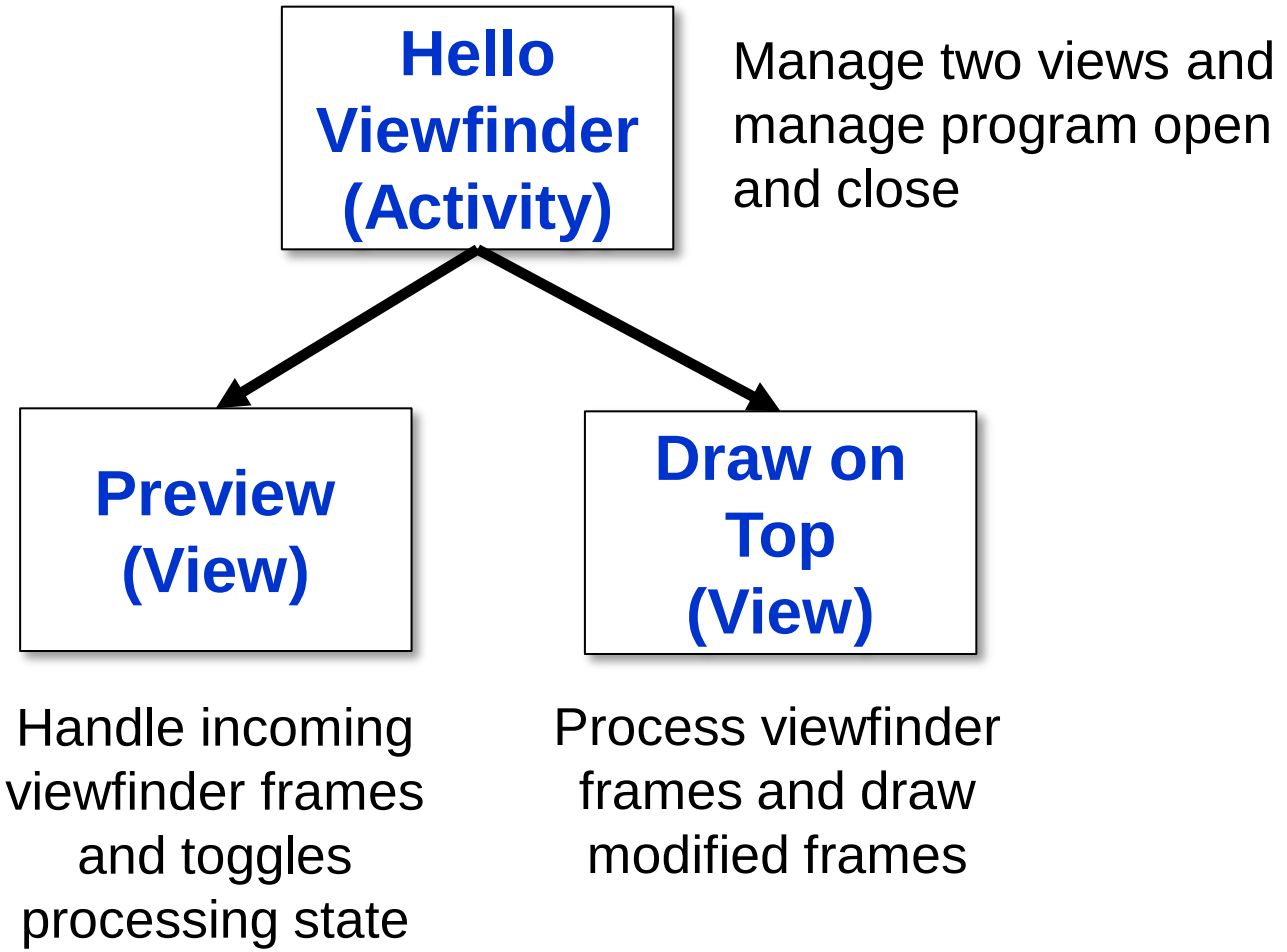
“Hello Viewfinder” project

- Goals of this project
  - Learn how to create a simple Android project
  - Learn how to display viewfinder frames
  - Learn how to process viewfinder frames

