SimpleMan.Utilities Download

Standard utilities for any project on Unity engine.

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Requirements

- Sirenix - Odin Inspector

How to install plugin?

Open installer by the click on Tools -> Simple Man -> Master Installer -> [Plugins' name] -> Click 'Install' button. If you don't have one or more of the plugins this plugin depends on, you must install it first.

Coroutines as MonoBehavior extensions

create and execute coroutine by one line of code.

Methods

Function name	Description
Delay	Invoke target method after delay
DestroyAfter	Destroy game object after delay
DestroyComponentAfter	Destroy component after delay
WaitFrames	Invoke target method after certain number of frames
WaitUntill	Invoke target method after condition completed
RepeatUntill	Call target method while condition is not complete
RepeatForever	Call target method each frame or with delay forever

C# Examples

```
//Call 'DoAction' method after 3 seconds
this.Delay(3, DoAction);
```

```
//Destroy game object after 3 seconds
this.DestroyAfter(3);


//Call 'DoAction' method after 3 seconds with parameter
this.Delay(3, ( ) =>DoAction("Hello!"));
```

Value checkers

Gives ability to check the value without using 'if' keyword and throw an exception or print log to constole if check was failed.

C# Examples

```
//Check the "Health" value and call the "Death" method if it is zero,
Health.IfEqualZero().Execute(Death);

//Check the "Armor" value and print message 'Armor is broken' to the console if it less than 0.5,
Armor.IfLessThan(0.5f).PrintLog(gameObject.name, "Armor is broken");

//Check the 'HealthBar' class reference and throw and exception if it is null
HealthBar.IfNull().ThrowException(gameObject.name, "Health isn't exist");
```

Execute once system

Gives ability to execute method only one time per frame, no matter how many calls was received.

Methods

Function name	Description
ExecuteOncePerFrame	Execute target method. Ignore other execution calls for this method in current frame.

C# Examples

```
//Will be called once
ExecuteOnceSystem.ExecuteOncePerFrame(DoAction)
```

```
ExecuteOnceSystem.ExecuteOncePerFrame(DoAction)
ExecuteOnceSystem.ExecuteOncePerFrame(DoAction)


//Works also with parameters
ExecuteOnceSystem.ExecuteOncePerFrame(( ) => DoAction("Hello"))
```

State machine

Make your state machine based on the 'StateMachine' class. It simple! The state machine supports up to 3 arguments in each state and custom tick range.

```
//Create state machine for the Game class
StateMachine<Game> _localStateMachine = new StateMachine<Game>()
{
    this,
    new InitialState<Game>(this),
    new LoadPlayerProgressState(this, _playerProgressService),
    new LoadingState(this, _sceneManagerService),
    new GameLoopState(this, _playerFactory, _uiFactory, _playerProgressService),
    new EndGameState(this, _playerProgresService, _uiFactory)
});

//Start state machine from the initial state
_localStateMachine.SwitchState<InitialState>();


//Switch state with the string parameter
_localStateMachine.SwitchState<LoadingState, string>(sceneName);
```

Collection extensions

Methods

Function name	Description
AddUnique	Works with list, queue, stack and dictionary. Ignore *Add* action if collection already contains element
Except	Returns collection without element

Function name	Description
Validate	Returns collection without null elements
NullCheck	Throws an exeption when at least one element is null
ForEach	Make action for each element in collection
Random	Gives random element in collection

C# Examples

```
//Add element only if it isn't exist in collection
List<GameObject> targetsList = new List<GameObject>();
gameObjectList.AddUnique(targetObject);
```

Transform extensions

Methods

Function name	Description
GetChildren	Return array of direct children transforms
GetChildrenOfType	Return array of direct children that have certain component
DestroyChildren	Destroy all children of current transform
DestroyChildrenImmediate	Destroy all children of current transform (for editor mode)

C# Examples

```
//Get children array
Transform[] children = transform.GetChildren();


//Get children array with 'Health' component
Health[] children = transform.GetChildrenOfType<Health>();
```

