

# Instructions for Lab 4

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CSE 162 - Mobile Computing - Lab

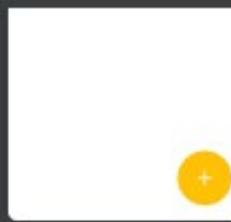
Templates

Phone and Tablet

Wear OS

Android TV

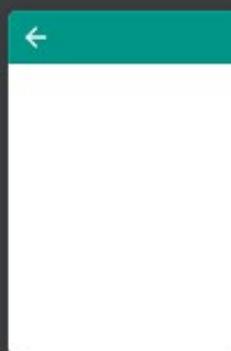
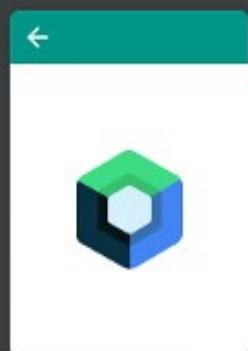
Automotive



No Activity

Basic Activity

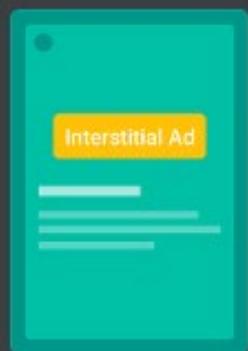
Bottom Navigation Activity



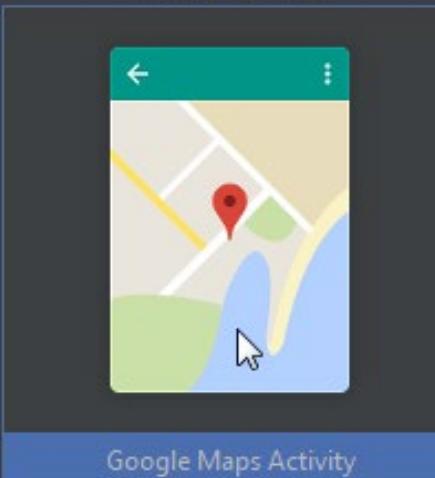
Empty Compose Activity

Empty Activity

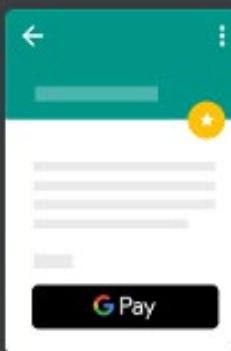
Fullscreen Activity



Google AdMob Ads Activity



Google Maps Activity



Google Pay Activity

Previous

Next

Cancel

Finish

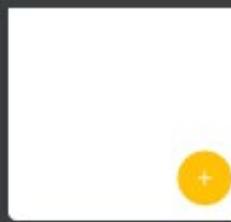
Templates

Phone and Tablet

Wear OS

Android TV

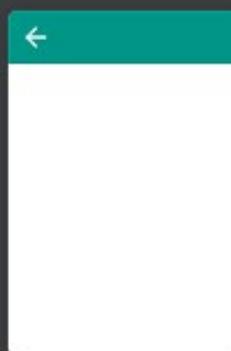
Automotive



No Activity

Basic Activity

Bottom Navigation Activity



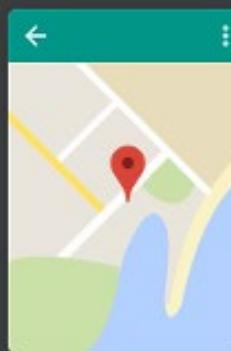
Empty Compose Activity

Empty Activity

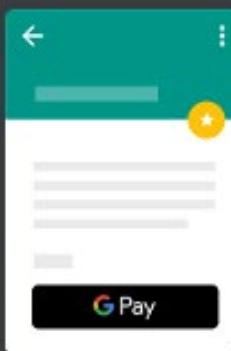
Fullscreen Activity



Google AdMob Ads Activity



Google Maps Activity



Google Pay Activity

Previous

Next

Cancel

Finish



New Project



## Google Maps Activity

Creates a new activity with a Google Map

Name

Lab4Map

Package name

com.yangqingsun.lab4map

Save location

D:\AndroidStudioProjects\Lab4Map



Language

Java



Minimum SDK

API 23: Android 6.0 (Marshmallow)



Your app will run on approximately **94.1%** of devices.

[Help me choose](#)

Use legacy android.support libraries

Using legacy android.support libraries will prevent you from using  
the latest Play Services and Jetpack libraries

[Previous](#)[Next](#)[Cancel](#)[Finish](#)

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

Project

Resource Manager

Android

app

manifests

AndroidManifest.xml

java

res

Gradle Scripts

MapsActivity.java

AndroidManifest.xml

Syncing...

Device Manager

Let's get a Google Maps API key before programming.

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <!--
            TODO: Before you run your application, you need a Google Maps API key.

            To get one, follow the directions here:
            https://developers.google.com/maps/documentation/android-sdk/get-api-key

            Once you have your API key (it starts with "AIza"), define a new property in your
            project's local.properties file (e.g. MAPS_API_KEY=Aiza...), and replace the
            "YOUR_API_KEY" string in this file with "${MAPS_API_KEY}".
        -->

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="YOUR_API_KEY" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
```

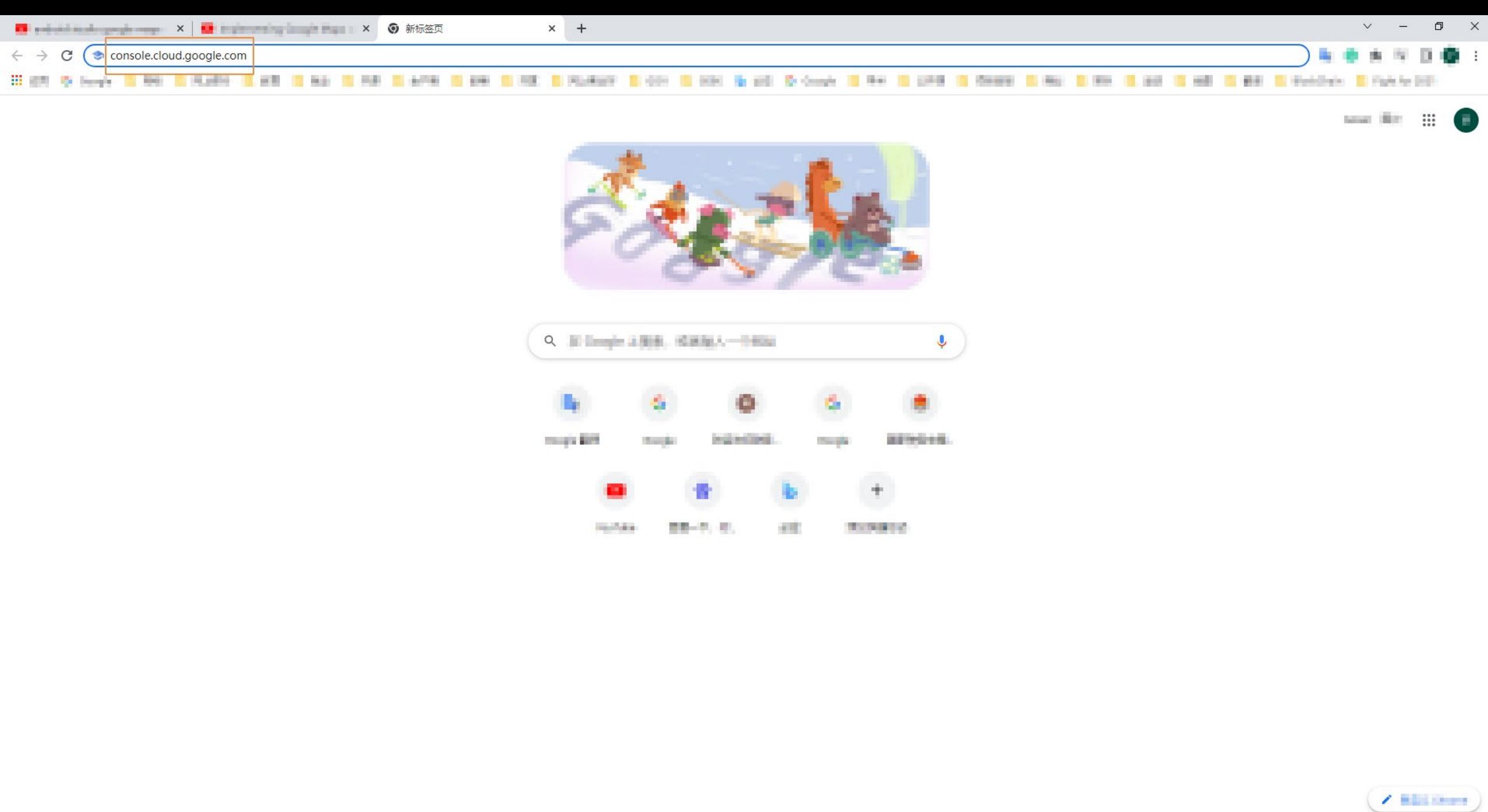
Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection

Event Log Layout Inspector

1:1 CRLF UTF-8 4 spaces

Gradle sync finished in 19 s 280 ms



console.cloud.google.com/getting-started

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- Google Maps Platform...

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SQL, MySQL, PostgreSQL

Cloud Run Fully managed compute platform for deploying and scaling containerized applications quickly and securely

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Cloud Storage

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BigQuery

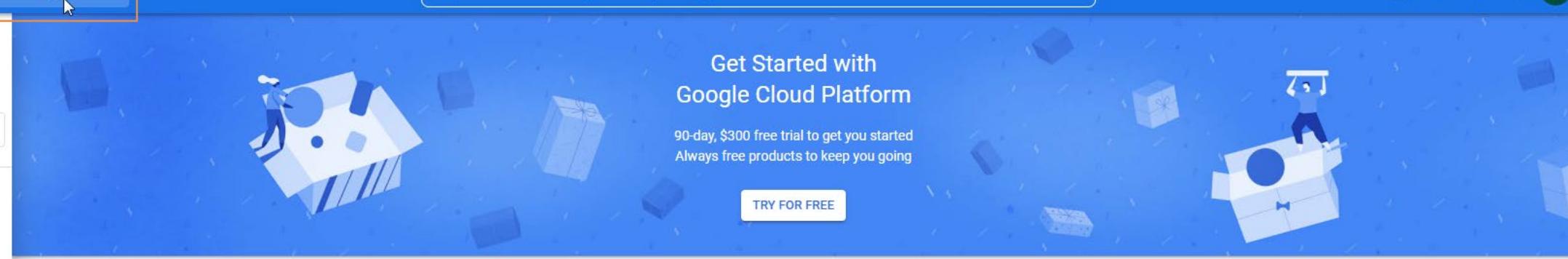
SQL

Security

Cloud Run

Google Maps Platfor...

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## Top Products



Compute Engine

Scalable, high-performance virtual machines



Cloud Storage

A powerful, simple and cost effective object storage service



Cloud SQL

A fully-managed MySQL, PostgreSQL, and SQL Server database service



Cloud Run

Fully managed compute platform for deploying and scaling containerized applications quickly and securely

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- Compute Engine
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- VPC network
- Kubernetes Engine
- BigQuery
- SQL
- Security
- Cloud Run
- Google Maps Platform...

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Select a project

NEW PROJECT

Search projects and folders

RECENT STARRED ALL

Name	ID
No organization	0

CANCEL OPEN

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- Support

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### New Project



[MANAGE QUOTAS](#)

Project name \*

Lab4Map



Project ID: lab4maps-[REDACTED]. It cannot be changed later. [EDIT](#)

Location \*

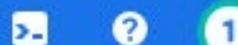
No organization

BROWSE

Parent organization or folder

**CREATE**

CANCEL

[DISMISS](#)[ACTIVATE](#)

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### Notifications

Create Project: Lab4Map

Just now

[SELECT PROJECT](#)

Storage

Powerful, simple and cost  
effective object storage service



Cloud SQL

A fully-managed MySQL,  
PostgreSQL, and SQL Server  
database service



Cloud Run

Fully managed compute platform  
for deploying and scaling  
containerized applications quickly



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COMMENDATIONS

Project info

Project name  
Lab4Map

Project number  
[REDACTED]

Project ID  
ab4map-[REDACTED]

ADD PEOPLE TO THIS PROJECT

[Go to project settings](#)

Resources

BigQuery  
Data warehouse/analytics

SQL

Managed MySQL, PostgreSQL, SQL Server

Compute Engine

VMs, GPUs, TPUs, Disks

Storage

Multi-class multi-region object storage

Cloud Functions

Event-driven serverless functions

App Engine

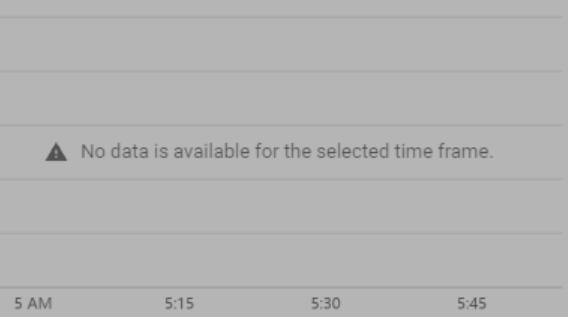
Managed app platform

Trace

No trace data from the past 7 days

API APIs

Requests (requests/sec)



[Go to APIs overview](#)

Google Cloud Platform status

All services normal

[Go to Cloud status dashboard](#)

Monitoring

Create my dashboard

Set up alerting policies

Create uptime checks

[View all dashboards](#)

[Go to Monitoring](#)

API Error Reporting

No sign of any errors. Have you set up Error Reporting?

[Learn how to set up Error Reporting](#)

News

Building cloud into your data strategy delivers higher efficiency in 3 hours

What's new with Google Cloud

2 days ago



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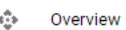
Lab4Map ▾

Search Products, resources, docs (/)



Google Maps Platform

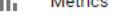
Maps APIs and Services



Overview



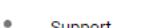
APIs



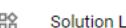
Metrics



Quotas



Credentials



Support



NEW



Map Management



Map Styles

To get started with Google Maps Platform browse and enable APIs and services listed below that best suit your needs.



Geolocation API  
Google Enterprise API

Location data from cell towers and WiFi nodes.



Maps SDK for Android  
Google



Maps for your native Android app.



Roads API  
Google Enterprise API

Snap-to-road functionality to accurately trace GPS breadcrumbs.



Places API  
Google Enterprise API

Get detailed information about 100 million places



Maps JavaScript API  
Google

Maps for your website



Maps Embed API  
Google Enterprise API

Make places easily discoverable with interactive Google Maps.



Time Zone API  
Google Enterprise API

Time zone data for anywhere in the world.



Distance Matrix API  
Google Enterprise API

Travel time and distance for multiple destinations.



Maps SDK for iOS  
Google

Maps for your native iOS app.



Maps Elevation API  
Google Enterprise API

Elevation data for any point in the world.



Directions API  
Google Enterprise API

Directions between multiple locations.



Maps Static API  
Google Enterprise API

Simple, embeddable map image with minimal code.



Geocoding API  
Google Enterprise API

Convert between addresses and geographic coordinates.



Street View Static API  
Google Enterprise API

Real-world imagery and panoramas.



<https://console.cloud.google.com/apis/library/maps-android-backend.googleapis.com?project=lab4maps-343109>



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≡ Google Cloud Platform

• Lab4Map ▾



## Maps SDK for Android

Google

Maps for your native Android app.

ENABLE

[OVERVIEW](#)

[DOCUMENTATION](#)

[SUPPORT](#)

### Overview

Add maps based on Google Maps data to your Android application with the Maps SDK for Android. The SDK automatically handles access to Google

Additional details



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Google Maps Platform

APIs



Overview



APIs



Metrics



Quotas



Credentials



Support



Solution Library NEW



Map Management



Map Styles

## Enabled APIs

Select an API to view details. Figures are for the last 30 days.

API ↑

Requests

Maps SDK for Android

## Additional APIs

Select an API to view details in Marketplace

API

Directions API

Distance Matrix API

Maps Elevation API

Maps Embed API



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Google Maps Platform

Credentials

All Google Maps Platform APIs ▾

+ CREATE CREDENTIALS

API key

Identifies your project using a simple API key to check quota and access

OAuth client ID

Requests user consent so your app can access the user's data

Service account

Enables server-to-server, app-level authentication using robot accounts

Help me choose

Asks a few questions to help you decide which type of credential to use

## API Keys

Name

Creation date

Restrictions ↑

No API keys to display

## OAuth 2.0 Client IDs

Name

Creation date ↓

Type

Client

No OAuth clients to display

## Service Accounts

Email

Name

Usage with this service (last 30 days) ? ↓

Usage with all services (last 30 days) ?

No service accounts to display



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Google Maps Platform

Credentials

All Google Maps Platform APIs ▾

+ CREATE CREDENTIALS



Overview



APIs



Metrics



Quotas



Credentials



Support



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Map Management



Map Styles

## Credentials compatible with this API

To view all credentials visit [Credentials in APIs & Services](#)



Remember to configure the OAuth consent screen with information about your application.

### API Keys

#### Name

⚠ API key 1

## API key created

Use this key in your application by passing it with the `key=API_KEY` parameter.

Your API key

[REDACTED]



[Copy to clipboard](#)

⚠ This key is unrestricted. To prevent unauthorized use, we recommend restricting where and for which APIs it can be used. [Edit API key](#) to add restrictions. [Learn more](#)

### OAuth 2.0 Client IDs

#### Name

No OAuth clients to display

### Service Accounts

#### Email

#### Name

Usage with this service (last 30 days)

Usage with all services (last 30 days)

No service accounts to display

CLOSE

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

Project Resource Manager Device Manager

Android app manifests AndroidManifest.xml

MapsActivity.java AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <!--
            TODO: Before you run your application, you need a Google Maps API key.
            To get one, follow the directions here:
            https://developers.google.com/maps/documentation/android-sdk/get-api-key
        -->

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="YOUR_API_KEY" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        
    

