Research Project Thesis – First Person Platformer

Abstract/Summary

Recreate the movement system of the video game Titanfall 2 as a time trial first-person platformer video game. The player with be able to walk, run, jump, double jump slide and wallrun. This project will also entail a level creator and editor and a leaderboard for best times for both pre-built (developer made) and user created levels. This game will utilize the control schemes of keyboard and mouse, as well as controller (360/XBO controllers). This project will also use a server hosting a database for levels and best times that the game will communicate with to download necessary leaderboards and upload new best times done by the user.

Tools and Software

* Environment
  + Desktop
    - Windows 10
    - AMD FX 6300 Processor
    - 16 GB Ram
    - NVidia GeForce 7400 GPU
  + Laptop
    - Windows 10
    - Intel Core i7 7th Gen Processor
    - 12 GB Ram
    - NVidia GeForce 940MX
  + Server
    - To be decided through further discussion/research
    - Windows Server or Linux Server
    - Physical or Google Cloud Server
    - Utilizes a MySQL Database
    - Online Accessible
* Software
  + MySQL
    - Database used for Leaderboards and program queries
    - Will need to research how to have the program connect and query the database
    - Database list will contain Level tables that will describe Player times in order of fastest and will only contain 5 listings.
      * Time
      * Player Name
      * Date
      * Level Name
    - Level Tables will be an updated table listing received level creations by users and developers.
      * Level Name
      * Created by
      * Date Created
      * Date Modified
      * Linked to best times table(described above)
  + Unity3D
    - One of two video game engines to choose from for this project
    - Most knowledgeable in
    - C# will be the programming language used
  + Unreal Engine 4
    - One of two video game engines to choose from for this project
    - Research will be necessary for use and coding
    - Least knowledgeable in
  + Blender
    - 3D modeling program to be used for creating 3D assets to export to chosen 3D game engine
  + GarageBand
    - iOS mobile app for creating and editing music
  + GIMP
    - Image creation and editing program for creating 2D art assets
  + GitHub
    - Version control program to be used when creating the game and server

Project Description

Create a video game program that replicates the movement system of Titanfall. There will be limitations; for example, may not be able to run on any vertical surface. The player will be able to walk in any direction, run in one direction, turn, jump, double jump, wallrun, and jump off objects.

Plan

* Sprint 1
  + Choose a engine
  + Create a basic movement system
    - Walk
    - Run
    - Slide
    - Jump
  + Create Basic level for testing and troubleshooting systems and gameplay
    - Utilize generic assets
      * Blocks
      * Pyramids
      * Cylinders
* Sprint 2
  + Movement System
    - Add Double Jump
    - Add Wallrun mechanic to movement system
      * Attach to Vertical surface
      * Move forward along surface while player is moving forward somewhat parallel to surface
      * Be able to jump off the wall
      * If player is moving away from the surface, detach from surface.
  + Start creating server
    - Create test code with engine to test communication and data sharing with server
  + Create Relational Diagrams for the database
* Sprint 3
  + Troubleshoot Movement System further
  + Create 5 basic levels
  + Create Hazards
    - Blades
    - Projectiles
    - Pits
    - Kill Walls
  + Have it so the game can now communicate to the configured server.
  + Create Database
* Sprint 4
  + Create Level Editor
    - Objects
      * Obstacle/Ground/Wall
      * Be able to spawn objects from a list
      * Be able to edit object properties
        + Size
        + Rotation
        + Position
      * Be able to change color
    - Set Player Spawn Point
    - Set Level End Point
    - Be able to Save level
    - Be able to Name Level
  + Upload Level Information to the Server
    - Name
    - Created By
    - Date Created
    - Level Structure
      * Objects
        + Size
        + Rotation
        + Position
      * Start Point
      * End Point