Object extensions

Methods

Function name	Description
ThrowNullReferenceException	Throws specified exception with name of the object caller
ThrowArgumentNullException	Throws specified exception with name of the object caller
ThrowInvalidOperationException	Throws specified exception with name of the object caller
ThrowArgumentOutOfRangeException	Throws specified exception with name of the object caller
ThrowIndexOutOfRangeException	Throws specified exception with name of the object caller
ThrowMustBeChildOfException	Throws specified exception with name of the object caller
PrintLogRequestReceived	Throws specified exception with name of the object caller
PrintLogValueChanged	Throws specified exception with name of the object caller
PrintLog	Print debug log message with name of the object caller
PrintWarning	Print debug log warning message with name of the object caller
SetPrefix	Set prefix to the target game object
GetNameWithoutPrefix	Returns name of the target game object without prefix
With	Pseudo-builder
ToScene	Move object to the target scene

C# Examples

```
//Throw exception
if(_health == null)
    this.ThrowNullReferenceException("Component 'Health' not exist");


//Game object name will look like this '[Player]PreviousName'
this.SetPrefix("Player");
```

Component extensions

Methods

Function name	Description
TryGetComponentInChildren	Return true if at least one child of this object have certain component
TryGetComponentInParent	Return true if at least one parent of this object have certain component

C# Examples

```
//Throws exception if parent object don't have 'Animator' component
if(TryGetComponentInParent<Animator>(out Animator animator) == false)
    this.ThrowMustBeChildOfException("Animator");
```

Base types extensions

Methods

Function name	Description
(string) ToSplitPascalCase	SadButTrue -> Sad But True
(string) WithoutSpaces	Sad But True -> SadButTrue
(float, int) ClampPositive	Return closest positive value
(string) FirstCharToUpper	Return string with upper first character
(Vector2) XY2XZ	Return Vector3 as projection of XY plane to XZ
(Vector3) XZ2XY	Return Vector2 as projection of XZ plane to XY. Y value will be ignored
(Color) Invert	Return inverted color
(Color) MaxAlpha	Return the same color with maximum alpha
(Color) MinAlpha	Return the same color with zero alpha
(Matrix4x4) ExtractRotation	Return Quaternion rotation value from transform matrix
(Matrix4x4) ExtractPosition	Return Vector3 position value from transform matrix
(Matrix4x4) ExtractScale	Return Vector3 scale value from transform matrix

C# Examples

```
//Get projection of position on XY plane
Vector2 position2D = transform.position.XZ2XY();
```

```
//Health can not be negative, so clamp it.
public float Health
{
    get => _health;
    set => _health = value.ClampPositive();
}
```

Mathematics

Methods

Function name	Description
GetClosest	Return closest Transform or other component to target point
GetPointsOnCircle	Return array with points positions
GetPointOnCircle	Return point position on circle by angle

C# Examples

```
//Get items around
IInteractable[] items = GetAvailableItems();

//Get closest interactable item to player
Vector3 playerPosition = transform.position;
IInteractable closestItem = Mathematics.GetClosest(playerPosition, items);
```

```
//Get angle between horizontal axes and mouse input
float inputAngle = Vector2.Angle(inputAxes, Vector2.right)

//Set top down crosshair position
_crosshair.transform.position =
    Mathematics.GetPointOnCircle(
        transform.position,
        _crosshairDistance,
        inputAngle).
```

```
        XY2XZ();
}
```

Ranges

Serializable int and float ranges stucts for using in inspector or in code.

Properties

Property name	Description
Min	Clamped from negative infinity to max value
Max	Clamped from min value to positive infinity

Methods

Function name	Description
IntRange	Return true if value is in the range
Clamp	Return clamped value to current range

C# Examples

```
//Pair attack time range where 0 - first frame of attack, 1 - last frame of attack.
FloatRange parryTime = new FloatRange(0.7f, 0.9f);
```