

Resident Evil 2D

Intro

Resident Evil is a survival horror game released in 1996 for the PlayStation. The game is set in the now iconic Spencer Mansion. You play as Chris Redfield or Jill Valentine, who end up stuck there after being tasked with investigating 'cannibal' attacks in Raccoon Forest.

The gameplay revolves around exploring the mansion, which involves solving puzzles and fighting/avoiding mutated creatures and zombies.

Resident Evil is actually credited with coining the term 'survival horror', though it's generally not considered to be the first game in the genre. The survival horror aspect is crucial to the game's identity so must remain in a 2D adaptation.

How could it work?

My idea is that the best way to make a 2D adaptation of Resident Evil would be reimagining it as a survival horror point-and-click adventure game.

My main sources of inspiration for this choice are the 1992 game Dark Seed and the 1995 game Clock Tower. Both of these games are point-and-click style horror games with a side-on perspective. Clock tower is also set in a mansion, though Resident Evil has various gameplay features which set it apart – gun-based combat being a big difference.



A screenshot from Dark Seed



A screenshot from Clock Tower

The Gameplay

As mentioned earlier, the gameplay of Resident Evil is centred around exploring the mansion and its grounds, solving puzzles to find items and get deeper into the mansion, and engaging in combat encounters with the monsters – or avoiding them. Exploration and puzzle-based gameplay is very achievable in 2D. Clock Tower is a good example, as is the entire Metroidvania genre. This gives me confidence in keeping the gameplay loop similar, just in a different perspective.

There's also the added focus on managing your inventory, which has become a staple of the genre. There is a very limited supply of ammo and health items, and you only have a maximum of 8 spaces in your inventory to deal with, so you have to choose carefully what you pick up. This all adds tension and keeps you on your toes constantly. It also helps immerse you in the game, as you're constantly having to make decisions between options such as use ammo or run, pick up a health item or hold on to extra ammo, and so on. Luckily, since managing your inventory all happens in menus, it would work in 2D as well.

One change I would make in my version is always having the inventory on the screen. Many point and click games take this approach, as a lot also have a focus on the items in your inventory. Including this staple of the genre would be justified in Resident Evil 2D as being able to constantly see your inventory means gameplay isn't interrupted by checking a separate screen, and being constantly reminded of your items and health will help you remain aware and focussed on your current objectives, as well as adding tension as you can see your ammo and health constantly depleting.

Here is a mock-up of how it would look to always have the inventory on screen, using footage from the original game (which is why the gameplay is 3D):



For comparison, here are the two screenshots I edited together to make that mock-up:



The change immediately makes the game feel more like a point-and-click, which is good. It's worth mentioning that not having the inventory on screen at all times does increase the feeling of isolation as all you can see during gameplay is your character and the environment. However, in my mock-up, the constant presence of the heart monitor as well as the ever-dwindling ammo count make up for lost tension.

Movement and combat controls are where some changes need to be made. From now on, instead of referring to 'the player character' I'll just say 'Jill', as she is one of the two playable characters. Resident Evil uses tank controls for moving and shooting. You use left and right on the d-pad to rotate Jill, and use up and down on the d-pad to move forwards and backwards. When aiming your weapon, the d-pad lets you look around and point your gun – also meaning you can't move while aiming. You can't move the camera, so the up button moves you forward depending on where you're pointing.

These movement controls work fairly well but are just awkward enough to add to the tension and make you doubt yourself when faced with enemies – perfect for a horror game. It's unclear whether the awkwardness was intended to have this effect or not, but the developers keep the control scheme for later sequels, so even if it wasn't, it seems they liked the effect.

My controls are going to be based on the PS1 controller as Resident Evil first released on that console. The particular PS1 controller in question is the one which lacks analog sticks as Resident Evil released the year before the PS1 Dual Analog Controller released, which was essentially the original controller with analog sticks added on. Since my version is 2D the lack of analog sticks is not a big problem, as Jill won't be moving in a 3D space. In fact, Jill won't be controlled directly by the d-pad either.

Instead, the d-pad will be used to control a cursor, since this version is a point-and-click game. Pressing X (the action button) while the cursor is on an interactable object, or an open space, will make Jill walk over to that location. If the cursor was on an interactable object, Jill will interact with it once she reaches it.

