



DesignNews

Embedded Software using RUST

DAY 5 : Becoming a Rust Expert

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THE SPEAKER



Jacob Beningo

Visit 'Lecturer Profile'

Beningo Embedded Group - President

Focus: Embedded Software Consulting

An independent consultant who specializes in the design of real-time, microcontroller based embedded software.

He has published two books:

- [Reusable Firmware Development](#)
- [MicroPython Projects](#)
- [Embedded Software Design](#)

Writes a weekly blog for DesignNews.com focused on embedded system design techniques and challenges.

Visit www.beningo.com to learn more ...

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Course Sessions

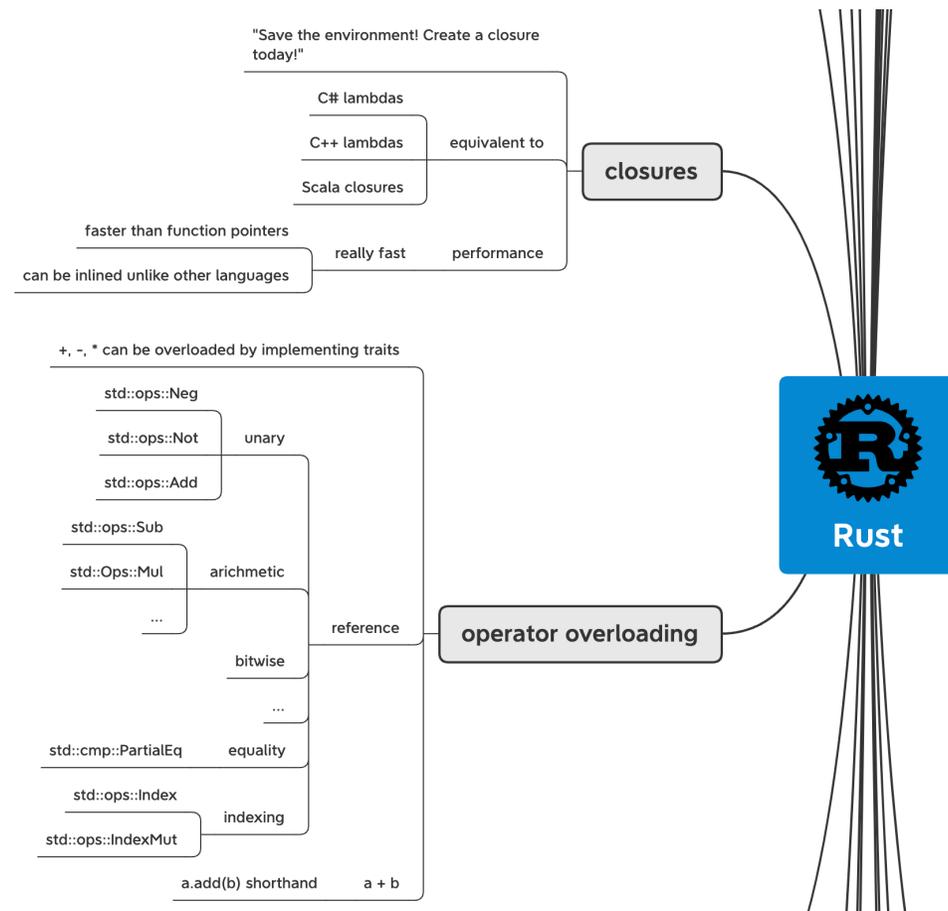
- Introduction to Rust for Embedded Systems
- "Hello Rust!", using QEMU
- "Hello Rust!", using the STM32F3
- Interfacing to Peripherals in Rust
- **Becoming a Rust Expert**

