

# **ManHunt**

## **Project Report**

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## 1 Introduction

After 6 months, our first group project is coming to an end. Our little baby ManHunt has taken shape. This project has taught us all a lot in development, in graphics but also in organization. Our group work skills have improved a lot compared to the beginning. During this last period we all worked hard to make the best game possible and we are all very proud of the result.

In this project report we will start by doing reminders of our book of specifications, and our first and second defenses. Then, we will explain what final touches we added to our game for this final defense. At last, each of us will describe the experience we had during the making of this game.

## 2 Reminder of the specifications

### 2.1 Group creation and name's origin

Putting the group together was quite simple as we got to know each other during the first semester. We knew each other's strengths and weaknesses, and, keeping all these factors in mind, we chose each other as teammates on this project. Also, the fact that we knew each other and had developed an affinity for each other was another advantage for us, as it would guarantee a good understanding and cohesion of the group. Our name, "4-sight", refers to the ability to predict what will happen or be needed in the future. This name has an important meaning for us because we aspire to acquire this ability. We are four people with a common passion: computers. This video game is a way for us to apply everything we have been taught so far while learning new things. Each member of this group is essential. Each one has a field in which he/she is really gifted, some will be better in programming while others have more creativity, it is this diversity that made the richness of this group.

### 2.2 Who are behind 4-Sight ?

#### 2.2.1 Shreya AHLUWALIA

The first member and group leader of our lovely team : Shreya.

Indeed, the latter is a novice in the field of computer sciences. Shreya has always been fascinated by computers without necessarily having manipulated algorithms. This project is a challenge for her, she wants to prove that despite the lack of experience in computer sciences, it is possible to create this game, even if she is aware that it will be difficult. She brings to this group the visual and musical creativity it needs to produce this game. We decided to give her the position of team leader because we believe in her and her leadership skills.

#### 2.2.2 Julien BESTARD

The second member of our team: Julien.

Julien is a computer genius from the 91st region of France, like the well-known group PNL, and lives a peaceful life in his country town. Since middle school, he has been attracted to new technologies, becoming more and more interested in this field. He is now a student at EPITA and ready to throw his heart and soul into this new project. Thanks to his computer skills and his

unrivalled sense of humour, he guarantees a good progress in the project and to keep a good atmosphere between us. Julien is a sure bet for this group!

### **2.2.3 David WU**

The third member of our team: David.

David is also a novice, he never understood computer sciences before EPITA, he was skeptical and he didn't know if he would like it. Fortunately for him, he managed to love what he was doing from the start. David, since his childhood, is passionate about video games. It is what has given him a greater appreciation for filmmaking, and also developed his creativity. This design genius will allow us to develop an incredible map and characters on softwares like Unity and Blender. It is during this project that he aspires to improve his programming and algorithmic skills. David guarantees us a great visual for our video game!

### **2.2.4 Melody BASTIEN**

Fourth and last member of our Dream Team: Melody.

Melody is a little more discreet than the rest of us, but she is just as gifted in computing. Indeed, she has a general baccalaureate, specialising in mathematics and computer science, and is therefore quite at ease with algorithms and programming. Her greatest asset? the creation of websites, she has already created several! It was during her high school years that she learned to code in HTML and CSS. Her computer skills and creativity will be very useful for this project. Melody is an essential pillar of this team.

## 2.3 Division of tasks

### 2.3.1 Task sharing

Tasks	Shreya	David	Melody	Julien
Website				
Map Design				
Multiplayer				
Survivors				
Hunter				
Menus				
IA				
Missions				
Traps				
Sound				
Design				

Leader

Substitute

### 2.3.2 Advancement in view of defenses

Advancement in percentage			
Tasks	Defense 1	Defense 2	Defense 3
Website	20%	70%	100%
Map Design	30%	70%	100%
Multiplayer	80%	100%	100%
Players	40%	80%	100%
Survivors	35%	70%	100%
Menus	0%	50%	100%
IA	30%	70%	100%
Missions	10%	50%	100%
Traps	0%	40%	100%
Sound Design	0%	35%	100%

## 2.4 Origin and Type of Project

### 2.4.1 Origin of project

To come up with the idea of creating a video game, we talked all together to find out what each one of us expected for this project. Therefore, we concluded

that a video game would be a great alternative to work on : both playfully and academically, we thought there would be a lot to learn by making our own.

Afterwards, we decided to make this specific type of game because we found it particularly easy to understand and entertaining for the players. Indeed, the game principle is easy to handle as it is a remastered version of the famous "Hide and Seek". We have been inspired by some existing games : Dead by Daylight, but changed the concept in a way that suits us.

#### **2.4.2 Type of project**

Our video game, entitled "ManHunt" will be made with 3D graphics, using softwares such as Blender and Unity. As said previously, our game is based on a "Hide and Seek" principle, which implies a multiplayer setup, in order to play with others.

The rules are simple: a hunter has to chase other players that we call the "survivors". The hunter wins if all survivors are found and killed. The hunter can lay traps to slow the progression of the other players, and he also has a weapon, with which it hits the survivors. The players have to hide themselves from the hunter.

Moreover, missions will be available to players, which will allow them to increase their progression bar and help them win.

We plan to develop an A.I., manifesting itself as a dog that will simply follow the players until they have complete all the missions. After that he will show them the way to the exit point for the players to leave the map and win the game.

### **2.5 Object of Study**

#### **2.5.1 Goal and Interest of Project**

Making a video game allowed us to discover one of the biggest parts of the computing world.

Being a group of 4, we divided the tasks as well as possible and chose the fields of competence in which we wish to deepen our knowledge, according to the various loads to be carried out for the project: the Web site, the AI, the implementation of a multiplayer system...

This project allowed us to develop many skills, mainly in programming, but also other skills, such as research or organization. Research, because we had little technical knowledge. Organization, because there were many steps to respect in the design of the game, and they must be done in the correct order.

### 2.5.2 Purpose of the project

We were not expecting to have the perfect game, but we wanted to provide one that is working, that we are proud of and that helped enhance our programming skills.

## 2.6 State of the Art

### 2.6.1 Inspiration for the project

The game was inspired by *Dead By Daylight* and by the *Among Us* game mode. The game will be available only on Windows.

*Dead By Daylight* is a survival horror, multiplayer game. Each game is composed of 5 players, one player plays the role of a hunter who must search for all the players left on the map, and 4 players called «survivors» who must escape from the killer by fixing generators (to open the exit door).

*Among Us* is a game where crewmates need to do missions to win. That's what we plan to do

### 2.6.2 Players

A game is composed of 5 players, 4 survivors and a hunter. Survivors are those who try to escape from the hunter. For a game to work, we must have at least two players.

To win the game, the survivors must complete all the missions (when the progress bar is full) and find the exit.

The survivors must achieve 3 missions. The idea was to make a "platformer" (in the same style as the "Mario Bros" game) but different levels (each level being harder than the previous one).

During the game, a progression bar will be displayed so that survivors can see the progress that they made with the missions.

### 2.6.3 Hunter

One of the 5 players in the game will be a hunter. He will have to find and catch all the players with his hunter gun and traps. To win the game, he must eliminate all the players who are still alive. As long as the players are not all eliminated the game continues (unless the players have completed all their missions). The hunter can hunt the players as long as they have not completed all their missions.

The hunter can place a limited number of traps throughout the map to disadvantage players (perhaps slowing them down, blocking them for a few seconds, or for a few seconds the hunter could see where are hidden the players on the map). The hunter will be given a weapon in to the entire game to kill the players. This weapon can only be used near them.

## 2.6.4 Realisation

For the development of this project we used Unity as graphic engine. Unity is compatible only with C#, so the programming part of the project has been done in C#.

To design the map, we exclusively used the modelling software Unity, especially to create the environment. David was the leader of this task, helped by his teammate Shreya. In addition, animation and characters were designed with other softwares, such as Blender and Maya.

We had chosen to model our game in 3D for a better immersion in the gameplay.

We created a website to provide information about our game, a presentation of the team and a way to contact us for feedback. We also added a way to download our game directly through the website. To develop it used **HTML** and **CSS**.

In order to collaborate all together on the defense reports and to obtain a document compatible for all, we used **Overleaf**, a website allowing to generate PDF documents while writing them in LaTeX.

## 2.7 Economic aspect

The realization of a video game has obviously a cost which can vary from a few thousand euros for the independent games and several million for the big productions.

Development is the most time-consuming part of creating a game. This project, however, had to be completed within six months, with a staff of only four people and a budget of almost zero. We used a free host (github pages) to put the website online. Generally, for this project all the softwares and resources used were free.

The realization of this project did not call upon either a publisher or a development studio. Moreover, the goal was not to seek any profitability, the production cost was reduced to the minimum possible, namely 0.

### 3 Reminder of the First Defense

#### 3.1 Introduction

For the first defense we are going to present you our progress on our "Man-Hunt". As a reminder, our game is a remake of "Friday the 13th" and it is a Prop Hunt.

#### 3.2 Hunter and Players

##### 3.2.1 Conception on Blender

To be able to design the Players and the Hunter we had to use "Blender". Blender is a free software for modeling, computer animation and 3D rendering. A tutorial on YouTube helped us make the Players in Low Poly :



Figure 1: Low Poly Character Tutorial

We had a lot of fun making the characters because it was our first time making them, discovering how to use Blender to eventually make the players and so on... That is why we tried to make a different set of people, we have boys and girls and our Hunter was a zombie !

