Celestial Rewind

Generated by Doxygen 1.8.17

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

Class Documentation

3.1 AudioController Class Reference

A controller for player audio.

Public Member Functions

- IEnumerator WaitForNextStep ()

  A coroutine method that waits until the next step audio should be played

Public Attributes

- AudioSource **audioSource**
- AudioClip[ ] **walkSounds**
- AudioSource **timeAudio**
- AudioClip **timeRewindSound**
- float **waitStep** = .5f
- PhysicsPlayerController **ppc**

Private Member Functions

- void Update ()

  Controls player walking and time rewind sounds.

Private Attributes

- int **walkSoundIndex**
- bool **playSound** = true

3.1.1 Detailed Description

A controller for player audio.

3.1.2 Member Function Documentation

3.1.2.1 Update()

```
void AudioController.Update ( )  [inline], [private]
```

Controls player walking and time rewind sounds.

3.1.2.2 WaitForNextStep()

```
IEnumerator AudioController.WaitForNextStep ( )  [inline]
```

A coroutine method that waits until the next step audio should be played

Returns

A WaitForSeconds object.

The documentation for this class was generated from the following file:

- Assets/Scripts/AudioController.cs

3.2 DebugPanel Class Reference

A controller for the debug settings. Currently contains a manually maintained map of UI elements to the corresponding object value.

Public Attributes

- TMP_InputField Gravity

  A text field representing gravity's value
- TMP_InputField RewindSpeed

  A text field representing how often per second a rewind capture is performed
- TMP_InputField Drag

  A text field representing drag
- List< TMP_InputField > Move

  A list of input fields corresponding to the three values of a player's movement acceleration
- List< TMP_InputField > Speed

  A list of input fields corresponding to the three values of a player's max velocity
- TMP_InputField RLimit

  A text field representing how long rewind can be held before time resumes.
- TMP_InputField RCooldown

  A text field representing how long the player must wait after burning out the rewind before they can use it again.
- TMP_InputField Leniency

  The leniency for the ZController's check for no motion.
- PhysicsPlayerController ppc

  The PhysicsPlayerController the fields are referencing.
- ZController zc

  The ZController the fields are referencing
- GameObject panel

  The parent container for all the text fields.

Private Member Functions

- void Start ()

  Set up all of the elements. If they have not been set in the editor, they will be extracted from the children of the panel GameObject. For each element, the corresponding value is pulled from game data and populated into the text fields.
- void Update ()

  Every frame, so long as the panel itself is active, all values in the gui will be copied into their corresponding fields in the game. This is done through TryParse calls, where a failure will result in the original value being maintained. If the key (f1) for the debug is called, the panel will be toggled.

3.2.1 Detailed Description

A controller for the debug settings. Currently contains a manually maintained map of UI elements to the corresponding object value.

Not as automated as I'd like but that would be difficult to do without reflection, which is already used slightly in instantiation.

3.2.2 Member Function Documentation

3.2.2.1 Start()

```
void DebugPanel.Start ( )  [inline], [private]
```

Set up all of the elements. If they have not been set in the editor, they will be extracted from the children of the panel GameObject. For each element, the corresponding value is pulled from game data and populated into the text fields.

3.2.2.2 Update()

```
void DebugPanel.Update ( )  [inline], [private]
```

Every frame, so long as the panel itself is active, all values in the gui will be copied into their corresponding fields in the game. This is done through TryParse calls, where a failure will result in the original value being maintained. If the key (f1) for the debug is called, the panel will be toggled.

3.2.3 Member Data Documentation

3.2.3.1 Drag

```
TMP_InputField DebugPanel.Drag
```

A text field representing drag

Possibly could be removed now

3.2.3.2 Gravity

```
TMP_InputField DebugPanel.Gravity
```

A text field representing gravity's value

3.2.3.3 Leniency

```
TMP_InputField DebugPanel.Leniency
```

The leniency for the ZController's check for no motion.

3.2.3.4 Move

```
List<TMP_InputField> DebugPanel.Move
```

A list of input fields corresponding to the three values of a player's movement acceleration

3.2.3.5 panel

```
GameObject DebugPanel.panel
```

The parent container for all the text fields.

3.2.3.6 ppc

```
PhysicsPlayerController DebugPanel.ppc
```

The PhysicsPlayerController the fields are referencing.

