MODULE 2

ACTIVITY

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What is an Activity?

- An application = one or more activities
- Activity
  - Usually represents a single screen
  - Consists of one or more user interface (GUI) controls
    - E.g, TextView, Button, EditText, …
  - Enables user interaction with the application

What is an Activity?

- Separation of the presentation layer (View) from business logic
  - View: Activity XML file
    - Defines the user interface of the application
    - Contains GUI controls
  - Business logic: Activity Java file
    - Contains action code of the GUI controls
      - Event handling
      - Processing of data entered by the user

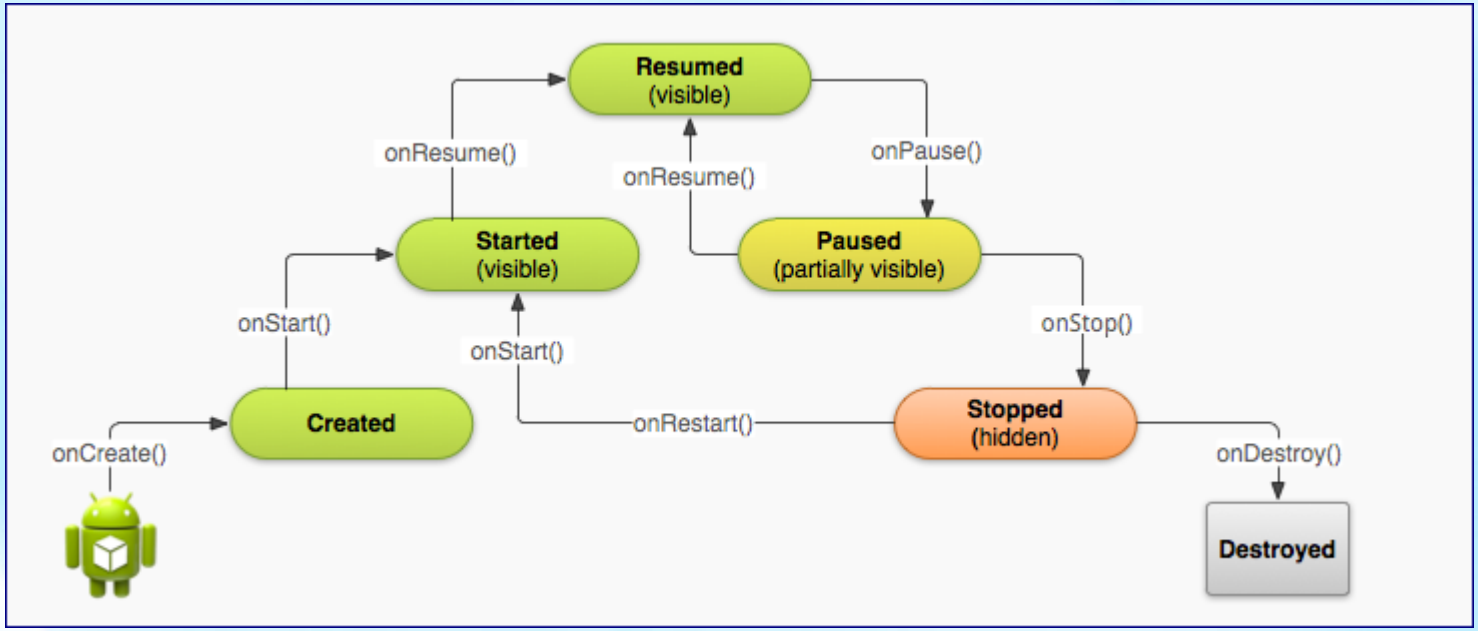
Stack of Activities

- Each activity operates independently of the others
- Stack of activities maintained while running the application
  - The activity on the top is the one currently being displayed
- When Back button pressed
  - The top activity is popped from the stack
    - ⇨ The previous activity becomes the current activity
    - ⇨ The previous screen is displayed
- Transition from one activity to another through intents
  - Asynchrounous message
  - Can be used to pass data from one activity to another one

