Tecnológico de Monterrey

Final Project

Computer Graphics

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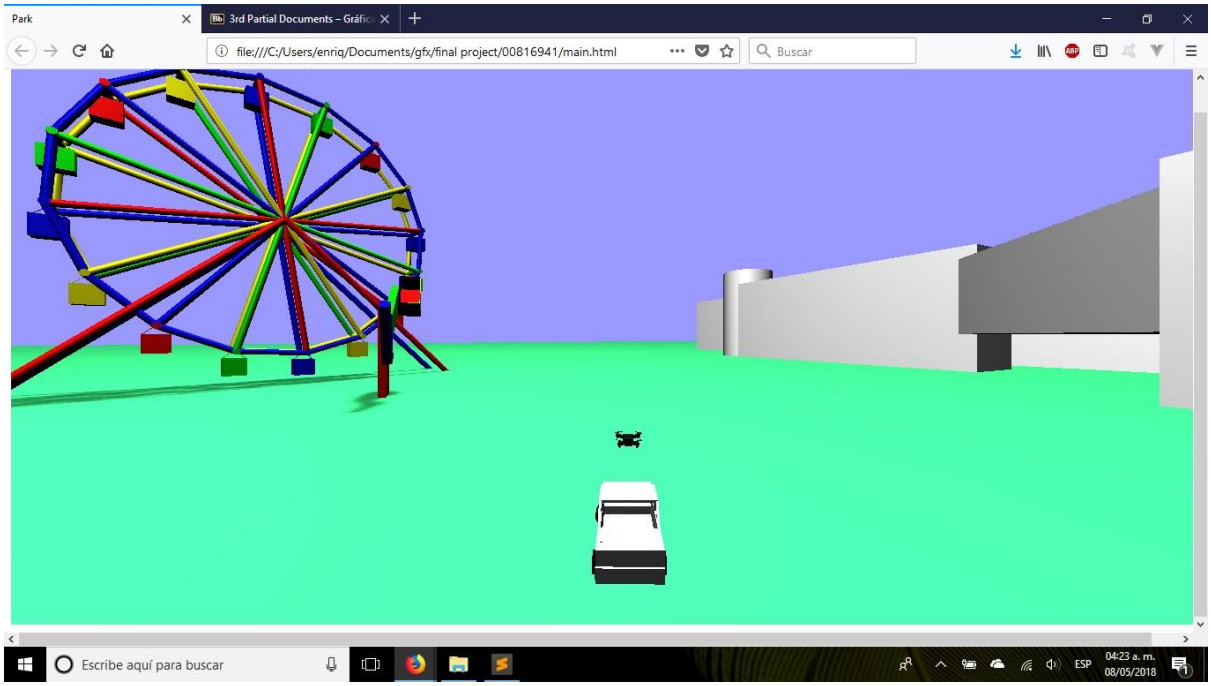
To complete this project, first I implemented and improved (added colors and shadows) the amusement park from the previous assignment. Finding out how to correctly assign shadows was the most difficult part of this segment.

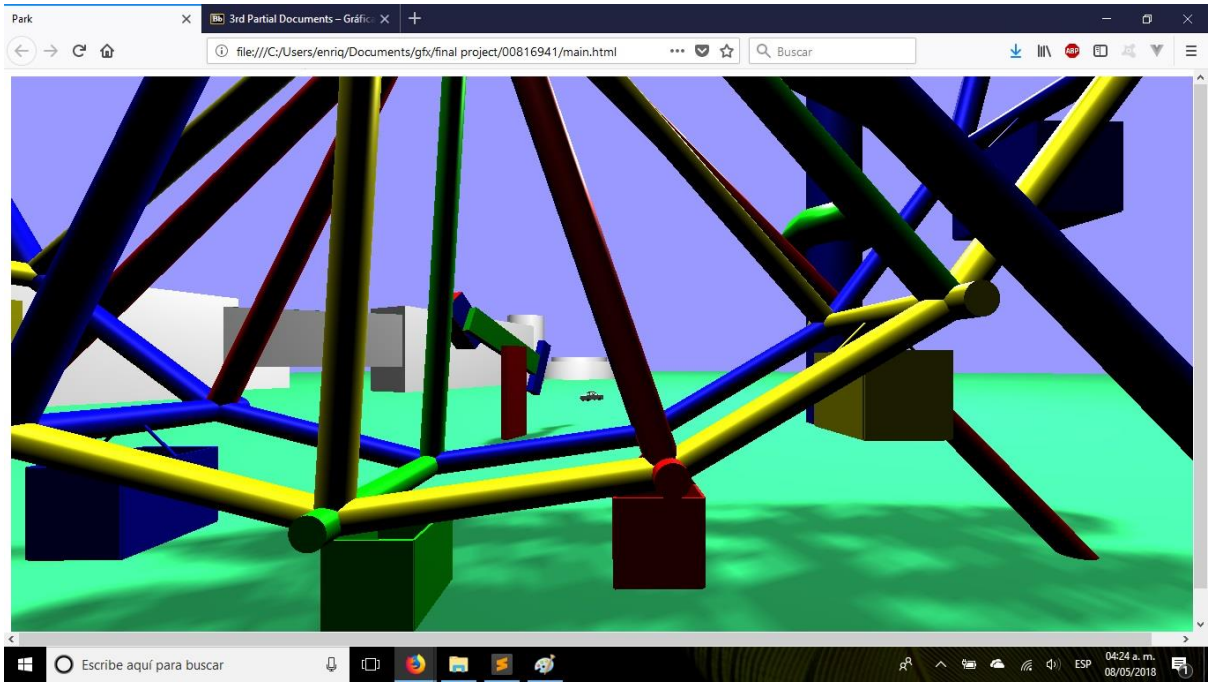
Then, I implemented the car, which was by far the most difficult part of the project, since it needed to have many movable parts, I had to build each and every piece separately and then carefully calculate which place it should hold. Once the car was assembled making the pieces move was not so difficult, but still it was time consuming.



I then coded the drone, which compared to the car was quite quick.
Finally, I implemented the ITESM Campus Puebla by creating a base building and replicating it, and then building the cafeteria and the DAE building.

I did not add shadows to the car or itesm, since they were already making the program much heavier while just being on the amusement park, plus I think that that is the best place you can appreciate them.

This project, although long and tiring, let me put into practice must of the things learned along the course in a challenging way.



