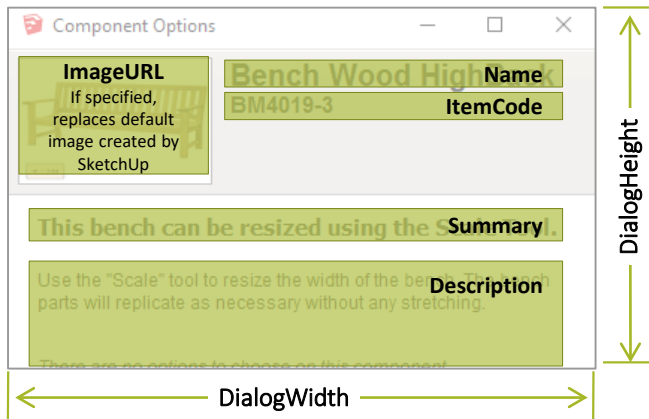


Basic Attributes

X,Y,Z	Coordinates of the component
LenX, LenY, LenZ	Length of the component
RotX, RotY, RotZ	Rotation about the axes, in degrees
Hidden	Indicates whether to hide = 1 (TRUE) or unhide = 0 (FALSE)
Copies	# of copies to be created by Sketchup. Note: copies carry same X,Y,Z coordinates as original
Copy	The copy # of a specific copy. Can be used to create a calculated offset e.g. setting X to $=15 + 2 * \text{Copy}$
OnClick	Contains a script or other onClick functions (see that section)
Material	The material to apply to the component in one of the following formats: <ul style="list-style-type: none"> A named color, such as 'Blue' (See Ruby API docs for complete list of colors). A hex string, such as '#FFFF00' or '3399AA' (the # is optional). A three number list of RGB values (between 0 and 255). For example, 255, 128, 0. A material name that exists in the InModel material list. Your dynamic component needs to have a tiny swatch of the material you want displayed embedded somewhere on the component. The material also needs to have a custom name.

Dynamic Component: dialog attributes

The "Component Options" dialog (visible to the end user via Window -> Component Options) can be affected using the attributes listed on the left. You can use HTML tags to format the text, e.g. <p>, <a> or tags.



OnClick Functions

AERT("message")	Displays the value of the message in an alert box.
ANIMATE(attribute, state1, state2, ... stateN)	Starts an animation that will change the value of the attribute to the next value in a list of parameters every half a second. E.g. ,if the ONCLICK attribute contains ANIMATE("X",0,100), and the user clicks on the component, the component would animate the value of the "X" attribute between 0 and 100. A subsequent click would animate back to 0 from 100. If more than two animate states are passed, then the value will toggle between them in order.
ANIMATESLOW(attribute, state1, state2, ... stateN)	Same as animate, but slower (one second).
ANIMATEFAST(attribute, state1, state2, ... stateN)	Same as animate, but faster (a quarter of a second).
ANIMATECUSTOM("attribute", time, easein, easeout, state1, ...stateN)	Same as animate, but with over an arbitrary time with easing. Refer to the ANIMATE function for information about easing.
GOTOSCENE("sceneName", time, easein, easeout)	Moves to a scene identified by a name or number. Refer to the ANIMATE function for information about easing.
REDRAW()	Redraws the component that contains this function.
SET("attribute", state1, state2, ...stateN)	Sets a given attribute to the next state in a list.

Using HTML in the Description & Summary fields

Valid tags (All other tags are ignored):<a>, , <i>, <u>, , , <p>,
, , , ,
No <style> attributes are allowed. Use tag instead. Do not use other HTML attributes in tags.

Math Functions

ABS(number)	Returns the absolute value of number.
CEILING(number, significance)	Rounds a number to the nearest integer or multiple of significance. The significance argument is the value whose multiple of ten is the value to be rounded up (.01, .1, 1, 10, etc.).
DEGREES(number)	Converts the number(in radians) to degrees.
EVEN(number)	Rounds the number up to the nearest even integer.
EXP(number)	The EXP function returns e raised to the power of number
FLOOR(number, significance)	The FLOOR function rounds the number down to the nearest multiple of significance.
INT(number)	The INT function rounds the number down to the nearest integer.
ISEVEN(number)	TRUE if the number is an even integer, or FALSE if the number is odd. If the number is not an integer, the function evaluates only the integer part of the number.
ISODD(number)	TRUE if the number is an odd integer, or FALSE if the number is even. If value is not a number, the function evaluates only the integer part of the number.
LN(number)	Returns the natural logarithm based on the constant e of the number.
LOG10(number)	Returns the base-10 logarithm of the number.
ODD(number)	Rounds the number up to the nearest odd integer
PI()	Returns the value of PI to fourteen decimal places.
RADIANS(number)	Converts the number (in degrees) to radians.
RAND()	Returns a random number between 0 and 1.
RANDBETWEEN(bottom, top)	Returns a whole number between the bottom and top number
SIGN(number)	Returns the sign of the number. The function returns the result 1 for a positive sign, -1 for a negative sign, and 0 for zero.
SQRT (number)	Returns the positive square root of the number. The number must be positive.

