

AINT253 - Escape Room Design Document

Jack Griffiths (10547816)

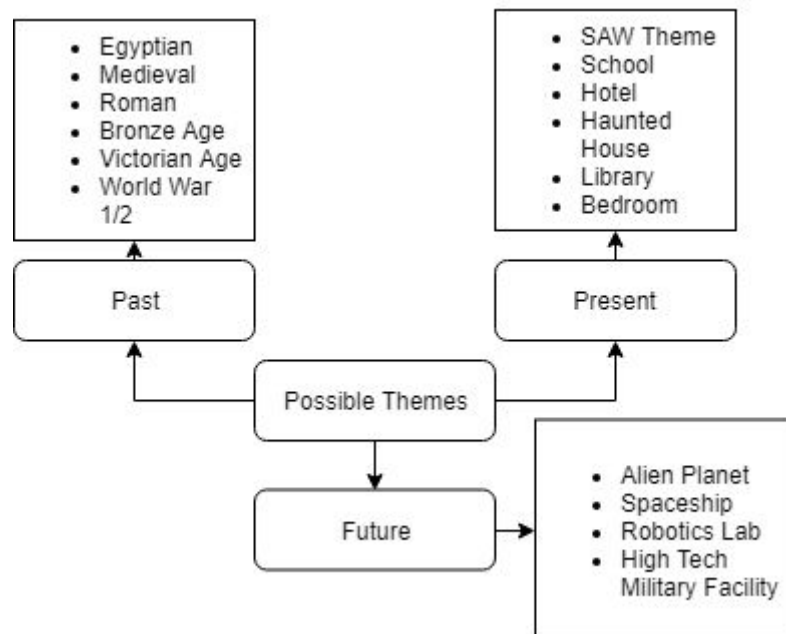
[Project Management](#)
[Realtime Board](#)

Theme Ideas/Research

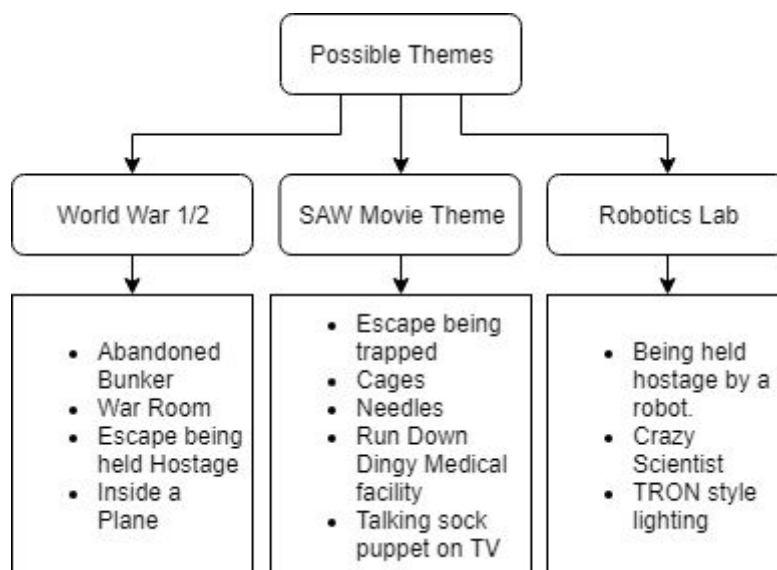
To start off my research, I needed to look into what an escape room is, so that I can start to base my research into possible themes. To start, I watched a few youtube videos of people going through Escape Rooms so that I can learn how they're structured, how the puzzles work and what possible themes I could use. This is what I've learnt from what i've watched:

- Puzzles usually involve finding keys to unlock new areas/clues.
- Puzzles involve hidden areas, and locating new rooms through going into unexpected places.
- They can either be a series of multiple rooms that you work your way through, or one large room in which you work your way towards finding a key.
- They can be pretty much any theme possible.

With this basic set of information I can start to research into possible themes so I can start to get an idea of the visual style I wish to aim for. With this sort of project I always aim to hone in on an idea from each time period (Past,Present and Future), which I then explore further as to how I can apply that theme to this project. I start this by creating a mindmap of possible themes I could take this project down :



Being as I have quite a lot of ideas to explore I have chosen my 3 favourites to discuss further, which will help decide the final theme. These are World War 1 / 2, SAW Movie Theme or The Robotics Lab.



