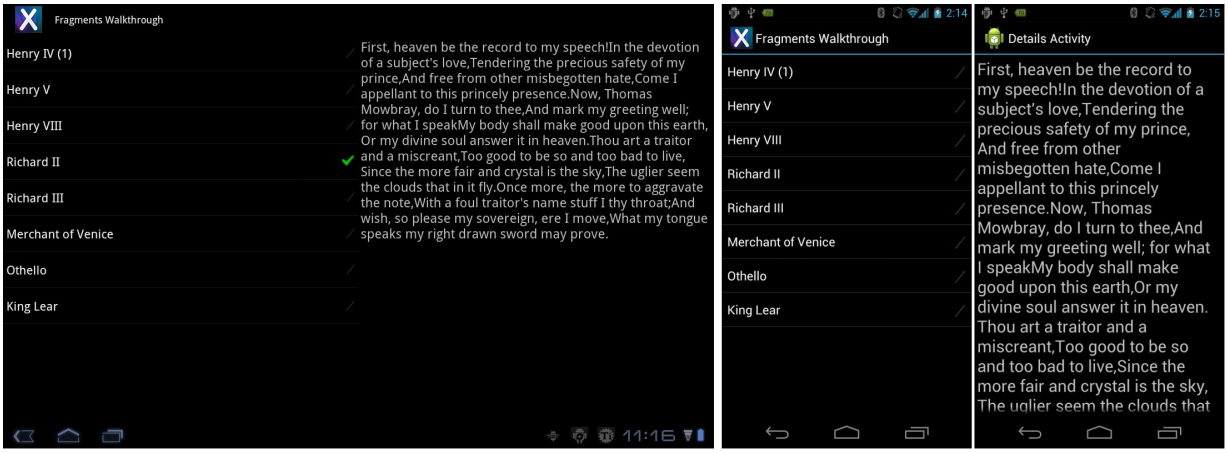
Part 3 - Specialized Fragment Classes

The Fragments API provides other subclasses that encapsulate some of the more common functionality found in applications. These subclasses are:

- **ListFragment** – This Fragment is used to display a list of items bound to a datasource such as an array or a cursor.
- **DialogFragment** – This Fragment is used as a wrapper around a dialog. The Fragment will display the dialog on top of its Activity.
- **PreferenceFragment** – This Fragment is used to show Preference objects as lists.

The ListFragment

The `ListFragment` is very similar in concept and functionality to the `ListActivity`; it is a wrapper that hosts a ListView in a Fragment. The image below shows a `ListFragment` running on a tablet and a phone:



Tablet Phone

Binding Data With The ListAdapter

The `ListFragment` class already provides a default layout, so it is not necessary to override `OnCreateView` to display the contents of the `ListFragment`. The `ListView` is bound to data by using a `ListAdapter` implementation. The following example shows how this could be done by using a simple array of strings:

```
public override void OnActivityCreated(Bundle savedInstanceState)
{
    base.OnActivityCreated(savedInstanceState);
    string[] values = new[] { "Android", "iPhone", "WindowsMobile",
                "Blackberry", "WebOS", "Ubuntu", "Windows7", "Max OS X",
                "Linux", "OS/2" };
    this.ListAdapter = new ArrayAdapter<string>(Activity,
Android.Resource.Layout.SimpleExpandableListItem1, values);
}
```

When setting the `ListAdapter`, it is important to use the `ListFragment.ListAdapter` property, and not the `ListView.ListAdapter` property. Using `ListView.ListAdapter` will cause important initialization code to be skipped.

Responding to User Selection

To respond to user selections, an application must override the `OnListItemClick` method. The following example shows one such possibility:

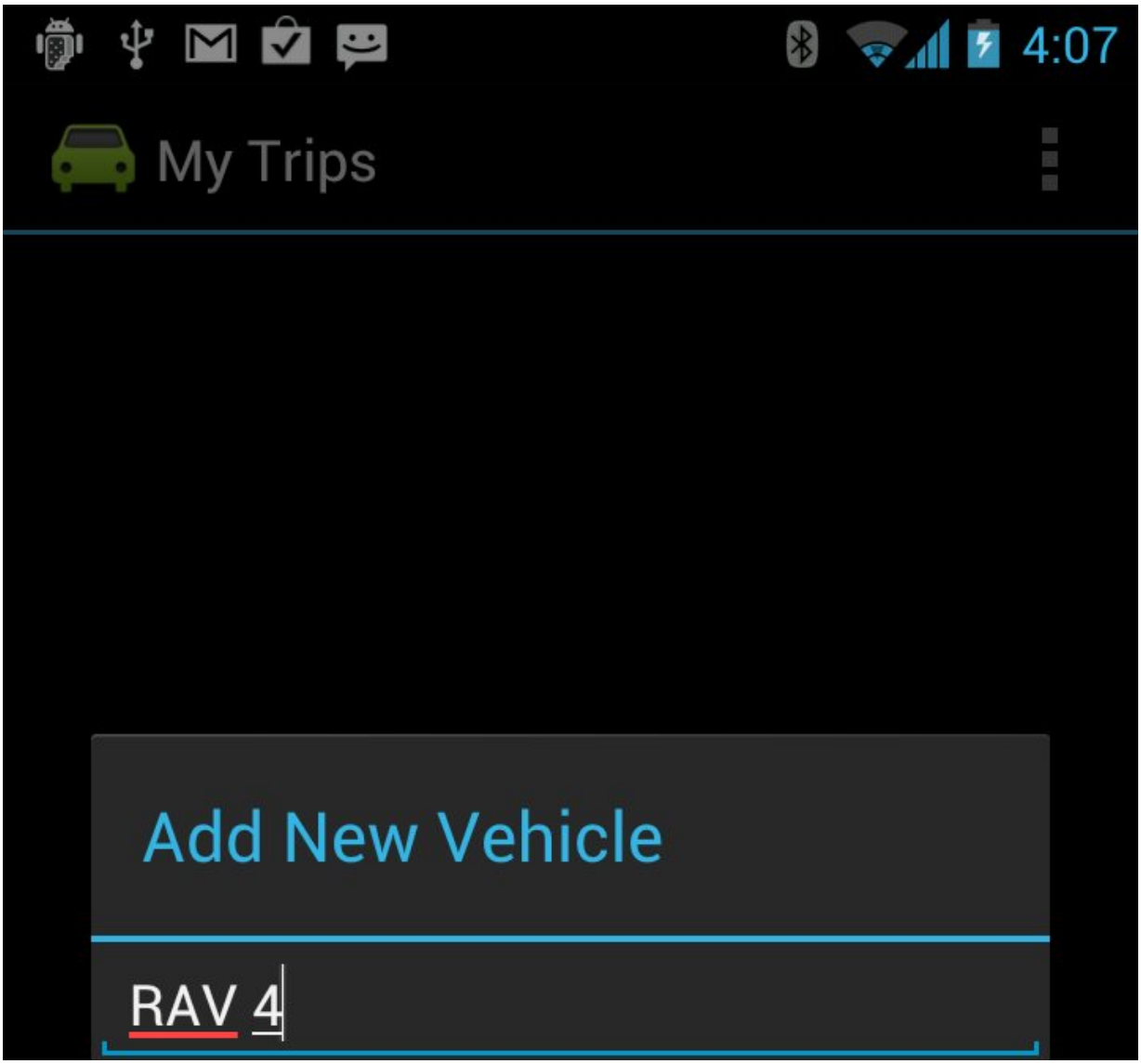
```
public override void OnListItemClick(ListView l, View v, int index, long id)
{
    // We can display everything in place with fragments.
    // Have the list highlight this item and show the data.
    ListView.SetItemChecked(index, true);

    // Check what fragment is shown, replace if needed.
    var details = FragmentManager.FindFragmentById<DetailsFragment>
(Resource.Id.details);
    if (details == null || details.ShownIndex != index)
    {
        // Make new fragment to show this selection.
        details = DetailsFragment.NewInstance(index);

        // Execute a transaction, replacing any existing
        // fragment with this one inside the frame.
        var ft = FragmentManager.BeginTransaction();
        ft.Replace(Resource.Id.details, details);
        ft.SetTransition(FragmentTransit.FragmentFade);
```

