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Filter Recipes

Creating Literals

Create a literal Expression from a number

```
Expression expression = new Expression(3.56)
println expression
```

```
3.56
```

Create a literal Expression from a string

```
Expression expression = new Expression("Seattle")
println expression
```

```
Seattle
```

Evaluating a literal Expression just gives you the value

```
Expression expression = new Expression(3.56)
double number = expression.evaluate()
println number
```

```
3.56
```

Creating Properties

Create a Property from a string

```
Property property = new Property("name")
println property
```

```
name
```

Create a Property from a Field

```
Field field = new Field("geom", "Polygon")
Property property = new Property(field)
println property
```

```
geom
```

Evaluating Properties

Evaluate a Property to get values from a Feature. Get the id

```
Feature feature = new Feature([
    id: 1,
    name: "Seattle",
    geom: new Point(-122.3204, 47.6024)
], "city.1")

Property idProperty = new Property("id")
int id = idProperty.evaluate(feature)
println id
```

```
1
```

Get the name

```
Property nameProperty = new Property("name")
String name = nameProperty.evaluate(feature)
println name
```

```
Seattle
```

Get the geometry

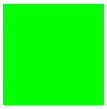
```
Property geomProperty = new Property("geom")
Geometry geometry = geomProperty.evaluate(feature)
println geometry
```

```
POINT (-122.3204 47.6024)
```

Creating Colors

Create a Color from a RGB color string

```
Color color = new Color("0,255,0")
```



Create a Color from a CSS color name

```
Color color = new Color("silver")
```

Create a Color from a hexadecimal string

```
Color color = new Color("#0000ff")
```

Create a Color from a RGB List

```
Color color = new Color([255,0,0])
```

Create a Color from a RGB Map

```
Color color = new Color([r: 5, g: 35, b:45])
```

Create a Color from a HLS Map

```
Color color = new Color([h: 0, s: 1.0, l: 0.5])
```

Get a Random Color

```
Color color = Color.getRandom()
```

Get a Random Pastel Color

```
Color color = Color.getRandomPastel()
```

Get a darker Color

```
Color color = new Color("lightblue")
Color darkerColor = color.darker()
```

Get a brighter Color

```
Color color = new Color("purple")
Color brigtherColor = color.brighter()
```

Getting Color Formats

Create a Color

```
Color color = new Color("wheat")
```


Get Hex

```
String hex = color.hex
println hex
```

```
#f5deb3
```

Get RGB

```
List rgb = color.rgb
println rgb
```

```
[245, 222, 179]
```

Get HSL

```
List hsl = color.hsl
println hsl
```

```
[0.10858585256755147, 0.7674419030001307, 0.8313725489999999]
```

Get the java.awt.Color

```
java.awt.Color awtColor = color.asColor()
println awtColor
```

```
java.awt.Color[r=245,g=222,b=179]
```

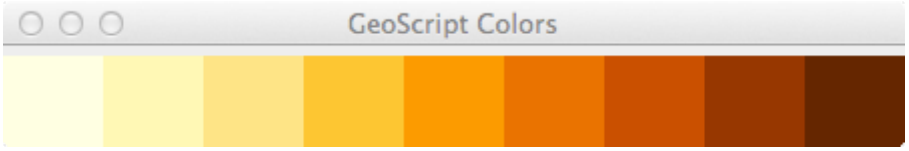
Displaying Colors

Draw a List of Colors to a BufferedImage

```
Color color = new Color("pink")
BufferedImage image = Color.drawToImage(
        [color.brighter(), color, color.darker()],
        "vertical",
        40
)
```

Draw a List of Colors to a simple GUI

```
List<Color> colors = Color.getPaletteColors("YlOrBr")
Color.draw(colors, "horizontal", 50)
```



Using Color Palettes

Get all color palettes

```
List<String> allPalettes = Color.getPaletteNames("all")
allPalettes.each { String name ->
    println name
}
```

```
YlOrRd
PRGn
PuOr
RdGy
Spectral
Grays
PuBuGn
RdPu
BuPu
YlOrBr
Greens
BuGn
Accents
GnBu
PuRd
Purples
RdYlGn
Paired
Blues
RdBu
Oranges
RdYlBu
PuBu
OrRd
Set3
Set2
Set1
Reds
PiYG
Dark2
YlGn
BrBG
YlGnBu
Pastel2
Pastel1
BlueToOrange
GreenToOrange
BlueToRed
GreenToRedOrange
Sunset
Green
YellowToRedHeatMap
BlueToYellowToRedHeatMap
DarkRedToYellowWhiteHeatMap
LightPurpleToDarkPurpleHeatMap
BoldLandUse
MutedTerrain
BoldLandUse
MutedTerrain
```

Get diverging color palettes

```
List<String> divergingPalettes = Color.getPaletteNames("diverging")
divergingPalettes.each { String name ->
    println name
}
```

```
PRGn
PuOr
RdGy
Spectral
RdYlGn
RdBu
RdYlBu
PiYG
BrBG
BlueToOrange
GreenToOrange
BlueToRed
GreenToRedOrange
```

Get sequential color palettes

```
List<String> sequentialPalettes = Color.getPaletteNames("sequential")
sequentialPalettes.each { String name ->
    println name
}
```

```
YlOrRd
Grays
PuBuGn
RdPu
BuPu
YlOrBr
Greens
BuGn
GnBu
PuRd
Purples
Blues
Oranges
PuBu
OrRd
Reds
YlGn
YlGnBu
Sunset
Green
YellowToRedHeatMap
BlueToYellowToRedHeatMap
DarkRedToYellowWhiteHeatMap
LightPurpleToDarkPurpleHeatMap
BoldLandUse
MutedTerrain
```

Get qualitative color palettes

```
List<String> qualitativePalettes = Color.getPaletteNames("qualitative")
qualitativePalettes.each { String name ->
    println name
}
```

```
Accents
Paired
Set3
Set2
Set1
Dark2
Pastel2
Pastel1
BoldLandUse
MutedTerrain
```

Get a Blue Green Color Palette

```
List colors = Color.getPaletteColors("BuGn")
```

Get a Purple Color Palette with only four colors

```
colors = Color.getPaletteColors("Purples", 4)
```

Get a Blue Green Color Palette

```
colors = Color.getPaletteColors("MutedTerrain")
```

Get a Blue Green Color Palette

```
colors = Color.getPaletteColors("BlueToYellowToRedHeatMap")
```

Create a Color palette by interpolating between two colors

```
Color startColor = new Color("red")
Color endColor = new Color("green")
List<Color> colors = startColor.interpolate(endColor, 10)
```

Create a Color palette by interpolating between two colors

```
Color startColor = new Color("wheat")
Color endColor = new Color("lightblue")
List<Color> colors = Color.interpolate(startColor, endColor, 8)
```

Creating Expressions from CQL

Create a literal number Expression from a CQL String

```
Expression expression = Expression.fromCQL("12")
println expression
```

```
12
```

Create a literal string Expression from a CQL String

```
Expression expression = Expression.fromCQL("'Washington'")
println expression
```

```
Washington
```

Create a Property from a CQL String

```
Expression expression = Expression.fromCQL("NAME")
println expression
```

```
NAME
```

Create a Function from a CQL String

```
Expression expression = Expression.fromCQL("centroid(the_geom)")
println expression
```

```
centroid([the_geom])
```