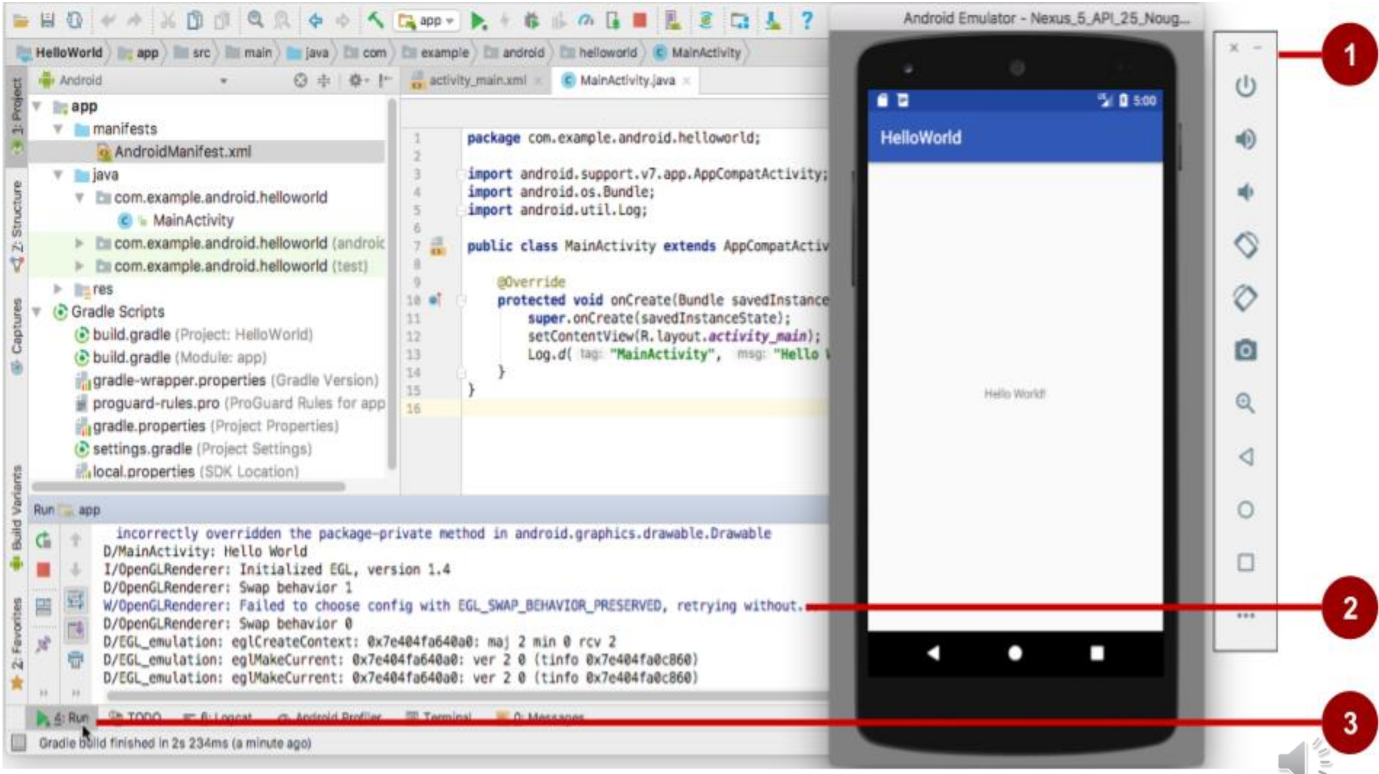
Logging in Android

Get feedback as your app runs

1. Emulator running the app

2. Run pane

3. **Run** tab to open or close the Run pane


HelloWorld
app
src
main
java
com
example
android
helloworld
MainActivity
Android
app
manifests
AndroidManifest.xml
java
com.example.android.helloworld
MainActivity
com.example.android.helloworld (androic
com.example.android.helloworld (test)
res
Gradle Scripts
build.gradle (Project: HelloWorld)
build.gradle (Module: app)
gradle-wrapper.properties (Gradle Version)
proguard-rules.pro (ProGuard Rules for app
gradle.properties (Project Properties)
settings.gradle (Project Settings)
local.properties (SDK Location)
activity_main.xml
MainActivity.java
Android Emulator - Nexus_5_API_25_Noug...
HelloWorld
5:00
Hello World!
Run
app
4: Run
TODO
6: Logcat
Android Profiler
Terminal
0: Messages
1
2
3

```
package com.example.android.helloworld;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;

public class MainActivity extends AppCompatActiv

    @Override
    protected void onCreate(Bundle savedInstance
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d( tag: "MainActivity",  msg: "Hello
    }
}
```

```
  incorrectly overridden the package-private method in android.graphics.drawable.Drawable
D/MainActivity: Hello World
I/OpenGLRenderer: Initialized EGL, version 1.4
D/OpenGLRenderer: Swap behavior 1
W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying without.
D/OpenGLRenderer: Swap behavior 0
D/EGL_emulation: eglCreateContext: 0x7e404fa640a0: maj 2 min 0 rcv 2
D/EGL_emulation: eglMakeCurrent: 0x7e404fa640a0: ver 2 0 (tinfo 0x7e404fa0c860)
D/EGL_emulation: eglMakeCurrent: 0x7e404fa640a0: ver 2 0 (tinfo 0x7e404fa0c860)
```

Gradle build finished in 2s 234ms (a minute ago)

LogCat pane

Run pane reports some messages but ***cannot be configured***....

