Group 4 Final Presentation

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Outline

01 Introduction

02 Process

03 Result

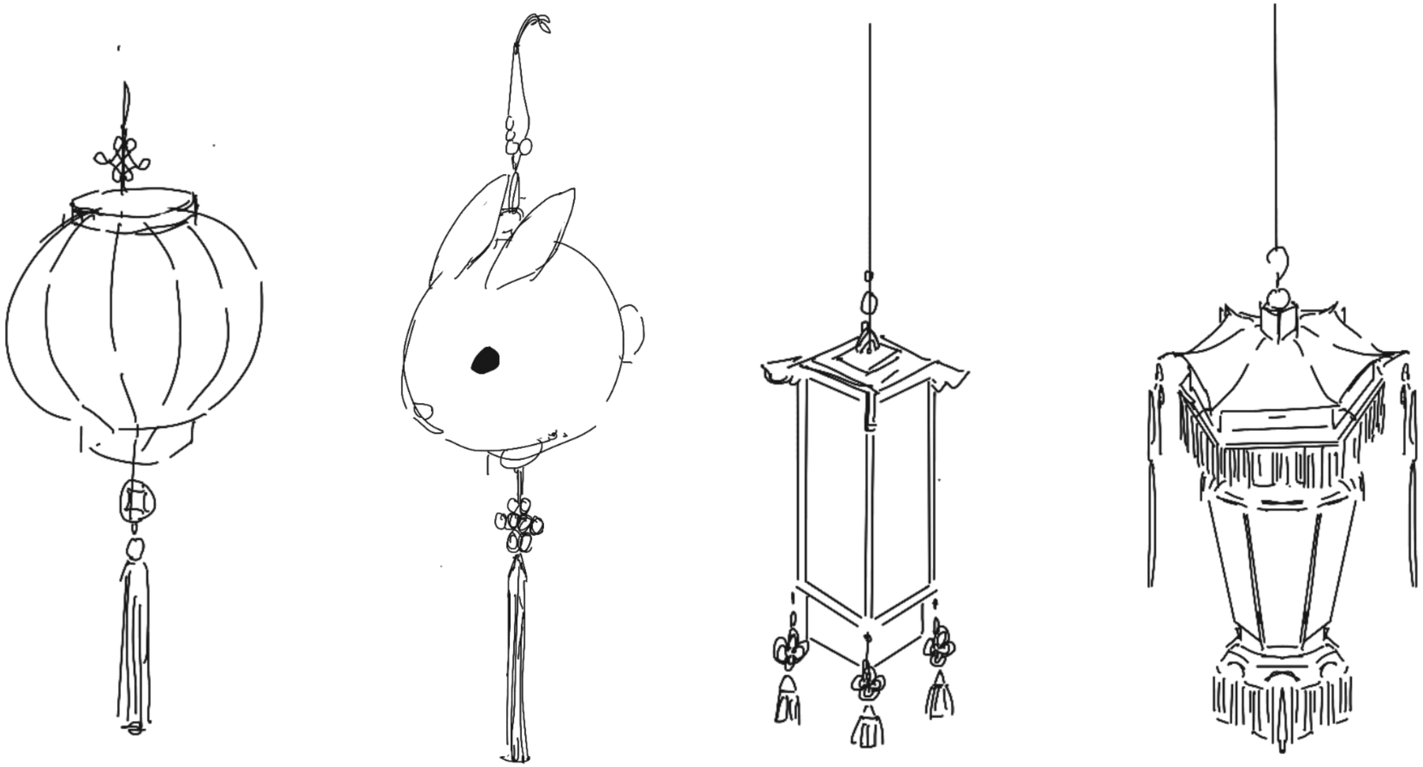
04 Q&A

01 Introduction

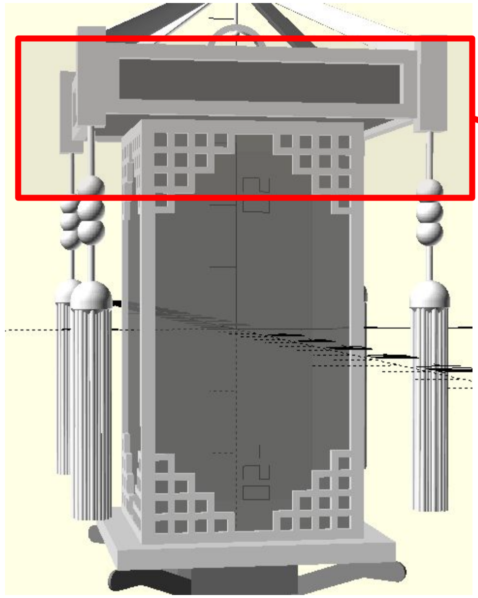
Background

