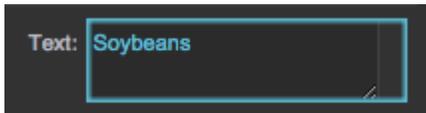


Bindings

When you create a binding to a property, you force that property to assume the value of the binding source, or to assume a value that is calculated based on that source. The target property then updates in real time as the source value changes.

In DGLux5, properties that are currently determined by bindings are outlined in blue.



A property that is currently determined by a binding

DGLux5 has two types of bindings:

- **Property to property:** One property determines another property.
- **Data to property:** A data value determines a property.

Properties are the many customizable aspects of a DGLux5 element, including appearance and behavior. The following types of items have properties:

- [Components and widgets](#)
- [Actions](#)
- [Dataflow blocks](#)

Video Tutorial: Binding Date Range to Chart

This video shows binding one property to another property.

Video Tutorial: Data Binding and Data Actions

This video shows binding a data value to a property. Furthermore, it shows using the [binding dialog](#) to create a data mapping.

More video tutorials are [here](#).

Binding from one Property to Another

To bind one property to another:

1. Hover over the source property, until a blue dot appears.
2. Drag the blue dot to the target property, and drop it.

Using the Small Binding Pop-Up

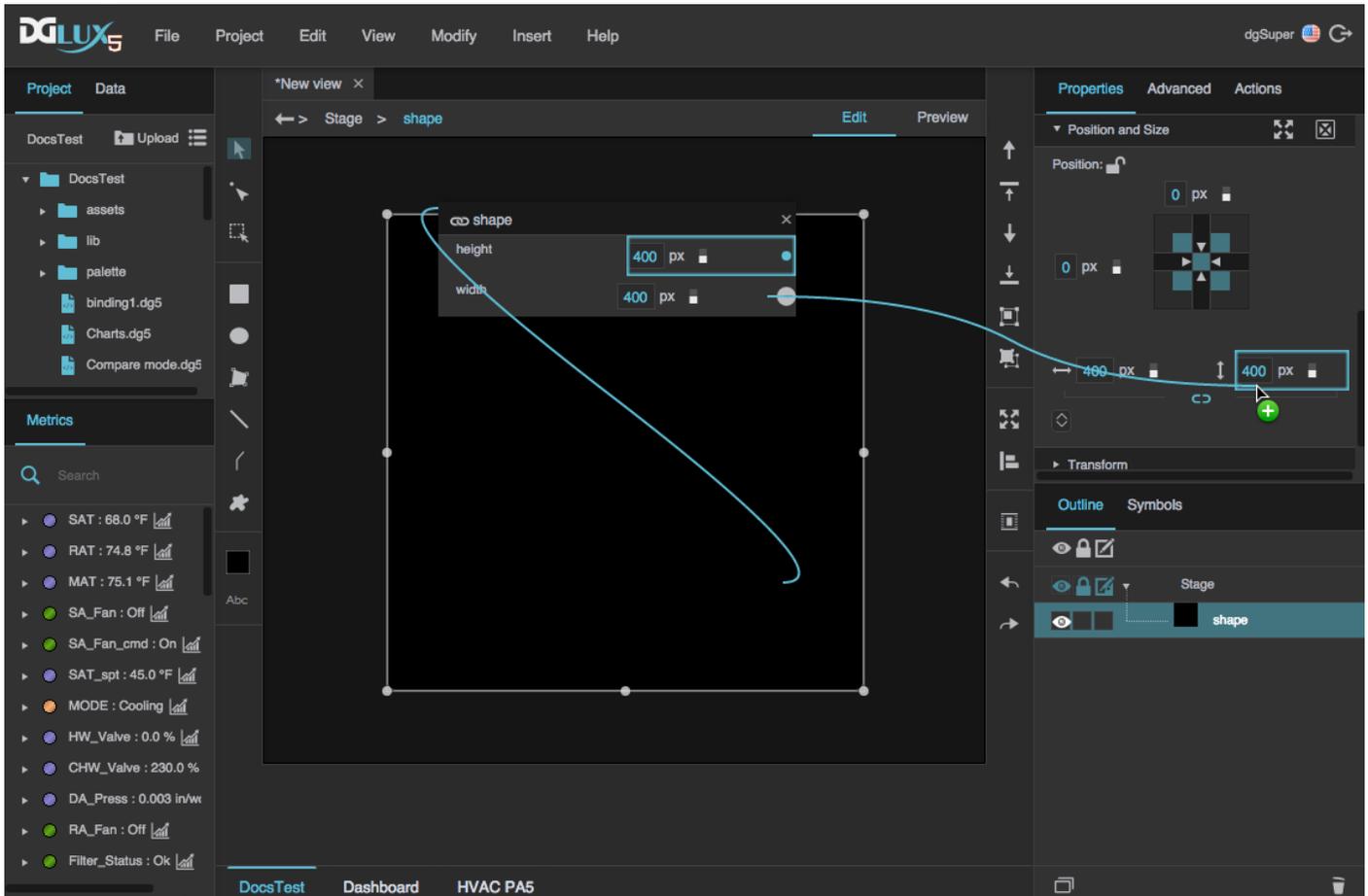
Sometimes, both properties can't be visible in DGLux5 panels at the same time. When this happens:

1. Hover over either the source property or the target property until a blue a dot appears.
2. Double-click the blue dot, or click the blue dot and select **Bind**.

A small pop-up dialog opens, representing the property. A blue wire connects the property and its parent in the [Document window](#).

3. Navigate to the other property.
4. Click the blue dot of the source property, and drag it to the target property.
5. Close the pop-up.

The example below ensures a rectangular component is always a square, by binding its length to its height.



Binding from the binding pop-up to the Property Inspector

Tips



- The small binding pop-up can hold several properties at once.
- To remove a property from the binding pop-up, hover over it and click **Remove**.
- If you hover over any property and a blue dot appears, it indicates that the property can be used in bindings.
- Some component types have a default property. For example, the default property of a text box is its **Text** property. To bind to an component's default property, drag and drop a metric or property onto the component in the [Document window](#).

