



# Programming Mobile Applications with Android

## Lab3

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# Programming Mobile Applications with Android

- Android Lab III.- Create, compile and execute an application with fragments and events management
  - Follow the instructions to create the an android application with events management and fragment visualizations

# Programming Mobile Applications with Android

- Android Lab III

- Create an Android Application Project as for the other labs, named Lab3ApplicationProject
- Open the layout, change the main layout to linear one and add two fragments:

```
<fragment  
  android:id="@+id/fragment1"      android:layout_width="0px"  
  android:layout_height="match_parent"  
  android:layout_weight="1"/>  
  
<fragment android:id="@+id/fragment2"  
  android:layout_width="0px"  
  android:layout_height="match_parent"  
  android:layout_weight="2" />
```

# Programming Mobile Applications with Android

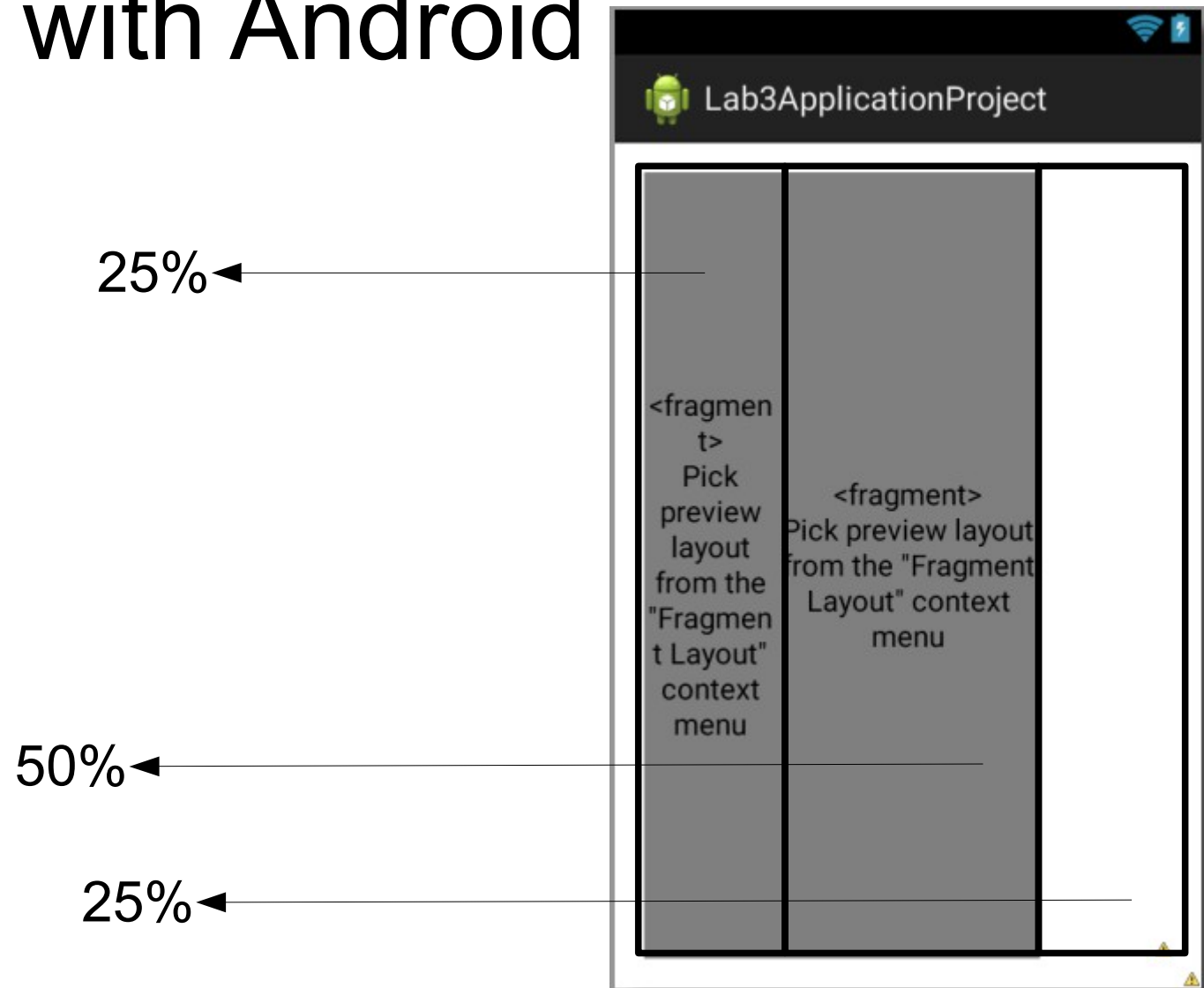
- Android Lab III

- Add a linear layout below the fragments

```
<LinearLayout  
    android:layout_width="0px"  
    android:layout_height="match_parent"  
    android:layout_weight="1"  
    android:orientation="vertical" >
```

- Using the field weight, we establish the % of the spaced used for the visualization (25%-50%-25%)

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- Android Lab III
  - Now, we will create two fragments
    - New → Other → Android → Android Object → Fragment
    - FragmentA → extends ListFragment
      - import android.app.ListFragment;
    - FragmentB → extends Fragment
      - import android.app.ListFragment;
  - With two associated layout files
    - layout\_a
    - layout\_b

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- Android Lab III

- layout\_a

```
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"    android:layout_height="match_parent"
    android:orientation="vertical"/>
```

- layout\_b

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"    android:layout_height="match_parent"
    android:orientation="vertical" >
```

```
    <TextView
```

```
        android:id="@+id/detailsView"
```

```
        android:layout_width="match_parent"
```

```
        android:layout_height="match_parent" />
```

```
</LinearLayout>
```

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- Android Lab III

- Then, it is time to modify the layout of the main class and establish the class field of the two fragments

```
<fragment android:id="@+id/fragment1"
```

```
class ="com.example.lab3package.FragmentA"
```

...

```
android:layout_weight="1"/>
```

```
<fragment android:id="@+id/fragment2"
```

```
class ="com.example.lab3package.FragmentB"
```

...

```
android:layout_weight="2" />
```



