MUSEUM HEIST

Game Design Document

09.12.2019

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Group 2

KTH - DH2650 Computer Game Design

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1.0	Gustav Frisk Arfvidsson, Hannah Bayat, Christophe Etienne, Henrik Andersson Glass, Robert Kindwall	7.11.2019
1.1	Gustav Frisk Arfvidsson, Hannah Bayat, Christophe Etienne, Henrik Andersson Glass, Robert Kindwall	14.11.2019
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3.0	Gustav Frisk Arfvidsson, Hannah Bayat, Christophe Etienne, Henrik Andersson Glass, Robert Kindwall	08.12.2019

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Design History

Version	Design History	Date
1.0	Initial version of the document	7.11.2019
1.1	Minor changes about the mechanics	14.11.2019
2.0	Art style Marketing and business part Target group updated with persona Test 1 : add results Technology : update libraries IA part : precise the algorithm used Screenflow : Create a sitemap Miscellaneous : Correct and/or add precision about different parts	28.11.2019
3.0	Minor changes before rendering Add 9 levels and their description Final layout of the document	08.12.2019

1. Section I - Game Overview

1.1. Game Concept

The main goal of the game is to steal an artifact from a museum without getting caught and by solving various puzzles. Museum Heist is a single player game but has the capacity to be expanded to a collaborative game in future versions. The game is a top down stealth game and the design is kept pixelated. For the design and the gameplay, we were inspired by the games *Monaco : What's yours is mine* and *Hotline Miami*.

The thief has to avoid the guards in order to not be caught. There are laser beams which protect the different artifacts and can be deactivated by pressing the according button. Some objects can be moved up by the player and used to shield the guards. Finally, to steal the artifact the player has to apply different tricks like turning off the light and solve various puzzles.

To complete a level, the thief has to steal the artifact and exit the building without getting caught by the guards. He starts from a predetermined point, steals the artifact and proceeds to an exit.

1.2. Feature Set

The thief can perform actions during the game. Here is a list of the actions he can do:

- turn off the room lights
- turn off the laser beams
- move objects
- open doors

Other actions that will not be implemented for the final version of December 9th due to a lack of time and to focus on the first mechanics so that they are well done include:

- picking up objects
- throwing objects
- Drop an object

The game contains several mechanics that will be explained in more detail in the following sections:

- guards
- flashlight
- laser beam
- pushable objects

For the same reasons as the unimplemented actions, there are mechanisms that can be added in a later versions:

- Pick up object and throw it to distract the guards

There is only one type of guard. They have a fixed path that they walk along, as long as the player is not being chased.

1.3. Genre

The game is a top-down stealth game. According to the Gamer Motivations Model of Quantic Foundry, we choose **challenge** and **strategy** as our main motivations for the players. These two motivations belong to the motivation group **Mastery**.

GAMER MOTIVATION MODEL — QUANTIC FOUNDRY

Action "Boom!"	Social "Let's Play Together"	Mastery "Let Me Think"	Achievement "I Want More"	Immersion "Once Upon a Time"	Creativity "What If?"
Destruction Guns. Explosives. Chaos. Mayhem.	Competition Duels. Matches. High on Ranking.	Challenge Practice. High Difficulty. Challenges.	Completion Get All Collectibles. Complete All Missions.	Fantasy Being someone else, somewhere else.	Design Expression. Customization.
Excitement Fast-Paced. Action. Surprises. Thrills.	Community Being on Team. Chatting. Interacting.	Strategy Thinking Ahead. Making Decisions.	Power Powerful Character. Powerful Equipment.	Story Elaborate plots. Interesting characters.	Discovery Explore. Tinker. Experiment.

1.4. Target Audience

We are targeting an audience aged from 15 to 30 years old. It is aimed for people who play other puzzle games like *Portal* or *The Witness* and who focus on the strategy more than the graphics and the story. Furthermore, we target people with an affinity for retro games.

In order to have a more precise idea of our target group and to have a reference when making decisions, we created a persona that helps to orient ourselves:

- Name : Bjorn Sundqvist
- Age : 26 years old
- Player type : Strategy player

Player Background	Gaming motivations
Bjorn has been playing video games since he was 9 years old. He is a fine strategist and loves old school games. They remind him of the games he played with his father in his childhood. He mainly plays strategy games and enjoys challenges. His favorite game is WOW but he likes to relax with less ambitious games that still require attention from time to time.	He wants to reflect on problems quickly and escape from everyday life.
Frustrations with other games	**Need and expectations for new games**
He always feels that he is finishing the games too quickly or that it takes too long to get into the game, which discourages him from continuing. He can't find the right balance.	A strategic thinking approach is needed but he doesn't want that the game is too time-consuming. He wants a game easy to play, to advance and where he can pick back up. He is looking for a game that reminds him of those from his childhood with which he played with his father. Finally, he doesn't want to spend too much money on a game because he likes to test different games and to buy DLC if he likes one in particular.

1.5.   Game Flow Summary

The game has different levels of difficulty. We want a level to take about 10 to 20 minutes to resolve by counting the player's various failures before succeeding. When finishing a level the player is instantly placed into the next level. A level is only interrupted if the player is caught during the game, the rhythm is sustained due to pressure and reflection.

1.6.   Look and Feel

The game is a retro game which graphics are pixelated. We were inspired by two well-known games - *Hotline Miami* and *Monaco: What's yours is mine*.

Monaco : What's yours is mine

Hotline Miami

1.7.   Project Scope

We have several levels with the difficulty varying between them. The first levels will be easy and quick to resolve in order for the user to get accustomed to the game and to have a clear vision of what is expected in it. In the different levels, there will be different mechanics that the user has to conquer, of the order of four mechanics in total. Each level represents one museum floor. Each robbery will take place at night which is more coherent with the background of the thief and realistic.

For the MVP of our video game, we wanted to do at least one level correctly and well done with three different mechanics implemented and a great design. It consists in one museum with one work of art to steal. A fairly basic artificial intelligence in the video game world is implemented for the guards so that they can dodge the walls and spot the thief when he is in the light.

Finally, on December 9, we have two museums with 5 levels in each. The first museum is composed of 5 tutorial levels and the second one of 5 levels whose difficulty of each varies. A menu designed in the style of a museum map gives the possibility to choose between unlocked levels.

1.7.1. Number of locations

For the game delivered in December, we have two museums: a local museum not very famous and thus designed with easier levels and the army museum of Stockholm that contains more difficult levels.

1.7.2. Number of levels

For all the museums, we have 5 levels, which makes 10 levels in total. There is one floor in each level for the moment. In more advanced levels, floors can be added so that the game is more robust and realistic.

1.7.3. Number of NPCs

The NPCs of our game are the guards. There is not an exact number of guards defined in each level, it depends on the puzzle. There are levels with no guards at all and other levels with up to 5 guards. We have moving guards with a good balance in order to make the game feel coherent.

2. Section II - Gameplay and Mechanics

2.1. Gameplay

2.1.1. Game Progression

The game's difficulty will increase as the user progresses. We have puzzles that will be more complicated to solve and that will require more thinking to complete. We will progressively introduce mechanics during the game with tutorial levels. Firstly, the thief will have to avoid the guards and the laser beams. After that, he will have to play with the lights and objects in order to complete the level. This will allow him to familiarize himself with the game and gradually refine his strategies.

Concerning the history, we have several museums with the same mechanics but used in different ways. The locations look quite similar in terms of visuals but the work of art is different and the museum is more famous. For instance, we have levels in the Army Museum of Stockholm where the thief steals a chalice or a painting. We can think of a final museum where the thief has to steal the Mona Lisa in the Louvre Museum.

For the MVP, we will have four mechanics: the guards, the lights, the laser beams and doors.

2.1.2. Mission/challenge Structure

The different steps of a level are as followed:

1. The thief starts at an entrance.
2. The thief analyzes the level quickly and starts to think of a path to follow and a strategy to overcome the traps and obstacles.
3. He makes his way to the artifact and steals it.
4. Once in possession of the artifact, he has to escape and thus think of a strategy to sneak out to the exit.