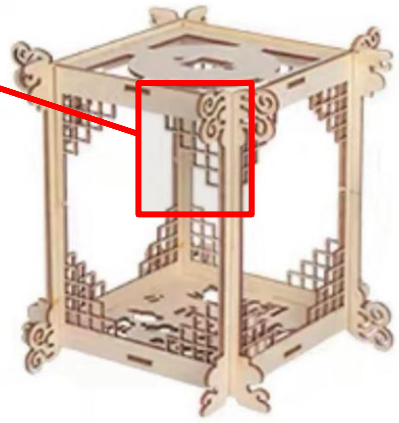
· CHINESE LANTERN

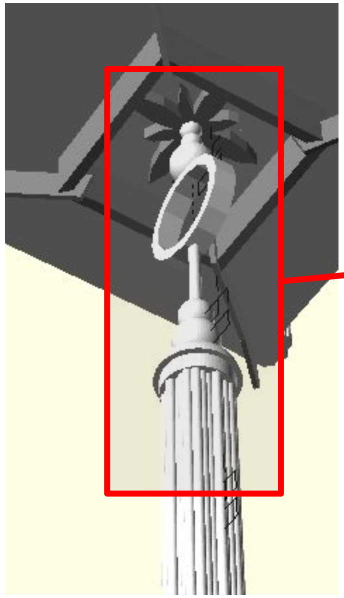
Inspiration & Design draft

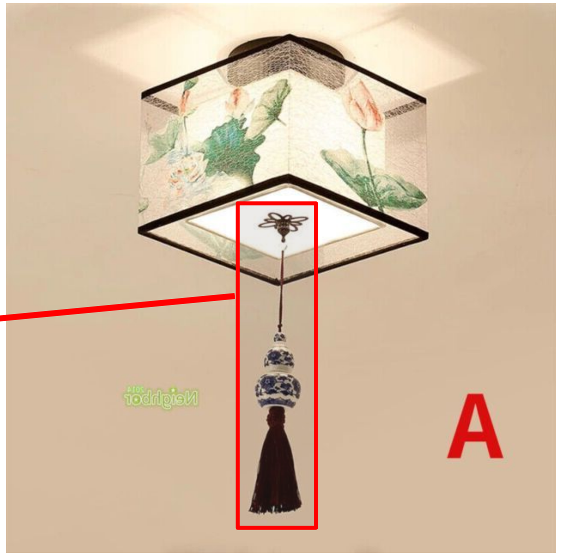


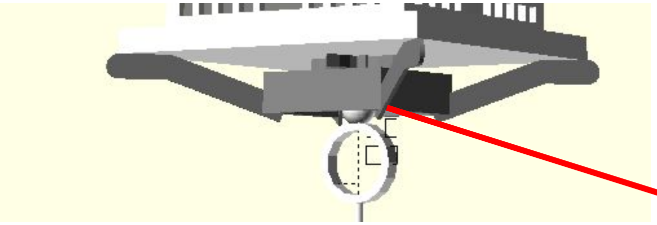
Reference





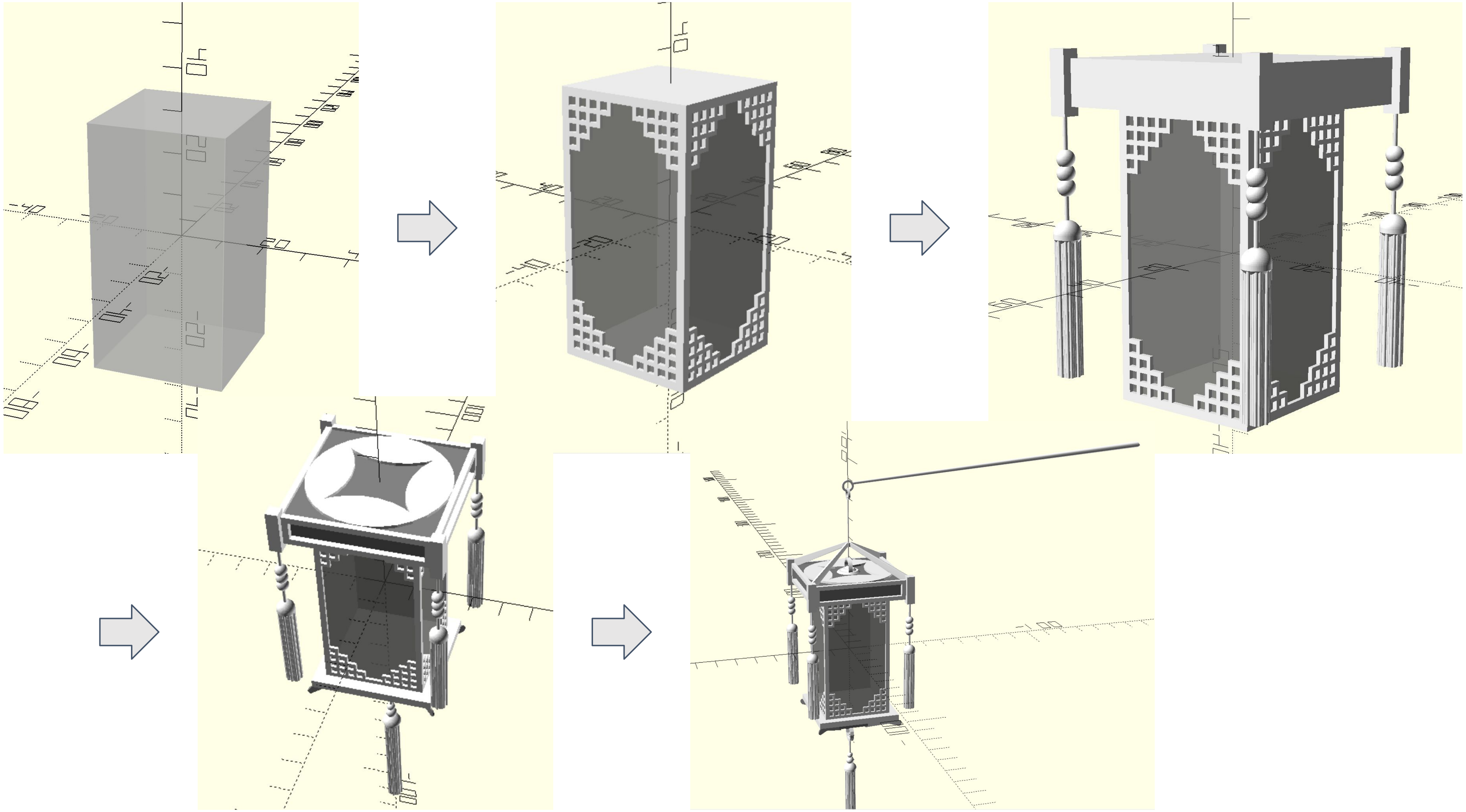




