Object Modeling
CS 3451: Project 2A

1 - Objective

The goal of this project is for you to learn how to assemble complex objects out of simple parts. You will use the matrix stack for this. This project is the first of two linked projects. For this first project, you will create one 3D object of your choice. Then during the following project, you will incorporate this object into a 3D animated scene, and this scene will also be of your own choosing.

2 - Deadline

Your project solution should be submitted on T-Square by 11:55 PM on Wednesday, February 17, 2016.

3 - Process

3.1   Download the base source

Download and unzip the folder with the base code for this project.

3.2   Project Description

Decide on an object that you want to include in your final animation. You should select the "hero" object from your scene to use in this week's assignment. (Next project, you will concentrate on making things move.)

The key aspect of this assignment is that the 3D object that you create should be made up of multiple pieces. You will use the matrix stack and the transformations (rotate, scale, translate) to put together the parts to form the final object.

- Your object should be something recognizable, and not some abstract or random shape

- Use at least **eight** different sub-parts to make your object (e.g. six spheres and two cylinders)

- Include at least two different kinds of parts in your object (e.g. sphere and block)

- Most or all of the sub-parts of your object should be touching or overlapping each other

- Use at least two different colors in your object

- You must use pushes and pops, and they should be balanced (same number of each)

- Make use of all three basic transformations to assemble your object (rotate, scale, translate)

When your Processing code is run, it should display your object, and slowly rotate it to show what the object looks like from different sides. This rotation of the whole object does NOT count towards your use of rotate to assemble the object.

3.3 Effort Is Part of the Grade
This assignment will be graded partially based on our assessment of the amount of care, effort, and creativity that you put into creating your object. If you choose a simple object and throw it together, you will not get a high score on the "effort" component of this project. **20% of the project will be based on our assessment of your effort.**

3.4 Optional Elements
If you wish to, you may add textures to your object. It is NOT necessary to add textures in order to have a successful object for this project.

You may decide that blocks, cylinders and spheres are not sufficient for making your object. You should feel free to create collections of polygons using the commands BeginShape(), Vertex(), and EndShape(). If you create a sub-part with polygon code of your own, this can count as one of the kinds of parts in your object.

Feel free to make use of various programming techniques to assemble your object. If some of the sub-parts of an object are regularly spaced, using a loop to create and position these parts is entirely appropriate. You may find that your object's parts really ought to be made of even smaller parts. If so, great! It is fine for the sub-parts to have sub-sub-parts.

3.5 Source Code
You should modify the source code in any way you see fit and comment your code (include your name in the header). The source code is written in Processing. Visit "Processing.org/reference/" for more information on built in functions and structures. You are allowed to use any built in processing/openGL functions in this project to accomplish your goal.

3.6 Not Allowed
The object that you turn in for this project should NOT be an object that was created using a modeling and animation package such as Blender or Maya. For this assignment, you are not allowed to read in an object from a file.

3.7 Authorship Rules
The code that you turn in entirely your own. You are allowed to talk to other members of the class and to the Professor and the TA about general implementation of the assignment. It is also fine to seek the help of others for general Processing/Java programming questions. You may not, however, use code that anyone other than yourself has written. The provided source code is the only exception to this. Code that is explicitly not allowed includes code taken from the Web, from books, from previous assignments or from any source other than yourself. You should not show your code to other students. Feel free to seek the help of the Professor and the TA's for suggestions about debugging your code.

3.8 Submission
In order to run the source code, it must be in a folder named after the main file. When submitting any assignment, leave it in this folder, compress it and submit via T-square.