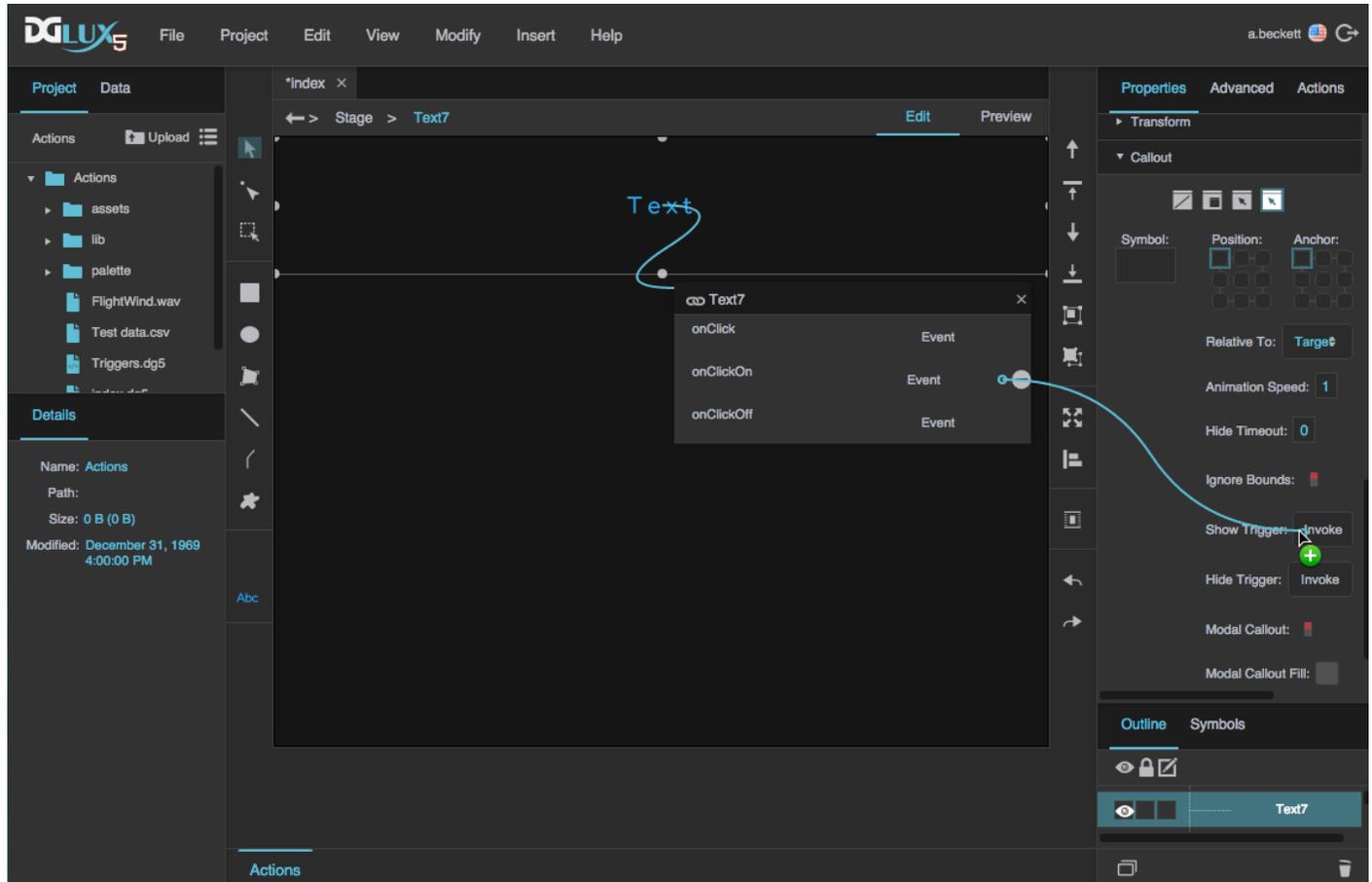
Events and Triggers

Some properties are *events*. Events fire automatically when something happens, such as a user interaction or the completion of a data process.

Other properties are *triggers*. Triggers cause things to occur, such as a [callout](#) being displayed or a data process beginning.

You can bind an event to a trigger. This invokes the trigger whenever the event fires. For example, you can cause a user click interaction to display a callout.

You can also bind some other property, such as a number, to a trigger. This invokes the trigger whenever the source property value changes. For example, you can [re-upload a string](#) whenever the value of the string is edited.