1

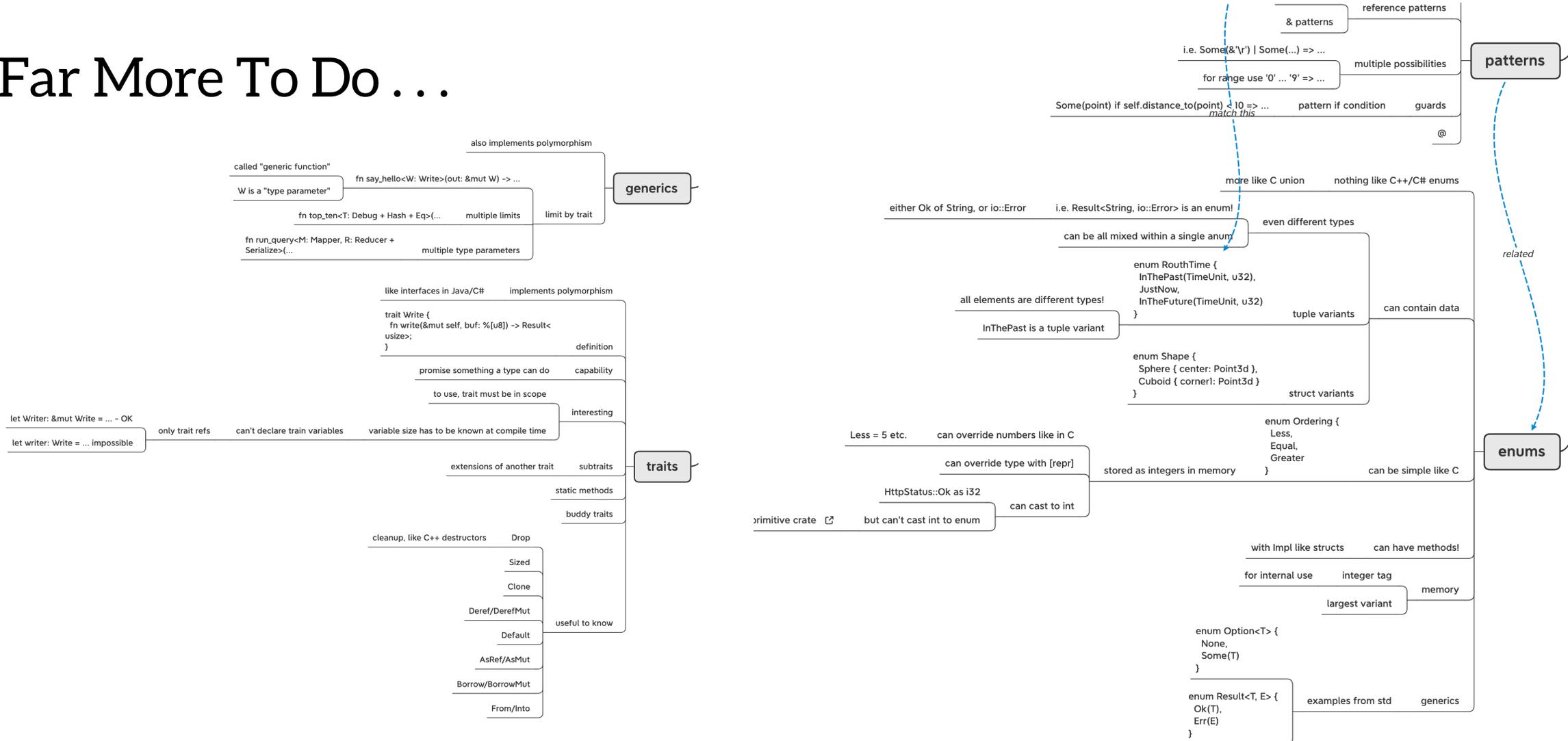
Far More To Do

<https://www.alonguid.uk/posts/2021/01/rust/rust.svg>