```

Text Merged Manifest

Let's add the key.  
Here, we are going to add it to build.gradle (:app).

TODO Problems Terminal Logcat Profiler App Inspection Event Log Layout Inspector

Gradle sync finished in 19 s 280 ms (4 minutes ago) 1:1 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - build.gradle (app)

Lab4Map app build.gradle

Project

Resource Manager

Android

app

- manifests
- AndroidManifest.xml
- java

  - com.yangqingsun.lab4map
  - com.yangqingsun.lab4map (androidTest)
  - com.yangqingsun.lab4map (test)

- res

  - drawable
  - layout
  - mipmap
  - values

- Gradle Scripts
- build.gradle (Project: Lab4Map)
- build.gradle (Module: Lab4Map.app) **Selected**
- gradle-wrapper.properties (Gradle Version)
- proguard-rules.pro (ProGuard Rules for Lab4Map.app)
- gradle.properties (Project Properties)
- settings.gradle (Project Settings)
- local.properties (SDK Location)

MapsActivity.java AndroidManifest.xml build.gradle (:app)

You can use the Project Structure dialog to view and edit your project configuration

Open (Ctrl+Alt+Shift+S) Hide notification

Device Manager

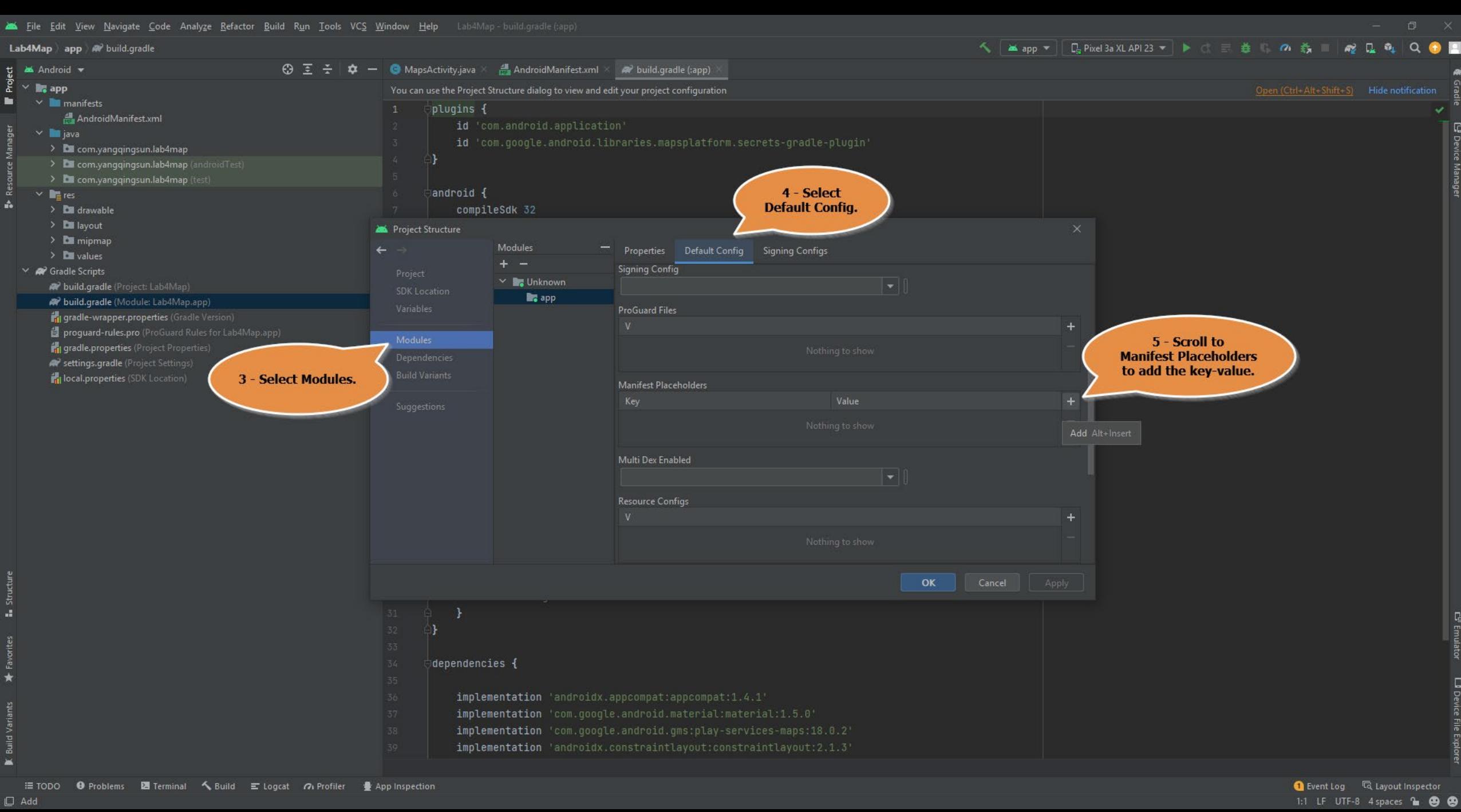
1 - Select build.gradle (:app) and open it.

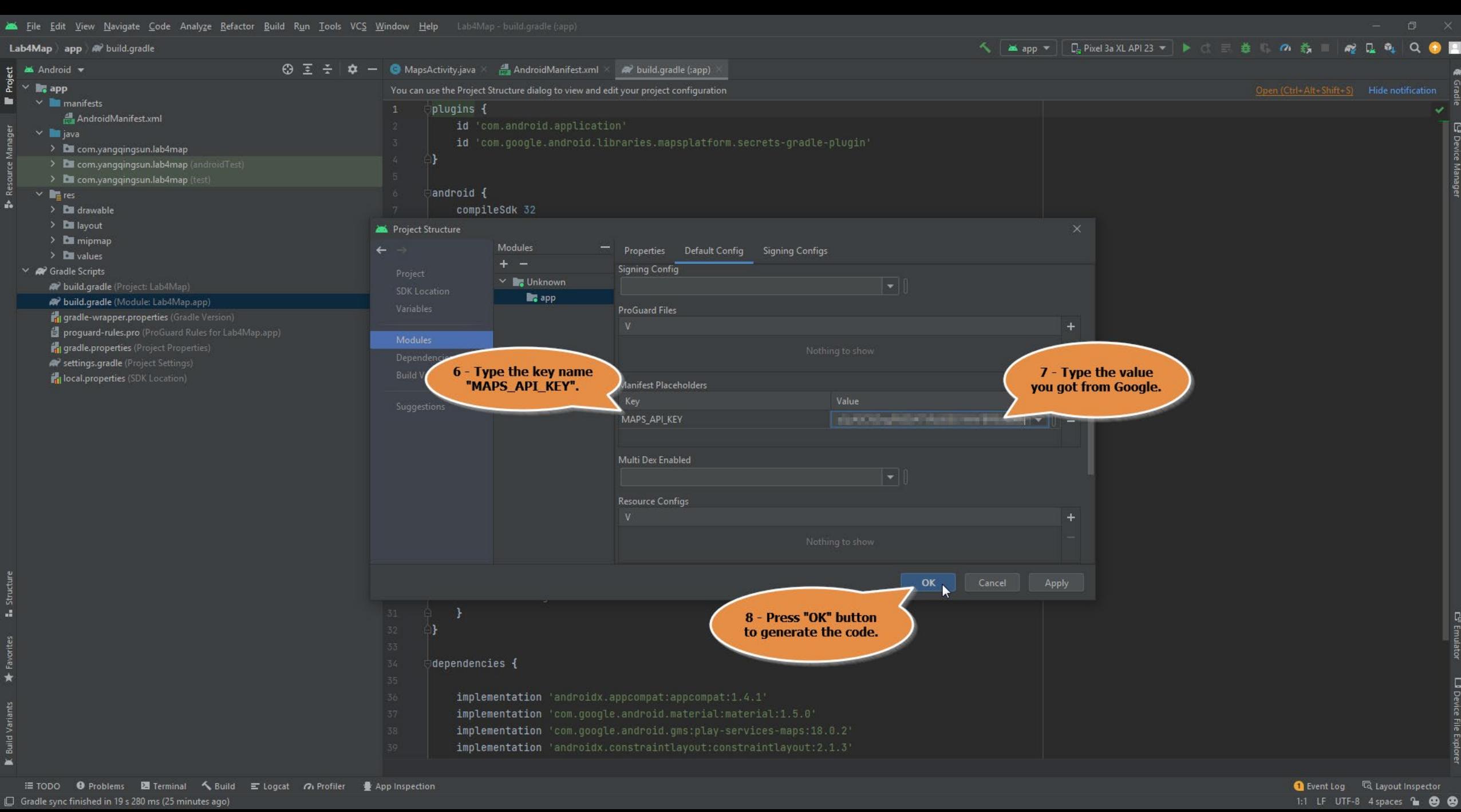
2 - Use the Project Structure dialog.

```
plugins {  
    id 'com.android.application'  
    id 'com.google.android.libraries.mapsplatform.secrets-gradle-plugin'  
}  
  
android {  
    compileSdk 32  
  
    defaultConfig {  
        applicationId "com.yangqingsun.lab4map"  
        minSdk 23  
        targetSdk 32  
        versionCode 1  
        versionName "1.0"  
  
        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"  
    }  
  
    buildTypes {  
        release {  
            minifyEnabled false  
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'  
        }  
    }  
    compileOptions {  
        sourceCompatibility JavaVersion.VERSION_1_8  
        targetCompatibility JavaVersion.VERSION_1_8  
    }  
    buildFeatures {  
        viewBinding true  
    }  
}  
  
dependencies {  
    implementation 'androidx.appcompat:appcompat:1.4.1'  
    implementation 'com.google.android.material:material:1.5.0'  
    implementation 'com.google.android.gms:play-services-maps:18.0.2'  
    implementation 'androidx.constraintlayout:constraintlayout:2.1.3'  
}
```

