Pendulum Simulation - Part 1

The Space and Movement

CSC 415

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(Due at Midnight on March 12, 2019)

Now that you have completed the “proof of concept” and demonstrated that your pendulum can indeed function correctly on different hardware, it is now time to start the process of making it look more realistic. This will initially be accomplished by adding elements to the room that give the viewer a sense of size and perspective.

Repo Management

TAG your final commit on your proof of concept repo with the name “POC Complete”. Create a new branch from your master and start your development from there.

Tidying Up and Preparing for A Larger Scale Project

1. Delete the “stick figure” from your code.
2. Create a subdirectory for textures. Call it textures. (We will add more subdirectories later and create a hierarchy of makefiles)

Add a Room

Place your pendulum in some sort of room. The obvious choice is a rectangular box type structure with four walls, a floor, and a ceiling. Recognize that this needs to be big enough to give perspective to your pendulum -- which it apparently one meter long. Also note that in later steps you will be adding features to the walls, floor, and ceiling to add perspective to your scene.

Elevate Your Pendulum

Place your pendulum on some sort of support structure so that the base if roughly 3 to 4 feet off the ground (a standard desk/lab table). Supports should have legs -- not just be solid underneath.

Camera Movement

The camera should be able to move around to explore the scene. The following keys should do the following things:

W - move forward	Left - pan left	Page Up - Move Up
A - move left	Right - pan right	Page Down - Move Down
S - move backwards	Up - pan up	
D - move right	Down - pan down	

Texture Mapping

1. Find textures for all of the elements in your scene - floor, ceiling, walls, pendulum components, etc., and place them in the textures subdirectory. In your textures directory, please also include a text file that lists the names of the textures and gives the URL addresses of where you found them.
2. Apply your textures to the appropriate components. This is essentially a proof of concept to see if you can do texturing. We will clean these up in subsequent parts.
3. Build your code and makefile in such a way that texturing can be turned on/off with a -DTEXTURE compiler definition.

Segmented Makefile and Code

If you have not done so already, break up your code into appropriates pieces, add the appropriate #ifdef stanzas where needed, and following my guidelines, create a makefile to build the entire project.

You will be adding lots of components to your repo over the next several weeks. I recommend that you commit and push OFTEN. Do not, however, push executables and object files to your repo. Later I will provide you with additional source codes that need to be built in separate subdirectories. Please go ahead and get your basic makefile in place. If you work on more than one platform then you need to ADD the components to your makefile and sources to compile across platforms.

Turnin via Merge Commit

Your work should continue on your branch, or sub-branch of that branch, until time for your final commit on March 12th. The merge request to your master should not only have an appropriate commit message, but also should be TAGGED “Space and Movement Complete”. You need to then complete the merge to your master on or before March 12th.