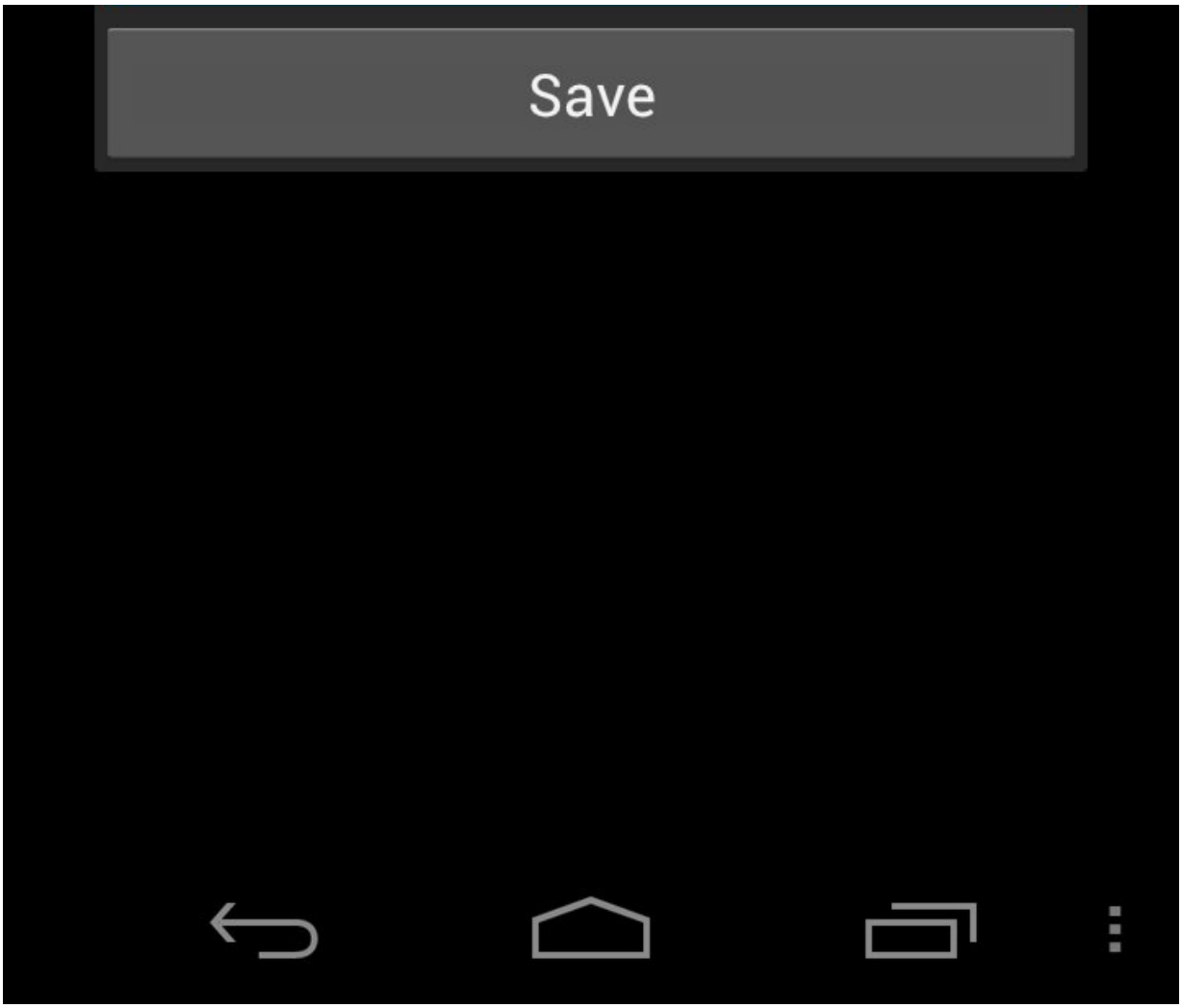
```
            ft.Commit();
        }
    }
```

In the code above, when the user selects an item in the `ListFragment`, a new Fragment is displayed in the hosting Activity, showing more details about the item that was selected.