TODO Problems Terminal Logcat Profiler App Inspection Event Log Layout Inspector

Gradle sync finished in 19 s 280 ms (10 minutes ago) 1:1 LF UTF-8 4 spaces





File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - build.gradle (app)

Lab4Map app build.gradle

Project

Resource Manager

Gradle Scripts

build.gradle (Project: Lab4Map)

build.gradle (Module: Lab4Map.app) **gradle-wrapper.properties (Gradle Version)** proguard-rules.pro (ProGuard Rules for Lab4Map.app) gradle.properties (Project Properties) settings.gradle (Project Settings) local.properties (SDK Location)

AndroidManifest.xml AndroidManifest.xml build.gradle (app)

You can use the Project Structure dialog to view and edit your project configuration

Open (Ctrl+Alt+Shift+S) Hide notification

Device Manager

Check your MAPS\_API\_KEY.

```
plugins {
    id 'com.android.application'
    id 'com.google.android.libraries.mapsplatform.secrets-gradle-plugin'
}

android {
    compileSdk 32

    defaultConfig {
        manifestPlaceholders MAPS_API_KEY: 'AIza...'

        applicationId "com.yangqingsun.lab4map"
        minSdk 23
        targetSdk 32
        versionCode 1
        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    }

    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
        }
    }

    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }

    buildFeatures {
        viewBinding true
    }
}

dependencies {
    implementation 'androidx.appcompat:appcompat:1.4.1'
    implementation 'com.google.android.material:material:1.5.0'
    implementation 'com.google.android.gms:play-services-maps:18.0.2'
}
```

Emulator Device File Explorer

TODO Problems Terminal Logcat Profiler App Inspection

Gradle sync finished in 2 s 991 ms (2 minutes ago)

Event Log Layout Inspector

1:1 LF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - build.gradle (app)

Lab4Map app build.gradle

Project

Resource Manager

Gradle Scripts

build.gradle (Project: Lab4Map)

build.gradle (Module: Lab4Map.app)

gradle-wrapper.properties (Gradle Version)

proguard-rules.pro (ProGuard Rules for Lab4Map.app)

gradle.properties (Project Properties)

settings.gradle (Project Settings)

local.properties (SDK Location)

MapsActivity.java

AndroidManifest.xml

build.gradle (app)

Sync Now Ignore these changes

Sync Now

And then press "Sync Now".

Add two lines of dependencies.

```
targetSdk 32
versionCode 1
versionName "1.0"

testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"

buildTypes {
    release {
        minifyEnabled false
        proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
    }
}

compileOptions {
    sourceCompatibility JavaVersion.VERSION_1_8
    targetCompatibility JavaVersion.VERSION_1_8
}

buildFeatures {
    viewBinding true
}

dependencies {

    implementation 'androidx.appcompat:appcompat:1.4.1'
    implementation 'com.google.android.material:material:1.5.0'
    implementation 'com.google.android.gms:play-services-maps:18.0.2'
    implementation 'androidx.constraintlayout:constraintlayout:2.1.3'
    implementation 'com.google.android.gms:play-services-location:19.0.1'
    implementation 'com.google.android.libraries.places:places:2.5.0'
    testImplementation 'junit:junit:4.13.2'
    androidTestImplementation 'androidx.test.ext:junit:1.1.3'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'

}
```

dependencies{}

TODO Problems Terminal Logcat Profiler App Inspection

Event Log Layout Inspector

An unexpected packet was received before the handshake. (7 minutes ago)

42:70 LF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

Project Resource Manager

app manifests Java res Gradle Scripts build.gradle (Project: Lab4Map) build.gradle (Module: Lab4Map.app) gradle-wrapper.properties (Gradle Version) proguard-rules.pro (ProGuard Rules for Lab4Map.app) gradle.properties (Project Properties) settings.gradle (Project Settings) local.properties (SDK Location)

MapsActivity.java AndroidManifest.xml build.gradle (app)

Now let's modify AndroidManifest.xml file.

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <!--
            TODO: Before you run your application, you need a Google Maps API key.
            To get one, follow the directions here:
            https://developers.google.com/maps/documentation/android-sdk/get-api-key

            Once you have your API key (it starts with "AIza"), define a new property in your
            project's local.properties file (e.g. MAPS_API_KEY=Aiza...), and replace the
            "YOUR_API_KEY" string in this file with "${MAPS_API_KEY}".
        -->

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="YOUR_API_KEY" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
```

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

Gradle sync finished in 2 s 820 ms (3 minutes ago) 1:1 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

app src main AndroidManifest.xml

Project

Resource Manager

Gradle

Device Manager

Android

app

- manifests
- AndroidManifest.xml
- java
  - com.yangqingsun.lab4map
  - com.yangqingsun.lab4map (androidTest)
  - com.yangqingsun.lab4map (test)
- res
  - drawable
  - layout
  - mipmap
  - values

Gradle Scripts

- build.gradle (Project: Lab4Map)
- build.gradle (Module: Lab4Map.app) **selected**
- gradle-wrapper.properties (Gradle Version)
- proguard-rules.pro (ProGuard Rules for Lab4Map.app)
- gradle.properties (Project Properties)
- settings.gradle (Project Settings)
- local.properties (SDK Location)

Structure

Favorites

Build Variants

Emulator

Device File Explorer

MapsActivity.java

AndroidManifest.xml

build.gradle (app)

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <!--
            TODO: Before you run your application, you need a Google Maps API key.
            To get one, follow the directions here:
            https://developers.google.com/maps/documentation/android-sdk/get-api-key

            Once you have your API key (it starts with "AIza"), define a new property in your
            project's local.properties file (e.g. MAPS_API_KEY=AIza...), and replace the
            "YOUR_API_KEY" string in this file with "${MAPS_API_KEY}".
        -->

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="YOUR_API_KEY" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        
    

```

manifest

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection

Event Log Layout Inspector

Gradle sync finished in 2 s 820 ms (5 minutes ago)

7:5 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

app src main AndroidManifest.xml

Project

Resource Manager

Gradle

Device Manager

Gradle Scripts

build.gradle (Project: Lab4Map)

build.gradle (Module: Lab4Map.app)

gradle-wrapper.properties (Gradle Version)

proguard-rules.pro (ProGuard Rules for Lab4Map.app)

gradle.properties (Project Properties)

settings.gradle (Project Settings)

local.properties (SDK Location)

MapsActivity.java

AndroidManifest.xml

build.gradle (app)

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
    package="com.yangqingsun.lab4map"  
  
    <uses-permission android:name="android.permission.ACCESS\_FINE\_LOCATION" />  
    **<uses-permission android:name="android.permission.ACCESS\_COARSE\_LOCATION" />**  
  
    <application  
        android:allowBackup="true"  
        android:icon="@mipmap/ic\_launcher"  
        android:label="@string/app\_name"  
        android:roundIcon="@mipmap/ic\_launcher\_round"  
        android:supportsRtl="true"  
        android:theme="@style/Theme.Lab4Map">  
  
        <!--  
            **TODO: Before you run your application, you need a Google Maps API key.**  
            To get one, follow the directions here:  
  
            <https://developers.google.com/maps/documentation/android-sdk/get-api-key>  
  
            Once you have your API key (it starts with "AIza"), define a new property in your  
            project's local.properties file (e.g. MAPS\_API\_KEY=AIza...), and replace the  
            "YOUR\_API\_KEY" string in this file with "\${MAPS\_API\_KEY}".  
        -->  
        <meta-data  
            android:name="com.google.android.geo.API\_KEY"  
            android:value="YOUR\_API\_KEY" />  
  
        <activity  
            android:name=".MapsActivity"  
            android:exported="true"  
            android:label="@string/title\_activity\_maps">  
            <intent-filter>  
                <action android:name="android.intent.action.MAIN" />  
  
                <category android:name="android.intent.category.LAUNCHER" />  
            </intent-filter>

manifest uses-permission

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection

Event Log Layout Inspector

Gradle sync finished in 2 s 820 ms (6 minutes ago)

6.81 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

app src main AndroidManifest.xml

Project Resource Manager Favorites Build Variants Structure

MapsActivity.java AndroidManifest.xml build.gradle (app)

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map"

    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="YOUR_API_KEY" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        
    

```

manifest uses-permission

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

Gradle sync finished in 2 s 820 ms (8 minutes ago) 6.81 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

app src main AndroidManifest.xml

Project Resource Manager Device Manager

Gradle Scripts build.gradle (Project: Lab4Map) build.gradle (Module: Lab4Map.app) gradle-wrapper.properties (Gradle Version) proguard-rules.pro (ProGuard Rules for Lab4Map.app) gradle.properties (Project Properties) settings.gradle (Project Settings) local.properties (SDK Location)

MapsActivity.java AndroidManifest.xml build.gradle (app)

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map">

    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="${MAPS_API_KEY}" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        
    

```

manifest uses-permission

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

Gradle sync finished in 2 s 820 ms (10 minutes ago) 6.81 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - AndroidManifest.xml [Lab4Map.app]

app src main AndroidManifest.xml

Project Resource Manager Device Manager

Gradle Scripts build.gradle (Project: Lab4Map) build.gradle (Module: Lab4Map.app) gradle-wrapper.properties (Gradle Version) proguard-rules.pro (ProGuard Rules for Lab4Map.app) gradle.properties (Project Properties) settings.gradle (Project Settings) local.properties (SDK Location)

MapsActivity.java AndroidManifest.xml build.gradle (app)

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab4map">

    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab4Map">

        <meta-data
            android:name="com.google.android.gms.version"
            android:value="@integer/google_play_services_version" />

        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="${MAPS_API_KEY}" />

        <activity
            android:name=".MapsActivity"
            android:exported="true"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

manifest Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

Gradle sync finished in 2 s 820 ms (15 minutes ago) 36:12 CRLF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - strings.xml [Lab4Map.app]

Lab4Map app src main res values strings.xml

MapsActivity.java AndroidManifest.xml strings.xml build.gradle (app)

Project Open editor Hide notification

Resource Manager Device Manager

Now let's modify strings.xml file.

```
<resources>
    <string name="app_name">Lab4Map</string>
    <string name="title_activity_maps">MapsActivity</string>
</resources>
```

resources

AndroidManifest.xml MapsActivity.java AndroidManifest.xml strings.xml build.gradle (app)

1 <resources>
2 <string name="app\_name">Lab4Map</string>
3 <string name="title\_activity\_maps">MapsActivity</string>
4 </resources>

Project Resource Manager Device Manager

Open editor Hide notification

Gradle Scripts

build.gradle (Project: Lab4Map)
build.gradle (Module: Lab4Map.app)
gradle-wrapper.properties (Gradle Version)
proguard-rules.pro (ProGuard Rules for Lab4Map.app)
gradle.properties (Project Properties)
settings.gradle (Project Settings)
local.properties (SDK Location)

Build Variants Favorites Structure

Emulator Device File Explorer

TODO Problems Terminal Logcat Profiler App Inspection

Event Log Layout Inspector

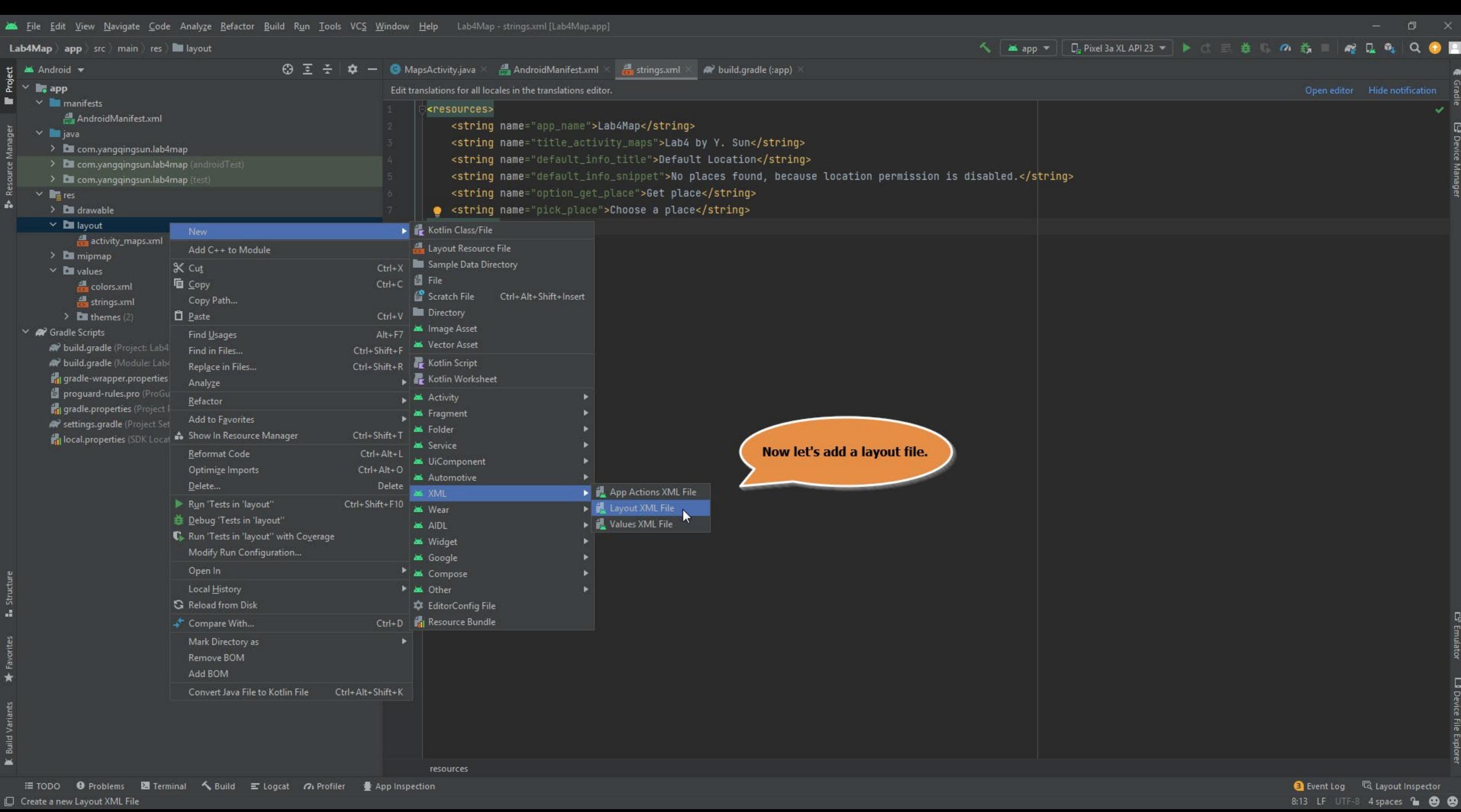
Gradle sync finished in 2 s 820 ms (17 minutes ago)