3.2.3.7 RCooldown

```
TMP_InputField DebugPanel.RCooldown
```

A text field representing how long the player must wait after burning out the rewind before they can use it again.

3.2.3.8 RewindSpeed

```
TMP_InputField DebugPanel.RewindSpeed
```

A text field representing how often per second a rewind capture is performed

3.2.3.9 RLimit

```
TMP_InputField DebugPanel.RLimit
```

A text field representing how long rewind can be held before time resumes.

3.2.3.10 Speed

```
List<TMP_InputField> DebugPanel.Speed
```

A list of input fields corresponding to the three values of a player's max velocity

3.2.3.11 zc

```
ZController DebugPanel.zc
```

The ZController the fields are referencing

The documentation for this class was generated from the following file:

- Assets/Scripts/UI/DebugPanel.cs

3.3 FallingRocksObstacle Class Reference

Public Attributes

- float **moveSpeed** = 0.05f
- float **timeout** = 2f

Private Member Functions

- void Start ()

  place script on the prefab that SpawningRocks script will spawn.
- void **FixedUpdate** ()
- IEnumerator Timeout ()

3.3.1 Member Function Documentation

3.3.1.1 Timeout()

```
IEnumerator FallingRocksObstacle.Timeout ( )  [inline], [private]
```

destroys obstacles after they have already fallen, after they already

The documentation for this class was generated from the following file:

- Assets/Scripts/FallingRocksObstacle.cs

3.4 FirstPersonLook Class Reference

Public Attributes

- float **turnSpeed** = 1
- float **mouseXSensitiviy** = 1
- float **mouseYSensitiviy** = 1
- Transform **cam**
- Transform **orientation**
- Transform **player**
- Transform **playerObj**

Private Member Functions

- void **Start** ()
- void **Update** ()
- void **MyInput** ()
- void **rotateCamera** ()
- void **TurnPlayer2** ()
- void **TurnPlayer1** ()
- void **resetTurn** ()

Private Attributes

- Vector2 **turn**
- float **horizontalInput**
- float **veritcalInput**

The documentation for this class was generated from the following file:

- Assets/Scripts/TestMovement/FirstPersonLook.cs

3.5 IRewinder Class Reference

An abstraction of the rewinder functionality for use with a ZController to rewind an object.

Public Member Functions

- virtual void Start ()

  Initializes SnapState list, sets initial position and rotation, and extracts the ZController from parent if it was not explicitly set. Finally, pauses the object, awaiting the ZController's signal.
- virtual bool NeedUpdate ()

  Checks to see if the object has moved since the last state capture. Uses ZController.Approximate(Vector3, Vector3) to compare the previous state's position with the current's. If they are not equivalent within the range of leniency, then a signal is sent stating that an update is required.
- virtual void Store ()

  Stores the current position and rotation of the object on the rewind stack.
- virtual SnapState RewindState ()

  Rewinds the states from the stack frame one state at a time, allowing for easier speed-up of rewind. If there are no states left, the function returns null
- virtual void Reset ()

  Resets the object to its initial position and rotation and clears the SnapState stack.
- abstract void Play ()

  Continues time wherever it was left off, however the concrete implementation needs to accomplish this.
- abstract void Pause ()

  Pauses the movement of the object however the concrete implementation needs to accomplish this.
- bool HasStates ()

  Checks whether the SnapState stack contains elements.

Public Attributes

- ZController zController

  Parent ZController of the current GameObject; Primarily for use of ZController.Approximate(Vector3, Vector3) method.

Protected Attributes

- Stack< SnapState > states

  Stack of SnapState objects; used to stash and then unwind different points within the IRewinder's lifecycle over the course of the ZController's rewind capture.
- bool printDebug

  Debug variable to toggle output in the debug console; in child methods, whenever debug is required, wrap it with an if statment checking this field.

Properties

- Vector3 startPos `[get, protected set]`

  Initial position state of the attachee GameObject
- Quaternion startRot `[get, protected set]`

  Initial rotation state of the attachee GameObject

3.5.1 Detailed Description

An abstraction of the rewinder functionality for use with a ZController to rewind an object.

3.5.2 Member Function Documentation

3.5.2.1 HasStates()

```
bool IRewinder.HasStates ( )  [inline]
```

Checks whether the SnapState stack contains elements.