Binding user interaction events to triggers

Binding Data to a Property

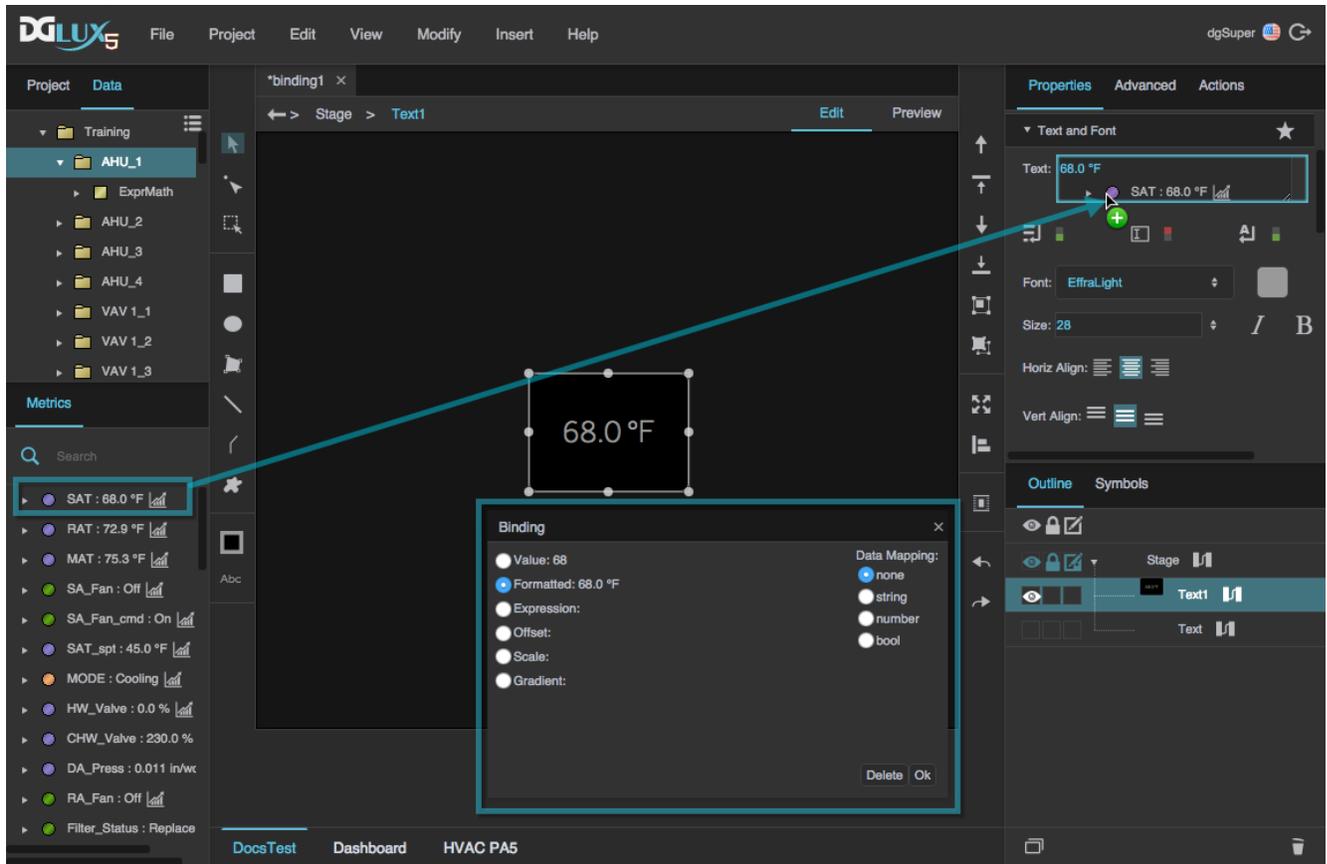
You can cause data values to determine properties.

For example, to make a text box that shows the current value of a temperature metric:

1. In the [Outline](#) or [Document window](#), select the [text component](#).
2. In the [Data panel](#), select the relevant data source.
3. In the [Metrics panel](#), find the temperature metric.
4. Drag the metric from the Metrics panel to the [Property Inspector](#), and drop it on the **Text** property.

The [binding dialog](#) opens.

5. In the binding dialog, select the **Formatted** option to display a formatted number.



Binding Dataflow Output to a Property

You can also bind a value from dataflow to a property.

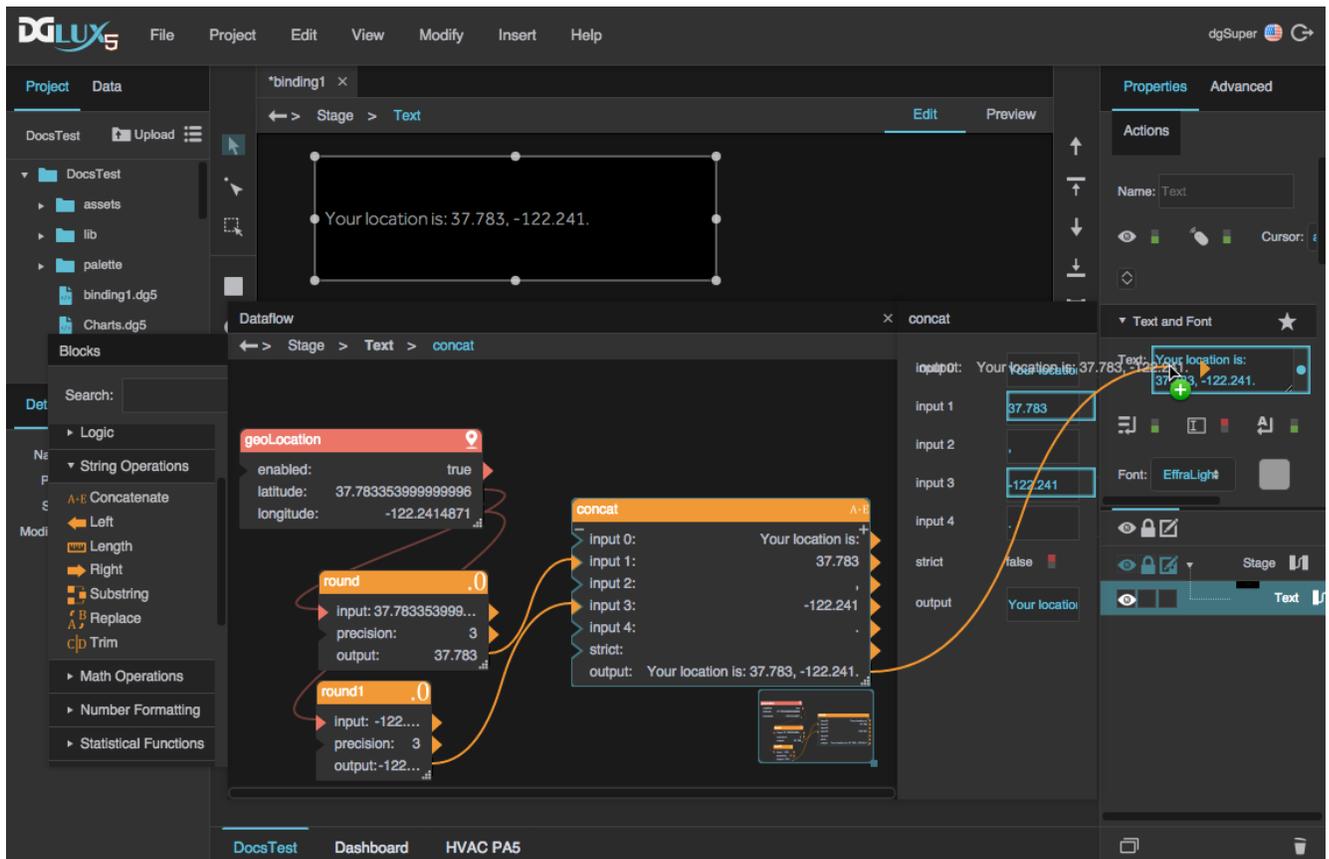
For example, to create a [text component](#) that displays a sentence based on the user's geographical location:

1. Open [dataflow](#) for the text component, expand **Browser API**, and drag a [Geo-Location](#) block onto the dataflow window.
2. Set the block's **enabled** property to TRUE.

