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# Render Recipes

## Creating Maps

*Create a Map with Layers*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
    width: 800,
    height: 300,
    layers: [ocean, countries]
)
File file = new File("map.png")
map.render(file)
```
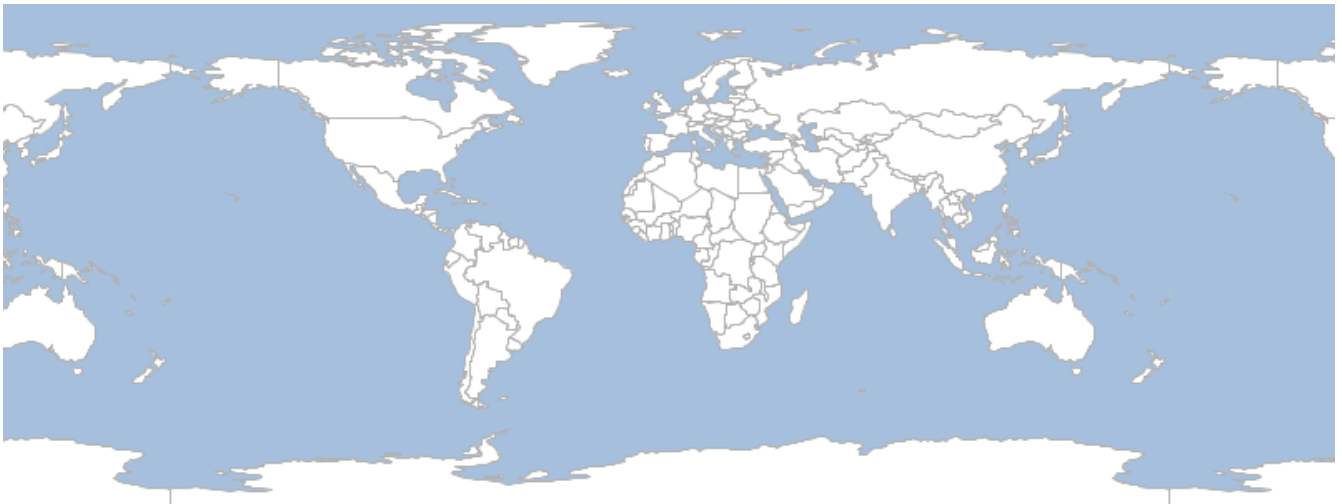


## Rendering Maps

**Image**

*Render a Map to an image using an Image Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
Image png = new Image("png")
BufferedImage image = png.render(map)
```



*Render a Map to an OutputStream using the Image Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
Image jpeg = new Image("jpeg")
File file = new File("map.jpeg")
jpeg.render(map, new FileOutputStream(file))
```
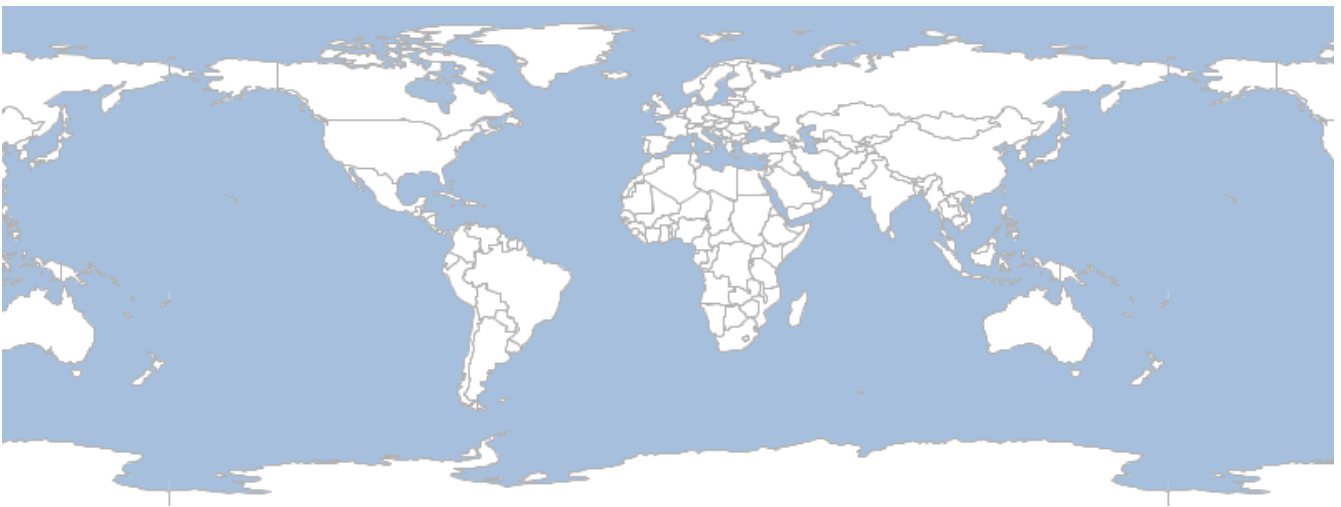
## PNG

*Render a Map to an Image using the PNG Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
    width: 800,
    height: 300,
    layers: [ocean, countries]
)
PNG png = new PNG()
BufferedImage image = png.render(map)
```

*Render a Map to an OutputStream using the PNG Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
    width: 800,
    height: 300,
    layers: [ocean, countries]
)
PNG png = new PNG()
File file = new File("map.png")
png.render(map, new FileOutputStream(file))
```



## JPEG

*Render a Map to an Image using the JPEG Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
JPEG jpeg = new JPEG()
BufferedImage image = jpeg.render(map)
```

*Render a Map to an OutputStream using the JPEG Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
JPEG jpeg = new JPEG()
File file = new File("map.jpeg")
jpeg.render(map, new FileOutputStream(file))
```



**GIF**

*Render a Map to an Image using the GIF Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
GIF gif = new GIF()
BufferedImage image = gif.render(map)
```

[ map gif image ] | *map_gif_image.gif*

*Render a Map to an OutputStream using the GIF Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
GIF gif = new GIF()
File file = new File("map.gif")
gif.render(map, new FileOutputStream(file))
```

[ map gif file ] | *map_gif_file.gif*

## GeoTIFF

*Render a Map to an Image using the GeoTIFF Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
GeoTIFF geotiff = new GeoTIFF()
BufferedImage image = geotiff.render(map)
```

*Render a Map to an OutputStream using the GeoTIFF Renderer*

```
Workspace workspace = new GeoPackage('src/main/resources/data.gpkg')
Layer countries = workspace.get("countries")
countries.style = new Fill("#ffffff") + new Stroke("#b2b2b2", 0.5)
Layer ocean = workspace.get("ocean")
ocean.style = new Fill("#a5bfdd")
Map map = new Map(
        width: 800,
        height: 300,
        layers: [ocean, countries]
)
GeoTIFF geotiff = new GeoTIFF()
File file = new File("map.tif")
geotiff.render(map, new FileOutputStream(file))
```