Regarding the deeper insight i've made into each possible theme, I believe that my favourite final idea is the Robotics Lab theme, as it will be a very effective escape room.

Puzzle & Mechanic Planning

Now that I have thought about the theme, I need to think about some puzzles that could simply randomly generate a solution each time the player starts the experience. I've already

been thinking about some puzzles, with my inspiration coming from games like Half Life and Portal 2.

My First Puzzle will consist of some form of code breaking - The player will be faced with a wall with a series of numbers. Each letter will correlate to a randomly generated number. E.g ($A = n$, $B = n+1$, $C = n+2$, $D = n+3$ and so on...) The game will have to take a random word from a predetermined list, and convert it into this code. The player will then have to use the 3 hints they're given to work out what word is displayed, then enter it into a plinth to continue.

The Second Puzzle will be an Air Vent maze, within which are 4 randomly generated 4-digit codes that the player has to enter into keypads in the main room. Once the correct codes are entered, the door will open. The player will need to have a torch so that they can explore this maze, as there will not be any lights in the tunnels.

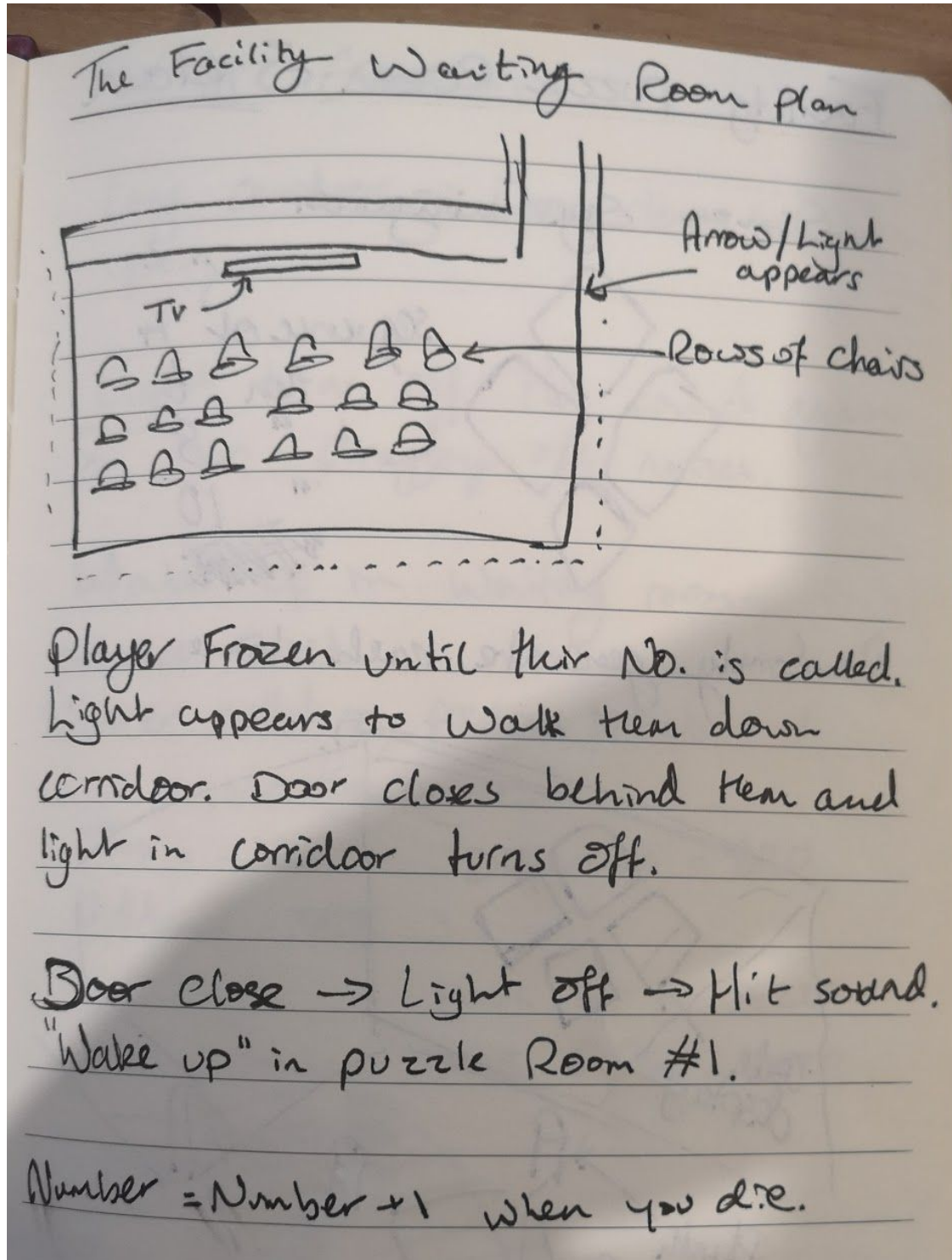
The Third and Final Puzzle will be a memory challenge. Very much based off a Simon Says minigame - the player will be presented by a big screen on which a series of randomly generated sequences will be shown. The player will have to input all sequences correctly into a Plinth in order to move onto the next stage.