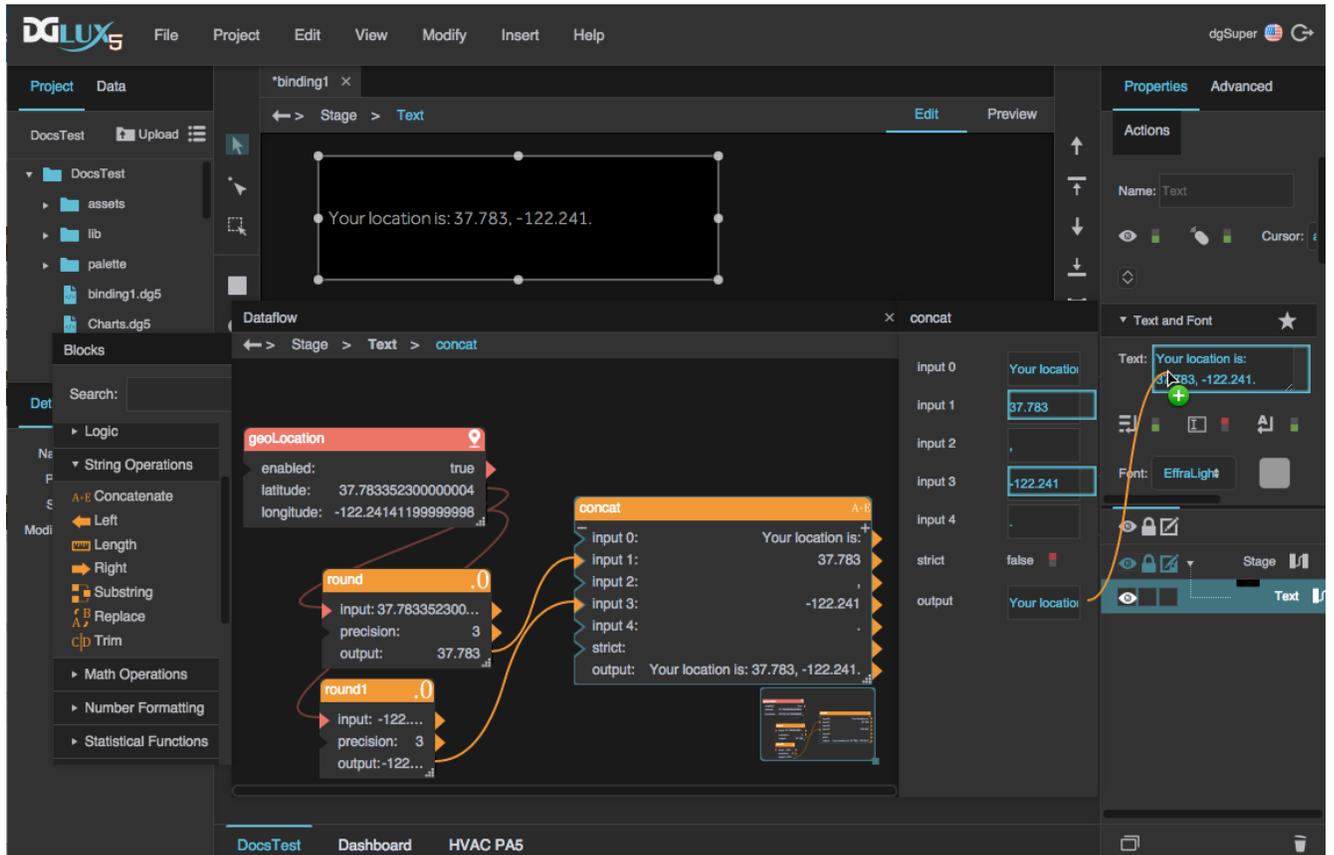
If your browser asks you to allow DGLux5 to access your location, accept.

3. Expand **String Operations**, and drag a [Concatenate](#) block onto the dataflow window.
4. On the Concatenate block, click the **+** plus sign to add three additional input properties.
5. Round the **latitude** number value to thousandths:
 1. Expand **Number Formatting**, and add a Round block to the dataflow window.
 2. Link the **latitude** property to the Round block's **input** property.

3. Set **precision** to 3, to display three digits after the decimal.
6. Repeat step 3 to round the **longitude** number.
7. Configure the Concatenate block as follows:
 1. input 0: Type, Your location is:
 2. input 1: Link the rounded latitude number.
 3. input 2: Type, ,
 4. input 3: Link the rounded longitude number.
 5. input 4: Type, .
8. Finally, bind the **output** property of the Concatenate block to the **Text** property of the text component. You can do this by dragging the arrowhead from the dataflow block, or by dragging the blue dot from the dataflow properties panel.



Binding using the dataflow block's orange arrowhead



Binding using the Dataflow properties panel

Binding Dialog

The binding dialog lets you create a calculated or formatted value for the target, based on the source value. It also lets you create data mappings.

Opening and Closing the Binding Dialog

The binding dialog opens automatically when you create a binding from a data metric. Otherwise, to open the binding dialog when creating a binding:

1. Begin dragging the binding source.
2. While dragging, press and hold the Ctrl key.
3. Drop the binding source on the binding target.

To open the binding dialog and edit an existing binding:

1. Hover over the binding target until a blue dot appears.
2. Click the blue dot, and select **Binding Dialog**.

This works only if the existing binding either has a data metric as its source or was created using the binding dialog.

To close the binding dialog:

- Click **OK** (saves current changes to the binding)
- Click the **X** in the top right corner (discards current changes)
- Click **Delete** (discards the binding entirely)

Data Bindings in the Binding Dialog

The binding dialog can create these types of data bindings:

Value

In a Value binding, the value of the target is the exact source value.

