Native modules trên Android và sức mạnh của FRIDA

CTF for fun

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01

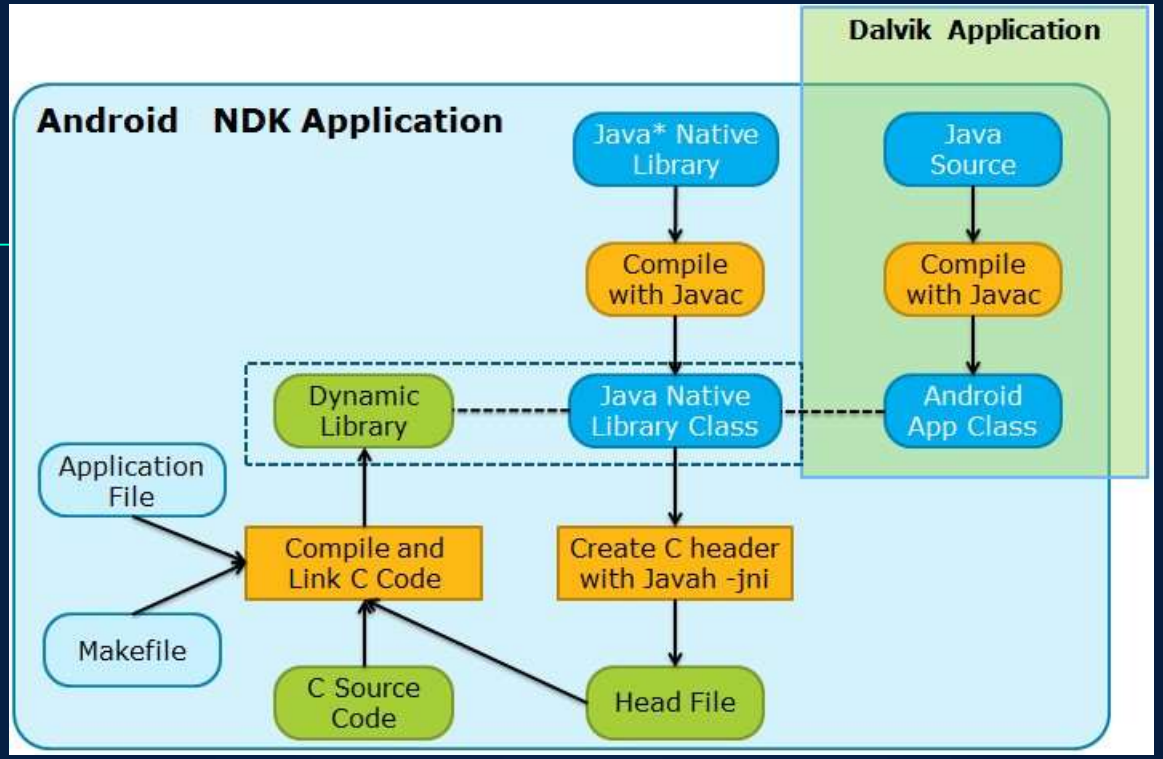
NDK, JNI?

Something you win, something you learn...

NDK

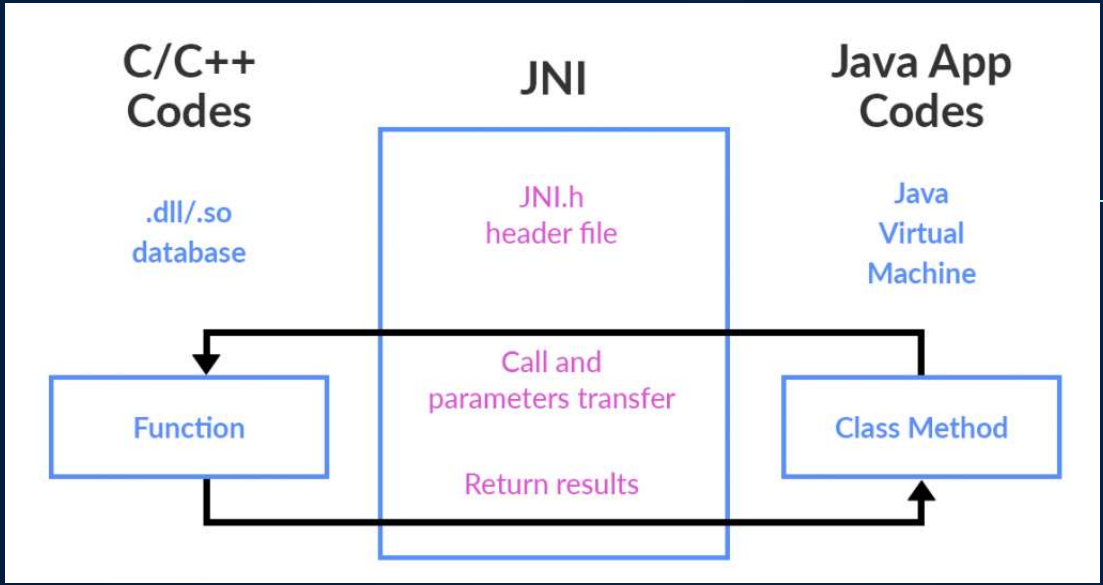
Native Development Kit

Tool để cho lập trình C/C++ trên thiết Android (bao gồm cả SDK) → cải thiện hiệu năng cho chương trình. Source code sẽ được compile ra mã máy (theo kiến trúc của CPU). Hầu hết các application thường sử dụng cả native-code và java-code để hiệu năng đạt cao nhất.
Nhưng làm thế nào để java-code tương tác được với native-code?
→ JNI



https://stackoverflow.com/tags/android-ndk/info

JNI



https://redwerk.com/blog/3-reasons-why-we-love-jni/

Java Native Interface

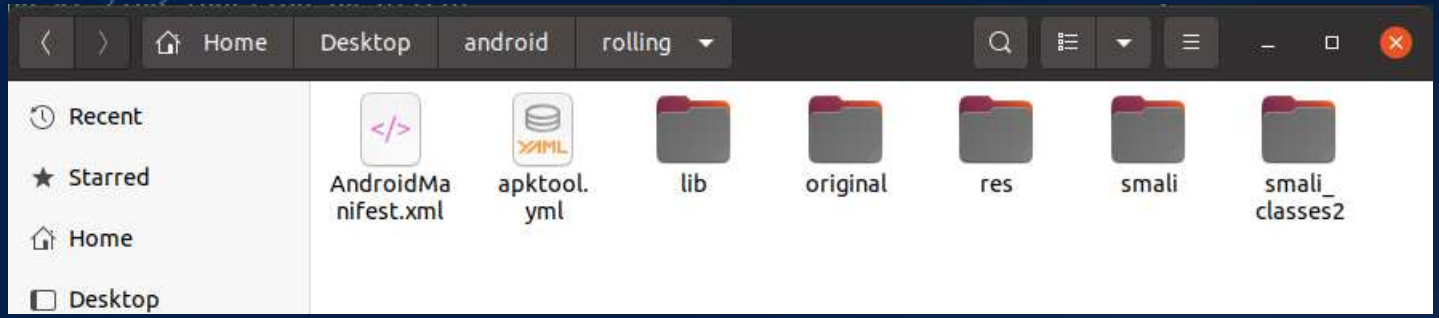
- Là giao diện hỗ trợ tương tác giữa C/C++ và Java
- Khi sử dụngJNI, C/C++ functions sẽ được map như một method và data types chuyển đến cho Java và ngược lại (như hình).

02

Native Library

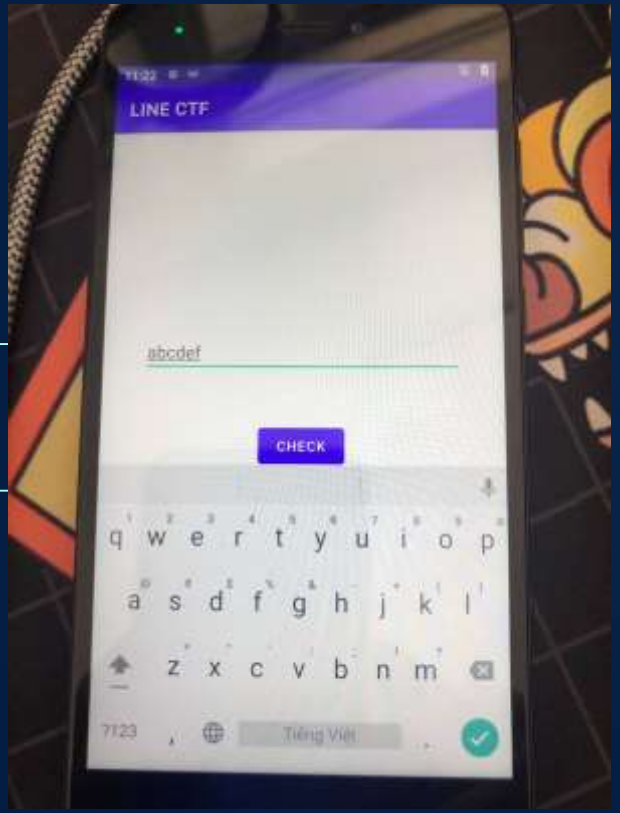
Native library?

- Các hàm native sẽ được đóng trong các library → native library
- Một file native-lib là .so file (so=Shared Object), tương tự như một file lib trong C/C++.

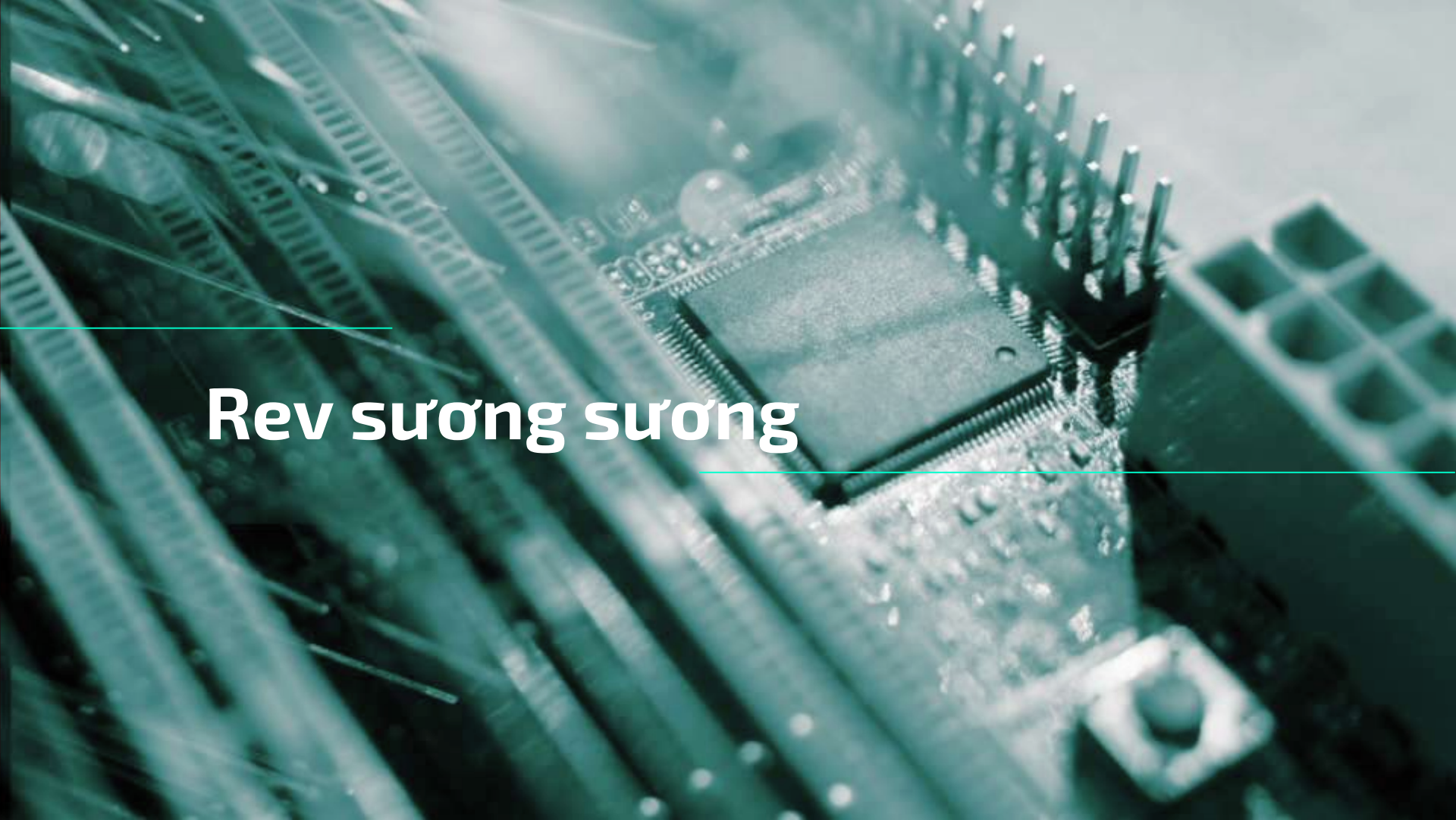



03
Hooking with FRIDA

DEMO

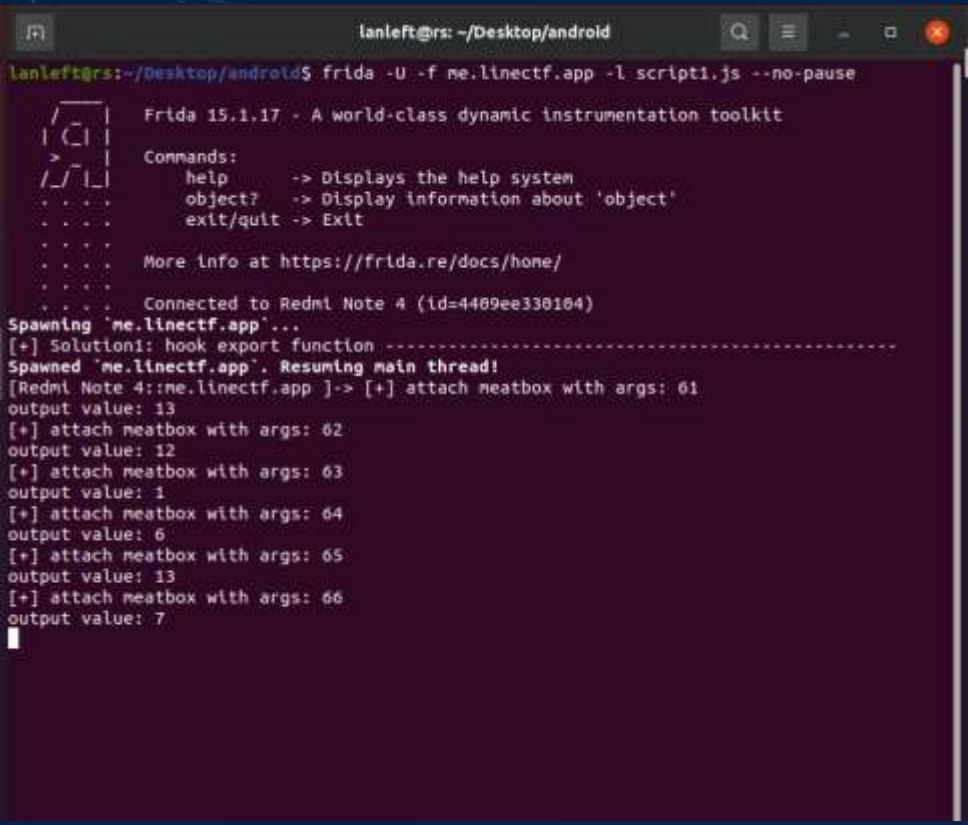


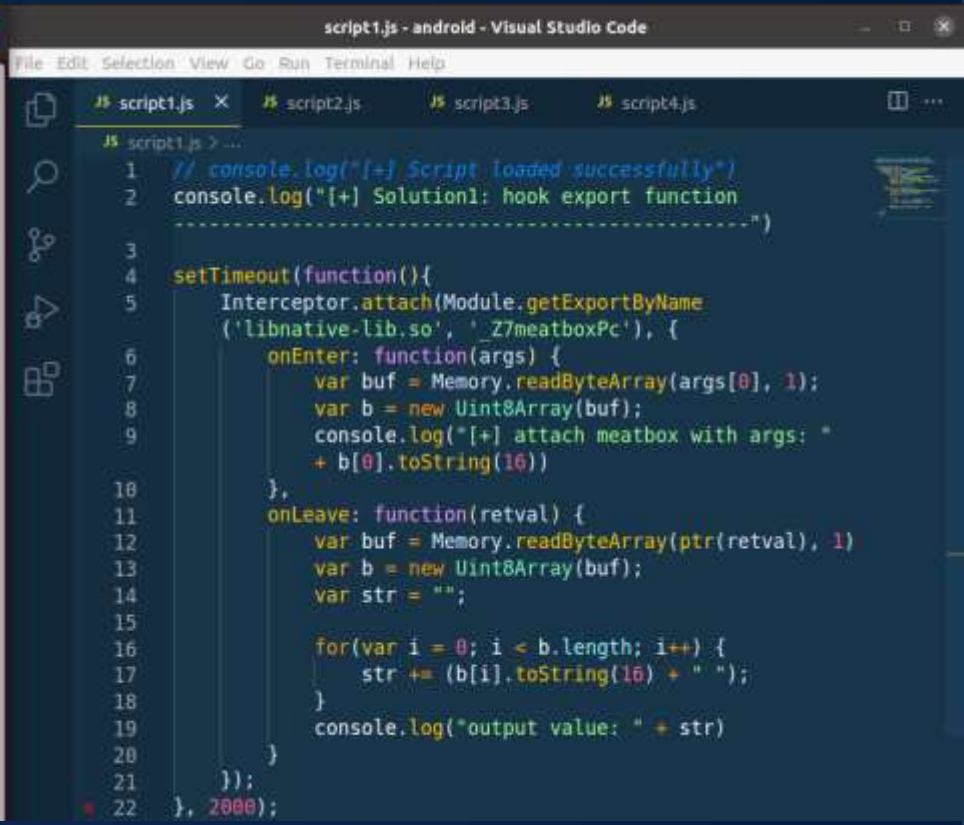
https://score.linectf.me/challenges



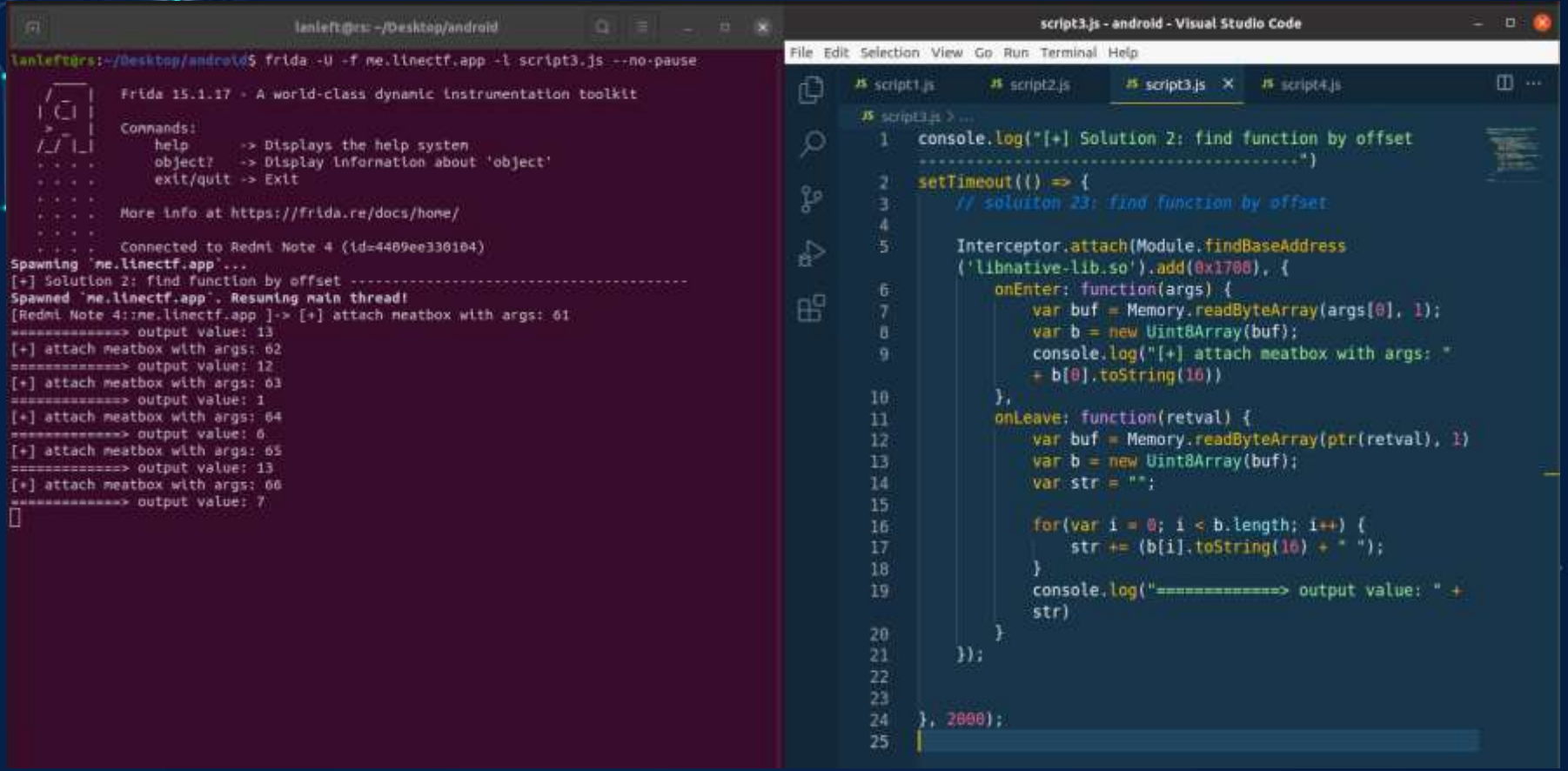
Rev sương sương

Solution 1: exported functions

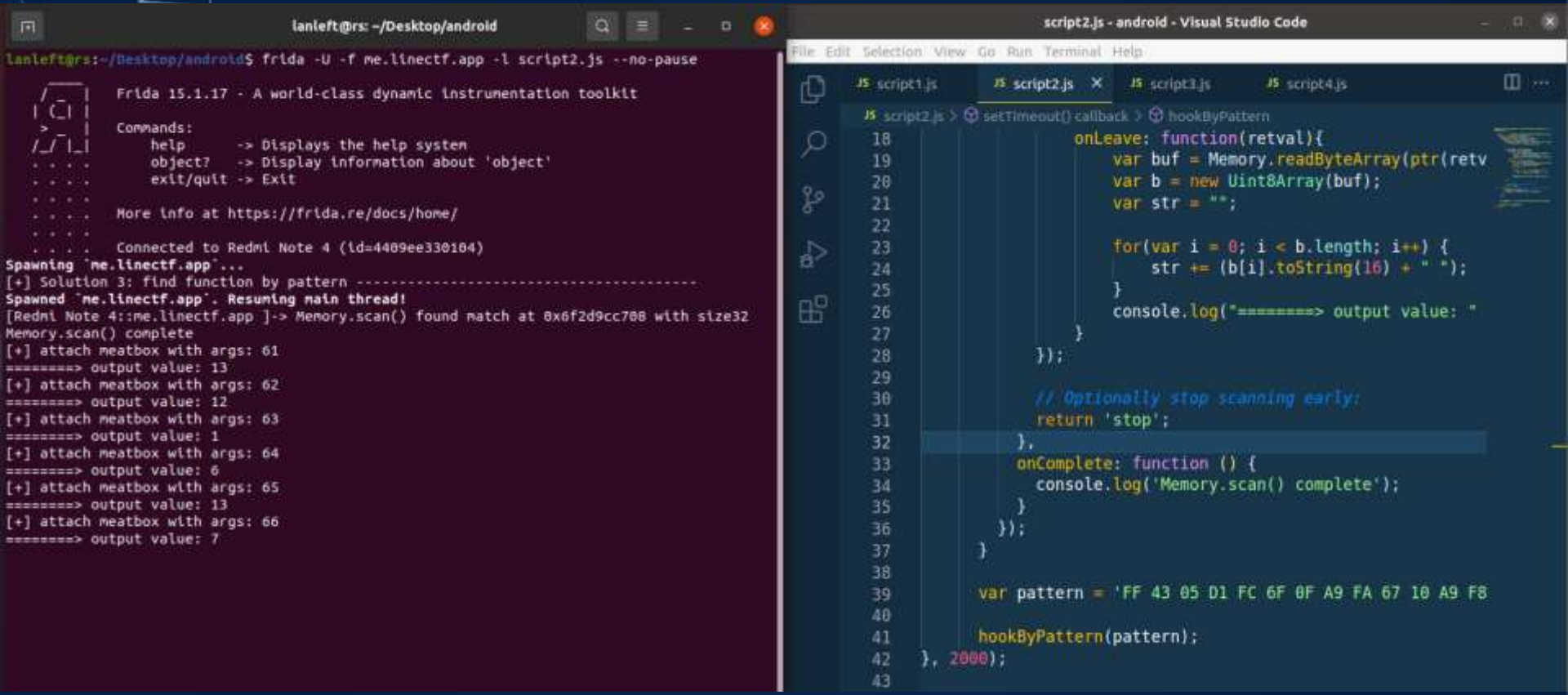




Solution 2: offset



Solution 3: pattern



Solution 4: by string reference

Ideas:
- Radare2
  - Frida + python ← lib, life python

// Open(“libabc.so”, “rb”)…
// life.parse(“lib_name”)
//

04
Mở rộng

File native-lib bị obfuscate strings, strip function?

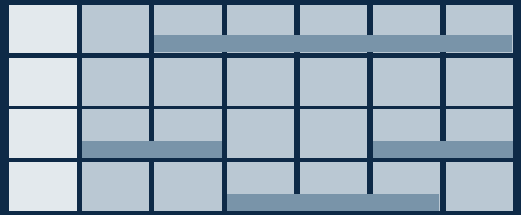
```
// open the shared object
void *dlh = dlopen("libnative-lib.so", RTLD_LAZY);
// void *dlh=NULL;
if (dlh == NULL) {

  printf("[-] open library fail\n");
  exit(1);
}
// resolve the function symbol
h_meatbox meatbox = dlsym(dlh, "_Z7meatboxPc");
```

File native-lib sử dụng custom bytecode?

???

THANKS

Does anyone have any questions?

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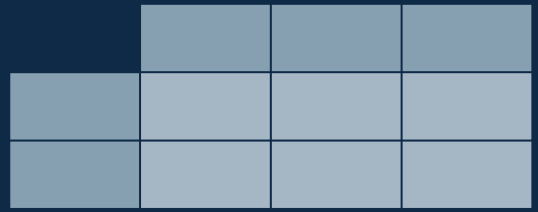

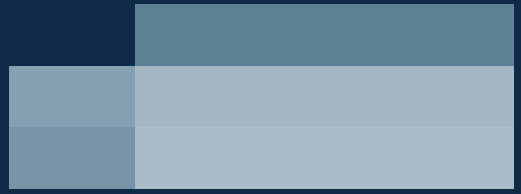

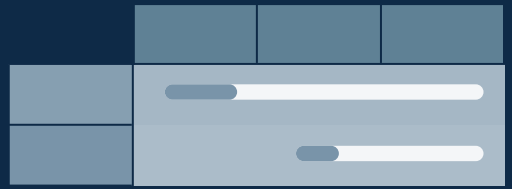

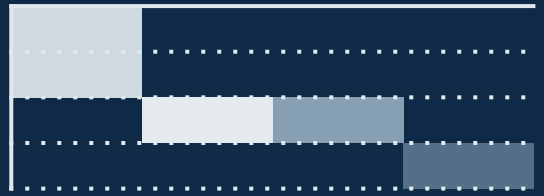

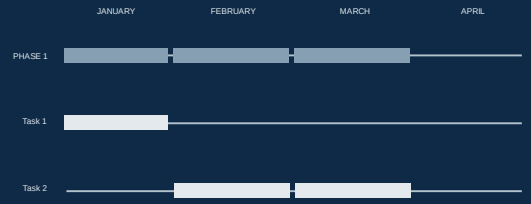
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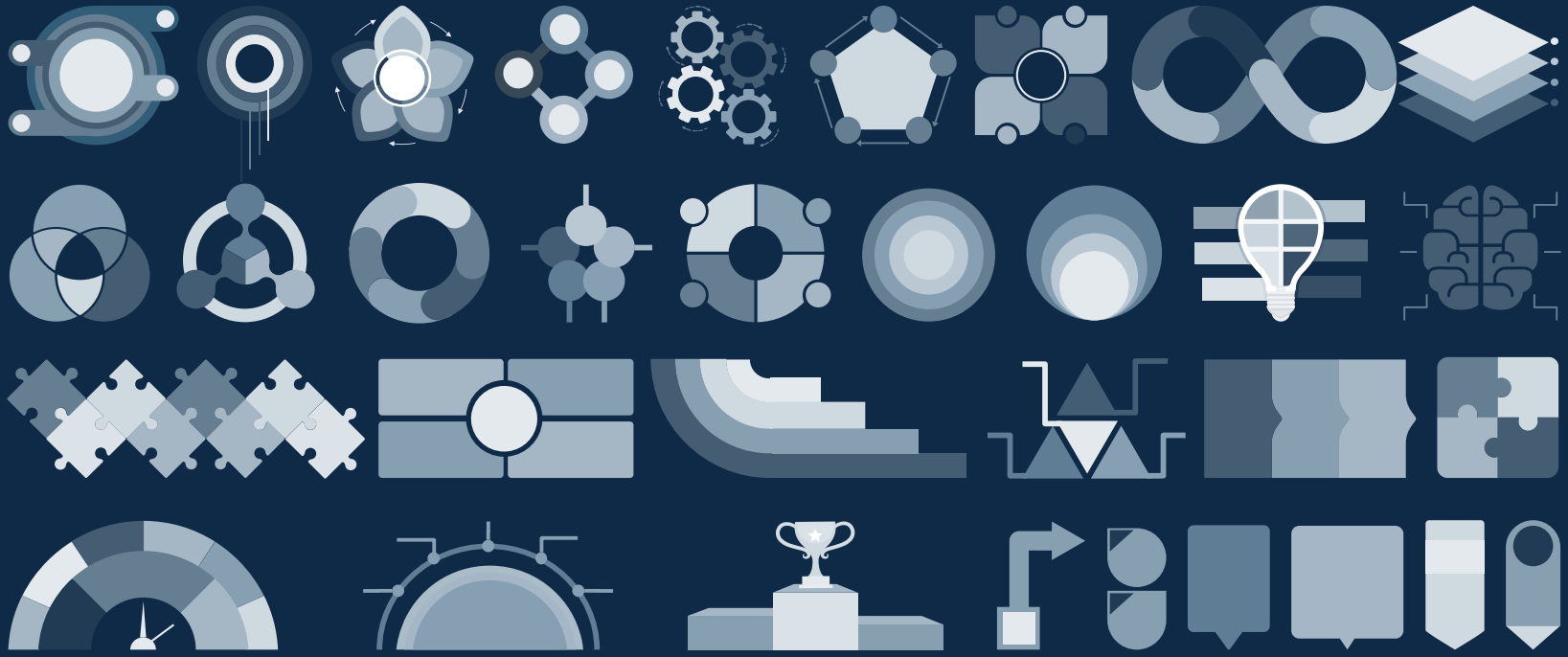

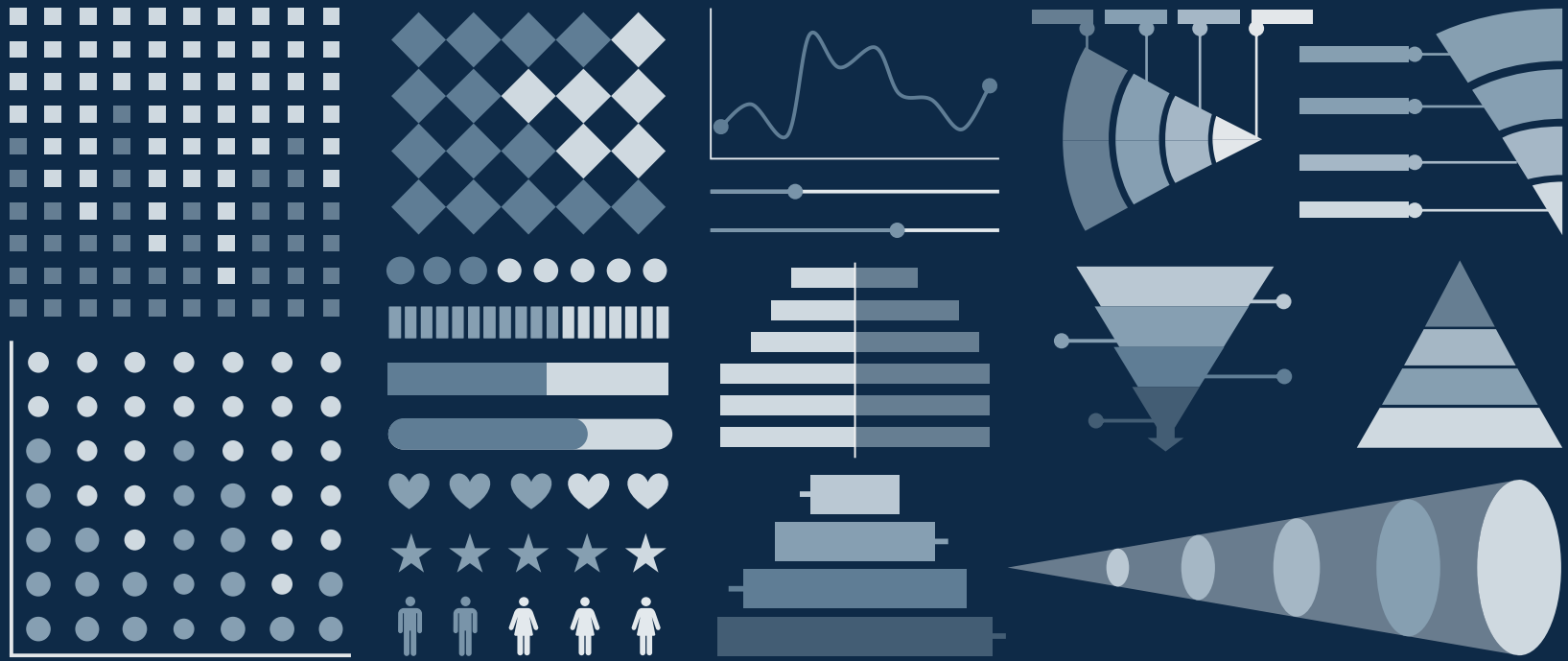

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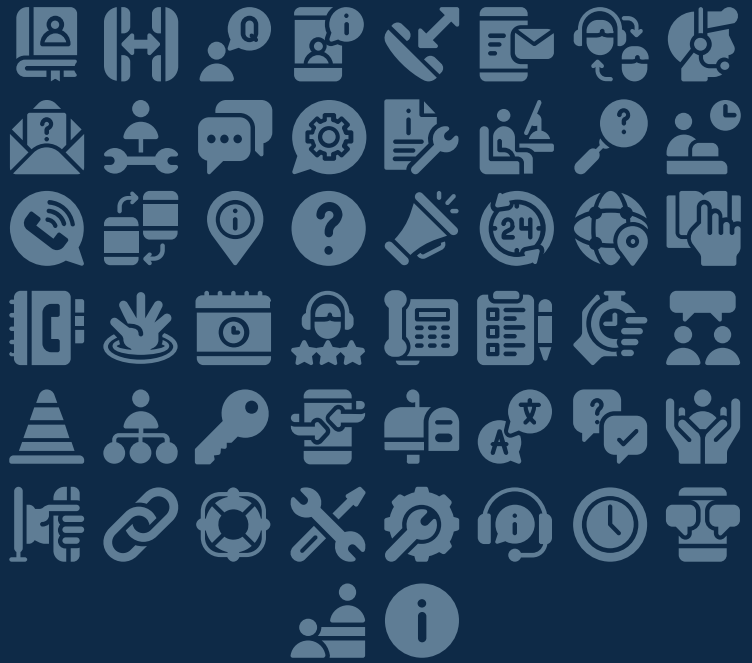

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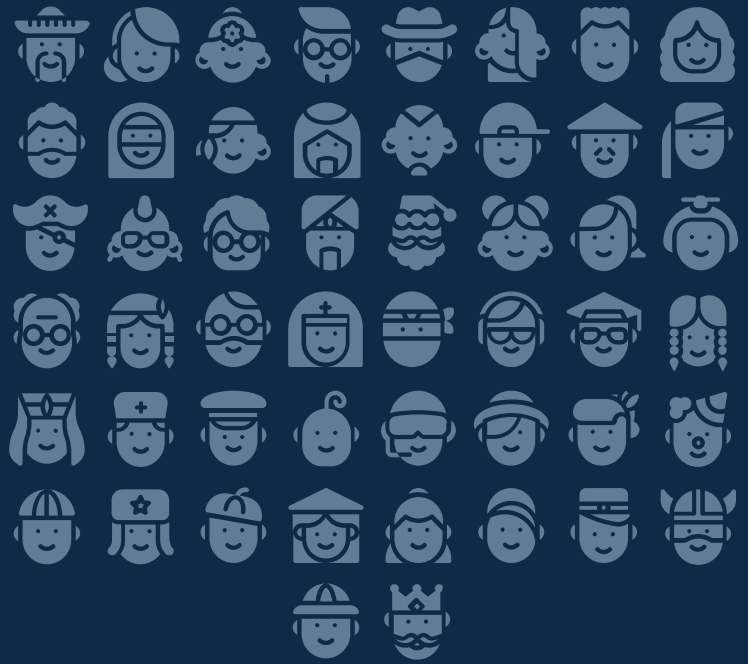

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