



ΧΑΡΟΚΟΠΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ
HAROKOPIO UNIVERSITY



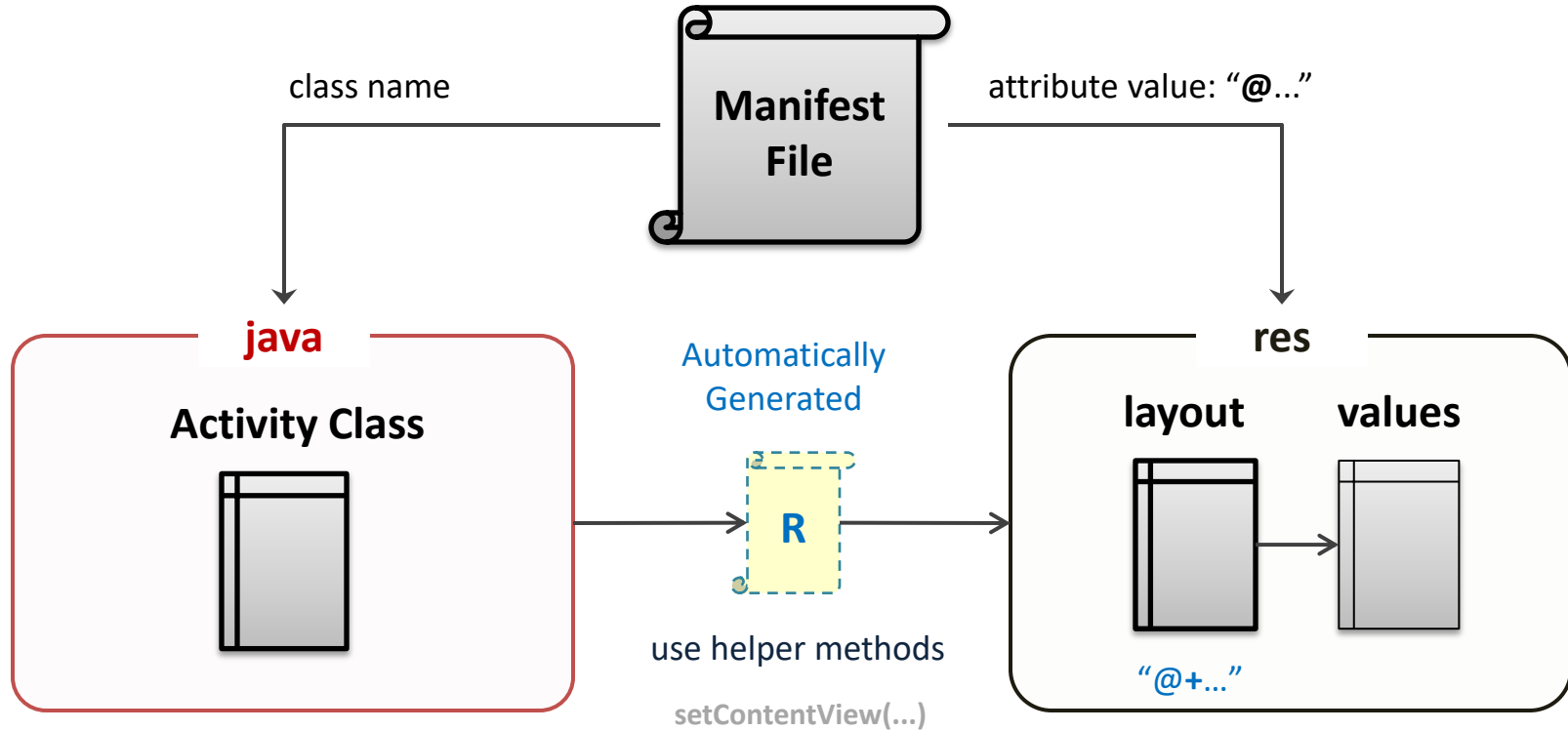
Τμήμα Πληροφορικής
και Τηλεματικής

Mobile Application Development

Lab 1

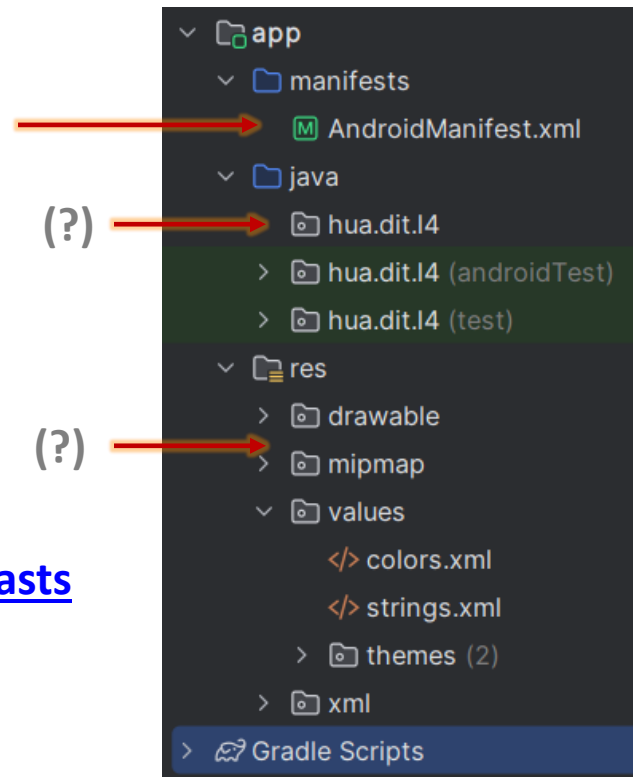
Dr. Efthymios Chondrogiannis

Android Project – Main Entities



Android App Dev from Scratch

- **New project – No Activity**
- **App UI – Resource XML File(s)**
 - Layout **Folder** and **XML File**
- **App Logic – Java Code**
 - «Main» **Activity** – App Entry Point
 - Set UI ... **Layout XML** ... using **R class** (variable)
 - Handle **UI Events**
 - [Log](#) Data and/or Show Messages using [Toasts](#)
- **App Description – Manifest XML**
 - Application Parameters & Main Activity



Lab 1 Tasks

- **Task 1:** Study Activity Lifecycle (including what happens when configuration changes)
- **Task 2:** Create Activity Layout XML using different Views and View Groups
- **Task 3:** Link two (or more) Activities using Intents and Intent Filters

Task 1: Study Activity Lifecycle

```
public class Activity extends ApplicationContext {  
    protected void onCreate(Bundle savedInstanceState);  
  
    protected void onStart();  
  
    protected void onRestart();  
  