The policeman as seen above is the base that inspired us to make our own 4 players as such :

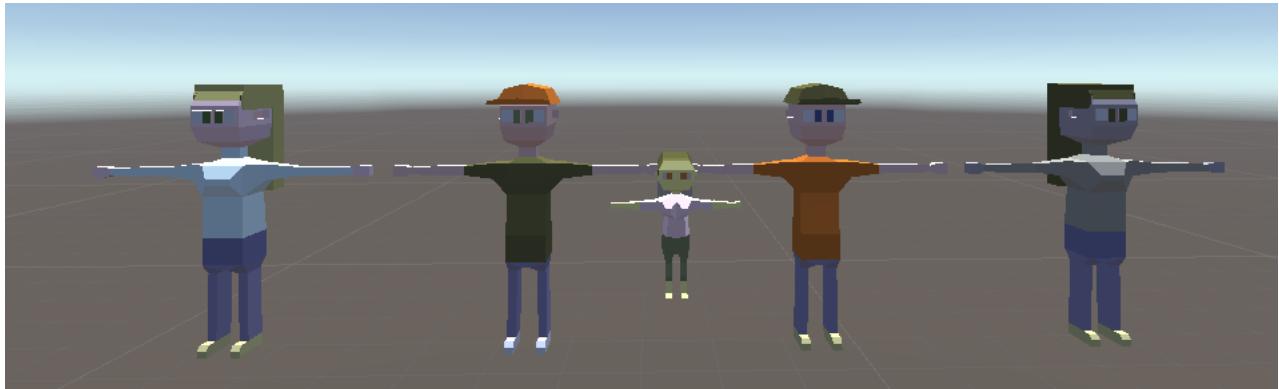


Figure 2: Our Players (made in Low Poly, not rigged)

Once the conception of the player was done, we had to rig our players. Rigging is basically adding a skeleton to the player so that it moves around like us. For the rigging we used another tutorial and made sure that it moved like humans :

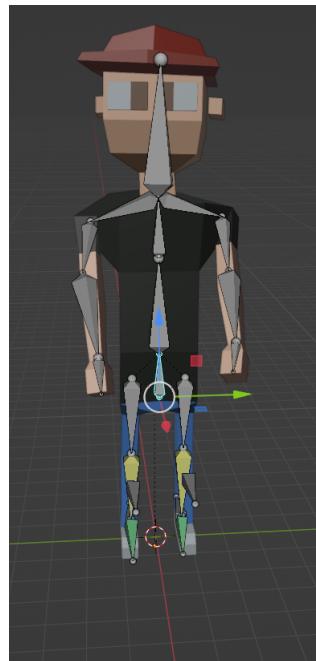


Figure 3: Rigged Player

### 3.2.2 Code

For the players and the hunter, we needed them to move. To do that, we coded on visual studio code in c sharp. At first, we searched on internet some information on how to code a unity character. Thanks to a lot of websites, we

learnt a lot of new things about new libraries and functions we could use for our code. To perform the movements, press :

- Q or left arrow : to move left
- D or right arrow : to move right
- Z or low arrow : to move forward, walk
- S or high arrow : to move backwards
- space bar : jump
- shift + S/Z : to sprint, run (backwards/forward)

Also, the mouse allows the player to look around and change directions. We wrote a code where the players and the hunter can't pass through walls or objects as well. To see if the movement was well coded, we had to test on unity, see if the player was not walking too slowly, was not jumping too high or he was not running too fast. For the moment, players and the hunter are similar, they do the same movements, because we haven't made their weapons yet.

### 3.2.3 Difficulties encountered

Blender conception was quite difficult because we had never used this software before. The first time we opened it, there was just a cube lying on the screen and we had no idea what to do with it. Eventually after digging a little bit and with a reference from a friend we found this YouTube page that helped us a lot in the making of our Players.

The most difficult part in the rigging of our players was ensuring that the characters would stick to the ground and not just hang in the air. Also, rigging the players' legs was not easy because we had to simulate human movements. Bending with the knees all that while the feet do not move and stick to the ground, making all the body parts move independently from each other and so on...

As for the code, it was pretty hard to do it. We had a lot of problems concerning the functions we had to use from the libraries. We did not know which function we could use and which one would work on our class. The movement code took us a lot of time and research. Furthermore, when the code was finished and we needed to import it to unity to test it, a lot of error appeared. The code did not match with unity and we put some time figuring out what was wrong (the

errors were often some writing mistakes or mistakes about functions we used from libraries). I also did a code about the damage the player takes but some mistakes appeared when i tried to merge the code with unity. I could not find the mistakes in time so this code is going to be in the next defense.

### 3.3 Map Design

To begin the designing of the map, we had to handle modeling software such as Blender and Unity 3D. Thus, we had two ways to model our map: designing in low poly with a soft number of vertices and a low graphic design, or the High poly way: more realistic, but much longer to process. To choose how we would proceed, we trained ourselves on both way. Finally, the decision was clear : modelling a simple wall in High poly was clearly time-consuming while the low poly way was easy to handle, not that realistic but we could bring our own style on it.

For our first defense, we had to choose the very first steps of the map's design. To match with the idea of our game, we wanted something quite simple, with many elements in the environment. To do so, we chose to model a whole city, where the main building of our game will be a abandoned supermarket. As we were creating a "horror" hunt game, we looked for a gloomy and worrying atmosphere, which explains our choice of the abandoned and damaged city. In the figure below, you can see the sketch of our map for the first defense.

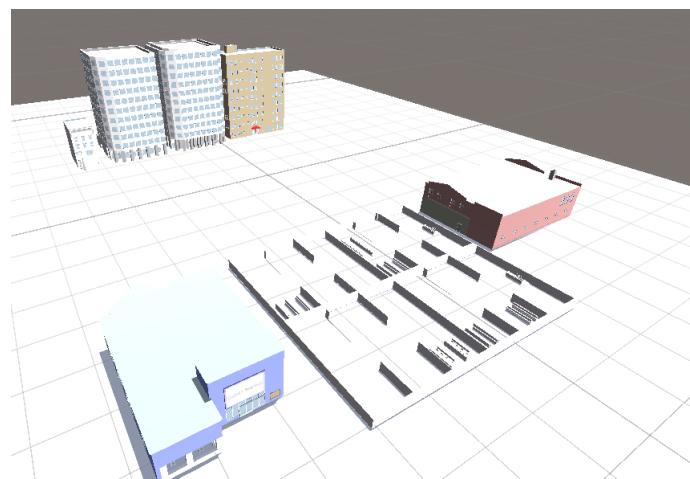


Figure 4: First buildings and supermarket's skeleton

As you can see, there was almost not color (neither elements) in our map, only a few buildings (which we modeled from Blender) and the beginning of the market's modelling. The plan was almost empty, with poor details and we encountered some issues in Unity3D, such as light and shadow problem. The

had a clear idea of what we wanted inside our supermarket as we drew a plan of it (figure 2). More than that, we thought of damaged furniture (figure 3), with props that we could scatter all over the floor, in order to create a sense of chaos. The market and the furniture had been all designed in Blender. Coming

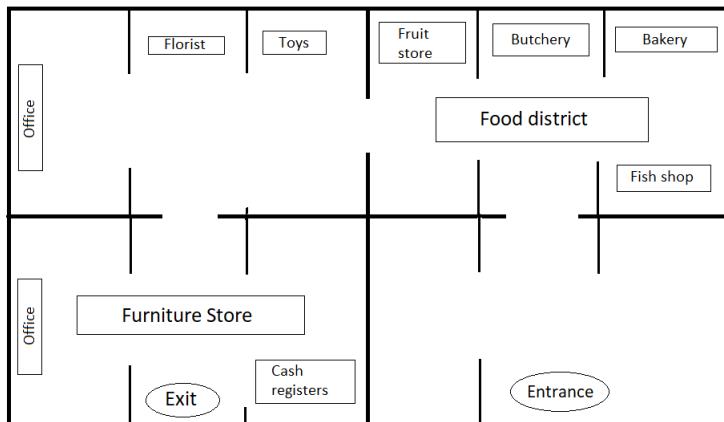


Figure 5: Supermarket plan



Figure 6: Damaged shelves

back on Unity, we chose to place our supermarket in a whole city, where the players will be able to play in. For the moment, the city is not finished, we designed some building to put on the environment (Figure 5). In addition, we chose to take some free prefabs on Unity assets store such as fruits, lamps, and furniture. These are the objects into which the players will be able to take the appearance (Figure 6).

Obviously, during this first stage, we had been faced to many issues. The most challenging part was to begin the conception of the map on software we have never (or almost) used before. For instance, the time we spent to handle Blender and Unity3D was substantial. However, it was necessary as we can now easily do in couple minutes what we needed 1 hour to model before. Moreover, we had an issue of proportion when we had to assembly the characters with the map: the map was too small and characters was too tall. To



Figure 7: Supermarket plan



Figure 8: Damaged shelves

overcome this problem, We decided to add rooms to our supermarket, and then assigned a feature for each room (food district, furniture store ...).

For this first defense, the texture and material were not added to our market, as we thought we had to do the texturing part after the modeling of the building. Also, the fact that we chose to model an abandoned building was quite challenging as everything can not be clean and straight.

### 3.4 Missions

For the first defense, we needed to start thinking about the missions that would be the heart of our project. We needed a system to show the progression in the success of these missions, therefore we chose a progression bar.



Figure 9: Progression Bar

As players complete missions, this one will keep filling itself up.

### 3.5 Multiplayer

#### 3.5.1 Connection to the server

For the multiplayer part, we decided to base it on the unity package named "Photon". "Photon" provides us free server for our project and is relatively

simple to use. The callback principle of "photon" allows us to divide the multiplayer into 4 stages :

The first stage was the connection to the master server : the player needs to provide a nickname to log into it.

