TIMLESS EMPIRE

PREMIERE SOUTENANCE

REDT--ZIMMER Quentin

XIONG Yiru

BUENO Rory

CONSTANT Mathis

LESUEUR Luka

404 STUDIO

TABLE OF CONTENT

INTRODUCTION

This document presents the work carried out so far as part of a group video game project. The objective of this project is to design and develop a video game through collaborative work, by combining different skills such as programming, game design, audio creation and project organization.

The report brings together the individual contributions of each team member. Each part describes the role, responsibilities and progress of the student concerned, highlighting how these contributions fit into the overall development of the project. As the project is still ongoing, the content reflects the current state of progress and the tasks that remain to be completed.

Through this project, the team is developing technical, creative and organizational skills while learning to work effectively in a group. This document aims to provide a clear overview of the work accomplished so far and the methods used to ensure the project's progression.

CDST

Old version :

TACHES	SOUTENANCE 1
BASIC CODE	90%
GAME DETAILS	10%
WEBSITE	100%
MUSIC/FX	40%
GRAPHISMES	0%
BONUS	0%

New version :

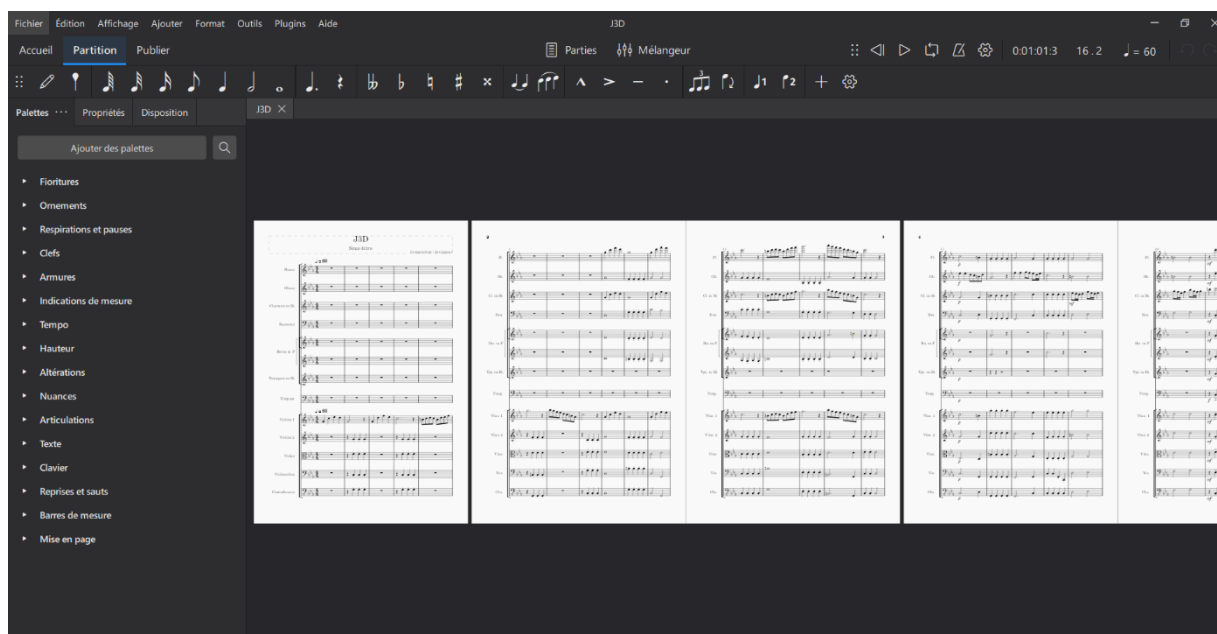| TACHES	SOUTENANCE 1
BASIC CODE	10%
GAME DETAILS	0%
WEBSITE	100%
MUSIC/FX	30%
GRAPHISMES	30%
BONUS	0%