Appendix

```
<html>
<head>
	<title> Park </title>
	<style>
	canvas { width: 100%; height: 100% }
</style>
</head>
<body>
	<script src="three.min.js"> </script>

	<script>

		window.addEventListener('keydown',doKeyDown,true);
		// agregamos el "listener" para "escuchar" los eventos del
teclado

		var zpos = 50.0;
		var xpos = 0;
		var yrot = 0;


		var doorControl = 0;
		var hoodControl = 0;
		var trunkControl = 0;
		var wheelControl = 0;
		var ascension = 0;

		function doKeyDown(evt){
```

```
                //console.log("Tecla presionada: "+evt.keyCode);
                switch (evt.keyCode) {
                  case 38:  /* Up arrow was pressed */
                  zpos -= (0.5 * Math.cos(yrot));
                  xpos -= (0.5 * Math.sin(yrot));
                  break;
                  case 40:  /* Down arrow was pressed */
                  zpos += (0.5 * Math.cos(yrot));
                  xpos += (0.5 * Math.sin(yrot));
                  break;
                  case 37:  /* Left arrow was pressed */
                  yrot += 0.1;
                  break;
                  case 39:  /* Right arrow was pressed */
                  yrot -= 0.1;
                  break;
                  case 87:  /* W was pressed */
                  camera.position.y += 0.5;
                  break;
                  case 83:  /* S was pressed */
                  camera.position.y -= 0.5;
                  break;
                  case 65:  /* A was pressed */
                    xpos -= (0.5 * Math.cos(yrot));
                    zpos += (0.5 * Math.sin(yrot));
                    break;
                    case 68:  /* D was pressed */
                    xpos += (0.5 * Math.cos(yrot));
                    zpos -= (0.5 * Math.sin(yrot));
                    break;
                    case 84:  /* T was pressed */
                    tsuru.position.z -= (1 *
Math.cos(tsuru.rotation.y+90*Math.PI/180));
                    tsuru.position.x -= (1 *
Math.sin(tsuru.rotation.y+90*Math.PI/180));
                    tsuru.rotation.y -= (WheelsGhostFL.rotation.z)/3;
                    break;
                    case 71:  /* G was pressed */
                    tsuru.position.z += (1 *
Math.cos(tsuru.rotation.y+90*Math.PI/180));
                    tsuru.position.x += (1 *
Math.sin(tsuru.rotation.y+90*Math.PI/180));
                    tsuru.rotation.y += (WheelsGhostFL.rotation.z)/3;
                    break;
                    case 82:  /* R was pressed */
                    if(hoodControl > 0){
                        CofreGhost.rotation.z += 10 * Math.PI/180;
                        hoodControl--;
                    }
                    break;
                    case 70:  /* F was pressed */
                    if(wheelControl > -2){
                        WheelsGhostFL.rotation.z -= 10 * Math.PI/180;
```

```
            WheelsGhostFR.rotation.z -= 10 * Math.PI/180;
            wheelControl--;
        }
        break;
        case 89:  /* Y was pressed */
        if(hoodControl < 7){
            CofreGhost.rotation.z -= 10 * Math.PI/180;
            hoodControl++;
        }
        break;
        case 72:  /* H was pressed */
        if(wheelControl < 2){
            WheelsGhostFL.rotation.z += 10 * Math.PI/180;
            WheelsGhostFR.rotation.z += 10 * Math.PI/180;
            wheelControl++;
        }
        break;
        case 85:  /* U was pressed */
        if(doorControl < 8){
            FrontGhostL.rotation.y -= 10 * Math.PI/180;
            FrontGhostR.rotation.y += 10 * Math.PI/180;
            doorControl++;
    }
        break;
        case 74:  /* J was pressed */
        if(doorControl > 0){
            FrontGhostL.rotation.y += 10 * Math.PI/180;
            FrontGhostR.rotation.y -= 10 * Math.PI/180;
            doorControl--;
        }
        break;
        case 73:  /* I was pressed */
        break;
        case 75:  /* K was pressed */
        break;
        case 66:  /* B was pressed */
        if(trunkControl > 0){
            TrunkGhost.rotation.z -= 10 * Math.PI/180;
            trunkControl--;
        }
        break;
        case 86:  /* V was pressed */
        if(trunkControl < 9){
            TrunkGhost.rotation.z += 10 * Math.PI/180;
            trunkControl++;
        }
        break;
        case 88:  /* X was pressed */
        if(ascension == 0){
            drone.position.y += 2;
            ascension = 1;
        }
        else{
```

```
                    drone.position.y -= 2;
                    ascension = 0;
                }
                break;
            }
        }

        // three basic components of a scene
        var scene = new THREE.Scene();
        var camera = new THREE.PerspectiveCamera(75,
window.innerWidth/window.innerHeight, 0.01, 1000);
        var renderer = new THREE.WebGLRenderer();

        renderer.shadowMap.enabled = true;
              renderer.shadowMap.type = THREE.PCFSoftShadowMap; //
default THREE.PCFShadowMap

              // create some point lights
        //Create a DirectionalLight and turn on shadows for the light
        var light = new THREE.DirectionalLight( 0xffffff, 1, 100 );
        light.position.set( 20, 70, 20 );          //default; light
shining from top
        light.castShadow = true;            // default false
        scene.add( light );

        //Set up shadow properties for the light
        light.shadow.mapSize.width = 512;  // default
        light.shadow.mapSize.height = 512; // default
        light.shadow.camera.near = 0.5;    // default
        light.shadow.camera.far = 500;     // default

        light.shadowCameraLeft = -150;
              light.shadowCameraRight = 150;
              light.shadowCameraTop = 150;
              light.shadowCameraBottom = -150;

        // create some point lights
        var pointLight = new THREE.PointLight( 0xFFFFFF );

        // set its position
        pointLight.position.x = -10;
        pointLight.position.y = 100;
        pointLight.position.z = -70;

        // add to the scene
        scene.add(pointLight);

        //Create a helper for the shadow camera (optional)
        var helper = new THREE.CameraHelper( light.shadow.camera );
        //scene.add( helper );


        function createVagon(material){
```

```
                var ferrisCarSideGeom = new THREE.BoxGeometry( 3, 3, 0.1 );
