Android Developer Fundamentals V2

Delightful User Experience

Lesson 5

5.3 Adaptive layouts and resources

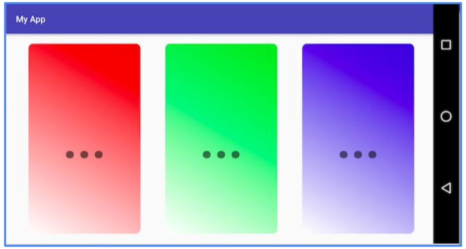
Contents

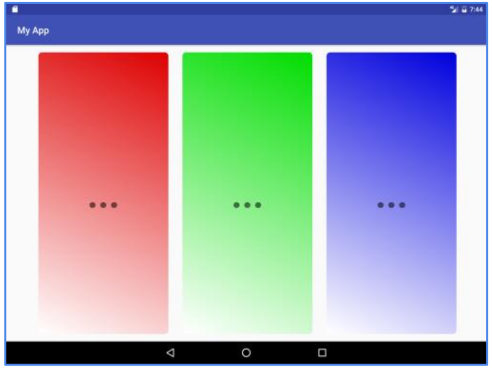
- Adaptive layouts and resources
- Alternative resources
- Default resources

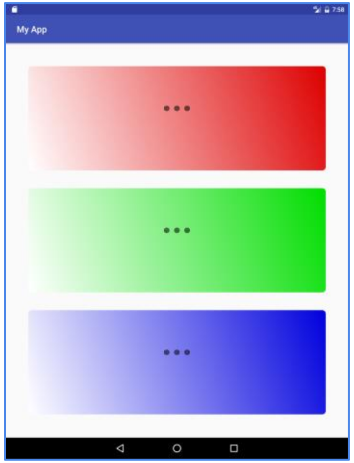
Adaptive layouts and resources

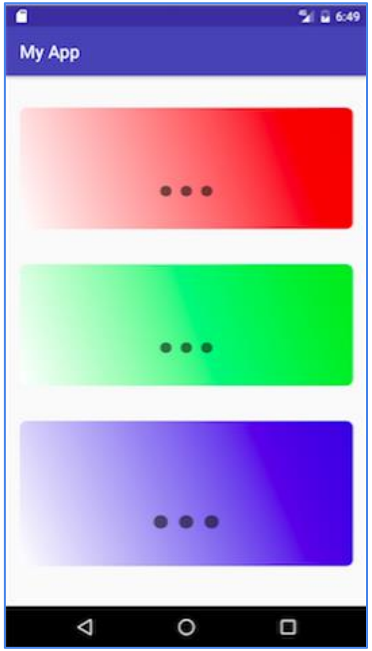
What are adaptive layouts?

Layouts that look good on different screen sizes, orientations, and devices









Adaptive layout

- Layout adapts to configuration
  - Screen size
  - Device orientation
  - Locale
  - Version of Android installed
- Provides alternative resources
  - Localized strings
- Uses flexible layouts
  - GridLayout

Resource folders of a small app

```
MyProject/
    src/
    res/
        drawable/
            graphic.png
        layout/
            activity_main.xml
            list_iteminfo.xml
        mipmap/
            ic_launcher_icon.png
        values/
            strings.xml
```

Put resources in your project's `res` folder

Common resource directories

- `drawable/`, `layout/`, `menu/`
- `values/`—XML files of simple values, such as string or color
- `xml/`—arbitrary XML files
- `raw/`—arbitrary files in their raw form
- `mipmap/`—drawables for different launcher icon densities
- Complete list

Alternative resources

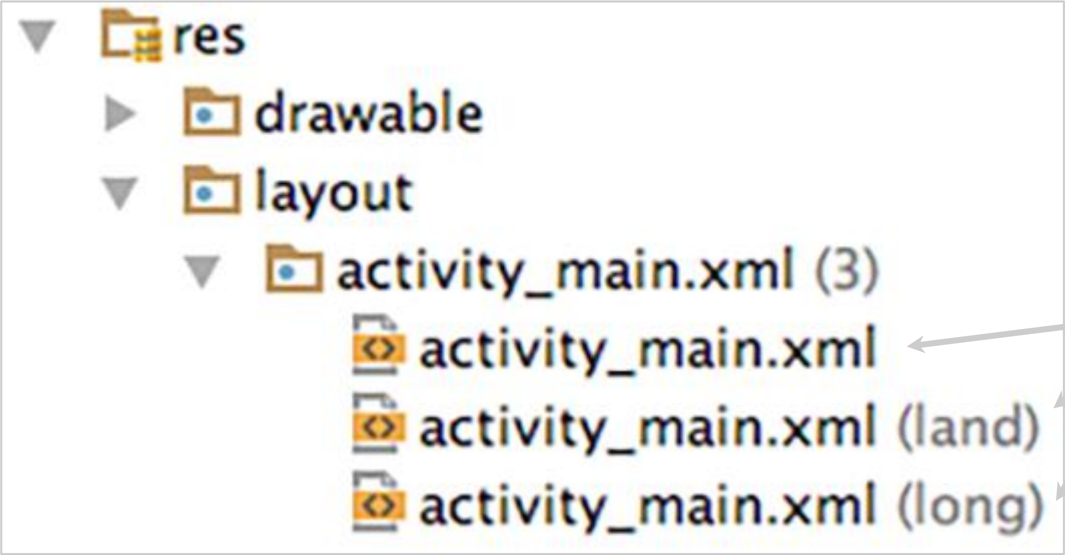
What are alternative resources?