The cursor will change appearance based on context. By default, it will be a simple crosshair, a plus sign. When hovering over an interactable object it will change to a question mark to signify it can be looked at further. In the original, the R1 button puts you into aiming mode, and it will do the same here. Pressing R1 will change the cursor into a crosshair with a circle, and Jill will draw her gun. Pressing X in aiming mode will shoot at the cursor. When over stairs or any object which lets you go up or down, it will change to an up or down arrow, and it will change to a left or right arrow when moved to the edge of the screen. Here's a simple early diagram of the cursors to provide some clarity:



This is just a quick rendition to give you an idea of what I mean – these cursors can definitely be made to look better and fit in with the art style of the game, but I'll address that when we get to the visuals.

I associate these kind of cursor controls very heavily with the point-and-click genre, so I thought it necessary to include them. To add to this, similarly to the slightly clunky controls in the original, I think cursor controls bring an extra layer of tension due to their unconventionality. It also makes the combat more tense as you still have to line up your crosshair if you want to hit a headshot for example, and don't want to waste ammo.

As I mentioned earlier, with the focus on inventory management due to the scarce resources (which is what makes the game 'survival' horror), you may end up choosing to avoid enemies to conserve ammo, with the trade-off being that they'd still be there if you went back. Avoiding the enemies was made possible due to the fact that you could move around them in 3D space. Since in 2D Jill can't move towards or away from the screen in standard gameplay, this method of avoiding enemies is impossible, so I think it makes sense to simply make it more difficult for enemies to land a hit on you when you're moving, and make it do less damage if they get a hit in. It's important that player's still have the choice to avoid combat in a 2D version as managing the scarce resources is a large part of what makes the original special.

Here is a mock-up of a game screen, taking into account everything I've mentioned so far:

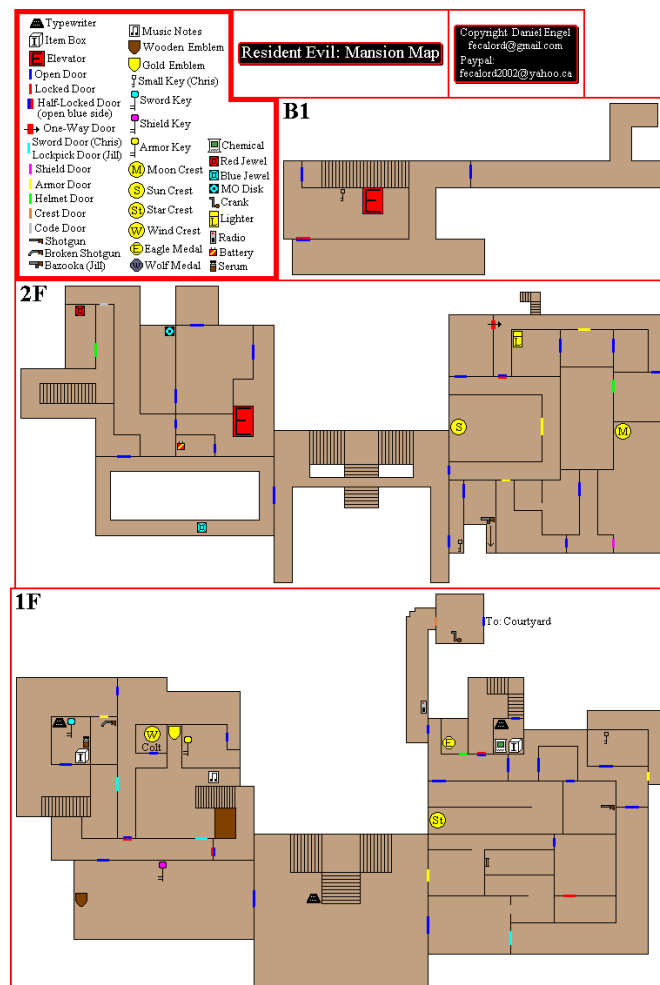


Here you can see the 2D side-on perspective, as well as the inventory along the bottom of the screen. You can also see the cursor, currently in aiming mode as Jill is lining up a shot with a zombie. The inclusion of the inventory along the bottom has the added effect of making the playable area – the mansion scene, everything that isn't inventory – appear in a 16:9 aspect ratio, even though the full screen, and original aspect ratio of the PS1, is 4:3. This will help give the game a more cinematic feel, and help hallways feel longer, adding to the feelings of isolation and dread.

