Mobile Phone Security

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Frida

Dynamic instrumentation toolkit for developers, reverse-engineers, and security researchers

What is frida ?

- ✓ Frida's core is written in C
- ✓ it's a dynamic code instrumentation toolkit.
- ✓ **Scriptable:**
  - ✓ It lets you inject snippets of JavaScript or your own library into native apps on Windows, macOS, GNU/Linux, iOS, Android, and QNX.
  - ✓ Frida also provides you with some simple tools built on top of the Frida API.
  - ✓ These can be used as-is, tweaked to your needs, or serve as examples of how to use the API.

Ref: https://frida.re/docs/home/

What is frida ?

- ✓ **Portable:**
  - ✓ Works on Windows, macOS, GNU/Linux, iOS, Android, and QNX.
  - ✓ Install the Node.js bindings from npm, grab a Python package from PyPI, or use Frida through its Swift bindings, .NET bindings, Qt/Qml bindings, or C API.
- ✓ **Free:**
  - ✓ Frida is and will always be free software

Ref: https://frida.re/docs/home/

- ✓ **Battle-tested:**
  - ✓ Frida has a comprehensive test-suite and has gone through years of rigorous testing across a broad range of use-cases.

Ref: https://frida.re/docs/home/

Why a Python API, but JavaScript debugging logic?

- ✓ Frida's core is written in C and injects QuickJS into the target processes, where your JS gets executed with full access to memory, hooking functions and even calling native functions inside the process.
- ✓ There's a bi-directional communication channel that is used to talk between your app and the JS running inside the target process.

Ref: https://frida.re/docs/home/

Why a Python API, but JavaScript debugging logic?

- ✓ Using Python and JS allows for quick development with a risk-free API. Frida can help you easily catch errors in JS and provide you an exception rather than crashing.
- ✓ You can use Frida from C directly, and on top of this C core there are multiple language bindings, e.g. Node.js, Python, Swift, .NET, Qml, etc. It is very easy to build additional bindings for other languages and environments.

Ref: https://frida.re/docs/home/

Why a Python API, but JavaScript debugging logic?

Common purpose of Frida,

- ✓ Spy on Crypto APIs
- ✓ Modify function's output
- ✓ Bypass AES encryption
- ✓ Bypass SSLPinning and Root detection
- ✓ Trace private application code
- ✓ Bypass various software sided locks (like applock)

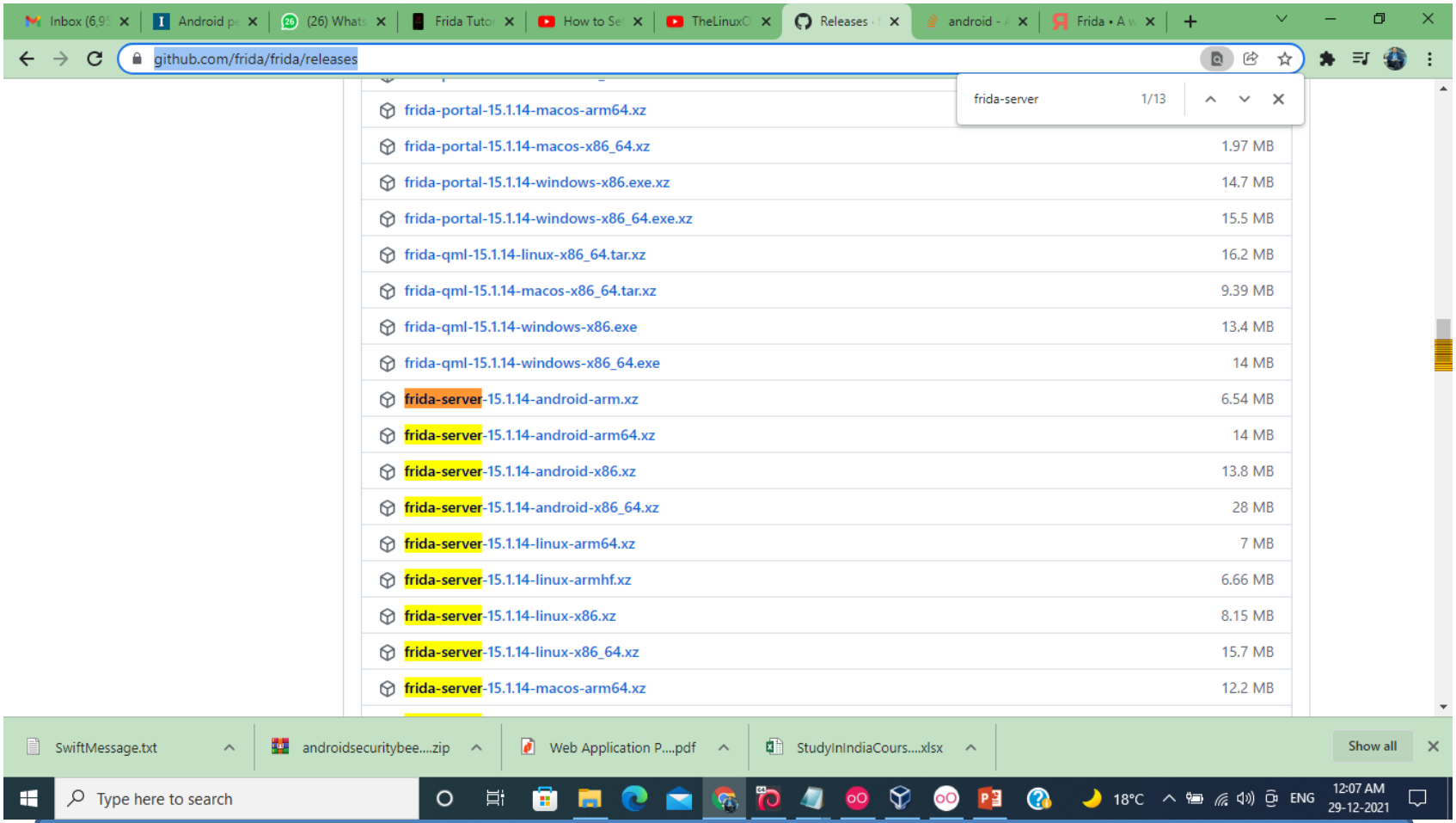
Ref: https://frida.re/docs/home/

Installation – frida server in Genymotion

- ✓ Python – latest 3.x is highly recommended
- ✓ Create Genymotion android device with API > 7.0 otherwise you face frida installation issues.
- ✓ Ping Genymotion AVD from Kalu
- ✓ Sever installation in the Genymotion:
- ✓ Find the android device CPU architecture
- ✓ Query all configuration information of Android devices: adb shell getprop.
  - ✓ >adb shell getprop
  - ✓ >adb shell getprop | grep abi
  - ✓ >adb shell getprop ro.product.cpu.abi
- ✓ Genymotion Emulator shows its X86 CPU architrecture

Installation – frida server in Genymotion

- ✓ Visit : https://github.com/frida/frida/releases
- ✓ Search for frida-server key word in the webpage



Installation – frida server in Genymotion

- ✓ Download suitable version of Frida-server. In this case as we have X86 CPU architecture so I downloaded following version,

Installation – frida server in Genymotion

- ✓ Unzip the frida-sever-15-14-1-android.xz
- ✓ Unzip the folder and rename the file as frida-server
- ✓ > adb connect ip-address-of-genymotion-AVD
- ✓ >adb devices
- ✓ >adb push frida-server /data/local/tmp
- ✓ # check the location of Frida-server file
- ✓ >adb shell
- ✓ root-android > cd /data/local/tmp
- ✓ # check that frida-server file is there or not

Installation – frida server in Genymotion

- ✓ root-android/data/local/tmp> chmod 755 frida-server
- ✓ root-android/data/local/tmp> ./frida-sever
- ✓ friday server will start and waiting for frida client to connect.
- ✓ If you receive any error such as
- ✓ reloc_library [1311] : 1319 cannot locate “getauxval”……

CANNOT LINK EXECUTABLE

It means you are using ancient you are using ancient versions of Android

Ref: https://frida.re/docs/android/

Installation – frida in the kali or santoku

- ✓ > sudo pip install frida or
- ✓ >sudo pip install frida-tools
- ✓ > sudo pip3 install frida
- ✓ # once it’s install successful then test the Friday
- ✓ >frida-ps –U
- ✓ >frida-ps this will shows the module.
- ✓ # if you find list of module it shows that frida is working.

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