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DE CATALUNYA**

Bachelor's Degree in Audiovisual Media

THE FUTURE DAYS

Memorandum

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Gratefulness

I would to give thanks to my teacher in Mataró, David Minguillón, for his support and recommendations about the project, and to my teacher in Glyndwr University, Simon Hall, for his help during my stance in United Kingdom.

I would to show my gratitude to Lúdia Cussó too, for his support and attention to the project.

Abstract

In this memorandum it will be read all the documentation related to the Final Project Degree of Carlos Cerezo Rodríguez, *The Future Days*. The objective of this project has been to realise a mini-game (in form of interactive animation in Flash). So that, it will rest prepared for his posterior upload to websites that offer these services. As it will be appreciated in the writing, the process of construction of the project has been made through a phase of planning and pre-production, a phase of design and production and a phase of sound and post-production, accomplishing the marked objective.

Resum

En aquesta memòria es podrà llegir tota la documentació relativa al Projecte Final de Grau de Carlos Cerezo Rodríguez, *The Future Days*. L'objectiu d'aquest projecte ha estat realitzar un mini-joc (en forma d'animació interactiva en Flash), de manera que aquest quedi preparat per a la seva posterior pujada a llocs web que ofereixin tal servei. Tal i com es podrà apreciar a l'escrit, el procés de construcció del projecte s'ha realitzat a través d'una etapa de plantejament i preproducció, una etapa de disseny i producció i una etapa de sonorització i postproducció, complint així amb l'objectiu marcat.

Resumen

En esta memoria se podrá leer toda la documentación relativa al Proyecto Final de Grado de Carlos Cerezo Rodríguez, *The Future Days*. El objetivo de este proyecto ha sido realizar un minijuego (en forma de animación interactiva en Flash), de manera que éste quede preparado para su posterior subida a sitios web que ofrezcan tal servicio. Tal y como se podrá apreciar en el escrito, el proceso de construcción del proyecto se ha realizado a través de una etapa de planteamiento y pre-producción, una etapa de diseño y producción y una etapa de sonorización y pos-producción, cumpliendo el objetivo marcado.

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Glossary of terms.

Adobe Flash Software created by Adobe, which allows creating 2D animations with interactivity.

CS6 One of the latest versions launched by Adobe.

.swf File format obtained when a project in Adobe Flash is exported or rendered.

.fla Editable file format for projects created using Adobe Flash.

Mad Max Movie trilogy created between 1979 and 1985 situated on an apocalyptic future.

1. Objectives of the work.

1.1. Purpose.

Create an interactive story that allows users to choose different events using determined options in some parts of the application.

1.2. Finality.

Obtain a *.swf* file that will contain the finished product, ready for upload it on mini-games' websites or similar services.

1.3. Object.

This is the memorandum of the Final Project Degree, which includes all related information about the project and its evolution. It includes three parts or documents: project's memorandum, economic survey and budget, and annex. The materials and documentation given to the professorate are: the memorandum, two *.fla* files that contains the project in an editable format, two *.swf* files that contain the finished product and a folder called "TheFutureDays – MATERIALS" which contains all videos, effects and music and other materials used or downloaded for the project.

1.4. Scope.

In this memorandum it's shown all relative information about the development and finalization of the Final Project Degree. In the materials given to the professorate is located the finished project and the related files for show it to the faculty and for make possible to play the editable file correctly.

2. Creating the project.

The project is an interactive cartoon movie created using Adobe Flash. The story is based on a post-apocalyptic world, with clear references to *Mad Max*, where the protagonist will have to survive. The interaction between the user and the product is possible through an interface that appears in determined times of the story and allows him to choose what action will do the main character. These choices will do the protagonist to pass successfully a situation, to pass a situation with difficulties or to make him to die. The interaction has been made possible using the programming code “Action Script 3.0”.

The most important reason why it has been decided to make an interactive animation is because it has been observed that this method can be attractive and funny: there aren't too many games or applications that make use of the ability to create an storyline with alternative ways where the user is able to choose or promote one group of events or another. That's the reason why nowadays is found attractive and curious the idea of a non-linear story.

2.1. Before the pre-production. Planning, definition of objectives and goals and information research.

2.1.1. General information about the project.

The project has been thought before the stay in Glyndwr University in July 2013. There was the idea to make something related to an apocalyptic world and the purpose of express the story using an interactive animation. During the first stay in Glyndwr, it was taken conscience about this was possible to make and the work on the project and the script and the different choices that the user will be able to do began.

