INFO6022 - Physics 2

Final Project: FPS Character Demo

Due Date: Sunday, April 19th 11:59PM

**Richard Woods**

For this project, you will create a first-person shooter style demo featuring a character controller using the Bullet Physics library. There will be multiple items in the scene to interact with, collision feedback you would see in games such as sounds playing, points accumulating, damage inflicted, etc. Multiple shapes and constraints will be implemented to create an interesting interactive experience. The main focus of the game will be controlling a character, using the character’s weapon to shoot things in the scene, and navigating the scene.

|  |  |  |
| --- | --- | --- |
|  | Item | Marks |
|  | **MUST HAVES: ( Just do it, or you get zero ☹ )**   * It must compile in Visual Studio 2019 Community * It must compile without anything external (all 3rd party stuff is included in the submitted package) * It must have reasonable 3D rendering * It must have reasonable controls (The scene must be able to be navigated easily in order to judge the ‘feel’ of the physics)   **Remember your ReadMe file (\*.txt, \*.docx, or \*.md)**  **This ReadMe file must be included inside your submission!**   * List all group member names * Build instructions * User controls * Information about all graded items you have accomplished | 0 |
| !! | **Up to -5 marks for ugly code!!!** … So what is ugly code?   * Bad or inconsistent formatting, indenting, and spacing. * Poor naming choices. Eg. “param5” “temp3” “MyClass” “v1, v2, v3, v4, v5, v6” names should be *accurately* descriptive. * No comments. * Inaccurate comments. * Unused/misusued/abused variables or objects. * Ugly polymorphism. * Rampant commented out code. |  |
| 1 | Implement **at least 3** shapes not already covered in the course. Ie, any shape other than btSphereShape and btStaticPlaneShape.  *2 marks per shape* | 6 |
| 2 | Implement **at least 3** constraints.  For each constraint, there must be some instance in the scene that is accessible to the player (Eg. If you have a bell in your scene implementing a btConeTwistConstraint, position it so the character can walk into it and see it swing)  *2 marks per constraint* | 6 |
| 3 | Implement the bullet btKinematicCharacterController.  All control options should be listed in your ReadMe.  *5 marks for getting it working*  *5 marks for completeness (ie. Using all the features available by the controller)*  *5 marks for how good the ‘feel’ is (separate marks below for matching animation movement)* | 15 |
| 4 | Match the character animation with physical movement | 3 |
| 5 | Create a weapon feature so the character can shoot things in the scene.  Marks are for implementation, ‘feel’ of the weapon usage, and ‘feel’ of the inflicted damage on scene elements being shot. | 5 |
| 5 | Implement **at least 3** different categories of collision feedback influencing game actions.  “Category” examples:   * Triggering sounds to be played * Reaching checkpoints * Applying damage impulse * Scoring points * Picking up powerups   *5 marks per category* | 15 |
|  | TOTAL: | 50 |