Report for assignment 3

Important: about mouse click:

(1) part A: click middle button to call menu, and click the left button to see the effect.

(2) Part B: just keep clicking the right button.

Part A: You can see the results below through the screen shots.

1. how to run it:

(1) in current folder, using command “make” to compile the files

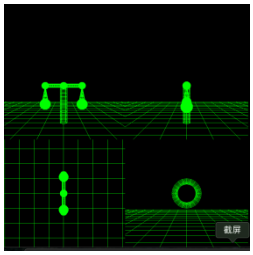
(2) Use ./project to run the program.

(3) Then u will get the pattern as ***picture 1***.

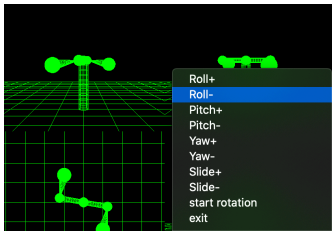
(4) U can test the functions in the low-right corner (ViewPort1).

(5) When u press the middle button of the mouse, u can call the menu as ***picture 2***.

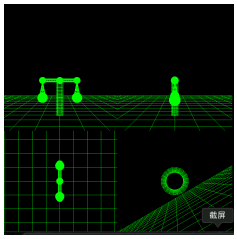
(6) Press any button among (Roll+-,Pitch+-,Yaw+-,Slide+-), then press left button of mouse. U can see the effect. Through ***picture 3 - picture10***



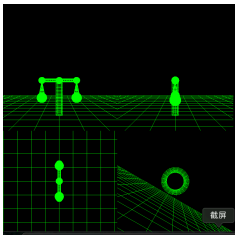
1:Overview



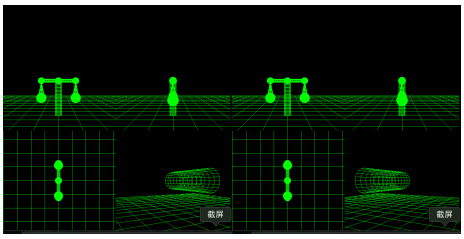
2:Menu



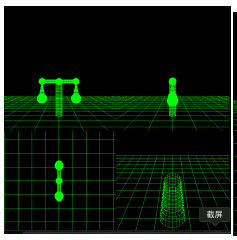
3:Roll+



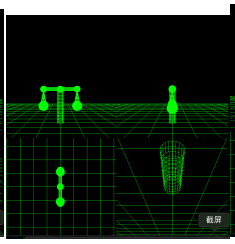
4:Roll-



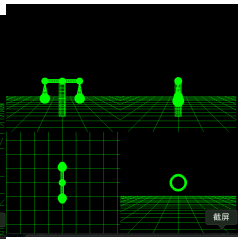
5:Pitch+ 6:Pitch-



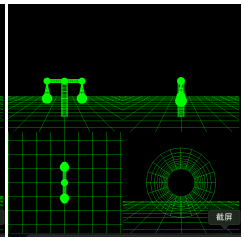
7:Yaw+



8:Yaw-



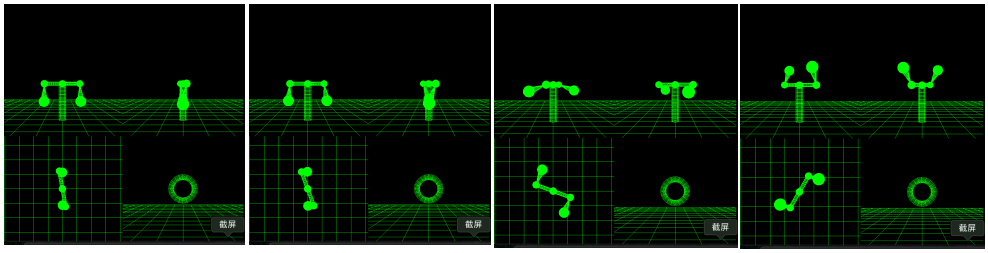
9:Slide+



10:Slide-

Part B: In ViewPort2 - ViewPort4.

For test partB, U just need to click the right button of the mouse. With every click, The whole model will rotation 10 degrees. These are part of the results as follow: You can test it by yourself to see more.



1. Code for three ViewPorts are almost the same. But still a little differences:

(1) The projection position on the screen.

(2) The position of the virtual camera. We use the gluLookAt to change the position of the camera.

```
//// V2,low-left, viewPoint(x,y=40,z), v vecotr Z axis
glViewport(0, 0, width/2.0, height/2.0); {
        projection(width/2.0, height/2.0, 1);
        gluLookAt(0, 80, 0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0);
        one_viewPort();
}
```

2. Because the rest of the code are the same, so I write them in one function called one_viewPort, then call this function in different viewPort.

Codes about how to display the models are in file called: display.cpp

I divide the whole model into ten parts : and draw them individually.

(1) b1-b5(five sphere)

(2) s1-s5(five cylinder).

```
void one_viewPort(){
    DrawGround();// Draw the ground.
    //// (b1)
    glPushMatrix();
    glRotatef(b_s, 0,1,0);
    glTranslatef(0,0,10);
    RenderGLScene(2, 0, 0);
    glPopMatrix();
    ...
    //// (s5)
    glPushMatrix();
    glRotatef(b_s, 0,1,0);
    glRotatef(b_s, 0,0,1);
    glRotatef(90, 1,0,0);
    glTranslatef(0,-10,0);
    RenderGLScene(0, 2, 10);
    glPopMatrix();
}
```

Rotation function for Part B:

```
void startRotation(float n){    b_s += n;       if(b_s < -360)    b_s = 360;    }
```