PROJECT PROGRESS

REDT--ZIMMER QUENTIN

For my part, this project represents the creation of my first video game, but also my first large-scale computer science project, as I did not take the NSI specialization during my final years of high school. This project therefore places me in a new environment that I am discovering progressively, both technically and methodologically. I am learning step by step as the project moves forward.
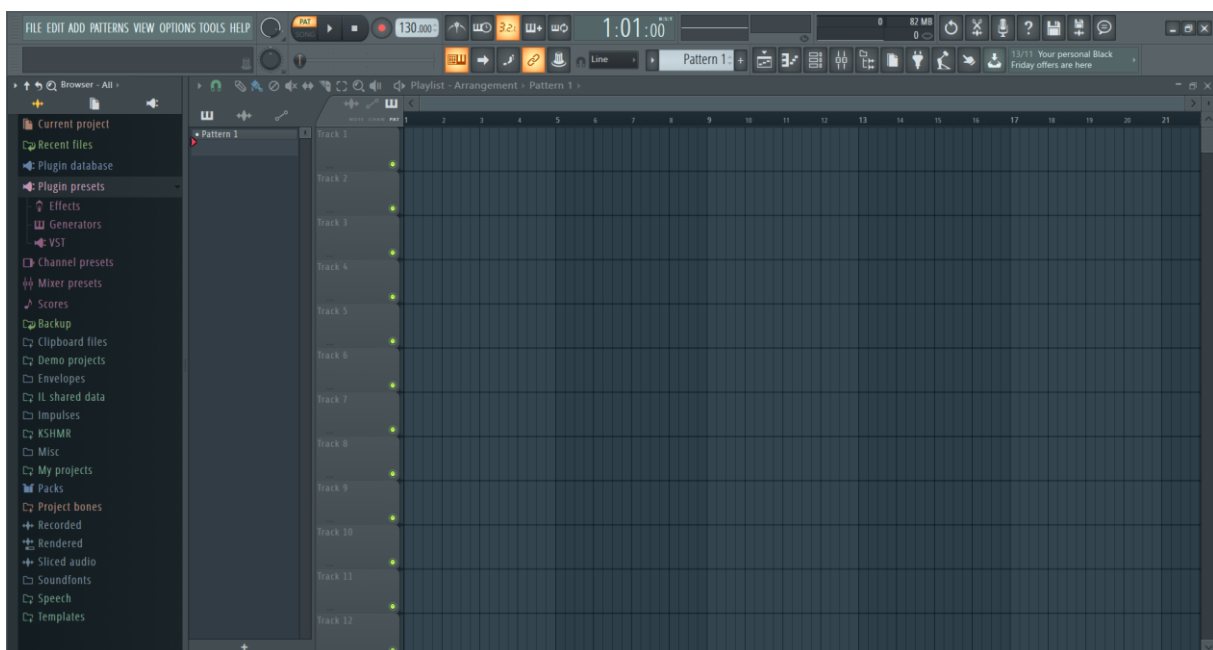
For this reason, my main task in the project is to take care of the audio part in all its forms, including music and, later on, sound effects. The main goal of this work is to make the player's experience more pleasant and immersive. Sound plays an essential role in a video game, as it supports the player's actions, strengthens the atmosphere, and avoids a feeling of emptiness.

Timeless Empire is a strategy game that deals with serious and heavy themes. To stay consistent with this universe, I choose to create a sound atmosphere that reflects this tone. I decided to compose orchestral music rather than using synthetic sounds, which I find less suitable for the mood of the game. Having followed an advanced musical education from a young age, this choice fits well with my skills and artistic approach. I am also helped by Yiru, who has a musical background as well. The music is composed using MuseScore 4.

As the game is not based on fast-paced action, I focus on creating a long background music track designed to accompany the player during moments of reflection. This approach helps fill the silence while remaining discreet. However, it creates an important constraint: the music must loop smoothly without sounding too repetitive or causing noticeable cuts. I am currently working on a musical structure adapted to this constraint.

The creation of sound effects and sound design has not started yet, but it represents an important upcoming step. This work will involve finding or creating sounds that remain pleasant when repeated, such as interface interactions, map selection sounds, or natural background sounds like wind. The main challenge will be to choose sounds that fit the game's universe and each situation. This part will be created using FL Studio.

