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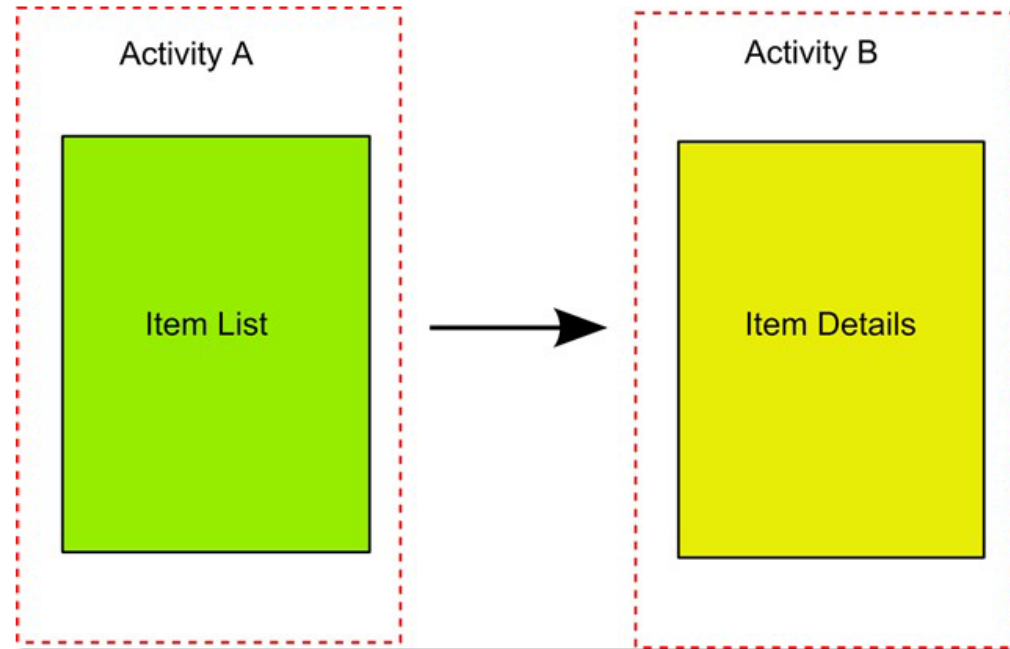
Mobile Application Development

