Milestone Two Narritive

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CS-499: Computer Science Capstone

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11/17/2024

# Briefly describe the artifact. What is it? When was it created

The artifact that I am using is a scene from CS330. It is a basic 3D scene rendered from a 2D image. The initial code was created by Brian Battersby – SNHU Instructor, Nov 1st, 2023. My work with this code was completed Oct 19th, 2024.

# Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?

I am including this artifact in my ePortfolio, as this is what I would like to do with my CS knowledge. I would like to create 3D renderings for people to enjoy. The components that I will be using to showcase my abilities are in the SceneManager.cpp. This is where the meat and potatoes are for the scene. I have improved efficiency in the code, removed redundant coding, corrected errors in some of the codework, as well as commented on the sections of improvement.

# Did you meet the course outcomes you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

I am working on meeting my plans outlined in module 1. By the completion of this course, I will have either completed the planned updates or made revisions to the plan to coincide with the updates I have made.

# Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?

While I was improving on the code I am learning that some of the planned improvements are going to be more complicated that originally thought. As I am going through, I am learning new techniques to improve and modify code. Some of the challenges I faced were just the way to update the code. I have the concept in my head, just putting it into action is harder than anticipated.

# Updates to the base code

The updates that I have completed to this point in the SceneManager.cpp are.

1. I have updated the code to free up GPU memory, and make the code more efficient.

*void SceneManager::DestroyGLTextures()*

*{*

*for (int i = 0; i < m\_loadedTextures; i++)*

*{*

*glDeleteTextures(1, &m\_textureIDs[i].ID); //updated to glDeleteTextures to free up GPU memory associated with them*

*}*

*}*

1. This code I updated to correctly indicate if the material was found, was always returning true.

*bool SceneManager::FindMaterial(std::string tag, OBJECT\_MATERIAL& material)*

*{*

*if (m\_objectMaterials.size() == 0)*

*{*

*return(false);*

*}*

*int index = 0;*

*bool bFound = false;*

*while ((index < m\_objectMaterials.size()) && (bFound == false))*

*{*

*if (m\_objectMaterials[index].tag.compare(tag) == 0)*

*{*

*bFound = true;*

*material.ambientColor = m\_objectMaterials[index].ambientColor;*

*material.ambientStrength = m\_objectMaterials[index].ambientStrength;*

*material.diffuseColor = m\_objectMaterials[index].diffuseColor;*

*material.specularColor = m\_objectMaterials[index].specularColor;*

*material.shininess = m\_objectMaterials[index].shininess;*

*}*

*else*

*{*

*index++;*

*}*

*}*

*return(bFound); //code always returns true in this instance. Going to update to correctly indicate whether the material was found*

*}*

1. I removed duplicate / redundant code as well as added comments.

*//Used to set textures for the scene*

*void SceneManager::LoadSceneTextures()*

*{*

*bool bReturn = false;*

*bReturn = CreateGLTexture(*

*"../../Utilities/textures/rusticwood.jpg",*

*"table");*

*bReturn = CreateGLTexture(*

*"../../Utilities/textures/stainless.jpg",*

*"stainless");*

*bReturn = CreateGLTexture(*

*"../../Utilities/textures/Rocks.jpg",*

*"coaster"); //Romeved duplicate texture*

*BindGLTextures();*

*}*

1. Removed more code that was redundant.

*SetShaderTexture("table");*

*SetTextureUVScale(1.0, 1.0);*

*SetShaderMaterial("wood");*

*// draw the mesh with transformation values*

*m\_basicMeshes->DrawPlaneMesh();*

*}*

At this point I am working on updating ViewManager.cpp. The updates I am making in this code are to improve the motion around the scene as well as the efficiency and ease of use of the controls. I will be working to update the lighting, as well as the way the databases are used.

# References

*ntroduction of Software Design Process*. (2024, Feburary 25). Retrieved from GeeksforGeeks: https://www.geeksforgeeks.org/introduction-of-software-design-process-set-2/

*What are Software Enhancements?* (2023). Retrieved from coding/it: https://codingit.dev/2023/03/29/what-are-software-enhancements/#:~:text=Software%20enhancements%20are%20an%20essential%20part%20of%20the,improved%20user%20interface%2C%20bug%20fixes%2C%20and%20security%20updates.