- Full source available on class website

“Hello Viewfinder” class hierarchy



Main activity class

```
public class HelloViewfinderActivity extends Activity {
    private Preview mPreview;
    private DrawOnTop mDrawOnTop;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // Hide the window title and set full screen
        getWindow().setFlags(... Full Screen Parameters ...);
        requestWindowFeature(Window.FEATURE_NO_TITLE);

        // Create Preview and DrawOnTop
        mDrawOnTop = new DrawOnTop(this);
        mPreview = new Preview(this, mDrawOnTop);
        setContentView(mPreview);
        addContentView(mDrawOnTop, ... Layout Options ...)
    }
}
```

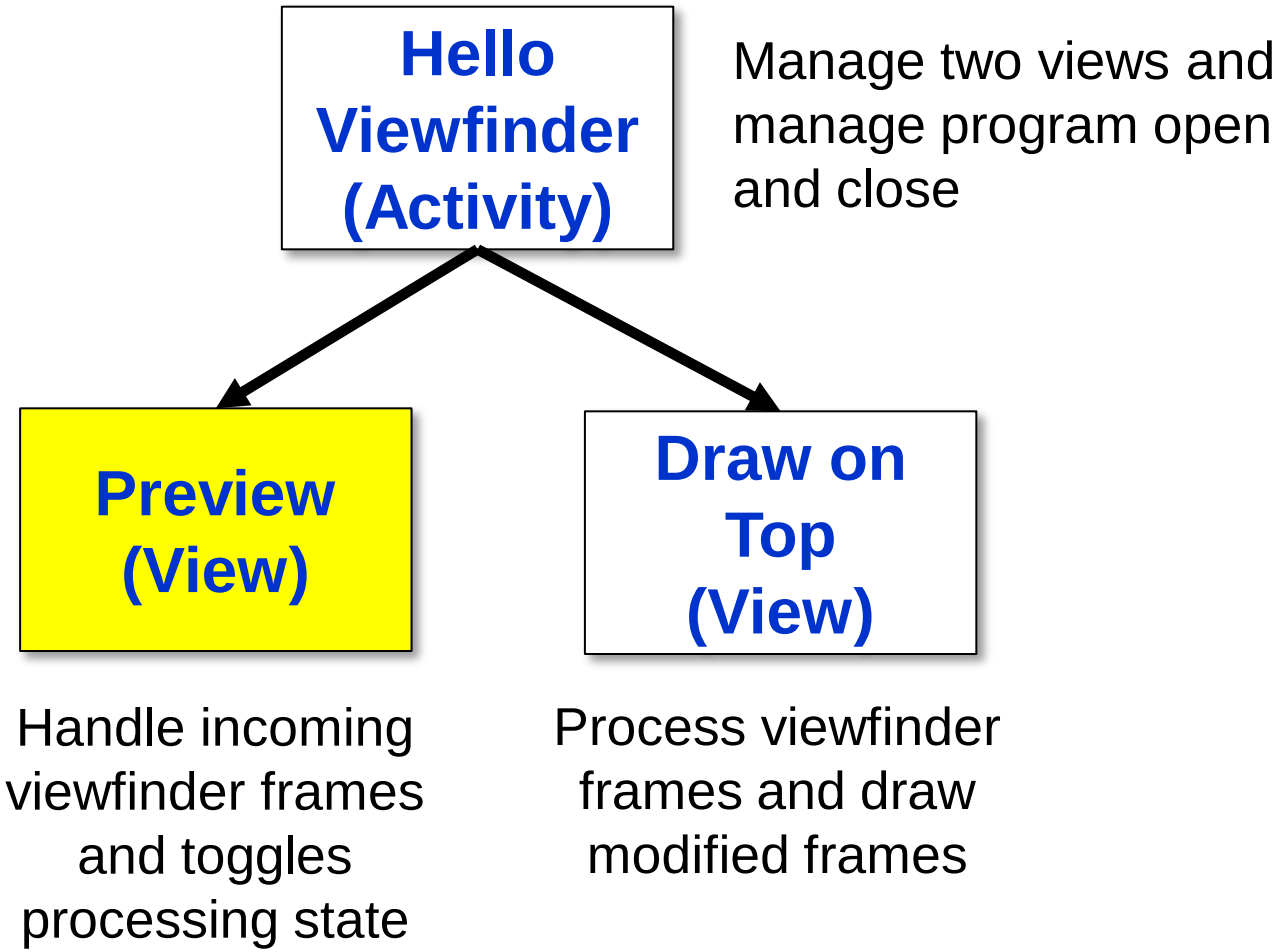
Make this class inherit the properties of an Activity

