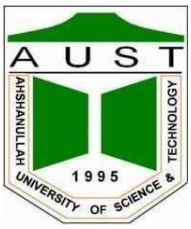
Ahsanullah University of Science & Technology
Department of Computer Science & Engineering



An Analog Watch

Computer Graphics Lab (CSE 4204)

Project Final Report
Group NO: 3

Submitted To:

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Project Requirements:

The 3D Analog Watch project, developed using three.js, featuring a beautifully textured watch body and hands for a realistic appearance. The design includes interactive camera controls, allowing users to move around the watch using the keyboard. Mouse interaction adjusts the lighting around the watch, enhancing the visual experience. Additionally, the second hand is animated to tick smoothly, replicating the motion of a real watch in real-time.

Software Platform:

- **Three.js**: For rendering 3D graphics.
- **WebGLRenderer:** For enabling smooth real-time rendering.
- **TextureLoader:** For loading textures for the watch body, face, and needles.
- **MeshStandardMaterial:** For realistic material rendering with metalness and roughness properties.
- **PerspectiveCamera:** For dynamic camera angles.
- **Keyboard and Mouse Events:** For camera control and light adjustments.

Project Features:

1. Watch Body (with texture): A textured, realistic watch body designed using a cylindrical geometry with metal and roughness properties for visual accuracy.

2. Hour, Minute, and Second Needles (with texture): Needles created using box geometry, with textured materials, rotating based on real-time data for a functional watch display.

3. Camera Movement with Keyboard Interaction: The ability to move the camera around the 3D scene using the arrow keys for dynamic viewing angles, though it may need further tuning for smooth interaction.

4. Light Position Rotation with Mouse Interaction: The light moves dynamically based on mouse movements, illuminating the watch from different angles, with intensity adjustments depending on the cursor position.

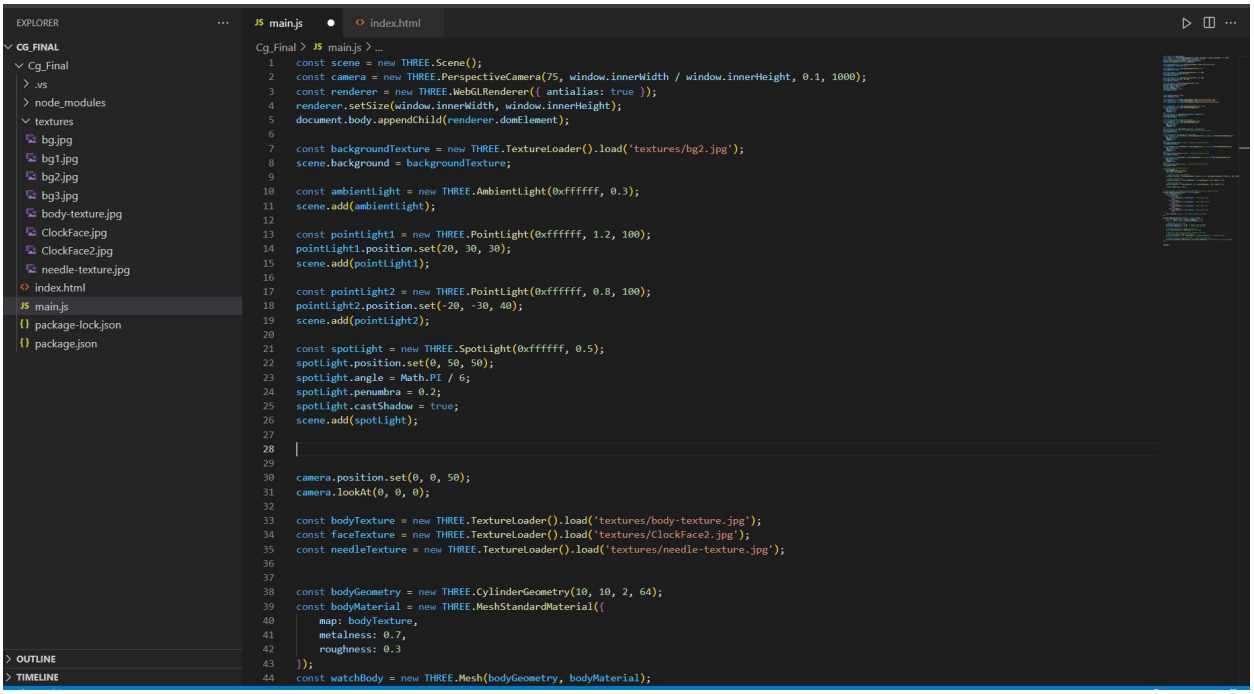
5. Second Needle Ticking Animation: Real-time ticking animation for the second hand, calculated using real-time data, giving the watch a realistic ticking effect.

