

# Aint253 – Observatory escape room design document

## User story map-

(Live board - [https://miro.com/app/board/o9J\\_kwGDa3c/](https://miro.com/app/board/o9J_kwGDa3c/))

### Escape room: User story map



## Mood boards –

### Room

[https://s22380.pcdn.co/wp-content/uploads/Lick\\_refractor.jpg](https://s22380.pcdn.co/wp-content/uploads/Lick_refractor.jpg)



[https://live.staticflickr.com/2113/2259738219\\_335f707014\\_z.jpg](https://live.staticflickr.com/2113/2259738219_335f707014_z.jpg)



[https://www.tripsavvy.com/thmb/E3V2AcAs12-cVMq9uobEL6lFFdke/2121x1414/filters:no\\_upscale\(\)max\\_bytes\(150000\)strip\\_icc\(\)/Gettyimages-171322107-5c27cef64e0fb0001550623.jpg](https://www.tripsavvy.com/thmb/E3V2AcAs12-cVMq9uobEL6lFFdke/2121x1414/filters:no_upscale()max_bytes(150000)strip_icc()/Gettyimages-171322107-5c27cef64e0fb0001550623.jpg)



My game is going to be based inside an astronomical observatory, so I gathered pictures of the Lick observatory as it matched the room design I had in mind, that being a large circular room.

[https://www.ucoick.org/main/visit/images/lh\\_domes\\_wide.jpg](https://www.ucoick.org/main/visit/images/lh_domes_wide.jpg)

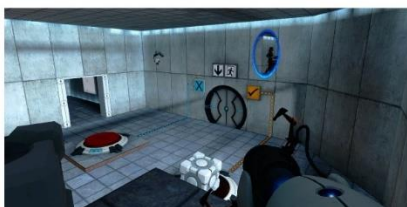


[https://upload.wikimedia.org/wikipedia/commons/0/04/Lick\\_Observatory\\_Refractor.jpg](https://upload.wikimedia.org/wikipedia/commons/0/04/Lick_Observatory_Refractor.jpg)



### Walls & floor

<https://www.hypable.com/wp-content/uploads/2018/03/portal3-speculation-1.jpg>



<https://cdn.collector.com/wp-content/uploads/2018/09/portal-video-game-1.jpg>



<https://www.yemurbeat.com/wp-content/uploads/2013/03/portal.jpg?imgref=1>



<https://00.wp.com/the-gem-bok.com/wp-content/uploads/2016/06/Portal-screenshot-with-lots-of-portal-surface-area.jpg?resize=722%3C408>



<http://portalgame-maps.com/images/maps/fg/740000.jpg>



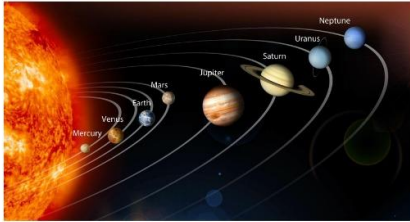
Images of rooms from the game "Portal". I liked the simplistic grey colours used for the walls and the floors as it gives off a sci-fi vibe, which matches what I'm after for my game.

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## Planets

[https://i22280.adn.co/wp-content/uploads/Solar-system-NASA\\_5.jpg](https://i22280.adn.co/wp-content/uploads/Solar-system-NASA_5.jpg)



[https://upload.wikimedia.org/wikipedia/commons/thumb/0/02/OSIRIS\\_Mars\\_true\\_color.jpg/1200px:OSIRIS\\_Mars\\_true\\_color.jpg](https://upload.wikimedia.org/wikipedia/commons/thumb/0/02/OSIRIS_Mars_true_color.jpg/1200px:OSIRIS_Mars_true_color.jpg)



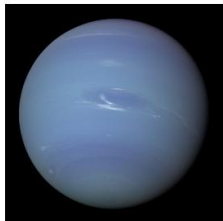
<https://upload.wikimedia.org/wikipedia/commons/3/3d/Uranus2.jpg>



