[B-4] Rigidbody Experiments

Objective

To understand and experiment with the Rigidbody component in Unity for simulating realistic physics behavior on game objects.

Tasks

1. Add a rigidbody component to the yellow cube object.
1. In Start(), get the rigidbody component of the object.
2. In Update(), Script forward movement and rotation around the Y axis.
    a. When pressing “F” the cube should move forward
        i. Use Physics API “AddForce”
    b. When pressing “T” the cube should rotate around the world Y axis.
        i. Use Physics API “AddTorque”

Answer key next page!

Answer Key

```
using UnityEngine;

public class RigidbodyExperiment : MonoBehaviour
{
    public float forceMagnitude = 10.0f;
    public float torqueMagnitude = 5.0f;

    private Rigidbody rb;

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

    void Update()
    {
        if (Input.GetKeyDown(KeyCode.F))
        {
            // Apply a forward force
            rb.AddForce(transform.forward * forceMagnitude,
ForceMode.Impulse);
        }

        if (Input.GetKeyDown(KeyCode.T))
        {
            // Apply a torque
            rb.AddTorque(Vector3.up * torqueMagnitude, ForceMode.Impulse);
        }
    }
}
```

Starter Code

```
using UnityEngine;

public class RigidbodyExperiment : MonoBehaviour
```

```
{
    public float forceMagnitude = 10.0f;
    public float torqueMagnitude = 5.0f;

    void Start()
    {
        // Get the rigidbody component
    }

    void Update()
    {
        // Implement force and torque application logic
    }
}
```