Returns

3.5.2.2 NeedUpdate()

```
virtual bool IRewinder.NeedUpdate ( )  [inline], [virtual]
```

Checks to see if the object has moved since the last state capture. Uses ZController.Approximate(Vector3, Vector3) to compare the previous state's position with the current's. If they are not equivalent within the range of leniency, then a signal is sent stating that an update is required.

Returns

True if the object has moved

3.5.2.3 Pause()

```
abstract void IRewinder.Pause ( )  [pure virtual]
```

Pauses the movement of the object however the concrete implementation needs to accomplish this.

Implemented in PhysicsRewinder.

3.5.2.4 Play()

```
abstract void IRewinder.Play ( )  [pure virtual]
```

Continues time wherever it was left off, however the concrete implementation needs to accomplish this.

Implemented in PhysicsRewinder.

3.5.2.5 Reset()

```
virtual void IRewinder.Reset ( )  [inline], [virtual]
```

Resets the object to its initial position and rotation and clears the SnapState stack.

3.5.2.6 RewindState()

```
virtual SnapState IRewinder.RewindState ( )  [inline], [virtual]
```

Rewinds the states from the stack frame one state at a time, allowing for easier speed-up of rewind. If there are no states left, the function returns null

Returns

The popped SnapState or null if there are no states remaining.

Reimplemented in PhysicsRewinder.

3.5.2.7 Start()

```
virtual void IRewinder.Start ( )  [inline], [virtual]
```

Initializes SnapState list, sets initial position and rotation, and extracts the ZController from parent if it was not explicitly set. Finally, pauses the object, awaiting the ZController's signal.

Reimplemented in PhysicsRewinder.

3.5.2.8 Store()

```
virtual void IRewinder.Store ( )  [inline], [virtual]
```

Stores the current position and rotation of the object on the rewind stack.

Reimplemented in PhysicsRewinder.

3.5.3 Member Data Documentation

3.5.3.1 printDebug

```
bool IRewinder.printDebug  [protected]
```

Debug variable to toggle output in the debug console; in child methods, whenever debug is required, wrap it with an if statment checking this field.

3.5.3.2 states

```
Stack<SnapState> IRewinder.states  [protected]
```

Stack of SnapState objects; used to stash and then unwind different points within the IRewinder's lifecycle over the course of the ZController's rewind capture.

3.5.3.3 zController

```
ZController IRewinder.zController
```

Parent ZController of the current GameObject; Primarily for use of ZController.Approximate(Vector3, Vector3) method.

3.5.4 Property Documentation

3.5.4.1 startPos

```
Vector3 IRewinder.startPos  [get], [protected set]
```

Initial position state of the attachee GameObject

3.5.4.2 startRot

```
Quaternion IRewinder.startRot  [get], [protected set]
```

Initial rotation state of the attachee GameObject

The documentation for this class was generated from the following file:

- Assets/Scripts/Rewinders/IRewinder.cs

3.6 LevelLoader Class Reference

Public Member Functions

- IEnumerator **LoadLevel** (int sceneIndex)
- void **ChangeScene** (int sceneIndex)
- void **NextScene** ()
- void **ReloadScene** ()

Public Attributes

- List< Scene > **SceneList**
- Animator **Transition**
- float **TransitionTime** = 1

Private Member Functions

- void **Start** ()

The documentation for this class was generated from the following file:

- Assets/Scripts/Transitions/LevelLoader.cs

3.7 LevelTransitionTrigger Class Reference

Public Member Functions

- void **OnTriggerEnter** (Collider other)

Public Attributes

- LevelLoader **lLoad**
- bool **TargetScene**
- int **SelectedScene** = 0

The documentation for this class was generated from the following file:

- Assets/Scripts/Transitions/LevelTransitionTrigger.cs

3.8 MenuScript Class Reference

Public Attributes

- GameObject **panel**

Private Member Functions

- void **Update** ()

The documentation for this class was generated from the following file:

- Assets/Scripts/UI/MenuScript.cs

3.9 MovementScript Class Reference

Public Member Functions

- IEnumerator **WaitForNextStep** ()