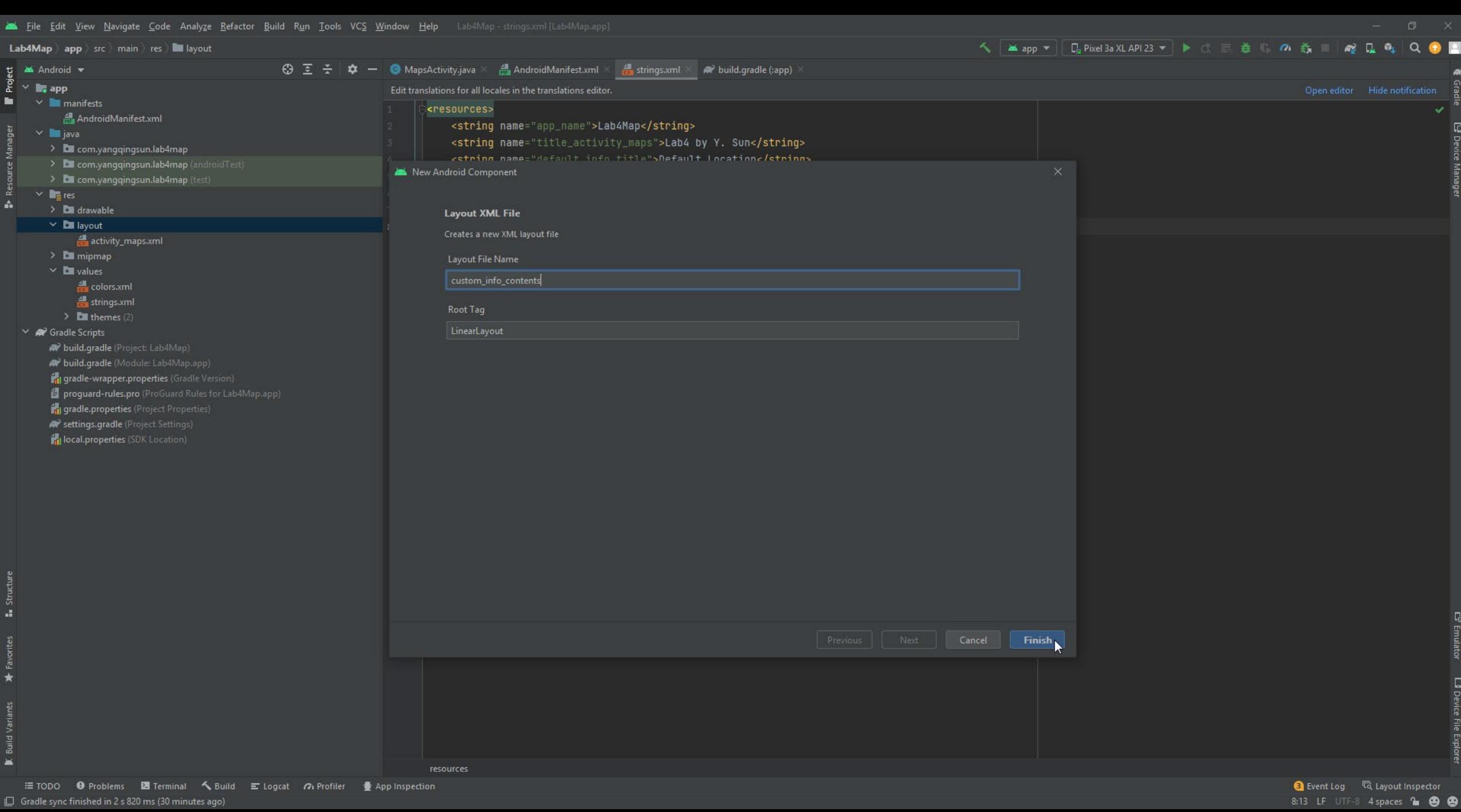
1:1 LF UTF-8 4 spaces

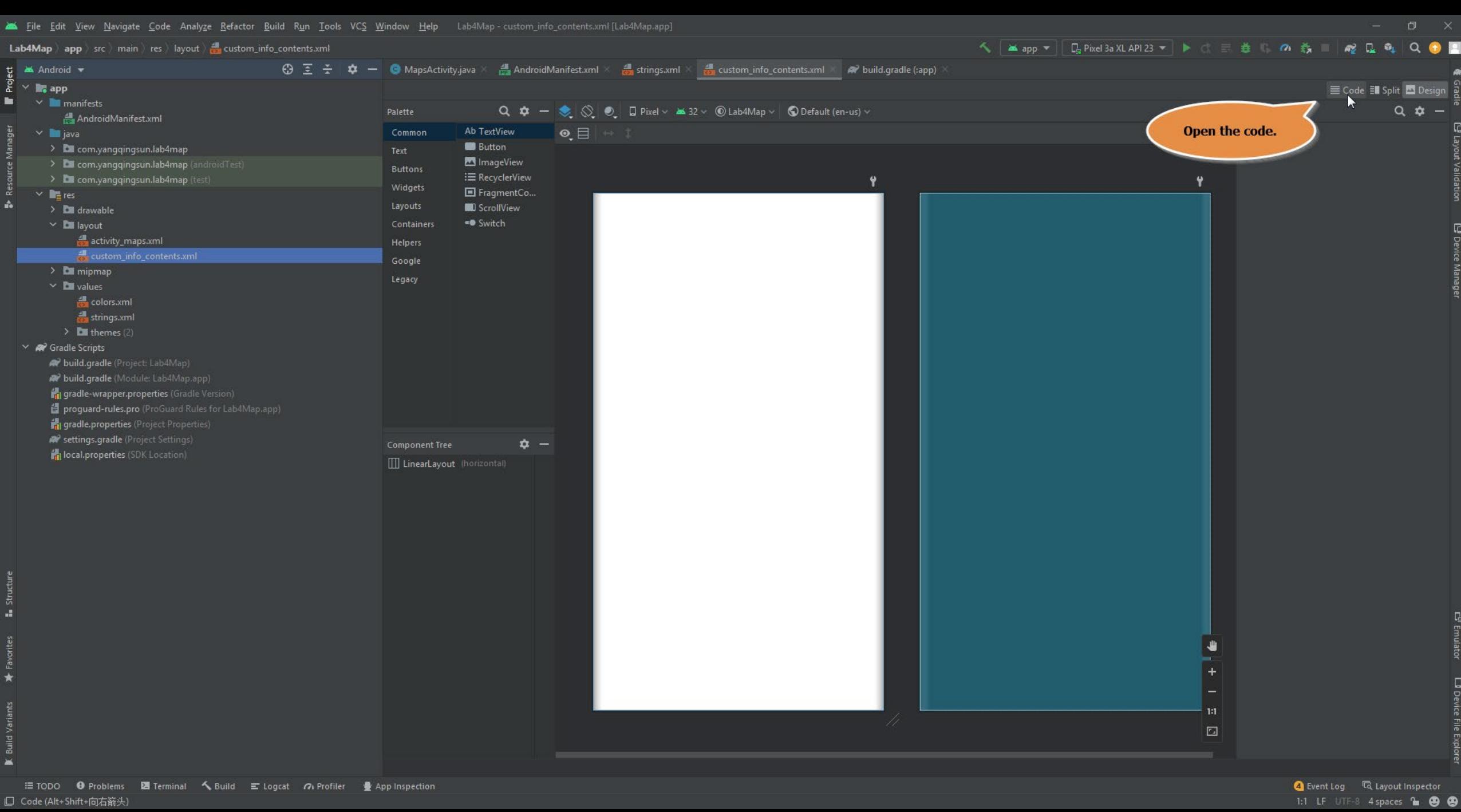
The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure under the 'app' module, including 'manifests', 'java', 'res' (with 'drawable', 'layout', 'mipmap', and 'values' subfolders), and 'Gradle Scripts'. The 'values' folder contains files like 'colors.xml' and 'strings.xml', which is currently selected and shown in the main editor area. The editor shows the XML code for the strings resource:

```
<resources>
    <string name="app_name">Lab4Map</string>
    <string name="title_activity_maps">Lab4 by Y. Sun</string>
    <string name="default_info_title">Default Location</string>
    <string name="default_info_snippet">No places found, because location permission is disabled.</string>
    <string name="option_get_place">Get place</string>
    <string name="pick_place">Choose a place</string>
</resources>
```

The top navigation bar shows tabs for 'MapsActivity.java', 'AndroidManifest.xml', 'strings.xml' (which is active), and 'build.gradle (app)'. The bottom navigation bar includes 'TODO', 'Problems', 'Terminal', 'Build', 'Logcat', 'Profiler', 'App Inspection', 'Event Log', 'Layout Inspector', and a status message about Gradle sync.







File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - custom\_info\_contents.xml [Lab4Map.app]

Lab4Map app src main res layout custom\_info\_contents.xml

Project

Resource Manager

app

- manifests
- java
- com.yangqingsun.lab4map
- com.yangqingsun.lab4map (androidTest)
- com.yangqingsun.lab4map (test)
- res
- drawable
- layout
- activity\_maps.xml
- custom\_info\_contents.xml

mipmap

values

- colors.xml
- strings.xml

themes (2)

Gradle Scripts

- build.gradle (Project: Lab4Map)
- build.gradle (Module: Lab4Map.app)
- gradle-wrapper.properties (Gradle Version)
- proguard-rules.pro (ProGuard Rules for Lab4Map.app)
- gradle.properties (Project Properties)
- settings.gradle (Project Settings)
- local.properties (SDK Location)

Code Split Design

Code

Modify the code.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
</LinearLayout>
```

LinearLayout

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

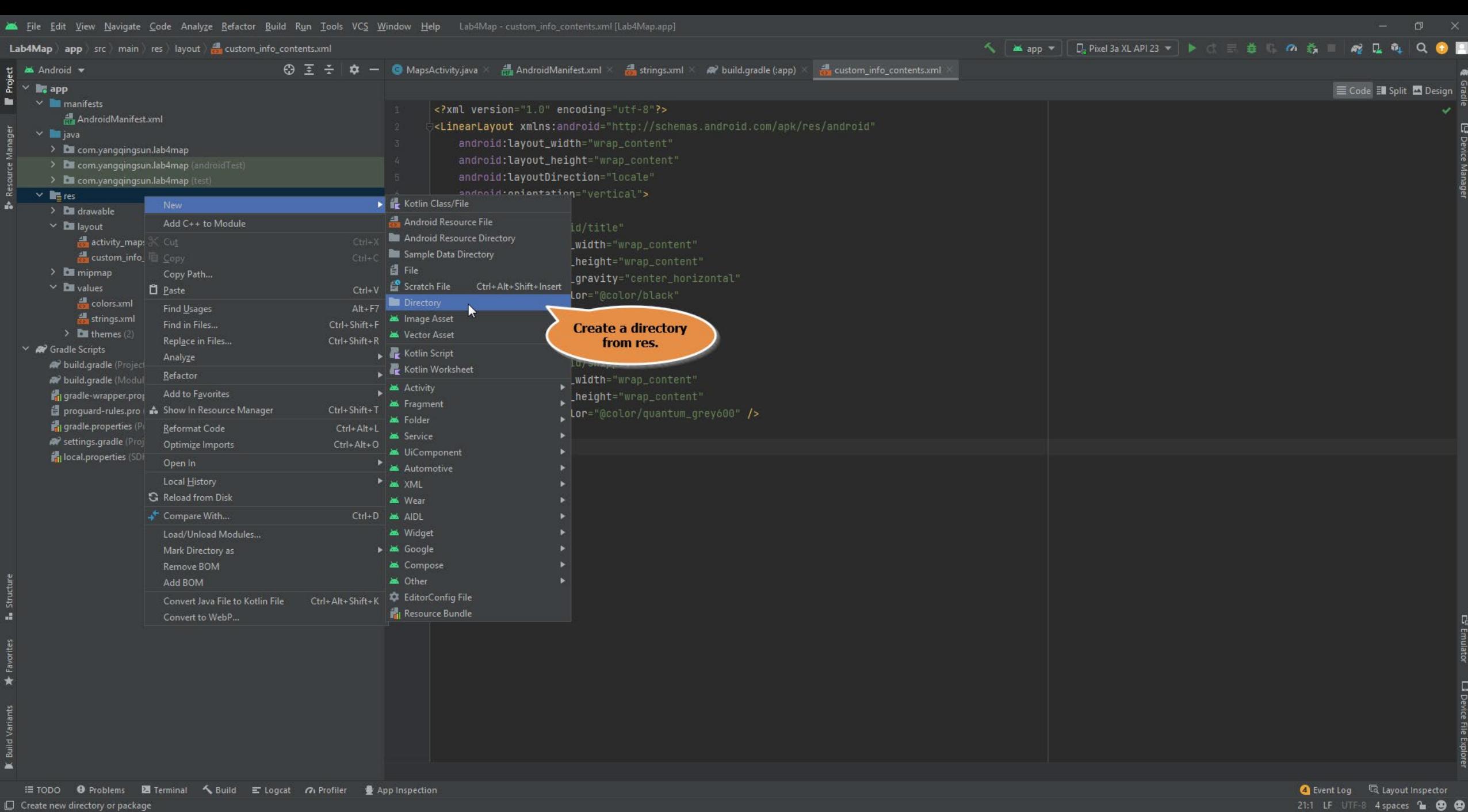
Project Lab4Map is using the following JDK location when running Gradle: // C:/Program Files/Android/Android Studio/jre // Using different JDK locations on different processes might cause Gradle to spawn multiple daemons, for example, by executing Gradle tasks from a terminal while usin... (2 minutes ago)

6:16 LF UTF-8 4 spaces

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help.
- Title Bar:** Lab4Map - custom\_info\_contents.xml [Lab4Map.app]
- Toolbar:** Includes icons for app, device, search, and more.
- Project Tab:** Shows the project structure under "app".
- Code Editor:** The current file is "custom\_info\_contents.xml", which contains the following XML code:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layoutDirection="locale"
    android:orientation="vertical">
    <TextView
        android:id="@+id/title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:textColor="@color/black"
        android:textStyle="bold" />
    <TextView
        android:id="@+id/snippet"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/quantum_grey600" />
</LinearLayout>
```
- Toolbars:** Includes "Code", "Split", "Design", "Gradle", and "Device Manager".
- Side Panels:** Resource Manager, Structure, Favorites, Build Variants.
- Bottom Bar:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.
- Status Bar:** Project Lab4Map is using the following JDK location when running Gradle: // C:/Program Files/Android/Android Studio/jre // Using different JDK locations on different processes might cause Gradle to spawn multiple daemons, for example, by executing Gradle tasks from a terminal while us... (13 minutes ago)



