Jetpack & AndroidX

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AndroidX is the open-source project that the Android team uses to develop, test, package, version and release libraries within Jetpack

Android Jetpack

Jetpack is a collection of Android software components to make it easier for you to develop great Android apps. These components help you follow best practices, free you from writing boilerplate code, and simplify complex tasks, so you can focus on the code you care about.

Jetpack comprises the androidx.* package libraries, unbundled from the platform APIs. This means that it offers backward compatibility and is updated more frequently than the Android platform, making sure you always have access to the latest and greatest versions of the Jetpack components.

https://developer.android.com/jetpack/

Jetpack

Introduced in 2017 to repackage existing libraries + introduce a range of new / modernised libraries

These are ‘unbundled’ from the SDK, supporting older releases of android

AndroidX

The namespace + versioning for the Jetpack libraries

Android Jetpack Components

Android Jetpack components are a collection of libraries that are individually adoptable and built to work together while taking advantage of Kotlin language features that make you more productive. Use them all or mix and match!

Foundation

Foundation components provide cross-cutting functionality like backwards compatibility, testing and Kotlin language support.

Architecture

Architecture components help you design robust, testable and maintainable apps.

Behavior

Behavior components help your app integrate with standard Android services like notifications, permissions, sharing and the Assistant.

UI

UI components provide widgets and helpers to make your app not only easy, but delightful to use.

Foundation

Foundation components provide cross-cutting functionality like backwards compatibility, testing and Kotlin language support.

AppCompat

Degrade gracefully on older versions of Android

Android KTX

Write more concise, idiomatic Kotlin code

Multidex

Provide support for apps with multiple DEX files

Test

An Android testing framework for unit and runtime UI tests

Architecture

Architecture components help you design robust, testable and maintainable apps.

Data Binding

Declaratively bind observable data to UI elements

Lifecycles

Manage your activity and fragment lifecycles

LiveData

Notify views when underlying database changes

Navigation

Handle everything needed for in-app navigation

Paging

Gradually load information on demand from your data source

Room

Fluent SQLite database access

ViewModel

Manage UI-related data in a lifecycle-conscious way

WorkManager

Manage your Android background jobs

Behavior

Behavior components help your app integrate with standard Android services like notifications, permissions, sharing and the Assistant.

Download manager

Schedule and manage large downloads

Media & playback

Backwards compatible APIs for media playback and routing (including Google Cast)

Notifications

Provides a backwards-compatible notification API with support for Wear and Auto

Permissions

Compatibility APIs for checking and requesting app permissions

Preferences

Create interactive settings screens

Sharing

Provides a share action suitable for an app's action bar

Slices

Create flexible UI elements that can display app data outside the app

UI

UI components provide widgets and helpers to make your app not only easy, but delightful to use.

Animation & transitions

Move widgets and transition between screens

Auto

Components to help develop apps for Android Auto

Emoji

Enable an up-to-date emoji font on older platforms

Fragment

A basic unit of composable UI

Layout

Lay out widgets using different algorithms

Palette

Pull useful information out of color palettes

TV

Components to help develop apps for Android TV

Wear OS by Google

Components to help develop apps for Wear

AndroidX Overview

AndroidX is the open-source project that the Android team uses to develop, test, package, version and release libraries within Jetpack.

AndroidX is a major improvement to the original Android Support Library. Like the Support Library, AndroidX ships separately from the Android OS and provides backwards-compatibility across Android releases. AndroidX fully replaces the Support Library by providing feature parity and new libraries. In addition AndroidX includes the following features:

- All packages in AndroidX live in a consistent namespace starting with the string `androidx`. The Support Library packages have been mapped into corresponding `androidx.*` packages. For a full mapping of all the old classes and build artifacts to the new ones, see the Package Refactoring page.
- Unlike the Support Library, AndroidX packages are separately maintained and updated. The `androidx` packages use strict Semantic Versioning starting with version 1.0.0. You can update AndroidX libraries in your project independently.
- All new Support Library development will occur in the AndroidX library. This includes maintenance of the original Support Library artifacts and introduction of new Jetpack components.

