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# Process Recipes

The Process classes are in the [geoscript.process](#) package.

## Execute a built-in Process

*Create a Process from a built-in process by name*

```
Process process = new Process("vec:Bounds")
String name = process.name
println name
```

vec:Bounds

*Get the title*

```
String title = process.title
println title
```

Bounds

*Get the description*

```
String description = process.description
println description
```

Computes the bounding box of the input features.

*Get the version*

```
String version = process.version
println version
```

1.0.0

*Get the input parameters*

```
Map parameters = process.parameters
println parameters
```

```
[features:class geoscript.layer.Cursor]
```

*Get the output parameters*

```
Map results = process.results  
println results
```

```
[bounds:class geoscript.geom.Bounds]
```

*Execute the Process to calculate the bounding box of all Features in a Layer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')  
Layer layer = workspace.get("places")  
Map executeResults = process.execute([features: layer])  
Bounds bounds = executeResults.bounds
```



## Listing built-in Processes

*Get the names of all built-in Processes*

```
List<String> processes = Process.processNames  
processes.each { String name ->  
    println name  
}
```

```
geo:isValid  
geo:buffer  
geo:union  
geo:intersection
```

geo:difference  
geo:area  
geo:numGeometries  
geo:symDifference  
geo:distance  
geo:isClosed  
geo:convexHull  
geo:crosses  
geo:boundary  
geo:centroid  
geo:interiorPoint  
geo:getGeometryN  
geo:numPoints  
geo:isSimple  
geo:isWithinDistance  
geo:overlaps  
geo:relate  
geo:touches  
geo:within  
geo:simplify  
geo:densify  
geo:envelope  
geo:getX  
geo:getY  
geo:dimension  
geo:exteriorRing  
geo:numInteriorRing  
geo:geometryType  
geo:reproject  
geo>equalsExact  
geo:isRing  
geo:polygonize  
geo:startPoint  
geo:endPoint  
geo:relatePattern  
geo>equalsExactTolerance  
geo:pointN  
geo:interiorRingN  
geo:splitPolygon  
geo:length  
geo:isEmpty  
geo:contains  
geo:disjoint  
geo:intersects  
vec:Aggregate  
vec:BarnesSurface  
vec:Bounds  
vec:BufferFeatureCollection  
vec:Centroid  
vec:Clip  
vec:CollectGeometries

```
vec:Count
vec:Feature
vec:FeatureClassStats
vec:Grid
vec:Heatmap
vec:InclusionFeatureCollection
vec:IntersectionFeatureCollection
vec:LRSGeocode
vec:LRSMeasure
vec:LRSegment
vec:Nearest
vec:PointBuffers
vec:PointStacker
vec:Query
vec:RectangularClip
vec:Reproject
vec:Simplify
vec:Snap
vec:Transform
vec:UnionFeatureCollection
vec:Unique
vec:VectorToRaster
vec:VectorZonalStatistics
ras:AddCoverages
ras:Affine
ras:AreaGrid
ras:BandMerge
ras:BandSelect
ras:Contour
ras:ConvolveCoverage
ras:CovarianceClassStats
ras:CropCoverage
ras:MultiplyCoverages
ras:NormalizeCoverage
ras:PolygonExtraction
ras:RangeLookup
ras:RasterAsPointCollection
ras:RasterZonalStatistics
ras:RasterZonalStatistics2
ras:ScaleCoverage
ras:StyleCoverage
```

## Executing a new Process

### Create a Process using a Groovy Closure

```
Process process = new Process("convexhull",
    "Create a convexhull around the features",
    [features: geoscript.layer.Cursor],
    [result: geoscript.layer.Cursor],
    { inputs ->
        def geoms = new GeometryCollection(inputs.features.collect{f -> f.geom})
        def output = new Layer()
        output.add([geoms.convexHull])
        [result: output]
    }
)
String name = process.name
println name
```

geoscript:convexhull

### Get the title

```
String title = process.title
println title
```

convexhull

### Get the description

```
String description = process.description
println description
```

Create a convexhull around the features

### Get the version

```
String version = process.version
println version
```

1.0.0

### *Get the input parameters*

```
Map parameters = process.parameters  
println parameters
```

```
[features:class geoscript.layer.Cursor]
```

### *Get the output parameters*

```
Map results = process.results  
println results
```

```
[result:class geoscript.layer.Cursor]
```

### *Execute the Process created from a Groovy Closure*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')  
Layer layer = workspace.get("places")  
Map executeResults = process.execute([features: layer.cursor])  
Cursor convexHullCursor = executeResults.result
```

