



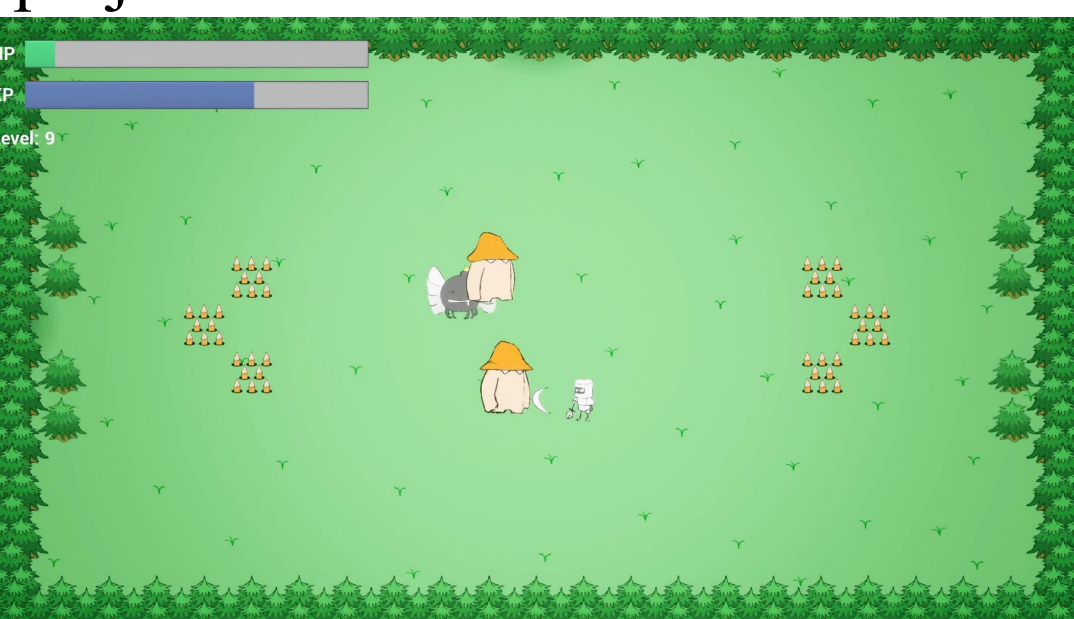
Introduction

For our project we created a 2D video game using Unreal Engine, a heavily 3D-focused game engine. More specifically, our goal was to create a short demo that includes a playable level.

The game was planned to be a top-down action-adventure game akin to *The Legend of Zelda*. The game would have unique features to differentiate itself such as a shoulder charge attack, a dodge, and the ability to throw enemies at each other.

Background

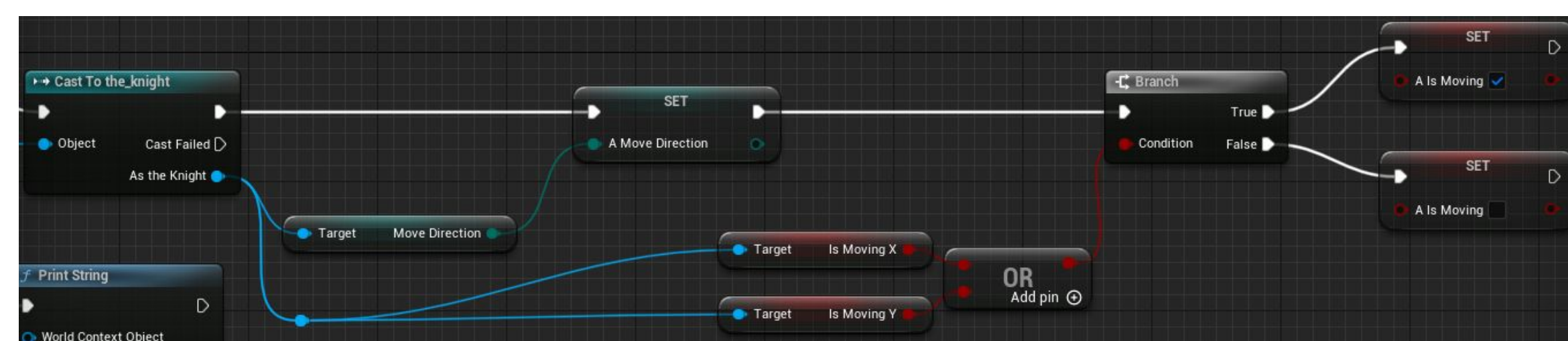
Hand-Drawn Hero started development as a roguelike game. The original developers were David Michel, Austin Edwards, and William Spear. David and James Royals would continue the project with a new vision.



