I ran out of time, and this did not implement the undo/redo stacks. However, conceptually this is a simple idea. Basically two stacks: undo and redo. Each holds an angle and affected joints. When undo, remove from undo stack and add to redo. When a new operation occurs, empty the redo stack. These two stacks should be cleared on reset all or reset joints.

I implemented all the options, defaulted to “off” as desired. With the z-buffer off as default, the scene looks a little dark.

I created my puppet using the model suggested in the assignment specification. No creativity here :p.

I did not write the reset joints function, due to a lack of time.

I used a single white light, positioned at 1, 1, 1, 0.

My position translation is not done in relation to the view frame. I couldn’t get it working at all, so I just left the translation on the root node.

When an item is selected, its colour changes to purple.

I did not do the special B3 operation to have the head rotate.

I got picking working, so I did not implement the picking menu.

Something fishy may be going on with my rotations when an object near the top of the tree is selected. Not sure what this may be though.

My spheres are drawn using the gluSphere command.

I made a few changes to the data structure. First off, I keep a separate structure of pointers to all the primitives. This allows me to quickly update the transformations, colours, and the like. This structure gets populated when the script file is read. Next, I added a curpos variable to the JointNode class. This allowed me to easily implement min/max rotations. I also added a number of accessors/editors for the member values.

My puppet follows a very typical hierarchical structure, based off the examples given in the assignment specification and a3mark.lua. I start by building a Torso. I then fill in the tree from left to right, doing arms (upper arm, forearm, hand), head (neck, head, nose), and legs (thigh, calf, foot). Essentially, DFS. Each of these objects that is not a leaf node has the same structure: Joint, Sphere, Extra node. Leaf nodes then don’t have the extra node. This is as specified in the assignment. Transformations get applied to the parent joints, and colour changes get applied to leaves. However, I could only get my nose to show up with frontface culling on.