When the local machine receives the callback from photon, that can be described by "Hey you are connected", the Scene will switch on the one that we use to create/join room and wait for all the players to join. A menu was presented as follows, on the right, there was an area to see the rooms created and the possibility to join them and on the left a button to create a room or leave the server.

Once the player logged into a room, if he is the master of the room (the one who created it) and that there are enough players to start a game. If he is not the master, the player just has to wait for the game to start.

In another menu, the player could select the character that he wanted to play with.

### 3.5.2 The difficulties encountered

Photon can be quickly painful to use. For example, all the GameObject that we want to instantiate on the network need to be in a folder named "Resources", when you are not seeing that you put two "s" instead of one, you lose your mind quickly and stay two hours one this mistake.

Another problem was that all the GameObject that need to be updated on the network, need to have a photon view and transform view component. If it's something that can be updated by all the players, you need to switch from owner of the object. The documentation of Photon is pretty good, but do not explain stuff like that, the major part of our time was to try and hope it will work.

## 3.6 Artificial Intelligence

### 3.6.1 What was it doing at the time ?

Our Artificial Intelligence was quite simple, its only purpose was to detect the players in a defined radius, and to follow them as long as they are inside said radius.

### 3.7 Website

#### 3.7.1 Website Conception

For the Website we used HTML and CSS. These are two languages for website conception. The HTML file will let us write, put up photos, and basically let us create a structure for our website. Whereas the CSS file, is in charge of all the aesthetics of our web page.

The first step to designing our web page, was making a logo. The logo was a sketch at first that we made on a sheet and eventually we virtualized it thanks to InkScape, a designing software on which we tried to make the logo again :



Figure 10: ManHunt Logo

Then we started imagining how we wanted our website to look like so we brainstormed for a while. We basically wanted something that matched the spirit of our game, something "horror-like". That is why we went with a "red and black" theme for the whole page.

On the Home page, for now, we have just added a footer with our pictures, our names, and silly quotes that correspond to us in a way or another. When the user clicks on our names next to our photos, for now it will get him to the second page : "Who are we ?"

Then for the second page, the "Who are we ?" page, we wanted to describe how we got the group together just like we did in our book of specifications. We also want to add our photos and descriptions of us, again, just like we did in the book of specifications.

Also, we designed the website in a way that when we click on "Home" or



Figure 11: Home page of the website

”Who are we ?” on the top right side of the website, it redirects us to the corresponding page.



Figure 12: ”Who are we ?” page

### 3.7.2 Difficulties encountered

The most difficult part here was teaching each other how to use HTML and CSS, because some of us knew how to use it while others didn't. But it also made us grow closer to each other, as in we understand better how each one of us works and how to explain them something. That is actually a pretty positive point that we developed.

Another very difficult thing to handle, mostly in CSS is how to position what we want to put on the page. We had a very hard time trying to position the photos on the footer of the page, and then how to position the quotes and the names next to each photos. As you are able to see on Figure 19, we still quite haven't figured that out yet. Some part of the quotes are still hiding under our pictures.

## 4 Reminder of the Second Defense

### 4.1 Map Design

In this stage of the map design, our goal was to advance in the modeling of the city in Unity3D, by adding more buildings, the first props, and the roads in front of the market.

#### 4.1.1 Realization on Unity3D

The very step of our realisation was to fix the light bug we had during the first defense. Indeed, the sky light was too bright and created dark, even black spot on the floor (shadow). To do so, we downloaded sky materials on the Unity Assets Store.

To keep a coherence with our theme of man hunt, we wanted a dark atmosphere, and so we have chosen two sky materials that we are sure will match well with our theme.

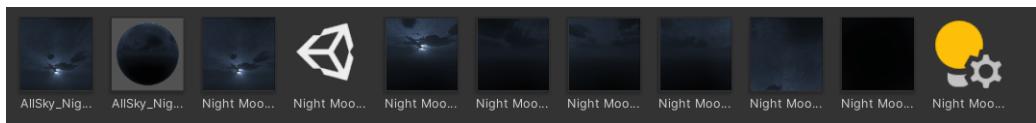


Figure 13: Night sky material

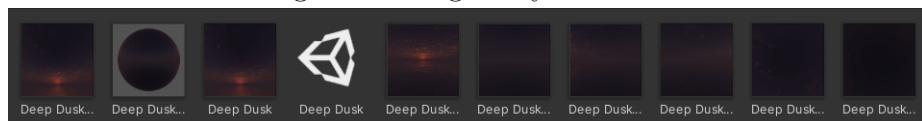


Figure 14: Red sunset sky material



Figure 15: Dark sky render in Unity



Figure 16: Red sky render in Unity

In order to simulate the appearance of a city, we started by building the roads and the sidewalk by using a prefab package. With this package, we had to build our entire road piece by piece. Therefore, the building was time consuming but we had the freedom to design our own road path.

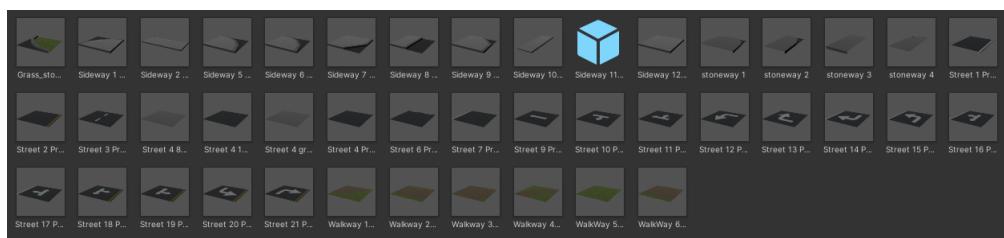


Figure 17: Floor prefab



Figure 18: Road Render and crosswalk

Starting from here, we managed to add many props in the street such as lamps, hydrants, traffic signs, bus station, cars, trash bins, cans...

#### 4.1.2 Modeling on Blender

We started this task by fixing some bugs we had on our supermarket by modelling it again for some part. To link the rooms between them, which was not the case for the first defense, we simply decided to make a space between each linked room. For this defense, we focused ourselves on the Unity map, including all buildings and props we put on it. Therefore, there is no great changes to our blender model, only the general color of the building that we made darker.

#### 4.1.3 Difficulties encountered

For this defense, we encountered several issues especially concerning the blender part. Indeed, the realization on Unity was time consuming due to all details we put on it, but quite simple when we get used to the software. However, the texture part was messy since we've spent a lot of time to look for a design we were happy with while we couldn't import them on Unity3D. For this defense, we didn't manage to add texture to our supermarket so we decided to complete our city.

## 4.2 Hunter And Players

### 4.2.1 Modeling

For this defense, if we speak about the modeling part of the Players and the Hunter, we worked on Blender with animations. Therefore, we had animated Players as well as an animated Hunter. Thanks to a tutorial video, we had learned how to manipulate the animation section in Blender. Our characters could run, walk and breath, and the Hunter had a stick. To do so, we modeled a basic stick on Blender and associated it with our Hunter, after that we animated it in such a way that it seemed to hit the others.

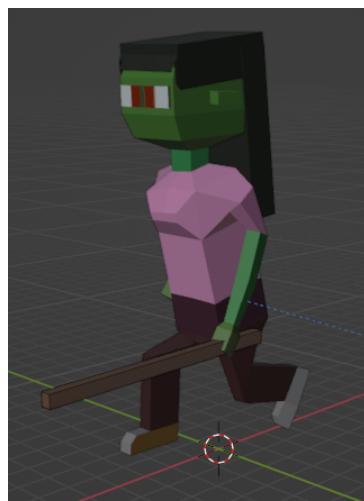


Figure 19: New zombie

### 4.2.2 Code

For this defense, we coded on Visual Studio. We allowed the hunter to attack the players.

Concerning the player, we had to make a code to allow players to morph/transform themselves into an object of the map. We did not know at all how to do it. For the weapon and the points of life , it was rather simple code. Whether the code to transform players was very difficult.

### 4.2.3 Difficulties encountered

The main problem encountered in the modeling/ conception part was the animation. The fact that we did not know how to use Blender and therefore its animation section was felt the most during the making of it. It was a very hard process because there were a lot of details that we needed to pay attention to.

The slightest movement could be hard to make because it should have look as real as possible.

### 4.3 Artificial Intelligence

#### 4.3.1 Modeling of the AI

We were able to model a basic low-poly animal that was roaming around on the map following the path that was defined in the first defense. Our poor little animal had yet to be rigged and animated, but thanks to a tutorial video it was a very sweet little puppy.

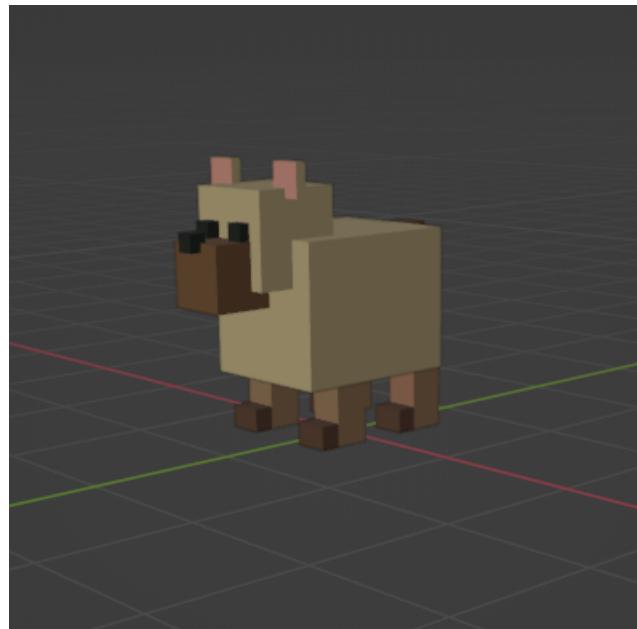


Figure 20: Dog on Blender

### 4.4 Traps

#### 4.4.1 Global

For the design we had thought of a trap bear, like this one, but in low poly

#### 4.4.2 Difficulties

What was hard here, was to immobilize the player on the trap. It was complicated because we had to find out which players were trapped and we had to destroy the trap after 3 seconds.