                var ferrisTubeGeom = new THREE.CylinderGeometry( 0.05,
0.05, 1.6, 32 );
                var ferrisHolderGeom = new THREE.CylinderGeometry( 0.5,
0.5, 8, 32 );
                var ferrisBaseGeom = new THREE.CylinderGeometry( 0.6, 0.6,
44, 32 );

                var ferrisCar = [new THREE.Mesh( ferrisCarSideGeom,
material), new THREE.Mesh( ferrisCarSideGeom, material), new THREE.Mesh(
ferrisCarSideGeom, material), new THREE.Mesh( ferrisCarSideGeom, material),
new THREE.Mesh( ferrisCarSideGeom, material)];
                var ferrisTube1 = new THREE.Mesh( ferrisTubeGeom,
material);
                var ferrisTube2 = new THREE.Mesh( ferrisTubeGeom,
material);
                var ferrisHolder = new THREE.Mesh( ferrisHolderGeom,
material);

                ferrisCar[0].position.z = -1.5;
                ferrisCar[1].position.z = 1.5;
                ferrisCar[2].rotation.y = 90 * Math.PI/180;
                ferrisCar[2].position.x = -1.5;
                ferrisCar[3].rotation.y = 90 * Math.PI/180;
                ferrisCar[3].position.x = 1.5;
                ferrisCar[4].rotation.x = 90 * Math.PI/180;
                ferrisCar[4].position.y = -1.5;
                ferrisTube1.rotation.z = -45* Math.PI/180;
                ferrisTube1.position.x = -1.5+Math.cos(45);
                ferrisTube2.rotation.z = 45* Math.PI/180;
                ferrisTube2.position.x = 1.5-Math.cos(45);
                ferrisHolder.rotation.x = 90 * Math.PI/180;

                carGroup = new THREE.Mesh();
                carGroup.add(ferrisCar[0]);
                carGroup.add(ferrisCar[1]);
                carGroup.add(ferrisCar[2]);
                carGroup.add(ferrisCar[3]);
                carGroup.add(ferrisCar[4]);

                vagonGroup = new THREE.Mesh();
                vagonGroup.add(carGroup);
                carGroup.position.y = -1.5-Math.cos(45)-1.5*Math.cos(45);
                vagonGroup.add(ferrisTube1);
                vagonGroup.add(ferrisTube2);
                ferrisTube1.position.y = -1.5*Math.cos(45);
                ferrisTube2.position.y = -1.5*Math.cos(45);
                vagonGroup.add(ferrisHolder);

                return vagonGroup;
            }

            var groundGeom = new THREE.BoxGeometry( 1000, 0.01, 1000 );
```

```
            var ferrisRingGeom = new THREE.TorusGeometry( 25, 0.5, 16, 16
);
            var ferrisSupportGeom = new THREE.CylinderGeometry( 0.5, 0.5,
50, 32 );
            var ferrisCenterGeom = new THREE.CylinderGeometry( 0.5, 0.5, 8,
32 );
            var ferrisBaseGeom = new THREE.CylinderGeometry( 0.6, 0.6, 44,
32 );

            var alibabaSupportGeom = new THREE.BoxGeometry( 15, 3, 1 );
            var alibabaPendulumGeom = new THREE.BoxGeometry( 2, 8, 1.1 );
            var aliCarSideGeom = new THREE.BoxGeometry( 3, 3, 0.1 );
            var aliCarSidezGeom = new THREE.BoxGeometry( 6, 3, 0.1 );
            var alibabaBaseGeom = new THREE.BoxGeometry( 4, 12, 1 );

            var kilahueaRingGeom = new THREE.TorusGeometry( 5, 3, 6, 8 );
            var kilahueaSupportGeom = new THREE.CylinderGeometry( 4, 4, 60,
8 );


            // create a Lambert material
            var redMaterial = new THREE.MeshStandardMaterial( { color:
0xff0000, metalness: 0.2} );
            var greenMaterial = new THREE.MeshStandardMaterial( { color:
0x00ff00, metalness: 0.2} );
            var blueMaterial = new THREE.MeshStandardMaterial( { color:
0x0000ff, metalness: 0.2} );
            var yellowMaterial = new THREE.MeshStandardMaterial( { color:
0xffff00, metalness: 0.2} );


            var grassMaterial = new THREE.MeshStandardMaterial({color:
0x28b463, metalness: 0, emissive: 0, roughness: 1});

            var grass = new THREE.Mesh( groundGeom, grassMaterial);


            var ferrisRing1 = new THREE.Mesh( ferrisRingGeom,
yellowMaterial);
            var ferrisRing2 = new THREE.Mesh( ferrisRingGeom,
blueMaterial);
            var ferrisCenter = new THREE.Mesh( ferrisCenterGeom,
redMaterial);
            var ferrisBase1 = new THREE.Mesh( ferrisBaseGeom,redMaterial);
            var ferrisBase2 = new THREE.Mesh( ferrisBaseGeom, redMaterial);
            var ferrisBase3 = new THREE.Mesh( ferrisBaseGeom,blueMaterial);
            var ferrisBase4 = new THREE.Mesh( ferrisBaseGeom,
blueMaterial);

            var ferrisSupport1 = new THREE.Mesh( ferrisSupportGeom,
redMaterial);
```

```
            var ferrisSupport2 = new THREE.Mesh( ferrisSupportGeom,
greenMaterial);
            var ferrisSupport3 = new THREE.Mesh( ferrisSupportGeom,
blueMaterial);
            var ferrisSupport4 = new THREE.Mesh( ferrisSupportGeom,
yellowMaterial);
            var ferrisSupport5 = new THREE.Mesh( ferrisSupportGeom,
redMaterial);
            var ferrisSupport6 = new THREE.Mesh( ferrisSupportGeom,
greenMaterial);
            var ferrisSupport7 = new THREE.Mesh( ferrisSupportGeom,
blueMaterial);
            var ferrisSupport8 = new THREE.Mesh( ferrisSupportGeom,
yellowMaterial);

            var ferrisSupport12 = new THREE.Mesh( ferrisSupportGeom,
blueMaterial);
            var ferrisSupport22 = new THREE.Mesh( ferrisSupportGeom,
yellowMaterial);
            var ferrisSupport32 = new THREE.Mesh( ferrisSupportGeom,
redMaterial);
            var ferrisSupport42 = new THREE.Mesh( ferrisSupportGeom,
greenMaterial);
            var ferrisSupport52 = new THREE.Mesh( ferrisSupportGeom,
blueMaterial);
            var ferrisSupport62 = new THREE.Mesh( ferrisSupportGeom,
yellowMaterial);
            var ferrisSupport72 = new THREE.Mesh( ferrisSupportGeom,
redMaterial);
            var ferrisSupport82 = new THREE.Mesh( ferrisSupportGeom,
greenMaterial);

            vagonArr1 = createVagon(redMaterial);
            vagonArr2 = createVagon(greenMaterial);
            vagonArr3 = createVagon(blueMaterial);
            vagonArr4 = createVagon(yellowMaterial);
            vagonArr5 = createVagon(redMaterial);
            vagonArr6 = createVagon(greenMaterial);
            vagonArr7 = createVagon(blueMaterial);
            vagonArr8 = createVagon(yellowMaterial);
            vagonArr9 = createVagon(redMaterial);
            vagonArr10 = createVagon(greenMaterial);
            vagonArr11 = createVagon(blueMaterial);
            vagonArr12 = createVagon(yellowMaterial);
            vagonArr13 = createVagon(redMaterial);
