Assignment 2

Deadline:	Hand in by 5pm on Tuesday 23rd October 2012
Evaluation:	20 marks – which is 20% of your final grade
Late Submission:	1 Mark off per hour late
Teams:	The assignment can be done individually or in teams of up to 3 students per team (one assignment per team submitted by the team leader including all student names in the source code).
Purpose:	To reinforce ideas covered in the lecture for building graphics rendering programs in Java.

Problem to solve:
Render a Model Scene in Java – Imagine you are prototyping animation for a Jurassic Park Movie!
Requirements:
Write a program called Render.java (which may have any other supporting classes you wish). Your program should as a minimum do the following:

- Load in more than one model (or duplicate a single model) to render. For example you can choose to load the dinosaur model given on the paper web site (**dinosaur.dat**) and instantiate it more than once at different locations, to have a scene with two or more dinosaurs.
- Render the scene with some colouring and lighting/shading of your choice. For example you might render two different dinosaurs in different shades of green, and light them from one or more light sources. A single light source is sufficient.
- Allow the user to view your scene from different viewing angles either by explicitly setting control widgets or by allowing a slow rotation around some axis.
- Optionally you may wish to add texture mapping to make your models look more realistic, and you may want to supply the user some controls that affect the colours and lighting.

Hints:
1) Look at the example programs given on the web site. You should be able to adapt the wire-frame and surface drawing codes. Use normal calculations to discard hidden surfaces and backface polygons.
2) If you are duplicating models you will need to apply suitable translation matrices to them. Note that if you use the cow and dinosaur files together you will need to rotate and scale them.
3) How will you ensure the parts of each model are correctly visible when one is behind another?
4) You can use any Java library code that is available on the Lab Image.
5) You can make the rendering engine more sophisticated than required here, but remember the assignment is only worth 20% of the credits for this paper – do not spend too much time on it! Around 20-25 hours is a reasonable estimate.

You can implement as many classes as you like – but supply everything inside **ONE** zip file which you should submit.

You **must** follow the next two specifications in **each and every assignment for this course**
1. Place the following at the top of your program code and **provide the appropriate information**:
```
// Family Name, Given Name, Student ID, Assignment number, 159.235
/* explain what the program is doing . . . */
```
2. Ensure that your *main* function uses *System.out.println* to send this information to the console. You might use code like:
```
public static void main( String args[] ){ {
 System.out.println( "------------------------------------" );
 System.out.println( " 159.235 Assignment 2 Semester 2 2012   " );
 System.out.println( " Submitted by: Mouse, Mickey,  12345678 " );
 System.out.println( "              and Duck, Donald,  98765432 " );
 System.out.println( "              and Mouse, Minnie, 12345679 " );
 System.out.println( "------------------------------------" );
 new Render(); }
```
Hand-in: Submit **mystuff.zip**
Marks will be allocated for: correctness, fitness of purpose, sensible use of graphical components, utility, style, use of sensible comments and program documentation, and general panache! Good comments will help me to award you marks even if your code is not quite perfect.

If you have any questions about this assignment, please ask the lecturer.