Assignment 1-4: ePortfolio Selection and Refinement Plan

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For the category of software design and engineering, I will be adding to the complexity of the final project I submitted for CS-330 Computational Graphics and Visualization. For that project, I was tasked with creating a virtual object based on an existing item of furniture I owned. For ease, it will be referred to as “table,” as that is the object I chose to replicate virtually. To enhance the existing code, my plan will be to add a different object on top of the table. During this project I noticed a distinct difficulty with implementing different shapes within the same file. I’d like to use this project as motivation to overcome this.

//the mentioned project has 664 lines of code, and changes will need to be made extensively //throughout. Pseudocode to follow will be incredibly vague and can be applied in multiple spots

#define WINDOW\_TITLE “Table” //re-naming to fit this project

Table position and scale parems

Table light and color

Object on table position and scale parems //new addition

Object on table light and color //new addition

Light position and scale

Table vertex shader source code

Global variables for the transform matrices

Table fragment shader source code

Object on table vertex shader source code //new addition

Global variables for the transform matrices //new addition

Object on table fragment shader source code //new addition

Lamp shader source code

Lamp fragment shader source code

Shader program

Table vertex shader

Table fragment shader

Table shader program

Delete vertex and fragment shaders once linked

Object on table vertex shader //new addition

Object on table fragment shader //new addition

Object on table shader program //new addition

Delete object on table vertex and fragment shaders once linked //new addition

Lamp vertex shader

Lamp fragment shader

Lamp shader program

Delete lamp shaders once linked

Draw the vertices for the table

Draw the vertices for the object //new addition

For the category of algorithms and data structures, I will be improving the efficiency of the final project I submitted in CS-350 Emerging Systems Architectures and Technologies. For that project I was tasked with creating a temperature and humidity data collecting device that would only record data during day-light hours. I will re-program that same weather data-collecting device to record not only the temperature and humidity levels, but to also record if it’s light or dark and the time of day. I will then enhance the existing code that sends the collected data to a json file to include everything I listed.

# starting at the JSON portion of code

# get sensor value (i.e., indications of it being light or dark in the room)

lightsensor\_value = grovepi.analogRead(light\_sensor) # what will read light in the room

# create a formula that will determine if the room is light or dark

resistance = (float)(1023 – lightsensor\_value) \* 10 / lightsensor\_value

#note, the above was the formula used for the previous assignment, will have to re-calculate

# initiate if/else statements

If resistance is less than the threshold

Data will be sent to a json file #record temp, humidity, time of day, and light levels

Set frequency to 10 minutes

Else

Print no data collected at TIME

In the databases category, I will attempt to create a MongoDB interface with the same weather project used in the previous category from CS-350 Emerging Systems Architectures and Technologies. While I’m in the terminal of my raspberry Pi setup, I will initiate Mongo DB. In its current state, the weather project saves certain weather data to a json file to be viewed on an HTML5 canvas. My intent will be to view the same json files through Mongo DB. Doing so will make it quicker and easier for me to access the weather data. Adding this feature to my existing code was made possible by taking CS-340 Advanced Programming Concepts.

#While in the terminal

../startMongod.sh

View available databases

View files

Open json file that holds weather data

If I am successful with my enhancements, then I will be able to demonstrate extreme attention to detail, the ability to adapt and overcome, and resourcefulness. In project Table, I am starting with an existing project that consists of over 600 lines of code. To achieve my enhancements, I must comb through every line and add in new lines of code to place a new object seamlessly on the existing table. Doing all that successfully no doubt proves that I have developed a great attention to detail. In project Weather, I am posing the realistic expectation of adjusting an existing project to better fit the new needs of myself or a client. Doing so may require me to look at a project I spent countless time on with fresh eyes. To pull that off shows that can adapt to new challenges and overcome them through resourcefulness.

My cause for concern in project Table lies with creating an entirely new shape to add to the project. When I was taking that course, I noticed how the shape of the light copied the shape of the object it was meant to illuminate. I believe I caused that to happen because I was not paying enough attention to the details, so I am optimistic that I can get the results I want this time. In project Weather, creating JSON files was the biggest issue I had. I believe the bulk of my work will be spent tweaking that bit of code so that the JSON file records the exact kind of data I want. I don’t foresee any issues with implementing Mongo DB into project Weather, but it’s still early. Other than a couple of courses requiring the creation of JSON files, I don’t have much training in that area. This I feel will be my biggest weakness, but it’s one I intend to overcome.