

# Fade

## Design Document

### Introduction

Falling through his basement floor, our protagonist finds himself in an old abandoned mine down below. Finding his way up the dark caverns he discovers that things are not as they seem. With new discovered powers our protagonist must complete challenges to climb out of his dark fate.

### Technical Introduction

This is a 2D platformer game where the player can transform himself and the environment at will. The environment and the character abilities will change as the player transforms. This adds another level of complexity to the levels. Essentially there are 2 worlds in each level, one is in light and one is in darkness. In order to complete the level the player would have to shift between the two worlds quickly to go over and around obstacles. All while performing tight platform segments. Each world will include new features that will react to the shift in new and exciting ways. We can have platform that will show only in light or darkness, platform that move to one side or the other when we shift the light and Lights that flip the script at specific areas. We can also have enemies that react to the change in lighting.

### Inspiration

While a platformer is one of the most accessible genre for a solo developer this is not the reason why I would like to make one. I absolutely love 2D platformers. These days this is the only single player genre that I like to play and I would like to make a game I want to play. I have many different games to pull inspiration from. The one the pops up to mind the most when thinking of this game is **Color Symphony 2**.

### Color Symphony / Color Symphony 2



In the Color Symphony games you can navigate between 3 colors at will. Changing to a color will hide all the obstacles and platforms of that color. This is a very difficult and confusing game that takes some time to get used to. The controls are tight and

responsive and the levels are hard. I really liked playing it and I think I can add a lot of cool ideas to this color changing theme while making it more wieldy.

## Rayman (1995)



Other games come to mind thinking of the different hazards, features and platforms that I would like to include in the game. The first Rayman game is one of my favorite games, I played it to death and I think you can see a bit of it in almost every other platformer since. The game has so many unique and fun features, I would like to have each world in my game introduce a unique mechanic that will leave the player interested.

## Celeste



Speaking of Celeste, I think it's going to be one of my biggest inspirations when it comes to movement and level management. There is no other game that is as fluid as Celeste.

## N++



As for music, enemies and general look, I look at N++ and think that will be a general direction I will go for. With 2 contrasting colors for the light and dark (which doesn't have to be white and black). The constant high speed electronic music in the background keeps you engaged as you have to complete super difficult levels. Some of the enemy abilities in this game might fit the narrative and gameplay style of my game as well.

# Technical Parameters

**Platforms:** Windows PC, Web. PC is my target platform. Web is to comply with the Game Jam requirements.

**Engine:** Unity.

**Genre:** 2D Platformer, Precision Platformer.

## Demo Requirements

These are the parameters for the game **demo**. Completing these will result in a finished demo for the game.

### Levels

**Level 0:** Short narrative level in the character house that ends in the character falling through the floor of the basement leading the player to the first level of the game.

**Level 1:** Level including 5 - 10 minutes of gameplay with branching levels and challenges.

**Level 1 Boss scene:** A boss scene for the end of the first level where the player loses the control of the color and the color changes on a music beat. This while escaping from a chaser is a high stake 1 - 2 min chase scene. Where the map acts as a rhythm level.

### Level Features

**Lights:** Areas that are in a spot light will become dark when changing the color of the map. So they will always be the opposite of everything else. This will create really cool lighting effects and cool challenges.

**Colored Platforms and Colored Moving Platforms:** Platform can be part of the dark world, light world or be always available (gray). The platform will have a polygon collider that will be updated every frame based on the location and lighting. I can either use a clipping algorithm or use the clipper2 library in my project <https://github.com/AngusJohnson/Clipper2>.

**Hazards:** Different types of stationary, colored and moving hazards.

**Platform that changes direction based on the color of the background:** A platform that is always available but changes the direction of travel when changing position.

## Character Controller

The character controller must feel like a top tier platformer. I think this is the most important aspect. I've made quite a few character controllers in the past, I can get something done.

**Run:** The character will have a responsive run with a run speed of 3 seconds per screen.

**Wall Attach & Wall Jump:** I want the game to be a precision platformer. These games usually avoid having too many floors to land on. This feature will allow me to design vertical levels that make the player keep moving. The wall jump will be snappy and allow the player to climb on a single wall without using the double jump.

**Jump & Double Jump:** To allow the player to move through a platform, change color and attach from the other side I have to include another movement option in mid air. My options are dash or a double jump. Including both might make it too hard to design levels so I'll stick to double jump for now. I might change this decision in the future.

