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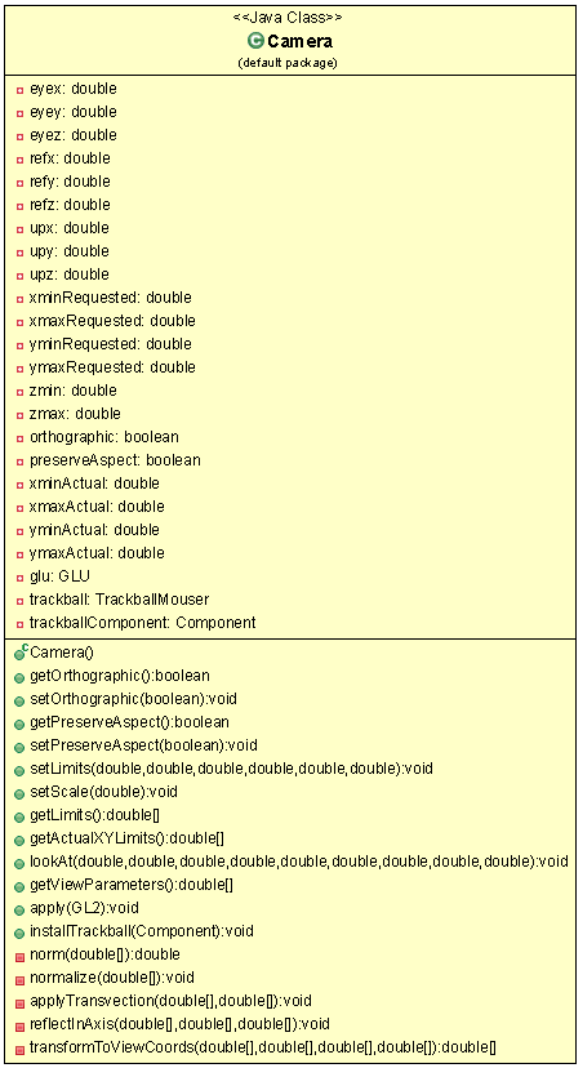
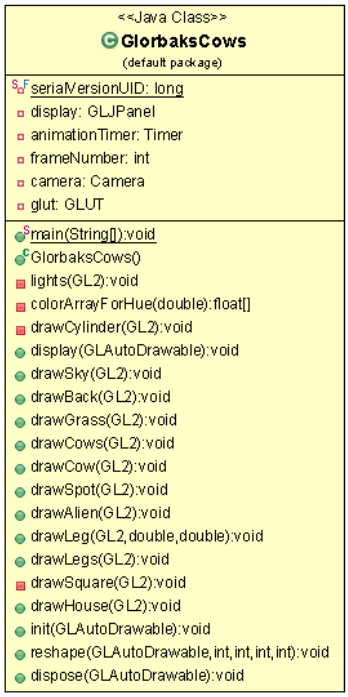
CMSC 405
6/15/21

Project 2

UML Class Diagram





Developer's Guide

To run the project, double click "Project 2.zip" from the UMGC submission portal. This will download the files. If the zip file does not unzip, unzip it. Open the GlorbaksCows.java and

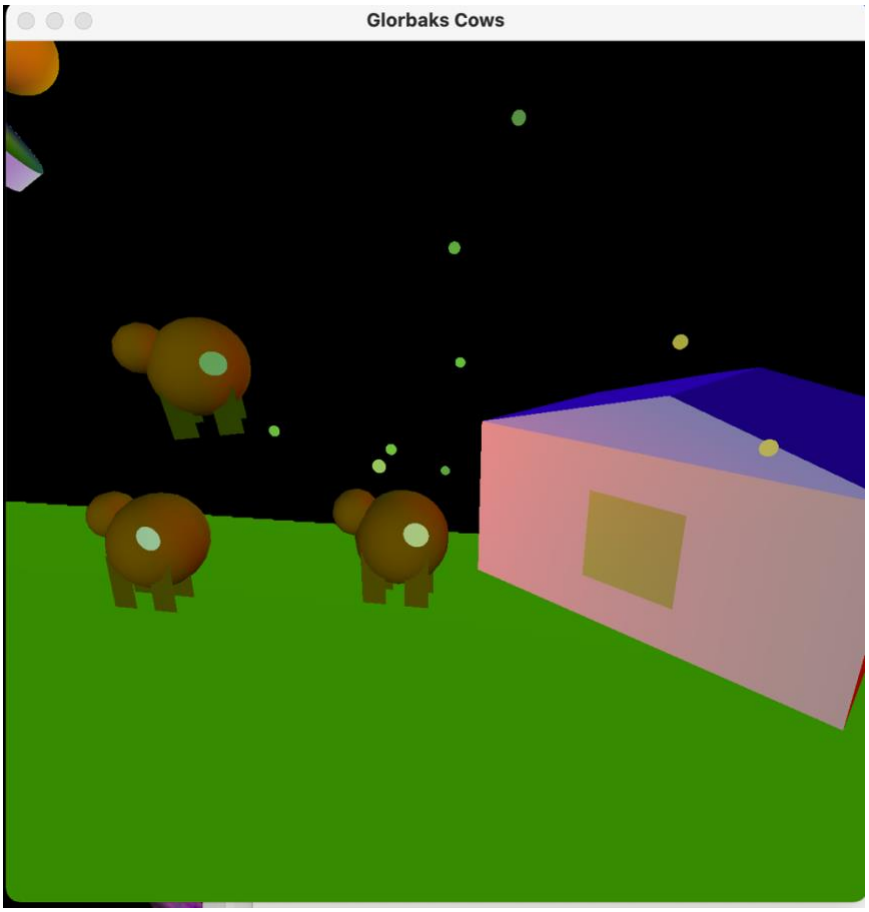
Camera.java file in your IDE and run GlorbaksCows.java. I have included a jar file however, I do not believe that it is configured correctly. It is better to run this from the IDE.