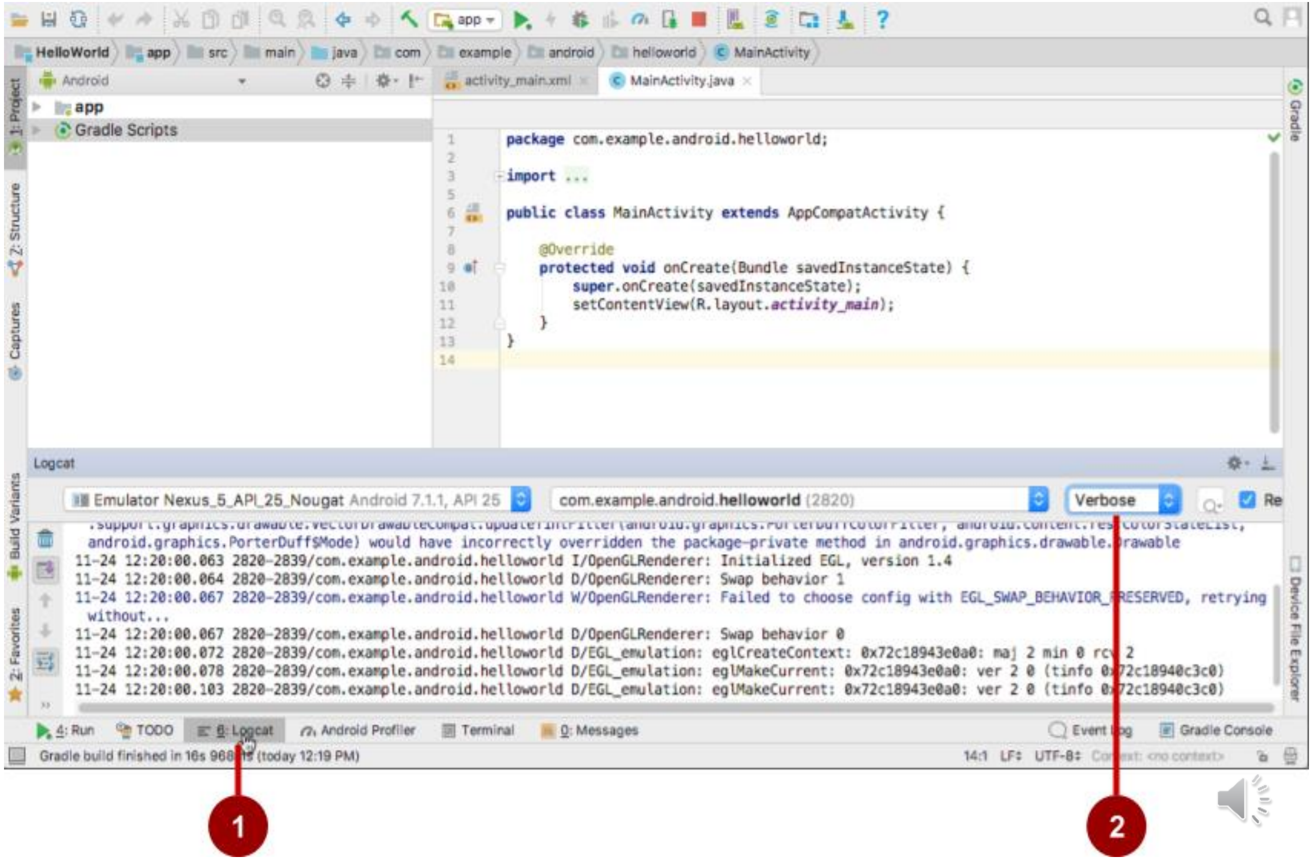
Instead, with the ***configurable*** **Logcat pane** it is possible to create custom view of:

- **system messages**, such as when a garbage collection occurs
- **messages** added to the app with the ***Log class***

It **displays messages** in ***real time*** and keeps a history so you can view older messages

