa, com o objetivo de demonstrar a compatibilidade entre ambas.

Esta dissertação começa por recolher ideias sobre como os videojogos se tornam parte da cultura, passando pelo significado de cultura, jogo, artefactos culturais e videojogos, ao mesmo tempo mencionando o impacto dos videojogos na cultura e na sociedade em geral. Além disso, o projeto investiga dois videojogos comerciais, sendo estes a série Yakuza e Kingdom Come: Deliverance, usando os como exemplos de como os videojogos podem ressoar com elementos ou padrões culturais. Além disso, são discutidos vários jogos de produção portuguesa que têm como inspiração a história e a cultura portuguesas. Por fim, uma reflexão sobre a cultura portuguesa é escrita como uma tentativa de defini-la.

O design da demo de um videojogo vai seguir várias técnicas e métodos de design de jogos. O processo de desenvolvimento do protótipo será um processo de aprendizagem documentado sobre as várias áreas que complementam design de jogos, e ferramentas como Godot game engine, no qual a demo será desenvolvida. Após a produção de uma versão estável, testes de User Experience serão aplicados durante sessões de playtesting com o protótipo. Os resultados serão depois rigorosamente analisados e discutidos, de forma a confirmar se o projeto atingiu o seu objetivo.

Palavras Chave

Design de Jogos, Cultura Portuguesa, Video Jogos.

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1.

Introduction

1.1 Context

Video games have grown in popularity across the last four decades, and today stand as one of the most influential and popular forms of media. In addition, due to the investment, interest in this industry and advancement in technology, the number of possibilities for this media has increased.

Due to these reasons, a lot of interesting and complex titles have come and gone, but there are some titles that have captured my interest, for example, Yakuza, Nioh, Judgement, Ghost of Tsushima and Sekiro. All of these games either rose in popularity recently or were well received after an anticipated release, and what do these games have in common with each other? The answer is that all these games are all heavily inspired by modern Japanese culture, and the Yakuza criminal world, similarly Norse culture and its mythology have also been explored in various other popular titles and franchises, such as Valheim, God of War, Assassin's Creed Valhalla, etc, and In the same way for most of video games existence, they also represent the United States of America, trough games like Red Dead Redemption, Grand Theft Auto, Fallout, etc. In short, this had me thinking, what if the same type of cultural adaptation that these games have, could be applied to Portuguese culture.

Portugal as a country, has about 900 years of history, but even before being officially formed, the region itself still has hundreds years of history, from the Romans to the Moors. Alternatively, the country's current culture and way of living still has its own charm and distinction from other countries and cultures, for example, it has an unique academic life and the practice of "praxe". In general culture and history isn't short for Portugal, in fact I believe there's a great opportunity in our country for video games to inspire their concept, for instance our rich history can be used to generate a setting for fantasy games or localise an historically based video game in Portugal. Besides, currently there's a market for games that are based on historical events portrayed realistically (e.g. Kingdom Come: Deliverance), and also for games that tell fictional stories today, showing the contemporary life of the countries in which they are located (e.g. Grand Theft Auto, Yakuza, Judgement). Additionally, Portugal's geography, fauna and flora, art, music, architecture and other aspects could also be used to inspire a setting, the sound design, a certain artstyle or the design of a map.

Furthermore, a video game that has the ability to transmit Portuguese culture and history, can also be used for educational purposes and transmission of heritage. Moreover, this would also help

dealing with some consequences of globalisation and digitalization of society, these being the dilution of aspects and cultural identity in a sea of information. In other words, adapting Portugal's culture to a digital media, in this case video games, would be extremely beneficial for the country to pass on and celebrate its heritage and way of living for both citizen's of Portugal and other countries to learn about it.

Besides my own motivation to develop this project, I also find that there's some interest from certain parties who might take an interest in this concept. The idea of a video game being designed around and inspired by Portuguese culture, in my opinion, is of great interest for many stakeholders around this project.

For example, if the video game bases itself on Portuguese historical events in addition to being historically accurate, it would be of great interest to a particular set of players that enjoy these types of games that have a great amount of attention to detail and accuracy. Furthermore, depending on the amount of events represented and detail, these games could also be used in school context, with the objective to aid students in learning about certain historical subjects in a more interactive and fun experience. For instance, in later sections of this thesis, I refer to multiple attempts by Portuguese companies to develop video games for school context. However, the design of a video game for school context seems to be a very complex process, so it won't be the main focus of the project, still I believe that anyone can learn something new from games.

Equally important, the district counties that have an area or a region represented in a game with Portuguese cultural value, could use it to promote tourism easily. For example, having ingame representations of iconic landmarks, architecture, entire cities, etc, would give incentive and the idea of a roadmap for players of the game, in case they ever visit Portugal. Moreover, the idea of visiting and experiencing the lifestyle and culture of a certain country in a video game, is already pretty appealing for a certain demographic of video game fans. Besides the appeal to international fans, a video game based on Portuguese culture would bring a lot of national attention, as Portuguese gamers would take an interest due to playing a part in their culture, history and heritage represented in their favourite media.

Overall, I believe the idea of a Portuguese culture inspired video game can generate enough interest to hold its own on the gaming market. As the interest is there, the success of a game with these qualities, will solely depend on the execution of the idea and deliverance of a product that meets the expectations.

1.2 Objectives

Design of a Portuguese Videogame as a Cultural Artefact, stands as a both practical and theoretical project about the area of Game Design. Its objective is to research how this particular area can use the video game medium, in order to represent the culture and themes of a country. In this case, the project has the goal to research the possibility of adapting and gamifying Portuguese culture and themes to the video game media. In addition, it also has the purpose to understand the difficulties, and process of the task, consequently identifying and defining an easier path to achieve it.

With this goal, the project plans to research various concepts related to it in order to better understand its purpose. Namely these being the concept of culture, the definition of a cultural artefact, the moment and the conditions needed for a video game to become a cultural artefact. In addition I also plan to research if similar projects were developed in this area around the same theme, and other works of interest.

After an intensive background research, I plan to implement the ideas and knowledge gathered into both planning and developing a playable video game demo by following an interactive design process. Furthermore, in order to develop the demo, the areas that surround a Game Design project will also be explored, these being, Sound Design, Graphic Design, UI Design, etc. The final product of this project seeks to enhance its reception as a cultural contribution, to both national and foreign markets. Besides the goal mentioned, the project also has the goal to make the demo a fun and entertaining experience for the player, since if this condition isn't met, the project will fail as a game. "*The game is fun. The game is a battle. If it's not fun, why bother? If it's not a battle, where's the fun?*" (Reggie Fils-Aimé, 2017).

2.

State of Art

2.1 Culture

To understand how a simple video game could represent the culture and history of a certain society, we first need to know what culture itself is and what defines it. The anthropologist Edward Burnett Tylor, in his book "Primitive Culture" defined culture as an umbrella term, that includes a wide array of aspects found in human societies, these are the "knowledge, belief, art morals, law, custom and any other capabilities and habits acquired by man as a member of society" (Tylor 1871).

Culture isn't something innate for us humans. As said in the later paragraph, **culture is a constant learning process** for each individual and this process comes in the form of enculturation and socialisation. The first process, **enculturation**, consists of people learning from their surrounding culture, where the individual acquires the dynamics, norms, morals and values practised and needed to succeed in his surrounding culture. The second process mentioned is **socialisation**, which consists of the individual internalising the ideologies and norms of society.

2.2 Cultural Artefact

By definition, an artefact is a general term given to any object made by humans, examples of these can be tools, sculptures, paintings, etc. Similarly, a cultural artefact shares the same quality of being an item produced by humans, however, the object also has to transmit information about the culture of its users and creator (Contributors to Wikimedia projects, 2021).

In the paper "Video Games as Cultural Artefacts", written by Patricia M. Greenfield in 1994, she says that usually, a cultural artefact will embody a certain symbol system, by creating and using its own sort of representational competence. The term "representational competence" was coined by Sigel and Cocking in 1977, and it refers to the modes, modalities and means by which we absorb information,

change it, and then transmit it. She then mentions Bruner (1965, 1966), where he introduces the three modes of representation, and their role in development. These three modes introduced by Bruner are the **enactive**, the **iconic** and the **symbolic**. Greenfield then explains that "the essence of representation is a relationship between signifier and signified. In enactive representation, motor action serves as a signifier; in iconic representation, an analogue image serves as the signifier; and in symbolic representation, an arbitrary sign such as a word serves the signifier" (Greenfield 1994). According to Bruner, for each of these modes, there is the existence of amplifiers. Greenfield explains this term, that an amplifier is in fact a cultural artefact, which expands the range of sensory, motor, or thinking processes related with a particular mode of representation.

Greenfield states that video games are in fact cultural artefacts that both depend on and develop the iconic mode of representation, she also notes that a particular aspect of the iconic representation, the dynamic representation of space. Quoting the studies by Okagaki and Frensch (1994), Subrahmanyan and Greenfield (1994), Brannon and Lohr (1994), she affirms that video games show the potential in developing skills and expertises in the dynamic representation of space. For example, players might be able to understand how to read maps better.

In addition, it's also important to mention that (Greenfield 1994) also states that besides video games embodying a particular set of symbolic systems, they embody it through a context of goal-directed activity with instantaneous feedback. This goal-directed activity is important in cognitive development, and due to it being present in video games, it might have been one of the reasons why they have become so popular and why they can stimulate and exercise cognitive skills. Lastly, video games have an enormous social importance as a cultural or cognitive artefact, due to their nature as a mass medium, video games are progressively becoming the children's first introduction to computers and technology. Due to this, Video games are cultural artefacts that require and grow a certain set of cognitive skills. For example, just like past games and activities, that had the objective to prepare children for their future as an adult and the different activities required at this age. Similarly, video games now prepare children for a life in a society where technology is predominant.

Anyway, it seems clear that a video game can be considered a cultural artefact. As long as it's created by humans and transmits information about culture. In addition, by following the Bruner's three modes of representation, the enactive, the iconic and the symbolic, the video games can strengthen its identity as a cultural artefact.

2.3 Play

Before understanding what a video game is, It is first necessary to understand the concept of what play is. The definition of this idea differs a lot, but the most accepted one comes from the anthropologist Johan Huizigan, who wrote in his book Homo Ludens. In addiction Huizingan's definition will also be applied to the context of video games, to see if it is still applicable.

In his book Homo Ludens, a study of the play-element in culture, Johan Huizingan dives into the importance of play in our lives. Despite being part of it, play is much older than culture, as Huizinga says "animals have not waited for man to teach them their playing" (Huizinga 1938). This is true as animals play just like men, for example the lions play fighting with their cubs, and pretend to be hurt by their weak attacks with the objective to encourage them, this is one of many examples of play in nature.

It is also mentioned that that there are various definitions and theories of what is play, these come to the conclusion that play must be a biological function, a way of training the young for the serious experiences later on in life, to others it's a way to discharge overaccumulation of vital energy, to others its a way to satisfy some imitative instinct, or again just simply a need for recovery and relaxation, another take on play is that its purpose is an exercise in restraint essential to the individual, and lastly it might be way to rid the individual from harmful impulses, and restore the energy that is wasted on other activities.

Huizinga takes into account all of these hypotheses and considers that they all have one thing in common with each other, "they all start from the assumption that play must serve something which is not play, that it must have some kind of biological purpose" (Huizinga 1938). He refers to these as only partial solutions to the problem, as most of these tend to overlap with each other rather than exclude one another. He comes to believe all of these hypotheses are flawed, as they do not take into account the pleasure and fun of playing, as these aspects don't find any explanation in biological analysis. He then defines play as being a concept that resists every attempt at logical interpretation and analysis, as making it logical and rational would limit it to mankind only.

Huizinga then defines his concept of play as a special form of activity. "Play is a free activity standing quite consciously outside 'ordinary' life as being 'not serious,' but at the same time absorbing

the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner" (Huizinga 1938). This is the definition he came up with by encapsulating certain concepts he defined, these being called the five characteristics of human play:

Play is free, is in fact freedom

Play is different from other activities, due to it always being of a voluntary nature, players always choose when to play, how to and when to stop playing, "it is never imposed by physical necessity or moral duty, it is never a task" (Huizinga 1938). As opposed to other activities that usually require our responsibility and are performed due to obligation or survival, for example studying, working, washing dishes, etc, there's always a rational reason or obligation behind these actions on the contrary to play.

Play is not "ordinary" or "real" life

"It is rather a stepping out of "real" life into a temporary sphere of activity with a disposition all of its own" (Huizinga 1938). Players know that play is not real-life, that it's only pretending, yet they choose to participate, and play it with all seriousness, as they are aware that playing is a step out of reality into its own.

Play is distinct from "ordinary" life both as to locality and duration

This is the third main characteristic of play, and it refers to the fact that "it is "played out" within certain limits of time and place. It contains its own course and meaning" (Huizinga 1938), as it "begins, and then at a certain moment it is "over", it plays itself to an end", and "it can be repeated at any time" (Huizinga 1938).

As for the location, Huizinga refers to it as the "playground", "the magic circle" a "consecrated spot" where the ritual of playing occurs, a place chosen beforehand, either ideally, deliberately, materially or as a matter of course. Within the "playground" is where all play moves happen and stay. "Playgrounds" are not just limited to kids playgrounds at the park, it includes every location where play happens, for example, a monopoly board, Dungeon and Dragons table, a football field, etc. All of these count as a "playground", a time limited world, within the real world, with its only purpose being the performance of an act apart.

Play creates order, is order. Play demands order absolute and supreme

"Play turns to seriousness and seriousness to play" (Huizinga 1938). While the act of playing is recurring, it demands absolute order from its players, order is supreme, as when the rules are broken the "game is spoiled", "robs it of its character and makes it worthless" (Huizinga 1938). "All play has its rules", and players have to abide by these in order to play, because if they break the rules, they will be considered the "spoil-sport", a person who both ignores order and the "magic circle" and for this crime must be expelled.

Play is connected with no material interest, and no profit can be gained from it

Here Huizinga describes play as something purely non-purposeful, that while inside the magic circle, nothing can be gained in the outside world. He also recognizes the existence of gambling and professional sports, and says that when material interest is at stake it's no longer purely play.

Are Huizinga's five characteristics of play applicable to video games?

In the first chapter of "Homo Ludens", Huizinga sums up the act of play with a definition with 5 qualities. And even though the book was published in 1938, the characteristics of this definition can still be applied to contemporary means of play, in this case video games being the media put to the test.

In the first rule, "**play is free, is in fact freedom**" (Huizinga 1938), the act of playing a video game as play, is normally a purely voluntary act, as there's nothing forcing or giving the need for the player to play the video game. Normally the player chooses to play the video game because he enjoys playing, but there are also exceptions for the reason someone plays it. For example playing a video game might not be voluntary if the player is a streamer or an esports player, they will be playing the game because it's their job.

In the second rule, "play is not "**ordinary" or "real" life**" (Huizinga 1938), video games too fit this rule, as they are temporarily stepping out of the "real" world into its own reality, where whoever plays them knows it's not the "real" world, but still continues to "play pretend". For instance Role Playing Games, are games where the objective might only be playing pretend being a hero, a mage or a barbarian. As it's only pretending, players who play these games are not serious that they are these characters for real, but they are serious on the immersion of playing these characters, from choosing armour, stats, weapons, dialogue and moral compass that fits the character they are playing.

In the third rule, "**play is distinct from "ordinary" life both as to locality and duration**" (Huizinga 1938), in video games the "playground" can vary, in my opinion it's the digital place where the player can control or play something. And the duration of play for a video game, can be the length of a match or story driven game. For example, in the popular Multiplayer online battle arena, League of Legends, the "playground" is the map where the player controls their champion, in most cases this being Summoner's Rift, and the duration of play being the match length.

In the fourth rule, "**It creates order, is order**" (Huizinga 1938), this is also easily applicable in video games, because the player needs to follow the rules imposed by the game itself and also the made-up ones by the player base, so the game can be played smoothly. Using again the League of Legends as an example, champions are only played on their designed role, even though there's no official rule that prohibits a player from playing a character in any of the other roles, the player base agrees that there's a certain order of things, and if someone doesn't follow it, they are labelled as a "Troll", which is basically the "spoil-sport" who breaks the "magic world". Usually the players who witness the "Troll" in their

“playground”, they refuse to play with him and quit the game or try to punish him by convincing the rest of the players to report him.

In the fifth rule, “**play is connected with no material interest, and no profit can be gained from it**” (Huizinga 1938), here comes to mind the situation of a parent telling its kid that video games are a waste of time. In other words the parent tells the child there’s nothing of value to gain from playing the game, which the kid also knows but keeps playing, due to the simple fact he enjoys it. In most cases, the act of playing a video game is never done with the intent of obtaining something. However, some players play games for material reasons, if he is a streamer or an esports player for example, they will be playing because they get paid for it, and no longer for just simple fun, consequently this can’t be perceived as pure play.

2.4 Play and Culture

In later chapters of Homo Ludens, Huizinga explains how play and culture are intimately linked, he states that “**something that was originally play passed into something which was no longer play and could henceforth be called culture**” (Huizinga 1938). With this, Huizinga takes the view that culture begins in the form of play, that culture is played from its beginning. It is through playing that society expresses its interpretation of the world and life itself. However, Huizinga doesn’t mean that play turns into culture, but that early culture has always the play-character, which then proceeds in the shape and the mood of play.

For example, he points out that primitive activities like hunting have recreational forms nowadays. Huizinga then continues to use examples from the animal kingdom, to strengthen his statement that play is older than culture. He targets elements that are usually considered culture in our society, these being exhibitions and competitions, and gives examples of it occurring in nature, where culture is not present. For instance, “birds, phylogenetically so far removed from human beings, should have so much in common with them. Woodcocks perform dances, crows hold flying matches, bower-birds and others decorate their nests, song-birds chant their melodies” (Huizinga 1938).

Huizinga characterises play by having tension and uncertainty, asserting that if the game intensifies the lives of the players, it gets similar to the level of culture. In addition when play is considered beautiful, it immediately gains its value as culture, however such aesthetic value is not essential for play

to gain cultural character. Other values such as physical, intellectual, moral or spiritual can also elevate play into the level of culture.

2.5 Video Games

From now forward, video games will be the focus of this text, so it is necessary to provide some contextualization on this media. By covering its definition and its history, from their origins until today.

Video games are a type of electronic games, where the player interacts with an input device or an user interface, such as a keyboard, mouse, controller, etc. Then as response to the input, visual feedback is displayed through a video device, for example, a television, a virtual reality headset, a PC monitor, a portable console screen, etc. Besides relying mainly on visual feedback, video games also use audio feedback by taking advantage of headphones, headsets or speakers.

The origin of video games starts in 1947, with the cathode-ray tube amusement device, which was an interactive electronic game and the first to have an electronic display. This device was patented by Thomas T. Goldsmith Jr. and Estle Ray Mann and had the objective to simulate missiles being fired at targets. Other important games worth mentioning are “Spacewar!”, developed in 1962 by MIT students, and was the first video game to be played on multiple computers. Lastly we have “Tennis for Two”, a video game that simulates the sport tennis, it was designed by William Higinbotham and released in 1958, as the first video game designed for entertainment purposes only, rather than academic ones like the previous examples.

Following the cathode-ray tube amusement device, multiple video game prototypes started to appear. They started as simple extensions of the currently existing electronic games, using video-like output, but were processed in huge room size computers weighing over a ton, which made it impossible to be sold commercially. It wasn’t until 1966, when Ralph H. Baer changed the idea of what a video game could be, and sparked the idea of what video games are today. Baer developed a device that made it possible to play a game of table tennis on a television, this prototype then paved the way for him to develop a blueprint called the “Brown Box”, which would be later known and released as Magnavox Odyssey, the first home video game console.

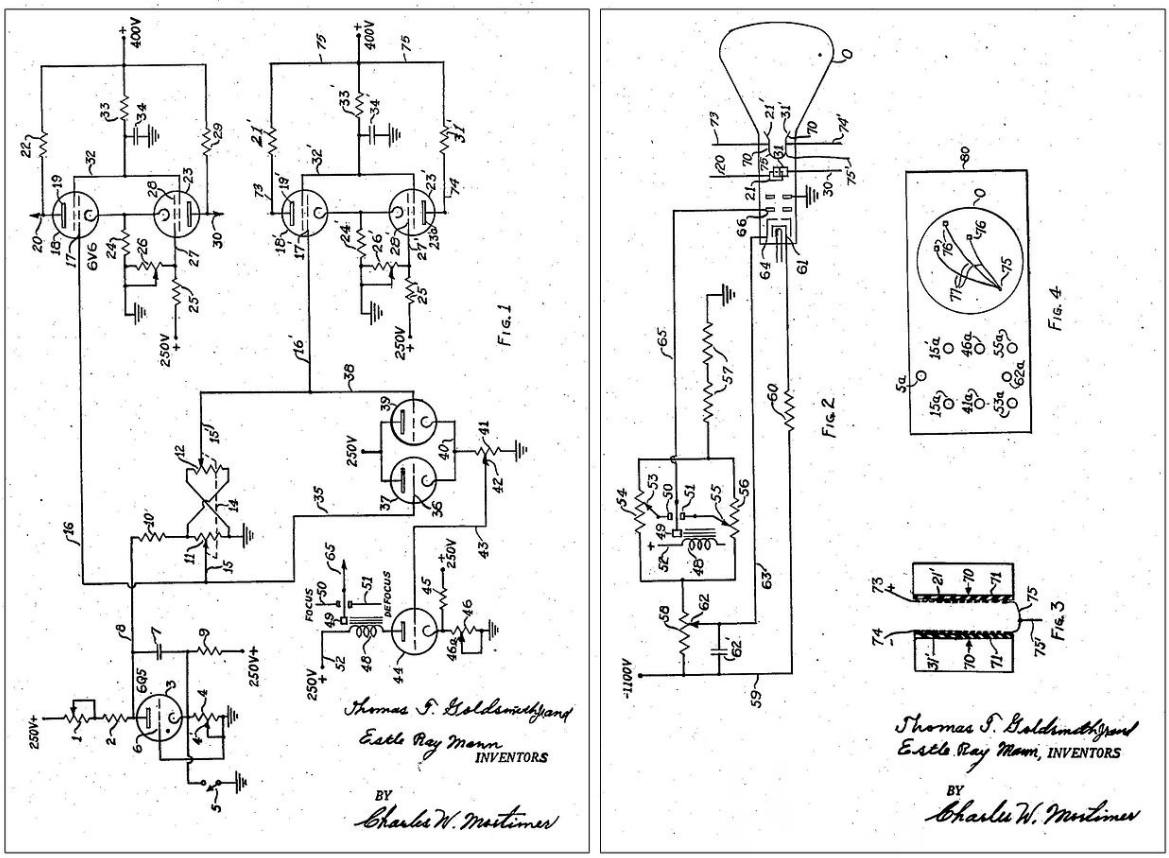


Figure 1: Circuitry schematic from the cathode-ray tube amusement device's patent (Blitz, 2016).

Figure 2: Magnavox Odyssey and one of its controllers (Edwards, 2012).

During the same time, the two engineers Nolan Bushnell and Ted Dabney, were inspired by the space combat video game "Space War!" to develop a similar version in a coin-operated arcade cabinet. The resulting product was released in 1971, as the first ever arcade game, named "Computer Space". After this project the duo went on to form the video game company Atari, Inc. and one year later, together with Allan Alcorn developed another arcade game, which was the iconic hit game game Pong, which was another table-tennis style game that was also directly inspired by Magnavox Odyssey's game. This similarity eventually led for the two companies to enter legal disputes in court, where Atari eventually paid for the rights to Baer's patents, and after that, in 1975, Atari released an home version of Pong.

On the whole, the success of Pong and Magnavox Odyssey, on arcade and home markets, jump started what we know today as the video game industry and titled both Ralph H. Baer and Nolan Bushnell as the "Fathers of Video Games".

2.6 Video Games and Culture

Even though video games appeared very recently in our world, they still became part of our lives and culture in some kind of way. For instance they interact with our current culture through their influence, appeal and debate generated around them, but they also have created their own branch of culture, for example a cult around a specific game or the rise of esports. However, their reception by the masses and culture isn't just always positive. When video games appeared and started to gain popularity they still had their own type of backlash just like other media before them.

Video Games in Society

The introduction of video games in society and culture, like other preceding technologies, like the film and television, have also gathered some controversies, such as video games are degenerate, dangerous and the most debated one, do video games cause violence? In the article "Cultural Framing of Computer/Video Games", by Kurt Squire, at GameStudies, he states that "*since their inception, computer and video games have both fascinated and caused great fear in the politicians, educators, academics, and the public at large*" (Squire 2002). He then continues with examples of these instances, that "*in the United States, this fear and fascination goes back to the early 1980s, when Ronald Reagan extolled the virtues of games to create a generation of highly skilled cold war warriors, while U.S. Surgeon General C. Everett Koop proclaimed games among the top health risks facing Americans*" (Squire 2002). But this kind of reaction towards new technologies and cultural changes isn't new at all, as similarly televisions also

had their fill of negative views, for example, at around the mid twentieth-century, some people feared that television would become addictive, leaving regular watchers never wanting to leave their homes, and even before people feared that film would eventually pervert its viewers.

Going back to the video games causes violence, for many there was a time where parents wouldn't buy their kids a shooter type of game, due to being believed to incentivise violence in the child. Video games are also usually targeted in the culture war as the reason for violence in schools, and school shootings. But this discussion of video games being the main cause of the rise in violence in children, has not been supported by any kind of serious research. In addition, children being exposed to violence in the media isn't anything new and limited to video games. Prior to the existence of these, violence has been shown in TV, film, cartoons, comics, books, etc. Furthermore, there aren't many disciplined gaming studies in order to correlate violence to them, and the ones that do aren't supported by any real-world evidence that links games to violence. These studies also tend to ignore broad trends that show the opposite between violent behaviour and playing video games. Lastly, they make absurd logical leaps in linking certain behaviours experienced in test areas to violent acts that actually hurt people.

Another example of how video games can have a role in culture and society, is the fact that video games have gathered the attention of researchers, as they find potential in using them for learning and education. Squire then states, "some advocates of digital game-based learning imply that developing educational games is a moral imperative, as kids of the "*video game generation" do not respond to traditional instruction. Other educators, such as Eugene Provenzo worry that games are inculcating children with hyper competitive or warped sexual values*" (Squire 2002). He then continues to state that, "*the pedagogical potential of games and social contexts of gaming have been woefully unexamined. Already, entertainment games allow learners to interact with systems in increasingly complex ways. Digital game players can relive historical eras (as in Pirates!), investigate complex systems like the Earth's chemical & life cycles (SimEarth), govern island nations (Tropico), manage complex industrial empires (Railroad Tycoon), or, indeed, run an entire civilization (Civilization series). Or, they might travel in time to Ancient Greece (Caesar I, II, & III), Rome (Age of Empires I, and II), North America (Colonisation), or manage an ant colony, farm, hospital, skyscraper, themepark, zoo, airport, or fast food chain*" (Squire 2002).

By naming this list of games, a question arises from it, what are players learning from playing these games? It seems that not much is known, as there aren't many studies, however, many simulation games are designed with attention to detail in mind, and many times their gameplay is very informative when it comes to imitating real life skills or elements. For example, playing survival games might teach basic survival skills, while playing SimCity might make someone understand geography better, or playing historical inspired games might awaken an interest in History, etc.

Video Games as Culture

But video games don't just inspire or affect the culture around them, they've also spawned their own culture around them, these come in many forms and are actively celebrated and participated either online or in the physical world. For instance, every game has its own fandom, and sometimes the passion of these fans around these games ignites a cult following. One known example of this occurring is Touhou Project (Hou 2020) (Kaa 2021), a very popular video game franchise in Japan that no one really knows overseas. "*The Touhou Project is a series of bullet-hell games that take place in Gensokyo, a fantastical world inhabited by humans and creatures from Japanese folklore*" (Hou 2020), developed by only one person, this being Jun'ya Ōta, also known as ZUN.

However, the main interest here isn't in the games themselves, but the Touhou Project's cult-like fandom, as due to their passion and dedication for this series, they have generated an incredible amount of fan content, that is wide spread through the internet, examples of these are memes, mangas, games , art, merch, music, etc. This fanmade Touhou content also makes up a huge portion of Japanese "Doujin culture", which is a "*significant sphere within fan activity of manga, anime, and video games in Japan*"(Kaa 2021). Doujin, by translation and definition, is a Japanese term for a group of people who have a common interest, which is fitting, as due to this common interest, fans host conventions and festivals, where they celebrate their favourite franchise.

Video Games as Socialisation

Video Games also serve as a way for people to socialise with each other, they can be used as a way to form common interests with other individuals or a way to connect with friends or family. For instance, as seen before, a common interest in video games generates fandom, and in turn this common love for a video game generates events, meetings and kinship between fans. Video Games are also currently used by families, in the same way board games like monopoly were used. Nowadays it's common for groups of friends to meet online in order to play Video Games together, and sometimes these friends don't even know each other in real life, and have met through gaming. This practice is of the same essence as, for example, a group of friends meeting in order to play a sport on a field, or table football at a bar. Another example is that in older generations, in countries like America it was normal to meet at arcade centres with friends and strangers alike and play for hours together with them.

Video Games as Festivals

The scale of events related to gaming, have been continually growing more and more popular, for example Comic Cons host conventions in a number of countries, and esports tournaments are becoming more and more watched and invested in. Both of these have gone from niche little gaming conventions, held in small enclosures, to occupying stadiums. A good example is the League of Legends World Championships, in its first occurrence it started as a small event to celebrate the best teams at the game, it only had a prize pool of 100,000 USD and had a peak of 210,000 people watching it live. Fast forward to later years and now League of Legends World Championships are now held in large stadiums, and in 2021

the prize pool jumped to 2,225,000 USD and its peak live viewership was of 4.01M. In other words, recently various gaming communities host festival-like events yearly, either online or locally, where they celebrate gaming culture together.

Figure 3: League of Legends World Championships 2011 (left) vs 2021 (right).

In conclusion, video games follow the path of interest and controversy that other media like Film and TV have followed before, and to today still are a common subject of discussion in both politics and the news. They also have piqued the interest of researchers and scholars on the possible use of these in education, as they in theory seem like an efficient way of transmitting information to its player. Furthermore, video games are more impactful to the current culture landscape than people think, as seen, this media is still not at the peak of its popularity, and over the years has already increased in influence dramatically. Consequently becoming one of the most predominant media in internet culture, through memes, esports, conventions, etc. Additionally, they also have some role in the socialisation process of individuals, as they permit the strengthening of bonds between them, and also have generated a number of festival-like events that celebrate their own culture. From my point of view it seems that video games are more than ready to be accepted as a normal part of culture, and also to represent it in their media.

2.7 Video Games Inspired by Real Life

As it was discussed in the previous sections of this thesis, video games themselves are cultural artefacts. So the question is, is it possible for video games to be used to represent the culture of a country? The answer is yes, as we can observe in most video games, they are usually inspired by the culture surrounding their game designers, or the game design itself is inspired by a particular culture. So in some way or another, they always end up transmitting culture to the player. For example, “The Elder Scrolls V: Skyrim” and “Valheim” are two of many games with norse culture elements, despite both of these

games still conveying aspects from the culture of the countries they took inspiration from, the extent of this representation is still limited and distanced from reality. This is due to the fact that these games are fantasy themed and set themselves in their own created fantasy world, different from ours with different biomes, creatures, flora, history, races, societies, etc. In my opinion, one way for a video game to easily transmit the culture of a country, it needs to have its setting in the same world and country the culture originates from.

For instance, in this section I will use two examples of video games, that on the contrary of setting themselves in a fantasy world inspired by reality, they instead focus their concept on romanticising reality itself, to generate a fictitious story or a retelling of historical events. Therefore, these video games end up representing and transmitting the culture of their respective countries, in a way more deeply connected than normal games. These two examples are the "Yakuza" franchise and "Kingdom Come: Deliverance".

2.7.1 Yakuza

The Japanese game series Ryū ga Gotoku (Like a Dragon) known in the Western market as Yakuza, is developed by Ryu Ga Gotoku studio and published by SEGA. The premise of these games revolves mainly around crime dramas involving the Yakuza, which is the criminal organisation equivalent of the Mafia in Japan. And its events follows mainly the story of Kazuma Kiryu, a middle aged ex-yakuza who is always being pulled back to the criminal world of Japan, where he is tasked to stop criminal and governmental conspiracies and conflicts, in order to protect his loved ones and way of life. As for gameplay "Yakuza" is mainly an open world, brawler type, beat 'em up, action-adventure with role-playing elements. Besides being a story romanticising the criminal world of Japan, Yakuza is much more than just a series of crime drama stories. The franchise appears to be inspired in specific districts of Japan, and represents the surrounding foreign atmosphere and culture in a way that doesn't alienate the player or ruin his experience.

Despite marketing itself around the idea of a game about Japanese organised crime, Yakuza is much more than what it appears at first glance. In the sub-sections below, I will explain why this video game series is an important topic for discussion, from aspects surrounding its choices on development, to the attention in detail when it comes to representation of iconic elements and ideas.

Yakuza's Localization

In the paper, "Found in Translation: Evolving Approaches for the Localization of Japanese Video Games", written by Carme Mangiron in 2021, the author goes in detail about Yakuza's localization process over the years, about its failures that one day helped reach the success of the franchise in the overseas market. It all started in 2005, with the release of the first game of the series, Yakuza released in Japan and later in 2006 in Europe and North America, exclusively on Sony's PlayStation 2. With the objective to cater to the overseas market, the name of the game was changed from its original title "Ryu Ga Gotoku", meaning like a dragon, to simply Yakuza, this was made with the intention of marketing it with the appeal of a themed Japanese game to western gamers. The process of localization also involved the production of an english dub, and famous industry names were even used, such as Michael Madsen as Futoshi Shimano, and Mark Hamill as Goro Majima, however, the eastern reception of the game wasn't positive, due to the voice acting and script making the players feel that the characters mischaracterized, and that there were too many casual curse words and the use of Japanese honorifics like "-san" and "-chan" in a full english conversation were in fact out of place. Therefore, after this failure, SEGA decided to not use english dubs in later releases, instead they opted in using the original Japanese voices, with subtitles in english and other languages for western markets.

In 2010, with the release of Yakuza 3 in North America, the company decided that some Japanese themed content should be removed, this content being mainly mini games, like dating sims, mahjong and hostess clubs, this was done in order to increase the game's appeal in the overseas market. Consequently, this decision was objected by the players in North America, hence the later release, Yakuza 4, had no content removed from the western version. This release also marked the change in the developers approach to the serie's localization, due to western fan feedback, they opted for a more foreignizing approach, so the western versions would stay closer to the original in terms of cultural content.

Despite these changes, Yakuza 4 still flopped in the overseas market, and Yakuza 5, released in Japan in 2012, wasn't planned to be localised outside of it. However, due to PlayStation receiving numerous fan requests for the game to be localised, Playstation decided they would fund the process themselves, localising and releasing Yakuza 5 worldwide in 2015.

In later releases, the studio took again a new approach to localization, when they released the Yakuza spin-off, Judgement in 2018. Due to this being a new release with original characters, the studio once again tried to fully localise the game, by using an English dub, in order to appeal to a larger market. In addition the player also has the option to play these games with English subtitles and the original Japanese audio, this approach is called dual localization, as it mixes partial localization and full localization, and is designed to attract both types of players, the ones that want a more foreignizing experience and the ones that expect a more domesticating one.

Yakuza's localization producer at SEGA, Scott Strichart, describes their dual localization process in Playstation.Blog as follows: "*Essentially, we took a base translation and then pushed it out into different directions for Japanese audio and English audio. The Japanese audio got our traditional "Yakuza" pass, listening intently to each line and crafting the dialogue to suit it. The English script was written for actors to perform it, which was more of a focus on making sure it sounded like things people would actually say in English. Sometimes, the two versions are totally the same! Others, it's totally different [...] the English is still a faithful Localization of the story, and the Japanese subtitles were still crafted with all the considerations for a good read that always goes into the Yakuza title localization*" (Scott Strichart, 2019).

Since then, the localization team behind Yakuza believes that to reproduce the original feeling of the game to western audiences, the use of fluid and good sounding English is essential in order to make a fully localised version. Therefore, they improved the quality control of this process, by forming a team essentially made of editors and translators, and this practice seems to also be followed by other Japanese games like Ace Attorney and Persona.

Due to these improvements of localization, and a good balance between foreignizing and domesticating processes, in addition to following fan feedback. The Yakuza franchise has risen from its place as a niche in mid 2000s gaming landscape to a success in both domestic and international markets, with millions of fans already, and more to come due to its popularity starting to rise even more with each release. And also from the series moving from being an exclusive to Sony and its Playstation, into a multi platform franchise, as it's now playable both on PC and Xbox. Yakuza marks the success of a game, that despite having an experience completely of Japanese nature and culture, it still rose in popularity in international markets due to this Japanese character and good practises of localization.

Yakuza's Game World

The game world of Yakuza is set in Japan, and most of its events take place in Kamurocho, which is based on Tokyo's red light and entertainment district Kabukicho. Besides this one district the series also has representations of other Japanese regions and districts, These being Dotonbori and Shinsekai from the Osaka region, Kokusai Dori in Naha, Nakasu in Fukuoka, Susukino in Hokkaido, Sakae in Nagoya, Onomichi in Hiroshima, Isekicho in Yokohama. The representation of different regions of Japan, adds to a better representation of the country's culture. But also lets the game designers explore the iconic part of culture, and depict important elements, these range from local dishes, leisure activities, structures, etc. Which will be discussed in greater detail further down, as to why they show importance to this project

It seems that if the design of the game world is a detailed representation of a real world area, it massively adds value to its cultural representation, as game designers have the chance represent the cultures present in this area more closely, by building up an immersive experience based on these locations and also representing easily recognizable iconic elements, for example, famous restaurants, land-

marks, structures, temples or churches, etc. In addition it also makes it possible for players from these games to easily navigate through the real life counterparts of these in game representations, knowing every interesting spot to visit, routes, types of food and goods sold and even plan pilgrimage-like trips through the locations that inspired these games. This is made possible, due to the street layout of Yakuza's Kamurocho being very similar to the original Kabukicho, with the only difference being a number of small tweaks to improve gameplay. To more hardcore fans of the series, Kamurocho and Kabukicho, have become a home away from home.

Figure 4: in game map of Kamurocho (left) compared to Kabukicho in Google Maps (right).

Figure 5: In game Kamurocho (left) compared to its real life counterpart Kabukicho (right).

Figure 6: In game Sotenbori (left) compared to its real life counterpart Dotonbori (right).