There are different ways the thief can be spotted by the guards:

1. The thief passes through the laser beam
2. The thief bumps into a guard but this will also make the player lose the level instantly
3. The guard spots the player while the room lights are on
4. The guard spots the player while his flashlight is on
5. The guard's attention is drawn from the player's noise

When the thief is spotted by a guard, the guard is alerted and he runs towards him at a higher pace. This makes it difficult for the thief to sneak out or to steal the artifact and if the thief collides with the guard, he loses the game.

2.1.3. Puzzle Structure

The level consists of a start, an exit, the artifact and obstacles. In each level, the thief goes from the start to the artifact, then to the exit with while conquering obstacles. The puzzle is thought of as a kind of labyrinth where the thief must be resilient to find his way. He must activate buttons in order to deactivate the lasers, avoid guarded areas and move objects if necessary to clear a path.

2.1.4. Objectives

The player experience goals is: "Players will feel under pressure as they try to steal the artifact in a museum filled with guards and traps".

We want the game to be difficult enough and require enough thought for the player to have fun and not be bored.

We want to set up a point or ranking system in the long term so that the player wants to achieve the levels again and does not let go of the game once it is over.

2.1.5. Play Flow

During a level, the flow is not interrupted. The user can do whatever he wants inside the map and perform the different actions. The game is only interrupted when he loses. When he solves the puzzle to steal the artifact. In future versions, we want to show an image of the item to steal. After the visualization of it in the center, the image comes to the bottom right of the screen so that he knows that it is in his possession.

The rhythm is sustained due to pressure and reflection. He can take breaks to think while hiding, but once in action, it is made very difficult.

2.2. Mechanics

2.2.1. Physics

There are walls that keep the guards from seeing or passing through.

The thief can activate buttons by going in front and pressing the F-key on the keyboard. The artifact can only be retrieved, it cannot be thrown, placed or moved.

There are push physics on some of the objects in the room like sofas and plants. The walls and other static objects are not pushable in any way.

2.2.2. Movement

2.2.2.1. General Movement

The thief can move in every direction. In order to have a clearer vision, we can take the example of the game *Hotline Miami* from which we draw inspiration for the thief's movements.

The thief has two paces to move around. The first is a slow pace rhythm and the second is a running rhythm. Concerning the first one, it concerns the ability of the thief to sneak around and to move without being heard or seen. The second one allows him to run quickly when he is chased by the guards or when crossing a surface quickly, after a distraction for example.

2.2.3. Objects

For this version, we only have decorative objects like sofas and plants. In the future, we want the thief to be able to pick an object, carry it, drop it and throw it. The different objects with which he will be able to do that are the following :
- Chair
- Flashlight
- Plant

He can move the object to block the way of a room for instance. He uses the following :
- Plant
- Sofa

2.2.4. Actions

2.2.4.1. Switches and Buttons

The thief can turn the light off. It allows him to use a specific strategy to steal the artifact. In order to do that, he has to go to a certain point and activate the button to perform this action.

The same mechanic applies to switching off laser beams.

2.2.4.2.Picking Up, Carrying and Dropping

In future versions, we want the thief to be able to pick object and to have the possibility to throw it in order to distract the guard. If he accidentally takes the object, he can drop it on the floor.

For now, the thief can move objects to block the access to a room for the guards. It allows him to save time and to use other strategies to win the level.

2.2.4.3. Doors

Doors can be opened and closed by pushing the F-key. They can not only be opened by the player but also by guards. In case they are blocked by pushable objects like a sofa or plants it is not possible to open them.

2.2.5. Conflict

There is no combat in the game. However, there are conflicts between the guards and the thief. If the guard sees you, he will start to run towards you at a higher pace. Once triggered, guards won't stop following the player until they catch the thief or the thief is out of the museum.

2.3. Screen Flow

2.3.1. Screen Flow Chart

The different levels are accessible via the menu designed in the style of a museum map. Levels are unlocked when completing the previous level. So, the player can revisit previous levels and play them again.

For future versions, an addition of splash screens for transitions would add a good flow to the game.
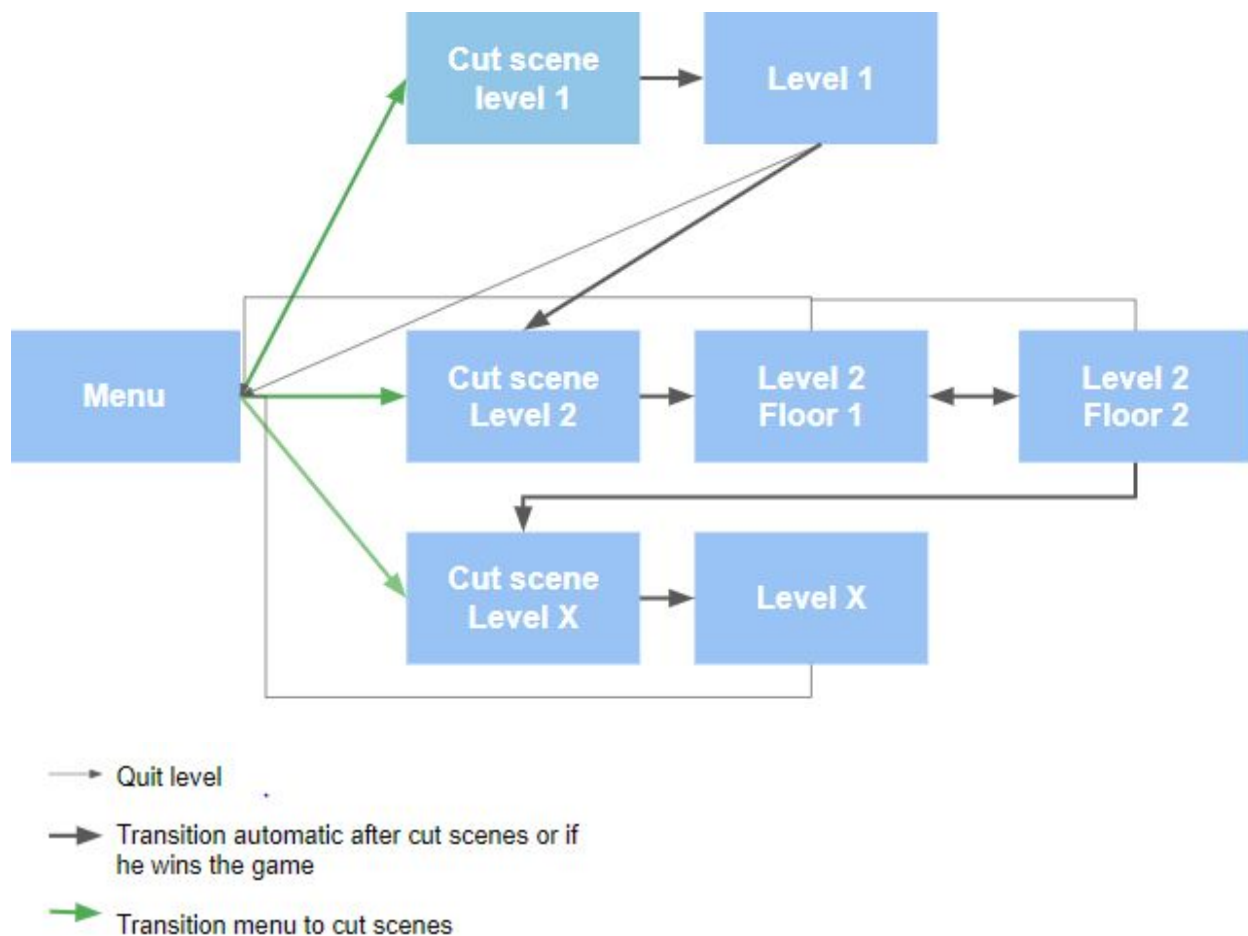
2.3.2. Screen Descriptions

2.3.2.1. Main Menu Screen

It allows the user to select the museum he wants to steal and the level inside it, that is to say the level of the game he wants to play. If the level is unlocked it will be displayed differently and the player is able to start it. The player can see the levels that are unlocked and interact with them as buttons with representative numbers for their level.

2.3.2.2. Options Screen

For the MVP there will be not screen to set options. In a later version an option screen would appear when the user pauses the game. The player would be able to go back to the main menu and give up the level he is playing. He can also allow him to take a break if needed. The last option he can choose will be to save the game he is playing and resume it later.

