# Goktug Ulvan - Skateboard Task

Original Task Document: https://gravitygames.notion.site/Unreal-Programmer-Task-9db9f9087b174ad6a37b42351dd263ef

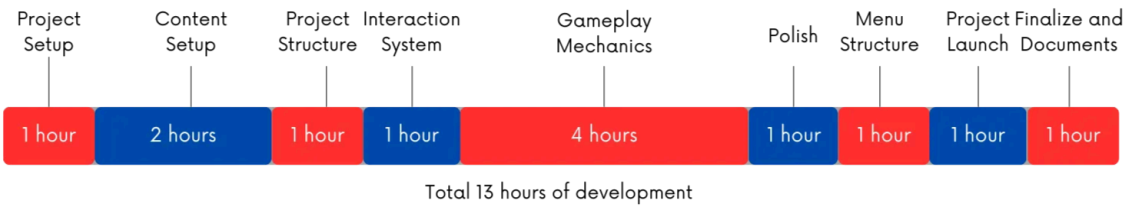
Completed in 13 hours.

**Details:**

- **Content Integration and Optimization:** Added the content to the project and performed some minor optimization and polish on the map.
- **Animation Retargeting and Customization:** Adjusted missing animations by downloading the character from Mixamo and retargeting the animations to the UE5 skeleton. I repeated this process throughout development as I identified further animation needs. I also created custom animations and adjustments using keyframes within an animation sequencer.
- **Core Gameplay Structure:** Established the entire project structure, including a game instance, player controller, player state, and game mode to manage the character and game details. I also created interfaces for each of these components to facilitate communication between them.
- **Skateboard Customization System:** Built an enum, structure, and data table to enable customization of skateboards and access to these custom skateboards. Data from related systems were passed into the project using interfaces.
- **Interaction System:** Created an interaction system for picking up skateboards from the ground. Created a dedicated trace channel specifically for interactions.
- **Movement Mechanics Integration:** Transferred movement mechanics, initially created in the player controller, into the character blueprint to facilitate easier editing of the gameplay.

- **Skateboard Movement Development:** Developed the skateboard movement using only one animation.
- **Animation Blueprint Implementation:** Created and implemented an animation blueprint for the character to enhance movement realism. Reduced system load by storing and using animation blueprint variables within a blueprintthreadsafeupdateanimation function.
- **Acceleration and Handling:** Implemented a system where the character accelerates over a specific period while using the skateboard. Sharp turns are restricted until a certain speed is reached. Animations have been added to current states wherever possible.
- **Skateboard Rotation Normalization:** Normalized the skateboard's rotation to the ground using trace functionality.
- **IK Implementation for Foot Placement:** Set the character's feet to sockets on the skateboard in real-time using IK.
- **Animation Transition Smoothing:** Used interpolation in various movement and transition states to achieve a near-realistic animation transition for smoothness.
- **OffSkate Gameplay Implementation:** Implemented a separate input system for the character's gameplay while not on the skateboard.
- **Menu Structure:** Built the game's menu structure, including game start and exit functionality, managed through interfaces.
- **Score System:** I've integrated a score system with obstacles. Points are earned exclusively through kickflips

**Timeline:**



**Areas for Future Development:**

- **Sound and Visual Effects (SFX/VFX) Implementation:** Currently, SFX and VFX are not implemented.
- **IK System Refinement:** The existing IK system requires further development. Exploring alternatives such as FABRIK could enhance performance and realism.
- **Animation Expansion and Refinement:** Additional animations and transitions can be added to further refine the player experience, particularly in relation to speed variations and player input responsiveness.

**Project files:**

**Github:**
https://github.com/Goktug-Ulvan/Skateboard_Gameplay_Task

**Exe:** https://drive.google.com/file/d/1CahihFOQ-tjn3eTBYu-oVB-JjkyB4Gn0/view?usp=sharing

**Gameplay Video:** https://youtu.be/jdCDpaK28h0