Figure 21: Trap bear

## 4.5 Menus

### 4.5.1 Global

We had decided to go for a menu with our map in background , a background of theme horror, gloomy. We had a total of 5 "scenes" : those we called "entryMenu" which gave us access to the login menu, the credit and the possibility to quit the game.

### 4.5.2 Difficulties

As surprising as it may be, the design of the menus was quite long to find to stay in the same theme as the site, and the atmosphere of the game

## 4.6 Multiplayer

Small update on the multiplayer, users could only start a game with at least one hunter in. We also had added the animation through the network so that everyone was able to see it.

## 4.7 Missions

We had an idea to do a mini game, a jumper, where the level of difficulty increased each time that the players completed a mission. The game looked like Mario Bros, a 2D game where a player jumped over obstacles until he reached the final point. Each time a player had finished the mission, the game difficulty would increase for the next one. The game had 3 levels of difficulty. During the game, the player was just going to jump over cubes and try not to fall or dodge obstacles.

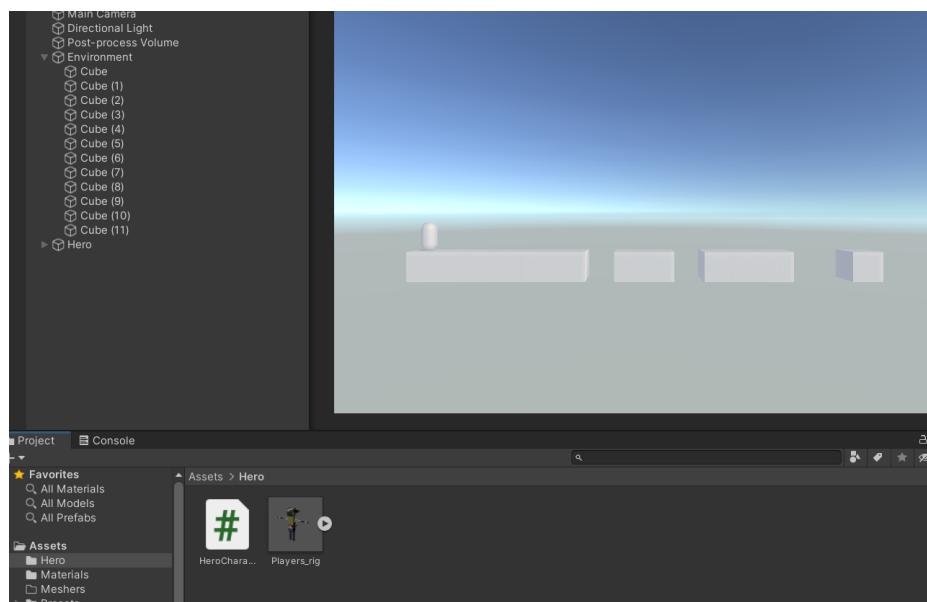


Figure 22: Beginning of the mission

The white capsule was the player and the blocks had been customized on blender.

## 4.8 Sounds and Music

For the sounds and music, we had to sought help from our beloved friend : YouTube. We had mainly searched for music that we would be able to fit our "horror" theme. Therefore Julien and Shreya had consulted each other and had agreed on four extracts from these audios :

- <https://www.youtube.com/watch?v=D3IOBHMj94E>
- <https://www.youtube.com/watch?v=3hXUsaVBkbM>
- <https://www.youtube.com/watch?v=m3wH9K9cDcI>
- <https://www.youtube.com/watch?v=1ar7fqJXD50>

We had already managed to seperate the extracts that we wanted from the videos.

There had not been any difficulties encountered in the process of finding our sounds nor our ideas.

## 4.9 Website

### 4.9.1 Problems

We had to first readjust our website. Indeed, the website didn't match with all computers. We had realized that it wasn't compatible with all computers and tried to remedy to that by calibrating the website while comparing two computer screens.

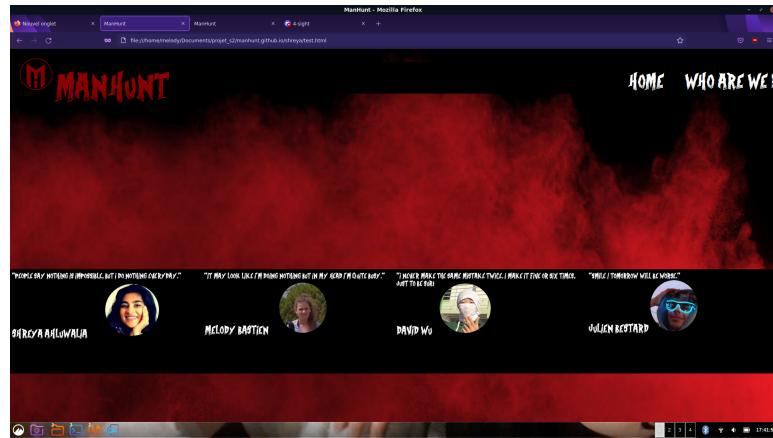


Figure 23: Shreya's computer

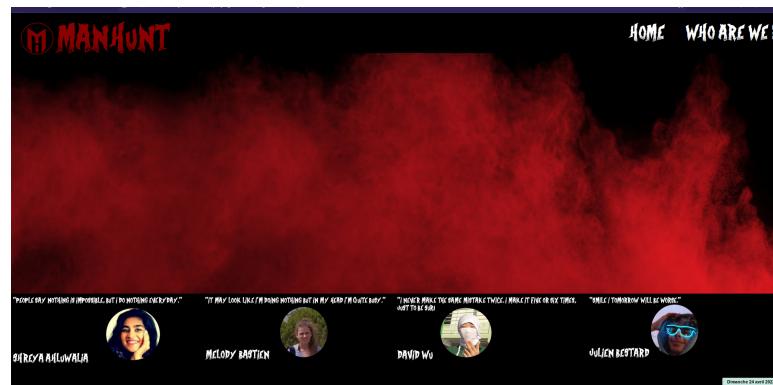


Figure 24: Melody's computer

We had also realized that depending on the computer screen size, the text on the website would overlap. We were still trying to figure out how to correct this mistake, but it was hard as we are still learning to use HTML and CSS. Furthermore, this problem had also appeared when the window of the website were not in full screen. When it was in full screen the text appeared correctly.

#### 4.9.2 What's new on our website ?

For this defense we had added some new features on our website. First : our "Who are we ?" page on which we had added our beautiful faces to the page and little descriptions of ourselves for our future players to know us a little better.

Second : We had created a third page, it will be the space on which our users will be able to download our lovely ManHunt.

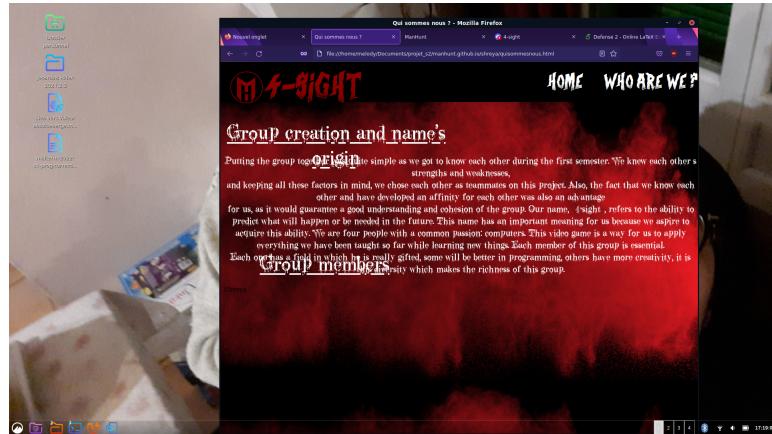


Figure 25: Small Screen

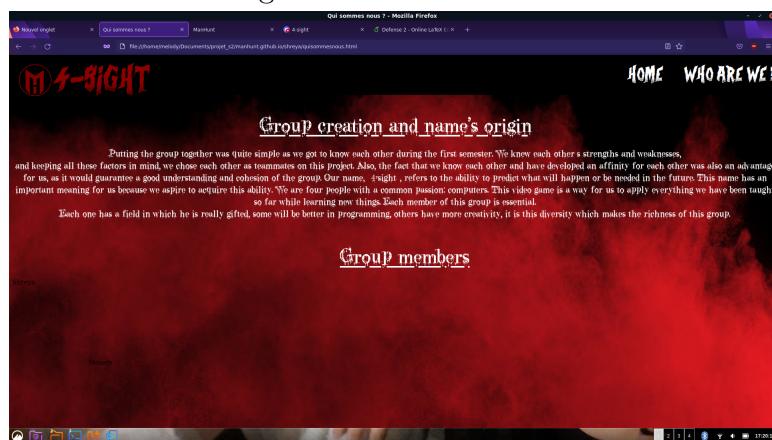


Figure 26: Full Screen

## 5 Last Defense

For the last defense, we managed to implement all the desired functions of our project and are proud of what we achieved.