[https://upload.wikimedia.org/wikipedia/commons/3/50/Upisier%2C\\_image\\_taken\\_by\\_NASA%27s\\_Hubble\\_Space\\_Telescope%2C\\_June\\_2013\\_-\\_610x610.jpg](https://upload.wikimedia.org/wikipedia/commons/3/50/Upisier%2C_image_taken_by_NASA%27s_Hubble_Space_Telescope%2C_June_2013_-_610x610.jpg)



[https://upload.wikimedia.org/wikipedia/commons/6/63/Neptune\\_-\\_Voyager\\_2\\_-\\_28x29x47980845%29\\_flatten\\_crop.jpg](https://upload.wikimedia.org/wikipedia/commons/6/63/Neptune_-_Voyager_2_-_28x29x47980845%29_flatten_crop.jpg)



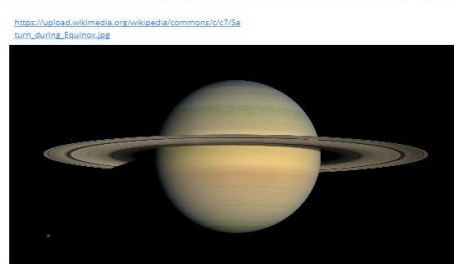
[https://mi4astronomynow9oh6g.kinstadn.com/wp-content/uploads/2019/04/042119\\_mercury\\_globe2.jpg](https://mi4astronomynow9oh6g.kinstadn.com/wp-content/uploads/2019/04/042119_mercury_globe2.jpg)



<https://image.businessinsider.com/54a2c11ecad043905ce4d667width=1100&format=jpeg&auto=webp>



[https://upload.wikimedia.org/wikipedia/commons/thumb/9/97/The\\_Earth\\_seen\\_from\\_Apollo\\_17.jpg/1200px:The\\_Earth\\_seen\\_from\\_Apollo\\_17.jpg](https://upload.wikimedia.org/wikipedia/commons/thumb/9/97/The_Earth_seen_from_Apollo_17.jpg/1200px:The_Earth_seen_from_Apollo_17.jpg)



[https://upload.wikimedia.org/wikipedia/commons/c/c7/Saturn\\_during\\_rainstorm.jpg](https://upload.wikimedia.org/wikipedia/commons/c/c7/Saturn_during_rainstorm.jpg)

Around the room in my game there will be a model of each planet. Each planet is going to be textured to look similar to the pictures I have collected. The textures most likely won't be as high resolution as the pictures however I will still try to resemble them as closely as possible.

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## Light switch

<https://iqaoh.fr/quoracdn.net/main-qimg-f70d9a5fa7b746c45f8135d39ae482f1>



Pictures of the light switch, I went with a white design as it matched the style of the walls that I was planning on.

<https://cnet1.cbsstatic.com/img/7/Wser0CpazqXODrFFGL3XKu2ocv/1200x675/2015/112/04/fd4c74e97a820-49ae-a7cc-f9879fehd977/high-switch-insulation.jpg>



## Light's

[http://www.scopeviews.co.uk/Lich358refractor\\_files/image002.jpg](http://www.scopeviews.co.uk/Lich358refractor_files/image002.jpg)



<https://www.ac-et.com/wp-content/uploads/2019/05/Spotlight-Hyperion-P8-Hy-LED-300-6C-Fresnel-300x300.jpg>



[https://www.simpysoundandlighting.co.uk/media/catalog/product/cache/1/image/1800x/609bf72458f6f023cc955d92e3889/a/aled\\_fresnel\\_angle\\_1.jpg](https://www.simpysoundandlighting.co.uk/media/catalog/product/cache/1/image/1800x/609bf72458f6f023cc955d92e3889/a/aled_fresnel_angle_1.jpg)



For my lighting I'm going to have lights around the edge of my room, like in the picture above. For the MVP, I plan on using spotlights to show which planets do and don't have puzzles. For the MAP, all puzzles will be implemented so I will have the room fully lit, as this will allow the player to see all objects in the room clearly.

