



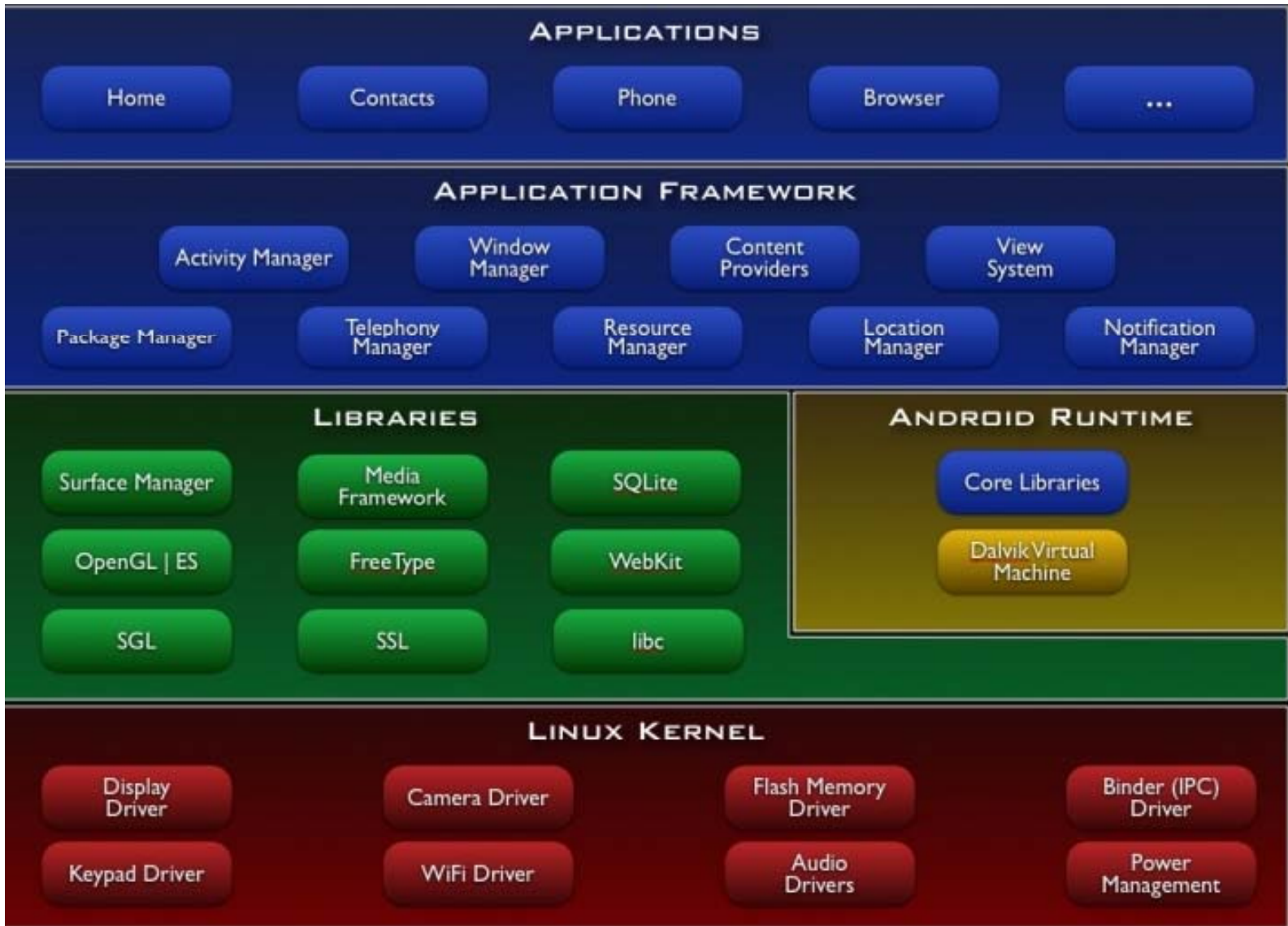
ANDROID

Lecture 22

Topic beyond Syllabus :

