Script Tip Friday- Working with Legends in Mechanical Scripting

Published on April 8, 2022

Ansys Structures
18,742 followers

✓ Following

"Can we change legend settings through scripting in Mechanical?"

This was a question Pernelle Marone-Hitz, Lead Application Engineer at Ansys, received in a forum one day, and she didn't just give a simple "yes" response. She crafted a beautifully detailed response below that we'd like to share with you today in hopes that you gain the same insight we did! Enjoy:

In 2020R2, new ACT features have been released to expose legend settings. Legend Settings can either be Global (common to all results) or result specific. You can use the following Legend Settings objects to perform various operations like:


- Construct an independent Legend Settings object and apply it to the current result
- Copy the Legend Settings from one result object and apply it to another result.

There are examples later in the document to illustrate the same.

1. Global Legend Settings

```
Graphics.GlobalLegendSettings # Access these settings
LegendOrientation # Gets or sets the Legend Orientation
ShowDateAndTime # Gets or sets whether the date and time is sh
ShowMaxMin # Gets or sets whether the Min and Max value are sh
ShowDeformationScaling # Gets or sets whether the Deformation
```

Example: Changes the legend orientation to horizontal and hides the deformation scaling:

```
gls = Graphics.GlobalLegendSettings
gls.LegendOrientation = LegendOrientationType.Horizontalgls.Sh
gls.ShowMaxMin = True
gls.ShowDeformationScaling = False
```

2. Result specific Legend Settings

Some of the legend settings are specific to each result object. To access these settings, you must first navigate to the result you want to manipulate and use this command:

Note: You can only manipulate the legend of the currently active result. The following properties are available within this object:

```
NumberOfBand # Gets or sets the number of bands on the legends
AllScientificNotation # Gets or sets whether the result values
Digits # Gets or sets the number of significant digits
ColorScheme # Gets or sets the Color Scheme for the legend.
SemiTransparency # Gets or sets whether the legend is semi-tra
LogarithmicScale # Gets or sets whether the result values are
HighFidelity # Gets or sets whether the High Fidelity mode is
GetLowerBound # Gets lower bound value of the specified band.
SetLowerBound # Sets lower bound value of the specified band.
GetUpperBound # Gets upper bound value of the specified band.
SetUpperBound # Sets upper bound value of the specified band.
GetBandColor # Gets the color of the specified band.
SetBandColor # Sets the color of the specified band.
GetBandColorAuto # Gets whether the specified band is set to A
SetBandColorAuto # Sets the specified band to Automatic.
ResetColors # Resets all colors to default values.
Reset # Resets all legend customizations into default values
```

Example:

```
legendSettings = Ansys.Mechanical.Graphics.Tools.CurrentLegend
legendSettings.AllScientificNotation = FALSE
legendSettings.Digits = 4
legendSettings.NumberOfBands = 7
legendSettings.ColorScheme = LegendColorSchemeType.ReverseGray
legendSettings.SemiTransparent = TRUE
legendSettings.SetLowerBound(0, Quantity(2.38e-8 ,”m”))
legendSettings.SetUpperBound(0, Quantity(3.38e-8 ,”m”))
legendSettings.SetUpperBound(1, Quantity(4.38e-8,”m”))
legendSettings.SetUpperBound(2, Quantity(5.38e-8,”m”))
legendSettings.SetBandColor(0, Ansys.Mechanical.DataModel.Cons
legendSettings.SetBandColor(1, Ansys.Mechanical.DataModel.Cons
```

```
legendSettings.SetBandColor(5, Ansys.Mechanical.DataModel.Cons
legendSettings.SetBandColor(6, Ansys.Mechanical.DataModel.Cons
```

3. Standalone Legend Settings

You can create a standalone Legend Settings object, modify the properties on it and then copy it onto an existing result object. You create the standalone legend by:

```
legendSettings = Ansys.Mechanical.Graphics.Tools.LegendSetting
or:
legendSettings = Ansys.Mechanical.Graphics.Tools.LegendSetting
```

If you want to assign a default unit system to this legend settings object. The standalone LegendSettings comes with a default set of band values (from 0 to 9) and a default color scheme (Rainbow). You can set or modify any other properties that you care about. It is also possible to set the Min and Max for the standalone legend. (to mimic the result Min and Max of a result):

```
legendSettings.Min = Quantity(1 ,”m”)
legendSettings.Max = Quantity(100 ,”m”)
```

4. Copying Legends

You can copy the current result’s legend onto a standalone Legend Settings object. Similarly, you can create a standalone Legend Settings object and then copy it onto a current result. These capabilities allow

methods are available for these copy operations:

```
MakeCopy() # Returns a standalone LegendSettings object that i

CopyTo() # Copies a standalone LegendSettings object onto the
```

Example:

```
# Create a standalone legend settings object
legendSetting = Ansys.Mechanical.Graphics.Tools.LegendSettings
legendSetting.NumberOfBands = 3
legendSetting.SetBandColor(1, Ansys.Mechanical.DataModel.Const


# Navigate to a result object
totalDeform = DataModel.GetObjectsByName("Total Deformation")[
totalDeform.Activate()


# Copy the standalone legend to this result
legendSetting.CopyTo(Ansys.Mechanical.Graphics.Tools.CurrentLe
```

These copy operations can also be used for copying legends between different results.

Example: This code copies the legend from one result object onto another

```
# Navigate to a result object
eqvStress = DataModel.GetObjectsByName("Equivalent Stress")[0]
eqvStress.Activate()

# Make a copy of its legend settings
eqvStressLegend = Ansys.Mechanical.Graphics.Tools.CurrentLegen

# Navigate to a different result object
principalStress = DataModel.GetObjectsByName("Maximum Principa
principalStress.Activate()

# Copy the previous legend to this result
eqvStressLegend.CopyTo(
Ansys.Mechanical.Graphics.Tools.CurrentLegendSettings())
```

These are some miscellaneous global view options. They can be accessed using this command:

```
Graphics.ViewOptions
```

The various properties under this object are:

```
ShowLegend #Gets or sets whether the legend is shown.
ShowTriad #Gets or sets whether the triad is shown.
ShowRuler #Gets or sets whether the ruler is shown.
```

Example: The example below hides the ruler and the triad and shows the legend:

```
Graphics.ViewOptions.ShowRuler=  False
Graphics.ViewOptions.ShowLegend = True
Graphics.ViewOptions.ShowTriad=  False
```

We really hope you enjoyed this week's Script Tip! To learn more about pyAnsys and Scripting Hacks, make sure you register for our Webinar on 4/27/22 --> **Scripting Hacks: Automating Repetitive Tasks in Ansys Mechanical | Ansys**

Published by

Ansys Structures
18,742 followers
Published • 1d

✓ Following

It's Script Tip Friday again! This week, Pernelle Marone-Hitz goes into working with Legends in Mechanical Scripting by answering the question "Can we change legend settings through scripting in Mechanical?" After reading, let us know what you think! Was it helpful? Do you have a great Script Tip YOU can share?

#engineering #mechanicalengineering #simulation #scripting #python #ansys

Reactions

+17

0 Comments

Add a comment...

Ansys Structures

✓ Following