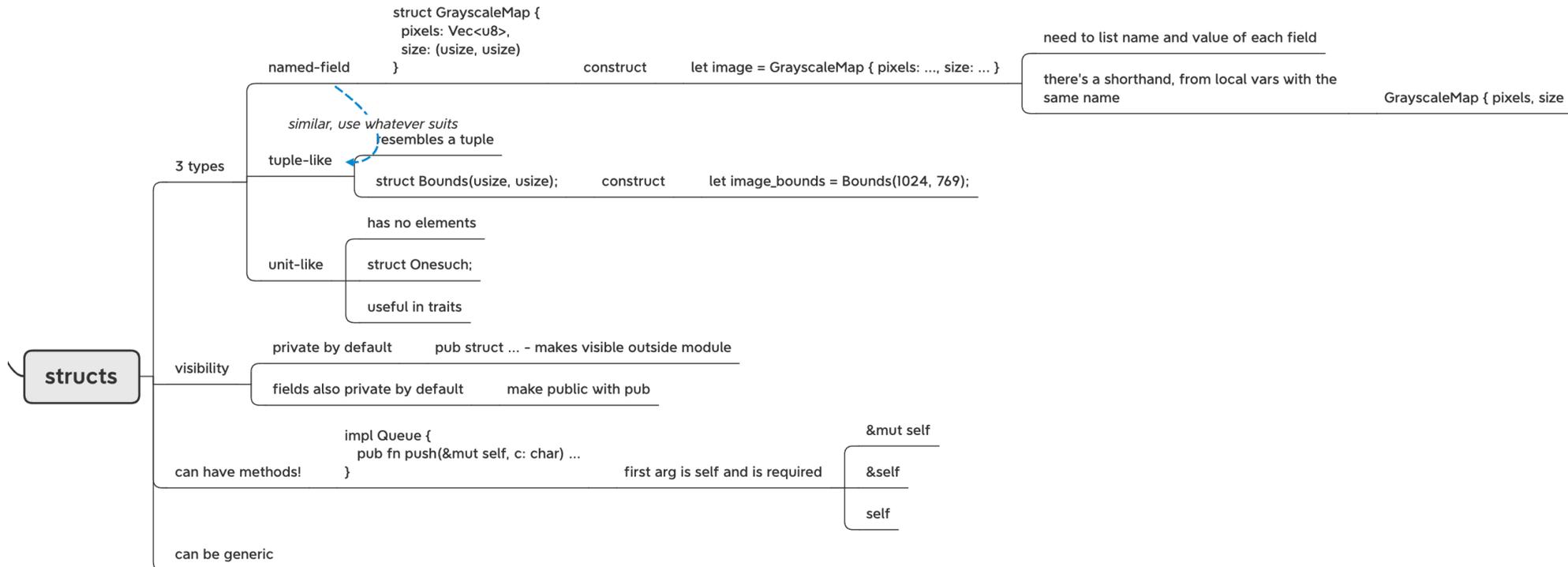
Far More To Do . . .



Far More To Do ...