            vagonArr14 = createVagon(greenMaterial);
            vagonArr15 = createVagon(blueMaterial);
            vagonArr16 = createVagon(yellowMaterial);

            ferrisSupport2.rotation.z = 1 * (360/16) * Math.PI/180;
            ferrisSupport3.rotation.z = 2 * (360/16) * Math.PI/180;
            ferrisSupport4.rotation.z = 3 * (360/16) * Math.PI/180;
            ferrisSupport5.rotation.z = 4 * (360/16) * Math.PI/180;
```

```
            ferrisSupport6.rotation.z = 5 * (360/16) * Math.PI/180;
            ferrisSupport7.rotation.z = 6 * (360/16) * Math.PI/180;
            ferrisSupport8.rotation.z = 7 * (360/16) * Math.PI/180;

            ferrisSupport22.rotation.z = 1 * (360/16) * Math.PI/180;
            ferrisSupport32.rotation.z = 2 * (360/16) * Math.PI/180;
            ferrisSupport42.rotation.z = 3 * (360/16) * Math.PI/180;
            ferrisSupport52.rotation.z = 4 * (360/16) * Math.PI/180;
            ferrisSupport62.rotation.z = 5 * (360/16) * Math.PI/180;
            ferrisSupport72.rotation.z = 6 * (360/16) * Math.PI/180;
            ferrisSupport82.rotation.z = 7 * (360/16) * Math.PI/180;

            ferrisSupportGroup = new THREE.Mesh();
            ferrisSupportGroup.add(ferrisSupport1);
            ferrisSupportGroup.add(ferrisSupport2);
            ferrisSupportGroup.add(ferrisSupport3);
            ferrisSupportGroup.add(ferrisSupport4);
            ferrisSupportGroup.add(ferrisSupport5);
            ferrisSupportGroup.add(ferrisSupport6);
            ferrisSupportGroup.add(ferrisSupport7);
            ferrisSupportGroup.add(ferrisSupport8);

            ferrisSupportGroup2 = new THREE.Mesh();2
            ferrisSupportGroup2.add(ferrisSupport12);
            ferrisSupportGroup2.add(ferrisSupport22);
            ferrisSupportGroup2.add(ferrisSupport32);
            ferrisSupportGroup2.add(ferrisSupport42);
            ferrisSupportGroup2.add(ferrisSupport52);
            ferrisSupportGroup2.add(ferrisSupport62);
            ferrisSupportGroup2.add(ferrisSupport72);
            ferrisSupportGroup2.add(ferrisSupport82);

            ferrisSupportGroup.position.z = 3;
            ferrisSupportGroup2.position.z = -3;

            ferrisCenter.rotation.x = 90 * Math.PI / 180;

            ferrisGroup = new THREE.Mesh();
            ferrisGroup.add(ferrisRing1);
            ferrisGroup.add(ferrisRing2);
            ferrisGroup.add(ferrisSupportGroup);
            ferrisGroup.add(ferrisSupportGroup2);
            ferrisGroup.add(ferrisCenter);

            ferrisRing1.position.z = 3;
            ferrisRing2.position.z = -3;

            vagonArr1.position.y = 25 * Math.cos( 0 * (360/16) *
Math.PI/180);
            vagonArr1.position.x = 25 * Math.sin( 0 * (360/16) *
Math.PI/180);
```

```
            vagonArr2.position.y = 25 * Math.cos( 1 * (360/16) *
Math.PI/180);
            vagonArr2.position.x = 25 * Math.sin( 1 * (360/16) *
Math.PI/180);

            vagonArr3.position.y = 25 * Math.cos( 2 * (360/16) *
Math.PI/180);
            vagonArr3.position.x = 25 * Math.sin( 2 * (360/16) *
Math.PI/180);

            vagonArr4.position.y = 25 * Math.cos( 3 * (360/16) *
Math.PI/180);
            vagonArr4.position.x = 25 * Math.sin( 3 * (360/16) *
Math.PI/180);

            vagonArr5.position.y = 25 * Math.cos( 4 * (360/16) *
Math.PI/180);
            vagonArr5.position.x = 25 * Math.sin( 4 * (360/16) *
Math.PI/180);

            vagonArr6.position.y = 25 * Math.cos( 5 * (360/16) *
Math.PI/180);
            vagonArr6.position.x = 25 * Math.sin( 5 * (360/16) *
Math.PI/180);

            vagonArr7.position.y = 25 * Math.cos( 6 * (360/16) *
Math.PI/180);
            vagonArr7.position.x = 25 * Math.sin( 6 * (360/16) *
Math.PI/180);

            vagonArr8.position.y = 25 * Math.cos( 7 * (360/16) *
Math.PI/180);
            vagonArr8.position.x = 25 * Math.sin( 7 * (360/16) *
Math.PI/180);

            vagonArr9.position.y = 25 * Math.cos( 8 * (360/16) *
Math.PI/180);
            vagonArr9.position.x = 25 * Math.sin( 8 * (360/16) *
Math.PI/180);

            vagonArr10.position.y = 25 * Math.cos( 9 * (360/16) *
Math.PI/180);
            vagonArr10.position.x = 25 * Math.sin( 9 * (360/16) *
Math.PI/180);

            vagonArr11.position.y = 25 * Math.cos( 10 * (360/16) *
Math.PI/180);
            vagonArr11.position.x = 25 * Math.sin( 10 * (360/16) *
Math.PI/180);

            vagonArr12.position.y = 25 * Math.cos( 11 * (360/16) *
Math.PI/180);
```

```
            vagonArr12.position.x = 25 * Math.sin( 11 * (360/16) *
Math.PI/180);

            vagonArr13.position.y = 25 * Math.cos( 12 * (360/16) *
Math.PI/180);
            vagonArr13.position.x = 25 * Math.sin( 12 * (360/16) *
Math.PI/180);

            vagonArr14.position.y = 25 * Math.cos( 13 * (360/16) *
Math.PI/180);
            vagonArr14.position.x = 25 * Math.sin( 13 * (360/16) *
Math.PI/180);

            vagonArr15.position.y = 25 * Math.cos( 14 * (360/16) *
Math.PI/180);
            vagonArr15.position.x = 25 * Math.sin( 14 * (360/16) *
Math.PI/180);

            vagonArr16.position.y = 25 * Math.cos( 15 * (360/16) *
Math.PI/180);
            vagonArr16.position.x = 25 * Math.sin( 15 * (360/16) *
Math.PI/180);

            ferrisGroup.add(vagonArr1);
            ferrisGroup.add(vagonArr2);
            ferrisGroup.add(vagonArr3);
            ferrisGroup.add(vagonArr4);
            ferrisGroup.add(vagonArr5);
            ferrisGroup.add(vagonArr6);
            ferrisGroup.add(vagonArr7);
            ferrisGroup.add(vagonArr8);
            ferrisGroup.add(vagonArr9);
            ferrisGroup.add(vagonArr10);
            ferrisGroup.add(vagonArr11);
            ferrisGroup.add(vagonArr12);
            ferrisGroup.add(vagonArr13);
            ferrisGroup.add(vagonArr14);
            ferrisGroup.add(vagonArr15);
            ferrisGroup.add(vagonArr16);

            ferrisWheel = new THREE.Mesh();
            ferrisWheel.add(ferrisGroup);
            ferrisWheel.position.x = 30;
            ferrisWheel.rotation.y = 2;

            ferrisPhantom1 = new THREE.Mesh();
            ferrisPhantom1.add(ferrisBase1);
            ferrisBase1.position.z = -4.4;
            ferrisBase1.position.y = -21.5;
            ferrisPhantom1.rotation.z = 45 * Math.PI/180;

            ferrisPhantom2 = new THREE.Mesh();
            ferrisPhantom2.add(ferrisBase2);