**Crouch:**

**Slide:** Because currently I don't have a dash, moving on flat ground might be too boring at times. I'll give the player a slide that adds speed and can be channeled to a long jump. It will have similar speed ups like in ghost runner where sliding from a ledge gives a massive speed boost. The slide will not be a key movement type in the challenges but it might offer some skips.

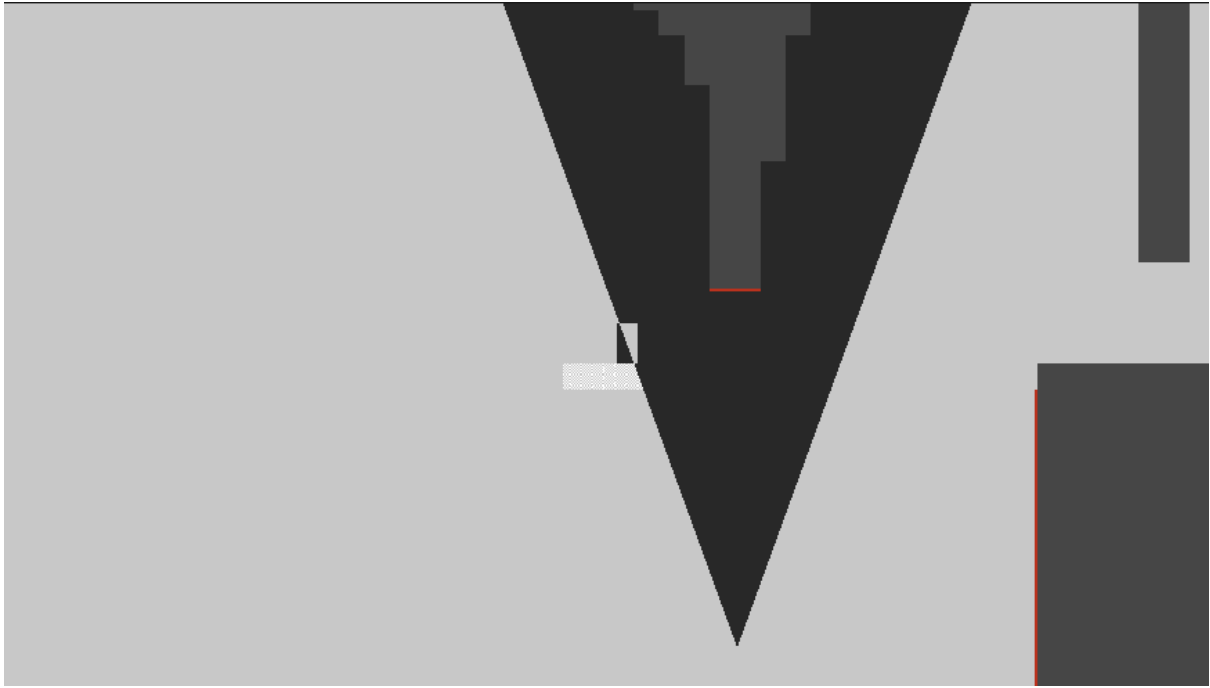
**Dash (Disabled):** A 2 way or 4 way dash might be added in the future. Either for advanced levels or in general for all levels instead of double jump or in conjunction with it. Dash is a fun mechanic but it has costs in the level design department. I think it will be added because I like it but I need to figure out the level design limitations first before doing so. Once I'm more familiar with the game I would be able to have a better sense for this ability.