For the moment, when he is playing a level, the user can just go back to the level selection menu.

2.4.   Replaying and Saving

Levels that are already unlocked can be replayed any time. For now, we do not have a saving mechanism. For a future version, the user should be able to save the game that he is playing and go back to it later. At the end of each level, the performance of the user is saved. As a result of this, the user is able to unlock new and more difficult levels, going forward to prevent the need to replay all the already completed levels in order to reach the same level the user quit.

We are thinking of a points or ranking system, so the result for each level will be saved and the player can improve in another way as well.

3.   Section III – Story, Setting and Character

3.1.   Story and Narrative

3.1.1.   Back story

Terry Ocean is an accountant, father of two and husband to a successful lawyer. Day by day Terry's life repeats itself. He gets up in the morning, goes to work, has lunch with the ever same colleagues, picks up his kids from school and goes home to watch his daily episode of "The Simpsons". This is how his life goes by until one day he decides to spice up his life. On a lazy sunday the family decides to visit the local museum, where Terry thinks of his great great uncle who was arrested for a museum robbery back in the 20s. "Good old uncle Danny must have had an exciting life". Terry stares at the beautiful chalice in front of him, while thinking about his uncle and his life, when suddenly he comes to a conclusion and a simple thought changes his entire life. "Uncle Danny, I'm going to follow your footsteps, change my boring daily routine and become a professional thief"

3.1.2.   Plot Elements

We have the thief, the different museums and the works of art to steal in each one.

3.1.3.   Game Progression

The thief is becoming more and more skilled and taking more and more risks when trying to steal from more famous museums. For a possible sequel, we thought of a possible end to the game which is as follows.

At the end of the game, the thief has become a real expert and he decides to tell his wife what he has done in the past few years. His wife, shocked at the beginning and angry at him, accepts the situation. She even thinks she wants to try the experiment to understand her husband. The thief decides to train her and together they will become a couple of

thieves. This introduces version 2 of the game where a multiplayer version will be playable and where each of the protagonists will have strengths and weaknesses. The two will have to join forces and combine their strength to steal the works. In addition, new multiplayer strategies will appear

3.1.4. Cut Scenes

We want to have one cut scene per level which is the text before the beginning of the level. It indicates the work of art to steal and a short description of the museum in order to put the user in the context.

We also want to have when we start the game a short text or video explaining the background story of the thief. We will have other cut scenes from time to time to talk about its evolution and make reference to it in order to keep a coherence in the story.

However, for the current version there was no time to focus on cut scenes.

3.2. Game World

3.2.1. General look and feel of world

Depending on the level, the lights are turned on or off at the beginning of the level. The robbery takes place at night but we can think about an exceptional level in the future where the robbery will take place during the day with other people than the guards in the museum.

3.2.1.1. Music/Sound

There is different sounds in the game depending on the context in which the user is currently evolving.

The background music sets a mystical, dark atmosphere. This creates a great sound environment and puts the player in the mood and context of the game. When alarm lights go off we can hear a siren and we also added sounds for doors being opened and closed.

It did not make it to the final version, but we wanted the music to pause when the lights are lit. It is quiet and you can only hear the guards' footsteps.

When we deactivate an alarm or a laser, we would like in future versions to turn on music, depending on the context, we intend to put the ticking of a bomb to intensify and put more stress on the user to make him hurry to solve the puzzle.

In case there is a level that take place during the day, we will have music with background noises from people who are discussing the works.

3.2.1.2. Design

Concerning the design part, it is pixelated which gives the look of an old school game. We aim to give an atmosphere of spy action and heavy atmosphere where the user is constantly holding his breath and stressed about getting caught. In order to do that, we chose dark colours.

3.3. Characters

3.3.1. Terry the Thief

3.3.1.1. Back story

The only character in the game is the thief. His background story is described in the section 5.1.1.

3.3.1.2. Personality

The thief is a regular guy who works during the day in a boring office job. He is not very extroverted or has a lot of hobbies. Terry is a married father of two who is bored of his life and needs some excitement. He is a perfectionist, who works very precise and keeps everything he does in order.

3.3.1.3. Look

3.3.1.3.1. Physical characteristics

The thief is a man with black hair and white skin. He wears a thief style consisting ofa black sweater, red pants and a mask to avoid being spotted.

3.3.1.3.2. Animations

4. Section IV – Levels

4.1. Museum #1 - Local Museum

4.1.1. Synopsis

The tutorial levels represent a local museum where the thief starts to steal from, to learn how to avoid different hazards and obstacles.

4.1.2. Introductory Material

In the future, there will be a small text before the level starts in order to introduce the player to the mechanic that he will learn in this level.

4.1.3. Objectives

The main objective of this museum is to learn the mechanics and to have a first gaming experience.

4.1.4. Physical Description

The levels vary in size and there is only one floor for each level. Some are more narrow with corridors, while others have large spaces and different rooms. The average room is however of the smaller size. The scene contain different furniture and decoration.

4.2. Museum #2 - Army Museum of Stockholm

4.2.1. Synopsis

The second museum is of a regular size with not so famous works of art to steal. The museum is the Army Museum of Stockholm (Armémuseum). It starts with a random object not famously known so it is easier to sneak it out of the museum.

4.2.2. Introductory Material

There will be a small epilogue describing the museum and the artifact to rob before he starts to play.

When he succeeds to steal the artifact, we want a small picture of it appears on the screen and then it will be displayed in a corner of the game in order for him to know that he has it in his possession.

Both mechanisms are to implemented in future versions.

4.2.3. Objectives

He has to steal different works of art in the Army Museum of Stockholm without being caught. There is a chalice and a painting to steal.

4.2.4. Physical Description

Depending on the level, the map has a single floor with open rooms or a single floor with several rooms with doors separated each one. Areas are delimited by lasers or by a door that block the passage. There are guards in different rooms and they cover the main surface by walking.

5.   Section V - Interface

5.1.   Visual System

5.1.1. HUD - What controls

When he is in front of a lever with which he can interact or the artifact, the key that must be pressed on the keyboard to perform the action which is indicated via a text in the middle of the screen. If it is a standard object like a sofa, he just needs to walk in it to move the object. There is also a shortcut in the top left corner allowing the player to return to the level selection menu at any time.

Later, we want to have an indication that the art has been stolen in the corner of the screen. Therefore, the thief know that he has it and it is time to go.
We will also have an indication when he picks up an object, the object is displayed in another corner of the screen.
We also thought of a timer when it deactivates certain lasers or lights. This would be displayed on the screen to allow him to see how much time he has before an alarm or the element reactivates.

5.1.2. Menus

We have a menu that displays the different levels. This one has the shape of a map. We are inspired by the video games *Candy Crush Saga* and *Super Mario Bros*. We like this idea because it is visually attractive, allows to see its progress easily and in future versions to see the location of museums. It is possible to click on the desired level. To unlock levels, the user must complete the previous ones, therefore, locked levels will be displayed but not clickable with a gray tint.

5.1.3. Rendering System

The default Unity rendering system is used.

5.1.4.   Camera

The camera is a top-down view. The map is a straight top-down view and the elements on the map are seen in a two-and-half-dimensional perspective.

5.1.5.   Lighting Models

The lighting models is that the lights are realistic. The light will come from the laser beams and the flashlight of the guards mostly. For the screen we will have a dark atmosphere to make the interior of a museum look realistic at night.

We use the light2D library which will be described in more detail in section 10.

5.2.   Control System

The player controls the thief with the keyboard and the mouse. To move the thief, he uses the WASD-keys on the keyboard. To point the flashlight the direction of the mouse cursor is used and by left clicking the mouse the player can switch his flashlight on and off. Moreover, by pressing the shift-key the player starts sneaking.

5.3.   Audio

We have several sounds in the game. The character makes noise in different ways in order that the game seems more realistic. Like opening doors and turning off switches/buttons. There is also an alarm sound playing when walking into the lasers.

Later, we want to add sounds of footsteps. Guards would be able to notice these noises and move towards them when they hear them.

5.4.   Music

In order to put the user in context, we use free music sounding mysterious and dark.

