

Código 9: Jerarquias

```
#include <windows.h>
#include <GL/glut.h>

static int muslo = 0, pantorrilla = 0, pie = 0, pasoy = 0;

void reshape (int w, int h)
{
    glMatrixMode (GL_PROJECTION);
    glLoadIdentity ();
    glOrtho(-4,4,-4,4,-4,4);
    glMatrixMode (GL_MODELVIEW);
    glLoadIdentity();
}

void dibuja(void)
{
    glClear (GL_COLOR_BUFFER_BIT);
    glPushMatrix();
    glRotatef ((GLfloat) pasoy, 0.0, 1.0, 0.0);
    glPushMatrix();
    glRotatef ((GLfloat) muslo, 0.0, 0.0, 1.0);
    glPushMatrix();
    glTranslatef (0.0, 1.6, 0.0);
    glScalef (0.6, 2, 0.5);
    glColor3f(1,0,1);
    glutSolidCube (1.0);    //muslo
    glPopMatrix();
    glPushMatrix();
    glTranslatef (0.0, 0.3, 0.0);
    glColor3f(.7,.7,.7);
    glutSolidSphere(0.29,15,15);    //rodilla
    glPopMatrix();
    glPushMatrix();
    glRotatef (-(GLfloat) pantorrilla * 2, 0.0, 0.0, 1.0);
    glPushMatrix();
    glTranslatef (0.0, -1, 0.0);
    glScalef (0.6, 2, 0.5);
    glColor3f(0,0,1);
    glutSolidCube (1.0); //pantorrilla
    glPopMatrix();
    glPushMatrix();
    glTranslatef (0.0, -2.3, 0.0);
    glColor3f(.7,.7,.7);
    glutSolidSphere(0.28,15,15);    //talon
    glPopMatrix();
    glPushMatrix();
    glTranslatef(0, -2.8, 0.0);
    glRotatef ((GLfloat) pie, 0.0, 0.0, 1.0);
    glTranslatef (0, 2.8, 0.0);
    glPushMatrix();
    glTranslatef (0.25, -2.8, 0.0);
    glScalef (1, 0.35, 0.7);
    glColor3f(.5,0,.8);
    glutSolidCube (1.0); //pie
    glPopMatrix();
    glPopMatrix();
    glPopMatrix();
    glPopMatrix();
    glutSwapBuffers();
}
```

```

void teclado (unsigned char key, int x, int y)
{
    switch (key) {
        case 27: exit(0);
        case 'M': muslo = (muslo + 5) % 360;
                break;
        case 'm': muslo = (muslo - 5) % 360;
                break;
        case 'A': if (pantorrilla >= 75) pantorrilla = 75;
                else pantorrilla += 5;
                break;
        case 'a': if (pantorrilla <= -5 ) pantorrilla = -5;
                else pantorrilla -= 5;
                break;
        case 'P': if (pie >= 30) pie = 30;
                else pie += 5;
                break;
        case 'p': if (pie <= -30) pie = -30;
                else pie -= 5;
                break;
        case 'r': pasoy += 2; //rota con respecto a y
                break;
        case 'R': pasoy -= - 2;
        default: break;
    }
    glutPostRedisplay();
}
int main(int argc, char** argv)
{
    glutInit(&argc, argv);
    glutInitDisplayMode (GLUT_DOUBLE | GLUT_RGB);
    glutInitWindowSize (500, 500);
    glutInitWindowPosition (100, 100);
    glutCreateWindow ("Pierna");
    glutDisplayFunc (dibuja);
    glutReshapeFunc (reshape);
    glutKeyboardFunc (teclado);
    glutMainLoop();
    return 0;
}

```



