MODULE 10

FRAGMENT

Françoise Dubisy

TABLE OF CONTENT

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What's a Fragment?

▶ Represents a portion of user interface
- ◦ Defines its own view layout
- ◦ Has its own lifecycle

▶ Must be embedded in an activity
- ◦ Can be added or removed while the activity is running
- ◦ Insert a fragment into activity layout using <fragment> element

▶ Multiple fragments can be combined in a single activity
- ◦ To build a multi-pane UI
- ◦ To reuse a fragment in multiple activities

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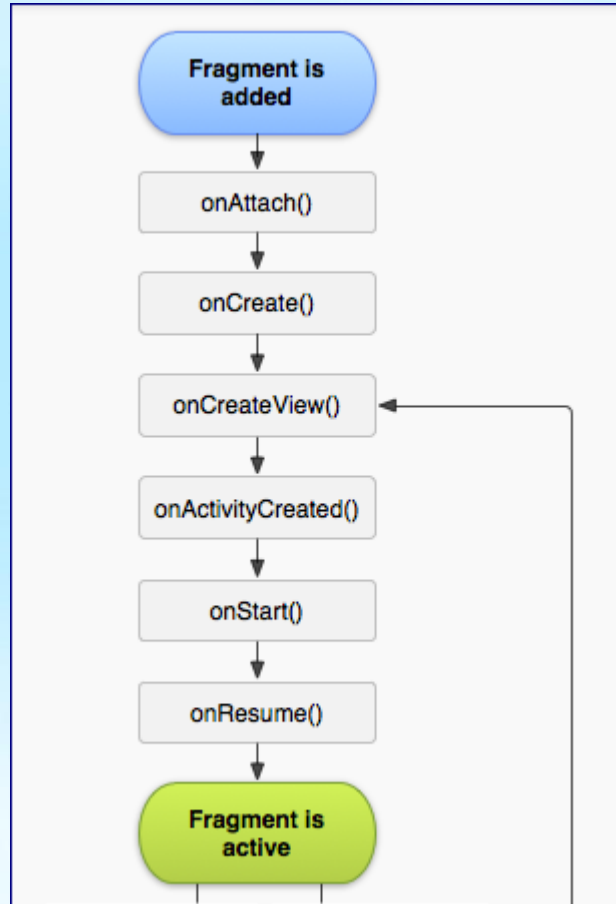
What's a Fragment?

▸ Introduced in Android 3.0 (API level 11)

- ◦ To support more dynamic and flexible UI designs on large screens
- ◦ E.g, tablet's screen has more room to combine UI components

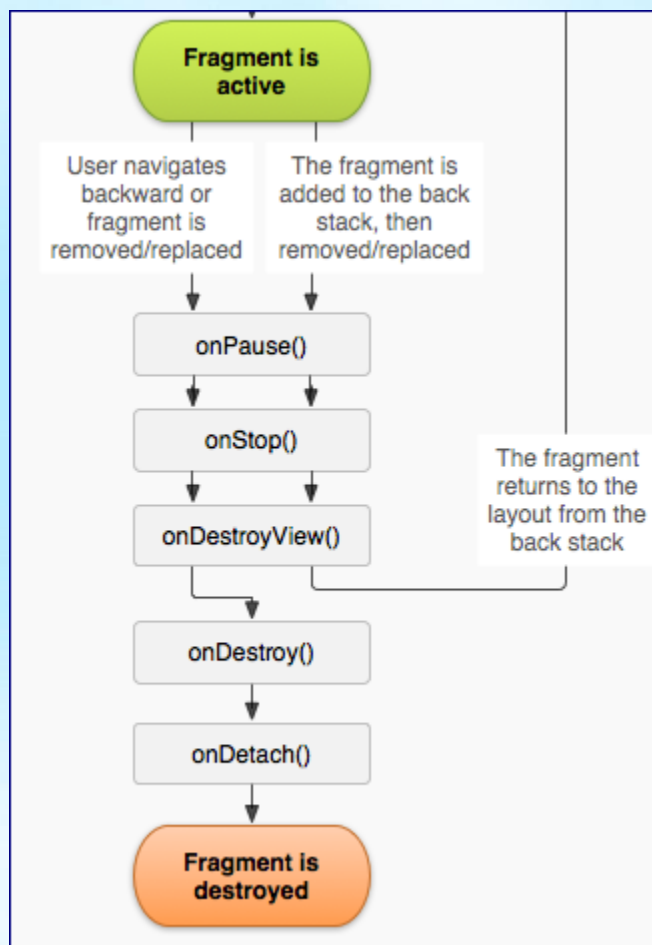Source: http://developer.android.com/guide/components/fragments.html