5.5.   Sound Effects

There are sound effects for the alarm lights. When the laser is triggered a siren will go off. When opening and closing doors we also added a wooden sounding effect.

We would have liked to add more sound effects in the game. The sound of winning when the thief succeeds in sneaking out of the museum with the work of art. Another one would be the sound of a failure when he gets caught. A sound effect when the guards spot him so that the thief know that he has to escape.

6. Section VI - Artificial Intelligence

6.1. Opponent AI

The guards as the opponent are have a simple AI implemented. There is a strategic decision they have to make in order to spot the thief and find the fastest way to the player.

Before chasing the player, in their "neutral" state, the guards follow a predetermined path. There are several waypoints that they follow in order and patrol through the rooms.

When they hear a noise, the thief enters the guards' sight or he triggers a laser, the guards chase the thief and run towards him by using the shortest path. In order to do that, we are using the A* pathfinding algorithm.

6.2. A* pathfinding

The A* pathfinding is an algorithm that calculates the shortest path between two points by also taking not walkable areas, like walls into consideration. The algorithm works with a grid. For each cell three costs, the h-cost, g-cost and f-costs is calculated. The costs are calculated by accumulating the cost for the path to the starting node (h-cost) and the costs for the path to the target node (g-cost) for a specific grid. By evaluating the f-cost, which is the sum of the h- and g-cost the algorithm finds the shortest path from the start to the target. The cost of a diagonal step is usually weighed with 14 while a horizontal or vertical step is weighed with 10. The A* pathfinding algorithm as seen in the image below is implemented in combination with a grid and a tilesystem provided by Unity.

7. Section VII – Technical

7.1. Target Hardware

The video game is design to be a desktop game. It is playable on **PC** and compatible with different operating systems: Linux, Windows and Unix.

7.2. Development hardware and software

During the project, we will use **Linux**, **Mac** and **Windows** operating systems for development.

To create the sprites, we will use **Piskel** which is a free online sprites editor as well as the so-called **character generator**.

7.3. Development procedures and standards

To collaborate on the development of the video game and keep a version history, we will use **Github**. It is a useful tool for most cases but there are some big issues with merge conflicts for scenes. Therefore, we tried to never push the same scene after it happened once. Unity does have a tool for debugging this but then we need to use their version handler in the project which we did not want.

To follow the different tasks needed for the project, we will used **Trello** which is a web-based Kanban-style list-making application. The main functionalities we use are the attribution of a task to a member, the establishment of a deadline and the use of labels.

7.4. Game Engine

The game engine used for the development is **Unity 2D**. It is a good tool to use if we want to get things done quick but it does have issues when we want to debug.

7.5. Scripting Language

The programming language used is **C#** which one of the three languages available for developing with this game engine.

7.6. Third libraries

We use **Light2D** which is a 2D lighting system that runs on GPU. We need it mainly for all the light effects, laser beams and flashlights.

7.7. Licences

The different licences are listed below :

- Unity 2D: Student License
- Light2D: MIT License
- Piskel: Apache License

8.   Section VIII – Game Art

8.1. Concept Art

The art concept of the game is a retro top-down game. You can see a first visual draft of the game below.

8.1.1. Overview

8.1.2. Logo title

MUSEUM HEIST

8.2. Style Guides

8.2.1. Font

For the website, we use the following font to write the different texts :

- **Arial Black**: Content
- **Press start 2 play**: Title

8.2.2. Color

8.2.2.1. Website

- **#CCCCCC** : Content
- **#C13C3C** : Title

8.2.2.2. Game

We want to harmonize the colors with those chosen from the website. For now, it wasn't our priority, we wanted something elegant similar to what we had in mind but we didn't define precisely the details of the game's graphic charter.

8.2.2.3. Laserbeam

- Red laser: #FF0000
- Green laser: #01C815
- Blue laser: #013DC8

8.3. Characters

8.3.1. Thief

8.3.1. Guard

8.4.   Textures

8.4.1. Wall

8.4.1.1. Wall 1

8.4.1.2. Wall 2

8.4.2. Floor

8.4.2.1. Floor

8.4.3. Laserbeam

8.5. Levels
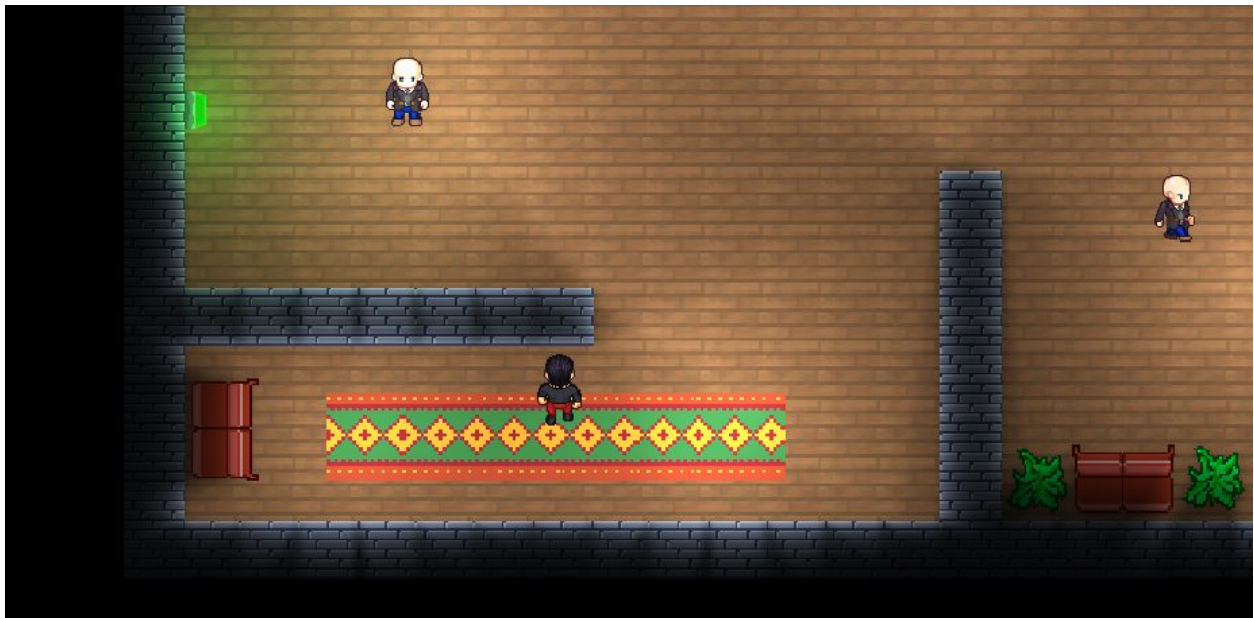
8.5.1. Level 1
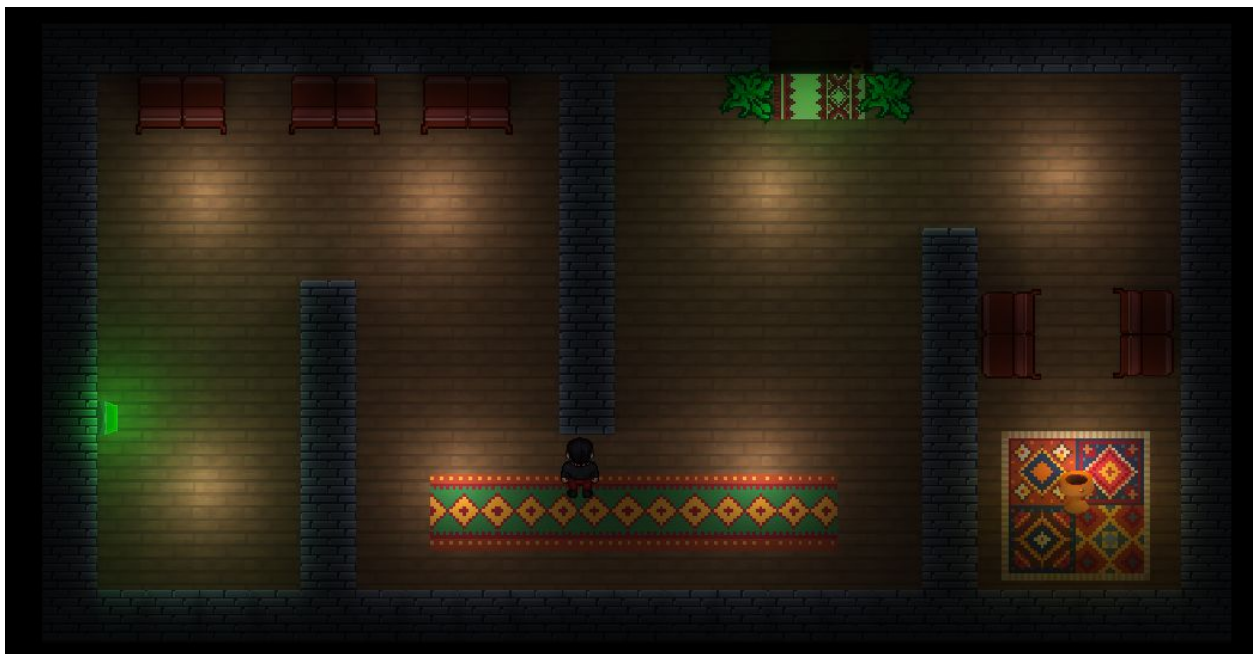
8.5.2. Level 2