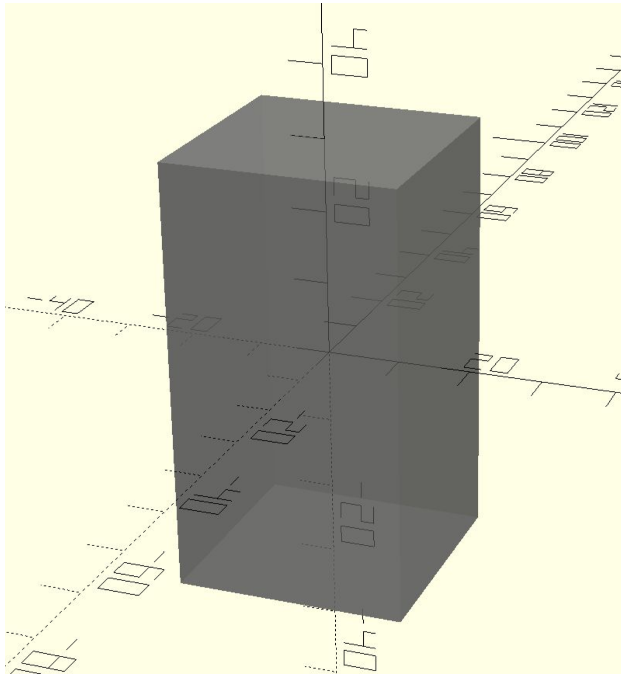


02 Process

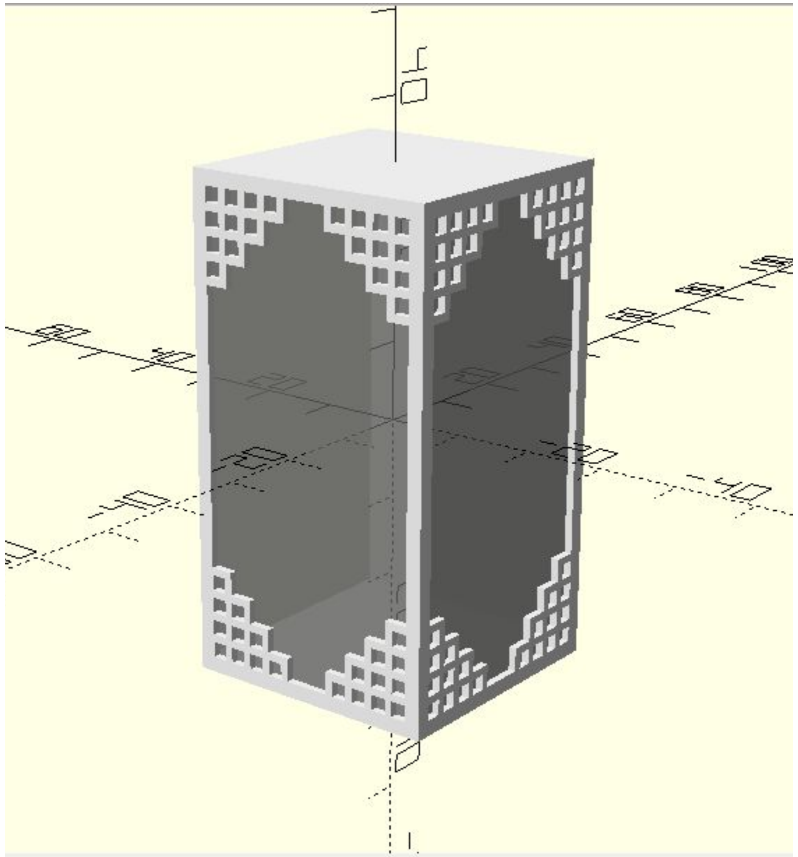
Part 1: OpenSCAD - Modeling



Process

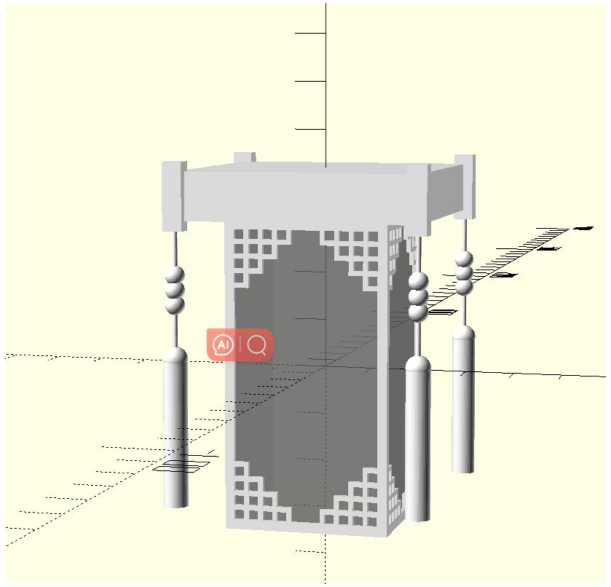


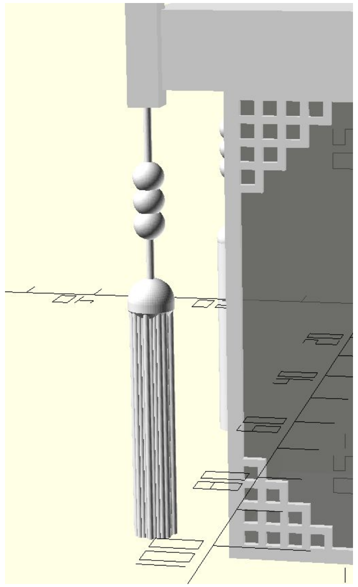
```
translate([-16,-16,-30])
color("grey",0.7)
