CS260 Intro to Java & Android 06.AndroidEvents

Winter 2018

Input Controls

- Android has a wide variety of input controls for designing sophisticated UIs including
  - Buttons
  - Text Fields
  - Checkboxes
  - Radio Buttons

Button

- Consists of text or icon (or both)

- Communicates an action when the user touches the button

Event-handling

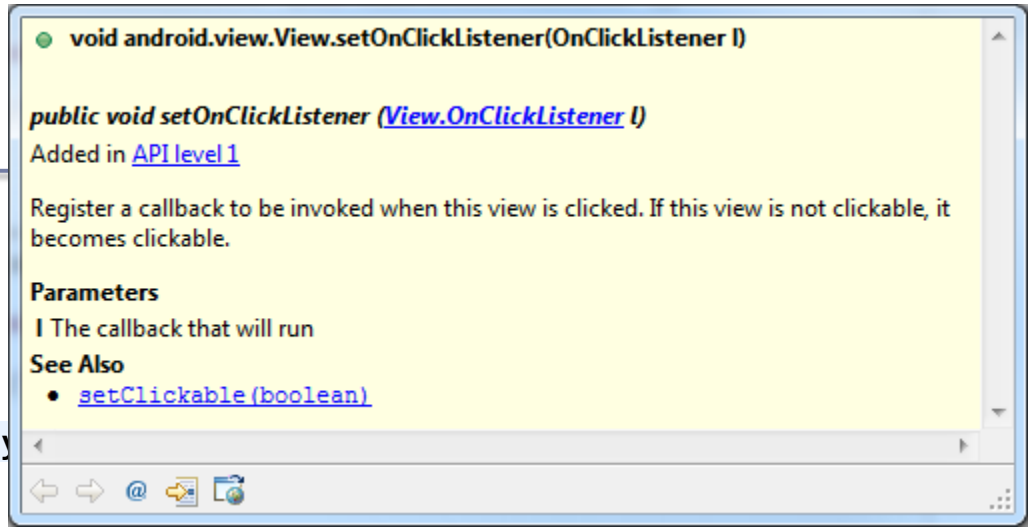
- Events are created through user interaction
- Events are captured from a View object interacted with by the user

Example: When a button is touched, the method onTouchEvent () is called on the touched object

Button Example

- Create a project called ButtonInteraction that looks exactly like the following
- Button names in main.xml are btnOff and btnOn
- Strings are sButtonOff is OFF and sButtonOn is ON

Button Events



- Method #1 for handling a button click

```
public class MainActivity extends Activity
{
  Button mButtonOff;
 protected void onCreate (Bundle savedInstanceState)
{
    mButtonOff = (Button) findViewById (R.id.btnOff);
    mButtonOff.setOnClickListener (new View.OnClickListener ()
    {
      public void onClick (View view)
      {
        Log.d ("ButtonInteraction","Button Off");
      }
    });
```

What might a Button look like?

```
class Button
{
  private View.OnClickListener mListener;

  public Button ()
  {
    mListener = null;
  }

  public void setOnClickListener (View.OnClickListener listener)
  {
    mListener = listener;
  }

  private void handleEvent (Event e)
  {
    paintButton();
    if( mListener != null)
    {
      mListener.onClick (this);
    } …
```

Button Events

- Method#2 for handling a button click

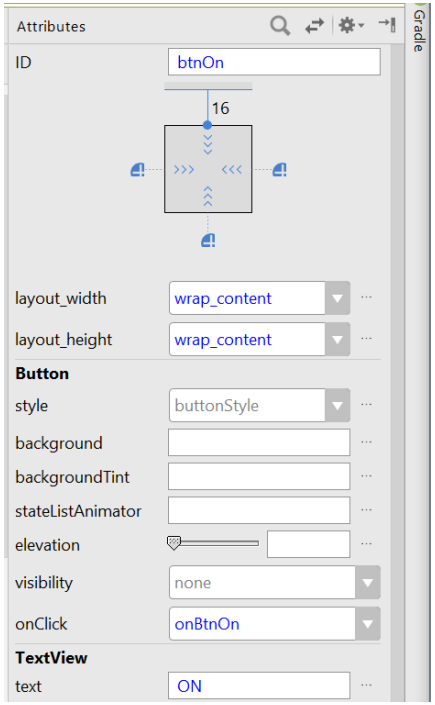
```
public class MainActivity extends Activity
                                  implements View.OnClickListener
{
  Button mButtonOff;
  ...
  protected void onCreate (Bundle savedInstanceState)
{
  mButtonOff = (Button) findViewById (R.id.btnOff);
  mButtonOff.setOnClickListener (this);
}

public void onClick (View view)
{
  Log.d ("ButtonInteraction", "Button Select");
}
...
```

