

Level 4 Game Project

Art Book & Design Document

Team 17

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Designers -

Alexander Barnes
Luke Dove

Artists -

Beth Birkinshaw
Brooke Powell

Programmers -

Lara Cuttriss
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Level 4 Game Project

Design Documentation

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Game Description

Game Title - Ratrio

Genre - Roguelike

Theme - Action Adventure

Location - Paris Sewers

Target Audience - 12+

Narrative

Deep in the sewers of Paris, Tito, seeks revenge on the Rafia for the murder of his beloved daughter Sofia. With a heavy heart, pure hatred and fueled by his vendetta against the Rafia, Tito traverses the sewers with one goal in mind, take as many of the Rafia to an early grave with him... No Prisoners and certainly No Mercy!

Game Logic and Lore

Internal logic will be maintained by matching the appearance of an object to its interactivity (e.g. destructible crates are 2D, while the environment is 3D).

Iterative learning is used to teach the player mechanics (e.g. enemies are attracted to lures) as they play through the game. Player failure will result in all progress lost, and will be sent back to the beginning.

Examples:

Mouse trap will
lure enemies.



Restores
Player Health



Design Inspiration: The Binding of Isaac: Rebirth

As a starting point of our team's video game, we decided to create a 2D roguelike action adventure located within the sewers. We aimed to create a dungeon crawler type game with a permadeath element, using the amount of floors cleared as a way to indicate to the player how well they performed.

The Binding of Isaac was a big inspiration for our video game, utilising the floor clearing aspect of the game as the base gameplay. Including cover to maneuver around while defeating enemies and item drops for the player to utilise, we also used the permadeath aspect as the gameplay loop for our game.



Design Inspiration: Hades

We used hades as the inspiration for the isometric camera angle, utilising 2D assets within a 3D world space to give the illusion of a 3D game. This overall gives the art style a simplistic but eye catching visual, accompanied by tile map texturing to give the player a sense of familiarity while also giving the artists more freedom with the environments.



Design Inspiration: Octopath Traveler

We used the game Octopath Traveler as inspiration for the 2D pixel art within the game. Its unique pixel art style accompanied with the isometric view caught our eye as the 2D assets fit seamlessly within the illusion of the 3D world space. Every 2D asset is distinct and is easily identifiable which is something we wanted to implement into our own game.



Design Inspiration: Enter the Gungeon

We found inspiration from Enter the Gungeon in its level design. In the game, the player has to be ready to change their strategy in every room they explore. Because of this, we thought it would be important to keep the player on their toes with floor layouts.

Another source of inspiration was the enemy variety. In the game, the player is faced against many variations on the same core enemy type. We can add random elements in our game (eg. health and attack patterns) to our game to keep combat encounters fresh and unique.



Art Style - Main Character

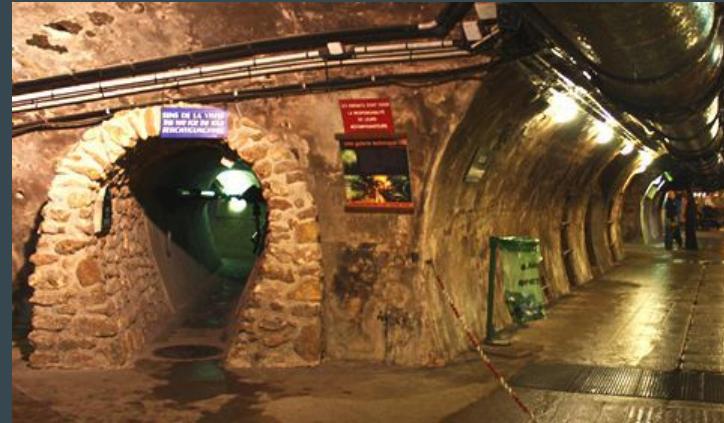
For the main character art style, I started by researching all of the aspects that we discussed as a team for the game in general. Using the location I found a suitable time period and started analysing the clothing prominently worn by gangsters and mafia members around that time. Also we chose to use the pixel art style for our game, so i found some examples of characters in different styles of pixel art.



Art Style - Environment

For the Environment art style, i started researching the location more in depth to get an idea of the layout, structure and colours used in the sewers. The direction i decided to go with was a dark and grungy style to fit with the overall style of our game.

Pixel art tiling felt like the best style to use as its simplistic but aesthetically pleasing.



Art Style - Enemies

For the enemy rats art style, i decided to take inspiration from dark souls as the rats presented have an evil and diseased aesthetic which fits perfectly with our environment and game style.

I advised on using different rat variations to use as bosses and mini bosses, changing the size and colours to diversify the levels.



