

CSC7336 : Advanced Software Engineering...

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`http://www-public.telecom-sudparis.eu/~gibson/Teaching/CSC7336/`

Android Development -GUI Example

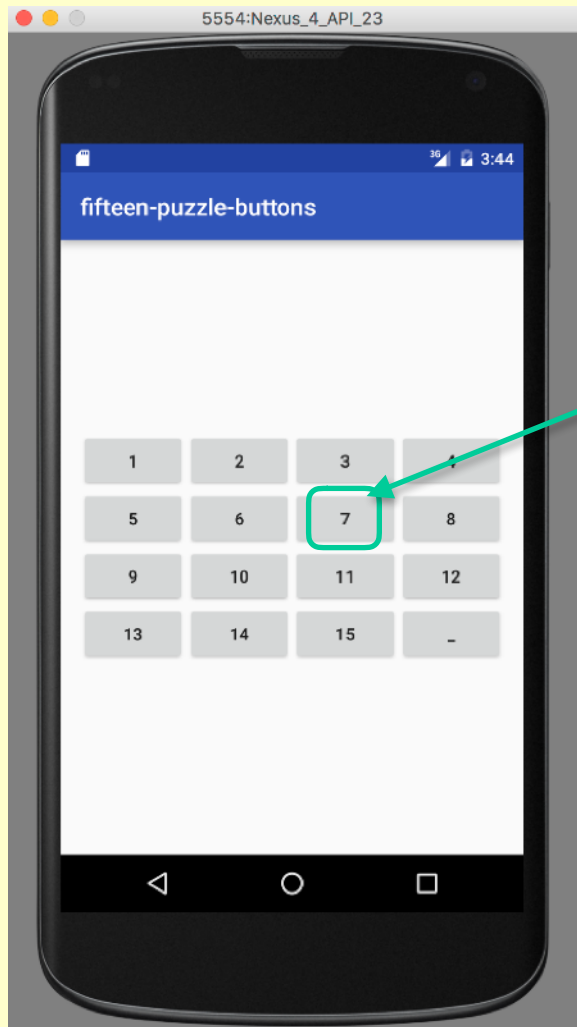
`.../~gibson/Teaching/CSC7336/L6-AndroidDevelopmentII`

