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TouchDesigner | Common Operations Cheat Sheet

Calls for Global Variables

Seconds (bound to Time Line)

```
me.time.seconds
```

Seconds (absolute Time – constantly incrementing)

```
me.time.absSeconds (Legacy method)
absTime.seconds
```

Frame (bound to Time Line)

```
me.time.frame
```

Frame (absolute Frame count – constantly incrementing)

```
me.time.absFrame (Legacy Method)
absTime.frame
```

Scripts

Parameter Referencing in a Container (Using a parent to set resolution)

```
Width - me.parent().par.w
Height - me.parent().par.h
```

Using Storage to hold information

Syntax – *component_for_strorage.store("key" , value or object)*

```
Example - me.parent().store( 'width' , 1920 )
```

Using Storage to retrieve information

Syntax – *component_containing_strorage.fetch("key")*

```
Example 1 - me.fetch( 'width' )
Example 2 - op('project1').fetch( 'width' )
```

Using digits to retrieve the integer value of an operator

Syntax – *operatorname.digits*

```
Example 1 - me.digits | op( 'moviefilein1' ).digits
Example 2 - me.parent().digits
```

Run a Text DAT

Syntax – textDAT.run()
Example
Here we assume that there is an existing text DAT that contains a script that you would like to run.

Example 1

```
runMe = op( 'textDATyouWantToRun' )
runMe.run()
```

Example 2

```
a = "print( 'Hello World' )"
run(a)
```

Example 3

```
a = '''
b = 10

for i in range( b ):
 print( i )
'''

run(a)
```

Simple if else statement

Syntax

if condition a == a testable value:
do this operation
else:
do a different operation

Example

```
test = op( 'chop2' )[ 'chan1' ]
movie = op( 'moviefilein1' )
if test == 0:
      movie.par.file = 'flower1.jpg'
 else:
      movie.par.file = 'leaves.jpg'
```

Open the viewer of an operator

Method 1

Syntax – *operatorname.openViewer()*

Example - `op( 'container1' ).openViewer()`

Method 2
Syntax
variable_name = operatorNameAndPath
variable_name.openViewer()

Example 2
```
ctrl = op( '../container1' )
ctrl.openViewer()
```

Copy Contents of One DAT to Another
Syntax
op('targetDAT').copy(op('sourceDAT'))

Example 1
```
op( 'to' ).copy( op( 'from' ) )
```

Example 2
```
to = op( 'to' )
from = op( 'from' )

to.copy( from )
```

Run a .bat file from Python in TouchDesigner
Syntax
from subprocess import Popen

Popen([filePathHere])

Example 1
```
from subprocess import Popen

file = "E:\\GitHub\\Beneath\\tools\\robo_copy\\batTest.bat"

Popen( [ file ] )
```

Execute a String
Syntax
exec("op('targetOp').par.parameter = value")

Example 1

```
target_par = 'invert'
target_op = 'level1'
val = 0

# build your script as a string
command = "op( '" + target_op + "' ).par." + target_par + " = " + str( val )

# print to debug and make sure it's what you want to be
print( command )

# execute the command
exec( command )
```

TouchDesigner User Interface Scripts

Open an Explorer Window
Syntax – ui.chooseFile()
Example 1
Here we assume that there is another text DAT (text1) that we want to populate with the path to a file.

```
op( 'text1' ).text = ui.chooseFile( fileTypes = tdu.fileTypes[ 'image' ], title =
```

Example 2
Here we assume that there is another DAT (text1) that we want to populate with a path to a file – we further want to limit the kind of file that we're selecting to an image file, and we want to give the explorer window the title "Select an Image."

```
op( 'text1' ).text = ui.chooseFile( fileTypes=tdu.fileTypes[ 'image' ], title = '
```

Change the Background Color
Syntax – ui.colors['worksheet.bg'] = (r , g , b)
Example
We can make our background bright green.

```
ui.colors[ 'worksheet.bg' ] = ( 0.0 , 1.0 , 0.0 )
```

