**1.6**

**Android Application Components**

(Activities, Intents, Views, Layouts, Services)

In android, **application components** are the basic building blocks of an application and these components will act as an entry point to allow system or user to access our app.

Following are the basic core application components that can be used in Android application.

* [Activities](https://www.tutlane.com/tutorial/android/android-activity-lifecycle)
* [Intents](https://www.tutlane.com/tutorial/android/android-intents-implicit-explicit)
* [Content Providers](https://www.tutlane.com/tutorial/android/android-content-providers-with-examples)
* [Broadcast Receivers](https://www.tutlane.com/tutorial/android/android-broadcastreceivers-with-example)
* [Services](https://www.tutlane.com/tutorial/android/android-services-with-examples)

All these application components are defined in android app description file (**AndroidMainfest.xml**) like as shown below.

<?xml version="1.0" encoding="utf-8"?>  
<manifest …..>  
    <application android:allowBackup="true" android:icon="@mipmap/ic\_launcher" ……>  
        <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>

This is how we can define an android application components in **AndroidManiFest.xml** file.

**Android Activities**

In android, [Activity](https://www.tutlane.com/tutorial/android/android-activity-lifecycle) represents a single screen with a user interface (UI) and it will acts an entry point for user’s to interact with app.

For example, a contacts app which is having a multiple activities like showing a list of contacts, add new contact, and another activity to search for the contacts. All these activities in contact app are independent of each other but will work together to provide a better user experience.

**Android Intents**

In android, [Intent](https://www.tutlane.com/tutorial/android/android-intents-implicit-explicit) is a messaging object which is used to request an action from another component.

In android, [intents](https://www.tutlane.com/tutorial/android/android-intents-implicit-explicit) are mainly used to perform following things.

* Starting an [Activity](https://www.tutlane.com/tutorial/android/android-activity-lifecycle)
* Starting a [Service](https://www.tutlane.com/tutorial/android/android-services-with-examples)
* Delivering a [Broadcast](https://www.tutlane.com/tutorial/android/android-broadcastreceivers-with-example)

There are two types of intents available in android, those are

1. [Implicit Intents](https://www.tutlane.com/tutorial/android/android-implicit-intents-with-examples)
2. [Explicit Intents](https://www.tutlane.com/tutorial/android/android-explicit-intents-with-examples)

**Android Services**

In android, [Service](https://www.tutlane.com/tutorial/android/android-services-with-examples) is a component which keep an app running in the background to perform long running operations based on our requirements. For [Service](https://www.tutlane.com/tutorial/android/android-services-with-examples), we don’t have any user interface and it will run the apps in background like play music in background when the user in different app.

We have two types of [services](https://www.tutlane.com/tutorial/android/android-services-with-examples) available in android, those are

* Local Services
* Remote Services

**Android Broadcast Receivers**

In android, [Broadcast Receiver](https://www.tutlane.com/tutorial/android/android-broadcastreceivers-with-example) is a component which will allow a system to deliver events to the app like sending a low battery message to the app. The apps can also initiate broadcasts to let other apps know that required data available in a device to use it.

Generally, we use [Intents](https://www.tutlane.com/tutorial/android/android-intents-implicit-explicit) to deliver broadcast events to other apps and Broadcast Receivers use status bar notifications to let user know that broadcast event occurs.

**Android Content Providers**

In android, [Content Providers](https://www.tutlane.com/tutorial/android/android-content-providers-with-examples) are used to exchange the data between the apps based on the requests. The Content Providers can share the app data that store in the file system, [SQLite database](https://www.tutlane.com/tutorial/sqlite), on the web or any other storage location that our app can access.

By using [Content Providers](https://www.tutlane.com/tutorial/android/android-content-providers-with-examples), other apps can query or modify the data of our app based on the permissions provided by content provider. For example, android provides a Content Provider (**ContactsContract.Data**) to manage **contacts** information, by using proper permissions any app can query the content provider to perform read and write operations on contacts information.

**Additional Components**

In android, we have an additional components which are used to build the relation between above components ([Activities](https://www.tutlane.com/tutorial/android/android-activity-lifecycle), [Intents](https://www.tutlane.com/tutorial/android/android-intents-implicit-explicit), [Content Providers](https://www.tutlane.com/tutorial/android/android-content-providers-with-examples), [Services](https://www.tutlane.com/tutorial/android/android-services-with-examples) and [Broadcast Receivers](https://www.tutlane.com/tutorial/android/android-broadcastreceivers-with-example)) to implement our application logic, those are

| **Component** | **Description** |
| --- | --- |
| Fragments | These are used to represent the portion of user interface in an activity |
| Layouts | These are used to define the user interface (UI) for an activity or app |
| Views | These are used to build user interface for an app using UI elements like buttons, lists, etc. |
| Resources | To build android app we required external elements like images, audio files, etc. other than coding |
| Manifest File | It’s a configuration file (**AndroidManifest.xml**) for the application and it will contain the information about [Activities](https://www.tutlane.com/tutorial/android/android-activity-lifecycle), [Intents](https://www.tutlane.com/tutorial/android/android-intents-implicit-explicit), [Content Providers](https://www.tutlane.com/tutorial/android/android-content-providers-with-examples), [Services](https://www.tutlane.com/tutorial/android/android-services-with-examples), [Broadcast Receivers](https://www.tutlane.com/tutorial/android/android-broadcastreceivers-with-example), permissions, etc. |

These are the main application components which are required to build any android application based on our requirements.

**Questions**

* 1. What are the basic core components used in Android application?
  2. What is Android Intent for, and how many types of Intent are?
  3. What is Android Services for, and how many types of Services are?
  4. What is Android Broadcast Receivers for?
  5. What is Android Content Providers for? Explain its Additional Components.