# Rust

Zhang Yuning

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# What is Rust?

*"Rust is a systems programming language that runs blazingly fast, prevents nearly all segfaults, and guarantees thread safety."*

*– rust-lang.org*

# Fast

- Compiles to native code
- No garbage collector
- Most abstractions have zero cost

# Functional

- Closures
- Algebraic Data Types
- Pattern matching

# Safe

- Ownership
- Borrowing
- Lifetime

# Try it

- https://play.rust-lang.org/
- rustup: the Rust toolchain installer

# Rustup

rustup installs The Rust Programming Language from the official release channels, enabling you to easily switch between stable, beta, and nightly compilers and keep them updated.

# Cargo, Rusts Package Manager

Cargo downloads your Rust projects dependencies and compiles your project.

# hello, world!

cargo new –bin helloworld

# Borrowing

Newcomers to Rust often find themselves "fighting with the borrow checker" trying to get their code to compile

# Borrowing Rules

- You can't keep borrowing something after it stops existing.
- One object may have many immutable references to it (&T).
- OR exactly one mutable reference (&mut T) (not both).

# Demonstration

How will a beginner fight with the borrow checker