
RANGER
2D Platformer Case Study
Jared Rigby

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The Quest

I love video games. From an early start in my childhood, I was playing old school Mario games on the family Gameboy and Super Nintendo. As I grew older, that expanded into other franchises such as Pokemon, Legend of Zelda, and of course, more Mario. The old classics still reign supreme in my favorites to play today.

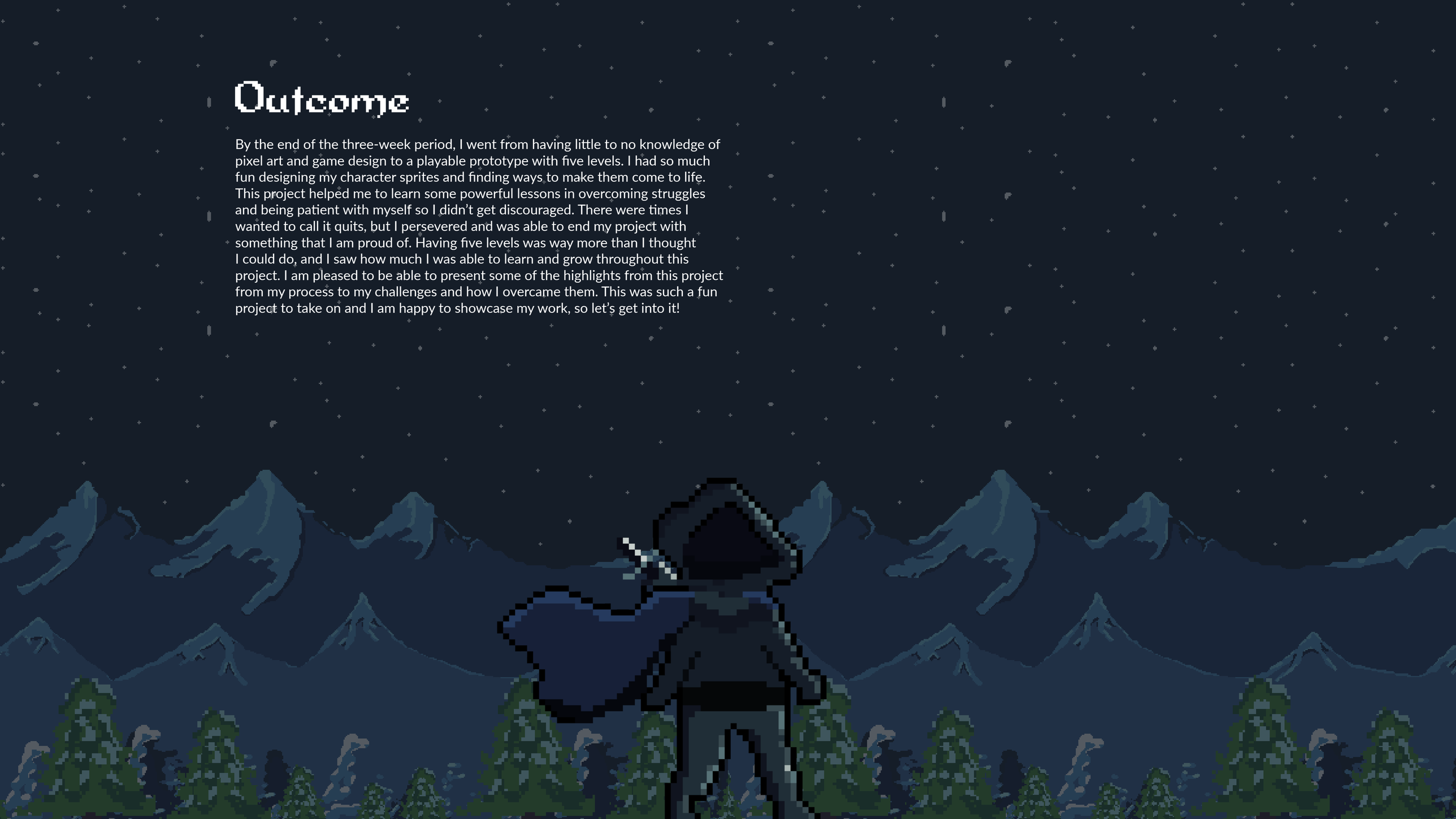
With my love of games, I found myself in a situation where I asked, can I make my own game? I decided to give this a go and see what I could accomplish. I would be making a 2D platformer following the 8-bit pixel art style. I did some research into the realm of video game design, pixel art, game coding, pretty much everything that would be required in building a game. Building a full game can take years of work with a full team and I only had myself. I needed to make sure that I was going to embark on something that would help challenge me, but also something that I could do. To help make sure I could do it, I set up some parameters. First, I would have 3 weeks to complete this project. Second, the project would have two main aspects: pixel art and building the game. Since video game coding was new to me, I decided to aim for at least one playable level and I would see how things went and adjust things as needed.

While this project was going to be something I had never done before, I knew that I could do it. I am passionate about designing and gaming, so this was a perfect opportunity to bring those two things together. I was excited to see what I could accomplish with such a short time frame, and I was ready to take on the quest of building my own 2D platformer!

Can I Make My Own Game?

Outcome

By the end of the three-week period, I went from having little to no knowledge of pixel art and game design to a playable prototype with five levels. I had so much fun designing my character sprites and finding ways to make them come to life. This project helped me to learn some powerful lessons in overcoming struggles and being patient with myself so I didn't get discouraged. There were times I wanted to call it quits, but I persevered and was able to end my project with something that I am proud of. Having five levels was way more than I thought I could do, and I saw how much I was able to learn and grow throughout this project. I am pleased to be able to present some of the highlights from this project from my process to my challenges and how I overcame them. This was such a fun project to take on and I am happy to showcase my work, so let's get into it!



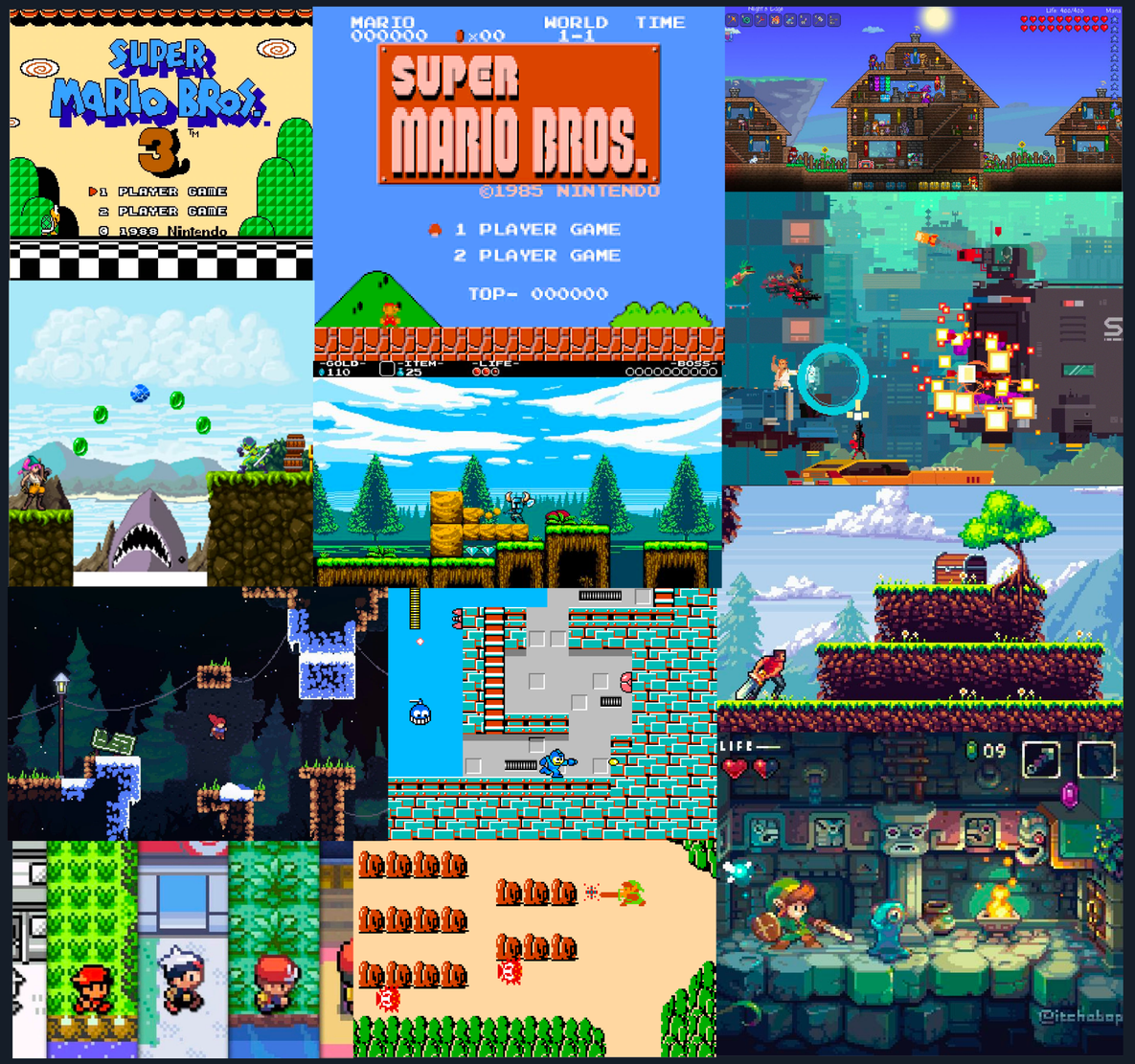
Approach

I have had plenty of experience with design work and creating things digitally, but I have never done pixel art before. Luckily, I have access to so many examples, so the first thing I did was start a mood board. I looked at some classic 8-bit games such as Mario, Zelda, Mega-Man, and other modern games. I wanted to see how they do it, and what I might try and do to “replicate” that for my own game. While each game has its own style, the realm of pixel art is just squares of different shades of colors. After I had researched and saw what the professionals had done, I knew that all I needed was a good idea and a solid program to use.