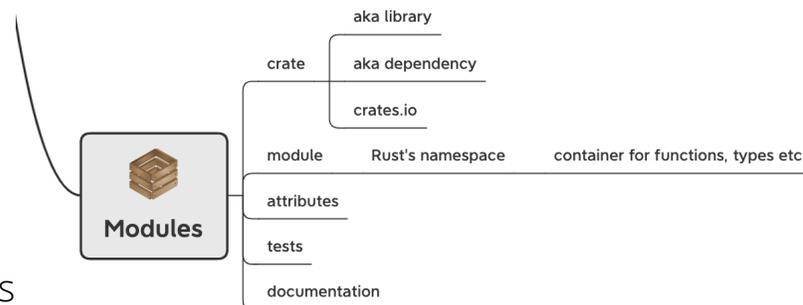
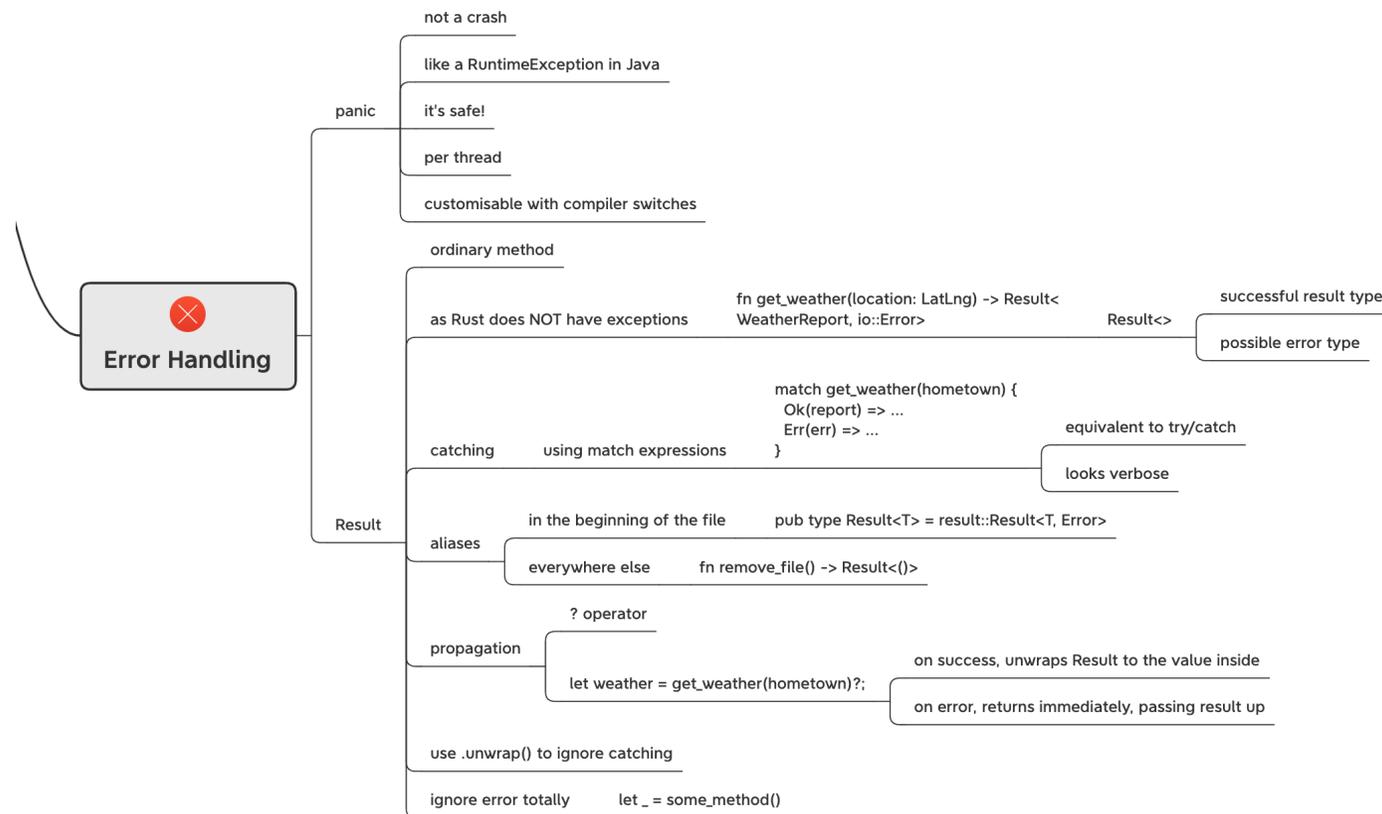


Far More To Do ...