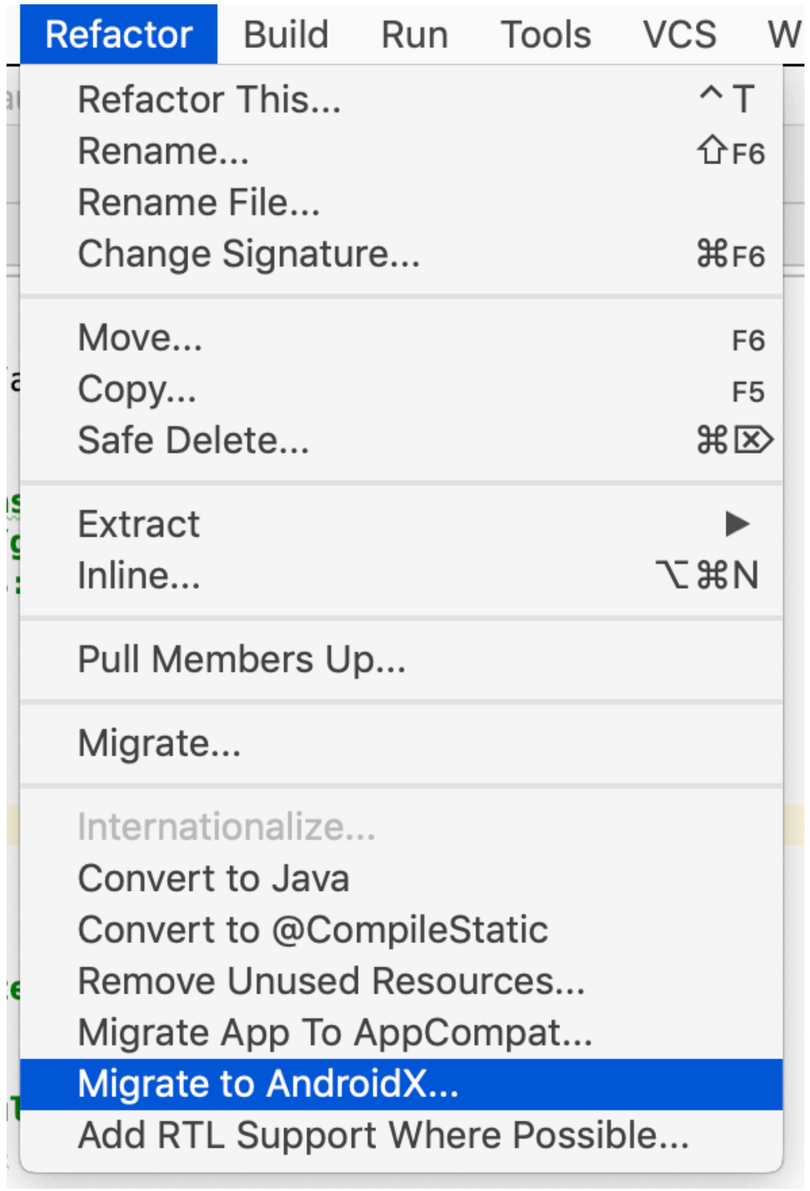
Migrate an existing project using Android Studio

With Android Studio 3.2 and higher, you can quickly migrate an existing project to use AndroidX by selecting **Refactor > Migrate to AndroidX** from the menu bar.

If you have any Maven dependencies that have not been migrated to the AndroidX namespace, the Android Studio build system also migrates those dependencies for you when you set the following two flags to `true` in your `gradle.properties` file:

```
android.useAndroidX=true
android.enableJetifier=true
```

To migrate an existing project that does not use any third-party libraries with dependencies that need converting, you can set the `android.useAndroidX` flag to `true` and the `android.enableJetifier` flag to `false`.




```
gradle.properties
app/build.gradle
app/src/androidTest/java/org/wit/placemark/ExampleInstrumentedTest.kt
app/src/main/java/org/wit/placemark/helpers/LocationHelpers.kt
app/src/main/java/org/wit/placemark/views/BaseView.kt
app/src/main/java/org/wit/placemark/views/placemarklist/PlacemarkAdapter.kt
app/src/main/java/org/wit/placemark/views/placemarklist/PlacemarkListView.kt
app/src/main/res/layout/activity_edit_location.xml
app/src/main/res/layout/activity_placemark.xml
app/src/main/res/layout/activity_placemark_list.xml
app/src/main/res/layout/activity_placemark_map.xml
app/src/main/res/layout/card_placemark.xml
app/src/main/res/layout/content_placemark_map.xml
```

Artifact mappings

The following table lists the current mappings from old artifacts to new ones. You can also download these mappings in CSV format.

