

# CE318: Games Console Programming

## Lab 4: Matrices: Movement and Cameras

4th November 2011

### 1 Creating a model (45 minutes)

- Create a simple model in Google Sketchup.
  - Open **Google Sketchup**, selecting *Simple Template - Meters* as a template.
  - You will see now an empty world model, with a human model in its center. This person is used in **Google Sketchup** as a reference for dimensions of objects. Remember to select it and delete it when you're finish with your models.
  - Using the tools in the toolbar, create a simple model. The model will consist of a rectangular base with a cylinder on top of it. You also have to add a texture to the model. Figure 1 shows some of the most used tools.

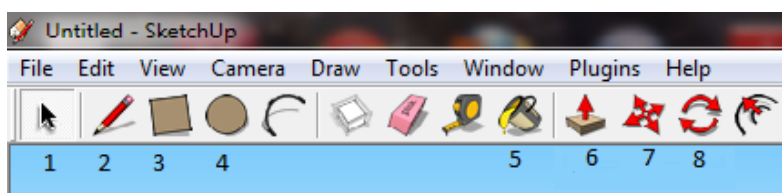


Figure 1: Toolbar icons. 1: Select tool; 2: Line drawer; 3: Square drawer; 4: Cylinder drawer; 5: Texture tool; 6: Volume tool (click and drag on the shape); 7: Move tool; 8: Rotation tool.

- When you are happy with your model, save it and export it as a *.DAE* file (*File* → *Export* → *3DModel*).
- Convert the model to something (*.fbx*) that XNA understands.
  - Unfortunately, XNA can not import *.DAE*, so we have to find a way around. To do this, open **Blender**.
  - Create a new file in **Blender** (*File* → *New*).
  - A model will appear, with a simple box in the middle. We need to get rid of that box, so select it (by righth-clicking on it) and press the **Delete** key.
  - Now, with no models, go to *File* → *Import* → *COLLADA(.DAE)*. Navigate to where you saved your exported model from **Google Sketchup** and click on **Import COLLADA** (at the top right corner).
  - The model you created in **Google Sketchup** should appear in **Blender** now. The only thing you need to do is to export the model in *.fbx* format. To do that, just click on *File* → *Export* → *AutodeskFBX(.fbx)*.

### 2 Primitives and model in the world (1h 15 minutes)

- Download from the web page the **Basic3DWorld** file and open the solution.

- This solution comes with a free camera. If you execute, you can move the camera using the *WASD* keys and rotate (yaw) it by moving the mouse in the horizontal axis.
- Place some primitives in the world (as stated in the last part of last week's exercise, adding rotations and translations). Import also the .fbx model you created in **Google Sketchup**, and draw it in several places of the world. The class `BasicModel` (in *BasicModel.cs*) is given so you can use it as a skeleton to write the functionality of the models and primitives (writing the contents of the methods `Update()` and `Draw()`).