Operating System : Android

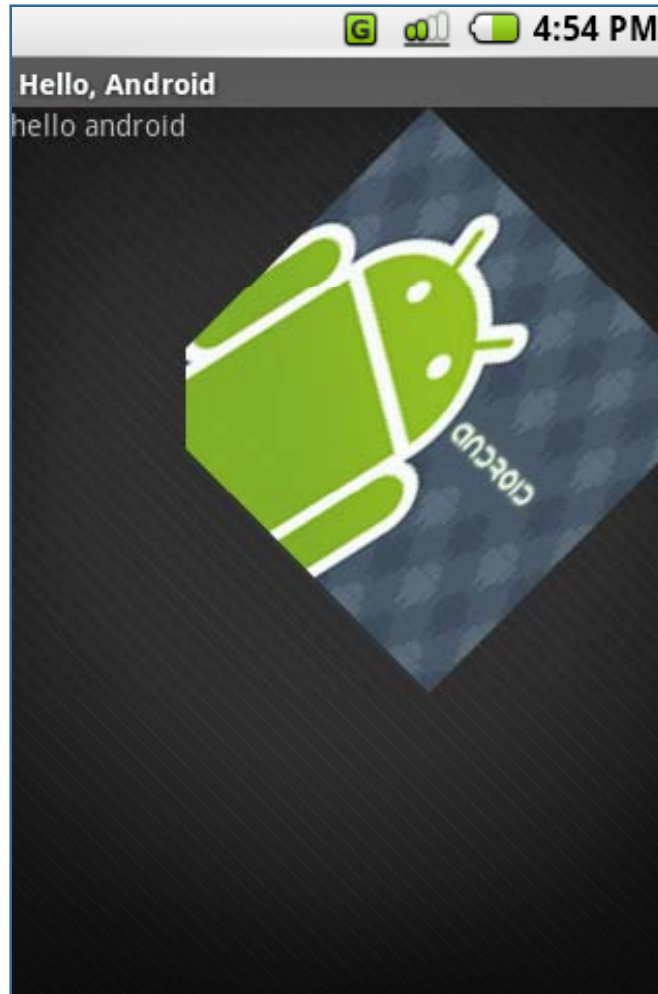
Android has many components



Android applications have common structure

Views such as lists, grids, text boxes, buttons, and even an embeddable web browser

Content Providers that enable applications to access data from other applications (such as Contacts), or to share their own data



An **Activity Manager** that manages the life cycle of applications and provides a common navigation backstack

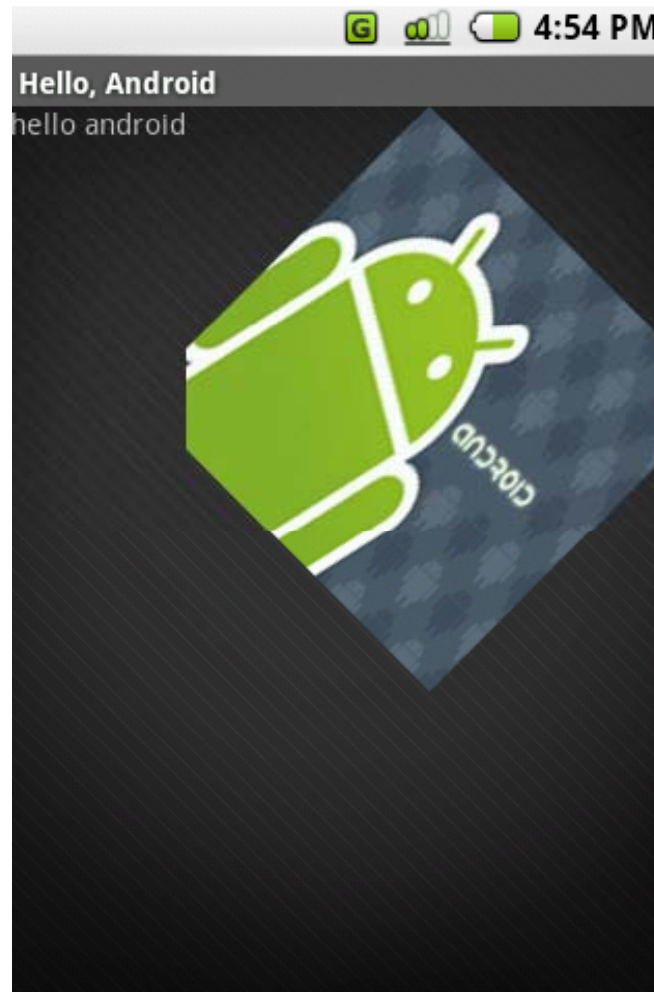
A **Notification Manager** that enables all apps to display custom alerts in the status bar

A **Resource Manager**, providing access to non-code resources such as localized strings, graphics, and layout files

Android applications have common structure

Broadcast receivers can trigger intents that start an application

Data storage provide data for your apps, and can be shared between apps – database, file, and shared preferences (hash map) used by group of applications