There are many other gameplay features that can stay the same, as they don't rely on three dimensions. These include saving at particular areas with ink ribbons, and puzzles where all that is required is interacting with a certain object. These puzzles and mechanics may need changes, but the changes would be superficial, as they can be done in 2D.

The Level Design

Resident Evil doesn't really have levels in the traditional sense; instead the game is split into five distinct locations, all of which can be thought of as levels, though at times you backtrack through them, so it's not a case of completing one level then moving on and never going back. In this document, I'm going to focus on the Spencer Mansion, as it's the most iconic of the locations and also has the most complex layout, making it more of a challenge to adapt it into 2D.



A map of the Spencer Mansion, created by Daniel Engel, accessible at <https://gamefaqs.gamespot.com/ps/198454-resident-evil/map/1510-mansion-map>

The mansion, when thought of as a level, is quite a non-linear location. At any one time, you can access multiple locations. Even so, you can't necessarily progress through the game in any order you'd like. Usually, you will spend some time in a more general area (with various accessible locations) in which you have to solve some puzzles to get into more areas, which you could already see, but were locked out of, and you'll spend some time going from room to room. Eventually you'll be faced with another more general area with another set of rooms for you to work through, and as you progress shortcuts will open up for easier backtracking.

Essentially, you can explore chunks of the locations in a fairly non-linear fashion, but you progress through these more general location clusters in a linear way as you hit story beats. This is a clever approach as it allows the designers to be able to plan progression and pacing in a more controlled way than if the game was entirely open ended, but it also gives the player some agency to explore freely to some extent, adding to the atmosphere and making you feel like you're genuinely exploring and aren't just on a set path, you're breaking further into somewhere you shouldn't be. To add to this, if the mansion was entirely non-linear, the player might miss certain items or get lost to an extent where it would be too frustrating, so designing the layout would have been even more of a challenge for the designers.

Another thing that affects the level design is the game's fairly unique camera setup. The camera is always locked in place in somewhere like the top corner of a room, but will change location based on where you wander, be that into another room, or just too far away from the initial camera location. The angle is however always consistent in the same room. This is interesting in multiple ways:

1. The fact it moves gives you a good look at the 3D space since you can't rotate the camera due to the controls.
2. It adds to the atmosphere of uneasiness, as the often unconventional camera angles feel voyeuristic.
3. It lets the designers be creative about what they let the player see – for example there is a room where you emerge into a room, and the angle lets you see a zombie in a hallway which could not be seen if you were to look through Jill's eyes, the system allows the designers to have control over giving the player information about combat and puzzle elements.
4. It also helps makes rooms memorable – there are many, many rooms in the mansion, and the different and often unconventional angles in different rooms makes navigation a little easier as it sticks in your mind.



Some screenshots of the different camera angles

(note, these screenshots feature Chris as opposed to Jill)

The designer's clever use of 3D space complements the gameplay, and so does the camera. I thought about taking a similar approach to camera angles in my version, but having your view of Jill rotate toes the line a little too much with 3D than what I would like. To remain consistent, I'm choosing to stick with a side-on. Another thing that needs changing is basically the entire design of the mansion – if I were to copy it, it wouldn't be playing to the strengths of 2D.

In Clock Tower, the designers added depth to the 2D environment and map by placing the camera on different walls depending on the room you walk into. This gives the impression of moving towards or away from the screen, when you compare the position of the room you enter to the one you exited, whilst also keeping the side-on perspective. Unfortunately, I find this quite disorienting, especially when you compare a map of the game to the actual view on screen. Since we already have

cursor controls providing some necessary clunky tension, I don't want to make the game any more frustrating.

Instead, to add some complexity to the 2D Spencer mansion, I want to expand it horizontally and vertically – adding a lot more verticality than is present in the original. Since we're in 2D, the mansion doesn't need to be quite as realistic, as the medium itself is inherently distanced from reality. To add to this, a mansion which may seem impossible, or larger on the inside, places emphasis on the fact that you've entered somewhere unnatural and spooky – everything is not as it seems.

However, I do appreciate Clock Tower's other method of adding depth, by making the sprites smaller to give the effect of moving away from the screen. The 2D Oddworld games do this as well, having a 'second layer' so to speak. This helps to imply the game world is bigger than it actually is, while staying true to the side-on perspective. In Resident Evil 2D, I could achieve this effect by scaling down Jill's sprite while she's on the second layer, and hammering the effect home by only doing this in locations where the first layer is still visible, such as the mansion's foyer. Having too much control over accessing the second layer would bring the game closer to feeling 3D, so having it be situational gets around this, keeping the game solidly in the realm of 2D, while adding some well needed depth to the mansion.