Public Attributes

- Transform **orientation**
- Rigidbody **rb**
- AudioSource **audioSource**
- AudioSource **timeAudio**
- float **moveSpeed** = 1
- float **jumpForce**
- float **jumpCooldown**
- float **airMultiplier**
- bool **readyToJump**
- AudioClip[ ] **walkSounds**
- AudioClip **timeRewindSound**
- float **waitStep** = .5f
- KeyCode **jumpKey** = KeyCode.Space
- float **playerHeight**
- float **groundDrag**
- LayerMask **whatIsGround**
- bool **grounded**

Private Member Functions

- void **Start** ()
- void **Update** ()
- void **FixedUpdate** ()
- void **MyInput** ()
- void **MovePlayer** ()
- void **SpeedControl** ()
- void **Jump** ()
- void **ResetJump** ()

Private Attributes

- int **walkSoundIndex**
- bool **playSound** = true
- float **horizontalInput**
- float **verticalInput**
- Vector3 **moveDir**

The documentation for this class was generated from the following file:

- Assets/Scripts/TestMovement/MovementScript.cs

3.10 PhysicsPlayerController Class Reference

A Rigidbody based player controller.

Public Member Functions

- void UpdateCamera ()

  Updates camera rotations using player mouse input. Player GameObject is also transformed for y rotations, allowing forward to always be where the player is facing.
- void DoMovement (ref float xVel, ref float zVel)

  Calculates the player's x and z direction movement. Movement is converted into a Rigidbody force using the mass and the playerAcceleration for that direction. If the current velocity is higher than the max, however, it will be reduced to the max and stored in xVel and zVel .
- void DoJump (ref float yVel)

  Calculates the player's vertical velocity and processes jump input. Checks for ground using a raycast, then if the player is on the ground and jump is pressed enacts an impulse force upwards using the value specified in playerAcceleration. If not on the ground and the velocity is greater than the max speed, yVel will be set to the value in maxSpeed.
- void OnCollisionEnter (Collision collision)

  Detects a collision with the player and calculates the force of the impact. If the impact is too high, the player will be killed.

Public Attributes

- Vector3 playerAcceleration = new Vector3(10, 10, 20)

  A Vector3 containing the accelleration value for the player in each direction.
- Vector3 maxSpeed = new Vector3(3, 15, 5)

  A Vector3 containing the maximum absolute velocity that the player can go in any direction.
- bool grounded

  A bool representing whether or not the player is currently touching a ground.
- Transform cam

  The Transform for the player's main Camera.
- float mouseXSensitiviy = 1

  The mouse sensitivity for the camera going up and down.
- float mouseYSensitiviy = 1

  The mouse sensitivity for the camera going side to side.

Private Member Functions

- void Start ()

  Attempts to set the Rigidbody and camera Transform if not set within the editor, and locks the CursorState.
- void Update ()

  Updates the player's movement based on input; calls UpdateCamera, DoMovement(ref float, ref float), and DoJump(ref float).
  Also applies velocity cap.

Private Attributes

- Rigidbody rigidBody

  The the attachee GameObject's Rigidbody.
- LayerMask **ground**
- Vector2 turn

  A Vector2 keeping track of the current x and y rotations of the player camera.

3.10.1 Detailed Description

A Rigidbody based player controller.

3.10.2 Member Function Documentation

3.10.2.1 DoJump()

```
void PhysicsPlayerController.DoJump (
            ref float yVel )  [inline]
```

Calculates the player's vertical velocity and processes jump input. Checks for ground using a raycast, then if the player is on the ground and jump is pressed enacts an impulse force upwards using the value specified in playerAcceleration. If not on the ground and the velocity is greater than the max speed, *yVel* will be set to the value in maxSpeed.

Parameters

yVel	A reference to the z velocity of the player; will be capped to the maxSpeed value if too high

3.10.2.2 DoMovement()

```
void PhysicsPlayerController.DoMovement (
            ref float xVel,
            ref float zVel )  [inline]
```

Calculates the player's x and z direction movement. Movement is converted into a Rigidbody force using the mass and the playerAcceleration for that direction. If the current velocity is higher than the max, however, it will be reduced to the max and stored in *xVel* and *zVel* .

