

# COMMON EXPRESSIONS

**View online:** <https://www.construct.net/en/make-games/manuals/construct-3/plugin-reference/common-features/common-expressions>

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The following **expressions** are common to several plugins.

## Angle

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The object's current angle, in degrees. 0 degrees is facing right and angles increment clockwise.

## Appearance

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### ColorValue

A number representing the color property of the instance. This can be used with the *Set color* action to set an object's color to match another object.

### Opacity

The object's current opacity (semitransparency), from 0 (transparent) to 100 (opaque).

## Hierarchy

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These expressions are available for plugins that support the *scene graph* feature, allowing objects to be connected together so they move, rotate and scale as if they were one large object.

### ChildCount

Return the number of children currently attached to this object (with the *Add child* action) in the hierarchy. This is 0 if the object has no children.

### AllChildCount

Return the number of children currently attached to this object (with the *Add child* action) in the hierarchy, including all descendants. This is 0 if the object has no children

### ParentUID

The unique ID (UID) of this object's parent in the hierarchy. If this object has no parent, it returns -1.

# Misc

## AsJSON

Save the object state to a string of data in JSON format, and return it. This can be downloaded or otherwise stored, and later the state of the object restored using the *Set from JSON* action.

## Count

The number of [instances](#) of the [object type](#).

## PickedCount

The number of instances meeting the event's conditions. For example, if the event has the condition "Mouse is over Sprite", *Sprite.PickedCount* will return the number of Sprite instances that the mouse is over.

## ObjectTypeName

The name of the object type for the given object. For example *Sprite.ObjectTypeName* will return "Sprite". When used as a family expression, this returns the name of the actual object type, never the name of the family itself.

## IID

Return the instance's index ID (IID). See [instances](#).

## UID

Return the instance's unique ID (UID). See [instances](#).

## Tags

Get all the current instance tags as a space-string.

## TagsCount

Get the number of tags an instance has.

## TagAt

Get the tag at a zero-based index.

# Size & Position

## BBoxLeft

**BBoxRight****BBoxTop****BBoxBottom**

Return the layout co-ordinates of the object's axis-aligned bounding box. This is the smallest unrotated box that completely encloses the object, taking in to account any rotation or stretching.

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**BBoxMidX****BBoxMidY**

Return the layout co-ordinates of the mid-point of the object's axis-aligned bounding box. This is not necessarily the same position as the object origin, such as if the origin is not exactly in the middle.

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**Width****Height**

Return the size of the object in pixels.

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**ImagePointX(nameOrNumber)****ImagePointY(nameOrNumber)****ImagePointZ(nameOrNumber)**

Return the position of one of the object's image points from its currently displaying animation frame in layout co-ordinates. Either the image point's name or its number can be passed. Note that when using a number, 0 refers to the origin, so the first image point is number 1.

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**X****Y**

Return the object's position in the layout, in pixels. The origin (0,0) is at the top-left of the layout and the Y axis increments downwards.

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**Time****dt**

Return delta-time according to the object's own timescale. See [Delta-time and framerate independence](#) for more information.

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**Z Order****I avérName**

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## Layer

The name of the layer the instance is currently on.

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### **LayerNumber**

The zero-based index of the layer the instance is currently on.

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### **ZElevation**

Return the current elevation on the Z axis for the instance relative to its layer. This is not affected by the layer's Z elevation.

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### **TotalZElevation**

Return the instance's Z elevation added to the layer's Z elevation, providing the total Z elevation the instance appears at.

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### **ZIndex**

Get the zero-based index of the Z order of this instance within its current layer. 0 is the bottom instance, increasing up to the top instance.

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## Template

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### **TemplateName**

The name of the template used to create this instance. Returns an empty string if no template was used.