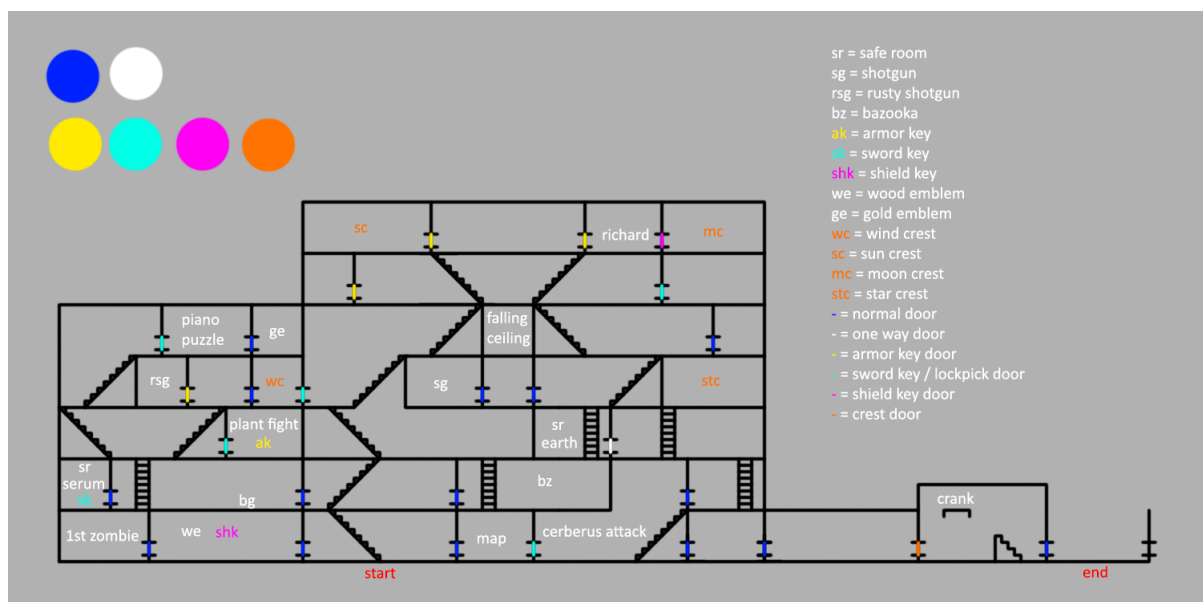
*A screenshot from Oddworld: Abe's Exoddus,
an enslaved Mudokon can be seen working in the distance*

I could also alter the proximity of Jill to the camera for added effect; in large rooms such as the foyer, the camera could be zoomed out so the player can see both layers, but in tighter corridors, the camera could be much closer to Jill, making them feel more claustrophobic.

I'm going to create a 2D level design for the beginning of the game, which mainly features progression through the mansion. To do this, I'm going to watch a playthrough and look at some guides so I can jot down the main beats to hit, as well as plan out how to adapt the area and the puzzles. The main important things to keep in mind are:

1. There needs to be multiple rooms to explore at one time
2. Generally, the item or puzzle you need to advance is within your vicinity, even if that's not immediately obvious
3. Shortcuts need to be planned so they can open as the player progresses, and make backtracking easier

Here's what I came up with:



As I expected, creating this level design was quite difficult. Creating a layout for a mansion is difficult enough, but having limited dimensions to use really made it a challenge. This layout hits all the main beats of the first act of the game – and as such is a fairly faithful adaptation – but the layout had to be altered quite a bit, especially as I ditched the idea of having a second background layer. I decided against this because it was tricky to keep track of, felt arbitrary as only the odd room really needed to be on the second layer, and I also began to feel like repeatedly moving back and forth between the background and foreground might actually draw attention to the fact that the mansion is flat, which might break immersion. There are definitely places where I would want to change the layout through creating more iterations, however at this point I'm happy to leave it as is as I have proved that it's possible to create a 2D Spencer Mansion (at least how it appears at the start of the game).

The Visuals

The original graphics are quite distinct, featuring pre-rendered backgrounds, with most other things such as Jill, enemies, and interactable objects all being 3D assets, rendered in real-time, on top of the backgrounds. This graphical style helps all the important parts of the game stand out against the background, and the fact that all the 3D assets are all fairly low poly adds to this.