Parameters

xVel	A reference to the x velocity of the player; will be capped to the maxSpeed value if too high
zVel	A reference to the z velocity of the player; will be capped to the maxSpeed value if too high

3.10.2.3 OnCollisionEnter()

```
void PhysicsPlayerController.OnCollisionEnter (
             Collision collision )  [inline]
```

Detects a collision with the player and calculates the force of the impact. If the impact is too high, the player will be killed.

3.10.2.4 Start()

```
void PhysicsPlayerController.Start ( )  [inline], [private]
```

Attempts to set the Rigidbody and camera Transform if not set within the editor, and locks the CursorState.

3.10.2.5 Update()

```
void PhysicsPlayerController.Update ( )  [inline], [private]
```

Updates the player's movement based on input; calls UpdateCamera, DoMovement(ref float, ref float), and DoJump(ref float).

Also applies velocity cap.

3.10.2.6 UpdateCamera()

```
void PhysicsPlayerController.UpdateCamera ( )  [inline]
```

Updates camera rotations using player mouse input. Player GameObject is also transformed for y rotations, allowing forward to always be where the player is facing.

3.10.3 Member Data Documentation

3.10.3.1 cam

```
Transform PhysicsPlayerController.cam
```

The Transform for the player's main Camera.

3.10.3.2 grounded

```
bool PhysicsPlayerController.grounded
```

A bool representing whether or not the player is currently touching a ground.

3.10.3.3 maxSpeed

```
Vector3 PhysicsPlayerController.maxSpeed = new Vector3(3, 15, 5)
```

A Vector3 containing the maximum absolute velocity that the player can go in any direction.

3.10.3.4 mouseXSensitiviy

```
float PhysicsPlayerController.mouseXSensitiviy = 1
```

The mouse sensitivity for the camera going up and down.

3.10.3.5 mouseYSensitiviy

```
float PhysicsPlayerController.mouseYSensitiviy = 1
```

The mouse sensitivity for the camera going side to side.

3.10.3.6 playerAcceleration

```
Vector3 PhysicsPlayerController.playerAcceleration = new Vector3(10, 10, 20)
```

A Vector3 containing the accelleration value for the player in each direction.

3.10.3.7 rigidBody

```
Rigidbody PhysicsPlayerController.rigidBody  [private]
```

The the attachee GameObject's Rigidbody.

3.10.3.8 turn

```
Vector2 PhysicsPlayerController.turn  [private]
```

A Vector2 keeping track of the current x and y rotations of the player camera.

The documentation for this class was generated from the following file:

- Assets/Scripts/PhysicsPlayerController.cs

3.11 PhysicsRewinder Class Reference

An implementation of IRewinder made for operating with Rigidbody physics.

Public Member Functions

- override void Start ()

  Initializes the Rigidbody if not set in the editor.
  Initializes SnapState list, sets initial position and rotation, and extracts the ZController from parent if it was not explicitly set. Finally, pauses the object, awaiting the ZController's signal.
- override void Store ()

  Stores the current position and rotation of the object on the rewind stack.
  Also stores the Rigidbody's current velocity and current angular velocity.
- override SnapState RewindState ()

  Rewinds the states from the stack frame one state at a time, allowing for easier speed-up of rewind. If there are no states left, the function returns null
  Sets the rewind velocity to the popped SnapState's velocity.
- void Update ()

  Updates the rewindVelocity every frame, so long as the the Rigidbody is not in kinematic mode.
- override void Play ()

  Continues physics for the object, and begins by applying the force if there is no history within the SnapState stack. If there is a state within the stack, attempts to resume movement by applying the previous state's velocity
- override void Pause ()

  Halts physics for the object and sets the Rigidbody to kinematic mode.
- void OnCollisionStay (Collision collision)

  In the case of collision while the GameObject is rewinding, a force needs to be applied to the colliding object since the Rigidbody cannot do it for itself in kinematic mode.

Public Attributes

- Vector3 startForce = Vector3.zero

  The initial force that should be applied to the Rigidbody when time starts playing.
- Rigidbody rb

  The attachee GameObject's attached Rigidbody.

Private Attributes

- Vector3 rewindVelocity

  A cached state of the previously popped SnapState's velocity; used for calculating the force imparted onto any non-rewound object while rewinding time (primarily the plyaer)

Additional Inherited Members

3.11.1 Detailed Description

An implementation of IRewinder made for operating with Rigidbody physics.

