

```

1 using UnityEngine;
2 using System.Collections;
3 using System.Collections.Generic; /* need this for the List<> */
4
5 public class Main : MonoBehaviour {
6     public GameObject cubePrefab_;
7     public GameObject spherePrefab_;
8
9     private Ball ball_;
10    private List<Block> block_list_;
11
12    // Use this for initialization
13    void Start() {
14        /* setup camera */
15        Camera.main.transform.position = new Vector3(0, 15, 0);
16        Camera.main.transform.eulerAngles = new Vector3(90, 0, 0);
17
18        /* setup lighting */
19        {
20            GameObject go = new GameObject("Light");
21            Light light = go.AddComponent<Light>();
22            light.transform.position = new Vector3(0, 5, 0);
23        }
24
25        /* create walls */
26        {
27            GameObject wall_left_go = Instantiate(cubePrefab_) as GameObject;
28            wall_left_go.transform.localScale = new Vector3(1, 1, 10);
29            wall_left_go.transform.position = new Vector3(5, 0, 0);
30            GameObject wall_right_go = Instantiate(cubePrefab_) as GameObject;
31            wall_right_go.transform.localScale = new Vector3(1, 1, 10);
32            wall_right_go.transform.position = new Vector3(-5, 0, 0);
33            GameObject wall_top_go = Instantiate(cubePrefab_) as GameObject;
34            wall_top_go.transform.localScale = new Vector3(10, 1, 1);
35            wall_top_go.transform.position = new Vector3(0, 0, 5);
36        }
37
38        /* create paddle */
39        {
40            GameObject go = Instantiate(cubePrefab_) as GameObject;
41            go.transform.localScale = new Vector3(1, 1, 0.5f);
42            go.transform.position = new Vector3(0, 0, -5);
43            go.AddComponent<Paddle>();
44        }
45
46        /* create blocks */
47        {
48            block_list_ = new List<Block>();
49            foreach (var x in new float[] { -3.5f, -1.5f, 0.5f, 2.5f, }) {
50                foreach (var z in new float[] { 3.9f, 2.9f, }) {
51                    GameObject go = Instantiate(cubePrefab_) as GameObject;
52                    go.transform.localScale = new Vector3(1.9f, 1f, 0.9f);
53                    go.transform.position = new Vector3(x, 0f, z);
54                    Block block = go.AddComponent<Block>();
55                    block_list_.Add(block);
56                }
57            }
58        }
59
60        /* create ball */
61        {
62            GameObject go = Instantiate(spherePrefab_) as GameObject;
63            Rigidbody rigidbody = go.AddComponent<Rigidbody>();
64            /* gravity is not necessary */
65            rigidbody.useGravity = false;
66            /* add Ball script defined below */
67            ball_ = go.AddComponent<Ball>();
68            /* setup the first velocity */
69            ball_.setVelocity(new Vector3(6f, 0f, 6f));
70        }
71    }
72
73    // Update is called once per frame
74    void Update() {
75        block_list_.RemoveAll(s => s == null);
76        if (block_list_.Count == 0) {
77            ball_.setVelocity(Vector3.zero);
78        }
79    }
80 }
81
82 public class Ball : MonoBehaviour {
83     private Vector3 velocity_;

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84     public void setVelocity(Vector3 velocity) { velocity_ = velocity; }
85     void OnCollisionEnter(Collision collision) {
86         if (collision.contacts.Length > 0) { /* hit for wall or paddle */
87             /* calculate the reflecting vector */
88             Vector3 p = collision.contacts[0].point;
89             Vector3 n = transform.position - p;
90             n.Normalize();
91             float v = -2 * Vector3.Dot(velocity_, n);
92             var r = n * v;
93             velocity_ += r; /* change the velocity vector */
94         }
95     }
96     void Update() {
97         transform.position += velocity_ * Time.deltaTime;
98     }
99 }
100
101 public class Block : MonoBehaviour {
102     void OnCollisionEnter(Collision collision) {
103         Destroy(gameObject);
104     }
105 }
106
107 public class Paddle : MonoBehaviour {
108     private Vector3 mouse_position_;
109
110     void Start() {
111         /* remember the first position of mouse */
112         mouse_position_ = Input.mousePosition;
113     }
114
115     void Update() {
116         /* the latest position of mouse */
117         Vector3 new_mouse_position = Input.mousePosition;
118         /* the amount of movement during the last frame */
119         Vector3 mouse_delta = new_mouse_position - mouse_position_;
120         /* update the paddle position for the next frame */
121         mouse_position_ = new_mouse_position;
122         /* sensitivity for the paddle */
123         float x = transform.position.x + mouse_delta.x * 0.01f;
124         /* limit for the paddle */
125         x = Mathf.Clamp(x, -5, 5);
126         /* update paddle */
127         transform.position = new Vector3(x, 0, -5);
128     }
129 }
end

```