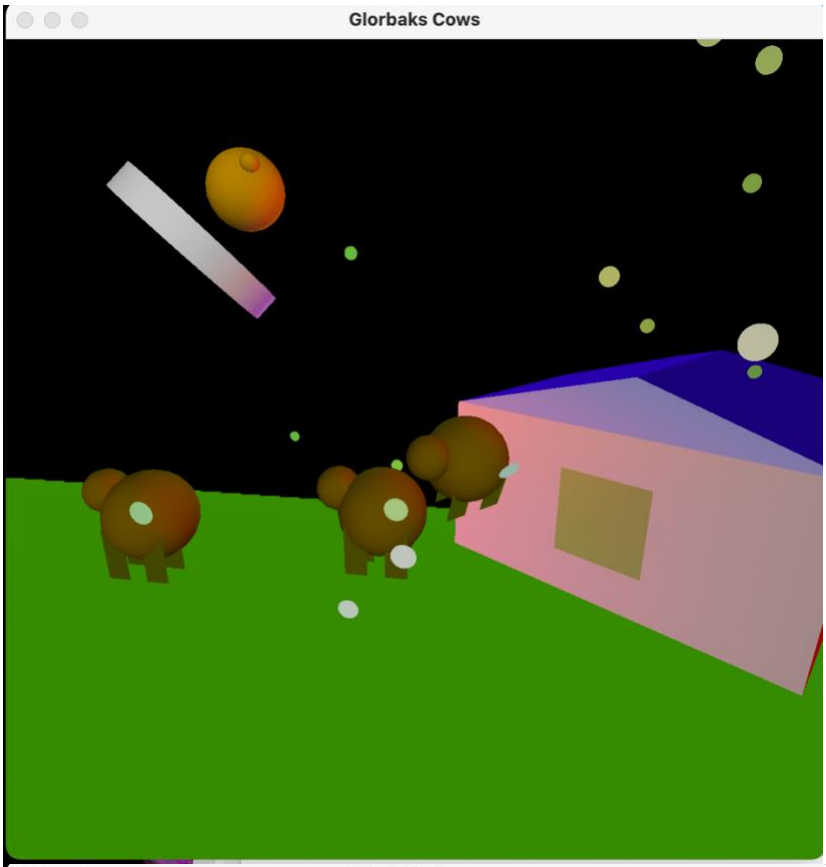
Note: I use a Mac and so I used terminal to open the jar file. I did not know if jar files were acceptable for submission, but I read that for exporting the project this was a convenient method. I included a zipped copy of the project as java files, to allow the code to be viewed as text and just in case the jar file was not allowed. I found there were build path issues that I did not know how to resolve when duplicating and zipping the project as java files, and elected to use a Jar file because it did not produce error when running from the command prompt. I used Eclipse and had to configure JOGL, so the jar file was not working at the time of submission due to this complication.