It has been decided to do the work using Adobe Flash because it permits to create a story with multiple ways and choices easily. Adobe Flash only allows to create cartoon models, but that's not a problem: it has been thought that the use of cartoons instead of 3D models makes possible to create stages and scenes easier and gives them a funny look.

During the first stance in Glyndwr University it was studied and designed a general planning for the correct development of the project and it was started the pre-production's phase.

2.1.1.1. General planning.

The created planning was divided in four phases:

I. Development of planning and definition of objectives and goals. Taking references and research of information and software. This is the actual phase. In this stage it had been created this actual planning and was designed a chart of objectives. It had been made an investigation of clothes, scenarios and other items and props for take familiarization with the post-apocalyptic genre and had been made a research for take knowledge about best options of software for the phases of pre-production, production and post-production. This phase was though to continue until it was considered that enough information was obtained and it carried on although the phase of pre-production has began. Its duration was two months, since July until September 2013.

II. Pre-production: Characters, storylines and choices. Design of the characters: their aspect, their personality and their objectives and drawing a first version of them. Writing of the story and the different ways that the user is able to choose. This second part was made using "Twine", which is a software that allows users to create interactive stories with multiple choices and ways. Although it is a program destined to design writing stories, it has been the principal tool for write the script of the project successfully. The pre-production stage was through to carry on until January 2014. Since this month, it started the phase of production. However, once in the next stage, it were realised some changes and modifications too.

III. Production: Design and creation of the game. Once a first version of the characters and the story was created, it started the phase of production. In this stage some of the characters and the ways of the script were modified and new characters, the stages and the animations were created. It were programmed the code for create the interactivity between the player or user and the game. This part was though to continue until June 2014, just before the second stance in Glyndwr, but as the phase of post-production was though to

carry on only few days, there wasn't any problem if it continued in July. Finally, it carried on until the third week of July.

IV. Post-production: Improve the project and add sound. This was a fast phase. Basically, the actions needed to do were to improve some parts of the animation that had aspects to fix or to work harder, and to add sound effects and music. The sounds and the music were obtained thanks to free-software websites. This phase was realised basically in two weeks, just before the assessment in Glyndwr University, however it have been made some modifications until 14th August.

2.1.1.2. Objectives and goals.

For mark the different objectives clearly, they were summarized in the table 2.1.

ITEMS / GOALS	Essential	Desirable	Pleasing
Storyline and choices	Make a story with one start and one end, but with choices that can make to success one event by different options.	Make a story with one start and one end, but with choices that can make to success one event by different options and to take alternative routes before returning to the main storyline.	Make a story with one start, with choices that can make to success one event by different options, to take alternative routes and to access to different endings.
Modelling and drawing	<ul style="list-style-type: none"> - Create the different characters following the models that have been drawn already. - Create the different objects and stages in harmony with the characters look and between them. 	-	-
Animation	Make coherent animations that will be understand by the player.	Make coherent animations that will be understood by the player and that will be in harmony with the game's general look.	-

ITEMS / GOALS	Essential	Desirable	Pleasing
Creation of interactivity	Make possible to the user to select different options in one situation.	Make possible to the user to select different options in one situation and, sometimes, that one choice will affect to the next selection-situation.	-
Sound effects, music and voices	Obtain the different sound effects, music and voices thanks to own creation and free-license downloads, and make that they be realistic and coherent in the game.	Obtain the different sound effects, music and voices thanks to own creation, and make that they will be realistic and will induce powerful sensations in the player.	Entrust the tasks related to sound effects and music to an external producer that will be able do a better work.

Table 2.1. Summary of the objectives and goals to accomplish, divided in grades of importance.

2.2. Pre-production.

2.2.1. Plot

In the future, a big war between enemy nations immerses the world into a nuclear devastation which razes cities, countries and causes that the governments and the law forces to disappear. Survivors have to choose between continue alive thanks to the debris of the previous world or fight and rob to other survivors.

The main character of this story lost his family when the war started, and now he travels around the world without cause or direction. When he arrives to a destroyed city and he falls in an ambush, he will have to choose the best options to escape alive.

2.2.2. Script

2.2.2.1. Story's ways and choices

Due to the game is an interactive animation where different ways can be chosen, it has not been created a linear script. Instead, it has been created an interactive story using only text thanks to a software called *Twine*. This is a program which allows users to design

interactive stories with many options and permits them to upload it online in order to making it playable to other users. This program permits to create a script for the game appreciating all choices and the connections between them. In the point A.1 of the annex, it is possible to find a link to a first playable version of the script.

