Fall 2016: ELG5124/CSI5151
Assignment 1
Due: Monday, October 3rd, 2016, 11:00pm in Virtual Campus
University of Ottawa - Université d'Ottawa

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1   Scene Modelling

This assignment will give you a chance to familiarize yourself with the JMonkey engine and to implement a basic scene. You will have to create a heightfield defining the ground, insert some 3D models and use collision detection.

1.1   Installation and Getting Started

This assignment will require you to use *JMonkey 3.0* (`http://www.jmonkeyengine.org/`), a popular open source Java-based game engine. Please download the engine from its website for your platform. The website contains numerous tutorials and videos. Our goal in using this engine is to learn the principles behind graphics rendering.

1.2   Heightfield [2]

Define a heightfield with a mountainous terrain where the valleys are textured grassy and mountains are rocky, furthermore, there should be blue rivers and streams. You will need to define 3 flat topped mountains of different heights where you will place a 3D model in the following steps.

The Beginner Tutorial 10 (j) on terrain shows how to use a `TerrainQuad` and assign three textures. You can use your favourite drawing program to design the heightfield of the terrain. It may however be easier to use TerraMonkey, the built-in terrain editor. Either can work, choose what you prefer.

1.3   Placing 3 Tiger Meshes [3]

Load the supplied (plush) tiger mesh into your scene. A tiger should be placed on each of your flat topped mountains.

The Beginner Tutorial 3 (c) on assets shows how to load a mesh from file. Please note that in order to submit your assignment, you will have to convert the mesh into the jmonkey file format `j3o` and add it to your project's assets. You can find more information on this in the tutorial.

1.4   Roaming Dinosaur [1]

Load the supplied dinosaur mesh and add the dinosaur to your scene. The dinosaur is to be placed in in a valley.

This is the same process as in Section 1.3.

1.5   Dinosaur Interaction [2]

The next step is to add interaction keys for the dinosaur. The dinosaur is to be controllable by the WASD keys.

The Beginner Tutorial 5 (e) on user input explains how to add key controls to your program.

1.6   Collision Detection [2]

The final step is to ensure that the dinosaur stays on the surface of your terrain and does not submerge.

The Beginner Tutorial 9 (i) on collision detection explains the process, however the Solid Terrain tutorial linked from the Beginner Tutorial 10 (j) on terrain may be especially helpful.

2   Submission

You will need to submit your solution (only the source directory and your assets directory along with the `*.xml` project files but no other files) to BB learn by the deadline. No late submissions are allowed, you can submit multiple times but only your last submission is marked.