THREE.JS

The Creative 3D Rendering Library

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2023BCS-058
CG Assignment- 1

OVERVIEW

What is Three.js?

A powerful JavaScript library that makes WebGL accessible, enabling developers to create stunning 3D graphics in web browsers without complex low-level programming.

Essential Components

- Scene - The 3D world container holding all objects
- Camera - Your viewpoint into the 3D scene (Perspective/Orthographic)
- Renderer - Converts 3D mathematics into pixels on screen
- Objects - Meshes combining geometry (shape) with materials (appearance)

Rich Feature Set

- Built-in Geometries - Spheres, cubes, cylinders, custom shapes
- Advanced Materials - PBR shading, textures, environment mapping
- Dynamic Lighting - Realistic shadows with multiple light types
- Animation System - Keyframe animation, morphing, skeletal rigging
- Post-Processing - Bloom, tone mapping, screen-space effects
- Asset Loaders - Import from Blender, Maya (GLTF, OBJ, FBX)

Core Benefits

Built on WebGL with automatic optimization, cross-platform compatibility, and intuitive API design for rapid 3D development.

Real-World Applications

- E-Commerce - Product configurators and 360° viewers
- Gaming - Browser-based 3D games
- Data Visualization - Interactive 3D charts
- Architecture - Virtual tours and walkthroughs
- Education - Interactive learning models

Key Advantages

- Zero Installation - Runs in any modern browser
- Framework Flexible - React, Vue, Angular integration
- Active Community - Extensive documentation and examples