In general, sound volume management and sound priority are also important aspects of the work. Some actions may require the music volume to be lowered so that sound effects can be heard more clearly. These settings will require testing and adjustments to achieve a good balance and improve immersion.
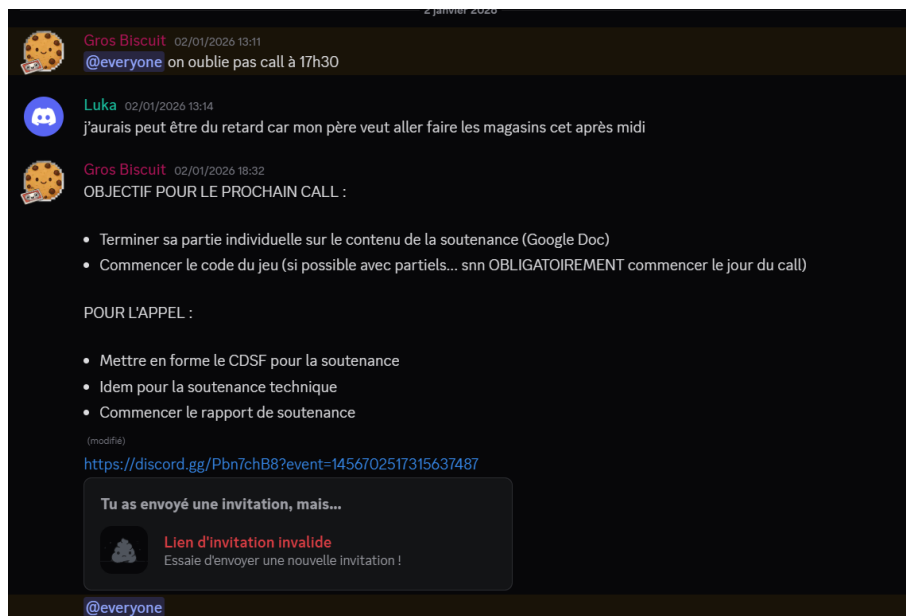
Alongside my work on the game's audio, I also take on the role of timekeeper within the team. My main objective is to ensure that deadlines are respected and to support an efficient organization of the group. This role helps maintain a steady working rhythm while allowing each member some freedom in how they organize their work.

Rather than creating a detailed schedule, I set clear deadlines for the different stages of the project. These deadlines act as shared reference points for the whole team and help ensure consistent progress. Each member is free to organize their work in their own way to meet

these deadlines. I regularly remind the team of these deadlines to keep the common goal in mind and avoid delays.

Project progress is mainly followed during voice calls on Discord, which are key moments for coordination. After each call, I write short summaries to keep track of decisions, tasks to complete, and objectives for the next meeting. This written follow-up helps prevent misunderstandings, clarifies priorities, and strengthens team communication.

This timekeeper role allows me to develop skills in organization, communication, and time management. It also gives me a broader view of the project beyond my own tasks. I also help resolve difficulties, whether technical or organizational, by encouraging discussion and finding solutions with the team.

For the next stages of the project, several tasks remain to be completed for the audio part. The music is still being composed and will be gradually finalized. After that, sound effects and sound design will be created and then integrated into the game's code. This integration will involve defining sound triggers, adjusting volumes, and managing priorities so that sounds react correctly to the player's actions.

At this stage of the project, the work completed so far provides a solid foundation for the rest of the development. The difficulties encountered up to now, such as finding musical inspiration or dealing with a lack of information at the beginning of the timekeeper role, are gradually being overcome. As the project is still ongoing, this experience continues to help me develop new skills and better understand collaborative work. The current state of the project is encouraging and suggests steady improvement in the coming stages.

XIONG YIRU

<u>Graphic Design Section</u>

- This section describes the visual elements and graphic design choices implemented in the game to create an engaging and cohesive visual experience for players.

<u>Art Style:</u>

- The game adapts a pixel art style to appeal to our target audience (PEGI 16). The visual theme of adventure and strategies emphasizes to support the game's narrative and gameplay mechanics.

<u>Color Palette:</u>

- The color choices aim to enhance user experience by providing clear visual cues and maintaining consistency across different screens.

- The primary color palette includes:

    o Main Colors: Shades of Blue, Green, Yellow

o   Accent Colors (UI elements such as notifications): Darkened main colors

o   Background Colors: white and light primary colors to ensure readability and aesthetic consistency

Character Design:

- Player Character: The main character is designed with simple featuring, referencing to historical characters that really exists.

- Objects: Interactive objects follow the same pixel art style to ensure they stand out against the background and are easily recognizable during gameplay.

<u>Cards:</u>

- Resources: Cards which represent resources, are designed to be clear and easily readable for users, enabling them to use and interpret them effectively.

<u>Environment and Backgrounds:</u>

- The game environment includes empires, forests, oceans, created with different backgrounds to add depth.