cube([32,32,60]);
```



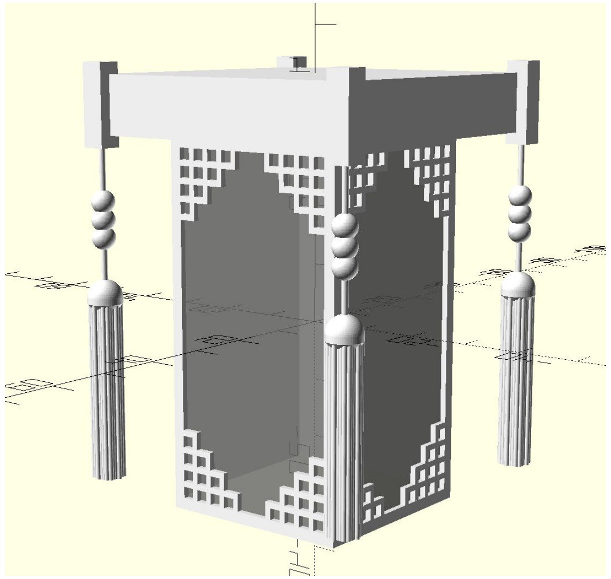
```
union() {
translate([-15,-17,-28])
cube([11,1,1]);
translate([-15,-17,-25])
cube([8,1,1]);
translate([-15,-17,-22])
cube([5,1,1]);
translate([-15,-17,-19])
cube([3,1,1]);
}
……
mirror([0,0,1])
……
```