### 5.1 Map Design

#### 5.1.1 Global realization

As said in the previous part, we have done a great part we planned on Unity3D. For this final defense, we had to focus on the realization of the supermarket in Blender, including adding texture and material, modelling more details on each room of the building, adding props... The first stage of the map design was to add color to our building. We chose to create a metallic texture for the market's walls so that it looks solid and fortified. In the figure below, you can see the simple nodes of texture we used to make the metallic texture.

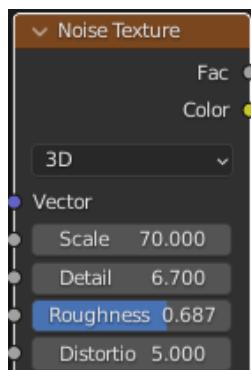


Figure 27: Nodes for roughness

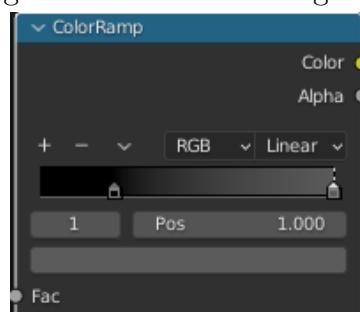


Figure 28: Colour gradient

Here you can see what was the render in Unity3D, where we can easily see the light reflection on the cube. As we chose to design our whole game in low poly, we chose to not create some complex texture to our building. In fact, we wanted to keep simple graphics, to remain consistent with the other buildings we have made before. To make it as we wish, we created several new material for each rooms, in order to put some colours to our supermarket.

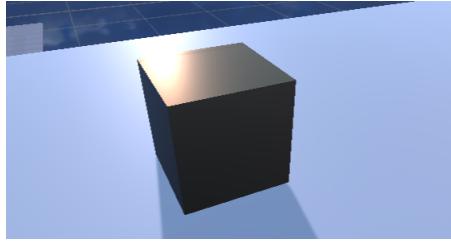


Figure 29: Cube with metallic material

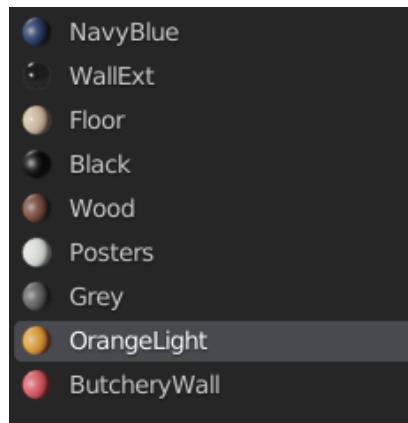


Figure 30: List of material made on Blender

For instance, we chose a brown material, called "Wood" for the bakery space, the red for the Butchery, a light colour for the floor...

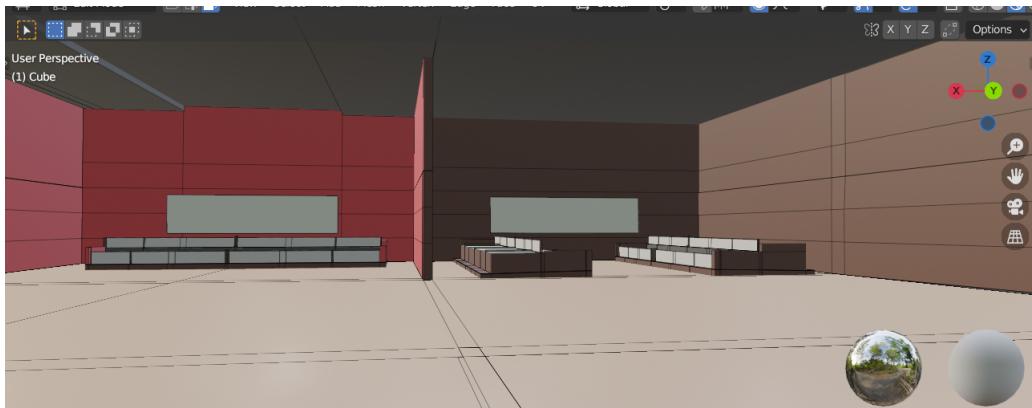


Figure 31: Bakery and Butchery

As you may have seen, we modeled some furniture in both butchery and bakery, where we have put our several food prefab once we were on Unity. These furniture were quite simple to model. It is divided in several compartments, where we can find prefab such as cake, bread, ice cream (concerning the bakery) or meat for the butchery section. We filled these compartments with prefabs we imported from the UnityAssetsStore, which means meat and bakery food.

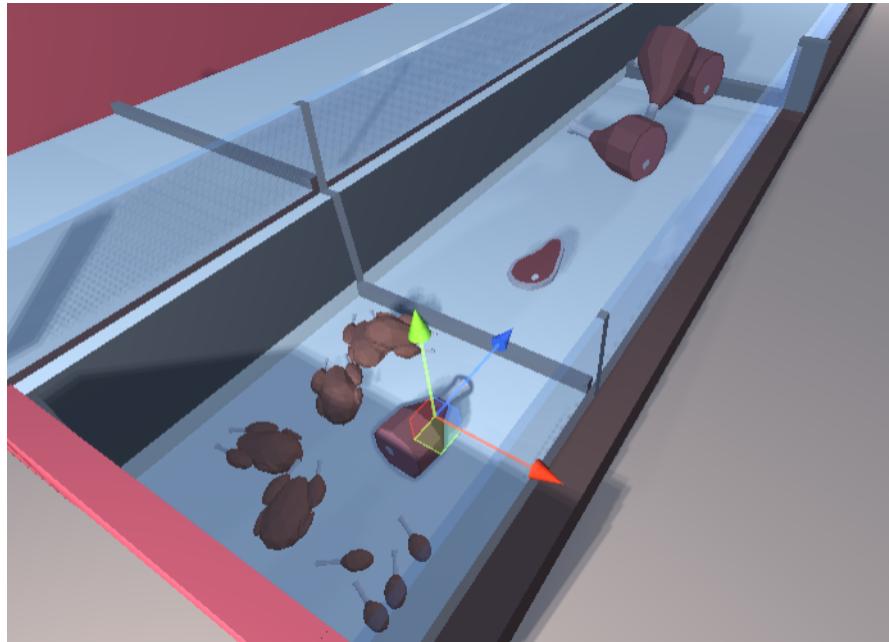


Figure 32: Meat in the butchery

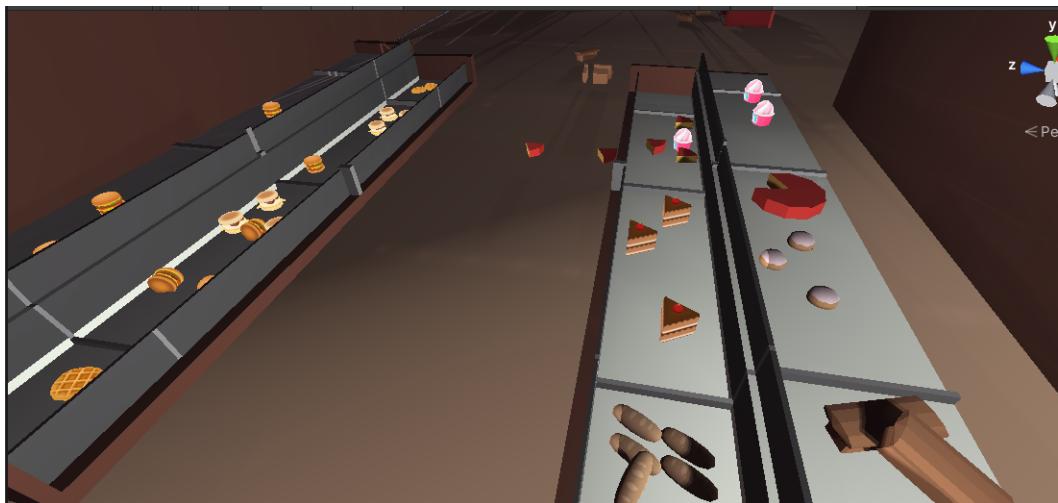


Figure 33: Bakery Food

In the other room of the food district, we made a fruit and vegetable section, with some baskets we modeled in Blender too.

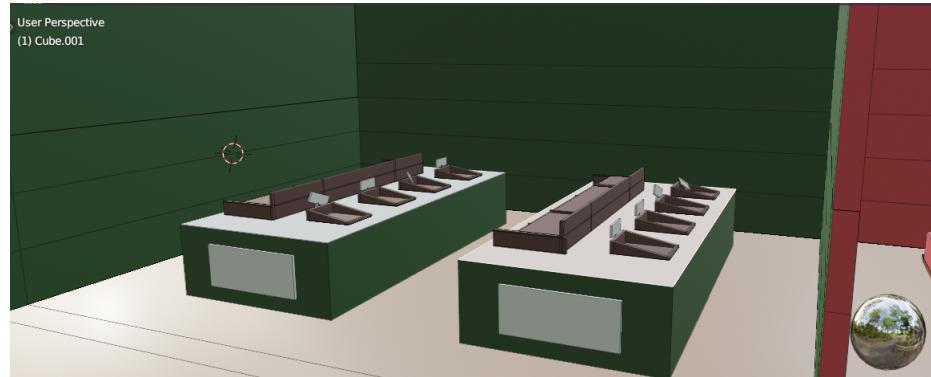


Figure 34: Fruits and vegetables with baskets

For the other rooms, we have decided to model a florist and a toy sales section (remember the first defense!). And so, we modeled it right next to butchery and bakery district.



Figure 35: Florist section

To follow our first defense plan, we modeled the toy section next to the florist one. Our goal was to make our market looks like a mall, with a diversified amount of choices : toys, food, flowers, furniture...