```

```
            ferrisBase2.position.z = -4.4;
            ferrisBase2.position.y = -21.5;
            ferrisPhantom2.rotation.z = -45 * Math.PI/180;

            ferrisPhantom3 = new THREE.Mesh();
            ferrisPhantom3.add(ferrisBase3);
            ferrisBase3.position.z = 4.4;
            ferrisBase3.position.y = -21.5;
            ferrisPhantom3.rotation.z = 45 * Math.PI/180;

            ferrisPhantom4 = new THREE.Mesh();
            ferrisPhantom4.add(ferrisBase4);
            ferrisBase4.position.z = 4.4;
            ferrisBase4.position.y = -21.5;
            ferrisPhantom4.rotation.z = -45 * Math.PI/180;

            ferrisWheel.add(ferrisPhantom1);
            ferrisWheel.add(ferrisPhantom2);
            ferrisWheel.add(ferrisPhantom3);
            ferrisWheel.add(ferrisPhantom4);



            alibaba = new THREE.Mesh();
            alibabaCar = new THREE.Mesh();
            alibabaStruct = new THREE.Mesh();
            alibabaBase = new THREE.Mesh( alibabaBaseGeom, redMaterial);
            alibabaSupport = new THREE.Mesh( alibabaSupportGeom,
greenMaterial);
            alibabaPendulum = new THREE.Mesh( alibabaPendulumGeom,
blueMaterial);
            alibabaCarSide1 = new THREE.Mesh(aliCarSideGeom,
greenMaterial);
            alibabaCarSide2 = new THREE.Mesh(aliCarSideGeom, redMaterial);
            alibabaCarSidez1 = new THREE.Mesh(aliCarSidezGeom,
blueMaterial);
            alibabaCarSidez2 = new THREE.Mesh(aliCarSidezGeom,
yellowMaterial);
            alibabaCarUnder = new THREE.Mesh(aliCarSidezGeom, redMaterial);

            alibabaCarSide1.rotation.y = 90 * Math.PI / 180;
            alibabaCarSide2.rotation.y = 90 * Math.PI / 180;
            alibabaCarSide1.position.x = -3;
            alibabaCarSide2.position.x = 3;
            alibabaCarSidez1.position.z = -1.5;
            alibabaCarSidez2.position.z = 1.5;
            alibabaCarUnder.rotation.x = 90 * Math.PI/180;
            alibabaCarUnder.position.y = -1.5;
            alibabaPendulum.position.x = -7.5;

            alibabaCar.add(alibabaCarSide1);
            alibabaCar.add(alibabaCarSide2);
            alibabaCar.add(alibabaCarSidez1);
```

```
            alibabaCar.add(alibabaCarSidez2);
            alibabaCar.add(alibabaCarUnder);
            alibabaCar.position.x = 7;
            alibabaCar.position.z = 2;


            alibaba.add(alibabaCar);
            alibaba.add(alibabaSupport);
            alibaba.add(alibabaPendulum);
            alibaba.position.y = 6;
            alibaba.position.z = 1;

            alibabaStruct.add(alibabaBase);
            alibabaStruct.add(alibaba);

            kilahueaRing = new THREE.Mesh(kilahueaRingGeom, greenMaterial);
            kilahueaSupport = new THREE.Mesh(kilahueaSupportGeom,
blueMaterial);

            kilahuea = new THREE.Mesh();
            kilahuea.add(kilahueaRing);
            kilahuea.add(kilahueaSupport);
            kilahueaRing.rotation.x = 90 * Math.PI/180;
            kilahuea.position.x = -30;
            kilahueaRing.position.y = -26;

            ferrisRing1.castShadow = true;
            ferrisRing2.castShadow = true;
            ferrisCenter.castShadow = true;
            ferrisBase1.castShadow = true;
            ferrisBase2.castShadow = true;
            ferrisBase3.castShadow = true;
            ferrisBase4.castShadow = true;
            ferrisSupport1.castShadow = true;
            ferrisSupport2.castShadow = true;
            ferrisSupport3.castShadow = true;
            ferrisSupport4.castShadow = true;
            ferrisSupport5.castShadow = true;
            ferrisSupport6.castShadow = true;
            ferrisSupport7.castShadow = true;
            ferrisSupport8.castShadow = true;
            ferrisSupport12.castShadow = true;
            ferrisSupport22.castShadow = true;
            ferrisSupport32.castShadow = true;
            ferrisSupport42.castShadow = true;
            ferrisSupport52.castShadow = true;
            ferrisSupport62.castShadow = true;
            ferrisSupport72.castShadow = true;
            ferrisSupport82.castShadow = true;

            alibabaBase.castShadow = true;
            alibabaSupport.castShadow = true;
            alibabaPendulum.castShadow = true;
```

```
            alibabaCarSide1.castShadow = true;
            alibabaCarSide2.castShadow = true;
            alibabaCarSidez1.castShadow = true;
            alibabaCarSidez2.castShadow = true;
            alibabaCarUnder.castShadow = true;

            kilahueaRing.castShadow = true;
            kilahueaSupport.castShadow = true;

            feria = new THREE.Mesh();
            feria.add(ferrisWheel);
            feria.add(alibabaStruct);
            feria.add(kilahuea);
            ferrisWheel.position.y = 30;
            alibabaStruct.position.y = 6;
            kilahuea.position.y = 30;
            alibabaStruct.position.z = 20;
            kilahuea.position.z = -20;

            feria.position.z = -50;
            feria.position.x = 50;



            //tsuru
            //largo = 6
            //ancho = 2.289
            //alto = 1.91
            var carUnderGeom = new THREE.BoxGeometry( 5.8, 0.2, 2.289 );
            var carFrontDoorGeom = new THREE.BoxGeometry( 1.5, 0.9, 0.1 );
            var carFrontBumperGeom = new THREE.BoxGeometry( 1.5, 0.36,
2.289 );
            var carCofreFrontGeom = new THREE.BoxGeometry( 0.1, 0.9, 2.289
);
            var carCofreTapaGeom = new THREE.BoxGeometry( 1.4, 0.005, 2.289
);
            var carBackSideGeom = new THREE.BoxGeometry( 2.9, 0.9, 0.1 );
            var carBackGeom = new THREE.BoxGeometry( 0.1, 0.3, 0.4578 );
            var carTrunkGeom = new THREE.BoxGeometry( 0.9667, 0.1, 2.089);
            var carTrunk2Geom = new THREE.BoxGeometry( 0.1, 0.14, 2.089);
            var carTrunk3Geom = new THREE.BoxGeometry( 0.1, 0.3, 1.3734);
            var carWheelGeom = new THREE.CylinderGeometry( 0.39, 0.39,
0.32, 36 );
            var carRimGeom = new THREE.CylinderGeometry( 0.24, 0.24, 0.322,
36 );
            var carWindowFrameVGeom = new THREE.BoxGeometry( 0.1, 0.7,
0.1);
            var carWindowFrameHGeom = new THREE.BoxGeometry( 0.75, 0.1,
0.1);
            var carWindowFrameIGeom = new THREE.BoxGeometry( 0.1, 1.026,
0.1);
            var carRoofGeom = new THREE.BoxGeometry( 1.548, 0.1, 2.289);
```

```
