SGI Lab

Session 1: Introduction to Blender

Goals

A first contact with Blender's 3D modeling system:

- Blender GUI
- Navigation in 3D (view configuration)
- Creating objects
- Selecting objects
- Transforming objects
- Per-object operations (such as boolean operations, and other modifiers)
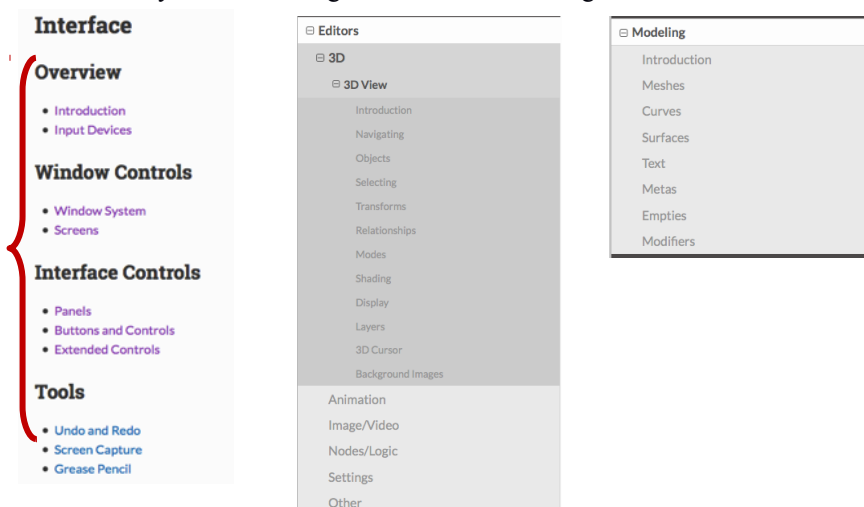- Per-face, per-edge and per-vertex operations (including sweeps)

After the session, you should be able to configure the GUI elements, import and explore existing models, and create simple models.

You should also be able to create more complex models using modeling tools such as boolean operations. This would also allow us to get some experience with the Euler equation.

Resources

Blender manual at https://docs.blender.org/manual/en/dev/

For this session you are encouraged to read the following sections of the Blender Manual:

There are many other sources of blender-related information that you may find of use:
- http://www.blender.org/
- http://www.blenderguru.com/
- http://www.blendernation.com/
- http://wiki.blender.org/index.php/Doc:2.6/Tutorials
- http://cgcookie.com/blender/
  much of the contents of this web require a paid registration...
- https://docs.blender.org/api/
  use your version!... At the lab it's 2.71
- ...

Exercise 1

Configure Blender with 4 *3D View* windows and one *Outliner* windows (see Figure below). Note the axis orientation in each *3D view.* Create a new *screen named Modeling* for the new configuration, and save the result with **Ctrl-U**.
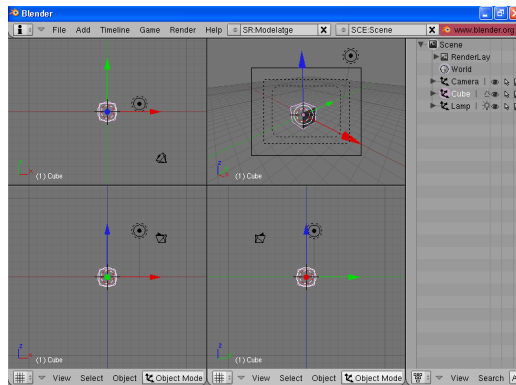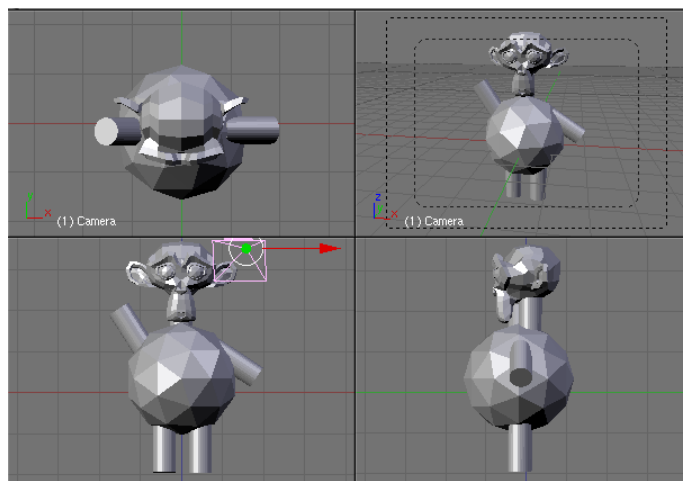

Exercise 2

Open the file */assig/sgi/models/armadillo.blend* and change the **3D view camera** so that it captures the point of view shown in the figure below. Then set the **Blender active camera** to reproduce the same view.
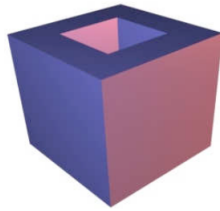

Exercise 3

Create a simple monkey model as shown in the figure. The head can be created using the *primitive* object *Monkey* (Add→ Mesh → Monkey). Arms and legs can be properly-transformed cylinders, and the body is a sphere. Once created, export the model in *Wavefront* format (*.obj)*.
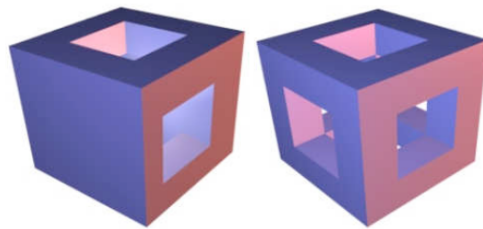
Exercise 4

Create the following figure using boolean operations. Note that the two operands required for creating this object are just (scaled) cubes. Create both objects and then add a Boolean modifier to the first operand. Once you create the object, select it and switch to EDIT MODE to check the number of faces, edges and vertices of the new object. Check that the object fulfills the Euler equation.
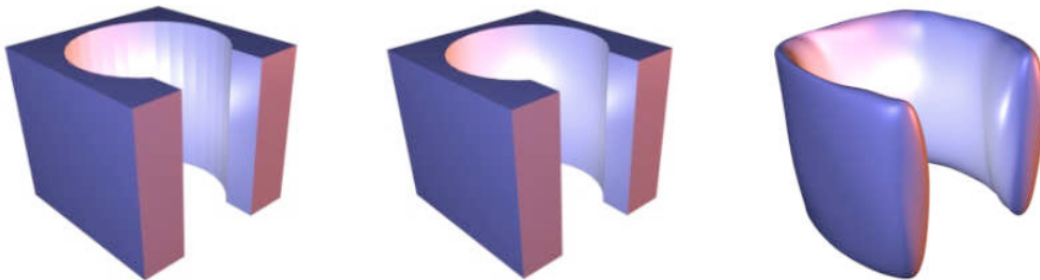

Exercise 5

Add a new boolean operation to create the two objects shown (in both cases the hole goes through the whole solid). What is the genus of these objects? Check you answer by applying the Euler equation.

Exercise 6

Create an object similar to that shown on the left. Select a proper subset of its faces and use the option Set Smooth / Set Solid to enable edge smoothing on those edges shared by faces approximating a curved surface. Then try simplifying and smoothing (through subdivision) the solid to get some shape similar to the figure on the right.

Exercise 7

Create a circle and move the vertexs until you get a polyline similar to the one shown on the left. Then appluy a rotation sweep of 360o to get something similar to the lamp shown. Using recursive surface subdivision to smooth the resulting surface and get an object similar to that shown on the right.