Figure 36: Toy Section

Then, comes to our two last rooms : the entry and the exit. For the entry, we had no much idea what we could put in it, knowing that we had to make it abandoned. Therefore, the room is quite empty, with some books on the floor and shopping trolleys. The figures below shows how we composed our entry with the books shelves and the shopping carts.



Figure 37: Books shelves

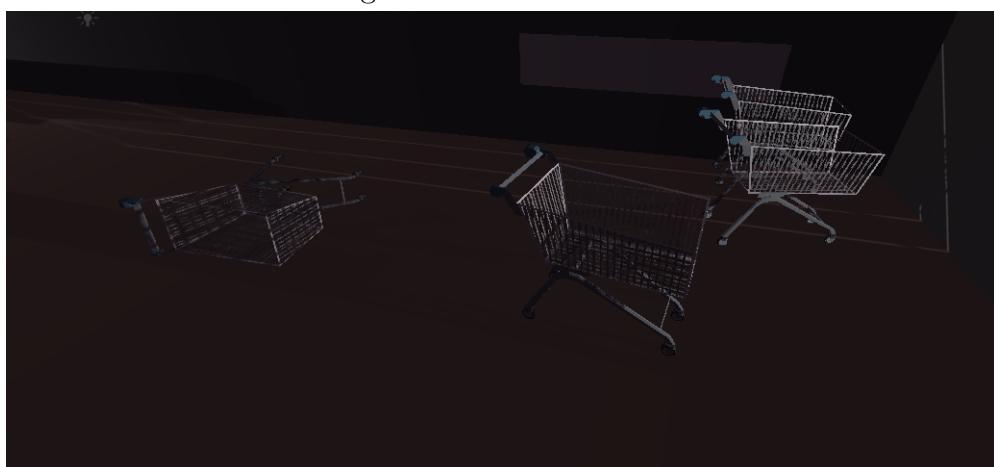


Figure 38: Shopping carts

The environment is dark : we chose to make it like this since it has to be quit gloomy, as the players should be afraid of being surprised by the hunter. Now, comes to the exit room. Once more, following our first defense plan, we had two main areas to model : the furniture district and the cash registers.

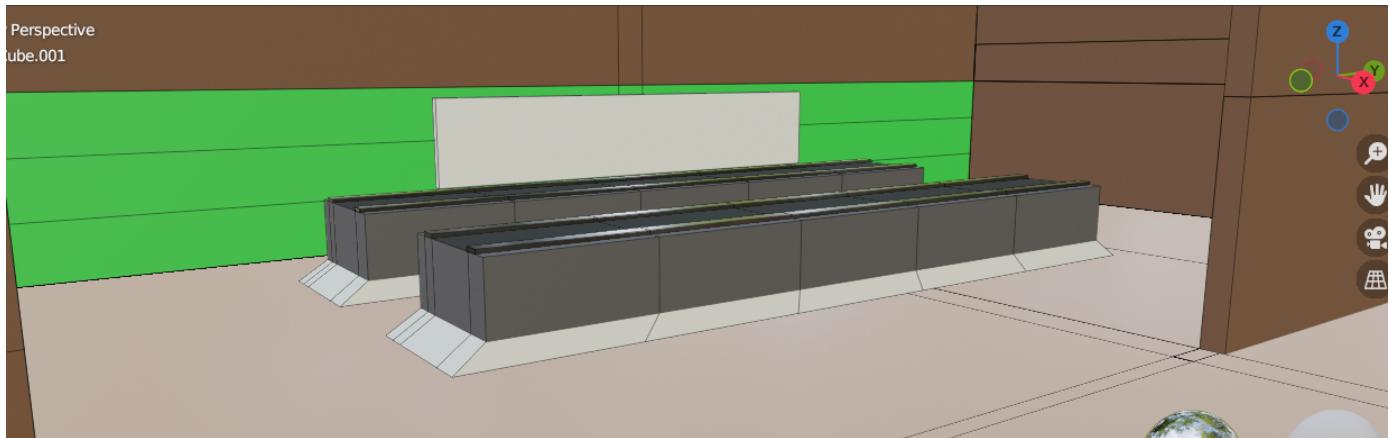


Figure 39: Cash Registers

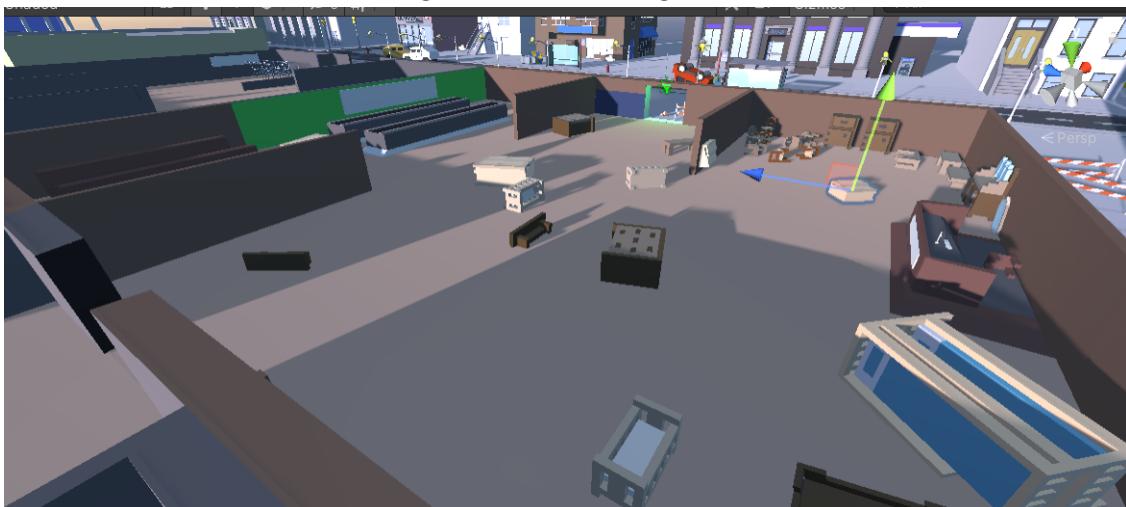


Figure 40: Furniture district

Once we have put the material we wanted on the interior of the mall and modeled the structures we wanted, we had done much of the work. Next, we had to create the roof of our building, by modeling it once more in Blender. At the end, we chose to model a classic roof, with the written word "MALL", lightened in yellow, to make it realistic and also to remind the players it was a very important place for the win.

For instance, many props are scattered in the mall, one of them allowing the players to launch the mission.



Figure 41: Last version of the supermarket

To show the progress of our map throughout the semester, here is a picture of our map at each presentation.

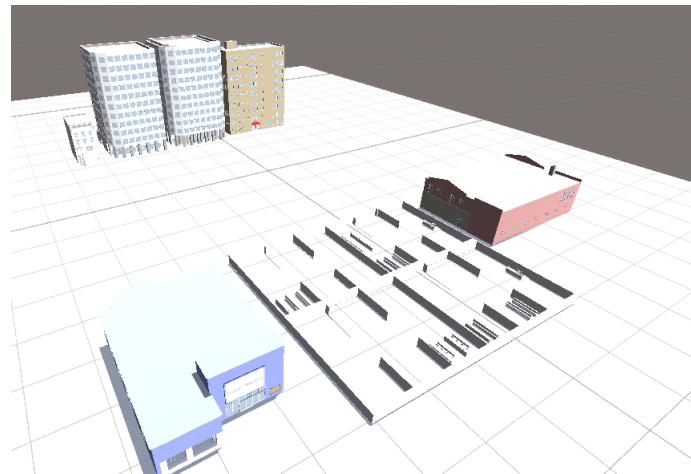


Figure 42: First defense map



Figure 43: Second defense map

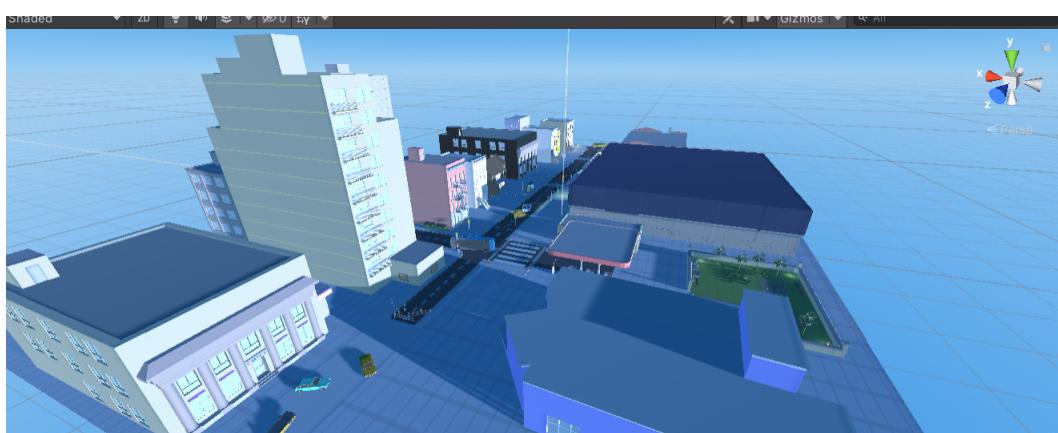


Figure 44: Last defense map

### 5.1.2 Difficulties encountered

For this stage of the map design, we thought at the beginning that the great part of the work had been done for the previous defense. However, we found that this last part of the design was the most difficult one. The use of prefab inside the mall was truly time consuming, as we had to put the objects one by one, following a coherent placement. As you might have seen in the pictures above, the prefabs' placement look random, because we wanted to make a sense of chaos, a sense of disorder. Therefore it was a hard task since we had to be precise in our moves. Moreover, we encountered several issues on Blender, especially when we had to go from Blender to Unity : some material were not showing up, same for the textures and several walls. The objects appeared on Blender but not on Unity, which took us a long time to fix. The most persistent problem was the one that vanished the walls from Blender to Unity. To fix this issue, we had to reveal the normal axes of each faces in Blender and flip it in order to make them visible.