    protected void onResume();  
  
    protected void onPause();  
  
    protected void onStop();  
  
    protected void onDestroy();  
}
```

For **testing** purposes:

- Override the six callback methods
- Add Log Messages
- Deploy & Run
- Check Log Messages

Activity: <https://developer.android.com/reference/android/app/Activity>

Configuration Changes

- The system **recreates an Activity** when a configuration change occurs – also recreates the UI with the new configuration
 - e.g., Rotating the device, Changing the font size, or app language
- **Prevent automatic activity recreation**
 - Add the configuration type to the **<activity>** entry in your AndroidManifest.xml

```
<activity android:name=".MyActivity"  
    android:configChanges="orientation|screenSize|screenLayout|keyboardHidden"  
    android:label="@string/app_name">
```

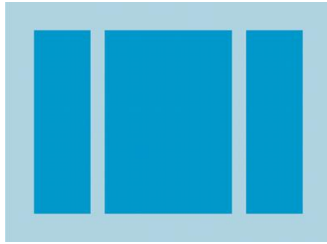
- Override the **onConfigurationChanged()** callback method in the Activity Class

```
public void onConfigurationChanged(Configuration newConfig)
```

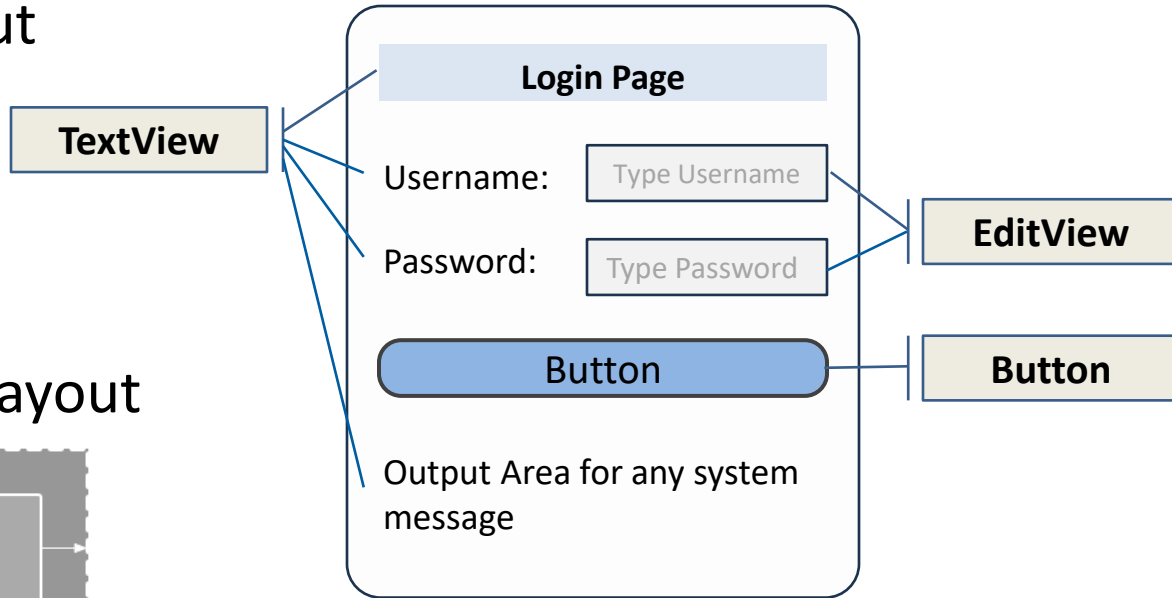
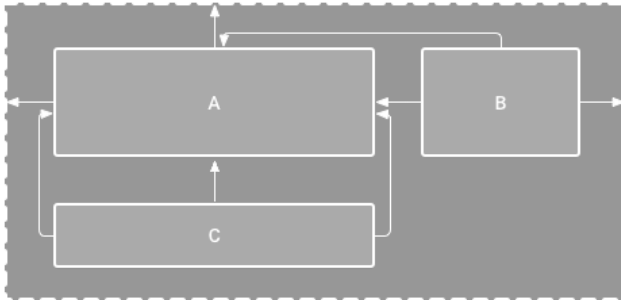
Handle configuration changes: <https://developer.android.com/guide/topics/resources/runtime-changes>