The franchise embodies the open world genre, so the player can freely explore the world map themed after these regions and districts. The map also has a lot of locations for the player to interact, these locations are also representative of the country and the local atmosphere, and they consist of various restaurants of national dishes like sushi and gyudon (beef bowl), the player can visit these food establishments and recover his Health and gain experience, by buying and eating these dishes, and in later titles mixing menu options could give buffs to the player character. There's also the possibility to add healing items and food to the player's inventory, this is possible by visiting pharmacies and buying energy drinks or food in supermarkets like Don Quixote (an actual Japanese supermarket), convenience shops or buying street food like takoyaki (octopus balls) from food carts.

Another important thing to note is that the game designers for Yakuza, also captured the environment of the areas they took inspiration from. For example, in the representation of a red light district like Kabukicho, Yakuza couldn't just leave it at the similar layout and infrastructures, they also had to make it feel like it's the same place. To do this, the designers had to simulate the original atmosphere, by filling the streets with NPCs walking or talking to make it seem more busy and lively, barkers and sign spinners that stay outside the clubs in order to promote them, escorts, tissue givers, homeless people and their makeshift structures around the town, neon signs everywhere, specific types of stores that are usually non intractable like porn shops, hostesses clubs, clothing shops, bars, etc.

Side Content

Despite maintaining a serious and dramatic tone during its main quest, “Yakuza” also knows when and how to shift the emotional theme of the game, as to give the player a breather from its main story, so in turn offers the player a ton of side content, consisting of side quests and mini games.

The side quests from “Yakuza” offer a variety of emotions and themes, but are usually comedic, wacky and ridiculous. These quests continue to tackle the criminal world of Japan, but also other aspects of the country’s life and interesting themes. For example they have side quests that tackle themes and problems present and relevant in Japanese society like homelessness, over demanding school life, perverts, otaku culture, extreme work culture, fear of foreigners, the burst of the 80s economic bubble, biker gangs, Sumo wrestling, scams and con-men, etc.

As for the mini games, they are also Japanese themed, for example, these consist of karaoke, telekura, which is translated to telephone club, was a popular dating system in the 80s, Cabaret club manager, which is a type of japanese nightclub for men mostly, who employs female staff to attract them, by providing conversation, food and drinks, SEGA Arcade Center, while no longer popular on the West, in Japan Arcades are still overly popular, and in “Yakuza”, SEGA offers a lot of mini games in the form of multiple classic arcade machines, the crane game, classic arcade games and Toylets, that are urinal games, that as strangely as it sounds do exist, and are interactive games played on urinals that are controlled by the player’s stream, ramen cooking, where the player manages a ramen stall, ramen being a traditional and iconic Japanese noodle soup, Mahjong, a Chinese tile based game popular in Asia, Shogi, is Japanese chess.

Furthermore, these are just a few examples of the side activities present in this franchise, as there are still many that weren’t mentioned. The existence of these activities is relevant for the immersion of the player in the game world, in this case, the red light district of Tokyo, without these, the game world would feel like an empty sand box with a Japanese themed coat of paint. And it would be quite ironic, for an entertainment and red light district to not have any of these activities.

Lastly, these minigames, together with their extravagant and over the top elements also shared in combat, sidequests and story, might have also contributed to the rise of popularity of the franchise in the western gaming market. As the ridiculous expressions of these have found their way into internet meme culture, sprouting various memes and meme formats along the years. Such as “Dame Da Ne” or “Baka Mitai”, it’s probably the most known Yakuza meme to date, “Dame Da Ne” means “it’s no use”, and it refers to a part of the lyrics of a karaoke song in Yakuza, called “Baka Mitai”, meaning I’ve been a fool. This song first appeared in the karaoke mini game in Yakuza 5, released in 2015, but it wasn’t until the release of the more popular Yakuza 0 in 2017, that the internet picked it interest in the song, as starting in 2018 the song had began to be parodied multiple times on Youtube in various formats, including remixes or paired with humorous videos. Furthermore in 2020, “Baka Mitai” rose again in

popularity, when the internet started toying with deepfakes, this term refer to a form of synthetic media, that replaces a person present in a image or video with someone else, by using advanced techniques from artificial intelligence and machine learning in order to change audio or visual content in order to deceive. For having a lot of potential for harm, both the industry and the government limit their use. Despite this, it didn't stop the internet from using this technology to make static pictures of themselves or famous people sing the song "Baka Mitai", and then spread them through Youtube, Twitter and other forms of social media during mid 2020.

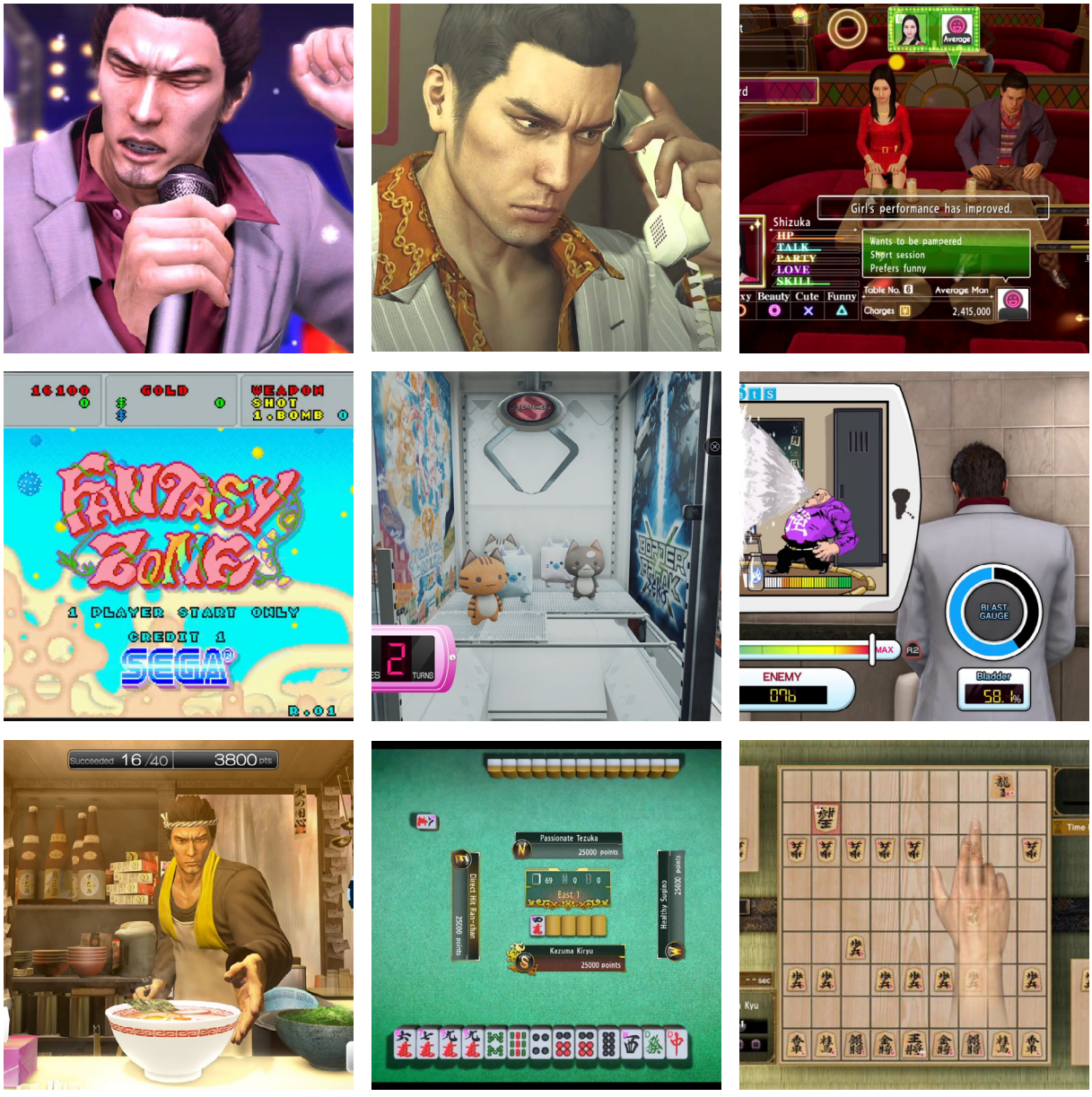


Figure 7: Karaoke, telephone club, cabaret club manager, SEGA arcade, claw machine, toylets, ramen cooking, Mahjong and Shogi minigames (left to right, top to bottom).

In Conclusion

Yakuza, is a story of a franchise that rose from its niche corner in the gaming landscape, into one very popular and financially successful series. From the overview of this section we learn that the Yakuza franchise stayed true to its Japanese essence, and over the years improved its transmission to the western market with the help of better localization tactics that have inspired other similar games to do the same. Similarly, I also plan on using these localization techniques in the planning of the video game demo, perhaps by translating its content from Portuguese to English, making it easier for foreigners to understand the original experience of the game.

Secondly, Yakuza shows that one of the most important aspects of cultural representation through video games, could be done by designing its game world and its atmosphere as close and detailed as possible to the original area. As seen previously, adding every necessary detail to make the gaming experience as close as possible to the real thing, makes it extremely immersive for the players, making them feel like they are truly there, experiencing a new country and culture.

This game series also stands as a proof of an existent player base that has an interest in playing video games that represent cultures different from their own. And have curiosity in experiencing it, by role playing it as a character native to it while by roaming in the streets of a city far away from them. In other words, these are just normal players that play video games for new experiences, but instead of playing a game with a fantasy setting, they choose to immerse themselves in another culture. Hence, I believe that due to this interest, a Portuguese inspired game could be well received overseas, if it's adequately localised and offers good gaming experience.

2.5.2 Kingdom Come: Deliverance

The video game Kingdom Come: Deliverance, was developed and published by Czech developers, Warhorse Studios and co-published by Deep Silver. The game follows the journey of the main character, Henry, through the mediaeval Kingdom of Bohemia, which is an imperial state of the Holy Roman Empire and a predecessor to the current Czech Republic.

Kingdom Come at its core is an open world, action based role-playing game, but on the contrary to many games of the same genre, for example Skyrim, it trades the common fantasy elements for historical accuracy. From its kickstarter page, Kingdom Come: Deliverance claims to be a "realistic single-player RPG set in mediaeval Europe. Open world sandbox with period accurate melee combat. Dungeons & no Dragons" (Warhorse Studios). Meaning that the players won't find any of the stereotypical elements found on most RPGs, from dragons, impractical armour and weapons to half naked elves.

Another interesting aspect is that in the current gaming industry, where games try to not be representative of anything that's culture related, in order to appeal to larger audiences, Kingdom Come found success in doing the exact opposite. The project started by creating a kickstarter with the promise of delivering a historically accurate Role Playing Game, and four years after the launch of the project, its "crowdfunding collected more than 1,2 million Euros among 353384 contributors. In the first week after its release on February 13th 2018, Kingdom Come: Deliverance sold more than a million copies. In the second week, it was the no.1 selling game in several European countries including Austria, France, Germany, Italy, Spain and the United Kingdom" (Seco 2018). However, its reception still had a lot of issues and also caused some division among the gaming community, due to the fact that Kingdom Come launched full of bugs and other technical difficulties. Furthermore, the game also didn't reinvent the wheel for RPGs, having completely pretty standard gameplay compared to other games of the genre. Nevertheless, Kingdom Come still pulled through from its rocky release, carried only by its concept of being historically accurate, which made it stand out from other games. In sum, the story of successes of Kingdom Come: Deliverance proves that there's a market and an existing interest for these types of games that go against the flow of the industry, and develop a project based on culture and history.

Historically-based Narrative

Kingdom Come: Deliverance follows historical events from the early 15th century mediaeval Bohemia as its main plot. The game sets itself after the death of king Charles IV in 1378, who ruled and brought a golden age to the kingdom of Bohemia. After his father's death, Wenceslaus IV took the thrones of both Germany and Bohemia, but eventually revealed himself as useless and idle ruler, who was all about enjoying the privileges of being a king but none of the responsibilities. These behaviours created regular conflicts with the Bohemian nobility, who eventually sided with Wenceslaus's half brother and king of Hungary Sigismund. Together with the help of the nobles, he kidnapped Wenceslaus and plunged Bohemia into a succession war against the allies of the current king, ravaging and pillaging Bohemia to punish them.

In 1403, a silver mining village called Stříbrná Skalice, was razed by Sigismund and his army. In game the player follows this event by playing as a young peasant named Henry, who lives and loses his parents and friends during this raid. The overseer Racek Kobyla of Dvorce and the survivors of the initial attack, managed to evacuate and retreat to Talmberk. But due to fearing the threat of Sigismund and his army, Racek and his people continued to Rataje nad Sázavou, where they stayed as refugees under the care of Hanuš of Lipá.

The player character, ends up joining king Wencelaus's allies against Sigismund. And follows a set of quests through the region of Bohemia fighting through battles under the leadership of real-life lords, and using actual fencing techniques in combat, learning the ways of nobility and squireship, entering undercover in a monastery and experiencing life as a monk, by following a rigid schedule of regular gatherings for praying, helping at the herbarium and translating latin texts.

During these events the player is also met with a lot of real world historical figures, these being: Racek Kobyla of Dvorce, was the overseer of Stříbrná Skalice; Diviš of Talmberk, was the lord of Talmberk; Jan Ptáček of Pirkstein, heir to Rataje nad Sázavou; Hanuš of Lipá, Jan's guardian and during the events of the game was Rataje nad Sázavou's lord; Konrad Kyeser, was a german military engineer and author of a book on military technology called Bellifortis; Jobst of Moravia, was the king of Germany; Sigismund, king of Hungary, Croatia, Germany, Bohemia and Holy Roman Emperor; Wenceslaus IV, king of Bohemia and Germany; Charles IV, father of Sigesmund and Wenceslaus and king of Bohemia, of the Romans and Holy Roman Emperor; Otto III of Bergau, Bohemian nobleman against Wenceslaus;

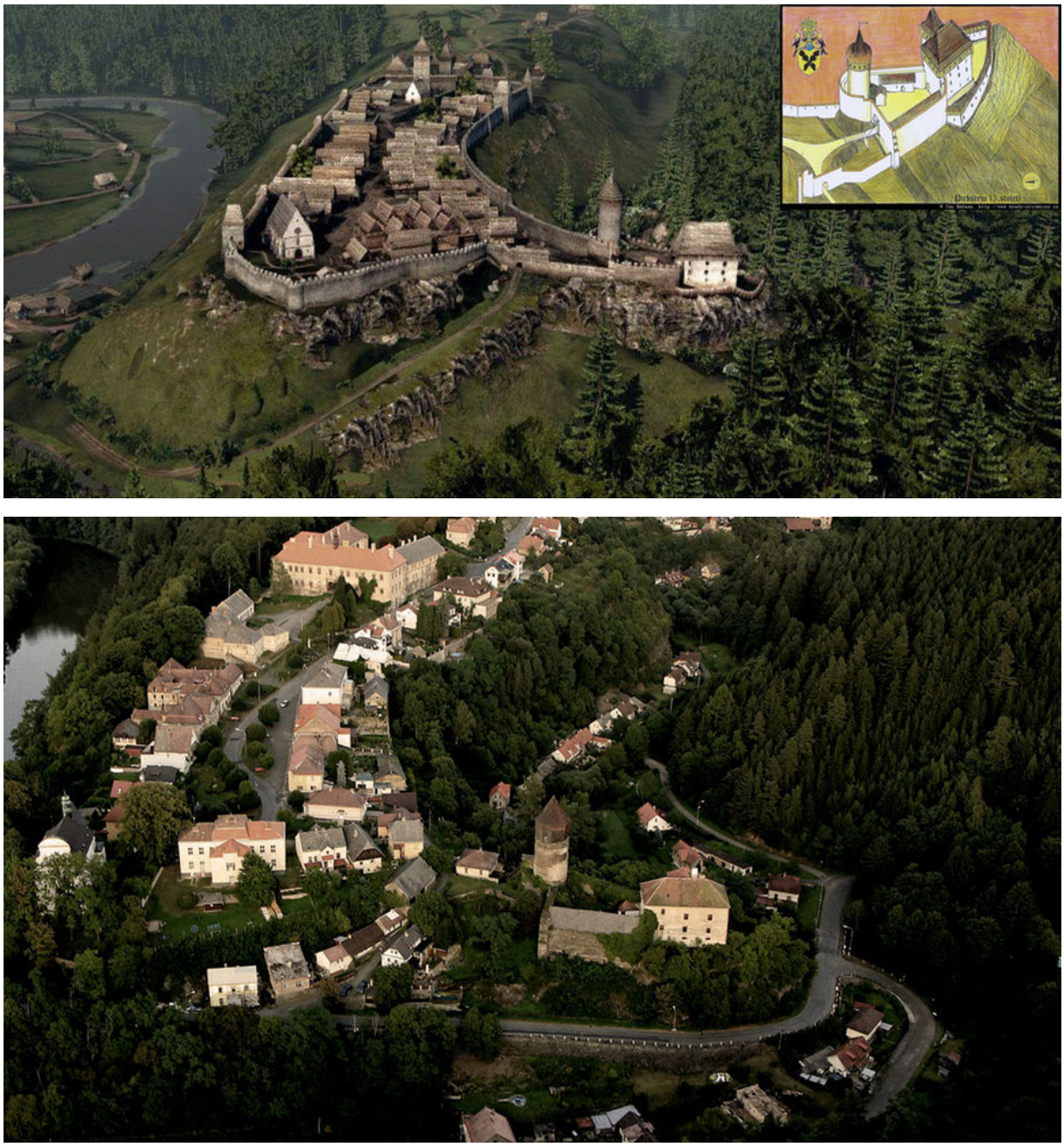
Realistic World Representation in Kingdom Come

Because Kingdom Come: Deliverance is an open world and is set in the mediaeval Czech Republic, the player can freely explore the Kingdom of Bohemia. The map features an impressive representation of real-world geography and locations, as we can see on figure 24 and 25 below. It represents 16 square-kilometres that include a lot of geographic elements, like the Sázava river and other waterways, multiple fields and farmland between the forests as well as road systems. It also includes a number of villages and places, these being Ledečko, Mrchojedy, Přibyslavice, Samopše, Sázava Monastery, Stříbrná Skalice, Talmberk, Úžice, Vraník and Rataje nad Sázavou.

Figure 8: Satellite view of the Region (left) compared to the in game map (right).

It's also important to note that some changes had to be made, in order to adapt the real life aspects to a gaming experience, "a deviation from reality in order to make the illusion playable" (Seco 2018). "For example, meanders of the Sásava river have been shortened, probably in order to get the town of Sásava closer. Furthermore, the northwest area of the map which contains the village of Stříbrná Skalice is actually situated farther west" (Seco 2018). In addition, due to the difficulty in pronouncing the names of these villages, Kingdom Come mostly opts to use the German name of these settlements instead, for example, Rataje nad Sázavou is called by its German name Rattay instead.

In short, a realistic representation of geography gives a lot of value and also strengthens the intention of the game to be historically accurate, however, absolute realism isn't a requirement, as a fluid and healthy player experience should always be prioritised above anything else.



Figures 9: In game Rattay (top) compared to real life Rataje nad Sázavou (bottom).

Speaking of Rataje nad Sázavou, see figures 26 and 27 above, this town is probably where the player will be spending most of his time when he isn't adventuring, as it serves as a hub for the player. This town is a marketplace situated in Central Bohemia, and its ingame counterpart is reproduced as a fortified town, with the actual terrain elevation and layout of the main street and buildings, and also its two castles. In this settlement the player avatar can sleep, play dice and obtain information from inns, trade with traders like cobblers, tailors, blacksmiths, butchers, hunters, bakers,etc, and haggle with them on

the street or shop for better prices, using the Groschen, for reference it was the currency used in the Holy Roman Empire and other parts of Europe. The items available to purchase by the player and also every object in game also represents the genuine culture of the era. The design of these objects is heavily inspired by iconographic representations and museum artefacts, with origin ranging approximately 40 years around the year 1400.

Architecture in Kingdom Come

Another aspect of the development of Kingdom Come, was the length the developers went for the re-construction of buildings in game. As they've stated, it was one of the most difficult tasks in the whole project, because in order to virtually reconstruct buildings from the XVth century, the developers made use of various sources and their interpretation, data gathered from preserved documents, paintings from the exact era and also consultation with experts and historians who work in museums. For instance, the two castles reconstructed in Rataje nad Sázavou, had to be entirely virtually reconstructed. However, these virtual reconstructions, still had a lot of research behind them, as the southern castle, Pirkštejn, was based of its remains with fidelity, and the northern castle which was reworked numerous times with Gothic, Renaissance and Baroque architecture, also had to receive a reconstruction based on the general interpretation of mediaeval Bohemia's castles.

Figures 10: The remains of the Sasau monastery compared to its in-game representation.

Another interesting example is the reconstruction of the Sasau monastery, figures 28 and 29 above, which was a "*Benedictine abbey founded on the site of the hermitage of Saint Procopius in 1032*" (Seco 2018). "*During the XIVth century, the Romanesque basilica was transformed into a Gothic building, intended as a monumental three nave structure. As Sasau was sacked by Hussite troops in 1421, the building activity was interrupted and the monastery fell into decay over the following two centuries*" (Seco 2018). As of today, the only thing standing in this monastery is the remains of the tower. As we know, Kingdom Come sets itself in 1403, 18 years before the Hussite raid, so the developers have chosen to place the monastery under construction, representing only the still existing tower, while the rest is under construction. With this choice, the developers state that their main focus is on representing the iconic first, before attempting to build their own interpretation.

Furthermore besides the representation of iconic elements in-game, the developers found the representation of the whole area in-game being based on archaeological evidence was an impossible feat. Therefore, the developers of Kingdom Come opted to fill the game world by "turning mediaeval" the present organisation of existing buildings. This process was a systematic "medievalization" of barns and houses, with some minor variations and mirror effects. Despite the use of these techniques, the structures look very similar in each place in-game. This is due to the fact that the team was lacking information, time and resources, therefore every structure couldn't be designed differently from each other. Nevertheless, Kingdom Come: Deliverance, still manages to keep consistent with its objective of representing the Kingdom of Bohemia's Late Middle Ages aesthetic and a logical planning between settlements and landscapes, in addition to representations of iconic local structures.

Dialogue in Kingdom Come

"Language appears as a crucial point of immersion but it does experience many difficulties" (Seco 2018). To replicate or simulate the orality of a past language is either difficult or even impossible, due to the fact that the only accessible sources are written only, this being referred to as a "Silent Age". Due to these obstacles, the developers chose to avoid using neo-medievalist language in the games dialogue, instead they opted to use modern English, only using some Czech words between, most of these being curse words such as "kurva",which is the equivalent to the "F word".

Figure 11: Charisma based dialogue options.

Despite these changes, Warhorse Studios couldn't ignore that interactions between player and NPCs had to differ when taking account social class and hierarchy, as it would break immersion for the player if he treated through dialogue a noble the same as peasant, or if the NPCs didn't act differently based on the players standing on the social class hierarchy. Therefore, the developers came up with a solution, "in an interesting way, they turned it into a sort of challenge for players. Those ones have sometimes to choose the right dialogue between Henry and another character according to their social relation. In a more interesting link to material representation, the outfit of the hero can have an effect on the result by in-

creasing or decreasing its charisma abilities. If Henry speaks to a peasant, the player can choose a more direct way to obtain information, especially if he is armed or standing in plate-armour. Interactions with noblemen have to be more respectful and a dirty outfit may decrease Henry's charisma. An aggressive approach may even conduct the player to spend several nights in prison. As all conversations are already written, this system is limited and sometimes very stereotypical. However, it does show an interesting will to represent social indicators and interactions by turning it to an element of the gameplay" (Seco 2018). They turned the dialogue into a type of challenge, where the player tries to choose the correct interaction depending on the type of NPC which the player is interacting with, taking in account the both player and NPC social status.

Combat in Kingdom Come

Combat is a very important aspect of Open world Action RPG gameplay, having a good combat can be all the game needs while having a bad one breaks the whole experience. In Kingdom Come's case, the combat differs from comparable games like The Elder Scrolls V: Skyrim, which in terms of sword play, was only a simple melee slasher, left click to attack, right click to block. While in Kingdom Come, the combat, like the rest of the game, tries to be historically accurate.

Normally, a weapon in a regular RPG, is only affected by its stats and other multipliers, meaning the player always chooses the one that is currently stronger at his disposal, and the order of progression usually goes from using normal steel weapons to equipping magical ones forged from a mythical metal. While in Kingdom come, weapons matter, as here is a logical and realistic design choice when it comes to the weapons of this game. Weaker weapons are usually poorly/ cheaply made, standard soldier gear or everyday tools that normally bandits and peasants use, while stronger weapons are of higher quality craft, made by master blacksmiths and are usually used and reserved for knights and nobles.

These choices of weapons also have logic in their combat uses, for example, swords are deadly for against most peasants and under armour bandits, they are mostly useless against heavy armoured damage, as the steel plate and the chainmail stop any of the slashing damage, leaving the only option for swords to execute combos, in order to break the enemy's defences and thrust the point of the blade into the armour's weak spots, these being the visor and the armpits. While blunt type weapons like the mace and warhammer have an easier time dealing with armoured opponents, as all they need is to smash in the armour. Another realistical, aspect is that bows on contrary to most fantasy games and tabletops like Dungeons & Dragons, aren't a dexterity weapon, on the contrary they are one of the most strength required weapons in game, because just as real life, an archer needs a lot of strength to fully draw a longbow. Lastly, the moves, learnable techniques and combos of the different weapons in game, have been inspired by real combat techniques. As the developers have researched and consulted, actual fencing techniques written on the Late Middle Ages, such as the works of the 14th century German fencing master, Johannes Liechtenauer.

Speaking of armour, the game presents a realistic way of armoring the player avatar, by sorting every necessary piece of a fully equipped real life knight into a particular equipment slot, as seen on figure 30 below, it divides items by numerous criteria from mail, padding to plate. An avatar well armoured will have better protection against all damage and a reduced amount of exposed weak spots. However, being heavily armoured brings some consequences, as wearing it will slow the player slightly, and helmets with a visor for face protection will obscure the player's vision while in combat.

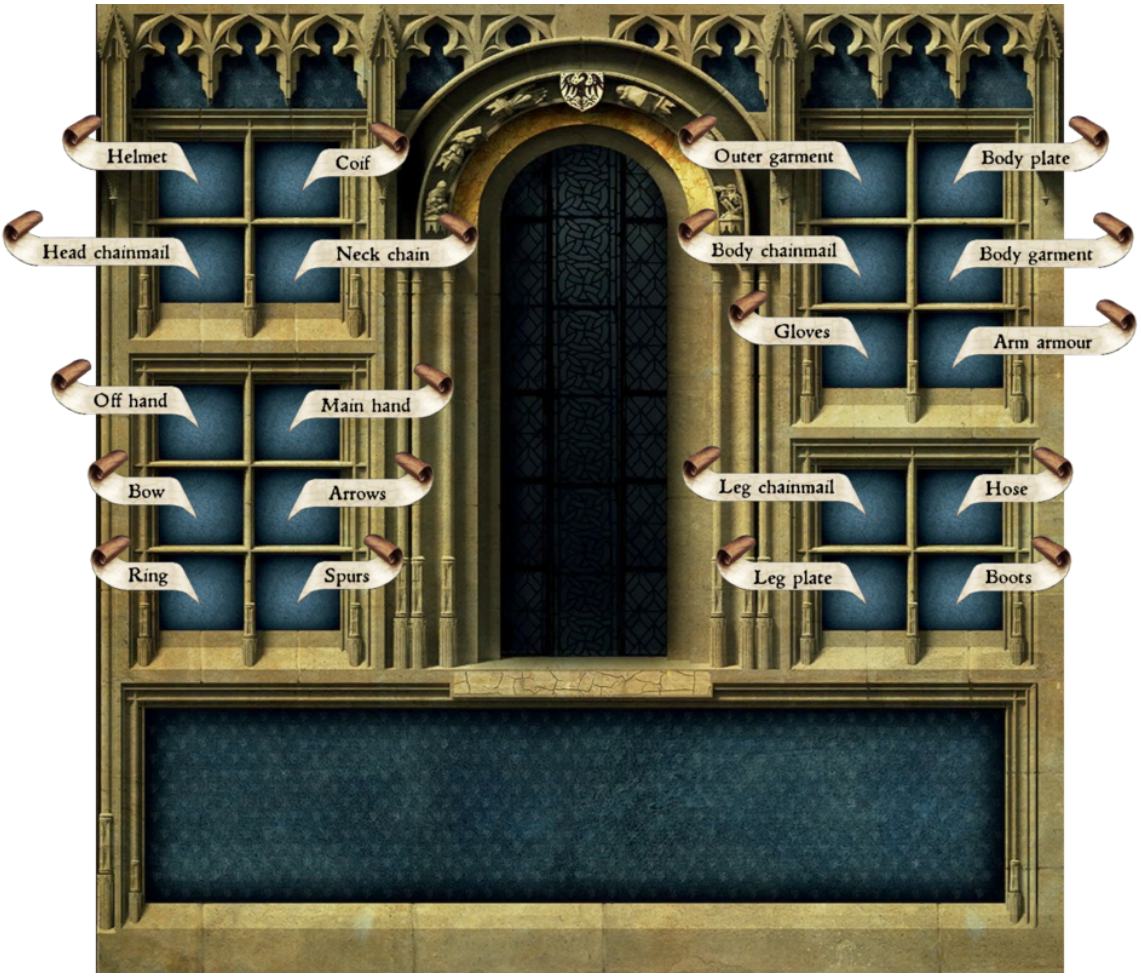


Figure 12: Equipment Slots.

In Conclusion

Kingdom Come: Deliverance, is an example of historical reenactment in video games, and a game that stands out from others of the genre, and from standards of the gaming industry, by keeping its promise of being an historically accurate game. However an accurate representation of the past is indeed impossible, yet Kingdom Come has its own methods of filling in the blanks left by history, by applying a medialization process to the present it recreates an immersive and believable representation of what the region would look like in the 15th century. But at the end of the day, Kingdom Come: Deliverance is a hit game, based on Czech culture and history, that follows and brings light to the national events that are mostly unknown to other countries besides Czech Republic.

This example also shows a great compatibility between cultural representative games and Open World, Action Adventure, Role Playing Games, which makes me believe that this type of design might be optimal for these types of games. As these are designed with the intention of immersing the player in a certain setting or world, in this case Kingdom Come immerses their players in a cultural historic setting on contrary to others of the genre that choose a fantasy setting. Furthermore, it also strengthens the idea that the game world is one of the most important core features of a game that has the objective to represent something either historical or culture related.

Another point for discussion, is the fact that Kingdom Come: Deliverance, User Interface design, and the elements in it. In game design, the UI is also a part of the game that has the power to improve or break immersion. Kingdom Come is conscious of this, as a result, its UI elements as seen from previous figures are designed with the objective to transmit the feeling of a mediaeval era game, as every choice of colour, icon, pattern, texture is done with the intention of making the game more immersive.

Lastly, Kingdom Come shows that in order to develop a game based on real historical events, that are represented in game with accuracy and detail, an incredible amount of work and research is needed in order to achieve this, and also, that the use of historical reenactment techniques is crucial to fill in the gaps left in historical records. Similarly, in order to develop a game that would follow an historical event from Portuguese history, I would need to follow the same process of using medialization techniques to turn the current world into a reenactment of the past.

2.8 Video Games Inspired by Portuguese Culture

As seen in the previous section, video games are already inspired by existent cultures. Now the question is if there are already video games that are representative of Portuguese culture. And if there is, are they successful or did they fail? If so, why and what can we learn from these projects?

2.8.1 Viagem de Bartolomeu Dias

In 1991, a commission for the commemorations of the Portuguese Discoveries, chaired by Vasco da Graça Moura, together with the Ministry of Education launched a national competition for ideas and proposals. José Luís Ramos, an History scholar, from the University of Évora, competed with a project for a game about Bartolomeu Dias's journey. This proposal was approved, and soon after a team was built to develop the game, the production team was constituted by José Luís Ramos, in coordination with four programmers, who were in charge of the development of the game engine and interactivity, these being José Gonçalo Pedro, Vicencia Maio, Pedro Próspero Luís, Pedro Luis Seabra, and finally the inclusion of an artist, Francisco Bilou (Zagalo 2013).

The project started by being programmed in C for MS-DOS, but soon after they decided to switch to C++, this change was made in order to facilitate the creation of game engine editors for the Windows environment. The visual assets were entirely created in watercolour painting and then digitised. José Luís Ramos refers that the main influence for the creation of "Viagem de Bartolomeu Dias", was the game LucasArts, The Secret of Monkey Islands, released in 1992. Viagem de Bartolomeu Dias finished development in 1994, and in 1995 the Ministry of Education edited and distributed the game by several schools in the country (Zagalo 2013).

After its release, this game vanished from existence, besides its development records, there's not much evidence to be found about what happened after. Due to its objective of being an educational game for schools, it would have been interesting if studies were conducted on the impact it had on school environments and the learning experience of the depicted historical events.

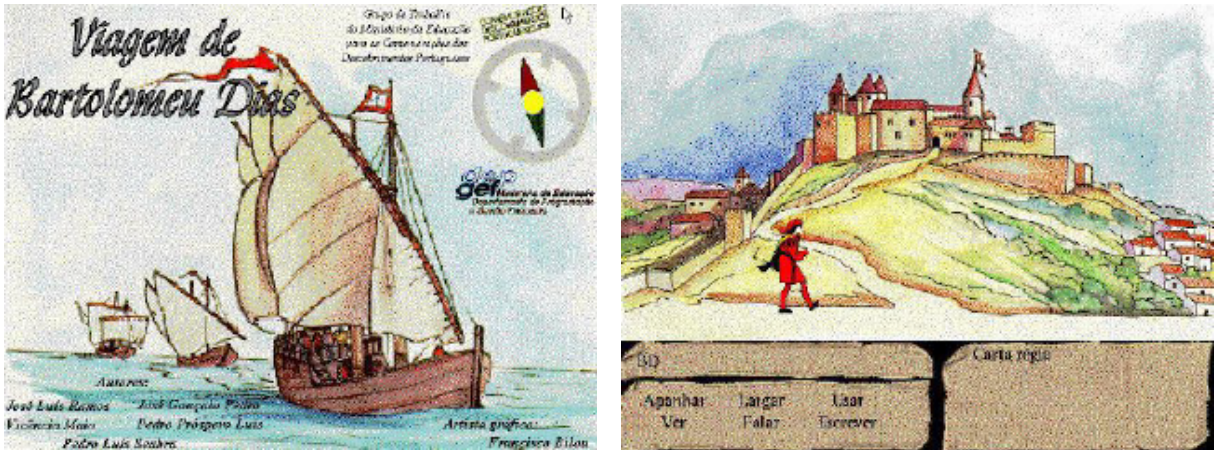


Figure 13: Viagem de Bartolomeu Dias.

2.8.2 As Aventuras da Peregrinação

In 1996, the Forum group started its activities in the multimedia area, launching the first version of their recognized Professions Guide in a CD-Rom format, creating a know-how for the CD-Rom boom that would follow, almost all in Macromedia format. Later, with a very strong investment in national history, due to the support of the Committee for the Commemorations of the Portuguese Discoveries and the Expo 98 event, with an orientation always emphasised by educational aspects. The Forum group developed more than twenty CD-Roms at this time, but only two were characterised as videogames, the rest were only mere digital illustrated databases.

Figure 14: The two CD-Roms Developed by the Forum Group.

In 1997, the Forum group dedicated their first videogame to the Portuguese explorer Fernão Mendes Pinto, by developing the "As Aventuras da Peregrinação", a game that was pretended to be divided into six narrative frames or six levels. The video game presents itself as a dramatisation of Fernão Mendes Pinto's Peregrination, in which six moments of the game offer the possibility of solving some of the problems that Fernão Mendes Pinto would have faced on his journey. In this case, the video game puts the player in the place of the explorer, creating a strong sense of identification and thus facilitating the learning of events by the player (Zagalo 2013).

The video game development was coordinated by Marco Morais, who was also responsible for all the programming, with Carlos Caetano being responsible for the graphics, and also in support of illustration, sound and music with three other people. These five people took between four to six months to develop the entire game, which demonstrates the full power of Macromedia's platform (Zagalo 2013).

Figure 15: Game screens from "As Aventuras da Peregrinação".

2.8.3 Vasco da Gama: A Grande Viagem

After the release of their first game, the Forum group dedicated their second video game to the Portuguese explorer Vasco da Gama, with the game being titled as Vasco da Gama: A Grande Viagem, and was launched in 1998. It was a big project in terms of creating a multimedia experience, as the video game was developed for CD-Rom, just like As Aventuras da Perigrinação before, but in addition to this it also introduced a logbook with activities to stimulate the player's interaction with the game's events, which could be used in classrooms and school environments. In the box there was also a second CD, that contained the entire soundtrack of the game. The experience was then complemented by a website with specific information for teachers or parents. In this online component, it was also possible to download more games, namely those corresponding to Vasco da Gama's return journey (Zagalo 2013).

The game was developed by Alice Alcobia, Luís Alcobia and Paulo Pinho chose to present a collectivist perspective of the trip, removing the role of Vasco da Gama in the action while placing him more as the teller of the story of this journey. This way, the player has the opportunity to discover how to sail a boat across the high seas, and thus understand that it was impossible without the collective effort of the brave Portuguese sailors (Zagalo 2013).

On the whole, it seems that these two games from the Forum group, As Aventuras da Peregrinação and Vasco da Gama: A Grande Viagem, after their release were soon left to be forgotten in the era of CD-Roms, also there are no records of how these games were received or were played. It is also mentioned that there was intention of releasing these games for school environments, but yet again there's no data if they were even used, or if they were what were the responses of the teachers and the students.

Figure 16: Game screens from "Vasco da Gama: A Grande Viagem".

2.8.4 Portugal 1111: A Conquista de Soure

Figure 17: Portugal 1111's campaign menu and in game enviroment.

The Project Portugal 1111: a Conquista de Soure is a single-player real-time strategy game developed by Ciberbit together with the Municipality of Soure and University of Coimbra and published by Visão in 2004. The game had the objective to spread the local history of the region os Soure, in Coimbra district. In addition, this game also holds the record of being the first commercially released video game developed in Portugal.

The premise of Portugal 1111 is the reconquest of the Iberic peninsula by the Christians against the Moors. Upon reconquering territory to the shores of Mondego river, the Christians felt it was necessary to repopulate and protect the region of Soure. This was with the objective of using this region as a foothold and to sustain the war efforts.

