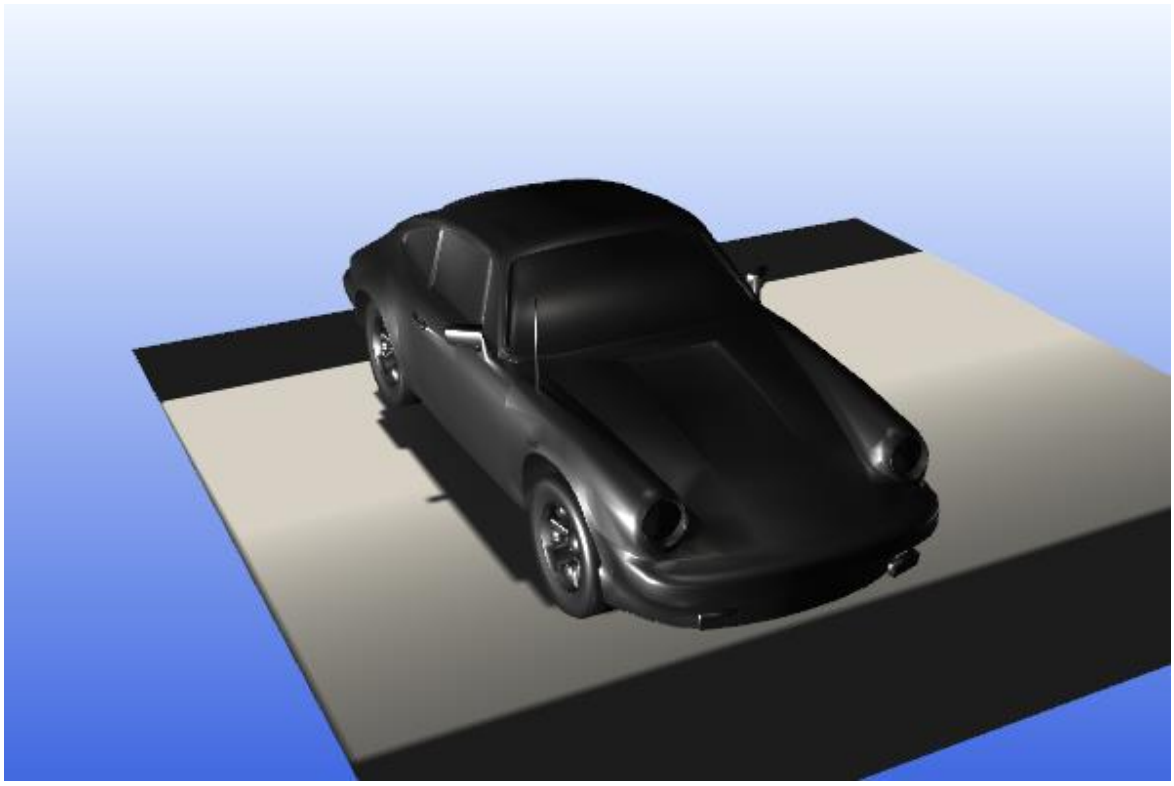
Exercício 6.1

```
from pyvirtualdisplay import Display
display = Display(visible=0, size=(600, 400))
display.start()
import pyvista as pv
filename = '/big_porsche.ply'
reader = pv.get_reader(filename)
mesh = reader.read()
p = pv.Plotter(notebook=True, window_size=(600,400))
p.add_mesh(mesh, color = 'Blue', show_edges = False, ambient = 0.3, diffuse = 0.8,
specular = 0.5, specular_power = 5, opacity = 1, metallic = 0.2, roughness = 0.4,
pbr = True)
light = pv.Light(position = (-5, 1, 1), light_type = 'scene light')
p.add_light(light)
p.camera_position = [(15, 10, 10), (0, -1, 0), (0, 1, 0)]
p.show()
```

```
from pyvirtualdisplay import Display
display = Display(visible=0, size=(600, 400))
display.start()
import pyvista as pv
filename = '/stratocaster.ply'
reader = pv.get_reader(filename)
mesh = reader.read()
p = pv.Plotter(notebook=True, window_size=(600,400))
p.add_mesh(mesh, color = 'Grey', show_edges = False, ambient = 0.3, diffuse = 0.8,
specular = 0.5, specular_power = 5, opacity = 1, metallic = 0.2, roughness = 0.4,
pbr = True)
light = pv.Light(position = (-5, 1, 1), light_type = 'scene light')
p.add_light(light)
p.camera_position = [(100, 0, 800), (100, 0, 0), (100, 150, 0)]
p.show()
```

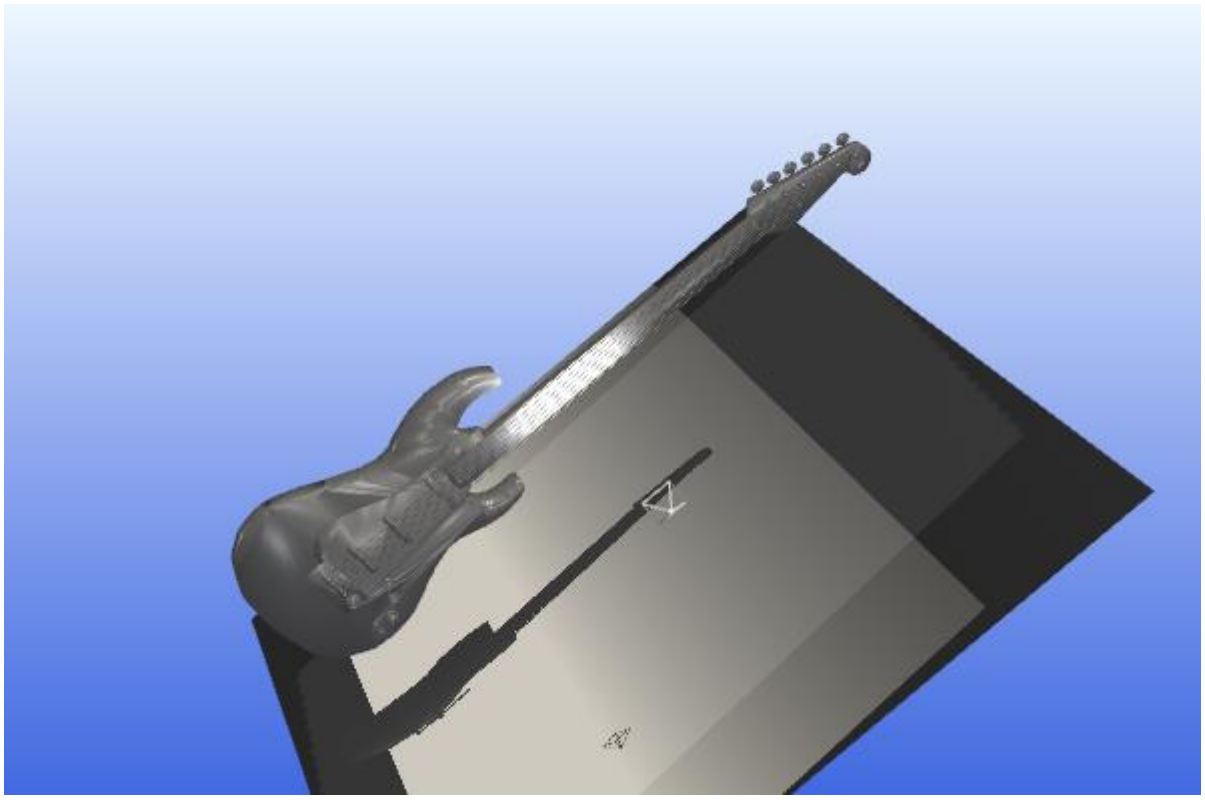
Exercício 6.2

```
import numpy as np
from pyvirtualdisplay import Display
display = Display(visible=0, size=(600, 400))
display.start()
import pyvista as pv
filename = '/big_porsche.ply'
reader = pv.get_reader(filename)
mesh = reader.read()
p = pv.Plotter(notebook=True, window_size=(600,400))
p.add_mesh(mesh, color = 'Black', show_edges = False, ambient = 0.3, diffuse =
0.8,
specular = 0.5, specular_power = 5, opacity = 1, metallic = 0.2, roughness = 0.4,
pbr = True)
maxx= np.max(mesh.points[:, 0])
maxy= np.max(mesh.points[:, 1])
minx= np.min(mesh.points[:, 0])
miny= np.min(mesh.points[:, 1])
minz= np.min(mesh.points[:, 2])
maxz= np.max(mesh.points[:, 2])
light = pv.Light(position = [(maxx + minx)/2, (maxy + miny)/2, maxz + 150],
focal_point = [(maxx + minx)/2, (maxy + miny)/2, 0], show_actor = True,
positional = True, cone_angle = 45, exponent = 50, intensity = 30)
p.add_light(light)
p.set_background('royalblue', top = 'aliceblue')
grid = pv.Plane(i_size = 1.3*(maxx - minx), j_size = 3*(maxz - minz),
center = [(maxx + minx)/2, (maxy + miny)/2 - 2.5, minz], direction = (0,1,0))
p.add_mesh(grid, color = 'white')
p.enable_shadows()
p.camera_position = [(20, 10, 10), (0, -1, 0), (0, 1, 0)]
p.show()
```



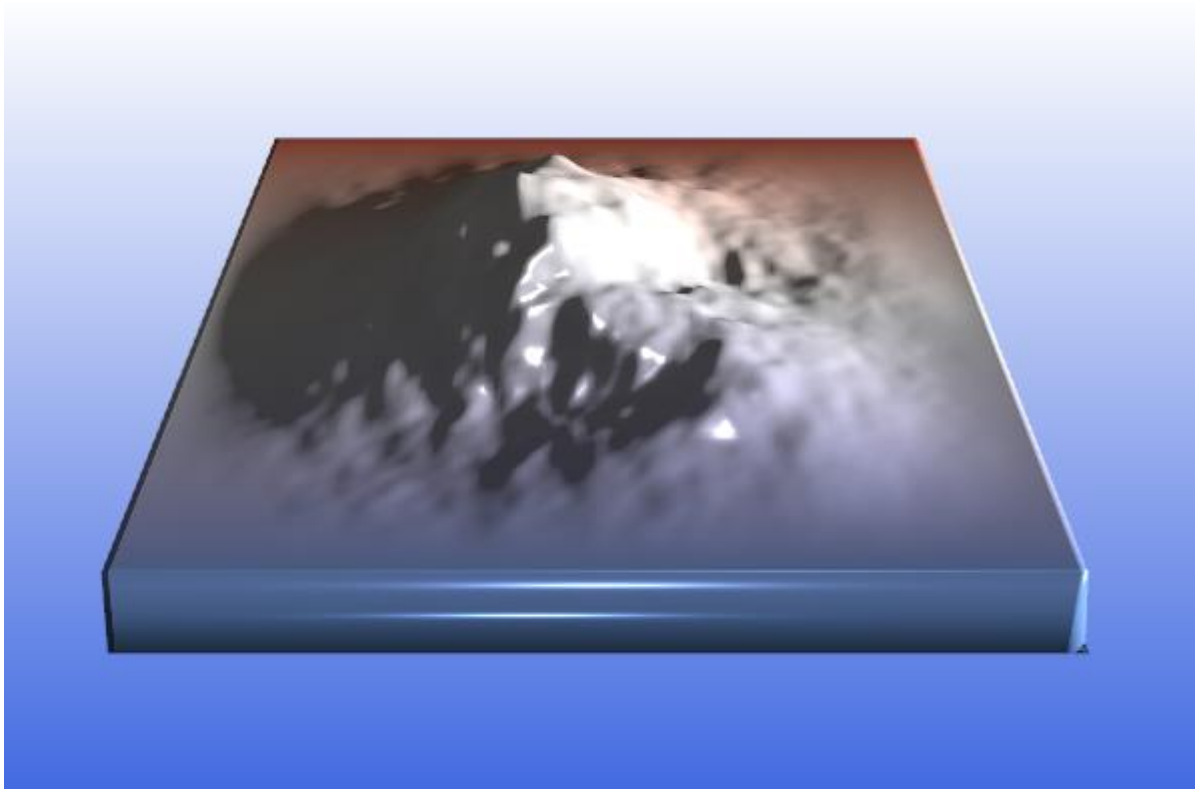
```
import numpy as np
from pyvirtualdisplay import Display
display = Display(visible=0, size=(600, 400))
display.start()
import pyvista as pv
filename = '/stratocaster.ply'
reader = pv.get_reader(filename)
mesh = reader.read()
p = pv.Plotter(notebook=True, window_size=(600,400))
p.add_mesh(mesh, color = 'White', show_edges = False, ambient = 0.3, diffuse =
0.8,
specular = 0.5, specular_power = 5, opacity = 1, metallic = 0.2, roughness = 0.4,
pbr = True)
maxx= np.max(mesh.points[:, 0])
maxy= np.max(mesh.points[:, 1])
minx= np.min(mesh.points[:, 0])
miny= np.min(mesh.points[:, 1])
minz= np.min(mesh.points[:, 2])
maxz= np.max(mesh.points[:, 2])
```

```
light = pv.Light(position = [(maxx + minx)/2, (maxy + miny)/2, maxz + 150],
focal_point = [(maxx + minx)/2, (maxy + miny)/2, 0], show_actor = True,
positional = True, cone_angle = 45, exponent = 50, intensity = 30)
p.add_light(light)
p.set_background('royalblue', top = 'aliceblue')
grid = pv.Plane(i_size = (maxx - minx)*1, j_size = (maxz - minz)*20,
center = [(maxx - minx)/16, miny-100, minz], direction = (0,1,0), )
p.add_mesh(grid, color = 'white')
p.enable_shadows()
p.camera_position = [(100, 600, 800), (100, 0, 0), (100, 150, 0)]
p.show()
```



Exercício 6.3

```
import numpy as np
from pyvirtualdisplay import Display
display = Display(visible=0, size=(600, 400))
display.start()
import pyvista as pv
filename = '/hills1.obj'
reader = pv.get_reader(filename)
mesh = reader.read()
p = pv.Plotter(notebook=True, window_size=(600,400))
light = pv.Light(position = (10, 1, 1), light_type = 'scene light', intensity =
32)
p.add_light(light)
p.set_background('royalblue', top = 'white')
p.add_mesh(mesh, cmap = 'coolwarm_r', scalars = mesh.points[:, 2], show_scalar_bar
= False,
ambient = 0.3, diffuse = 0.5, specular = 0.5, specular_power = 15, pbr = True,
metallic = 0.5, roughness = 0.2)
p.camera_position = [(0, 1000, 800), (0, 500, 100), (0, 100, 0)]
p.show()
```



Exercício 6.4

```
import numpy as np
from pyvirtualdisplay import Display
display = Display(visible=0, size=(600, 400))
display.start()
import pyvista as pv
filename = '/r2d2.obj'
reader = pv.get_reader(filename)
mesh = reader.read()
p = pv.Plotter(notebook=True, window_size=(600,400))
light = pv.Light(position = (10, 1, 1), light_type = 'scene light', intensity =
32)
p.add_light(light)
p.set_background('royalblue', top = 'white')
p.add_mesh(mesh, color = 'White', scalars = mesh.points[:, 2], show_scalar_bar =
False,
ambient = 0.3, diffuse = 0.5, specular = 0.5, specular_power = 15, pbr = True,
metallic = 0.5, roughness = 0.2)
p.camera_position = [(0, -30, 100), (0, 0, 0), (0, 0, 0)]
p.show()
```