Technical Task: Development of Interactive Virtual Showroom (Unity WebGL)

Overview

Develop a **Unity-based WebGL interactive showroom** for the Window Cleaning Robot product line. The showroom will showcase the robot in a building maintenance scenario with interactive controls, animations, and product information panels.

Input Details

- **Machine Models (Robots + Cradle + BMU):**
- File: `Virtual_Showroom_3d_Models.fbx`
- **Building Model (Glass Facade):**

File: `Building.fbx`

- **Textures (Color Variations for Robot):**

Folder: `Color_Options`

- **Camera reference**

Folder: `Camera_ref`

1. Landing Screen

Tasks:

- Load **Building.fbx** as background scene (wide view of facade).
- Add **UI elements**:
  - "Enter Showroom" button (loads main interactive scene).
  - Branding/logo + short tagline.
- Implement **fade-in transition** when entering showroom.
- **Pop-up Panel Text Content:**
  Provided in a **Notepad file** (to be used directly in feature hotspot panels).

2. Showroom Entry

Tasks:

- Position **main camera** at wide view of building facade.
- Tooltip overlay explains controls:
  - Rotate = mouse drag
  - Zoom = scroll
  - Pan = right-click drag (desktop) / two-finger drag (mobile)
- Implement **orbit camera controller**.

3. Robot Showcase (Idle Mode)

Tasks:

- Import robot + cradle from `Virtual_Showroom_3d_Models.fbx`.
- Stage robot in cradle on `Building.fbx` facade.
- Create **UI control panel**:
  - **Color Theme Switcher** → assign textures from `Color_Options` folder (material swapping).
  - **Add Second Robot** → duplicate robot prefab, place offset in same cradle.

- **Camera Shortcuts** → pre-defined positions (close-up | full facade | top view) with smooth transitions.

4. Feature Exploration (Hotspots)

Tasks:

- Add **hotspot markers** on:
  - Robot body
  - Cradle
  - BMU
- On click → show **pop-up panel** (text)

5. Animation Playback (Cleaning Demo)

Tasks:

- Trigger via **"Play Animation"** button.
- Sequence:
  - Robot attaches to glass.
  - Robot moves across window.
  - Cleaning effect (spray + wipe animation).
  - Robot returns to idle.
- If second robot is enabled → both animate simultaneously in same cradle.

6. Product Info Section

Tasks:

- Add **"About the Product"** menu button.
- On click → open scrollable panel with:
  - Technical specifications

    - Key features
    - Maintenance/safety info
- Add **“Download PDF Brochure” button**

7. End of Experience (CTA)

Tasks:

- Add overlay screen with:
    - **“Schedule a Demo”** (just a button).
    - **“Contact Sales”**(just a button).

8. Technical Implementation

- **Engine:** Unity (latest LTS).
- **Build Target:** WebGL (desktop + mobile browsers).
- **Assets:**
    - Models: `Virtual_Showroom_3d_Models.fbx`, `Building.fbx`
    - Textures: `Color_Options` folder
- **Optimization:**
    - Baked lighting for smooth performance for static objects.
    - Compress textures for WebGL.
- **UI:** Unity Canvas system (screen-space + world-space mix).
- **Animations:** Unity Animator with scripted triggers.
- **Materials:** PBR with reflection probes for realistic glass/metal.

9. Deliverables

- **Unity WebGL Build** (host-ready package).
- **Screen record of the final build loaded in localhost**
- **Documentation** (how to update models, add new color themes, modify animations).