DialogFragment

The *DialogFragment* is a Fragment that is used to display a dialog object inside of a Fragment that will float on top of the Activity's window. It is meant to replace the managed dialog APIs (starting in Android 3.0). The following screenshot shows an example of a `DialogFragment`:





A `DialogFragment` ensures that the state between the Fragment and the dialog remain consistent. All interactions and control of the dialog object should happen through the `DialogFragment` API, and not be made with direct calls on the dialog object. The `DialogFragment` API provides each instance with a `Show()` method that is used to display a Fragment. There are two ways to get rid of a Fragment:

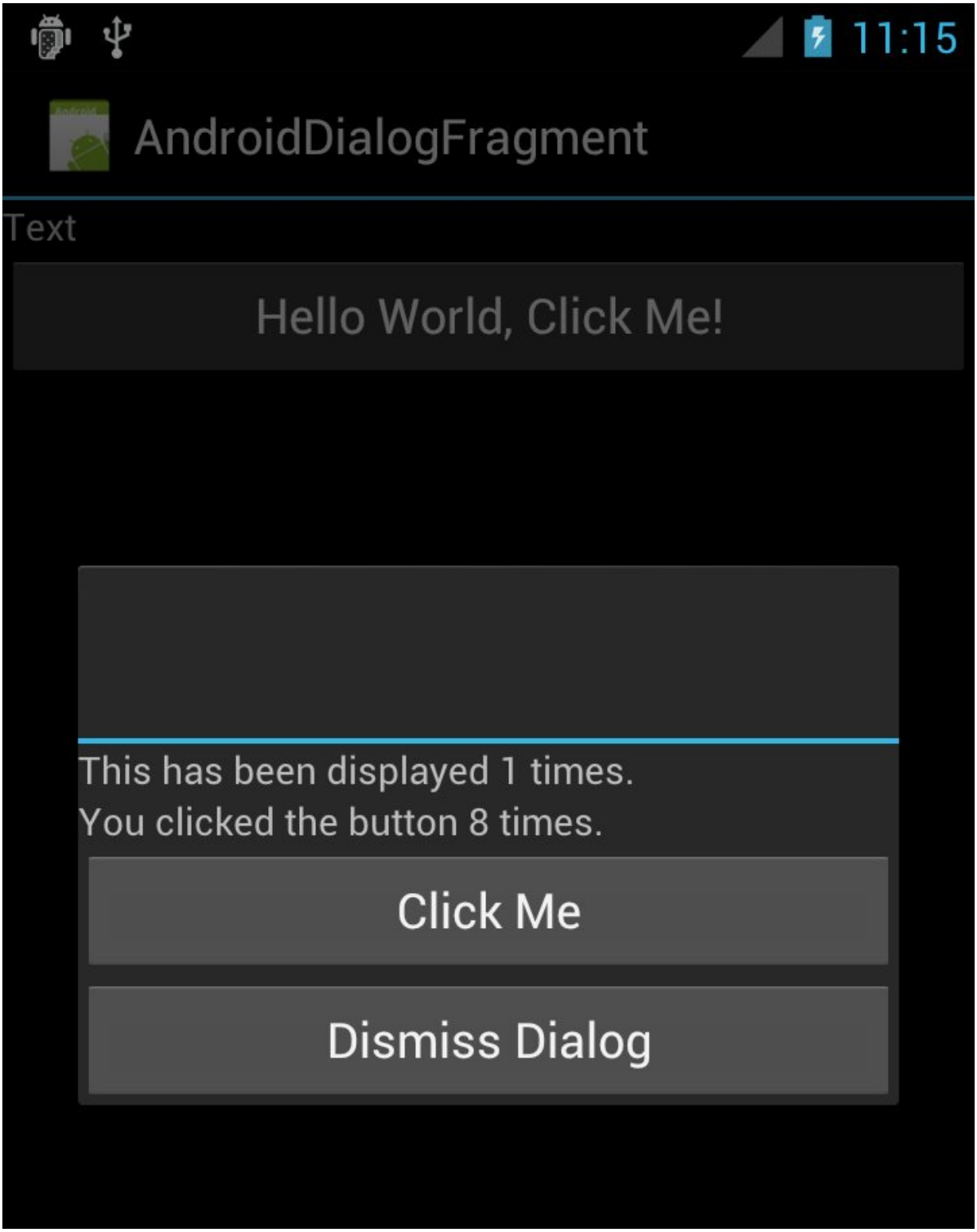
- Call `DialogFragment.Dismiss` () on the `DialogFragment` instance.
- Display another DialogFragment .

To create a `DialogFragment`, a class inherits from `Android.App.DialogFragment`, and then overrides one of the following two methods:

- **OnCreateView** – This creates and returns a view.
- **OnCreateDialog** – This creates a custom dialog. It is typically used to show an *AlertDialog* . When overriding this method, it is not necessary to override `OnCreateView` .

