

# Assignment 1 Report

2D Platformer Game

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## Development

Since I have built similar projects before for various other purposes, my goal was to fulfill the criteria of the assignment, but with my own knowledge, not following a tutorial. The first task was to create a physics based character controller, which used the input manager with the rigidbody to give the player velocity. A Spherecast is used to determine if the player is grounded. Coin and Enemies are then created, and use a collider based approach, which modifies the players score upon collision. UI elements were then added in order to keep track of the players current score, as well as a game over screen detailing the player's score and a restart button. A GameManager is then created to control the gameplay loop and a trigger is added under the level, to end the game upon falling out of the playspace.

## Challenges

A major challenge with development was the jump mechanic felt too floaty and unrealistic. This was not an essential change, but was one I wished to undertake. Since most games of similar style utilize button holding to increase jump height. To accomplish this, rather than modify the initial jump, the descent was modified based on the direction of the current vertical. When the player is descending or the space bar is released, a modified gravity effect is applied to the player, creating a much smoother and controlled jumping mechanic. Another challenge was getting the enemies to switch directions smoothly, as the earlier iterations would stutter when moving too fast, due to scalar distance being tracked always being positive. This was simply remedied by multiplying the scalar value with the direction being traveled.