Portugal 1111 is heavily inspired by Age of Empires, from its gameplay, menu, hud, mechanics, graphics, aesthetics and overall design, to the point where it could be called the Portuguese AoE clone. Despite the similarities Portugal 1111 still has its own charm, this is mainly due to elements like its premise and buildings architecture being as historically accurate as possible and also containing new mechanics like “Faith”. For this resource It is imperative that this does not reach low values, due to the fact that the player units need faith to keep working and fighting, reaching a zero value of faith means desertion. With this in mind the player needs to maintain a high level of faith, using churches, masses and priests, which in turn raise the level of faith of the player units.

The Main gameplay has the objective to defend against constant Moor invasions, while also cultivating the territory and building up an economy, to fight back and find the “hot spot”. To progress on these objectives the player needs to build specialised buildings, for example, barns, farms and mills produce wheat and flour, which are used to generate an economy, while castles, walls and towers are built with the purpose to protect the population.

The term “hot spot” refers to a hidden place on the game map, which basically permits the player to advance to the next level and then permits the player to add more twenty units to his group. In addition the player can advance through eight maps, each with different scenarios. Another interesting aspect is that besides playing as the Portuguese Christian armies and people, it is also possible to play from the Moorish side.

Graphically, Portugal 1111 is on a positive note, besides the buildings being historically themed both on the Christian and Moorish side, the overall graphics are pleasant and the game also presents well built maps and scenarios with attention to detail. Furthermore the sound design is a mix between positives and negatives, the background music seems appropriate, and mediaeval themed, but it’s always the same on repeat. As for the other sounds, the sound of the Portuguese units seem fitting and the Moorish voices are on the comic side, but both suffer a bit due to having a small pool of voice lines and end up sounding repetitive with repeated actions.

In conclusion, at the time Portugal 1111 proved that complex games could be made in Portugal, and also about Portuguese culture, but the success of these games will always depend on dedicated manpower and funding. Which probably was probably one of the main problems, as the team behind it was very small, the game had a single limited edition (20k units) and was only sold with Visão magazine for the small amount of nine euros. Another reason for its relatively limited success might be that it was

heavily inspired in a game that was already 7 years old at the time, this being the first Age of Empires, but still paled in comparison to it, as Portugal 1111's gameplay was considered repetitive and without much depth.

Portugal 1111 game – The Conquest of Soure in a school context

Following the release of Portugal 1111, the scholars Filipe Penicheiro, Joaquim Ramos de Carvalho and Licínio Roque, from Coimbra University studied this video game in a school context. The project intends to answer the following questions: Does Portugal 1111 enhance the emergence of learning opportunities on the subject of reconquest in the school context? What intervention opportunity can teachers explore in the context of this game activity? How are the different components of learning related in the appropriation of the game, from the domain of the artefact to the understanding of the historical domain represented?

To answer these questions, the project hosted play sessions in schools, where they used a method for data collection, based on a systematic survey of the verbalised questions that arose between students, this one being the player and the teacher during the exploration sessions. This approach was partially supported by the Question Driven Instruction model, which values the dynamics of questioning between teachers and students as part of the learning process.

The experience was conducted as part of the history class, in two exploration sessions, of the game Portugal 1111 - A conquista de Soure, the subjects used were the students of the fifth grade from two schools from the district of Coimbra. In session A, there were 25 students from various fifth grade classes and in session B there was a class of 23 fifth grade students. Both of these sessions lasted in total 90 minutes, in this time period the subjects were given a 10 minute introduction of the game and the reason why this session was occurring, leaving in total 80 minutes for them to play the game. During this playthrough, there wasn't enough time for them to experience the whole campaign, so the experience opted to use another mode, this being "castle versus castle", in this mode there is a single map, and the player starts with four peasants and four militiamen.

During the introduction, they presented the initial video of Portugal 1111, and also the context behind the game, this one being based around a Portuguese historical period, the "Reconquista", which all the students had already studied before in history class. Furthermore, the students weren't informed of any of the game's controls beforehand.

The results of these sessions were informally collected between students and teachers, and in general observation both the students and the teachers had great interest in participating in this experience, however, the teachers also showed some doubts in the best way to integrate games in their job, which the researchers say is a common reaction. The collected data was compiled in two tables, which have all the questions asked by the students during the session. These questions result from a retrospec-

tive record of the interaction between students and teacher, at the student's initiative, organised chronologically, also indicating the frequency registered for each question at regular intervals of 5 minutes.

From the analysis of these results, the scholars came to the conclusion that most of the student's questions were related to the game itself, these included doubts about the controls, mechanics, objectives, etc. In addition, they found that these questions dropped in frequency, the longer the session lasted, the researchers noted that it gives an opportunity for the teacher to intervene, with the purpose of questioning the students for more reflective answers. Lastly, they concluded three important aspects, these being: the importance of the teacher's role as a facilitator of introduction and learning with games in a school context; that the game, Portugal 1111, raises some questions on the theme of the "Reconquista" that can contribute to the learning of historical knowledge about this period; a time trajectory through artefact learning objectives, game dynamics and modelled domain is notorious, with implications for design and game exploration strategies.

In conclusion, reading this study about the game "Portugal 1111: A Conquista de Soure", seeing this Portuguese made game, based on Portuguese history and culture, being used on a school environment, with the objective to teach the students about the "Reconquista" period and also reading the conclusions and results of this project was interesting overall. Equally important, was seeing the reception of both teachers and students to participate in the experience, and also the interactions between them. Which reinforces the idea of video games having potential in education, but also as a means of transmitting history and culture to players.

2.8.5 A Primeira Armada da Índia

A Primeira Armada da Índia is a new game concept mixing augmented and virtual realities, fine and wide gestures. It's a project that takes the iconic story in the "The Lusiads" from Luís Camões, where the Portuguese explorer Vasco da Gama confronts a giant called Adamastor while crossing the Cape of Good Hope in the journey to discover a maritime course to India. And then applies it to a virtual reality environment where two players confront each other, player one being the Helmsman of Vasco da Gama's ship and player two representing Adamastor.

The objective of the project was to present an innovative video game concept as an inspirational reflection proposal for a multimodal combination of forms of interaction. The different players use virtual reality, augmented reality with contextual information, gestural interaction and ample body movements, which can be present in the same physical space or geographically distant. They can play for the challenge of the game or as a multi-sensory experience at fairs or entertainment venues.

The title of the project, A Primeira Armada da Índia, refers to the fleet of the Portuguese explorer Vasco da Gama, which had the mission to discover the maritime course to India. The game focuses on the legendary moment the Portuguese sailors cross the Cape of Torments and upon success name it the Cape of Good Hope. In the great works "Os Lusíadas" by Luís de Camões and "O Monstrengo" by Fernando Pessoa, this historical moment is elevated to a mythical one, where the Portuguese sailors confront a giant called Adamastor and succeed. The game takes this important cultural theme and implements it by placing the players in the roles of Adamastor and the helmsman of a Portuguese nau from the First Fleet of India. The helmsman must drive the ship safely to the Indian Ocean and the giant Adamastor must turn it back.

In the image 18 below, we can see the two players and the game equipment. Player one (left) is the helmsman and uses a set of virtual reality goggles (in this prototype being Oculus Rift) and controls the helm bar with a hand and forearm by using a movement detection device. Meanwhile player two (right), plays as Adamastor and uses a set of augmented reality goggles (in this prototype being Google Glass), a sensor for detecting body movements that captures and reproduces them on the virtual giant (in this case, Microsoft Kinect) and a wearable finger movement sensor for making commands. The backpack on the player's two back, represents the computer that processes and transmits the data collected in the sensors to the game.

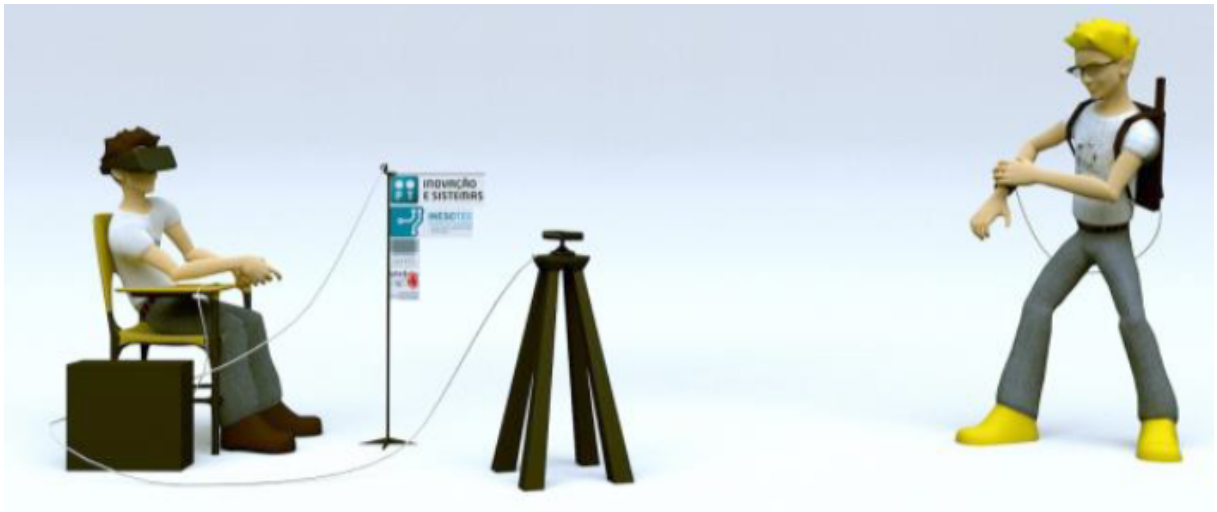


Figure 18: Players with the game's controllers and equipment.

The gameplay of the experience is divided in three phases, these are represented as danger zones or threats with increasing difficulty levels. The helmsman has to sail the nau through these three danger zones, while the Adamastor has to try and stop him. Through these zones, the helmsman needs to steer away from a whirlpool that pulls the ship into it, if the player one lets himself be dragged to the obstacle its game over.

Figure 19: Helmsman perspective: nau's bow, Adamastor and whirlpool.

For the Adamastor, he has free control on the upper part of his body, so he can move his arms, torso and head. His actions also change with the difficulty phases, during the first one the giant can throw boulders at the nau, in the second he can send giant waves in its direction and in the third he can perform both. The player with the helmsman role, to protect the ship against these attacks, has to steer away from the giant waves and use a cannon to destroy the rocks hurled by Adamastor. However, the giant's attack doesn't destroy the nau, instead with every hit of a rock or giant wave the courage of the helmsman goes down, if it reaches zero, he gives up and runs away, and the maritime path to India is never discovered.

The First Fleet of India, is an interesting project, despite being left in a prototype stage and not being exposed to a larger audience, except for some events, there's still some aspects to take in from this object. First being that it's still an attempt at a video game that transmits an event with origin in Portuguese great works from Luís de Camões and Fernando Pessoa. It does well representing the myth of the Adamastor and its conflict with the Portuguese sailors, but as we previously saw in other examples, the representation of space and location as well as the environment with detail is key to adapting culture to the video game media. Furthermore we could take away the context that this is Adamastor versus Vasco da Gama's fleet, and there wouldn't be much to recognize this Portuguese myth.

A solution to this would be developing the representative elements, by making a storm become more violent with each phase of the game, as for a representation of the Cape of Torments the sky and sea on the prototype are too calm and blue. And Speaking of the Cape of Torments, it's not present in the game, but representing Adamastor forming from this landmass, then when the player clears the game the giant fading from the rocks revealing the Cape of Good Hope and a blue sky would give a better experience at conveying the myth of the First Fleet of India.

2.8.6 Closing Thoughts

Overall, there have been a few national attempts at developing video games based on Portuguese culture and history, unfortunately these never go far commercially, as they are usually developed with the intention of being used for educational purposes with limited funding and support, consequently it leaves these games either underdeveloped or as niche underachievers, only barely remembered in the national gaming market. Which is indeed a shame, the reason for these games ending up in this state is probably due to the Portuguese gaming industry being lacking in comparison with other countries, as ours is quite small in terms of resources and investment in comparison with the others.

In addition most of the games found and discussed, had a similar aspect of focusing their entire concept around a single historical episode, most of them choosing the golden age of the Descobrimentos. This direction, in my opinion, has its interest, the exploration of the history of a country always brings some value and has an audience and market to receive it. However, it's a shame that during this background check I couldn't find any Portuguese made game that distanced itself from using the country's history as its main concept, and instead focused on other aspects of the country's culture. Because even if Portuguese history and heritage is part of Portuguese culture, Portuguese culture is more than just the past of the country.

2.9 "Bacalhau com Batatas", a Reflection About Portuguese Culture

After reviewing the state of art, and before continuing into the practical work section of this thesis, I want to use this subsection to reflect briefly on one of the most important themes of this paper, this being Portuguese Culture. The following text will be a mix of both factual and personal reflection, where I try to define this concept, in order to better explore it during the video game demo's development and in turn achieve the project's initial goal.

Portugal, geographically, is located on the western coast of the Iberian Peninsula in southwestern Europe. And historically has a long and complex history that has shaped its culture and traditions. From the Romans, to the Moors, the foundation of the country, the "Descobrimentos", etc. Due to this background of history and heritage, Portuguese culture consists of a rich and diverse blend of influences from various parts of the world and cultures.

Besides history and geography, religion has also played a significant role in shaping Portuguese culture and society, with the majority of the population being Roman Catholic. The country has a strong religious heritage, with many beautiful churches and cathedrals built and located throughout the country and various celebrated holidays throughout the year. In addition to having a strong Catholic heritage, Portugal has the remnants of Moorish influence due to this group's occupation. Speaking of architecture, Portugal is full of buildings and other architectural elements from various different ages and styles, blended together resulting in an unique city landscape. Portuguese Cities, are also decorated with unique styles, for example various walls are covered in white tiles, styled with blue patterns, called azulejos, and the ground is styled in white and black stones, which is named calçada.

Literature, music, dance and other forms of art are all important aspects of Portuguese culture. Fado, a type of emotional and melancholic music, is a popular genre that has its origin in Portugal. The country is also home to a number of famous writers, including Nobel laureate José Saramago and the poets Luís Vaz de Camões and Fernando Pessoa.

Another important part of Portuguese culture is its traditional food. Portugal is known for having various delicious and unique dishes from hearty stews, like "Cozido à Portuguesa", to various recipes involving different ways to cook and prepare codfish. In addition, there's also a variety of pastries both savoury, like the "Covilhete" or sweet like the "Pastel de Nata". To wash everything down, Portugal is also well known for its wine, to the point of being home to a number of famous wine-producing regions, and world famous wine varieties, like Porto wine.

Sports, particularly Football, play a very important part of Portuguese culture and discussion, for better or worse. Despite being a small country, Portugal has a long history of Football, with our national team having had great success on the international stage, while producing a number of top class players. Besides Football, festivals and other festivities, are activities that are in great abundance, especially in the summer, and most of these celebrate some kind of religious figure but others theme themselves around other stuff, like the sardine or cherry festival.

Overall, a unique variety of old and new concepts, influenced by the country's history and its place as a gateway between Europe and the rest of the world, form what we know as Portuguese culture. Despite being a small country, Portugal's Culture is too vast and complex for me to fully understand or write it properly, still I find that the few concepts I have in this section will be helpful for the task ahead.

3.

Game Design

3.1 Methodology

In order to develop the video game demo, I planed on following a iterative design methodology specialised for game design, the process in mind is a set of steps used by Game Design Ed, this entity is an online resource that gathers a number of game design strategies, processes, tips, methods and solutions, and then distributes them online by social media. Due to the process of developing a video game demo being a complex one, an iterative process that maps every step of the project, in order to facilitate the development and the improvement upon ideas.

The process described involves six different stages, these are: capture, brainstorm prototype, iterate and implement. These stages aren't obligatory consecutive, as they can be performed at the same time as others, furthermore they can also repeat if necessary. For instance the prototype, playtest and iterate stages, usually follow a cycle that repeats itself as many times as needed in order to achieve the final product.

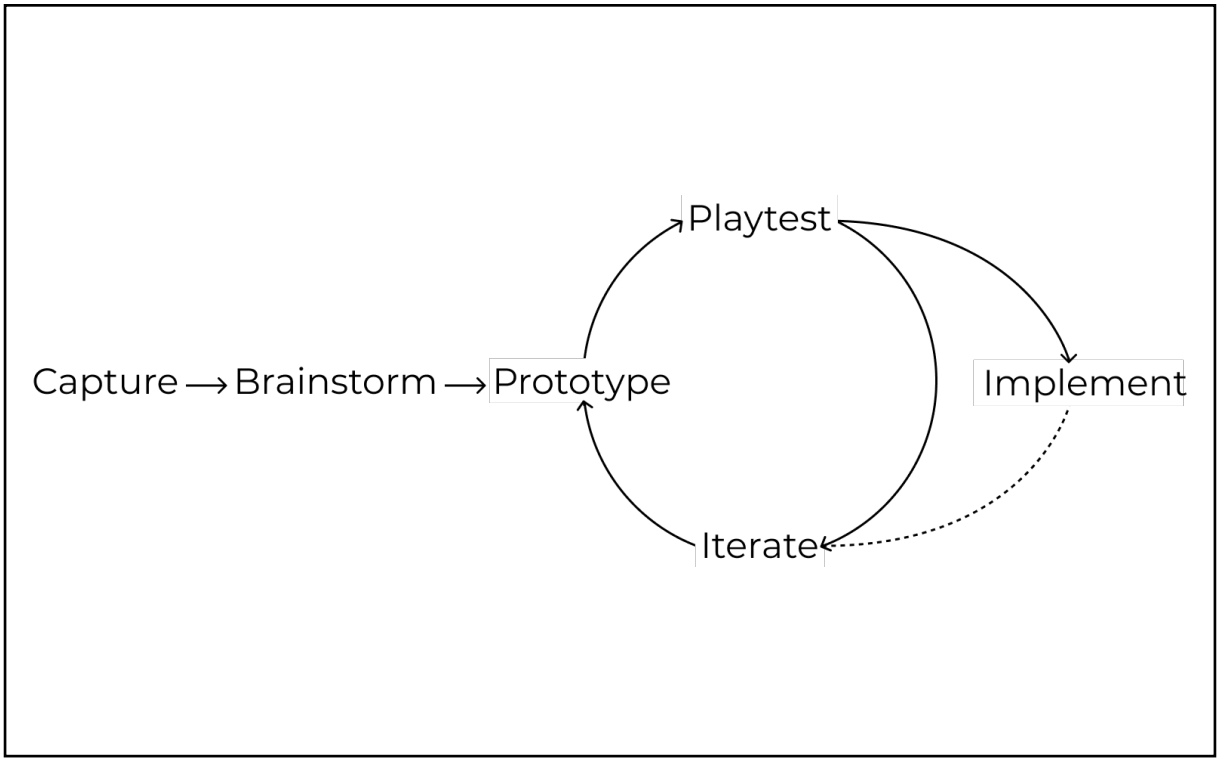


Figure 20: Game Design Ed's game design iterate process diagram.

Capture

This is the first step of the process, it consists of a background search of a variety of ideas, themes, concepts, music, art, technology, history, mythology, etc. In addition, the game designer is also recommended to search for related video games and similar works, in order to learn from these past experiences. The state of art section in this paper is part of this process, and functions as a way to record it.

Brainstorm

The second stage consists of a brainstorming process, where the designer takes into account all the information learned from the previous stage background search, and then tries to come up with original ideas. By either improving on existing ideas, mixing and matching previous concepts, to come up with something new or just coming up with something crazy and new with inspiration alone.

Therefore, the best way to go on about this process, seems to be letting the mind and creativity run wild in the beginning, and then with everything out of the box, a process of critical thinking and reflection should be exercised in order to work the raw ideas into actual good concepts.

Prototype

A key part in game design and design in general, is materialising the ideas, to see what does and doesn't work in practice, to achieve this, a prototype should come into play. A prototype has the definition of being an attempt at an early sample or mock-up of the desired product, used to test and validate ideas. A prototype doesn't need to be perfect or complex, and It can range from a simple sketch, miniature, wireframe, etc. These are fine as long as It gets the ideas across the table, with the objective of making It clear for everyone involved, and also to see what works or fails, so It can be fixed before developing the later versions. Another aspect of prototypes is that they can be divided into two different approaches, the low fidelity and the high fidelity. It's very important to choose the correct one as It will save both time and resources.

Low fidelity prototypes are used at the early stages of the project, with the purpose of focusing on the main aspects of the product, and are made with materials that are unlike the final product, for example paper or cardboard. From my experience in previous projects, by creating a paper Lo-fi prototype at the earlier stages of development. It helped me clear some doubts about the idea, and from using it in testing I also received feedback from the test users on what works, what's difficult to understand, their feelings, what should be changed, etc. But eventually this type of approach Is difficult to maintain in the long run, since as the project grows more and more complex, the need to make another prototype to accompany the complexity of the work arises.

High Fidelity prototypes are the ones closest to the final product and they are ideal to test the functionalities and the appearance of the final product. Making a Hi-fi was always the last phase of my previous projects, the creation and testing of these, gave me a good idea of what the final product could

be. But in the end, I believe that the high fidelity prototype only works well at a later stage of the project, due to the support and understanding of the Lo-fi prototype provided before. So in my opinion, a project will need these two to compliment each other's strengths and weaknesses, the Lo-fi needs the Hi-fi when the project complexity increases, and the Hi-fi needs the Lo-fi because It's more clear in the first impression of the project and easier to change.

Therefore, In this project's case, the creation of a paper prototype that displays every core idea to me and test users, will be crucial in the whole process of developing the game. The paper prototype should represent every visual element that will be present in the future demo,even if it's just a rudimentary representation it should include the map, the UI, the player avatar, menus, NPCs, every button and action. With the Lo-fi Prototype created, it will be then proved to the test, this will be through the conduction of test sessions with volunteer test users, in order to gather their feedback. The sessions will leave the subjects on their own interpretation of the prototype, while the other side only interferes if necessary, this is made with the intention of gathering their purest reactions to the prototype. After the session, the users will go through a series of questions prepared in a questionnaire, with the opportunity to also leave any other comments that aren't in the pre-made questions. Consequently after the sessions, the results will be compiled and reflected upon, so the necessary changes can be made, in order to achieve the ideal design for the video game demo.

The Video Game demo will be the high fidelity prototype of this project, and also its main objective and final product. It will require the full implementation of the planned ideas, assets and mechanics, as well as taking into account the feedback and the required changes, noted during the paper prototype testing. The demo will be developed in a game engine or tool that at the moment is still not set in stone. Upon its finalisation, the demo will follow a similar process to the paper prototype, as it will be necessary to test it, by also conducting test sessions with volunteer subjects. The sessions will follow the same structure as before, leaving the test user to his own, and after each session enquire about his experience through a questionnaire. The results recorded, will be then compiled and analysed in this paper, and instead of using the conclusions to improve further, they will be used to reflect on the whole development of the project, and see if the demo achieved its purpose and objectives.

Playtest

The fourth phase of the process is playtest, its objective is to test either alone or with some test users, the developed prototype, in order to discover what works and what doesn't. This is done by recording feedback and then improving them through iteration, and answering questions like "was it intuitive/ fun/ difficult/ challenging/ competitive?".

Iterate

After receiving data and feedback from the previous phases, it's time to reflect upon them and apply the necessary changes to the artefact. "What can be changed?" "What should be changed?" "What sort of changes will you make and test?" Are examples of questions that should be asked in this phase, and by answering them the project is then brought back to the prototype stage. Here we use the recorded feedback of this cycle to either build a new or improve the current prototype.
Implement

Finally, after going through enough cycles, eventually it will lead the designer to achieve a final prototype, for instance this could be a wireframe, a playable demo, an alpha or beta build. However, this phase doesn't mean it's the end of the process, if necessary the project can always go back to the iteration cycle.

3.2 Concept

The first step of the project is to develop the current ideas, and objectives into one final, and definitive concept of a video game. Developing a concept is a crucial part of the creative process because it aids in focusing and clarifying ideas and intentions. A concept is a core idea or theme that serves as the foundation for a creative project. By coming up with a concept, I can articulate the meaning and purpose of this project, in order to ensure that it is coherent and coherently expressed. This can also aid in communicating effectively with the players and achieving the desired goal of developing a Portuguese themed video game. Building a concept also refines raw ideas in order to better comprehend the direction in which the project should take. It also provides a roadmap for the project's development and can help it stay on track. It can also help in identifying any potential problems or challenges that may be encountered during development, but also strategies to address them.

3.2.1 Participation-centred Game Design Canvas

In order to develop a concept for the game prototype, I will be employing the "Participation-centred Game Design Canvas". The objective of this model is to "support game design and gameplay experience evaluation built upon the notion of participation, the way players take part in gameplay activity and experience the game. "*The model aims to contribute to an understanding of design space in videogame medium as well as to the evaluation of gameplay experience through six perspectives on participation: Playfulness, Challenge, Embodiment, Sociability, Sensemaking and Sensoriality*" (Pereira and Roque, 2013). "*These dimensions seek to assist the designer in thinking, in a comprehensive manner, about the range of possibility at her disposal to define or give a certain character to a game. The perspectives considered result from the synthesis of literature on the nature of play activity, the conceptualization of the gameplay experience and the motivation of the players*" (Pereira and Roque, 2013).

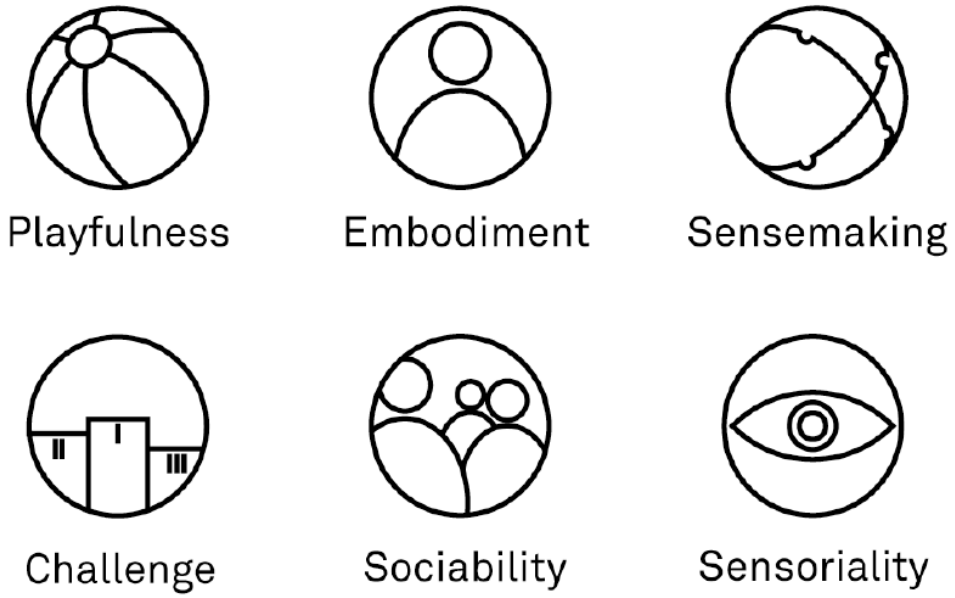


Figure 21: Six perspectives to rationalise player's participation (Pereira and Roque, 2013).

The reason for using this model in the project's early stages, is to draft a video game concept to follow for the rest of its course. Another reason is that I am already familiar with this model, and I am comfortable exploring it to achieve the expected results. Lastly, a good game concept probably won't be drafted on the first try, hence the need to perform this exercise multiple times, being accustomed to this process makes it easier and more time efficient if there's a need to redo it.

The use of this tool started by brainstorming various game ideas and concepts that had potential to achieve the objective of this project, these were: a cooking game with Portuguese cuisine; a RPG, located in Portugal; and a compilation of mini games in the form of various traditional Portuguese games. After defining these three ideas, I went on to develop them with the use "Participation-centred Game Design Canvas". The first idea, in my opinion, was already too self explanatory, so I prioritised developing the later two.

	Intention	Artefact	Participation
Playfulness	Exploring, discovering, recreating, customising.	The nature of a player's agency, the variety of interactive elements of the game (objects, characters, actions, etc).	Degree , variety and tendency of exploration.
Challenge	Overcoming a challenge, creating a strategy, defeating an opponent, mastering a skill.	Nature of challenges proposed, type of penalties and rewards, intensity and organisation of challenges.	Control, pace, progress, efficiency in performing tasks.
Embodiment	Physical involvement, physical performance.	Representation of the physical game world, player's representation of the game world, interpretation of player's movement.	Control and rhythm of movement, aesthetics of movement.
Sensemaking	Interpretation of a role, fantasy, self-expression.	Theme and underlying narratives, models and representations of phenomena, roles and motives, significant actions.	Alignment between actions and roles, understanding and or critique os represented phenomenon.
Sensoriality	Interpretation of a role, fantasy, self-expression. Contemplation wonder.	Style, nature of the stimuli, visual and sonic compositions, synesthetic explorations.	Degree of exposure and responsiveness to stimuli, interaction or engagement with sources.
Sociability	Competition, cooperation, friendship, identification, recognition.	Diversity and nature of social interactions and relationships, models of social structures (team, hierarchy, etc).	The intensity and types of interactions between players, effectiveness bonds.

Table 1: Characterising players' participation along the three foci of analysis (Pereira and Roque, 2013).

3.2.2 RPG Concept

Starting with the RPG concept, the idea for this video game was inspired by various design and conceptual choices from the game Yakuza Like a Dragon. Besides the reasons already stated in previous sections, this game explores the use of real world and contemporary elements to represent the classic tropes of a classic JRPG like Dragon Quest. For example the job, class system and abilities like wizard, paladin and healer are converted respectively into homeless man, riot guard and Japanese pop idol. This idea of using real life modern elements to represent classic RPG tropes, seems to hold potential to gamify iconic elements, locations and characters for a Portuguese themed RPG. As a result I came up with the idea of setting a RPG game in Coimbra, and gamifying its elements.

Playfulness

What spaces of free exploration does the videogame support? The aim of the game is to offer a high level of physical exploration, allowing the player to freely explore the city of Coimbra. In this case, it will only be limited to the exploration of one or more iconic areas of the city, in principle the Praça da República or Baixa/ Sé Velha will be represented. Here the player can navigate through a representation of these areas, interacting with shops, structures and local elements.

What elements support the player's expression and wilful actions? The player can customise his avatar, his party, choosing the classes of each character and which characters are active in the party.

What is the space of the player's possible actions? The Players can freely explore iconic areas of Coimbra, which are free to explore by the player, the number of areas explorable by the player will be unlocked according to the progress of the game. To navigate the map a fast travel system will be used through buses. The player can also visit local restaurants and order typical Portuguese dishes, visit shops and buy items represented by local or artisanal products, and finally he can visit bars and order drinks. The player can also talk to background NPCs, who can give him information through dialogue, initiate or decline side quests. Finally, there should be a number of locations that allow you to play mini games scattered around the map, these could consist of tuning races in polo 2, "sueca" tournaments, darts, etc.

Challenge

What goals does the videogame propose? At the moment as a demo, the game only intends to create a sandbox environment for the player to explore and have fun. But in the future a storyline is necessary to be developed for the player to follow in the game world.

What is the nature of the videogame's challenge? The difficulty of the game depends on the player's preparation, strategy for encounters and map navigation. The difficulty can be eased by obtaining or purchasing better gear or items, and levelling up the party.

What feedback is awarded to players' performance? The player is rewarded after each successfully completed quest or encounter with experience, currency and maybe items or gear. If an encounter is failed by the party's total health points dropping to zero, the player returns to the last save point, losing all his current progress.

Sensemaking

What ideas or contexts are represented in the game? As for a thematic, the game could approach various themes and contexts in its story plot and side quests, such as sebastianism, stagnation, etc. It also could adapt stereotypes in the form of Playable NPCs and background NPCs, through character design and dialogue. These depictions should take a funny and satirical approach.

What meaningful events are represented and enacted in the game? Academic life, present life in Coimbra, day to day life of work class citizens. And then taking these elements and gamifying them into a RPG quest line.

What roles do players play? The player plays through an avatar that has a starting class or job, for example he could play a college student, a police officer, a foreman, etc. The starting class will depend on the story context, but players should be able to change their class later on.

Embodiment

How would you spatially characterise the game world? The game world will be divided into zones based on distinct and iconic locations from Coimbra. These serve as a means of progression and difficulty and can be freely explored. Some of these iconic locations include, Sé Velha, Pólo 2, Alta, Cabra, Portagem, etc.

How are players present in the game world? The player sees the world through a top down view perspective, and can control a party consisting of his own avatar and controllable NPCs.

How do players move or perform? As the game will be developed for the PC it will be controlled through mouse and keyboard.

Sensoriality

What are the modalities, style or mood of stimuli? Types of stimulus: sound effects, characteristic background music, character and element animations. Style: The game is intended to convey a fun, relaxed, not too serious, "silly" experience.

What opportunities for contemplation does the game offer? The game is intended to have auditory feedback that accompany the success of certain actions, or the achievement of milestones.

What will be the opportunities for aesthetic expression in game play? Perhaps the implementation of minigames related to dancing, singing or playing an instrument.

Sociability

What interpersonal relations does the game propose? None, it's supposed to be developed as a single player game.

What forms of social organisation does the game promote? The game, as it is a single player, does not promote any aspect of this genre.

How do players interact with each other? The game is a single player, so players cannot directly co-operate or compete in an in-game environment. But players can interact with each other outside of the game, discussing and sharing aspects of the game, strategies, stories, etc.

3.2.3 Mini Game Compilation Concept

A second concept involved the development of a multiplayer video game that consists of a mini game compilation of Portuguese traditional games, in style similar to Warioware, or Mario Party games. The idea for this concept came to me for various reasons, one of them was the Yakuza series again. The use of mini games based on iconic Japanese activities, like karaoke or cooking ramen for example, picked my interest in doing something similar. The other reason was by reflecting again on Huizinga's words, in which he relates play and culture closely. These two gave me the idea to move forward on the concept of a mini game collection, where each mini game is a digital representation of a traditional Portuguese popular game.

Playfulness

What spaces of free exploration does the videogame support? The game offers the possibility to explore a variety of mini-games, based on traditional Portuguese games, but transported to the digital medium. These include: sack race, blind goat, pot race, etc.

What elements support the player's expression and wilful actions? The player can choose his name and avatar in the form of a player icon, to differentiate himself from other players. The name is chosen by the player, but the icon is chosen from a premade selection. This selection of icons is based on iconic

elements of Portuguese culture, for example historical figures like Luís Camões, symbols like the Galo de Barcelos or even food like codfish or sardines.

What is the space of the player's possible actions? The space where players can perform actions is within each minigame, for example if they are playing the sack race they control a doll inside a bag, and they have to control it to the finish line.

Challenge

What goals does the videogame propose? The objective of the game is to compete among friends in one or several mini-games, with the aim of having the best performance in them.

What is the nature of the videogame's challenge? The nature of the challenge of this concept will mostly have the physical part, because although the idea of the final gameplay of each mini game is not yet well planned, in principle, to achieve the best performance in each one, good dexterity will be needed. But also in other mini games like the handkerchief game or the stick game, you will also need good reaction time and observation.

What feedback is awarded to players' performance? The player is rewarded after each victory in a mini game with first place, followed by other players ranked by their performance. The last place is crowned "The Rotten Egg".

Sensemaking

What ideas or contexts are represented in the game? The game adapts traditional Portuguese games to the digital environment.

What meaningful events are represented and enacted in the game? None, the players are just playing traditional Portuguese games in a digital environment.

What roles do players play? They play as themselves, competing against each other for the first place in each mini game.

Embodiment

How would you spatially characterise the game world? The game world will depend on the minigame that is currently being played, for example in the sack race the game world will be a track with a start and finish.

How are players present in the game world? The way players see the world will depend on the mini game, for example if it's the "Corrida de sacos" the view will be a side scroller, but if it's the "Jogo da Malha" it will be a bird's eye view.

How do players move or perform? As the game will be developed for the PC it will be controlled through mouse and keyboard.

Sensoriality

What are the modalities, style or mood of stimuli? Stimulus types: sound effects, characteristic background music, character and element animations. Style: The game intends to convey a fun experience and intends to use a recognizable graphic style.

What opportunities for contemplation does the game offer? The game is intended to have sounds like auditory feedback that accompany the success of certain actions, or the achievement of milestones.

What will be the opportunities for aesthetic expression in game play? Perhaps the implementation of minigames related to dancing, singing or playing an instrument.

Sociability

What interpersonal relations does the game propose? The game proposes competition between players, and cooperation if necessary in the chosen mini game.

What forms of social organisation does the game promote? The game proposes a leaderboard at the end of each mini game, where you can see the winner and "The Rotten Egg".

How do players interact with each other? Players are free to interact as they wish outside of the game.

3.2.4 A Pragmatic Choice

As a result of this exercise, I came up with three interesting concepts, however for the project I can only choose one. The cooking game about typical Portuguese food wasn't inspiring me too much, so I ended up not choosing it or even developing it using the canvas. The RPG idea, thematically was the one with the most potential, and the one I originally chose to follow, however it also brought the most complex and intensive work schedule out of the three, and after some time I dropped this idea due to being an unrealistic project for the available time frame. Therefore, my design proposal for this project is to develop a video game demo that can represent Portuguese culture at its core, and also be considered a Portuguese game. I propose a video game that consists of a number of mini games, all of them based on traditional Portuguese popular games.

In order to further develop the concept I drew a bunch of sketches so I could visualise my ideas. Here I planned which mini games would be developed and how they would be controlled and played in the demo. I choose to implement at least three mini games in the long run, these being “Jogo da Malha”, “Corrida de Sacos” and “Corrida de Cântaros”.

The first chosen game is probably the most known traditional Portuguese popular game, the “Jogo da Malha”, “Chinquilho” or “Jogo do Fito” is a sport in which the participants throw metal disks or flat stones, called “malhas”, towards a pin called “xisto” with the intention of knocking it down or leaving it as close to it as possible. The game is played by four players divided into two teams, where they compete against each other until one of them archives a score of 30 points.

The second chosen game was the “Corrida de Sacos”, which is a staple popular game in village festivals which I used to participate in as a child, where mainly children put their feet inside bags and jump with the objective of reaching the finish line. The first child to reach this goal is the winner of the game. The game can also be a dispute between two teams, and children must jump into the bags, get out of the bag and hand it to the next competitor, taking turns. Bags should be made from sturdy materials, such as burlap, potato, thick plastic or rice bags, as long as they reach at least the child’s hips.

