In assignment 4 you will write a 3D modeler, i.e. an interactive program to let the user build interesting 3D models. This can interpreted very broadly: what sort of models, and how they're built, is up to you. For example, any of the following are suitable:

- Assemble Lego-like blocks (all grid aligned, at right angles)

- Sketch out curves that are extruded or revolved into 3D shapes

- Deform a simple initial mesh in or out depending on where the mouse clicks

- Pose and modify (stretch limbs etc.) a human-like figure

- Start with a simple cube, add more cubes where the user clicks (maybe in a more complicated or randomized fractal way)

You may well have other ideas beyond this. Check with me if you're concerned it might not fit this general category.

For this assignment you are encouraged to work in pairs, though doing it by yourself is also an option. Groups of three or more people may be possible—come see me in advance if you want to do this—but note that significantly more will be expected from a large group than a pair or singleton.

The modeler must have the following features:

- It must be programmed using OpenGL, running on either the CS department Linux workstations or a computer you can bring in to demonstrate the game.

- It must be fully 3D (the interaction may be in a 2D plane, the end-result has to be a 3D model)

- It must be interactive, with the mouse: some part of the modeling has to be controlled according to where the mouse is clicked on the model.

- The viewpoint on the 3D model must be able to change interactively, building on what you did in assignment 2.

- You should be able to load and save models, though the interface for this can be very primitive (e.g. supply the filename as a command line argument).

Other than that, you are free to do whatever you want, with additional or more advanced features counting towards a better grade (for example, higher quality rendering using texture maps, collisions between the model and itself detected and handled appropriately, unlimited undo). You may use other code or libraries, provided you give appropriate credit, but the code that implements required features must be your own. You do not have to use C++ if you'd prefer to use some other language from which you can call OpenGL.

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The final version is due before midnight **December 3**. One of your group's members must use `handin cs314 assn4` to submit the following:

- a text or PDF file clearly listing who is in your group, what your modeler does, and a list of the features you implemented (with any interesting details you think we should know about).

- the final code, with instructions on how to build and run it.

- an image (JPEG preferred) showing off an interesting model you made with your program. (make sure the filename is obvious, or highlighted in the text file)

If your game does not run on the CS department Linux machines, you must also set up a time in the last week of classes to demonstrate your modeler to the professor or TAs, where you bring a computer it can run on.

This is **worth 16% of your final mark**.