Create a 4*4 grid of buttons

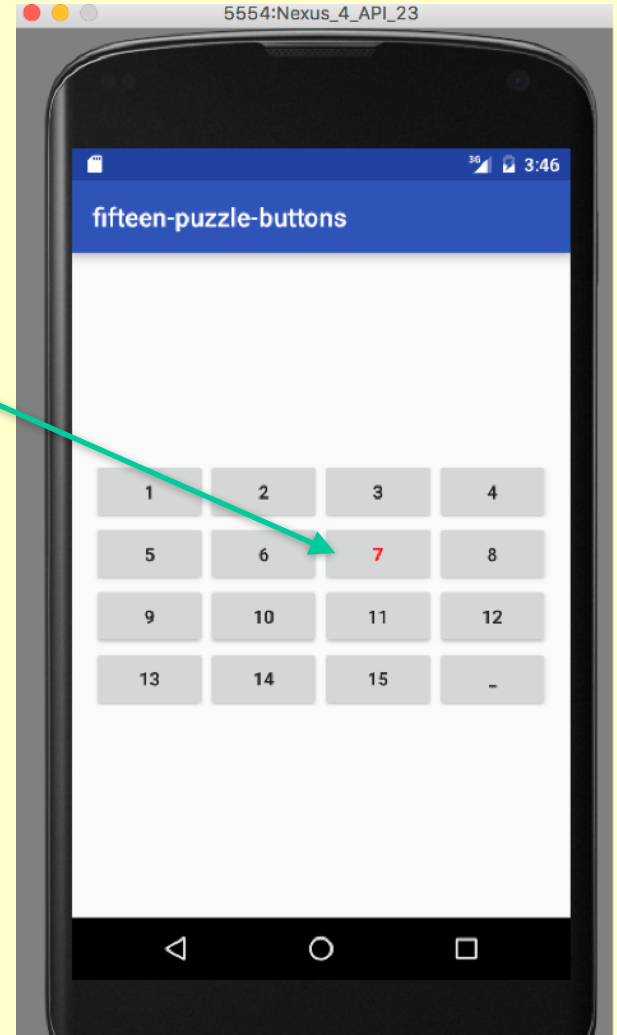


Requirement: when we click on a button it changes colour to red

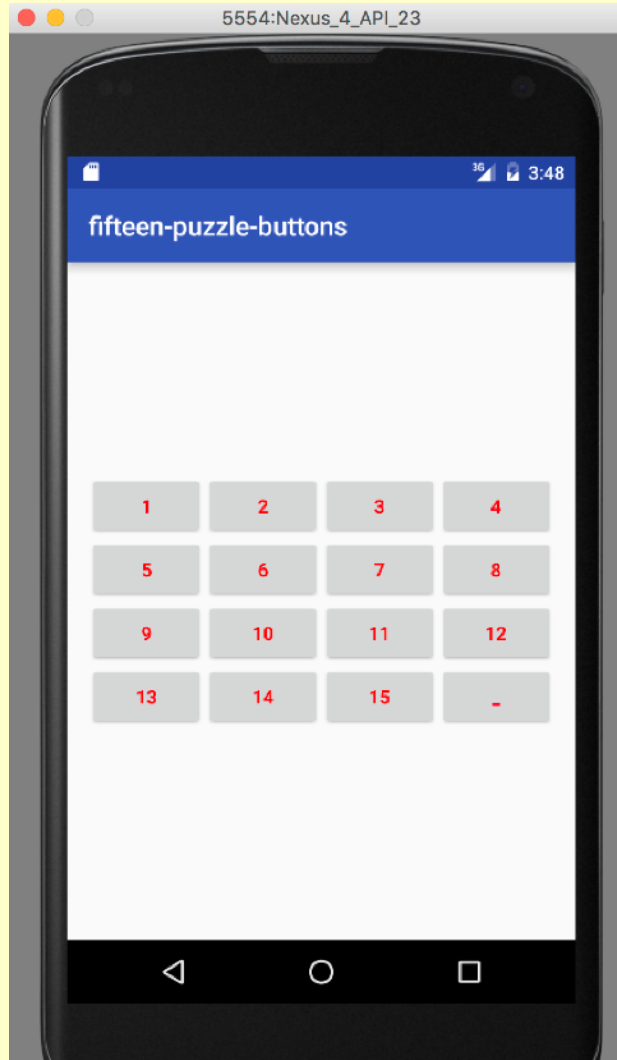
Create a 4*4 grid of buttons



Example-
click on 7



Create a 4*4 grid of buttons



Validation Test: all buttons change colour when clicked

Create a 4*4 grid of buttons

The manifest file *AndroidManifest.xml*

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

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

Create a 4*4 grid of buttons

The **manifest file** *AndroidManifest.xml*

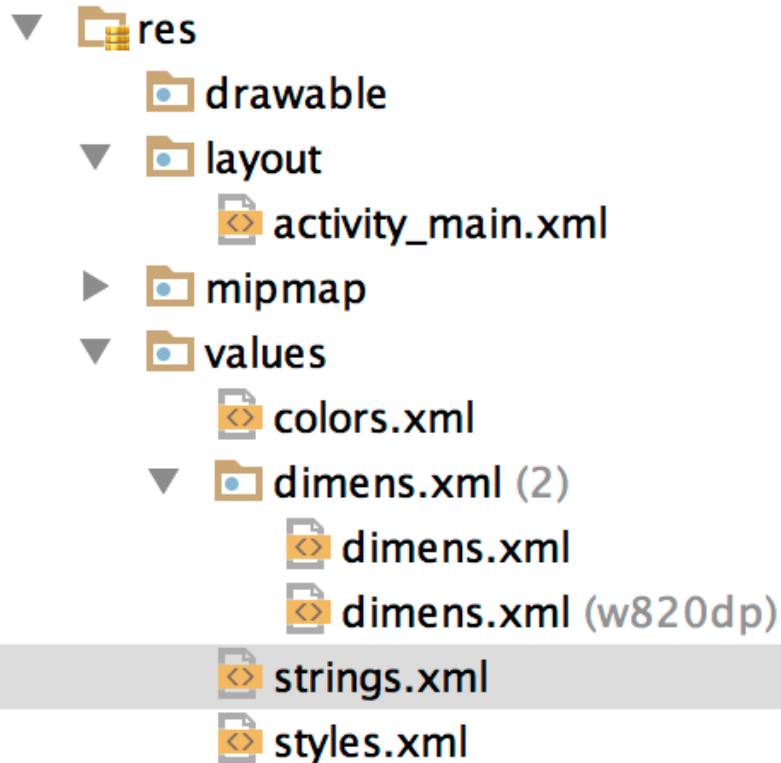
The manifest file presents essential information about your app to the Android system, information the system must have before it can run any of the app's code.