8.5.3. Level 3

8.5.4. Level 4

8.5.5. Level 5

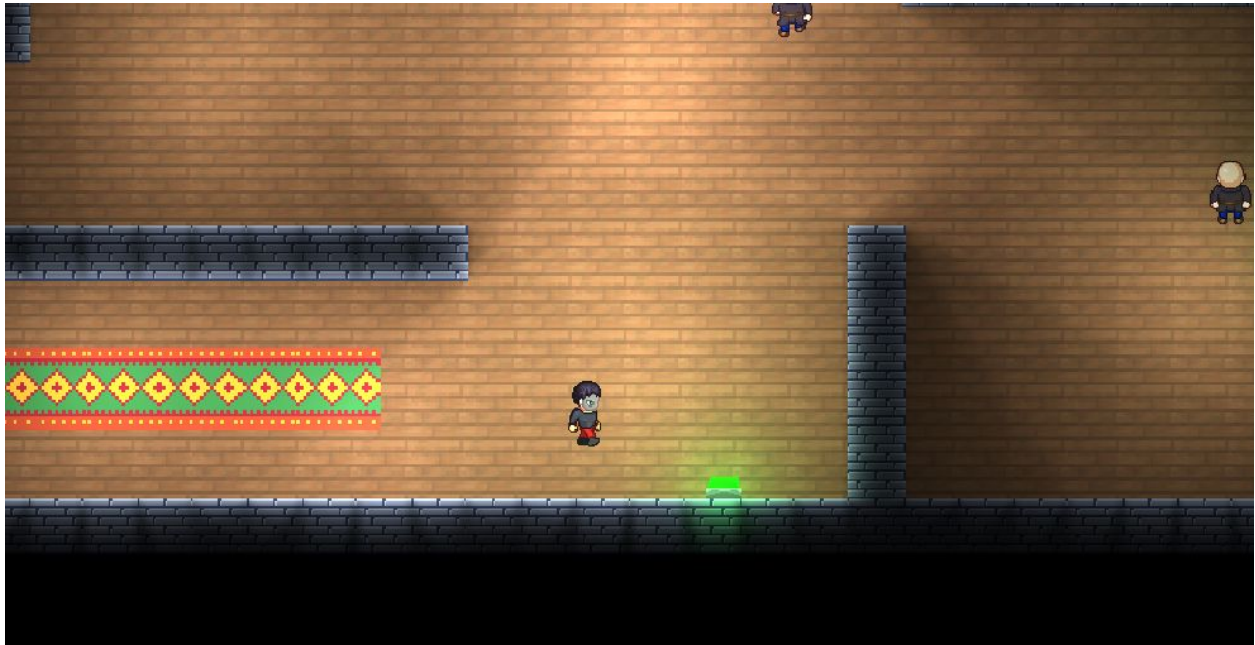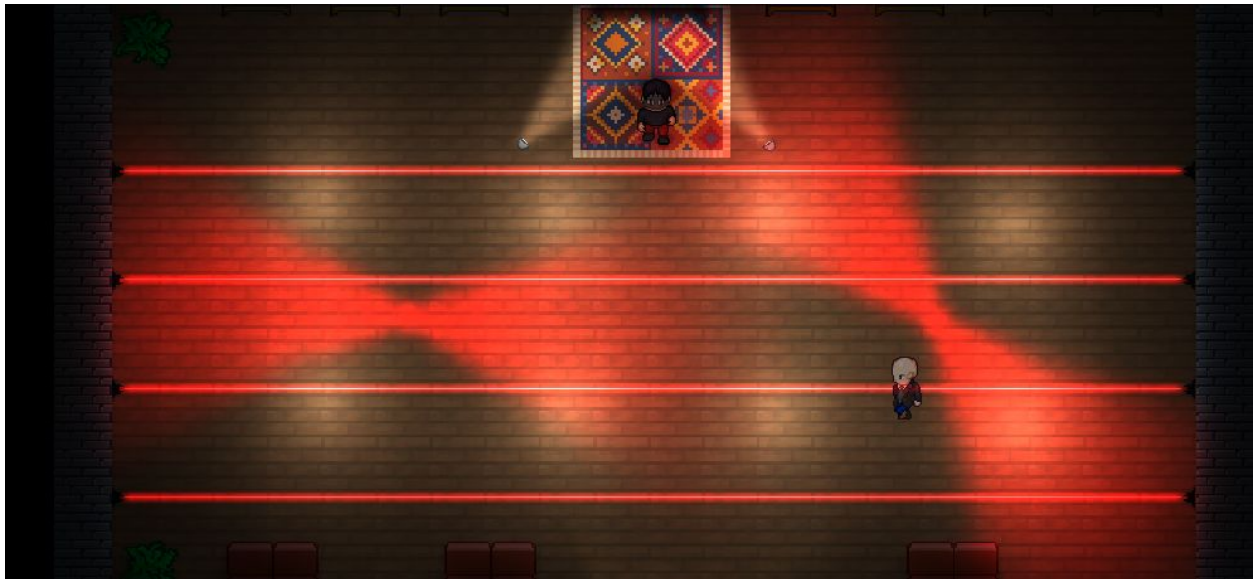