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- Android Lab III

- ... and start creating the code in the FragmentA class

1. Remove all the content and leave just the following lines

```
private ListSelectionListener mListener;  
  
public interface ListSelectionListener {  
  
    public void onListSelection(int index); }  
  

```

2. Source → Override/Implement: onItemClick

```
public void onItemClick(ListView l, View v, int position, long id) {  
  
    listView().setItemChecked(position, true);  
  
    mListener.onListSelection(position); }  
  

```

3. Source → Override/Implement: onAttach, onActivityCreated

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- Android Lab III
  - ... and start creating the code in the FragmentA class
    - Source → Override/Implement: `onActivityCreated` (no change)
    - Source → Override/Implement: `onAttach`

```
public void onAttach(Activity activity) {  
    super.onAttach(activity);  
  
    try { mListener = (ListSelectionListener) activity;  
    } catch (ClassCastException e) {}  
}
```

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- Android Lab III

- With respect to the FragmentB

- Add the following field

```
private TextView detailsView = null;
```

- Source → Override/Implement: onCreateView

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

- Source → Override/Implement: onActivityCreated

```
public void onActivityCreated(Bundle savedInstanceState)
{ super.onActivityCreated(savedInstanceState);
  detailsView = (TextView) getActivity().findViewById(R.id.detailsView); }
```

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- Android Lab III
  - Now we have ...
    - Main Activity that visualizes two fragments
    - FragmentA
      - Ready to handle item selections
    - FragmentB
      - Ready to visualize details
    - ...
  - Next steps
    - Add the content

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- Android Lab III
  - Open the main activity class
    - Create 3 variables
      - `public static String[] firstLevelArray;`
      - `public static String[] secondLevelArray;`
      - `private FragmentB mDetailsFragment;`
    - Insert the following lines in the `onCreate()` method
      - `mDetailsFragment = (FragmentB)`  
`getFragmentManager().findFragmentById(R.id.fragment2);`
      - `firstLevelArray = new String[5];`
      - `firstLevelArray[0] = "Day 1";`
      - ...
      - `secondLevelArray = new String[5];`
      - `secondLevelArray[0] = "Day 1 Info";`
      - ...

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- Android Lab III

- Open the layoutA class

- Insert this line in the `onActivityCreated` method

- `setListAdapter(new ArrayAdapter<String>(getActivity(),R.layout.layout_a, MainActivity.firstLevelArray));`

- Insert the following methods