Formatted

In a Formatted binding, the value of the target is the source value as an automatically formatted string.

Expression

Expression bindings use a custom Expression to format the source value. This creates the target value. The Expression can include a [Number Format Pattern](#). It can also include other strings, such as units.

Number format patterns must be in square brackets ([]).

The string value enclosed in square brackets becomes the exact source value, as a string.

Examples:

- Source: 5
Expression: [#0.00]
Target: "5.00"
- Source: 13000.6
Expression: [# ,##0.00]
Target: "13,000.60"
- Source: 47
Expression: [0] hours
Target: "47 hours"

- Source: 17.8
Expression: [#0] °C
Target: "18 °C"
- Source: 63.21 Expression: [value] hours
Target: "63.21 hours"

Offset Bindings

Offset bindings calculate a target value based on an operator and a number.

Offset Bindings have two options: the Offset Operator and the Offset Value.

Offset Operator

The Offset Operator is the operator that indicates how the source value and the Offset Value are used to create the target value.

Possible values:

- **add** — The source value and Offset Value are added together.
- **subtract** — The Offset Value is subtracted from the source value.
- **multiply** — The source value and Offset Value are multiplied together.
- **divide** — The source value is divided by the Offset Value, and a decimal value is returned.

Example:

Source: 30
Offset: divide 8
Target: 3.75

This is because $30 / 8 = 3.75$.

- **modulo** — The source value is divided by the Offset Value, and the remainder is returned.

Example:

Source: 30
Offset: modulo 8
Target: 6

This is because $30 / 8 = 3r6$.

- **divide (int)** — The source value is divided by the Offset Value, and the quotient is returned, rounded down to the nearest integer.

Example:

Source: 30
Offset: divide 8
Target: 3

This is because $30 / 8 = 3r6$.

Offset Value

The Offset Value is the number that is used together with the source value and Offset Operator to determine the target value.

Scale Bindings

A scale binding takes the source value's relationship to an original scale, and returns the corresponding value on a new scale.

A scale binding requires these options:

- **Scale Input Minimum** — The lower bound of the original scale.
- **Scale Input Maximum** — The upper bound of the original scale.
- **Scale Output Minimum** — The lower bound of the new scale.
- **Scale Output Maximum** — The upper bound of the new scale.

Example:

- Source: 25
Original scale: 0 to 100
New scale: 0 to 10
Target: 2.5

Scale bindings work similarly to the [Scale](#) dataflow block.

Gradient Bindings

A gradient binding takes the source value's position on an original scale, and returns the color that is at the corresponding position on a specified gradient.

A gradient binding requires these options:

- **Gradient Input Minimum** — The lower bound of the original scale.
- **Gradient Input Maximum** — The upper bound of the original scale.
- **Gradient Fill** — The gradient.



Gradient Editing

Any time you customize a gradient in DGLux5:



- To change a color value, click the small square below the track in the dialog, and then use the color picker.
- To add a color to the gradient, click below the track in the dialog.
- To delete a color from the gradient, right-click the small square.
- Drag colors to move them.

Gradient bindings work similarly to the [Gradient Mapping](#) dataflow block.

Data Mappings in the Binding Dialog

The binding dialog can also perform a data mapping. A data mapping compares the binding's source value to one or more **Case** values in order, until the statement it is evaluating is true:

- For numbers, a data mapping evaluates whether the source value is **less than or equal to the Case value**.
- For other data types, the data mapping checks whether the source value is **equal to the Case value**.

When the first true statement is encountered, that **Mapping** value is assigned to the binding's target. If none of the statements is true, the **default** value is assigned to the binding's target.

More complex case mappings can be created in the [dataflow](#) using the [Case](#) block.

A data mapping has these options:

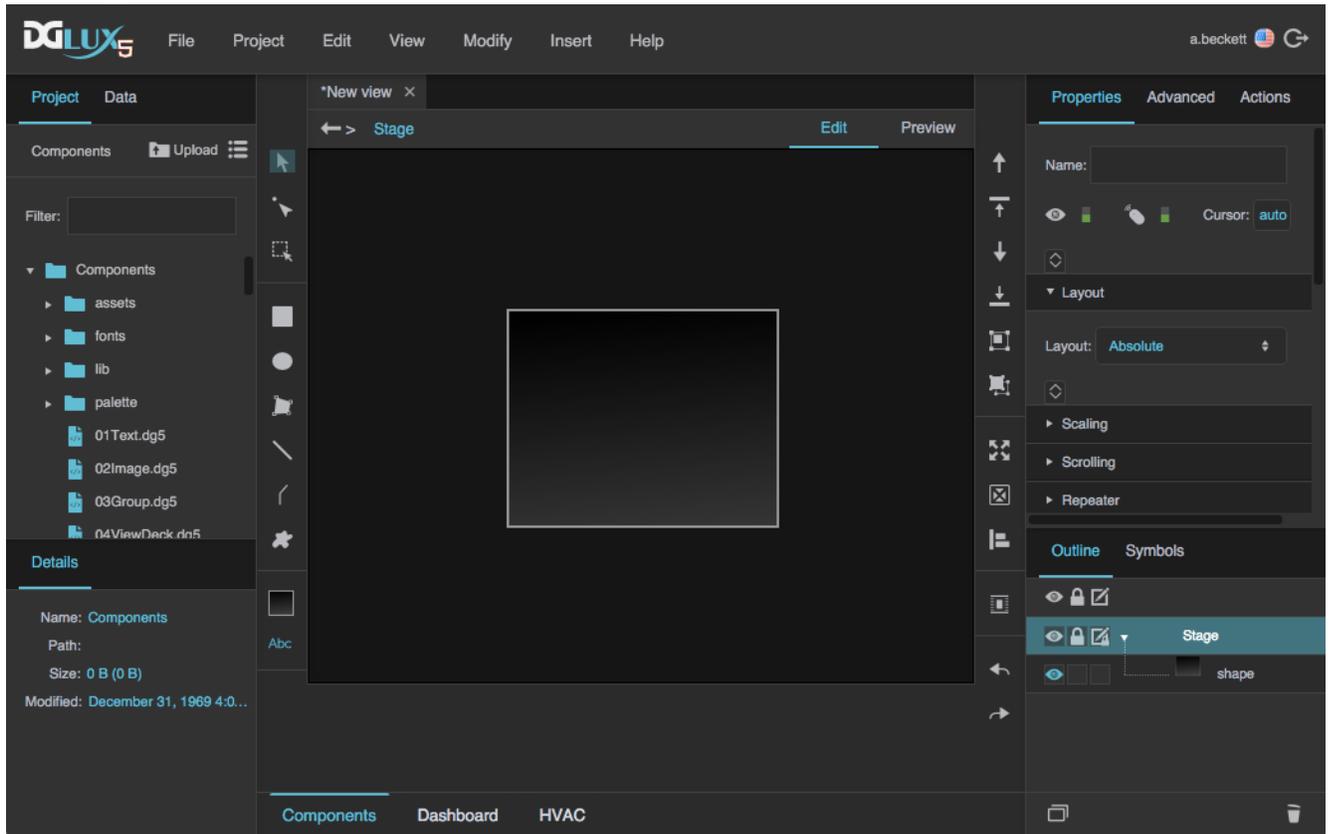
- **Case n** — A test value to compare with the input.
- **Mapping n** — A value to assign to the target if the expression with Case n evaluates to true.
- **default** — A value to assign to the target if none of the expressions are true.