Process

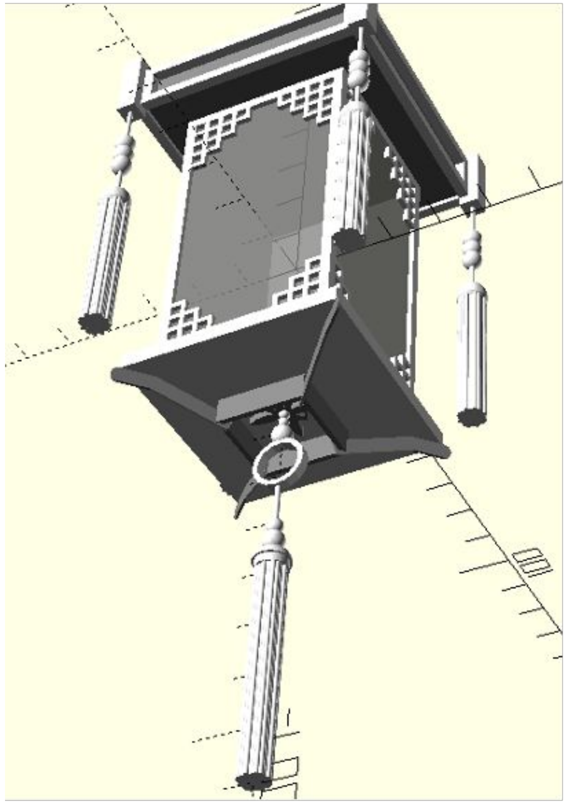


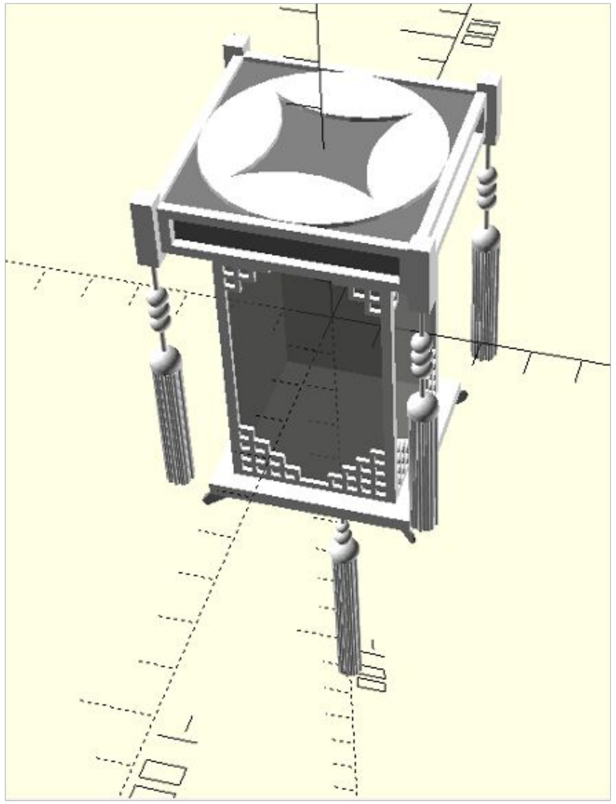


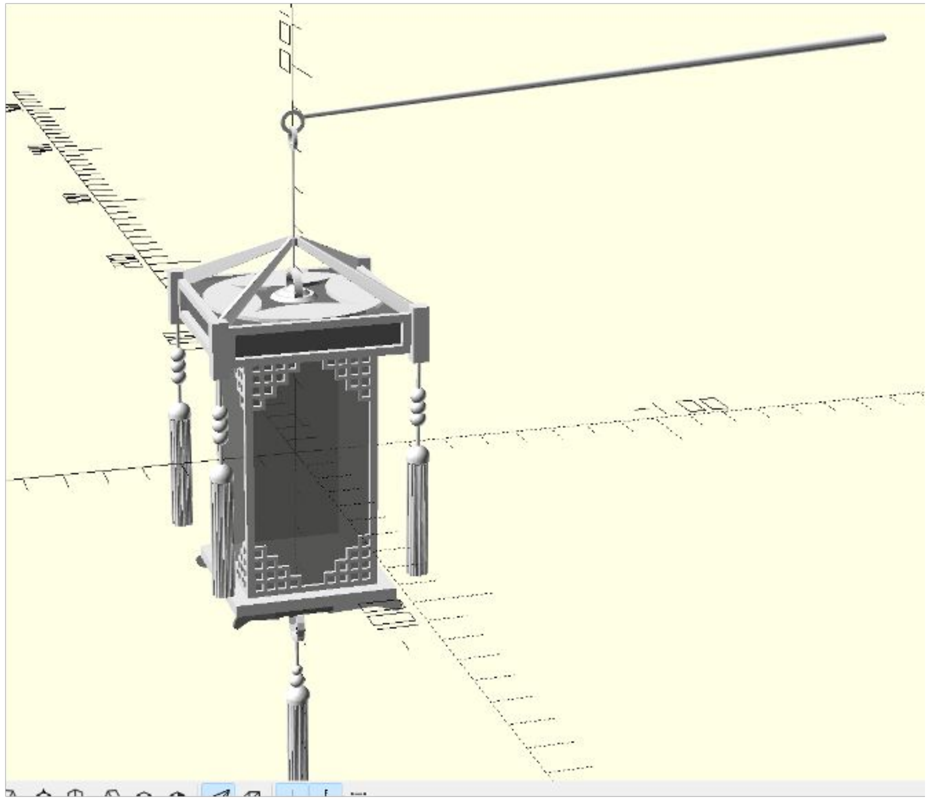
```
for(x=[-2.5:0.5:2.5]){
    for(y=[-2.5:0.5:2.5]){
        if(x*x+y*y<=6.25){
        translate([25+x,25+y,-11])
        color("white")
        cylinder(h=30, r=0.4,
$fn=60, center=true);
        }
    }
}
```