File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - custom\_info\_contents.xml [Lab4Map.app]

app src main res layout custom\_info\_contents.xml

Project

Resource Manager

Gradle Device Manager

Code Split Design

Project

app

- manifests
- java
- com.yangqingsun.lab4map
- com.yangqingsun.lab4map (androidTest)
- com.yangqingsun.lab4map (test)

res

- drawable
- layout
- activity\_maps.xml
- custom\_info\_contents.xml

mipmap

values

- colors.xml
- strings.xml

themes (2)

Gradle Scripts

- build.gradle (Project: Lab4Map)
- build.gradle (Module: Lab4Map.app)
- gradle-wrapper.properties (Gradle Version)
- proguard-rules.pro (ProGuard Rules for Lab4Map.app)
- gradle.properties (Project Properties)
- settings.gradle (Project Settings)
- local.properties (SDK Location)

MapsActivity.java AndroidManifest.xml strings.xml build.gradle (app) custom\_info\_contents.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layoutDirection="locale"
    android:orientation="vertical">
    <TextView
        android:id="@+id/title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:textColor="@color/black"
        android:textStyle="bold" />
    <TextView
        android:id="@+id/snippet"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/black" />
</LinearLayout>
```

New Directory

menu

Press ENTER key after typing.

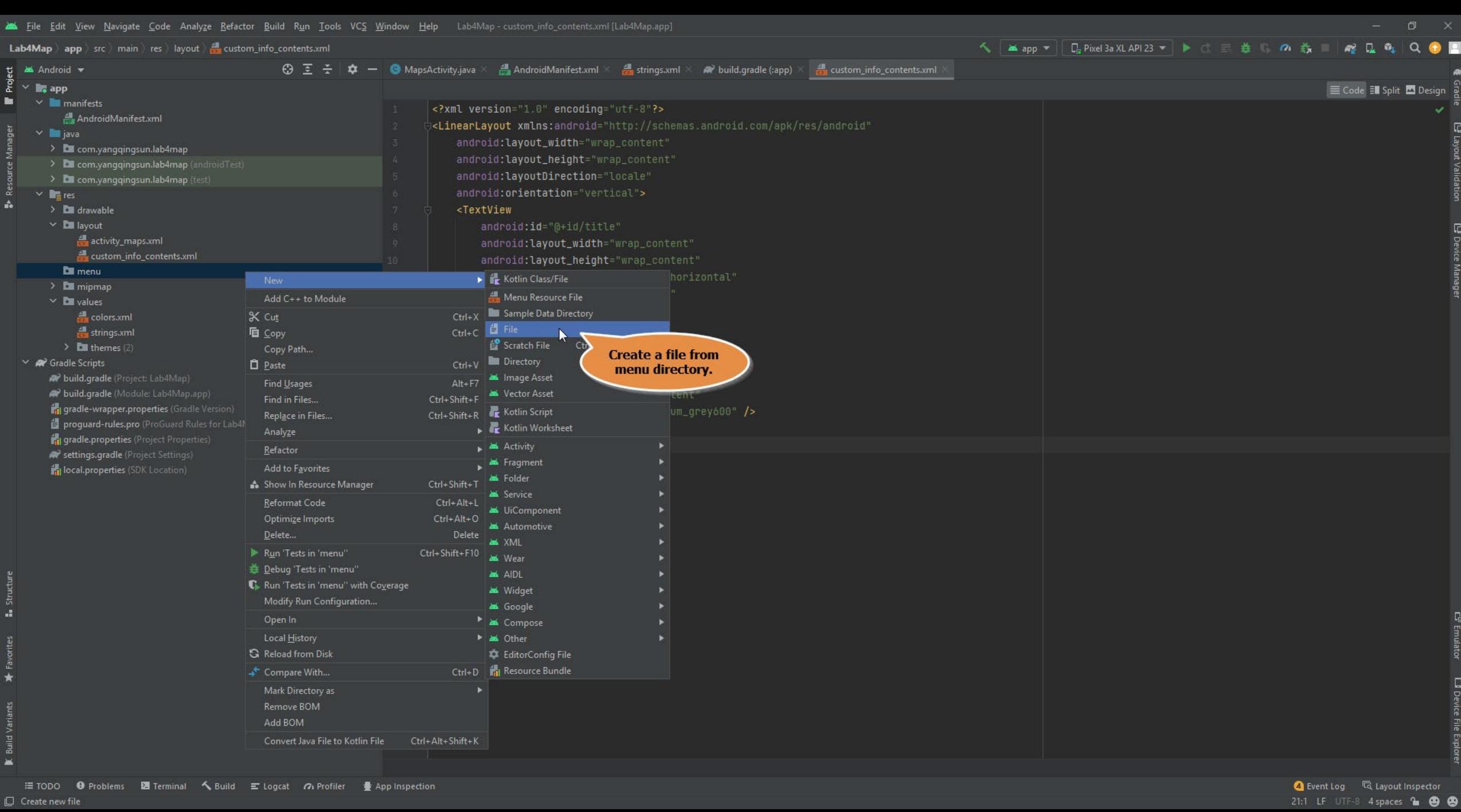
Structure Favorites Build Variants

Emulator Device File Explorer

TODO Problems Terminal Logcat Profiler App Inspection Event Log Layout Inspector

Project Lab4Map is using the following JDK location when running Gradle: // C:/Program Files/Android/Android Studio/jre // Using different JDK locations on different processes might cause Gradle to spawn multiple daemons, for example, by executing Gradle tasks from a terminal while us... (16 minutes ago)

21:1 LF UTF-8 4 spaces 😄



File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - custom\_info\_contents.xml [Lab4Map.app]

app src main res layout custom\_info\_contents.xml

Project

Resource Manager

Gradle Scripts

build.gradle (Project: Lab4Map)  
build.gradle (Module: Lab4Map.app)  
gradle-wrapper.properties (Gradle Version)  
proguard-rules.pro (ProGuard Rules for Lab4Map.app)  
gradle.properties (Project Properties)  
settings.gradle (Project Settings)  
local.properties (SDK Location)

Code Split Design

Layout Validation

Device Manager

Emulator Device File Explorer

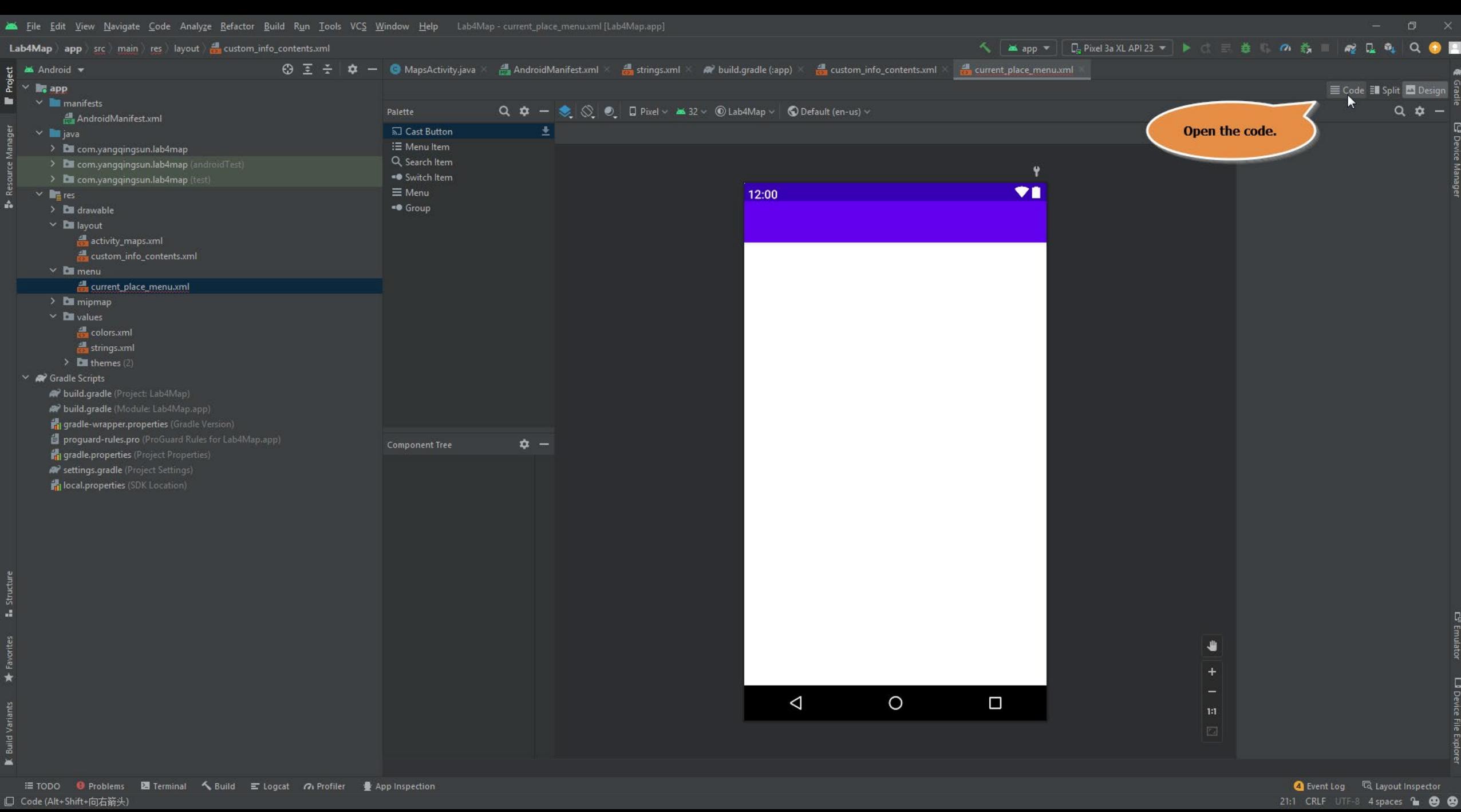
Project Structure Favorites Build Variants

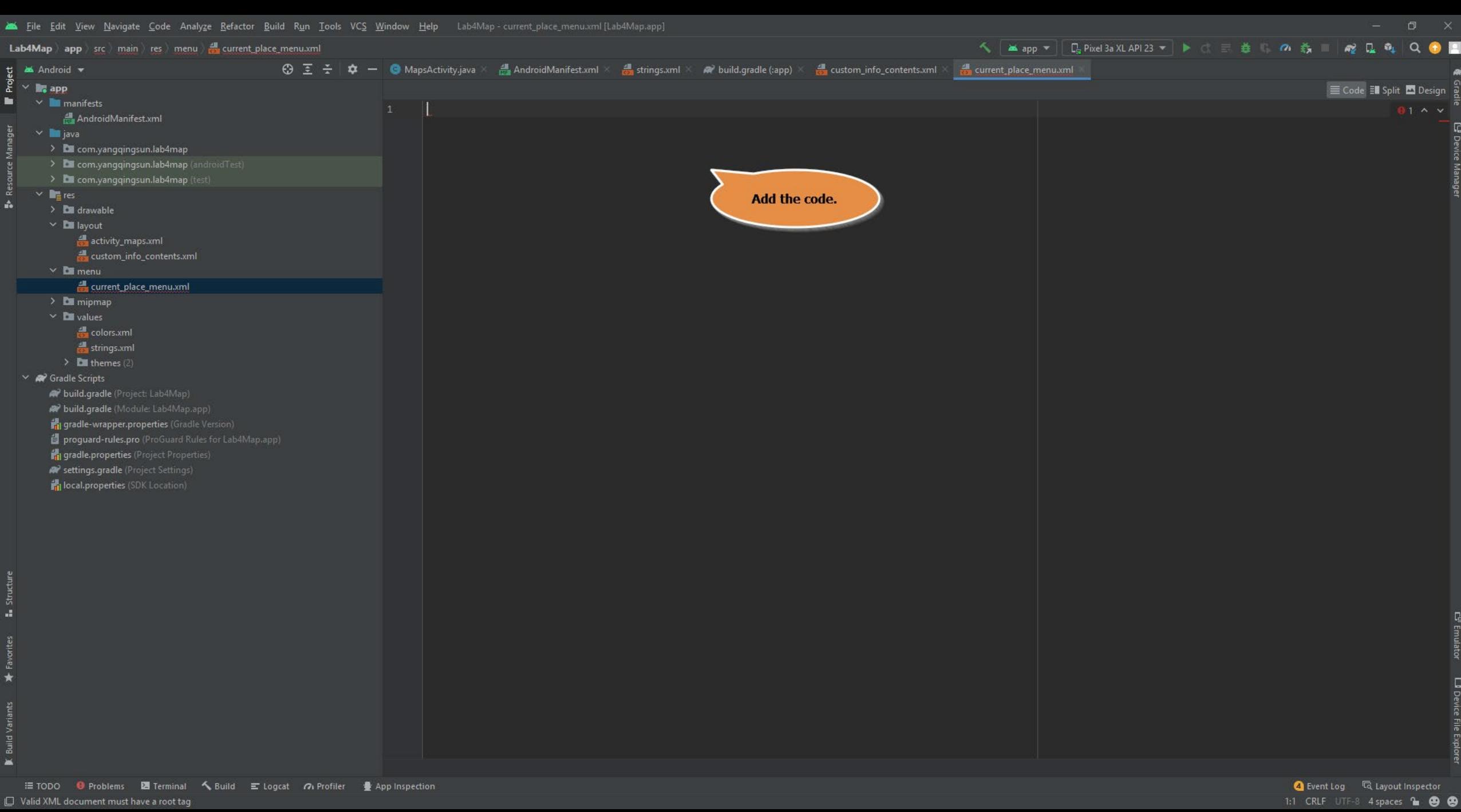
custom\_info\_contents.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layoutDirection="locale"
    android:orientation="vertical">
    <TextView
        android:id="@+id/title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:textColor="@color/black"
        android:textStyle="bold" />
    <TextView
        android:id="@+id/snippet"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="@color/current_place_menu_color" />
</LinearLayout>
```