Format a Group of Ops
Example
Lets imagine that we want to format a lot ops in one go.

```
# create an empty list for all ops
null_ops = []

# create a list of names
null_types = [
    null_tops,
    null_sops,
    null_dats,
    null_mats,
    null_chops
]

# create lists of all op types
null_tops = parent().findChildren( type = nullTOP )
null_sops = parent().findChildren( type = nullSOP )
null_dats = parent().findChildren( type = nullDAT )
null_mats = parent().findChildren( type = nullMAT )
null_chops = parent().findChildren( type = nullCHOP )

# extened empty list with the contents of all op types
for type in null_types:
    null_ops.extend( type )

# turn off the display of all ops, set them to black
for item in null_ops:
    op( item ).viewer = False
    op( item ).color = 0 , 0 , 0

# debugging line - check the contents of the null_ops list
# print( null_ops )
```

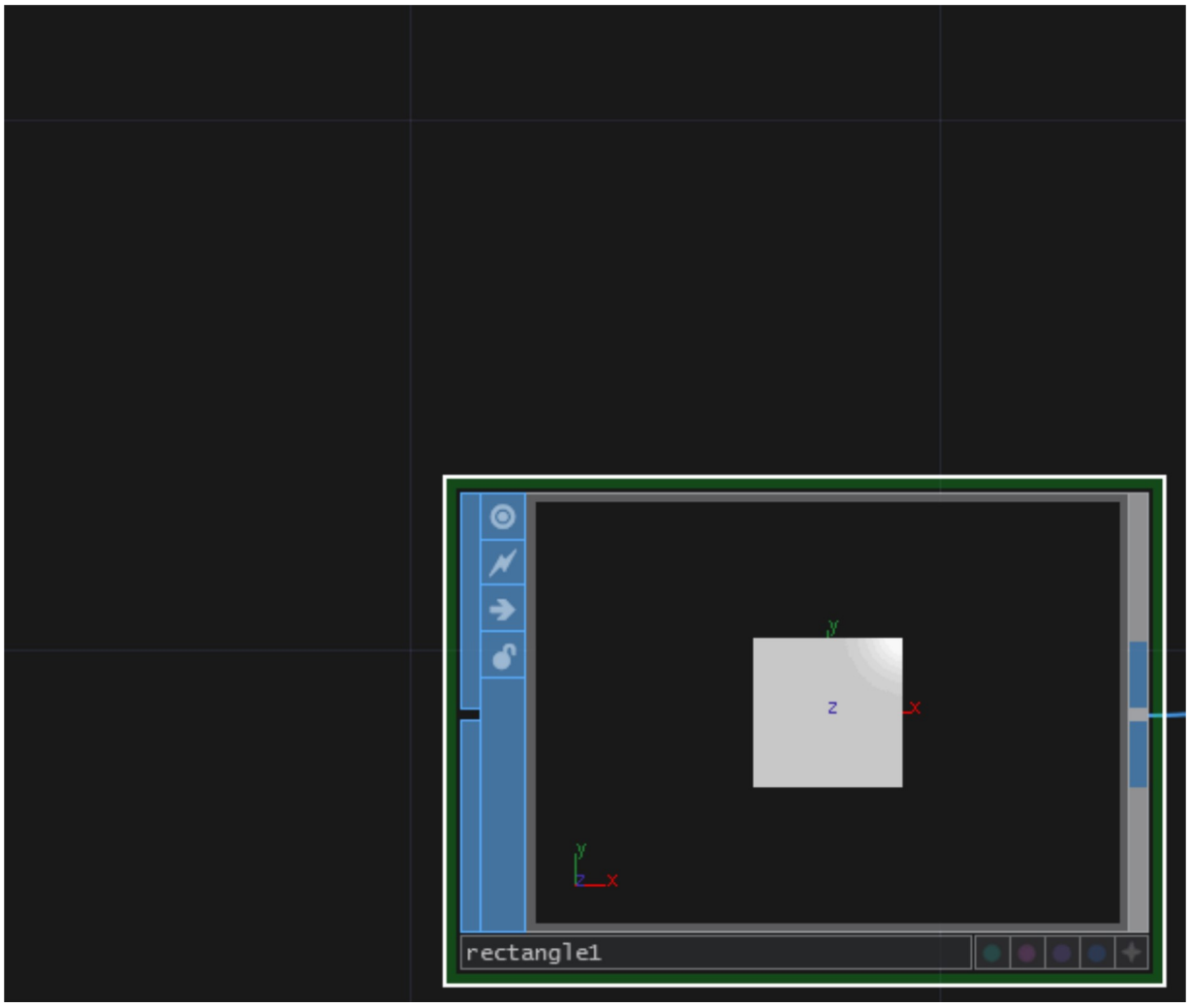
Set the Color of an Operator
Syntax – op('nameOfOperator').color = (r , g , b)
Example
We can make any operator any color we like.

```
op( 'text1' ).color = 1 , 0 , 0
```