Logcat pane

1. **Logcat** tab to show Logcat pane
2. Log level menu



```java
package com.example.android.helloworld;

import ...

public class MainActivity extends AppCompatActivity {

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

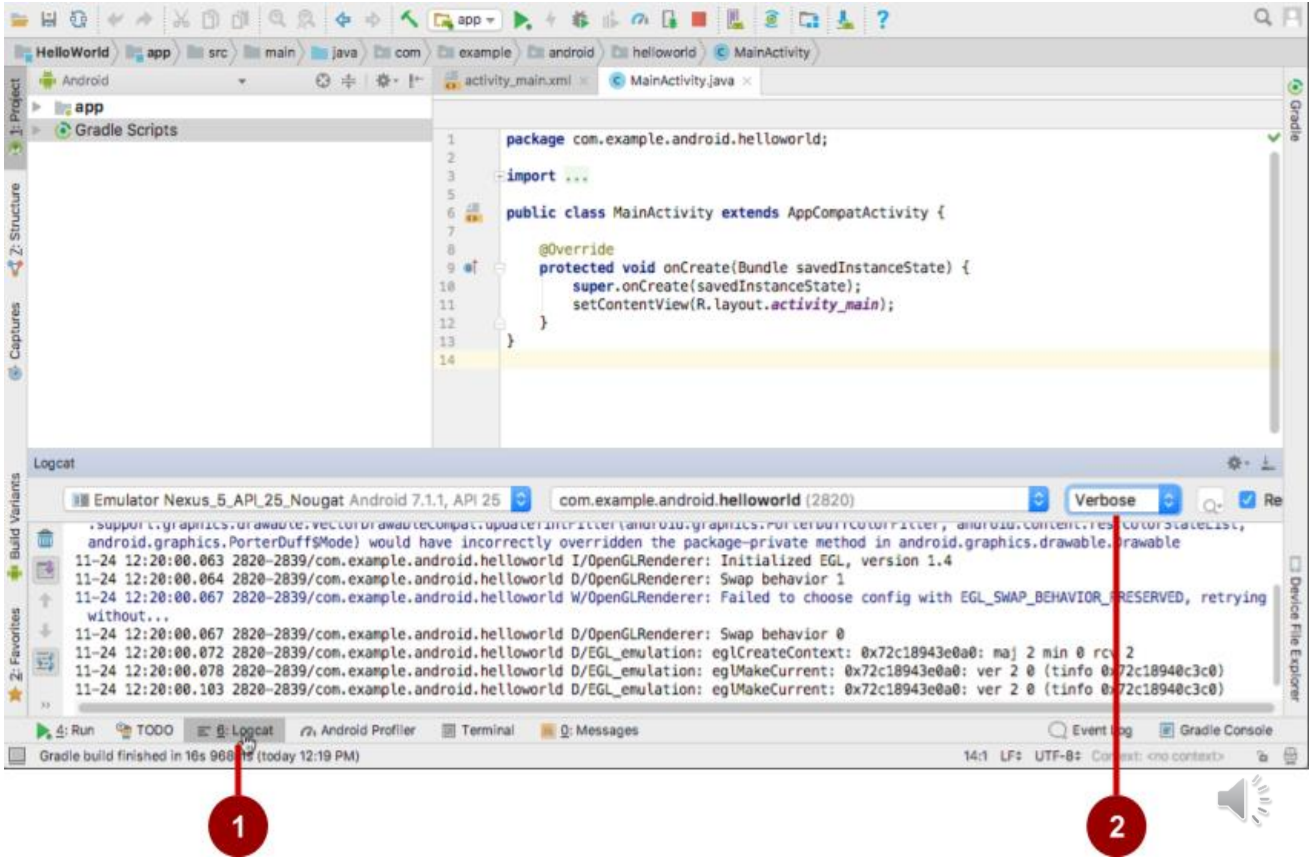
```
.support.graphics.drawable.VectorDrawableCompat.updateTintFilter(android.graphics.PorterDuffColorFilter, android.content.res.ColorStateList,
  android.graphics.PorterDuff$Mode) would have incorrectly overridden the package-private method in android.graphics.drawable.Drawable
11-24 12:20:00.063 2820-2839/com.example.android.helloworld I/OpenGLRenderer: Initialized EGL, version 1.4
11-24 12:20:00.064 2820-2839/com.example.android.helloworld D/OpenGLRenderer: Swap behavior 1
11-24 12:20:00.067 2820-2839/com.example.android.helloworld W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying
  without...
11-24 12:20:00.067 2820-2839/com.example.android.helloworld D/OpenGLRenderer: Swap behavior 0
11-24 12:20:00.072 2820-2839/com.example.android.helloworld D/EGL_emulation: eglCreateContext: 0x72c18943e0a0: maj 2 min 0 rcv 2
11-24 12:20:00.078 2820-2839/com.example.android.helloworld D/EGL_emulation: eglMakeCurrent: 0x72c18943e0a0: ver 2 0 (tinfo 0x72c18940c3c0)
11-24 12:20:00.103 2820-2839/com.example.android.helloworld D/EGL_emulation: eglMakeCurrent: 0x72c18943e0a0: ver 2 0 (tinfo 0x72c18940c3c0)
```

Logcat pane

1. **Logcat** tab to show Logcat pane
2. Log level menu

When an application throw out exceptoion, those throw out a link to the error.

...



```java
package com.example.android.helloworld;

import ...

