Project 3: Rust and Security

CS 3740/5130, Fall, 2019

[Instructions]

In this project, you will solve a list of Rust programming problems/bugs and discuss the security implications for each problem.

For each program (*.rs) in every problem set, you're expected to "fix" the program (i.e., make it complete and compliable). To view/edit/debug a program, you simply click the corresponding link below, which takes you to an online Rust IDE with the buggy program populated (no need to install any software on your computer).

The deliverable of this project is a report that documents your fixed version of the programs, alone with the root cause of the bug and potential security implications.

The project is due EOD Nov. 20th.

[Problem Sets]

Variable bindings

Relevant chapter in The Rust Programming Language

- "variables1.rs"
- "variables2.rs"
- "variables3.rs"
- "variables4.rs"

Functions

Relevant chapter in The Rust Programming Language

- "functions1.rs"
- "functions2.rs"
- "functions3.rs"
- "functions4.rs"
- "functions5.rs"

Primitive types

Relevant chapter in The Rust Programming Language

- "primitive_types1.rs"
- "primitive_types2.rs"
- "primitive_types3.rs"
- "primitive_types4.rs"
- "primitive_types5.rs"
- "primitive_types6.rs"

Strings

Relevant chapter in The Rust Programming Language

- "strings1.rs"
- "strings2.rs"
- "strings3.rs"

Move semantics

Relevant chapters in the book Ownership and References and borrowing

Note that the exercises in this section may look similar to each other but they are subtly different :)

- "move_semantics1.rs"
- "move_semantics2.rs"
- "move_semantics3.rs"
- "move_semantics4.rs"

Threads

See the Dining Philosophers example and the Concurrency Chapter from the book.

- "threads1.rs"

Credit: the problems were selected from the Rustlings Project.