Module Code: CS7GV6– Computer Graphics 2024-25
Individual Project – Checkpoint 1
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Project Proposal and Design Document: Tropical Coral Reef – Use vibrant lighting and animations for a dynamic, colourful coral ecosystem with fish schools

Real World Reference for proposed design: https://www.burgerszoo.com/nieuws/2022/05/the-tropical-coral-reef-of-the-ocean

Key Features I am planning to implement:

- Basic reef outline on the sea bed: rectangular 3D blocks of differing dimensions stretching across a rectangular view area, on a sand-texture base
- Animated red sea-grass on the reef surface with swaying motions
- Animated 3D schools of fish moving through the reeds and crossing each other
- One special fish to weave through the sea-grass
- Point source of light from top-left corner, diffusing into a spotlight
- Four-way keyboard movement to navigate through the scene
- Water texture to mimic the depth of the ocean
- Gouraud Shading to render the objects as smooth as possible

Figure 1: Basic 2D Reef Structure using OpenGL

Figure 2: 2D Scene Mockup using Photoshop

Advanced Features I am considering:

- Multiple camera angles to explore the scene, one from side (default), and one top-view for the user to switch back and forth from
- Animated water texture, interacting with the fishes' and grass' movements