            var carMaterial = new THREE.MeshStandardMaterial( { color:
0xffffff, metalness: 0.5} );
            var wheelMaterial = new THREE.MeshStandardMaterial( { color:
0x000000, metalness: 0.0, roughness: 1} );
            var rimMaterial = new THREE.MeshStandardMaterial( { color:
0xC0C0C0, metalness: 0.7} );

            var carUnder = new THREE.Mesh(carUnderGeom, carMaterial);
            var carFrontDoorL = new THREE.Mesh(carFrontDoorGeom,
carMaterial);
            var carFrontDoorR = new THREE.Mesh(carFrontDoorGeom,
carMaterial);
            var carFrontBumper = new THREE.Mesh(carFrontBumperGeom,
carMaterial);
            var carCofreL = new THREE.Mesh(carFrontDoorGeom, carMaterial);
            var carCofreR = new THREE.Mesh(carFrontDoorGeom, carMaterial);
            var carCofreF = new THREE.Mesh(carCofreFrontGeom, carMaterial);
            var carCofreT = new THREE.Mesh(carCofreTapaGeom, carMaterial);
            var carBackBumper = new THREE.Mesh(carFrontBumperGeom,
carMaterial);
            var carBackL = new THREE.Mesh(carBackSideGeom, carMaterial);
            var carBackR = new THREE.Mesh(carBackSideGeom, carMaterial);
            var carBackkL = new THREE.Mesh(carBackGeom, carMaterial);
            var carBackkR = new THREE.Mesh(carBackGeom, carMaterial);
            var carTrunk = new THREE.Mesh(carTrunkGeom, carMaterial);
            var carTrunk2 = new THREE.Mesh(carTrunk2Geom, carMaterial);
            var carTrunk3 = new THREE.Mesh(carTrunk3Geom, carMaterial);
            var carFrontWheelL = new THREE.Mesh(carWheelGeom,
wheelMaterial);
            var carFrontWheelR = new THREE.Mesh(carWheelGeom,
wheelMaterial);
            var carBackWheelL = new THREE.Mesh(carWheelGeom,
wheelMaterial);
            var carBackWheelR = new THREE.Mesh(carWheelGeom,
wheelMaterial);
            var carFrontRimL = new THREE.Mesh(carRimGeom, rimMaterial);
            var carFrontRimR = new THREE.Mesh(carRimGeom, rimMaterial);
            var carBackRimL = new THREE.Mesh(carRimGeom, rimMaterial);
            var carBackRimR = new THREE.Mesh(carRimGeom, rimMaterial);
            var carWindowFrameVFL = new THREE.Mesh(carWindowFrameVGeom,
carMaterial);
            var carWindowFrameHFL = new THREE.Mesh(carWindowFrameHGeom,
carMaterial);
            var carWindowFrameIFL = new THREE.Mesh(carWindowFrameIGeom,
carMaterial);
            var carWindowFrameVFR = new THREE.Mesh(carWindowFrameVGeom,
carMaterial);
            var carWindowFrameHFR = new THREE.Mesh(carWindowFrameHGeom,
carMaterial);
            var carWindowFrameIFR = new THREE.Mesh(carWindowFrameIGeom,
carMaterial);
            var carWindowFrameVBL = new THREE.Mesh(carWindowFrameVGeom,
carMaterial);
```

```
            var carWindowFrameHBL = new THREE.Mesh(carWindowFrameHGeom,
carMaterial);
            var carWindowFrameIBL = new THREE.Mesh(carWindowFrameIGeom,
carMaterial);
            var carWindowFrameVBR = new THREE.Mesh(carWindowFrameVGeom,
carMaterial);
            var carWindowFrameHBR = new THREE.Mesh(carWindowFrameHGeom,
carMaterial);
            var carWindowFrameIBR = new THREE.Mesh(carWindowFrameIGeom,
carMaterial);
            var carTrunkS = new THREE.Mesh(carTrunkGeom, carMaterial);
            var carWindowshieldL = new THREE.Mesh(carWindowFrameIGeom,
carMaterial);
            var carWindowshieldR = new THREE.Mesh(carWindowFrameIGeom,
carMaterial);
            var carRoof = new THREE.Mesh(carRoofGeom, carMaterial);

            FrontGhostL = new THREE.Mesh();
            FrontGhostL.add(carFrontDoorL);
            FrontGhostL.add(carWindowFrameVFL);
            FrontGhostL.add(carWindowFrameHFL);
            FrontGhostL.add(carWindowFrameIFL);
            carFrontDoorL.position.x = 0.75;
            carWindowFrameVFL.position.x = 1.45;
            carWindowFrameVFL.position.y = 0.8;
            carWindowFrameHFL.position.x = 1.125;
            carWindowFrameHFL.position.y = 1.10;
            carWindowFrameIFL.position.x = 0.42;
            carWindowFrameIFL.position.y = 0.75;
            carWindowFrameIFL.rotation.z = -45 * Math.PI/180;

            FrontGhostR = new THREE.Mesh();
            FrontGhostR.add(carFrontDoorR);
            FrontGhostR.add(carWindowFrameVFR);
            FrontGhostR.add(carWindowFrameHFR);
            FrontGhostR.add(carWindowFrameIFR);
            carFrontDoorR.position.x = 0.75;
            carWindowFrameVFR.position.x = 1.45;
            carWindowFrameVFR.position.y = 0.8;
            carWindowFrameHFR.position.x = 1.125;
            carWindowFrameHFR.position.y = 1.10;
            carWindowFrameIFR.position.x = 0.42;
            carWindowFrameIFR.position.y = 0.75;
            carWindowFrameIFR.rotation.z = -45 * Math.PI/180;

            CofreGhost = new THREE.Mesh();
            CofreGhost.add(carCofreT);
            carCofreT.position.x = -0.7;

            TrunkGhost = new THREE.Mesh();
            TrunkGhost.add(carTrunk);
            TrunkGhost.add(carTrunk2);
            TrunkGhost.add(carTrunk3);
```

```
carTrunk.position.x = 0.48335;
carTrunk2.position.x = 0.9167;
carTrunk2.position.y = -0.12;
carTrunk3.position.x = 0.9167;
carTrunk3.position.y = -0.34;

WheelsGhostFL = new THREE.Mesh();
WheelsGhostFL.add(carFrontWheelL);
WheelsGhostFL.add(carFrontRimL);
WheelsGhostFL.rotation.x = 90 * Math.PI/180;
WheelsGhostFL.position.x = -2;
WheelsGhostFL.position.z = 1.15;
WheelsGhostFL.position.y = -0.1;

WheelsGhostFR = new THREE.Mesh();
WheelsGhostFR.add(carFrontWheelR);
WheelsGhostFR.add(carFrontRimR);
WheelsGhostFR.rotation.x = 90 * Math.PI/180;
WheelsGhostFR.position.x = -2;
WheelsGhostFR.position.z = -1.15;
WheelsGhostFR.position.y = -0.1;

WheelsGhostBL = new THREE.Mesh();
WheelsGhostBL.add(carBackWheelL);
WheelsGhostBL.add(carBackRimL);
WheelsGhostBL.rotation.x = 90 * Math.PI/180;
WheelsGhostBL.position.x = 1.7;
WheelsGhostBL.position.z = 1.15;
WheelsGhostBL.position.y = -0.1;

WheelsGhostBR = new THREE.Mesh();
WheelsGhostBR.add(carBackWheelR);
WheelsGhostBR.add(carBackRimR);
WheelsGhostBR.rotation.x = 90 * Math.PI/180;
WheelsGhostBR.position.x = 1.7;
WheelsGhostBR.position.z = -1.15;
WheelsGhostBR.position.y = -0.1;

FrontGhostL.position.x = -1.5;
FrontGhostL.position.z = 1.095;
FrontGhostL.position.y = 0.55;

FrontGhostR.position.x = -1.5;
FrontGhostR.position.z = -1.095;
FrontGhostR.position.y = 0.55;