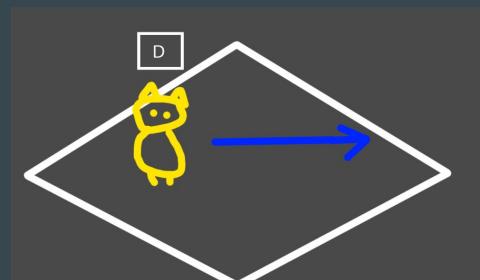
Game Mechanics: Player Actions/Abilities

Controls:

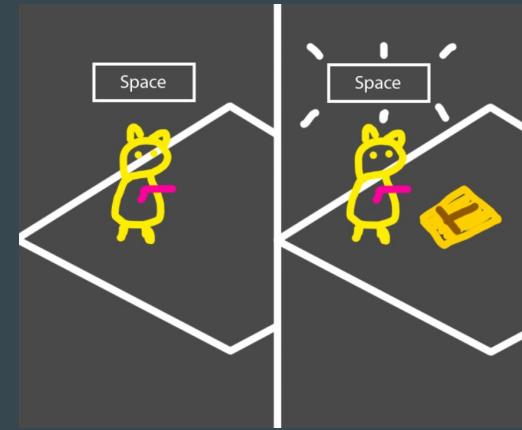
Input	Action
W	Move Up
A	Move Left
S	Move Down
D	Move Right
Left Click	Attack
Space	Lay Trap

The player will be able to:

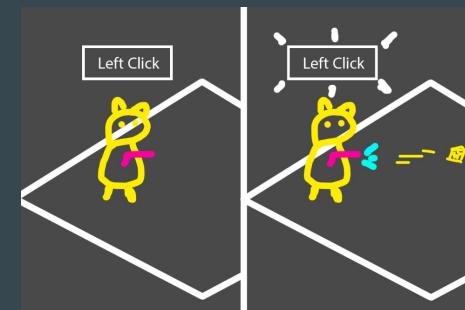
- Move up
- Move down
- Move left
- Move right
- Attack
- Lay Traps



Player moves to the right



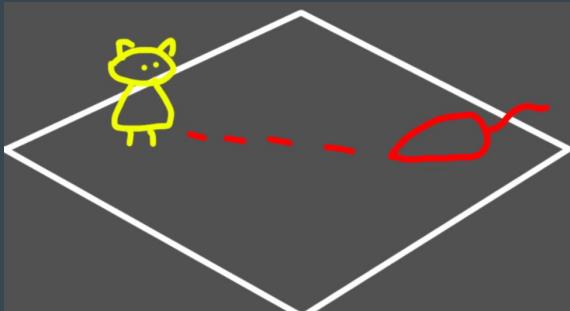
Player lays trap



Player performs ranged attack

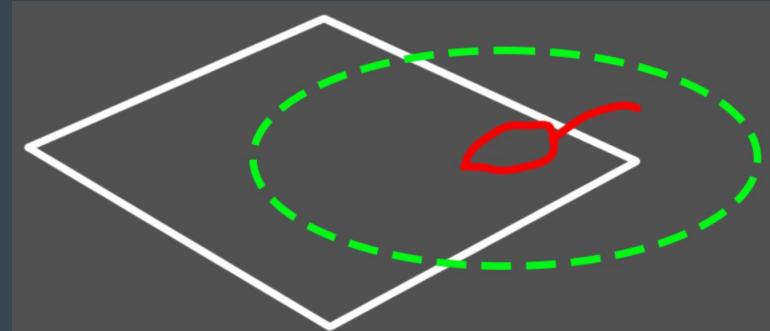
Game Mechanics: Enemy AI/Behaviour

When the player is not nearby, the enemy will move very little. Once the player gets within 8 units of an enemy, they will begin to engage. If the enemy is a ranged type, they will try to keep their distance and attack from a distance. If they are a melee type, they will rush towards the player and attack up close. If they succeed, the player will sustain some damage.

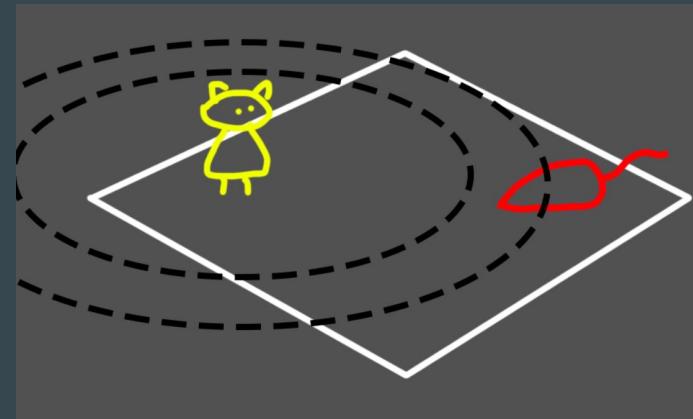


Ranged rats will try to stay within the ring when attacking the player.

Melee rats with charge at the player when they are aggravated.



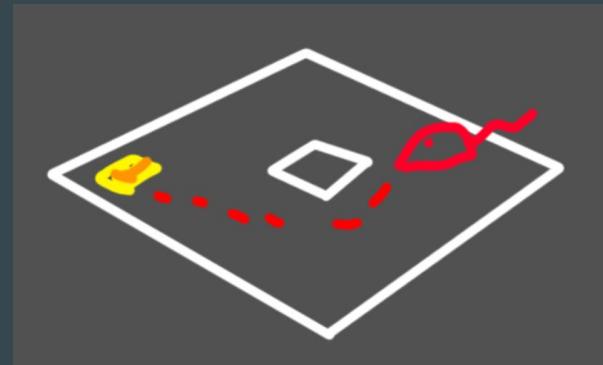
Rat detection radius.



