Title: Two Object Motion in Unity Engine

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Aim: To create a Unity script where 2 objects moves with different speed and 2 objects with opposite direction and without collison.

Description/Concept:

In this Unity experiment, the goal is to create a script that moves four objects simultaneously with the following conditions:

Two objects move at different speeds.

Two objects move in opposite directions.

All objects avoid collision throughout their movement.

The script controls each object's movement using different speed variables to ensure diversity in motion. Two objects move toward the right side of the screen, while the other two move toward the left side. Collision avoidance is achieved by initially spacing the objects adequately so that their paths do not intersect during movement.

This experiment helps demonstrate fundamental Unity concepts such as manipulating object transforms to create motion, managing multiple objects within a single script, and understanding how to control movement directions and speeds effectively. The outcome ensures smooth, continuous movement in opposite directions without overlap or collision between the objects.

Program/Coding:

```csharp
using UnityEngine;

public class AutoForwardStopOnCollision : MonoBehaviour
{
    public float moveSpeed = 5f;            // Forward movement speed
    private bool canMove = true;
    private Rigidbody rb;

    void Start()
    {
        rb = GetComponent<Rigidbody>();
    }

    void FixedUpdate()
    {
        if (canMove)
        {
            rb.MovePosition(rb.position + transform.forward * moveSpeed *
Time.fixedDeltaTime);
        }
    }
}
```

Output:

On Play, Cube A moves forward fastest, Cube B follows slower.

Cube C and D move in the exact opposite direction at their own speeds.

Cubes pass through each other without colliding (as intended) but still collide with the ground and any obstacle.

If obstacles are present and the script/physics material is set, cubes either stop or bounce back on impact with obstacles
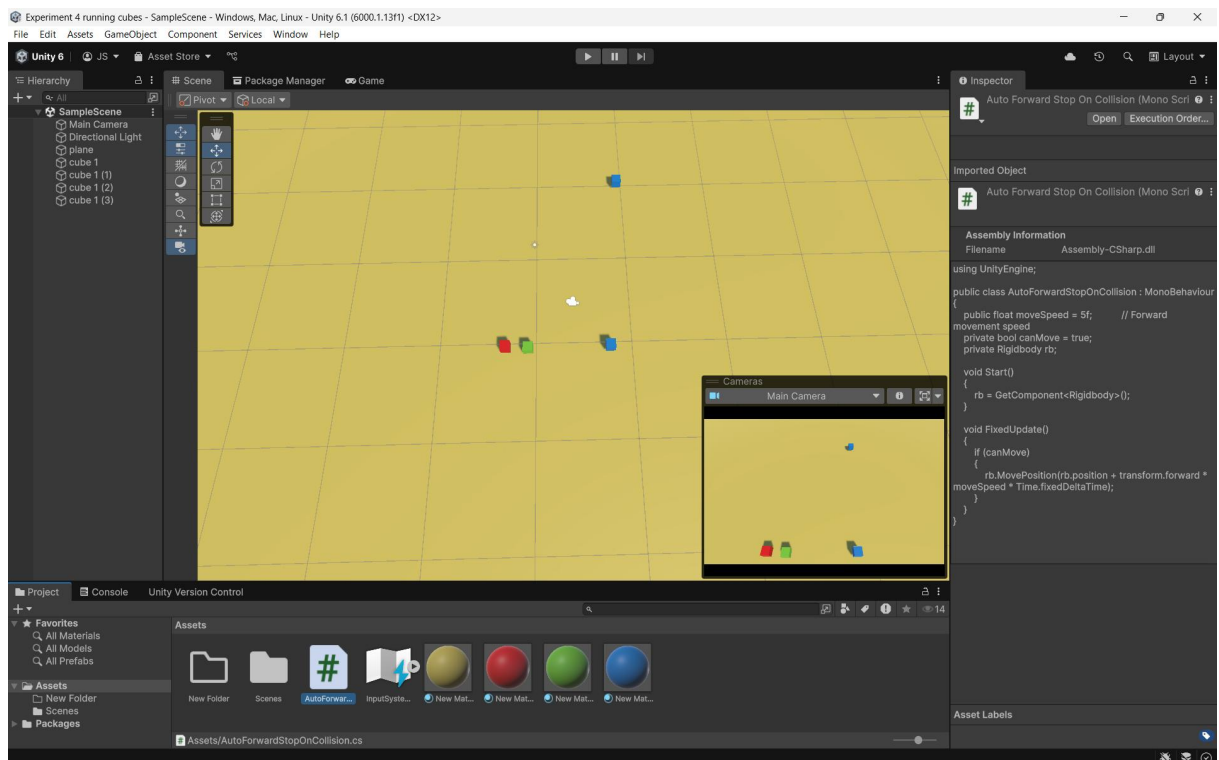
Conclusion:

In conclusion, the motion of any object is governed by Newton's Laws, with F=ma dictating its acceleration. When an object interacts with a static wall, the outcome is determined by the nature of the collision.

The coefficient of restitution (e) provides the crucial link, quantifying how much kinetic energy is conserved. This single value determines if the object will bounce back with full speed (elastic, e=1), stop completely (inelastic, e=0), or, as is most common in the real world, bounce back with reduced speed.

Result:

Script was created for two object motion in same and opposite direction were successfully implemented and tested in Unity Game Engine 6.1 Their application in game mechanics was understood through coding and console outputs.