**Advanced Games Engine Creation Tutorial 17**

In this practical you will practice implementing collision detection using:

* Bounding spheres
* Bounding boxes

1. Download the collision detection example code from Blackboard. Compile and run the program, which creates and animates 20 teapots, and detects collisions between them using bounding spheres. The teapots are normally green, but turn red when they are in collision with at least one other teapot.

2. Examine the example code. What is the relationship between the teapots and their bounding spheres? How are the teapots bounding spheres created and updated? Where and when is the collision detection performed? How does the system respond to collisions? How are the teapots kept within the game world?

Try (test out your program each time you change it!):

* Commenting out the code to draw the bounding sphere. Do the teapot collisions look realistic?
* Changing the size of the bounding sphere relative to the teapot
* Adding a rotation member variable to the Teapot class, and creating the teapots with random rotations.

3. Implement and display a running total of the number of collisions that have occurred.

4. How could you implement collision response? We will look at this next week

5. Can you improve the program design? What about changing Vector3D to a class and adding some functionality (ie overloading the + and – operators)

6. Try implementing collision detection using an axis-aligned bounding box rather than a sphere.