The Little Book of Rust Books

This book is a treasure-trove of Rust books:

- Official books maintained at rust-lang.org
- Unofficial books maintained elsewhere
- Application books on specific Rust applications

If you know of others, why not submit a pull request?

The titles of books not in mdbook format are *italicised*. For more books in other formats, see Rust Books.

Official Rust Books

The following books are maintained at rust-lang.org. Many of them are mentioned in Learn Rust.

Introductory:

- Rust by Example - runnable examples illustrating Rust concepts
- The Rust Programming Language - “the book”

Core:

- The Cargo Book - the Rust package manager
- The Edition Guide - guide on introducing changes into the Rust language
- The rustc Book - guide to the compiler for the Rust programming language
- The rustdoc Book - guide to the tool which generates documentation for Rust projects
- The rustup Book - guide to the tool which installs the Rust language from release channels

Advanced:

- Guide to Rustc Development - compiler internals
- Rust Forge - Rust team documentation
- The Rust Reference - primary reference to the Rust language
- The Rust Unstable Book - nightly-only features
- The Rustonomicon - the dark arts of unsafe Rust

Working groups:

- *Compiler team working groups* - a list of working groups
- Standard library developers Guide
- types-team - traits implementation improvements
- wg-async - foundations of async I/O

Other:

- Asynchronous Programming in Rust - non-blocking coroutines
- Clippy Documentation - code lints for programmers
- Criterion.rs - statistics-driven micro-benchmarking
- Error Codes Index - list of all error codes emitted from the Rust compiler
- mdBook - authoring, rendering and serving markdown books
- Polonius - experimental borrow checker crate
- Rust API Guidelines - how to design and present APIs
- Rust RFCs - list of Requests For Comments for changes to Rust
- The Chalk Book - Rust's new trait system implementation
- The `bindgen` User Guide - automatically generates Rust FFI bindings to C and C++ libraries

Unofficial Rust Books

The following books are maintained outside rust-lang.org.

Introductory:

- A Gentle Introduction To Rust
- *A half-hour to learn Rust*
- *Common Rust Lifetime Misconceptions*
- Comprehensive Rust 🦀 - a multi-day course developed by Google to teach Rust to Android engineers
- `Dyner` - experimental trait (*dyn*) objects in Rust
- Easy Rust - aimed at non-English native speakers
- Effective Rust - Rust guidelines[1]
- Error Handling in Rust
- Futures Explained in 200 Lines of Rust - from the internet archive
- *Java-Rust Generics*
- *Learn Rust the Dangerous Way*
- Learning Rust - a collection of resources by `quinedot`
- Learning Rust With Entirely Too Many Linked Lists
- LifetimeKata
- *Pointers*
- py2rs - from Python into Rust
- *r4cppp* - quick introduction to Rust for C++ programmers
- rust-cross - everything you need to know about cross compiling Rust programs!
- Rust Anthology 1
- Rust By Practice - Rust practice through challenging examples, exercises and projects
- Rust Cookbook - a collection of example programs
- Rust for C++ Programmers
- *Rust for Clojurists*

- *Rust for Node Developers*
- Rust for the Polyglot Programmer
- *Rustic Symmetries*
- *Rust Iterators*
- *Rust Ownership, the Hard Way*
- Rust 101 - Rust programming language learning guide
- The Node Experiment: Exploring Async Basics with Rust - from the internet archive

Application domains:

- Async
  - Async programming in Rust with async-std
  - Async Raft - the Raft distributed consensus protocol in async Rust
  - *Learning Async Rust with Entirely Too Many Web Servers*
  - The Node Experiment - Exploring Async Basics with Rust
  - *Tokio Tutorial* - event-driven, non-blocking I/O
- Comparing parallel Rust and C++
- Command line
  - Command Line Applications in Rust
  - PNGme: An Intermediate Rust Project - building a command line program to hide secret messages in PNG files
- CXX — Safe Interop Between Rust and C++
- Embedded
  - Embedded: The Missing Parts
  - Embedded Rust on Espressif - training Material for learning to use Embedded Rust with the Espressif ESP32-C3.
  - The Embedded Rust Book
  - The Embedonomicon - build a `#![no_std]` application from scratch
  - The Rust on ESP Book - comprehensive guide on using the Rust programming language with Espressif SoCs and modules.
  - Workbook for Embedded Workshops - an embedded Rust workshop
- Foreign Function Interface (FFI)

    - *The Rust FFI Omnibus*
    - The (unofficial) Rust FFI Guide - FFI in depth
    - Using Unsafe for Fun and Profit
- Real-Time Interrupt-driven Concurrency
- Triangle From Scratch - draw a triangle using Win32, but no external crates
- Web assembly
    - Rust and WebAssembly
    - The `wasm-bindgen` Guide
    - The `wasm-pack` Guide
    - WASM It
- *Writing an OS in Rust*
- Writing Interpreters in Rust: a Guide

Other:

- Macros
    - Advanced Macros
    - MacroKata - a series of worked exercises to learn macros
    - The Little Book of Rust Macros
    - *Rust Latam: procedural macros workshop*
- High Assurance Rust - developing secure and robust software
- Rust Design Patterns
- Rust Fuzz Book - fuzz testing
- Rust Performance
- Salsa - framework for on-demand, incrementalized computation
- Secure Rust Guidelines
- The Little Book of Rust Books
- The Rust Rand Book - Rust's random number library
- Rust Tutorials

[1] Some concepts are incomplete, as of March 2022.

Rust Application Books

Applications of Rust:

- *An Introduction to Chip-8 Emulation using the Rust Programming Language* - PDF book
- A thoughtful introduction to the pest parser - a library for writing plain-text parsers
- Build a Lua Interpreter in Rust
- Book of crosvm - a hosted (a.k.a. type-2) virtual machine monitor
- Create Your Own Programming Language with Rust
- `delta` - syntax-highlighting pager for git, diff, and grep output
- Embedded
  - Anachro - a network protocol and a PC architecture for microcontrollers
  - Discovery - use an F3 Discovery circuit board and Rust
  - The Rust on ESP Book
- Game development
  - Amethyst Game Engine
  - *BEVY The Book* - data-driven game engine
  - DMG-01: How to Emulate a Game Boy
  - Emergent AI - smart agents and events
  - Fyrox Cheat Book - a general purpose game engine
  - Roguelike Tutorial - In Rust - Roguelike game development
  - Rust sokoban - puzzle video game
  - The Specs Book - an introduction to Entity–component–system (ECS) and the Specs API
  - Writing NES Emulator in Rust - NES is the Nintendo Entertainment System gaming platform
- GPU development
  - Rust GPU Dev Guide
- GraphQL
  - Async-graphql Book - GraphQL server-side library
  - Cynic - A GraphQL Client For Rust

    - Juniper - GraphQL Server for Rust
- GUI development
    - Druid
    - GUI development with Relm4
    - GUI development with Rust and GTK 4
    - SixtyFPS Memory Game Tutorial (Rust) - tutorial using the SixtyFPS GUI toolkit
- intermezzOS OS
- *nalgebra* - a linear algebra library
- Plotly.rs
- PNGme: An Intermediate Rust Project
- Prusti user guide - a Rust verifier
- *SeaORM* - an async and dynamic ORM
- Serde - **ser**ialize and **de**serialize Rust data structures
- Stakker actor runtime guide - a low-level single-thread actor runtime for Rust
- Tealdeer User Manual - implementation of tldr (help like `man`, but more approachable).
- *The DNS Protocol*
- The Nom Guide (Nominomicon) - a parser combinator library
- The Redox Operating System
- Thesus OS
- The Zebra Book