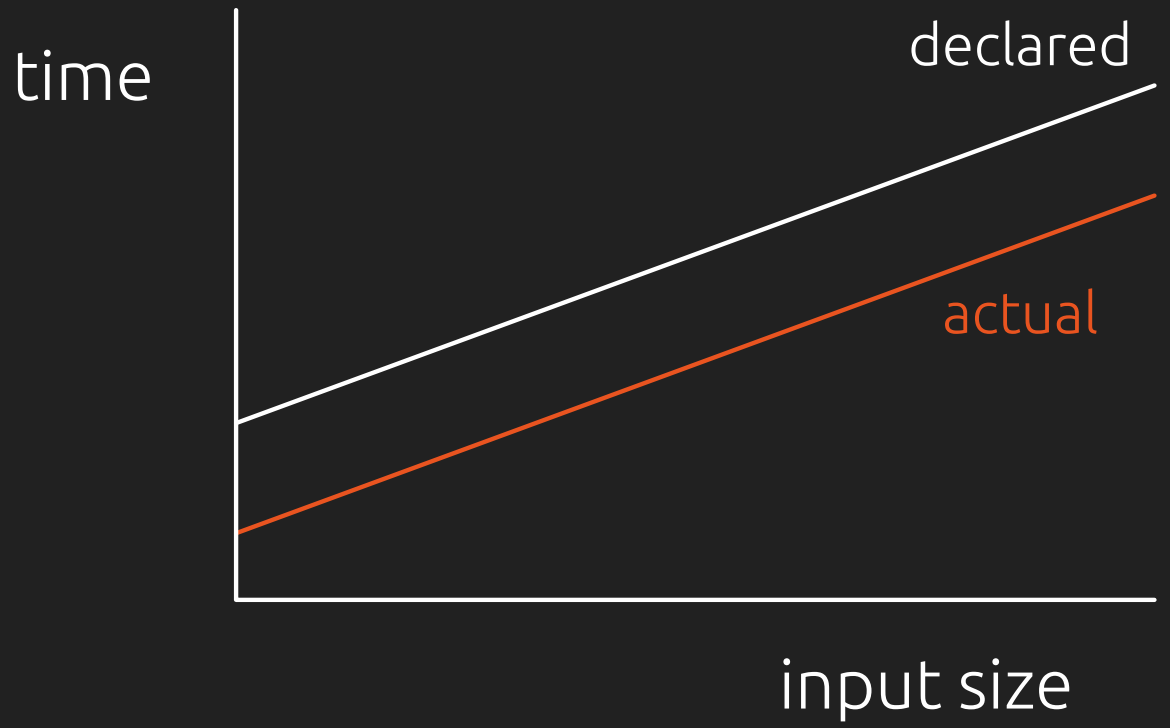
Fearless Refactoring and the Art of Argument-Free Rust

