

Taking Gradle to Task

Intro to the Gradle Task

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Hello, I'm Lisa
I work on Android at Electric Objects



Gradle Tasks

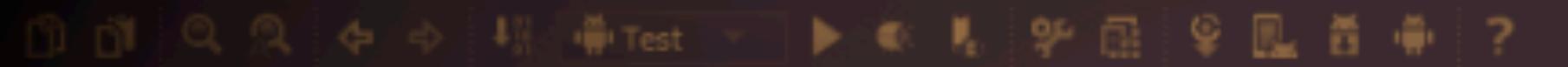
Gradle Tasks

- Recognize the 3 phases of a Gradle build
- Understand how a Task interacts with build phases
- Be able to start writing your own Gradle tasks to customize your release process

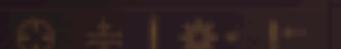
Test Yourself

- What language is Gradle written in?
- What are the 3 phases of a Gradle build?
- What does the << notation stand for in a Gradle build script?
- doLast is a property on a Task. What is its type?
- How do you run a Gradle task from the command line?

Why Gradle?



src main res layout activity_main.xml



MainActivity.java x activity_main.xml x

(C:\Users\Paresh\AndroidStudioProject)

main

java

com.technotalkative.test

MainActivity

res

drawable

Studio_logo.png

drawable-hdpi

drawable-mdpi

drawable-xhdpi

drawable-xxhdpi

layout

menu

values

values-sw600dp

values-sw720dp-land

values-v11

values-v14

AndroidManifest.xml

launcher-web.png

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello world!"
        android:id="@+id/textView" />

    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/imageView"
        android:src="@drawable/Studio_logo"
        android:layout_below="@+id/textView"
        android:layout_alignParentLeft="true" />

</RelativeLayout>
```

Preview

Nexus 4

AppTheme

MainActivity



Nexus One (3.7")



Galaxy Nexus (4.7")



Gradle is Groovy

- Gradle is a Groovy DSL for managing build dependencies, configurations, and build related tasks
- Replaces and / or supplements Maven, the Java package manager
- Completely replaces Ant (XML)
- Script-like language for automating build tasks

Tasks

A Gradle build is composed of a set of Tasks.

→ Build an Android Project

```
$ ./gradlew assemble
```

→ Show me all the Tasks in a project

```
$ ./gradlew tasks
```

`:tasks`

All tasks runnable from root project

Android tasks

`androidDependencies` – Displays the Android dependencies of the project
`signingReport` – Displays the signing info for each variant

Build tasks

`assemble` – Assembles all variants of all applications and secondary packages.
`assembleDebug` – Assembles all Debug builds
`assembleDebugTest` – Assembles the Test build for the Debug build
`assembleRelease` – Assembles all Release builds
`build` – Assembles and tests this project.

...

```
apply plugin: 'com.android.application'
```

Android Plugin Tasks

- **Android tasks:** Android project introspection
- **Build tasks:** Build Android projects
- **Install tasks:** Calls ADB actions for installing / uninstalling APKs
- **Verification tasks:** Run instrumentation tests and Android lint

Groovy / Gradle:

```
task hello {  
    doLast {  
        println "Hello NewCircle!"  
    }  
}
```

Groovy / Gradle:

```
task hello {  
    doLast {  
        println "Hello NewCircle!"  
    }  
}
```

Run:

```
$ ./gradlew hello
```

And we get...

```
♠ ./gradlew hello
```

```
:app:hello
```

```
Hello NewCircle!
```

BUILD SUCCESSFUL

Total time: 11.075 secs

Gradle:

```
♠ ./gradlew earlyHello
```

```
Hello, very early  
:app:earlyHello UP-TO-DATE
```

BUILD SUCCESSFUL

Total time: 10.184 secs

^ what's going on?

Gradle uses closures to build task logic that will be executed at runtime.

Closures

Gradle Build Phases

- Initialization: which projects are being built
- Configuration: Resolves dependency graph, builds a task execution plan
- Execution: Runs the task execution plan

♠ ./gradlew hello

> Configuring > 2/2 projects

:app:helloAgain

Hello Again, NewCircle!

BUILD SUCCESSFUL

Groovy:

```
task hello << {
    println "Hello NewCircle!"
}
```

```
task earlyHello {
    println "Hello, very early"
}
```

Closure magic!



Task Actions

- Tasks are a set of “actions”, which are closures
- Actions are run during the Execution phase
- Three ways to add an Action (closure) to a task:
 - doFirst {}
 - doLast {}
 - leftShift {} / <<

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Q&A