Activity Lifecycle

- Activity States
  - Running (visible)
    - Activity is visible and interacts with the user
  - Paused
    - Activity is still visible but partially obscured
    - Instance is running but might be killed by the system
  - Stopped
    - Activity is not visible
    - Instance is running but might be killed by the system
  - Destroyed
    - Activity has been terminated
      - By the system
      - By a call to finish() method

Activity Life Cycle



Source: http://developer.android.com/training/basics/activity-lifecycle/starting.html

Creating an Activity

- Each activity has to be defined in the AndroidManifest.XML

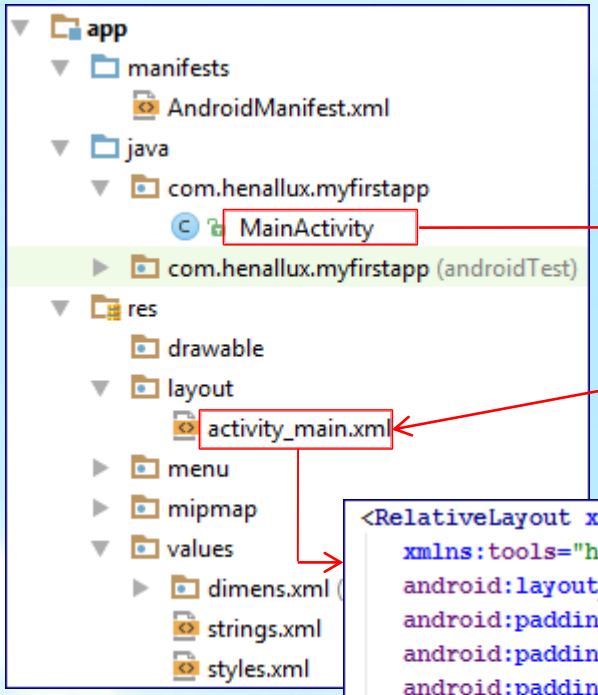
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.henallux.myfirstapp" >

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme"
        android:name="MyApplication"
        >
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

First launched activity

Creating an Activity

- Separation of the presentation layer (View) from business logic
- View: Activity XML file
  - Defines the user interface of the application
  - Contains GUI controls
- Business logic: Activity Java file
  - Contains action code of the GUI controls
    - Event handling
    - Processing of data entered by the user
  - Subclass of Activity class
    - E.g, AppCompatActivity
      - Base class for activities that use the support library action bar features

Creating an Activity




```
public class MainActivity extends AppCompatActivity {

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

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent" android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin" tools:context=".MainActivity">

    <TextView android:text="@string/hello_world" android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</RelativeLayout>
```

Application Object

- Create a subclass of the android.app.**Application** class
  - E.g,
    - To store global variables
    - To use preferences
    - To define action to perform when the allocated memory is low
- Declare this Application subclass in the AndroidManifest.xml
- One object of this class represents the current application
  - It can be retrieved anywhere through **getApplicationContext()** method

Application Object

- E.g,

```
public class MyApplication extends android.app.Application {

  private int generalValue;

  @Override
  public void onCreate()
  {  super.onCreate();
     generalValue = 100;
  }

  public int getGeneralValue() {
      return generalValue;
  }
}
```

- In AndroidManifest.xml

```
<application
    android:allowBackup="true"
    android:icon="@drawable/ic_launcher"
    android:label="@string/app_name"
    android:theme="@style/AppTheme"
    android:name="MyApplication">
```

Application Object

- Access to the application object

```
MyApplication myApplicationObject = (MyApplication)this.getApplicationContext();
int dataFromAppObject = myApplicationObject.getGeneralValue();
```

Toast Notification

- Transient message
  - Automatically disappears after a while without user interaction
- Used to inform user about non important happenings
  - Not a problem if unnoticed by user
- Through android.widget.**Toast** class
  - Method : makeText
    - Arguments : context (Activity), string to display, duration
  - E.g,

```
Toast.makeText(MainActivity.this, "Welcome!", Toast.LENGTH_SHORT).show();
```

Webography

- http://developer.android.com/training/basics/firstapp/index.html
- http://developer.android.com/guide/components/activities.html