Called when the activity is first created

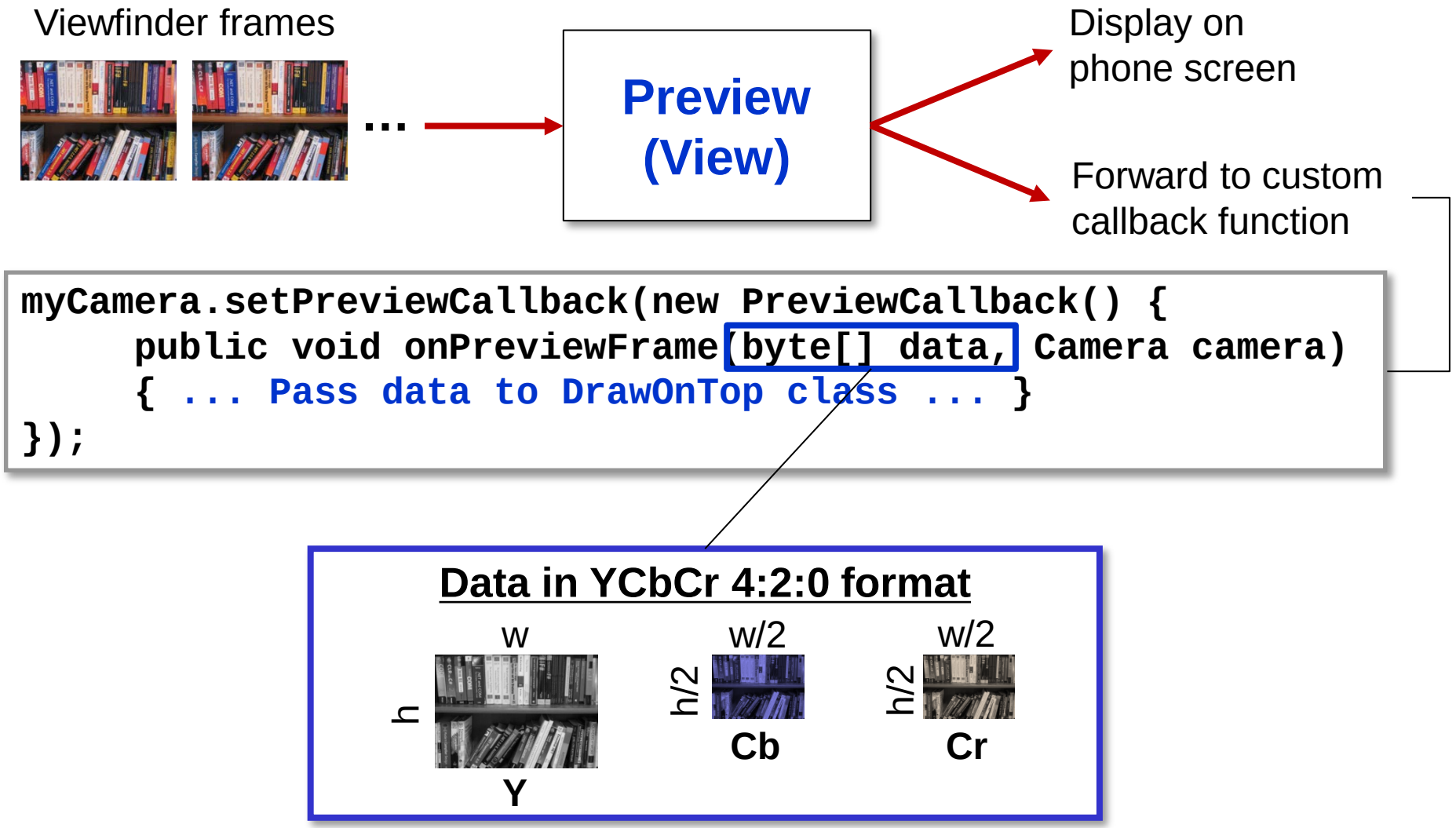
Make the application appear in full screen