3.11.2 Member Function Documentation

3.11.2.1 OnCollisionStay()

```
void PhysicsRewinder.OnCollisionStay (
            Collision collision )  [inline]
```

In the case of collision while the GameObject is rewinding, a force needs to be applied to the colliding object since the Rigidbody cannot do it for itself in kinematic mode.

Using the difference between the next state's velocity and the cached rewind velocity, the delta is multiplied by the Rigidbody's mass and applied to the colliding Rigidbody as a force. In this implementation, the change in time is ignored because it produces better results.

Parameters

collision	A Collision containing data about the colliding body.

3.11.2.2 Pause()

```
override void PhysicsRewinder.Pause ( )  [inline], [virtual]
```

Halts physics for the object and sets the Rigidbody to kinematic mode.

Implements IRewinder.

3.11.2.3 Play()

```
override void PhysicsRewinder.Play ( )  [inline], [virtual]
```

Continues physics for the object, and begins by applying the force if there is no history within the SnapState stack. If there is a state within the stack, attempts to resume movement by applying the previous state's velocity

Implements IRewinder.

3.11.2.4 RewindState()

```
override SnapState PhysicsRewinder.RewindState ( )  [inline], [virtual]
```

Rewinds the states from the stack frame one state at a time, allowing for easier speed-up of rewind. If there are no states left, the function returns null

Sets the rewind velocity to the popped SnapState's velocity.

Returns

Rewinds the states from the stack frame one state at a time, allowing for easier speed-up of rewind. If there are no states left, the function returns null

Reimplemented from IRewinder.

3.11.2.5 Start()

```
override void PhysicsRewinder.Start ( )  [inline], [virtual]
```

Initializes the Rigidbody if not set in the editor.

Initializes SnapState list, sets initial position and rotation, and extracts the ZController from parent if it was not explicitly set. Finally, pauses the object, awaiting the ZController's signal.

Reimplemented from IRewinder.

3.11.2.6 Store()

```
override void PhysicsRewinder.Store ( )  [inline], [virtual]
```

Stores the current position and rotation of the object on the rewind stack.

Also stores the Rigidbody's current velocity and current angular velocity.

Reimplemented from IRewinder.

3.11.2.7 Update()

```
void PhysicsRewinder.Update ( )  [inline]
```

Updates the rewindVelocity every frame, so long as the the Rigidbody is not in kinematic mode.

3.11.3 Member Data Documentation

3.11.3.1 rb

```
Rigidbody PhysicsRewinder.rb
```

The attachee GameObject's attached Rigidbody.

3.11.3.2 rewindVelocity

```
Vector3 PhysicsRewinder.rewindVelocity  [private]
```

A cached state of the previously popped SnapState's velocity; used for calculating the force imparted onto any non-rewound object while rewinding time (primarily the plyaer)

3.11.3.3 startForce

```
Vector3 PhysicsRewinder.startForce = Vector3.zero
```

The initial force that should be applied to the Rigidbody when time starts playing.

The documentation for this class was generated from the following file:

- Assets/Scripts/Rewinders/PhysicsRewinder.cs

3.12 PlayerController Class Reference

Modified from unity docs: https://docs.unity3d.com/ScriptReference/Character←Controller.Move.html To be removed in later versions.

Public Member Functions

- IEnumerator **WaitForNextStep** ()

Public Attributes

- CharacterController **controller**
- float **playerSpeed** = 5.0f
- float **jumpHeight** = 2.0f
- float **MAX_VELOCITY_TOLERANCE** = 100
- Transform **cam**
- float **turnSmoothnessTime** = 0.1f
- float **mouseXSensitiviy** = 1
- float **mouseYSensitiviy** = 1
- AudioSource **audioSource**
- AudioClip[ ] **walkSounds**
- AudioSource **timeAudio**
- AudioClip **timeRewindSound**
- float **waitStep** = .5f

Private Member Functions

- void **Start** ()
- void **Update** ()
- void **OnTriggerEnter** (Collider other)

Private Attributes

- Vector3 **playerVelocity**
- bool **groundedPlayer**
- float **gravityValue** = -9.81f
- Vector2 **turn**
- float **turnSmoothSpeed**
- int **walkSoundIndex**
- bool **playSound** = true

3.12.1 Detailed Description

Modified from unity docs: https://docs.unity3d.com/ScriptReference/Character←Controller.Move.html To be removed in later versions.

