UNIVERSIDAD NACIONAL DE SAN AGUSTÍN

ESCUELA PROFESIONAL DE CIENCIA DE LA COMPUTACIÓN

COMPUTACION GRAFICA

Practica 3 Casa en Three.js

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1. Ejercicio

Implemente una aplicaci on b asica en Three.js, esta aplicaci on debe contener una casa y algunos arboles a su alrededor (ver Figura 1).

1.1. Código

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <title>House</title>
    <style>
      body:{margin : 0;}
      canvas:{width : 100;height : 100;}
    </style>
    <meta charset="utf-8">
  </head>
  <body>
    <script src = "js/three.js"></script>
    <script src = "js/OrbitControls.js"></script>
    <script>
      function getRndInteger(min, max) {
        return Math.floor(Math.random() * (max - min + 1) ) + min;
      }
      function generateTrees(listRL , listRT , number , xy_min , xy_max ){
        LeafsSource = [];
        LeafsPoints = [];
        TrunkSource = [];
        TrunkPoints = [];
        for(var i = 0;i<number;i++){
          LeafsSource.push(new THREE.ConeGeometry(1.5,5,32));
          LeafsPoints.push(new THREE.MeshLambertMaterial({color: 0x088A08,
              wireframe : false }));
          listRL.push(new THREE.Mesh(LeafsSource[i],LeafsPoints[i]));
          var xr = 0
          while(xr == 0){
            xr = getRndInteger(xy_min[0],xy_max[0])
          }
          var yr = 0
          while(yr == 0){
```

```
33            yr = getRndInteger(xy_min[1],xy_max[1])
34          }
35          var cr = getRndInteger(3,50)
36          listRL[i].position.set(xr*cr,4,yr*cr);
37          TrunkSource.push(new THREE.CylinderGeometry(0.5,0.5,4,32));
38          TrunkPoints.push(new THREE.MeshPhongMaterial({color : 0x5c3b00 ,
                wireframe : false }));
39          listRT.push(new THREE.Mesh(TrunkSource[i],TrunkPoints[i]));
40          var center = new THREE.Vector3();
41          listRL[i].getWorldPosition(center);
42          listRT[i].position.set(center.x,center.y-3.5,center.z);
43        }
44        return;
45      }
46      var scene = new THREE.Scene();
47      var camera = new THREE.PerspectiveCamera(75 , window.innerWidth /
            window.innerHeight, 0.1 , 1000);
48      var renderer = new THREE.WebGLRenderer();
49      renderer.setSize(window.innerWidth , window.innerHeight);
50      document.body.appendChild(renderer.domElement);
51      window.addEventListener('resize',function(){
52        var width = window.innerWidth;
53        var height = window.innerHeight;
54        renderer.setSize(width,height);
55        camera.aspect = width/height;
56        camera.updateProjectionMatrix();
57      });
58      control = new THREE.OrbitControls(camera , renderer.domElement);
59
60      /*var treeLeafsG = new THREE.ConeGeometry(1,3,32);
61      var treeLeafsM = new THREE.MeshBasicMaterial({color: 0x088A08,
            wireframe : true });
62      var treeLeafsR = new THREE.Mesh(treeLeafsG,treeLeafsM);
63      treeLeafsR.position.set(1,1,1);
64      LeafsSource = [];
65      LeafsPoints = [];*/
66      LeafsMeshs = [];
67      TrunksMeshs = []
68      xy_min = [-2,-2];
69      xy_max = [2,2];
70      generateTrees(LeafsMeshs,TrunksMeshs,100,xy_min,xy_max);
```

```
71
72      //scene.add(cube);
73      //scene.add(treeLeafsR);
74      for(var i = 0;i<LeafsMeshs.length;i++){
75        scene.add(LeafsMeshs[i]);
76        scene.add(TrunksMeshs[i]);
77      }
78      camera.position.z = 3;
79
80      var hgeo = new THREE.BoxGeometry(3,3,3);
81      var hmes =
82      [
83        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/brick.png'),side : THREE.DoubleSide}),
84        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/brick.png'),side : THREE.DoubleSide}),
85        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/brick.png'),side : THREE.DoubleSide}),
86        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/brick.png'),side : THREE.DoubleSide}),
87        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/brick.png'),side : THREE.DoubleSide}),
88        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/brick.png'),side : THREE.DoubleSide})
89      ]
90
91      var hmat = new THREE.MeshFaceMaterial(hmes);
92      var house = new THREE.Mesh(hgeo,hmat);
93      scene.add(house);
94
95      var hgeo1 = new THREE.BoxGeometry(2,1.5,0.1);
96      var hmes1 =
97      [
98        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/glass.png'),side : THREE.DoubleSide}),
99        new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/glass.png'),side : THREE.DoubleSide}),
100       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/glass.png'),side : THREE.DoubleSide}),
101       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/glass.png'),side : THREE.DoubleSide}),
```