carFrontBumper.position.x = -2.25;
carFrontBumper.position.y = 0.28;

carCofreL.position.z = 1.0945;
carCofreL.position.y = 0.55;
carCofreL.position.x = -2.15;
```

```
carCofreR.position.z = -1.0945;
carCofreR.position.y = 0.55;
carCofreR.position.x = -2.15;

carCofreF.position.y = 0.55;
carCofreF.position.x = -2.85;

CofreGhost.position.x = -1.5;
CofreGhost.position.y = 1;

carBackBumper.position.x = 2.25;
carBackBumper.position.y = 0.28;

carBackL.position.z = 1.0945;
carBackL.position.y = 0.55;
carBackL.position.x = 1.45;

carBackR.position.z = -1.0945;
carBackR.position.y = 0.55;
carBackR.position.x = 1.45;

carBackkL.position.z = 0.8656;
carBackkL.position.y = 0.61;
carBackkL.position.x = 2.85;

carBackkR.position.z = -0.8656;
carBackkR.position.y = 0.61;
carBackkR.position.x = 2.85;

TrunkGhost.position.x = 1.9333;
TrunkGhost.position.y = 0.95;

carWindowFrameVBL.position.x = 0.05;
carWindowFrameVBL.position.y = 1.35;
carWindowFrameVBL.position.z = 1.0945;
carWindowFrameHBL.position.x = 0.375;
carWindowFrameHBL.position.y = 1.65;
carWindowFrameHBL.position.z = 1.0945;
carWindowFrameIBL.position.x = 1.079;
carWindowFrameIBL.position.y = 1.3;
carWindowFrameIBL.position.z = 1.0945;
carWindowFrameIBL.rotation.z = 45 * Math.PI/180;

carWindowFrameVBR.position.x = 0.05;
carWindowFrameVBR.position.y = 1.35;
carWindowFrameVBR.position.z = -1.0945;
carWindowFrameHBR.position.x = 0.375;
carWindowFrameHBR.position.y = 1.65;
carWindowFrameHBR.position.z = -1.0945;
carWindowFrameIBR.position.x = 1.079;
carWindowFrameIBR.position.y = 1.3;
carWindowFrameIBR.position.z = -1.0945;
carWindowFrameIBR.rotation.z = 45 * Math.PI/180;
```

```
carTrunkS.position.x = 1.9333;
carTrunkS.position.y = 0.95;

carWindowshieldL.position.x = -1.125;
carWindowshieldL.position.y = 1.3;
carWindowshieldL.position.z = 1.0945;
carWindowshieldL.rotation.z = -45 * Math.PI/180;

carWindowshieldR.position.x = -1.125;
carWindowshieldR.position.y = 1.3;
carWindowshieldR.position.z = -1.0945;
carWindowshieldR.rotation.z = -45 * Math.PI/180;

carRoof.position.y = 1.65;
carRoof.position.x = -0.024;
```

```
tsuru = new THREE.Mesh();
tsuru.add(carUnder);
tsuru.add(FrontGhostL);
tsuru.add(FrontGhostR);
tsuru.add(carFrontBumper);
tsuru.add(carCofreL);
tsuru.add(carCofreR);
tsuru.add(carCofreF);
tsuru.add(CofreGhost);
tsuru.add(carBackBumper);
tsuru.add(carBackL);
tsuru.add(carBackR);
tsuru.add(carBackkL);
tsuru.add(carBackkR);
tsuru.add(TrunkGhost);
tsuru.add(WheelsGhostFL);
tsuru.add(WheelsGhostFR);
tsuru.add(WheelsGhostBL);
tsuru.add(WheelsGhostBR);
tsuru.add(carWindowFrameVBL);
tsuru.add(carWindowFrameHBL);
tsuru.add(carWindowFrameIBL);
tsuru.add(carWindowFrameVBR);
tsuru.add(carWindowFrameHBR);
tsuru.add(carWindowFrameIBR);
tsuru.add(carTrunkS);
tsuru.add(carWindowshieldL);
```

```
            tsuru.add(carWindowshieldR);
            tsuru.add(carRoof);

            tsuru.position.y = 0.49;


            var droneBodyFrontGeom = new THREE.BoxGeometry( 0.45, 0.25,
0.45);
            var droneBodyBackGeom = new THREE.BoxGeometry( 0.45, 0.25,
0.32);
            var droneLegGeom = new THREE.BoxGeometry( 0.4, 0.1, 0.15);
            var droneRotorGeom = new THREE.BoxGeometry( 0.22, 0.01, 0.075);
            var droneRotorSupportGeom = new THREE.CylinderGeometry( 0.05,
0.05, 0.25, 36);


            var droneMaterial = new THREE.MeshStandardMaterial( { color:
0x090909, metalness: 0.2} );


            var droneBodyFront = new THREE.Mesh(droneBodyFrontGeom,
droneMaterial);
            var droneBodyBack = new THREE.Mesh(droneBodyBackGeom,
droneMaterial);
            var droneLegFL = new THREE.Mesh(droneLegGeom, droneMaterial);
            var droneLegFR = new THREE.Mesh(droneLegGeom, droneMaterial);
            var droneLegBL = new THREE.Mesh(droneLegGeom, droneMaterial);
            var droneLegBR = new THREE.Mesh(droneLegGeom, droneMaterial);

            var droneHelixFL = new THREE.Mesh(droneRotorSupportGeom,
droneMaterial);
            var droneRotorFL1 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            var droneRotorFL2 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            droneHelixFL.add(droneRotorFL1);
            droneHelixFL.add(droneRotorFL2);
            droneRotorFL1.position.y = 0.125;
            droneRotorFL1.position.x = 0.125;
            droneRotorFL1.rotation.x = 15*Math.PI/180;
            droneRotorFL2.position.y = 0.125;
            droneRotorFL2.position.x = -0.125;
            droneRotorFL2.rotation.x = -15*Math.PI/180;
            droneHelixFL.position.x = -0.15;
            droneLegFL.add(droneHelixFL);

            var droneHelixFR = new THREE.Mesh(droneRotorSupportGeom,
droneMaterial);
            var droneRotorFR1 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            var droneRotorFR2 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            droneHelixFR.add(droneRotorFR1);
```

```
            droneHelixFR.add(droneRotorFR2);
            droneRotorFR1.position.y = 0.125;
            droneRotorFR1.position.x = 0.125;
            droneRotorFR1.rotation.x = 15*Math.PI/180;
            droneRotorFR2.position.y = 0.125;
            droneRotorFR2.position.x = -0.125;
            droneRotorFR2.rotation.x = -15*Math.PI/180;
            droneHelixFR.position.x = -0.15;
            droneLegFR.add(droneHelixFR);

            var droneHelixBL = new THREE.Mesh(droneRotorSupportGeom,
droneMaterial);
            var droneRotorBL1 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            var droneRotorBL2 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            droneHelixBL.add(droneRotorBL1);
            droneHelixBL.add(droneRotorBL2);
            droneRotorBL1.position.y = 0.125;
            droneRotorBL1.position.x = 0.125;
            droneRotorBL1.rotation.x = 15*Math.PI/180;
            droneRotorBL2.position.y = 0.125;
            droneRotorBL2.position.x = -0.125;
            droneRotorBL2.rotation.x = -15*Math.PI/180;
            droneHelixBL.position.x = 0.15;
            droneLegBL.add(droneHelixBL);

            var droneHelixBR = new THREE.Mesh(droneRotorSupportGeom,
droneMaterial);
            var droneRotorBR1 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            var droneRotorBR2 = new THREE.Mesh(droneRotorGeom,
droneMaterial);
            droneHelixBR.add(droneRotorBR1);