Multiple cases can be used. To add cases, click  **Add**. To delete a case, click  **Remove**.

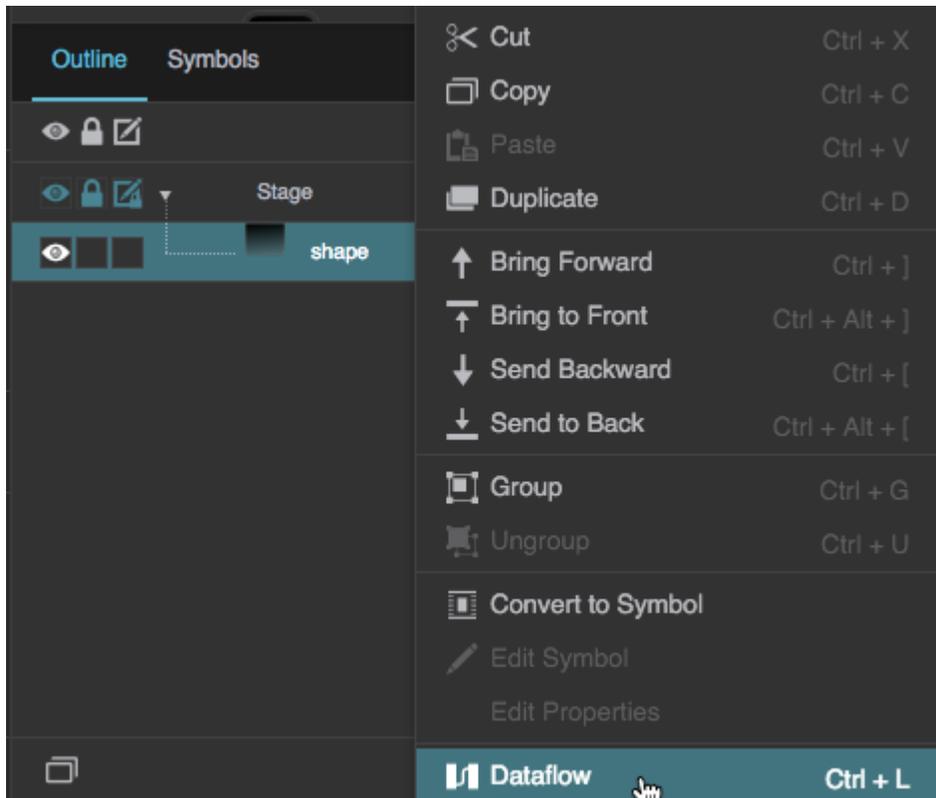
Binding Dialog Example: Map Data Ranges to Colors

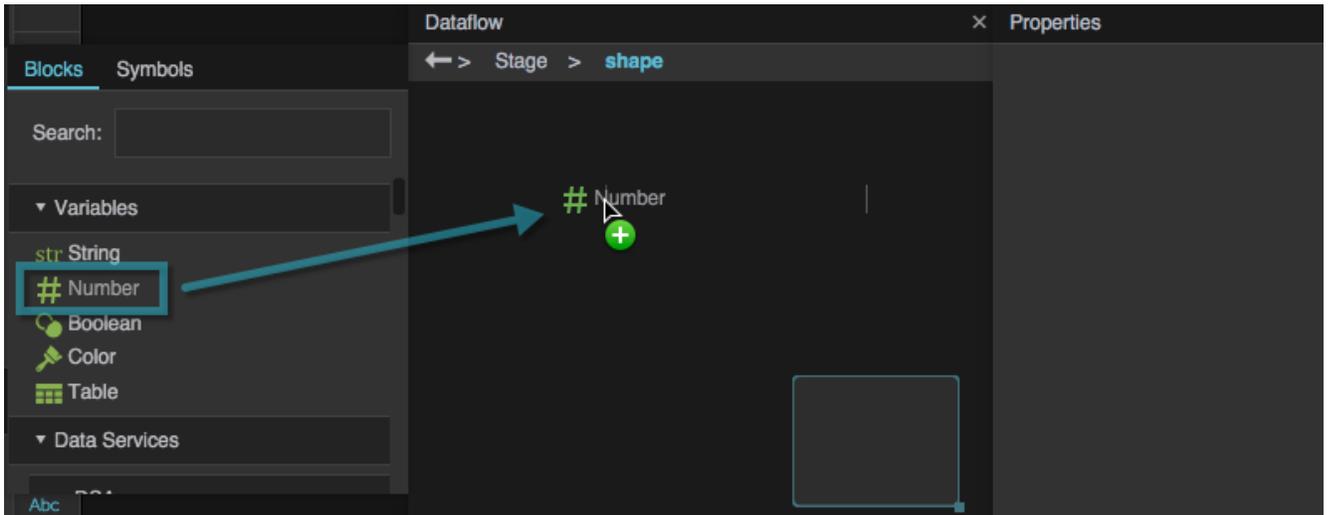
This example shows you how to map data ranges to colors, in order to create a shape whose color reflects a data value.

