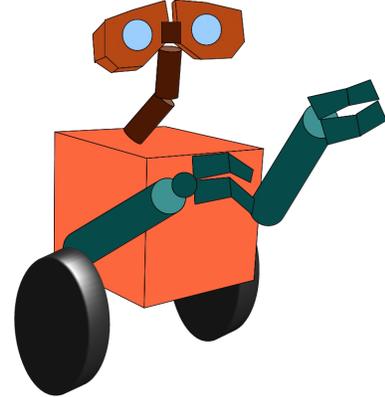
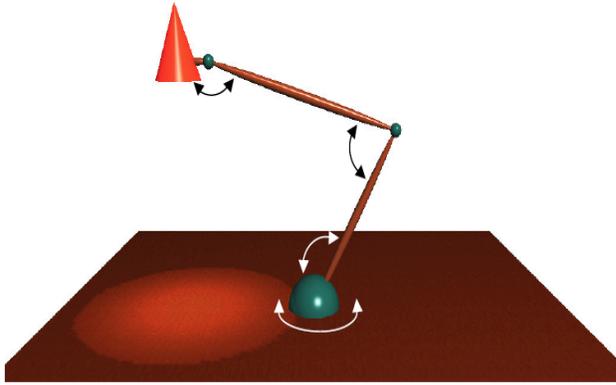


Computer Graphics

Hierarchical Models and Animation



In this assignment you will draw and animate an object of your choice. Two Pixar examples (simplified versions of Luxo Jr. and Walle) are shown above. You can use one of these two objects, or select one of your own (of similar complexity). Keep in mind that you will use this object in producing a very short movie by the end of the course (which will enter a class competition!)

1. Include a menu that appears when the right mouse button is clicked (refer to source code `viewport.cpp` on the class website). The menu should allow you to select any one of object's rotational joints. (similar to the robot menu we saw in class, which enabled us to select the upper arm joint, lower arm joint, upper leg joint, etc...) Once a joint is selected, pressing the up and down arrow keys should increase and decrease the rotation at this joint, and the display should be redrawn after each key press.
2. Add to your menu the option of starting one or more animations of your object. Selecting one of these menu options should begin a short animation showing your object moving in some fashion. (This is done by varying the object's position or joint angles over time.) This will involve repeatedly setting the timer callback to go off every X milliseconds. Each time it goes off, the value of your object's joint angles and/or position should be adjusted appropriately by a small amount, the display redrawn, and then a new timer callback set.
3. Do not worry about colors in this assignment. You will be graded on several things:
 - 1) How creatively you model your object.
 - 2) Use of the three-step algorithm for drawing hierarchical models.
 - 3) Good use of the Modelview matrix.
 - 4) Good use of the timer, menu, and special arrow key callback functions.
 - 5) How creative your animation(s) are and/or how nice the motion is. For example, a motion that is random is not as desirable as a motion that has meaning or expression.

Hand-in instructions:

At the beginning of your code, write a clear description of what the program does. Insert explanatory comments throughout your code. Email your source code to your instructor, and a readme file explaining the amount of time spent on this project, any known bugs, and any suggestions for improvement to the assignment.