public class MainActivity extends AppCompatActivity {

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

```
  .support.graphics.drawable.VectorDrawableCompat.updateTintFilter(android.graphics.PorterDuffColorFilter, android.content.res.ColorStateList,
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11-24 12:20:00.063 2820-2839/com.example.android.helloworld I/OpenGLRenderer: Initialized EGL, version 1.4
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11-24 12:20:00.067 2820-2839/com.example.android.helloworld W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying
  without...
11-24 12:20:00.067 2820-2839/com.example.android.helloworld D/OpenGLRenderer: Swap behavior 0
11-24 12:20:00.072 2820-2839/com.example.android.helloworld D/EGL_emulation: eglCreateContext: 0x72c18943e0a0: maj 2 min 0 rcv 2
11-24 12:20:00.078 2820-2839/com.example.android.helloworld D/EGL_emulation: eglMakeCurrent: 0x72c18943e0a0: ver 2 0 (tinfo 0x72c18940c3c0)
11-24 12:20:00.103 2820-2839/com.example.android.helloworld D/EGL_emulation: eglMakeCurrent: 0x72c18943e0a0: ver 2 0 (tinfo 0x72c18940c3c0)
```
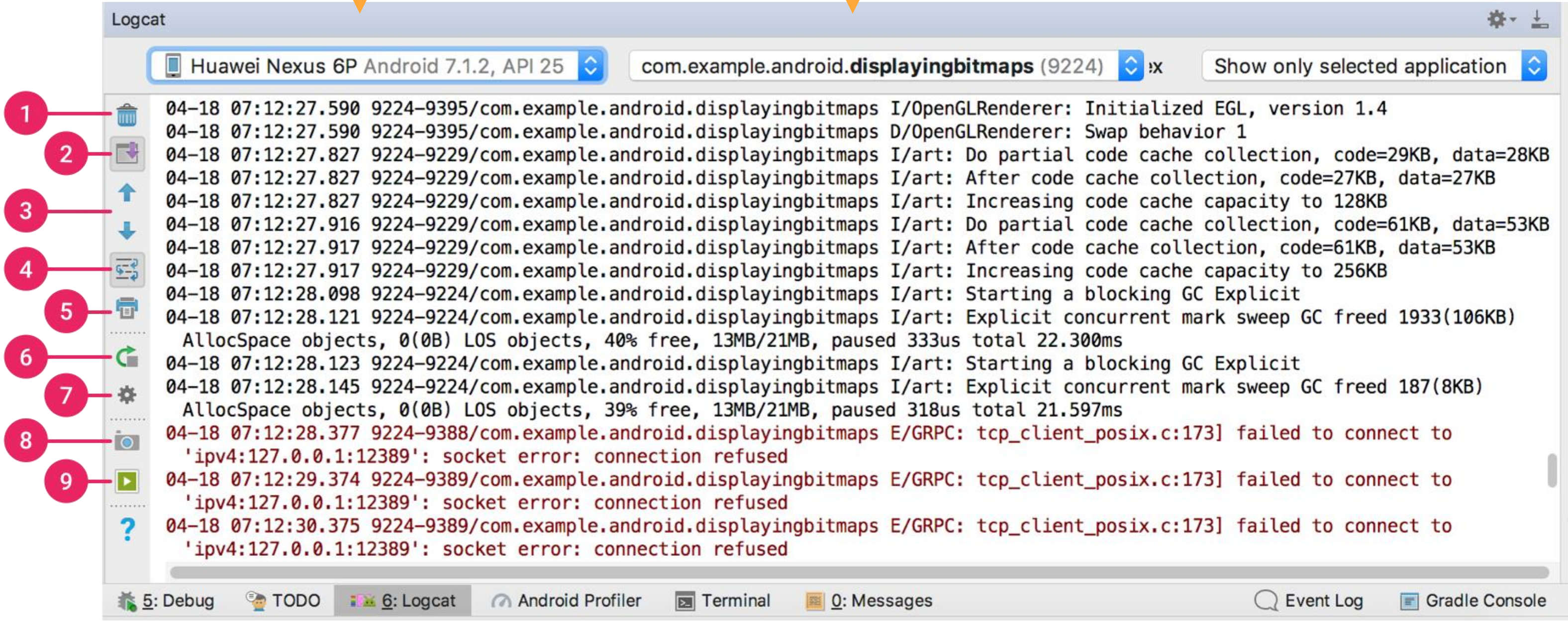

Logcat pane

Details of the LogCat pane

device/emulator running

application running so we'll see only the messagges associated to this

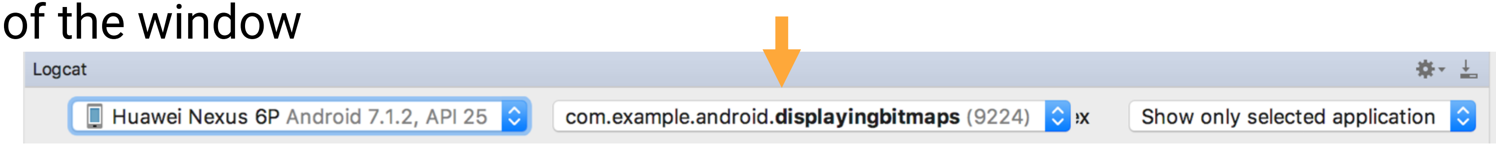


Huawei Nexus 6P Android 7.1.2, API 25 | com.example.android.displayingbitmaps (9224) | Show only selected application

```
04-18 07:12:27.590 9224-9395/com.example.android.displayingbitmaps I/OpenGLRenderer: Initialized EGL, version 1.4
04-18 07:12:27.590 9224-9395/com.example.android.displayingbitmaps D/OpenGLRenderer: Swap behavior 1
04-18 07:12:27.827 9224-9229/com.example.android.displayingbitmaps I/art: Do partial code cache collection, code=29KB, data=28KB
04-18 07:12:27.827 9224-9229/com.example.android.displayingbitmaps I/art: After code cache collection, code=27KB, data=27KB
04-18 07:12:27.827 9224-9229/com.example.android.displayingbitmaps I/art: Increasing code cache capacity to 128KB
04-18 07:12:27.916 9224-9229/com.example.android.displayingbitmaps I/art: Do partial code cache collection, code=61KB, data=53KB
04-18 07:12:27.917 9224-9229/com.example.android.displayingbitmaps I/art: After code cache collection, code=61KB, data=53KB
04-18 07:12:27.917 9224-9229/com.example.android.displayingbitmaps I/art: Increasing code cache capacity to 256KB
04-18 07:12:28.098 9224-9224/com.example.android.displayingbitmaps I/art: Starting a blocking GC Explicit
04-18 07:12:28.121 9224-9224/com.example.android.displayingbitmaps I/art: Explicit concurrent mark sweep GC freed 1933(106KB)
 AllocSpace objects, 0(0B) LOS objects, 40% free, 13MB/21MB, paused 333us total 22.300ms
04-18 07:12:28.123 9224-9224/com.example.android.displayingbitmaps I/art: Starting a blocking GC Explicit
04-18 07:12:28.145 9224-9224/com.example.android.displayingbitmaps I/art: Explicit concurrent mark sweep GC freed 187(8KB)
 AllocSpace objects, 0(0B) LOS objects, 39% free, 13MB/21MB, paused 318us total 21.597ms
04-18 07:12:28.377 9224-9388/com.example.android.displayingbitmaps E/GRPC: tcp_client_posix.c:173] failed to connect to
 'ipv4:127.0.0.1:12389': socket error: connection refused
04-18 07:12:29.374 9224-9389/com.example.android.displayingbitmaps E/GRPC: tcp_client_posix.c:173] failed to connect to
 'ipv4:127.0.0.1:12389': socket error: connection refused
04-18 07:12:30.375 9224-9389/com.example.android.displayingbitmaps E/GRPC: tcp_client_posix.c:173] failed to connect to
 'ipv4:127.0.0.1:12389': socket error: connection refused
```