            droneHelixBR.add(droneRotorBR2);
            droneRotorBR1.position.y = 0.125;
            droneRotorBR1.position.x = 0.125;
            droneRotorBR1.rotation.x = 15*Math.PI/180;
            droneRotorBR2.position.y = 0.125;
            droneRotorBR2.position.x = -0.125;
            droneRotorBR2.rotation.x = -15*Math.PI/180;
            droneHelixBR.position.x = 0.15;
            droneLegBR.add(droneHelixBR);

            droneBodyFront.add(droneLegFL);
            droneBodyFront.add(droneLegFR);
            droneLegFL.position.x = -0.32;
            droneLegFL.position.z = 0.33;
            droneLegFL.rotation.y = 45 * Math.PI/180;
            droneLegFR.position.x = -0.32;
            droneLegFR.position.z = -0.33;
            droneLegFR.rotation.y = -45 * Math.PI/180;
            droneBodyFront.position.x = -0.225;
```

```
            droneBodyBack.add(droneLegBL);
            droneBodyBack.add(droneLegBR);
            droneLegBL.position.x = 0.3;
            droneLegBL.position.z = 0.23;
            droneLegBL.rotation.y = -45 * Math.PI/180;
            droneLegBR.position.x = 0.3;
            droneLegBR.position.z = -0.23;
            droneLegBR.rotation.y = 45 * Math.PI/180;
            droneBodyBack.position.x = 0.225;

            var drone = new THREE.Mesh();
            drone.add(droneBodyFront);
            drone.add(droneBodyBack);

            tsuru.add(drone);
            drone.position.y = 1.825;




            var aulaMagna = new THREE.CylinderGeometry(10, 10, 36, 32);
            var aulas = new THREE.BoxGeometry(80, 30, 18);
            var banderas = new THREE.BoxGeometry(60, 18, 60);
            var banderapiso = new THREE.BoxGeometry(59.5, 18, 59.5);
            var borreouter = new THREE.CylinderGeometry(30, 30, 12, 32);
            var borrein = new THREE.CylinderGeometry(20, 20, 18, 32);
            var daeGeom = new THREE.BoxGeometry(60, 30, 45);

            var tecMaterial = new THREE.MeshStandardMaterial( { color:
0xFFFFFF, metalness: 0} );

            var magna1 = new THREE.Mesh(aulaMagna, tecMaterial);
            var aula1 = new THREE.Mesh(aulas, tecMaterial);
            var aulas1l = new THREE.Mesh();
            aulas1l.add(magna1);
            aulas1l.add(aula1);
            magna1.position.x = -40;

            var magna2 = new THREE.Mesh(aulaMagna, tecMaterial);
            var aula2 = new THREE.Mesh(aulas, tecMaterial);
            var aulas1r = new THREE.Mesh();
            aulas1r.add(magna2);
            aulas1r.add(aula2);
            magna2.position.x = 40;

            var magna3 = new THREE.Mesh(aulaMagna, tecMaterial);
            var aula3 = new THREE.Mesh(aulas, tecMaterial);
            var aulas2l = new THREE.Mesh();
            aulas2l.add(magna3);
            aulas2l.add(aula3);
            magna3.position.x = -40;
```

```
var magna4 = new THREE.Mesh(aulaMagna, tecMaterial);
var aula4 = new THREE.Mesh(aulas, tecMaterial);
var aulas2r = new THREE.Mesh();
aulas2r.add(magna4);
aulas2r.add(aula4);
magna4.position.x = 40;

var bande = new THREE.Mesh(banderas, tecMaterial);
var bandepiso = new THREE.Mesh(banderapiso,grassMaterial);
bande.add(bandepiso);
bandepiso.position.y = 0.1;

bande.rotation.y = 45 * Math.PI/180;

aulas1l.position.z = -35;

aulas2r.position.z = 35;

aulas1l.position.x = -40;
aulas1r.position.x = 70;
aulas2l.position.x = -70;
aulas2r.position.x = 40;

magna1.position.y = 3;
magna2.position.y = 3;
magna3.position.y = 3;
magna4.position.y = 3;

var cafe = new THREE.Mesh(borreouter, tecMaterial);
var cafein = new THREE.Mesh(borrein, tecMaterial);
cafe.add(cafein);
cafe.position.x = -150;
cafe.position.z = -30;

var dae = new THREE.Mesh(daeGeom, tecMaterial);
dae.position.x = 150;
dae.position.z = 50;
dae.position.y = 15;


aulas1l.position.y = 15;
aulas1r.position.y = 15;
aulas2l.position.y = 15;
aulas2r.position.y = 15;
cafe.position.y = 6;
bande.position.y = 18;



var itesm = new THREE.Mesh();
itesm.add(aulas1l);
itesm.add(aulas1r);
itesm.add(aulas2l);
```

```
itesm.add(aulas2r);
itesm.add(bande);
itesm.add(cafe);
itesm.add(dae);

itesm.position.z = 100;



grass.receiveShadow = true;



scene.add(grass);
scene.add(tsuru);
scene.add(feria);
scene.add(itesm);
renderer.setSize(window.innerWidth, window.innerHeight);
document.body.appendChild(renderer.domElement);

camera.position.z = zpos;
camera.position.x = xpos;
camera.rotation.y = yrot;




// set the background color
renderer.setClearColor(0x9999FF, 1);

camera.position.y = 10;

var goingUp = 1;

var render = function () {
      requestAnimationFrame(render);
    ferrisGroup.rotation.z += 0.0025;
    vagonArr1.rotation.z = -ferrisGroup.rotation.z;
    vagonArr2.rotation.z = -ferrisGroup.rotation.z;
    vagonArr3.rotation.z = -ferrisGroup.rotation.z;
    vagonArr4.rotation.z = -ferrisGroup.rotation.z;
    vagonArr5.rotation.z = -ferrisGroup.rotation.z;
    vagonArr6.rotation.z = -ferrisGroup.rotation.z;
    vagonArr7.rotation.z = -ferrisGroup.rotation.z;
    vagonArr8.rotation.z = -ferrisGroup.rotation.z;
    vagonArr9.rotation.z = -ferrisGroup.rotation.z;
    vagonArr10.rotation.z = -ferrisGroup.rotation.z;
    vagonArr11.rotation.z = -ferrisGroup.rotation.z;
    vagonArr12.rotation.z = -ferrisGroup.rotation.z;
    vagonArr13.rotation.z = -ferrisGroup.rotation.z;
```

```
            vagonArr14.rotation.z = -ferrisGroup.rotation.z;
            vagonArr15.rotation.z = -ferrisGroup.rotation.z;
            vagonArr16.rotation.z = -ferrisGroup.rotation.z;
            alibaba.rotation.z += 0.05;
            alibabaCar.rotation.z = alibaba.rotation.z;
            if(kilahueaRing.position.y >= 26)
                goingUp = 0;
            else if(kilahueaRing.position.y <= -26)
                goingUp = 1;
            if(goingUp == 1)
                kilahueaRing.position.y += 1;
            else
                kilahueaRing.position.y -= 1;
            if(ascension == 1){
              droneHelixFL.rotation.y += 1;
              droneHelixFR.rotation.y += 1;
              droneHelixBL.rotation.y += 1;
              droneHelixBR.rotation.y += 1;
            }

              camera.position.z = zpos;
              camera.position.x = xpos;
              camera.rotation.y = yrot;
              renderer.render(scene, camera);
        };

        render();
    </script>
</body>
</html>
```