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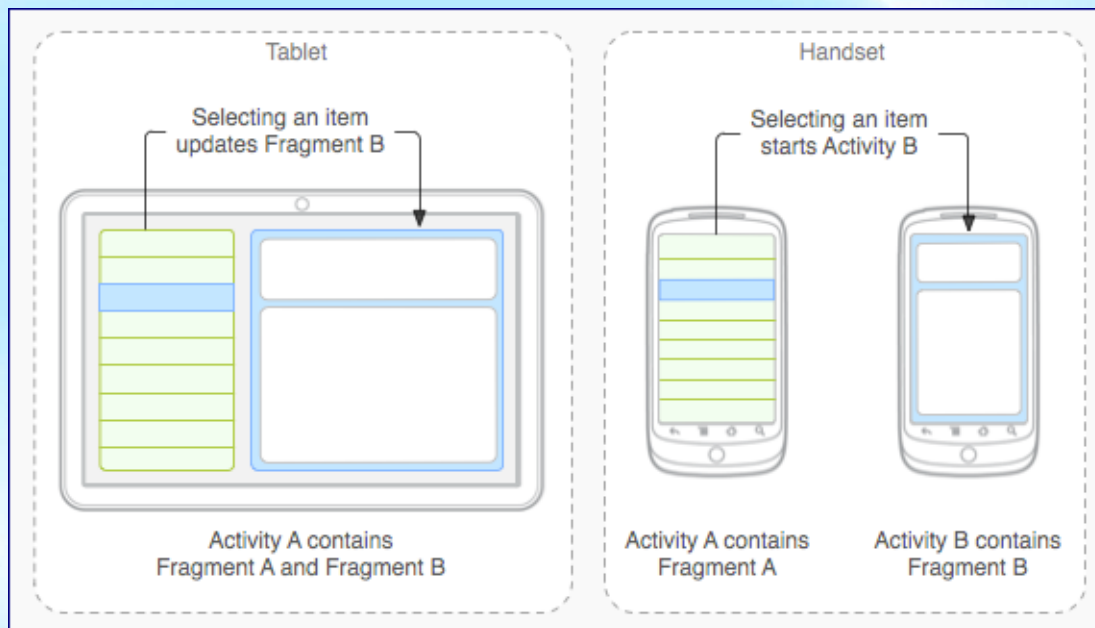
Fragment Lifecycle

▸ First steps

Source: http://developer.android.com/guide/components/fragments.html

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Fragment Lifecycle

▶ Continue

Source: http://developer.android.com/guide/components/fragments.html

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Creating a Fragment

▸ Subclasses of Fragment class

▸ Existing Fragment Subclasses

- DialogFragment
  - To create a dialog
- ListFragment
  - To display a list of items managed by an adapter
  - Similar to ListActivity
- PreferenceFragment
  - To display a hierarchy of Preference objects as a list
  - Similar to PreferenceActivity

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Creating a Fragment

▸ Create subclass of Fragment class

▸ Normally implement at least

- **onCreate()**
  - Called when creating the fragment
  - To initialize components of the fragment to retain when it is paused/stopped then resumed

- **onCreateView()**
  - Called to draw the layout of the fragment
  - Must return a View that is the root of the fragment's layout

- **onPause()**
  - Called when the user is leaving the fragment
  - To commit any changes that should be persisted beyond the current user session
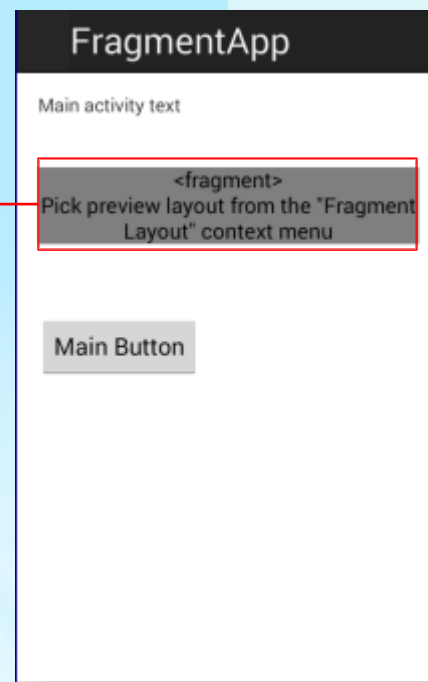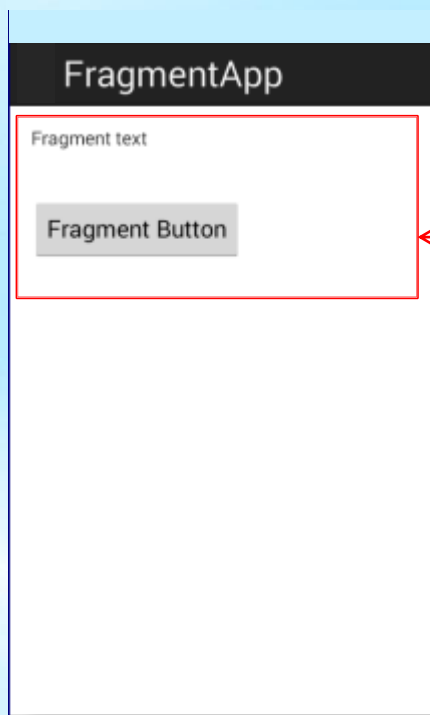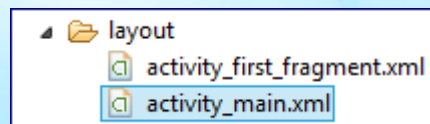   - Because the user might not come back
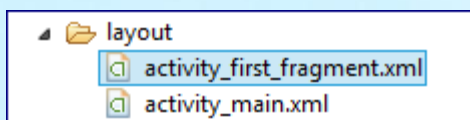
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Creating a Fragment

