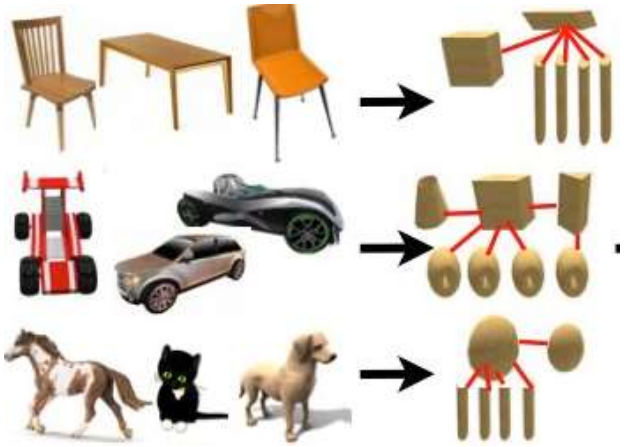
Exercise 1: Second Life objects



One of the most distinguishing features of the virtual world of Second Life is that everything in Second Life is created and owned by its users. Objects can be created using the Second life viewer's built-in 3D modeling tool. Objects are created using a set of seven different types of solid body entities called "prims" (primitives) that are defined analytically (i.e., box, prism, sphere, cylinder, torus, tube, ring) with permutations such as twist and taper. Prims can be molded together and textured to create the desired objects. Prims can be composed into larger objects (wheel) which can then be further composed into larger objects (car). The use of prims is motivated by the fact that they are compact, they can be rendered more cheaply and are more easily mapped to a physics model than mesh based 3d shapes.

Assignment 1: Provide a UML diagram for your designs.

Assignment 2: Implement a data structure (hint: composite) to store objects composed out of prims or sub objects that contain prims. Use a function to render each prim and also support a function to compute the volume of an object by adding the volume of each prim. For simplicity you only have to support box, sphere and cylinder.