FPSheesh

First report

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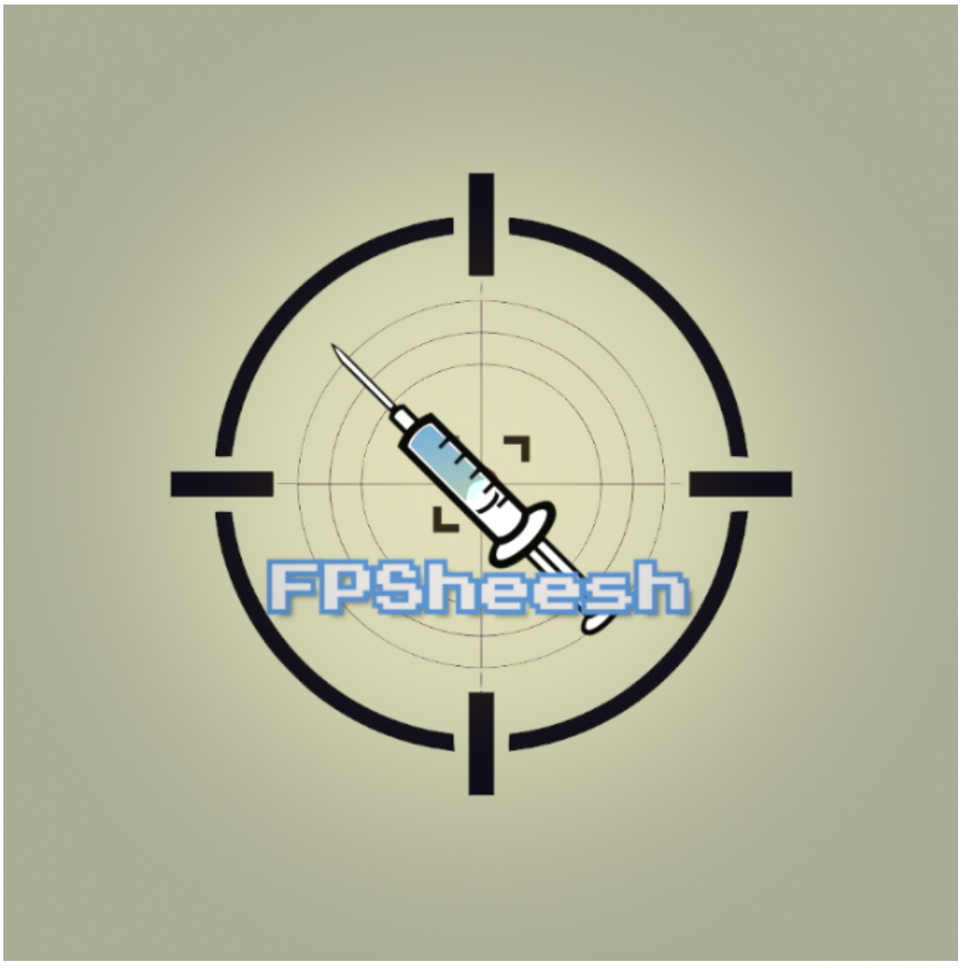

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Introduction

This first report will show the progress made the game *FPSheesh* created by the SheeshTeam. It will remind all the tasks needed and how we managed to realize them.

As a reminder, *FPSheesh* is a First Person Shooter game in which players will use weapons to fight other players in different environments.

Many steps are needed as the team will offer a multiplayer game which implies server management to allow multiple connections among other tasks that will be detailed in this book of specifications. Each of those tasks was assigned to two group members : the one in charge along with a substitute.

At this stage of the project, we achieved to have a working multiplayer FPS and a complete map.

All the steps used to get to that point will be detailed in this report.

1 Structure of the game

- When the player wants to play he chooses on what map he wants to fight and in what game-mode (Free-for-all, Team deathmatch, Capture the Flag).
- He loads into a game with x players. The player then plays differently according to the game mode. The player earns points by killing other players or fulfilling objectives.
- At the start of each round or when he dies, the player chooses a kit that comes with a weapon and an "abilisheesh".
- FPSheesh's own mechanic comes with the ability to use a special "abilisheesh" that gives many different bonuses such as movement speed, more control over guns etc. These stims can be obtained when the player earns x points.
- We started building as many kits, maps and game modes as possible to keep the gameplay fun and fresh.