Phased result





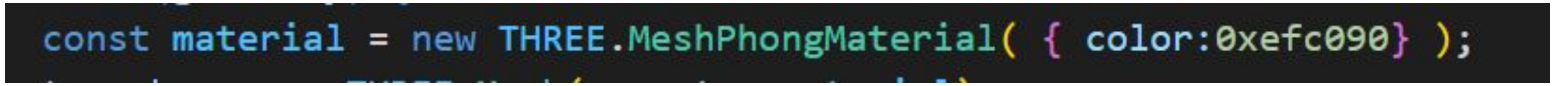


Part 2: Three.js - Shading & Texturing

1. Mesh Phong Material
2. Normal map and texture
3. Add shadow effects
4. Cube Map

·Phong shading

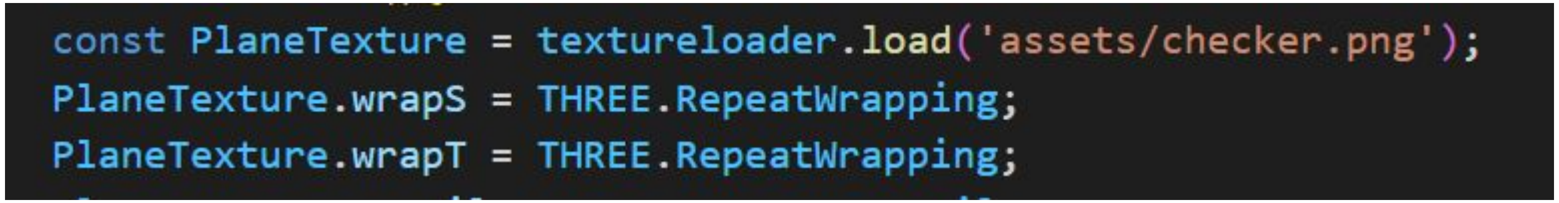
Three.js has a built in constructor for Phong shading. We can apply it to meshes simply call:



```
const material = new THREE.MeshPhongMaterial( { color:0xefc090} );
```

·Texture

Apply texture to objects in three.js is also easy. We can simply call:

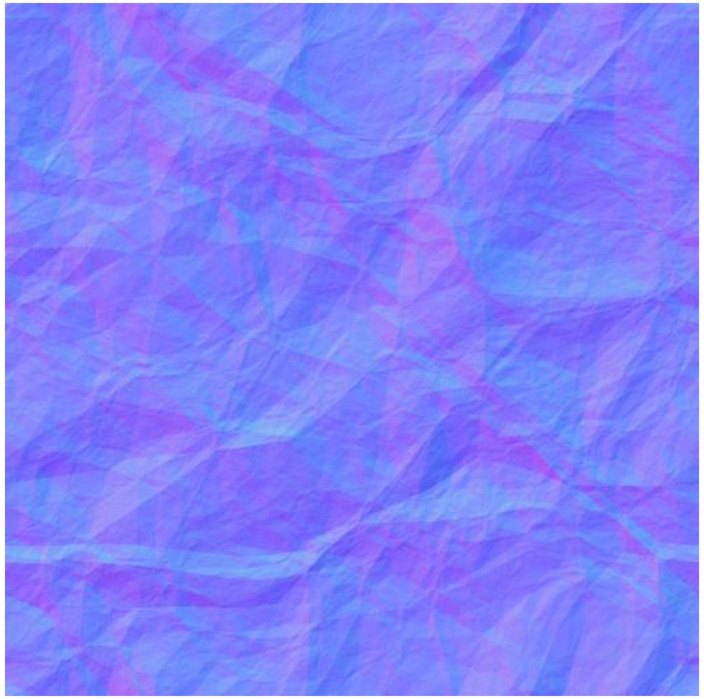


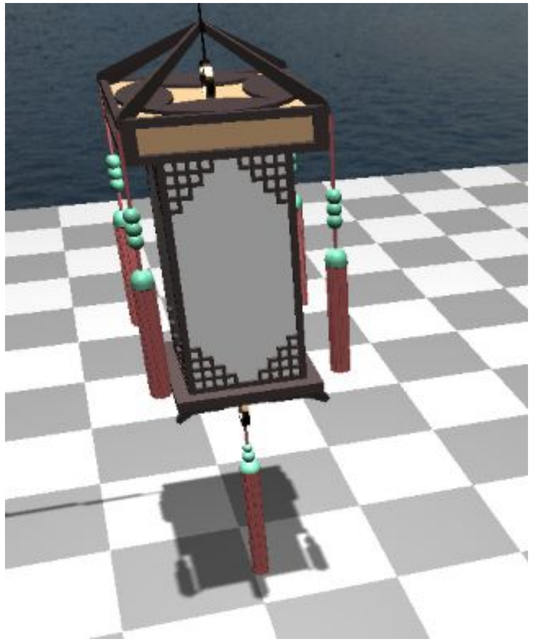
```
const PlaneTexture = textureloader.load('assets/checker.png');
PlaneTexture.wrapS = THREE.RepeatWrapping;
PlaneTexture.wrapT = THREE.RepeatWrapping;
```

We apply the checkerboard texture with repetition to the plane which we will use it later to receive shadow.

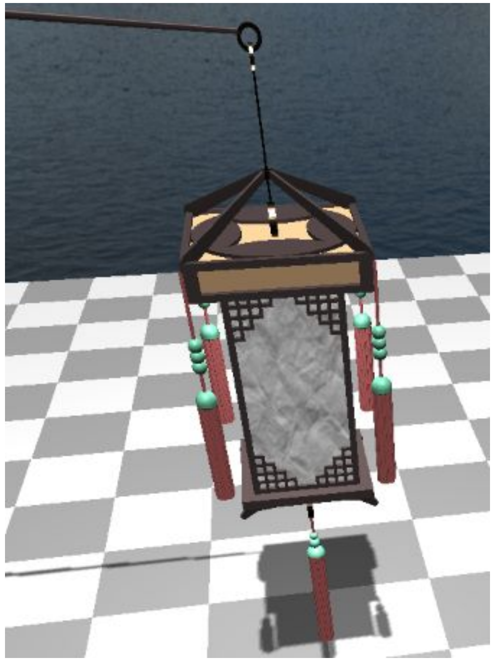
Normal map

Luckily we can directly put normal map in MeshPhongMaterial constructor. We want our main part has crumpled paper style.



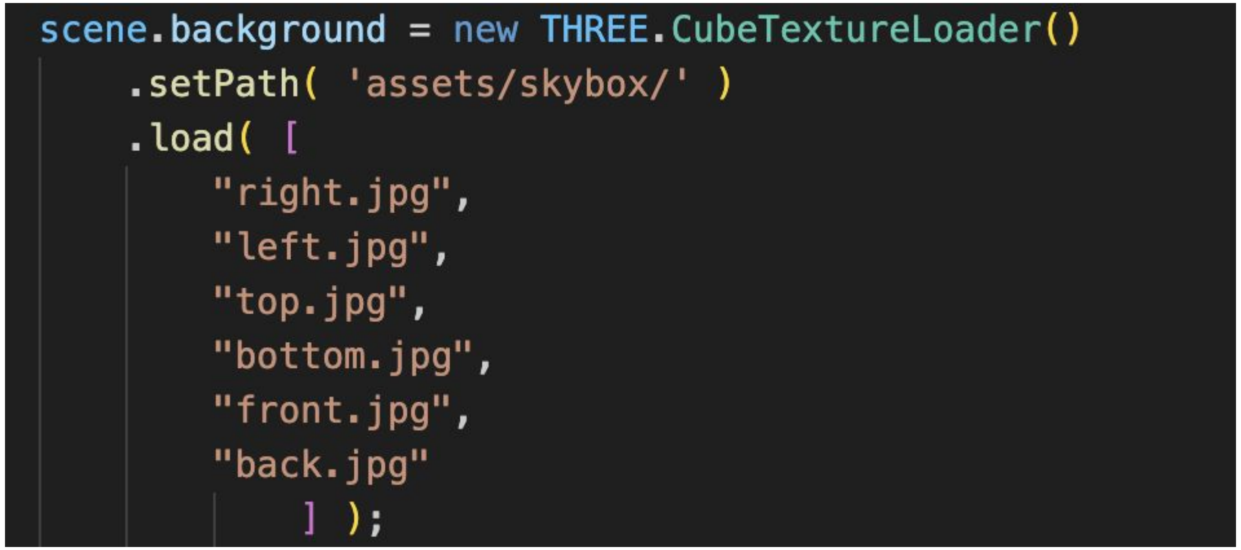


=>



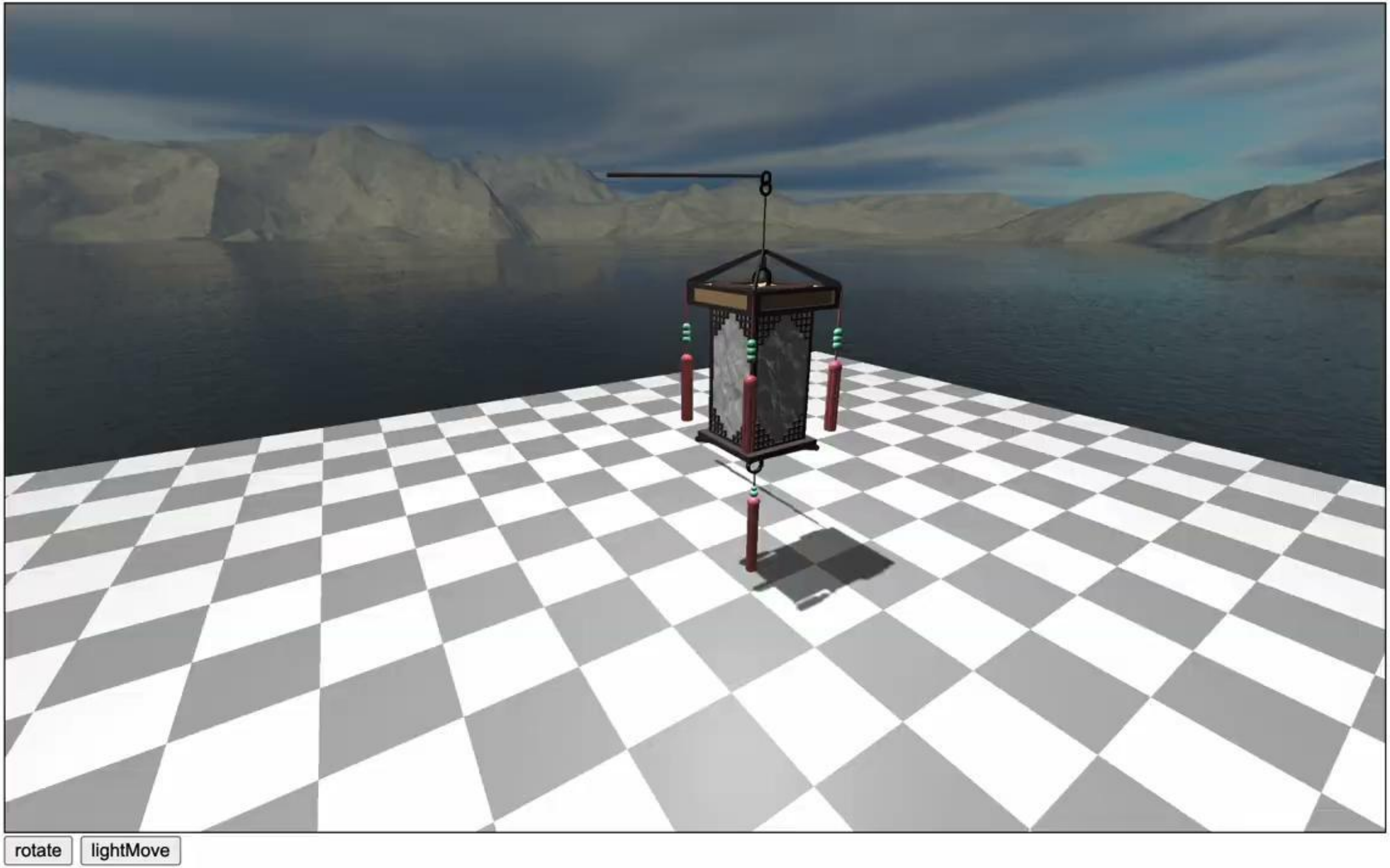
Cube Map, shadow and Animation

Cubemap: skybox



```
scene.background = new THREE.CubeTextureLoader()
    .setPath( 'assets/skybox/' )
    .load( [
        "right.jpg",
        "left.jpg",
        "top.jpg",
        "bottom.jpg",
        "front.jpg",
        "back.jpg"
            ] );
```

03
Result


rotate
lightMove

Thank you!