ArcGIS Runtime SDK for Java: Building Apps

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Agenda

• Getting Started
• API Basics
• Patterns & Workflows
• Licensing and Deployment
• Questions
Getting Started
What You Get

- Code
- API Reference (Javadoc)
- Open-source toolkit
- Guide documentation
- 100+ samples on GitHub
- Sample Viewer app
- DevLabs
- GeoNet
System Requirements

- Windows (x86, x64), MacOS (64-bit), Linux (64-bit) OS
- Oracle jdk-8u171 - 10.0.1
- JavaFX

**End of Public Updates for Oracle JDK 8**

Oracle will not post further updates of Java SE 8 to its public download sites for commercial use after January 2019. Customers who need continued access to critical bug fixes and security fixes as well as general maintenance for Java SE 8 or previous versions can get long term support through Oracle Java SE Advanced, Oracle Java SE Advanced Desktop, or Oracle Java SE Suite. For more information, and details on how to receive longer term support for Oracle JDK 8, please see the Oracle Java SE Support Roadmap.
apply plugin: 'com.esri.arcgisruntime.java'

buildscript {
    repositories {
        maven {
            url = 'https://esri.bintray.com/arcgis'
        }
    }
    dependencies {
        classpath 'com.esri.arcgisruntime:gradle-arcgis-java-plugin:1.0.0'
    }
}

arcgis.version = '100.3.0'
<repositories>
  <repository>
    <id>arcgis</id>
    <url>https://esri.bintray.com/arcgis</url>
  </repository>
</repositories>

<pluginRepositories>
  <pluginRepository>
    <id>arcgis-plugin</id>
    <url>https://esri.bintray.com/arcgis</url>
  </pluginRepository>
</pluginRepositories>

<dependencies>
  <dependency>
    <groupId>com.esri.arcgisruntime</groupId>
    <artifactId>arcgis-java</artifactId>
    <version>100.3.0</version>
  </dependency>
</dependencies>

<build>
  <plugins>
    <plugin>
      <groupId>com.esri.arcgisruntime</groupId>
      <artifactId>arcgis-java-maven-plugin</artifactId>
      <version>1.0</version>
      <configuration>
        <version>100.3.0</version>
      </configuration>
    </plugin>
  </plugins>
</build>

Run the “arcgis” maven goal
Zip

1. Place in root of project
2. Environment Variable ARCGISRUNTIMESDKJAVA_100_3_0
3. ArcGISRuntimeEnvironment.setInstallDirectory(path)
API Basics
Architecture

Java SE API

Android API

Java Common API

Interop

C++ Core
ArcGISMap

Operational Layers

Basemap

MapView

Sketch Editor

Grid

Graphics Overlays

Map
3D

ArcGISScene

- Operational Layers
- Basemap
- Surface

SceneView

- Analysis Overlays
- Graphics Overlays

Scene
Layers

- Feature Layers
- Raster Layers
- Image Tiled Layers
- Vector Tiled Layers
- Web Tiled Layers
- WMS & WMTS Layers
- Open Street Map Layer
- Bing Maps Layer
- ENC Layer
- Scene Layers
Graphics

- Simple Symbols
- Simple Scene Symbols
- Model Scene Symbols
- Text Symbols
- Picture Marker Symbols
- Distance Composite Scene Symbols
Analyses

- Viewshed
- Line of Sight
- Distance Measurement
Patterns & Workflows
```java
public class DisplayMapSample extends Application {

    @Override
    public void start(Stage stage) {
        // create stack pane and application scene
        StackPane stackPane = new StackPane();
        Scene scene = new Scene(stackPane);

        // set title, size, and add scene to stage
        stage.setTitle("Display Map Sample");
        stage.setWidth(800);
        stage.setHeight(700);
        stage.setScene(scene);
        stage.show();

        // create a ArcGISMap with a basemap
        ArcGISMap map = new ArcGISMap(Basemap.createImagery());

        // set the map to a MapView
        MapView mapView = new MapView();
        mapView.setMap(map);

        // add the map view to stack pane
        stackPane.getChildren().add(mapView);
    }
}
```

```xml
    <MapView fx:id="mapView"/>
</StackPane>
```
Loadable Pattern

```java
final String mmpkPath = new File("./samples-data/mmpk/Yellowstone.mmpk").getAbsolutePath();
MobileMapPackage mobileMapPackage = new MobileMapPackage(mmpkPath);

mobileMapPackage.loadAsync();
mobileMapPackage.addDoneLoadingListener(() -> {
    if (mobileMapPackage.getLoadStatus() == LoadStatus.LOADED) {
        mapView.setMap(mobileMapPackage.getMaps().get(0));
    } else {
        new Alert(Alert.AlertType.ERROR, "Failed to load the mobile map package").show();
    }
});
```
Tasks