Learn more about the UI Class

Using the Interface

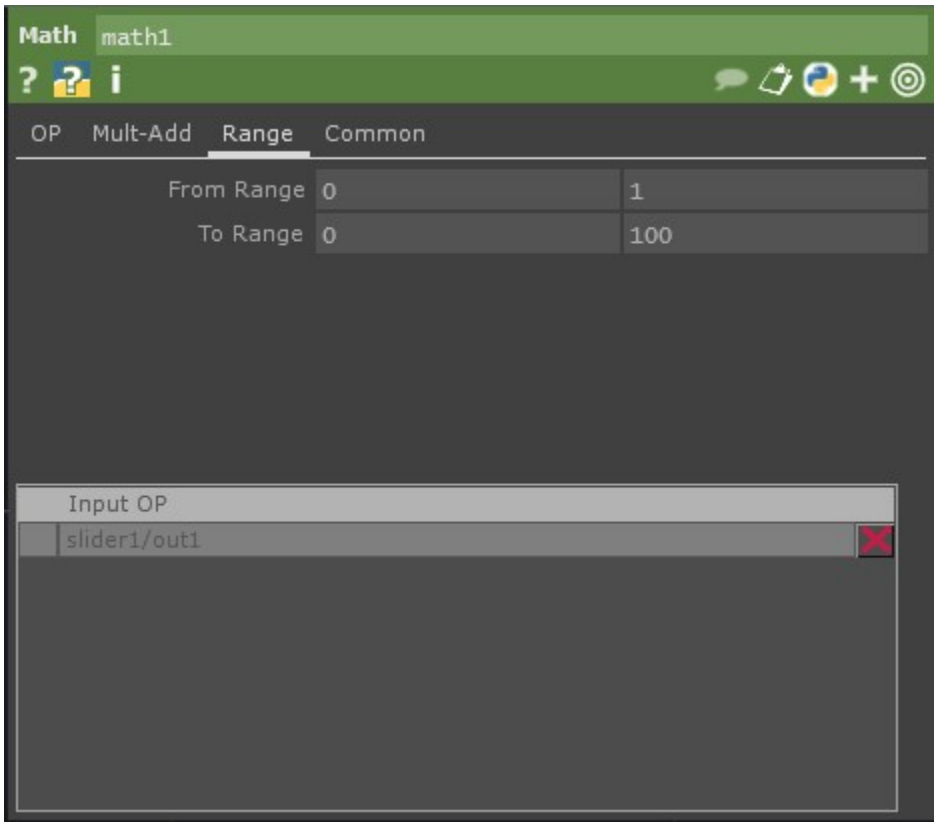
Display the Normals on a SOP



CHOPs

The Math CHOP

In the Math CHOP the **From Range** is based on the incoming values, and the **To Range** is the outgoing values. This is a scaling operation. If we were going to write this as a sentence we might think of it by saying "I would like numbers **From** *0 to 1*, **To** be scaled to numbers between *20 and 40*. In the picture below we can see values **From 0 – 1**, now scaled **To 0 – 100**.