SUPER MARIO BROS.

MEGA MAN

THE LEGEND OF ZELDA



Choosing the Programs

I first needed to choose what programs I would use for this project. A mentor had suggested the idea of using Game Maker Studio to build the game, which has its own coding language and an easy-to-use interface for beginners. Figuring out what to do for the pixel art was a little bit trickier. I had considered using Photoshop, but I found a YouTube channel that taught me about a program called Aesprite.

Aesprite is a program dedicated to pixel art. Since it was so popular and seemed easy enough to use, I was able to download a free version and followed some online tutorials. I was quickly able to pick up how the software works, so I went ahead and chose this as my platform for all my pixel art.

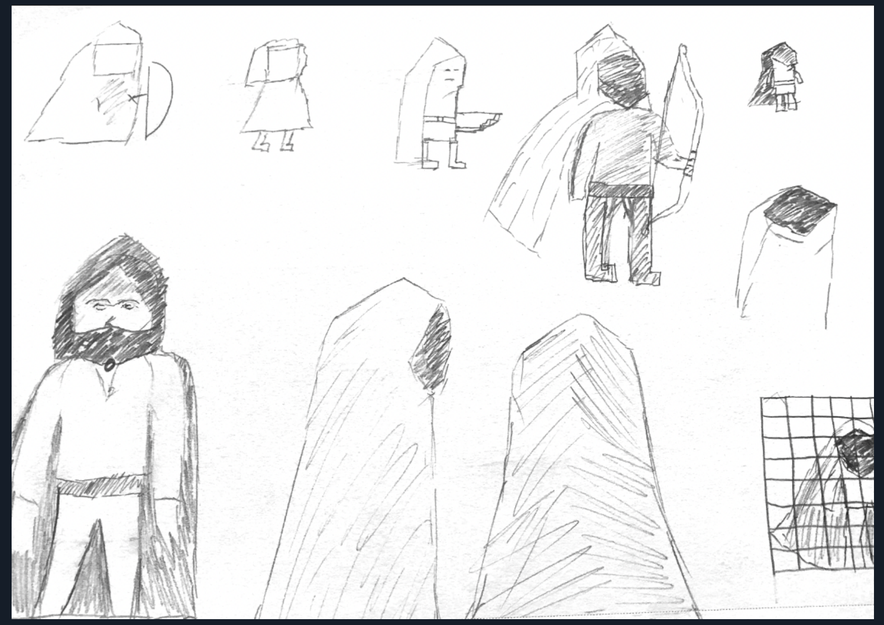
Now that I had figured out what programs I would use, I could get to work. I was still nervous about the coding part, but I stumbled across what I considered to be the Holy Grail of tutorials. It was a 27-part YouTube series that covers everything to build a basic platformer. Since that is what I was doing for this project, it was perfect. My fears of not being able to build the game were now gone, as I could follow along to add the right code, and then add in my sprites as I finished them.

GameMaker Studio 2™

Creating The Sprites

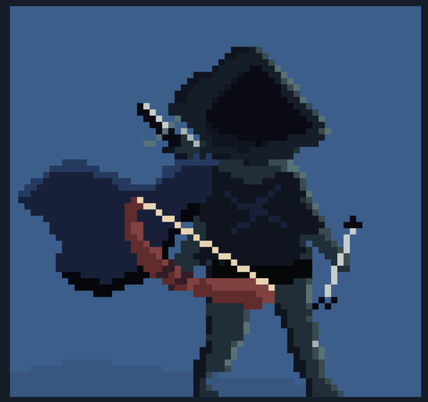
Before I got too far ahead of myself with the designing part, I needed to figure out what game I was going to make. I knew I wanted to make a 2D platformer, but I didn't have a story. My first main task was creating my first character and getting a basic story outlined. I love the fantasy genre, so it didn't take long for me to choose an archer as my main character. I did some quick outline sketches to get the shape and idea down, but quickly jumped into Aesprite to see how putting things together would go.

My first drafts were rough. I called them my "beta sprites" as they were still in the early stages of development. It wasn't until later after more practice that I started getting the hang of creating pixel art, and the successes started with my first character. I liked the idea of the mysterious hero, so I kept his face hidden behind his hood. This helped shape the story arch of where he would be the nameless Ranger who is here to save the kingdom. With more time and resources, I would flush out his story, but for now, his goal is to survive and defeat all the enemies who have come to invade the land. This also gave me the title for this game, named after my main character: Ranger.



First Draft

Refined

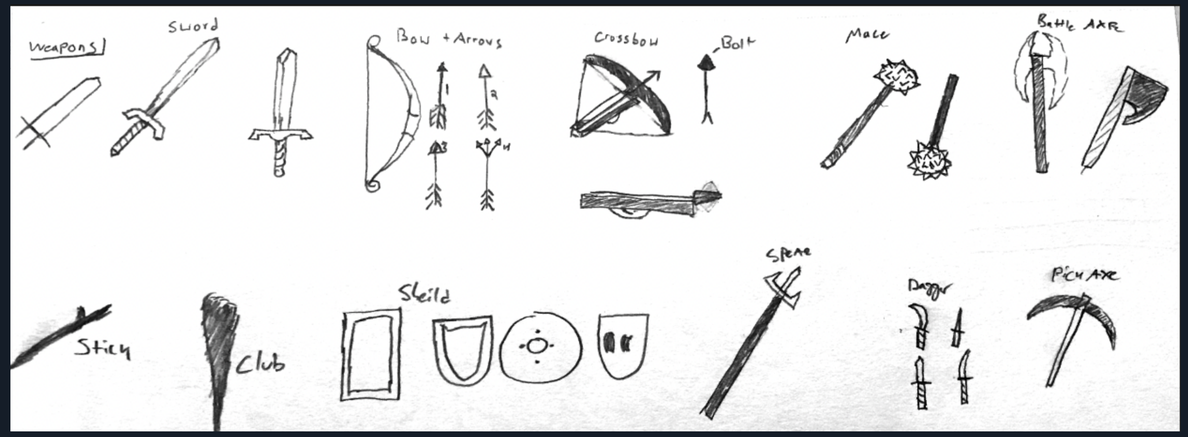


Final

Creating Items

Creating a few items was the next part in my pixel art journey. Starting with some sketches and transferring those to Aesprite allowed me to get some practice on how shading can make a huge difference. As seen in my first attempts, the farther down I went with the execution the better they got. Pixel art is typically done on the small canvas size of 8x8, so adding in details can be challenging at times. However, adding in the shading here taught me to do that everywhere else, as it is one of the small things you can do to elevate the overall design.

