

Final Practical Quiz Project Report

Design Choices

I designed a modern villa environment using A-Frame to create an interactive 3D experience. My goal was to make the villa look realistic while keeping performance smooth. I used textures for walls, laminated floors, a swimming pool, a car, and decorative items like chandeliers, and an air conditioner. I added animated elements such as a walking security guard, a moving dog. I also placed beach balls, and glass doors to improve visual realism

Technical Challenges and Solutions

- Textures flickering on walls – I fixed this by adjusting material sides and avoiding overlapping faces.
- Gates not showing – I ensured GLB models were correctly loaded using asset management and correct scale/position.
- Water animation – I used opacity, moving texture effects, and plane animation to simulate water motion.
- Positioning- I positioned the items well by adjusting the x y and z values all the time.
- Performance lag – I reduced model sizes and optimized textures to improve loading speed.

Future Improvements

- Add sound effects like water splashing, dogs barking, and ambient music.
- Add more furniture inside the villa rooms.
- Enable user interaction such as opening doors, switching lights, and controlling AC.
- Use better quality textures and models for more realism.
- Make the project mobile-friendly and faster to load.

Conclusion

This project helped me understand 3D web development using A-Frame, textures, GLB models, and animations. I learned how to solve real design problems and improve performance. With more time, I can expand this villa into a fully interactive smart-home experience