

# CS445/545 – Project 2: Hierarchical Transformations

## 1. Due Date

Project 2 is due on **10/11 11:59pm**

## 2. Introduction

You are required to write a program using OpenGL to create a 2D robot. The body parts should be rotatable. Your program should allow users to select and rotate body parts. An executable of this assignment (.exe) is on Canvas. Please run it and get the feel of the work you should deliver.

## 3. Requirements

The robot must have at least **16 body parts**, as shown in Figure (A). The relationships of these body parts are shown in Figure (B).

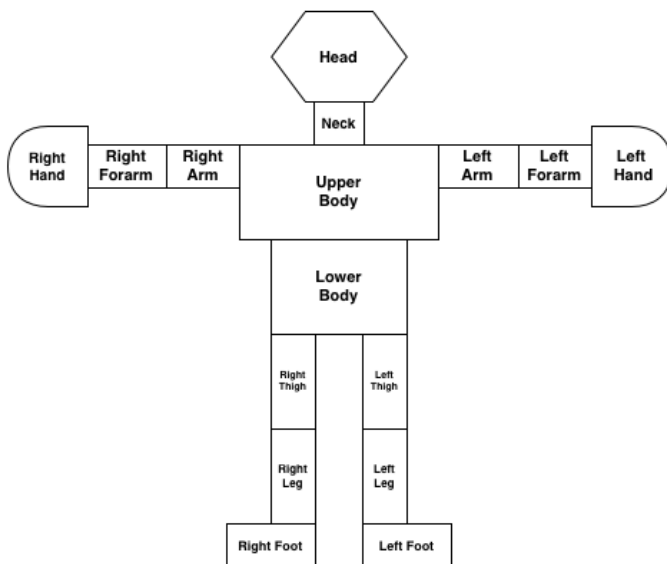


Figure (A)

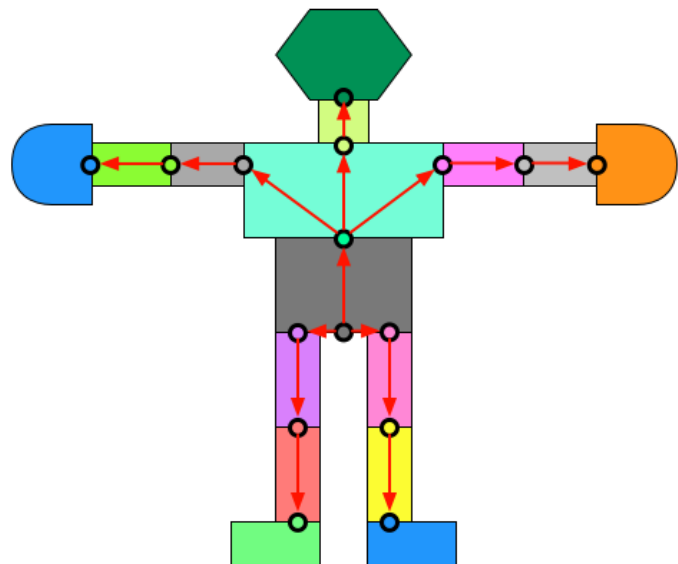


Figure (B)

**3.1. (80pts) Transformation:** Your program must correctly control the rotations of the 16 body parts (5 points for each body part). Note that the coordinates of a child part should be defined in the coordinate system of its parent, as shown in (B).

**3.2. (20pts) Body Part Selection:** Your program must allow users to select and rotate a particular body part. For example, you may use a key on the keyboard to cycle through the indices of body parts, and then use another key for rotation.

## 4. What to Turn In

Upload the following two things to Canvas:

- (1) A description explaining how to select and rotate a body part in your program.
- (2) A .zip file containing all source files (.h and .cpp files).