A Simple DialogFragment

The following screenshot shows a simple `DialogFragment` that has a TextView and two Button s.



The TextView will display the number of times that the user has clicked one button in the `DialogFragment`, while clicking the other button will close the Fragment. The code for `DialogFragment` is:

```
public class MyDialogFragment : DialogFragment
{
    private int _clickCount;
    public override void OnCreate(Bundle savedInstanceState)
    {
        _clickCount = 0;
    }

    public override View OnCreateView(LayoutInflater inflater, ViewGroup
container, Bundle savedInstanceState)
    {
        base.OnCreate(savedInstanceState)

        var view = inflater.Inflate(Resource.Layout.dialog_fragment_layout,
container, false);
        var textView = view.FindViewById<TextView>
(Resource.Id.dialog_text_view);

        view.FindViewById<Button>(Resource.Id.dialog_button).Click += delegate
```

```
                                                                                {

textView.Text = "You clicked the button " + _clickCount++ + " times.";

};
        // Set up a handler to dismiss this DialogFragment when this button is
clicked.
            view.FindViewById<Button>(Resource.Id.dismiss_dialog_button).Click
+= (sender, args) => Dismiss();
            return view;
        }
    }
```

Displaying a Fragment

Like all Fragments, a `DialogFragment` is displayed in the context of a `FragmentTransaction`.

The `Show()` method on a `DialogFragment` takes a `FragmentTransaction` and a `string` as an input. The dialog will be added to the Activity, and the `FragmentTransaction` committed.

The following code demonstrates one possible way an Activity may use the `Show()` method to show a `DialogFragment`:

```
public void ShowDialog()
{
var transaction = FragmentManager.BeginTransaction();
var dialogFragment = new MyDialogFragment();
dialogFragment.Show(transaction, "dialog_fragment");
}
```

Dismissing a Fragment

Calling `Dismiss()` on an instance of a `DialogFragment` causes a Fragment to be removed from the Activity and commits that transaction. The standard Fragment lifecycle methods that are involved with the destruction of a Fragment will be called.

