

Related Roadmaps

- ✓ Backend Roadmap
- ✓ DevOps Roadmap
- ✓ Go Roadmap

Find the detailed version of this roadmap
Along with resources and more roadmaps

<https://roadmap.sh>

Rust

What is Rust?

Why use Rust?

Memory Safety and Zero-Cost Abstractions

Environment Setup

Installing Rust and Cargo

IDEs and Rust Toolchains

Rust REPL (Rust Playground)

Threads, Channels, and Message Passing

Atomic Operations and Memory Barriers

Futures and Async/Await Paradigm

Concurrency and Parallelism

Traits and Generics

Trait Definitions and Implementations

Trait Bounds and Associated Types

Advanced Generics and Type-level Programming

Lifetimes and Borrow Checker

Explicit Lifetime Annotations

Lifetime Elision Rules

Covariant and Contravariant Lifetimes

Asynchronous Programming

Tokio

async-std

smol

Networking

request

hyper

quinn

Serialization/Deserialization

Serde

json-rust

toml-rs

Database and ORM

Diesel

sqlx

rusqlite

Game Development

bevy

fyrox

ggez

macroquad

wgpu-rs

GUI Development

druid

gtk-rs

relm

embedded-hal

rppal

nrf-hal

WebAssembly (WASM)

wasm-bindgen

wasm-pack

wasmer

Embedded and Systems

Testing

Unit and Integration Testing

Mocking and Property-based Testing

Debugging

rust-gdb

rust-lldb

Documenting with `rustdoc`

Performance and Profiling

Criterion.rs

Keep Learning

Language Basics

Pattern Matching and Destructuring

Functions and Method Syntax

Control Flow Constructs

Variables, Constants, and Data Types

Syntax and Semantics

Error Handling

Option & Result Enumerations

Propagating Errors and `?` Operator

Custom Error Types and Traits

Macros and Metaprogramming

Declarative Macros with `macro_rules`!

Procedural Macros and Custom Derive

Domain-Specific Languages (DSLs) in Rust

Web Development

Rocket

Warp

Actix

Yew

Cryptography

ring

rust-crypto

sodiumoxide

CLI Utilities

clap

structopt

termion

Introduction

Enums

Structs

Traits

Impl Blocks

Constructs

Data Structures

Integers

Floats

Boolean

Character

Tuple

Array

Vector

String

Hashmap

Hashset

LinkedList

BinaryHeap

Stack

Queue

Advanced

BTreeMap

BTreeSet

Rc

Arc

Mutex

RwLock

Channels

Modules and Crates

Code Organization and Namespacing

Dependency Management with Cargo.toml

Publishing to crates.io

Ecosystem and Libraries