- Special attention was paid to:

  - Consistency in style: pixel art style

  - Visual clarity

  - Performance optimization (simplified backgrounds for smooth gameplay)

- Historical background:

o Prehistory

o Middle Ages
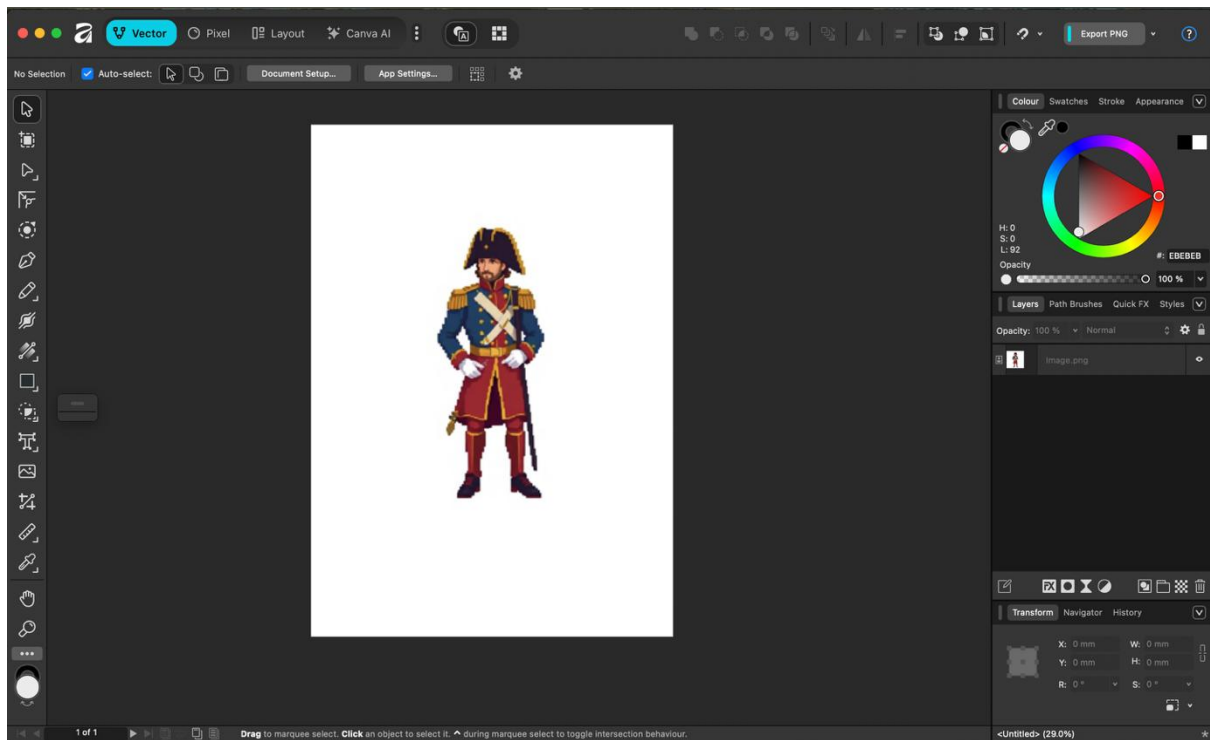
o Modern Times

o Contemporary Period

- o   Future

UI Elements:

- Menus and Buttons: Designed with pixel art style, using the same color palette (Blue, Purple…)

- HUH (Heads-up Display): Includes health bars, score, resources, rounds and other indicators, designed to be unobtrusive yet visible

- Fonts: The 'Press Start 2P' for readability and aesthetic consistency, match with the pixel art style.

Implementation Tools:

- The graphics were created using Photoshop, GIMP, affinity and handcraft, focusing on optimizing assets for performance and visual quality.

Challenges and Solutions:

- Challenges: Balancing visual detail with game performance, maximising the graphics details while having a functional game.

- Solution: Used optimized sprites and layered backgrounds to ensure smooth gameplay without sacrificing visual appeal.

Future Improvements:

- Potential future enhancements include:

    o Adding animations for characters and objects

    o Incorporating dynamic backgrounds

    o Refining UI elements based on user feedback

BUENO RORY

For my part, this project represents the continuation of my experience in video game development, as I previously worked on several video game projects during the NSI specialization in high school. Thanks to this background, I already had a solid foundation in programming and game logic before starting this project. However, this project differs significantly in scale and complexity, making it my first large collaborative project developed over an extended period of time, involving multiple systems that must interact consistently.

Within the team, my main responsibility is to take care of the programming aspects of the game. This includes the implementation of core gameplay mechanics, game systems, and the overall structure of the code. I am responsible for ensuring that the game logic is reliable, efficient, and maintainable, while respecting the design choices defined collectively by the team. I also act as a technical reference when architectural or implementation decisions have to be made.