Tasks 2: Create a Login Page

- A. Using Linear Layout



- B. Using Constraint Layout



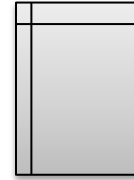
- ❖ On click ... when username and password are empty show an error message using **Toast**

Style & Theme

- **Modify Theme**

- Remove App Bar
- Change Primary Color
- Increase Text Size

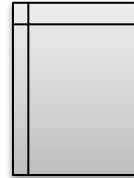
themes.xml



- **Specify Widget Style**

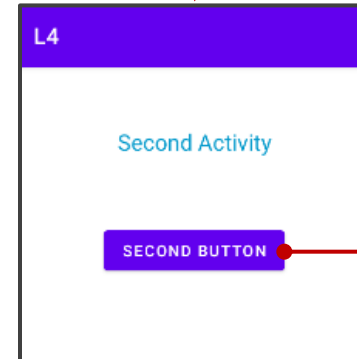
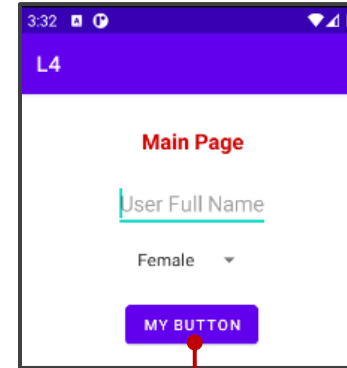
- Header Style → Text Size, Style and Color
- Edit Text Style
- Button Style

styles.xml



Task 3: Navigation to (other) Activities

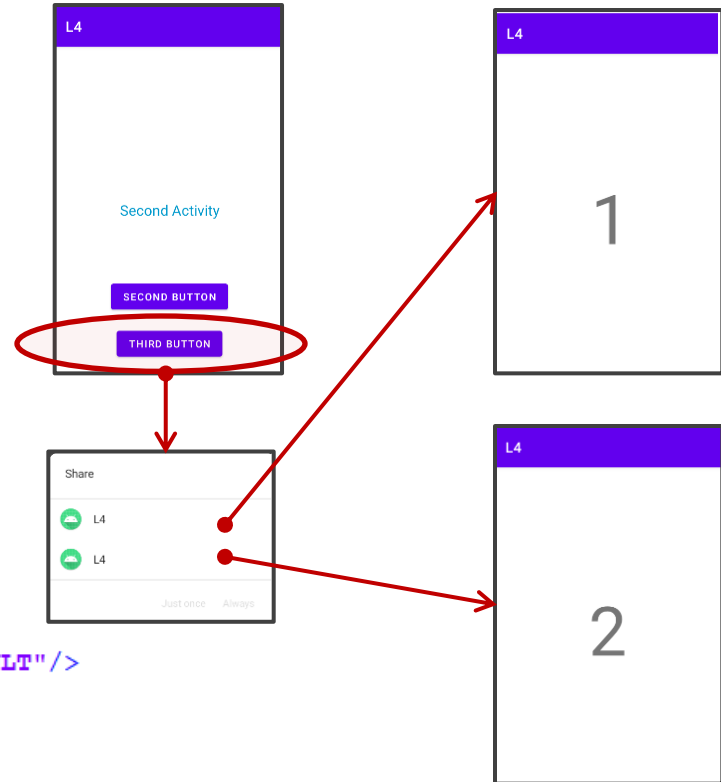
- Functionality
 - Go to another “page” using an **Explicit Intent**
 - Send **data** captured through the main App UI
 - Open a Web Page using an **Implicit Intent**
 - Enable users to open a **Web Browser** with the given **URL** by pressing a button



Intents and Intent Filters

- Enable two Activities to handle the same Intent
 - Create an **Implicit** Intent when pressing a Button
 - Create two Activities with the same **Intent Filters**

```
<activity android:name=".Activity" android:exported="true">  
  <intent-filter>  
    <action android:name="android.intent.action.SEND"/>  
    <category android:name="android.intent.category.DEFAULT"/>  
  </intent-filter>  
</activity>
```



Conclusion

- Android App Development using Android Studio
- **Task 1:** Activity Lifecycle
- **Task 2:** Activity Layout XML
- **Task 3:** Intent and Intent Filters

Thank You!