New File  
current\_place\_menu.xml

Press ENTER key after typing.





File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - current\_place\_menu.xml [Lab4Map.app]

Lab4Map app src main res menu current\_place\_menu.xml

Project

Resource Manager

Gradle Scripts

Build Variants Favorites Structure

Code Split Design

Device Manager

Emulator Device File Explorer

TODO Problems Terminal Logcat Profiler App Inspection Event Log Layout Inspector

Project Lab4Map is using the following JDK location when running Gradle: // C:/Program Files/Android/Android Studio/jre // Using different JDK locations on different processes might cause Gradle to spawn multiple daemons, for example, by executing Gradle tasks from a terminal while ... (28 minutes ago)

9:1 CRLF UTF-8 4 spaces

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:app="http://schemas.android.com/apk/res-auto">
    <item
        android:id="@+id/option_get_place"
        android:title="@string/option_get_place"
        app:showAsAction="always"/>
</menu>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Project Manager Resource Manager Project

MapsActivity.java AndroidManifest.xml strings.xml build.gradle (app) custom\_info\_contents.xml current\_place\_menu.xml

Now let's modify MapsActivity.java file.

```
package com.yangqingsun.lab4map;

import ...

public class MapsActivity extends FragmentActivity implements OnMapReadyCallback {

    private GoogleMap mMap;
    private ActivityMapsBinding binding;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        binding = ActivityMapsBinding.inflate(getLayoutInflater());
        setContentView(binding.getRoot());

        // Obtain the SupportMapFragment and get notified when the map is ready to be used.
        SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
            .findFragmentById(R.id.map);
        mapFragment.getMapAsync(callback: this);
    }

    /**
     * Manipulates the map once available.
     * This callback is triggered when the map is ready to be used.
     * This is where we can add markers or lines, add listeners or move the camera. In this case,
     * we just add a marker near Sydney, Australia.
     * If Google Play services is not installed on the device, the user will be prompted to install
     * it inside the SupportMapFragment. This method will only be triggered once the user has
     * installed Google Play services and returned to the app.
     */
    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;

        // Add a marker in Sydney and move the camera
        LatLng sydney = new LatLng(latitude: -34, longitude: 151);
        mMap.addMarker(new MarkerOptions().position(sydney).title("Marker in Sydney"));
        mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney));
    }
}
```

TODO Problems Terminal Logcat Profiler App Inspection Event Log Layout Inspector

Project Lab4Map is using the following JDK location when running Gradle: // C:/Program Files/Android/Android Studio/jre // Using different JDK locations on different processes might cause Gradle to spawn multiple daemons, for example, by executing Gradle tasks from a terminal while us... (30 minutes ago)

51:2 LF UTF-8 4 spaces 😊

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The code editor displays the Java file `MapsActivity.java`, which imports various Android and Google Play Services classes. The project structure on the left shows the app module with its manifest, Java files (including `MapsActivity`), resources, and Gradle scripts. The bottom navigation bar includes tabs for Run, TODO, Problems, Terminal, Build, Logcat, Profiler, and App Inspection. The status bar at the bottom right shows the build time and other system information.

```
package com.yangqingsun.lab4map;

import android.content.DialogInterface;
import android.content.pm.PackageManager;
import android.location.Location;
import android.os.Bundle;

import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.FrameLayout;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;

import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationServices;
import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.CameraPosition;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.Marker;
import com.google.android.gms.maps.model.MarkerOptions;
import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;

import com.google.android.libraries.places.api.Places;
import com.google.android.libraries.places.api.model.Place;
import com.google.android.libraries.places.api.model.PlaceLikelihood;
import com.google.android.libraries.places.api.net.FindCurrentPlaceRequest;
import com.google.android.libraries.places.api.net.FindCurrentPlaceResponse;
import com.google.android.libraries.places.api.net.PlacesClient;

import java.util.Arrays;
```

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the main editor window shows the code for 'MapsActivity.java'. The code implements a map activity that displays the current location. It imports various Google Play Services libraries and defines several private fields including a Google Map, camera position, PlacesClient, fused location provider client, default location, and last known location. It also defines constants for camera position and location keys.

```
import com.google.android.libraries.places.api.net.FindCurrentPlaceRequest;
import com.google.android.libraries.places.api.net.FindCurrentPlaceResponse;
import com.google.android.libraries.places.api.net.PlacesClient;

import java.util.Arrays;
import java.util.List;

/**
 * An activity that displays a map showing the place at the device's current location.
 */
public class MapsActivity extends AppCompatActivity
    implements OnMapReadyCallback {

    private static final String TAG = MapsActivity.class.getSimpleName();
    private GoogleMap mMap;
    private CameraPosition cameraPosition;

    // The entry point to the Places API.
    private PlacesClient placesClient;

    // The entry point to the Fused Location Provider.
    private FusedLocationProviderClient fusedLocationProviderClient;

    // A default location (Sydney, Australia) and default zoom to use when location permission is
    // not granted.
    private final LatLng defaultLocation = new LatLng(-33.8523341, 151.2106085);
    private static final int DEFAULT_ZOOM = 15;
    private static final int PERMISSIONS_REQUEST_ACCESS_FINE_LOCATION = 1;
    private boolean locationPermissionGranted;

    // The geographical location where the device is currently located. That is, the last-known
    // location retrieved by the Fused Location Provider.
    private Location lastKnownLocation;

    // Keys for storing activity state.
    // [START maps_current_place_state_keys]
    private static final String KEY_CAMERA_POSITION = "camera_position";
    private static final String KEY_LOCATION = "location";
    // [END maps_current_place_state_keys]

    // Used for selecting the current place.
    ...
```

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The main window displays the Java code for 'MapsActivity.java'. The code handles the creation of a map activity, setting up location services, and displaying the current place. The code includes imports for Context, Fragment, MapFragment, AppCompatActivity, and various Google Play Services classes. It uses Parcelable for location and camera position, and initializes PlacesClient and FusedLocationProviderClient. The code also sets the content view to 'activity\_maps' and finds a fragment by ID.

```
private static final String KEY_CAMERA_POSITION = "camera_position";
private static final String KEY_LOCATION = "location";
// [END maps_current_place_state_keys]

// Used for selecting the current place.
private static final int M_MAX_ENTRIES = 5;
private String[] likelyPlaceNames;
private String[] likelyPlaceAddresses;
private List[] likelyPlaceAttributions;
private LatLng[] likelyPlaceLatLngs;

// [START maps_current_place_on_create]
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    // [START_EXCLUDE silent]
    // [START maps_current_place_on_create_save_instance_state]
    // Retrieve location and camera position from saved instance state.
    if (savedInstanceState != null) {
        lastKnownLocation = savedInstanceState.getParcelable(KEY_LOCATION);
        cameraPosition = savedInstanceState.getParcelable(KEY_CAMERA_POSITION);
    }
    // [END maps_current_place_on_create_save_instance_state]
    // [END_EXCLUDE]

    // Retrieve the content view that renders the map.
    setContentView(R.layout.activity_maps);

    // [START_EXCLUDE silent]
    // Construct a PlacesClient
    Places.initialize(getApplicationContext(), apiKey: "${MAPS_API_KEY}");
    placesClient = Places.createClient(context: this);

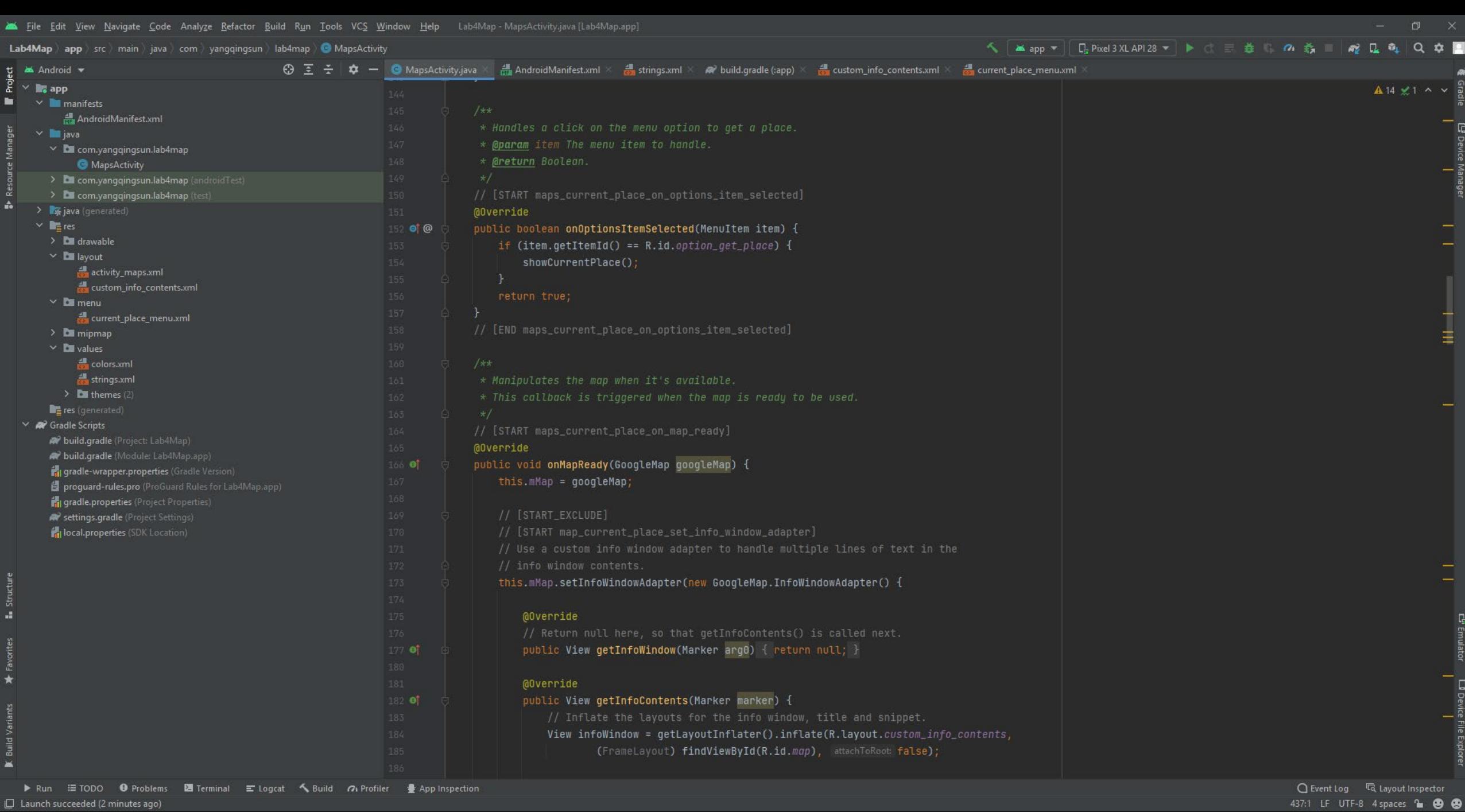
    // Construct a FusedLocationProviderClient.
    fusedLocationProviderClient = LocationServices.getFusedLocationProviderClient(activity: this);

    // Build the map.
    // [START maps_current_place_map_fragment]
    SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
        .findFragmentById(R.id.map);