- ```
public int getSelectionIndex() {  
    return selectionIndex; }  

```

- ```
public void getDetails(int index) {  
    if (index < 0 || index >= selectionMaxIndex) return;  
    selectionIndex = index;  
    detailsView.setText(MainActivity.secondLevelArray[selectionIndex]); }  

```

# Programming Mobile Applications with Android

- Android Lab III

- Open the layoutB class

- Insert this line in the `onActivityCreated` method

```
selectionMaxIndex = MainActivity.firstLevelArray.length;
```

- Insert the following methods

```
public int getSelectionIndex() {  
    return selectionIndex; }  
}
```

```
public void getDetails(int index) {  
    if (index < 0 || index >= selectionMaxIndex) return;  
    selectionIndex = index;  
    detailsView.setText(MainActivity.secondLevelArray[selectionIndex]); }  
}
```

# Programming Mobile Applications with Android

- Android Lab III

- Open the main activity class

- Import the listSelectionListener

- `import com.example.lab3package.FragmentA.ListSelectionListener;`

- Add the “implements ListSelectionListener”

- Fix the errors by adding the methods

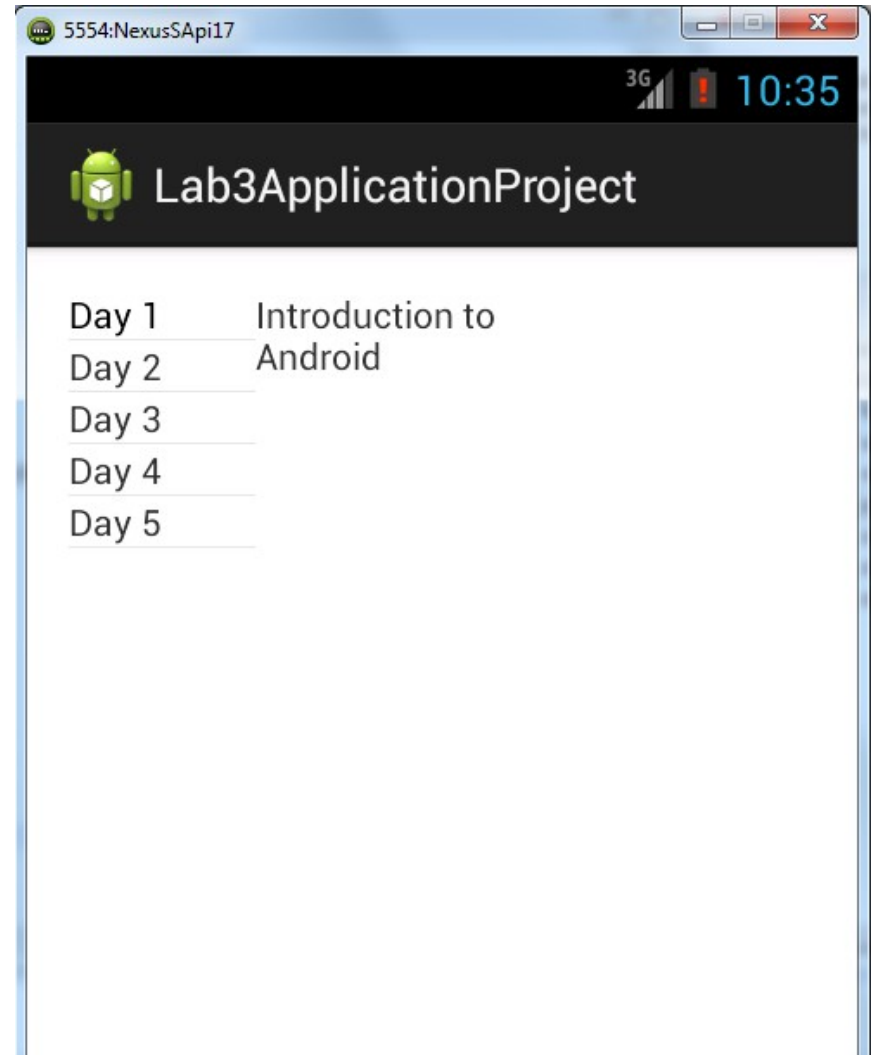
- Insert in the onListSelection method