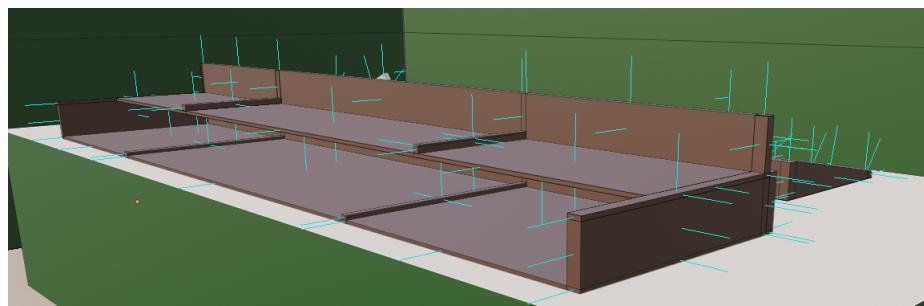


Figure 45: Normal axes in Light blue

## 5.2 Players

As far as the conception and animation of the players are concerned, no changes have been made.

Concerning the code, we coded a script and built a health bar used for the health in the game. The script takes care of the health bar. It allows the health(the beginning of the game the health of the health bar is at 100% ) of the health bar to decreased when the player is hit by the hunter.

We, then, coded another script (“Attack/Defense”) that decreases the health of the health bar, so the health of the player

## 5.3 Hunter

### 5.3.1 Conception and Animation

For this last defense, the hunter was completely modified. It was seen previously that the original hunter was supposed to be a female zombie. However, after the second defense we realized that our hunter wasn't actually that scary and therefore it wouldn't match the "horror" theme of our game. Therefore we tried something very different, and we went for somewhat of a very large, evil robot like so:



Figure 46: New Hunter

Therefore we had to rig the hunter yet again as well as animate it. The realization of the new hunter was done thanks to Blender. For the hunter the animation was done in a little bit of a funky way on purpose to make the villain look slightly crazy.

### 5.3.2 Code

For this defense, we made a script that allows the hunter to hit the players and damage them. Because of this hit, the health bar of the players decreases.

## 5.4 Missions

### 5.4.1 Conception Unity

For the last defense, we had to finish to do the mission with three different levels. Each level has a different level of difficulty: easy, medium and hard. We decided to first do the easiest one. It was difficult to do it but when it was finished, doing the other ones was quite easy. Indeed, we just had to copy the scene of the first level, so that all the objects were already connected to each other, and then change the placements of the blocks to make it more difficult. The easy one, represented by level1, has the camera reverted compared to the two other missions. We decided to revert the camera because we found that the level was too simple.

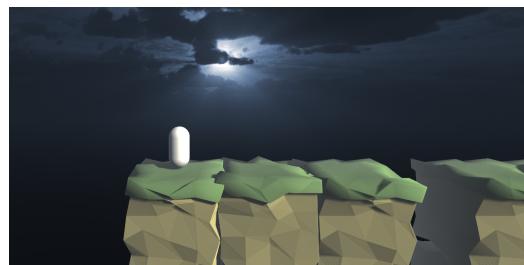


Figure 47: Normal Camera



Figure 48: Inverted Camera

The medium level, level 2, is a bit more difficult than the level 1. There are less blocks and there is increasing space between each blocks. The difficult level, level3, is much more difficult than the others. It has blocks where the “Itrigger” is on. So the player can pass through the block. This kind of block is used like trap (the player is going to think that he can hop on the block but he is going to go through it), so the player has more chance to lose. It is for this reason that this level is more difficult than the others. Of course, we can distinguish the block and the trap, the trap is just a block of dirt whereas the block has grass on it (the level would have been too hard if not).

In the game, the missions are represented by stuffed toys. So, the players must

find 3 stuffed toys in the map and complete these 3 missions.

(photo of the stuffed toys)

As long as the mission is not completed, the player can continue to try winning it.

If the player dies before the end of the mission, he must restart or quit it. A failed mission equals to less time in the game (so less luck for the players to win).

What the screen displays when the player loses:

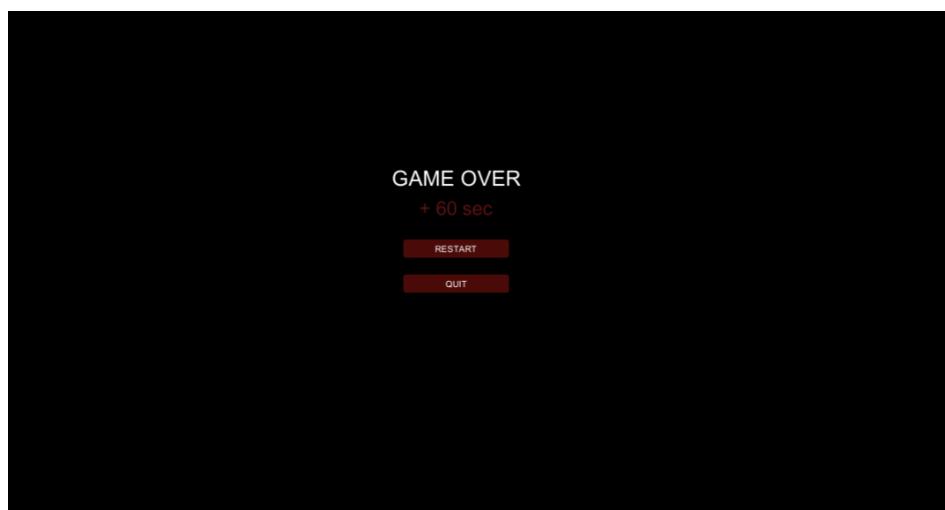


Figure 49: Game Lost

If the players finishes the mission, the task bar of the game go up and the players have more chance to win the game.

What the screen displays when the player wins the mission:

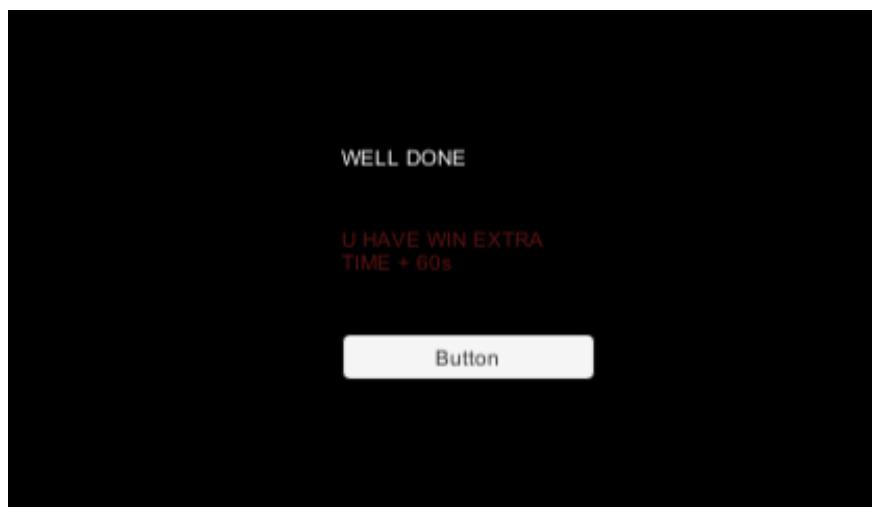


Figure 50: Game Won

Once the 3 mission completed, the players must find the gate to win before the countdown.

### 5.4.2 Conception Blender

Thanks to Blender, Shreya was able to make different types of cubes: one with grass and one without. The background was imported thanks to unity package, we tried to match the background of the mission with the one of the map, like so:

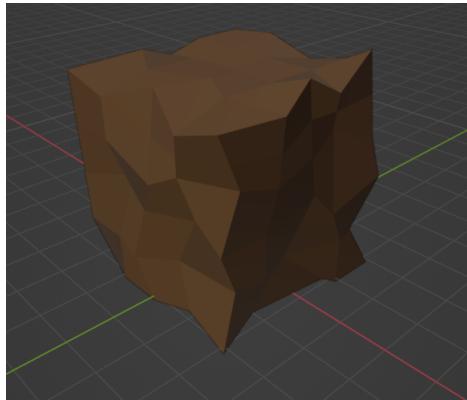


Figure 51: Block of Dirt

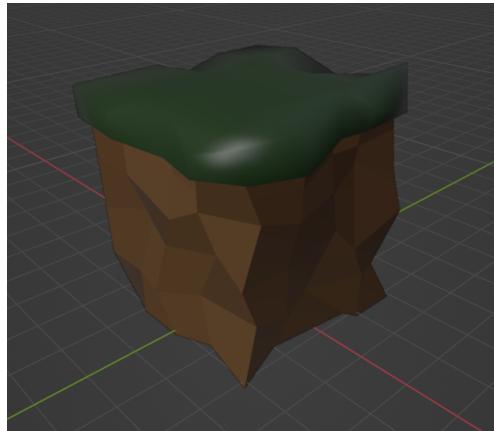


Figure 52: Block of Grass

## 5.5 Artificial Intelligence

Our little artificial intelligence hides inside a dog without legs (yes, without legs). Who says dog, says faithful companion of the man. Our dog has a simple goal: as long as the survivors have not finished their missions, it follows them, otherwise, it takes them to the exit point of the map. Simple enough but it does the job for our project.