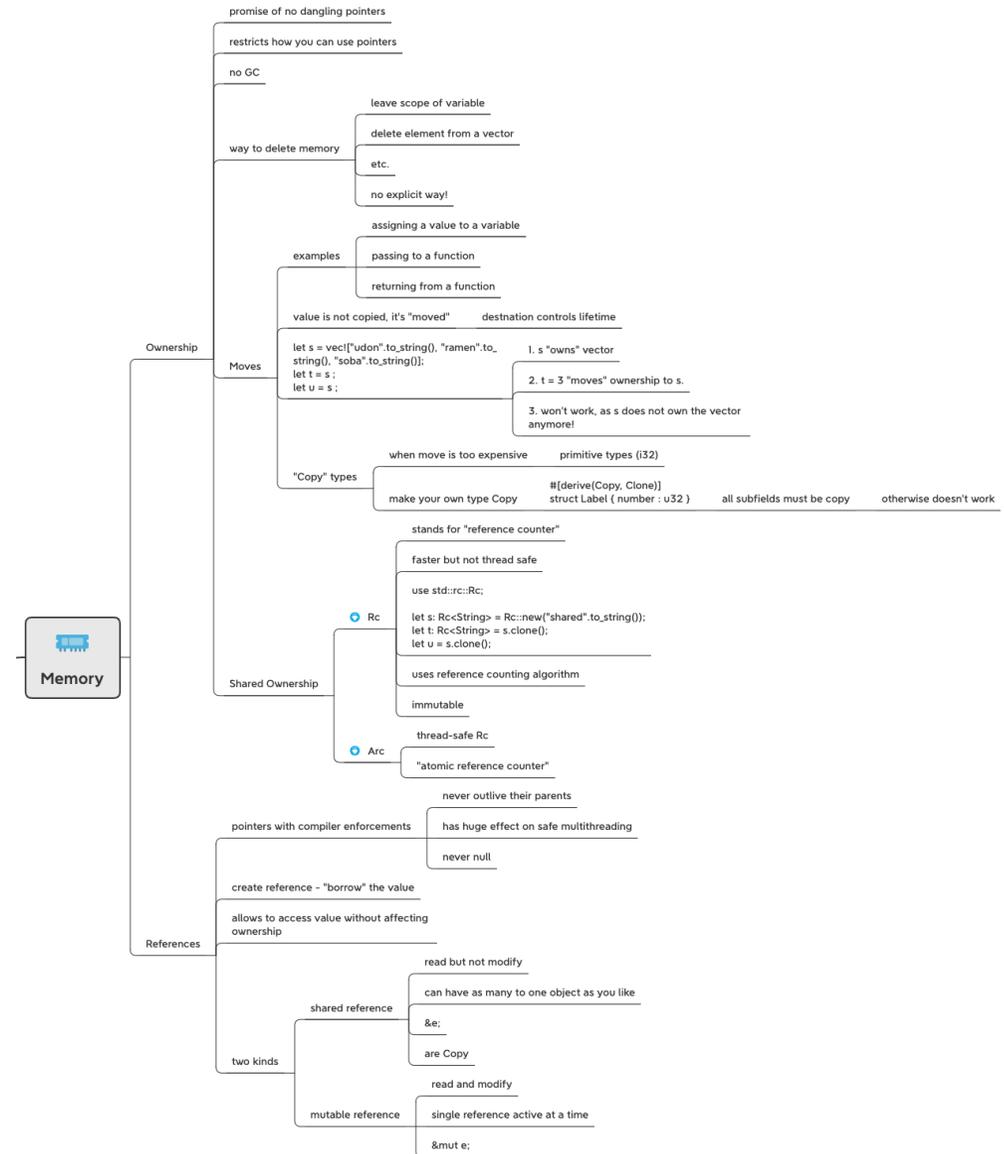
Far More To Do ...