The third chosen game is probably the less known one, but it’s one that I remember women participating in at my grandparent’s village festival, this being the “Corrida de Cântaros”. The game consists of carrying a pitcher (cântaro) made of clay, full of water on your head, during a race through a course, without the help of your hands. Balancing the pitcher on the head is quite difficult, so most of them end up broken during the race. The player who manages to complete it in less time wins the game. Usually, this game is only played by women.

During the sketching phase of the project I tried to plan how the rules and objectives of these traditional games would translate into the video game medium. At first I began to develop the project with the intention of being a PC game, the games would be controlled by different types of controllers, for example the “Corrida de Cântaros” was supposed to make the player move and hold a slider in a certain zone in order to balance the pitcher. The “Jogo da Malha” was initially supposed to be controlled by first selecting the launch angle and then selecting its force. The “Corrida de Sacos”, had the player press a button at a certain rhythm in order to jump.

These were the ideas I had for gameplay initially, however after discussing them with my advisors, I reconsidered this approach. Traditional Portuguese games are physical games, and by using controllers like the ones mentioned before, would give the gameplay a mechanical feel, and in turn the digitalization of these games wouldn’t feel right. Because of this, I changed the game’s controllers to be touch based so I could maintain the physical aspect of these games to some extent. Consequently, the game’s platform changed from PC, to Tablet, and later for Smartphones. Furthermore, the idea of touch

controls changed the previous concept for controls for each game. The “Corrida de Cântaros” now used them to move the player character to the sides in order to balance the pitcher. In the “Jogo da Malha” touch controls are used to pick up the malha and throw it. Finally, in the “Corrida de Sacos” taping the screen makes the player character jump.

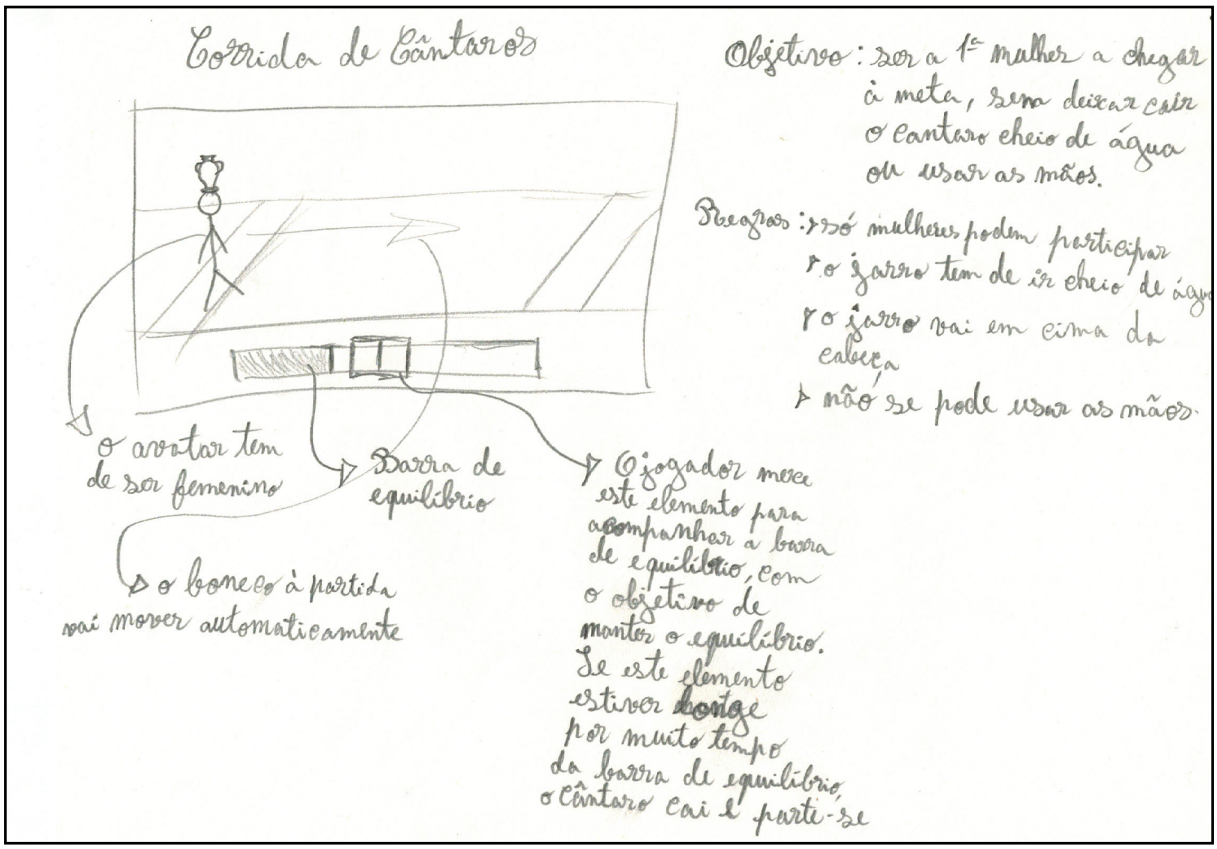


Figure 21: Innital gameplay sketch for the “Corrida de Cântaros”.

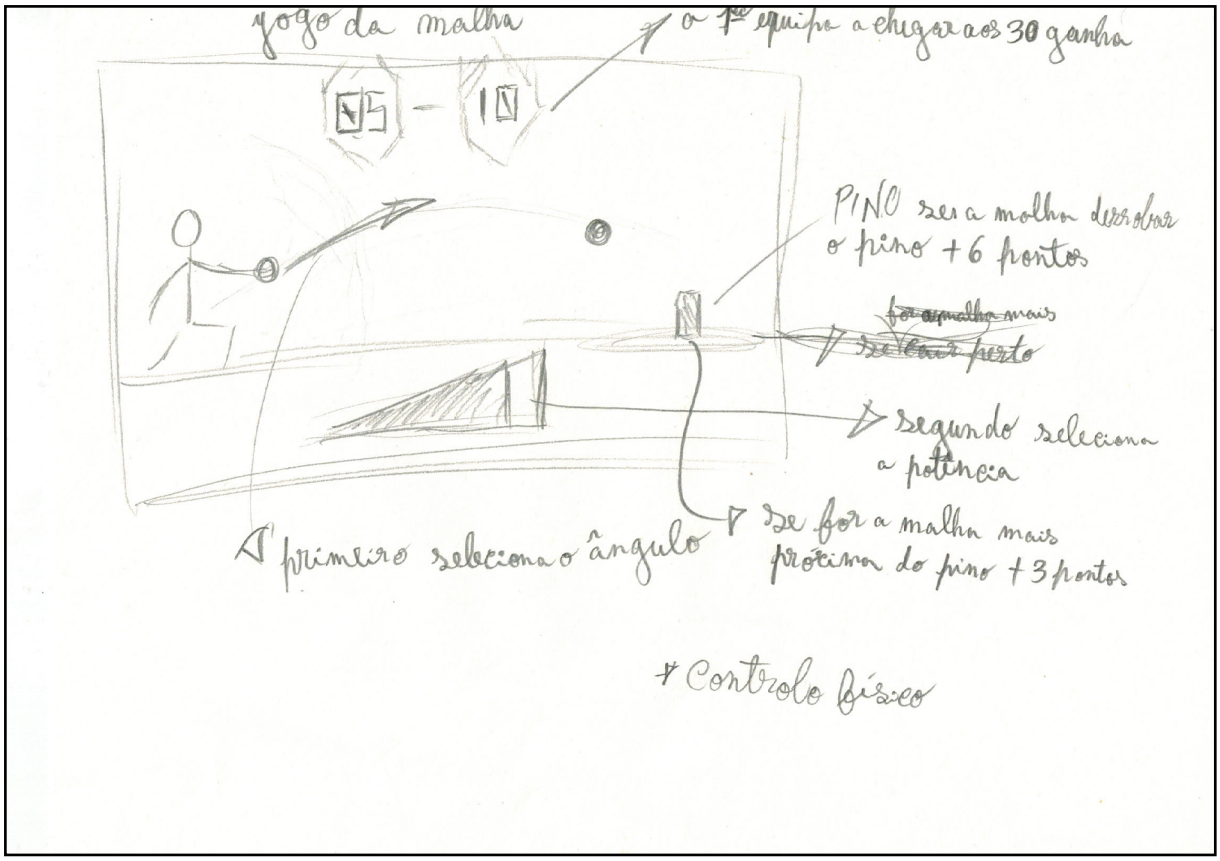


Figure 22: Innital gameplay sketch for the “Jogo da Malha”.

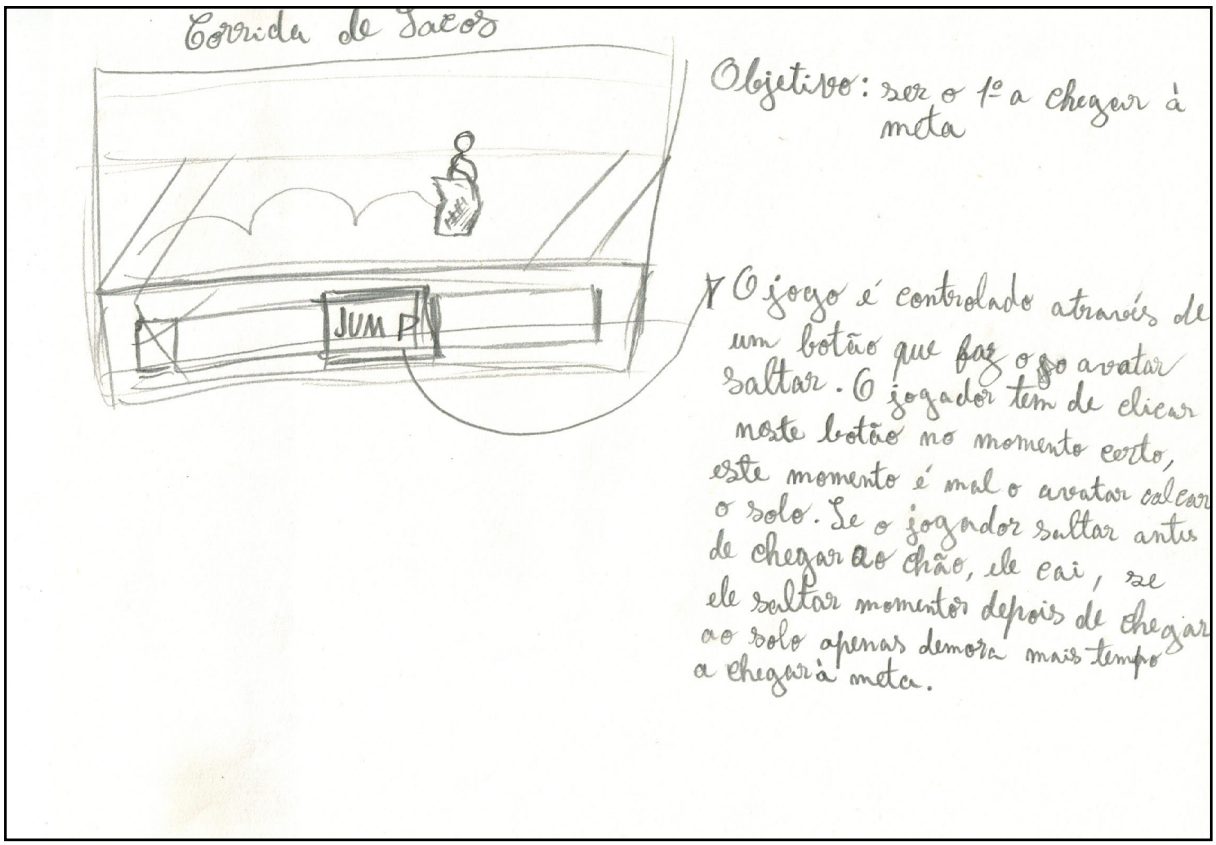


Figure 23: Innital gameplay sketch for the “Corrida de Sacos”.

3.3 Artstyle

Another important aspect of the whole process is finding an art style to develop graphics and assets for the video game demo, that help in achieving the goal of this project. The visual appearance of elements on the screen, can't be styled carelessly, or else it will fail on obeying the three modes of representation, and in turn it won't be recognized as a Portuguese game.

The term art style refers to the visual appearance and design of a project or a work of art, such as a painting, a sculpture, or a video game. It includes elements such as the use of colour, line, shape, form, and composition. Art style can vary widely depending on the medium, the intended audience, the purpose of the work, and the personal preferences and vision of the artist or creator. Some art styles are more realistic and depict objects and scenes as they might appear in the real world, while others are more stylized or abstract, using simplified or exaggerated forms and colours to create a particular effect or atmosphere.

Overall, art style has a significant impact on the overall aesthetic and atmosphere of a video game and can contribute to the player's emotional response and engagement with it. Furthermore it helps to define its visual identity and create a unique and memorable experience for the audience.

To start this process of finding an art direction for the project, I went on to look for inspiration in the Portuguese city streets of Coimbra, and photographing elements of interest. In addition I created a Pinterest board with the goal of gathering multiple styles of references, which can be viewed at the following link (https://pin.it/78vDh6R). During this reference gathering process I found myself inspired by the use of colour, intricate patterns and typography of the Portuguese tiles.

Portuguese tiles, or azulejos, are a traditional form of art found in Portugal, and have been a feature of Portuguese architecture for centuries. They are typically made from glazed ceramic, and are used to decorate the floors and walls of buildings, both inside and outside. Portuguese tiles are known for their bright colours and intricate patterns, and are often used to depict scenes from Portuguese history or folklore. They can be found in churches, palaces, and other important buildings throughout the country.

Figure 24: Some visual references gathered on my figma board. (Tortas de Azeitão – Portugalize.Me, 2013), (Pryor, n.d.), (alma-portuguesa, 2014), (Portuguese Tile Prints, n.d.), (Homydesign, n.d.), (Extinta Tarefa Do Campo, n.d.), (The Homeland, n.d.), (order left to right, top to bottom).

After this process I started experimenting with this style, using Adobe Illustrator and Figma. Using these tools I created various patterns similar to the azulejo tiles, that I could use as textures and decorate the game's UI. In addition I also developed a bunch of borders and UI elements, which could be used for buttons, labels, etc. The following figures are a few of the most interesting elements created.

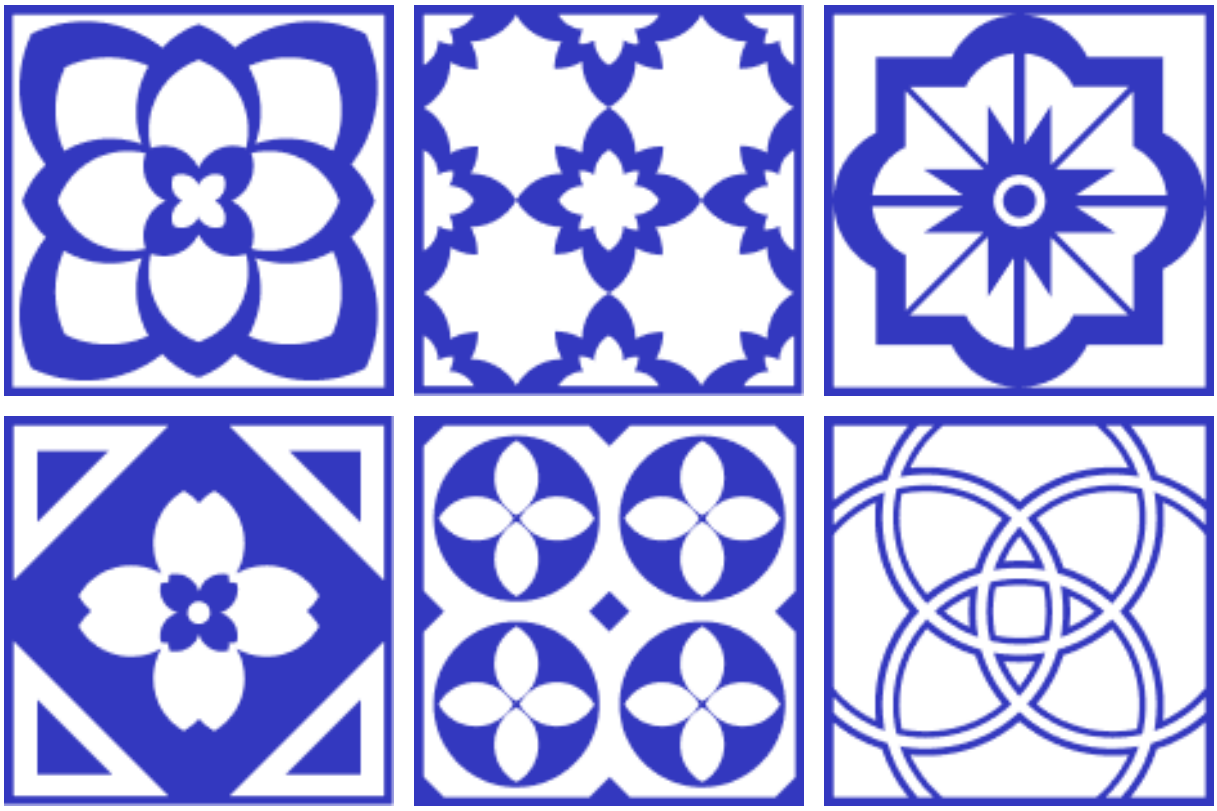


Figure 25: Some azulejo pattern experiences.

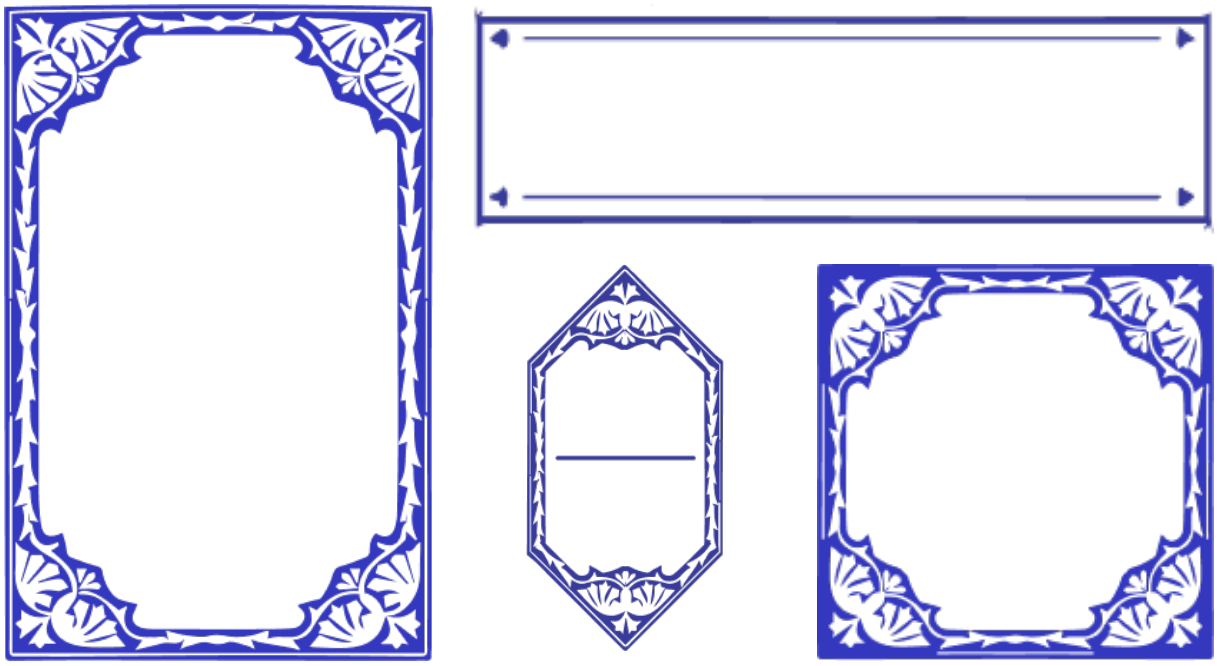


Figure 26: Some ajulejo themed borders for game elements.

3.3.1 “Arcos” a Conceptual Typeface

The calligraphy and typography of the azulejos found in Portugal differs a lot from tile to tile, yet they also share some similarities, in their style, shape and form. Consequently I tried to capture some of these common aspects and develop a typeface for my game that could help sell the thematic, and make the overall art style feel more cohesive.

To try and develop a new font for my game, I went back to a previous project I had developed, where I revisited an experimental font I left unfinished. It was initially a concept inspired and built by parts and modules, from other types of typography around the city of Coimbra, mainly from characters on azulejos and Portuguese sidewalk, see figure 27 below.

Figure 27: Base Modules.

When I picked up this project again, its state was already quite developed, so I planned its improvements to occupy a small part of the project’s schedule. Conceptually the typeface was following inspiration from the characters present in the azulejos, but also had some letters shaped to look like columns and arches, so it could also resemble ancient architecture. This characteristic resulted in me naming it “Arcos”, meaning arches in Portuguese. Finnaly, another aspect I came to conclusion is that colour plays a huge role in selling the concept, namely using tones of dark blue makes this attempt feel close to a representation of azulejo letters.

Overall I kinda liked the results, but I also felt it wasn’t ready, and still needed further improvements in order to capture the feeling and design of the letters drawn in azulejo street name signs. In

addition, I couldn't continue working on this part of the project due to schedule needing me to start implementing and coding the demo. Furthermore when I turned it into a typable typeface some of its details and personality were lost or simplified during the process. In short I didn't have too much confidence in the typeface, so I chose not to implement it in the demo, however I now regret this decision as It would have been best to test its potential during the UX testing session that took place later in the project.

Figure 28: "Arcos" final result.

Figure 29: Example of "Arcos" in use.

3.3.2 Sprite Design

Sprite design is the process of creating a visual representation of game elements. It involves designing its appearance, and other characteristics. The objective of sprite design is to create assets that are visually interesting, unique, and consistent with the world in which they exist. Sprite design is a complex and time-consuming process, but it is an important part of this project where the in-game elements can't stand out as a different style from each other and the rest of the azulejo styled elements.

In order to grasp a style that fit the current art direction of the project, I went back to gathering visual references on Pinterest. I began to look at azulejo art, and thought that the style would be nice to implement on the game. However, after trying to emulate its style as digital art using a wacom tablet to draw on PC, I realised after a lot of attempts that I wasn't able to translate my non digital drawing skills into this environment. And that I wouldn't be able to progress fast enough to hand draw detailed sprites in this style. In addition detailed sprites also would have visibility problems due to the game being developed for mobile. As such I had to rethink my approach.

I continued my visual reference search by searching other simpler styles used in Portuguese art that could fit the azulejo thematic. As result, various other ideas for styles appeared, some of these examples are selected in the figure 41. One of the styles in mind was a more cartoonish approach, which permitted the generation of visual assets quickly using shapes. Another style was to use lines, in order to draw recognizable shapes, this style resembles quick sketches and blind style drawings.

Figure 30: Visual references exemplifying a more cartoonish style. (#24_O_Fado - Ilustração: André Da Loba / Texto: Chema García Martínez, n.d.), (Burchworks, n.d.), (Fado, n.d.).

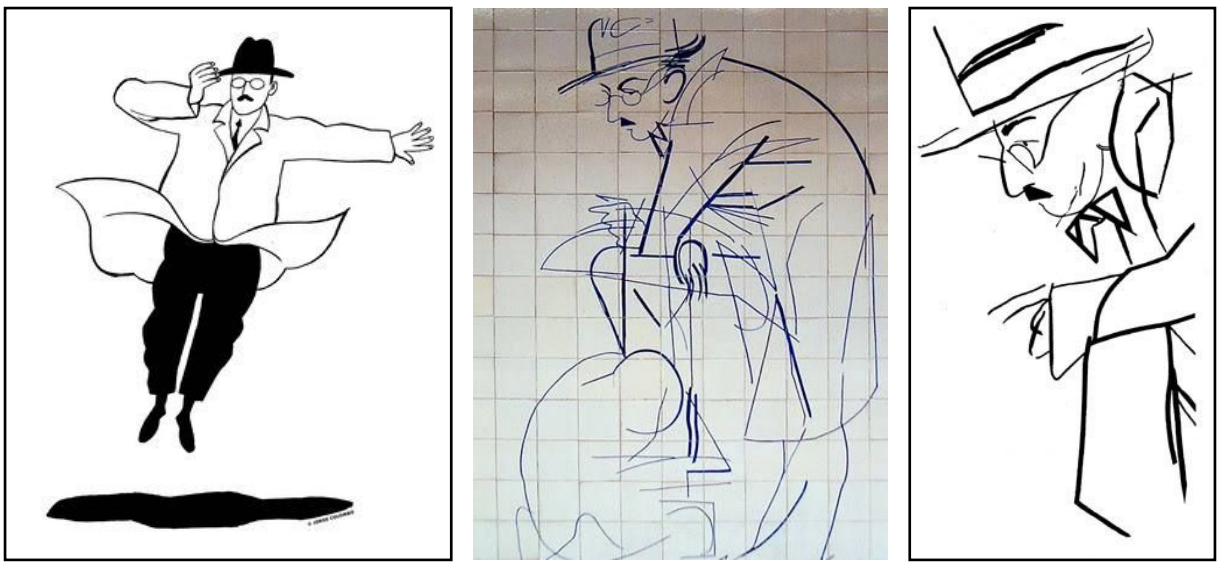


Figure 31: Visual references exemplifying an artstyle that mainly uses lines. (Portoghesi, 2010), (Albino, n.d.), (GERMINA, n.d.).

After this process I began experimenting with these styles, using Adobe Illustrator and Figma again. First I tried to emulate the style that used mainly lines, however after various attempts using a wacom tablet I couldn't draw smooth lines consistently, so I ended up not choosing to keep developing this style. The more cartoonish approach was the one that ended up being chosen for development, the following figures are examples of some of the assets developed.

After this process I began experimenting with these styles, using Adobe Illustrator and Figma again. First I tried to emulate the style that used mainly lines, however after various attempts using a wacom tablet I couldn't draw smooth lines consistently, so I ended up not choosing to keep developing this style. The more cartoonish approach was the one that ended up being chosen for development, the following figures are examples of some of the assets developed.

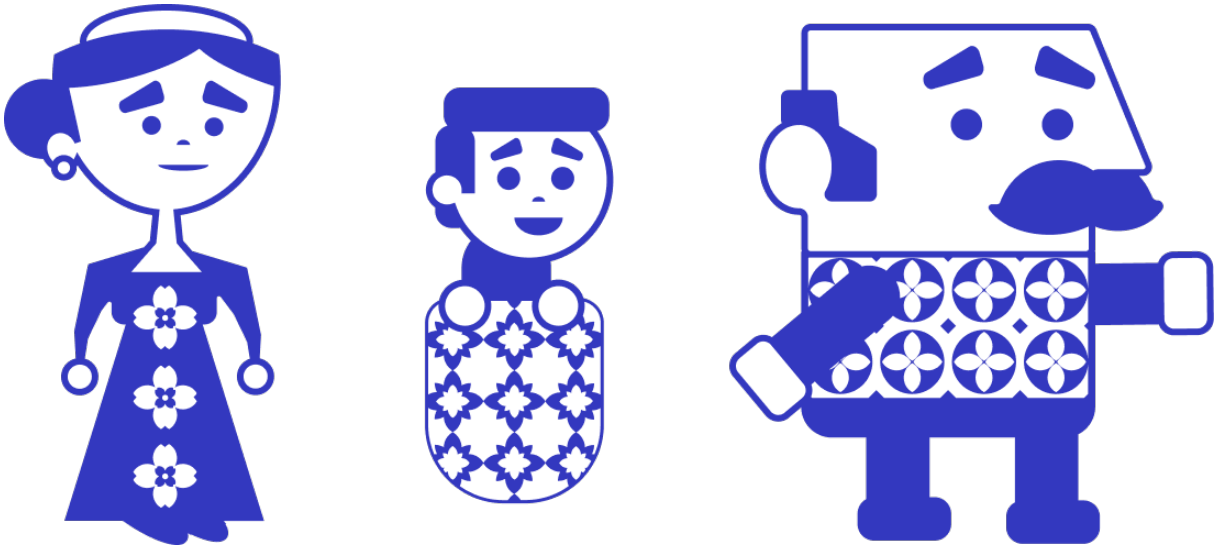


Figure 32: Intial design for the player character sprites.

The process of creating assets using this style started with using basic shapes in order to create the player characters and other game elements. After their basic shape was done I started adding colour and the azulejo patterns that were already made, so I could fit with the current artstyle of other elements. However the results of the experiences left me a bit unsatisfied as I still wanted to keep more realism and texture on the elements. Also the cartoonish player characters were difficult to animate. Due to these reasons, later in the project I started using Adobe Photoshop in order to edit stock photos, to make them look like they were painted pictures. Also in the final weeks of development I decided to change the sprites I had for others that had been animated.

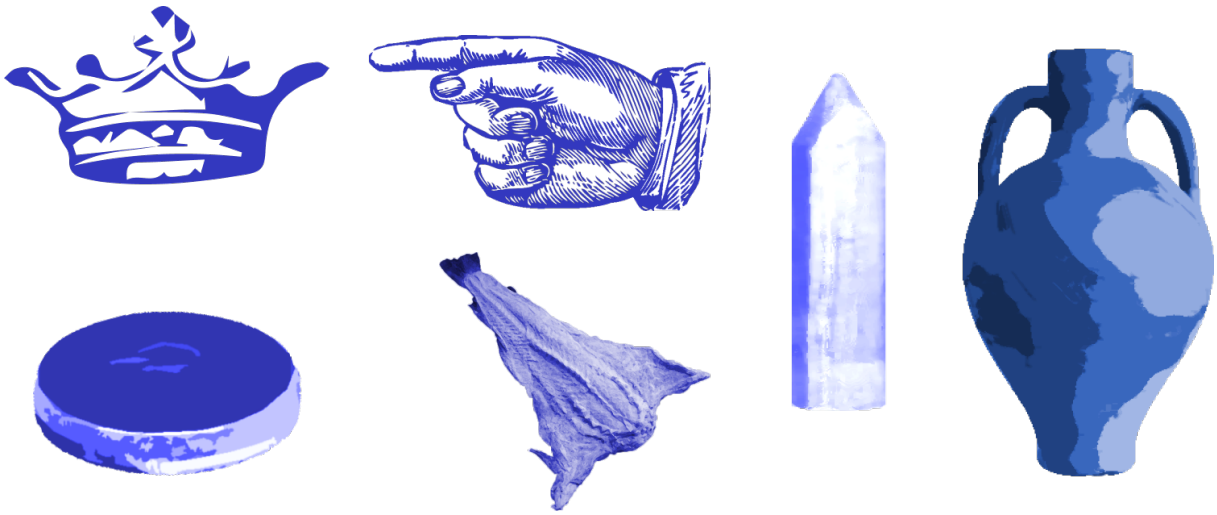


Figure 33: Sprites used in the game's final version.

Figure 34: Player character sprites used in the game's final version and their animation frames.

On the whole, I was satisfied with the results, as I believed the developed sprites fitted in with the theme of the game's art direction, even though they are a bit rough. Furthermore, I would have liked to explore more styles and directions during the project's development, especially hand painting the sprites themselves, as I believe the results would be the best fitting sprites for the project. However, I would have to develop the talent and skills in the digital art area to do so.

3.3.3 UI Design and Lo-Fi Prototyping

After developing multiple assets and sprites, I began designing how the game's interface was going to look like. To do so I used Figma, in order to build a Lo-Fi prototype that showed how each screen of the video game would look like.

The process of designing the User Interface is in my opinion one of the most important processes of game design. Therefore I planned to be rigorous with my design decisions, however I still plan on experimenting new things during this process. The objective of this process is to design the visual and interactive elements of the video game demo. It includes the colour scheme, layout, typography, and overall aesthetic, as well as the functionalities and behaviour of interactive elements such as buttons. In short my objective is to create an easy and intuitive experience for users, allowing them to easily navigate and interact with the game.

In my first experiences, I designed the game around being played on tablets, so I designed a bunch of screens for this reason. After some reconsiderations, the idea of developing them for tablets only was dropped, and I moved to develop them for smartphones so I had to redo some parts of the process again.

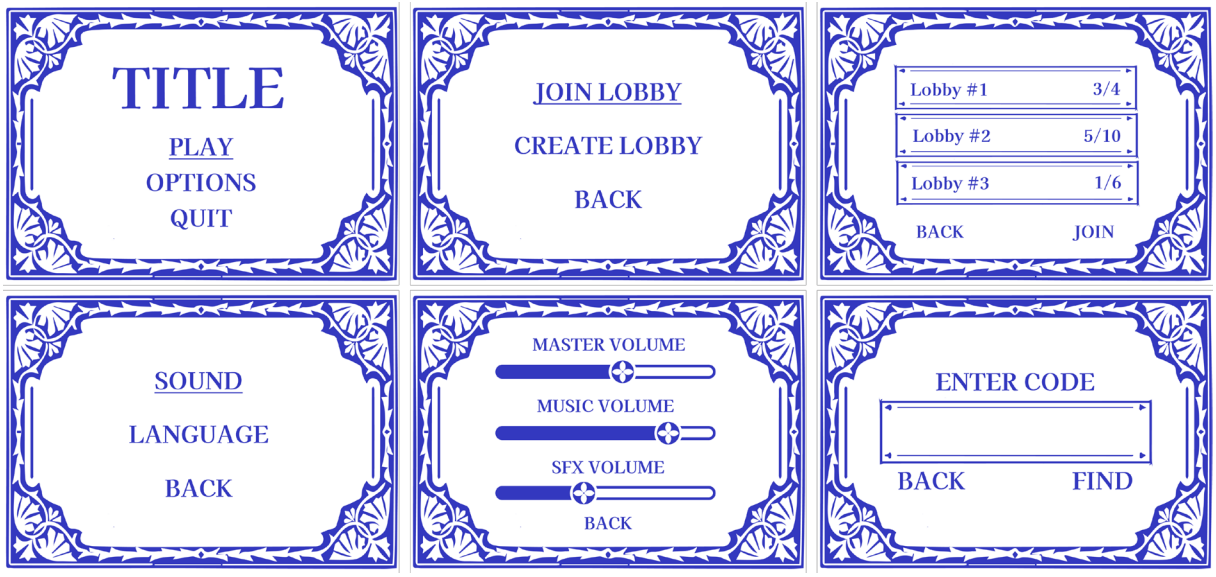


Figure 35: Some examples of the inital UI design for tablets.

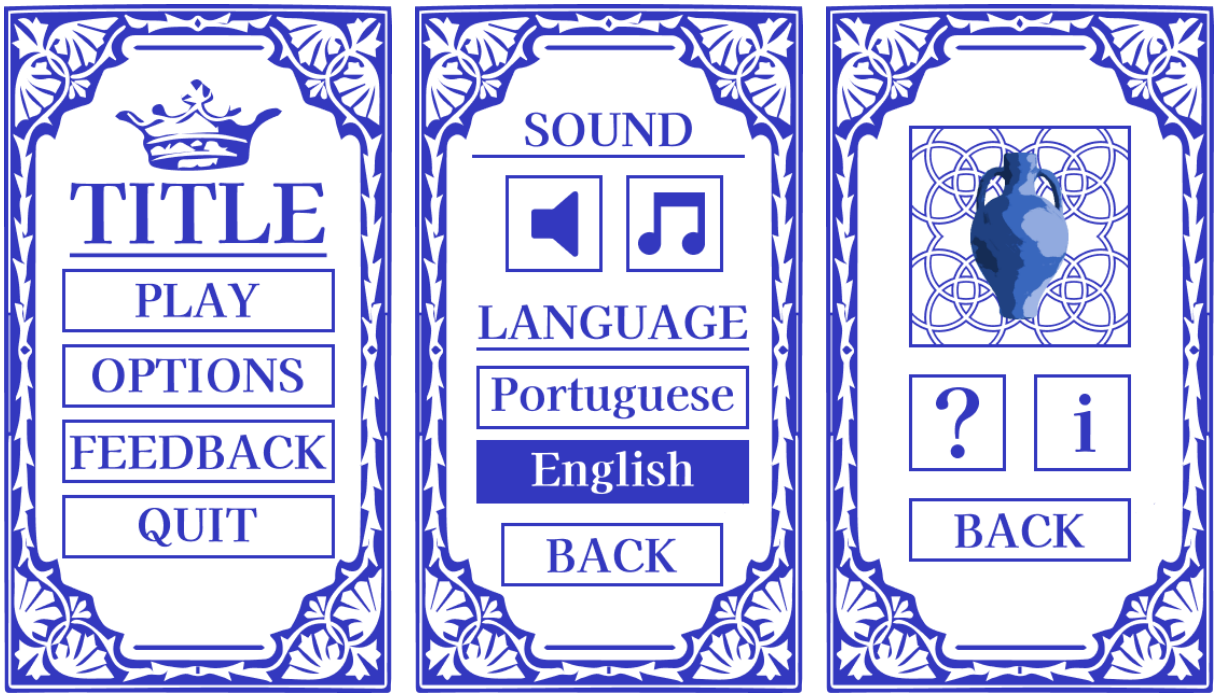


Figure 36: Final results for the title, options and game selector screens, order left to right.

Figure 37: Final results for the tutorial, information and scoreboard screens, order left to right.

The screens shown in the pictures on the previous page, have some design choices worth mentioning. First, the title screen, this is the first screen the players see when they open the game, this screen lets players access important menus like the options and game selector. In addition, a feedback button was added to this menu, this particular element had the intention of easily linking the users to a form that gathered their experiences with the prototype during the testing phase of the project. Next screen of interest is the game selector, here the players have access to all three mini games, their tutorials and their information screens. As mentioned before, one of the design decisions I took in this project was to avoid controllers, in turn of using more physical controls. As such, I used swipe controls, in order to navigate from minigame to minigame. The tutorial screens, in my opinion, are always a must in every game, due to the reason they reduce player confusion and overall contribute to a better experience for them, and in return better results are gathered. The Information screens are an experimental addition, as I thought that players having the access to some context behind the traditional Portuguese games would be interesting. Finally, the scoreboard screen, this particular screen appears after a malha is launched, and hits either the floor or the xisto. Here the players discuss which malha got closer to the xisto and after that they manually score the points on the respective team.

The approach I took in designing the UI was to make them resemble the azulejo signs that can be seen in older Portuguese streets. Overall I feel that I managed to capture that feeling with the current designs, and I don’t plan on changing this direction, but some improvements can still be made on the current product.

3.4 Game Sound Design

Sound and music are an integral part of various cultures around the world, and has played a significant role in human history. It has the ability to bring people together, express emotions and ideas, and reflect the values and traditions of a society. In many cultures, music is used to mark important events, such as a countries anthem, weddings, funerals, and other religious ceremonies. It can also be used to tell stories, record history, and preserve cultural traditions. Music and sounds have the power to evoke strong emotions and can be used to bring people together, due to It transcending language barriers. In short, music and sounds play a vital role in culture and has the power to bring people together, express emotions and ideas, and preserve cultural traditions.

