CS4204 Computer Graphics Fall 2010
Project 2 – 3D Robot Modeling Tool

Due Dates
Project 2 is due on Tuesday, 03/16/2010 11:59pm.

Introduction
In computer graphics, hierarchical modeling is widely used for designing a virtual 3D character. The design normally includes articulated body, lighting material, texture mapping and body pose. In this project, you need to write a program to model or design a human-like robot.

This project is designed to be finished by **one-person team** only.

Your 3D robot character should have all of the following features.

Features of the Robot character

Your robot character should have the following body parts: (18 points)
- Torso: Should have at least two parts for torso: upper torso and lower torso.
- Pelvis (Optional)
- Left and Right leg: Each leg should have at least two parts, upper leg and lower leg.
- Shoulder (Optional)
- Left and Right Arm: Each arm should have at least two parts, upper and lower arm
- Left and Right Feet
- Left and Right Hand
- Neck (Optional)
- Head

To make your Robot character look good, you should include the following features for your Robot character: (16 points)
- Each body part should have its own OpenGL lighting material property.
- Each body part should have its own texture.
- Each body can be a simple 3D primitive or a complex 3D mesh (Optional).

Features of the program

Your program must contain all of the following features: (47 points)
- The scene should also include a floor and a visualized 3D coordinate system. (5 points)
- You should be able to use the mouse to change the view angle, zoom in-and-out and pan the camera. (Pan, Zoom and Rotate) (10 point)
- You should be able to change the body pose using mouse to change every joint angle between body parts. (8 points)
- Your program should be able to save your robot pose (including geometry shape, light material, texture and joint angle) into a file, whose format is defined by yourself. (12 points)
- Your program should also be able to load the saved file (designed by the previous feature) to display the designed robot pose stored in it. (12 points)

What to Submit

Includes your solution in one or more C++ source files. The main file (which includes function main {}) should be named `project2.cpp`. Includes all source files in a zip file (project2.zip) and upload it onto the class Scholar site in your own DropBox. Please also include a description file, called "`descriptions.txt`" that describes how to use your program.

Also submit one or more files that can be loaded into your program to display your robot pose design.

Grading

Your overall grade will be based on the following:

- (81 points) Completion of the feature list.
- (5 points) How easy to use the GUI.
- (9 points) How complex and interesting (in art sense) your robot pose is.
- (5 points) How good is your descriptions.txt file?
- You will get 5 more points for each optional feature.