CS4052: Computer Graphics
LAB 4- OBJECT HIERARCHY

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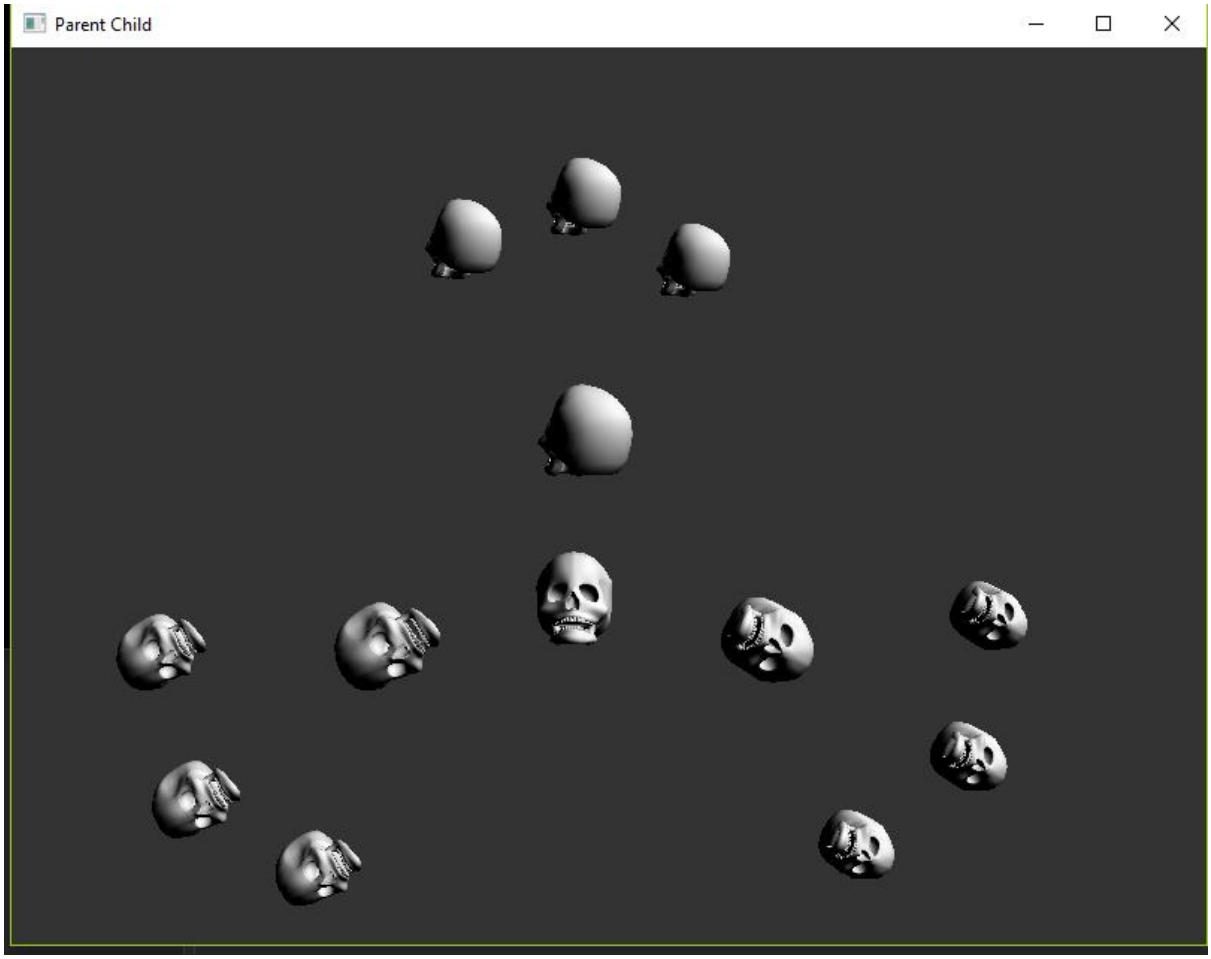
For this lab we had to work on object hierarchy. To complete this assignment we had to show a one-to-one relationship and one-to-many relationship and how we can control the translation of the root object using our own models and then add something interesting to the code. For this we had to construct a hierarchy of models and adjust our program to render more than one mesh so that we can demonstrate a parent-child relationship.

To do this I already had a sample code in which models were already added which I replaced with one of my own and then made few changes in the display function to represent the one-to-one and one-to-many relationship while constructing a hierarchy of objects as can be seen from the screenshot. And then I went on adding the translation features to the model from what I had learned from the previous assignments. To do something interesting I added two features to this program:

The first being that the object at the centre is the root object and if you translate that all the models get translated but if you translate one of the child the root stays at its place and only the child moves from its location. The second one was I added a feature so that it moves along negative z-axis and the image gets bigger (not actually bigger but just the positioning of the camera that it seemed bigger) until you can see only the skull on the screen that skull being the root object.

For this I tried creating a mesh representing two blocks separately and tried to use two different models together but I was unable to that so I just used one model and stored it in a separate Vertex Array object with their own buffered position co-ordinates. For implementing a model to represent the parent and child hierarchical animation, I decided to render just the one model with other various model around the root model. All the child models were rotating around the root model. This is done by creating a model matrix to position the root model, I then translate this model to position it however I want and also applied a rotation transformation to it as well.


Parent Child