Logcat pane

shows the log messages for the selected app, as selected from the dropdown lists at the top of the window

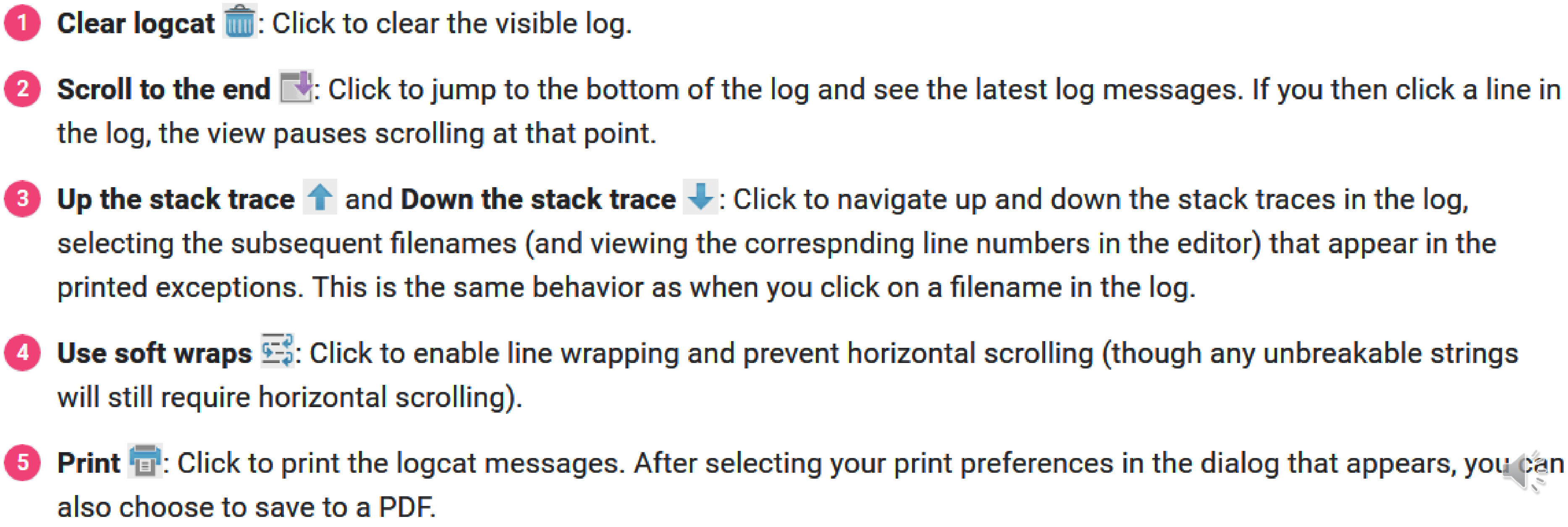


Logcat

Huawei Nexus 6P Android 7.1.2, API 25

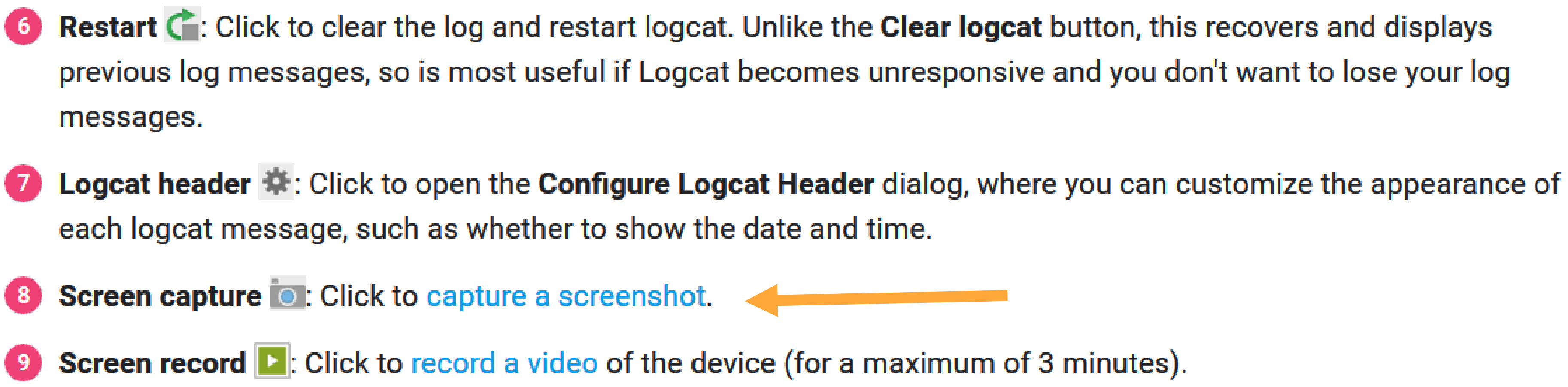
com.example.android.**displayingbitmaps** (9224)

Show only selected application



1. **Clear logcat**: Click to clear the visible log.
2. **Scroll to the end**: Click to jump to the bottom of the log and see the latest log messages. If you then click a line in the log, the view pauses scrolling at that point.
3. **Up the stack trace** ↑ and **Down the stack trace** ↓: Click to navigate up and down the stack traces in the log, selecting the subsequent filenames (and viewing the correspnding line numbers in the editor) that appear in the printed exceptions. This is the same behavior as when you click on a filename in the log.
4. **Use soft wraps**: Click to enable line wrapping and prevent horizontal scrolling (though any unbreakable strings will still require horizontal scrolling).
5. **Print**: Click to print the logcat messages. After selecting your print preferences in the dialog that appears, you can also choose to save to a PDF.