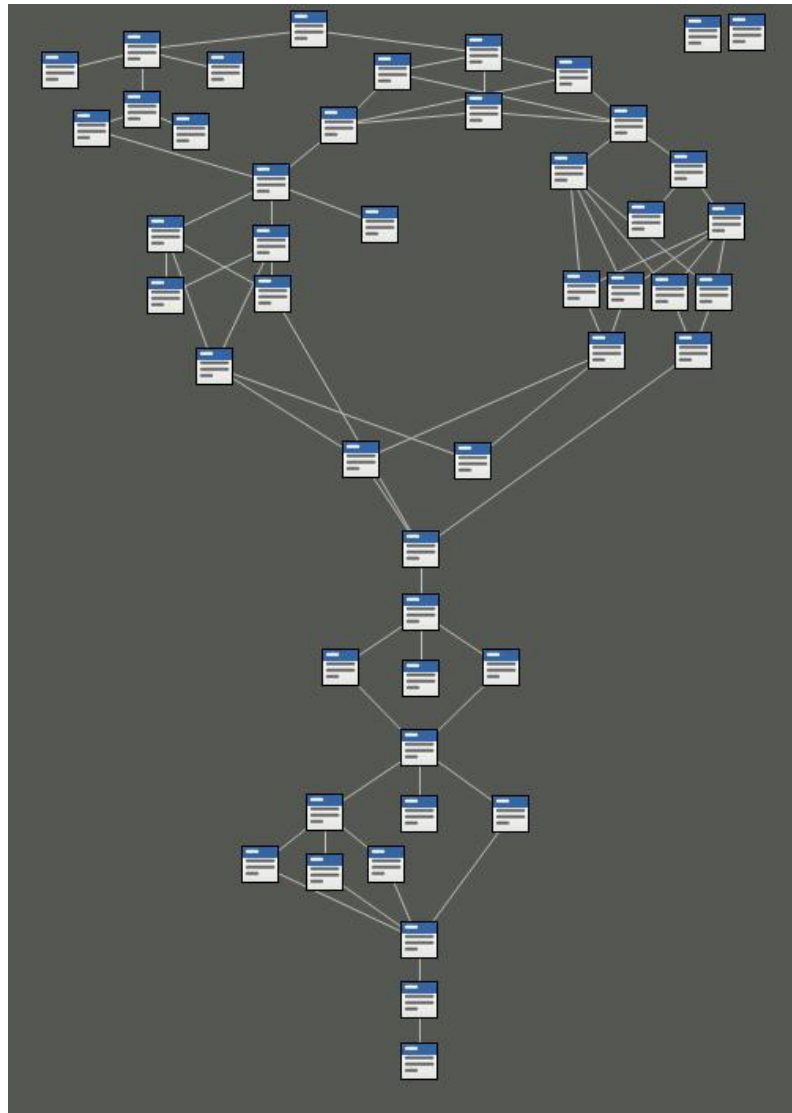


Fig. 2.1. A screenshot of the first version of the script designed using *Twine*.

2.2.2.2. Character's dialogue.

The voices and dialogue between the characters are simple phrases. It had been created a script for them, which can be located in the annex, in the point A.2.

2.2.3. Introduction's storyboard.

Before the user arrives to the first choice's screen there is an introduction. Due to this introduction is linear, previously it has been developed a storyboard for it. This storyboard can be found in the annex, in the point A.3.

2.2.4. The characters.

2.2.4.1. General features.

The general design of all characters, specially the head, has been inspired by *South Park* cartoons.

During the development of the first character –used as template for the rest of them- it had been realized that an interesting point could be to make special features. It appeared the idea of no-hands characters and, when the head was being designed, to put the eyes and the eyelids reversed.

The design of all characters has been made, first of all, based on the template character and, later, based on characters that were finalised. A clear example of that is the design of the raiders.

2.2.4.2. The main character.



Fig. 2.2. Front view of the main character.

2.2.4.2.1. General description.

The main character is a girl perturbed by her past. The lost of her parents and her little sister when a nuclear attack destroys their city, makes her a person without objectives and direction. Her only concern is to survive day after day roaming through a devastated world where raiders, savages creatures and the rests of a past world are a continuous danger. The only reason that gives her force for survive are the last words that her sister told him before she die, "Never give up". According to her mysterious past and identity she is for now an unnamed character.