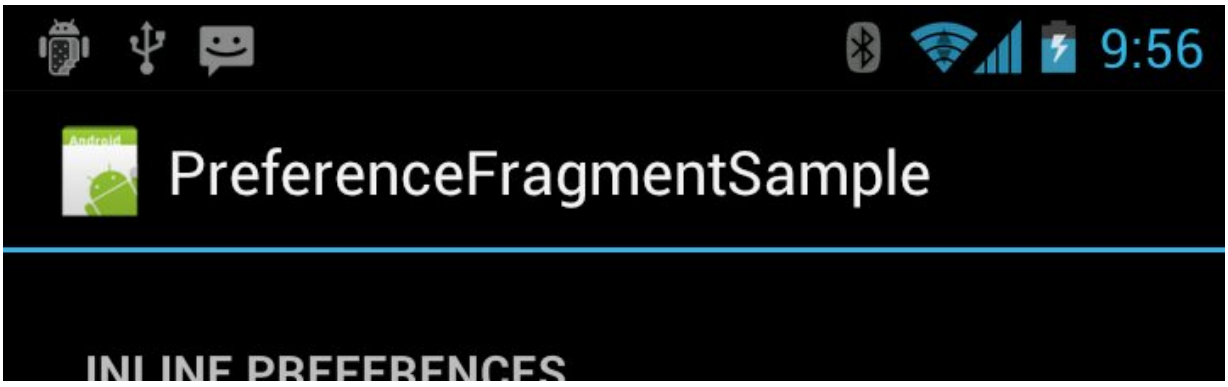
Alert Dialog

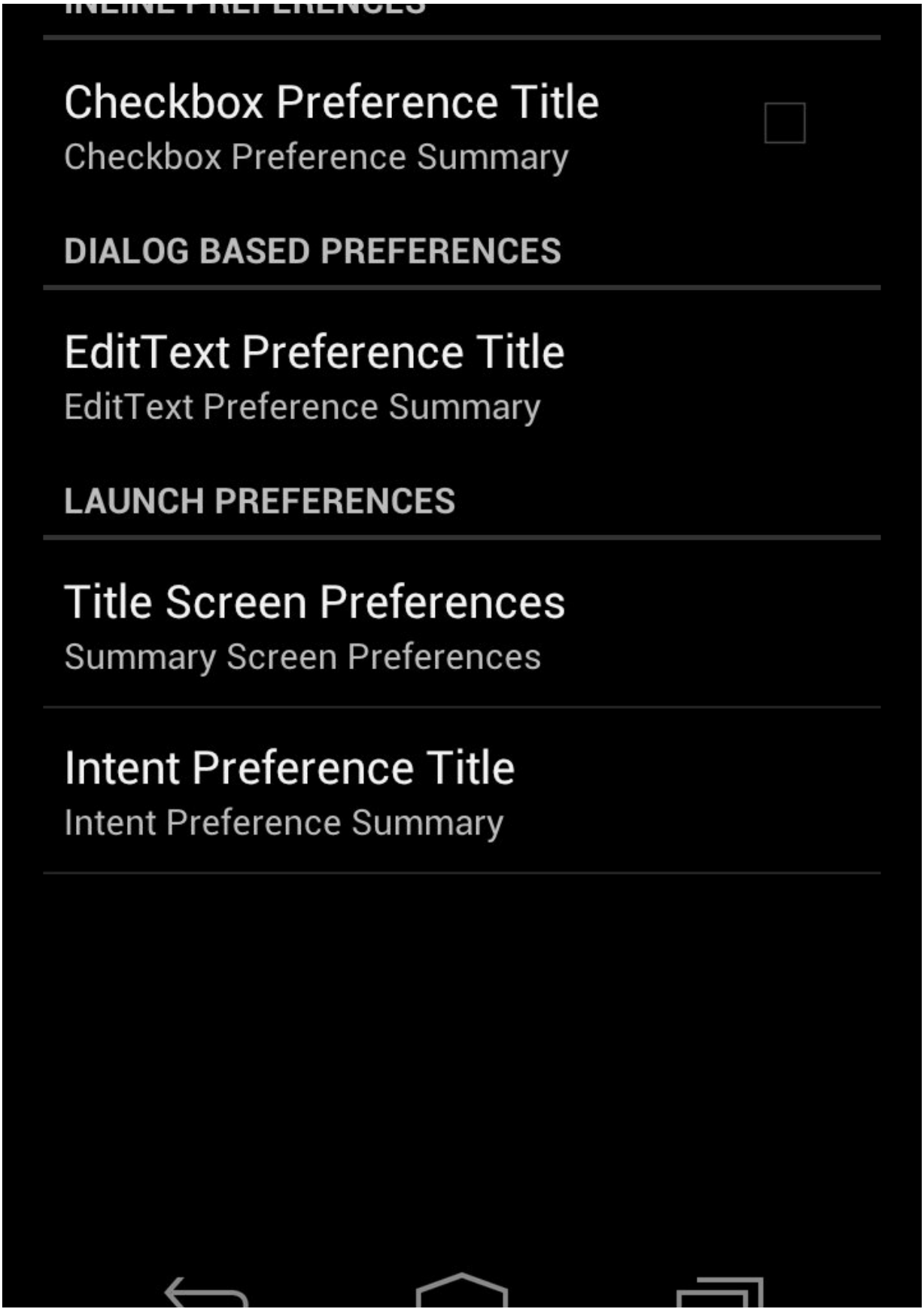
Instead of overriding `OnCreateView`, a `DialogFragment` may instead override `OnCreateDialog`. This allows an application to create an AlertDialog that is managed by a Fragment. The following code is an example that uses the `AlertDialog.Builder` to create a `Dialog`:

```
public class AlertDialogFragment : DialogFragment
    {
        public override Dialog OnCreateDialog(Bundle savedInstanceState)
        {
            EventHandler<DialogClickEventArgs> okhandler;
            var builder = new AlertDialog.Builder(Activity)
                .SetMessage("This is my dialog.")
                .SetPositiveButton("Ok", (sender, args) =>
                                                {
                                                    // Do something when this
button is clicked.
                                                })
                .SetTitle("Custom Dialog");
            return builder.Create();
        }
    }
```

PreferenceFragment

To help manage preferences, the Fragments API provides the `PreferenceFragment` subclass. The `PreferenceFragment` is similar to the PreferenceActivity—it will show a hierarchy of preferences to the user in a Fragment. As the user interacts with the preferences, they will be automatically saved to SharedPreferences. In Android 3.0 or higher applications, use the `PreferenceFragment` to deal with preferences in applications. The following picture shows an example of a `PreferenceFragment`:




Checkbox Preference Title
Checkbox Preference Summary
DIALOG BASED PREFERENCES
EditText Preference Title
EditText Preference Summary
LAUNCH PREFERENCES
Title Screen Preferences
Summary Screen Preferences
Intent Preference Title
Intent Preference Summary

Create A Preference Fragment from a Resource

The preference Fragment may be inflated from an XML resource file by using the PreferenceFragment.AddPreferencesFromResource method. A logical place to call this method in the lifecycle of the Fragment would be in the `OnCreate` method.

