

Developing a 2D Platformer in the Unreal Engine

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Introduction:

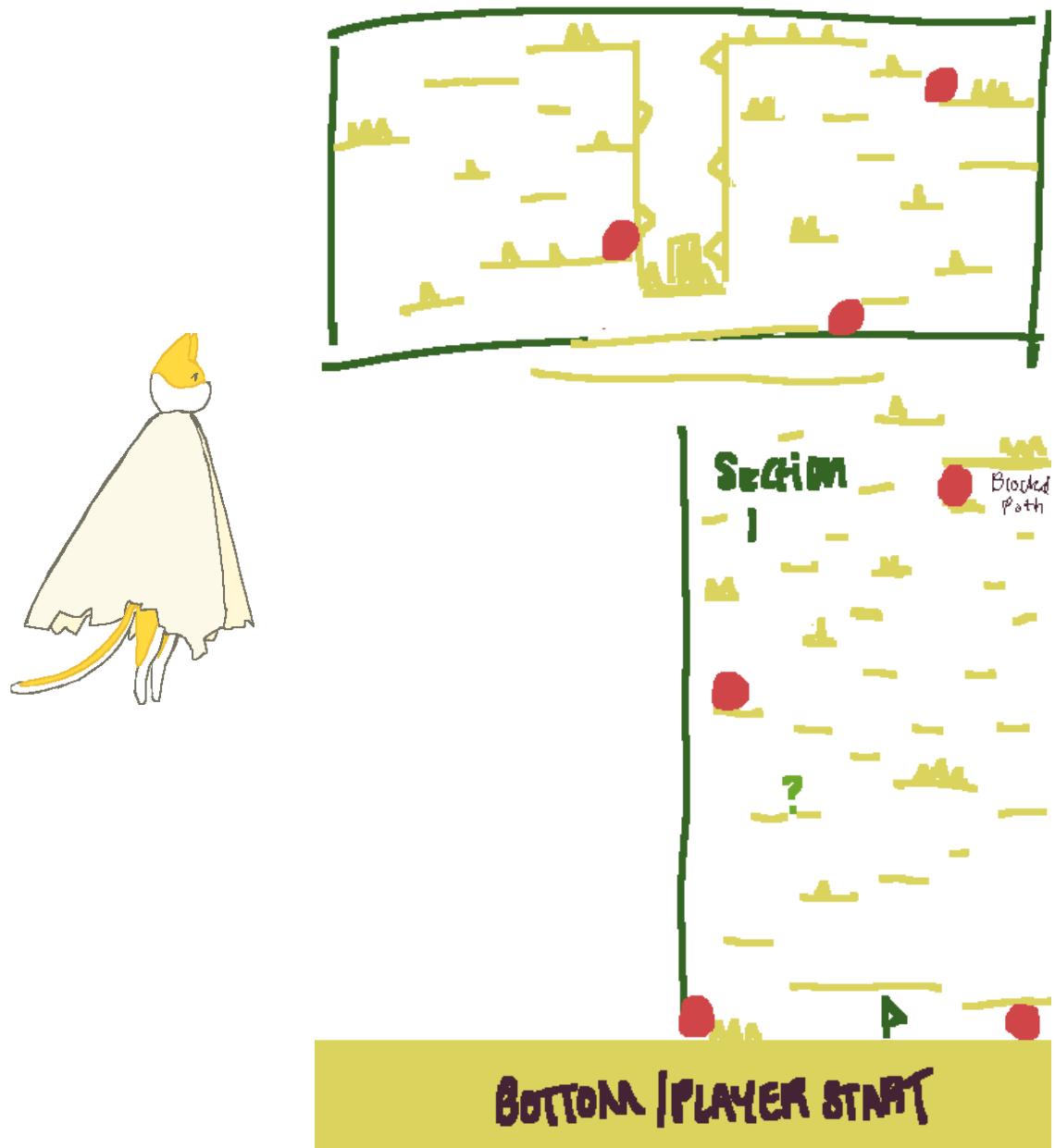
During the Summer semester of 2019 I was challenged to make an independent project that would allow me to create a 2D platformer video game in the Unreal Engine. Given the opportunity I took the chance to learn the developing process of video games. I applied my coding skills and my art skills into creating my very first video game.

Motivation:

Video games have a very important impact in my life and my goal upon joining the Computer Science department at CSU was to gain the skills necessary to be able to enter the video game industry. Whether independently or through a company, my ultimate goal from college is to create video games that people can enjoy. Needing to take the first steps into creating a video game was tough without direction and this project provided the direction and tools necessary to learn how to develop a video game.

Methodology:

To start the process of creating this game, I had to do some research about the Unreal Engine, and basics to game developing. I then began to create some concept art for the game:

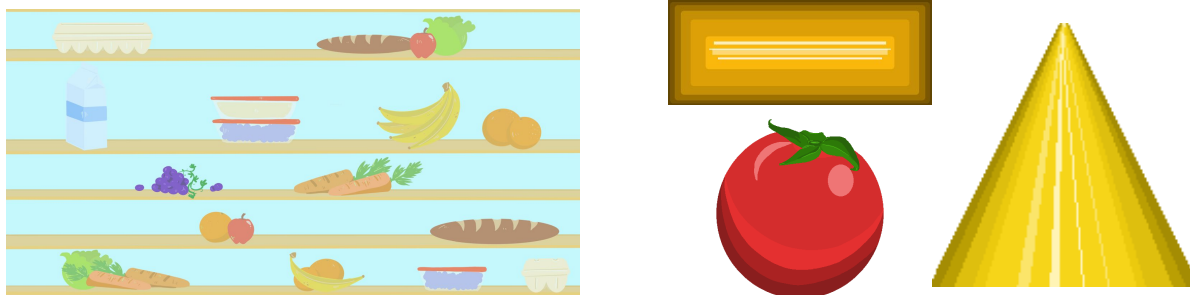


creating the initial design of the main character, some ideas for the level design and some ideas for a 'story'. After creating those I got to work creating the actual level, this involved designing the background and the environment as well as finding suitable background music. Next, I worked with the HUD (Heads Up Display) and created a basic health system, the main menu, and some additional HUDs; one for the end game, one for a game over and two bonus frames.

My final step was to create the goal, implement the main character sprite and some extra environment details with sound effects. This sounds easy enough, however, I ran into a few bumps in the road; presenting me with challenges that I wasn't ready for as well as some that I simply had to overcome by learning a bit more.

My first challenge involved the learning curve of the Unreal Engine. I had to really play with the engine a lot, at first, completely separate from the file of the game. This led to me creating a 'dummy' game, one that started to look like the one that I have now, however it didn't work right at all and it was filled mostly with garbage blueprints that I made for the sake of learning. After trashing this project I moved on to carefully making the current game.

Immediately after, I moved on to creating some environment:



After creating this environment, I really felt like I could make something with it. While small, another challenge that I ran into was creating a level design that felt doable, but not necessarily easy. Admittedly, it is not a difficult game, and at that point I hadn't created the goal of the game, while I knew what the objective was, I hadn't yet thought about what that could look like. But I moved on and started to work with the damage and health system. The challenge that I ran into was learning how to create a HUD, I ended up creating a very simple heart in the corner of the screen to represent the player's health:

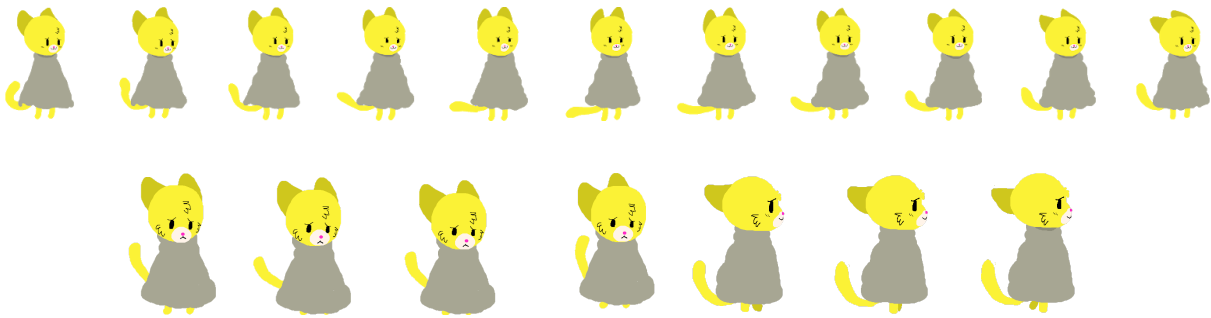


and I made the spikes a hazard in the environment.

The next goal was to create a sprite, this ended up being one of the most frustrating parts of the experience. The challenge was; I was unable to create a sprite that worked for my purposes, without a background in animation I needed to find someone who was willing to be commissioned for the sprites. Initially I commissioned a friend of mine; this was an issue due to my friend's inexperience with commissions and issues with technology. The problem here was that it took a lot of time, without the sprite I felt dissatisfied with the game. After adding the background music and some sound effects the only thing I felt it needed besides a goal was the sprite. Three weeks later I cancelled the commission and quickly found another friend of mine who was available to create the needed sprite sheets. While waiting for this sprite, I proceeded to work on the issue of the goal.

The first thought I had with the goal was to exit through a simple door at the top of the level. However, not wanting the game to be too easy, with a suggestion from my Father, I created four doors total, one of which is the exit of the fridge, one that was a dummy door that simply bugged the player every time they touched it, another was a door that is located in a difficult place that makes the game start over, the final door was one that leads to the freezer, which is a short bonus level. This created another challenge for me; since my initial thought was

to only have one level, I didn't bother looking up how to create another level. So I had to study a bit more, after some issues of dealing with the doors going to and from the fridge and freezer, it began to work. All of the pieces had come together, I finally received my sprites and implemented them, and with this I considered my project finished:



However I do have a small wish list of things I may want to work on in my own time. I would like to implement some type of enemy and fighting mechanic, I decided to not put in enemies into the game during this time period simply because of my lack of understanding in AI. I would like to learn a bit more about AI before I try to implement something like that into the game. I would also like to put in more of a story; when thinking about what kind of game I would like to create I really thought up a detailed story and outline of what the game would look like. This was done without knowing how to even begin to make the game so a lot of it was scrapped due to time constraints. With that story I would like to implement the enemies, some cutscenes and a few more levels, but that is something for the future.

Takeaways:

I learned a lot during this process. I learned about the Unreal Engine, and how to apply my coding skills to the creation of a video game. I learned just how many people the creation process requires, the developer, artists, and musicians and I believe it could take even more if I

were to get testers and promoters. These tools that I've gained will help guide me into my next steps of learning more about the development of video games.