```

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the right side shows the code editor with the file 'MapsActivity.java' selected. The code implements a map fragment and handles its state saving and menu creation.

```
109 // Build the map.  
110 // [START maps_current_place_map_fragment]  
111 SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()  
112     .findFragmentById(R.id.map);  
113 mapFragment.getMapAsync(callback: this);  
114 // [END maps_current_place_map_fragment]  
115 // [END_EXCLUDE]  
116 }  
117 // [END maps_current_place_on_create]  
118  
119 /**  
 * Saves the state of the map when the activity is paused.  
 */  
120 // [START maps_current_place_on_save_instance_state]  
121 @Override  
122 protected void onSaveInstanceState(Bundle outState) {  
123     if (mMap != null) {  
124         outState.putParcelable(KEY_CAMERA_POSITION, mMap.getCameraPosition());  
125         outState.putParcelable(KEY_LOCATION, lastKnownLocation);  
126     }  
127     super.onSaveInstanceState(outState);  
128 }  
129 // [END maps_current_place_on_save_instance_state]  
130  
131 /**  
 * Sets up the options menu.  
 * @param menu The options menu.  
 * @return Boolean.  
 */  
132 @Override  
133 public boolean onCreateOptionsMenu(Menu menu) {  
134     getMenuInflater().inflate(R.menu.current_place_menu, menu);  
135     return true;  
136 }  
137  
138 /**  
 * Handles a click on the menu option to get a place.  
 * @param item The menu item to handle.  
 * @return Boolean.  
 */  
139 // [START maps_current_place_onOptionsItemSelected]  
140 @Override  
141 public boolean onOptionsItemSelected(MenuItem item) {  
142     switch (item.getItemId()) {  
143         case R.id.action_settings:  
144             Intent intent = new Intent(this, SettingsActivity.class);  
145             startActivity(intent);  
146             return true;  
147         case R.id.action_map:  
148             Intent intent2 = new Intent(this, MapsActivity.class);  
149             startActivity(intent2);  
150             return true;  
151     }  
152     return super.onOptionsItemSelected(item);  
153 }  
154 // [END maps_current_place_onOptionsItemSelected]
```



The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the main editor window shows the code for `MapsActivity.java`. The code implements a custom info window for a map marker, handles location permissions, and updates the map's location.

```
// Inflate the layouts for the info window, title and snippet.  
View infoWindow = getLayoutInflater().inflate(R.layout.custom_info_contents,  
        (FrameLayout) findViewById(R.id.map), attachToRoot: false);  
  
TextView title = infoWindow.findViewById(R.id.title);  
title.setText(marker.getTitle());  
  
TextView snippet = infoWindow.findViewById(R.id.snippet);  
snippet.setText(marker.getSnippet());  
  
return infoWindow;  
}  
};  
// [END map_current_place_set_info_window_adapter]  
  
// Prompt the user for permission.  
getLocationPermission();  
// [END_EXCLUDE]  
  
// Turn on the My Location layer and the related control on the map.  
updateLocationUI();  
  
// Get the current location of the device and set the position of the map.  
getDeviceLocation();  
}  
// [END maps_current_place_on_map_ready]  
  
/**  
 * Gets the current location of the device, and positions the map's camera.  
 */  
// [START maps_current_place_get_device_location]  
private void getDeviceLocation() {  
    /*  
     * Get the best and most recent location of the device, which may be null in rare  
     * cases when a location is not available.  
     */  
    try {  
        if (locationPermissionGranted) {  
            Task<Location> locationResult = fusedLocationProviderClient.getLastLocation();  
            locationResult.addOnCompleteListener(activity: this, new OnCompleteListener<Location>() {  
                @Override  
                public void onComplete(Task<Location> task) {  
                    if (task.isSuccessful()) {  
                        Location location = task.getResult();  
                        if (location != null) {  
                            // Set the camera position to the device's last known location.  
                            map.animateCamera(CameraUpdateFactory.newLatLngZoom(new LatLng(location.getLatitude(), location.getLongitude()),  
                                15));  
                        }  
                    }  
                }  
            });  
        }  
    } catch (Exception e) {  
        Log.e("MapsActivity", "Error getting device location: " + e.getMessage());  
    }  
}  
}
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Project Manager Resource Manager

MapsActivity.java

```
try {
    if (locationPermissionGranted) {
        Task<Location> locationResult = fusedLocationProviderClient.getLastLocation();
        locationResult.addOnCompleteListener(activity: this, new OnCompleteListener<Location>() {
            @Override
            public void onComplete(@NonNull Task<Location> task) {
                if (task.isSuccessful()) {
                    // Set the map's camera position to the current location of the device.
                    lastKnownLocation = task.getResult();
                    if (lastKnownLocation != null) {
                        mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(
                            new LatLng(lastKnownLocation.getLatitude(),
                                lastKnownLocation.getLongitude()), DEFAULT_ZOOM));
                    }
                } else {
                    Log.d(TAG, msg: "Current location is null. Using defaults.");
                    Log.e(TAG, msg: "Exception: %s", task.getException());
                    mMap.moveCamera(CameraUpdateFactory
                        .newLatLngZoom(defaultLocation, DEFAULT_ZOOM));
                    mMap.getUiSettings().setMyLocationButtonEnabled(false);
                }
            }
        });
    }
} catch (SecurityException e) {
    Log.e(tag: "Exception: %s", e.getMessage(), e);
}
// [END maps_current_place_get_device_location]
/***
 * Prompts the user for permission to use the device location.
 */
// [START maps_current_place_location_permission]
private void getLocationPermission() {
    /*
     * Request location permission, so that we can get the location of the
     * device. The result of the permission request is handled by a callback,
     * onRequestPermissionsResult.
     */
    if (ContextCompat.checkSelfPermission(this.getApplicationContext(),
        Manifest.permission.ACCESS_FINE_LOCATION)
```

Run TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

Launch succeeded (9 minutes ago) 437:1 LF UTF-8 4 spaces

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the main editor window shows the code for 'MapsActivity.java'. The code handles location permissions and UI updates.

```
255 * Request location permission, so that we can get the location of the
256 * device. The result of the permission request is handled by a callback,
257 * onRequestPermissionsResult.
258 */
259 if (ContextCompat.checkSelfPermission(this.getApplicationContext(),
260         android.Manifest.permission.ACCESS_FINE_LOCATION)
261         == PackageManager.PERMISSION_GRANTED) {
262     locationPermissionGranted = true;
263 } else {
264     ActivityCompat.requestPermissions(activity, this,
265             new String[]{android.Manifest.permission.ACCESS_FINE_LOCATION},
266             PERMISSIONS_REQUEST_ACCESS_FINE_LOCATION);
267 }
268 // [END maps_current_place_location_permission]
269 /**
270 * Handles the result of the request for location permissions.
271 */
272 // [START maps_current_place_on_request_permissions_result]
273 @Override
274 public void onRequestPermissionsResult(int requestCode,
275                                     @NonNull String[] permissions,
276                                     @NonNull int[] grantResults) {
277     locationPermissionGranted = false;
278     if (requestCode
279             == PERMISSIONS_REQUEST_ACCESS_FINE_LOCATION) // If request is cancelled, the result arrays are empty.
280     if (grantResults.length > 0
281             && grantResults[0] == PackageManager.PERMISSION_GRANTED) {
282         locationPermissionGranted = true;
283     }
284     else {
285         super.onRequestPermissionsResult(requestCode, permissions, grantResults);
286     }
287     updateLocationUI();
288 }
289 // [END maps_current_place_on_request_permissions_result]
290 /**
291 * Prompts the user to select the current place from a list of likely places, and shows the
292 * current place on the map - provided the user has granted location permission.
293 */
294
```

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the main editor window shows the code for `MapsActivity.java`. The code implements functionality to prompt the user to select a current place from a list of likely places on a map.

```
// [END maps_current_place_on_request_permissions_result]  
//  
/**  
 * Prompts the user to select the current place from a list of likely places, and shows the  
 * current place on the map - provided the user has granted location permission.  
 */  
// [START maps_current_place_show_current_place]  
private void showCurrentPlace() {  
    if (mMap == null) {  
        return;  
    }  
  
    if (locationPermissionGranted) {  
        // Use fields to define the data types to return.  
        List<Place.Field> placeFields = Arrays.asList(Place.Field.NAME, Place.Field.ADDRESS,  
            Place.Field.LAT_LNG);  
  
        // Use the builder to create a FindCurrentPlaceRequest.  
        FindCurrentPlaceRequest request =  
            FindCurrentPlaceRequest.newInstance(placeFields);  
  
        // Get the likely places - that is, the businesses and other points of interest that  
        // are the best match for the device's current location.  
        @SuppressWarnings("MissingPermission") final  
        Task<FindCurrentPlaceResponse> placeResult =  
            placesClient.findCurrentPlace(request);  
        placeResult.addOnCompleteListener(new OnCompleteListener<FindCurrentPlaceResponse>() {  
            @Override  
            public void onComplete(@NonNull Task<FindCurrentPlaceResponse> task) {  
                if (task.isSuccessful() && task.getResult() != null) {  
                    FindCurrentPlaceResponse likelyPlaces = task.getResult();  
  
                    // Set the count, handling cases where less than 5 entries are returned.  
                    int count;  
                    if (likelyPlaces.getPlaceLikelihoods().size() < M_MAX_ENTRIES) {  
                        count = likelyPlaces.getPlaceLikelihoods().size();  
                    } else {  
                        count = M_MAX_ENTRIES;  
                    }  
  
                    int i = 0;
```

The code uses the Google Places API to find the current place based on the device's location. It handles cases where fewer than 5 entries are returned by setting the count to the size of the list. The code is annotated with JavaDoc comments and includes suppression of missing permission warnings.

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the main editor area shows the code for `MapsActivity.java`. The code handles location permissions and likely places.

```
327 } else {  
328     count = M_MAX_ENTRIES;  
329 }  
330  
331     int i = 0;  
332     likelyPlaceNames = new String[count];  
333     likelyPlaceAddresses = new String[count];  
334     likelyPlaceAttributions = new List<String>[count];  
335     likelyPlaceLatLngs = new LatLng[count];  
336  
337     for (PlaceLikelihood placeLikelihood : likelyPlaces.getPlaceLikelihoods()) {  
338         // Build a list of likely places to show the user.  
339         likelyPlaceNames[i] = placeLikelihood.getPlace().getName();  
340         likelyPlaceAddresses[i] = placeLikelihood.getPlace().getAddress();  
341         likelyPlaceAttributions[i] = placeLikelihood.getPlace()  
342             .getAttributions();  
343         likelyPlaceLatLngs[i] = placeLikelihood.getPlace().getLatLang();  
344  
345         i++;  
346         if (i > (count - 1)) {  
347             break;  
348         }  
349     }  
350  
351     // Show a dialog offering the user the list of likely places, and add a  
352     // marker at the selected place.  
353     MapsActivity.this.openPlacesDialog();  
354 }  
355 else {  
356     Log.e(TAG, msg: "Exception: %s", task.getException());  
357 }  
358 }  
359 }  
360 } else {  
361     // The user has not granted permission.  
362     Log.i(TAG, msg: "The user did not grant location permission.");  
363  
364     // Add a default marker, because the user hasn't selected a place.  
365     mMap.addMarker(new MarkerOptions()  
366         .title(getString(R.string.default_info_title))  
367         .position(defaultLocation)  
368         .snippet(getString(R.string.default_info_snippet)));  
369 }
```

The status bar at the bottom indicates 'Launch succeeded (9 minutes ago)' and the bottom right corner shows '437:1 LF UTF-8 4 spaces'.

The screenshot shows the Android Studio interface with the project 'Lab4Map' open. The left sidebar displays the project structure, and the main editor window shows the code for 'MapsActivity.java'. The code handles location permissions and displays a dialog for selecting a place from a list.

```
363 // Add a default marker, because the user hasn't selected a place.
364 mMap.addMarker(new MarkerOptions()
365     .title(getString(R.string.default_info_title))
366     .position(defaultLocation)
367     .snippet(getString(R.string.default_info_snippet)));
368
369 // Prompt the user for permission.
370 getLocationPermission();
371 }
372 }
373 }
374 // [END maps_current_place_show_current_place]
375
376 /**
377 * Displays a form allowing the user to select a place from a list of likely places.
378 */
379 // [START maps_current_place_open_places_dialog]
380 private void openPlacesDialog() {
381     // Ask the user to choose the place where they are now.
382     DialogInterface.OnClickListener listener = new DialogInterface.OnClickListener() {
383         @Override
384         public void onClick(DialogInterface dialog, int which) {
385             // The "which" argument contains the position of the selected item.
386             LatLng markerLatLng = likelyPlaceLatLngs[which];
387             String markerSnippet = likelyPlaceAddresses[which];
388             if (likelyPlaceAttributions[which] != null) {
389                 markerSnippet = markerSnippet + "\n" + likelyPlaceAttributions[which];
390             }
391
392             // Add a marker for the selected place, with an info window
393             // showing information about that place.
394             mMap.addMarker(new MarkerOptions()
395                 .title(luckyPlaceNames[which])
396                 .position(markerLatLng)
397                 .snippet(markerSnippet));
398
399             // Position the map's camera at the location of the marker.
400             mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,
401                     DEFAULT_ZOOM));
402         }
403     };
404 }
```

The bottom status bar indicates 'Launch succeeded (10 minutes ago)' and shows system information like battery level, signal strength, and network status.

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Project Resource Manager Build Variants Favorites

MapsActivity.java AndroidManifest.xml strings.xml build.gradle(app) custom\_info\_contents.xml current\_place\_menu.xml

// Position the map's camera at the location of the marker.  
mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,  
DEFAULT\_ZOOM));  
}  
};  
}  
}  
// Display the dialog.  
AlertDialog dialog = new AlertDialog.Builder( context: this)  
.setTitle(R.string.pick\_place)  
.setItems(likelyPlaceNames, listener)  
.show();  
}  
// [END maps\_current\_place\_open\_places\_dialog]  
  
/\*\*  
 \* Updates the map's UI settings based on whether the user has granted location permission.  
 \*/  
// [START maps\_current\_place\_update\_location\_ui]  
private void updateLocationUI() {  
if (mMap == null) {  
return;  
}  
try {  
if (locationPermissionGranted) {  
mMap.setMyLocationEnabled(true);  
mMap.getUiSettings().setMyLocationButtonEnabled(true);  
} else {  
mMap.setMyLocationEnabled(false);  
mMap.getUiSettings().setMyLocationButtonEnabled(false);  
lastKnownLocation = null;  
getLocationPermission();  
}  
} catch (SecurityException e) {  
Log.e( tag: "Exception: %s", e.getMessage());  
}  
}  
// [END maps\_current\_place\_update\_location\_ui]  
}

Run TODO Problems Build Logcat Profiler App Inspection Event Log Layout Inspector

Launch succeeded (11 minutes ago) 437:1 LF UTF-8 4 spaces

The screenshot shows the Android Studio interface with the project **Lab4Map** open. The **MapsActivity.java** file is the active editor. The code deals with location permissions and map UI settings.

