

```
1 using System;
2 using UnityEngine;
3
4 /// <summary>
5 /// CameraMovement handles all player movement within the editor
6 /// Some behaviors (e.g. scrolling) will be enabled or disabled based on
7 /// the state of several other scripts.
8 /// </summary>
9 public class CameraMovement : MonoBehaviour
10 {
11     // Singleton state reference
12     private static CameraMovement instance;
13
14     /// <summary>
15     /// The primary camera utilized by the player.
16     /// </summary>
17     [SerializeField]
18     Camera playerCamera;
19
20     /// <summary>
21     /// The speed under which the player can move around scenes.
22     /// </summary>
23     [SerializeField]
24     float movementSpeed;
25
26     /// <summary>
27     /// The speed under which the player can scroll around scenes.
28     /// </summary>
29     [SerializeField]
30     float scrollSpeed;
31
32     /// <summary>
33     /// How low and high the player can vertically go.
34     /// </summary>
35     [SerializeField]
36     float minHeight, maxHeight;
37
38     /// <summary>
39     /// Moves the player up and down respectively.
40     /// </summary>
41     [SerializeField]
42     KeyCode upKey, downKey;
43
44     /// <summary>
45     /// Keeps track of the mouse position in the current frame.
46     /// </summary>
47     private Vector3 mousePosCurrent;
```

```
48 // Enforces a singleton state pattern and initializes camera values.
49 private void Awake()
50 {
51     if (instance != null)
52     {
53         Destroy(this);
54         throw new Exception("CameraMovement instance already established; terminating.");
55     }
56
57     instance = this;
58     ClampPos();
59 }
60
61 private void Start() { mousePosCurrent =
62     Coordinates.Instance.MousePos; }
63
64 // Listens to key inputs and updates movements each frame.
65 private void Update()
66 {
67     float x, y, z;
68
69     Vector3 mousePosPrev = mousePosCurrent;
70
71     mousePosCurrent = Coordinates.Instance.MousePos;
72
73     // If the scene is paused or there is an override, no movement can occur.
74     if (BehaviorManager.Instance.CurrentStateType ==
75         BehaviorManager.StateType.PAUSED && !
76         IOAssigner.Instance.MovementOverride) return;
77
78     // Otherwise, some/all movement features are allowed depending on whether the game is unrestricted or locked.
79     // X-Z movement via mouse drag
80     if (Input.GetMouseButton(0) &&
81         BehaviorManager.Instance.CurrentStateType ==
82         BehaviorManager.StateType.UNRESTRICTED &&
83         BehaviorManager.Instance.CurrentGameState !=
84         BehaviorManager.GameState.CIRCUIT_HOVER)
85     {
86         Vector3 mousePosDelta = mousePosPrev - mousePosCurrent;
87
88         x = mousePosDelta.x;
89         z = mousePosDelta.z;
90     }
91
92     // X-Z movement via WASD
93     else
```

```
87     {
88         // Obtains x and z axis values based on input
89         x = Input.GetAxisRaw("Horizontal") * movementSpeed * Time.deltaTime;
90         z = Input.GetAxisRaw("Vertical") * movementSpeed * Time.deltaTime;
91     }
92
93     // Y movement via scroll wheel
94     if (Mathf.Abs(Input.mouseScrollDelta.y) > 0)
95     {
96         y = -Input.mouseScrollDelta.y * scrollSpeed * Time.deltaTime;
97     }
98
99     // Y movement via upKey and/or downKey
100    else
101    {
102        y = 0;
103
104        // Determines y axis values (holding both "upKey" and "downKey" will negate one another)
105        if (Input.GetKey(upKey))
106        {
107            y += movementSpeed * Time.deltaTime;
108        }
109
110        if (Input.GetKey(downKey))
111        {
112            y -= movementSpeed * Time.deltaTime;
113        }
114    }
115
116    // Adds obtained values and updates position
117    transform.position += x * Vector3.right + y * -CameraRay.direction + z * Vector3.forward;
118    ClampPos();
119    mousePosCurrent = Coordinates.Instance.MousePos;
120 }
121
122 /// <summary>
123 /// Clamps values to ensure the user cannot traverse out of bounds.
124 /// </summary>
125 private void ClampPos()
126 {
127     Vector3 pos = transform.position;
128
129     pos.y = Mathf.Clamp(pos.y, minHeight, maxHeight);
130     transform.position = pos;
131 }
```

```
132
133     // Getter methods
134     public static CameraMovement Instance { get { return instance; } }
135
136     public Camera PlayerCamera { get { return playerCamera; } }
137
138     private Ray CameraRay { get { return playerCamera.ScreenPointToRay
139         (Input.mousePosition); } }
```