1. Create a [shape](#) on the stage.

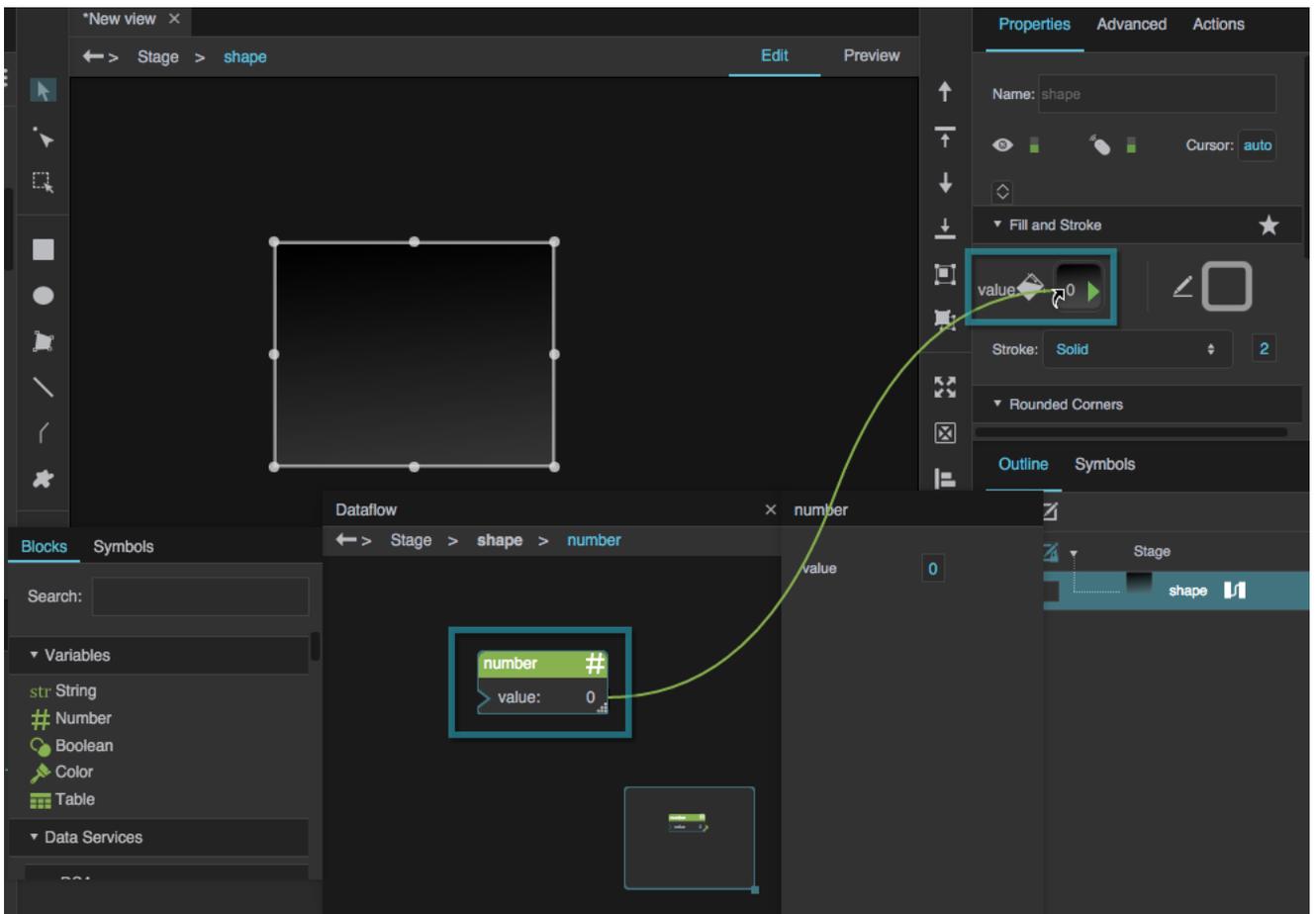


2. Open the [dataflow](#) for the shape, and add a [Number](#) block to the dataflow.



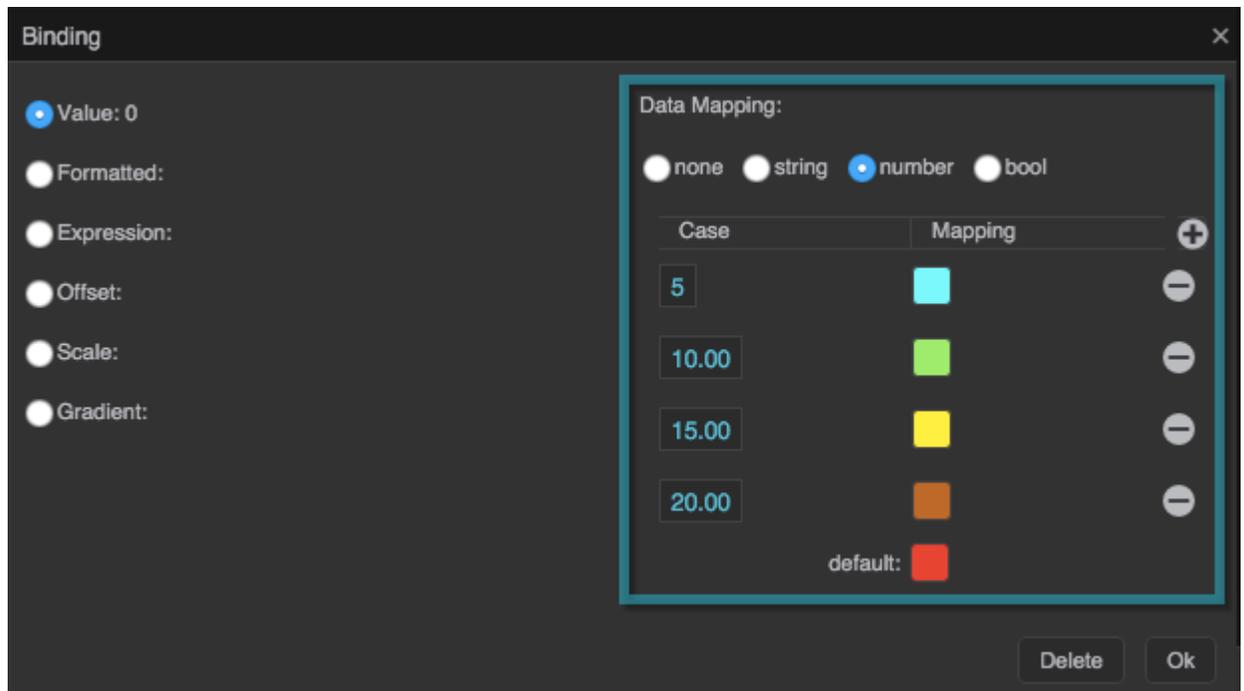


- 3. Bind the **value** property of the Number block to the **Fill** property of the shape. Hold Ctrl while dropping to open the binding dialog.

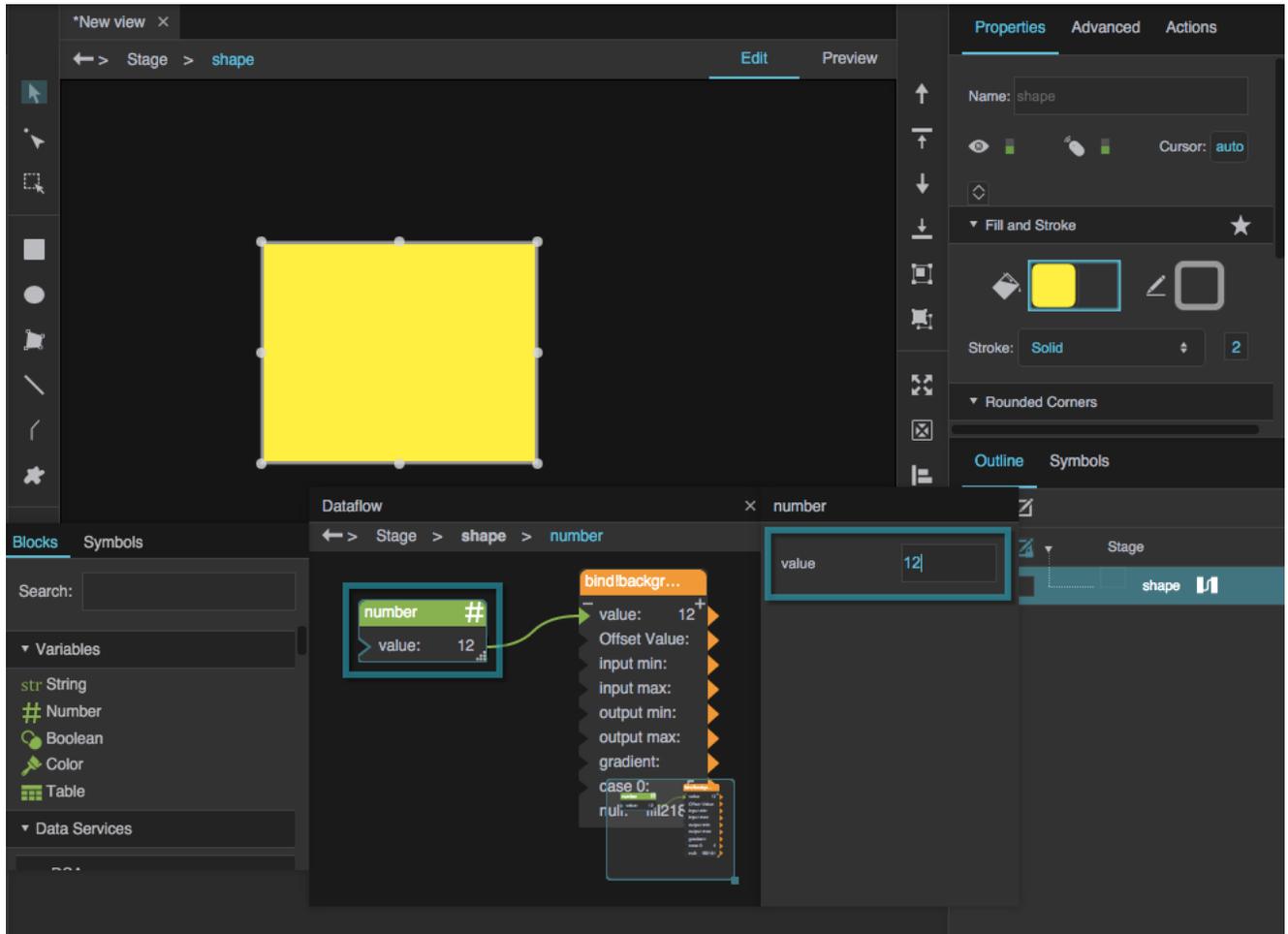


- 4. In the binding dialog:
 - 1. For **Data Mapping**, select **number**.
 - 2. Add three cases, for a total of four, by clicking **+ Add** three times.
 - 3. For the cases, enter 5, 10, 15, and 20. These must be in ascending order.
 - 4. For the colors, choose four color values, and also a default color value.

5. Click OK.



5. Test your data mapping by changing the value in the Number block. Values less than or equal to 5 use the first color, and so on.



Data mapping can be used together with a [repeater](#) or [custom item renderer](#) to create items whose data values determine their properties. For more guidance, see [Charts FAQ](#).

Review a Binding

To review the source or targets of a property's binding:

- Hover over the property until a blue dot appears, click the blue dot, and select **Binding Path** to review the source, or **Binding Targets** to review the targets.

A pop-up appears. This pop-up lists the path or targets. It uses [page model syntax](#).

Delete a Binding

To delete a binding:

- Hover over the property until a blue dot appears, click the blue dot, and select **Unbind**.

To delete a binding, and also reset the property value to its default:

- Hover over the property until a blue dot appears, click the blue dot, and select **Reset**.

[Previous: clickThrough](#)

[Next: Actions](#)

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