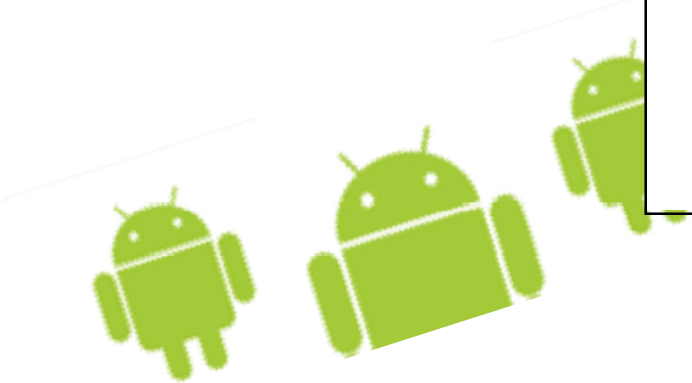
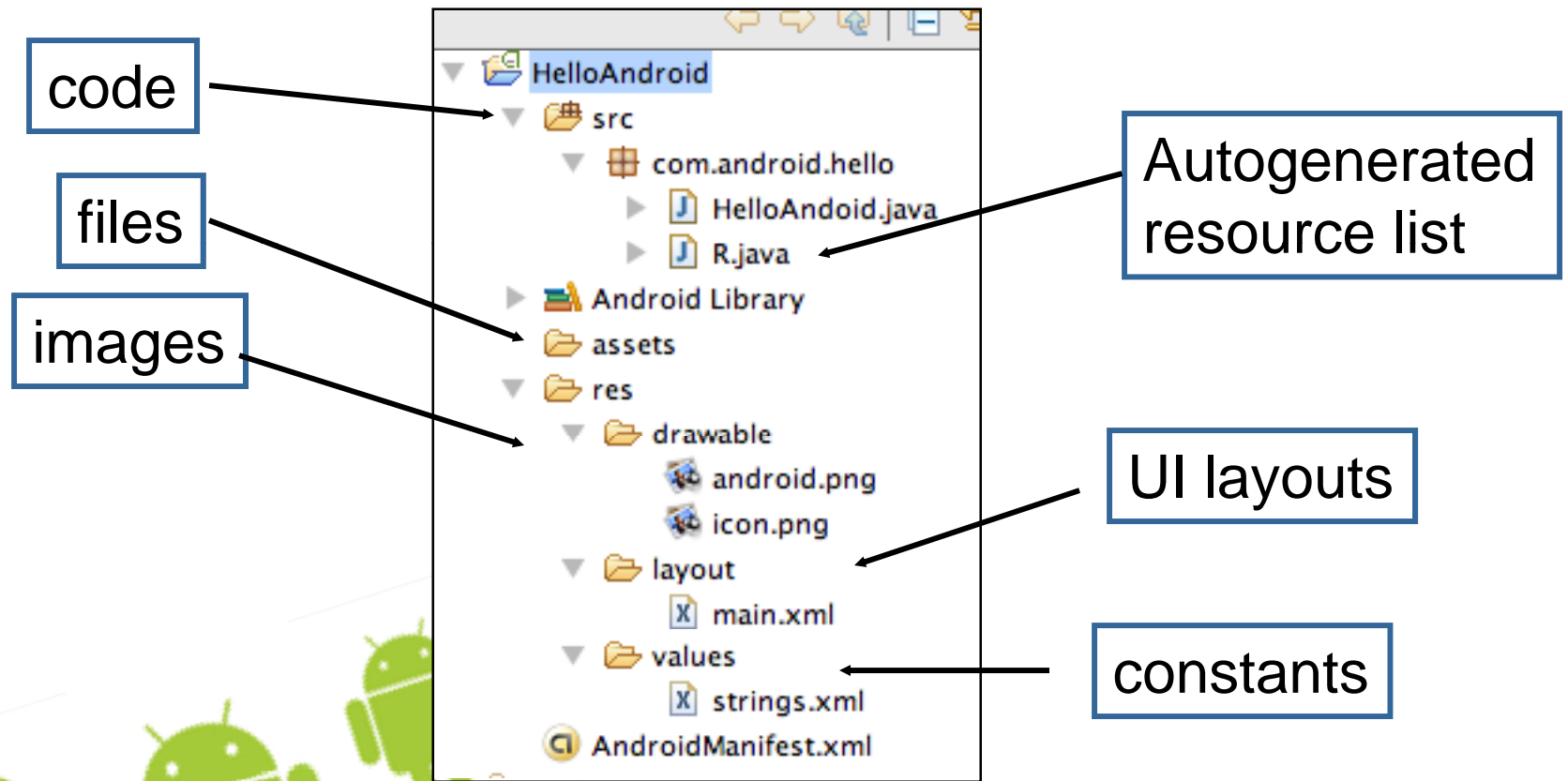


Activity is the presentation layer of your app: there will be one per screen, and the Views provide the UI to the activity

Intents specify what specific action should be performed

Services run in the background and have no UI for the user – they will update data, and trigger events

There is a common file structure for applications



Intent provides late running binding to other apps

It can be thought of as the glue between activities. It is basically a passive data structure holding an abstract action to be performed.