There are also a few Mechanics I will need to test and implement, which will help bring the entire experience together:

- A Torch which the player can turn on and off using F.
- A Tooltip Method that will bring up a piece of paper and "type" out information for the player. This will add to the isolated 'feel' of the test lab, as you won't hear any voices.
- A 'Notepad' which the player can bring up and use during puzzles. This will just be a blank piece of paper which they can type on, and is shown up by pressing N.

Now that I have a basic theme, as well as developed Puzzle ideas, I can start making a few moodboards to develop my ideas further and start creating the escape room.

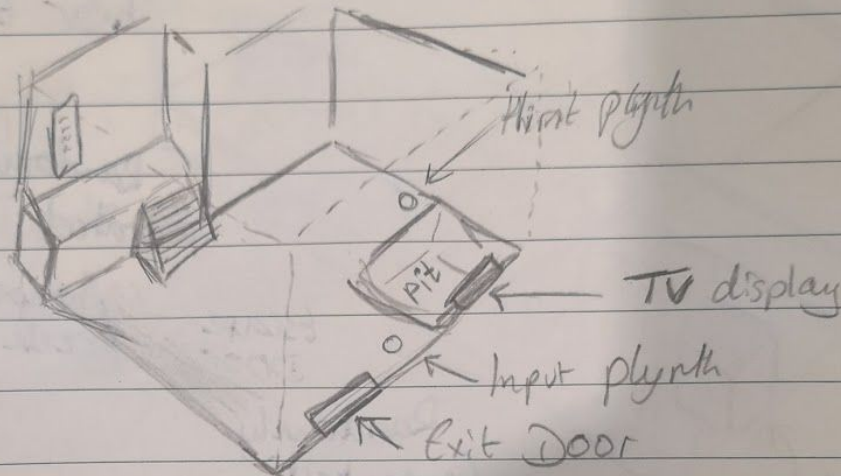
Waiting Room Planning



Puzzle 1 Planning

The Facility - Escape Room Design

WORDS



Randomly generate alphabet code.

a	b	c	d	e	f...
y	x+1	x+2	x+3	x+4	x+5

Picks a word, converts it into alphabet
& player decodes to exit the room.

Puzzle 2 Planning

The Facility - Escape Room Design

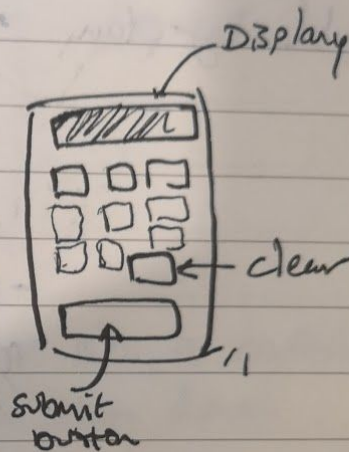
Puzzle 2 = Maze with keycodes hidden in various places