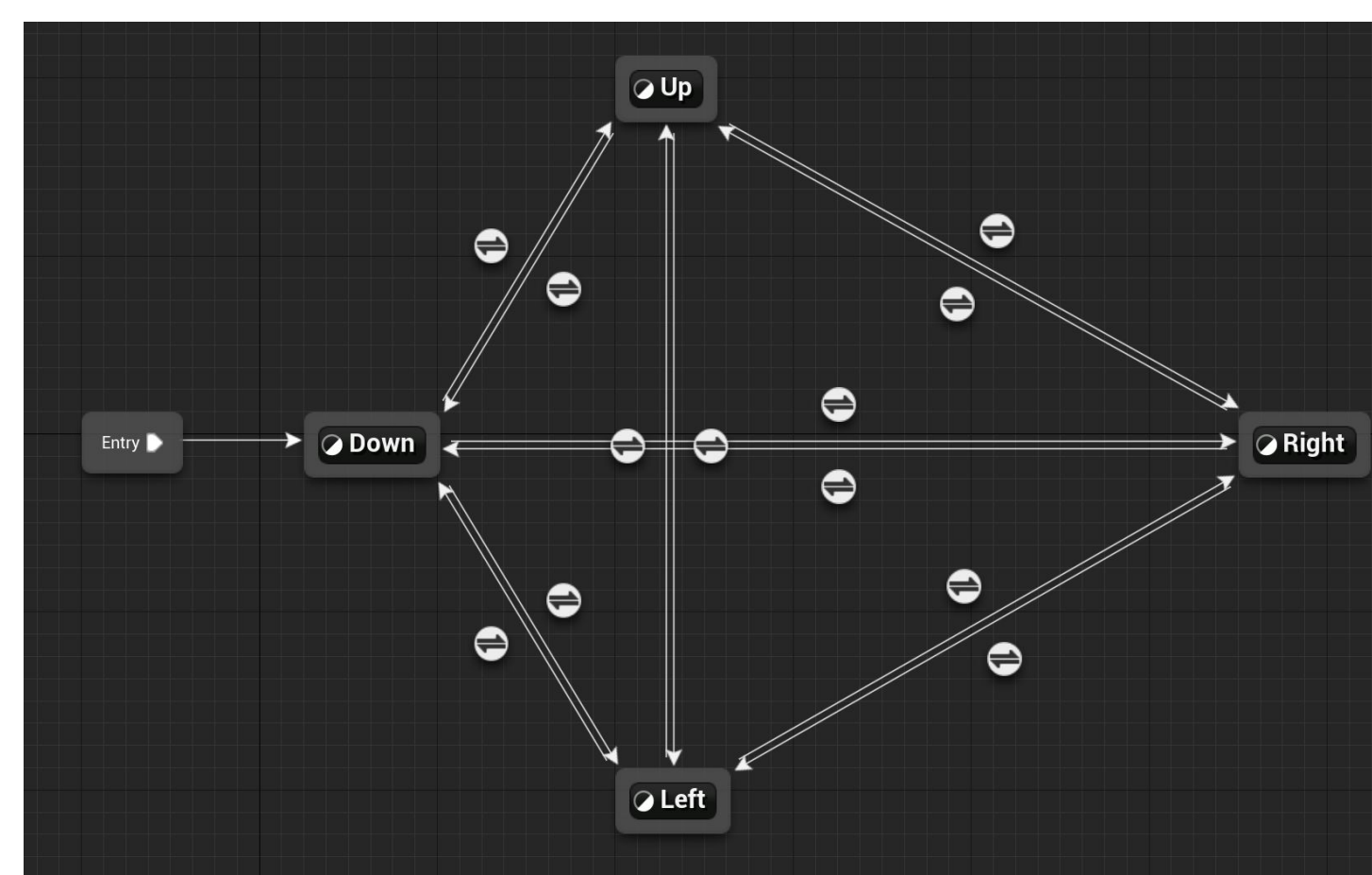
1. HDH Prototype

Objectives

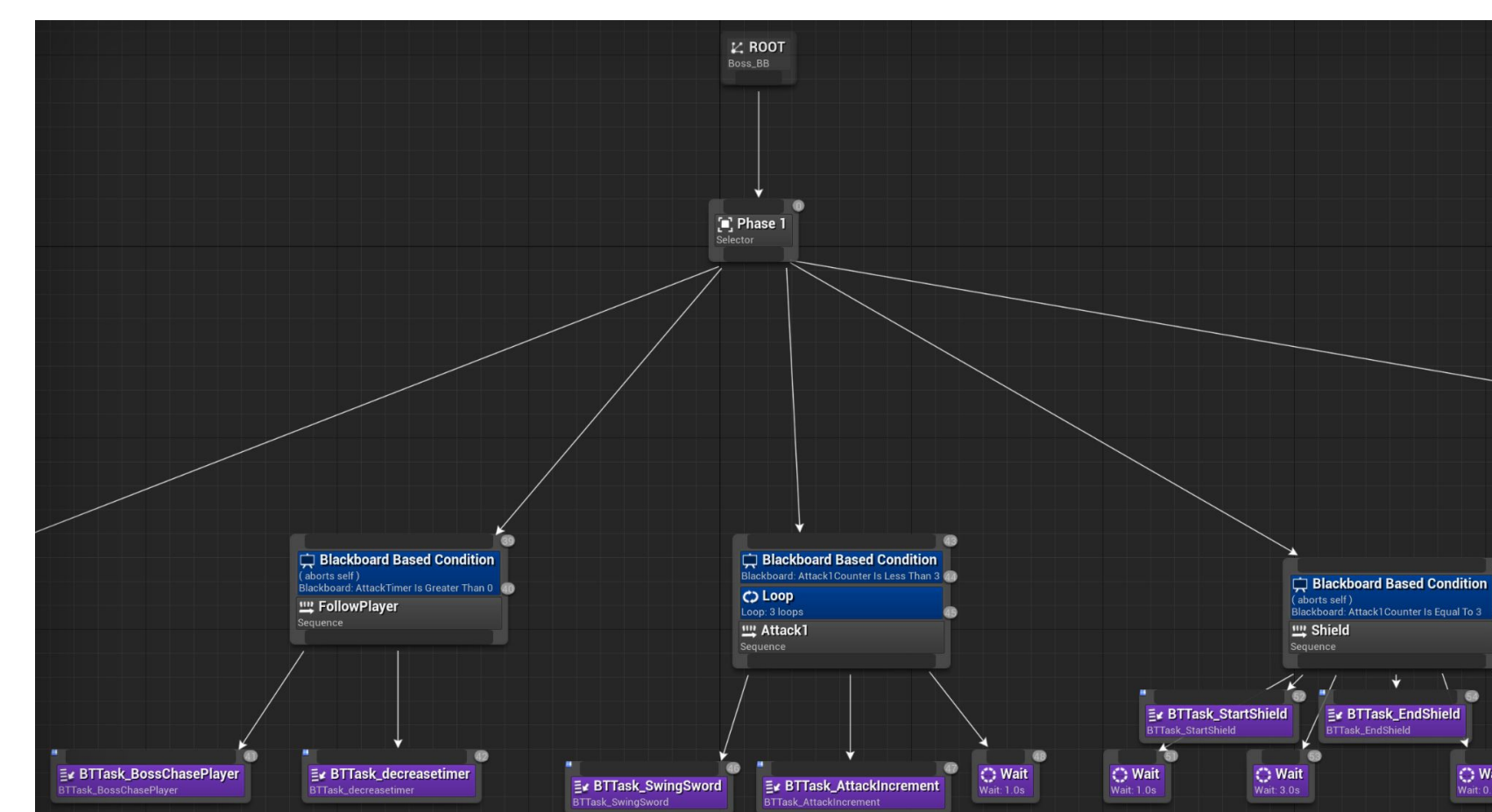
- Create a playable character that can do more than the previous iteration
- Create an entire level that the player can complete
- Create a sort of overworld where the player can interact with non-player characters (NPCs).



