MODULE 5

RESOURCE

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What is a Resource?

- Resources include text data , bitmaps, audio, videos, …
- Better to define resources in external files
  - Easier to maintain
- XML files
  - In ***res*** directory
- Accessed in Java code through IDs assigned to them

What is a Resource?

- Apps applicable to diverse hardware systems
  - By creating several resources files supporting different hardwares
- Resources mainly divided into drawables, layouts and values

Types of Resources

- **Drawable** Resources
  - Define various graphics with bitmaps or XML
    - Icons and graphics resources according to the screen resolutions
  - Saved in res/drawable/
    - drawable-xhdpi folder : for 320dpi
    - drawable-hdpi folder : for 240dpi
    - drawable-mdpi folder : for 160dpi
    - drawable-ldpi folder : for 120dpi
  - Accessed from the **R.drawable** class

Types of Resources

- **Layout** Resource
  - Define the layout for application UI
  - Saved in res/layout/
  - Accessed from the **R.layout** class
- **Menu** Resource
  - Define the contents of application menus
  - Saved in res/menu/
  - Accessed from the **R.menu** class

Types of Resources

- **MipMap** Resources
  - For placing the app icons only
    - Any other drawable assets are placed in drawable folders
  - Saved in res/mipmap/
  - Accessed from the **R.mipmap** class

Types of Resources

- **Values** Resource: **String** Resources
  - Define strings, string arrays, and plurals (and include string formatting and styling)
  - Saved in res/values/
  - Accessed from the **R.string, R.array** and **R.plurals** classes
- **Values** Resource: **Style** Resources
  - Define the look and format for UI elements
  - Saved in res/values/
  - Accessed from the **R.style** class

Types of Resources

- **Animation** Resources
  - Tween animations
    - Saved in res/anim/
    - Accessed from the **R.anim** class
  - Frame animations
    - Saved in res/drawable/
    - Accessed from the **R.drawable** class

Types of Resources

- **Color** State List Resource
  - Define a color resources that changes based on the View state
  - Saved in res/color/
  - Accessed from the **R.color** class

Types of Resources

- More Resource Types
  - Define values such
    - Bool : XML resource that carries a boolean value
    - Color : XML resource that carries a hexadecimal color value
    - Dimension : XML resource that carries a dimension value (with a unit of measure)
    - ID : XML resource that provides a unique identifier for application resources and components
    - Integer : XML resource that carries an integer value
    - Integer Array : XML resource that provides an array of integers
    - Typed Array : XML resource that provides a TypedArray
  - Saved in res/values/

Types of Resources

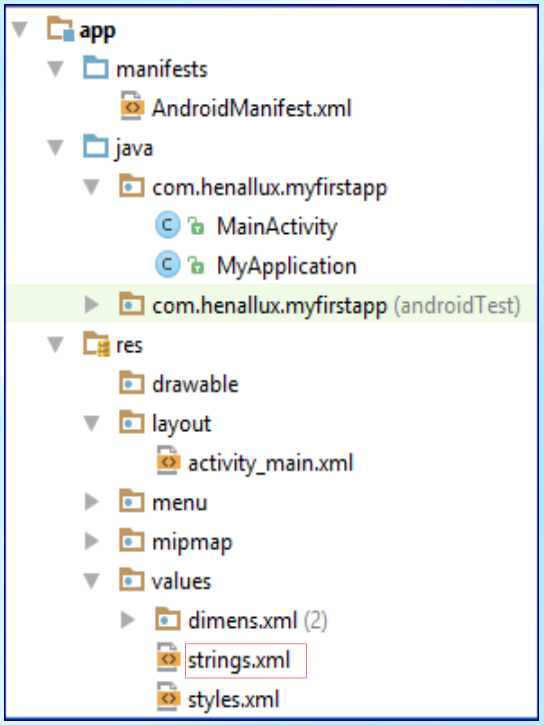
- More Resource Types (continued)
  - But each accessed from unique R sub-classes
    - Bool : Accessed from the **R.bool** class
    - Color : Accessed from the **R.color** class
    - Dimension : Accessed from the **R.dimen** class
    - ID : Accessed from the **R.id** class
    - Integer : Accessed from the **R.integer** class
    - Integer Array : Accessed from the **R.array** class
    - Typed Array : Accessed from the **R.array** class

