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| **Practicum Case** | A logo for a software laboratory center  Description automatically generated |
| COMP6583 | COMP6583001  Computer Graphics |
| **Computer Science** | **E241-COMP6583-HG01-04** |
| ***Valid on*** *Odd Semester Year 2021/2022* | **Revision 00** |

**Learning Outcomes**

* Understand how to create 3D objects.

**Topics**

* Session 04 – Creating 3D Shapes

## Sub Topics

* Box
* Cone
* Sphere
* Cylinder
* Wireframe

**Creating 3D Shapes**

In this session, you are tasked to create a simple 3D model using combination of 3D objects from Three.js. Please create the model of a lighthouse below. Specification for the model will be explained underneath it.

A white and red lighthouse

Description automatically generated

Figure . Result

To make this model, we need various 3D objects such as the **cylinder, cone, box, and sphere**. We will also implement a **wireframe** to make the fence of the lighthouse.

Before we start with the 3D objects, please **set up your three.js project** first. Create a three.js project and use a **Perspective Camera**. Change the camera **positions** to **(0, 34, 30)** (x, y, z) and make it **look at** the **(0, 10, 0)** position. Also don’t forget to set the **renderer clear color** to **#EEEEEE**.

Here are the specifications to make the model.

1. **Floor (Box)**

|  |  |
| --- | --- |
| Box Geometry | |
| Width | 9 |
| Height | 2 |
| Depth | 9 |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #888888 |

|  |
| --- |
| Position |
| (0, 0, 0) |

1. **Body (Cylinder)**

|  |  |
| --- | --- |
| Cylinder Geometry | |
| Radius Top | 2.6 |
| Radius Bottom | 4 |
| Height | 20 |
| Radial Segments | 100 |
| Height Segments | 1 |
| Open Ended | false |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #FFFFFF |

|  |
| --- |
| Position |
| (0, 10, 0) |

1. **Neck (Cylinder)**

|  |  |
| --- | --- |
| Cylinder Geometry | |
| Radius Top | 3.6 |
| Radius Bottom | 3.6 |
| Height | 0.5 |
| Radial Segments | 20 |
| Height Segments | 1 |
| Open Ended | false |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #AC443C |

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| --- |
| Position |
| (0, 20, 0) |

1. **Fence (Cylinder Wireframe)**

|  |  |
| --- | --- |
| Cylinder Geometry | |
| Radius Top | 3.2 |
| Radius Bottom | 3.2 |
| Height | 1 |
| Radial Segments | 10 |
| Height Segments | 1 |
| Open Ended | true |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #5C0000 |
| Wireframe | True |

|  |
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| Position |
| (0, 21, 0) |

1. **Head (Cylinder)**

|  |  |
| --- | --- |
| Cylinder Geometry | |
| Radius Top | 2.2 |
| Radius Bottom | 2.2 |
| Height | 3 |
| Radial Segments | 30 |
| Height Segments | 1 |
| Open Ended | false |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #FFFFFF |

|  |
| --- |
| Position |
| (0, 22, 0) |

1. **Roof (Cone)**

|  |  |
| --- | --- |
| Cone Geometry | |
| Radius | 3.5 |
| Height | 3.5 |
| Radial Segments | 100 |
| Height Segments | 1 |
| Open Ended | false |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #AC443C |

|  |
| --- |
| Position |
| (0, 25, 0) |

1. **Top Part (Sphere)**

|  |  |
| --- | --- |
| Sphere Geometry | |
| Radius | 0.5 |

|  |  |
| --- | --- |
| Mesh Basic Material | |
| Color | #AC443C |

|  |
| --- |
| Position |
| (0, 26.5, 0) |