Sketches

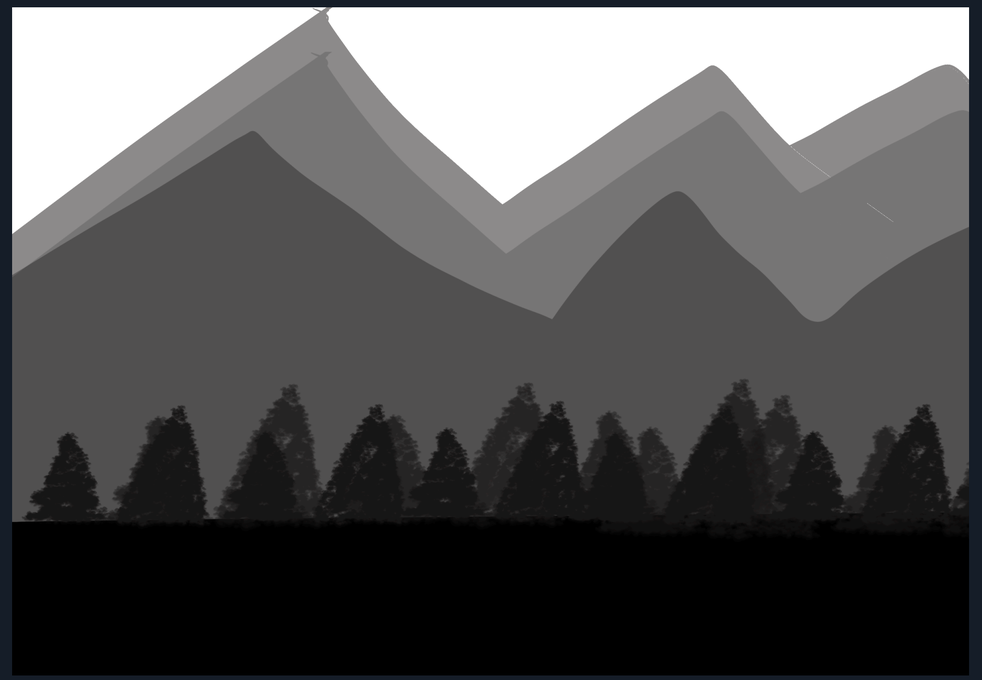


First executions

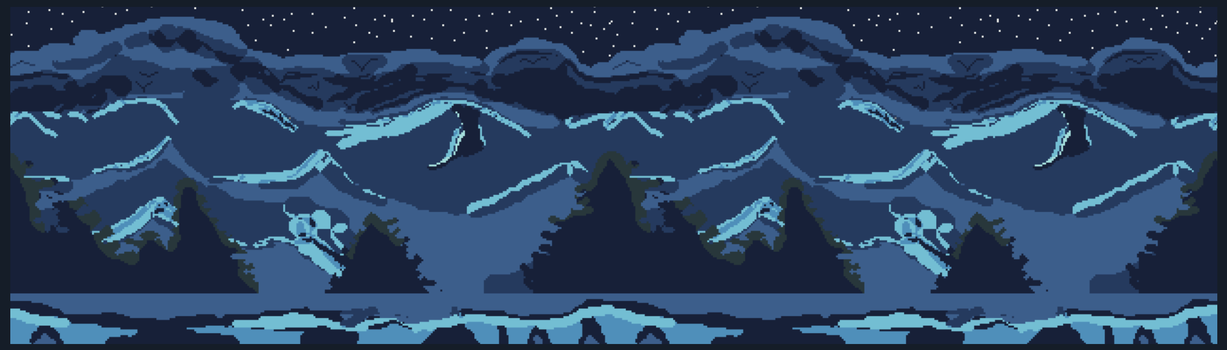
Level Design

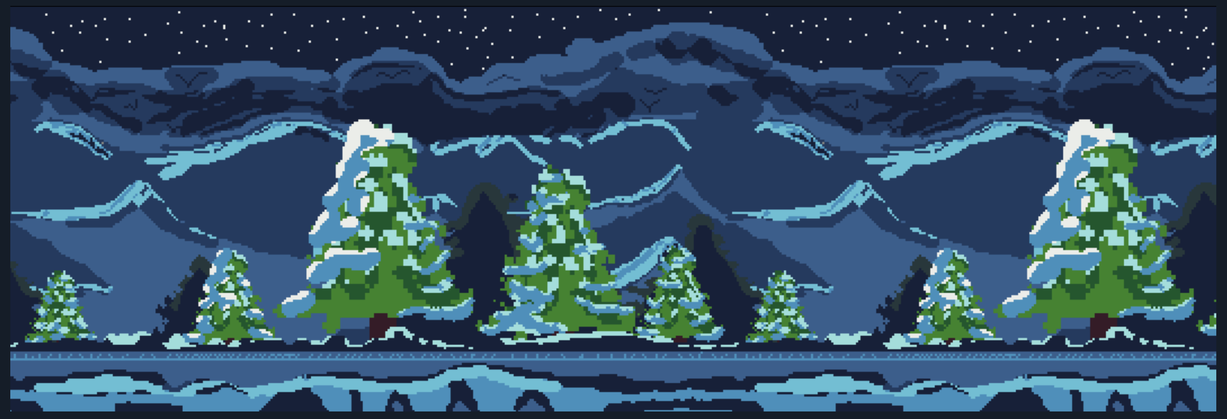
The next big portion of the sprites was the level design. The background is easily one of the most important things to have, as without it you have a very boring game that is not visually appealing. It was wintertime when I was creating this game, so the snowy scenery inspired me to do a wintery landscape. I started with a very greyscale, but over time the refinements turned my rough sketch into a landscape that fit my game perfectly. My color scheme was very dark and mysterious, and I loved that. Things were coming along nicely as I did some drafts of my background and the environment. Then I ran into the biggest challenge I had with creating my sprites: the tileset.

Initial Greyscale Sketches



Executed Drafts



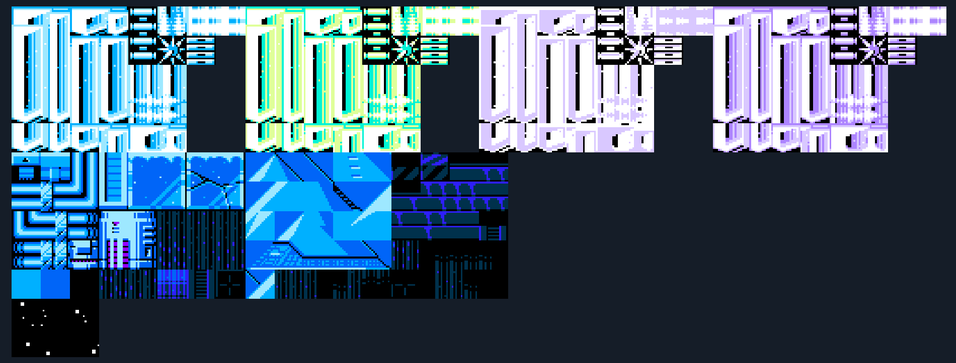


Tileset

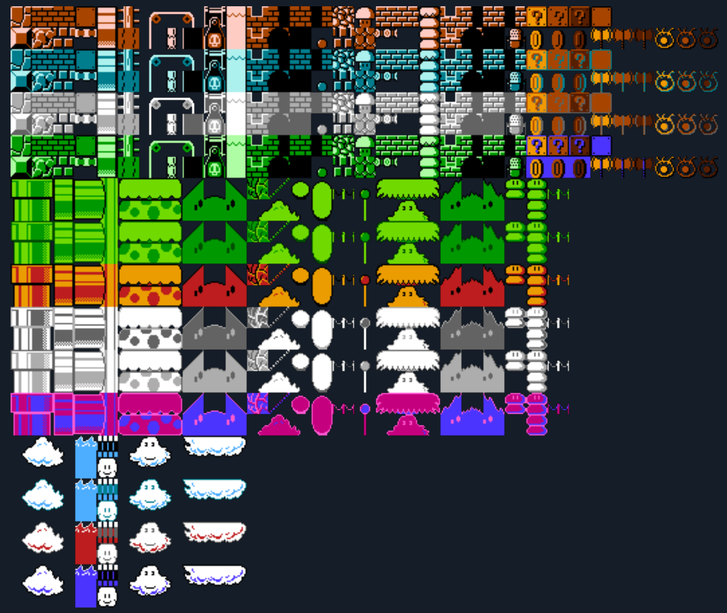
A tileset is what game developers use to cover up the generic boxes that are coded in so that your character can move back and forth and not appear to float mid-air. Luckily, Game Maker Studio does all the behind-the-scenes work for you with its auto tile feature, which would automatically put the correct design on the right square so that it all looks good. Here are some examples of what I am talking about.

To create my own tileset, I found a layout that would help me make sure that the auto tile feature would work properly. However, my first versions were on the wrong canvas size, so they weren't lining up correctly. I tried over and over to fix this by resizing the canvas and adding color to the gaps, but it still wasn't working. I took a break for a few days to focus on other parts of the project, and then on the day before Christmas I had my breakthrough. I decided to try and redo the entire thing to see how that would work, and it fixed all my issues. By starting over, the alignment issues were resolved, and the auto tile service was working perfectly. I could now move away from the tileset and finish up the rest of my sprites.

