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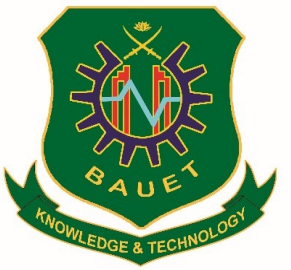

Department of
Computer Science and Engineering (CSE)

Project Proposal: BAUET_PanoSim

Course Code: CSE-4206
Course Title: Computer Graphics Sessional
Submission Date: 11-02-2024

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1. Introduction

Welcome to BAUET_PanoSim, an immersive and dynamic simulation project that brings the iconic Panorama building of BAUET (Bangladesh Army University of Engineering and Technology) to life through the lens of computer graphics and interactive programming. This project leverages the power of OpenGL and GLUT (OpenGL Utility Toolkit) to create a captivating virtual experience, combining architectural representation with real-time elements. In BAUET_PanoSim, we aim to provide a visually engaging representation of the Panorama building, complete with an analog clock and a bustling academic atmosphere. The simulation incorporates a day-night cycle, simulating the passage of time from sunrise to sunset and beyond, accompanied by the ebb and flow of students entering and leaving the building as classes unfold. As the clock ticks, witness the transformation of the virtual landscape, with students bustling in and out during class hours, and the tranquility of the night setting in as the sun dips below the horizon. To add an extra layer of realism, the night mode introduces various nocturnal elements, including the occasional presence of animals such as cats and dogs in the foreground. BAUET_PanoSim is not just a static representation but a living, breathing simulation that captures the essence of a day at BAUET's Panorama building. Whether you're a student, a developer, or simply curious about the intersection of computer graphics and real-world scenarios, BAUET_PanoSim offers an engaging and educational experience. Join us on this journey as we blend technology and creativity to recreate the vibrant life and architectural beauty of BAUET's Panorama building in a virtual realm.

2. Objectives:

The primary objective of the BAUET_PanoSim project is to create an interactive and visually immersive simulation of the Panorama building at Bangladesh Army University of Engineering and Technology (BAUET). Through the integration of OpenGL and GLUT, this project aims to achieve the following key objectives:

i. **Architectural Representation:** Develop a detailed 3D model of the Panorama building, capturing its distinctive features and layout with precision.

ii. **Dynamic Time Simulation:** Implement a realistic day-night cycle, allowing users to observe the changing ambiance as time progresses, with accurate representation of sunrise, sunset, and nighttime.

iii. **Clock and Time-Dependent Events:** Integrate an analog clock into the scene, synchronized with real-world time. Simulate the movement of students entering and exiting the building based on the class schedule.

iv. **Realistic Day-Night Transitions:** Create seamless transitions between day and night modes, adjusting lighting, shadows, and environmental elements to enhance realism.

v. **Animals and Environmental Elements:** Introduce animated elements such as cats and dogs during nighttime, enhancing the virtual environment's authenticity.

vi. **User Interaction:** Provide users with the ability to interact with the simulation, potentially controlling the time or triggering specific events manually.

vii. **Educational and Engaging Experience:** Design the simulation to serve as an educational tool, offering users insights into the architectural beauty of BAUET's Panorama building and the dynamic nature of academic life.

viii. **Optimization and Performance:** Ensure the project is optimized for smooth execution, considering factors such as frame rate and resource utilization.

By achieving these objectives, BAUET_PanoSim aims to deliver a captivating and informative virtual experience, showcasing the vibrancy of BAUET's Panorama building and the daily rhythm of academic life within it.

3. Number of Objects:

The number of objects in BAUET_PanoSim created using OpenGL can vary significantly depending on the level of detail and complexity desired in the scene. Here are some potential objects we might include in BAUET_PanoSim:

i. **Panorama Building:** Main architectural structure representing the Panorama building at BAUET.

ii. **Clock:** Analog clock displayed on a separate part of the screen, synchronized with real-world time.

iii. **Students:** 3D models or simple representations of students moving in and out of the building based on the class schedule.

iv. **Sun:** A visual representation of the sun moving across the sky to simulate daytime.

v. **Moon and Stars:** Representations of the moon and stars during the nighttime.

vi. **Sky Dome:** A spherical representation of the sky that changes colors and lighting to simulate different times of the day.

vii. **Daytime Elements:** Props like benches, trees, and other daytime elements to enhance the environment during daylight.

viii. **Nighttime Elements:** Props like street lamps, illuminated windows, and other nighttime elements to enhance the environment during the night.

ix. **Animals:** 3D models or simple representations of animals like cats and dogs that may appear during the nighttime.

x. **Doors:** Interactive doors for the entrance and exit of students from the building.

xi. **Windows:** Representations of windows that may have lights on during the night.

xii. **Classrooms:** Interior representations of classrooms within the Panorama building.

xiii. **Landscape Elements:** Terrain, pathways, and other outdoor elements surrounding the Panorama building.

xiv. **Ground:** The ground or floor of the environment.

xv. **Additional Props:** Any additional props or details that contribute to the realism and atmosphere of the scene.

4. Conclusion:

In conclusion, BAUET_PanoSim achieves its goal of blending architectural representation with dynamic, time-dependent elements, offering an engaging virtual experience. The project successfully simulates the iconic Panorama building, featuring a synchronized analog clock, dynamic student movements, and realistic day-night transitions. Through thoughtful incorporation of animals and environmental details, the simulation captures the essence of both academic life and nocturnal activities. BAUET_PanoSim not only serves as a visually captivating endeavor but also stands as an educational tool, providing users with a glimpse into the architectural charm and vibrant daily rhythm of BAUET's Panorama building, creating an immersive and interactive exploration.