2.2.4.2.2. Personality.

The main character is a sad person. She is always tense because she has to be aware of the dangers she has around, and at the same time she feels lost herself. However, in dangerous situations she manifests determination and skill in her survival desire, thanks to the knowledge that she has acquired trying to continue alive and to the last words of her sister.

2.2.4.2.3. Physical appearance.

At the beginning, the main character seems like a boy. In fact, this is an aspect which has been made for astonish the player at the end of the game. She wears heavy police armour that found somewhere and she wears dark colours. This appearance is according to the personality of the girl: she protects herself of the exterior and she's lost and perturbed.

2.2.4.3. The raiders' boss.

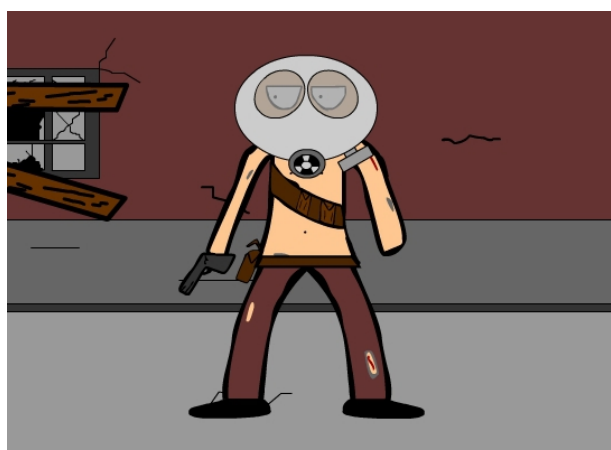


Fig. 2.3. Front view of the raiders' boss.

2.2.4.3.1. General description.

The raiders' boss is a mysterious character. According to that, it has been developed little information about him or his past. He is the man who gives orders to the rest of the raiders.

2.2.4.3.2. Personality.

He is a dark person really disturbed and he doesn't take care about the other people; he gets pleasure killing them. The mystery around his person is one of the points that increases his wickedness.

2.2.4.3.3. Physical appearance.

The main feature of this character is that he wears a gas mask which hides all his face. Leaving uncovered only his eyes shows him such a mysterious person. Like all other raiders, he wears broken pants. In his torso, he only wears a bandolier where he brings his ammunition.

2.2.4.4. Raiders.

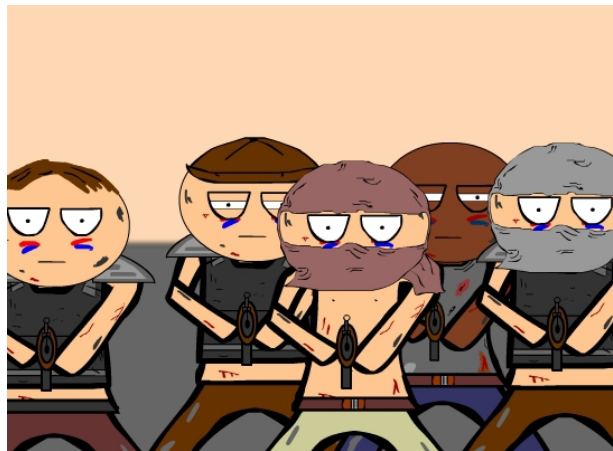


Fig. 2.4. Image of the raiders.

2.2.4.4.1. General description.

The raiders have different similarities that identify them as a group. All of them are disturbed people without a benefit purpose or objective in the life. As a result, they spend their time killing, robbing and repairing and modifying cars for their assaults to other travellers.

2.2.4.4.2. Personality.

The raiders are really perturbed people who were wicked before the war or who lost everything they had before. Due they are minions, all of them have a similar and superficial personality, which can be summed up in rage and obedience to their boss or leader, who is such the only figure of order inside the group.

2.2.4.4.3. Physical appearance.

All of the raiders dress broken and dirty clothes that they obtained from the debris or robbing people. There is variety in their torso clothing: some of them wear dirty shirts, others don't wear anything over it, and others wear bulletproof vests.

In their faces they have red and blue paintings that identify them as the same band. In their bodies there are visible hurts and dirty marks which show their poor interest in their hygiene and care, and consequently their gloominess.