2 Tasks

2.1 Task distribution

TASK	IN CHARGE	SUBSTITUTE
UI graphics / implementation	Charlotte	Valentin
Player behaviour	Valentin	Tom
Gunfire	Valentin	Bede
Gameplay / Abilities	Tom	Bede
Multiplayer	Charlotte	Tom
AI	Valentin	Bede
3D modeling	Tom	Valentin
3D animation	Tom	Bede
Map design	Bede	Charlotte
Tutorial	Bede	Tom
Music / SFX	Charlotte	Tom
Website	Valentin/Tom	Charlotte
LateX	Charlotte	Valentin

We didn't particularly have any prior specifications, so we decided to split the tasks to do by personal preference and tried our best to give everyone a bit of everything. Valentin's role was crucial at the start of our project. Being in charge of the player behavior, our whole project would build up thanks to this base. So knowing his work ethic, we decided to give him this task as we knew it was a major one that needed to be done in order for the others to be born.
We also decided to let him have gunfire as it was in accordance with the player behavior as it was required quite fast and was one of the most important features in our game.
Ultimately, as he had some experience and confidence in the making of the web development, he was happy to do it. Charlotte was in charge of the multiplayer, UI implementation/graphics and music. We decided to give her these tasks as first of all,
Charlotte was very interested in how multiplayer worked in games, how servers work in games, sites, etc. This was a very important part as a FPS without multiplayer isn't really a FPS, and we were sure that Charlotte could be trusted with the matter.
She also decided to be in charge of the UI implementation/graphics of the game as well as the music as she remains a very creative person and our team really enjoy her taste in graphics and music.

Bede, being the leader of our group enabled us to work efficiently in such a way where we would be ready at the right time. His role was to manage the design of maps and the two "levels" we have in our game.
We decided to assign him to this role as he is the one that has had the most experience playing FPS's inside our team such as Call of Duty, Valorant, Overwatch, Apex Legends, etc. and so has the most knowledge on how these games work and behave but more importantly on how important a map is and how it should work. Having this much knowledge about FPS games gave him the ability to know what elements the tutorial or the training ground should have so that the player has the best time.
Also, the interest he showed in map making was very inspiring and motivated us all in the project.

Tom's role was the gameplay/abilities, 3D modeling and 3D animations. We decided to give him the role to do the gameplay/abilities as similarly to Bede, he has a lot of experience in games such as FPS, MMORPG and so had a good amount of knowledge on how abilities were made how they worked and also had the creativity to create the abilities in a coherent manner.
He also wanted to participate in the visual aspect of the game and so we decided to give him the 3D animation / modeling so he could do the guns, the characters and the animations of these models.
Having a good amount of experience on these games and a clear idea of the style the game would be in we were confident he would do a good job.

2.2 Task progression

TASK	FIRST DEFENSE	PROGRESSION
UI graphics / implementation	0%	20%
Player behaviour	90%	90%
Gunfire	70%	70%
Gameplay / Abilities	50%	50%
Multiplayer	50%	50%
AI	0%	0%
3D modeling	10%	10%
3D animation	0%	0%
Map design	25%	25%
Tutorial	0%	0%
Music / SFX	0%	0%
Website	25%	25%
LateX	100%	100%

Everyone managed to remain on schedule and we even started the UI because it was linked to the multiplayer part of the game.

2.3 Achievements

2.3.1 Multiplayer

We had planned to have 50% of the multiplayer done for this defense. To do that, Charlotte created two options to start the game : finding an existing room where other players are, or to create one that people can join.

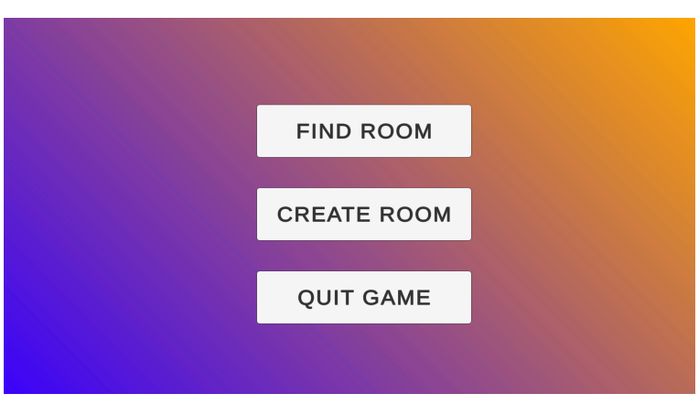
If the player wants to find a room, he clicks on the button “find room” and a list of rooms pops up, and all he has to do is click on it. A list of all the players in this room appears and only the host (the one who created this room) can start the game.