Chapter 4 - Multiple Activities and Intents

Reference : <http://web.stanford.edu/class/cs193a/lectures.shtml>

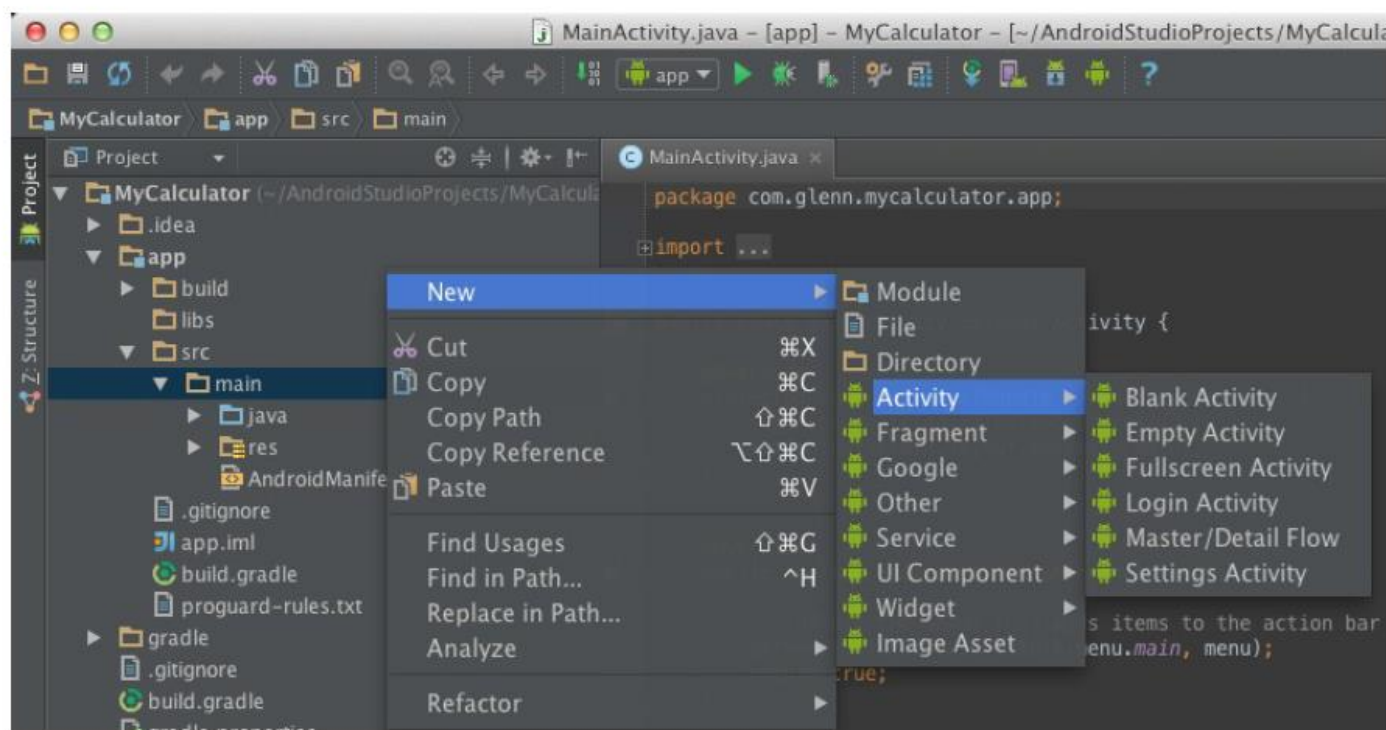
Multiple Activities

- Many apps have **multiple activities**.
 - Example: In an address book app, the main activity is a list of contacts, and clicking on a contact goes to another activity for viewing details.
 - An activity A can launch another activity B in response to an event.
 - The activity A can pass data to B.
 - The second activity B can send data back to A when it is done.



Adding an Activity

- in Android Studio, right click "**app**" at left: **New -> Activity**
 - creates a new **.XML** file in **res/layouts**
 - creates a new **.java** class in **src/java**
 - adds information to **AndroidManifest.xml** about the activity (without this information, the app will not allow the activity)



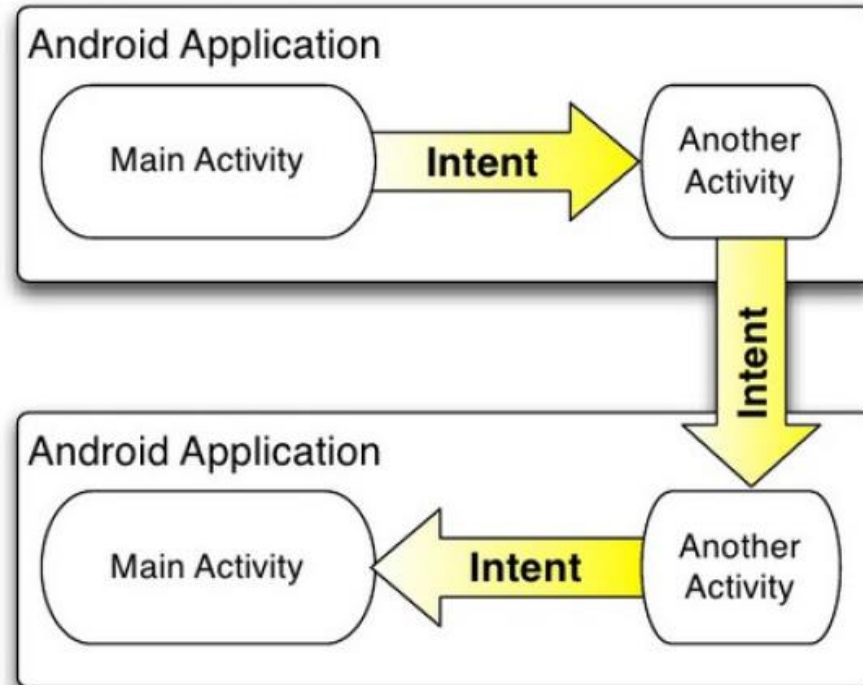
Activities in Manifest

- Every activity has an entry in project's **AndroidManifest.xml**, added automatically by Android Studio:

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.myusername.myapplication" >
    <application android:allowBackup="true"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >
        <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>
        <activity android:name=".SecondActivity"
            android:label="@string/title_activity_second"
            android:parentActivityName=".SecondActivity" >
            <meta-data android:name="android.support.PARENT_ACTIVITY"
                android:value="com.example.myusername.myapplication.MainActivity" />
        </activity>
    </application>
</manifest>
```

Intents

- **intent**: a bridge between activities;
a way for one activity to invoke another
 - the activity can be in the same app or in a different app
 - can store **extra data** to pass as "parameters" to that activity
 - second activity can "**return**" information back to the caller if needed



Creating an Intent

- To launch another activity (usually in response to an event), create an Intent object and call `startActivity` with it:

```
Intent intent = new Intent(this, ActivityName.class);  
startActivity(intent);
```

- If you need to pass any parameters or data to the second activity, call `putExtra` on the intent.
 - It stores "extra" data as key/value pairs, not unlike a Map.

```
Intent intent = new Intent(this, ActivityName.class);  
intent.putExtra("name", value);  
intent.putExtra("name", value);  
startActivity(intent);
```


Extracting extra data

- In the second activity that was invoked, you can grab any extra data that was passed to it by the calling act.
 - You can access the Intent that spawned you by calling `getIntent`.
 - The Intent has methods like `getExtra`, `getIntExtra`, `getStringExtra`, etc. to extract any data that was stored inside the intent.

```
public class SecondActivity extends Activity {  
    ...  
    public void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_second);  
        Intent intent = getIntent();  
        String extra = intent.getStringExtra("name");  
        ...  
    }  
}
```

Waiting for a result

- If calling activity wants to wait for a result from called activity:
 - Call **startActivityResult** rather than startActivity.
 - startActivityForResult requires you to pass a **unique ID** number to represent the action being performed.
 - By convention, you declare a final int constant with a value of your choice.
 - The call to startActivityForResult will not wait; it will return immediately.
 - Write an **onActivityResult** method that will be called when the second activity is done.
 - Check for your unique ID as was passed to startActivityForResult.
 - If you see your unique ID, you can ask the intent for any extra data.
 - **Modify the called activity** to send a result back.
 - Use its setResult and finish methods to end the called activity.

Sending back a result

- In the second activity that was invoked, send data back:
 - Need to create an Intent to go back.
 - Store any extra data in that intent; call setResult and finish.

```
public class SecondActivity extends Activity {  
    ...  
    public void myOnClick(View view) {  
        Intent intent = new Intent();  
        intent.putExtra("name", value);  
        setResult(RESULT_OK, intent);  
        finish();    // calls onDestroy  
    }  
}
```

Grabbing the result

```
public class FirstActivity extends Activity {  
    private static final int REQ_CODE = 123;    // MUST be 0-65535  
  
    public void myOnClick(View view) {  
        Intent intent = getIntent(this, SecondActivity.class);  
        startActivityForResult(intent, REQ_CODE);  
    }  
  
    protected void onActivityResult(int requestCode,  
        int resultCode, Intent intent) {  
        super.onActivityResult(requestCode, resultCode, intent);  
        if (requestCode == REQ_CODE) {  
            // came back from SecondActivity  
            String data = intent.getStringExtra("name");  
            Toast.makeText(this, "Got back: " + data,  
                Toast.LENGTH_SHORT).show();  
        }  
    }  
}
```

Implicit Intent ([link](#))

- **implicit intent:** One that launches another app, without naming that specific app, to handle a given type of request or action.
 - examples: invoke default browser; load music player to play a song

```
// make a phone call
```

```
Uri number = Uri.parse("tel:5551234");
```

```
Intent callIntent = new Intent(Intent.ACTION_DIAL, number);
```

```
// go to a web page in the default browser
```

```
Uri webpage = Uri.parse("http://www.stanford.edu/");
```

```
Intent webIntent = new Intent(Intent.ACTION_VIEW, webpage);
```

```
// open a map pointing at a given latitude/longitude (z=zoom)
```

```
Uri location = Uri.parse("geo:37.422219,-122.08364?z=14");
```

```
Intent mapIntent = new Intent(Intent.ACTION_VIEW, location);
```