



2D Adventure Game

Senior Project I

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Introduction

- Understanding the game development process.
- Expanding our knowledge post Software Engineering.
- Reinforcing and learning a new language: C#
- Working with advanced software such as a game development platform.

Choosing a Game Engine

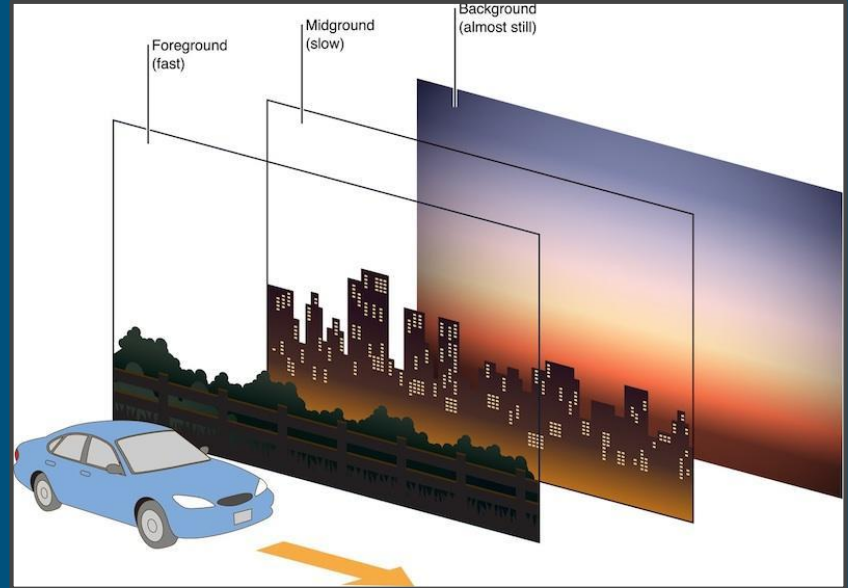
- Using OpenGL to build from scratch
 - Too low level and complex.
- Using a Game Development Platform
 - Reduces the need to focus on compatibility concerns with multiple platforms.
 - Provides a user friendly experience.

Unity vs Others

- Some are too simple
 - Require little to no programming at all.
 - Use their own proprietary coding language.
- Unreal Engine
 - Focuses on game logic
 - Excessive for 2D, usually used for much larger 3D games.
- Unity
 - Works well with smaller projects and 2D projects.
 - Uses C# or Javascript as its main language.
 - Allows compiling to multiple platforms both mobile and desktop.

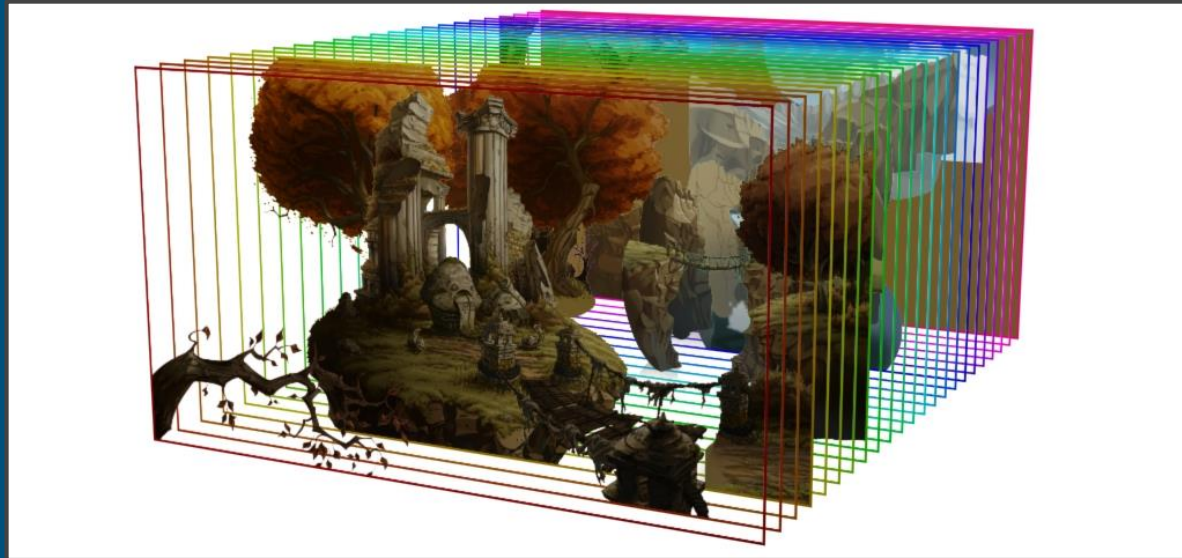
Illusion of Depth

- Parallax Scrolling
 - Uses multiple background layers.
 - Each of the layers move with the camera at different speeds.