Keycode 1 = Red //

Keycode 2 = Green 21

Keycode 3 = Blue

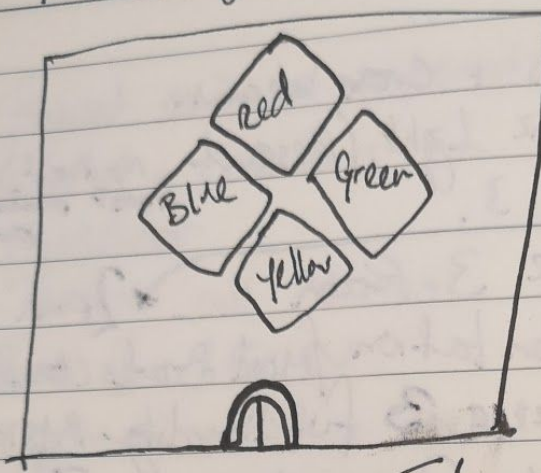
Keycode 4 = yellow



- Tooltip method that types any string out as a tooltip on GUI.
- use for
 - Crouch (LCTRL)
 - Flashlight (F)

Puzzle 3 Planning

The Family puzzle 3 planning



Simon Says Style.

Enter Answer on Plynth.

stand on plynth to begin

Random Generation of codes. 10 levels to complete ~~length~~ ~~length~~

1 → 2	6 → 5	1 → Red
2 → 2	2 → 5	2 → Green
3 → 3	8 → 6	3 → Yellow
4 → 4	9 → 7	4 → Blue
5 → 4	10 → 8	

Moodboards

All Moodboard available at

<https://realtimeboard.com/welcomeonboard/evs4XBuD4AJPinw3ZmZA7Ypgpl4LMvXnRkKiddBmZ85dQ5ctUVkEalgzoCvycoPu>

Theme

Theme



I really enjoy the Portal 1 Aesthetic, so will follow these images when looking into designing the walls and shape of rooms in my escape room.

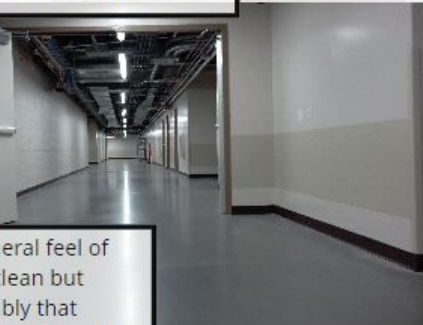


I like the blocky aesthetic to the walls in the above two images, as it keeps with the desired style but helps section off certain areas of the room.

The light in the walls in between the button and door will also make an appearance in my escape room, as it ties together how to move into the next section of the game.



I want the general feel of the lab to be clean but isolated. Possibly that people have abandoned it very recently but still functions without humans.



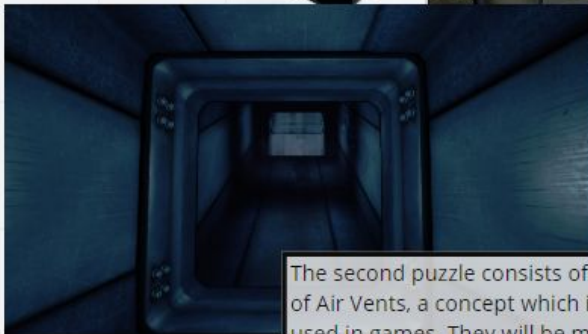
Puzzle Room Specifics

Puzzle Room Specifics

A standard Plinth design will be required across the game. It will be the place the player goes to in order to Enter an answer or retrieve info, so will need to be recognizable.



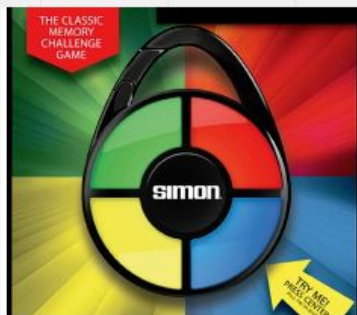
In Puzzle #1, The player will need to read info off a giant screen. This image accurately represents the size of Screen I am going for, but as to whether it is within or mounted to the wall I have not yet decided.