Expressions 28



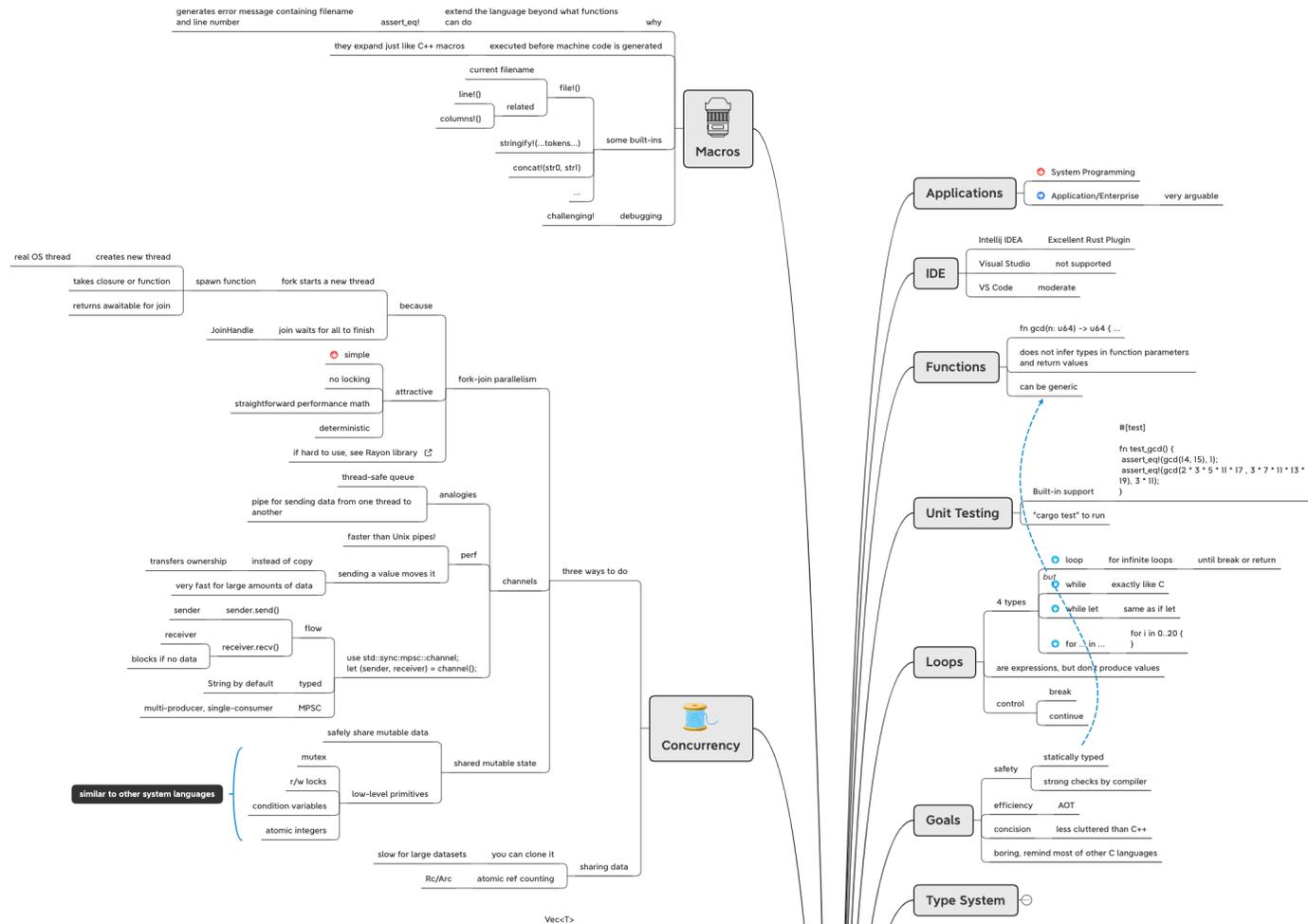
Far More To Do . . .

- References
 - Compile time enforced pointers
 - Shared references
 - Mutable references
- Ownership
 - Moves
 - Shared ownership



Far More To Do ...

- Closures
- Iterators
- Collections
- Concurrency
- Loops
- Unit Testing
- Macros
- etc



With what you've seen so far, what best describes what you'll do after this course?

- Experiment with Rust on a host
- Experiment with Rust on an embedded board
- Adopt Rust for your next project
- Investigate moving to C++
- Run back to C without looking back

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In Depth Resources

The Embedded Rust Book

<https://doc.rust-lang.org/book/title-page.html>

Main Rust Programming Language Guide.

Targets beginners and walks through language and tools from the perspective of the host environment.

The Embedded Rust Book – STM32F3 Discovery Version

<https://docs.rust-embedded.org/book/intro/index.html>

Repo:

<https://github.com/rust-embedded/discovery>

Older material but can provide some basic insights to get you going in the right direction. Embedded Focused.

Rust YouTube Videos

[Why Rust Won't Replace C \(Anytime Soon\)](#)

[Writing an Embedded Operating System in Rust](#)

[Rust Run on EVERYTHING, Including the Arduino](#)

Many, Many, more

What resource are you most interest in for learning Rust for embedded?

- Free online books
- Websites with Rust example code
- Leverage Github Copilot and ChatGPT
- A formal language course

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Should we be using Rust?

Jacob's Opinion



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Going Further

Rust Resources

- [Rust Website](#)
- [Rust Book](#)
- [Rust for Embedded Book](#)
- [Learning Rust for Embedded Systems](#)
- [Rust By Example](#)
- [RTIC: Real-Time Interrupt Driven Concurrency](#)



Thank you for attending

Please consider the resources below:

- www.beningo.com
 - Blog, White Papers, Courses
 - Embedded Bytes Newsletter
 - <http://bit.ly/1BAHYXm>
 - Embedded Software Design
 - <https://www.beningo.com/embedded-software-design/>

From www.beningo.com under

- Blog > CEC – Embedded Software using Rust





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