# Scriptable Properties

Scriptable Properties are a data type that represent a set value and can be manipulated from Unity events to change the value that is stored inside.

Scriptable Properties allows for the creation of several types of Scriptable Objects (Scriptable Bool, Int, Float & String) that can be used in a wide variety of implementations. Their functionality is mainly to put power into the hands of designers and artists to allow for customization without direct coding knowledge.

## Installing the Asset

1. Go to the Unity Asset store page for Scriptable Properties
2. Click Import and select all of the packages
    a. (OPTIONAL) From the Windows tab of the Unity Editor open the Package Manager. Select the TextMesh Pro package and install it. Scriptable Properties does not require TextMesh Pro but is fully compatible with it.
3. Once the package is installed right-click in your project window, Navigate to *Create/Adjective Noun Tools/Scriptable Properties* and then select from Bools, Numbers, or Strings to create a Scriptable Property.

# Scriptable Properties Object

You can create a Scriptable Property via *Create/Adjective Noun Tools/Scriptable Properties.* This will create the object in the target directory. Additional information about the object can be seen by entering debug mode.

## Generic Scriptable Property

Every scriptable Property has the following methods that are performed on them.

### Methods

| | |
|---|---|
| GetValue | Returns the current value of the property. |
| SetValue | Sets the current value of the property. |
| ToString | Returns the current value of the property as a string. |
| PrintValue | Sets a text or TextMeshPro component's text to the value. |
| GetEquation | This is used to nicely format the value inside the editor. |

# Bool

Scriptable Bools store a single true or false bool which can be read by other scripts and can be toggled or set.

## Methods

| | |
|---|---|
| GetValue | Returns the current value of the property. |
| SetValue | Sets the current value of the property. |
| toString | Returns the current value of the property as a string. |
| Toggle | Switches the current state to its opposite. |

# Int/Float (Scriptable Number)

These are 2 different scriptable properties that all share the same methods and work with each other different types. When running operations between different types the value that is being passed through will be casted to the value it is manipulated.

## Methods

| | |
|---|---|
| GetValue | Returns the current value of the property. |
| SetValue | Sets the current value of the property. |
| toString | Returns the current value of the property as a string. |
| Add | Adds to the current value of the property. |
| Subtract | Subtracts to the current value of the property. |
| Multiply | Multiplies the current value of the property. |
| Divide | Divides the current value of the property. |

## Range

There is a subtype of Scriptable Number that has a min and max which keeps the value to be within that range. If the min becomes greater than the max or vice versa these values are flipped.

The max and min value can be a scriptable number of the same type or a primitive type.

### Methods

| | |
|---|---|
| SetMin | Sets the min value of the property. |
| SetMax | Sets the max value of the property. |
| SetMin | Returns the min value of the property. |
| SetMax | Returns the max value of the property. |

## String

Scriptable Strings store a String read by other scripts and can be set or added to.

### Methods

| | |
|---|---|
| GetValue | Returns the current value of the property. |
| SetValue | Sets the current value of the property. |
| toString | Returns the current value of the property as a string. |
| AddAtEnd | Adds to the end of the current value of the property. |
| AddAtStart | Adds to the start of the current value of the property. |
| ToUpper | Makes the value to be all uppercase |
| ToLower | Makes the value to be all lowercase |

# Scriptable Properties Operators

These are Scriptable Bools that take multiple scriptable properties and run comparisons to determine what value is the bool.

## Scriptable Bool comparisons

This operator supports any number of scriptable bools greater than 1 or a scriptable bool and a bool.

| | |
|---|---|
| IsEqual | Checks if the values are the same. |
| NotEqual | Checks if the values are different. |

| | |
|---|---|
| And | Checks if the values are all true. |
| Or | Checks if one of the values is true. |

## Scriptable Number comparisons

This operator supports a 2 scriptable numbers or a single scriptable number and the primitive of that type. When it compares different data types of numbers it will cast the second value to that type.

| | |
|---|---|
| IsEqual | Checks if the values are the same. |
| NotEqual | Checks if the values are different. |
| LessThan | Checks if value 1 is less than value 2 |
| GreaterThan | Checks if value 1 is greater than value 2 |
| LessThanAndEqualTo | Checks if value 1 is less than or equal to value 2 |
| GreaterThanAndEqualTo | Checks if value 1 is greater than or equal to value 2 |

## Scriptable String comparisons

This operator supports 2 scriptable strings or a single scriptable string and a string.

| | |
|---|---|
| IsEqual | Checks if the values are the same |
| NotEqual | Checks if the values are different |
| Contains | Checks if value 1 has value 2 within it. |
| DoesNotContain | Checks if value 1 does not have value 2 within it. |

# Scriptable Math

Scriptable math is a scriptable number that works similar to the Scriptable operators but rather it performs math from left to right and sets that to it's value. This supports any number scriptable numbers and primitive values. Which ever is the base type of the property is what all the operations are casted to before calculating.

| | |
|---|---|
| Add | Adds the left and right value together. |

| | |
|---|---|
| Subtract | Subtracts the left and right value together. |
| Multiply | Multiplies the left and right value together. |
| Divide | Divides the left and right value together. |

# Additional Scripts

## Monobehaviour Event

This script has events for when Awake, Start, OnEnable, OnDisable and OnValidate are called on that gameobject. To get a further explanation of when these events are triggered it can be read here.

## Bool Checker

This script has events for if the Scriptable Bool is true or false. These events are run when the Check Condition function is called.

## Print Value

This script is used to display a scriptable property's value in a text or TextMesh component. This text is updated every frame.

## Run Event

This script contains a single event that is triggered by calling RunEvent.

## Timed Event

This script contains 2 events: one triggered at the start of the time and the other at the end. There are settings to add a range of delay for the initial start and how many times these events are triggered. There are 2 triggers to activate the events; the first is setting the gameobject to be enabled while having play on enable to be true and the second is by calling ActiveEvents.