Create two children objects for displaying frames

“Hello Viewfinder” class hierarchy



Preview class: viewfinder frames go down two paths



Preview class: toggle states via touch screen

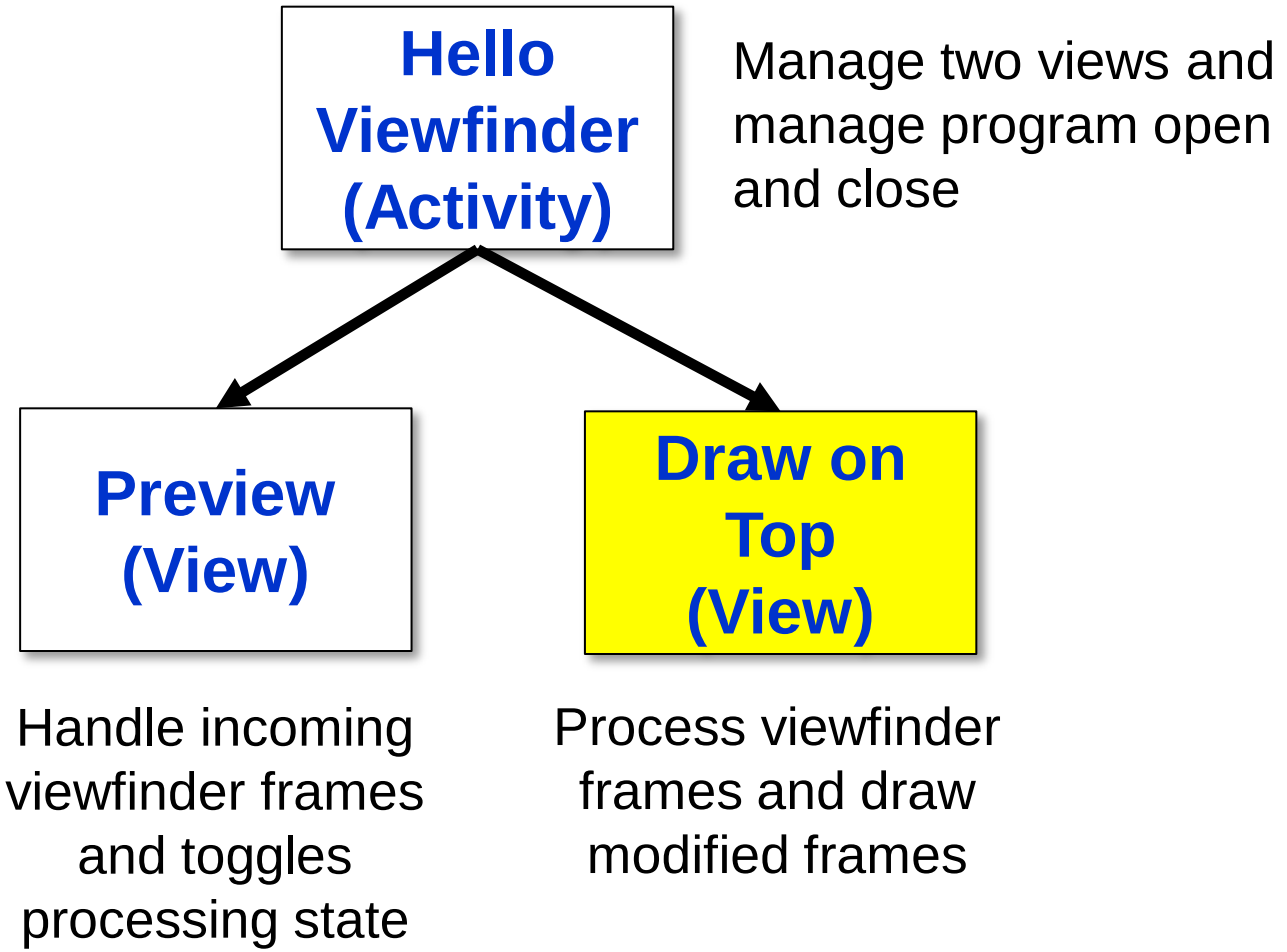
```
// Define on touch listener
this.setOnTouchListener(new OnTouchListener() {
   public boolean onTouch(View v, MotionEvent event)
   {
       if (mDrawOnTop.mState == DrawOnTop.STATE_ORIGINAL)
        {
          mDrawOnTop.mState = DrawOnTop.STATE_PROCESSED;
        }
        else if (mDrawOnTop.mState == DrawOnTop.STATE_PROCESSED)
        {
          mDrawOnTop.mState = DrawOnTop.STATE_ORIGINAL;
        }
        return false;
   }
});
```