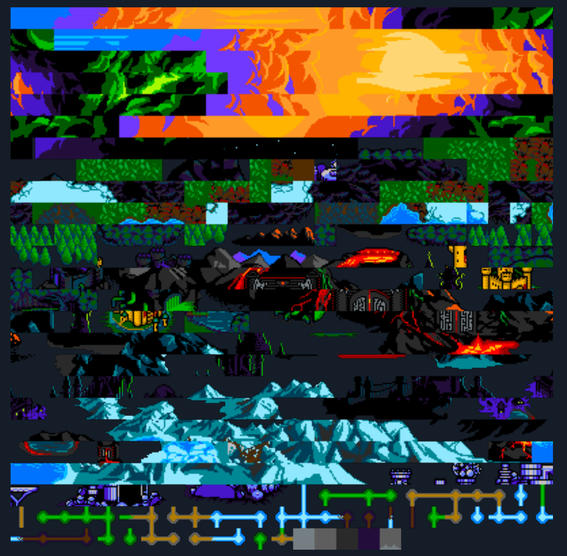
Mega Man Tileset Example



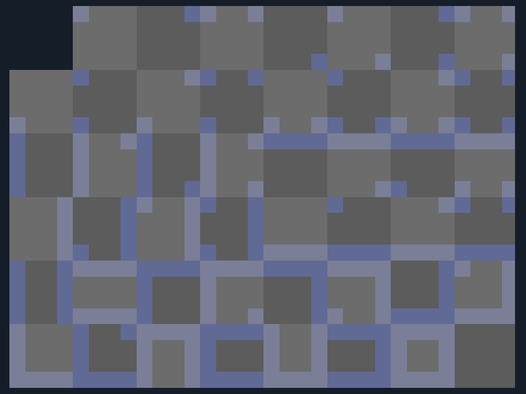
Mario Tileset Example



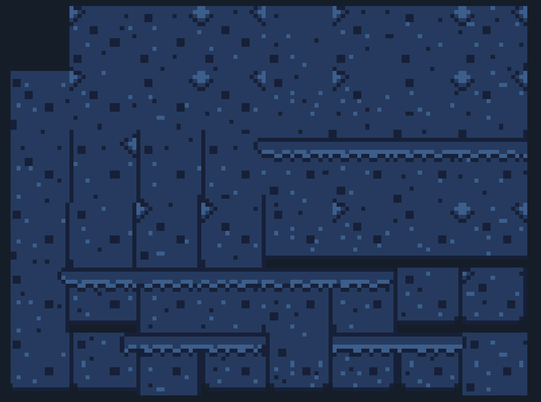
Shovel Knight Tileset Example



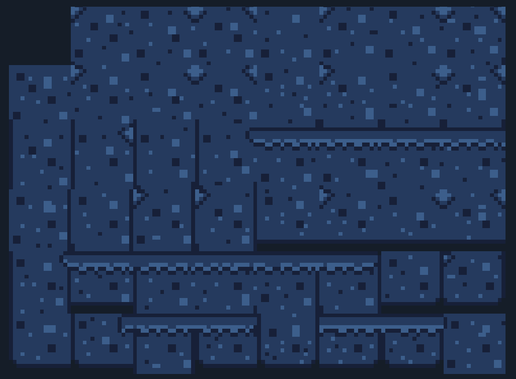
Tileset Template Used



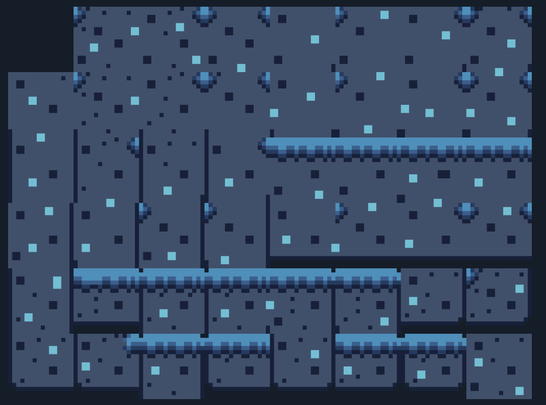
First Draft



Resized Version



Final

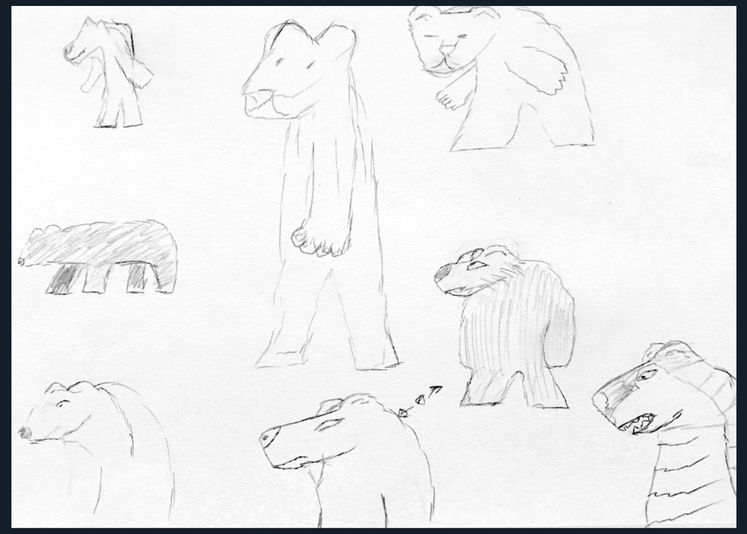


Enemies

Creating my enemies was straightforward as they weren't the focus of my project. To save time, it is common for game developers to create alternate-colored versions of the main character for the initial enemies. I followed this trend by creating the red "evil" rangers, but also wanted to stick with the snow theme. I solved this by making a polar bear! I did some simple sketches first, but quickly went to work in Aesprite to get it designed and figured out. Taking the bear from sketch to software was fun but bringing him into the game and watching him walk around on his own was a big moment for me.

Recolored Enemy Sprite

Sketches



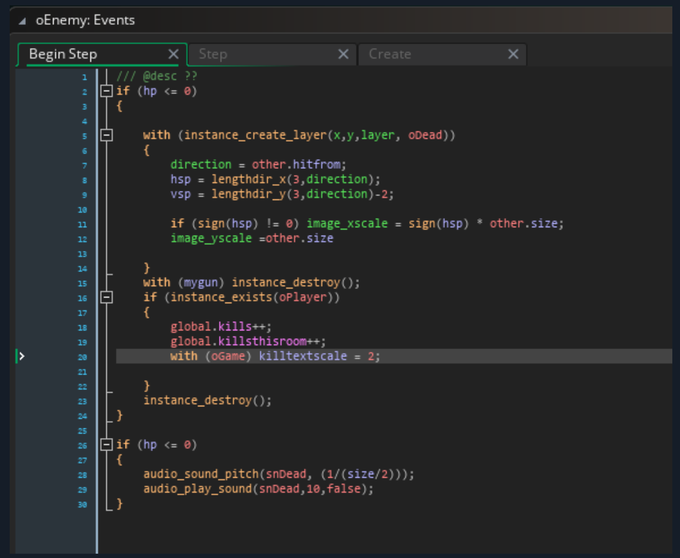
First Executions

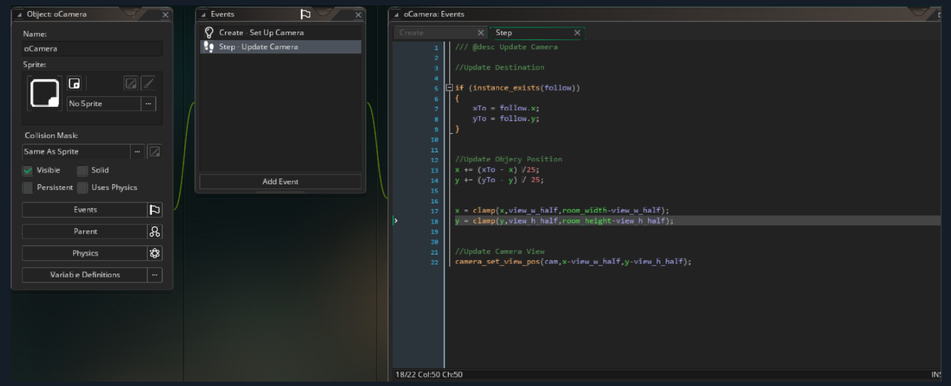
Final

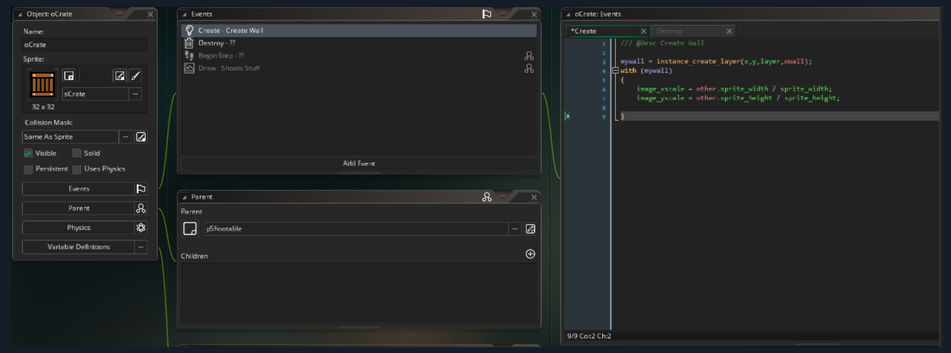
Building the Game

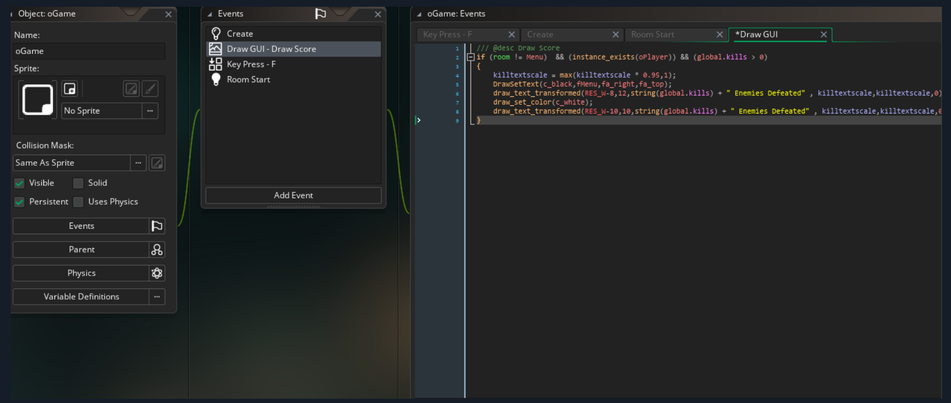
When it comes to coding, I have a very small amount of experience. HTML and CSS are the only aspects of code I have worked with, so I was worried that video game coding is entirely different. This turned out to be only partially true. I was surprised to see that there were some parts that did make sense, such as how it was written out. The logic behind it clicked in my brain, so as I was following along it was easy to keep up.