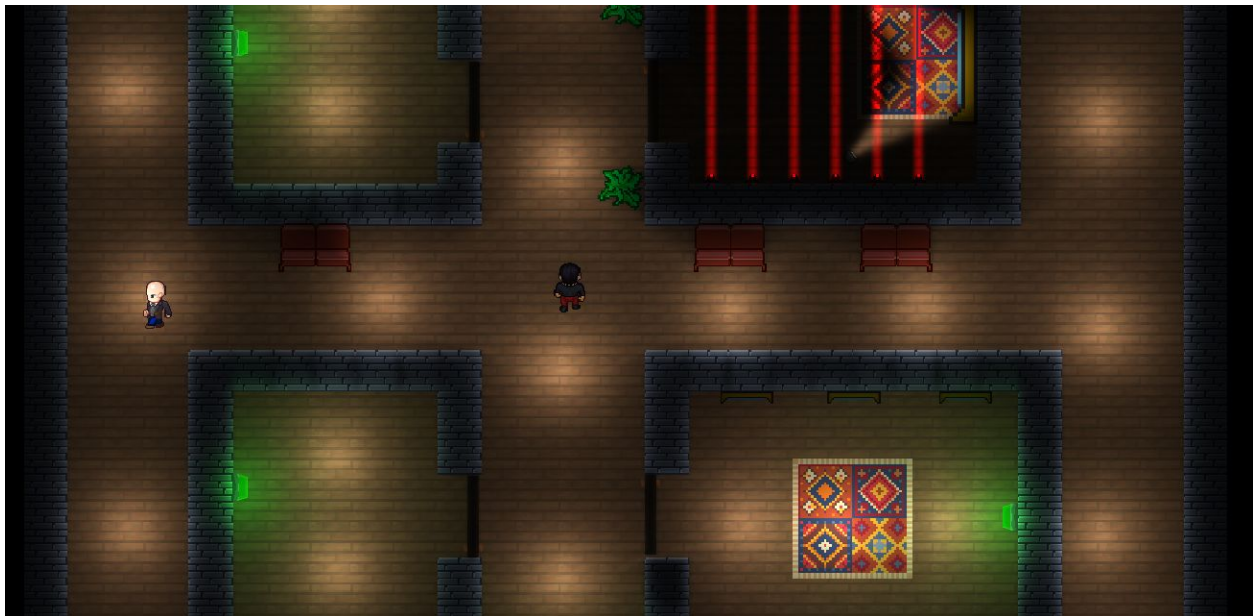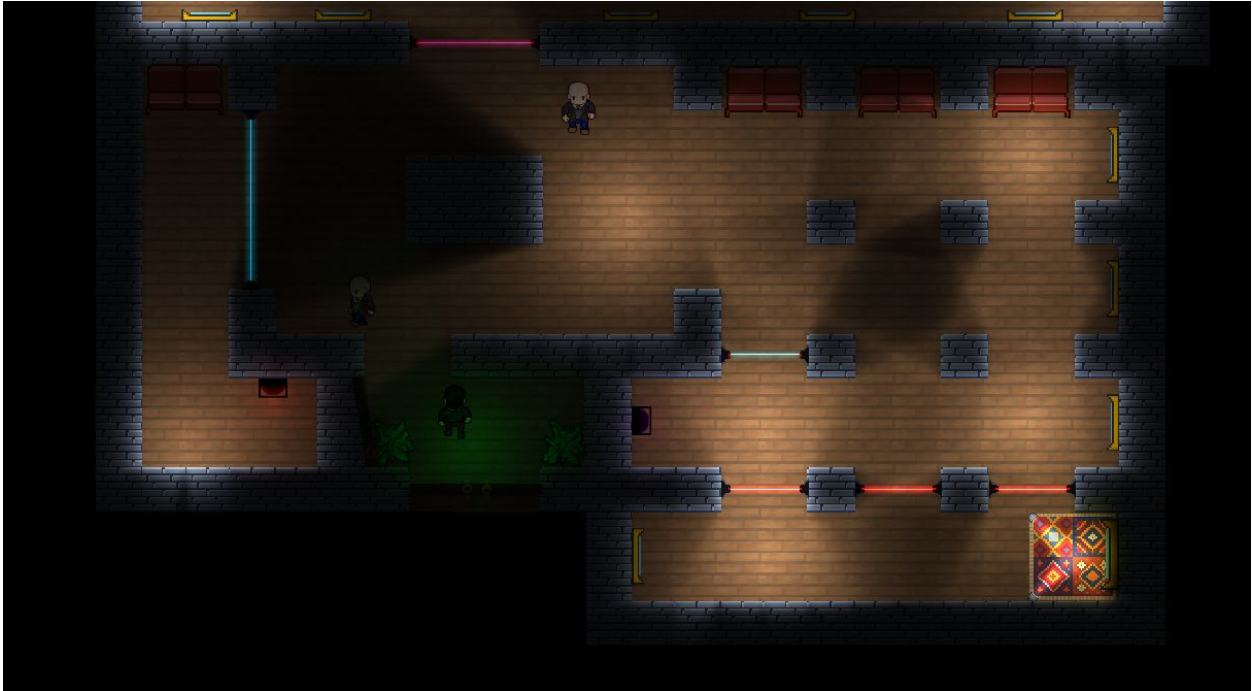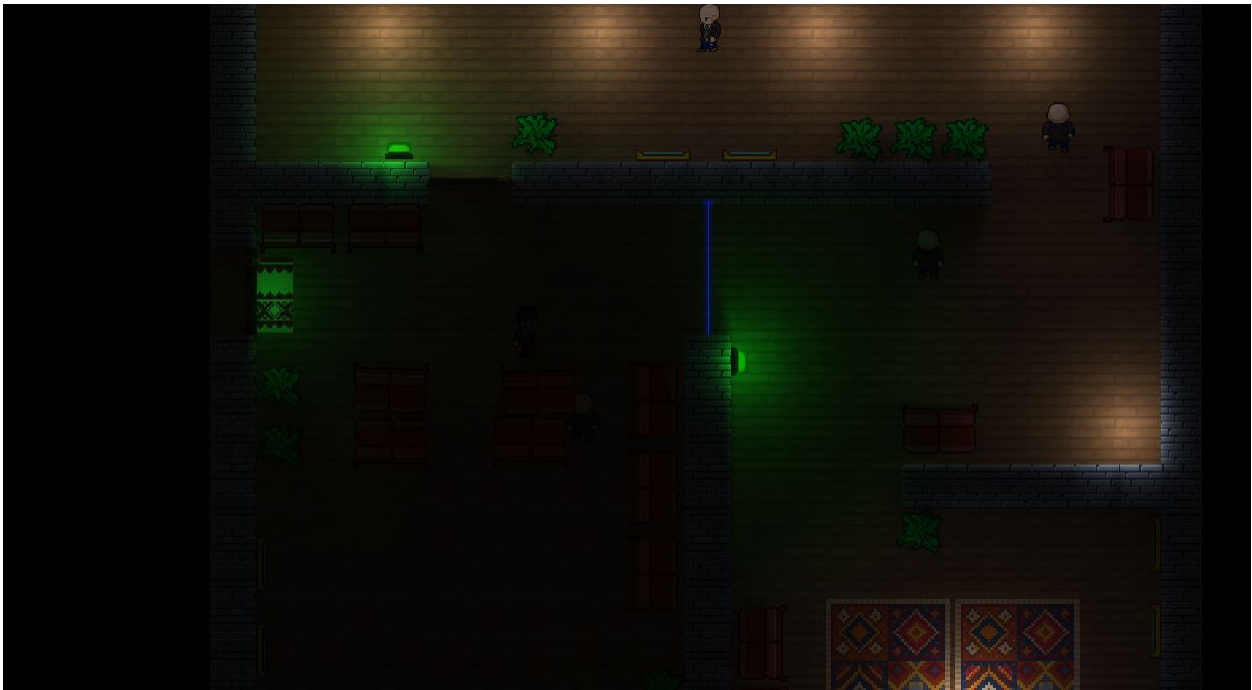8.5.6. Level 6