Written as action/data pairs such as:
`VIEW_ACTION/ACTION content://contacts/1`

Services declared in the manifest and provide support

Services run in the background:

Music player providing the music playing in an audio application



Intensive background apps, might need to spawn their own thread so as to not block the application

Notifications let you know of background events

This way you know that an SMS arrived, or that your phone is ringing, and the MP3 player should pause



Content Providers share data

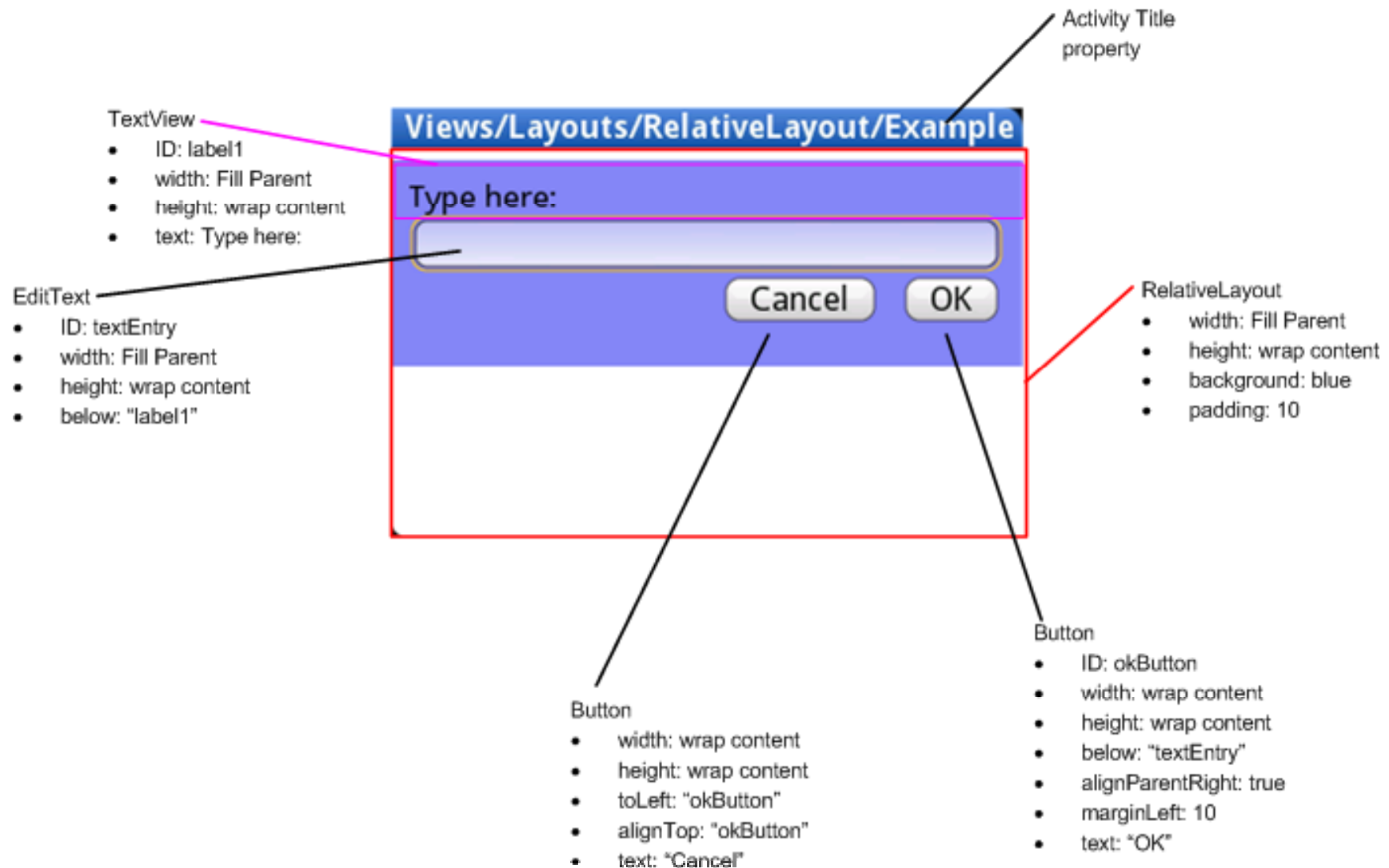
You need one if your application shares data with other applications

This way you can share the contact list with the IM application

If you don't need to share data, then you can use SQLite database



UI layouts are in Java and XML



```
setContentView(R.layout.hello_activity); //will load the XML UI file
```

Security in Android follows standard Linux guidelines

Each application runs in its own process

Process permissions are enforced at user and group IDs assigned to processes

Finer grained permissions are then granted (revoked) per operations

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="com.google.android.app.myapp" >
  <uses-permission id="android.permission.RECEIVE_SMS" />
</manifest>
```

Performance