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# Wooden texture

[https://img.freepik.com/free-photo/wooden-plank-textured-background-material\\_53876\\_33591.jpg#size=526&ext=.jpg](https://img.freepik.com/free-photo/wooden-plank-textured-background-material_53876_33591.jpg#size=526&ext=.jpg)



<http://www.textures4photoshop.com/text/thumbs/free-wood-texture-with-high-resolution-thumb38.jpg>



[https://img.freepik.com/free-photo/light-brown-wooden-textured-background\\_53876\\_75616.jpg#size=626&ext=.jpg](https://img.freepik.com/free-photo/light-brown-wooden-textured-background_53876_75616.jpg#size=626&ext=.jpg)



Different wood textures to use for texturing the desk

## Desk

[https://images-na.ssl-images-amazon.com/images/I/61MMUg3NGGL\\_Sy355.jpg](https://images-na.ssl-images-amazon.com/images/I/61MMUg3NGGL_Sy355.jpg)



[https://www.dakohome.co.uk/media/catalog/product/cache/1/image/550x500/9df78eab33525d08d6e3188c27136e95/bj/bjburko\\_2.jpg](https://www.dakohome.co.uk/media/catalog/product/cache/1/image/550x500/9df78eab33525d08d6e3188c27136e95/bj/bjburko_2.jpg)



<https://5.imimg.com/data5/QM/HM/38998159/wooden-study-table-500x500.jpg>



For the desk I decided to go with a standard wooden desk. The colour of the desk will make it stand out in the mostly white and grey room, which will indicate to the player that it's something of importance and will lead them to it.

# Cup

[https://images-na.ssl-images-amazon.com/images/I/71jM7uLU42L\\_Sl1500.jpg](https://images-na.ssl-images-amazon.com/images/I/71jM7uLU42L_Sl1500.jpg)



[https://www.themagictouch.co.uk/wp-content/uploads/2018/01/satinmug\\_black-1.png](https://www.themagictouch.co.uk/wp-content/uploads/2018/01/satinmug_black-1.png)



<https://files.cdn.printful.com/upload/variant-image-jpg/21/2134a3fa568449b50adffcc6313aafb91>



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# Tap

[https://cdn.cloud.grohe.com/Web/3\\_4/ZZH\\_T30189Y01\\_000\\_01\\_3\\_4/3\\_4/532/ZZH\\_T30189Y01\\_000\\_01\\_3\\_4\\_3\\_4.jpg](https://cdn.cloud.grohe.com/Web/3_4/ZZH_T30189Y01_000_01_3_4/3_4/532/ZZH_T30189Y01_000_01_3_4_3_4.jpg)



<https://cdn.schoolfurniture.co.uk/wp-content/uploads/2016/02/sink-header.jpg>



[http://www.churchillschool.co.uk/sites/churchill/files/styles/gallery\\_main/public/gallery/science\\_lab\\_sink.jpg?itok=eg85H9xE](http://www.churchillschool.co.uk/sites/churchill/files/styles/gallery_main/public/gallery/science_lab_sink.jpg?itok=eg85H9xE)



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For the tap in the room I plan on using a design similar to the middle picture however I'm going to use a metal texture, like that of the picture on the left.



# Computer

<https://5.imimg.com/data5/EF/RQ/MY-3030942/lenovo-desktop-computer-500x500.jpg>



<https://5.imimg.com/data5/GX/YX/MY-3522780/desktop-computer-500x500.jpg>



[https://5.walmartimages.com/asr/20c2da98-23b6-42c0-99ff-3719a352c2a8\\_1\\_d7738944df20f5cd082a4c5d826986b0.jpeg](https://5.walmartimages.com/asr/20c2da98-23b6-42c0-99ff-3719a352c2a8_1_d7738944df20f5cd082a4c5d826986b0.jpeg)



Images of the computer that will be on the desk. For the MAP I will also add in wiring to the computer.

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## Computer screen

<https://writingsofmasseductiondotcom.files.wordpress.com/2011/10/hack-this-game.jpg>



<https://ytmimg.com/vi/s0li3Tc6a8/maxresdefault.jpg>

```
static int groups_to_user(gid_t __user *grouplist,
                        const struct group_info *group_info)
{
    int i;
    unsigned int count = group_info->ngroups;
    for (i = 0; i < group_info->nblocks; i++) {
        unsigned int cp_count = min(NGROUPS_PER_BLOCK, count);
        unsigned int len = cp_count * sizeof(*grouplist);
        if (copy_to_user(grouplist, group_info->blocks[i], len))
            return -EFAULT;

        grouplist += NGROUPS_PER_BLOCK;
        count -= cp_count;
    }
    return 0;
}
/* fill a group_info from a user-space array - it must be allocated...
```

<https://www.malwarefox.com/wp-content/uploads/2017/12/access-denied.png>



For the computer screen itself I have gone with a "Matrix" style UI. I made this decision as the design itself feels like a puzzle which will help further immerse the player in the idea that they need to solve something. The design itself is also very simple and is easy to read, which is an important goal for UI.

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## Phone

[https://img.gta5-mods.com/q95/images/new\\_icons\\_for\\_michael\\_s\\_phone/647b0dd-screen1.png](https://img.gta5-mods.com/q95/images/new_icons_for_michael_s_phone/647b0dd-screen1.png)



<https://oiph.fs.quoracdn.net/main-qimg-003d08af3372d35542116af5d09659e>



For the phone I need it to have a simplistic UI as it's going to be used in some of my puzzles so I found pictures that matched that. For my MAP I'd like to have a similar design to what's in the pictures as well as animations for the hand. For my MVP I'll only have the top of the phone showing and no animations.

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# UI design

[https://miro.medium.com/max/3200/0\\*3MF5ciFcty2rTN](https://miro.medium.com/max/3200/0*3MF5ciFcty2rTN)



[https://65.media.tumblr.com/3202659f03ce1f1a31d0776609f4c29/tumblr\\_inline\\_pj2h8T181s944eq\\_540.jpg](https://65.media.tumblr.com/3202659f03ce1f1a31d0776609f4c29/tumblr_inline_pj2h8T181s944eq_540.jpg)



<https://img.litch-zone.ai/W1hZ2UyMTkwMDMwLzg4OTYty5vbmc=/original/C7ETqq.png>



[https://i.kym-cdn.com/photos/images/newstfeed/000/858/776/f2e.jpg\\_large](https://i.kym-cdn.com/photos/images/newstfeed/000/858/776/f2e.jpg_large)



Throughout my game I will need to display information to the player, so I need a UI that allows me to do so in a simple and easy to read way. For things such as dialogue and general information I plan to use simple dialogue boxes, such as the pictures above, as this is a very effective way of delivering information to the player. For interacting with objects I plan on using on screen text, similar to the bottom right picture. For my MVP I'll just use simple white text and for my MAP I'll do something similar to the above picture where the key to press is a different style from the rest of the text.

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## Door

<https://5.imimg.com/data5/OT/KC/MY-23512032/1-500x500.jpg>



<https://3c01.alicdn.com/6f/HTB1Kt8Dtp0006u0000q6v050004/200209486u/HTB1Kt8Dtp0006u0000q6v050004.jpg>



<https://www.pertensionsdustalls.com/images/dynamicslideshow/slides/partitions-and-stalls.jpg.pagespeed.ic.OyteAbTgw7.jpg>



Images showing the styles of doors that will be in my game. Because my game is based in an observatory I wanted doors that looked like they were from a science lab. One of my puzzles requires the player to go into the toilets, so I found a pictures of bathroom stall doors. I also like the colour as it's similar to the colour of the planet that the puzzle is based around.

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## Desk phone

<https://mxl-storage.googleapis.com/snom/D120-IPPhone-front.png>



<https://www.deck-phone.com/wp-content/uploads/2015/05/yealink-T19p-Front-Hero.png>



[https://www.yealinkvoice.com/wp-content/uploads/2018/12/yealink\\_t19p.png](https://www.yealinkvoice.com/wp-content/uploads/2018/12/yealink_t19p.png)



Images showing the type of office phone that will be on the desk in the game.

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## Lighter

[https://api.windycitymovietitles.com/Data/Media/cc182200-5c6d-443e-b31b-31596586c099?ae003ea-led-flameless-concert-lighter-L&\\_2018.jpg](https://api.windycitymovietitles.com/Data/Media/cc182200-5c6d-443e-b31b-31596586c099?ae003ea-led-flameless-concert-lighter-L&_2018.jpg)



[https://www.allbranded.co.uk/out/shop-uk/pictures/generated/product/1/680\\_480\\_80/2451-0200.jpg](https://www.allbranded.co.uk/out/shop-uk/pictures/generated/product/1/680_480_80/2451-0200.jpg)



[https://cdn1.thehunt.com/app/public/system/zine\\_images/2407295/mobile/e3e3c74307c6ab3af0c235e87fb6520b.jpg](https://cdn1.thehunt.com/app/public/system/zine_images/2407295/mobile/e3e3c74307c6ab3af0c235e87fb6520b.jpg)



Images for the lighter. For my MVP I'll use something simple like the middle and left picture, and for my MAP I'll go for something more detailed such as the picture on the right.

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## Gas valve

<https://gascylindersource.com/wp-content/uploads/Gas-Cylinder-Source-Sherwood-CGA580-Inert-Gas-Valve-One-Half-Inch.jpg>



[https://media.screwfix.com/is/image/ae235?src=ae235/46199\\_P8&prodImageMedium\\$](https://media.screwfix.com/is/image/ae235?src=ae235/46199_P8&prodImageMedium$)



[https://images.homedepot-static.com/productImages/692ee563-f5a7-41d8-b8ae-bf4c5c17aa73/svn/brasscraft-gas-fittings-connectors-pssc-68-64\\_1000.jpg](https://images.homedepot-static.com/productImages/692ee563-f5a7-41d8-b8ae-bf4c5c17aa73/svn/brasscraft-gas-fittings-connectors-pssc-68-64_1000.jpg)

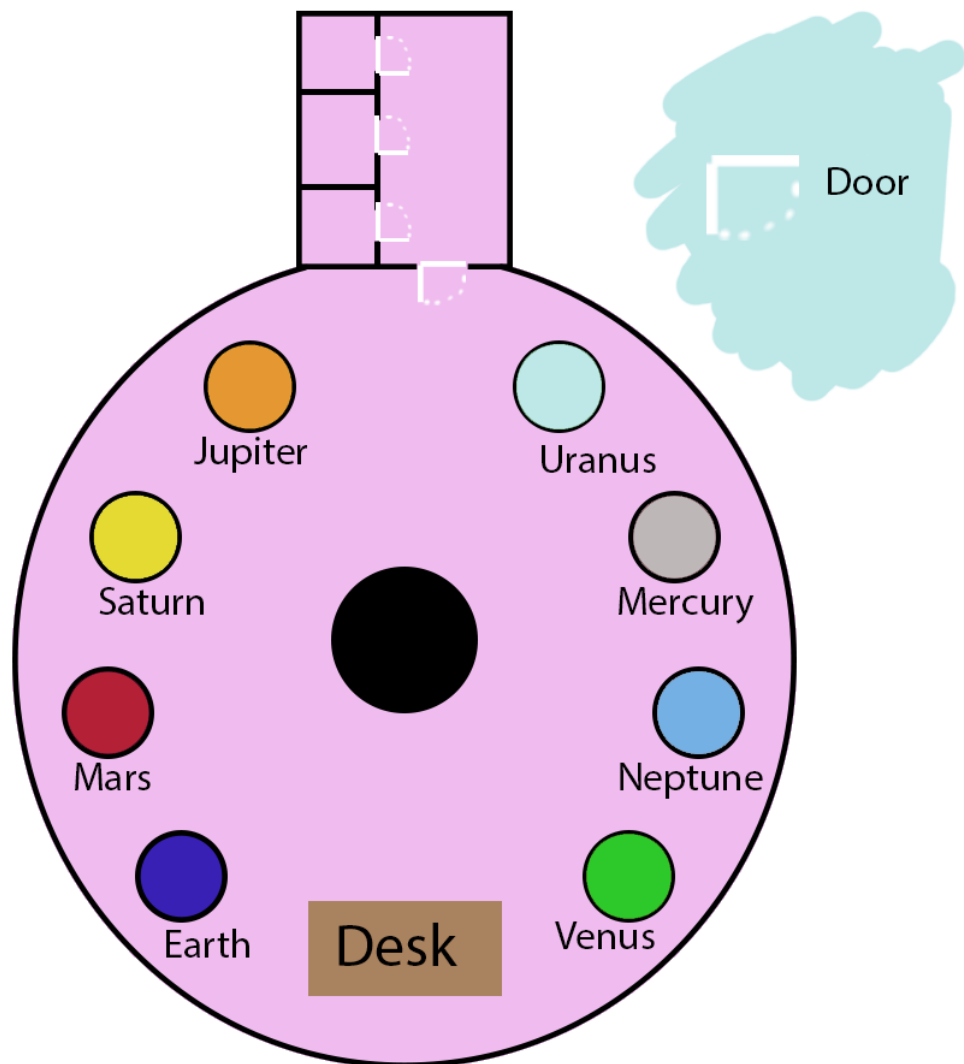


Images showing the design I'd like to go for, for the gas valve.

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Floor plan –



## **Observatory escape room – Puzzle design**

For my escape room I decided to base my puzzles around the planets in our solar system. I took one aspect of each planet and designed the puzzles around those aspects. Each puzzle will give the player a number when completed. The player will need all the numbers in order to complete the final puzzle.

### **Mercury & Neptune**

Mercury is the closest planet to the sun, and Neptune is the furthest away. This results in Mercury being the hottest planet in our solar system and Neptune being the coldest, so I decided to base the puzzles around these two planets on heat. Next to the planets there will be a tap and a cup. The player will have to fill the cup with cold water and pour it onto a small platform next to Neptune to reveal the number. The player will also have to do the same thing but with hot water for Mercury.

### **Earth & Mars**

For Earth I had the idea of using the moon in some way. I decided to go with a light reflection puzzle, where the moon is a lamp that emits light. For the puzzle the player has to turn off the main lights in the room so that they can see the light from the moon lamp, then they need to spin light discs so that the light ends up on a certain point on a wall, revealing the number. I decided to also use this concept for Mars, but with Mars being known as the “Red planet”, the player must use some stained glass to turn the light red or else the number can’t be seen.

### **Saturn**

Saturn is a planet known for its rings. I decided to take the idea of rings and do a play on words. For the puzzle the player will have to take a phone they find on the desk in the room and place it next to the planet, then they will need to call the phone. The phone will then “Ring”, which will solve the puzzle and award the player the number.

### **Jupiter**

Jupiter is a gas giant and the largest planet in our solar system. I decided to use the idea of gas for its related puzzle. The planet will have four buttons that need to be pressed in a certain order to solve the puzzle, to find what the correct order is the player will have to turn on a gas valve that’s next to the planet and then use a lighter that’s found in the desk drawer to light a fire inside the model. The light from the fire will then reveal the correct order to the player.

