CS4204 Computer Graphics Fall 2008
Homework 4 – 3D Robot (Programming)

Due Dates
Homework 4 is due on Monday, 10/27/2008 11:59pm.

Introduction
In computer graphics, hierarchical modeling is widely used for designing a virtual 3D character. The design normally includes articulated body design, lighting material design, texture mapping and body pose design.

In this homework, you need to write a program to model or design a human-like robot, which will be used in your next project for character animation.

You 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, 2 points for each part)

- Torso: Should have at least two parts 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: (10 points)

- Each body part should have its own OpenGL lighting material property. (5 points)
- Each body part should have its own texture, or some body parts share the same texture. (Make sure you have at least two different textures on the body) (5 points)

Features of the program

Your program must contain all of the following features: (22 points)

- The scene should also include a floor. (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. (7 points)
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What to Submit
Put your solution in one or more C++ source files. The main file (which includes function main {}) should be named `homework4.cpp`. Send all source files in a zip file to your TA, Sean Ponce, via email ponce@vt.edu. Please also include a description file, called "`descriptions.txt`" that describes how to use your program.