Main Building Blocks

1 Activities

Each screen has an activity. The activity is linked with the layout of the screen.

Activities can have different states:

- onCreate()
- onStart()
- onResume()
- onStop()
- ….

See life cycle of an Activity here:
https://developer.android.com/reference/android/app/Activity.html

Activities are managed by the Activity Manager (memory management, garbage collector)

Implementation of an Activity:

a) Each Activity must be declared in the manifest.xml
b) Each Activity has a layout xml file

2 Intents

These are messages which connect activities. You navigate between activities through intents. They are like the “glue” in your app.

Example, when user clicks, then start chat Activity:

```
public void onClick(View v) {

      AllChats chats = AllChats.getInstance();
      chats.setChatId(v.getId());

      Intent intent = new Intent(v.getContext(), ChatInstanceActivity.class);
      startActivity(intent);
}
```

Intents can be explicit or implicit.

Explicit: the addressed activity is declared in the constructor of Intent.
Implicit: there is no explicit activity declared.

```
// -------------  Implicit Intent ----------------------

public void openBrowser(View v) {

   Uri uri = Uri.parse("http://www.tbz.ch");
   //implicit intent:
   Intent i = new Intent(Intent.ACTION_VIEW); //no activity class given
   i.setData(uri);
   startActivity(i);
}

// -------------  Explicit Intent ----------------------

public void askQuestion(View v) {

   Intent i = new Intent(this, QuestionActivity.class);
   i.putExtra("question", getString(R.string.question_title));
   startActivityForResult(i, 1);
}
```

Implementation of Intents:

Implicit intents must be listed with potential activities in the manifest-file. Example:

```
<intent-filter>
    <action android:name="android.intent.action.MAIN" />
    <category android:name="android.intent.category.LAUNCHER" />
</intent-filter>
```

Getting started:

- Create a simple page with two buttons:
- The first button calls a webpage. (implicit intent)
- The second button calls a second page in your app. On this second page the user can enter a text and send it back to the first page…. (explicit intent)

Use the example project “IntentExample”.

3 Services

Services run in the background. They don't have an interface.
Services and activities run on the same main application thread.

Example, Scheduled Service to deal with chat messages:

```
public class ScheduledService extends IntentService {
	public ScheduledService() {
		super("ScheduledService");
		Log.d(getClass().getSimpleName(), "fabmsg sedulservice");
	}

	@Override
	protected void onHandleIntent(Intent intent) {
		Log.d(getClass().getSimpleName(), "fabmsg ScheduledService-start");

	//chat instance nehmen
	AllChats allChats = AllChats.getInstance();

	//nachrichten empfangen
	try{
		recieveMsgs(allChats);
	}catch( Exception e ){
		Log.e(getClass().getSimpleName(), "fabmsg error receiveMsg", e);
	}
```

4 Content Providers

They are interfaces for sharing data between applications.
Can be used as a proxy to a database.

Typical example: the `SharedPreferences` object.

5 Broadcast Receivers

They implement the Observer Design Pattern.
They have no visual representation, but they are triggered to run some code as soon as an intent informs them.

Design Philosophy (taken from “Learning Android”)

1. Develop the application in **small increments**
2. The app must always work!
3. Do refactoring when necessary