## Game Jam Theme: Shadows and Alchemy

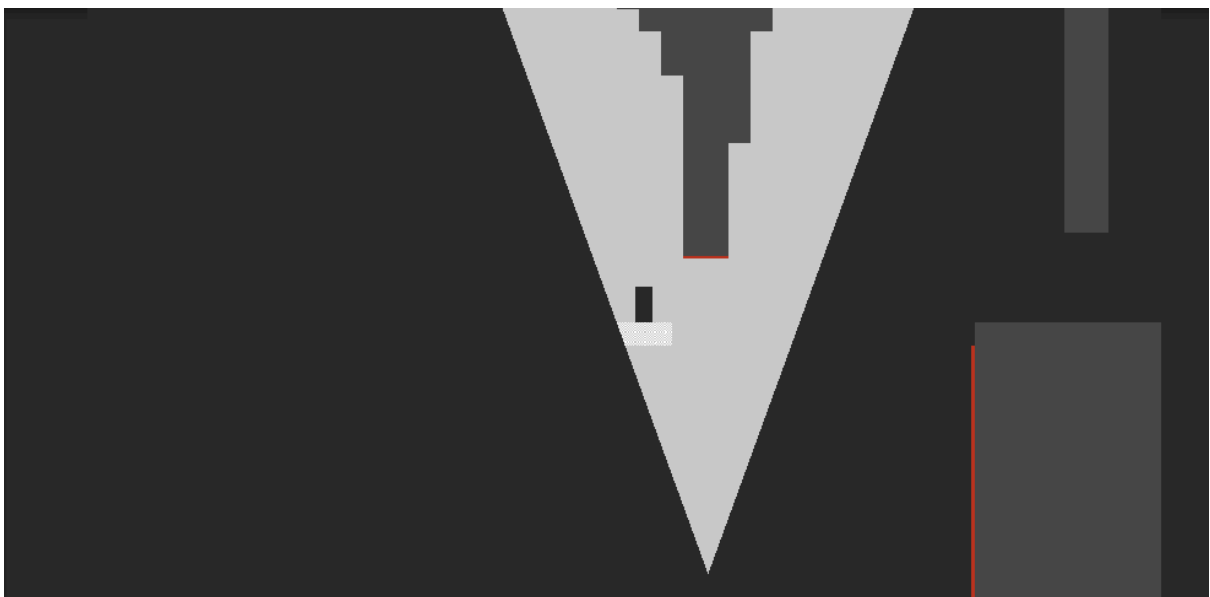
I think the game kinda answers both parts of the theme. The shadows in the lighting are a core gameplay mechanic in the game, this part is represented very well. As for the alchemy, the player has the ability to transform the world back and forth at the press of a button. The person you encounter in the cave is a wizard of some sort.

# Lighting Mechanic Example 1

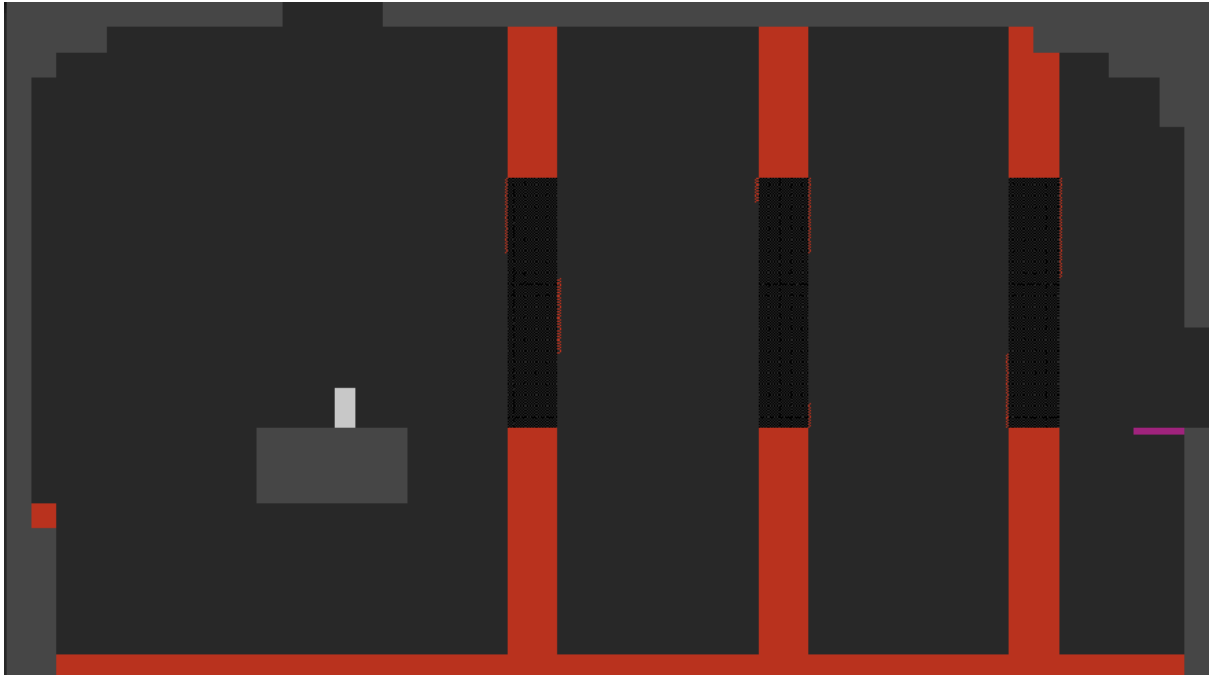
I've quickly coded the collider code and the shader code where the lighting system causes platforms to disappear and reappear when moving through light (both the visual aspect and the collider will be missing inside the light).



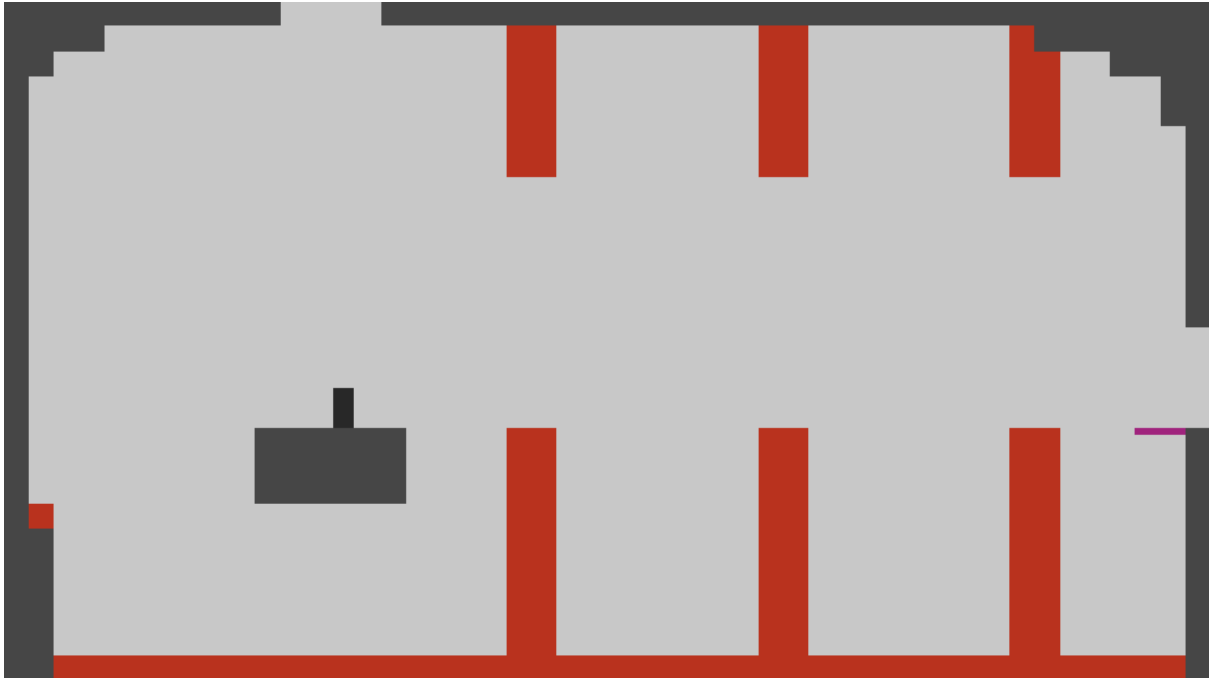
In this example the character is standing on a light platform that is moving to the right. The player can't jump because he will hit the red hazard above his head. The player must change the color of the world back and forth when moving through the boundary in order to stay on the platform.

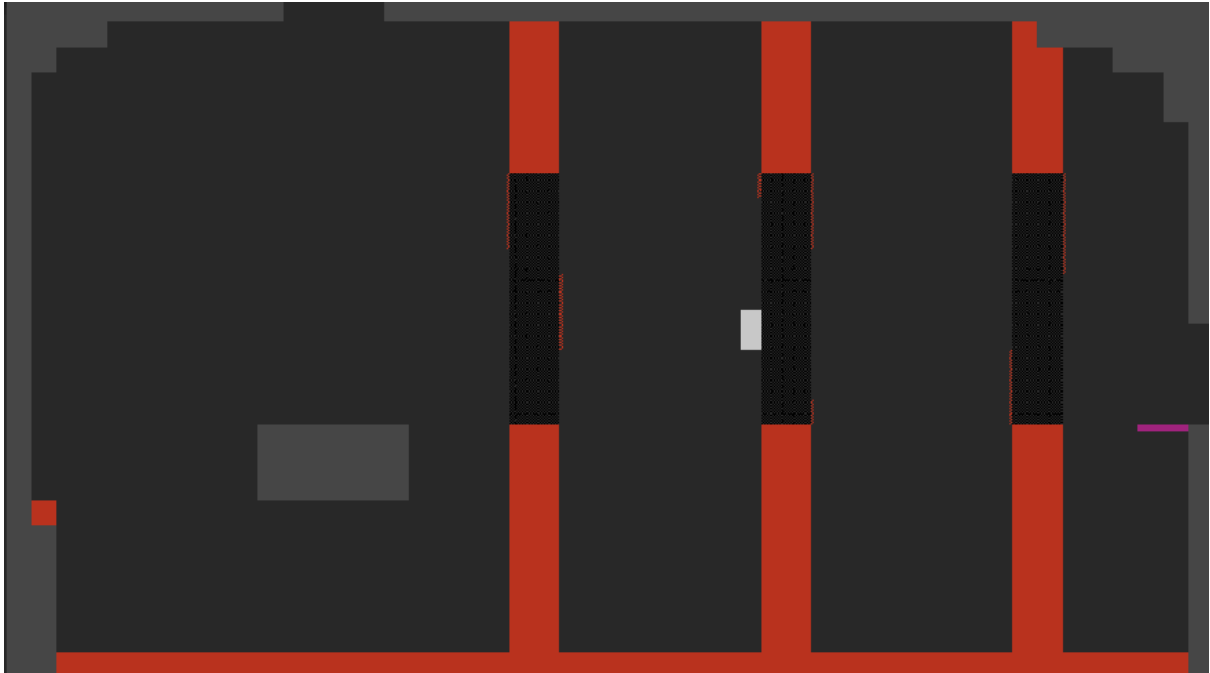


## Lighting Mechanic Example 2



The player must change the world to white, jump through the platform, change the world to black and attach on the other side.





## Art

I'm not an artist, This is an issue. I'll do my best to make the game look good enough. This section is TBD. Currently the game uses boxes and I might keep it that way for the game jam because it might take me more than 2 weeks to fix. I'll try to do my best to make it presentable.

## Sounds

### Sound effects

I'm using edited free sound effects for all of my sounds. Most of them I got from a free to use commercial GDC library.

## Music

I'll use anything I can find cheaply on the Unity asset store. I'm not a musician and 2 weeks are not nearly enough to start learning while also making a game. To be more with the spirit of the Jam I'll only get something that is super affordable.

## Game Structure

4 - 5 levels with light switches, without the ability to change the lighting.  
Then someone gives you the ability to change the colors on a single screen

The next 25 levels are levels that use that changing color power. around 8 normal levels 8 with moving platforms and 8 with shifting platforms based on color. End with around 4 levels where the guy that gave you the power tries to hunt you and he changes the colors on the beat.

## Game Jam Time Management

I'll split this into 4 parts: Coding, Level Design, Art, Music & Sounds.  
I assume I have 12 days to work on the demo

### Coding - 3 days

This is the only part I have any idea what I'm doing. I already have the controller working and the lighting effects before the writing on this document, both the platforms and the visuals of the player. I would say the biggest hurdle here is to get shadows to work (when the light hits the ground). I already have an algorithm in mind. The clipper2 library makes it much faster for me to program the clipping code on the CPU. I did some of it with shaders but I'm not sure how well it will work on the web so I'll try to use the polygons I created on the CPU and mask areas using them (or generate meshes overlays). I assume 2 days of work to get things done here.

As for the level creator tool, I use the unity grid to create the levels and I created a script that takes different color tiles and replaces them with platforms at the start of the run. In the future I'll cache this replacement before releasing the game but for now the game will take .1 seconds longer to load. The caching system while it will be important, the demo is small enough to skip it for now.

The boss level is another thing that needs to be programmed. I assume it will take me 1 day of coding work (not including the level design).

As for the controller. Most of it is done (modified from previous work). I want to add time stop animation for the color change.

### Level Design - 4 days

This is a hard one. I would like to work on it for 2 days at the start and clean everything up 2 days in the end after everything sinks in my mind. I think this is better as an iterative process so I'll split the work up over the entire jam. I assume 4 days in total but it will be a little bit here and there.

The target here is to create the following -

1. A starting level in the character house - an hour or 2
2. 30 level screens with 2 branching paths - 2 days
3. boss chase scene with 6-8 screens - 2 days



## Art - 4 days

This is by far the hardest part for me. I give it as much as I can afford. If I'm lucky enough to save a day on coding or level design I'll use it here. Targets:

1. Ground tileset
2. Hazard saws, round spikes.
3. Animation for character (If I have time I would like to have a different set for light and dark).
4. Main Menu Screen

## Sounds - 1 day

I have a list of 10 or so sounds I need to add. This should only take a few hours (I'll use public sounds for all of them).