The second puzzle consists of a maze of Air Vents, a concept which is widely used in games. They will be metal and have bolts at certain places to give them an industrial look.



I will also need a small keypad model that is used for this puzzle. This one is inspired by the ones from Half Life - Made by the same Developers as the Portal Games.



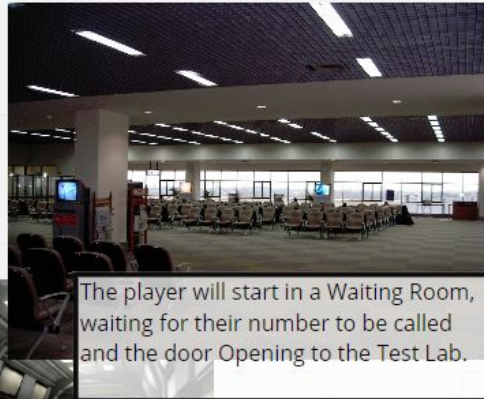
The Third Puzzle will follow a Simon-Says like style. The screen and UI for this puzzle will look similar to the classic game on the left.

Puzzle Transitions

Puzzle Transition



The area in between the puzzles will be sci-fi themed corridors. The player will be locked in these for a couple of seconds before continuing.

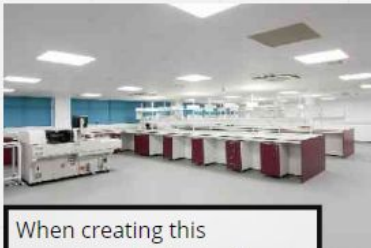


The player will start in a Waiting Room, waiting for their number to be called and the door Opening to the Test Lab.

While leaving the waiting room, they will walk down a long corridor and the lights will turn off, leaving them in darkness. The corridor they walk down during this will look more official than the ones in the test lab.

Lighting

Lights & Lighting



When creating this experience, I also look to Portal for inspiration for the lighting. The Test Lab will need to be pretty well lit to maintain the "clean but isolated" look I'm going for.



I will use 2 different kinds of lights - Ones built into the ceiling like the above image, and others that hang down from cross beams like on the right.



Post Processing Bloom will help with creating the desired Sci-Fi like feel.



User Story Map

Full version available here :

<https://realtimeboard.com/welcomeonboard/evs4XBuD4AJPinw3ZmZA7Ypgpl4LMvXnRkKiddBmZ85dQ5ctUVkEalgzoCvycoPu>

The Facility User Story Map									
User activities	The user is locked in a scientific testing lab.		After waking up in an abandoned Waiting Room.		They have to complete a set of 3 puzzles.		In order to 'escape'.		
User tasks	Player can walk through various Testing Rooms.	In an 'abandoned' but modern looking test facility.	After waking up in a waiting room, with only the number on a ticket.	Before being called into a corridor and getting knocked out.	One test will be based on Code Breaking.	Another Test that contains a maze.	And a memory puzzle.	All tests will have to be complete in order to leave the facility.	After getting knocked out and waking up in the waiting room again.
Prototype	3 Large Testing Rooms	Large Modernistic Style Rooms.	Empty Hospital style waiting room with TV Calling numbers.	Door Opens when number is called.	Large Screen in Room that Displays the code number + Welcome Wall as you come in.	Keypads installed upon Plinths + Welcome Wall. Interact with Keypads to open UI.	Large Indicators mounted above Exit Door + Welcome Wall. Indicators play a series of sequences like Simon Says.	All test must be complete before continuing.	Final test door opening reveals large corridor.
	Connecting Corridors with animated doors.	Lights are still fully functioning. A few built into the ceiling.	Closed door behind the player and one door to the right of the TV.	Revealing large Corridor that teleports player to test lab 1.	Plinth near exit Door that player enters the correct word to exit. Door Sides open if correct with appropriate sound.	An Item maze that the player has to explore in order to find the codes. All codes entered correctly opens the door with appropriate SFX sound.	Plinth with correlating colored buttons. All sequences repeated successfully results in Door Opening.	Door Opens in final testing room to reveal yet another corridor.	This corridor is much like the others. Player questions whether or not the testing is over.
MVP	Varying Height floors in order to add variety.	Walls are still very clean but show slight wear/stains.	Waiting Room is filled with Chairs.	Player hears footsteps and then a punching sound.	Player can receive a maximum of 3 hints by pressing a button on a plinth.	Player has a maximum of 3 attempts to get all of the codes correct.	Random Sequences also play a tune. Also SFXs, positively or negatively when player gets one correct.	Player travelling down it starts the ending sequence.	Player hears footsteps and punching sound.
	Lights hang from Crossbars in the ceiling. Glaringly Bright.	Cameras follow the player around each level. 'Who is operating them?'	All walls are very clean and well maintained. Room is well lit with built-in ceiling Lighting.	Screen goes black then a 'Wake up' animation occurs to reveal the test lab.	Player hears clear positive and negative dings based on whether their answer is correct.	Codes are on plinths that is colored to correlate to the keypads. Plays a tune when playing.	This is the most run down room. Screened Writing on the walls that represents the color sequences.		Screen goes black then player 'wakes up' in the Waiting Room.
MAP	Post Processing Effects that add to the Glaringly Bright Lights.	Tooltips pop up from a piece of paper under the screen. 'Who is sending them?'	Arcade Machine in Waiting Room that is playing The SlippyTennis Trailer.	Lights in this corridor slowly turn off with a "THUD" sound.	Blue Bar Travels along the walls from the Plinth to the top of the door, making it clear how they link.	Player is able to 'hic' the Air Vent out of the way to gain access to the maze.			Lights turn off slowly with a "THUD" sound.
	Corridors Shut the user in for a short time while loading/unloading levels.	Walls get slightly more worn as you go through the tests.							Player's number is now their previous number + 1
		'Notes' start appearing from previous test subjects.							