String Resource

- Do not hardcode String values!
  - Better to define String resources in external file
  - Easier to maintain
  - E.g, for internationalization

Using String Resource

- Add new resource entry in strings.xml file
  - Through <**string**> tag
    - Attribute **name** : identifies resource



- E.g,

```
<resources>
    <string name="app_name">MyFirstApp</string>
    <string name="action_settings">Settings</string>
    <string name="hello_world">Hello world</string>
</resources>
```

Resource identifier

String value

String Resource

- Use String resource
  - In XML files
    - Through `@string/resourceIdentifier`
    - E.g,

```
<TextView
    android:id="@+id/helloText"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/hello_world" />
```

  - In Java
    - Through **R.string**
      - E.g,

```
String message = getString(R.string.hello_world);
```

```
Toast.makeText(MainActivity.this, R.string.hello_world, Toast.LENGTH_LONG).show();
```

Internationalization

- Put default language text in res/values/strings.xml
- To support additional languages:
  - Create additional values directories inside **res/**
  - Include a hyphen and the ISO language code at the end of the directory name
    - E.g, ***res/values-fr***
  - Copy strings.xml files in those directories with values in right language
    - E.g, ***res/values-fr/strings.xml***
- Android loads the appropriate resources according to the locale settings of the device at runtime

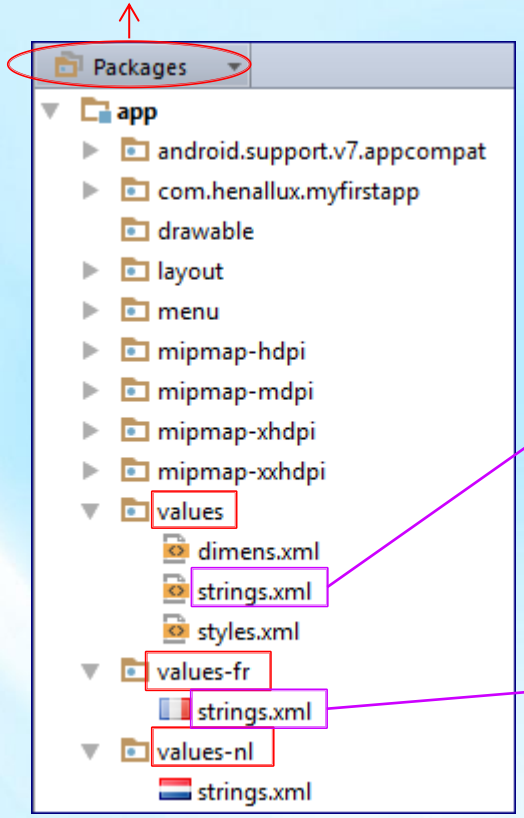
Internationalization

- The Iso language code is defined by
  - A two-letter ISO 639-1 language code
  - Optionally followed by a two letter ISO 3166-1-alpha-2 region code (preceded by lowercase "r")
  - E.g, **en**, **fr**, **en-rUS**, **fr-rFR**, **fr-rCA**