## 5.6 Traps

There was just a little upgrade that was made for the traps. At the last defense the traps were represented by a small red square located on the floor. This time a design was made through Blender in the shape of a bear trap :

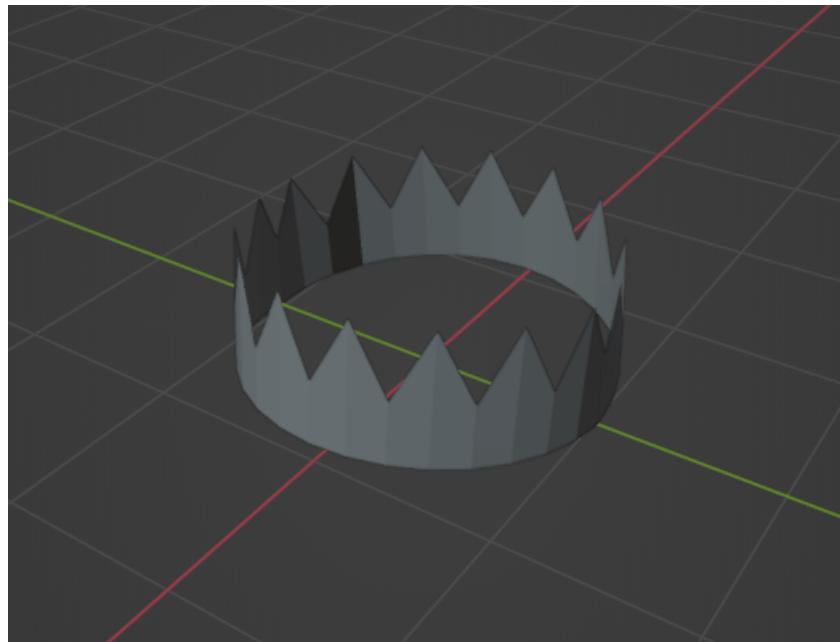


Figure 53: Trap designs

## 5.7 Menus

A lot of modifications here, especially in the design of our menus.

From our skeleton seen during the second defense, we added colors, revised the shape of buttons, add text, features, in short our menus are much more complete !

Here are three screenshots that show the design used for the game :



Figure 54: Entry Menu



Figure 55: Lobby Menu

Let's talk about the pause menu. In addition to what was present at the second defense we decided to add a pause menu in our game. Like any kind of those menu, it gives the possibility to quit the game or to modify the parameters.



Figure 56: Pause Menu

The settings menu allows players to change their resolution, full screen, maximum frames per second (fps) and to display ping, fps or both at the same time.



Figure 57: Settings menu

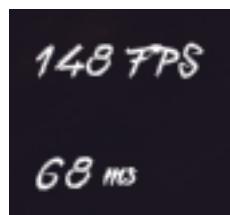


Figure 58: Fps and ping display

And here it's end with our menus !

## 5.8 HUD

In order to guarantee an optimal gaming experience, we have added different HUDs. For our players, their lives, the progress of tasks and a viewfinder are displayed. As for our hunter, he has the same progress bar, a viewfinder, but also the number of traps he has left and the exit that the players will have to take.



Figure 59: HUD Global (hunter)



Figure 60: Zoom on HUD (Hunter)

## 5.9 Sounds

At the second defense we presented the different music tracks that we wanted to add to the game, and it was successfully done. Thanks to a video tutorial on YouTube we were able to implement background music that loops during the whole game. The biggest difficulty that was encountered in this part was linked to a bug that took a little bit of time to fix. The bug was linked to the fact that some of the scenes lacked a "Listener". It is a necessary component to play the background music in a scene. At first, we were unable to understand what caused this issue, but, eventually we understood and the second challenge that presented itself was to find the component. When all was found and set, the music played in the background without any other issue.

## 5.10 Website

For the website, we tried to create a creepy atmosphere by putting a red and black background and changing the font with two different ones

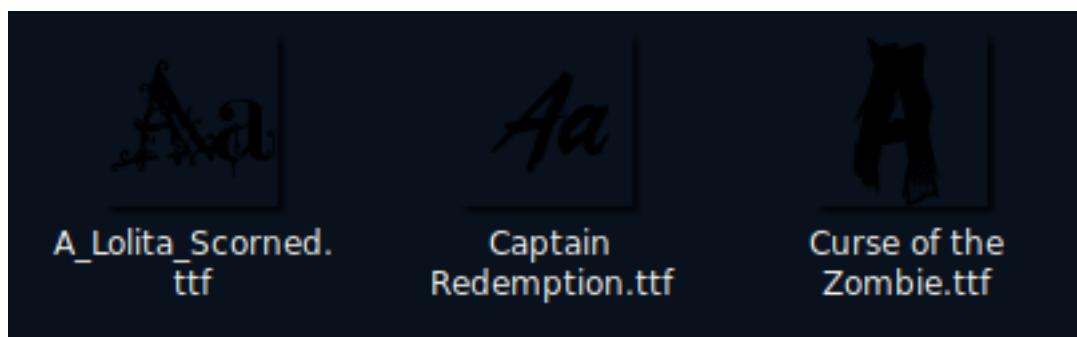


Figure 61: Font uploaded

Each page contains a header with the title and the links which leads to the other pages, and a footer with pictures and names of people in our group.



Figure 62: Header



Figure 63: Footer

On the website they are three pages:

- 1 Home: On this page, a text which explains the rules of the game. Two pictures had been implemented to show users what players and hunter look like.
- 2 Who are we : this page tells us more about our project and people on the team. We first explain how we have created the group and how we found the name of the group and project. Then, we put pictures for each person of our group with some texts which describes us. Finally, at the bottom of the page, we placed a picture of Instagram, linked to our Instagram page (4-sight). We also put the mail of our group.

The Instagram profile for **manhunt.4sight** displays the following information:

- Publications:** 2
- Followers:** 7 abonnés
- Following:** 4 abonnements

**ManHunt**  
ManHunt - The Game (Coming soon)  
Work in progress...

Abonnés : [wdevyd](#), [mathias\\_dart](#), [julienbsd\\_](#) et 2 autres

**PUBLICATIONS** **IDENTIFIÉ(E)**

Two sample posts are shown:

- A dark, pixelated image of a character from a game.
- A large, stylized red and black logo consisting of the letters 'M' and 'H'.

Figure 64: Page Insta

### 3 Download

## 6 Conclusion

### 6.1 Personal summaries

#### 6.1.1 Julien BESTARD

I consider this project a very rewarding experience personally. It was not my first computer project, nor my first game. The skills I acquired will be useful for the rest of my schooling, but also beyond, in a company.

The project first of all improved the way I approached a specific problem, how to solve it while not jeopardizing everything else around. The skills acquired through the C# tp proved to be a great help.

This project has also consolidated my human skills. It is thanks to the group work that we reached our goal. Group work means communication, respect of the deadlines imposed for a progress without problems.

The way I was writing was also improved thanks to the various reports.

This project also allowed me to consolidate one of the strong points of my future, I don't want to become a video game developer (I don't have the exact name in my head). I find it too restrictive and not very exciting, even if I had fun doing this project.

Finally, let's remember that I'm in a French-speaking course. Doing the project in English allowed me to improve my oral and written skills considerably.

#### 6.1.2 Shreya AHLUWALIA

This project helped me achieve the goals that I had set myself when we started it. My creative streak helped a lot for the conception of the players and the choices of background sounds and music. When I started this project I was not really at ease with coding but to me it feels better coding now than it was before. I cannot say that I turned into an expert within this 6 months period but I improved my skills a little which still is a plus point.

Also, as a group leader i had to organize the team and keep up with everyone's progression throughout the whole project. I do not know if I was a suitable leader for this group but I personally feel like I improved my leadership and organizational skills. On the other hand I feel that the making of this game tested my patience a lot, and I lost my cool over some parts of the conceptions sometimes rather than taking the failure in that instant in a good way.

## 6.2 David WU

Honestly, I am really proud of what my team and I managed to achieve this whole semester. As a beginner in IT sciences and 3D Modeling, the goals I set myself seemed unattainable for me at first. But with the help of the others in the team, and especially Shreya as we worked a lot together, we achieved the goal we set ourselves. As the design leader, this project has clearly improved my skills in modeling software such as Blender and Unity3D. Also, being leader of this section allowed me to express my creativity and put it at the service of my team mates.

I learnt how to work in group within a real IT project. Working on the mission and the multiplayer also improved my programmer skills in C#. The realization of this project made me aware of how difficult it is to create its own video game, since it the first one I make (and my first IT project by the way). It has brought me a lot of benefits that will help me for my engineer curriculum : it has taught me to be patient, communicative, persevering and stringent.

More than that, I really learnt to make my own research, to document myself in a precise purpose and to be curious in general. I really feel like I almost reached my limits for this project, since I had to manage my time between the external work we had to do and the work I had to realize on the project. Finally, I personally think that this project was a great experience that I will remember for a long time.

## 6.3 Melody BASTIEN

On my end, I enjoyed this project as much as I despised it. In the beginning I really liked discovering the different platforms and coding languages I needed to use. However the past few months were quite hectic, I had the feeling that there was too much to do, and so many things that need to be kept in mind. That being said, I cannot deny that it was also a great learning opportunity. I was able to achieve the project, all that while keeping a good understanding with the rest of my team mates. I was able to polish and enhance the programming skills that I already had as well.

Indeed it was a good experience, but I do not think that I will make a video game again, at least not alone and maybe with more people.