2.2.4.5. Main character in the past.

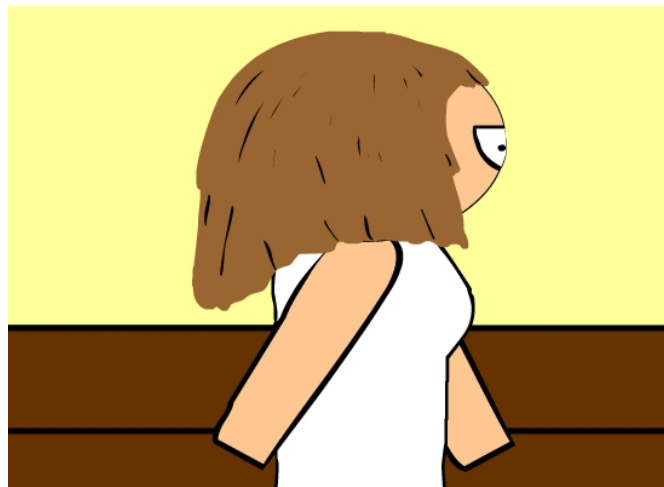


Fig. 2.5. Side view of he main character in the past.

2.2.4.5.1. General description.

Before the war, the main character doesn't feel hopeless and she is shown more beautiful in this time than in the future.

2.2.4.5.2. Personality.

In the past, the main character worries about the world situation, but she doesn't lose her belief that things will get better and tries to calm her sister.

When her sister dies and their house gets destroyed, her hopes die away.

2.2.4.5.3. Physical appearance.

The main character in the past is painted with more beautiful colours than the future. She wears simple and common clothes, and grey and black colours become blue and white.

2.2.4.6. Main character's sister.



Fig. 2.6. Back view of the sister of the protagonist.

2.2.4.6.1. General description.

The protagonist's sister is a young and innocent girl who doesn't take matter about the incoming disaster.

2.2.4.6.2. Personality.

She is an innocent who is unconcerned about the seriousness of the conflict that can attack her life and she is only worried about her parents, that haven't come back home yet. However, when the house is attacked she is mature enough to understand the situation and to encourage her sister not to give up.

2.2.4.6.3. Physical appearance.

She is a very young girl. Her innocence is reflected in the beautiful and gaudy colours she dresses. She wears a pink dress and has blonde hair.

2.2.5. Letters and fonts.

2.2.5.1. The title.

The title's features are:

I. Font: Arial Black

II. Size: 50px

The title's style is a result of experimentation with the effects or filters that Adobe Flash CS6 allows the user to Apply. It had been applied shadows with highlights for obtain black letters over a black background thanks to red highlights around it.

Concretely, the effect is “Shadow”, and its attributions are:

I. Blur X: 10px

II. Blur Y: 10px

III. Intensity: 100%

IV. Quality: High

V. Angle: 45°

VI. Distance: 5px

VII. “Extractor” activated

VIII. Colour: Red

2.2.5.2. Interfaces.

For the texts that appear in the interfaces the features are:

For the word “choose”:

I. Font: Times New Roman

II. Size: 20px

III. Colour: Red

For the buttons:

I. Font: Times New Roman

II. Size: 25px

III. Colour: Red

All these texts have not filters or effects applied for make it visible and understandable easily.

2.2.5.3. Credits and other texts.

For the credits and other type of texts the features are:

I. Font: Arial Black

II. Size:

Big texts: 25px

Small texts: 17px

III. Colour: Red

It has not filters or any effect applied for make it visible and understandable easily.

2.3. Production.

2.3.1. Drawing the project.

For design the project, it has been used only *Adobe Flash CS6*, which allowed to draw the different contents correctly and permitted to apply the desirable effects and animations easily.

2.3.2. The stages.

2.3.2.1. Post-Apocalyptic world.

The stages or scenarios have been drawn according to the dark atmosphere which acclimates the game. The roads and buildings that surround the protagonist are frequently broken, full of fissures and with big burned marks, and the smoke columns are a common element in the landscape.

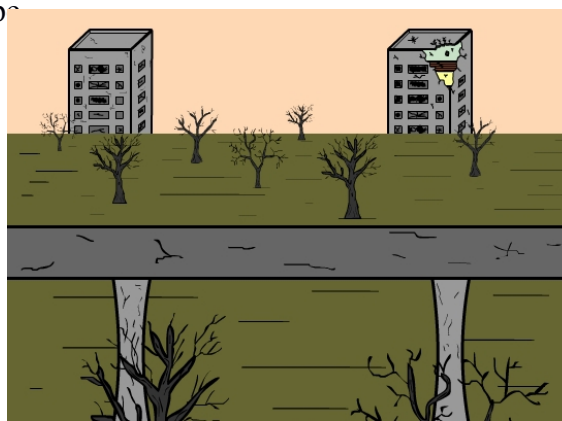


Fig. 2.7. Image of one post-apocalyptic stage of the game.