Illusion of Depth

Each individual piece of the background and foreground appears on a different layer.



Shaders

- Surface Shaders
 - Used to simulate realistic lighting on materials.
- Vertex and Fragment Shaders
 - Used to show simple and complex effects and other postprocessing effects such as the flame itself.



Camera Manipulation

- Controlling how the game camera reacts.
 - A single player vs multiple players.
 - Showing the player enough information.
 - Reacting to certain events such as unlocking a faraway door.

Camera Manipulation

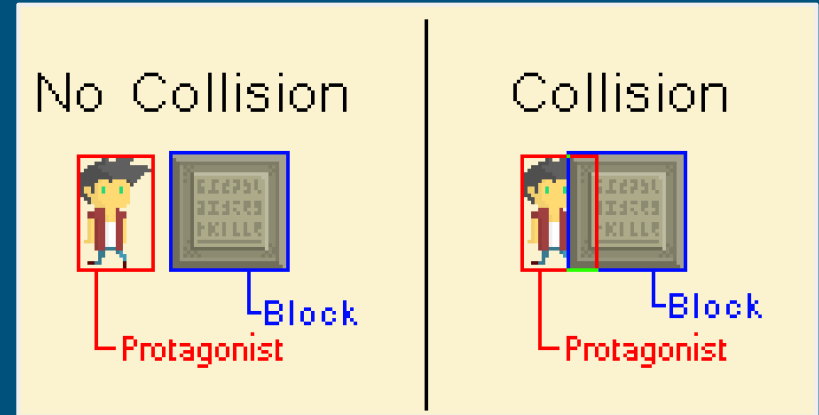
BattleBlock Theater:



2D Method

Collision Detection

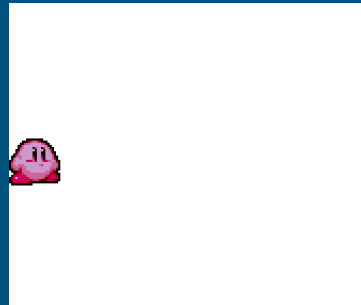
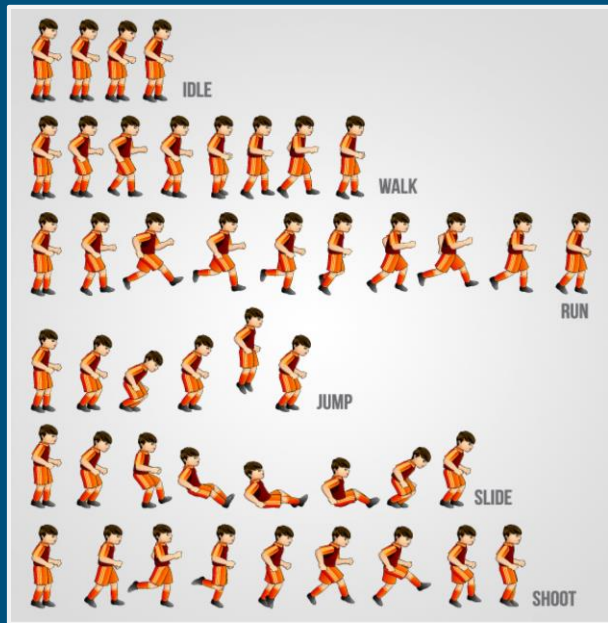
- When one collider makes contact with another object's collider.
- Shooters require precise collision detection.
- Less frustration for the player.



2D Method

Animation

- Can be done by changing the sprite image at constant intervals.



Sound Capability

- Plays an integral part in any game as it affects the mood of the player at a conscious and subconscious level

Base Game Features

Game Manager

- Controls the state of the game and is referenced by other components of the game such as menus, item pickups, or opening doors.
- Opening doors, NPC interactions, item pickups, or puzzles solved.

Text System

- Displays text to the player such as the game's story, warnings, or events.

Base Game Features

Player & Enemies

- Main character's abilities.
 - Jumping, crawling, climbing, or attacking.
 - Unlocking new weapons or abilities such as double jumping.
- Enemy AI
 - Scripted AI
- Incremented Difficulty
 - Determined based on location and abilities unlocked.

Base Game Features

Save System

- Required in order to save the player's data locally.
- Must correctly save the player's progress.

Player HUD

- Displays important information at a glance without opening a menu.
- Usually includes a minimap, health, and ammo.