LocatorTask locatorTask = new LocatorTask("http://geocode.arcgis.com/arcgis/rest/services/World/GeocodeServer");
locatorTask.loadAsync();

mapView.setOnMouseClicked(evt -> {
    if (evt.isStillSincePress() && evt.getButton() == MouseButton.PRIMARY) {
        Point2D point = new Point2D(evt.getX(), evt.getY());
        Point mapPoint = mapView.screenToLocation(point);
        ReverseGeocodeParameters params = new ReverseGeocodeParameters();
        params.setOutputSpatialReference(mapView.getSpatialReference());
        ListenableFuture<List<GeocodeResult>> resultFuture = locatorTask.reverseGeocodeAsync(mapPoint, params);
        resultFuture.addDoneListener(() -> {
            try {
                List<GeocodeResult> results = resultFuture.get();
                // do something with result ...
            } catch (InterruptedException | ExecutionException ex) {
                ex.printStackTrace();
            }
        });
    }
});
## License Levels

### Lite
- Display maps with essential features
- View maps and scenes
- Display layers and packages
- Place finding
- Routing and Directions
- Basic editing of public data
- Map authoring
- Access local data files
- Edit feature geodatabases
- Edit enterprise geodatabases

### Basic
- Create and edit data
- View maps and scenes
- Display layers and packages
- Place finding
- Routing and Directions
- Basic editing of public/private data
- Map authoring
- Access local data files
- Edit feature geodatabases
- Edit enterprise geodatabases

### Standard
- Use local non-proprietary data
- View maps and scenes
- Display layers and packages
- Place finding
- Routing and Directions
- Basic editing of public/private data
- Map authoring
- Access local data files
- Edit feature geodatabases
- Edit enterprise geodatabases

### Advanced
- Enterprise editing and operations
- View maps and scenes
- Display layers and packages
- Place finding
- Routing and Directions
- Basic editing of public/private data
- Map authoring
- Access local data files
- Edit feature geodatabases
- Edit enterprise geodatabases
License Key and Named User

```java
ArcGISRuntimeEnvironment.setLicense("runtimelite,1000....");

UserCredential credential = new UserCredential("user", "pswd");
Portal portal = new Portal("https://your-org.arcgis.com");
portal.setCredential(credential);

portal.loadAsync();
portal.addDoneLoadingListener(() -> {
    if (portal.getLoadStatus() == LoadStatus.LOAD_STATUS_LOADED) {
        LicenseInfo licenseInfo = portal.getPortalInfo().getLicenseInfo();

        if (licenseInfo != null) {
            ArcGISRuntimeEnvironment.setLicense(licenseInfo);

            // can be persisted
            String licenseJson = licenseInfo.toJson();

            // later, without logging into Portal again
            LicenseInfo licenseInfoFromJson = LicenseInfo.fromJson(licenseJson);
            ArcGISRuntimeEnvironment.setLicense(licenseInfoFromJson);
        }
    }
});
```
Deployment

One option: Zip

Not targeting Windows? Remove directx and WIN folders

Don’t need hydrography or military symbology? Delete them
Please Take Our Survey on the App

1. Download the Esri Events app and find your event
2. Select the session you attended
3. Scroll down to find the feedback section
4. Complete answers and select “Submit”
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<tbody>
<tr>
<td>• ArcGIS Runtime SDKs: Building Cross Platform Apps</td>
<td>• Room 30 C</td>
<td>• 8:30 – 9:30 Thursday</td>
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