As the game is a strategy game, particular attention must be paid to the management of turns, player actions, units, and resources. These systems must be carefully designed to ensure consistency and prevent incoherent game states. I work on structuring the code in a modular way so that each system remains independent and can be easily modified or extended as the project evolves. This modular approach also makes it easier for other team members to contribute to the codebase.

My previous experience in game development allows me to anticipate certain technical challenges, such as performance issues, bug management, or code organization. As a result, I often help other team members when they encounter technical difficulties, whether by reviewing their code, suggesting improvements, or explaining certain concepts related to game logic or software design. This support helps maintain a good overall code quality and reduces integration issues.

Working on this project also allows me to strengthen my skills in collaborative development. Using version control tools and respecting common coding conventions are essential to ensure smooth teamwork. I pay particular attention to code readability, clarity, and documentation so that all team members can understand the existing systems and work on them efficiently. I also encourage regular testing and incremental integration of new features.

For the next stages of the project, several tasks remain to be completed on the programming side. Core mechanics will continue to be refined and stabilized, and additional features will be implemented according to the project's progress. Further optimization, debugging, and

testing phases will be necessary to ensure that the game remains stable and coherent as its complexity increases.
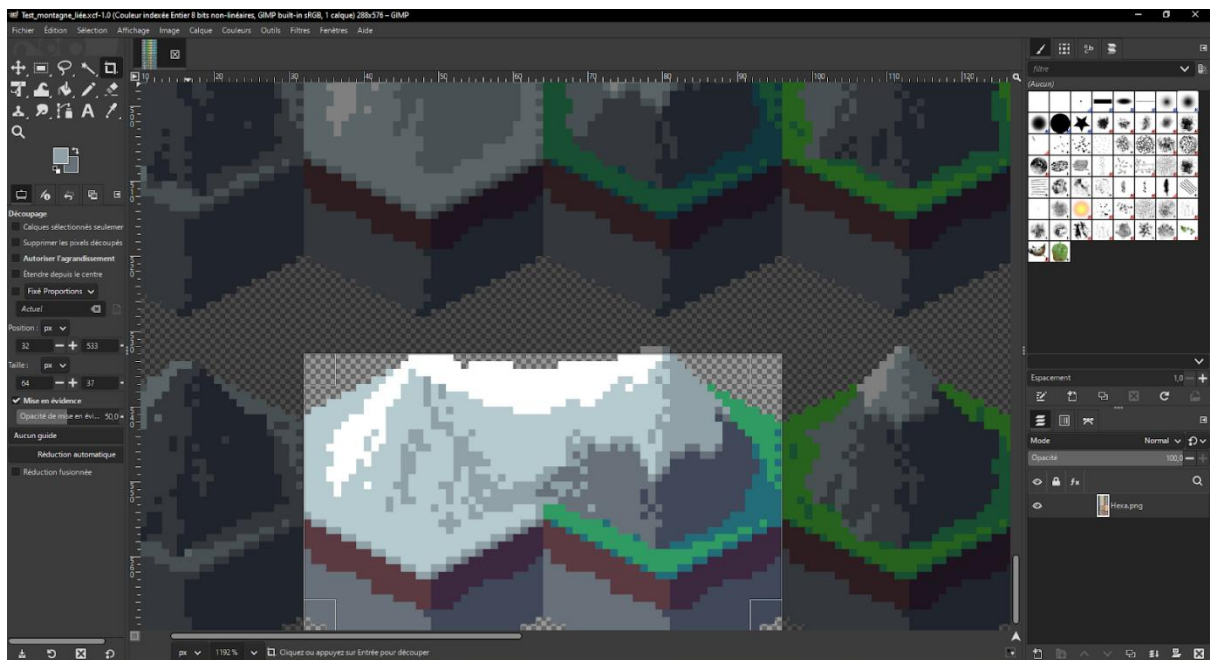
Overall, this project allows me to deepen my programming skills while applying them to a concrete and ambitious video game project. Beyond technical development, it also helps me better understand the challenges of teamwork, coordination, and long-term project management. The experience gained so far is very positive and contributes significantly to my growth as a developer.
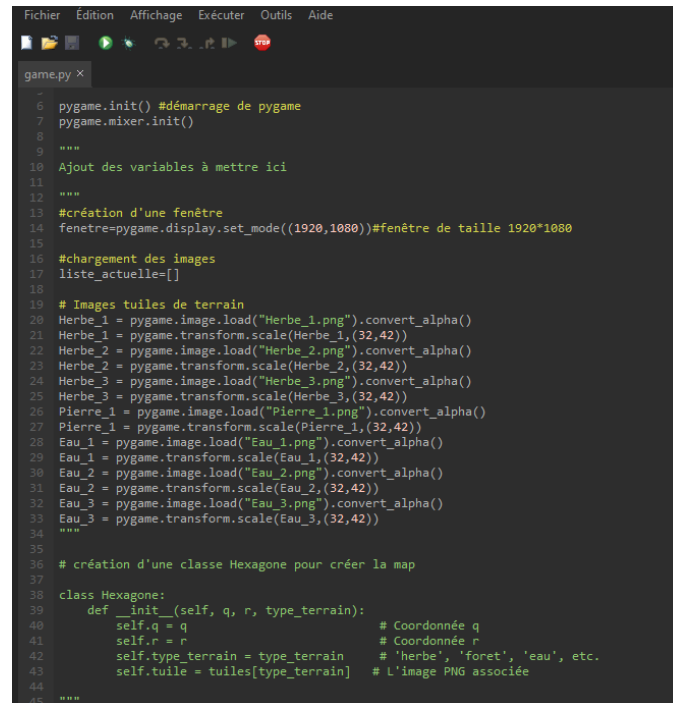
CONSTANT MATHIS