- ```
if (mDetailsFragment.getSelectionIndex() != index)
    mDetailsFragment.getDetails(index);
```



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- Android Lab III
  - Now, we can run the application and see how it works



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- Android Lab III

- In addition to the Fragments, we can modify the menus/action bar to add additional visualization

- Open the res/menu/main.xml file in text mode and set

```
<menu xmlns:android="http://schemas.android.com/apk/res/android" >
    <item android:id="@+id/labs"
        android:title="Labs"
        android:showAsAction="ifRoom" >
        <menu>
            <item android:id="@+id/menuLab1" android:title="1 - Introduction"
                android:showAsAction="withText" />
            <item android:id="@+id/menuLab2" android:title="2 - Basics"
                android:showAsAction="withText"/>
        </menu>
    </item>
</menu>
```

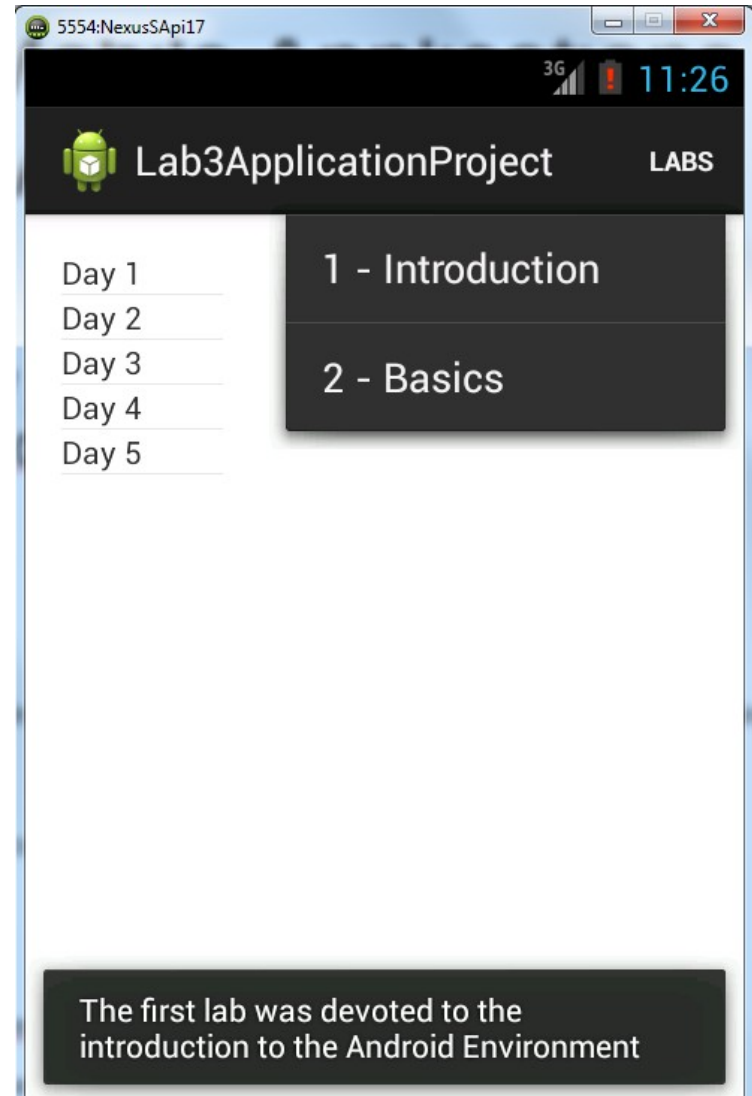
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- Android Lab III
  - Open the main activity java file → `onOptionsItemSelected`

```
int id = item.getItemId();
    switch (id)
    {
        case R.id.menuLab1:
            Toast.makeText(this, "The first lab was devoted to the introduction to the Android Environment",
                Toast.LENGTH_SHORT).show();                break;
        case R.id.menuLab2:
            Toast.makeText(this, "In second lab we saw some Android basics",
                Toast.LENGTH_SHORT).show();
            break;
    }
    return super.onOptionsItemSelected(item);
```

# Programming Mobile Applications with Android

- Android Lab III



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- Android Lab III
  - You all still have a linear layout with the 25% of the window to add multimedia elements and see how they work
    - Add some elements like an spinner and experiment with them