Internationalization

- E.g,

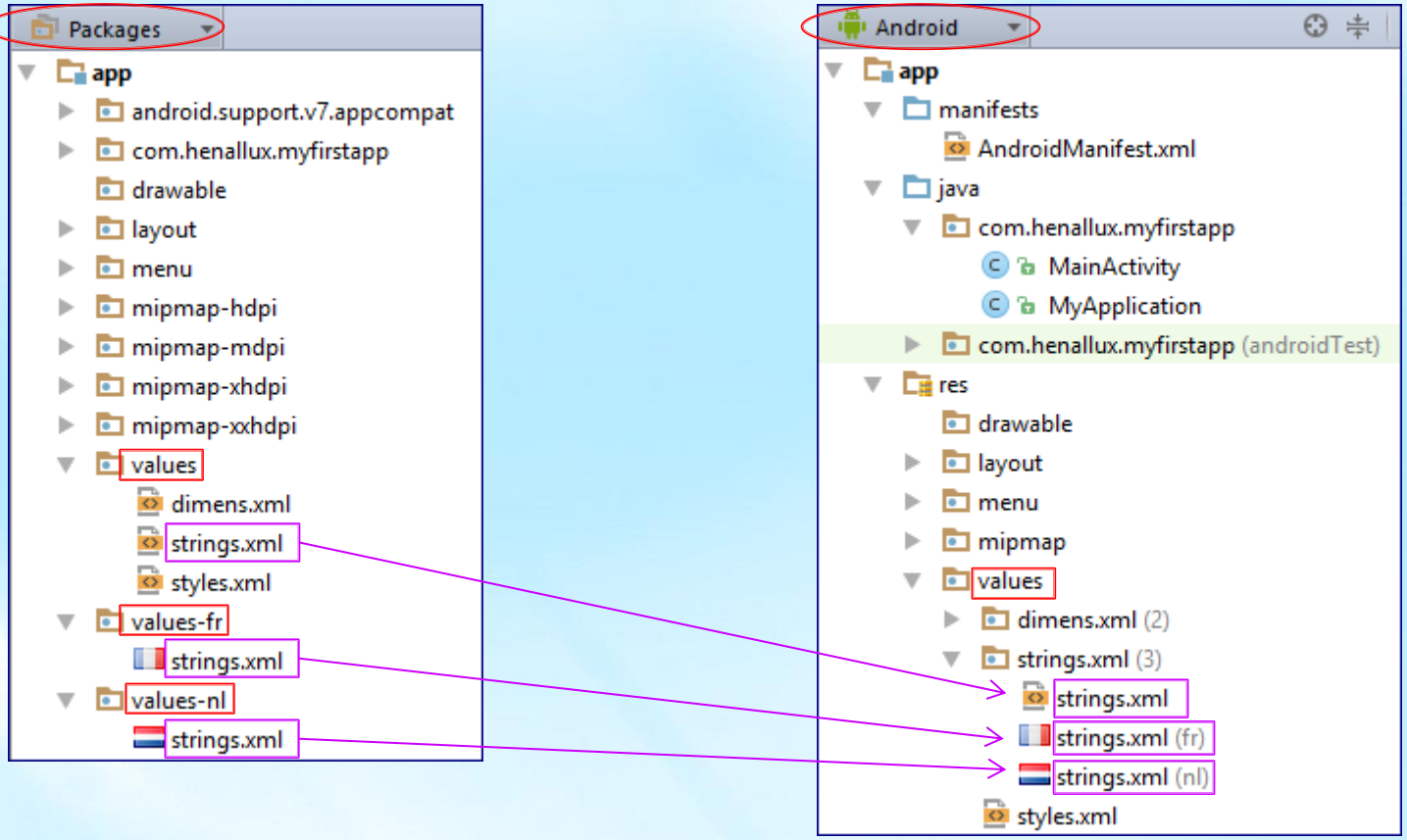
In Android studio: change to Package view




```xml
<?xml version="1.0" encoding="utf-8"?>
 <resources>
   <string name="app_name">My first application</string>
   <string name="hello_world">Hello world!</string>
 </resources>
```

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <string name="app_name">Ma première application</string>
  <string name="hello_world">Bonjour à tous!</string>
</resources>
```

Internationalization



Webography

- http://developer.android.com/guide/topics/resources/index.html
- http://developer.android.com/guide/topics/resources/available-resources.html
- http://developer.android.com/guide/topics/resources/localization.html
- http://developer.android.com/training/basics/supporting-devices/languages.html