Define an anonymous touch listener object

If in original state, toggle to processed state

If in processed state, toggle to original state

“Hello Viewfinder” class hierarchy



Draw-on-top class: process viewfinder frames

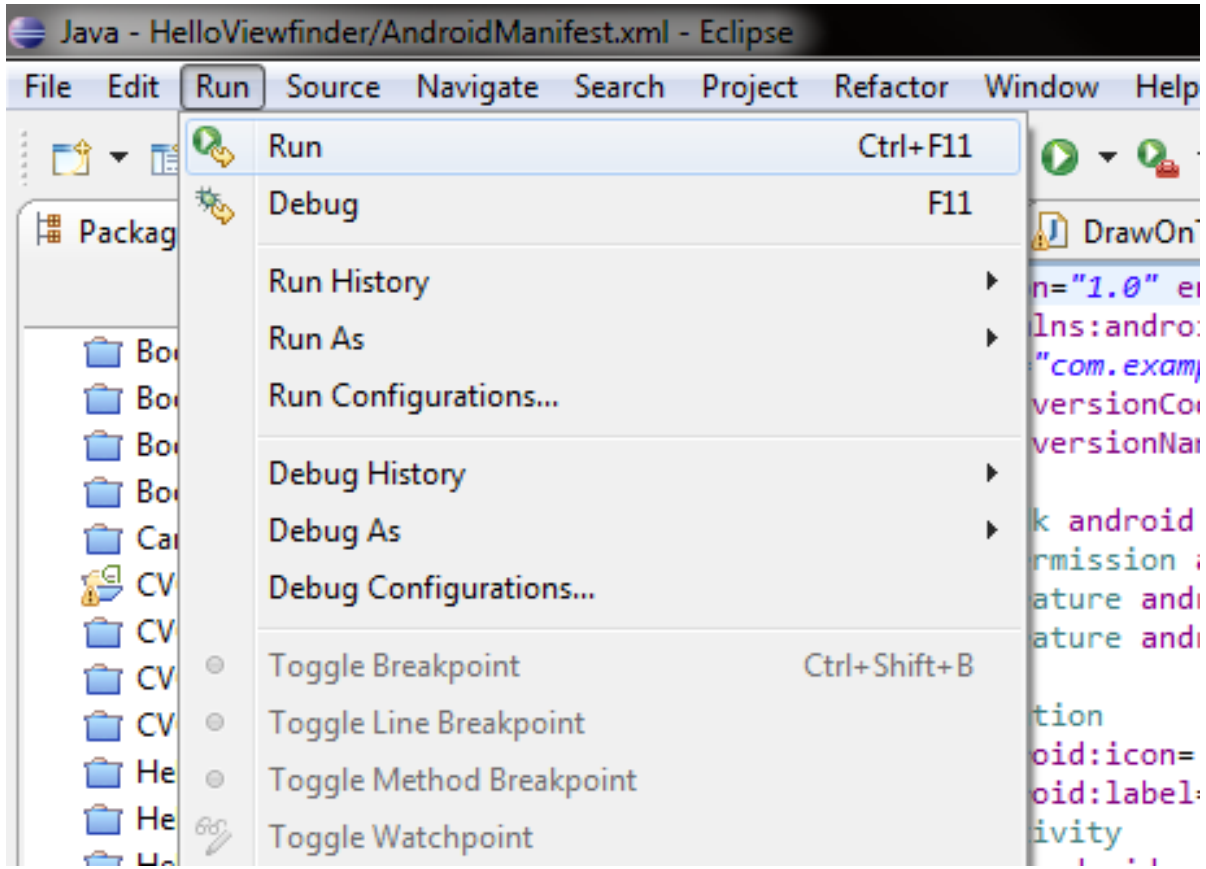
```
// Called whenever a repaint is requested
protected void onDraw(Canvas  canvas)
{
    ...
    // Convert from YCbCr to RGB
    if (mState == STATE_ORIGINAL)
         decodeYCbCr420RGB(mRGBData, mYCCData, mWidth, mHeight);
    else
         decodeYCbCr420RGBHistEq(mRGBData, mYCCData, mWidth, mHeight);

    // Draw bitmap
    mBitmap.setPixels(mRGBData, 0, mWidth, 0, 0, mWidth, mHeight);
    Rect src = new Rect(... Size parameters ...);
    Rect dst = new Rect(... Size parameters ...);
    canvas.drawBitmap(mBitmap, src, dst, mPaintBlack);
    ...
}
```

Called whenever this view is repainted

Decode frame with or without hist. eq.

Draw decoded frame in new layer

Running the program on an Android device



“Hello Viewfinder” application running on device