Project Breakdown

3D Modelling

- Puzzle 1 Environment - Varying levelled floor with death pit and TV in wall.
- Puzzle 2 Environment - Simple Room with 4 Keypads on the wall.
- Puzzle 3 Environment - Room with High Ceilings for installing Indicators on top of the exit Door.
- Modular Air Vent system that will snap together in order to create a fully explorable Maze.
 - Straight
 - Corner
 - T Junction
 - 4 Way Intersection
 - Short Piece
 - Up/Down Levels Piece
 - End Room
 - Vent Piece that will block incorrect paths.
- Indicators that will ceiling mount and work for displaying the sequences of Puzzle 3.

- Corridor Model that will also snap together to create Longer Corridors and attach Puzzle Rooms.
- Door Frame that surrounds each exit.
- Plinth Model to use across the game as a method of entering/requesting data.
- Keypad Model that will be used in the Second Puzzle.
- CCTV Camera that will follow player.
- Beams to put in the ceiling
- Lighting that mounts to the metal Beams.
- Waiting Room Chair.
- Arcade Machine [MAP]

Textures / Materials

- Large Grey Panels on most walls. [See Portal Mood Board]
- Feature walls that have a checkered Black/Grey Pattern.
- Brown Panels on interior walls (Not the outside).
- Light Grey metal/plastic looking floor.
- Metal Cross Beams
- Glaringly bright White Glow for Various Lights.
- Red , Green , Yellow and Blue Glow Materials for Various Plinths/Indicators.

Player Interactions

- **Puzzle 01**
 - Press E on Red Plinth to reveal Hint on the screen.
 - Press E on Blue Plinth to show UI and enter guess.
- **Puzzle 02**
 - Remove Vent to enter Maze.
 - Press E on coloured Plinth to hear/see code for the appropriate keypad.
 - Press E on Keypad to enter guess.
- **Puzzle 03**
 - Walk into center area to start the sequence.
 - Press E on Blue Plinth to enter sequence.
- Press F to Turn Torch On/Off.

Lighting

- Large Square Lights built into the ceiling of waiting room and Puzzle 01.
- All other puzzle rooms lit by ceiling mounted hanging lights.
- Corridors are dark - lit only by emission on Blue Glow.
- Player should be able to see everything clearly, as the bright lights provide a 'clean', hospital like environment.
- Lights in Corridor during Starting/Ending Sequences should turn on/off and therefore should be realtime.