As for music I will choose 3 songs for the game one for each part of the demo. If I have more time I'll try to make as much as I can in a single day. Although this is not one of the things I have any idea about, there isn't too much work in this department and I need to make it just decent enough for the demo.

## Game Jam Log

I've logged everything I've done over the game jam. This is not a part of the actual GDD above but I felt like doing it here. It's my document and you can't tell me what to do!

### Day 1

1. Created this GDD.
2. I collected some code I wrote in the past for a character controller. I've adopted the code to include the type of movement I want. I also added the color change ability to the code.
3. I've written the first version of the polygon collider changes in lighting. Also the player is changing color based on lighting.
4. Added a good implementation of a moving platform. This by far took the longest because the unity physics system is not very good with changing physics context.
5. Created some basic levels.

### Day 2

1. Blocked up world 0.
2. Added sound effects to movement.

3. Added particle effects to jump and fall.
4. Blocked up half of world 1.

## Day 3

1. Color Change
  - a. Added sound when changing colors
  - b. Added the ability to freeze time when changing color. Feels like a lag for now so I disabled it. Might get back to it in the future. Maybe just slow down time.
2. Level reset/death
  - a. Added death sound.
  - b. Added fade in and out of a black screen with disabled inputs. Takes 1 second.
3. Character Animation
  - a. Added a humanoid character that reacts to light and dark with animations for everything.
4. Crouch & Slide
  - a. Added crouch and slide boost with animations and sounds.
  - b. Added level that teaches how to slide boost.

## Day 4

1. Spent most of the day fixing a bug in the moving platforms.
2. Blocked out 5 new level ideas. Currently has 23 of the desired 30.
3. Added slide ledge boost (and extra slide boost when sliding off a ledge).  
Fixed level 17 which teaches how to use the slide ledge boost to be at the correct distance.

## Day 5

1. Fixed a bug with the ground parent code.

## Day 6

1. Completed 6 or 7 levels and edited old levels to look better. This includes new shifting platforms levels.
2. Added waypoint moving platforms
3. Shrink collider when crouched
4. Unload far away levels. The only levels loaded now are adjacent levels and the current level. This is to disable the usage of resources (cpu & gpu) of far away levels.
5. Added variable jump. Maybe I'll remove it because I don't think it's needed in this game.
6. Added crash detection
7. Connected all Done levels - about 15 - 20 minutes of content. Super difficult!

## Day 7

1. Disabled variable jump
2. Added collectible sound
3. When jumping from a moving platform the speed of the moving platform will be added to the player. Added a level that uses this feature with the shifting platform.

## Day 8

1. Created 2 more shifting platform levels. Finalized World 1 without boss sequence.
2. Changed the art for all the hazards.

## Day 9

1. Added switch for lights
2. Added levels that play with the switch.
3. Added level that returns the ability to swap lights

## Day 10

Today I fixed the arrow direction in the shifting platform.

Aside from that minor change I discovered that WebGL doesn't support the compute buffers that I used to implement the entire lighting system in the game.

1. I've started working on a new system that creates the lighting base on layermask.
2. For each object that supports dual colors I hold 2 instances of the sprite 1 on top of each other and I mask on inside a custom mask that I generate and on outside.
3. The mask is auto-generated every time a lighting change even happens. This will happen in a coroutine so it doesn't stop the main thread of the program (This should happen in less than a single frame so it will probably be fine).
4. This effect will be used for both the web and windows version of the game even though the shader code is more efficient. This is so I won't have to manage the 2 versions separately.

Probably 5 hours later I've decided that this might be a good idea to try to implement at a later date but it will take me too much time now. I have a much simpler solution. Each light needs 6 floats in the shader. I can support up to 2 lights per level if I include 3 float4 in the shader instead of a buffer.

Note I've later discovered that [itch.io](https://itch.io) has experimental support for the buffers...

## Day 11

1. Light bolb art
2. switch sound
3. Disappearing block art
4. Text explaining gameplay at some levels
5. Time, collectibles collected and death count at end screen
6. Disable S early
7. Wizard animation that supports the lighting system.
8. Level\_4 animation that gives you the S power.
  - a. new coroutine of a wizard giving you the new powers.
9. Added end game boss levels with animations

## Day 12

1. Add binding to skip level
2. Add Esc screen with skip level and binding text
3. Switch event handler to a newer one
4. Added licensed music from the unity store
5. Add the ability of the wizard to shoot at the player
6. Added full controller bindings

Game is Ready for publishing.

Currently in the testing stage and figuring out how to publish properly.

## Day 13

1. Published