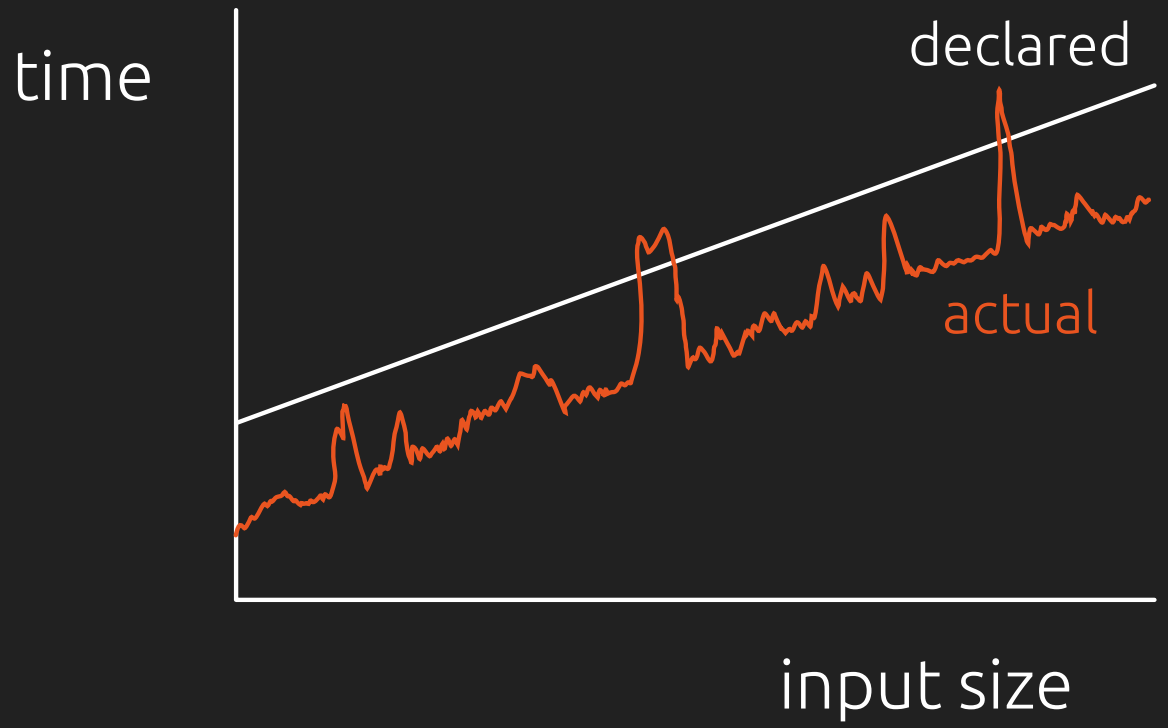
Ed Jones, RustConf '24

- I work at Canonical

- I work at Canonical
- I like clean code

- I work at Canonical
- I like clean code
- I annoy my coworkers


time
declared
actual
input size


time
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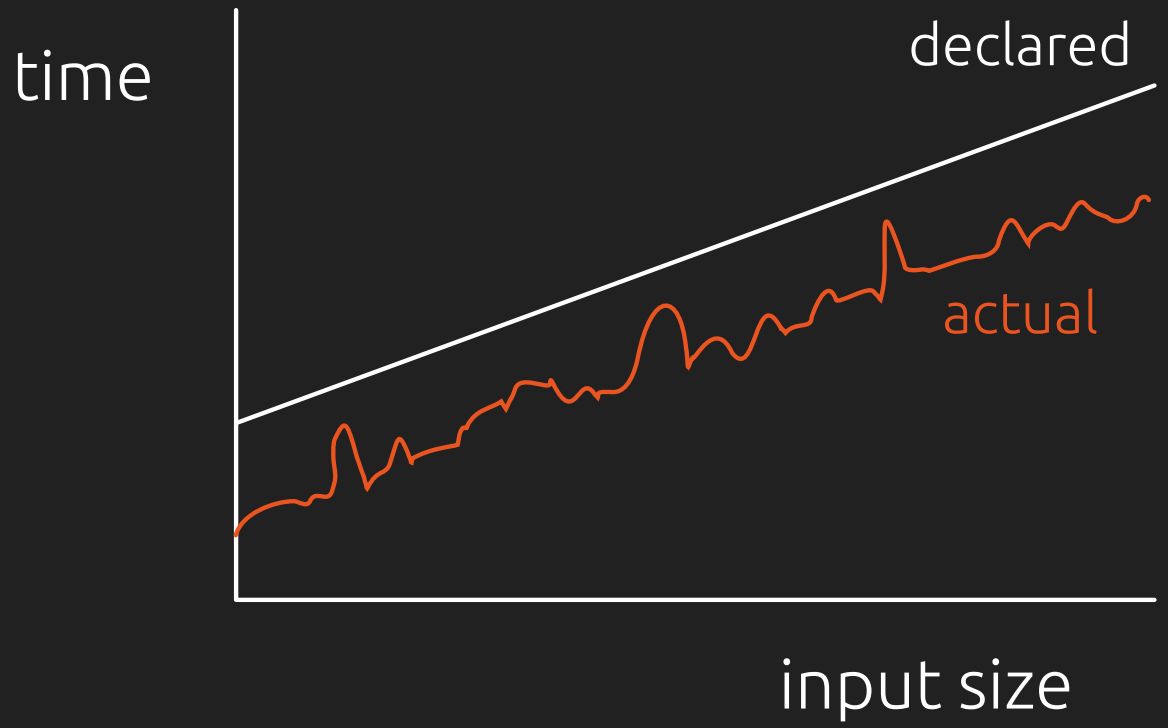
time
declared
actual
input size

industry’s hard problems

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- requirements

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- requirements
- politics

industry’s hard problems

- requirements
- politics
- maintenance

what’s maintainable?