Good Sound Design is essential for a video game, and perhaps even more crucial when the video game has the objective of being representative of something. Sound helps immensely when it comes to setting up the mood and the immersion of a video game. As a result, in this project with the objective of representing Portuguese culture in a video game demo, I don't plan on leaving the sound design unattended in the development process.

Accordingly, I plan to follow the methods described in "Beyond the Library: Applying film post-production techniques to game sound design", by Nick Peck, in order to compile the necessary sounds needed to be implemented in game. Peck affirms that sound design in video games is mostly left for last, and that usually heavily relies on pre recorded sound available in sound libraries, as a solution to this problem, he presents the idea of using sound design techniques used in the production of films. But why apply these techniques to generate audio for video games? His reasoning is that, due to the film industry being present for longer, they've developed more advanced sound design techniques, in order to produce unique and memorable audio. He then explains that film audio can be split into five different layers, these being: dialog, music, hard SFX, foley and ambiance.

Dialog

Peck states that dialog should always be first above all, due to the fact that it needs to be intelligible or its meaning is lost. Moreover, in video games the dialog is usually limited and compressed, because it needs to be intelligible above SFX and music. Meanwhile in film, dialog is better cared, being compressed less due to the fact of being carefully edited at the mixing stage.

Music

As said earlier, sound helps immensely in setting up the mood, immersion and emotional context of the video game. When it comes to this aspect, music is the one responsible, as it tells the players what they should feel in each moment. Another aspect is that both in film and video games, music and sound effects compete with each other, as both play in the same space. Peck warns that making both audible can be hard, so he suggests that music should have a greater dynamic range, so it can allow other sounds to rise and fall while being audible.

Hard SFX

These sounds are the weapon hits, power ups, opening a chest, spells, etc. These sounds define the sound profile of the game, so the designer has to be careful on the choices he makes while creating and implementing them in game.

Foley

In short, foley is sound made by humans, this includes footsteps, brushing teeth, clothing rustles, manipulating objects or tools, etc. Peck comments that in film, foley is the layer of sound that brings it realism. And because of this it should be brought up to video games as well.

Ambience

Ambience is the background sound that plays to set the idea the player is in a certain place. For example, a forest ambience is filled with birds chirping and trees rustling with the wind. Peck describes that ambience has two components, the first one is the ambient loop, which is a long recording of sound looping, that can be mixed with music and also with the second component, the short elements that trigger randomly through the loop, these can be bird chirps, water drips, etc.

Taking these sound design concepts in mind I planned in the table below which sounds would be necessary for the project, the sound layer they would belong to, the design intention behind the sound choice, and where the sound would be used on the demo.

Sound ID	Layer	Sound Description	Design Intention	Where it should be used
1	Music	Traditional Portuguese Guitar Music	Enhancing the already Portuguese azulejos inspired visual style, with a traditional Portuguese music style.	Overall music of the game, present in all the menus and mini games.
2	Foley	Walking	Audio feedback for the character movement.	Plays when the player drags the character to the sides in order to move
3	SFX	Pitcher breaking	This sound signals game over on the "Corrida de Cântaros" mini game.	Plays when the pitcher breaks.
4	Foley	Jumping with a bag	Audio feedback for the jump action.	Plays when the player taps for the character to jump.
5	SFX	An azulejo rubbing against or scratching another azulejo.	Turning the azulejo inspired UI more immersive.	Plays when the player swipes the screen on the tutorial and game selector menus.
6	SFX	Malha hitting the ground.	Immersion.	Play when the malha hits the ground.
7	SFX	Malha hitting the xisto.	Immersion.	Play when the malha hits the xisto.
8	SFX	Sound of a metal gently hitting an azulejo.	Turning the azulejo inspired UI more immersive.	Plays when a button is pressed.
9	SFX	Sound of an obstacle falling.	Draws attention to the falling obstacle.	Plays when an obstacle falls.
10	SFX	Sound of an obstacle colliding with the pitcher.	Enhances the sense of danger.	Plays when an obstacle collides with the pitcher.

Table 2: Planning for the sound design and implementation.

After planning the project's sound design, I started thinking about how to implement the sound in the demo. At first, developing original sound for the game seemed like the most appealing course of action. However, I soon realised that making my own audio from scratch would take a lot of effort, skill and time out of the schedule. As a result, I opted to procure royalty free sounds and music, which I could use for the most important elements of the game.

The sounds implemented for the demo were a sound of a piece of pottery breaking, that plays when the pitcher falls and breaks on the "Corrida de Cântaros", and the sound of an object falling on dirt, that was used for the sound effect of the malha hitting the ground. Both of these sounds were found on the website "Freesound", and edited using Reaper. The music used for the demo was found on Youtube, and it's a royalty free, Portuguese guitar instrumental song, played by Casimiro Ramos, music by Noturno and released in 2020.

In Godot, the sounds gathered were then implemented with dynamic sound properties, meaning, for example in "Corrida de Cântaros" if the pitcher falls to the right the breaking sound comes from the right if it falls to the left it comes from the left. The sounds, in order to be easily controllable were divided into three audio buses, an audio bus is a virtual channel that can be used to route audio signals between different nodes in the audio tree, allowing the creation of complex audio routing and mixing setups. The audio buses created were one for the music and one for the sounds, both of which could be muted and unmuted through buttons on the options menu.

Overall, the sound design of this project could use more expansion with different and original sounds, and improvements to the current implemented ones. In spite of these shortcomings I believe the sound in its current state, still helps to bring the project together and enhance the thematic and visuals of a video game based on Portuguese themes and culture.

3.5 Demo Localization

Going back to “Found in Translation: Evolving Approaches for the Localization of Japanese Video Games”. Mangiron explains that the term localization consists of a number of marketing, cultural, technical, legal and linguistic processes used in order to market a game internationally, but also preserving the original game’s look and feel, while also providing a similar experience as those who played the original version, to players outside the game’s country of development. The localization process is a type of user-centred and functional translation, where the main objective is to provide a game version, that allows the targeted user to experience the product as if it had been originally made for them. In addition, this localization process does not just translate the text assets of the game, it also changes its gameplay mechanics, visuals, music and storyline, in order to meet its targeted audience expectations. In the localization process, the translation of the video game is only the final steps of the development of the localised versions. Furthermore, the terms localization and translation are seen as the same as they are often used together in this process, but they are in fact different. The term game localization, is used to refer to the whole process of readjusting a video game, in order to sell it in target territories, while the term translation refers to the change of text elements during this process of localization.

During this process, in order to achieve a seamless localization, it’s important to note that the developers must design their game from the early stages with localization in mind, in order for the game to be easily adapted, without a lot of substantial changes, from its original version to a localised one for the other territories. This method is called internationalisation, and it consists of the development of a number of flexible assets that can be effortlessly replaced in each localised version. For instance, a game that pretends to be sold in various regions, needs to have its code compatible with various formats for time, numbers, special characters and dates.

Another practice of the gaming industry is that during this internationalisation phase, the game developers usually try to design their game with the widest appeal possible, in order to appeal to a larger audience and avoid culture-specific references, which wouldn’t be understood by players in other countries without the cultural context. In particular, the developers try to avoid designing a game with any cultural problem that could possibly be offensive or obscure to players in different cultures, or could affect its age rating. There are many instances of games being censored, or having the need to adjust due to cultural differences, for example, in the game League of Legends, one of the most played and

known games in the world, also had to adjust its game content in order to appease certain countries. For instance, due to China having taboos against blood and skulls, most of the undead characters in China's League server are censored or have a different model altogether due to skulls being considered taboo, blood is also either removed or painted over with another colour. In addition, female characters are usually censored not only in China but in a lot of other countries, due to them being considered overly sexualized for children.

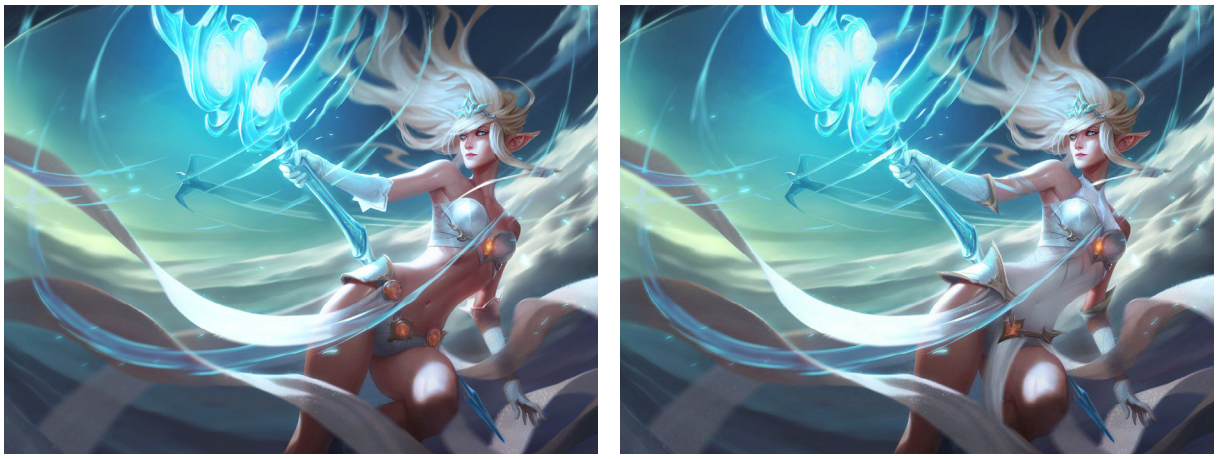


Figure 38: League of Legends's Champion Janna, censored version on the right.

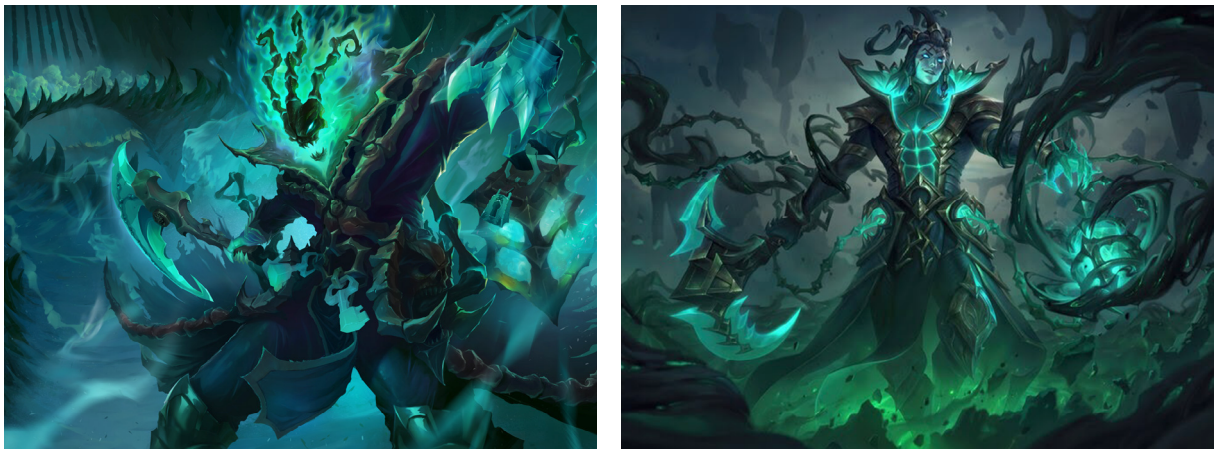


Figure 39: League of Legends's Champion Thresh's base skin in the West on the left, compared to China's base skin on the right.

The process mentioned is called culturalization, compared to localization, which only aids players from other countries in understanding the original experience of the game. Culturalization is going a step beyond it, as it goes deeper than localization in terms of the game's fundamental content, changing everything to be in accordance with the targeted region's culture and expectations, helping players comprehend it to a deeper and more personal level. Culturalization is a process that ensures that players will not feel alienated and disengaged from the video game due to a part of its content being strange or offensive to the player's culture.

Despite the gaming industry favouring streamlined localization designs, by developing their games in the widest and cultural appeal possible, the opposite direction of this can still come out as a success, and a better option for the gaming experience itself. This process is called foreignization, and this implies the preservation of most of the original social and cultural elements present in the original version of the game. In turn, the player will become acquainted with the game's culture, and this feeling of foreignness may become one of the game's main appeals. Furthermore, the appeal of being in a foreign territory is used more than players realise, as one of the most appealing genres in gaming are fantasy games, where living in another place with different culture is the main appeal of the game. In other words, why shouldn't games that offer the experience of living in another country have a similar interest.

In short, I believe that for a video game to successfully transmit a country's culture to another, a well made localization process needs to be implemented, and planned early on. The demo's localization process will take the Yakuza's approach, and do a partial localization by translating the game content into english, with the objective of leaving the game's experience as close as possible to the original culture, while being easily understood by others. In other words, the names of the mini-games, "Corrida de Cântaros", "Jogo da Malha" e "Corrida de Sacos", won't be translated into English, and will be left in their original language. In addition, names of certain elements like the cântaro, xisto and malha, will retain their Portuguese names.

4.

Implementation

In this chapter I will explain the implementation process in order to develop the demo. Here I will go into detail about every reason behind each decision, each step and strategy of the learning process, every difficulty and solution found, and also every time got stuck into “development hell”. This term refers to the long and often troubled process of developing a project, in this case a video game.

In order to develop a video game demo I had to choose a suitable game engine. Developing a demo for a video game is very time consuming, and the tool chosen heavily affects the development and learning time needed. At the time my only experience in making games came from using Unity and Processing, both of which I chose to avoid using. Unity in my opinion is awkward to use, I find its UI not very user friendly, while Processing, despite being the language I have more experience with, isn’t a game engine, so I would have to hard code everything. But the main reason for me not choosing either one of them, is because I wanted to take this opportunity to try and learn something new. Ultimately, the best tool I can choose is the one that suits my needs, skills and comfort level the best. After some time researching alternative tools and engines, I chose to learn Godot from the ground up, and use it to develop the demo.

4.1 Learning Godot

Godot is a free and open-source game engine that is designed to be lightweight and easy to use. It was developed to allow developers to create 2D and 3D games for a wide range of platforms, including desktop computers, mobile devices, and consoles. Godot is written in C++ and has a built-in scripting language called GDScript, which is similar to Python. It also has support for other programming languages, such as C# and VisualScript. Godot has a number of features that make it well-suited for game development, including a powerful physics engine, support for 2D and 3D graphics, support for a wide range of platforms, and a visual editor that makes it easy to create and manipulate game assets. It also has a robust community of developers who contribute to the project and provide support to users.

At first, I started messing with it blindly, seeing how far I could go without any help. At first glance, Godot in my opinion had better UI than Unity, not only was it more appealing it was also better organised and easier to understand. Another plus for Godot was that I didn’t have to open Visual Studio in order to edit scripts, I could easily access and edit them in Godot. Speaking of editing and coding scripts, in this phase I couldn’t type a single line, and didn’t understand anything about the language. Overall in this approach, I just learned a few basic things like collisions, Interactivity and movement.

After my first introduction to Godot, I started to search for tutorials that could teach me the basics of the engine and coding language. I then started a 36 episode video series on Youtube from the channel Godot Tutorials, that teaches the basics of GDScript, the "GDScript Fundamentals Tutorial Series". After Concluding this series I jumped into another series from the same channel, the "Godot Basic Tutorial Series", with a whopping 79 episodes. In addition I also saw the channel's series "Basic of Design Principles in Godot". Overall, this theoretical approach to learning the engine, despite being good quality material, and taking notes, It left me feeling overloaded, and still not being able to grasp both the engine and the scripting language to a level I could be satisfied with, and was beginning to enter developing hell again. Furthermore, I continued my research, this time with the objective to discover what was the expected Godot learning curve. After a while I came across a video from the Youtube channel Branno, called "Godot: How to transition from a Beginner to a Novice", uploaded on 9 September 2021. This particular video helped me get back on track of the project, and re-set my goals. It made me realise I couldn't master the engine during this project's planned development window, as to do so It would take me months to a year to get a solid grasp. And also, that it's ok to lower the bar when it comes to objectives, as per norm no one can develop a good game from scratch in their first attempt, due to game design having so many areas with different expertises to master.

My next step was to finally practise with the engine itself, following the previous advice from the video mentioned, I started to develop games following a tutorial series, of how to make X game. As it happens, by developing games and actually practising using the engine, my grasp with Godot was improving significantly compared to my previous approach of theoretical learning. In particular, when I developed a recreation of the 2013 mobile game hit, Flappy Bird, following a tutorial series from the Youtube channel Kaan Alpar. This example helped me understand and make various features and concepts present in video games, these being: saving scores as highscores, and then displaying them; spawners; the basics of mobile game development; game start conditions; game over conditions; sprite animations; deeper understanding about how GDScript, scenes, nodes and node trees work; etc.

After practising with examples, I began to build my demo. I started developing the three mini games I had in mind at the same time, "Corrida de Cântaros", " Jogo da Malha" and "Corrida de Sacos". In this early state, each mini game began as a crude prototype, using the Godot icon as a sprite for the visuals, my only objective in this phase was to test and develop the basic controls and gameplay of each mini game.

In figure 41, I tried to create a prototype for the "Corrida de Cântaros", where using the mouse I try to emulate touch controls, in order to move the player character, represented by the bigger squared element, while balancing the capsule-like element above it. In this early prototype I was already hitting some problems with the physics and the controls, despite this It still gave me a good idea how the game would play out.

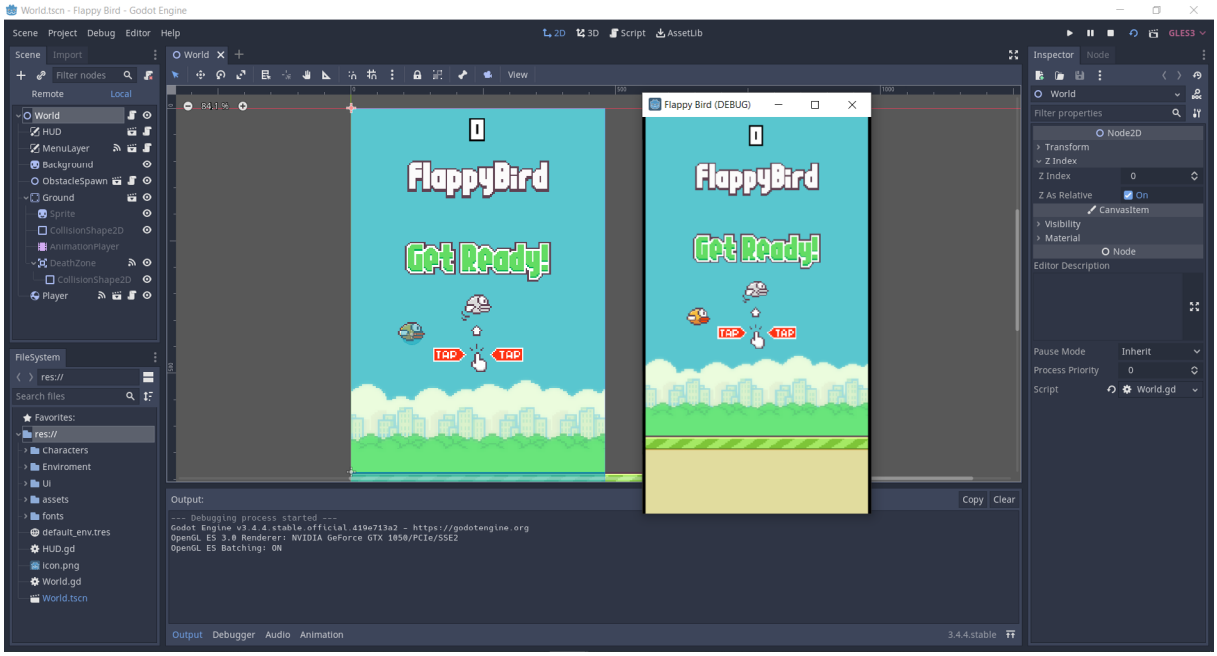


Figure 40: Recreated Flappy Bird running in Godot.

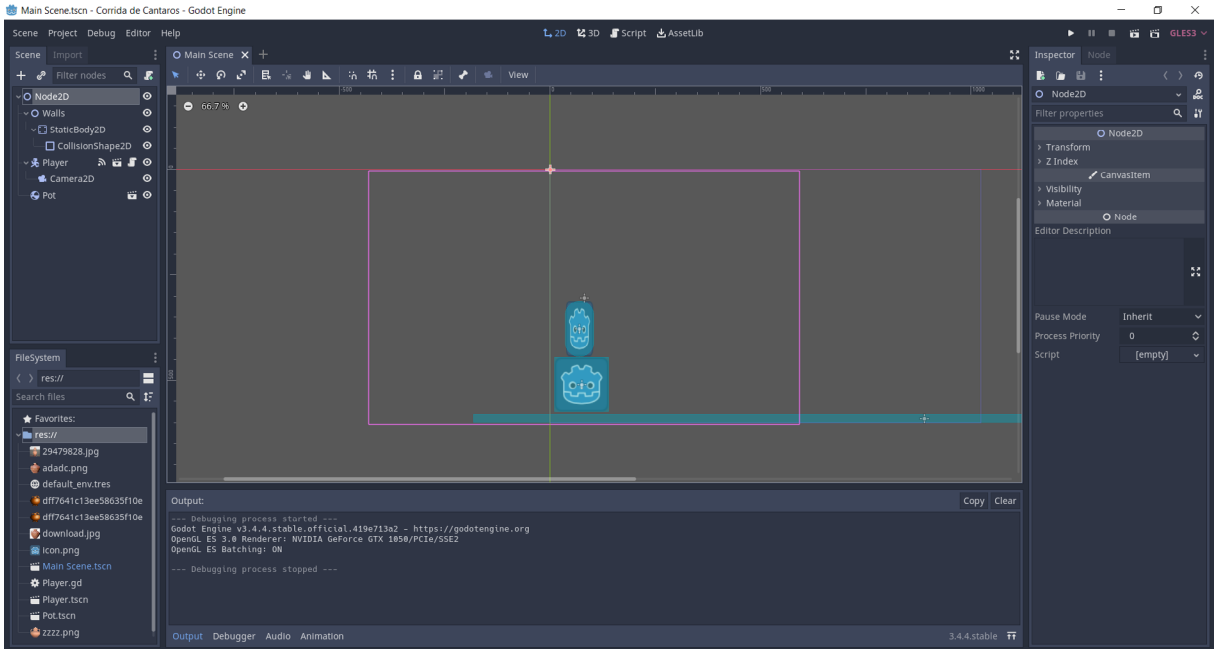


Figure 41: “Corrida de Cântaros” first version, testing key controls.

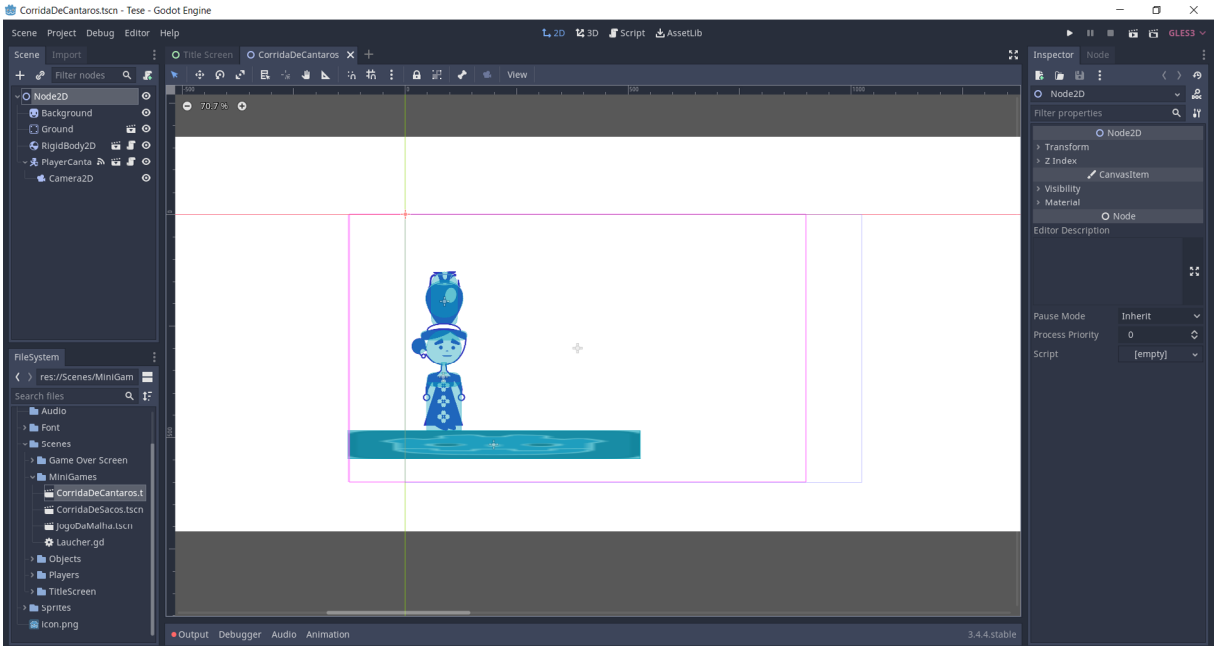


Figure 42: “Corrida de Cântaros” improved version, testing mouse controls.

The next game I started implementing was the “Corrida de Sacos”, here I focused again on developing the game’s controls. For these I experimented with two approaches, the first one used controls similar to the mobile game Angry Birds, where the player could sling the placeholder square forward. The second method was that by tapping the player character the placeholder square would jump forward, however this approach was a bit buggy and unstable at this time.

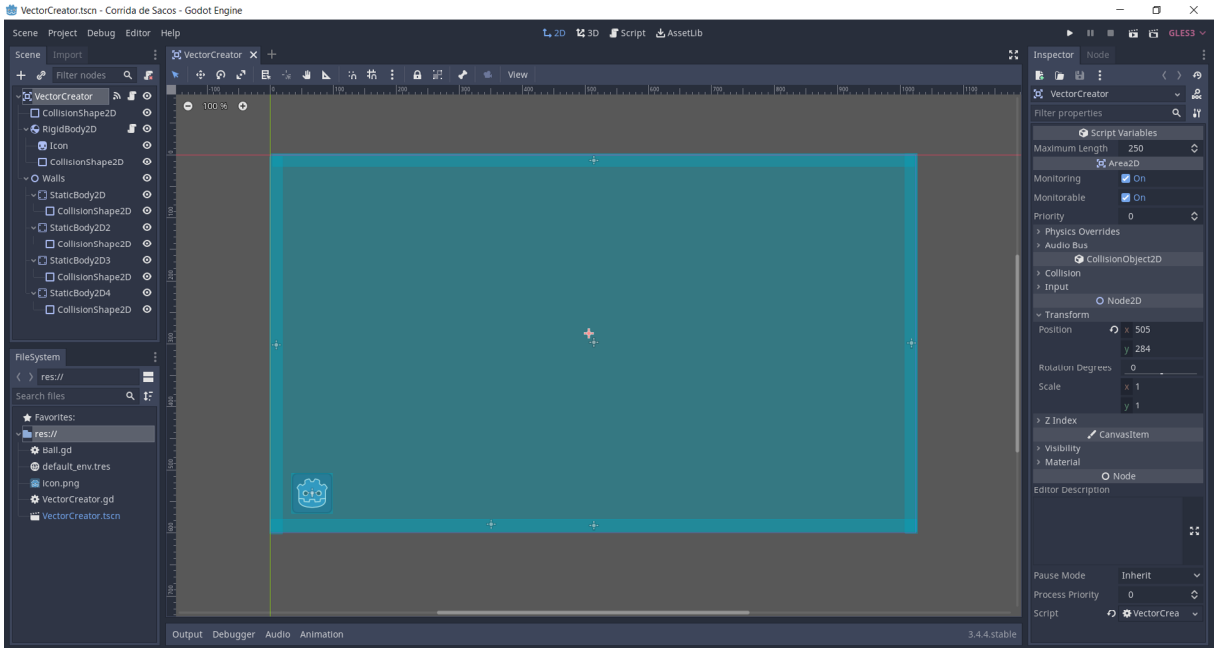


Figure 43: “Corrida de Sacos” first version, testing slingshot controls.

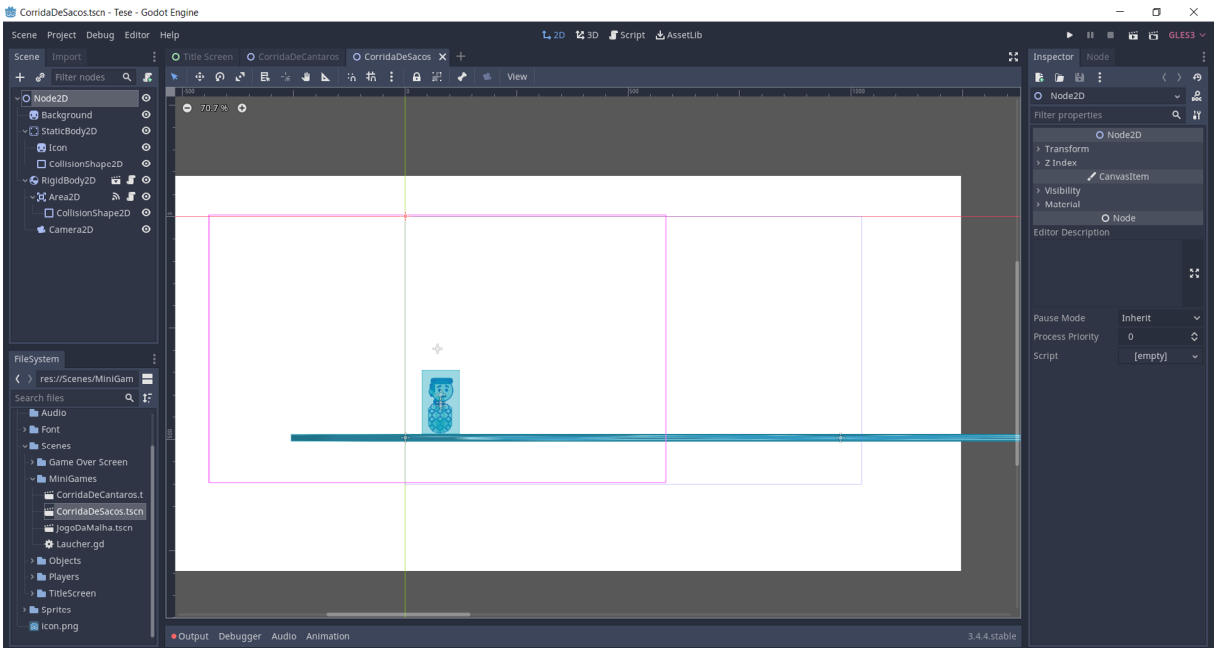


Figure 44: “Corrida de Sacos” improved version, testing tapping controls.

Finally I implemented the “Jogo da Malha”, here I used the Angry Birds type of controls I used for the previous mini game. Which worked fine, and by itself was playable at least. Despite this, I felt that these types of controls weren’t good enough to represent this popular game in a digital environment, I felt that the controls needed to be more physical. As such I came up with the idea of using the mouse to pick up the malha and use its movement to throw it. I then tried this idea in Godot, picking up an object and dropping it was working fine, but I couldn’t give it momentum, even if I moved the object in game representing the malha, it wouldn’t fly off when I stopped holding the mouse, on the contrary it would just drop to the ground.

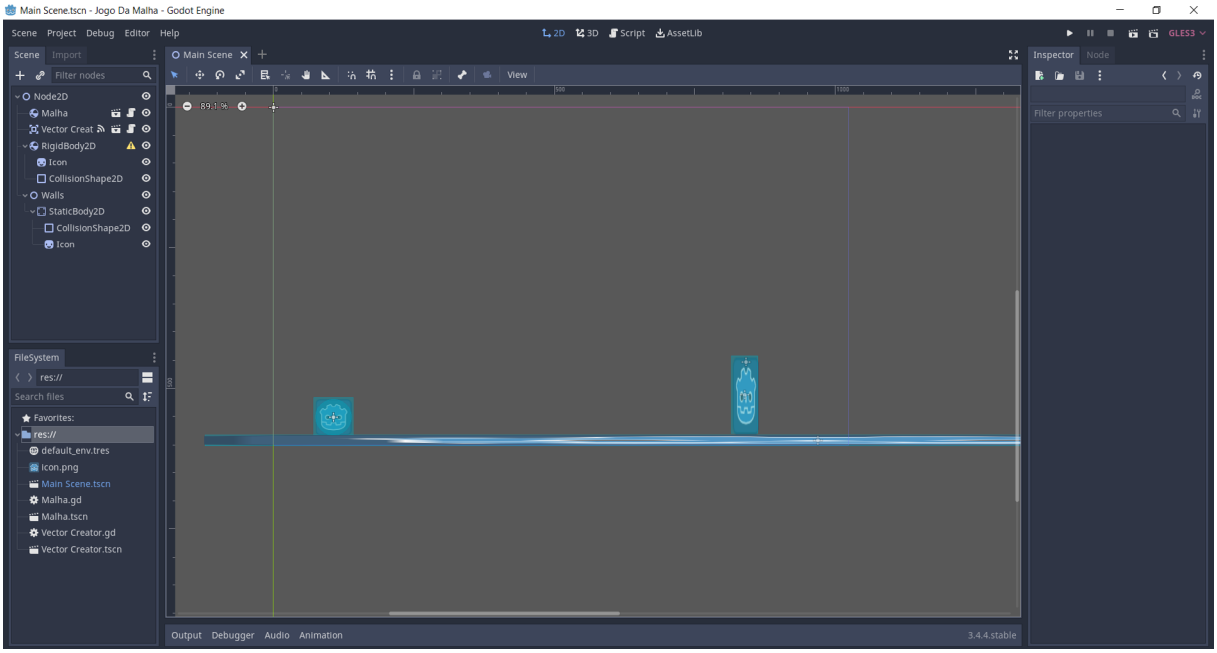


Figure 45: “Jogo da Malha” first version, testing slingshot controls.

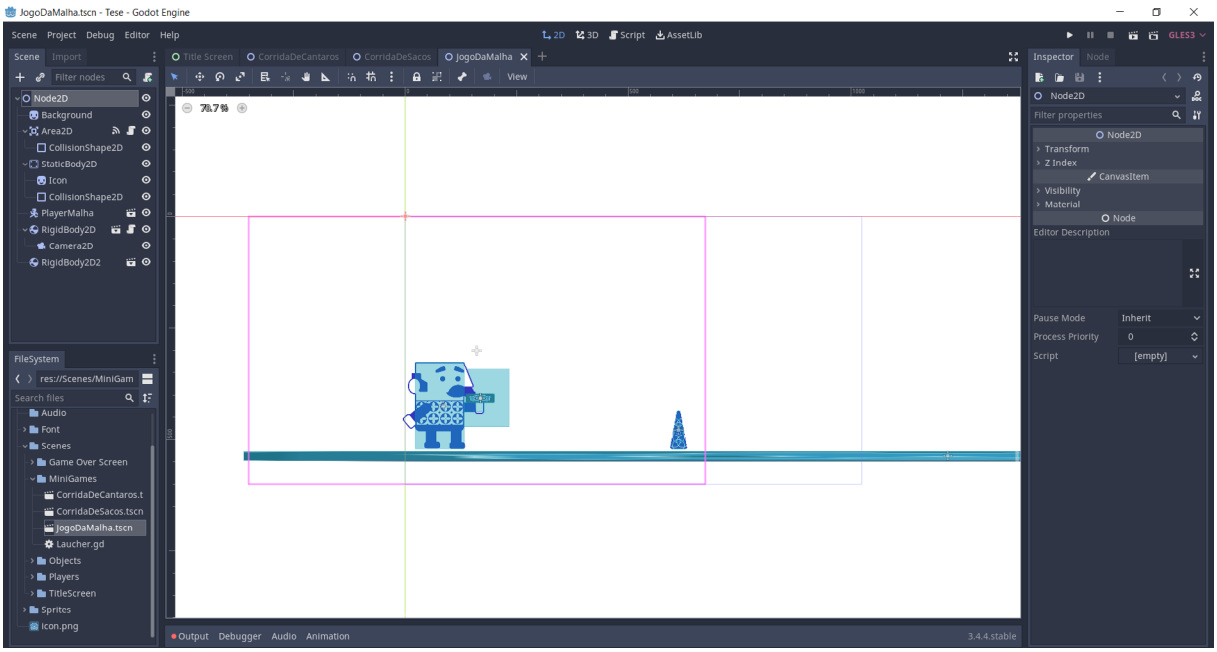


Figure 46: "Jogo da Malha" improved version.

In spite of making progress in the demos development, I was hitting a lot of walls in the implementation part of the project. Because of this, when I hit a wall in a particular element of a mini game, I would switch to develop another mini game, and if I hit another wall I would switch again or start working on different stuff like the artstyle or start implementing UI. This cycle kept repeating itself, and as a consequence, I wasn't achieving much progress with this approach. To counter this, I chose to focus on developing one mini game first, after the first one is done I would move to the next, and so one. This approach would ensure that at the end of the project I would still at least have one functional mini game to test.

4.2 Corrida de Cântaros

The mini game I chose to prioritise development was "Corrida de Cântaros". The reason why, is because in my opinion, it seemed more interesting and fun compared to "Corrida de Sacos", and it seemed like a more refreshing idea compared to a digitalization of the "Jogo da Malha". At this point I decided to restart the implementation process from scratch, and focused solely on developing this single mini game. This phase wasn't smooth either, and had a lot of ups and downs too, still having my focus on this part of the project only helped me get through most of the development problems.

The first step I took was to implement what I already knew the best, and that was to add elements like the player character and the pitcher, while giving them gravity, collisions with each other and the place-holder ground, which was easily implemented. Next I focused myself on the player movement, here I succeeded in using the mouse to emulate touch controls in order to move the player character. However, I could move it in any axis direction, which wasn't what I intended. What I wanted for the movement was for the player to only be able to move through the X axis, to either left or right, in order to progress further while balancing the pitcher on top. Because I still wasn't grasping the coding language I wasn't able to fix it at the moment, so I used arrow key controls to move it left or right for the time being. After that, I implemented the camera, in order for it to follow the player, and also smoothed its movement.