Logcat pane



6 **Restart**: Click to clear the log and restart logcat. Unlike the **Clear logcat** button, this recovers and displays previous log messages, so is most useful if Logcat becomes unresponsive and you don't want to lose your log messages.

7 **Logcat header**: Click to open the **Configure Logcat Header** dialog, where you can customize the appearance of each logcat message, such as whether to show the date and time.

8 **Screen capture**: Click to capture a screenshot.

9 **Screen record**: Click to record a video of the device (for a maximum of 3 minutes).

Interesting additional functionalities

Write log messages

The **Log class** allows to ***create log messages*** that appear in logcat.

Use the following log methods, listed in order **from the highest to lowest *priority*** (or, least to most verbose):

- `Log.e(String, String)` (error)
- `Log.w(String, String)` (warning)
- `Log.i(String, String)` (information)
- `Log.d(String, String)` (debug)
- `Log.v(String, String)` (verbose)

Write log messages

The **Log class** allows to ***create log messages*** that appear in logcat.

Turn off logging and debugging when creating a new application more complex

Make sure you deactivate logging and disable the debugging option before you build your application for release.
You can deactivate logging by removing calls to Log methods in your source files.

You can disable debugging by removing the android:debuggable attribute from the <application> tag in your manifest file, or by setting the android:debuggable attribute to false in your manifest file. Also, remove any log files or static test files that were created in your project.

https://developer.android.com/studio/publish/preparing#turn-off-logging-and-debugging

Write log messages

```
private const val TAG = "MyActivity"
```

so the name of the activity that i want to see

```
Log.<log-level>(TAG, "Message");
```

TAG: the first parameter should be a unique tag

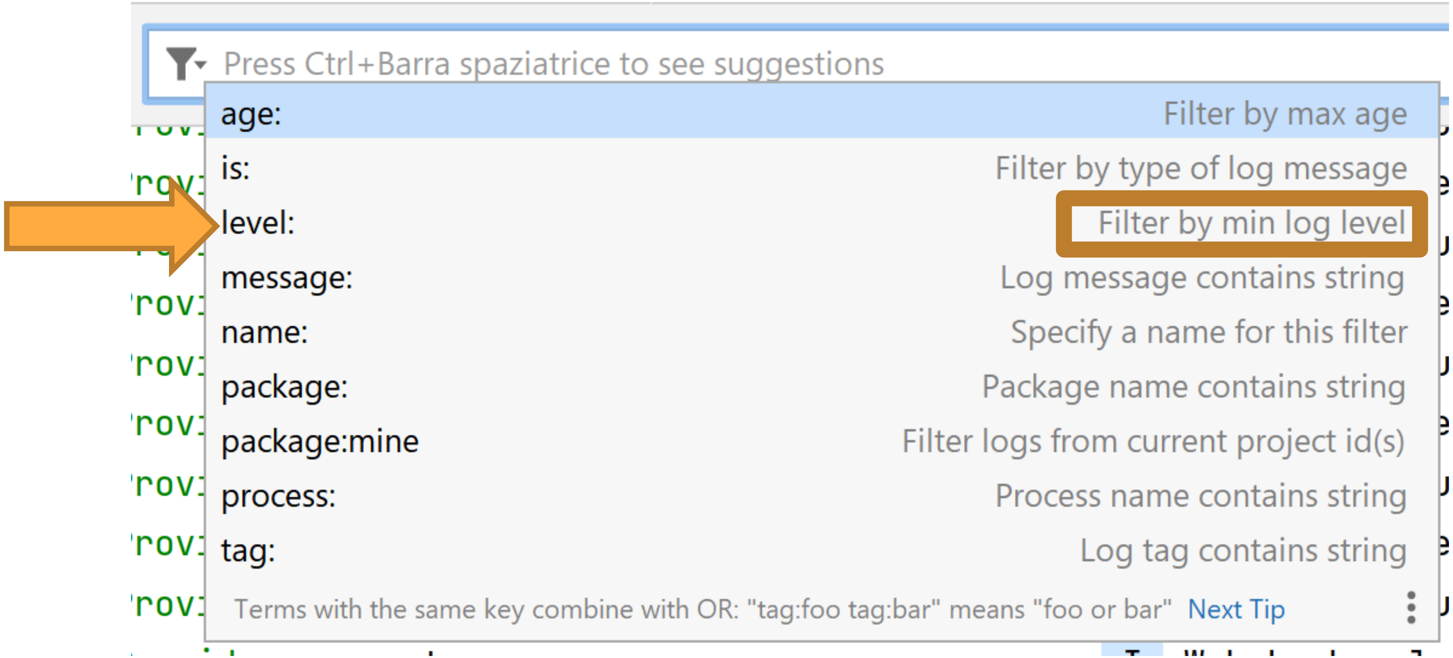
a ***short string*** indicating the ***system component*** from which the ***message originates*** (for example, MyActivity). The tag can be any string that you find helpful, such as the name of the current class.