The documentation for this class was generated from the following file:

- Assets/Scripts/PlayerController.cs

3.13 RoomController Class Reference

Private Member Functions

- void **Start** ()
- void **Update** ()

Private Attributes

- IEnumerable< Animator > **animators**
- float **animTime**
- float **maxTime**

The documentation for this class was generated from the following file:

- Assets/Scripts/RoomController.cs

3.14 RoomSettingsScript Class Reference

Private Member Functions

- void **Start** ()

Private Attributes

- Color **fogColor**

The documentation for this class was generated from the following file:

- Assets/Scripts/RoomSettingsScript.cs

3.15 SnapState Class Reference

A representation of a gameObject's current state.

Public Attributes

- Vector3 **position**
- Quaternion **rotation**
- Vector3 **velocity**
- Vector3 **angularVelocity**

3.15.1 Detailed Description

A representation of a gameObject's current state.

Currently contains

- Position
- Rotation
- Velocity
- Angular Velocity

The documentation for this class was generated from the following file:

- Assets/Scripts/Rewinders/IRewinder.cs

3.16 SpawningRocks Class Reference

Public Attributes

- GameObject **rockPrefab**

Private Member Functions

- void **Start** ()
- IEnumerator **SpawnFalling** ()

The documentation for this class was generated from the following file:

- Assets/Scripts/SpawningRocks.cs

3.17 TextureResizeScript Class Reference

Private Member Functions

- void **Start** ()

Private Attributes

- float **resize** = 4
- float **scale** = 1
- Transform **t**
- Renderer **r**
- Material **m**

The documentation for this class was generated from the following file:

- Assets/Scripts/TextureResizeScript.cs

3.18 ThirdPersonMovement Class Reference

Public Attributes

- CharacterController **_controller**
- Transform **_cam**
- float **walkSpeed** = 5f
- float **turnSmoothnessTime** = 0.1f

Private Member Functions

- void **Update** ()

Private Attributes

- float **turnSmoothSpeed**

The documentation for this class was generated from the following file:

- Assets/Scripts/ThirdPersonMovement.cs

3.19 TriggerWalls Class Reference

Public Attributes

- GameObject[ ] **targets**
- bool **Disable** = false

Private Member Functions

- void **OnTriggerEnter** (Collider other)

The documentation for this class was generated from the following file:

- Assets/Scripts/TriggerWalls.cs

3.20 TriigerWinLoss Class Reference

Public Attributes

- GameObject **WinLossScreen**
- bool **WinTrigger** = false
- bool **LoseTrigger** = false
- string **TriggerMessage** = "Unspecified Trigger"

Private Member Functions

- void **Start** ()
- void **OnTriggerEnter** (Collider other)

Private Attributes

- TMPro.TextMeshProUGUI **txt**

The documentation for this class was generated from the following file:

- Assets/Scripts/TriigerWinLoss.cs

3.21 VignetteRewind Class Reference

Private Member Functions

- void **Update** ()
- void **VignetteOn** ()
- void **VignetteOff** ()

Private Attributes

- Volume **volume**
- float **_intensity**

The documentation for this class was generated from the following file:

- Assets/Scripts/VignetteRewind.cs

3.22 ZController Class Reference

A script to control all IRewinders in the current GameObject's children and process their state capture, motion, and rewind.

Public Member Functions

- void Pause ()

  Pauses all IRewinders under this controller's control.
- bool Approximate (Vector3 a, Vector3 b)

  Checks if two vectors are approximately equivalent with approximateLeniency leniency.

Public Attributes

- float recordInterval = .2f

  The interval at which a record state should be taken in seconds.
- float rewindScale = 1f

  A measure of how quickly the rewinds should occur as a multiplier
- float rewindLimit = -1f

  How long in seconds a rewind can be held at a fully rewound state before "burning out" and needing to cooldown. -1 is disabled
- float rewindCooldown = 2f

  How long the player should be made to wait until they can use the rewind again after burning it out.
- float approximateLeniency = .01f

  A measure of how close to zero a vector needs to be for a child IRewinder to consider it to be zero; use primarily for IRewinder.NeedUpdate.
- bool active

  A boolean to determine whether or not this controller is active.

