AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

OPN304-R2

Async Rust: Hurry up and .await!

Felix Klock (he/him or they/them)
Rust Compiler Team (co-lead), Principal Software Engineer
AWS

Jon Gjengset (he/him)
Senior Software Dev Engineer
AWS

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Servers: Massive capacity; much waste



Photo © sveta – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Heart of problem



Photo © Goinyk – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Heart of problem

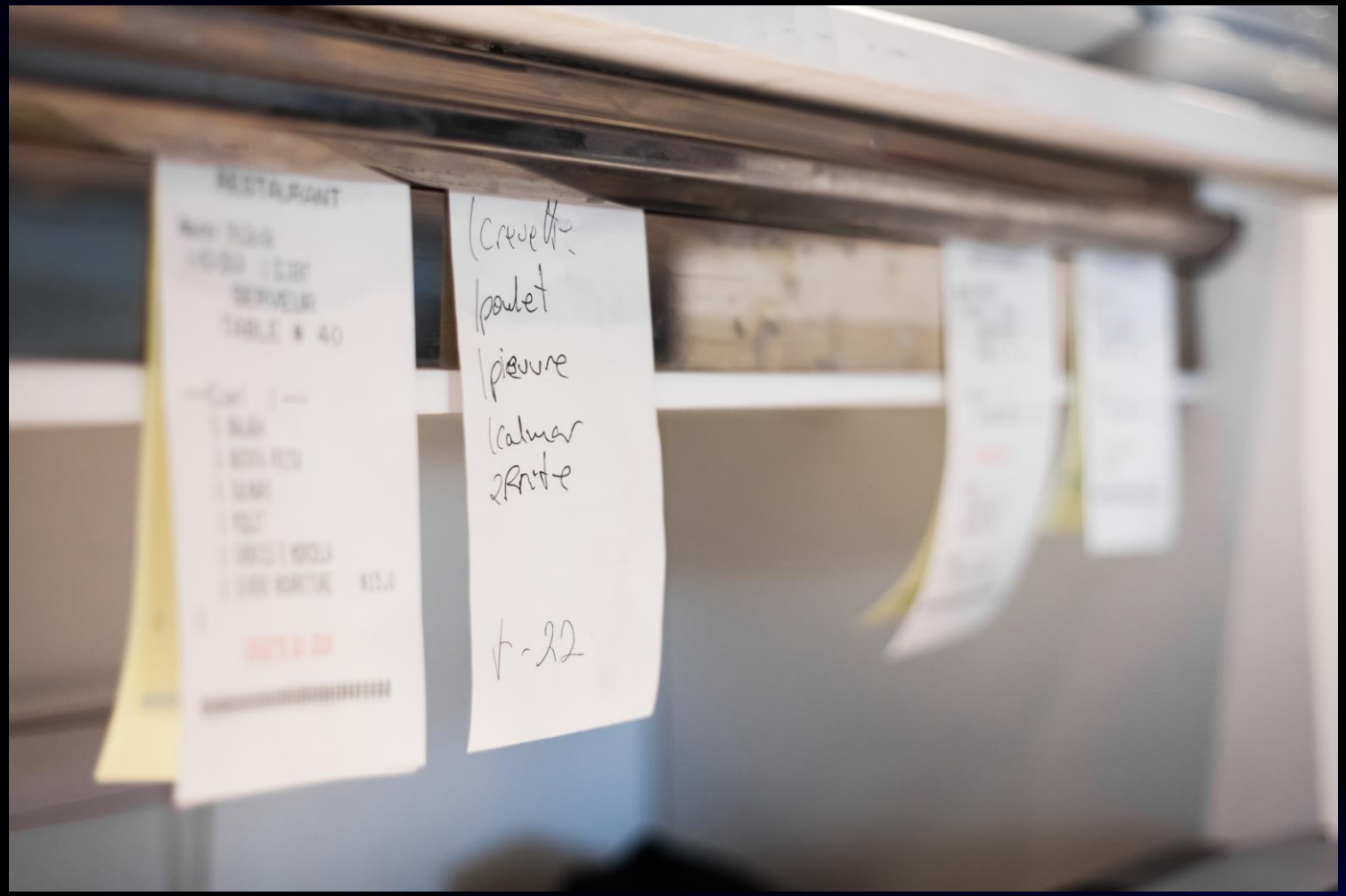


Photo © aetb – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Answer: Deploy more workers?

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Deploying workers



Photo © Gorodenkoff – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

… but as orders scale up …



Photo © Gorodenkoff – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Async: Smarter work ≫ more workers



Photo © Grafvision – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Async: Smarter work ≫ more workers



Photo © Grafvision – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Async: Smarter work ≫ more workers



Photo © LIGHTFIELD STUDIOS – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Plan for workshop

Running example: Building a web crawler from ground up

Lab: Async basics

Demo: Async instrumentation

Assumption: Some Rust experience

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Lab: Async basics

`async fn`

future`.await`

“What color is your function?”

`select!`

`task::spawn`

Communication and coordination

Outcome: You are able to write simple async Rust code

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

“Rust experience”

Have you written **any** Rust code?

`println!(“{:?}”, val);`

`loop { … }`

Edited a cargo.toml file ?

`Struct { x: val, … }`

`expression?` error handling?

`drop(value);` for its effect?

You are ready!



Photo © moodboard – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Any questions?

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Lab work time

huaa.workshops.async-rust.dev

(stop for check-in at 45 minutes past the hour)

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Lab: check-in

huaa.workshops.async-rust.dev

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Check-in: Hands up

Have you started exercise 1?

Started exercise 2?

Exercise 3?

Exercise 4?

Exercise 5?



Photo © moodboard – stock.adobe.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Lab work time

huaa.workshops.async-rust.dev

(We will stop for review and tool demo 15 minutes before end of workshop)

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Lab: Review

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Thank you!

Felix Klock

pnkfelix@amazon.com
http://pnkfx.org/pnkfelix/
tweet @pnkfelix

Jon Gjengset

jongje@amazon.com
https://thesquareplanet.com/
tweet @jonhoo

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.