Button Events

```
public void onClick (View view)
 {
   Log.d ("ButtonInteraction", "Button Select");

   if (mButtonSelect == view)
   {
     // do something else
   }
 }
```

Button Events

- Method#3 for handling a button click

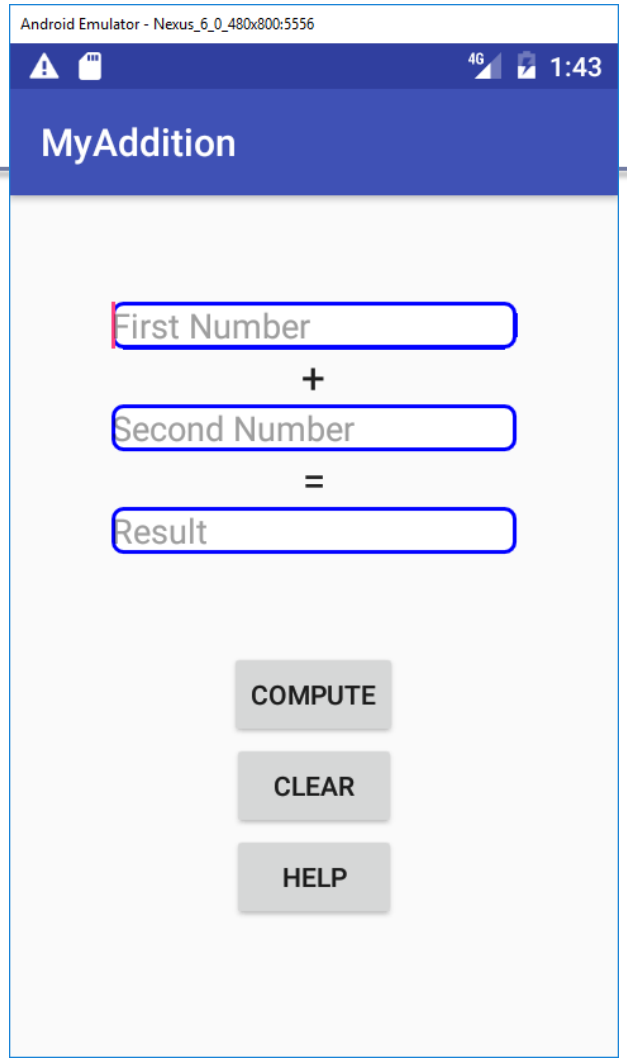



```
public class MainActivity extends AppCompatActivity
{
  Button mButtonOff, mButtonOn;

  @Override
  protected void onCreate (Bundle savedInstanceState)
  {
    super.onCreate (savedInstanceState);
    setContentView (R.layout.activity_main);

    mButtonOn = (Button) findViewById (R.id.btnOn);
  }

  public void onBtnOn (View view)
  {
    Log.d ( tag: "ButtonInteraction",  msg: "Button On");
  }
}
```

Problem

- You are to design a simple calculator that does addition of two digit numbers. The calculator is displayed on the next slide and details are given on slides thereafter.

Calculator


Android Emulator - Nexus_6_0_480x800:5556
1:43
MyAddition
First Number
+
Second Number
=
Result
COMPUTE
CLEAR
HELP

Class Calculator

- Has private members
  1. EditText mEditNumber1
  2. EditText mEditNumber2
  3. EditText mEditSum
  4. Button mButtonCompute
  5. mButtonClear
  6. mButtonHelp

main.xml ids

- main.xml has ids
  1. btnClear
  2. btnCompute
  3. btnHelp
  4. editNumber1
  5. editNumber2
  6. editResult