```
102         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/glass.png'),side : THREE.DoubleSide}),
103         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/glass.png'),side : THREE.DoubleSide})
104       ]
105
106       var hmat1 = new THREE.MeshFaceMaterial(hmes1);
107       var windowe = new THREE.Mesh(hgeo1,hmat1);
108       windowe.position.set(0,0,1.5)
109       scene.add(windowe);
110
111
112       var tico = new THREE.ConeGeometry(2.5,2,32);
113       var tpts = new THREE.MeshLambertMaterial({map : new THREE.
              TextureLoader().load('img/roof1.png')});
114       var ar = new THREE.MeshFaceMaterial(tpts);
115       var tejado = new THREE.Mesh(tico,ar);
116       tejado.position.set(0,2.5,0);
117       scene.add(tejado);
118
119       var dico = new THREE.BoxGeometry(0.3,2.5,1.5)
120       var dpts =
121       [
122         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/door.png'),side : THREE.DoubleSide}),
123         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/door.png'),side : THREE.DoubleSide}),
124         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/door.png'),side : THREE.DoubleSide}),
125         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/door.png'),side : THREE.DoubleSide}),
126         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/door.png'),side : THREE.DoubleSide}),
127         new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
                img/door.png'),side : THREE.DoubleSide})
128       ]
129       var dmat = new THREE.MeshFaceMaterial(dpts);
130       var door = new THREE.Mesh(dico,dmat);
131       door.position.set(1.5,-0.25,0)
132       scene.add(door)
133
```

```
134     var sico = new THREE.SphereGeometry(0.07,32,32)
135     var spts = new THREE.MeshLambertMaterial({color : 0xFAFAD2 , wireframe
            : false})
136     var perilla = new THREE.Mesh(sico,spts)
137     perilla.position.set(1.7,-0.5,0.5)
138     scene.add(perilla)
139
140     var fico = new THREE.BoxGeometry(200,0.1,200)
141     var mpts =
142     [
143       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/floor.png'),side : THREE.DoubleSide}),
144       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/floor.png'),side : THREE.DoubleSide}),
145       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/floor.png'),side : THREE.DoubleSide}),
146       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/floor.png'),side : THREE.DoubleSide}),
147       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/floor.png'),side : THREE.DoubleSide}),
148       new THREE.MeshBasicMaterial({ map : new THREE.TextureLoader().load('
              img/floor.png'),side : THREE.DoubleSide})
149     ]
150     var fpts = new THREE.MeshFaceMaterial(mpts)
151     var floor = new THREE.Mesh(fico,fpts)
152     floor.position.set(0,-1.5,0)
153     scene.add(floor)
154
155     var vico = new THREE.ConeGeometry(60,50,32)
156     var vmrs = new THREE.MeshLambertMaterial({color : 0x003947 , wireframe
            : false})
157     var volc = new THREE.Mesh(vico,vmrs)
158     volc.position.set(-80,20,0)
159     scene.add(volc)
160
161     var vico1 = new THREE.ConeGeometry(10,5,32)
162     var vmrs1 = new THREE.MeshLambertMaterial({color : 0xFFFFFF ,
            wireframe : false})
163     var volc1 = new THREE.Mesh(vico1,vmrs1)
164     volc1.position.set(-80,42,0)
165     scene.add(volc1)
```

```
166
167       var ambient = new THREE.AmbientLight(0xF0FFFF,0.3);
168       scene.add(ambient);
169       var directional = new THREE.DirectionalLight(0xFFFFFF,3.0);
170       directional.position.set(1,1,1);
171       scene.add(directional);
172       var update = function(){
173
174       };
175
176       var render = function(){
177         renderer.render(scene,camera );
178       };
179
180       var GameLoop = function(){
181         requestAnimationFrame(GameLoop);
182         update();
183         render();
184       }
185
186       GameLoop();
187     </script>
188   </body>
189 </html>
```

2. Link del repositorio

https://github.com/kpzaolod6000/Graphics-Computing/tree/main/house$_t hreejs$