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- easily-described concepts

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- easily-described concepts
- cleanly-flowing concepts

what’s maintainable?

- easily-described concepts
- cleanly-flowing concepts
- predictable patterns

for whom does the coder code?

for whom does the coder code?

- consumers

for whom does the coder code?

- consumers
- coworkers

for whom does the coder code?

- consumers
- coworkers
- themselves

fearless refactoring

fearless refactoring

after making a change, the next time all checking passes,
code likely still works as intended

to help the refactorer:

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- avoid `unwrap`

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- match exhaustively

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- avoid `unwrap`
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- limit unsafety

to help the refactorer:

- avoid `unwrap`
- match exhaustively
- mutate in small scopes
- limit unsafety
- be sparingly weird

weirdness

weirdness

- is equivalent to surprise

weirdness

- is equivalent to surprise
- diverts attention

weirdness

- is equivalent to surprise
- diverts attention
- is resolved by debate

The Art of Argument-free Rust

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note: not debate-free

fostering debate

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- cross-team code review

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- office hours (‘Rust Surgery’)

fostering debate

- cross-team code review
- office hours (‘Rust Surgery’)
- standardisation docs

General definition ordering

When read from top to bottom, a file should feel like a tour of the APIs it defines. The most important items should be defined further up the file, with their helpers below. No `impl` block should come before the type or trait to which it relates. In this way, lower-level implementation details are hidden from the reader until they wish to know more, at which point, having gained a good knowledge of the overall form of the code, they can read on to understand how it functions.

✅ Do this:

```
impl Foo {
    pub fn some_func(&self) {
        self.some_helper_func();
    }

    fn some_helper_func(&self) {
        // ...
    }
}
```

⚠️ Avoid this:

```
impl Foo {
    fn some_helper_func(&self) {
        // ...
    }

    pub fn some_func(&self) {
        self.some_helper_func();
    }
}
```

the process

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1. note repeated arguments

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2. write up generally-applicable notes

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3. review with a few experienced Rustaceans

the process

1. note repeated arguments
2. write up generally-applicable notes
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4. review with many Rustaceans

the process

1. note repeated arguments
2. write up generally-applicable notes
3. review with a few experienced Rustaceans
4. review with many Rustaceans
5. release

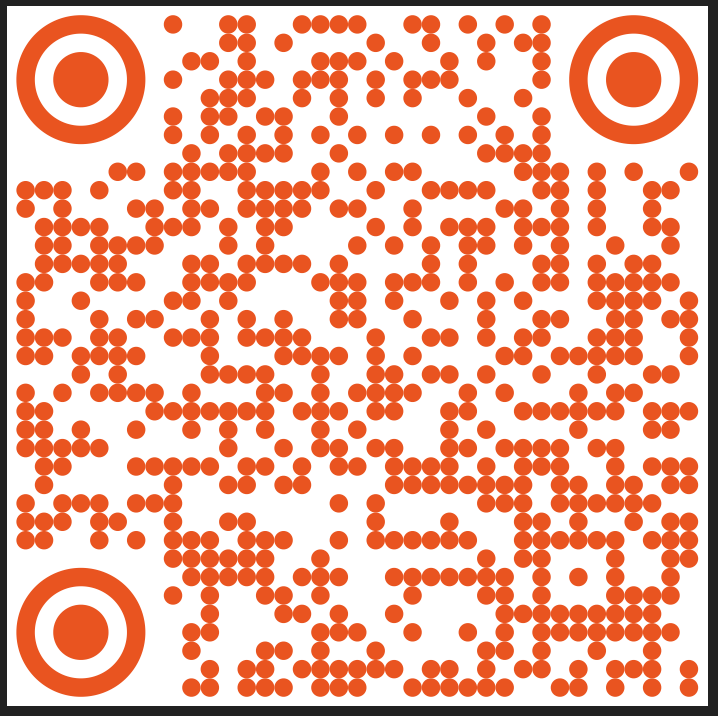
the process (hard-mode)

1. note repeated arguments
2. write up generally-applicable notes
3. review with a few experienced Rustaceans
4. review with many Rustaceans
5. release

the process (easy-mode)

the process (easy-mode)

`github.com/canonical/rust-best-practices`



what’s next?

what's next?

- more standards

what's next?

- more standards
- automation

what's next?

- more standards
- automation
- open office hours

thanks for listening!