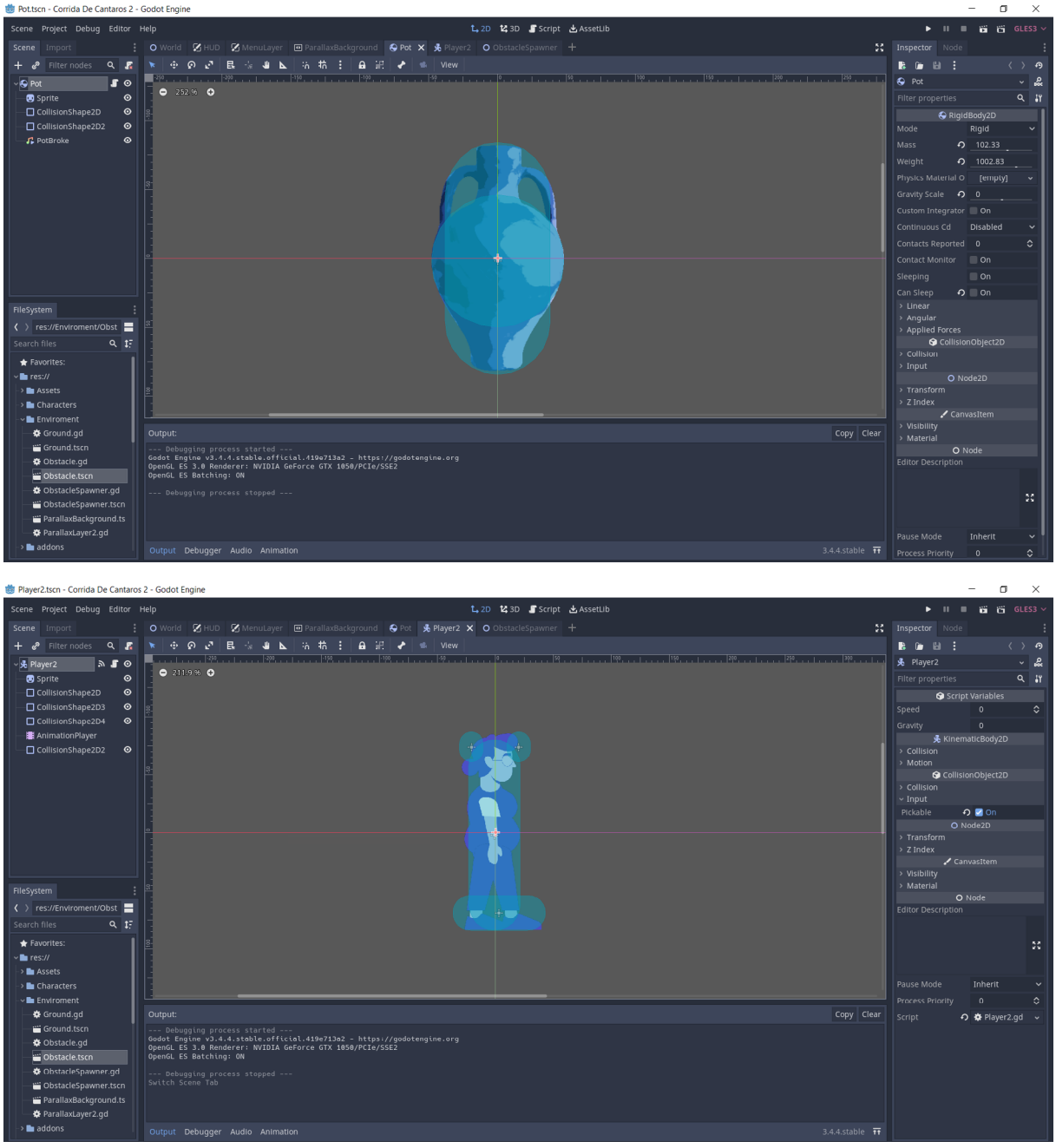


Figure 47: Final result of the "cântaro" and player character elements.

4.2.1 Generative scenario

I also implemented a Parallax Background, which is a technique that moves background images at a slower rate than the foreground images, resulting in the illusion of dimension and depth, which in turn makes it seem that the background is further away than the foreground. The Parallax Background I implemented has four layers, the first layer is a solid image representing the sky, the next layer is moving automatically during the course of the game, and represents the clouds moving slowly in the sky, the third layer represents the furthest visible elements like mountains or buildings and the last layer is the closest elements visible to the player, like nearby trees, hills or buildings. The reason I decided to develop a Parallax background was because It gave the background a more dynamic feel, and I also had hopes that it wouldn't feel repetitive for the player, to be playing in a game with an endless background.

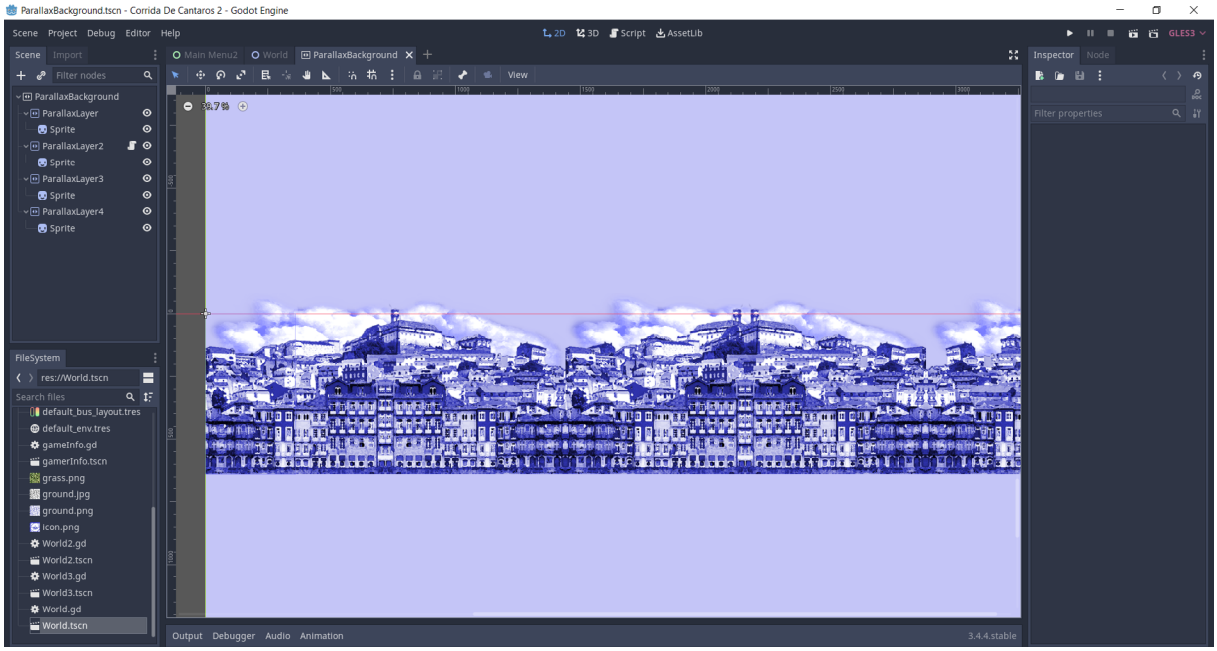


Figure 48: Final result of the Parallax Background.

With an endless background implemented, the next step for the project was to implement an endless ground. Taking some tips from tutorials about making endless runner types of games, I easily implemented an endless ground that continued to add ground in front of the player. However, only adding flat terrain in front of the player seemed boring, and I felt that I needed to improve how the ground was generated. As a result, I decided to procedurally generate uneven terrain, by following and learning from the Youtube video named "Procedural Generation in Godot Part 5: Infinite 2D Terrain", from the channel KidsCanCode. Here I adapted what I learned, and created a terrain that procedurally generated different

sized hills in front of the players location. With this new addition, the challenge of balancing the pitcher on top of the player character's head became a lot more interesting and challenging.

After developing the game's terrain, I moved to implement the interaction between it and the pitcher. Besides the pitcher colliding with the ground, I wanted this collision to use Godot's signal system to create a game over condition. Using similar logic used in my Flappy Bird recreation, I implemented it using an Area2D to signal the game over. However, a problem appeared, the Area2D in order to work properly needed to have its hitbox generated together with the terrain. So after tinkering with the terrain code, I made the two generate together. Now when the pitcher falls, in one of the hills of the terrain it immediately signals game over.

Using concepts from previous exercises, I started working on adding a hud that displayed the current score, in this mini game the score equals the distance the player travelled. This value was then shown again at the game over menu, and if it was a value bigger than the previous score, it was saved on the game's data. The highscore feature, as I call it, was one of the features with the most bugs and problems during development, for example, there was a time that the game wouldn't save scores bigger than 9. In spite of difficulties and bugs, the feature is now working properly.

4.2.2 Improving Movement

During this time, I got back to trying to improve the player movement from the current movement using arrow keys to one with the mouse simulating touch control. As it happens, at this point of the project I started to get a better grasp on the GDScript, so I finally fixed the player movement to use the mouse's X axis to move to either left or right. This new form of movement was working as intended, however it was bugging when colliding with the terrain. Upon further inspection of this bug, I came to the conclusion that the reason it was happening was because while moving the player character with the mouse, I was changing its position on the screen and not actually moving it forward. The solution to this problem was to change the current code and mix some of the code that moved the player character with arrow keys, this new code used the mouse position to give a speed value to the player character, moving him forward without bugging with the terrain.

The final parts of the implementation process for this mini game were dedicated to implementing assets like sprites and sound, while also animating the player character's sprite. It was also an extensive process of bug fixing, polishing the movement and physics and also testing if the game was fun. My thoughts after this process were that the game was working as intended, and was fun at first. However, it became apparent that if the player could achieve a certain speed of movement, it entered a state of

cruising speed, where the only way to lose was to stop moving and let the pitcher fall.

To counter this, I came up with the idea of spawning random obstacles above the player that fell in the direction of the ground. These obstacles ended up being the falling codfish present in the final product. And while they made it to the final cut, they were in an unfinished state. For context, the codfish uses a Node2D as the spawner, this node uses a timer node to space out the spawned elements, the elements it spawns are RigidBody2D, and these fall with gravity. The spawner node was then added to the main scene, and coded its positionX to follow the player's PositionX. Until this point everything was working as intended, only the obstacles were accumulating and cluttering the ground, so I added a condition that deleted them after falling a certain distance. With the addition of this condition I hoped the obstacle spawner would work normally, but for some reason when the game played the obstacles weren't being affected by gravity. To debug this I checked every scene, and discovered that if the obstacle spawner's position wasn't being controlled by the Player's PositionX the gravity came back and the obstacles were deleted as intended. I couldn't find a solution for this bug, so for testing purposes I made it move on its own, this wasn't meant to be a solution, only a way for the test users to get an experience of the obstacles. However, the obstacle spawner moving at different speeds than the player meant that it could go on ahead of the player, and that the player could outrun it after a certain point.

At this point, I came across a crossroad, where I had two paths to follow in order to complete the project. One of them was that I should focus on this mini game alone and keep polishing it further. While the other path was to stick to the original plan of developing three mini games. I ended up choosing the latter one, as it was the one I originally planned and intended, but also gave me more content to test. Despite choosing to focus on developing three mini-games, I now mostly regret my decision, and would have preferred to only have focused on this mini game, as it would have freed me from more implementation, and given myself more time to better explore and develop other dimensions of game design, namely, the sound design, UI design, art style, animation, etc.

The final version of this mini game plays in the following way, the game starts when the player first taps the screen, turning the gravity on for both the pitcher and the player character. Using touch controls, the player can move his character to either left or right while balancing the pitcher on top of his head. While moving through a procedurally generated hilly terrain, the player has to avoid falling obstacles, represented by codfishes. If the player lets the pitcher fall, a game over screen becomes visible displaying the current score, the distance travelled and the current high score. The objective of this mini game is to balance the pitcher and move for as long as possible in order to achieve a record distance.

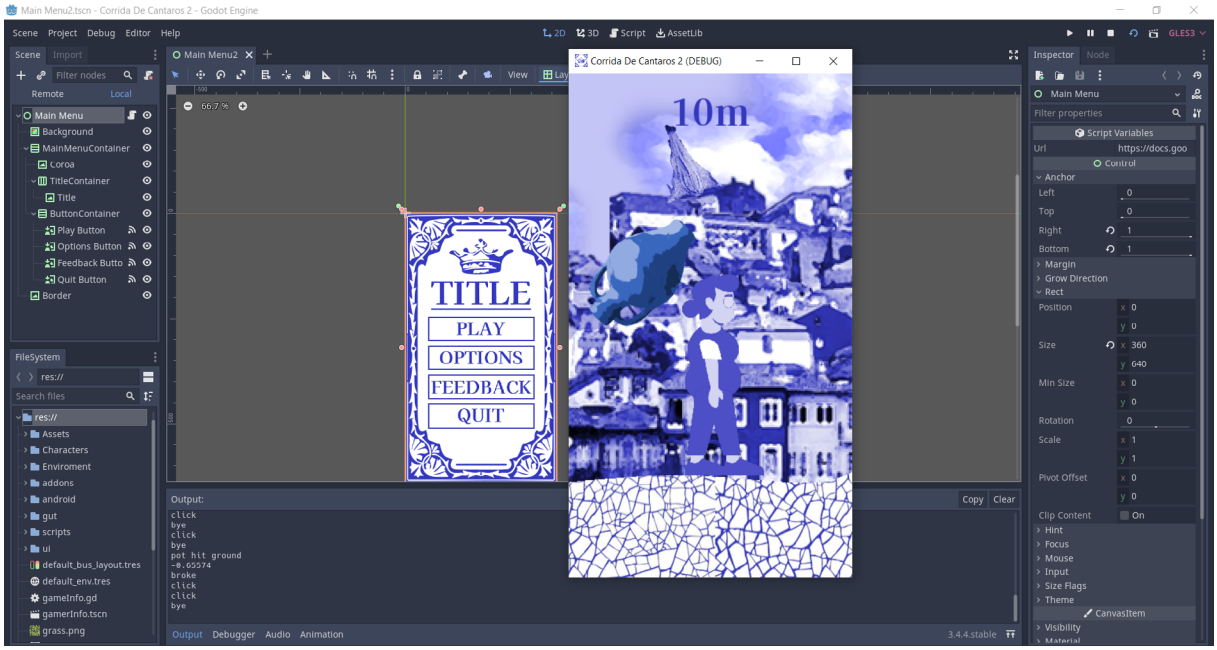


Figure 49: Final version of the "Corrida de Cântaros" minigame.

4.3 Jogo da Malha

This was the second mini game I decided to implement, here I continued from where I left from, and began working again on the malha keeping the momentum from the mouse movement when thrown. After trying for a while I found a way to use the mouse position and movement to add speed to the Rigid-Body2D representing the malha. After developing the mini game controls, I coded the camera to follow the malha after being thrown, so the player can see where it lands. I also implemented an hud that tells the player the distance between the xisto and the malha, that inicially displays 1500 cm, this value was chosen on purpose due to the game's rules, stating that the distance between the player's and the xisto should be 15 meters.

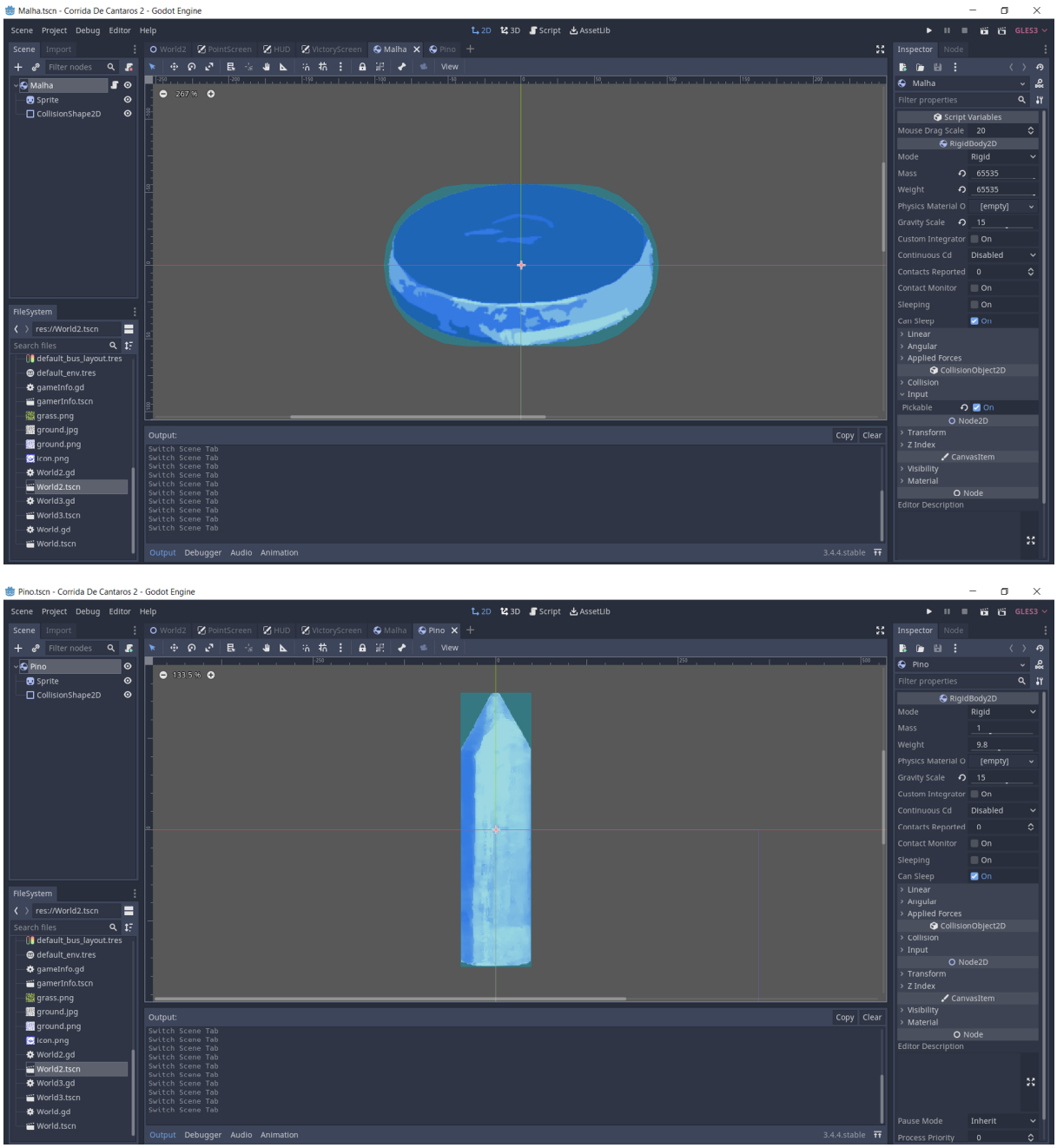


Figure 60: Final result of the “malha” and “xisto” elements.

With the basic elements implemented, I started wondering how more than one person could play the game, after all this game is supposed to be played by two teams with two players, each team competing against another. From my experience, implementing multiplayer is a hassle to do, and at this point of the project I didn’t believe I had the time and skill to set it up, especially if I was planning on testing on mobile with various different phones. Another aspect I thought to implement was a turn system, but because multiplayer wasn’t going to be added I felt it wasn’t necessary. My approach to make this game feel like a multiplayer, was to let the players play on different phones while being near each other, while manually scoring the points on each team’s score board, on a scoreboard that appeared after each throw. The concept behind this idea was because, in the traditional “Jogo da Malha”, players from both teams

checked the distance the malha threw to see which got closer to the xisto and then, gave 3 points to the one that got closer.

The final version of this game worked in the following way, the player could pick up the malha and throw it to the right side of the screen, the camera then follows the malha, to where it lands. When the RigidBody2D that represents the malha lands on the Area2D present in the ground, a timer starts, after one second it times out and fires a signal that makes the score screen visible. When this screen opens, the players compare the distance between their thrown malha and the xisto to that of their opponents, the one that got closer gets 3 points, if the xisto gets knocked over its 6 points. After this, the players keep throwing until one team achieves a score of 30 points.

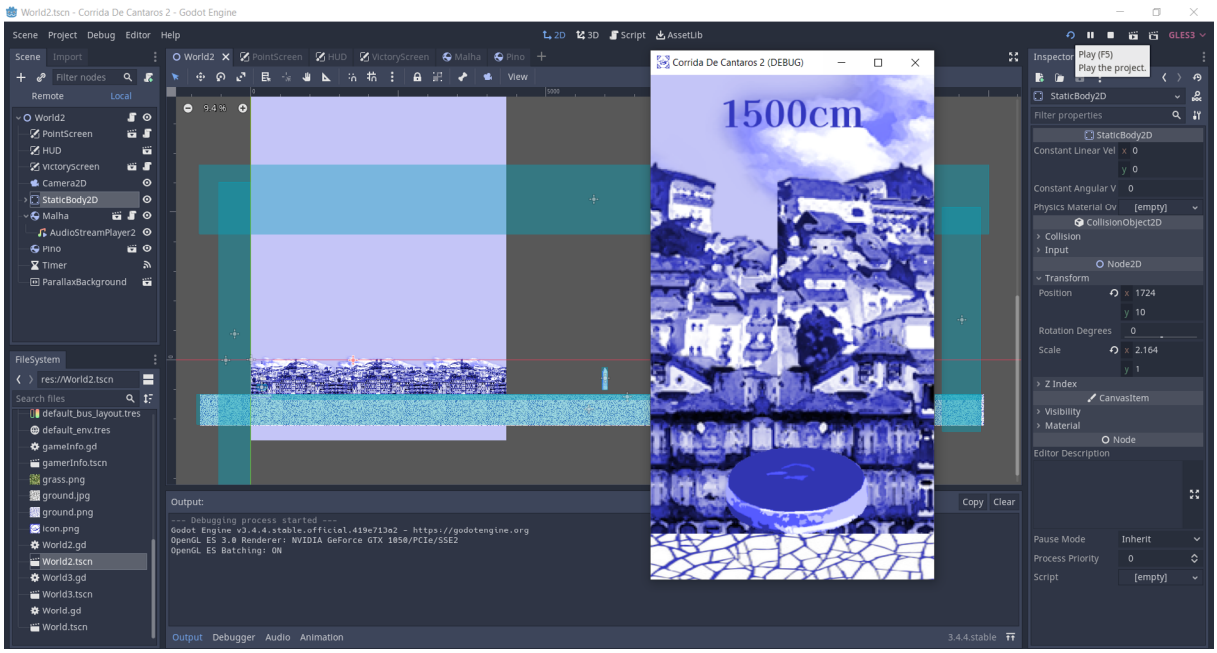


Figure 61: Final result of the “cântaro” and player character elements.

4.4 Corrida de Sacos

The final promised mini game was the “Corrida de Sacos”, at this point of the project I could easily set up the basics of the mini game. But despite being easy I was already entering a state of the project where I needed to wrap up development and begin testing, so some aspects of this mini game were left a bit rough and not as thoroughly tested as the previous ones.

The final version of the mini game starts when the player taps the screen for the first time, the gravity turns on and the timer starts, the player then keeps tapping the screen for the character to move, heavy taps make the character jump higher and longer. While jumping across the map an uneven hilly terrain is procedurally generated in front of the player. After travelling a certain distance, a sprite of two squared flags appears symbolising the location of the finnish line. If the player character reaches it, the KinnematicBody2D representing it, collides with the finish line’s Area2D, that in turn fires a signal that makes the cronometer stop, and an after menu screen becomes available, displaying the achieved time score and the current record. The objective of this game is to tap the player character as fast as possible in order to arrive at the finish line in the fastest time possible.

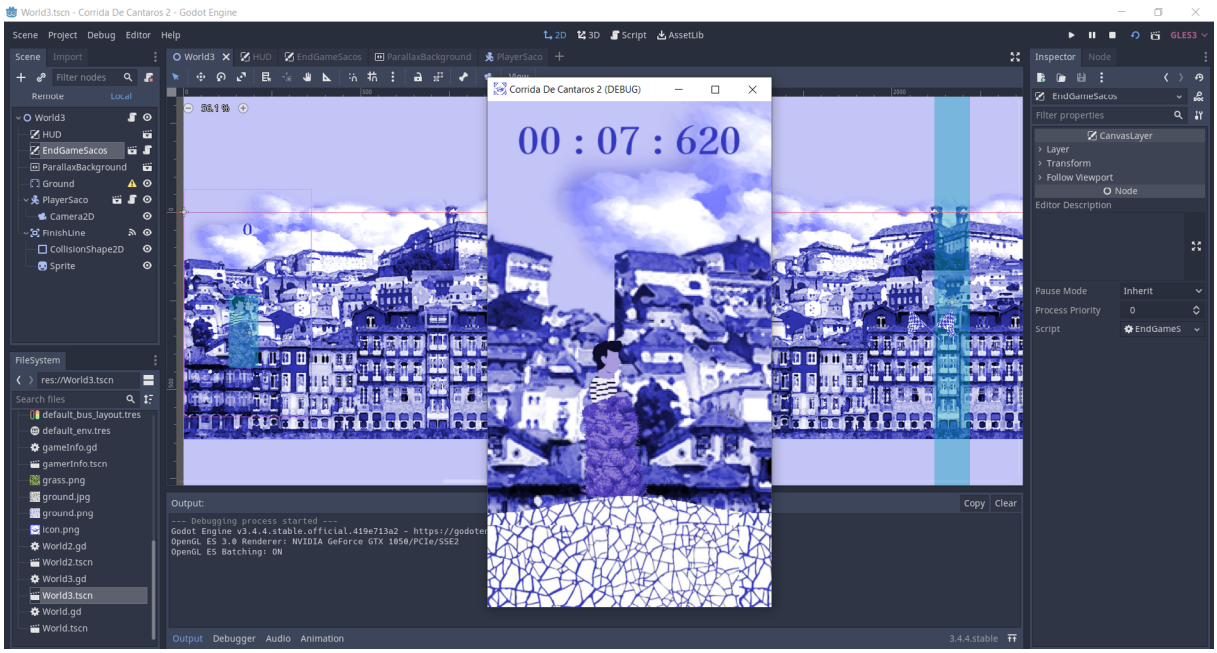


Figure 62: “Corrida de Sacos” final version.

4.5 User Interface

Implementing UI elements on Godot was an arduous task to do, as the organisation of the node tree elements is key for a user interface that holds itself together during testing. Also every UI element needed to be double checked to see if it was responsive with different screen sizes, or if it was blocking mouse inputs for other elements.

In order to organise any UI element I had to develop a really solid grasp on how to use VBox (vertical box) and HBox (horizontal box) nodes. These containers are used to layout and organise multiple child nodes within a single parent node. A VBox, arranges its children nodes vertically from top to bottom. An HBox, arranges its children nodes horizontally from left to right. Both the VBox and HBox containers have properties that allow the control of the alignment of child nodes within the container, as well of the spacing between child nodes.

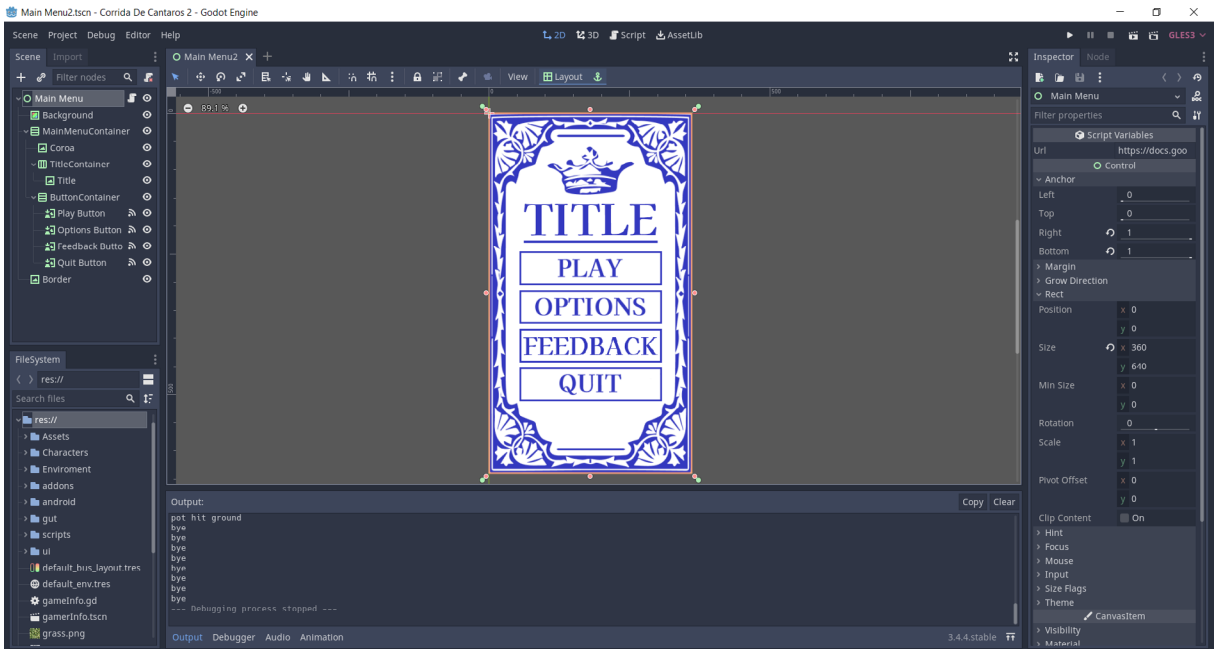


Figure 63: Main menu screen final version.

5.

Playtesting

With the prototype finally reaching a state that was acceptable and stable to test and ready to be played, the last phase of the project begins, testing and gathering results. Testing is an important process in any development process, as it helps ensure that a piece of software is working correctly and meets the requirements specified for it. The following points are several reasons where I explain the importance of testing for this project, and what I will be trying to achieve with this process:

Quality Assurance

Testing helps identify defects, bugs, and other issues in the software, which can then be patched out in later versions. This helps improve the overall quality of the video game and ensures that it performs as expected.

User Satisfaction

If the game is not tested properly, it may have unexpected behaviours or errors that can frustrate users. In addition, the overall gaming experience of the prototype might not be fun or interesting for the player. By testing the software thoroughly, I can ensure that users have a positive experience with the game.

Risk Reduction

Proper testing can help reduce the risk of software failure. The game shouldn't crash while being used.

Continuous Improvement

Testing can help understand how the game is being played and identify areas for improvement. This can help to continually improve the game and make it more valuable for the players.

5.1 Evaluation Procedure

The type of tests conducted in this session were user experience (UX) tests. These are evaluations of how a person feels when interacting with a product or service. These tests are typically conducted to assess how easy or pleasant it is to use a prototype. The goal of UX testing is to identify areas for improvement in the product or service and to make the user's experience as positive as possible.

The prototype testing session was held on the 16th of December 2022, in the computer engineering department at pole 2 of the University of Coimbra. Here various students tested the prototype using one of two android phones available, or if it was possible for them to install the apk, on their own

phones. The tests were conducted under supervision, where the subjects interacted with the prototype while being guided by and trying to complete a number of tasks (table #). The first few tests were done individually, but later tests were done in pairs, where the subjects played together and competed against each other. In addition a few players installed the apk and later played the game alone without any supervision.

The way the testing phase results were recorded was through a google forms questionnaire, which could be easily accessed through a button on the main menu of the prototype named Feedback. When the players access the questionnaire, they are presented with its first part, where a short text detailing the purpose of the form, and brief description of the project and prototype. Further down, there are a number of questions with the purpose of collecting the player's basic personal information and knowledge, see table number #.

On the second part of the form, twelve tasks with the purpose of guiding the test users are displayed, see table number #. Below them a number of linear scale questions, with the answers ranging from zero to five and also short answer questions, reside with the purpose of collecting information about their overall experience while handling the prototype, see tables below, numbers # and #.

In this section, I will reveal and discuss the results and errors collected from the testing session. These were then gathered and organised in tables containing the full list of errors, and individual results which are present further down below in the appendix section of this document.

During the testing sessions various errors were recorded, some which were already known but weren't already fixed, but also new ones came to light. In the Appendix A (page #) I compiled these errors in a table that lists their ID, accompanied by a description of the error, followed by the type of error that was either categorised as a technical or usability error. Next I had a column detailing the severity of the error and urgency to fix it, represented through a linear scale going from one, low priority, to five, high priority error that needs to be fixed as soon as possible. Finally, in the last column I detail the possible solutions and course of actions to fix these errors and therefore improve the prototype.

To give a glimpse of the recorded errors, the most notable and bothersome to the user experience, seemed to come from the game's UI, in certain screens where the player needed to swipe sideways in order to reveal either more of the playable games, or to continue reading the tutorial slides. This design choice seems to be confusing for the player and inefficient, therefore being the number one concern to fix in later versions. In addition the prototype also had a lot of technical issues, but most of these didn't impact the game severely, and even made for some fun interactions during play testing. However, despite bugs being fun and all, the gaming experience would be more positive and the results more precise without them.

Task ID	Task Description
1	Open the options menu, mute and unmute the music.
2	Open the game selector.
3	Open a game's information screen.
4	Open a game's tutorial.
5	Start a Pitcher Race match.
6	Try to balance the pitcher up to 50 meters.
7	Start a match of "Jogo da Malha".
8	Throw a "malha".
9	Add points to a team's score.
10	Knock down the "xisto".
11	Play a game of Sack Race.
12	Reach the finish line before 15 seconds.

Table 3: List of the tasks used in the testing session.

Figure 64: Testing session photos.

5.2 Test Population

The first part of the form, as already said, served as a way to record the user's basic profile: their area of studies or work, and their age. As expected, most of the players present were aged between their late teens and early twenties, with a minimum of 19 and a maximum of 25, while having an average age of 21.6. Furthermore, the test subjects in the testing session studied either design & multimedia or computer engineering, while one of the players worked as a software developer. In addition, their knowledge about the subjects related to the project was also recorded. Here the test users were asked to evaluate their experience with: electronic devices, like smartphones or tablets for example; mobile games, if they are used to playing them on such devices or not; and finally their knowledge about traditional Portuguese games, games that would be expected to be played at village festivals for example. As for the results of these questions, the subjects showed great confidence about their mobile games experience and even more when it came to electronic devices. This is probably due to their area of work/ study requiring them to be knowledgeable with technology, or maybe due to their age and generation. Meanwhile, when it came to their knowledge in traditional Portuguese games, most of them responded with an average knowledge about these. Here it would have been interesting to have more diverse age groups present in the session, in order to observe if these results would change or not.

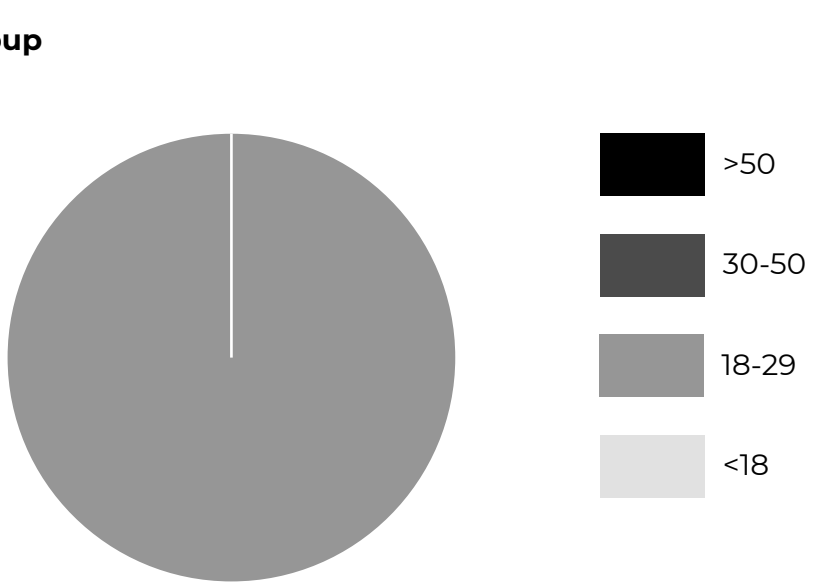


Figure 65: Distribuition of the user's age.

Area of Study/ Work

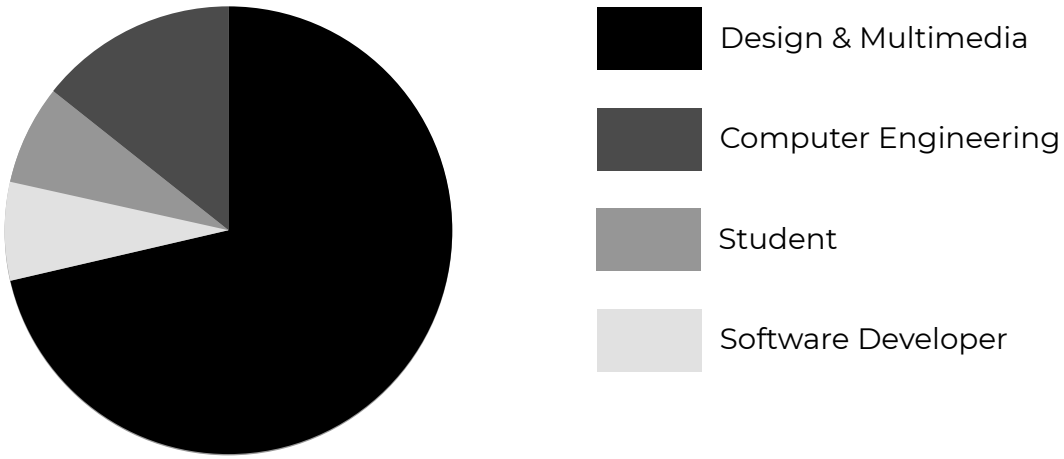


Figure 66: Distribuition of the user's Area of study/ Work

Experience with electronic devices.