This style is also quite uncanny feeling. The backgrounds are very still, so the characters and enemies look ever so slightly off as they lumber around the environment, which, since it's all part of the background, is essentially an optical illusion for the player. This, when combined with the voyeuristic camera angles, makes the game creepier.

I want to capture a similar uncanny feeling for Resident Evil 2D, and I think I have a good idea. The original Mortal Kombat game used videos of actors which were then turned into 2D sprites for the characters. This approach could give me detailed 2D sprites of human and zombie characters, with the references for their poses and animations all baked in. For the other creatures, hypothetically, you could get the same effect by using Star Wars style puppets – they could be filmed as they are operated by puppeteers, and then the puppeteers could be easily erased in the process of the video being turned into 2D sprites. However, obtaining puppets like this is beyond the scope of the project, so I'm going to stick to zombies when I need to demonstrate a game screen.



*A screenshot from Mortal Kombat,
the digitized footage makes for a unique aesthetic, and detailed 2D sprites*

For other significant props, objects, and other in-game assets, there are multiple approaches that would work. I could create real-life props to photograph and turn into sprites, and this could also work for larger set-pieces with a larger budget – sets could be created as miniatures and then photographed. I could also make 3D models and texture them – since they're mainly hard surface

they'd be easier to make look realistic, especially since polycount isn't an issue as they'd be turned into 2D sprites.

The Sound

Luckily, not a lot needs to be changed in the sound department for Resident Evil 2D. The sound in the original is essentially what you'd expect; there's creepy sound effects for the monsters, ambient background music as well as more intense action sequence music, and sound effects for basically anything else you'd think there'd be sounds for such as gunshots and ticking clocks. All of this works perfectly fine in 2D!

One thing I would change however is how you actually hear enemies. In the original, as far as I can tell, you can only hear enemies if you're in the same room, or in the same general vicinity not separated by loading screens or doors. I would change this so that more sounds can be heard from greater distances, as in a 2D game there would be less loading screen and separations inside of large areas, not to mention the fact that since it's a side scroller, you can see into rooms that you can't access – it would be strange if you could see a monster but it wasn't making sound. Hearing creepy sound effects but not being able to see the enemy would add tension and also let you know there was trouble ahead. This could be tweaked at will if any enemy was intended to be a surprise. It would also make good use of the ability to have sound come from a particular location in engine as the sound could only come from your left or right speaker/headphone initially, depending on where the enemy is located. This kind of detail would hopefully add to immersion.

The Vertical Slice

I originally only intended to create this document and mock up some gameplay screenshots. However, me and my tutors agreed it would be a good idea to get inside Unreal Engine 4 and create a small demo as a proof of concept. While this definitely increased the amount of time the project took, it was a worthwhile endeavour, as various changes had to be made to my plans as issues came to light that weren't apparent before.

Here's a YouTube link to a playthrough: <https://youtu.be/5unyeggNvmA>

And here's a quick walkthrough of what I made with some screenshots:

You spawn in next to a door with a pink glow. If you hover over it the cursor becomes an arrow indicating you can try to use the door, but if you click on it you'll see that it's locked.

(cont. on next page)



If you walk to the right, on the top floor you can see a zombie, as well as another locked door.



If you hover over the stairs the cursor will become a staircase indicating you can use them.



Click on the stairs to go up to the top floor.



If you go through the door on the top floor (which has no glow, indicating it's a regular door requiring no key) you'll come across another zombie.



Enter aiming mode and your cursor becomes a crosshair. Click on the zombie to shoot it!



With the zombie dead you can safely head downstairs.