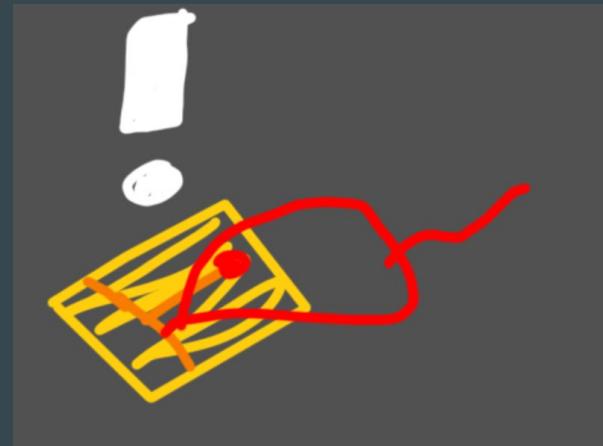
Game Mechanics: Traps

If a rat is within 5 units of a trap, they will set their focus to it. If a rat is pursuing the player when they get within range of a trap, they will stop chasing the player. This will let the player try to escape enemies in chaotic situations. Once one rat reaches the trap, they will be snared, keeping them in place for 5 seconds. Any rats that were being lured that were not snared will return to chasing the player if within range, otherwise returning to an idle state.

Example trap sprite



How the rat would move when lured



An alert to show the trap's activation

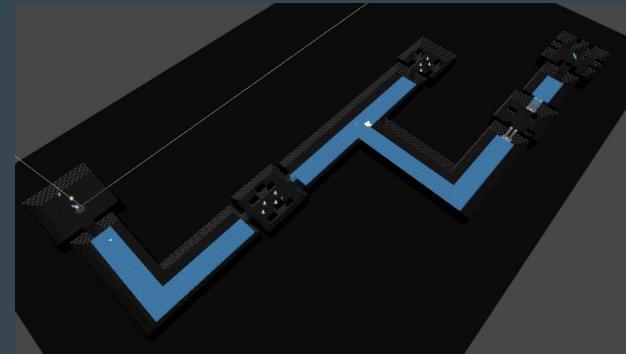
Level Design: Overview

Our game will make use of a mixture of procedural generation and bespoke rooms to create a unique experience each time the player starts an attempt. When generating a floor, we can provide inputs to control what types of rooms spawn (eg. a room that needs a key to open).

In order to progress through a floor, the player must navigate from the start room to the floor's exit room. If successful, the next floor will be generated and the player will continue until they die in combat.

The first floor will have a forced mechanical progression to teach the player the main mechanics of the game.

Example Layout of a generated floor

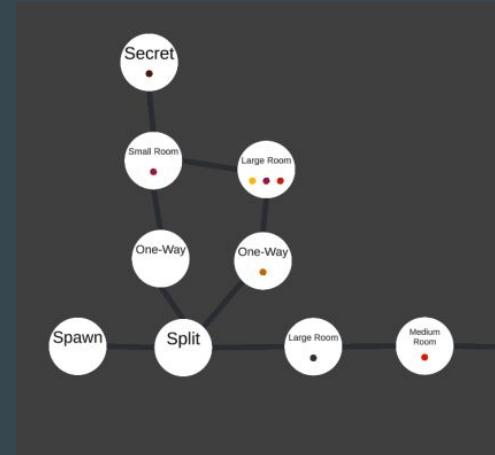


Level Design: Room Types

After a layout is chosen, the system will populate the rooms. There are multiple layouts per room that it will be able to pick from. If the room in question is a ‘Major Danger’, it will pick a room layout from the relevant set of room layouts.

Rooms will be able to generate as minor/major danger, minor/major treasure or key room and will generate in a small or large room.

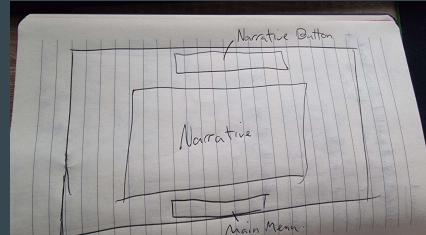
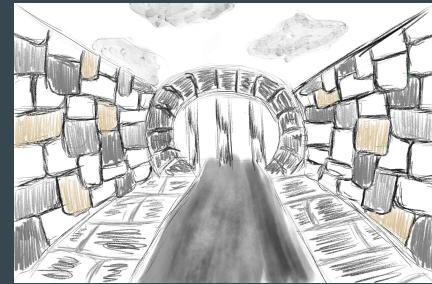
Generation tool



An example layout of a minor treasure room

Graphical User Interface (GUI) - Start Screen, Narrative Screen & Options Menu

For the GUI's, as a team we chose 1 of the 6 concepts that the artists had drawn, i gave my own input on the art style and layout. I also advised on using the screen we chose for all GUI's to keep it simple and consistent across the board.



Graphical User Interface (GUI) - Death Screen

For the death screen, I researched the different types of death screens from other games, including Chrono Cross, Dark Souls and Etrian Odyssey.

What stood out to me the most was the simplicity of all 3, not overbearing and elements of each would fit the art style for our game.

I especially liked the ending monologue from Chrono Cross, as this could give deeping meaning to the characters.