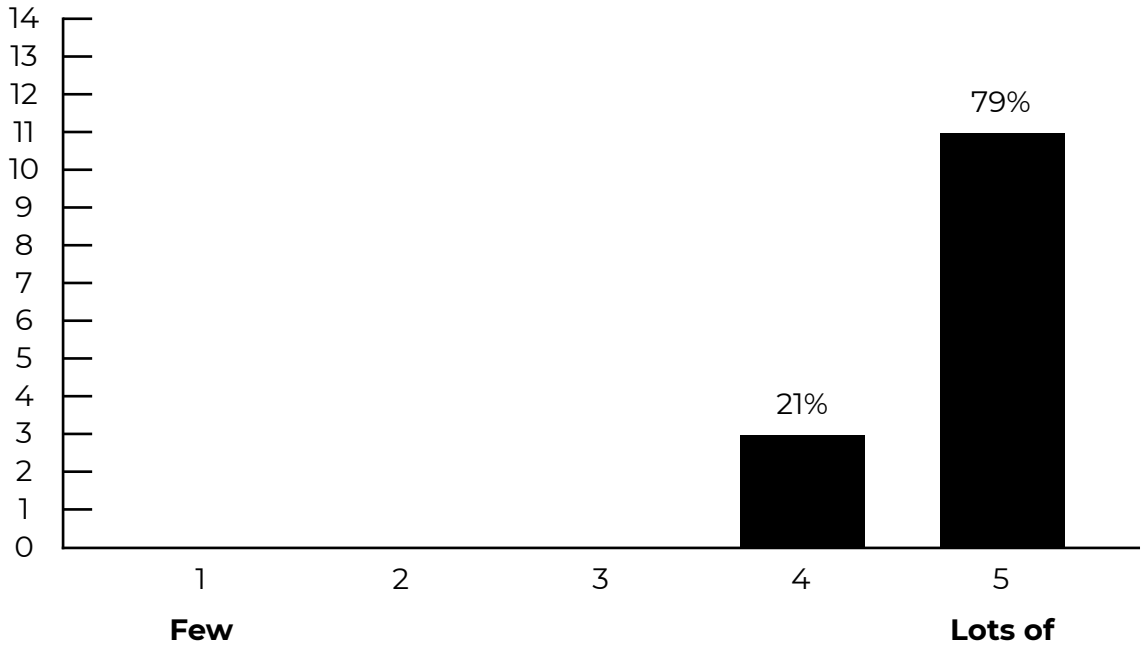


Figure 67: Distribuition of the user's experience with eletronic devices.

Experience with mobile games.

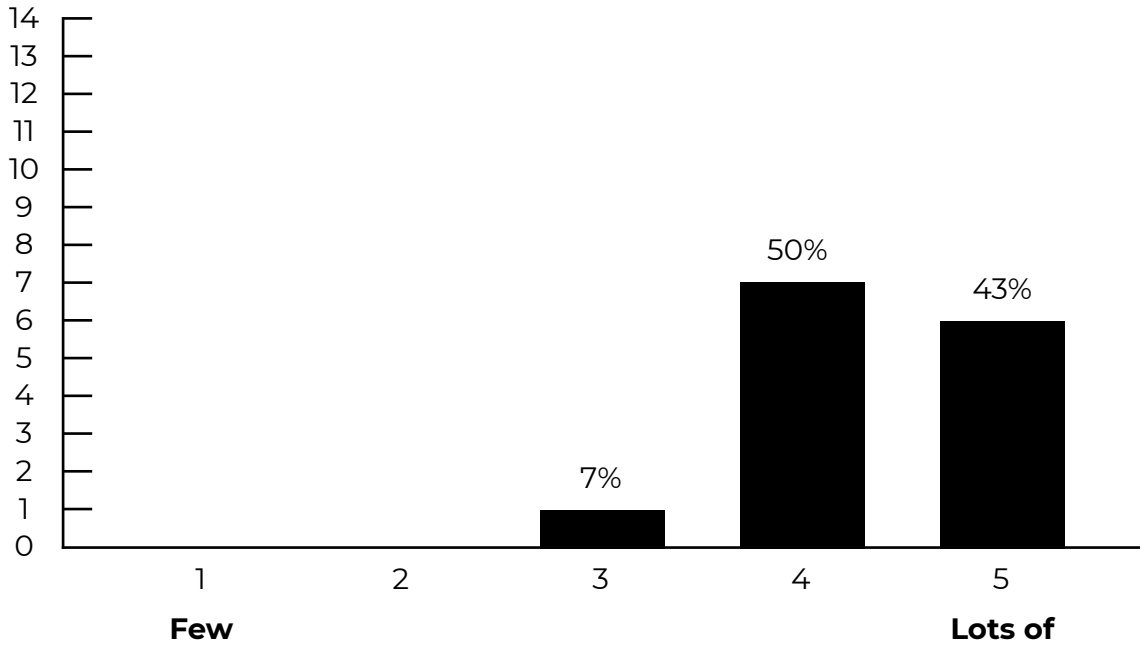


Figure 68: Distribuition of the user's experience with mobile games.

Experience with traditional Portuguese games.

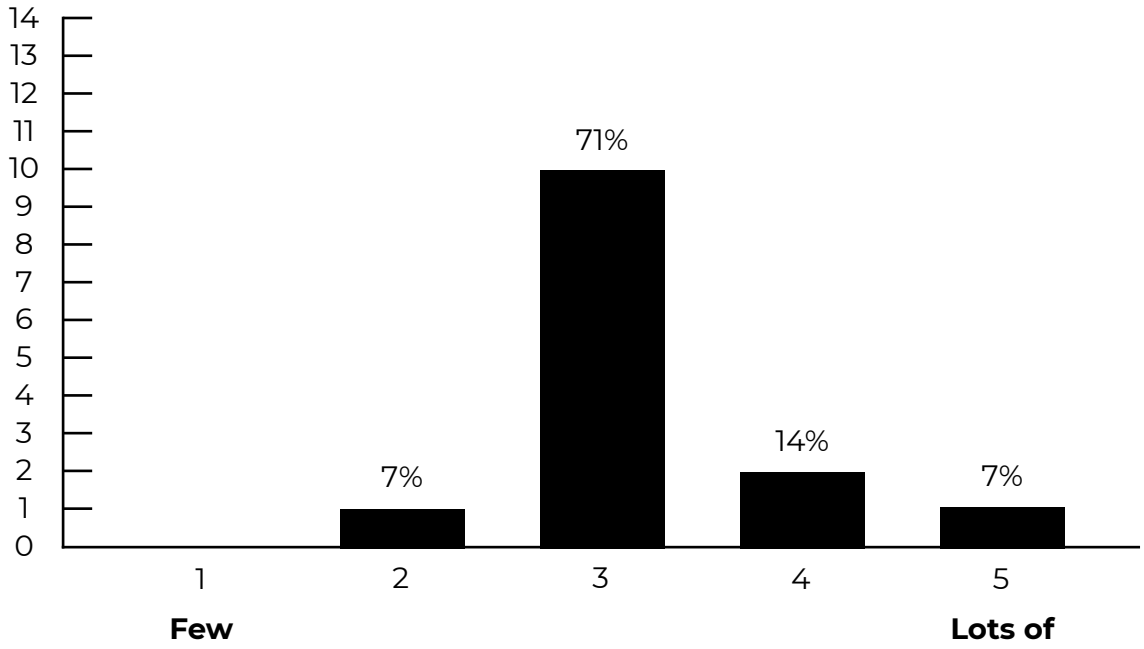


Figure 69: Distribuition of the user's experience with portuguese games.

5.3 Usability Issues

On the second part of the google form, the test users had to follow a list of tasks, these are detailed on the apendices section. These tasks helped guide the players through the prototype, in order for them to fully experience the features intended to record results.

As for a majority of these tasks, they didn't seem to be too hard for the players, as they completed them without difficulty and even answered that they didn't have much trouble doing so. However there were some aspects that confused the players while trying to complete the tasks, for example the "Game Selector Screen", due to not having any visual indicator showing it was possible to swipe to the sides in order to reveal the other playable games, players always felt surprised when they realised it.

Furthermore, tasks that consisted of gameplay challenges seemed hard for some players, which in theory should be normal, players have different types and levels of talent and learning speed. However in this case, the goals of knocking down the xisto, and achieving a best time below 15 seconds were almost impossible. The reason for this was because of these values being set after testing the prototype on a pc, while ignoring that perhaps on a mobile phone the game would behave differently. For example, swiping with the mouse on a computer, places more force on the malha making it fly farther, and easily knocking down the xisto, compared to its mobile counterpart.

As stated the game selector screen was the roughest point of the navigation through the game's interface, another reason for this, might be the design choice of using swiping to the sides in order to reveal the other games. Therefore a more traditional approach with arrow buttons to move through slides would be more comfortable for the players, as they have even stated it later. Moreover, I noticed that when players were asked to start a game in the game selector, they were a bit confused as to where they should click, but usually they find out that if they click a portrait icon on the menu they start a mini game. Finally, the tutorial screens also shared the swipe to the sides design choice, which also might have impacted the interface navigation experience.

The execution of the tasks was.

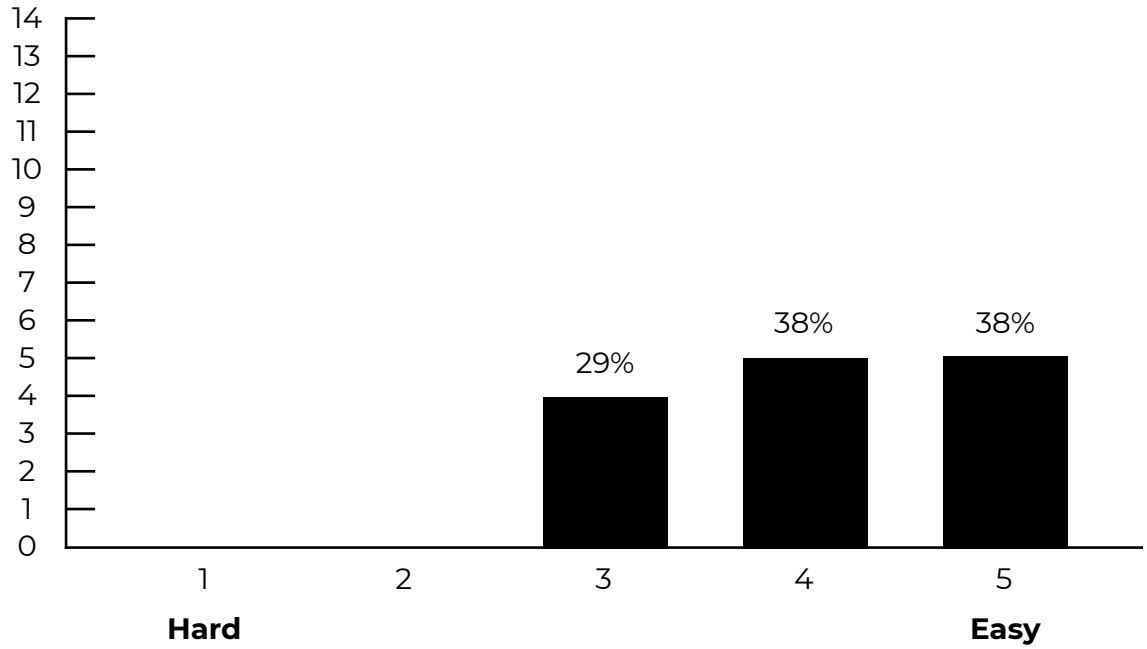


Figure 70: Distribuition of the user's experience with the tasks.

The navigation of the interface was.

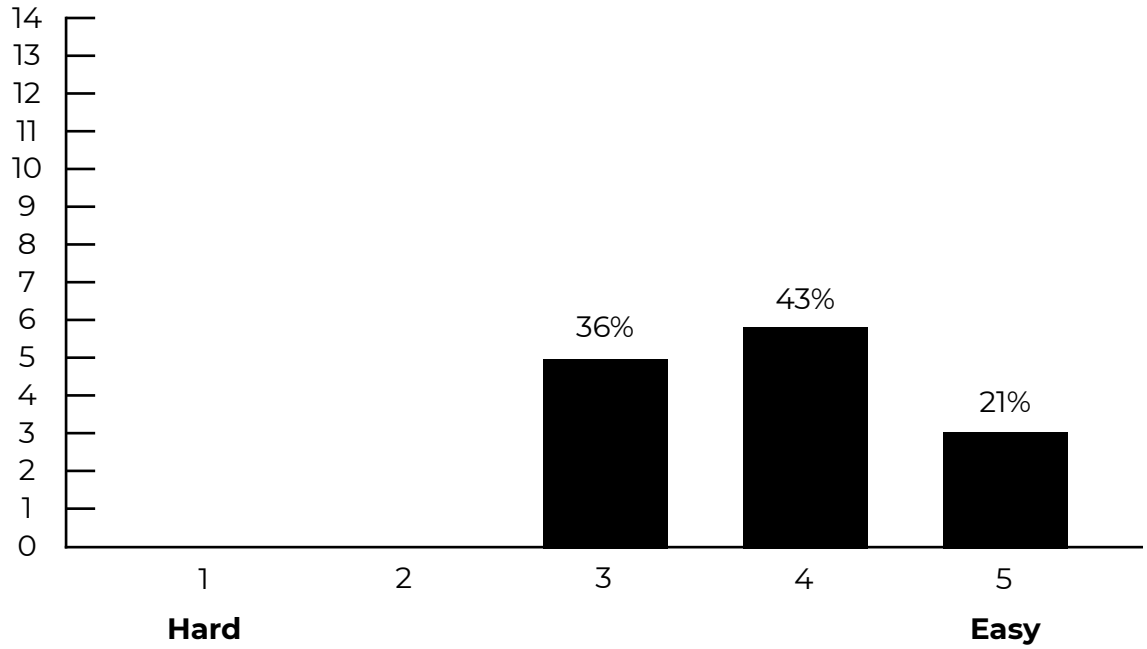


Figure 71: Distribuition of the user's experience with the interface.

From my previous game design experiences, any kind of tutorial present in game improves the player's experience, so in my opinion it should always be implemented in order to reduce player confusion. And as expected, the test subjects on the majority agree that the tutorial was useful for them to understand the game rules. In this form, the players were also questioned for their opinion on the relevance of the info cards, which had the purpose of giving some context and facts about the traditional games present on the demo. To my surprise, most players answered that these info cards had relevance in the prototype.

However, during testing I observed that players didn't seem to spend much time on these screens. The tutorial screens had a lot of visual elements and small blocks of text, so it might have been easy and fast to comprehend. But the info cards didn't share these traits, as they only consisted of a number of paragraphs detailing information that wasn't necessary to gameplay.

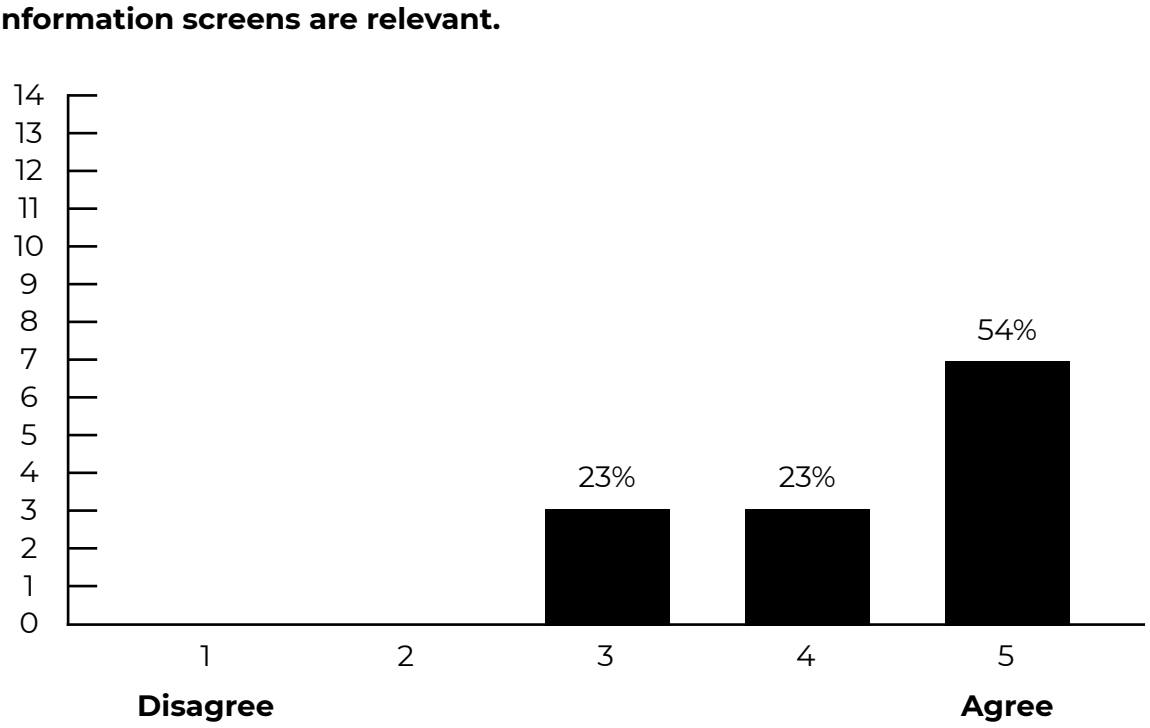


Figure 72: Distribuition of the user's opinion on the relevancy of the information screens.

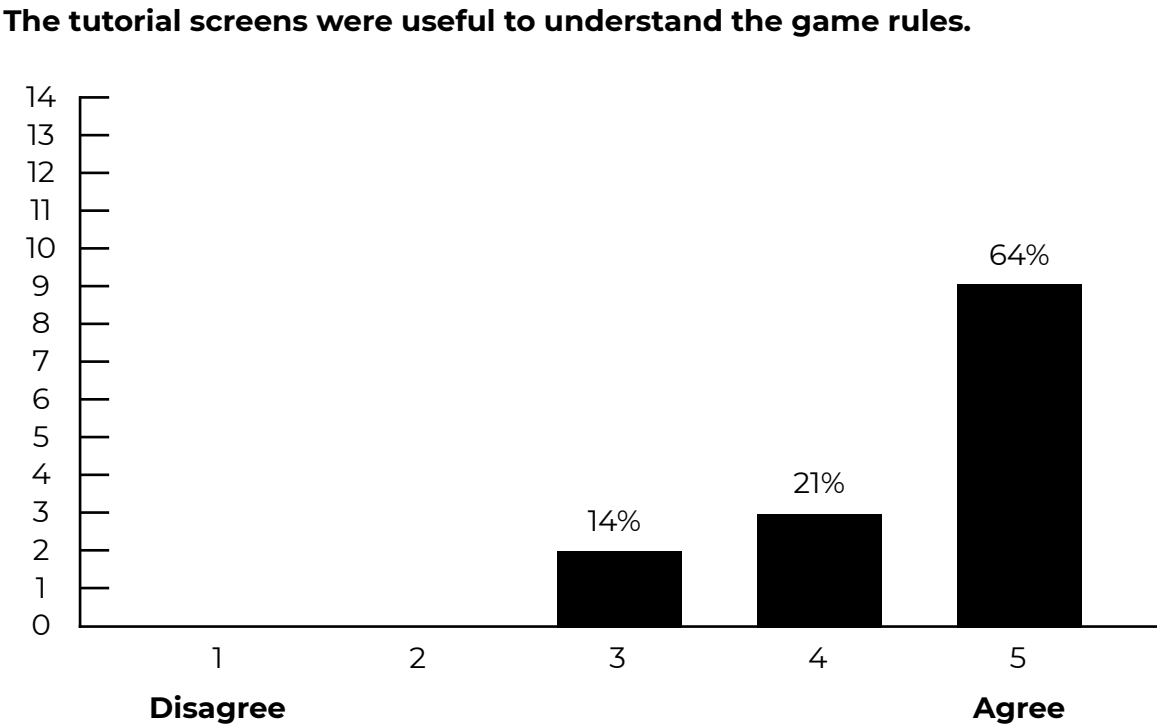


Figure 73: Distribuition of the user's opinion on the usefulness of the tutorial screens.

5.4 Artwork and Sound

The art direction of the project is another point I wanted to test, as already discussed, the visual style of the game is a make or break condition to the representation of Portuguese culture through the video game medium. Hence it's imperative to test and hopefully get positive results or if that is not the case, at least gather helpful feedback. Thankfully, the feedback on the artistic direction of the project was extremely positive, meaning that the choice to inspire the game's art style around Portuguese Azulejos was the correct course of action, but also that the current style succeeds in transmitting themes of Portuguese culture to the player and also assuring that these iconic tile work style is recognizable.

Besides agreeing that the artstyle can be identified as Portuguese inspired, I also wanted to learn if the visual direction was appealing. As seen from the results, the players agree that the interface style and the sprites for the characters and other elements present in the prototype are appealing. Personally, I'm surprised with the overall positive response on these questions, due to some parts of the UI being rough, and the current sprites being implemented as placeholders, with the intention to just give a feel of what the game would look like in a finished state.

The sound dimension wasn't as developed as the visual one, so the question about the sound direction of the game, had the intention to only confirm that it was the correct direction to follow in order to help achieve the project's objective. Which the results did confirm, as expected using music from a traditional Portuguese Guitar as background music, is an acceptable way to convey a Portuguese feel to the audience. In addition one player recommended implementing more songs in game, as the same music being played on loop was getting old for him. Finally, another test user was impressed by the implementation of dynamic sound, for example, in the "Corrida de Cântaros", if the pitcher fell and broke the right the sound would come from that side, the contrary would happen if it fell to the left side. Overall, the sound design of the game seems to be an area where the project needs to keep exploring and expanding.

The artistic direction of the project conveys themes of Portuguese culture.

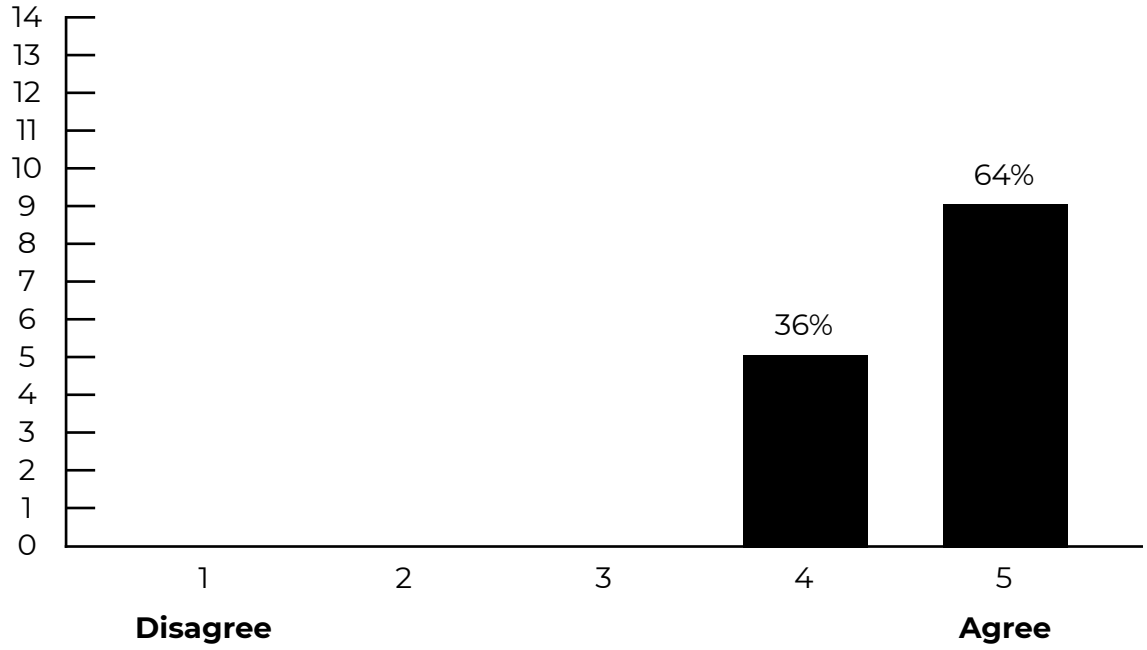


Figure 74: Distribuition of the user's opinion on the artwork's connection to Portuguese Culture.

The interface elements are appealing.

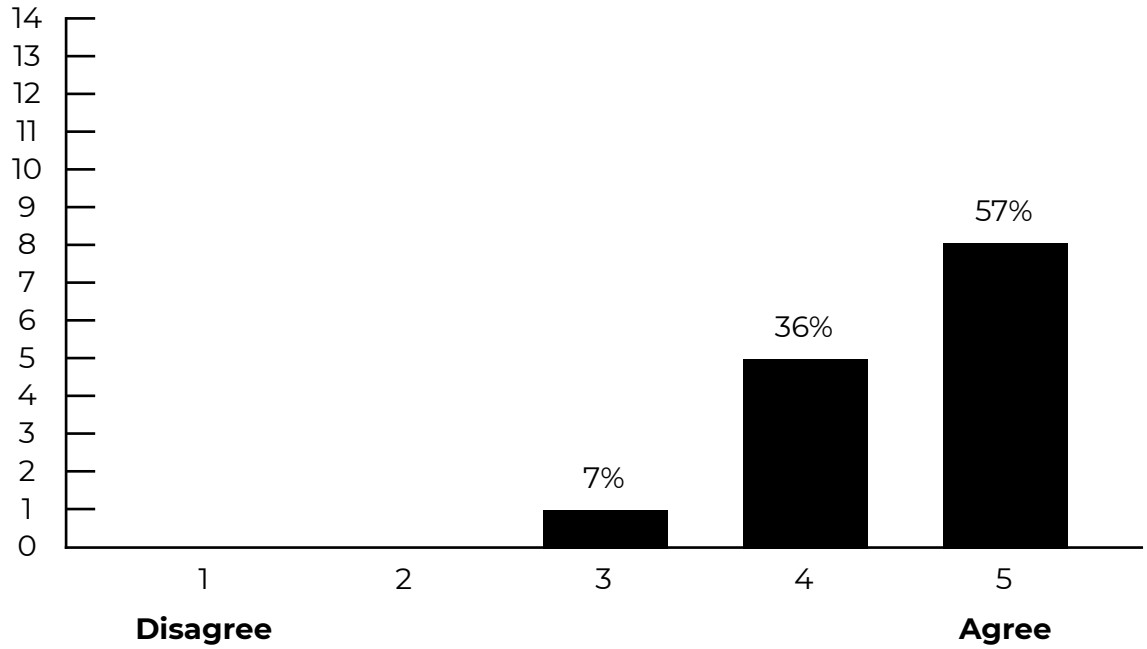


Figure 75: Distribuition of the user's opinion on the interface elements appeal.

The game elements are appealing.

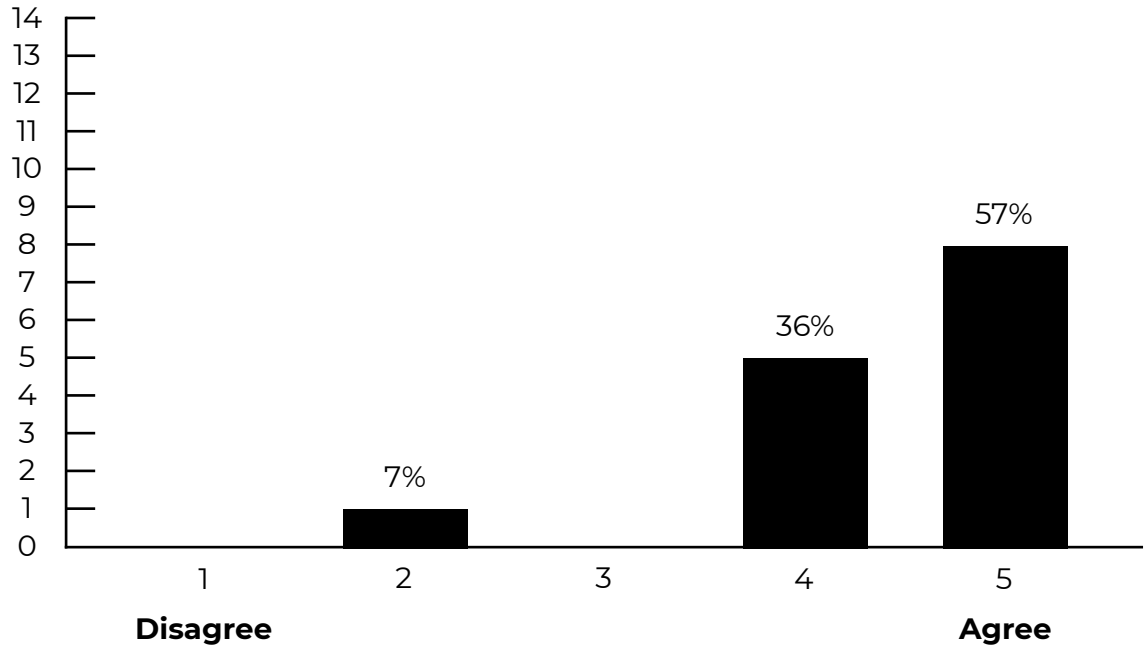


Figure 76: Distribuition of the user's opinion on the game elements appeal.

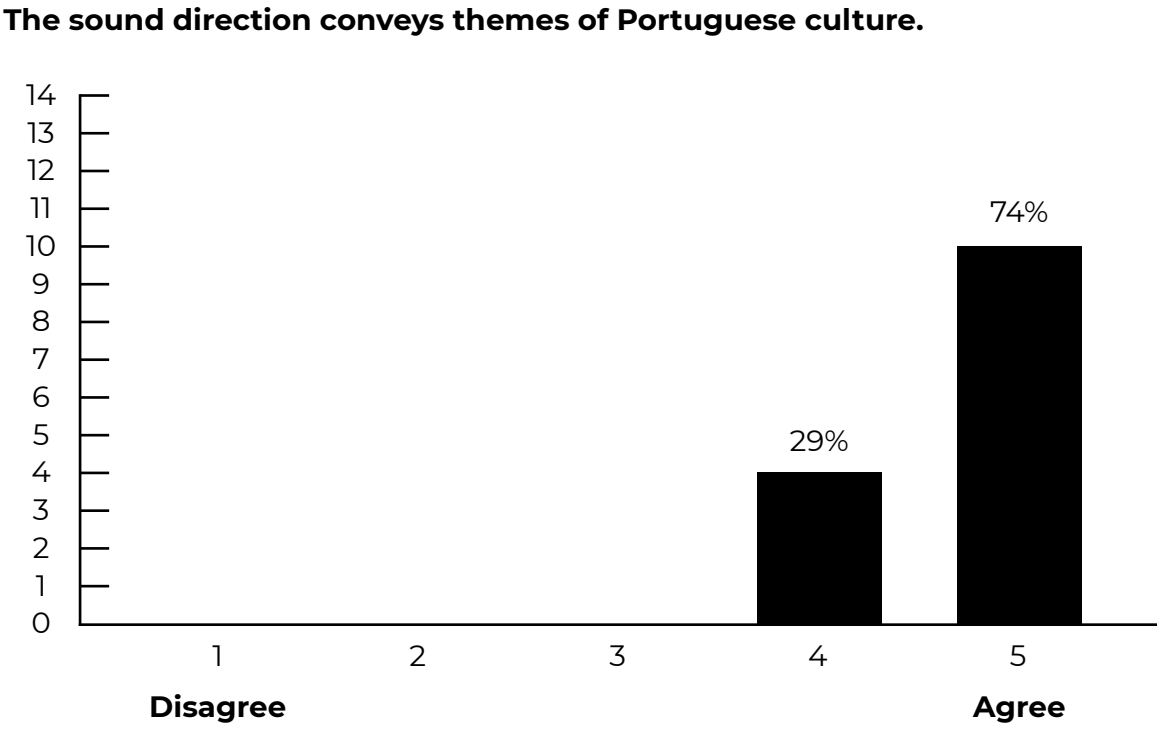


Figure 76: Distribuition of the user's opinion on the sound direction's connection to Portuguese Culture.

5.5 Cultural Connection

In the two final linear scale questions of the form, the objective was to confirm if the mini games implemented on the prototype were recognizable in the digital environment. From the results gathered, I conclude that the overall majority of the players felt that the mini games in the prototype are obviously and easily recognizable. As for the next question, it's purpose was to check if the player's experience with the prototype was fun, the importance of this question is because even if the artefact succeeds in conveying Portuguese culture through the medium, if the video game is not fun, then why bother playing it. Thankfully, most players agree that it was a fun experience for them. In addition, I observed that players enjoyed the "Corrida de Cântaros" mini game the most, as it was the game most replayed by them and with the most positive reactions at face value. Which made me rethink if it would have been better to just focus on this mini game and polish it instead of developing three other games. Finally, I also believe that the players testing the game in pairs and competing with each other also affected their experience in a positive way, but further tests between individual testing and paired testing should be made to make sure.

The traditional Portuguese games are recognizable in the digital environment.

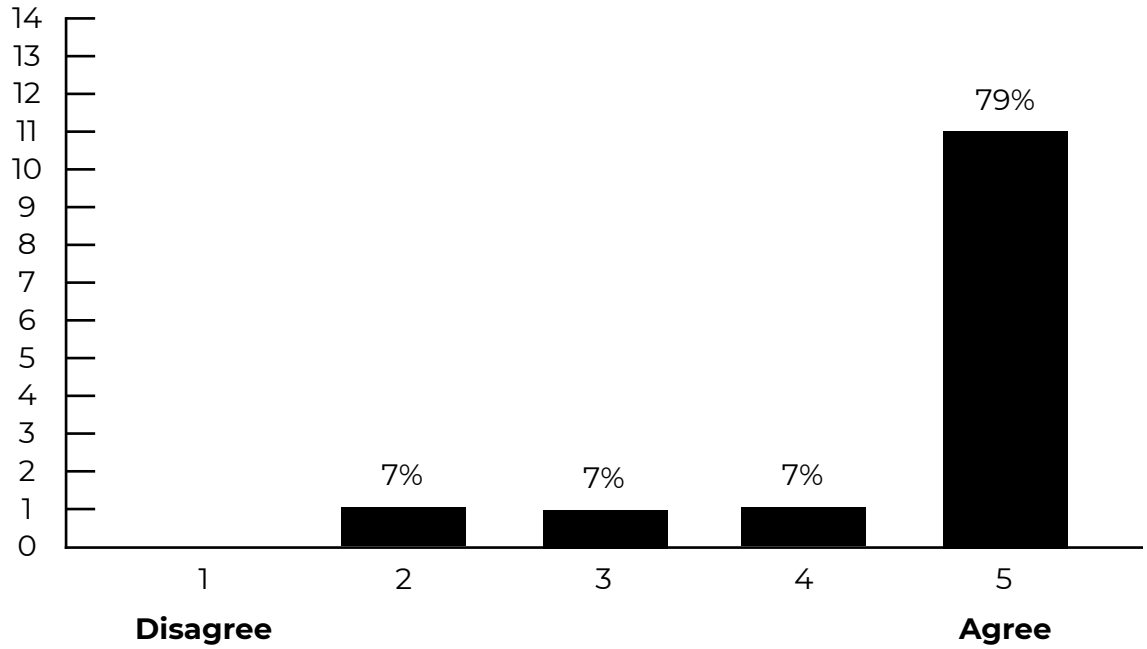


Figure 77: Distribuition of the user's opinion on the digitalization of traditional Portuguese games.

The gaming experience was fun.

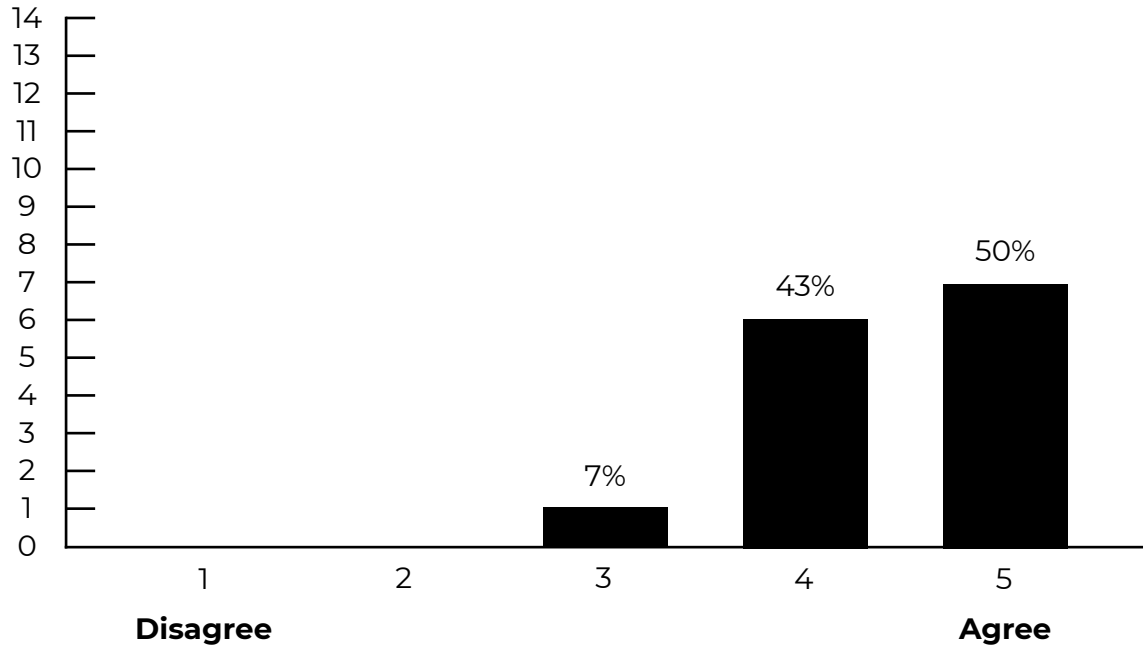


Figure 78: Distribuition of the user's experience.

5.6 Player Experience

In the last part of the questionnaire, four short answers were asked in order to receive more extended feedback from the user, which can be checked in greater detail on the appendice chapter. The first question intended for the players to speak their mind about what they felt during their experience with the prototype. With the exception of a few comments about feeling confused about what to do, most players wrote positive feedback, and in fact enjoyed their experience, praising the result and the concept of the video game, and also commenting about it being an overall fun experience, especially while playing with other players.

On the second question, the players were asked if they would play this game with friends or family, in order to confirm the game's potential as a multiplayer game. The answers to these questions were various messages of approval, most of the players were indeed interested in the social aspect of this game, in addition one of the players answered "yes, while drunk", which opens the discussion for the potential of the project to be used as a drinking party game.

On the third question, the players answered which difficulties they had during the test session. In short, most of these answers were about the game selector screen and the difficulty in achieving a certain score or milestone, which was already discussed above.

On the fourth and fifth questions players were asked what they would improve and add to the game respectively. Here the players answered in the majority that the UI needs improvement, mainly on the game selector screen. As for their suggestions for further additions, some answered with more UI elements, some just wrote nothing and the others just said they wanted more games.

In conclusion, the testing session brought to light numerous parts for improvement, mainly some bugs that need to be ironed out, and UI design choices that should be reworked. Overall the responses gathered from the testing session were very positive, the players enjoyed their experience with the artefact, they also recognized both the azulejo inspired art style and the traditional Portuguese games implemented in the video game medium easily, which was one of of the main objectives of this testing session to confirm, and most importantly, they the players had fun during their experience. However, despite all the information gathered from this UX focus testing session, I wish I had expanded on the questions of the form, and integrated gameplay evaluation tools.

6.

Conclusions

After a long and arduous development process, the project “Design of a Portuguese Videogame as a Cultural Artefact” comes to a close. During it, various difficulties, setbacks and problems were met, some of these were solved while the ones that were not, had plans left for future improvements. Furthermore, I came to see that the progress of the project and the problems it had could have been smoother and more efficient had I applied a better work plan. In the future, the use of a well thought out calendar, organised on a gantt diagram, together with a work methodology, like the second order feedback loop model, would have heavily benefited the project.