Private Member Functions

- void Start ()

  Initialize the time and extract the children IRewinders. If the rewind scale is below zero, set it to 1 to prevent crashes.
- void Update ()

  Handle all rewind code.
  - *If the player is doing a rewind, then iterate through the rewind states for each IRewinder*
  - *If all states have been rewound and the rewind limit is reached, set the cooldown and play motion.*
  - *If there is an IRewinder that is still moving, all IRewinders capture their current states.*
  - *If the player releases the rewind, then play all IRewinders, allowing them to continue motion.*
- void OnTriggerEnter (Collider other)

  Allows for multiple controllers to exist within the same scene, setting activation to a bound set of triggers. Whenever the trigger attached to this GameObject is entered, all other controllers will be paused.

Private Attributes

- IEnumerable< IRewinder > rewinds

  A collection of all IRewinders within this controller's influence.
- float deltaTime

  The amount of time that has passed since an update; used to calculate the record interval and the rewind limit
- float cooldown = 0f

  Keeps track of how long the cooldown has left before players can use rewind again.

3.22.1 Detailed Description

A script to control all IRewinders in the current GameObject's children and process their state capture, motion, and rewind.

Because like, control + z, get it? Because it undoes?

3.22.2 Member Function Documentation

3.22.2.1 Approximate()

```
bool ZController.Approximate (
            Vector3 a,
            Vector3 b )  [inline]
```

Checks if two vectors are approximately equivalent with approximateLeniency leniency.

Parameters

a	First vector
b	Second vector

Returns

True if the difference between the vectors is less than approximateLeniency

3.22.2.2 OnTriggerEnter()

```
void ZController.OnTriggerEnter (
            Collider other )  [inline], [private]
```

Allows for multiple controllers to exist within the same scene, setting activation to a bound set of triggers. Whenever the trigger attached to this GameObject is entered, all other controllers will be paused.

3.22.2.3 Pause()

```
void ZController.Pause ( )  [inline]
```

Pauses all IRewinders under this controller's control.

3.22.2.4 Start()

```
void ZController.Start ( )  [inline], [private]
```

Initialize the time and extract the children IRewinders. If the rewind scale is below zero, set it to 1 to prevent crashes.

3.22.2.5 Update()

```
void ZController.Update ( )  [inline], [private]
```

Handle all rewind code.

- If the player is doing a rewind, then iterate through the rewind states for each IRewinder
- If all states have been rewound and the rewind limit is reached, set the cooldown and play motion.
- If there is an IRewinder that is still moving, all IRewinders capture their current states.
- If the player releases the rewind, then play all IRewinders, allowing them to continue motion.

3.22.3 Member Data Documentation

3.22.3.1 active

```
bool ZController.active
```

A boolean to determine whether or not this controller is active.

The Unity version won't work because it disables the update methods when the object is inactive.

3.22.3.2 approximateLeniency

```
float ZController.approximateLeniency = .01f
```

A measure of how close to zero a vector needs to be for a child IRewinder to consider it to be zero; use primarily for IRewinder.NeedUpdate.

3.22.3.3 cooldown

```
float ZController.cooldown = 0f  [private]
```

Keeps track of how long the cooldown has left before players can use rewind again.

3.22.3.4 deltaTime

```
float ZController.deltaTime  [private]
```

The amount of time that has passed since an update; used to calculate the record interval and the rewind limit

3.22.3.5 recordInterval

```
float ZController.recordInterval = .2f
```

The interval at which a record state should be taken in seconds.

3.22.3.6 rewindCooldown

```
float ZController.rewindCooldown = 2f
```

How long the player should be made to wait until they can use the rewind again after burning it out.

3.22.3.7 rewindLimit

```
float ZController.rewindLimit = -1f
```

How long in seconds a rewind can be held at a fully rewound state before "burning out" and needing to cooldown. -1 is disabled

3.22.3.8 rewinds

```
IEnumerable<IRewinder> ZController.rewinds  [private]
```

A collection of all IRewinders within this controller's influence.

3.22.3.9 rewindScale

```
float ZController.rewindScale = 1f
```

A measure of how quickly the rewinds should occur as a multiplier

The documentation for this class was generated from the following file:

- Assets/Scripts/ZController.cs

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