System Variables

Display Console Window at Touch Start Up

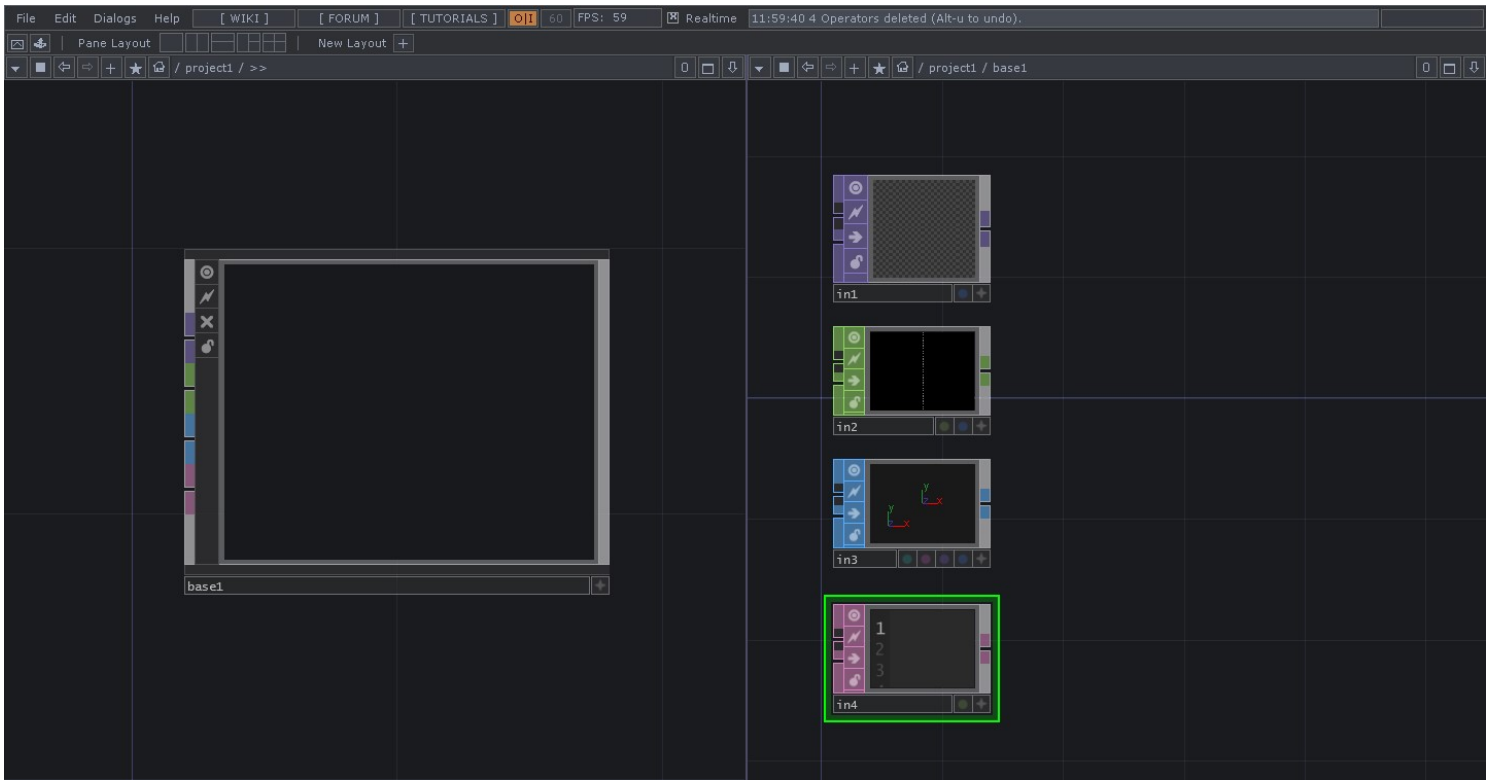
Create a new Windows Environment Variable and use the following settings:

```
Variable Name: TOUCH_TEXT_CONSOLE
Variable Value: 1
```

