@kmckelvin

KEVIN MCKELVIN - RUBYFUZA 2016

GOING NATIVE

WHERE ARE WE GOING?

- What is ‘native code?’
- Writing a C extension to a Ruby gem
- FFI
- Rust for Rubyists

CLEARING THE FOG OF WAR

http://checksbalances.clio.nl/wp-content/uploads/2014/05/the_fog_of_war_762_by_badchess-d328nzt.jpg

WHAT DOES ‘NATIVE’ MEAN?

LOWER LEVELS OF ABSTRACTION

WE DON'T CARE ABOUT PERFORMANCE*

WE CAN’T CARE ABOUT PERFORMANCE

OUR VOCABULARY IS LIMITED

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

Address	Name	Value
0	x	42

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

Address	Name	Value
0	x	42

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

Address	Name	Value
1	a	5
0	x	42

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

Address	Name	Value
2	b	100
1	a	5
0	x	42

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

Address	Name	Value
$2^{30}-1$		1
3	c	$\rightarrow 2^{31}-1$
2	b	100
1	a	5
0	x	42

THE STACK & THE HEAP

```
fn main() {
    let x = 42;
    foo();
}

fn foo() {
    let a = 5;
    let b = 100;
    let c = Box::new(1);
}
```

Address	Name	Value
0	x	42

WHAT DOES ‘NATIVE’ MEAN?

PERFORMANCE IS PART OF OUR VOCABULARY

WHAT DOES ‘NATIVE’ MEAN?

GARBAGE COLLECTION IS PREDICTABLE

DEMO

WRITING A C-EXTENSION TO A RUBY GEM

FFI

A foreign function interface (FFI) is a mechanism by which a program written in one programming language can call routines or make use of services written in another.

DEMO

USING FFI TO CALL INTO A RUST FUNCTION

WHY RUST?

Q&A

THANKS!