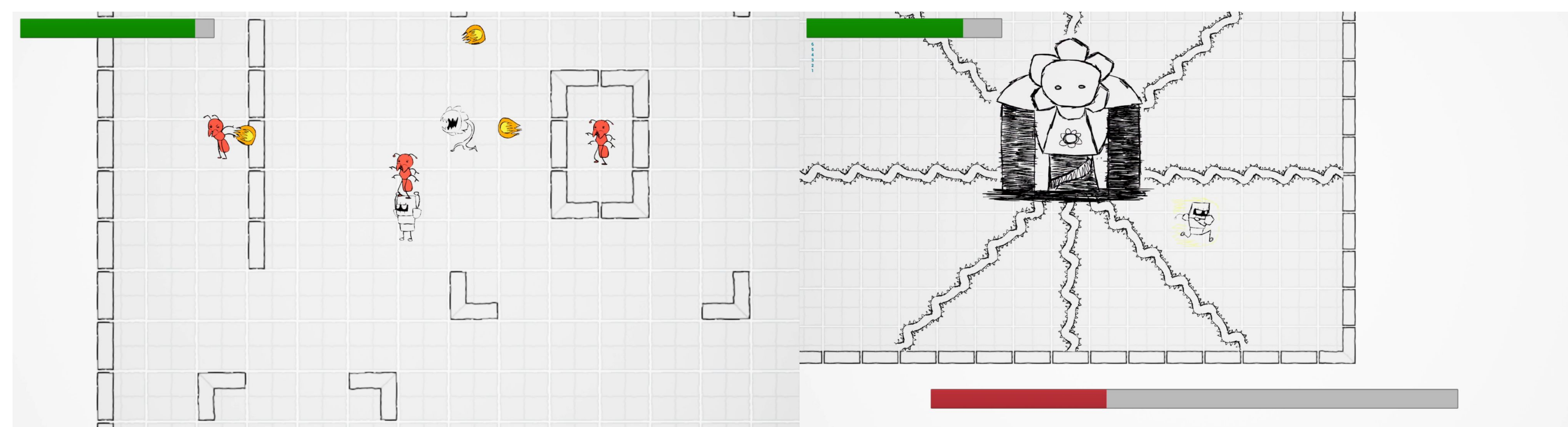
2. An example of Unreal's Blueprints



3. Sprite Animation State Machine



4. Boss AI Behavior Tree



5. Screenshot of Test Stage

6. Screenshot of Boss Fight

Methods

- **Unreal Engine 5.1:** Epic Games game engine used to create games like Fortnite and many other AAA titles; A staple in the gaming industry
- **Blueprints:** Unreal Engine's built-in visual scripting language that we used to program everything in the game
- **Pixel 2D Top-Down Engine:** Plugin for Unreal Engine to facilitate 2D development
- **Sprite Animation State Machine:** Included in the Pixel 2D plugin; state machine that handles sprite animation in Unreal Engine

Development Process

- **Changing Design:** It was decided that we would change the levels of Hand-Drawn Hero from procedurally generated mazes to more linear dungeons designed by us.
- **Designing a Dungeon:** Involves conceptualization, sketching and prototyping, asset creation, implementation, testing and iteration, and polishing and optimization.
- **Implementing Enemies:** Enemies from the first version were almost complete, but we needed to port them over to be compatible with Pixel 2D.
- **Implementing a Boss:** The previous version did not have a proper boss at the end of the level. We managed to create a playable boss fight.