Old build artifact	AndroidX build artifact
android.arch.core:common	androidx.arch.core:core-common:2.0.0-rc01
android.arch.core:core	androidx.arch.core:core:2.0.0-rc01
android.arch.core:core-testing	androidx.arch.core:core-testing:2.0.0-rc01
android.arch.core:runtime	androidx.arch.core:core-runtime:2.0.0-rc01
android.arch.lifecycle:common	androidx.lifecycle:lifecycle-common:2.0.0-rc01
android.arch.lifecycle:common-java8	androidx.lifecycle:lifecycle-common-java8:2.0.0-rc01
android.arch.lifecycle:compiler	androidx.lifecycle:lifecycle-compiler:2.0.0-rc01
android.arch.lifecycle:extensions	androidx.lifecycle:lifecycle-extensions:2.0.0-rc01
android.arch.lifecycle:livedata	androidx.lifecycle:lifecycle-livedata:2.0.0-rc01
android.arch.lifecycle:livedata-core	androidx.lifecycle:lifecycle-livedata-core:2.0.0-rc01
android.arch.lifecycle:reactivestreams	androidx.lifecycle:lifecycle-reactivestreams:2.0.0-rc01
android.arch.lifecycle:runtime	androidx.lifecycle:lifecycle-runtime:2.0.0-rc01
android.arch.lifecycle:viewmodel	androidx.lifecycle:lifecycle-viewmodel:2.0.0-rc01
android.arch.paging:common	androidx.paging:paging-common:2.0.0-rc01
android.arch.paging:runtime	androidx.paging:paging-runtime:2.0.0-rc01
android.arch.paging:rxjava2	androidx.paging:paging-rxjava2:2.0.0-rc01
android.arch.persistence.room:common	androidx.room:room-common:2.0.0-rc01
android.arch.persistence.room:compiler	androidx.room:room-compiler:2.0.0-rc01
android.arch.persistence.room:guava	androidx.room:room-guava:2.0.0-rc01
android.arch.persistence.room:migration	androidx.room:room-migration:2.0.0-rc01
android.arch.persistence.room:runtime	androidx.room:room-runtime:2.0.0-rc01
android.arch.persistence.room:rxjava2	androidx.room:room-rxjava2:2.0.0-rc01
android.arch.persistence.room:testing	androidx.room:room-testing:2.0.0-rc01
android.arch.persistence:db	androidx.sqlite:sqlite:2.0.0-rc01

Class mappings

The following table lists the current mappings from the old namespace to the new `androidx` packages. You can also download these mappings in CSV format.

Support Library class	AndroidX class
android.arch.core.executor.ArchTaskExecutor	androidx.arch.core.executor.ArchTaskExecutor
android.arch.core.executor.DefaultTaskExecutor	androidx.arch.core.executor.DefaultTaskExecuto
android.arch.core.executor.JunitTaskExecutorRule	androidx.arch.core.executor.JunitTaskExecutorR
android.arch.core.executor.TaskExecutor	androidx.arch.core.executor.TaskExecutor
android.arch.core.executor. TaskExecutorWithFakeMainThread	androidx.arch.core.executor. TaskExecutorWithFakeMainThread
android.arch.core.executor.testing. CountingTaskExecutorRule	androidx.arch.core.executor.testing. CountingTaskExecutorRule
android.arch.core.executor.testing. InstantTaskExecutorRule	androidx.arch.core.executor.testing. InstantTaskExecutorRule
android.arch.core.internal.FastSafeIterableMap	androidx.arch.core.internal.FastSafeIterableMa
android.arch.core.internal.SafeIterableMap	androidx.arch.core.internal.SafeIterableMap
android.arch.core.util.Function	androidx.arch.core.util.Function
android.arch.lifecycle.AndroidViewModel	androidx.lifecycle.AndroidViewModel
android.arch.lifecycle.ClassesInfoCache	androidx.lifecycle.ClassesInfoCache
android.arch.lifecycle. CompositeGeneratedAdaptersObserver	androidx.lifecycle.CompositeGeneratedAdaptersO
android.arch.lifecycle.ComputableLiveData	androidx.lifecycle.ComputableLiveData
android.arch.lifecycle.DefaultLifecycleObserver	androidx.lifecycle.DefaultLifecycleObserver
android.arch.lifecycle.Elements_extKt	androidx.lifecycle.Elements_extKt
android.arch.lifecycle. EmptyActivityLifecycleCallbacks	androidx.lifecycle.EmptyActivityLifecycleCallb
android.arch.lifecycle.ErrorMessages	androidx.lifecycle.ErrorMessages
android.arch.lifecycle.FullLifecycleObserver	androidx.lifecycle.FullLifecycleObserver
android.arch.lifecycle.FullLifecycleObserverAdapter	androidx.lifecycle.FullLifecycleObserverAdapte
android.arch.lifecycle.GeneratedAdapter	androidx.lifecycle.GeneratedAdapter
android.arch.lifecycle.GenericLifecycleObserver	androidx.lifecycle.GenericLifecycleObserver
android.arch.lifecycle.HolderFragment	androidx.lifecycle.HolderFragment
android.arch.lifecycle.Input_collectorKt	androidx.lifecycle.Input_collectorKt