

Assignment 1

CS 381: The Game Development Pipeline

Spring 2019

Max Score: 100

This is an individual assignment.

Objectives

1. Demonstrate an ability to apply knowledge of computing, mathematics, science, and engineering by learning and applying knowledge of C++ to solve a problem (1)
2. Demonstrate an ability to analyze a problem, and identify, formulate and use the appropriate computing and engineering requirements for obtaining its solution (5)
3. Demonstrate an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
4. Demonstrate an ability to apply design and development principles in the construction of software systems or computer systems of varying complexity

Assignment

Go through the first four ogre tutorials (except 3) on the ogre website. Make sure that you can make the camera move around the world.

Non-oriented physics

First, make a large (10000×10000) planar textured surface located at the origin on the xz plane at a height specified by a `surfaceHeight` variable (15 points).

Load a sphere into ogre at the origin. Make the sphere move in 3D with a **velocity** determined by the numeric pad's arrow keys and PGUP/PGDOWN. Key presses increase or decrease the x , y , and z components of the sphere's **velocity** (60 points).

You will control the camera with the WASD keys for camera motion in the xz plane and

the E/F keys for camera motion along the y -axis (15 points). You should learn from (and re-purpose) the code for making the Ninja move in the tutorials.

Note carefully, that the control keys (numeric pad's arrows, PGUP, PGDOWN keys) change the sphere's velocity **not** position. For example, if you hit the numeric uparrow key (numeric 8), just once, and let it go, your sphere should start moving forward in the xz plane and **continue** moving forward forever. Contrast this with the camera which stops moving as soon as you release the key.

Hitting the space bar should set the sphere's velocity to $(0, 0, 0)$ and thus stop it from moving (10 points).

0.1 Extra Credit

- Texture the sphere and make it look like the Earth or Mars or the Moon (+1)
- Implement tab selection where the tab key selects the next entity modulo the number of entities. Create 100 spheres in a 10 rows and 10 columns, and apply user input, as in the assignment, to the currently selected entity indicated by a framebox around the entity(+5).
- Use a ship model from <http://www.cse.unr.edu/~sushil/models/> and ensure that the ship is oriented correctly as it moves (+10)
- I am open to other ideas, so talk to me (+ x)

1 Turning in your assignment

Assume that this format will be used for all your laboratory assignments throughout the semester unless otherwise specified.

1. Demonstrate your working program in the lab on the due date. Demonstrate each of the above features. You will be graded on your in-class demonstration.
2. In lab, before demoing your program to the grader/TA, upload your code to Canvas. You will zip or, tar and gzip, the folder with all your code into one file. Upload this one file on Canvas.

Ask me (sushil@cse.unr.edu) if you have questions.