

Learning Android



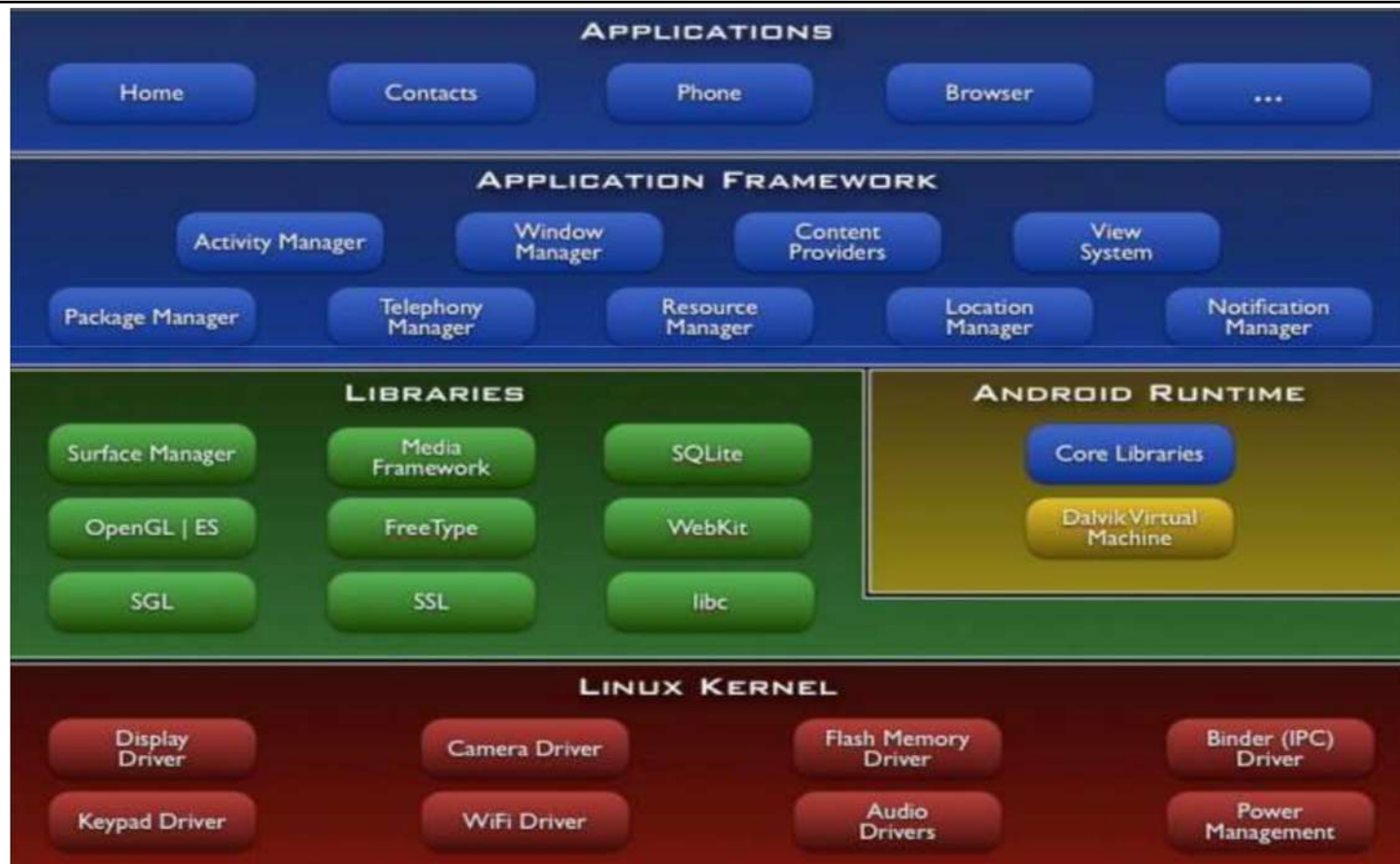
IBM **Research** | Africa

The world is our lab.

Android is a software stack for mobile devices that includes:

- ✓ an operating system
- ✓ middleware
- ✓ key applications

Google is the leading company to develop and promote android. Other companies involved are T-Mobile, HTC, Qualcomm etc



Android applications are written in the Java programming language. The android SDK tools compile the code into an android package, an archive file with an .apk suffix.

All the code in a single .apk file is considered to be one application and is the file that Android-powered devices use to install the application.

Activities

A single screen with a user interface.