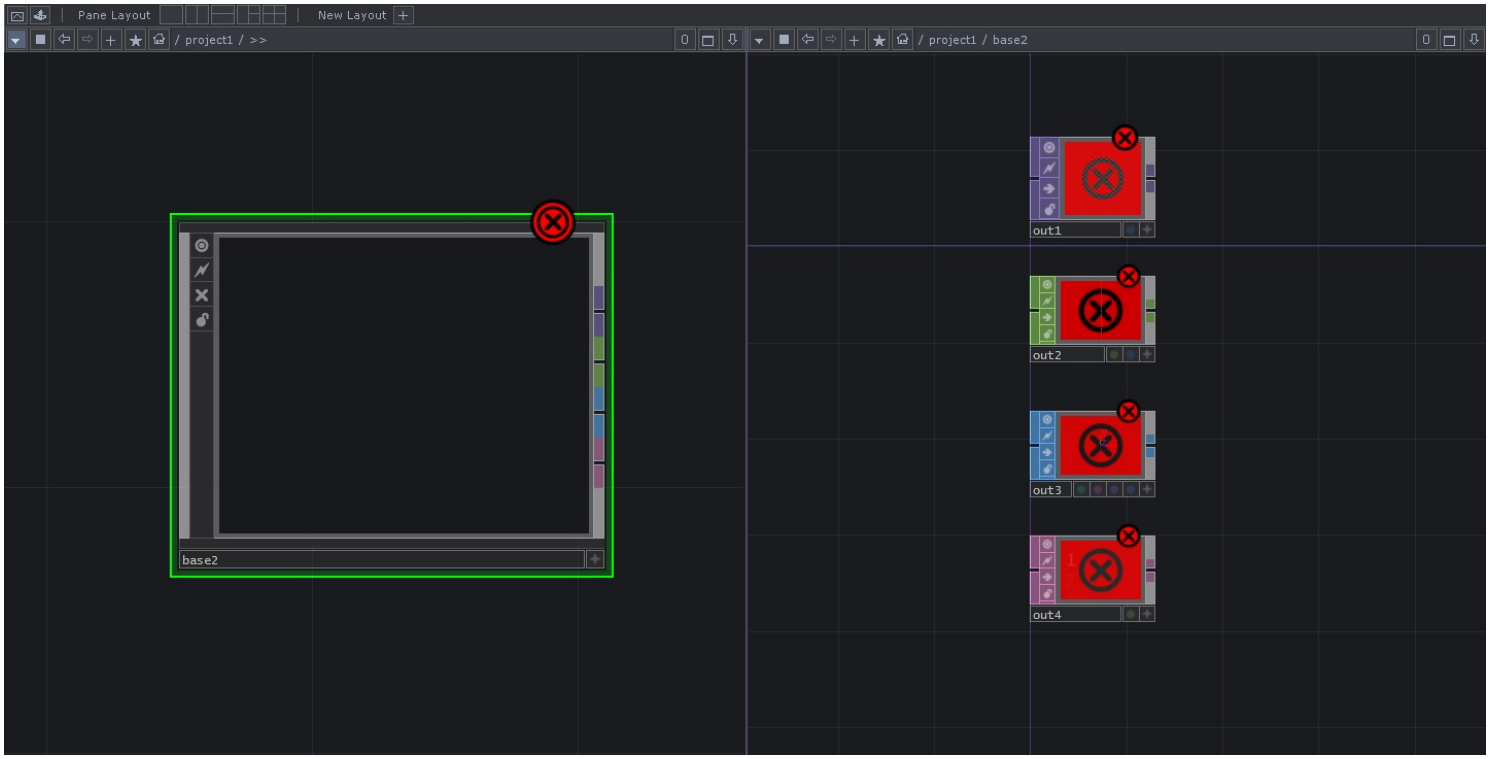
Conceptual Frames

Ins and Outs

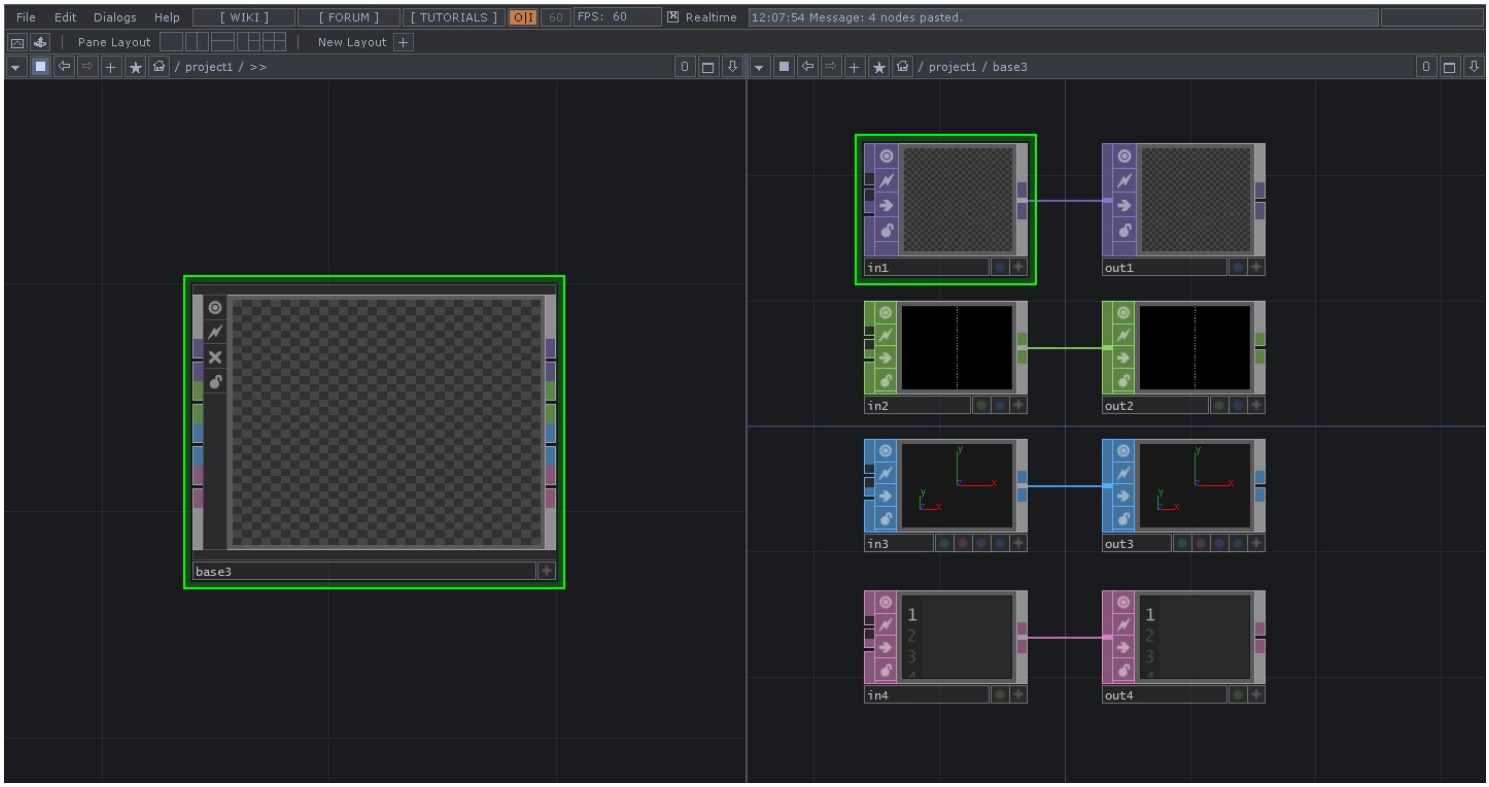
Encapsulating a process in TouchDesigner is a wonderful way to make re-usable custom components. When we make something modular, however, we often need a way to pass information into or out of our module. How can we do that? TOPs,CHOPs, SOPs, and DATs all have In and Out operators for just this purpose. An In TOPCHOP/SOP/DAT creates an inlet on a container or base, and an Out TOPCHOP/SOP/DAT creates an outlet. In the image below we can see a split network view where we're looking at a base from the outside (left), and at the inside of the base (right). We can see that there are inlets that correspond to our Ins that are located on the left side of the base.



In this second image we can see a split network view where we're looking at a base from the outside (left), and at the inside of the base (right). We can see that there are outlets that correspond to our Outs that are located on the right side of the base. In this example we can see errors in our network because Out Operators expect to have a source connected to them.



In this third image we can see a split network view where we're looking at a base from the outside (left), and at the inside of the base (right). We can see that there are inlets and outlets that correspond to our Ins and Outs that are located on the left and right side of the base.



TouchDesigner | Keyboard Shortcuts