The common colours which decorate the scenarios are brown, grey and black, and the sky is always with a pale yellow. Although the next sheet has not been followed in each time, the common colours used for these scenarios are:

Roads and ground: Grey #666666

Sidewalks: Grey #999999

Protagonist's car: Grey #333333

Sky: Yellow #FED8B4

Buildings: Grey #999999

Walls: Grey #999999 or #666666

2.3.2.2. The past.

2.3.2.2.1. Before the bombs.

Before the bombs the scenarios are very different compared with the future. The colours are now gaudy tones, and grey and black leave pass to yellow, blue, green, pink and white.



Fig. 2.8. Image of a stage of the past.

2.3.2.2.2. After the bombs.

After the bombs the brilliant colours become pale and it begins to appear black and grey tones and burned marks. This part is an intermediate stage between the clearness of the past and the darkness of the future, and between the naivety and the craftiness of the main character.

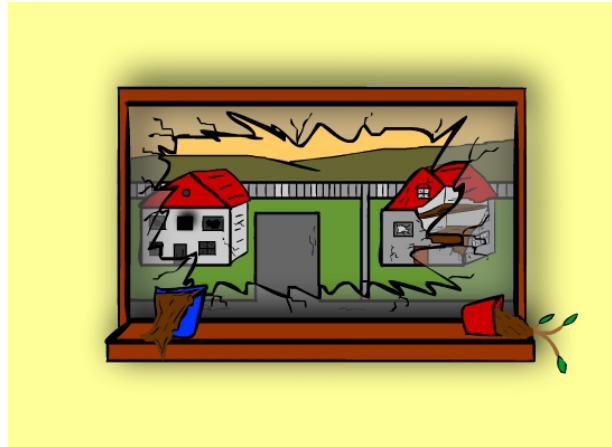


Fig. 2.9. Image of the destroyed past.

2.3.3. Animations.

For develop the project and its animations, it has been used the tools that includes Adobe Flash.

For the animation of characters and objects that don't experiment any change in their form during the movement, it has been applied simple interpolations and movement interpolations, which offer the same result.

For the animation in where the involved character or object experiments changes in their form during the movement, it has been applied form interpolations, which allowed including changes in the structure of the element from one point to another.

2.3.4. Effects over the image.

For obtain nice effects over the animation and add it quality, it has been added filters' tools of Adobe Flash. Basically, it had been added three filters.

2.3.4.1. Blur.

This effect has been used specially for eliminate background's depth. This action allows resting importance to the events and elements that are situated on the back of the principal action or first plan. This permits to the user or player to pay attention easily to the important zones of the scenario.

At the same time, this filter or effect has been used to rest importance to the elements which are situated on the first plan, making to the user to pay attention at the background.

In determined scenes, it has been made a combination of uses for obtain different zones of importance and change between situate the attention focus on the first plan or on the background.

For achieve a soft and correct application of it, the filter has been added using movement interpolations, which permitted to introduce it progressively.



Fig. 2.10. Scene with *blur* filter on the background.

2.3.4.2. Brightness.

The brightness filter has been used basically for create flashes and add realism to the shots. It has been applied over the shot draw, achieving an effect of flash.

In other determined scenes it has been used in corridors and clear areas in combination with white colours for recreate light effects, as you can see in the next figure.

2.3.4.3. Bezel.

This filter has been used basically for support to the brightness effect in the recreation of shots' flashes. It has been applied a yellow colour over it and has been modified its blur properties to 10px for obtain a large mark of light.



Fig. 2.11. Scene with *brightness* and *bezel* filters applied.

2.3.5. The interfaces.

2.3.5.1. General features.

The interfaces, which allow the user to communicate with the game, have a common design. All of them are composed by three items:

I. Support text: This text hasn't real interactivity, but helps the user to know that he is in an interface that requires his orders and advises him about the different possibilities and other information.

II. Choices buttons: These buttons contain in their interior text which advises the user about the option or way that he is going to choose if he clicks on them. When the user clicks on one of these buttons, the game programmes the next events according to the selected option, but it doesn't continue the reproduction yet. The user can know what is the latest chosen option easily because the clicked button generates a red mark around it.

III. Navigation buttons: These two buttons are situated on the bottom of the scenario and allow the user to continue playing the game or to return to the last choices screen. If the user clicks on the *Continue* button and there is not any choice selected, the game will do

nothing. If one choice is selected and then he clicks on the *Continue* button, the game will play on according to the chosen event.