8.5.7. Level 7

8.5.8. Level 8

8.5.9. Level 9
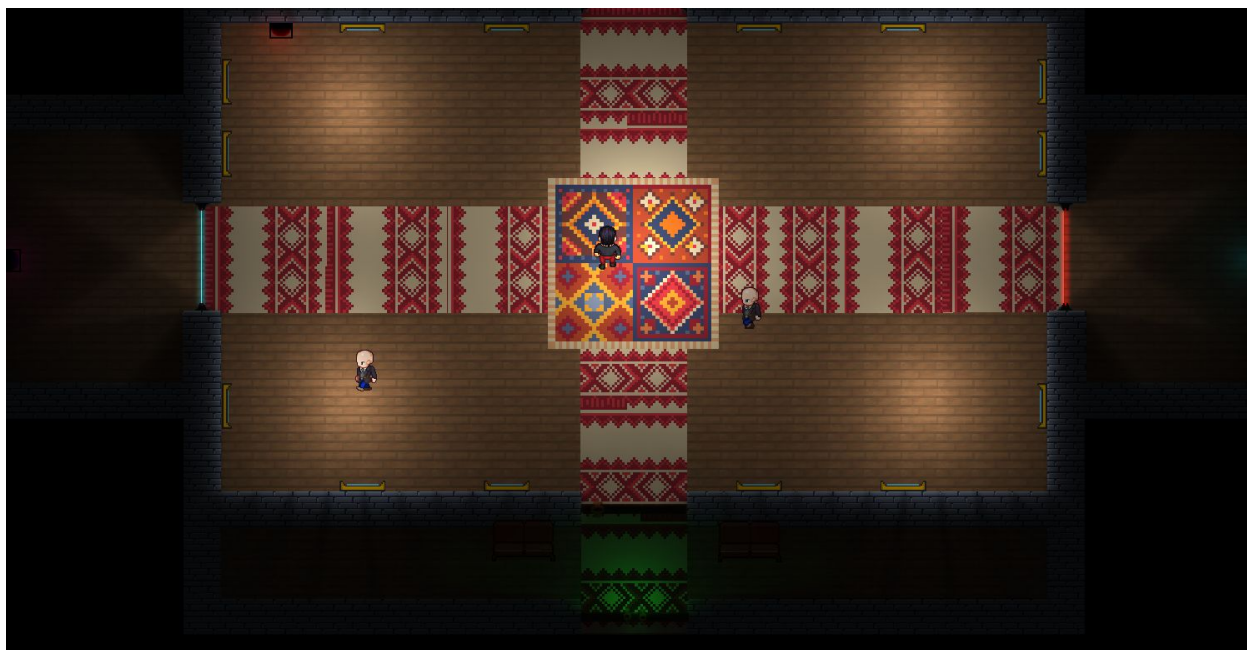

8.5.10. Level 10

8.6. Artifacts

8.6.1. Chalice

8.6.2. Painting

8.7. Objects

8.7.1. Sofa
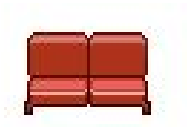
8.7.2. Plant

8.7.3. Carpets

8.7.3.1 Carpet 1

8.7.3.2 Carpet 2
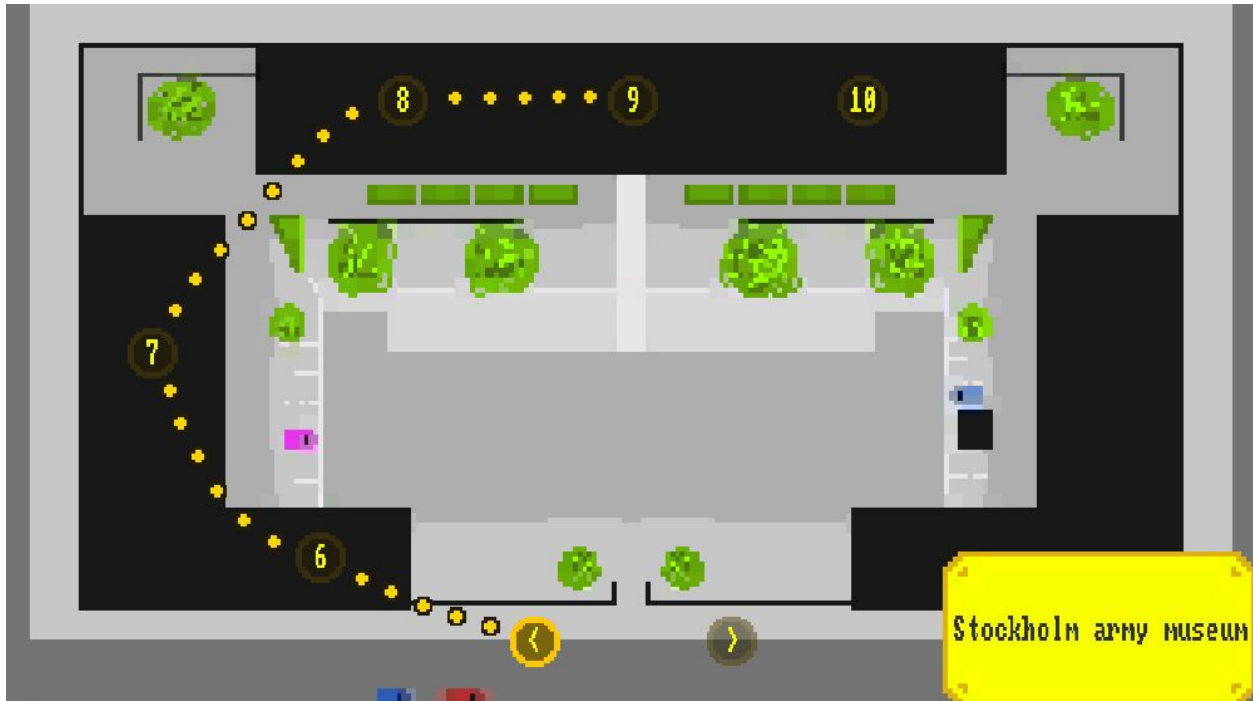

8.7.3.3 Carpet 3

8.8.   Menu

8.8.1. Level 1-5: Local Museum

8.8.2. Level 6-10: Army Museum of Stockholm

10. Section X - Management

10.1. Detailed Schedule

See appendices 15.2.1.

10.2. Budget

See appendices 15.2.2. to see the detailed budget.

We need approximately 16 000$ to break even. It is a substantial budget that remains achievable if we succeed in marketing well.

Assuming that we sell the game at a price of $5.99, we can expect a return on investment when we sell the 3816th game.

In fact, If we assume that the platforms on which we sell the game take 30% of the price, we have : 16 000 / (5.99 * 0.70) = 3816.

10.3. Risk Analysis

For this risk analysis, we will select a scale 1 to 5 in order to note the probabilities and the consequences of the risks.

Risk description	P	C	R	Suggested action
Lack of time to work on a task. Due to a busy schedule for this part of the semester, it is possible that the allocated working time for the project is not enough.	3	3	9	Responsible : Christophe Proactive: The team members efficiently organize at the beginning of the course by taking into account the different assignments we have in other courses. See each other frequently to give updates about the workload. Reactive: Organize a meeting in order to schedule new deadlines and search for a solution.
Conflict in schedule. The five people in the group have different courses and there may be conflicts that prevent a group member from attending an	3	2	6	Responsible : Hannah Proactive : • Inform the group of the schedule conflict and take it into account in the

important course or meeting.				preliminary planning. Reactive : ● Write a summary of the group meeting each time with the main points. ● Catch the work done by the group or the course given.
Problem with equipment. The software used requires powerful computers to operate properly. As a result, the work may take longer to manage.	2	2	4	Responsible : Henrik Proactive : ● Manage to find computer powerful enough to work with those software. Reactive : ● Manage to book room to work directly at school on the computers.
A person in the group gets sick for a long time. Due to the short period of time over which the project is spread, if one of us gets sick, it can really cause problems for our ambitions on the project.	1	3	3	Responsible : Robert Proactive : ● Balance the workload. ● Be sure that everyone can be backup by another member. Reactive : ● Schedule a meeting to distribute the workload of the sick member.
Video game too simple or too complicated. You have to think about all types of players and therefore have a rather gradual scale of levels. It is not enough to have levels that are too simple or too complicated.	2	3	6	Responsible : Gustav Proactive : ● Do test with external user and get their insights. Reactive : ● Change the rule of the level to fit the goal aimed.
Difficulty learning the software. It may take us some time to discover the different features and therefore not take advantage of them.	3	2	6	Responsible : Henrik Proactive : ● List the different functionalities we want for the game and search if it is feasible with the software used. Reactive : ● Find a similar solution to

				cope with a lack of functionality wanted. • Schedule a meeting to find an alternative of the functionality desired.
Conflict between the team members.	2	5	10	<u>Responsible</u> : Christophe <u>Proactive</u> : • Make sure you listen to what the other person says and find compromises. <u>Reactive</u> : • Remember that we are moving towards the same goal. • Talk to the teacher about it and try to find a solution.

10.4. Test Plan

Concerning the user testing, we performed only one test in front of the class. Due to lack of time, we couldn't do a user test before the final presentation like we wanted. The test performed in front of the professor and the class lasted around 15 minutes. It was used to detect bugs and collect feedback and new ideas to improve the game. The testers were free to do whatever they wanted to and play as long as needed. As a result, we took their feedback into account, reflected on it and improved the game.

10.4.1. November 15, 2019

Test performed in front of the teacher and the class during 15 minutes. We received a lot of feedback when we did this test. Some students played the game and seemed to enjoy it. We categorized the feedback: visual, mechanics, gameplay motivations and atmosphere.

Concerning the visual part, people wanted the elements to be more visible, such as the exit or activation levers.

For the game mechanics, they also advised us to put some fake objects in the museum that we can use to block the guards in a room or to get access to some elements. The teacher gave us a very important advice which is to limit the mechanics proposed but to reuse them in different ways in each level so as not to lose the user. They gave us ideas for different mechanics such as having different types of guards or adding a timer when disabling a laser or light.

To keep the player from getting bored, we were advised to find a motivation for the player to replay the levels, such as a points or ranking system.