Features Table:

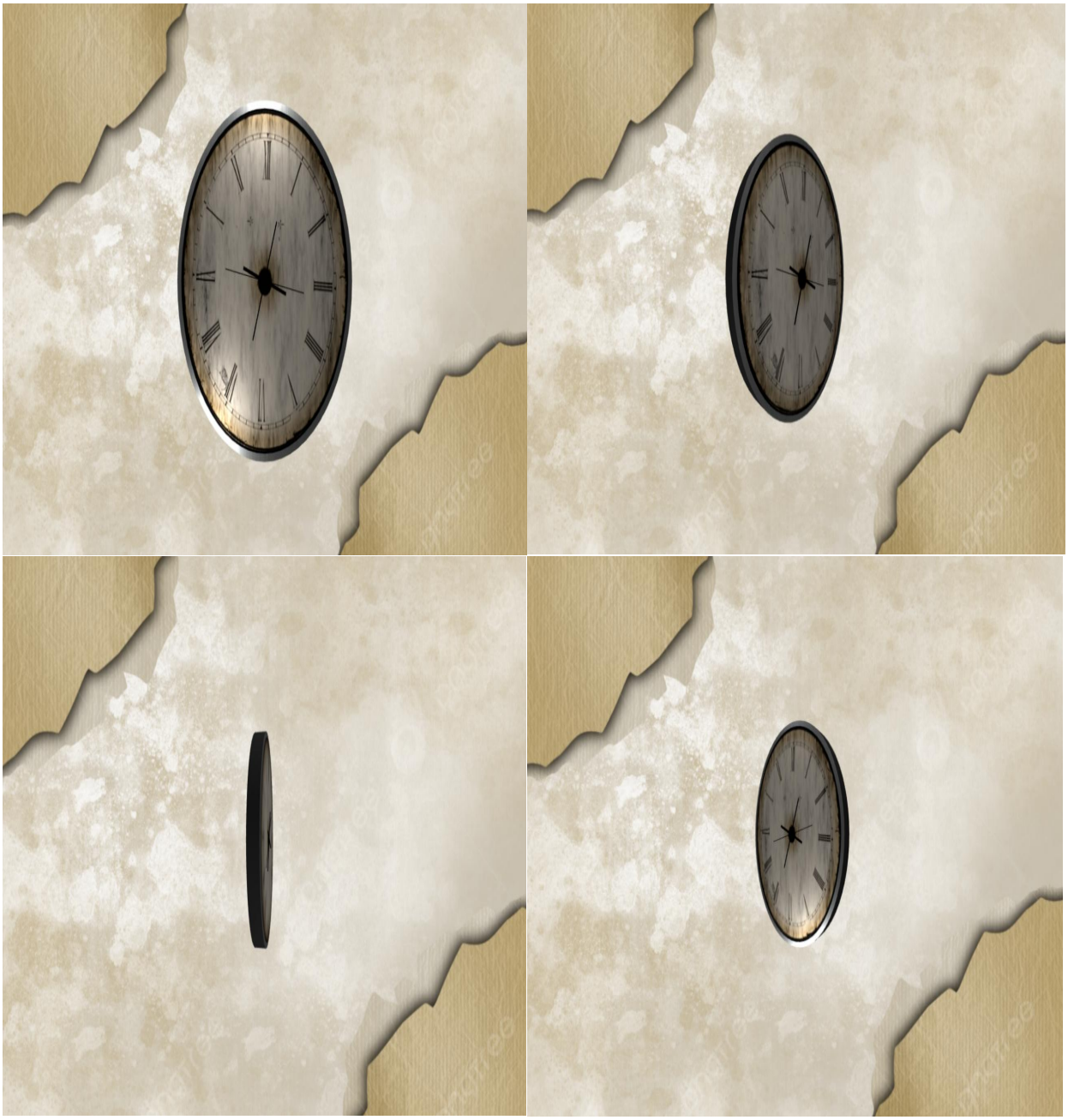
	Features	Status
1	Watch body (with texture)	Implemented
2	Hour, Minute, and Second Needles (with texture)	Implemented
3	Camera movement with keyboard interaction	Partially Implemented
4	Light position rotation with mouse interaction	Implemented
5	Second needle ticking animation	Implemented

Table 01: Project Feature Table

Snapshots:



Code Implementation



Different Angle Of Watch

Contribution:

Tanvir Rahman : Watch Body (with texture), Needles (Hour, Minute, Second) with animation, Light Position Rotation (Mouse Interaction), Documentation .

Indrajit Chakraborty : Camera Movement (Keyboard Interaction), Scene Setup and Lighting, Background Texture Integration.

Future Work:

1. Enhancing Camera Controls:

Improve the smoothness of the camera movement with keyboard interactions, possibly incorporating more advanced controls like zooming and rotation for a better user experience.

2. Refining the Needle Textures:

Although the needles are textured, further enhancements can be made to improve their visual quality or add dynamic reflections for better realism.

3. Adding More Detailed Lighting Effects:

Introduce additional light sources or explore different types of lights (e.g., directional, hemisphere) to create more depth and realism, especially in terms of shadows and reflections.

4. Watch Customization Options:

Implement features that allow users to change watch face designs, needle styles, or body textures in real-time.

5. Audio Integration:

Integrate sound effects, like ticking sounds for the second hand, to enhance the sensory experience of the watch.

6. Performance Optimization:

Improve the rendering performance for better frame rates, particularly on lower-end devices or browsers. This might involve using optimized models, textures, and more efficient lighting techniques.