The only main challenge I had was having to make small adjustments to the movement and actions when I added in my sprites, but those were easy to fix. While not a big challenge, misspelled words were almost my downfall. It is very common in the world of computers and coding that if one thing is misspelled or out of place, the whole thing crashes. I saw this MANY times, and it was quite fun to dig through my code to fix those. Each time I finally noticed my errors and everything started working again, I could breathe a sigh of relief until the next error appeared. I quickly learned how to spot those errors faster so I could move on with the code.



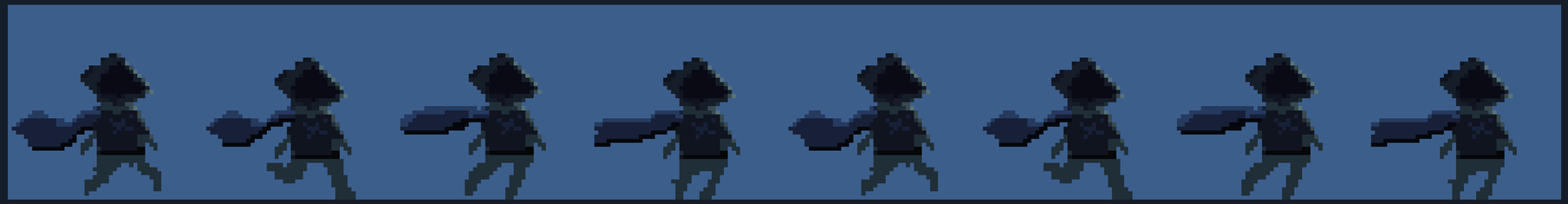


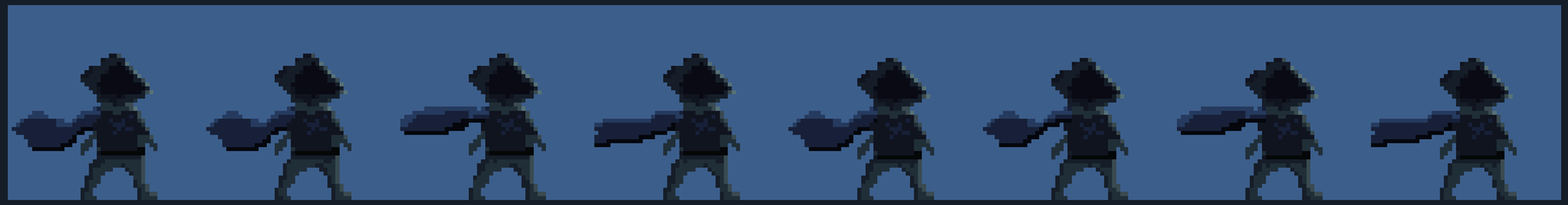




Animation

After getting my sprites and the bulk of the coding done, there was still one thing left to do. I didn't want my characters to simply slide back and forth, I wanted them to have life! To do this, I needed some animation. For my characters I stuck with a basic walking cycle, and then added in a jumping animation, as well as a dying animation. It was a matter of going frame by frame and making adjustments, even if the adjustments were small and not super noticeable. The biggest challenge was the multiple attempts to get it right, but I am glad I was able to try again if needed. Shown here are some of my initial idle and running animations from Aesprite. When you export your frames, you keep them all together and then Game Maker Studio will read through and play all the frames in order.
This method made getting the animations into the game easy, but it was still challenging to get them all to look normal while in gameplay. You can see my final animations in action with some links included later on!

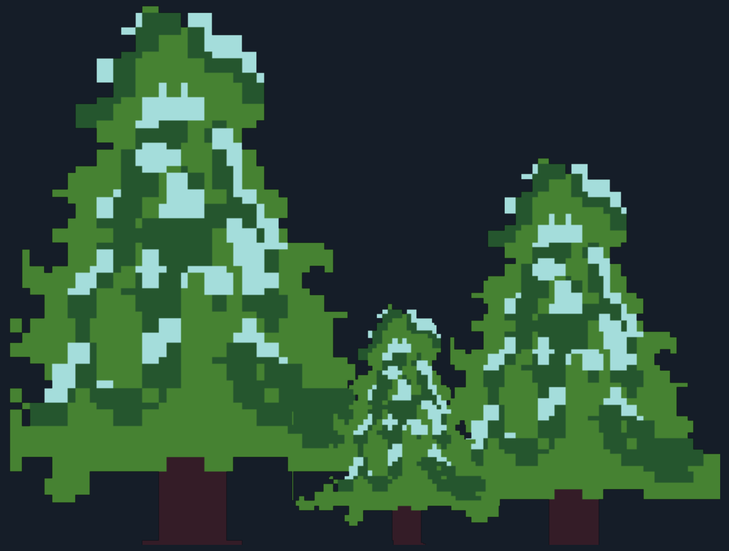




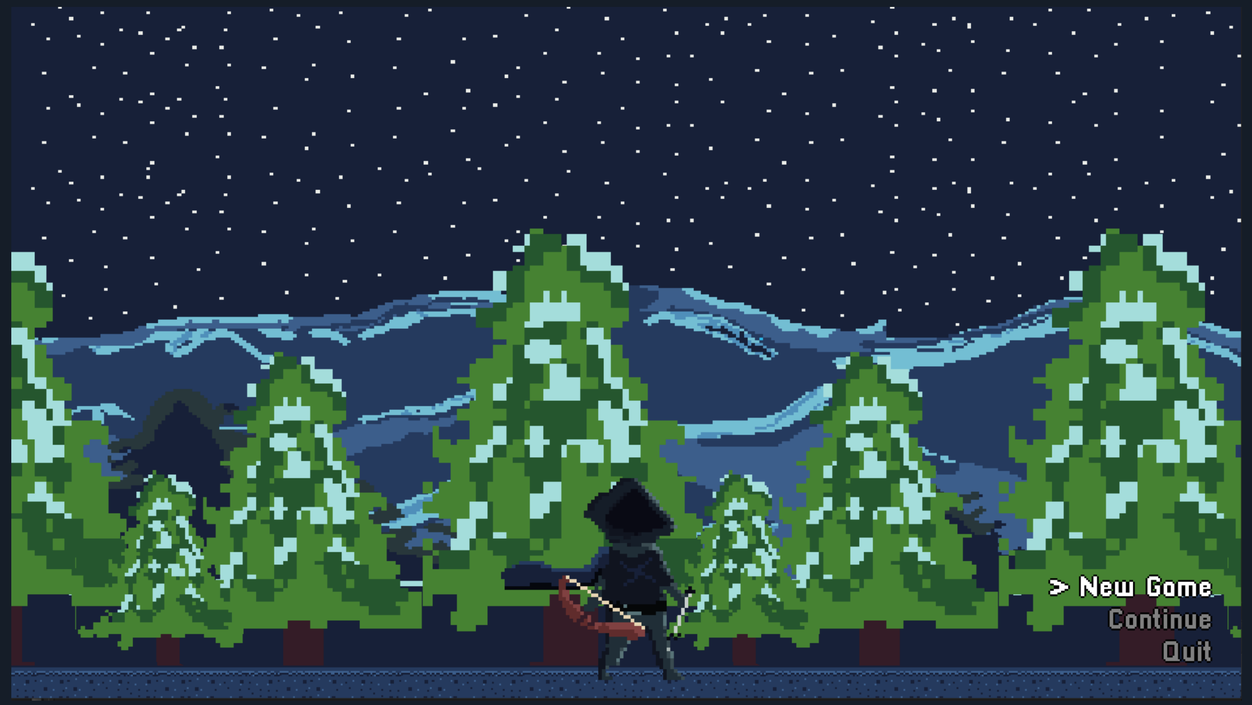
Refinements

With each of the base layers for the project, it really was just a matter of refining my project. Each day brought its own small challenges but being able to quickly work through them really made this whole process worth it. I am a big fan of projects like this because instead of trying my hardest to get a final product done quickly, I had the flexibility to leave things alone for a time, then come back to them. This helped me keep my sanity by not beating a brick wall without the right tools. Each time I came back to a problem, it was usually a quick fix. This whole process allowed me to continue to refine my designs while I finished up with the bulk of the coding. These refinements were all based on what the sprites looked like in-game, and what I could change to make them look better.

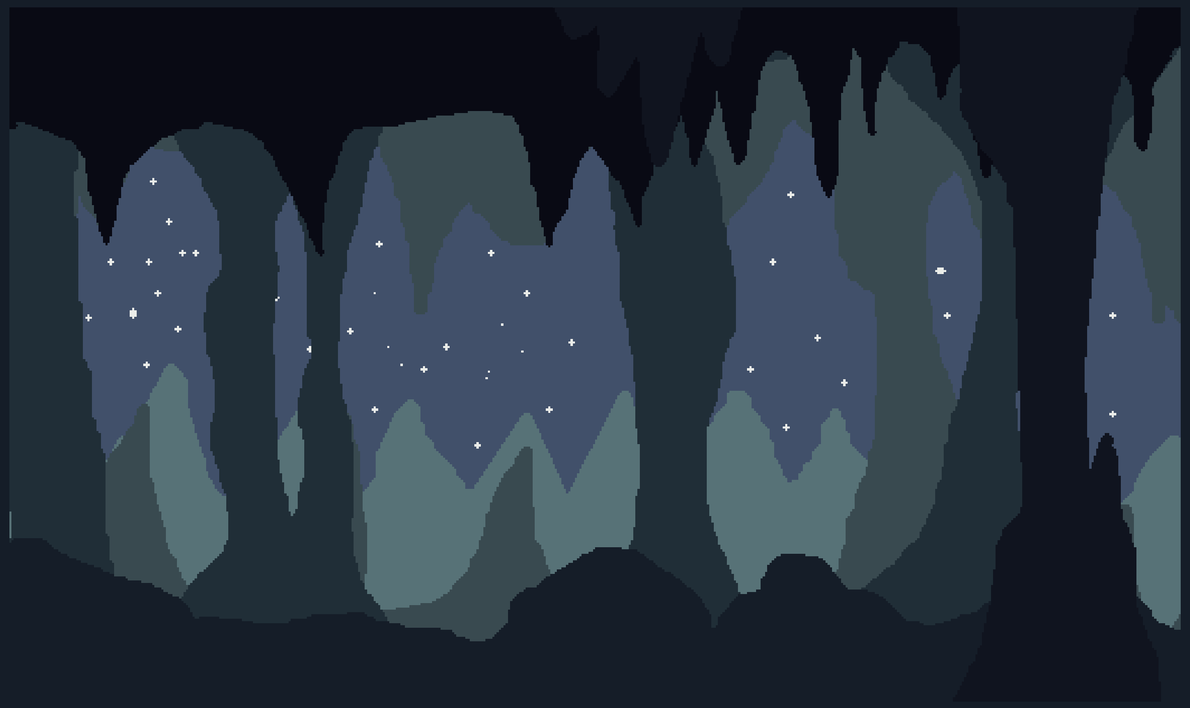
Refined Trees



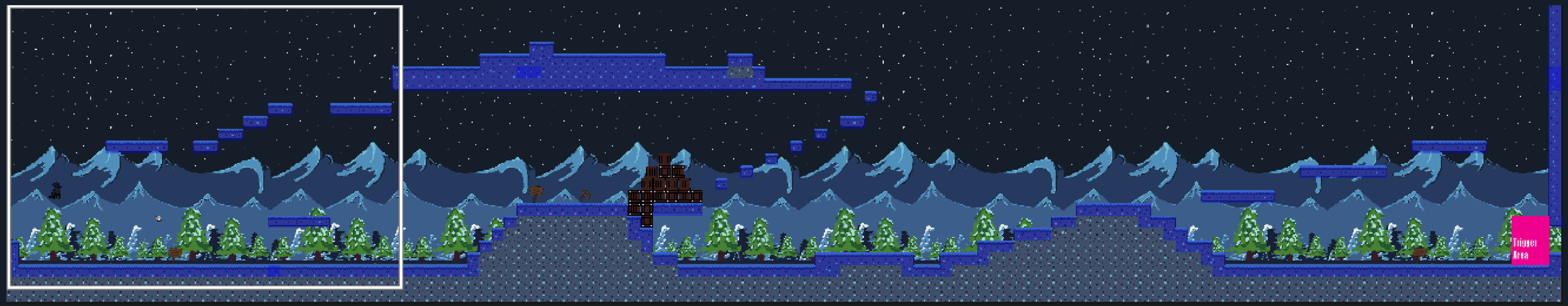
Menu



New Cave Background

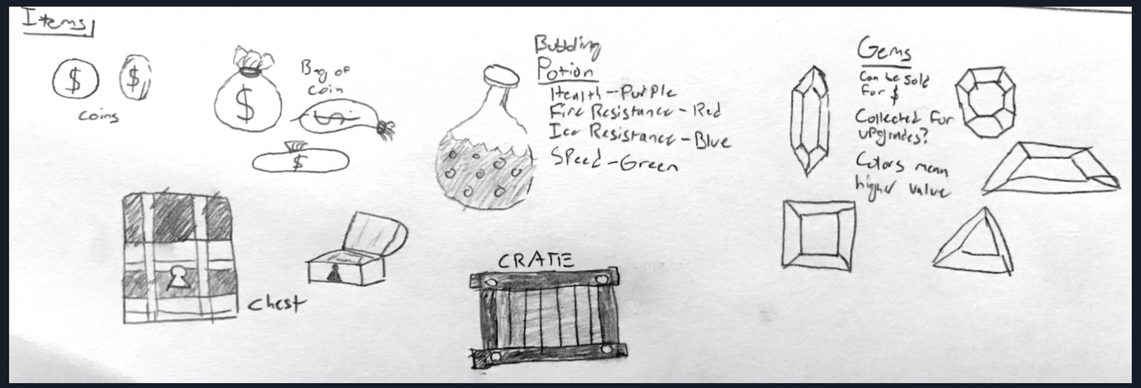


Level Building Refinements



Additional Executions

Additional Sketches



Main Weapon - The Crossbow

More Level Building

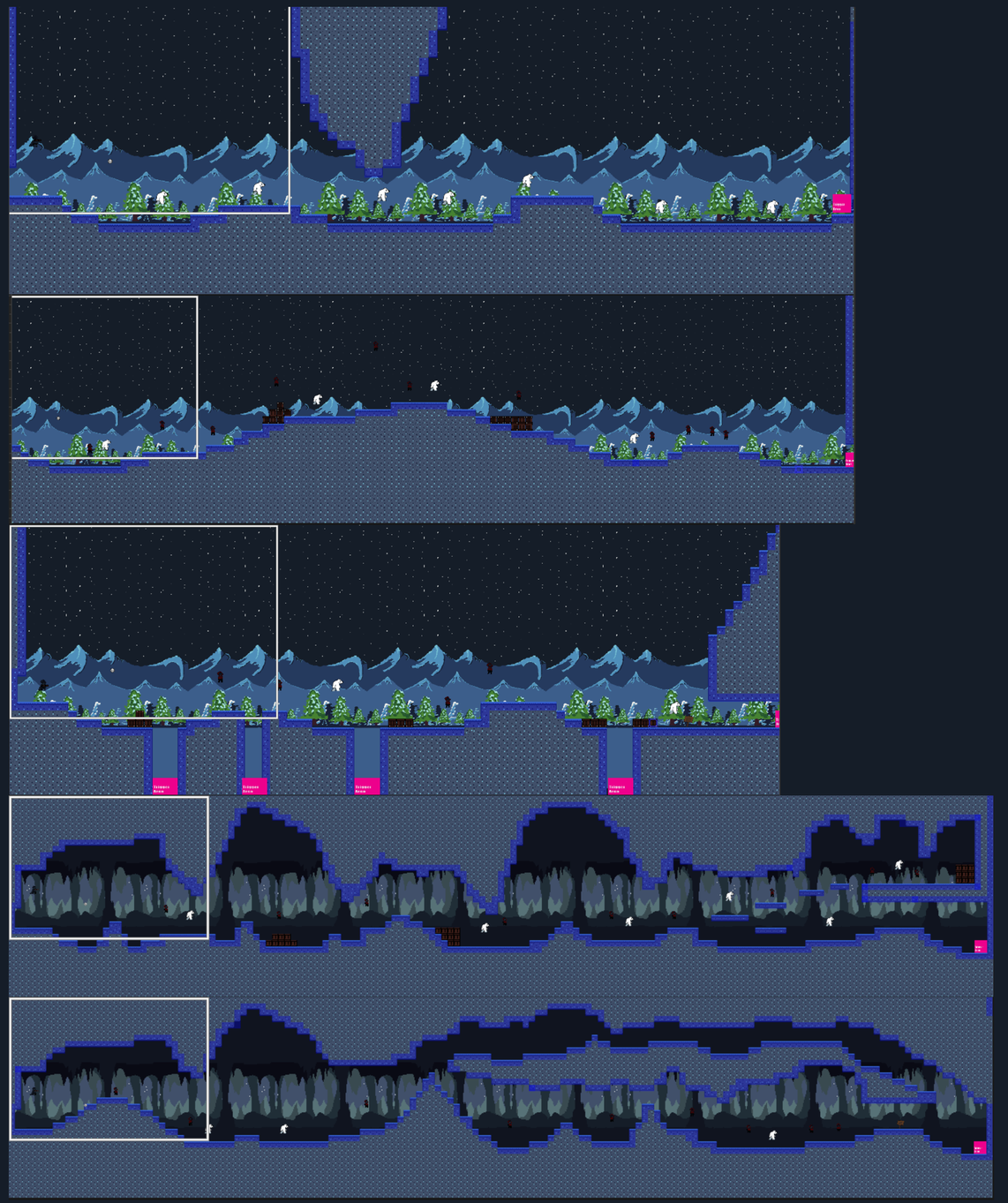
Room 2

Room 3

Room 4

Room 5

Room 6



The Final Game

When my 3-week timeframe was coming to an end, it was time to wrap things up and ensure that everything came together. With my newfound knowledge of coding, I continued to code more and more and build more levels. There were so many small details that I did not initially intend to include, but thanks to Game Maker Studio I was able to add in much more than initially planned. This included things like being able to use a controller, resetting rooms, and a counter that keeps track of the enemies you've defeated. I did not know how to do any of these things before this project started, but man it was fun to learn how to do it.

