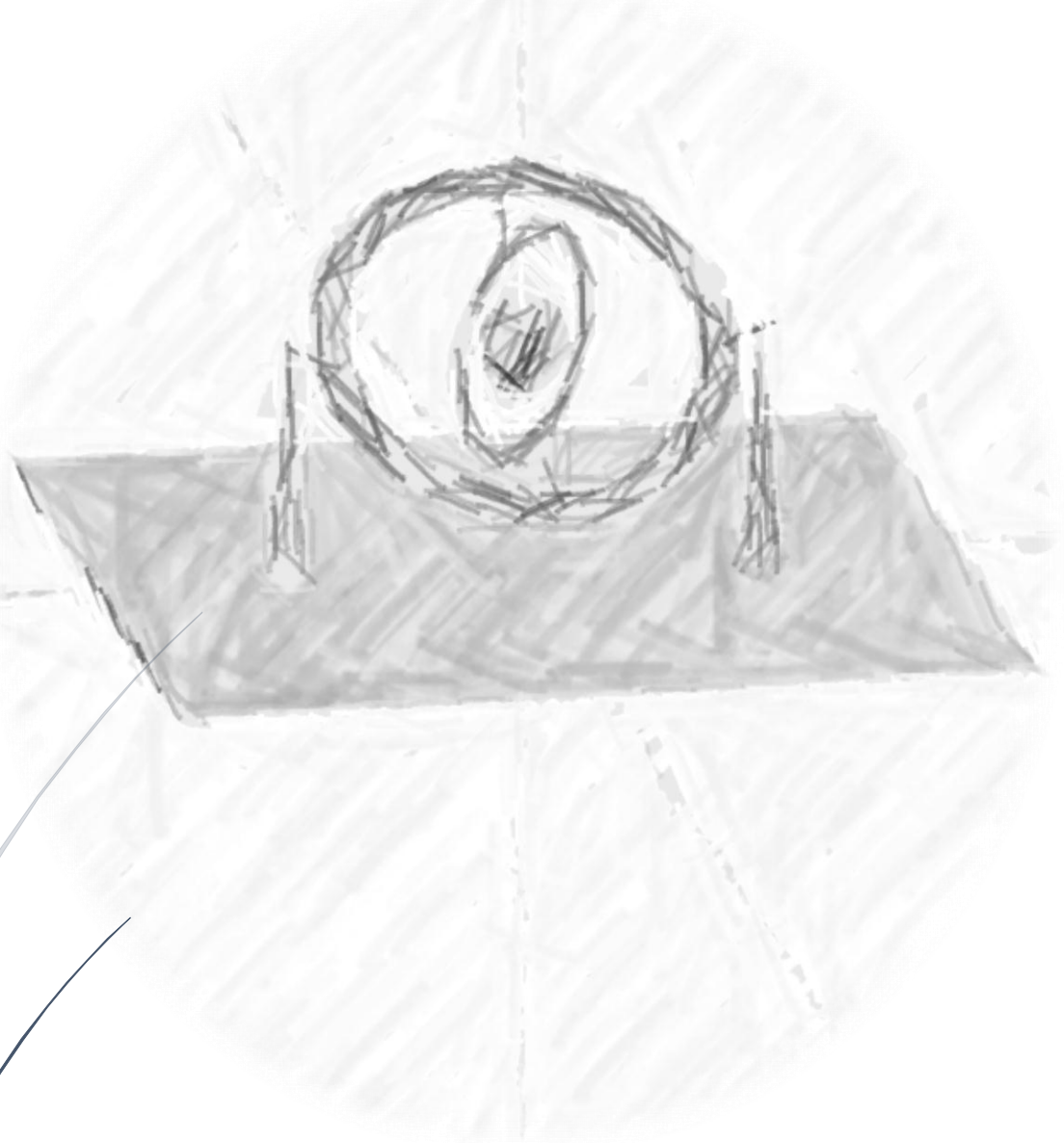
Informática Gráfica

Práctica 3:

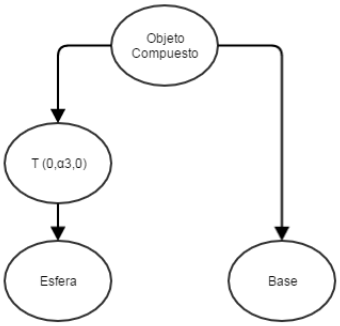
Modelos Jerárquicos



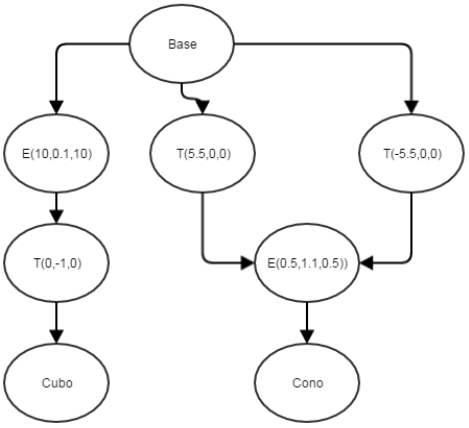
Bryan Moreno Picamán

Grafo del modelo jerárquico

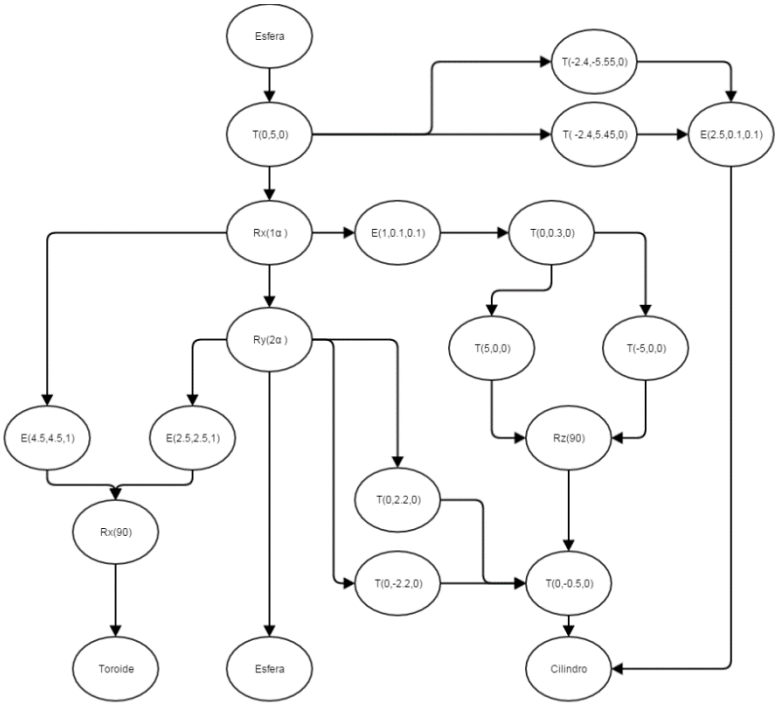
Grafo Objeto Final



Grafo Base



Grafo Esfera



Métodos de dibujo del modelo jerárquico

Objeto Final

```
ObjetoCompuesto::dibujar(grado1,grado2,traslacion){
    glPushMatrix();
        baseObjeto.dibujar();
    glPopMatrix();
    glPushMatrix();
        glTranslatef(0,traslacion,0);
        objetoEsfera.dibujar(grado1,grado2);
    glPopMatrix();

}
```

Base

```
Base::dibujar(){
    glPushMatrix();
        glPushMatrix();
            glPushMatrix();
                glTranslatef(5.5,0,0);
                glScalef(0.5,1.1,0.5);
                cono.dibujar();
            glPopMatrix();
            glPushMatrix();
                glTranslatef(-5.5,0,0);
                glScalef(0.5,1.1,0.5);
                cono.dibujar();
            glPopMatrix();
        glPopMatrix();
        glPushMatrix();
            glScalef(10,0.1,10);
            glTranslatef(0,-1,0);
            cubo.dibujar();
        glPopMatrix();
    glPopMatrix();
}
```

Esfera

```
Esfera::dibujar(int grado1,int grado2){
    glPushMatrix();
    glTranslatef(0,5,0);
        glPushMatrix();
            glRotatef(90,0,0,1);
            glPushMatrix();
                glTranslatef(-2.4,-5.55,0);
                glScalef(2.5,0.1,0.1);
                    cilindro2.dibujar();
            glPopMatrix();
            glPushMatrix();
                glTranslatef(-2.4,5.45,0);
                glScalef(2.5,0.1,0.1);
                    cilindro2.dibujar();
            glPopMatrix();
        glPopMatrix();

        glPushMatrix();
        glRotatef(grado1,1,0,0);

                //Toroide exterior
                glPushMatrix();
                    glScalef(4.5,4.5,1);
                    glRotatef(90,1,0,0);
                        toroide.dibujar();
                glPopMatrix();

                //Union toroide con base
                glPushMatrix();
                glScalef(1,0.1,0.1);
                glTranslatef(0,0.3,0);

                    glPushMatrix();
                        glTranslatef(5,0,0);
                        glRotatef(90,0,0,1);
                        glTranslatef(0,-0.5,0);
                            cilindro.dibujar();
                    glPopMatrix();
```

```
                //Union toroide con base
                glPushMatrix();
                glScalef(1,0.1,0.1);
                glTranslatef(0,0.3,0);

                    glPushMatrix();
                        glTranslatef(5,0,0);
                        glRotatef(90,0,0,1);
                        glTranslatef(0,-0.5,0);
                            cilindro.dibujar();
                    glPopMatrix();

                    glPushMatrix();
                        glTranslatef(-5,0,0);
                        glRotatef(90,0,0,1);
                        glTranslatef(0,-0.5,0);
                            cilindro.dibujar();
                    glPopMatrix();

                glPopMatrix();

                //Toroide interior con nucleo
                glPushMatrix();
                glRotatef(grado2,0,1,0);
                    glPushMatrix();
                        glScalef(2.5,2.5,1);
                        glRotatef(90,1,0,0);
                            toroide.dibujar();
                    glPopMatrix();

                    glPushMatrix();
                            esfera.dibujar();
                    glPopMatrix();

                    //Union toroide toroide exterior
                    glPushMatrix();
                        glScalef(0.1,1.5,0.1);
                        glPushMatrix();
                            glTranslatef(0,2.2,0);
                            glTranslatef(0,-0.5,0);
                            cilindro.dibujar();
                        glPopMatrix();
                        glPushMatrix();
                            glTranslatef(0,-2.2,0);
                            glTranslatef(0,-0.5,0);
                            cilindro.dibujar();
                        glPopMatrix();
                    glPopMatrix();
                glPopMatrix();

            glPopMatrix();
        glPopMatrix();
    }
```

RESULTADO