### **Venus**

The planet Venus is named after the Roman goddess of love, so I decide to make the puzzle a riddle about love that the player has solve.

### **Uranus**

For Uranus I decided to make the puzzle a joke. The player will have to go into the toilets, where under one of the seats is the number.

### **Final Code**

The final puzzle requires the player to enter all the numbers from the puzzles, into a computer in a correct order. The order for the numbers is the order of the planets in our solar system, starting closest to the sun and going back, so the first number you put in is the

number from Mercury's puzzle, the second number being from Venus's and so on. To help the player there will be a poster behind them that shows the planets in order.

## Sound design

### Opening door

For the door opening sound I will need the sound of a handle being turned and the door opening. Fortunately, my door fits this perfectly so I can just record the sound of my door.

### Phone ringing

The phone ringing will just be a simple generic phone ring, something similar to this <https://www.youtube.com/watch?v=f-g0hkNsZcc>. I will then take the sound into Audacity and edit it into a loop.

### Walking

My game takes place in a big open room, so for the footsteps of the player there will need to be some echo on it to make it immersive. I'll take one of the sounds from here, <https://www.youtube.com/watch?v=9g7uukgg0Fc>, and use audacity to give it the echoey feel I'm looking for.

### Draw opening + Light switch

These are both very simple sounds that I can get from recording the light switch and drawers in my room. Because of how simple these sounds are I can probably import them straight into Unity without any editing in Audacity.

### Water tap

The water tap sound will need to be a constant sound, so to achieve this I will record my tap whilst it's on and then use audacity to edit it into a loop, which will constantly play in the scene until turned off.

### Keyboard + computer sounds

For the keyboard key press sound I will simply record the sound of a key press on my keyboard and have it play whenever the player inputs a key. For the sounds the computer will make when the player inputs the code, the will use sounds similar to these <https://www.youtube.com/watch?v=worclOeTALw>. For my MAP I'd would also like to add some ambient computer sounds, these being fans that are constantly on but randomly rev up.

### Gas + fire

For both of these sounds I can record my gas hob and then use audacity to edit them into the sound I want.



## Observatory escape room references

Hypable.com. (2019). [online] Available at: <https://www.hypable.com/wp-content/uploads/2018/08/portal-3-speculation-1.jpg> [Accessed 26 Oct. 2019].

Venturebeat.com. (2019). [online] Available at: <https://venturebeat.com/wp-content/uploads/2013/03/portaly.jpg?strip=all> [Accessed 26 Oct. 2019].

Portalgamemaps.com. (2019). [online] Available at: <http://portalgamemaps.com/images/maps/lg/740000.jpg> [Accessed 26 Oct. 2019].

Collider.com. (2019). [online] Available at: <https://cdn.collider.com/wp-content/uploads/2016/09/portal-video-game-1.jpg> [Accessed 26 Oct. 2019].

Wp.com. (2019). [online] Available at: <https://i0.wp.com/thegemsbok.com/wp-content/uploads/2016/06/Portal-screenshot-with-lots-of-portal-surface-area.jpg?resize=722%2C408> [Accessed 26 Oct. 2019].

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Tripsavvy.com. (2019). [online] Available at: [https://www.tripsavvy.com/thmb/E3V2AcAs12-cVMq9uobEL6IFFdk=/2121x1414/filters:no\\_upscale\(\):max\\_bytes\(150000\):strip\\_icc\(\)/GettyImages-171322107-5c27cef646e0fb0001550623.jpg](https://www.tripsavvy.com/thmb/E3V2AcAs12-cVMq9uobEL6IFFdk=/2121x1414/filters:no_upscale():max_bytes(150000):strip_icc()/GettyImages-171322107-5c27cef646e0fb0001550623.jpg) [Accessed 26 Oct. 2019].

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