CSCB07 - Software Design

Introduction to Android

Summer 2022

Android

- Android is an platform comprising three entities
  - An operating system
  - A framework for developing applications
  - Devices that run the Android operating system and the applications created for it
- Android SDK
  - A collection of libraries and tools that are needed for developing Android applications
- Android Studio
  - IDE for Android application development

Dawn Griffiths and David Griffiths, Head First Android Development, O'Reilly Media, Inc., 2015.

Android App Basics

- An Android app is a collection of screens, and each screen is comprised of a layout and an activity
  - Layout: describes the appearance of a screen (written in XML)
  - Activity: responsible for managing user interaction with the screen (written in java)
- An activity transitions between different states during its lifecycle:
  - Created
  - Started
  - Resumed
  - Paused
  - Stopped
  - Destroyed

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Folder Structure

- Manifest file
  - It defines the structure and metadata of an application, its components, and its requirements
  - Stored in the root of its project hierarchy as an XML file
- Java files
- Resource files
  - Resources are maintained in sub-directories of the app/res directory (e.g. res/layout)
  - A resource can be accessed in the code using its resource ID (e.g. R.layout.activity_main)
- Gradle scripts
  - Used to automate the build process

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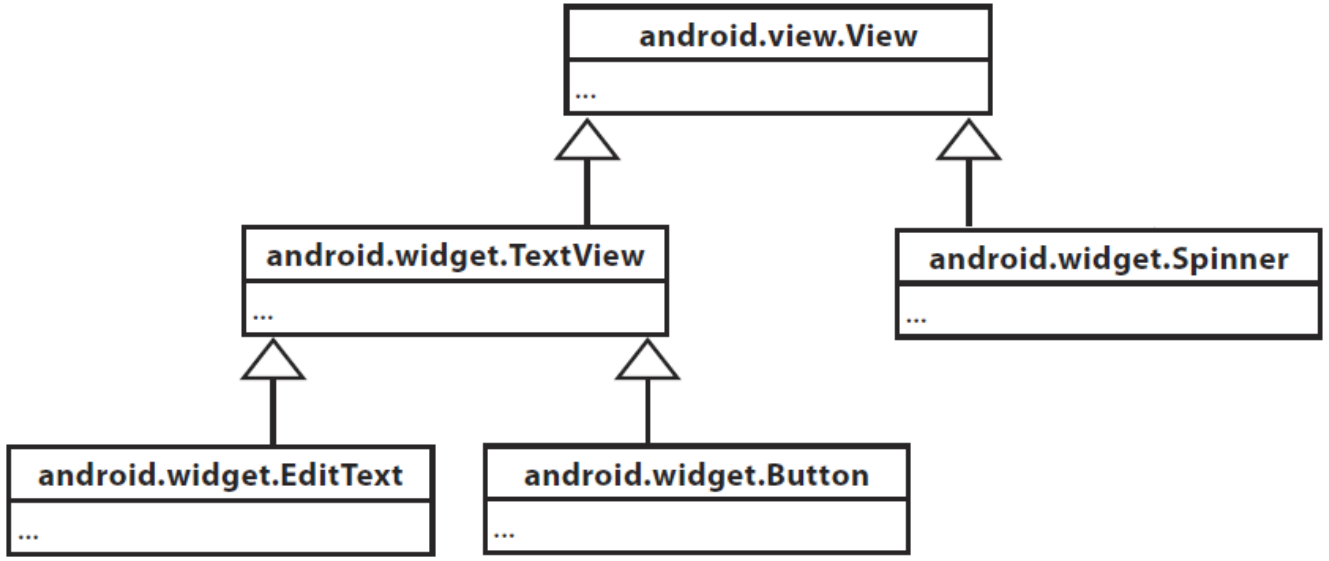
View

- Most GUI components are instances of the **View** class or one of its subclasses
  - E.g. Button, EditText, ImageView, etc.



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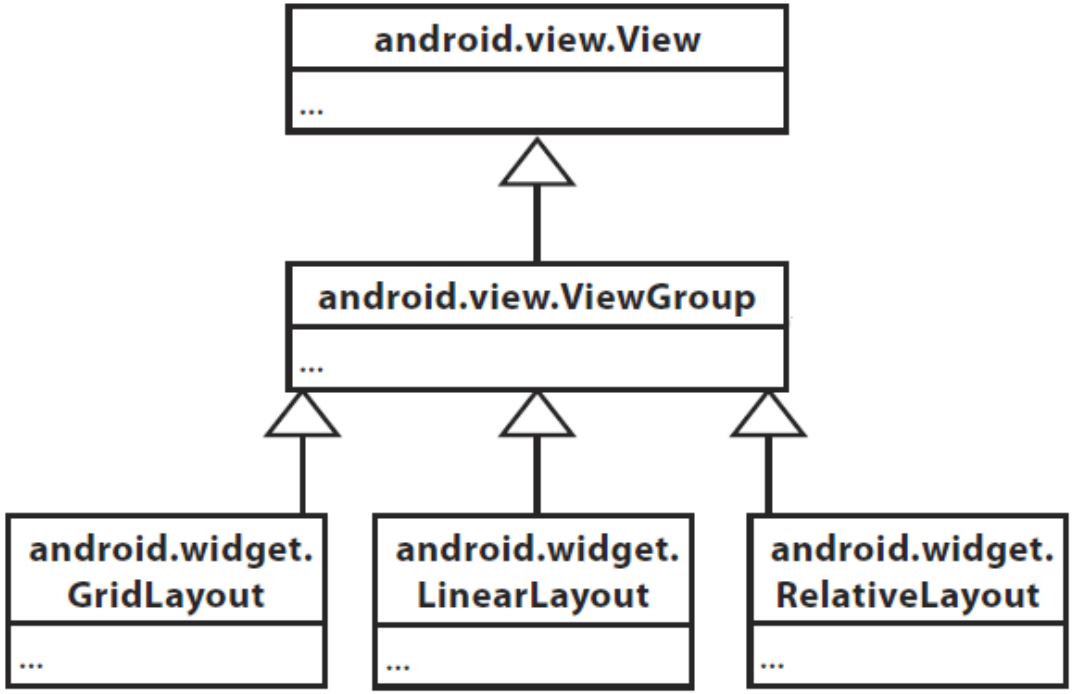
View Group

- A special type of view that can contain other views
- A layout is a type of view group



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Common GUI components

- TextView
- EditText
- Button
- Switch
- Spinner

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Intents

- An intent is an object that can be used to bind activities together at runtime
  - An activity can start another one by sending an intent to Android. Android will start the second activity and pass it the intent.
- Data can be passed between activities using intent extras
  - E.g. **intent.putExtra("message", value);**

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