- Names the java package for the app
- Describes the components - activities/services... and names the classes which handle them
- Matches processes to app components
- Declares permissions (app and others)
- Lists libraries
- etc...

See <http://developer.android.com/guide/topics/manifest/manifest-intro.html>

Create a 4*4 grid of buttons

The resources (the button Strings)



```
<resources>
  <string name="app_name">fifteen-puzzle-
  buttons</string>

  <string name="block1"> -1- </string>
  <string name="block2"> -2- </string>
  <string name="block3"> -3- </string>
  <string name="block4"> -4- </string>
  <string name="block5"> -5- </string>
  <string name="block6"> -6- </string>
  <string name="block7"> -7- </string>
  <string name="block8"> -8- </string>
  <string name="block9"> -9- </string>
  <string name="block10"> -10- </string>
  <string name="block11"> -11- </string>
  <string name="block12"> -12- </string>
  <string name="block13"> -13- </string>
  <string name="block14"> -14- </string>
  <string name="block15"> -15- </string>
  <string name="space"> --- </string>

</resources>
```

Create a 4*4 grid of buttons

The resources (the layout)

```
<?xml version="1.0" encoding="utf-8"?>
<GridLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:columnCount="4"
    android:orientation="horizontal" >

    <Button android:text="1"
        android:id="@+id/block1"/>
    <Button android:text="2"
        android:id="@+id/block2"/>
    <Button android:text="3"
        android:id="@+id/block3"/>
    <Button android:text="4"
        android:id="@+id/block4"/>

    ...

    <Button android:text="13"
        android:id="@+id/block13"/>
    <Button android:text="14"
        android:id="@+id/block14"/>
    <Button android:text="15"
        android:id="@+id/block15"/>
    <Button android:text="_"
        android:id="@+id/space"/>
</GridLayout>
```


Create a 4*4 grid of buttons

The main activity:

```
package puzzle.fifteen_puzzle_buttons;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.graphics.Color;

public class MainActivity extends AppCompatActivity
implements View.OnClickListener{

}
```

Create a 4*4 grid of buttons

The main activity:

@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);  
  
    Button yourBtn = (Button)findViewById(R.id.block1);  
    yourBtn.setOnClickListener(this);  
  
    yourBtn = (Button)findViewById(R.id.block2);  
    yourBtn.setOnClickListener(this);  
  
    ...  
  
    yourBtn = (Button)findViewById(R.id.block14);  
    yourBtn.setOnClickListener(this);  
  
    yourBtn = (Button)findViewById(R.id.block15);  
    yourBtn.setOnClickListener(this);  
  
    yourBtn = (Button)findViewById(R.id.space);  
    yourBtn.setOnClickListener(this);  
}
```

Create a 4*4 grid of buttons

The main activity:

```
public void onClick(View v) {  
  
    String text_inButton;  
    text_inButton = (String) ( (TextView) v).getText();  
  
    if (text_inButton.equals("_")) System.out.println("Space pressed");  
  
    else {  
  
        int number = Integer.parseInt(text_inButton);  
        System.out.println("Block " + number + " pressed");  
  
    }  
    ((Button) v ).setTextColor(Color.parseColor("#ff0000"));  
}
```

Create a 4*4 grid of buttons

Your task(s):

understand and execute the code

refactor the code to make it better structured

change the event from changing button text colour to swapping block clicked with space

add code so the swap only performed if the block clicked is beside the space (horizontally or vertically)

OPTIONAL (for project) - make the interface much more friendly and animate solving the puzzle after it is mixed up.