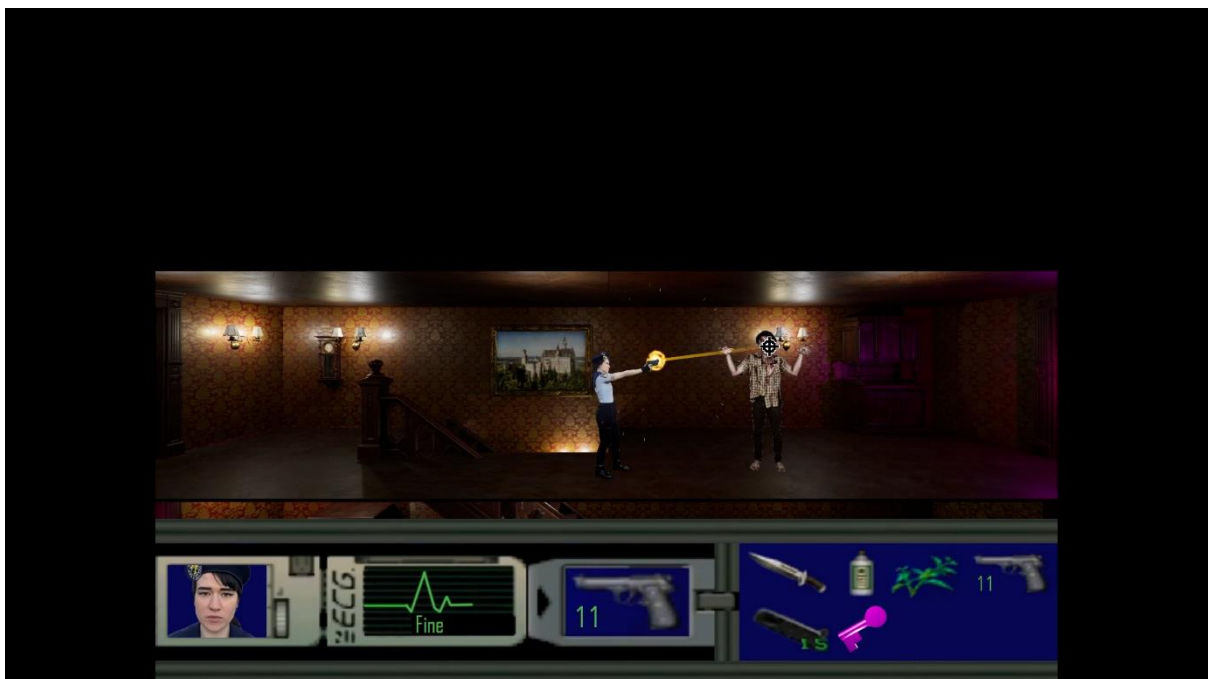
Downstairs you'll come across a pink key to the left, and if you hover your cursor over it the cursor will become a question mark. Click the key and it'll be added to your inventory.



You can now use the locked pink door!



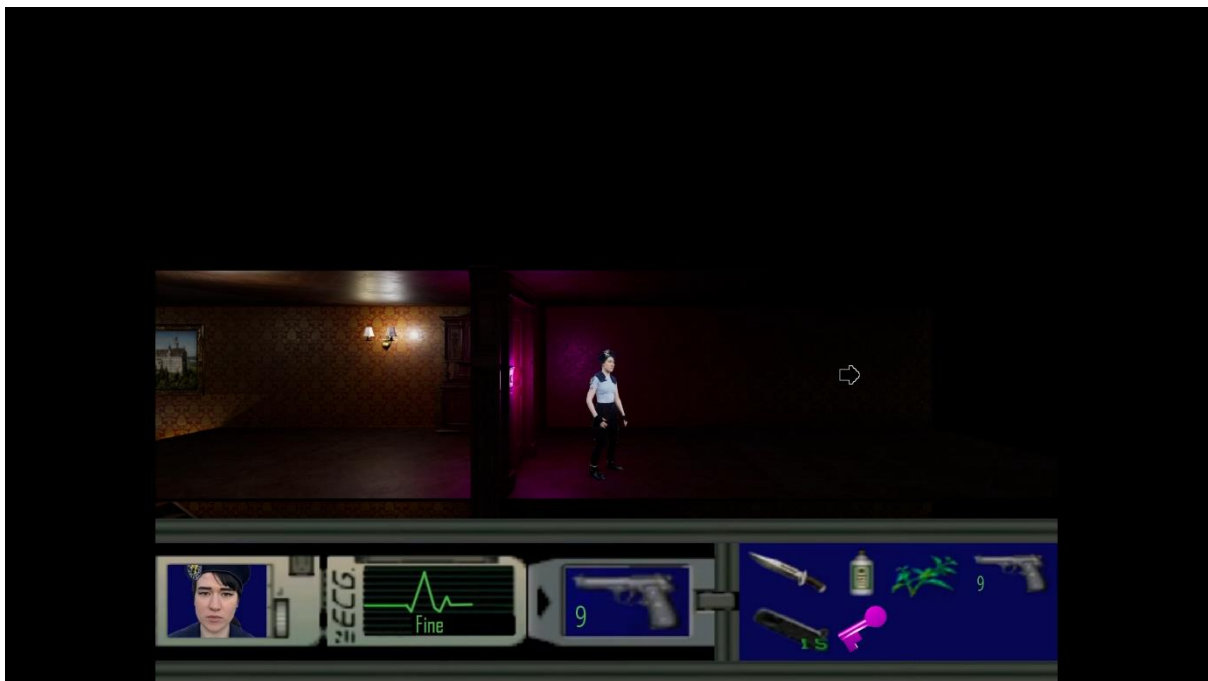
Back upstairs in the starting room you can kill the zombie – or try to avoid it – to get to the other locked door.