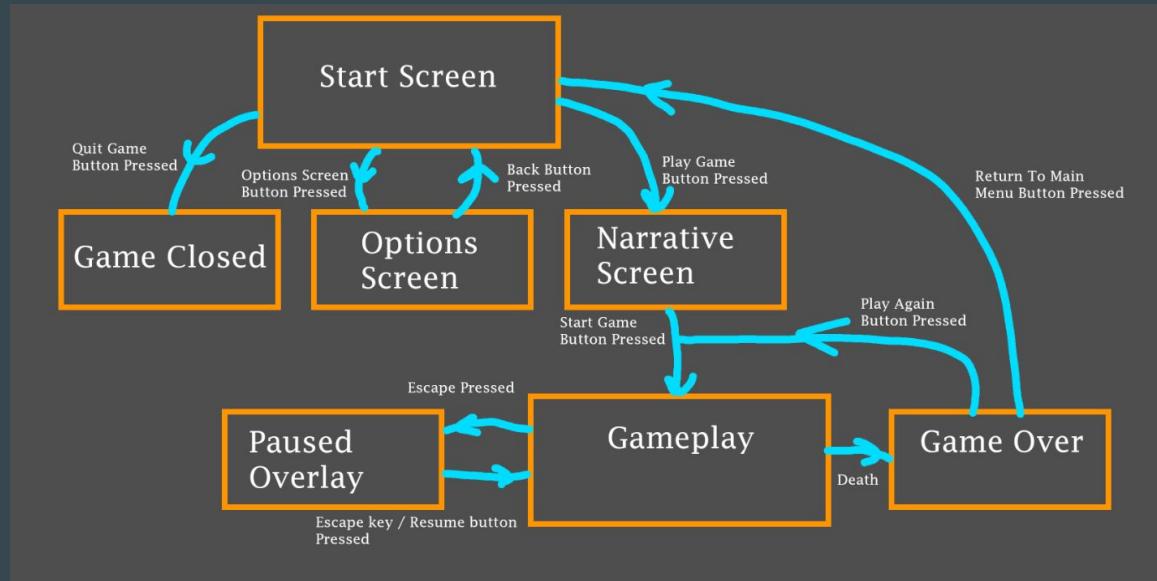
Graphical User Interface (GUI) - Death Screen, Continued

In the end, we decided to go with the same GUI for consistency and simplicity, but with the additions that I thought would fit the art style the best. These included, making the overall colour palette darker, making the sewer water run red indicating blood giving a sense of unease and having the writing centred at the bottom as to not take away from the overall artwork.



Graphical User Interface (GUI) - Flowchart

This is a flowchart that gives the full scale of our games GUI system and how each button will function and where it will lead.

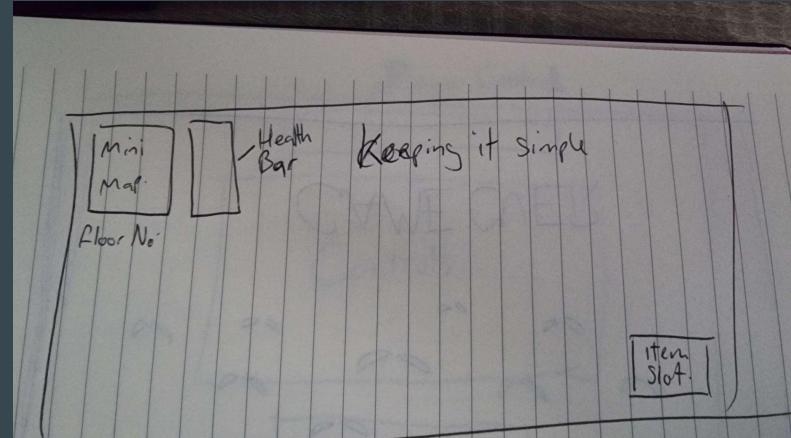


Heads Up Display (H.U.D)

For the HUD, I opted for a simple and clean design as to not take away from the gameplay and clutter all areas for the screen.

The item slot will be small with a counter that shows how many of that certain item is being carried.

The health bar is reworked from an asset that the artists had already made, i liked the idea of the main characters health being inside a milk carton to echo the health item pickup available to the player.



Additions for Further Development

- Additional enemy types (increase variation in combat encounters)
- Further room variations (keep player on their toes)
- Alternate level progression (give player multiple options to progress)
- More varied art style (more variation in environments)
- Additional pickups (more strategic decisions)
- Refine HUD (more diegetic)
- Update GUI (more background images to vary and distinctify menus)
- Additional player attacks (melee attack/alternate ranged attack)

Work Contributions

Alexander Barnes

- Player mechanics
- Game mechanic research
- Enemy behaviour
- Level sketches
- Level system
- Room design

Luke Dove

- Art style
- Art style research
- Environment designs
- Narrative
- GUI designs
- HUD design

Design Evaluation

Overall, we think that we have worked well together. We effectively split up our tasks to reduce unnecessary work when making our way through the design process. We were open to aid each other in the other's work when they needed the additional help. We think our communication was productive as we assigned tasks for ourselves on the Trello board, as well as messaging each other on Discord when we needed to ask a question. We would be happy to work together on a future project.

