Mobile App Reverse Engineering
Why, What & the How’s?

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Penetration tester (Web/Mobile)

Insert some certificates here [ OSCP, eWPTX]

Cricket/Pool
SUBMITTED TO OWASP NZ

GOT ACCEPTED!!
What we will cover

- We will only cover Android OS
- Android Architecture (crash course)
- Tools to reverse engineer an Android app
- APK compilation and decompilation process
- What to do to protect your app
Why should I do this?
- To know what is inside your application before you release it on Google Play Store or Apple’s App Store.

- So you know if you are leaving any treasure inside your source code e.g. hard coded API keys, secrets, tokens, ‘TO DO’ comments, IP (intellectual property), backend server IPs and credentials.

- What techniques and tools an attacker can use to steal your information or break into your app.
MOBILE TOP 10 2016

1. Improper Platform Usage
2. Insecure Data Storage
3. Insecure Communication
4. Insecure Authentication
5. Insufficient Cryptography
6. Insecure Authorization
7. Client Code Quality
8. Code Tampering
9. Reverse Engineering
10. Extraneous Functionality
What is Reverse Engineering?
Reverse engineering is the processes of extracting knowledge or design information from anything man-made and re-producing it or re-producing anything based on the extracted information. The process often involves disassembling something (a mechanical device, electronic component, computer program, or biological, chemical, or organic matter) and analyzing its components and workings in detail.
Yeah Whatever......
- We will take either an already installed Android app or its APK file and will decompile it

- This will give us all of the code and resources that make this APK file

- And we will then:
  - Unzip the APK file
  - Decompile it
  - Make some changes to the source code
  - Recompile it
  - Sign it
  - Optimize it
  - Install it
Android – Crash Course
C compilation process

Java compilation process
Java compilation process

Java Source Code (.java extension)

Java Compiler (javac)

Java Byte Code (.class file extension)

Java Virtual Machine
  - OSX
  - Linux
  - Windows

Old Android compilation process

Source Code

Byte Code

.dex

SAMSUNG (DVM)

GOOGLE (DVM)

HUAWEI (DVM)