

COSC342 Assignment 1

Due: 5pm, 10th April 2016*



Making Computer Graphics

You are asked to build a 3D model of the type of clothes peg that is pictured above. Several such pegs are on display in the laboratory – please return them to the box and do not remove them from the lab. You are to use Blender, the software provided in the laboratory, and in this assignment you should:

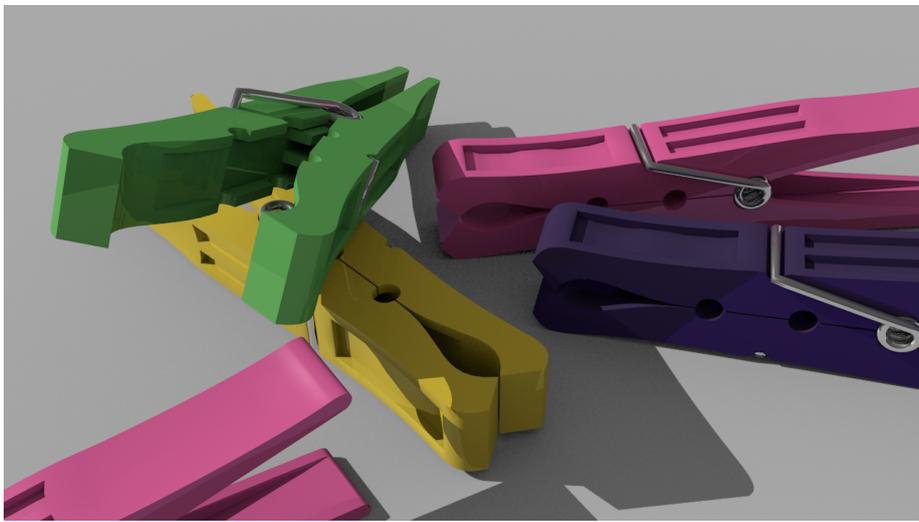
1. Learn to use Blender sufficiently well to make the model. Laboratory time has been set aside for this.
2. Build your model to represent the shape of the objects with reasonable accuracy (not surface scratches and defects). You may wish to measure the originals or estimate the dimensions from pictures of them.
3. Make sure that each of the main components of your models are placed in a separate layer. This makes it easier for us to see how they are built. The parts of your models must fit together but we will look at them as separate components too.

*The default late penalties apply.

4. Give your models suitable material properties to approximate the look of the original objects. You should at least create a peg in each of the four colours shown.
5. Make a scene that shows off your model and render an image of it.

You should submit three files:

- A `.blend` file of your model.
- A sample image file.
- A short report as a plain text file.



Points to note about your submission

- If you are working on the lab Linux environment, or on your own computer, you must ensure that your work opens and renders correctly on Blender as installed in the laboratory MacOS environment.
- Put your files for submission into a directory named `342assignment1`.
- Make sure that the report file contains your name and your student ID.
- Submit your files using the standard assignment submission script that is available on the lab computers: `submit342 <directory name>`
- Please note that all parts of this assignment are to be submitted electronically.
- High marks will be given for a model that has a good level of detail and has captured precisely the shape and proportion of the parts. It will be represented in at least four layers.
- Your `.blend` file should be of a single scene containing at least one peg of each colour.

Fairly basic example worth about $12/20 = 60\%$

Report for: A. Student
Student number: 123456789

The main body of the peg is made up from several Bézier curves and circles joined together. I sketched the shape of the pen on graph paper, with reference to the actual object, and then used this to guide my work in Blender. Once the curves were drawn, I converted them to meshes, and joined them together. In Edit mode, I linked up the various parts, and deleted some excess vertices.

Once the body of the peg was outlined, I extruded it to make a 3D shape, and added additional faces on the top and the bottom. I gave the peg smooth shading, and adjusted the “Auto Smooth” threshold to avoid some ugly artefacts on the body of the pen. This part was then duplicated and rotated to make the opposite side of the peg. The body of the peg is OK, but there’s a lot of detail missing, so the peg looks a bit chunky.

The spring is made from a spiral, which is then extended to make the arms that wrap around the plastic component. The spiral is then made into a solid object by adding a bezel.

For the plastic materials I just changed the colour of the default material, and for the metal I added some reflection. These look fairly good, but the colours aren’t quite right – particularly the pink and the purple.

For layers, I started with the plastic and metal components in separate layers to work on them. However, for the final scene each peg is in its own layer, and a separate one holds the background (a simple plane), light, and camera. I just used the default lighting, which is another area that could do with some work.