I'm Mathis CONSTANT, one of the technicians of our project called "Timeless Empire". To me Timeless Empire is a huge step in terms of complexity, I've already completed projects back when I was in high school like coding tetris, Hanoï's towers or even a bank management app, but this time, everything is more complicated. Having to respect criterias such as having the game to be playable online, implement an AI into the game, design it fully and the most important part of them all, having it to run is really really hard to do and takes a lot of effort.

I wear many different hats in this project.

On one hand, I manage the code, make sure the part I'm working on runs, fixing issues if anyone needs it. But my job does not end only on the code, I also need to redimension images, cut them with gimp, learn how to implement AI in python and how to use it, as well with the online functionalities, learn how to create specific folders to support a game etc…

On the other hand, I'm brainstorming a lot of ideas, even though we all brainstormed our thoughts at the beginning of the project, I'm coming up with new functionalities or alternatives we could do which are not important and awaited at the beginning, which could be a good thing but end up being more of a brake because the energy i'm giving to my ideas doesn't not end up in the code most of the time.

```python
pygame.init() #démarrage de pygame
pygame.mixer.init()

"""
Ajout des variables à mettre ici

"""
#création d'une fenêtre
fenetre=pygame.display.set_mode((1920,1080))#fenêtre de taille 1920*1080

#chargement des images
liste_actuelle=[]

# Images tuiles de terrain
Herbe_1 = pygame.image.load("Herbe_1.png").convert_alpha()
Herbe_1 = pygame.transform.scale(Herbe_1,(32,42))
Herbe_2 = pygame.image.load("Herbe_2.png").convert_alpha()
Herbe_2 = pygame.transform.scale(Herbe_2,(32,42))
Herbe_3 = pygame.image.load("Herbe_3.png").convert_alpha()
Herbe_3 = pygame.transform.scale(Herbe_3,(32,42))
Pierre_1 = pygame.image.load("Pierre_1.png").convert_alpha()
Pierre_1 = pygame.transform.scale(Pierre_1,(32,42))
Eau_1 = pygame.image.load("Eau_1.png").convert_alpha()
Eau_1 = pygame.transform.scale(Eau_1,(32,42))
Eau_2 = pygame.image.load("Eau_2.png").convert_alpha()
Eau_2 = pygame.transform.scale(Eau_2,(32,42))
Eau_3 = pygame.image.load("Eau_3.png").convert_alpha()
Eau_3 = pygame.transform.scale(Eau_3,(32,42))
"""

# création d'une classe Hexagone pour créer la map

class Hexagone:
    def __init__(self, q, r, type_terrain):
        self.q = q                          # Coordonnée q
        self.r = r                          # Coordonnée r
        self.type_terrain = type_terrain    # 'herbe', 'foret', 'eau', etc.
        self.tuile = tuiles[type_terrain]   # L'image PNG associée

"""
```

This creative role, even if it does not always result in immediate implementation, remains essential to the project. Proposing new ideas allows the team to question its choices, improve existing mechanics, and sometimes reconsider elements that could limit the game's potential. Even when an idea is not kept, it often helps refine the final direction of the project and contributes to its overall coherence.