By the end of the three weeks, I built a menu screen, five playable levels complete with all my assets/sprites, and a closing screen to exit you out of the game. Once all the coding was finished, I worked through some hurdles to allow me to export the game through Game Maker Studio and share it with others. I was able to export it in a way that all one would need is a computer to download the game. Here is a link for you to download your own copy of the beta version to test it out for yourself, as well as a link to a short gameplay video! You can also check out the appendix for some highlights of the gameplay.

Link to Download

Gameplay Video

Conclusion

Without having any prior knowledge of pixel art or video game coding, I was able to design and build a functioning 2D platformer. It was incredible to see how my skills in design and a little bit of experience with HTML assisted in my ability to complete this project. I feel that without those things, I would not have been able to accomplish what I did in such a short period of time. I also really loved how I was able to take two passions: design and video games, to create this wonderful game. I loved every minute as I learned how to do new things, even though it wasn't always smooth sailing. In the future, I do plan on returning to the world of Ranger and continuing working on it. Games are not fully built in three weeks, and there is so much more that I would love to add. This project helped me to learn and grow in ways I could have never imagined, and I am ready and excited to continue this new journey.

Do you have a quest for me? I'd love to be your hero to conquer whatever challenge you may have for me. Feel free to contact me using any of the information below and join me for my next adventure.