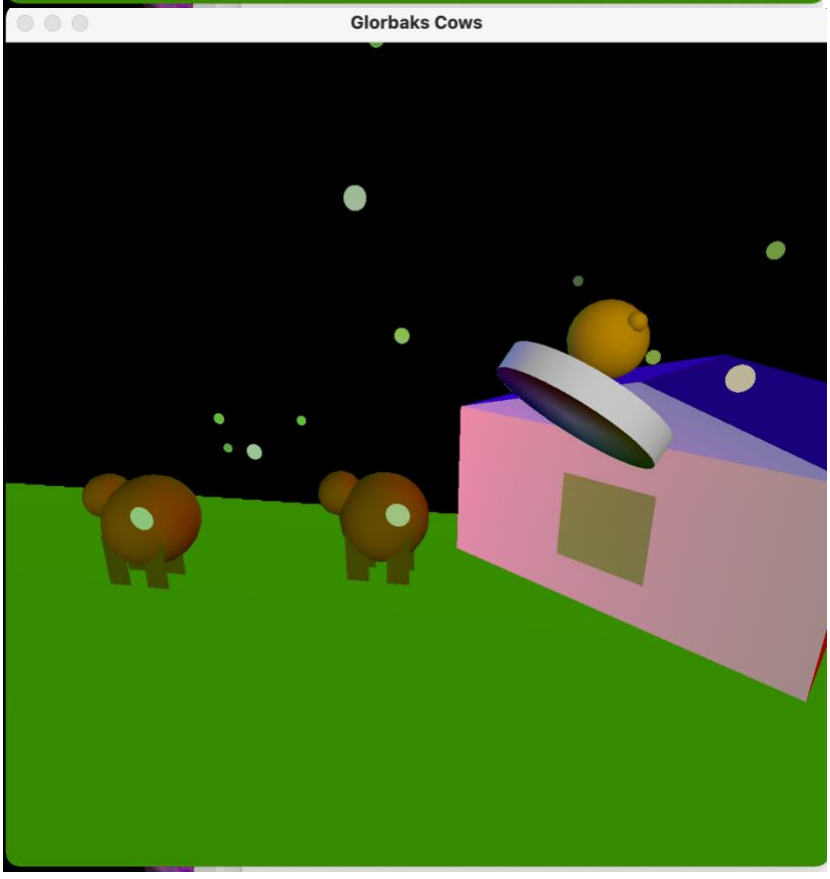
Test Plan

Test - Name	Input	Expected Output	Actual Output	Pass?
Glorbaks first Flight	Run the GlorbaksCows .java file.	The animation shows a UFO throwing a cow into a window. There are other cows in the scene and a meteor shower is running rampant. It repeats every 250 frames. When you are finished viewing the animation, feel free to exit the panel.	The animation shows a UFO throwing a cow into a window. There are other cows in the scene and a meteor shower is running rampant. It repeats every 250 frames. When you are finished viewing the animation, feel free to exit the panel.	yes

Screen Captures


Glorbaks Cows


Glorbaks Cows


Glorbaks Cows

Lessons Learned

There was so much to learn and unpack about OpenGL, but I feel as though I was able to touch the tip of the iceberg with my animation. I definitely learned about lighting and the implementation of hierarchical modeling. I used translation, rotation, and scaling transforms to set up the scene, from object coordinates to viewport coordinates. These allowed me to design the scene exactly how I wanted. Although the animation is skeletal, it does have animation techniques implemented using parabolic equations to design transforms that move the objects across the window. I definitely spent a lot of time creating the animation and it took me a long time to figure out how to get the animation just right. I pulled a lot of background from the example files, which really helped to make the material digestible. I used a lot of the material from FourLights.java to help understand the various lighting techniques and how to get this flow of colors to generate onto the various shapes. Polyhedron.java helped as well to develop the house itself. Getting the 2D square window to fit onto the house was no easy task either, and understanding exactly where to put this to render was a task. I would like to revisit this and add individual panes, and animation to show the breaking of the panes. Alternatively I would like to use a texture to add more interesting parts to this project. I really like the effect of the meteor shower generated using the random integers in the drawSky method. I developed this while trying to make stars and thought it would contribute to the very abstract nature of the animation. Thinking about the design of this project from the standpoint of model view upward, making those modeling transforms from the object coordinates to the projection coordinates really helped to allow me to visualize how to create each aspect of the scene I was attempting to develop. I

definitely feel that I want to continue experimenting with this animation because I did want to do more with the detail in the work, and this is definitely a good start.

Sources:

Graphics and Java OpenGL

D. J. Eck.(2018, January).*Introduction to Computer Graphics V 1.2*.Hobart and William Smith Colleges.(pp. 89-145). https://learn.umgc.edu/d2l/le/content/580433/viewContent/21625861/View

Provided JOGL Example Files, including Camera.java and FourLights.java

Jar Files

Silicon Valley High School. (2018, December 17). *How to Create an executable (runnable) JAR File using Eclipse : Intro to Programming Java* [Video]. YouTube. https://www.youtube.com/watch?v=Bb_gZUc6Tug&ab_channel=SiliconValleyHighSchool