`"Message"` the second parameter is the message

Set the log level

It is possible to control how many messages appear in logcat by setting the log level. In the Log level menu, select one of the following values:

so we can obv. filter those logs



Press Ctrl+Barra spaziatrice to see suggestions

age:	Filter by max age
is:	Filter by type of log message
level:	Filter by min log level
message:	Log message contains string
name:	Specify a name for this filter
package:	Package name contains string
package:mine	Filter logs from current project id(s)
process:	Process name contains string
tag:	Log tag contains string

Terms with the same key combine with OR: "tag:foo tag:bar" means "foo or bar" Next Tip

Set the log level

It is possible to control how many messages appear in logcat by setting the log level. In the Log level menu, select one of the following values:

- **Verbose:** Show all log messages (the default).
- **Debug:** Show debug log messages that are useful during development only, as well as the message levels lower in this list.
- **Info:** Show expected log messages for regular usage, as well as the message levels lower in this list.
- **Warn:** Show possible issues that are not yet errors, as well as the message levels lower in this list.
- **Error:** Show issues that have caused errors, as well as the message level lower in this list.
- **Assert:** Show issues that the developer expects should never happen.

Set the log level

It is possible to control how many messages appear in logcat by setting the log level. In the Log level menu, select one of the following values:

ordered in descending importance

- **Verbose:** Show all log messages (the default).
- **Debug:** Show debug log messages that are useful during development only, as well as the message levels lower in this list.
- **Info:** Show expected log messages for regular usage, as well as the message levels lower in this list.
- **Warn:** Show possible issues that are not yet errors, as well as the message levels lower in this list.
- **Error:** Show issues that have caused errors, as well as the message level lower in this list.
- **Assert:** Show issues that the developer expects should never happen.

??

Assert Level

There is an even higher priority than error:

Log.**e**() will simply log an error to the log

with priority ERROR

What a **Terrible Failure**: Log.**wtf**()

Report a condition that should never happen.

Log an error with priority level ASSERT, and may (depending on the system configuration) send an error report and terminate the program immediately

https://developer.android.com/reference/android/util/Log.html

Adding logging to your app

- Add logging statements to your app that will show up in the Logcat pane
- As the app runs, the **Logcat** pane shows information
- Set filters in **Logcat** pane to see what's important to you
- Search using tags

Logging statement

```
import android.util.Log;

// Use class name as tag
private static final String TAG =
    MainActivity.class.getSimpleName();

// Show message in Android Monitor, logcat pane
// Log.<log-level>(TAG, "Message");
Log.d(TAG, “Creating the URI…”);
```

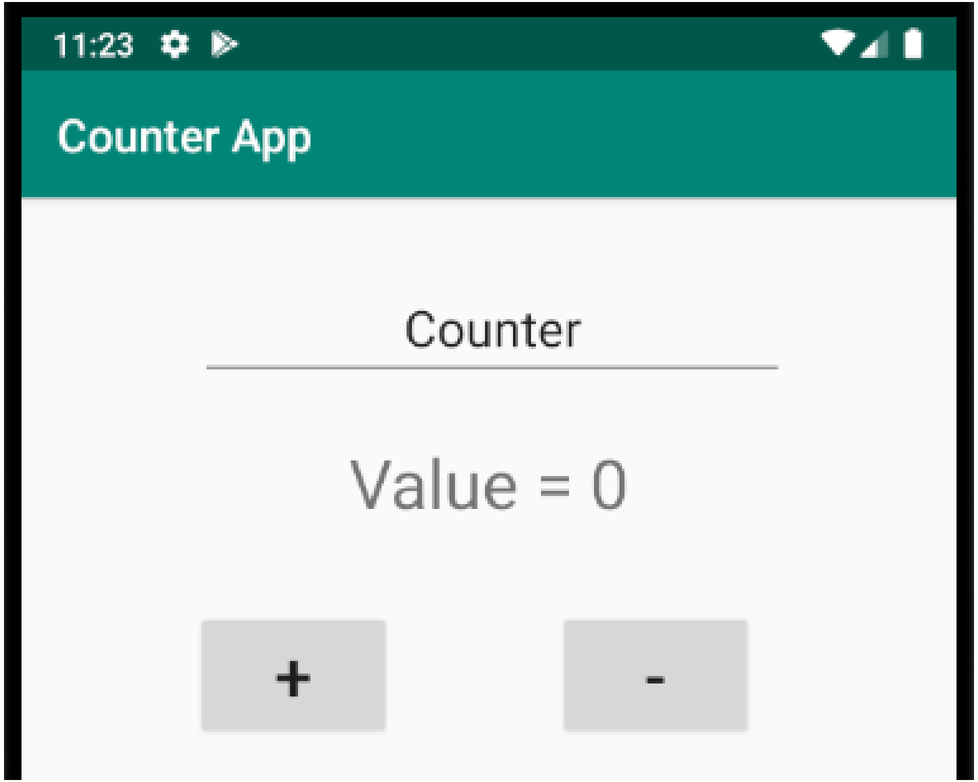
Exercise Counter App

Develop a Counter App

- **+** increases of 1 the value of the counter
- **-** decreases of 1 the value of the counter