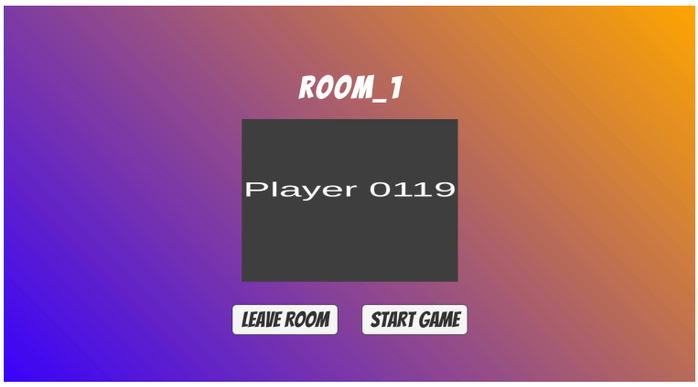
On the other hand, if he wants to create a new room, he names it and his name appears on the list of players, now other people can join and he decides when the game starts.

Now, if the host quits the game, the role of host is assigned to someone else and they are now in charge of starting the games.

To do that, we used Photon 2 in unity and thanks to a tutorial we created those options. One issue was to implement it for the players, as the player movements were already coded and functioning but we managed to put the two together which enabled us to have several players in the map together.

And this allowed us to start on the UI, which we planned to do for the second defense, because when creating or joining a room, the players choose thanks to buttons.





2.3.2 Abilities

For the first defense, we wanted to have about 50% of the abilities done, we decided to do 4 abilities, a dash ability which makes the character leap forward, a speed boost, which boosts the character's movement speed, a jump boost ability which makes the character's jump height increase and finally a strength ability which makes it so that the user's bullets do more damage to the enemy.

Each ability was coded so that at the press of a button, the corresponding ability begins. To do that, Tom learned how to code through unity by looking at multiple tutorials online and applying what he learned to the needs he had.

The way they work is pretty simple as they just influence the base stats of the character for example, the jump boost ability simply increases the user's jumpHeight variable for a certain time.

2.3.3 3D Modeling

10% of the 3D modeling also had to be done, this was completed by modeling two guns, which was achieved by looking up tutorials on how to use blender and how to create a gun which was then applied to the gun. To do that Tom looked online for templates of guns that he altered in a way that fitted our low-poly style, even though there are not completely done as Tom was only aiming for 10% of the modeling.

2.3.4 Character movements and Gunfire

As Character movements and Gunfire are two essential parts of the project that had to be 90% done for the first defense, as many features as possible were implemented. Our character is able to move, jump, crouch, run.

With the addition of the gunfire, he is also able to shoot and inflict damage to his opponents.
To achieve all this, as it was the first time Valentin was using unity for a project like this, he helped myself to many tutorials on Youtube in order to diversify the available features as much as possible.

So, the weapons have different characteristics that can vary like the damage, the range, the fire rate, the spread of the bullets and the size of the magazine.
However the design and the graphical aspect of the characters and the weapons are not as advanced, considering that the technical aspect is more important for the moment although it will not be neglected in the continuation of the project.

To make the game a bit more realistic, he added bullets and particle effects, including a muzzleflash and an impact animation. The muzzleflash simulates an explosion at the end of the gun barrel when shooting and the impact animation lets the player know if he hit an opponent.

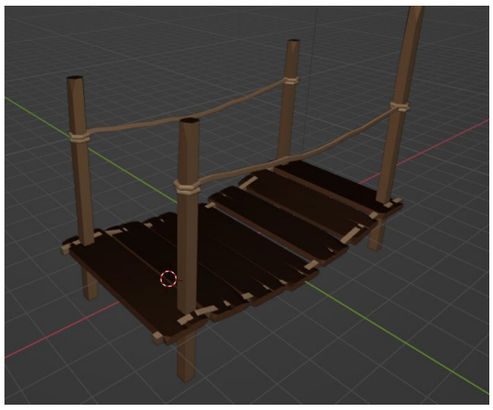
To make the game more enjoyable for the player, he also added a crosshair to help with aiming as well as an indicator of the amount of ammo left.

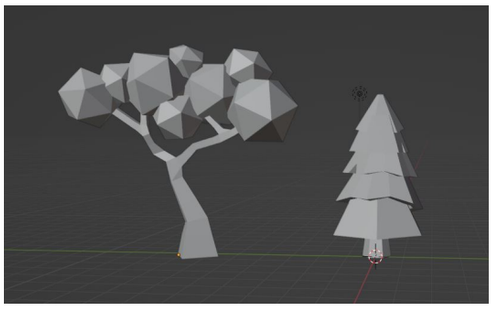
2.3.5 Website

Valentin started to think about the architecture of our website which would be composed of tabs leading to information such as a presentation of the game, a presentation of the team, an installation guide and finally a forum to answer questions from players. The site will be developed in html css with some javascript for the interactions.