Contact

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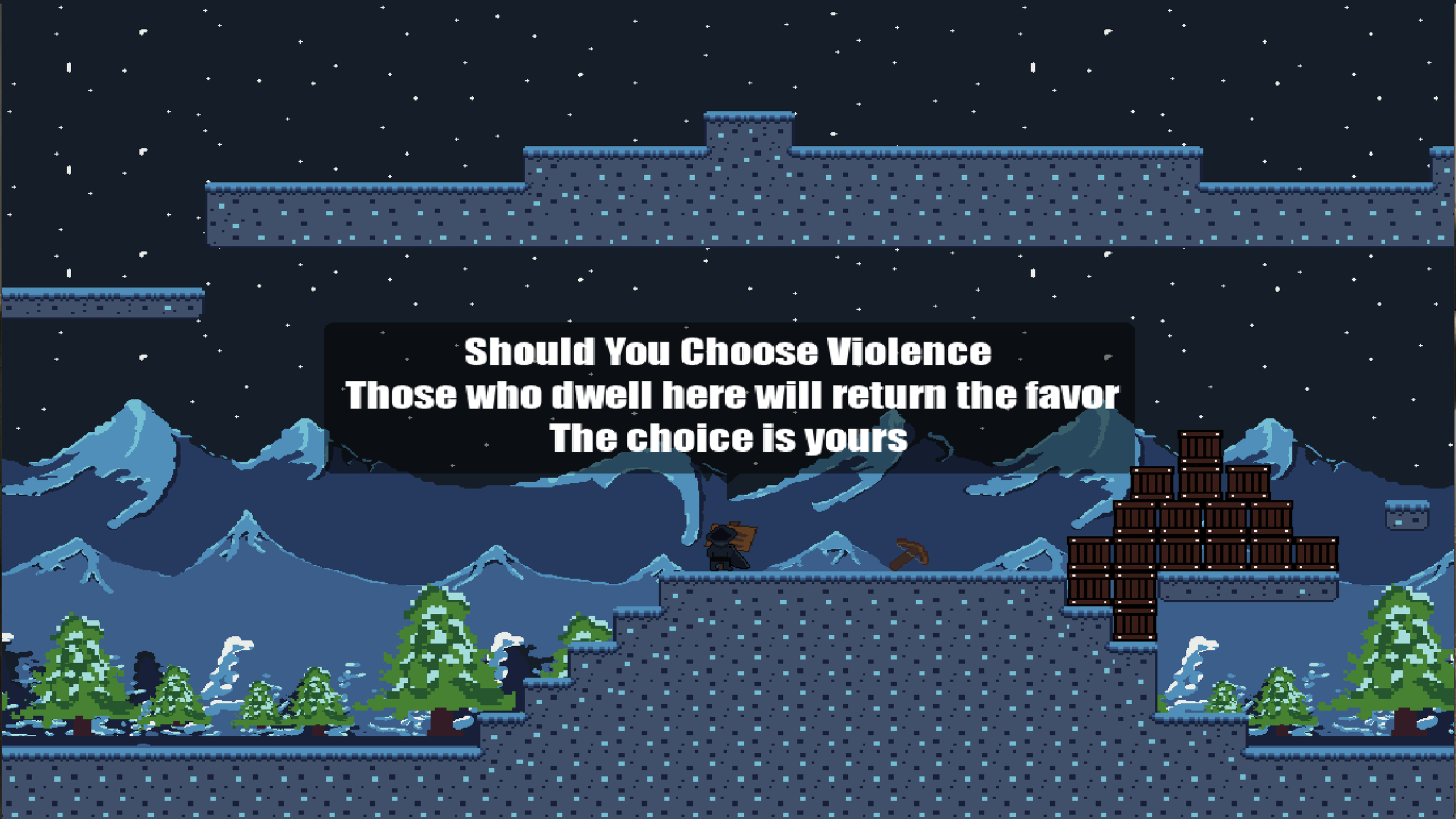
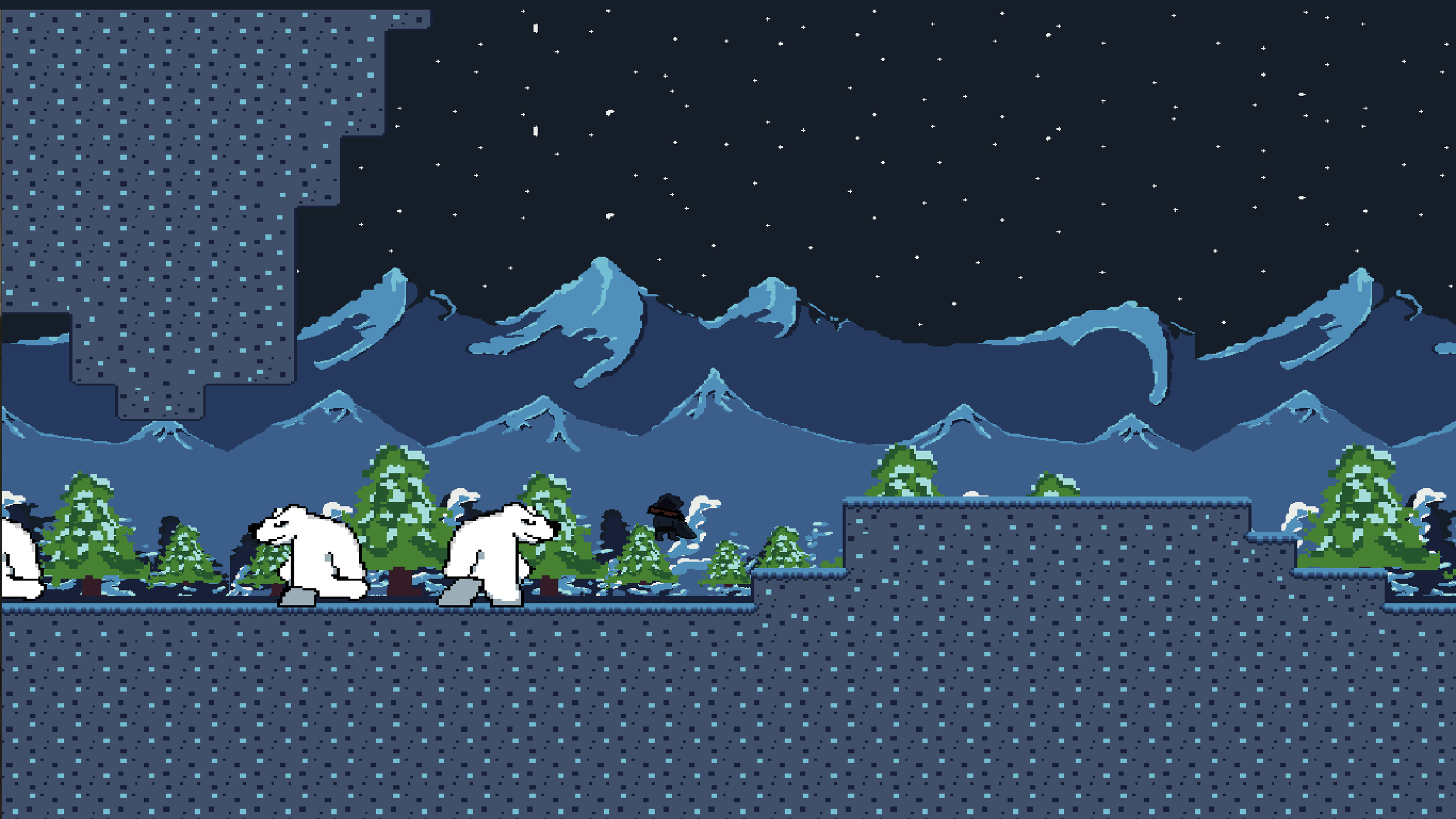
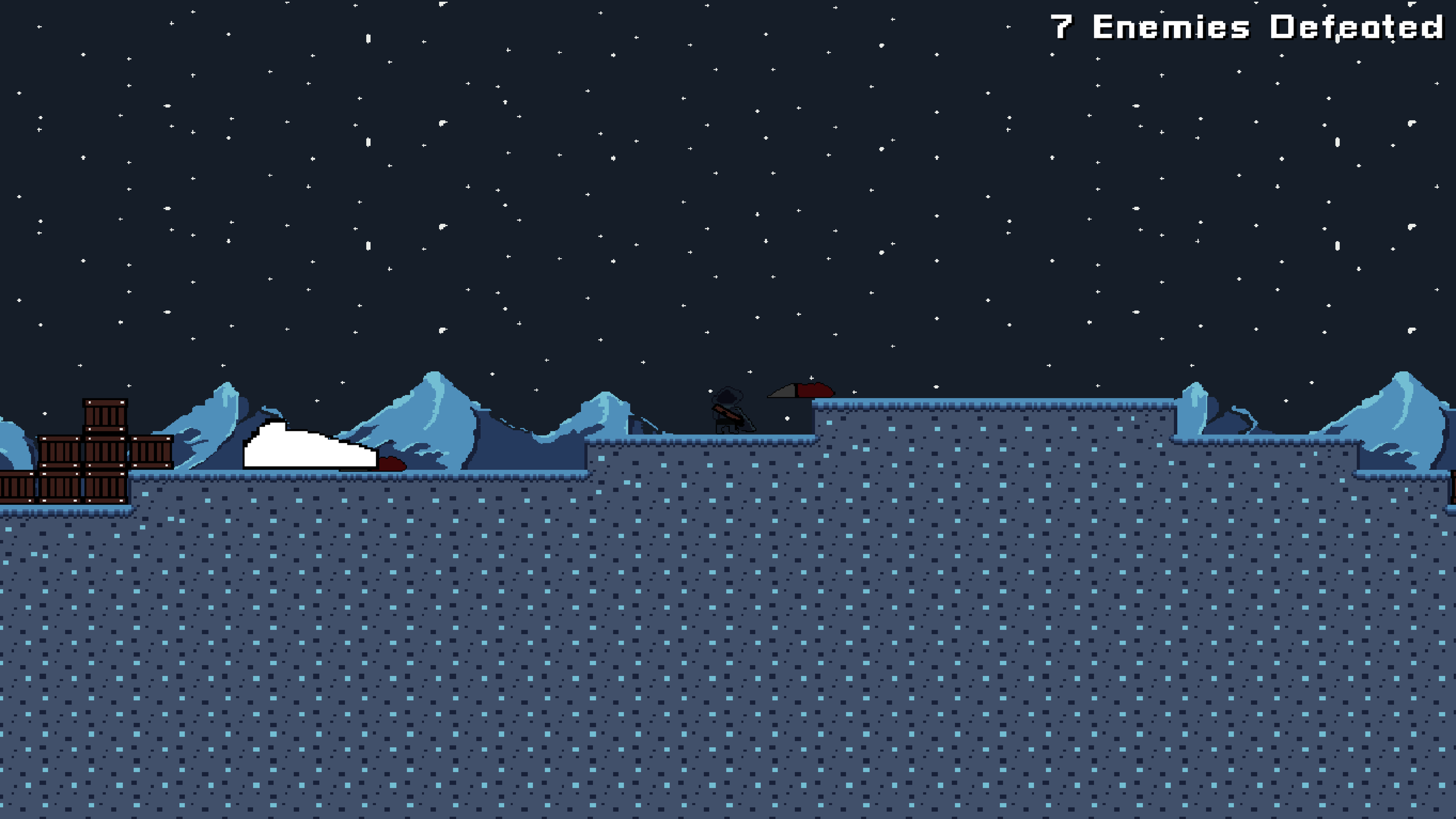
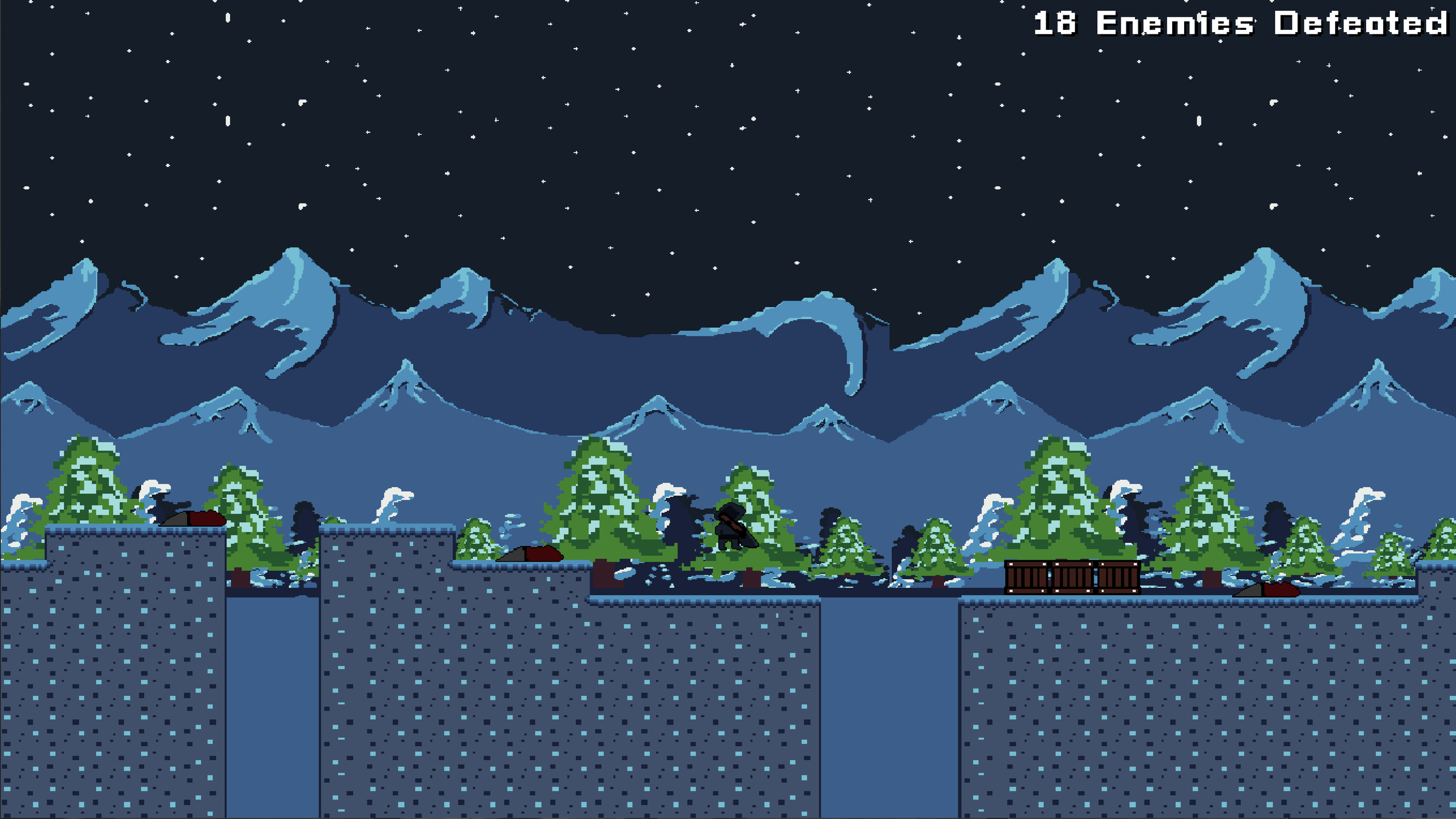
Instagram

Appendix - Game Screenshots


Should You Choose Violence
Those who dwell here will return the favor
The choice is yours




7 Enemies Defeated


18 Enemies Defeated


30 Enemies Defeated


The End.