The next figure is a screenshot about the general structure of the game interfaces in Action Script 3.0.



Fig. 2.12. Image of choices' scene.

2.3.5.2. The choice's interface.

This interface appears when the user has to decide which option will do the main character. On the top of this interface is situated the word *Choose*, which indicates the user that he needs to select an option. When this interface appears, the game rests paused and it is possible to continue seeing it on the background.

2.3.5.3. The death's interface.

This interface appears only when the main character has been killed. In the middle of this interface it is shown progressively the phrase *You are dead*. The user can choose between go back to the last choice's interface or quit the game. This interface has a black background which makes it tenebrous.

2.3.5.4. The end's interface.

This interface appears only when the user has completed the game successfully. On the top of this interface it is shown the phrase *Thank you for playing*. Like the previous interface, the user can choose between return to the last choice's screen or quit the game.

2.3.6. Changes in the script and choices.

During the production process, in order to finalize the project for the assessment's date in Glyndwr University, it had been noted that it where necessary changes to apply over the script and choices.

Basically they were cut some parts, the elimination of which didn't affect the main story, and the closed end that were created in the first finalized script were replaced by an open end. In the next figure, it's possible to appreciate the changes that had been made.

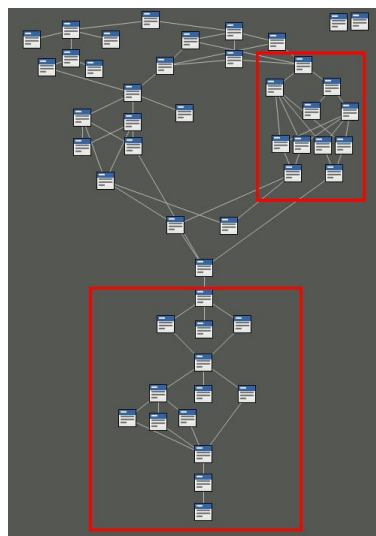


Fig. 2.13. Map of the choices that have been removed during the production (marked in red).

2.3.7. Problems during the project.

When 75% of the project was created, Adobe Flash began to create one important error. Testing the game, first of all, it wasn't any failure, but when it reproduced a considerable number of scenarios, the connections between scenes using Action Script 3.0 began to fail and it was impossible to continue the animation.

It was tested the operation of eliminate the code that was used yet and consequently it hadn't more utility, but no favourable result was experimented. Finally, it was selected the option of divide the project into to *.fla* files and link them using Action Script 3.0. This permitted to reproduce the *.swf* items without problem because the change of file weren't noticeable thanks to Action Script 3.0, and consequently the project appeared to be in one file.

However, with two files now, it appeared the doubt about how to upload them to a website correctly in the future. Despite this, as the purpose of the project was to rest it finished when the *.fla* files were completed, the matter of the publishing has not been considered an immediate problem for now.

2.4. Post-production.

2.4.1. Repairing and improving, phase I.

First of, it had been a revision of the work for detect mistakes and points to improve.

Basically, the objective was divided in to points:

- I. Find animations that had errors in their timeline, which was creating defective movements.
- II. Find parts or points that were done correctly, but it could to be improved for obtain better movements or effects.

2.4.2. Recording and adding the voices.

Before adding the music and effects, it was important to record and apply the voices.

For record the voices it was used the program Audacity. It is a software that permits to record and modify sounds easily. For catch the voices it was used the laptop's line microphone.

When the voices were recorded, they were tested in the project for know if their volume or others aspects needed to be modified. Basically, it was modified the volume of all voices, for achieve that they are heard easily.

2.4.3. Adding music and sound effects.

The sounds effects and music have been obtained using free-sounds websites ^[1]. All of these sounds were completely free software, so there weren't any aspects related to copyright to process.

First of all, it had been added the sounds effects. The system of work for do that consisted in find and download a determined sound or group of sounds depending the necessity of use of one type of effects or another. The downloaded sounds were saved in a folder and tested in the project for detect the aspects that could be improved. Once this has been done, the sounds were modified using Audacity for make them correctly to heard in the game.

The same process was used for add music.

For add the sounds and music, they were saved inside the game importing them to the project's library. Once this was done, the sound and music were able to be added in the timeline.

2.4.4. Repairing and improving, phase II.

Once the sounds and music have been added, it was made a process of revision again. The objective was to detect mistakes and points to improve again, paying special attention in the parts where new sounds and music were added.