Bibliography

Inspiration

Binding of Isaac: Rebirth - https://store.steampowered.com/app/250900/The_Binding_of_Isaac_Rebirth

Hades - <https://store.steampowered.com/app/1145360/Hades>

Enter the Gungeon - https://store.steampowered.com/app/311690/Enter_the_Gungeon

Octopath Traveler - https://store.steampowered.com/app/921570/OCTOPATH_TRAVELER

Main Character

Pixel Art Detective - https://www.freepik.com/premium-vector/pixel-art-detective-isometric-character_26027125.htm

Dallas Vintage Shop - <https://dallasvintageshop.com/vintage-attire/vintage-suits>

Environment

Paris Sewers -

<https://www.arnabontempsmuseum.com/the-arrondissement-sewers-of-paris-museum-a-great-place-to-learn-about-the-history-of-the-city>

Pixel Art Tiling- <https://www.pinterest.co.uk/pin/542543086345381990>

Bibliography

Enemies - Dark Souls Rat - <https://bloody-disgusting.com/editorials/3565113/the-scariest-rats-video-games>

Diseased Rat - <http://darksouls.wikidot.com/small-undead-rat>

Game Over Screens - <https://www.fandomspot.com/video-games-best-game-over-screens>

Level 4 Game Project

Art Book

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Beth

Character Concept Design

For the main character we wanted to go with a cat that was part of a mafia and wore clothes like suits and hats. As i was researching about different cat breeds i came across the tuxedo cat, which is a cat that looks like it's wearing a tuxedo, so for the first concept ideas i went with the tuxedo cat design base for all of them and changed the features, so i made the first one look like it had more fur around the neck to make him appear more rich and boujee give him more of a square appearance. Then for the second one i went for a more slimer cat with round features give him more of a chilled back vibe. For the final one he has more of a mafia look sharp and round features, and with the feedback from the group we decided to move forward with the third design, but this time to add more attributes that would give you more mafia vibes.



Character Concept Art

Once i had the shape of the cat i then dressed him up seen as though for the base design i just went with a monochrome colour i decided to experiment with different colour options and choosing suit colours that would compliment each other. Instead of doing the same suit design i also changed up the way the cat may chose to wear the suit to show off more of his personality. The colours i mainly avoided was anything to dark to the point where he may blend into the background so choosing colours more saturated would make him stand out more for the final design we chose the dark blue suited cat to move forward into the final sprite sheet.



Cat Sprite Sheet

I had been working at normal resolution when creating the cat designs so now i was able to see how well the cat design translated in pixel art i worked on a 64x64 canvas so i was able to get some more detail and more clarity so you can tell that it is a cat wearing a suit. The only problem that i had when drawing in pixel was trying to get the hat to look right because when doing the run cycle sometimes the hat ended up looking like a triangle then others like a square so was hard to get that balance of triangle and square. When creating the run cycle i used a reference as i wasn't comfortable enough to be able to draw a run cycle without guidance. I then did the run cycle with a gun as his hands movements would be different if he had a gun but just using the gun as a separate sprite would be easier to work with for the designers.



Rat Concept Art & Sprites

Coming up with different ways to draw a rat was hard as rats have a very common body shape, rats are also quite a greyish colour which would clash with the colour of the floor and you wouldn't be able to see the rat very well. As we didn't have much time we decided to just pick one rat design to implement into the game for now so we were able to prototype the game with one enemy. We picked the lvl one as the colours were more saturated and brown so they wouldn't clash with the backgrounds. When drawing the rat in pixel art i initially used the symmetry tool to make my workflow faster and so the sides were even then to simulate the rat moving using the liquify tool i moved his body to give him a wiggle effect and i also changed the direction of his tail to give him more movement, i removed the hat like it was shown in the concept art as it took up too much of the rats features in pixel art however if i was to have created more rat designs for the game i would of tried to make it work.



Cheese and Key icons

For objects the main character would use would be a cheese and jet object when they collect the key to open doors. So using the 64x64 canvas to keep the same pixel count as everything else in the game to keep a coherent look. For the design i was just given a simple design the programmer had been using as a placeholder and just made it into pixel art and added little details like rust on the key and some highlights and shading on the cheese to make the objects look more appealing.



Artist Evaluation - Beth

This project has helped me develop my team management skills and helping me with my time management and having to get things done so I don't hinder anyone else's workflow so they are able to continue with the game. I mainly worked on the characters in the game and some of the icons. When creating the concept art this was in a style I was comfortable in so I was able to quickly design the cats and when choosing the colours I avoided what the other artist used for the backgrounds so it wouldn't clash, with the suit colour I was leaning towards more of a blue scheme as blue is seen more of a calm colour and is shown as an ally colour in most games so the player would be able to understand more that the cat is an ally and is no threat. So when I then moved into creating the sprites this was new as I had never attempted pixel art before but the more time I spent messing around trying to get a feel for how I would create in pixel art the easier it was and by the end of the running animation I had more confidence in creating. I had previous animation skills so using the animation feature in Photoshop wasn't foreign to me and I had done a simple walk cycle before but using reference from other people online really helped with making the workflow faster.