From a technical perspective, working on Timeless Empire allows me to strengthen many skills in computer science. I am improving my ability to structure complex code, manage bugs efficiently, and adapt my work to a collaborative environment. Implementing artificial intelligence, online features, and game logic requires a rigorous approach and a good understanding of both programming concepts and project constraints. This project also pushes me to learn new tools and technologies autonomously, which is an important skill for future studies.

Collaboration within the team is another key aspect of my role. I regularly exchange with other members to ensure compatibility between my work and theirs, whether it concerns

game mechanics, visuals, or sound integration. These discussions help avoid conflicts in development and ensure that all parts of the game evolve in the same direction. Working as part of a team on such a complex project highlights the importance of communication and adaptability.
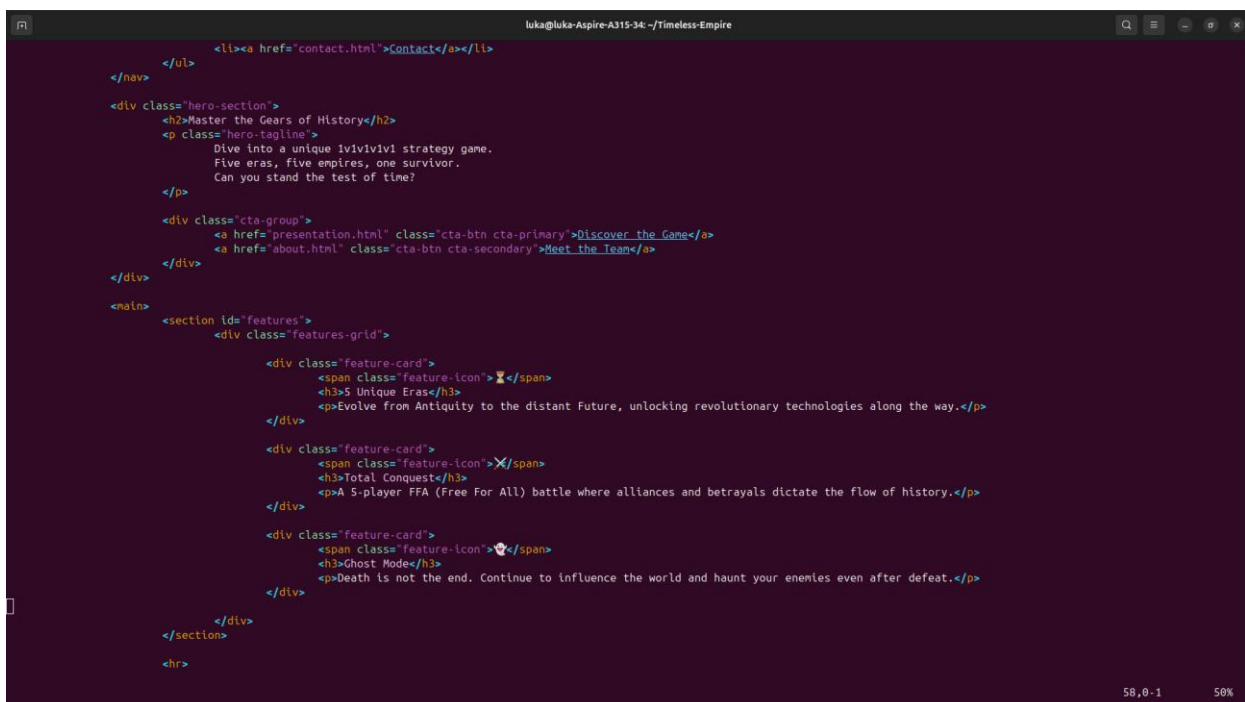
At the current stage of the project, much of the core technical structure is in place, but several challenges remain. Optimization, bug fixing, and the refinement of existing features are ongoing tasks. Online play and artificial intelligence still need to be implemented and well learnt to guarantee a smooth usage of them. These remaining steps are demanding, but they are also motivating, as they bring the project closer to a functional and coherent final version.

Overall, Timeless Empire represents a significant step forward in my personal and technical development. Compared to my previous projects, the scale, complexity, and collaborative dimension make this experience particularly formative. Despite the difficulties encountered, the progress made so far is encouraging. This project allows me to better understand how a large-scale computer science project is built and managed, and it confirms my interest in continuing to develop my skills in this field.

