Lesson 3

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Introduction

This report addresses the exercises done in Lesson 3 of Three.js.

# Exercise 1

Uma imagem com preto, preto e branco, escuridão, arte

Descrição gerada automaticamenteLoad the texture and apply it to the planeGeometry. If we modify the size of the plane the texture will stretch.

# Exercise 2

Add texture on a cube.

How is the image (lena.jpg) mapped to the cube? The image is repeated in all faces.

var texloader = new THREE.TextureLoader();

var tex1 = texloader.load("../Im1.jpg");

var tex2 = texloader.load("../Im2.jpg");

var tex3 = texloader.load("../Im3.jpg");

var tex4 = texloader.load("../Im4.jpg");

var tex5 = texloader.load("../Im5.jpg");

var tex6 = texloader.load("../Im6.jpg");

const materials = [];

materials.push(new THREE.MeshBasicMaterial({map: tex1}));

materials.push(new THREE.MeshBasicMaterial({map: tex2}));

materials.push(new THREE.MeshBasicMaterial({map: tex3}));

materials.push(new THREE.MeshBasicMaterial({map: tex4}));

materials.push(new THREE.MeshBasicMaterial({map: tex5}));

materials.push(new THREE.MeshBasicMaterial({map: tex6}));

const cube = new THREE.Mesh( geometry, materials );

Uma imagem com Gráficos, captura de ecrã, roxo, Saturação de cores

Descrição gerada automaticamente

# Exercise 3

Create the earth and view the model with a fixed rotation on the Z axis (use 0.41 rad) and with an animation (a rotation around the y axis of 0.0025 rad).

//fixed rotation on the z axis of 0.41 rad

    earth.rotation.z = 0.41;

    //rotation around the y axis of 0.0025 rad

    earth.rotateOnAxis(new THREE.Vector3(0,1,0),0.0025);

Uma imagem com Objeto astronómico, planeta, Espaço profundo, esfera

Descrição gerada automaticamenteUma imagem com Objeto astronómico, planeta, Evento celestial, Espaço profundo

Descrição gerada automaticamente

# Exercise 4

Check which key was pressed on the console.

Uma imagem com texto, captura de ecrã, menu, Tipo de letra

Descrição gerada automaticamente

# Exercise 5

Allow turning on/off the directional light and increase/decrease the intensity. (In folder Ex 4).

if(keyCode==76){ //l

        //verify if the light is on

        if(light.intensity == 0){

            light.intensity = 1;

        } else {

            light.intensity = 0;

        }

    };

    if(keyCode==107) {

        light.intensity += 1;

    } else if(keyCode==109) {

        light.intensity -= 1;

    }

**Exercise 6**

Use the arrow keys to increase/decrease the rotation speed around the yy axis axes and the Up/Down keys to increase/decrease the inclination of the model around the zz axis. (In folder Ex 4).

 if(keyCode==37){ //left arrow

        z = z - 0.01;

    } else if(keyCode==39){ //right arrow

        z = z + 0.01;

    }

    if(keyCode==38){ //up arrow

        y = y + 0.00025;

    } else if(keyCode==40){ //down arrow

        y = y/2;

    }

Uma imagem com Objeto astronómico, planeta, Evento celestial, esfera

Descrição gerada automaticamente

**Exercise 7**

Additon of the moon

const geometryMoon = new THREE.SphereGeometry(SIZE\_IN\_EARTHS,32,32);

var texloader = new THREE.TextureLoader();

var texMoon = texloader.load("../moon\_1024.jpg");

const materialMoon = new THREE.MeshPhongMaterial( { map: texMoon} );

const moon = new THREE.Mesh( geometryMoon, materialMoon );

var distance = DISTANCE\_FROM\_EARTH / EARTH\_RADIUS;

moon.position.set(Math.sqrt(distance / 2), 0,-Math.sqrt(distance / 2));

…

earth.add(moon);

…

moon.rotation.y = Math.PI;

    moon.rotation.x = INCLINATION;

Uma imagem com Objeto astronómico, Evento celestial, natureza, luar

Descrição gerada automaticamente    moon.rotation.y += (earth.rotation.y / PERIOD);