Sounds

- Correct Ding
- Incorrect Ding
- Various Notes/Beeps to be used around when listening to codes/sequences.
- Background dull hum of lights.
- Door Sliding Sounds
- Footstep noises.
- Typewriter Scroll and Click (For Telegram tooltips)

Animations/Effects

- Doors Open/Closing
- Lighting Shutting Down.
- Video on TV showing static/non responsive.
- Bubbling brown liquid in Puzzle Room 01
- Slidey Tanks on Arcade Machine.

UI

- Tooltips that rise up and down from the bottom of the screen. Resembling the player receiving a Telegram.
- Puzzle 01 Text Input Field
- Puzzle 02 Keypad Inputs
- Puzzle 03 Sequence Inputs
- Waiting Room Number Card.

References

Theme Ideas/Research

YouTube. (2019). *James Corden & Ariana Grande Visit an Escape Room*. [online] Available at: <https://www.youtube.com/watch?v=0iy3HPxBFQY> [Accessed 14 Jan. 2019].

YouTube. (2019). *Portal Teaser Trailer*. [online] Available at: <https://www.youtube.com/watch?v=TluRVBhmf8w> [Accessed 14 Jan. 2019].

Mood Boards

Overall Theme

Mod DB. (2019). *Modern-labs and test-chamber image - Portal 2: Lunar mod for Portal 2*. [online] Available at: <https://www.moddb.com/mods/portal-2-lunar/images/modern-labs-and-test-chamber> [Accessed 14 Jan. 2019].

Thinkwithportals.com. (2019). *Official Portal 2 Website - Blog*. [online] Available at: <http://www.thinkwithportals.com/blog.php> [Accessed 14 Jan. 2019].

Study Breaks. (2019). *4 Video Games Designed By Students that Changed the Industry*. [online] Available at: <https://studybreaks.com/culture/student-developed-video-games/> [Accessed 14 Jan. 2019].

Insiderlifestyles.com. (2019). *Bad Hospital Design Is Making Us Sicker | InsiderLifeStyles*. [online] Available at: <https://www.insiderlifestyles.com/bad-hospital-design-is-making-us-sicker/> [Accessed 14 Jan. 2019].

Videoblocks.com. (2019). *Walk POV Through Empty Shiny Hospital Basement Hallway Stock Video Footage - Storyblocks Video*. [online] Available at:

<https://www.videoblocks.com/video/walk-pov-through-empty-shiny-hospital-basement-hallway-4aci38m> [Accessed 14 Jan. 2019].

Study Breaks. (2019). *4 Video Games Designed By Students that Changed the Industry*. [online] Available at: <https://studybreaks.com/culture/student-developed-video-games/> [Accessed 14 Jan. 2019].

Puzzle Room Specifics

BioShock Wiki. (2019). *Air Vent*. [online] Available at: https://bioshock.fandom.com/wiki/Air_Vent [Accessed 14 Jan. 2019].

Steamcommunity.com. (2019). *Steam Workshop :: Black Mesa Keypad*. [online] Available at: <https://steamcommunity.com/sharedfiles/filedetails/?id=1530506576> [Accessed 14 Jan. 2019].

Case, P. (2019). *Plinth Display Case*. [online] Luminati.co.uk. Available at: <https://www.luminati.co.uk/plinth-display-case-2> [Accessed 14 Jan. 2019].

Multitechav.com. (2019). *60" Seamless Plasma: World's thinnest Video Walls - Multitech AV LLC, Dubai*. [online] Available at: <http://multitechav.com/our-products-multitech-av-llc-digital-signage-solutions-audio-video-led-lighting-dubai-abu-dhabi-uae-middle-east-doha-qatar/indoor-screen-technologies-multitech-av-llc-digital-signage-solutions-audio-video-led-lighting-dubai-abu-dhabi-uae-middle-east-doha-qatar/60-inch-seamless-plasma-multitech-av-llc-digital-signage-solutions-audio-video-led-lighting-dubai-abu-dhabi-uae-middle-east-doha-qatar.html> [Accessed 14 Jan. 2019].

MINI, S. (2019). *SIMON SAYS - MINI*. [online] www.zerotoys.com. Available at: <https://www.zerotoys.com/product-p/simon.htm> [Accessed 14 Jan. 2019].