Overall I really enjoyed working on this project and working with the group I was able to learn new skills and develop others and working within the group made me want to work more efficiently and be more confident when asking for advice and opinions on certain concepts. The group environment was very friendly and we all got along well. I was able to work closely with one of the designers as he was able to provide us with moodboards and descriptions of what they were more aiming for the characters and overall game to look like so that made the workflow a lot easier and so me and Brooke were able to have a cohesive style.

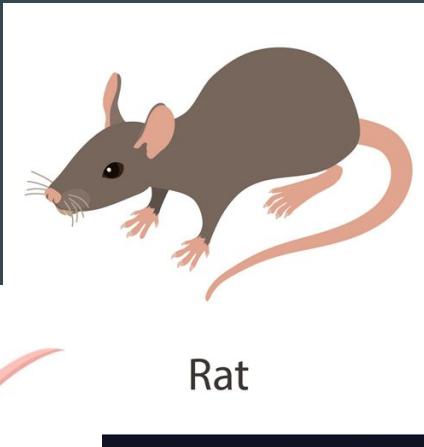
Brooke

Sprite Designs - rat

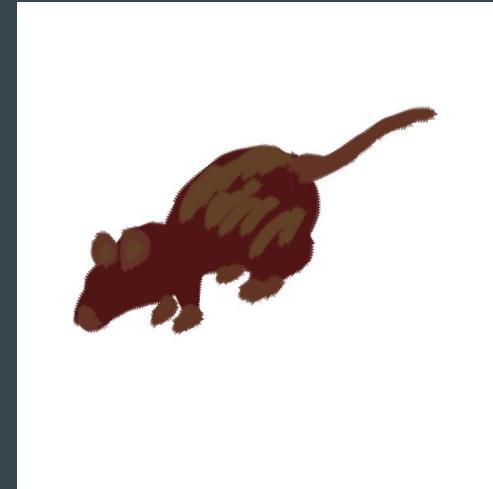
We decided on isometric pixel art as the art style, to get the angle correct I initially drew the rat as just a basic concept drawing, using isometric and side profile images of rats as inspiration and guides to get the anatomy and angle correct.



[1]



Rat



VectorStock.com/19770601

[3]



[2]

Sprite Designs - rat

We decided the characters should be 64 x 64 pixels, the initial sketch was used as a template for the pixel art rat, i realised after I drew it that the rat was too small and details were not shown enough so I redrew it slightly bigger. Ultimately the rat should've been drawn slightly bigger but since this was the placeholder it wasn't a massive issue.



1st attempt



Sprite Designs - rat

I trialled with some different styles of tails to try and get the angle and also anatomy correct so that it makes sense in an isometric view. Ultimately I went for the second design as I feel it looks more realistic and the angle seems to compliment it the most.



Sprite Designs - rat

For the final design I removed the white background so it can be used in the level as it needs to. Due to the pixel size being 64x64 the sprite is quite blurry but hopefully when drawn at a larger scale for the final design it won't be as blurry.



Sprite Designs - cat

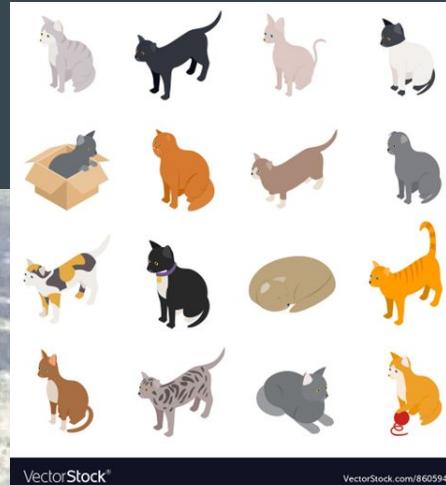
For the cat I researched for cats stood up for reference as the cat will be walking on two legs rather than on four as he will be holding objects within the game so it doesn't make sense to be on all four legs.



[4]



[5]



[6]



[7]

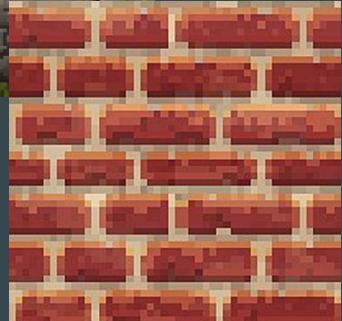
Sprite Designs - cat

I decided to just go straight in with the pixel drawing, because when I drew the initial concept art in 1240x1240 and placed into a 64x64 canvas it was actually quite difficult to use as a reference so i decided to go straight in with the pixel to save time and thankfully it came out well. Initially I drew the gun in grey which i felt wasn't accurate and didn't fit well with the cat already being grey so I changed it to black and felt it fit much better as well as altering the length of the gun and arm placement of the cat.



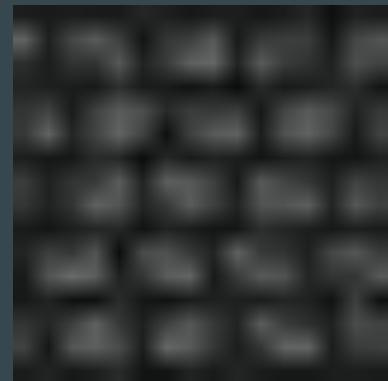
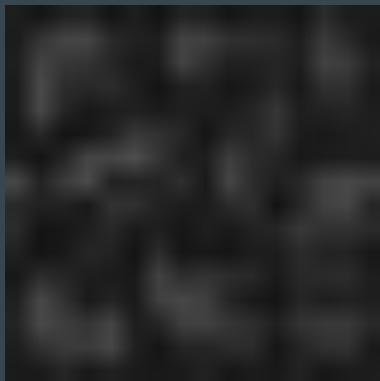
Sprite Designs - floor and wall textures

I did some research into sewer textures, as well as those already found by my group members, and did a few different variations, mainly brick walls as a lot of sewers either used bricks or just plain cement, I got inspiration from other pixel art textures on pinterest, and used both the references to create my own.