```
// Position the map's camera at the location of the marker.  
mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,  
        DEFAULT_ZOOM));  
  
    }  
  
    // Display the dialog.  
    AlertDialog dialog = new AlertDialog.Builder( context: this )  
        .setTitle(R.string.pick_place)  
        .setItems(likelyPlaceNames, listener)  
        .show();  
    }  
    // [END maps_current_place_open_places_dialog]  
  
    /**  
     * Updates the map's UI settings based on whether the user has granted location permission.  
     */  
    // [START maps_current_place_update_location_ui]  
    private void updateLocationUI() {  
        if (mMap == null) {  
            return;  
        }  
        try {  
            if (locationPermissionGranted) {  
                mMap.setMyLocationEnabled(true);  
                mMap.getUiSettings().setMyLocationButtonEnabled(true);  
            } else {  
                mMap.setMyLocationEnabled(false);  
                mMap.getUiSettings().setMyLocationButtonEnabled(false);  
                lastKnownLocation = null;  
                getLocationPermission();  
            }  
        } catch (SecurityException e) {  
            Log.e(tag: "Exception: %s", e.getMessage());  
        }  
    }  
    // [END maps_current_place_update_location_ui]  
}
```

The **Run** toolbar button, which is highlighted with a yellow box, is located at the top right of the interface. Other visible buttons include **File**, **Edit**, **View**, **Navigate**, **Code**, **Analyze**, **Refactor**, **Build**, **Run**, **Tools**, **VCS**, **Window**, and **Help**.

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Project Resource Manager

app manifests AndroidManifest.xml strings.xml build.gradle (app) custom\_info\_contents.xml Emulator: Pixel 3a XL API 23

MapsActivity.java

```
// Position the map's camera at the location of the marker.
mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,
    DEFAULT_ZOOM));}

// Display the dialog.
AlertDialog dialog = new AlertDialog.Builder( context: this)
    .setTitle(R.string.pick_place)
    .setItems(likelyPlaceNames, listener)
    .show();
}

// [END maps_current_place_open_places_dialog]

/**
 * Updates the map's UI settings based on whether the user has granted location permission.
 */
// [START maps_current_place_update_location_ui]
private void updateLocationUI() {
    if (mMap == null) {
        return;
    }
    try {
        if (locationPermissionGranted) {
            mMap.setMyLocationEnabled(true);
            mMap.getUiSettings().setMyLocationButtonEnabled(true);
        } else {
            mMap.setMyLocationEnabled(false);
            mMap.getUiSettings().setMyLocationButtonEnabled(false);
            lastKnownLocation = null;
            getLocationPermission();
        }
    } catch (SecurityException e) {
        Log.e( tag: "Exception: %s", e.getMessage());
    }
}
// [END maps_current_place_update_location_ui]
```

Emulator: Pixel 3a XL API 23

Lab4 by Y. Sun GET PLACE

Allow Lab4Map to access this device's location?

DENY ALLOW

Launch succeeded

Run TODO Problems Terminal Build Logcat Profiler App Inspection

Launch succeeded (moments ago)

Event Log Layout Inspector

437:1 LF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Project Resource Manager

MapsActivity.java

```
// Position the map's camera at the location of the marker.
mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,
    DEFAULT_ZOOM));}

// Display the dialog.
AlertDialog dialog = new AlertDialog.Builder( context: this)
    .setTitle(R.string.pick_place)
    .setItems(likelyPlaceNames, listener)
    .show();
// [END maps_current_place_open_places_dialog]

/**
 * Updates the map's UI settings based on whether the user has granted location permission.
 */
// [START maps_current_place_update_location_ui]
private void updateLocationUI() {
    if (mMap == null) {
        return;
    }
    try {
        if (locationPermissionGranted) {
            mMap.setMyLocationEnabled(true);
            mMap.getUiSettings().setMyLocationButtonEnabled(true);
        } else {
            mMap.setMyLocationEnabled(false);
            mMap.getUiSettings().setMyLocationButtonEnabled(false);
            lastKnownLocation = null;
            getLocationPermission();
        }
    } catch (SecurityException e) {
        Log.e("tag: %s", e.getMessage());
    }
}
// [END maps_current_place_update_location_ui]
```

AndroidManifest.xml strings.xml build.gradle (app) custom\_info\_contents.xml Emulator: Pixel 3a XL API 23

Extended Controls

Lab4 by Y. Sun GET PLACE

Ireland Poland Belarus Ukraine

Germany Austria Romania

France Spain Portugal Italy Greece Turkey

Morocco Tunisia Algeria Libya Egypt

Western Sahara Mauritania Mali Niger Chad Sudan

Guinea Burkina Faso Ghana Nigeria DRC

Gabon DRC Tanzania

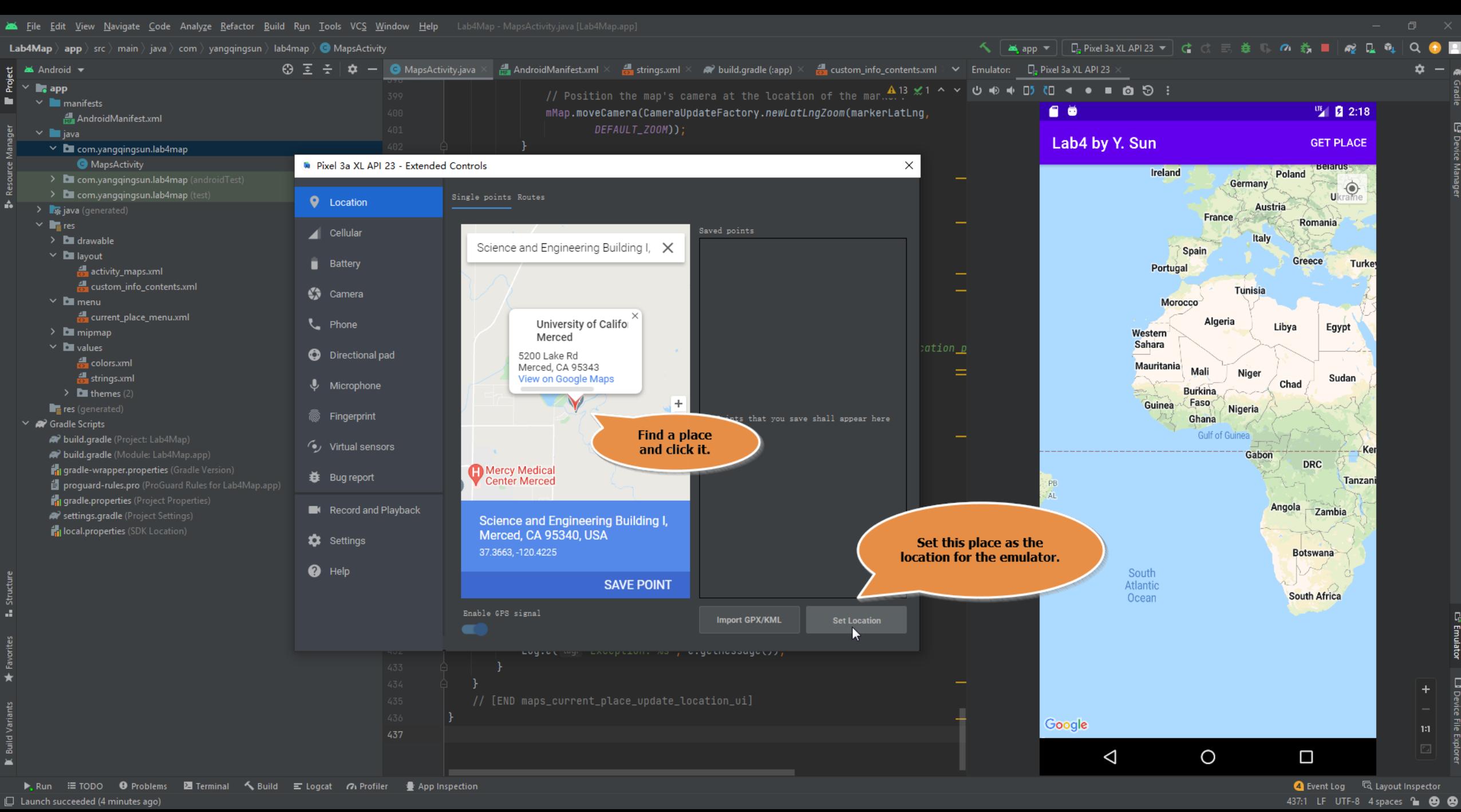
Angola Zambia Botswana South Africa

South Atlantic Ocean

Google

Run TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

Show extended controls



File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Lab4Map app src main java com.yangqingsun.lab4map MapsActivity

Project Resource Manager

app manifests AndroidManifest.xml strings.xml build.gradle(app) custom\_info\_contents.xml Emulator: Pixel 3a XL API 22

MapsActivity.java

```
399 // Position the map's camera at the location of the marker.
400 mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,
401 DEFAULT_ZOOM));
402 }
403 }

404 // Display the dialog.
405 AlertDialog dialog = new AlertDialog.Builder( context: this )
406 .setTitle(R.string.pick_place)
407 .setItems(likelyPlaceNames, listener)
408 .show();
409 }
410 }

411 // [END maps_current_place_open_places_dialog]

412 /**
413 * Updates the map's UI settings based on whether the user has granted location permission.
414 */
415 // [START maps_current_place_update_location_ui]
416 private void updateLocationUI() {
417     if (mMap == null) {
418         return;
419     }
420     try {
421         if (locationPermissionGranted) {
422             mMap.setMyLocationEnabled(true);
423             mMap.getUiSettings().setMyLocationButtonEnabled(true);
424         } else {
425             mMap.setMyLocationEnabled(false);
426             mMap.getUiSettings().setMyLocationButtonEnabled(false);
427             lastKnownLocation = null;
428             getLocationPermission();
429         }
430     } catch (SecurityException e) {
431         Log.e( tag: "Exception: %s", e.getMessage());
432     }
433 }
434 }

435 // [END maps_current_place_update_location_ui]
436 }
437 }
```

Emulator: Pixel 3a XL API 22

Enable the function by clicking "GET PLACE".

Lab4 by Y. Sun

GET PLACE

And then try to jump to the place you set previously.

Pixel 3a XL API 22

2:24

Ireland Poland Belarus Germany Turkey

Morocco Tunisia Algeria Libya Egypt

Western Sahara Mauritania Mali Niger Chad Sudan

Guinea Burkina Faso Ghana Nigeria Gabon DRC

Tanzania Angola Zambia Botswana South Africa

Gulf of Guinea South Atlantic Ocean

Google

Run TODO Problems Terminal Build Logcat Profiler App Inspection

Launch succeeded (10 minutes ago)

Event Log Layout Inspector

437:1 LF UTF-8 4 spaces

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help Lab4Map - MapsActivity.java [Lab4Map.app]

Lab4Map app src main java com.yangqingsun.lab4map MapsActivity

Project Resource Manager

app manifests AndroidManifest.xml strings.xml build.gradle(app) custom\_info\_contents.xml Emulator: Pixel 3a XL API 23

MapsActivity.java

```
399 // Position the map's camera at the location of the marker
400 mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(markerLatLng,
401 DEFAULT_ZOOM));
402 }
403 }
404 }
405 // Display the dialog.
406 AlertDialog dialog = new AlertDialog.Builder(context: this)
407 .setTitle(R.string.pick_place)
408 .setItems(likelyPlaceNames, listener)
409 .show();
410 }
411 // [END maps_current_place_open_places_dialog]
412 /**
413 * Updates the map's UI settings based on whether the user has granted location
414 */
415 // [START maps_current_place_update_location_ui]
416 private void updateLocationUI() {
417     if (mMap == null) {
418         return;
419     }
420     try {
421         if (locationPermissionGranted) {
422             mMap.setMyLocationEnabled(true);
423             mMap.getUiSettings().setMyLocationButtonEnabled(true);
424         } else {
425             mMap.setMyLocationEnabled(false);
426             mMap.getUiSettings().setMyLocationButtonEnabled(false);
427             lastKnownLocation = null;
428             getLocationPermission();
429         }
430     } catch (SecurityException e) {
431         Log.e(tag: "Exception: %s", e.getMessage());
432     }
433 }
434 // [END maps_current_place_update_location_ui]
435
436
437 }
```

Emulator: Pixel 3a XL API 23

Lab4 by Y. Sun GET PLACE

Google Merced Irrigation District Access Rd

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An unexpected packet was received before the handshake. (5 minutes ago)

437:1 LF UTF-8 4 spaces