2.3.6 Maps

We had planned to get 25% done which corresponds to 1 of our 4 maps to be completed and that is indeed what was achieved. To do so Bede started using a tool called blender that was brand new to him so he decided to learn how to use it by creating objects to go around his map, first creating a bridge and then creating a hunting perch all in the low-poly style.





Whilst making these Bede had a good friend teaching him the basics whilst at the same time reading and watching tips online. These two rather simple objects took a long time to do because we wanted to reach a certain level of detail but also make sure all the right tools were used as efficiently as possible.
He then got to work on creating the terrain of the map which was also made in blender but before Bede actually got started he sketched out a draft for the layout where he already had pictured two hills with a river in the middle with a lack of cover.

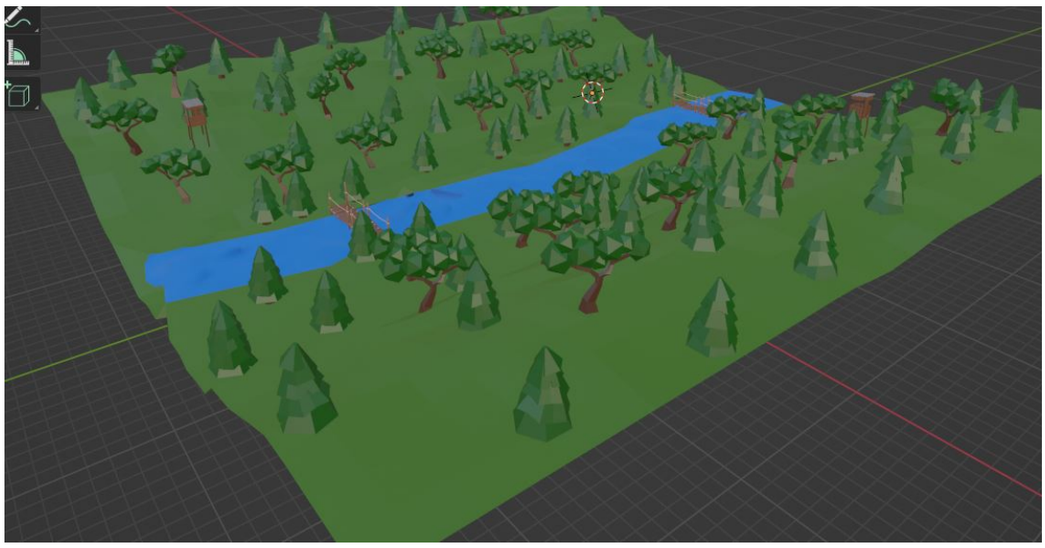
So it was designed in blender and decorated with trees Bede cre-

ated and the objects he talked about beforehand. Once he had the structure of the map down, he got to doing the colors/textures. For this he used something called UV editing which consists in having a color pallet and assigning colors from the pallet to different objects at the same time. This allowed to only have one material that colored every object correctly.

After this all that was left was to export the blender project as a .fbx which is my preferred way to exports the objects while keeping the colors without any major problems.

At the start when exporting my objects Bede did have problems with the colors because he used a special method that takes one material and raps it around objects in different area and at the start when he would open the map in unity all the colors would be mixed up but he managed to solve this by change the material settings in unity which solved the issue and made all the colors show correctly.

After this he needed to add a hitbox onto the map so that the player could walk around and collide with objects. In normal cases you want to have a smaller mesh and adapt it to the object for optimal collision but here to the size and amount to different collisions using a mesh collider was necessary even if it is not the most optimal.



Conclusion

During the first couple of months of the project development, we encountered a couple of bumps along the road but overall our progress was smooth and steady. We managed to stay on time concerning our project which means we have just gone over about one-third of completion.

To summarize: We have a local host website, we can also host local multiplayer lobbies on a pc, an almost fully operational player when it comes to basic mechanics but also able to use a couple of abilities. We also have a full map designed. All these assets were not only crucial for the game but also for our learning and now that we have acquired skills through said task progress in the future can become much smoother and faster.

We still have a lot to do but as said above it will be a lot easier, overall we have to get the website and the multiplayer to real online sessions. We also have to implement a functional AI and we still have a lot of 3D work to do whether it be more maps, guns or a player model.

So far everyone is very happy with the project and the individual projects, all of the members are learning great skills and the general enthusiasm fr the game grows with every little bit of progress.