2.4.5. Uploading the game on the Web.

For make it easily to show to the professorate or other collectives or persons, it was decided to upload the game on a website. For don't have costs, it was decided to create a free website using the services of WIX and to upload here the game. As the finalized game is divided into to files, it was created two pages with one part each of them.

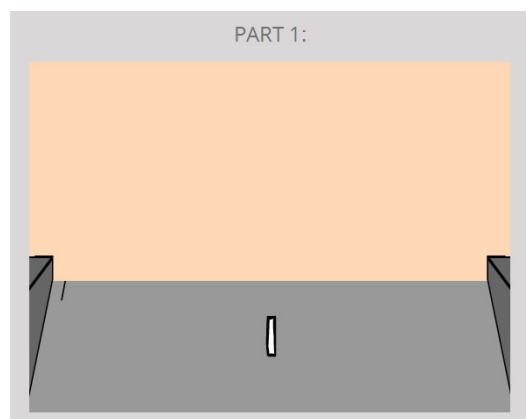


Fig. 2.14. Screenshot of the game executed in a *Wix* website.

3. Project's surveys and budget.

3.1. Technical viability survey.

3.1.1. Personnel.

The project has been developed and finished by Carlos Cerezo only. The work received help of the professorate of Tecnocampus and Glyndwr University thanks to their advices and ideas, although, there were not other implied people with it directly. This fact made the project very difficult many times, because it was many aspects and points to work on them.

3.1.2. Material.

3.1.2.1. Hardware.

The hardware that has been used for complete the project is my personal laptop. It has the technical requirements for make to work Adobe Flash, so it wasn't necessary any change related to it.

3.1.2.2. Software.

The software that has been used for develop successfully this project are:

I. Adobe Flash CS6.

II. Audacity.

III. OpenOffice writer.

IV. Google Chrome.

V. WIX's services (*www.wix.com*).

VI. Free-license sound websites (*www.freesound.org* and *www.flashkit.com*).

3.2. Economic viability survey and budget.

As the work has been developed using own-property hardware and software and free-license websites, it had been too low costs.

The laptop was bought basically for create the project successfully and for have a strong working method in United Kingdom, so if their costs are considered as inversion for the project develop, there are 599 euros (EUR) -477 pounds (GBP)- in inversion costs.

Apart from this aspect, there has not any more cost.

4. Possible future modifications.

There have been thought different actions that could to be applied in the future for improve the actual result:

I. Modify the game into one file: This is the principal point which is desirable to realize if future modifications are going to be done. This action will permit to transform the game in a flexible piece cause there will be no dependence of one file to another.

II. Upload the animation on a mini-games website or mini-games' market website: One of the desirable actions to realize in the future is to upload the game on a mini-games website for share it with other people. Moreover, there are specialized websites which objective is to manage mini-games that different users upload on it, and makes possible to interested clients or sites to show them on their pages.

III. Develop a second part or improve the actual game adding new content before the end: This is a distant possibility, but not discarded. The idea is to continue the story just after the end of this first part, discovering more aspects about the past life of the main character, thanks to a second part or incorporating the new content before the end. If this is made, it will be done as a hobby.

5. Conclusions.

Once the project has been finished, it has been extracted three principal conclusions:

I. About the personnel or workforce: The difficulties that occurred as a consequence of being only one member and the time used trying to solve problems and accomplishing the objectives confirmed me the idea that these type of projects are works to complete successfully thanks to a team. In a team every member can do a different task, and consequently the realization of a part or work doesn't have to interfere with other points to accomplish. Moreover, if every member of the group has a speciality or strong point, they can contribute with their experience to the different parts or processes of the project, producing a brilliant final result.

II. About the costs: After completing this project and looking the low costs, I extracted the conclusion that is possible to create some products without the use of too much resources and money. However, I'm conscious that isn't applicable to all works: depending the product you want to create and specially the scope that is desirable, possibly the needed resources and costs will increase.

III. Evaluation: Once the project is completed, I have a good valuation about the final result. I think that the final purpose is accomplished and the main objectives have been completed successfully. I'm a little disappointed with the aspect of have the game divided in two parts, but I think that this is a matter related with the possible actions to do in the future (like upload the game on a mini-games website or similar) and not the purpose of the project, which was to complete the product. Although that, I'm satisfied with the final result.

6. References.

[1] www.freesound.org www.flashkit.com

A. Paniagua Navarro, *Adobe® Flash Professional CS5*. Anaya Multimedia, Madrid, 2010.