LESUEUR LUKA

For my part, this project represents a significant opportunity to bridge the gap between technical programming and digital communication. My role within the group is twofold: I am responsible for the creation and design of the project's website, as well as the overall management of our communication strategy. I had the advantage of taking the NSI (Digital and Computer Sciences) specialization during my final year of high school. This academic background provided me with a solid foundation in HTML and CSS. Although I do not consider myself a professional developer in these languages, I have previously put these skills into practice by creating personal websites for the volunteer association I work with. However, the website for *Timeless Empire* places me in a more demanding context, requiring a higher level of polish and reliability.

Creating a website might seem easy from the outside, but the reality is quite complex. My main technical task is to ensure that the site aligns perfectly with the project's Artistic Direction. This is not merely about displaying information; it involves a careful selection of color palettes, button shapes, and fonts to ensure the website feels personal and unique. The goal is to avoid the "generic" look often found in standard templates, ensuring that the platform reflects the specific atmosphere of our game. To achieve this, I rely heavily on online documentation, particularly for advanced CSS styling, while also revisiting code structures from my high school projects to establish a reliable base. I am constantly striving to push beyond these basics to create a professional interface.

Following a strategic discussion with the other members during one of our Discord coordination calls, we decided to take a significant step forward by professionalizing our web presence. I took the initiative to purchase the domain name "timeless-empire.fr" through the Swiss registrar Infomaniak. This ensures that our site is accessible to the general public at any time, adding a layer of credibility to our work. For hosting, I chose GitHub Pages. This choice is strategic: beyond simply hosting the site, GitHub allows all team members to consult or modify the source code whenever they wish, facilitating collaborative work on the platform.

Accessibility and user interaction are also central to my role. As seen on the "Contact" page, the domain name allowed us to create a professional email address: *contact@timeless-empire.fr*. This gives players a direct channel to report bugs, provide feedback, or share their thoughts with the team. Currently, this interaction is managed through a form connected to the Formspree platform. However, this is a temporary solution; a future technical objective is to develop and integrate our own database to handle these messages, thereby reducing our dependence on third-party tools and giving us more control over our data.

In parallel with the technical development, I am in charge of the project's communication. This involves keeping the website dynamic and up-to-date, whether for publishing patch notes, announcing maintenance, or sharing essential information with our users. Looking ahead, I plan to expand our visibility by establishing a presence on social media platforms such as Instagram and TikTok. By adopting the strategies used by major game studios, I hope to build a community around *Timeless Empire*.

This role allows me to develop a versatile skill set, combining the rigorous logic of coding with the creativity required for design and communication. It also provides me with a broader view of how a digital product is presented to the world. As the project continues, I

aim to refine the site's features and strengthen our engagement with future players, ensuring that the web experience is as immersive as the game itself.

My greatest joys during the development of the site come, naturally, when an abstract idea I have in mind finally takes shape on the screen. There is a deeply satisfying moment when the code behaves exactly as intended and the visual result matches my imagination. However, reaching that point often requires hours of grueling work, sometimes leading to moments of genuine doubt where I find myself questioning: "Is it really worth giving myself this much trouble for a single button or a specific animation?" The creative process is not a straight line, and maintaining motivation when faced with technical roadblocks is a challenge in itself.

The creation of the site is far from simple just like the realization of the game itself and the human element is often just as challenging as the technical code. To be honest, receiving negative remarks on a feature where I spent hours of time, and where I genuinely thought I had succeeded, can be quite disheartening. When you invest so much personal effort into a design, expecting it to please everyone, it is difficult not to take criticism to heart. However, I have learned that this friction is an integral part of teamwork. I realized that these remarks, even if they are hard to hear at the moment, are not there to discourage me. Instead, they are the necessary fuel that forces me to evolve my tasks and the site itself towards something better, pushing us closer to a result that borders on perfection.

This is precisely why our communication during team calls on Discord is so critical. Written text often lacks nuance, but voice calls allow me to clearly express the "why" behind my choices explaining the technical or artistic reasoning that might not be obvious at first glance. Conversely, it allows my teammates to express a clear and precise opinion on what they liked or didn't like, without the risk of misunderstanding that comes with text messages. These exchanges are essential: they transform individual frustrations into collective solutions, ensuring that the final website is not just my personal vision, but the strongest possible version for the entire project.