Different device configurations may require different resources

- Localized strings
- Image resolutions
- Layout dimensions

Android loads appropriate resources automatically

Create alternative resource folders



```
▼ res
    ▶ drawable
    ▼ layout
        ▼ activity_main.xml (3)
              activity_main.xml
              activity_main.xml (land)
              activity_main.xml (long)
```

Use alternative folders for resources for different device configurations

Names for alternative resource folders

Resource folder names have the format
resources name-config qualifier

`drawable-hdpi`	drawables for high-density displays
`layout-land`	layout for landscape orientation
`layout-v7`	layout for version of platform
`values-fr`	all values files for French locale

List of directories and qualifiers and usage detail

Screen Orientation

- Use `res/layout` and provide alternatives for landscape where necessary
  - `res/layout-port` for portrait-specific layouts
  - `res/layout-land` for landscape specific layouts
- Avoid hard-coded dimensions to reduce need for specialized layouts

Simple adaptive layout

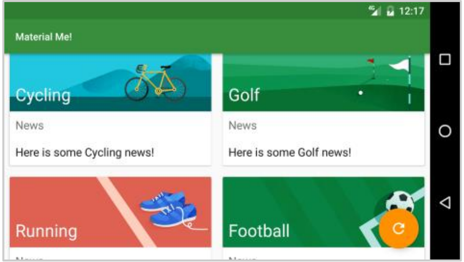
GridLayout

- In values/integer.xml:

```
<integer name="grid_column_count">1</integer>
```

- In values/integer.xml-land:

```
<integer name="grid_column_count">2</integer>
```



12:17

Material Me!

Cycling

News

Here is some Cycling news!

Golf

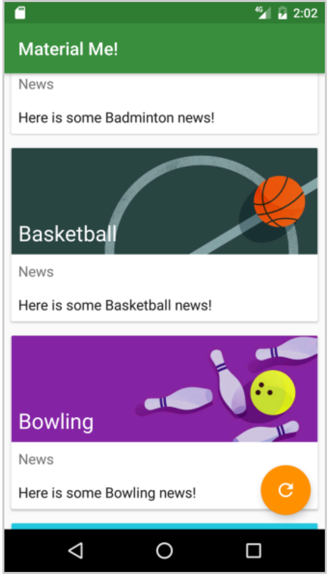
News

Here is some Golf news!

Running

Football

Landscape



2:02

Material Me!

News

Here is some Badminton news!

Basketball

News

Here is some Basketball news!

Bowling

News

Here is some Bowling news!

Portrait

Smallest width

- Smallest-width (sw) in folder name specifies minimum device width
    - res/values-sw*n*dp, where *n* is the smallest width
    - Example: res/values-sw**600**dp/dimens.xml
    - Does not change with orientation
- Android uses resource closest to (without exceeding) the device's smallest width

Platform Version

- API level supported by device
  - `res/drawables-v14`
    contains drawables for devices that support API level 14 and above
- Some resources are only available for newer versions
  - WebP image format requires API level 14 (Android 4.0)
- Android API level

Localization

- Provide strings (and other resources) for specific locales
  - `res/values-es/strings.xml`
- Increases potential audience for your app
- Locale is based on device's settings
- [Localization]()

Default resources

Default Resources

- Always provide default resources
  - directory name without a qualifier
  - `res/layout`, `res/values`, `res/drawables`….
- Android falls back on default resources when no specific resources match configuration
- Localizing with Resources

Learn more

- Supporting Multiple Screens
- Providing Resource
- Providing Resources Guide
- Resources Overview
- Localization Guide

What's Next?

- Concept Chapter: 5.3 Resources for adaptive layouts
- Practical: 5.3 Adaptive layouts

END