This project began by researching and analysing terms and concepts like culture and cultural artefact, and then relating them to play and video games. Moreover, various sections of the state of art go in depth about how video games after their creation until the present affect society, and how they emulate culture of their own. In addition, various video games of interest, both from international and national origins were analysed, in order to find good game design practices and techniques that could be applied to the demo, with the objective of improving its connection to Portuguese Culture.

Furthermore, the demo promised by this project was successfully developed, to some extent, using the Godot game engine. My learning process of this tool was frustrating and fun at times, but overall it was an experience and a set of knowledge and tools that I am happy to have experimented with and learned to at least a novice level.

As for gameplay, the demo has its strongest point on the minigame “Corrida de Cântaros”, as it was the most developed and out of the three minigames, and by observation was also the minigame the test players enjoyed the most. With some further improvements and bug fixes, in my opinion “Corrida de Cântaros” could work as a stand alone smartphone game. The “Jogo da Malha” sits in the middle out of the three minigames, as the second to be developed, it stands as an average experience. The game itself works as intended, however it is limited by one bug at least, the non-existence of multiplayer, and the solution implemented to replace it feels confusing and awkward. However, if these limitations are resolved, the game would transform into a solid and fun multiplayer experience. Finally, the “Corrida de Sacos” is the last one to be developed, and the weakest point of the demo. The game was developed on a short time frame between the rest of implementation and testing, so it ended up being too simple and also buggy, the best time score incentive doesn’t seem too appealing for players to keep playing it, and the gameplay using tapping is boring. For the future of this minigame, I propose reworking its objectives and controls, in order to be more dynamic and fun.

The final quality in question for the demo was if it had a cultural connection to Portuguese culture, to which I can say it successfully connects to it. As proven through testing, the art style of the game, with its sprites and UI elements, gives a strong and easily recognizable feeling of the traditional azulejos tiles found throughout Portuguese cities. In addition the sound and music choices for the demo are on point, enhancing the project's cultural connection. However, this dimension of the project still requires some expansion and experimentation, as such in the future, sound design is an area that should be further improved by practising and learning how to make sounds. Finally the gameplay and video game concept also worked, the original traditional games were easily recognized by the players in their new digital medium, and the overall feel of gameplay, together with its social elements makes it feel like a mini festival.

Overall, the project "Design of a Portuguese Videogame as a Cultural Artefact", stands as an extended learning experience of various areas and tools that complement game design. Additionally, the project achieved what it promised, both the background research of culture and video game related concepts and works. And the development of a video game demo that successfully connects to Portuguese culture, while also being mildly entertaining in its current state. However, the video game concept together with its unique art style, hold the potential and the foundations to grow into something special and fun to be enjoyed together with friends or family.

7.

Appendices

Appendix A

This Appendix contains screenshots of all the screens from the prototype developed running on an Android smartphone.

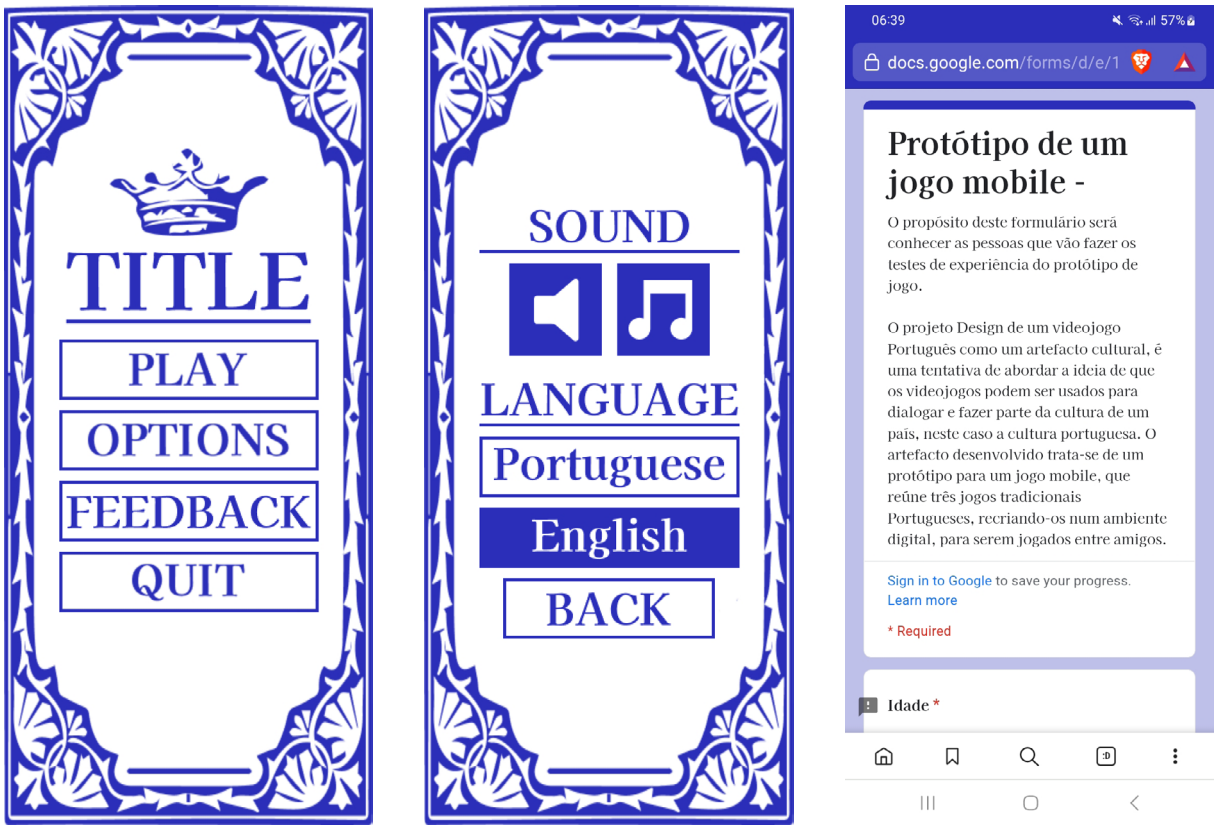


Figure 79: Title Screen, Options Menu, Form linked trough the Feedback Button.

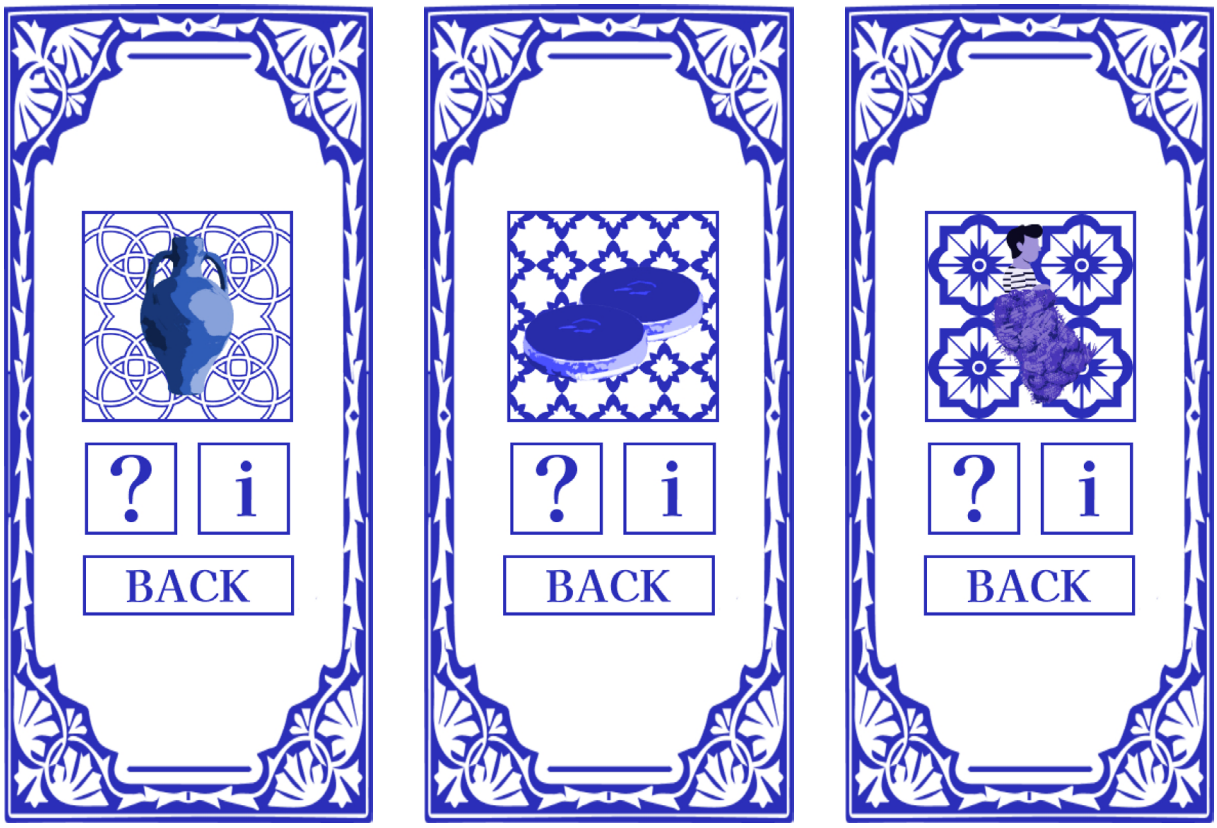


Figure 80: Game Selector Menu.

Figure 81: Each minigame's information screen

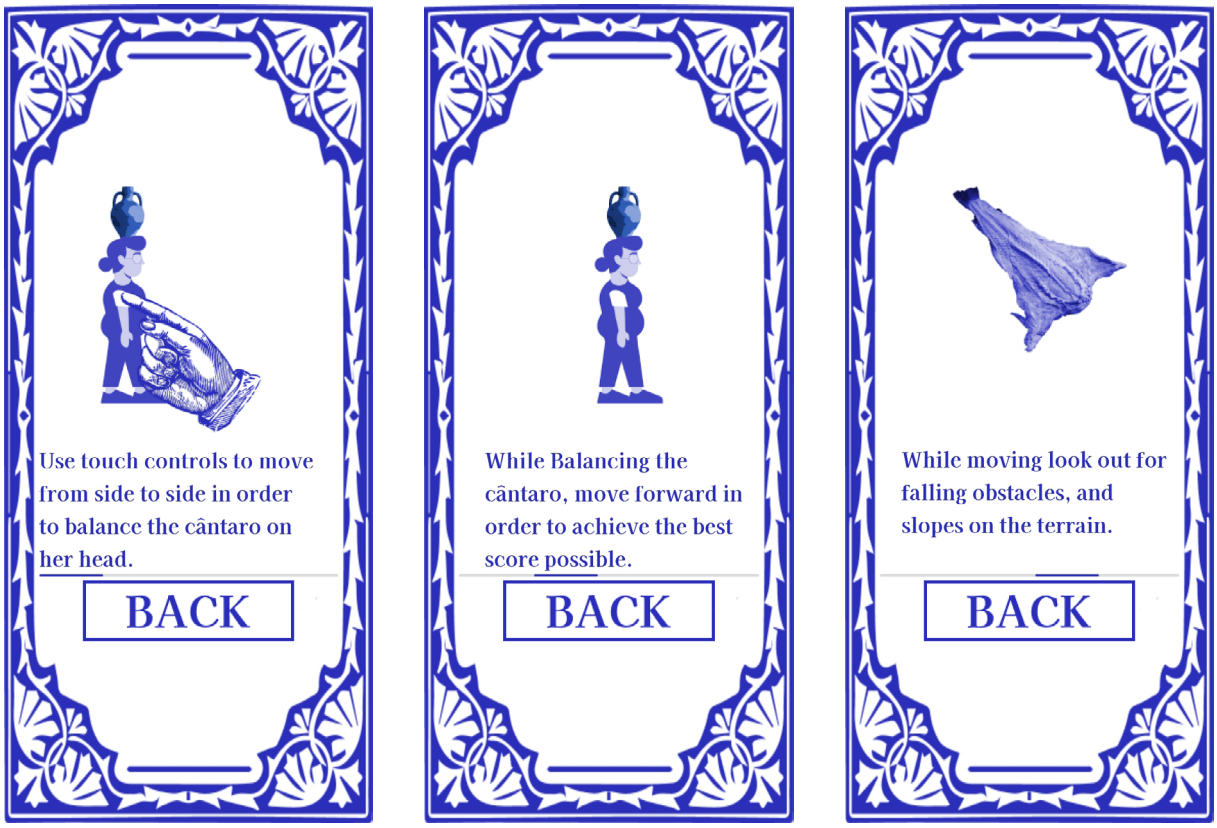


Figure 82: "Corrida de Cântaros" Tutorial frames.

Figure 83: "Corrida de Cântaros" Tutorial frame, Gameplay and Game Over Screen.

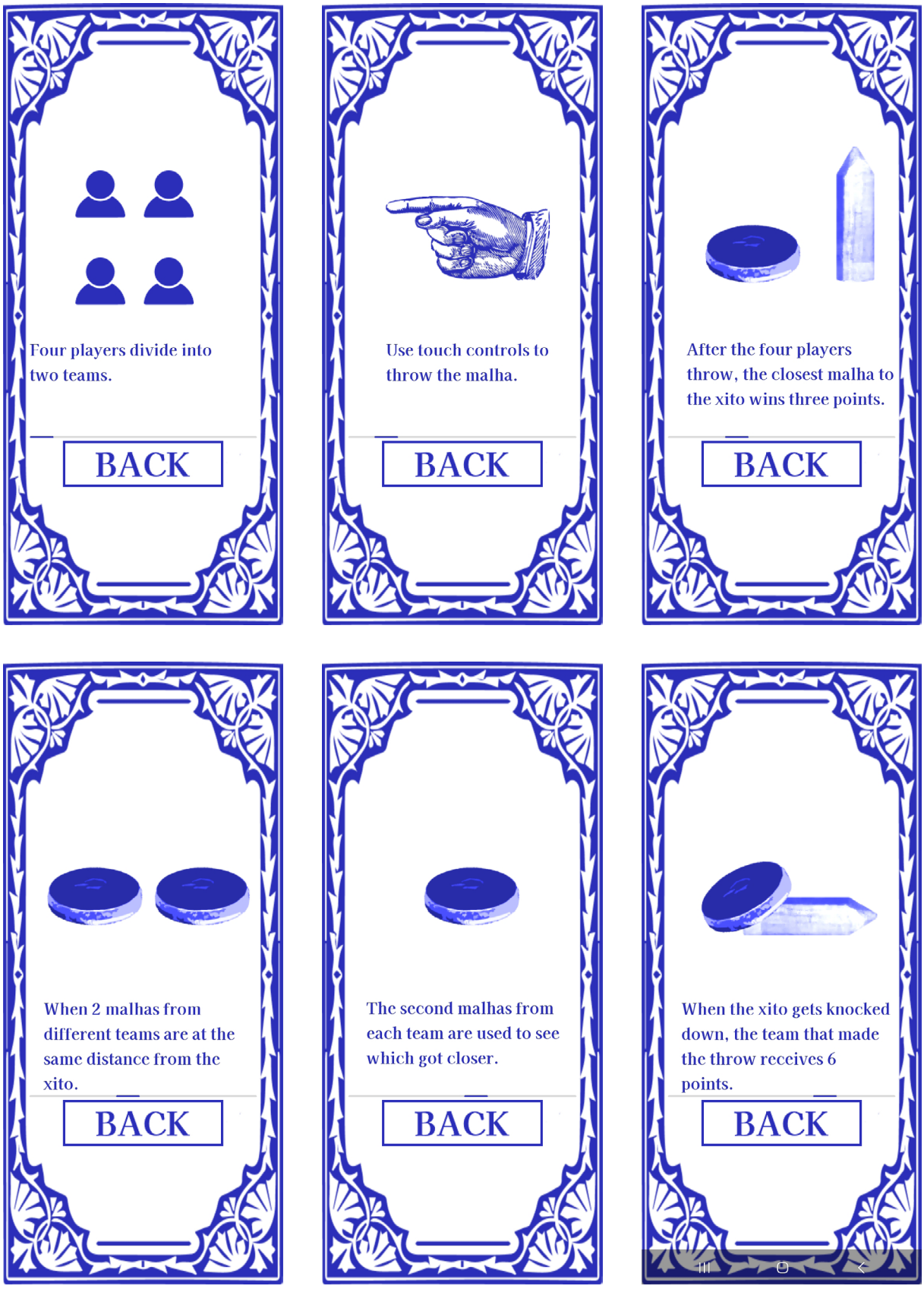


Figure 84: “Jogo da Malha” Tutorial frames.

Figure 85: "Jogo da Malha" Tutorial frames and gameplay.

Figure 86: "Jogo da Malha" Gameplay, Scoreboard Menu and Team 1 Wins Menu.

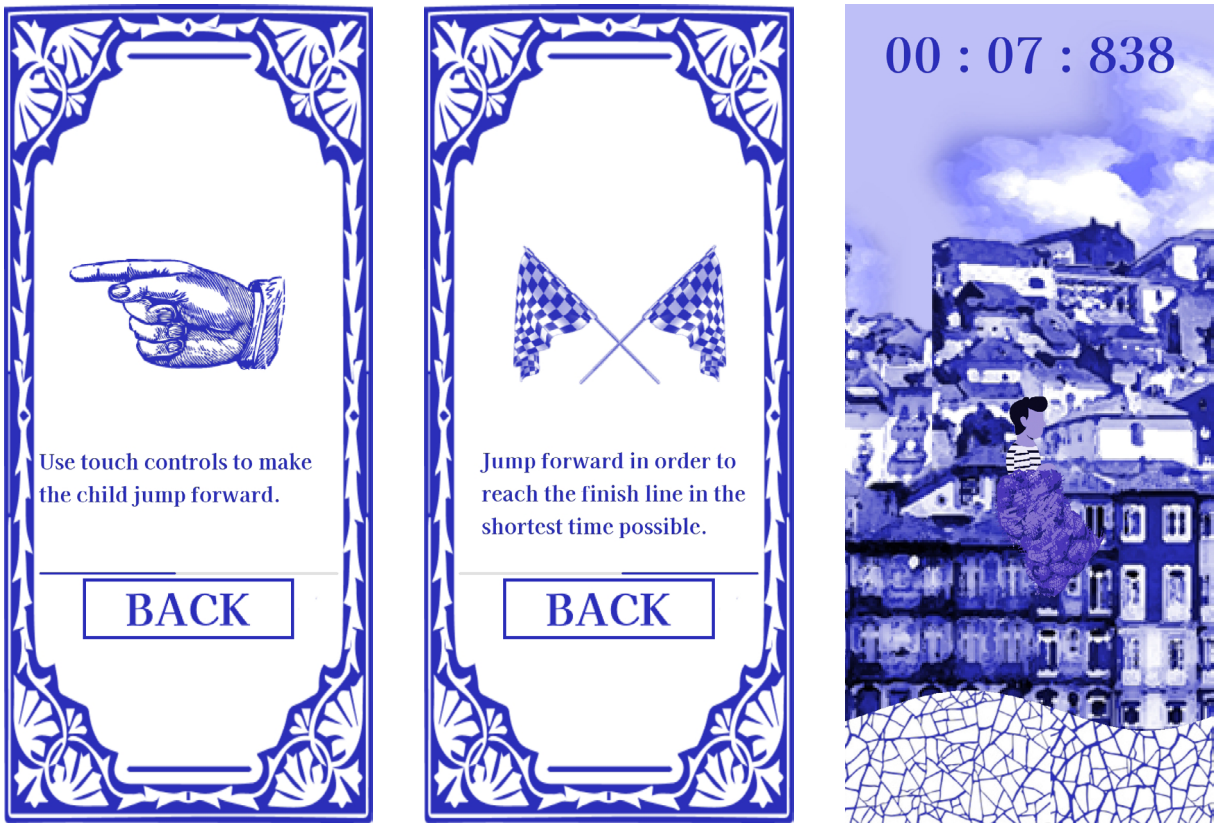


Figure 87: "Corrida de Sacos" Tutorial Frames and Gameplay.

Figure 88: "Corrida de Sacos" Gameplay and Game Over Screen.

Appendix B

This Appendix contains the full and individual results from the hands on testing session with the developed prototype.

User ID	Age	Profession/ area of study	Experience with electronic devices	Experience with mobile games	Experience with Portuguese traditional games
1	20	Design & Multimedia	5	4	2
2	22	Design & Multimedia	5	5	4
3	21	Design & Multimedia	4	4	3
4	23	Design & Multimedia	5	4	3
5	21	Computer Engineering	5	4	3
6	20	Design & Multimedia	4	4	3
7	25	Design & Multimedia	5	5	3
8	23	Student	5	3	4
9	20	Design & Multimedia	5	5	3
10	21	Student	4	4	3
11	22	Design & Multimedia	5	5	3
12	22	Design & Multimedia	5	5	5
13	19	Software Developer	5	5	3
14	24	Design & Multimedia	5	4	3

Table 4: Test population data.

Error ID	Description	Type of error	Prioraty	Solution
1	On the options menu of the game when the players mute the sound or music, it changes the visual appearance of the buttons. If they close and open the menu again the visual appearance of the button resets back to its original appearance.	Usability	1	Turning either the button state or the options menu scene into an autoload.
2	On the game selector menu, players had difficulty perceiving there were three available games to select, and that they could navigate this menu by scrolling to the side.	Usability	5	Implementation of side arrow buttons on the game selector UI, a progress bar below, and removal of the scrolling to the side.
3	On the game selector menu, a few of the test subjects when asked to open a game info card, they opened a tutorial instead, and vice versa.	Usability	1	Perhaps replacing the icons that label the buttons with “info” and “how to play” would be clearer, but would probably make the UI feel more cluttered.
4	On the tutorial screens, scrolling to the side didn’t feel like the most optimal way.	Usability	4	Implementation of side arrow buttons to move from slide to slide and a progress bar below.
5	One of the layers from the parallax background seems to bug at a certain distance. A small piece of this layer disappears while moving forward, and reappears while moving backwards.	Technical	1	Reimplementati-on of the parallax background, and the issue should be found and resolved.

6	On the “Corrida de Cântaros” the obstacle spawner isn’t working correctly, because for some reason, if the spawner follows the player’s location, while having a script that tells that if an obstacle hits the ground it disappears, the obstacles lose their gravity.	Technical	5	Maybe using autoloads to save the node globally or a timer to remove obstacles would work.
7	On the “Corrida de Cântaros”, as expected some players found that they could infinitely move without losing by entering a state of “cruise velocity”.	Technical	5	As expected the addition of obstacles would fix this issue, so it would be fixed together with the previous issue.
8	On the “Jogo da Malha”, the malha was harder to throw on a phone with a swipe, than on the computer by simulating the gesture with the mouse. This made the task number 10 of hitting the xisto almost impossible.	Usability	3	Changing a few values on the project in order to make the throw easier on mobile devices.
9	Even with the tutorial, some players had difficulty perceiving how to throw the malha or where.	Usability	2	Reworking the tutorial in order to be clearer might help ease player confusion. In addition, implementing an in game tutorial, like the flappy bird touch to play for example, might fix this issue.
10	On the “Jogo da Malha”, the malha is still pickable after being thrown and hitting the floor.	Technical	3	Making the malha non interactable when it’s thrown.
11	On the “Jogo da Malha” scoreboard screen, the points are added or or taken away by plus 1 and minus 1. This seems to be kinda inefficient, if the players are on too mobile devices. Also the points should be either scored with +3 or +6 if the xisto is knocked down.	Technical	4	If the manual approach is kept, the score is changed to +3 or -3 instead of +1 -1. If the score is changed to automatic, a turn system should be implemented, that measures and compares which malha got closer to the xisto.

12	On the “Jogo da Malha” scoreboard screen, the distance between the malha and the xisto overlays the border.	Technical	2	Redesign this screen to better fit all the elements.
13	On the “Corrida de Sacos”, the player character has a chance to get stuck on the ground.	Technical	5	I believe if the error number 14 is fixed, this error should cease to exist.
14	On the “Corrida de Sacos”, if the player keeps holding the screen the player character slides across the ground.	Technical	5	Code the player character to not slide across the ground.
15	The “Corrida e Sacos” seems to be the most lacklustre mini game out of the three. It seems that the best time incentive is not enough.	Usability	4	Spiking its difficulty should be a priority, adding obstacles, and making the player character choose when to jump might make it more interesting.
16	On the “Corrida de Sacos”’s game over screen, the border is not responsive.	Technical	1	Check if “Expand” is on and “Scale on Expand” is selected”, if it is and is not working delete it and add it again.
17	Even with the tutorial the players seemed confused about how to make the player character jump, most of them used swipe gestures instead of taping and holding.	Usability	4	Again an ingame tutorial might help conveying the player the basic controls. However, changing from taping and holding to swipe controls might be more fun and intuitive.
18	The player character on “Corrida de Sacos” keeps playing his jumping animation even when not jumping	Technical	1	Code if the player is on the ground, animation stops.
19	On the game selector screen players took a while to realise that by clicking the icon they would initiate one of the mini games.	Usability	3	Using a button with “play” written might be easier to understand than the icon.

Table 5: List of errors found in the testing session, their description, the type of error, their priority on a scale that goes from 1, low priority to 5, high priority and their proposed solution.

User ID	The execution of the tasks was. hard/ easy (1-5)	The navigation of the interface was. hard/ easy (1-5)	The information screens are relevant. little/ much (1-5)	The tutorial screens were useful to understand the game rules. disagree/ agree (1-5)	The art direction of the project conveys themes of Portuguese culture. disagree/ agree (1-5)
1	5	5	4	5	5
2	5	4	5	4	5
3	3	3	5	5	5
4	4	4	5	5	4
5	5	4	5	5	5
6	4	4	4	3	4
7	3	4	5	5	4
8	3	4		5	5
9	5	5	3	3	5
10	3	3	4	4	5
11	4	3	5	5	5
12	4	3	3	4	4
13	5	5	5	5	5
14	4	3	3	5	4
Avrg	4.1	3.9	4.3	4,1	4.6

Table 6: Usability issues and artwork and sound data.

User ID	Interface elements are appealing. agree/ disagree (1-5)	Game elements are appealing. agree/ disagree (1-5)	The sound direction conveys themes of Portuguese culture agree/ disagree (1-5)	Traditional Portuguese games are recognizable in the digital environment. agree/ disagree (1-5)	The gaming experience was fun. agree/ disagree (1-5)
1	4	5	5	5	5
2	5	4	5	5	4
3	5	5	5	5	5
4	3	4	4	5	4
5	5	5	5	5	5
6	4	4	4	3	4
7	4	3	5	5	3
8	5	5	5	5	5
9	4	4	5	2	4
10	4	4	4	4	4
11	5	5	5	5	5
12	5	5	5	5	5
13	5	5	5	5	5
14	5	5	4	5	4
Avrg	4.5	4.4	4.7	4.6	4.4

Table 7: Atwork, sound and cultural connection data.

User ID	How did you feel overall during the experience?
1	I found it interesting and a good attempt at representativeness of Portuguese culture.
2	The game is interesting but the characters we use are a bit slow.
3	I really liked it.
4	It was an interesting experience because there are no other ways to play these types of games besides in real life.
5	I liked it, it was smooth,
6	I found the connection to Portuguese culture interesting, but I thought that what was supposed to be done in the game or how to do it was not well specified.
7	
8	It was a lot of fun, even when I didn't get a good score.
9	Interesting.
10	It's quite fun and good to play between teams.
11	It was fun. Pretty application.
12	For a Portuguese person the interface is familiar and the concept is very well conceived.
13	
14	I think the art of the game is well done. It conveys what Portuguese culture is. I think some indications are missing on how to move your finger in some parts of the game.

Table 8: Player experience data.

User ID	Would you play this game with your friends or family?
1	Yes.
2	Yes.
3	Yes.
4	Yes.
5	Yes.
6	Yes, I could show them.
7	Maybe.
8	Yes.
9	Yes, while drunk.
10	Yes.
11	Yes.
12	Of course.
13	Yes.
14	Yes, I think it would be fun.

Table 9: Player experience data.

User ID	Did you have any difficulties?
1	I was unable to exceed the expectations asked for in the objectives.
2	No.
3	No.
4	No.
5	In winning, but it was because I'm bad.
6	Yes, realising what I was supposed to do
7	In throwing the "malha".
8	I had some difficulties.
9	The change between games.
10	Selecting the games.
11	"Malha" swipe. How to change the game in the selection. The horizontal swipe in the instructions menu.
12	No.
13	Yes, I didn't know how to start the game.
14	Generally speaking, no.

Table 10: Player experience data.

User ID	What would you improve?
1	
2	The character's delay.
3	Improve "Jogo da Malha".
4	Minor bugs.
5	Game screen needs arrows to see that there are more games to select.
6	Be more explicit.
7	The controls and graphics.
8	Tutorial menus could move to the next page with a scroll instead of being continuous.
9	The change between games.
10	It's hard to notice that there are more games.
11	Lock on the horizontal swipe in the instructions.
12	Make it clear that you can swipe on screens.
13	Put a play button.
14	I feel that the codfish is not well implemented and so it was not a very big difficulty in the gameplay.

Table 11: Player experience data.

User ID	What would you add?
1	
2	More games.
3	Nothing.
4	Nothing.
5	Nothing, I thought it was pretty good.
6	Perhaps something that showed the controls or what is supposed to be done, like a game tutorial.
7	Nothing.
8	More games.
9	
10	I don’t know.
11	Arrows in game selection.
12	Arrows.
13	Nothing.
14	Indicators to tell you how to move your finger.

Table 12: Player experience data.

References

#24_O_Fado - Ilustração: André da Loba / Texto: Chema García Martínez. (n.d.). Pinterest. Retrieved January 16, 2023, from https://www.pinterest.pt/pin/736971926536525335/

41-Game_20Studies_200102__20Cultural_20framing_20of_20computer_video-with-cover-page-v2. (n.d.).

Albino, J. (n.d.). FERNANDO PESSOA - Painel de azulejos de Júlio Pomar (1926 -), na estação do metro do Alto dos Moinhos, Lisboa. Pinterest. Retrieved January 16, 2023, from https://www.pinterest.pt/pin/736971926535139805/

alma-portuguesa. (2014, August 10). Alma Portuguesa. Tumblr. https://alma-portuguesa.tumblr.com/post/94381232721/super-bock

Asociación de Historia Contemporánea Congreso (14. Alicante. 2018), Moreno Seco, M., Fernández Sirvent, R., & Gutiérrez Lloret, R. A. (2019). Del siglo XIX al XXI : tendencias y debates (Alicante, 20-22 de septiembre de 2018) : actas del XIV congreso [de la] Asociación de Historia Contemporánea. Biblioteca Virtual Miguel de Cervantes.

Alves Fernandes, L. M., Cruz Matos, G., Azevedo, D., Rodrigues Nunes, R., Paredes, H., Morgado, L., Barbosa, L. F., Martins, P., Fonseca, B., Cristóvão, P., de Carvalho, F., & Cardoso, B. (2016). Exploring educational immersive videogames: an empirical study with a 3D multimodal interaction prototype. Behaviour and Information Technology, 35(11), 907–918. https://doi.org/10.1080/0144929X.2016.1232754

Blitz, M. (2016, March 28). The Unlikely Story of the First Video Game. Popular Mechanics. https://www.popularmechanics.com/culture/gaming/a20129/the-very-first-video-game/

Branno. (2021). Godot: How to transition from a Beginner to a Novice [Video]. In YouTube. https://www.youtube.com/watch?v=BUA0X9l-UI4

Burchworks. (n.d.). Lisbon #Lisbon #Portugal #travel #travelposter #burchworks #benjaminburch #bwburch. Pinterest. Retrieved January 16, 2023, from https://www.pinterest.pt/pin/736971926536525333/

drlauramitchell. (2018, December 19). Are we Homo Ludens? Huizinga's 5-point definition of play. Dr Laura Mitchell Is... Seriously Learned. https://drlauramitchell.com/2018/12/19/defining-play/

Ed, G. D. (2015, May 28). The game design process- gamecareerguide.com. https://gamecareerguide.com/features/1415/the_game_design_.php?page=3

Edwards, B. (2012, May 27). Inside the Magnavox Odyssey, the first video game console. PCWorld. https://www.pcworld.com/article/464739/inside_the_magnavox_odyssey_the_first_video_game_console.html

Engine, G. (n.d.). Godot Engine - Free and open source 2D and 3D game engine. Godot Engine. Retrieved January 16, 2023, from https://godotengine.org/

Extinta tarefa do campo. (n.d.). Flickr. Retrieved January 16, 2023, from https://www.flickr.com/photos/60083277@N00/1062280429/in/photostream/

Fado. (n.d.). Dribbble. Retrieved January 16, 2023, from https://dribbble.com/shots/7233137-Fado?utm_source=pinterest&utm_campaign=pinterest_shot&utm_content=Fado&utm_medium=Social_Share

Fils-Aimé, R. (2017). A quote by Reggie Fils-Aimé. https://www.goodreads.com/quotes/11137436-the-game-is-fun-the-game-is-a-battle-if

GERMINA. (n.d.). REVISTA DE LITERATURA & ARTE. Retrieved January 16, 2023, from https://www.germinaliteratura.com.br/fp.htm

Gray, P. (2013). Definitions of play. Scholarpedia, 8(7). https://doi.org/10.4249/scholarpedia.30578

Greenfield, P. M. (1994). Video games as cultural artefacts. In Journal of Applied Developmental Psychology (Vol. 15, Issue 1, pp. 3–12). https://doi.org/10.1016/0193-3973(94)90003-5

Homydesign. (n.d.). Panel of traditional Portuguese tiles hand-painted blue and whit. Image of Human, Senior: 76815659. Retrieved January 16, 2023, from https://www.dreamstime.com/editorial-stock-image-panel-traditional-portuguese-tiles-hand-painted-blue-whit-ovar-portugal-september-white-written-quoted-verses-image76815659

Hou, P. (2020, August 3). Touhou Project: The most popular game franchise you know nothing about. CBR. https://www.cbr.com/touhou-project-most-popular-game-know-nothing-about/

Huizinga, J. (1971). Homo ludens: O jôgo como elemento da cultura.

Hunicke, R., Leblanc, M., & Zubek, R. (n.d.). MDA: A Formal Approach to Game Design and Game Research.

JustOrdinaryMan. (2020, July 27). Dame Da Ne / Baka Mitai. Know Your Meme. https://knowyourmeme.com/memes/dame-da-ne-baka-mitai

KidsCanCode. (2018). Procedural Generation in Godot part 5: Infinite 2D terrain [Video]. In YouTube. https://www.youtube.com/watch?v=QLZa1mjW-YU

Mangiron, C. (2021). Found in Translation: Evolving Approaches for the Localization of Japanese Video Games. Arts, 10(1), 9. https://doi.org/10.3390/arts10010009

Momo. (2017a). Yakuza zero real life comparison - Kamurocho [Video]. In YouTube. https://www.youtube.com/watch?v=EcDh8W6Hwk8

Momo. (2017b). Yakuza zero real life comparison - Sotenbori [Video]. In YouTube. https://www.youtube.com/watch?v=nsUS-U65Ac0

Morgado, L., Cristóvão, P., Fernandes, L., Nunes, R. R., Martins, P., Paredes, H., Barbosa, L., Cardoso, B., & de Carvalho, F. (n.d.). Primeira Armada da Índia: novo conceito de jogo misturando realidades aumentada e virtual, gestos finos e amplos. https://en.wikipedia.org/wiki/Google_Glass

MusicFree2Use. (2022). Portuguese Fado Guitar Instrumental [Video]. In YouTube. https://www.youtube.com/watch?v=i_YDDI1Ad4c

Lucas Pereira, L., & Roque, L. (2013). Proceedings of DiGRA 2013: DeFragging Game Studies. Understanding the Videogame Medium through Perspectives of Participation.

Peck, N. (n.d.). Beyond the Library: Applying film post-production techniques to game sound design.

Penicheiro, F., Ramos De Carvalho, J., & Roque, L. (n.d.). Um estudo das dinâmicas de apropriação do jogo Portugal 1111-A Conquista de Soure em contexto escolar.

Portoghesi, via dei. (2010, October 18). Biblioteca particular de Fernando Pessoa alojada no site da Casa Fernando Pessoa. 21.10.10. https://viadeiportoghesi.blogspot.com/2010/10/biblioteca-particular-de-fernando.html

Portuguese tile prints. (n.d.). Maral Varolian. Retrieved January 16, 2023, from https://www.maralvarolian.com/portuguese-tile-prints-pattern

Pryor, S. (n.d.). Pin em PORTUGUESE TILES. Pinterest. Retrieved January 16, 2023, from https://www.pinterest.pt/pin/736971926541613179/

Santos, A. (2013, March 30). Portugal 1111: A Conquista de Soure. Revista Digital de Videojogos PUSHSTART. https://www.revistapushstart.com/review/portugal-1111-a-conquista-de-soure/

Smith, G. (2014). Understanding procedural content generation: A design-centric analysis of the role of PCG in games. Conference on Human Factors in Computing Systems - Proceedings, 917–926. https://doi.org/10.1145/2556288.2557341

Strichart, S. (2019, March 7). Judgment - Features Trailer: English. PlayStation.Blog. https://blog.playstation.com/2019/03/07/judgment-launches-june-25-how-the-yakuza-spinoff-reinvents-localization/

The homeland. (n.d.). Pinterest. Retrieved January 16, 2023, from https://www.pinterest.pt/pin/736971926541866567/

Tony Mott. (2010). 1001 Video Games.

Tortas de azeitão – portugalize.me. (2013). Portugalize.Me. http://www.portugalize.me/tag/tortas-de-azeitao/

Tylor, E. B. (1871). Primitive culture: Researches into the development of mythology, philosophy, religion, art, and custom.

van de Kaa, J. (2021). Touhou Project : A Case Study of Fandom Commercialisation.

Videojogos em Portugal. História, tecnologia e arte by Nelson Zagalo (z-lib.org). (n.d.).

Watts, R. J. (1981). The Pragmalinguistic Analysis of Narrative Texts: Narrative Co-operation in Charles Dickens's "Hard Times." Gunter Narr Verlag.

Webster, A. (2018, February 2). Kingdom Come: Deliverance is an RPG that trades fantasy for historical accuracy. The Verge. https://www.theverge.com/2018/2/2/16964080/kingdom-come-deliverance-history-rpg-ps4-xbox-pc