Services

A component that runs in the background to either perform

- ✓ long-running operations
- ✓ remote processes

Content Providers

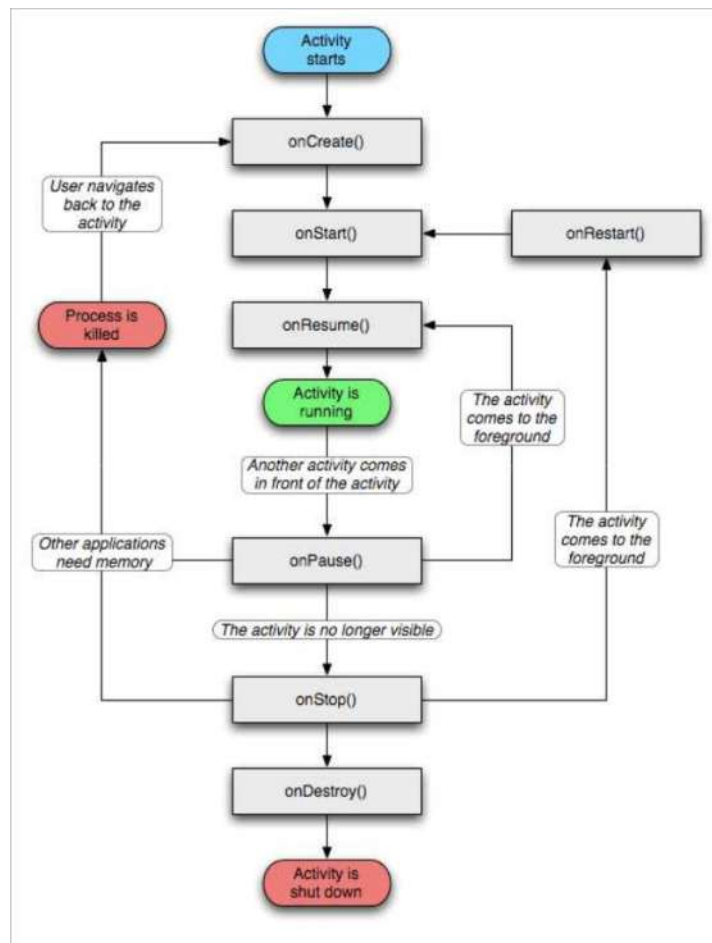
Manages a shared set of application data

Broadcast Receivers

A component that responds to broadcasted announcements

An android app is composed of the following:

- ✓ Code
- ✓ Resources – update application resources
 - Animations
 - Menus
 - Styles
 - Colors
 - Views



The Fun Part

Android Studio

<https://developer.android.com/studio/>

How To ...

1. <https://www.tutorialspoint.com/android/> (Easy for beginners)
2. <https://developer.android.com/training/basics/firstapp/>

