

Android User Interface

Riya Jacob K
Dept of BCA
2020 -21

The Android UI

- The Android UI is essentially a fourth-generation UI framework
- traditional C-based Microsoft Windows API the first generation
- the C++-based Microsoft Foundation Classes (MFC) the second generation.
- The Java-based Swing UI framework would be the third generation

The Android UI

- The Android UI, JavaFX, Microsoft Silverlight, and Mozilla XML User Interface Language (XUL) fall under this new type of fourth-generation UI framework
- Programming in the Android UI involves declaring the interface in XML files
- This is very much like HTML-based web pages. Much as in HTML, you find the individual controls through their IDs and manipulate them with Java code

The Android UI

- Screens or windows in Android referred to as *activities*,
- *which comprise multiple views that a user needs in order to accomplish a logical unit of action.*
- *Views are Android's basic UI building blocks*
- *combine them to form composite views called view groups.*

The Android UI

- Android 3.0 introduced a new UI concept called *fragments to allow developers to chunk views and functionality for display on tablets*
- One of the Android framework's key concepts is the life cycle management of activity windows.
- Protocols are put in place so that Android can manage state as users hide, restore, stop, and close activity windows

The Android Foundational Components

- An intent is an intra- and inter process mechanism to invoke components in Android.
- A component in Android is a piece of code that has a well defined life cycle.
- An activity representing a window in an Android application is a component

The Android Foundational Components

- Here is an example of using the Intent class to invoke or start a web browser:
- ```
public static void invokeWebBrowser(Activity activity)
{
 Intent intent = new Intent(Intent.ACTION_VIEW);
 intent.setData(Uri.parse("http://www.google.com"));
 activity.startActivity(intent);
}
```

# The Android Foundational Components

- In this example, through an intent, we are asking Android to start a suitable window to display the content of a web site.
- Depending on the list of browsers that are installed on the device, Android will choose a suitable one to display the site



# Advanced UI Concepts

- XML page-layout definitions (similar to HTML web pages) play a critical role in describing the Android UI.

# Advanced UI Concepts

- `<?xml version="1.0" encoding="utf-8"?>`
- `<!-- place it in /res/layout/sample_page1.xml -->`
- `<!-- will auto generate an id called:  
R.layout.sample_page1 -->`
- `<LinearLayout ..some basic attributes..>`
- `<TextView android:id="@+id/textViewId"`
- `android:layout_width="fill_parent"`
- `android:layout_height="wrap_content"`
- `android:text="@string/hello"`
- `/>`
- `</LinearLayout>`

# Advanced UI Concepts

- You will use an ID generated for this XML file to load this layout into an activity window
- Android supports dialogs, Menus
- Android offers extensive support for animation

# Advanced UI Concepts

- 3 ways to do animation
- You can do frame-by-frame animation
- you can provide tweening animation by changing view transformation matrices (position, scale, rotation, and alpha )
- you can also do tweening animation by changing properties of objects.

# Advanced UI Concepts

- Android has a number of new concepts that revolve around *information at your fingertips* using the home screen.
- Using live folders, you can publish a collection of items as a folder on the homepage.
- The second homepage-based idea is the *home screen widget*

# Advanced UI Concepts

- *Integrated Android Search is the third homepage-based idea.*
- *Using integrated search, search for content both on the device and also across the Internet*
- Android also supports touch screen and gestures based on finger movements on the device.

# Android Service Components

- Security is a fundamental part of the Android platform.
- Location-based service is another of the more exciting components of the Android SDK.

# **Android Media and Telephony Components**

- Android has APIs that cover audio, video, and telephony components