Click on the second locked door to go through it!



Finally we reach the end of the demo, leaving Jill in a dark and looming hallway...



Now I'll briefly go over the plans I laid out earlier in the document and talk about what changed, what stayed the same, and why.

The Gameplay

Gameplay wise, everything I planned on doing ended up coming to fruition, and works how I intended it to work. The movement and shooting remains the same, and you can clearly see how the inventory being on screen works well and aesthetically gives off point and click vibes. The only slight difference is there isn't much inventory management in this demo, all that really can happen is your ammo running out. However, like I planned, the ammo visibly ticking down is a reminder not to waste your shots. In a full release you'd click on the inventory to interact with the items.

Additionally, in a full version, there would still be inventory management. The only other difference is that you control the cursor with the mouse, but I felt like this was appropriate as point and click games work so well with PC hardware. Changing it to d-pad controls would function the exact same but be slightly clunkier, which I think is fine, as it adds to the tension.

The Level Design

For the demo I decided against using the level design I came up with, as that level was a large, interconnected space where the many items affected where you could go, and that was beyond the scope of what I wanted to make. Instead, I designed a very simple scenario in which you have to find a single key to open a couple of doors, whilst also having some zombies to fight. This level demonstrates essentially everything I had in mind for the adaptation.

The Visuals

I stuck with my decision of using 3D models for the environment, and created Jill's sprite by dressing up my fiancée in her outfit and taking photos of her to use as animation frames. This worked better than I expected, and creates a strange, uncanny effect! I also used a stock photo for the zombies, which I made wiggle slightly as an animation. The environment assets I used were a lucky find from the Unreal Marketplace. As you can see in the screenshots, having 3D assets adds some depth, and I further cement the depth by having Jill move into the background of the rooms when using the stairs, and the camera moves with her. I feel like this movement doesn't betray the 2D nature of the project as it is so limited, and the depth it adds to the world makes it feel less flat. To add to this, I decided to add a slight delay on the camera – I'm mentioning this here as it effects the visuals more than the gameplay itself. I only thought to do this once I began working in engine, but I believe it adds to the atmosphere, as the way it makes the camera feel disconnected from Jill is reminiscent of the voyeuristic camera angles in the original game. Plus, the floaty camera movement itself brings a feeling of uneasiness which is at home in a horror game. Finally, the way your full field of view is only revealed slightly after Jill gets to where you click adds spooky tension, as you might not see an enemy until the last minute.

The Sound

The sound also remains consistent with what I planned. I actually ended up using music and zombie sounds from the original game, and I think they work well. Being able to hear the zombie's moans to your left and right when you're off screen also works well, and is creepy as intended. The gunshots were found online.

Conclusion

Overall I'm very happy with how this project turned out. It took longer than expected, but I'll put that down to it being the first project in the series, and I also ended up making the vertical slice, which wasn't in my original plan. It really made me think about why certain aspects of design are implemented, where I might not have given them too much thought otherwise – the camera angles are a good example. Adapting Resident Evil into Resident Evil 2D was less straightforward than I thought it would be, as there was so much to think about, but I think what I came up with captures the essence of the original in a way that plays to the strengths of a the 2D point and click genre. I'm looking forward to investigating other games that are completely different to Resident Evil, and seeing what must be done to capture their essence in 2D!

For future projects, I'm keen to get into UE4 to start fully visualising the adaptation as soon as possible, as though I feel like creating a demo this time was valuable, I was fairly set in my plan and wanted to create what I'd already settled on (except for where it really didn't work). That's not to say that the Resident Evil 2D demo was restricted by what I'd already decided – I was very pleased

with how all my ideas ended up working out – just that it could've been. It'll just be interesting to test things out in engine whilst I'm coming up with ideas next time!