The `PreferenceFragment` pictured above was created by loading a resource from XML. The resource file is:

```
<?xml version="1.0" encoding="utf-8"?>

<PreferenceScreen xmlns:android="http://schemas.android.com/apk/res/android">

  <PreferenceCategory android:title="Inline Preferences">
    <CheckBoxPreference android:key="checkbox_preference"
                        android:title="Checkbox Preference Title"
                        android:summary="Checkbox Preference Summary" />

  </PreferenceCategory>

  <PreferenceCategory android:title="Dialog Based Preferences">

    <EditTextPreference android:key="edittext_preference"
                        android:title="EditText Preference Title"
                        android:summary="EditText Preference Summary"
                        android:dialogTitle="Edit Text Preferrence Dialog
Title" />

  </PreferenceCategory>

  <PreferenceCategory android:title="Launch Preferences">

    <!-- This PreferenceScreen tag serves as a screen break (similar to page
break
             in word processing). Like for other preference types, we assign a
```

```
key
             here so it is able to save and restore its instance state. -->
    <PreferenceScreen android:key="screen_preference"
                      android:title="Title Screen Preferences"
                      android:summary="Summary Screen Preferences">

      <!-- You can place more preferences here that will be shown on the next
screen. -->

      <CheckBoxPreference android:key="next_screen_checkbox_preference"
                          android:title="Next Screen Toggle Preference Title"
                          android:summary="Next Screen Toggle Preference
Summary" />

    </PreferenceScreen>

    <PreferenceScreen android:title="Intent Preference Title"
                      android:summary="Intent Preference Summary">

      <intent android:action="android.intent.action.VIEW"
              android:data="http://www.android.com" />

    </PreferenceScreen>

  </PreferenceCategory>

</PreferenceScreen>
```

The code for the preference Fragment is as follows:

```
public class PrefFragment : PreferenceFragment
{
    public override void OnCreate(Bundle savedInstanceState)
    {
        base.OnCreate(savedInstanceState);
        AddPreferencesFromResource(Resource.Xml.preferences);
    }
}
```

Querying Activities to Create a Preference Fragment

Another technique for creating a `PreferenceFragment` involves querying Activities. Each Activity can use the METADATA*KEY*PREFERENCE attribute that will point to an XML resource file. In Xamarin.Android, this is done by adorning an Activity with the `MetaDataAttribute`, and then specifying the resource file to use. The `PreferenceFragment` class provides the method AddPreferenceFromIntent that can be used to query an Activity to find this XML resource and inflate a preference hierarchy for it.

An example of this process is provided in the following code snippet, which uses `AddPreferencesFromIntent` to create a `PreferenceFragment`:

```
public class MyPreferenceFragment : PreferenceFragment
{
    public override void OnCreate(Bundle savedInstanceState)
    {
        base.OnCreate(savedInstanceState);
        var intent = new Intent(this.Activity, typeof
(MyActivityWithPreferences));
        AddPreferencesFromIntent(intent);
    }
}
```

Android will look at the class `MyActivityWithPreference`. The class must be adorned with the `MetaDataAttribute`, as shown in the following code snippet:

```
[Activity(Label = "My Activity with Preferences")]
[MetaData(PreferenceManager.MetadataKeyPreferences, Resource =
"@xml/preference_from_intent")]
public class MyActivityWithPreferences : Activity
{
    protected override void OnCreate(Bundle bundle)
    {
        base.OnCreate(bundle);
        // This is deliberately blank
    }
}
```

The `MetaDataAttribute` declares an XML resource file that the `PreferenceFragment` will use to

inflate the preference hierarchy. If the `MetatDataAttribute` is not provided, then an exception will be thrown at run time. When this code runs, the `PreferenceFragment` appears as in the following screenshot: