Ghidra
An Open Source Reverse Engineering Tool

Lars A. Wallenborn

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How the NSA open-sourced all software in 2019

Intro

whoami

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Since 2004 IT Freelancer
2013 Diploma in Mathematics @ Uni Bonn
2014 - 2015 Software Developer in Bonn
Since 2015: Security Researcher at CrowdStrike

Overview

1. What is Reverse Engineering?
2. Why should I do it?
3. How do I do it?

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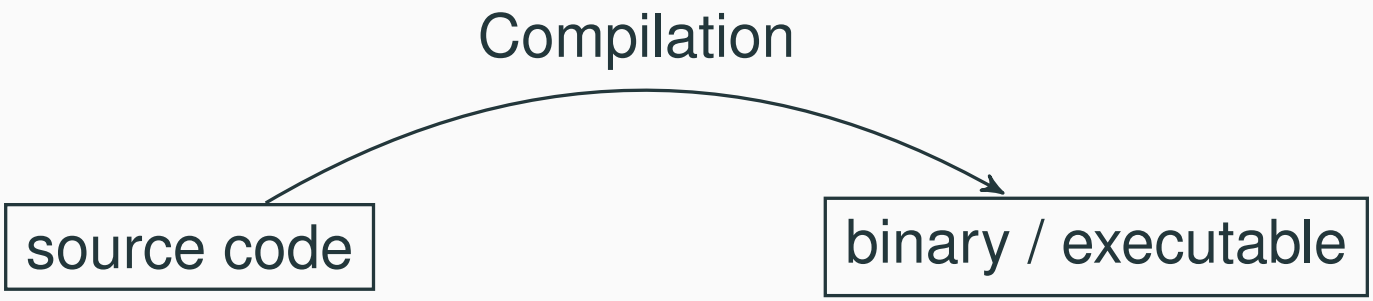
This Presenation

We will focus on a very specific kind of Reverse Engineering:

Binary Software Reverse Engineering

Binary Software Reverse Engineering



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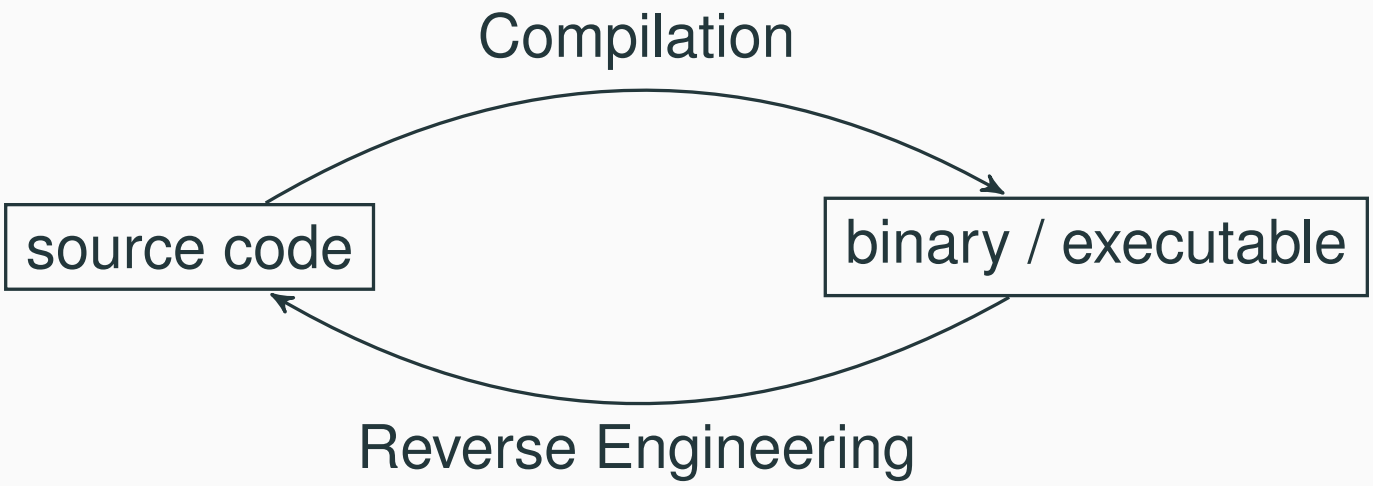
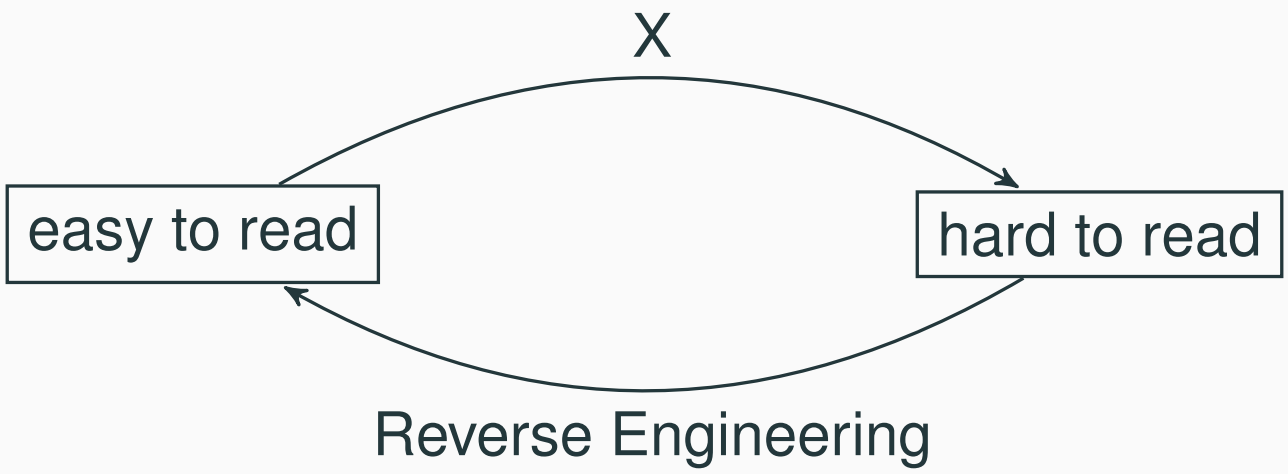


Binary Software Reverse Engineering – More General



Why should I do it?

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How do I do it?

Show me an Example!

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```c
#include <stdio.h>

int main() {
    printf("Hallo␣FrOSCon!");

    return 0;
}
```

Compile it!

Compile C program to a binary.

```
gcc main.c
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```
strip a.exe
```

strings Based Reversing

Demo

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Due to time constraints while reversing, you often have to find a balance between speed and confidence.

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- RE techniques heavily depend on the used programming language. C, C++, Delphi, Go, .NET ...
- Focus on ”native” PE files, i.e. files that are ”normal” Windows executables.

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- Then, execution is handed over to the so-called *entry point* within the `.text` section.

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we see

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SUB RSP, 0x98
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- IDA (Interactive Disassembler)

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- (und many other formats)

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- Import executables and disassemble them
- Decompile the assembly and display pseudo code (C-like)
- Guess variable and function names when possible
- Allow some basic refactoring similar to an integrated development environment (IDE)

How do I use it?

Demo

Thank You

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Some advertisement: I will give Reverse Engineering classes soon. If you are interested, talk to me or sent me an email!

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Questions?

Appendix: Static vs. Dynamic RE Comparison

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Conclusion

A combined approach is the best of course.

We will focus on static analysis here.

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- Depending on how you count there are between 1000 and 4000 assembly instructions.

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POP RBX
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- This allow arbitrarily deeply nested calls.