▶ E.g,

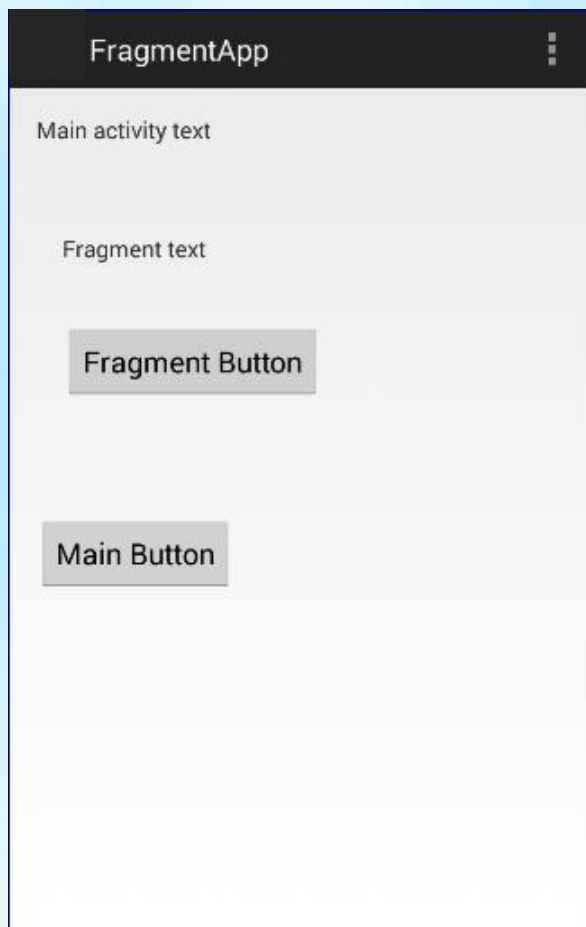Parent container for the fragment

```java
public class FirstFragment extends Fragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
            Bundle savedInstanceState) {
        return inflater.inflate(R.layout.activity_first_fragment, container, false);
    }
}
```

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Adding a Fragment to an Activity

layout
- activity_first_fragment.xml
- activity_main.xml

layout
- activity_first_fragment.xml
- activity_main.xml

FragmentApp

Fragment text

Fragment Button

FragmentApp

Main activity text

<fragment>
Pick preview layout from the "Fragment Layout" context menu

Main Button

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Adding a Fragment to an Activity

▸ Final layout

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Fragment Transactions

▸ Ability to add, remove, replace fragments in response to user interaction

▸ Each set of changes that is committed is called a transaction
  ◦ Objects from FragmentTransaction class

▸ Possible saving of transaction to a back stack managed by the activity
  ◦ Allowing the user to navigate backward through the fragment changes
  ◦ Similar to navigating backward through activities

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Fragment Transactions

▸ E.g, in activity_main.xml

```
<RelativeLayout ... >

 <TextView ... />

 <FrameLayout
    android:id="@+id/mainFrameLayoutID"
    ... >

    <fragment
       android:id="@+id/fragment1"
       android:name="com.henallux.fragmentsproject.MainActivityFragment"
       ... />

 </FrameLayout>

 <Button ... />

</RelativeLayout>
```

Frame Layout containing the fragment

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Fragment Transactions

▶ E.g, in MainActivity

ID of the FrameLayout containing the fragment

```
FragmentManager fragmentManager = getFragmentManager();
FragmentTransaction transaction = fragmentManager.beginTransaction();

transaction.replace(R.id.mainFrameLayoutID, new SecondFragment());

transaction.addToBackStack(null);

transaction.commit();
```

New fragment to display

Saving of transaction to the back stack

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Webography

- http://developer.android.com/guide/components/fragments.html

- http://developer.android.com/training/basics/fragments/index.html

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