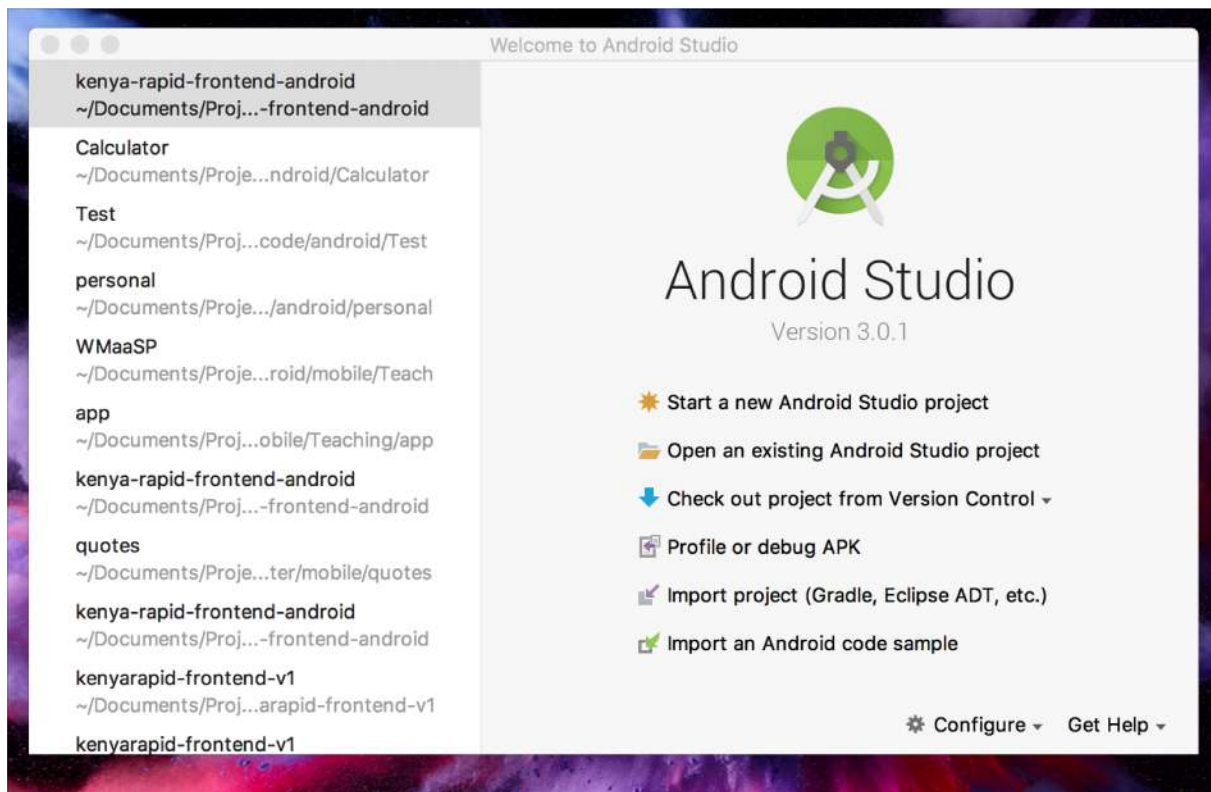
Android Studio

<https://developer.android.com/studio/>

How To ...

1. <https://www.tutorialspoint.com/android/> (Easy for beginners)
2. <https://developer.android.com/training/basics/firstapp/>

1. Download Android Studio
2. Install android studio and ensure the SDK is running.
3. Play around



Create New Project

Create Android Project

Application name
Calculator

Company domain
com.calculator

Project location
/Users/violetteogega/Documents/Projects/Water/code/android/mobile


Package name
calculator.com.calculator Edit

☐ Include C++ support
☐ Include Kotlin support

⚠ 'mobile' already exists at the specified project location.

Cancel Previous Next Finish

Create New Project

 Target Android Devices

Select the form factors and minimum SDK
Some devices require additional SDKs. Low API levels target more devices, but offer fewer API features.

☒ **Phone and Tablet**
API 21: Android 5.0 (Lollipop)

By targeting **API 21 and later**, your app will run on approximately **85.0%** of devices. [Help me choose](#)

☐ Include Android Instant App support

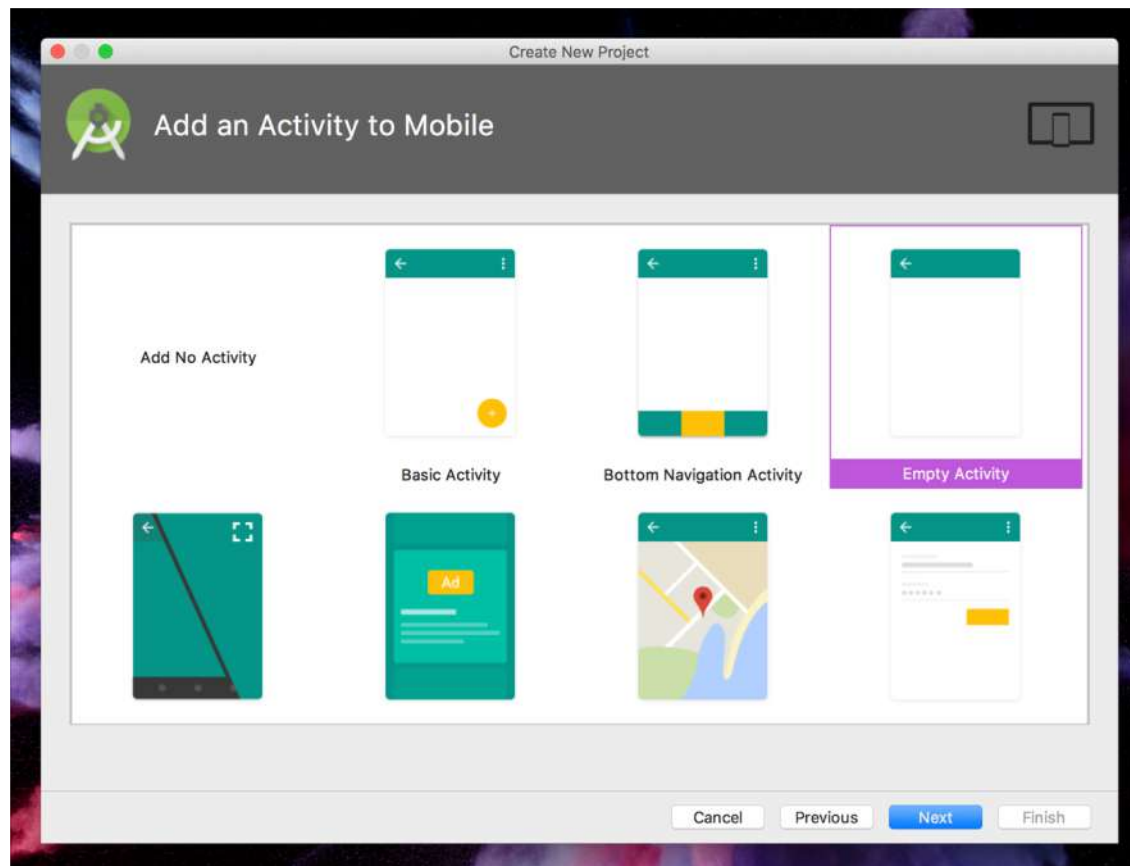
☐ **Wear**
API 21: Android 5.0 (Lollipop)