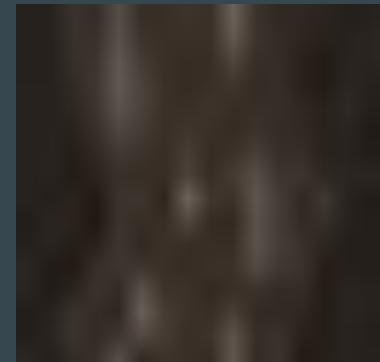
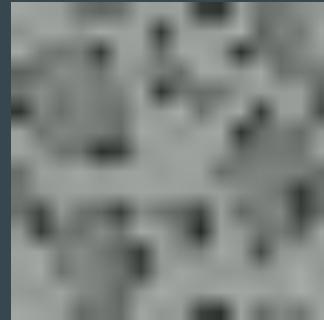
Sprite Designs - floor and wall textures

I was recommended to create the floor and wall textures in 16x16 so that is why they came out quite blurry as the canvas size is tiny, however this prevents the background from becoming too crowded and busy which is a benefit.



Sprite Designs - floor and wall textures

I used a spare photoshop canvas in 1240x1240 to make sure the textures were actually tileable and wouldn't be janky or break weirdly. Some textures ended up not working or looking great but I've included them here just to show other designs I had.



Sprite Designs - cat

Since the cat has more than one object it can pick up I also drew the cat with no object, so that we can have him holding the gun & the mouse trap as well as nothing, which also meant I drew the mouse trap and gun separately as well so it gives the feeling of being picked up in the game



Sprite Designs - Health

Since the cat is the main character and will need a health bar, we decided that the health pack / pick up should be a carton of milk, I initially did a trial run using procreate and used their isometric grid as well as a reference to help me create the milk carton, however it ended up being too long, so I redrew it as a smaller carton which ended up looking much better. However we ended up using this for the HUD in the end!



My first attempt
at pixel art, the
lines were too
thick



The
bottle
looked
too long

Sprite Designs - Health

Choosing to do a smaller milk carton makes more sense, since the cat isn't going to drink an entire liter carton of milk, it also fits more with the style and not out of place. I used a reference to help me with the isometric angle, as straight lines within pixel art are quite difficult to get right in an isometric angle. However I made the carton not as wide to make sure it wasn't exactly the same as the reference. I also added a blank label to indicate that it was a milk carton.



GUI

For the GUI I designed a few quick concept sketches in different placements within a sewer, including both characters, using reference and inspiration from both what I have found and also what my group members found when researching the art style.



[16]



[17]



[18]

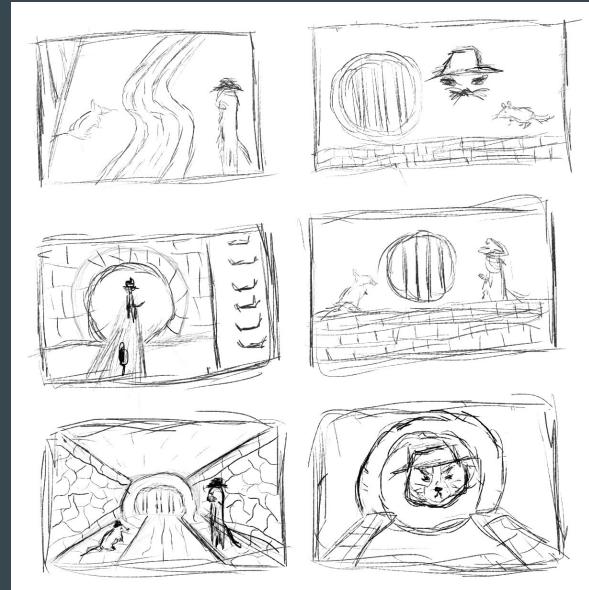
GUI

I created 6 very quick sketches in different angles to give some variety and ideas about what the final design could look like. I personally prefer the bottom left idea, as I feel it showcases the sewer the best.



[19]

I used this concept art to help with the angle of tunnel vision.
Artwork - by [Alexvanderlinde](#)



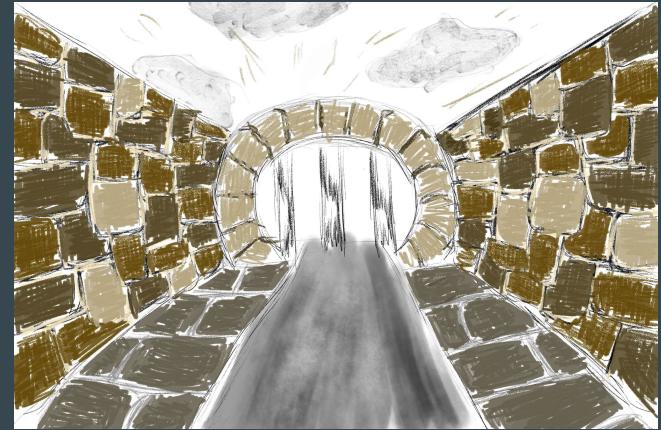
I took some inspiration from the game *Outlast*, as a portion of that game is spent in the sewer.