Step to Complete Calculator

1. Create all private instance variables
2. Set each instance variable equal to its' associated widget
3. Button widgets need to set the appropriate onClickListener
4. Add functionality to the onClick method such that when the Clear button is pressed, all text in each EditText field is cleared

e.g. mEditNumber1.setText ("");

Step to Complete Calculator

1. Program the Compute button such that you will add the two numbers entered by the user and output the result in mEditResult

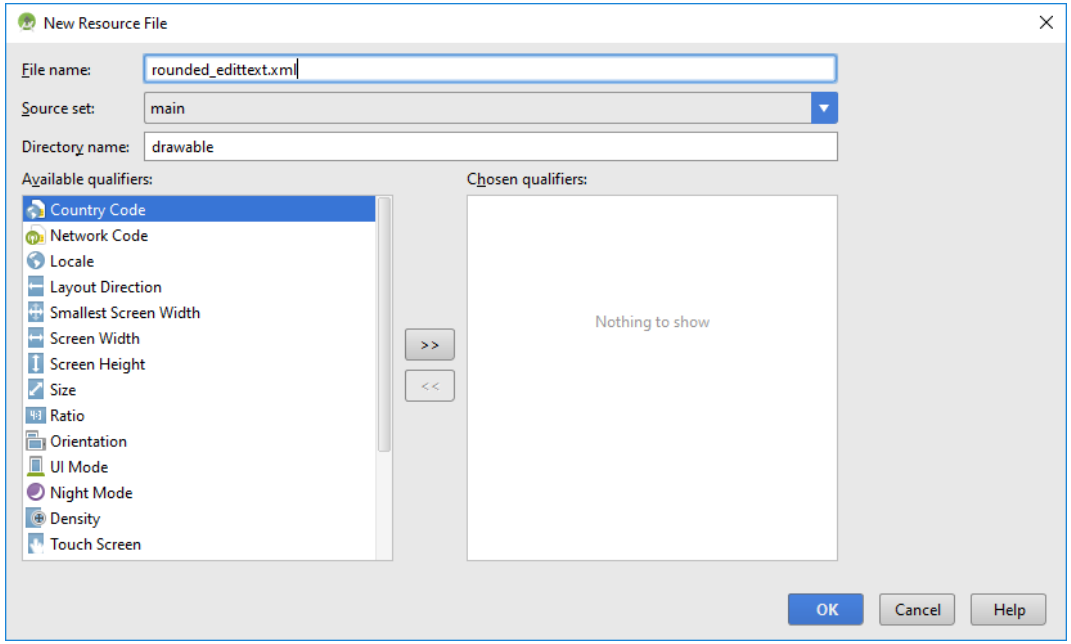
```
int num1, num2;

try
{
  num1 = Integer.parseInt (mEditNumber1.getText ().toString());
}
catch (NumberFormatException e)
{
  // we will eventually pop up an alert dialog
  num1 = 0;
}
```

Challenge

- If you get this far with time to spare, try and figure out how to display an alert if the user enters Invalid Input

Creating Rounded EditText

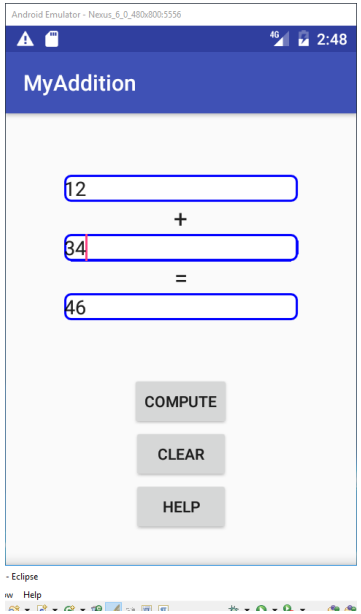
- Right click on drawable and select New Drawable resource ... call it rounded_edittext.xml



Creating Rounded EditText

- In rounded_edittext.xml type

```
<?xml version="1.0" encoding="utf-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="rectangle" android:padding="2dp">
    <solid android:color="@color/cWhite"/>
    <stroke android:color="@color/cBlue" android:width="2dp"/>
    <corners android:radius="5dp"/>
</shape>
```



- In activity_main.xml ... in <EditText add

```
android:background="@drawable/rounded_edittext"
android:hint="First Number"
```