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**Design Decisions for 2D Animation**

This document outlines the design choices implemented to enhance a basic 2D animation of a brick breaker game using C++ and OpenGL. The primary goal was to improve visual appeal and gameplay by modifying brick layout, introducing variety in brick properties, and refining collision detection.

To achieve a more engaging visual experience, a grid-based layout was adopted for the bricks using nested loops. This allowed for a structured arrangement and facilitated the introduction of variability in brick properties. Each brick was randomly assigned a type (reflective or destructible), color, and size, promoting visual diversity (Eberly, 2001).

Furthermore, the collision detection mechanism was refined to prevent "ghost collisions" with destroyed bricks. This involved immediately exiting the collision check function if a brick was flagged as "off." This ensured that only active bricks interacted with the game elements, enhancing gameplay accuracy.

The code was also restructured to improve readability and maintainability. This included using a **std::vector** to store bricks dynamically, facilitating easier manipulation and iteration.

These design decisions collectively contributed to a more visually appealing and engaging 2D animation by introducing variability, improving collision accuracy, and enhancing code structure.

**References**

Eberly, D. H. (2001). *3D game engine design: A practical approach to real-time computer graphics*. Morgan Kaufmann.