Planar. (2019). *LCD & LED Digital Wall Displays & Signage Solutions*. [online] Available at: <https://www.planar.com/> [Accessed 14 Jan. 2019].

Puzzle Transitions

YouTube. (2019). *Portal 2 Walkthrough: Chapter 6 (The Fall): Bottom of the Pit and Old Foyer (Let's Play, 1080p HD)*. [online] Available at: <https://www.youtube.com/watch?v=cvCiCKEBo8c> [Accessed 14 Jan. 2019].

Pinterest. (2019). *Sci fi corridors*. [online] Available at: <https://www.pinterest.co.uk/danejcustance/sci-fi-corridors/?lp=true> [Accessed 14 Jan. 2019].

En.wikipedia.org. (2019). *Waiting room*. [online] Available at: https://en.wikipedia.org/wiki/Waiting_room [Accessed 14 Jan. 2019].

Novasolaris.com. (2019). *Starship Corridors & Maintenance Crawl Spaces*. [online] Available at: <http://www.novasolaris.com/paladin/html/databanks/technical/tour/accessways.htm> [Accessed 14 Jan. 2019].

Lights & Lighting

iab Lab. (2019). *Drugs Testing Lab - iab Lab*. [online] Available at: http://www.iab-lab.com/portfolio_item/drugs_testing_lab/ [Accessed 14 Jan. 2019].

YouTube. (2019). *High School Computer Lab Gets Cree LED Lighting Makeover*. [online] Available at: <https://www.youtube.com/watch?v=WOpHmjDyMPE> [Accessed 14 Jan. 2019].

Assemblymag.com. (2019). [online] Available at: <https://www.assemblymag.com/gdpr-policy?url=https%3A%2F%2Fwww.assemblymag.com%2Farticles%2F93107-leds-prove-more-efficient-than-metal-halide-lamps-for-factory-lighting> [Accessed 14 Jan. 2019].

reddit. (2019). *r/Portal - Portal 2 Chamber Resources for Blender..* [online] Available at: https://www.reddit.com/r/Portal/comments/4xnvhd/portal_2_chamber_resources_for_blender/ [Accessed 14 Jan. 2019].

Clockworkbrain.net. (2019). *Fake volumetric lighting in Portal 2 | ClockworkBrain*. [online] Available at: <http://clockworkbrain.net/2014/11/p2-volumetric-light/> [Accessed 14 Jan. 2019].

Sounds

Creative Commons License

Jazz Music : <https://www.bensound.com/royalty-free-music/jazz>

Creative Commons 0 License

<https://freesound.org/people/themusicalnomad/sounds/253887/>
<https://freesound.org/people/timgormly/sounds/181858/>
<https://freesound.org/people/BMacZero/sounds/160678/>
<https://freesound.org/people/MasterNavigator/sounds/444813/>
<https://freesound.org/people/SwagMuffinPlus/sounds/176146/>
<https://freesound.org/people/elgronbo/sounds/144096/>
<https://freesound.org/people/xerana/sounds/202085/>

Attribution License

Factory Background Noise (bruce965) : <https://freesound.org/people/bruce965/sounds/403291/>
Incorrect Input Sound (Bertrof) : <https://freesound.org/people/Bertrof/sounds/131657/>
Typewriter Carriage Return (lonemon) : <https://freesound.org/people/lonemonk/sounds/47046/>
Flashlight Clicking (dersuperanton) : <https://freesound.org/people/dersuperanton/sounds/435845/>
Synth Thud (D W) : <https://freesound.org/people/D%20W/sounds/143605/>
Heavy Breath (samule44) : <https://freesound.org/people/samule44/sounds/96023/>
Hard Punch to Gut (EFlexMusic) : <https://freesound.org/people/EFlexMusic/sounds/369593/>

Attribution Non-Commercial License

Short Beep (DodoDuck) : <https://freesound.org/people/DodoDuck/sounds/122265/>

Fonts

Free Commercial Use License (Desktop License)

<https://www.dafont.com/nasalization.font>
<https://www.dafont.com/aa-typewriter.font>