[20]

GUI

It was decided that I would do the GUI based on the 5th concept art, I created 2 colour combination variations so that we could see which would fit better with the theme.



GUI



I decided to go with the darker version as it's more ominous and feels more grungy.

I added some green moss to match with the textures used in the main game which is also why I decided to not include the lighter coloured stones randomly as I feel it didn't fit very well.

Ultimately I didn't include the characters as the buttons would be blocking them.

GUI



Initially I was going to do the buttons on a 16x16 canvas however since the GUI was done on a 64x64 canvas it made sense to also do it on the same size

Along the same lines, I was going to use red and black to help them stand out however we decided that red would be used for the end / game over screen.

GUI



I initially did the button a little too squashed width wise and figured it would look better a little it more elongated, which I think was a good decision.

Then I experimented with whether the background should be black or grey but ultimately the grey background helped the black text stand out better than the latter.

GUI



I read through the art style document for the GUI and it was indicated that the buttons should be slightly opaque, so I tested this with both black and grey buttons and definitely think the grey looks better and stands out more.

Setting the 'play' and 'quit' buttons to 90% opacity and the 'options' button to 85% as that's what looked better.

GUI



I added a highlight at the very top of the button, and a shadow at the very bottom of each button to give a 3d effect, making them look more like buttons than just flat images.

GUI - Game Over



For the final/game over screen, it was indicated by the designers that it should be start screen but darker, as well as having the sewer water red, as if running with blood.

I also changed the green moss from the walls to look like blood dripping down, to make it more uncomfortable

GUI - Game Over

GAME OVER
YOU DIED

For the text, I was indicated to use either ‘ game over ‘ or ‘ you died ‘ , I did both so we had the options to choose from and can decide which one looks better together



I added a black overlay, changing the opacity to 59% to make the overall look darker and more unsettling as it contrasts with the red blood.

GUI - Game Over

The final GUI design
for the end screen,
either “ game over “ or “
you died “ can be
implemented.



Artist Evaluation - Brooke

I believe we worked well as a team, we actively communicated via discord, trello and through our weekly meetings regarding our tasks, duties and any other queries we had. I found my group members to be really helpful and easy to get along with which made the project more enjoyable as well as being a healthy environment to work in. There were a few times where there was a lack of communication from a programmer however, it didn't cause too many issues overall.

My personal contribution to the project consisted of designing and creating the placeholder sprites, as well as creating art for the GUI some designs for the HUD and textures for the environment. I think I did an okay job overall, I think my lack of experience with pixel art limited me, I had also never worked in an isometric view before so it was very new to me, however this project definitely allowed me to improve my skills and be more open to criticism regarding my work. I'm happy with the GUI as I feel more comfortable and confident with environments in pixel rather than natural elements. However, since the placeholders were just placeholders and wouldn't be in the final game, I didn't let it detriment my future work and enjoyed learning and experimenting more with pixel and will continue to do so in the future. I feel as though I time managed well, although I was balancing this project with other projects I had at the same time, I was able to get all my tasks done within the time allocated and didn't feel behind or a need to rush things. Overall I enjoyed this project, I think it has benefited me in multiple ways and has allowed me to gain some experience with working in a team and not being too anxious to share my own thoughts and work as it has in the past, I would be happy to work with this group in the future.

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Group Evaluation

Overall, we worked well as a team together. The design team and art team maintained clear communication throughout the project, and the assets we created were mostly up to the quality we aimed for to put in the game. Our weekly meetings allowed us to gain a better understanding of where the game was and where it was headed. When some jobs may have took longer than we had expected, such as creating a clear progression through the GUI, we were open to ask others for advice .

Despite some trouble with the programming team due to one team member being unable to work from sickness, we pulled through to get other systems completed ready for their return. If we were to make improvements going forward, we would make a less ambitious game. This is since some aspects of the development were new to artists and developers. By doing this, it would allow us to create a game that better suited the skills and strengths of the team.

Group Contribution Form

Integrated Project Level 4

Group no.

17

Group Contribution

This sheet is to be completed by the group and should indicate the level of effort and contribution that you feel each member of the group has made. Each group member needs to sign against their name to state that they agree.

Please note that the information given below will be used as an indication of effort and final marks and assessment decisions will be made by the academic team.

Student name (block letters please)	Signature	Contribution
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Alexander BarnesA Barnes.....	...19...%
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Luke DoveL Dove.....	...16...%
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Beth BirkinshawB Birkinshaw.....	...16...%
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Brooke PowellB Powell.....	...16...%
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Melika KhanM.Khan.....	...12...%
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Lara CuttrissL. Cuttriss.....	...21...%
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This sheet needs to be **printed** and submitted with your group submission (you can scan or photograph and submit with your group media submission).