

Solving the hard problems



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Explanation

What do I mean “hard” problems?

Nobody wants them!

How I suggest approaching addressing them

Case Study

InputStream

XOR obfuscation

Bitmaps

A Primer on XOR

The Operation

$$1 \wedge 1 = 0 \quad - \quad 0 \wedge 0 = 0 \quad - \quad 1 \wedge 0 = 1 \quad - \quad 0 \wedge 1 = 1$$

Symmetrical

Cyclic Key

Symmetrical “Encryption”

quick brown fox

abccabccabccabc

rwldmcctqxocgqa

rwldmcctqxocgqa

abccabccabccabc

quick brown fox

APRIL 08+09

DROIDCON
BOS19



Position matters

rwldmcctqxocgqa

abcabcabcabcabc

quick brown fox

rwldmcctqxocgqa

cabcabcabcabcab

meaninglessoops

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A Hard Problem arises...

Small Bitmaps decode fine - everything's good!

Medium and Large Bitmaps sometimes decode ok, otherwise not

Why not?

How do you fix this?

Find the code that's causing the problem

Fix the code that's causing the problem

Finding the source of the problem

Find the shortest path to repeatability

Flip (or remove) the ego:

What's the simplest/silliest possible cause?

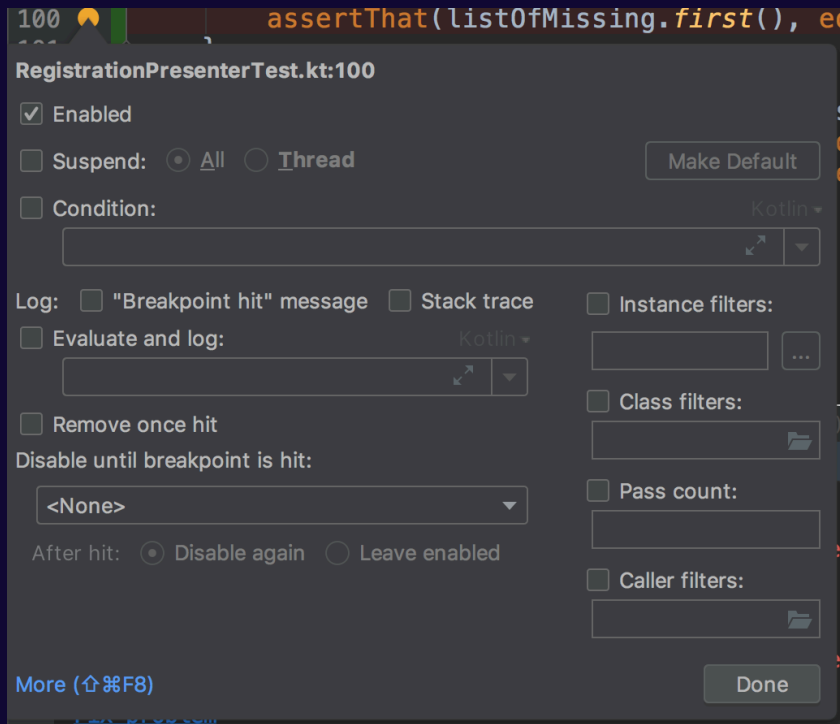
LOG EVERYTHING

Everything!

Eventually, this reveals the cause

Strategies

Custom implementations



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Finishing the case study

BitmapFactory

InputStream

Bitmap

Understand the cause

Learn from your mistakes

Keep a list of past offenders

PendingIntents

Implementation Overrides

Understand the cause

Thank you!

Questions?