Physics for Games

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| **Assessment Task Number:** Part 1 – Create a Custom Physics Simulation | |
| **Unit Code(s):** | **Unit Title(s):** |
| ICTGAM556 | Develop and implement physics in 3-D digital games |
| **Instructions to Learners:** | |

For this assessment you are required to create a custom physics simulation and demonstrate its successful implementation within a real-time application. You may not use any third-party physics libraries in the creation of this simulation.

The simulation must demonstrate:

* Static and Dynamic Rigid Bodies
* Forces being applied to Dynamic Rigid Bodies
* Static and Dynamic Rigid Bodies interacting with each other as expected

You must visually display the simulation in a meaningful way. (A suggested demonstration application is a billiards simulation or game).

You will need to submit an executable that runs external from the IDE and executes without errors or crashing.

You will also submit the solution, source code and any assets for the application. Your project must compile without any compiler errors or linking errors.

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| **Task** | | **Evidence Criteria** |
| 1. | Custom Physics Engine | Wire a custom physics systems and demonstrate its uses in a stand-alone real-time application. |
| 2. | Implement and demonstrate state and dynamic rigid bodies | In your custom physics engine, implement static and dynamic rigid body physics, and demonstrate static and dynamic rigid bodies interacting with each other. |
| 3. | Apply forces to physics bodies | In your custom physics engine, implement and demonstrate the application of forces to physics bodies. |
| 4. | Visualise physics bodies | In your demonstration application, implement functionality that enables the visualisation of physics bodies.  For example, add a debug mode that draws the 2D shape of the physics objects. |
| 5. | Project and source code | Submit the project/solution, source code and assets for your physics system and demonstration application. |
| **Submission Requirements:** | | |
| You will need to submit the following:   * A Release build of the demonstration application (which includes the custom physics system/engine) that can execute as a stand-alone program * Your complete Visual Studio project   Be sure to remove any temporary build folders (i.e., the Debug and Release folders). Only project files, source code files, and any resource files used should be included in your submission.  Package all files in a single compressed archive file (.zip, .7z, or .rar) | | |