☐ **TV**
API 21: Android 5.0 (Lollipop)



☐ **Android Auto**

☐ **Android Things**
API 24: Android 7.0 (Nougat)

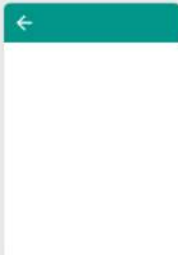
Cancel Previous Next Finish



Create New Project

 Configure Activity 

Creates a new empty activity



Activity Name

MainActivity


☒ Generate Layout File

Layout Name

activity_main

☒ Backwards Compatibility (AppCompat)

The name of the activity class to create

 Layout Name must be unique

Cancel Previous Next Finish


```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="calculator.com.calculator">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="Calculator"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

```
package calculator.com.calculator;

import ...

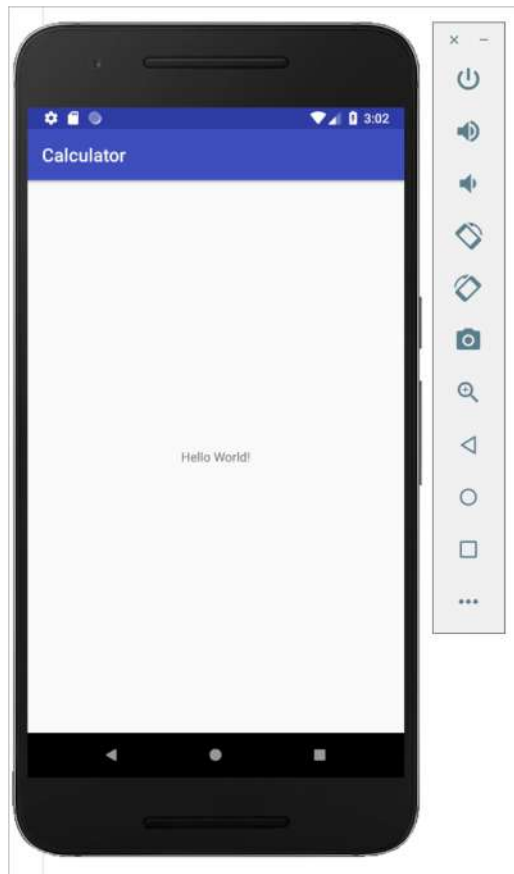
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

```
?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="calculator.com.calculator.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</android.support.constraint.ConstraintLayout>
```



```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="32dp"
    tools:context="calculator.com.calculator.MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">

        <TextView
            android:id="@+id/ans"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="18sp"
            android:layout_gravity="center"/>

        <EditText
            android:id="@+id/num1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:inputType="numberDecimal"
            android:hint="Number1"/>

        <EditText
            android:id="@+id/num2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:inputType="numberDecimal"
            android:hint="Number2"/>

        <Button
            android:id="@+id/btn_add"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Add"/>

    </LinearLayout>
</android.support.constraint.ConstraintLayout>
```

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    private Button btnAdd;

    private TextView ansView;

    private EditText num1View;
    private EditText num2View;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ansView = findViewById(R.id.ans);

        num1View = findViewById(R.id.num1);
        num2View = findViewById(R.id.num2);

        btnAdd = findViewById(R.id.btn_add);
        btnAdd.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String num1 = num1View.getText().toString();
                String num2 = num2View.getText().toString();

                int ans = Integer.parseInt(num1) + Integer.parseInt(num2);

                ansView.setText(String.valueOf(ans));
            }
        });
    }
}
```

HAVE FUN

No Friday class

Monday class will be 5pm to 7pm