**PROGRAM REPORT**

This is a Brief report of the program used for question 4 in the assignment. The code is in the code file and is named Crab\_Arm.html

This program gives out the output of 2 robotic arms with 2 parts within them, that is upper part and the lower part of the arm. These 2 arms have the ability to rotate 360 degrees

I have basically gone with a concept of a Crab with 2 lower legs and it could move its legs in complete 360 degrees, It would have 2 parts of legs that is lower and upper part of the leg within one part of the leg.

* For drawing and rotating the legs, we use the following code:

m = translate(-4.1, -0.8\*upperLegHeight, 0.0);

m = mult(m , rotate(theta[leftUpperLegId], vec3(0, 0, 1)));

The above code is used to translate the leg to our desired location and rotate about the z axis, we have to write 4 such functions for the 4 parts of these legsA red and blue line with blue and white text

Description automatically generated with medium confidence

* This is the basic state of the arm and crab, The following are the **model view matrices for each of the leg.**

**Left upper leg**: [-1, 1.2246467991473532e-16, 0, -4.1][-1.2246467991473532e-16, -1, 0, -2][0, 0, 1, 0] [0, 0, 0, 1]

**Right upper leg**: [1, 0, 0, 0][0, 1, 0, 2.5][0, 0, 1, 0][0, 0, 0, 1]

**Left lower leg** : [-1, 1.2246467991473532e-16, 0, 4.1][-1.2246467991473532e-16, -1, 0, -2][0, 0, 1, 0][0, 0, 0, 1]

**Right lower leg** : [1, 0, 0, 0][0, 1, 0, 2.5][0, 0, 1, 0][0, 0, 0, 1]

**Screenshots of the model view matrices in the console**

A screenshot of a computer program

Description automatically generated

**Some other screenshots of the crab**

A screenshot of a computer

Description automatically generated

A red rectangular object with blue lines and white text

Description automatically generated

A red rectangular object with blue and white text

Description automatically generated