Finally, for the atmosphere part, we had some comments on the music of the game according to the situations because we only had one music for the first presentation.

11. Section XI - Business

11.1. First customer

11.1.1. Description

The first customers are true lovers of old school game, top-down and strategic game. It is a niche profil but they are reliable and if they love the game they will spread the word to their friend. This is how we want to develop our community. These niche players are active on social platforms and forums and they are trusted by other players because of their experience and their passion for games.

In addition, in our game, you are not stronger because you start one week before your friends like with a lot of games nowadays. Therefore, everyone can compete and we can sell it during the long term, there is no strict deadline. Therefore, we believe that this is a good solution to create a solid customer base in the long term.

11.1.1. Advantages

There are several benefits to ue this solution. Like we mentioned in the previous part, target a niche in this area can have a real impact on the trust placed in the game.

Niche players are experienced and passionate. If they love your game, you can be sure that they will talk about it and defend it. They will spread the word in their community who are often inspired by them. They are often active on social platforms like forums but also Twitch or Youtube. Some of them have an audience and this makes it easier to communicate to a larger number of people.

11.2. Point of sale

We will sell a finished game with many levels and different mechanics implemented. We want something qualitative with a little less content for the first finished version. On the other hand, we will regularly add DLCs with new levels and gradually introduce new mechanics.

11.2.1. Online platforms

11.2.1.1. Steam

Steam is the platform most known by PC players. This advantage also makes it the most saturated. Indeed, about a hundred new games are added each week. It is therefore difficult to stand out from other games.

11.2.1.2. Itch.io

It is a place for independent PC game developers to sell their work with a pay-what-you-want model. We can publish our game for free and choose the revenue we want to share with the platform. Even if people pay what they want, we can still put a minimum price for the game. It is a great platform to create a community and to make the game known.

11.2.1.3. GOG

There is no submission fee for games but we have to get accepted by the platform. The main advantages is that they do an extensive promotion and marketing for the games they choose to put on the platform. Gog only accepts few game each month which makes it difficult to be selected but if we are, we gain a very high visibility.

The revenue split is 70/30 so it's a perfect platform to talk about your game and make it visible but less for the revenue generated.

11.3. Business competitors

11.3.1. Hotline Miami

The positive points of this game is that it is challenging, retro and addictive. That means that when people try it, they really get into the game and it's hard to stop playing it. This is one of the important points we want to represent in our video game.

In addition, this game offers a great soundtrack. It is a key element for a game and it allows the user to really be immersed in the atmosphere of the game.

The difference that we want for our game is that we want to focus on the strategic aspect and We don't want a violent or rough game.

11.3.2. Monaco : What's yours is mine

The game requires a strategic reflection to win the different levels. It possesses great mechanisms which means that the player is not bored easily and always has to be strategic. One common point with the idea of our game is that it is a stealth game. It is not very common for a 2D pixelated top-down game and we think that is one of the major reason for its success.

We want to take these different elements and adapt them slightly, but we want a slower and more realistic pace for our game.

11.4. Marketing

11.4.1. Challenge

For the launch of our game, we aim to organize a challenge in order to attract people and attention. The goal of the challenge would be to complete the maximum level in a defined period of time. The person winning the challenge would be awarded a prize. The implementation of the challenge and the publicity for it will have to be taken into account in the budget. Indeed, it is necessary to think of one or more prizes for the winner and platforms to advertise. Moreover, since the game is not networked, a special platform should be set up for it.

11.4.2. Lectures

Our target group is people from 15 to 30 years old. It could be interesting to do some lectures in famous school in order to deliver our knowledge about the implementation of a game as a student and in return it would allow us to advertise for it. If we reach a student audience, who are players but don't necessarily have a lot of time to play, word of mouth communication could be beneficial.

We can also think in the same way about making TEDx conferences composed of a larger audience and not necessarily fan of video games but which reach a very large audience both in person and online.

11.4.3. Chanel Slack

In order to improve our game, it would be interesting to open a slack channel to communicate with passionate players who play our game. This could answer questions when we have them and give us their ideas for improvement. It is not direct marketing but in a concern for development, the company and extensions, it could be very beneficial indirectly.

11.4.4. Influencers

One means of communication that has spread in recent years is influencers. These are people who promote our game if they like it in exchange for financial compensation. Getting very famous personalities is very hard. On the other hand, people a little less known but directly concerned by the world of retro gaming is feasible. The preferred platforms to do this are Twitch and Youtube as well as a potential sharing on the various social networks that the influencer owns.

11.4.5. Youtube/Instagram story (Record the development of the project like a diary)

Another means that has spread in recent years but is not yet very widespread and directly concerned in the video game industry because of its rather heavy implementation is the storytelling of video game development. The team records progress and major development milestones at more or less regular intervals to explain problems encountered and successes. This allows you to create a loyal community very early on and to make the game known even before it is released or finished.

The platforms currently used to do this are Instagram in the form of story and photos, youtube in the form of video and Twitch in the form of live streaming. A last very recent way is the podcast which is growing more and more and more and is not yet very developed in the field of video games which could be a real advantage if we start as soon as possible. We would have to be imaginative because this one is only audio and a video game has a lot of graphics but it can really be an impacting element to stand out.

12. Appendices

12.1. Asset List

12.1.1. Art

12.1.1.1. Model and Texture

- Wall
- Floor
- Carpets

12.1.1.2. Sprites

- Guard
- Thief

12.1.1.3. Artifacts

- Chalice
- Painting

12.1.1.3. Objects

- Sofa
- Plant

12.1.2. Sound

12.1.2.1. Sound effects

- Opening door

- Closing door
- Pushing button
- Alarm sound when colliding with lasers

12.1.2. Music

12.1.2.1. Ambient

- Dark music playing throughout all levels
- Music stops playing when lasers are triggered

12.2. Management

12.2.1. Detailed Schedule

Date	04/11/2019	05/11/2019	06/11/2019	07/11/2019	08/11/2019	09/11/2019	10/11/2019
Tasks	Meeting 3pm		Finish project presentation	Project presentation			
Date	11/11/2019	12/11/2019	13/11/2019	14/11/2019	15/11/2019	16/11/2019	17/11/2019
Tasks	GL			First demo finished / Meeting with the team (14h)	First demo (Presentation of 20 minutes to the teacher)		
Date	18/11/2019	19/11/2019	20/11/2019	21/11/2019	22/11/2019	23/11/2019	24/11/2019
Tasks	GL	Meeting 1pm	Status update 1 presentation finished	Status update 1 / Meeting 8am			
Date	25/11/2019	26/11/2019	27/11/2019	28/11/2019	29/11/2019	30/11/2019	1/12/2019
Tasks	GL			Status update 2 / Meeting 9am			
Date	2/12/2019	3/12/2019	4/12/2019	5/12/2019	6/12/2019	7/12/2019	8/12/2019
Tasks	GL	Meeting 9am	Website finished	Supervision			Video game Done / Presentation Done / Final version of

							GDD Done
Date	9/12/2019						
Tasks	Final presentation						

12.2.1. Detailed Budget

	Amount	**Unity**	**Period**	**Total**
Developer				**10 800$**
Developer 1	20$	Hours	9 weeks (12 hours/week)	2 160$
Developer 2	20$	Hours	9 weeks (12 hours/week)	2 160$
Developer 3	20$	Hours	9 weeks (12 hours/week)	2 160$
Developer 4	20$	Hours	9 weeks (12 hours/week)	2 160$
Developer 5	20$	Hours	9 weeks (12 hours/week)	2 160$
Marketing				**3 000$**
Advertisements on the forums	250$	Week	4 weeks	1 000$
Challenge advertising	250$	Week	2 weeks	500$
Challenge Awards	500$	-	One time	500$
Youtuber/streamer	2000$	-	Two	4 000$
School conferences	200$	-	Ten	2 000$
Backup	2000$	-	-	**2 000$**
Licences				**0$**
Unity	0$			0$
Light2D	0$			0$
Piskel	0$			0$
Release				**100$**
Steam	100$	-	One time	100$

Itch.io	0$	-	One time	0$
Gog	0$	-	One time	0$
			TOTAL	**15 900$**