SketchUp Dynamic Components Functions

CHOOSE(index,value1,value2, ...valueN)	Returns a value from a list of parameters at the location of the index value. This function allows you to create a single drop-down list that drives multiple attribute changes at once. E.g.: CHOOSE(2,"Blue","Red","Green") (results in "Red"). Use CHOOSE and OPTIONINDEX together as a mechanism to assign different values depending on a user's choice in the Component Options dialog box. E.g. to choose a price based on user choice of materials: =CHOOSE (OPTIONINDEX("Material"), 100, 150, 200)
CURRENT("attribute Name")	Accepts a string name of an attribute, and returns the size or position attribute that the SketchUp user just applied. This function allows you to do validation of Scale tool or Move tool actions. E.g. When the below formula is entered into the LenX value field, it constrains the component to the nearest width, within 2 inches, after scaling. =ROUND(CURRENT("LenX")/2)*2
EDGES()	Returns the number of 'ungrouped' edges inside the component or group
FACEAREA("material Name")	Returns the area (in square inches) of every 'ungrouped' face that is painted with the materialName. Returns the total area of all ungrouped faces in model when the materialName is not provided. E.g. Return the square inches of Oak material inside the component or group: =FACEAREA("Oak")
FACES()	Returns the number of 'ungrouped' faces inside the component or group
LARGEST(value1,value2,...valueN)	Returns the largest of the values in a list. E.g.: The following example, when entered into the LenX value field, constrains the component so it cannot be scaled more than the largest of either the value of LenX, 20, or 10: =LARGEST(CURRENT("LenX"), 20, 10)
LAT(), LNG()	Return the latitude or longitude of the current SketchUp model
NEAREST(originalValue, value1, value2, ...valueN)	Compares the originalValue with a list of target values, and returns the target value that is closest to the originalValue. E.g. When entered into the LenX value field, will cause the component to snap to the nearest width of 24,36, or 48 after scaling: =NEAREST(CURRENT("LenX"),24,36,48)
OPTIONINDEX("attributeName")	Returns the currently selected index from its option list given a string name of an attribute. For example, if an attribute can be 'red,' 'blue,' or 'green,' and blue is the current value, this function returns 2. If no match is found, 0 is returned.
OPTIONLABEL ("attributeName")	Returns the currently selected label from its option list given a string name of an attribute. For example, if an attribute can be 'Red=red','Blue=blue', or 'Green=green', and blue is the current value, this function returns 'Blue.' If no match is found, an error is raised.
SMALLEST(value1,value2,...valueN)	Returns the smallest of the values in a list. E.g. When entered into the LenX value field, constrains the component so it cannot be scaled less than the smallest number (the value of LenX, 20, or 10). =SMALLEST(CURRENT("LenX"),20, 10)
SUNANGLE()	Returns the angle (in degrees) between the sun and the model's North direction.
SUNELEVATION()	Returns the elevation (in degrees) of the sun from the current model's shadow settings. The elevation is defined as the angle between a vector pointing at the sun and the ground plane.

Text Functions

CHAR(number)	Returns the character represented by the ASCII code <u>number</u>
CODE(text)	ASCII value of the first character in text
CONCATENATE(text1, text2, ...textN)	Combine the strings into a single string
DOLLAR(value, decimals)	Converts a number to currency text format. . The decimals (optional) argument is the number of decimal places. If no decimals value is specified, all numbers in the currency format will be displayed with two decimal places.
EXACT(text1, text2)	Returns TRUE if both strings are identical. This function is case-sensitive.
EXACT(text1, text2)	Returns TRUE if both strings are identical. This function is case-sensitive.
FIND(findText, text, position)	Search for <u>findText</u> in the string text, starting in <u>position</u> (optional) characters from the beginning. The search is case-sensitive.
LEFT(text, number)	Returns the first <u>number</u> characters in <u>text</u> string.
LEN(text)	Returns the count of characters in <u>text</u> including spaces.
LOWER(text)	Convert text to lower case
MID(text, start, number)	The MID function returns a text segment of a text string. The text argument is the text string. The start argument contains the position of the first character in the text to extract. The number argument is the number of characters to return.
PROPER(text)	Capitalizes the first letter in all words of the provided <u>text</u> string.
REPLACE(text, position, length, new)	Replaces the characters beginning in <u>position</u> from the beginning of <u>text</u> with <u>length</u> characters of <u>new</u> string.
REPT(text, number)	Returns a repeating string <u>text</u> , for a <u>number</u> of times e.g. REPT ("*",10)
RIGHT(text, number)	Returns the <u>number</u> of last characters in <u>text</u> string.
SUBSTITUTE(text, searchText, newText, occurrence)	Substitutes new text for old text in a string. <u>text</u> is the old text string, <u>searchText</u> is the segment in text to be replaced and <u>newText</u> is the replacement text. The <u>occurrence</u> (optional) argument indicates the number of occurrences of searchText to be replaced. If the occurrence is missing, the search text is replaced throughout.
TRIM(text)	Removes spaces in front of a text string
UPPER(text)	Convert <u>text</u> to upper case
VALUE(text)	Converts the string <u>text</u> to its number value equivalent

Logical Functions

AND(logicalValue1, logicalValue2, ...logicalValueN)	Returns true if all logical values evaluate to true
FALSE()	Sets the logical value to FALSE
IF(test, thenValue, elseValue)	If test evaluates to TRUE then the value of thenValue is returned, else the value of elseValue is returned
NOT(logicalValue)	
OR(logicalValue1, logicalValue2, ...logicalValueN)	Evaluates to TRUE if any of the logical values evaluate to TRUE
TRUE()	Returns TRUE

Trig Functions

ACOS (number)	Inverse cosine of number in degrees
ACOSH (number)	Inverse hyperbolic cosine
ASIN (number)	Inverse sine
ASINH (number)	Inverse hyperbolic sine
ATAN (number)	Inverse tangent
ATANH (number)	Inverse hyperbolic tangent
COS (number)	Cosine
COSH (number)	Hyperbolic cosine
SIN (number)	Sine
SINH (number)	Hyperbolic sine
TAN (number)	Tangent
TANH (number)	Hyperbolic tangent

Supported Operators

+ (add)	<= (less than or equal to)
- (subtract)	>= (greater than or equal to)
* (multiply)	= (equal)
/ (divide)	() (parentheses)
< (less than)	<> (not equal to)
> (greater than)	