initial value = 0

Log the taps on the two buttons

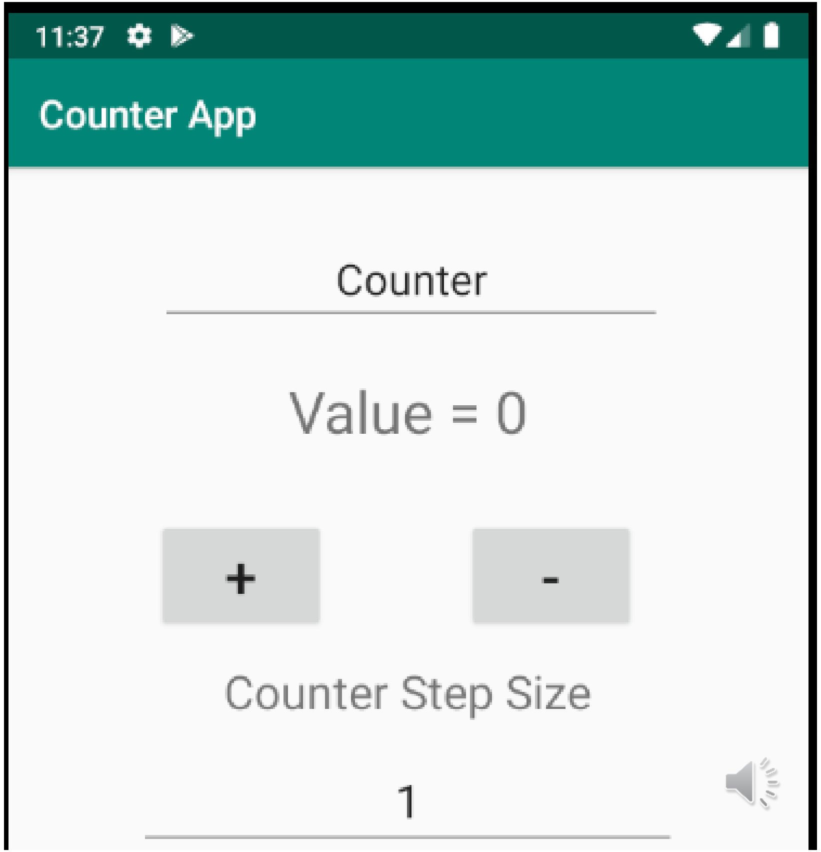


Exercise Counter App (Continue)

Now the user can insert the step for the counter:

e.g., 1 or 2 or 7.56

Constraint the value to numbers only....



Value = 0

Counter Step Size

1

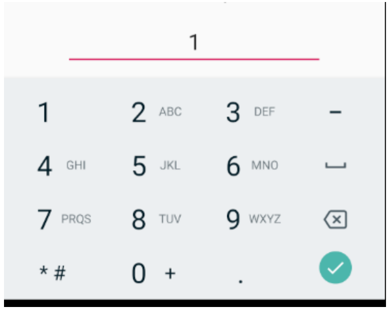
Exercise Counter App (Continue)

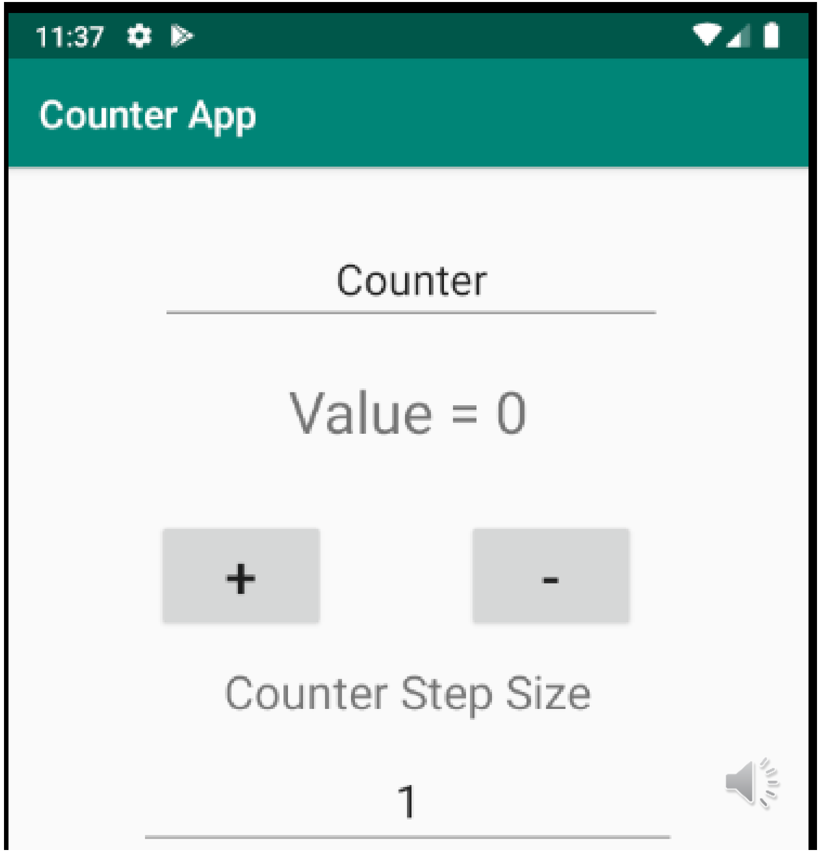
Now the user can insert the step for the counter:

e.g., 1 or 2 or 7.56

Constraint the value to numbers only....

Hint: set the inputType property


1
1
2 ABC
3 DEF
-
4 GHI
5 JKL
6 MNO
7 PRQS
8 TUV
9 WXYZ
* #
0 +
.


11:37
Counter App
Counter
Value = 0
+
-
Counter Step Size
1