



URL Shortener Final Report

Github Repo: <https://github.com/Prithvi0709/urlShortener>

Team Members

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Tech Stack

- Rust (Backend)



- HTML, CSS & JS (Frontend)



- Docker (Container)



- Digital Ocean & ngrok (Deployment - Live)



Features



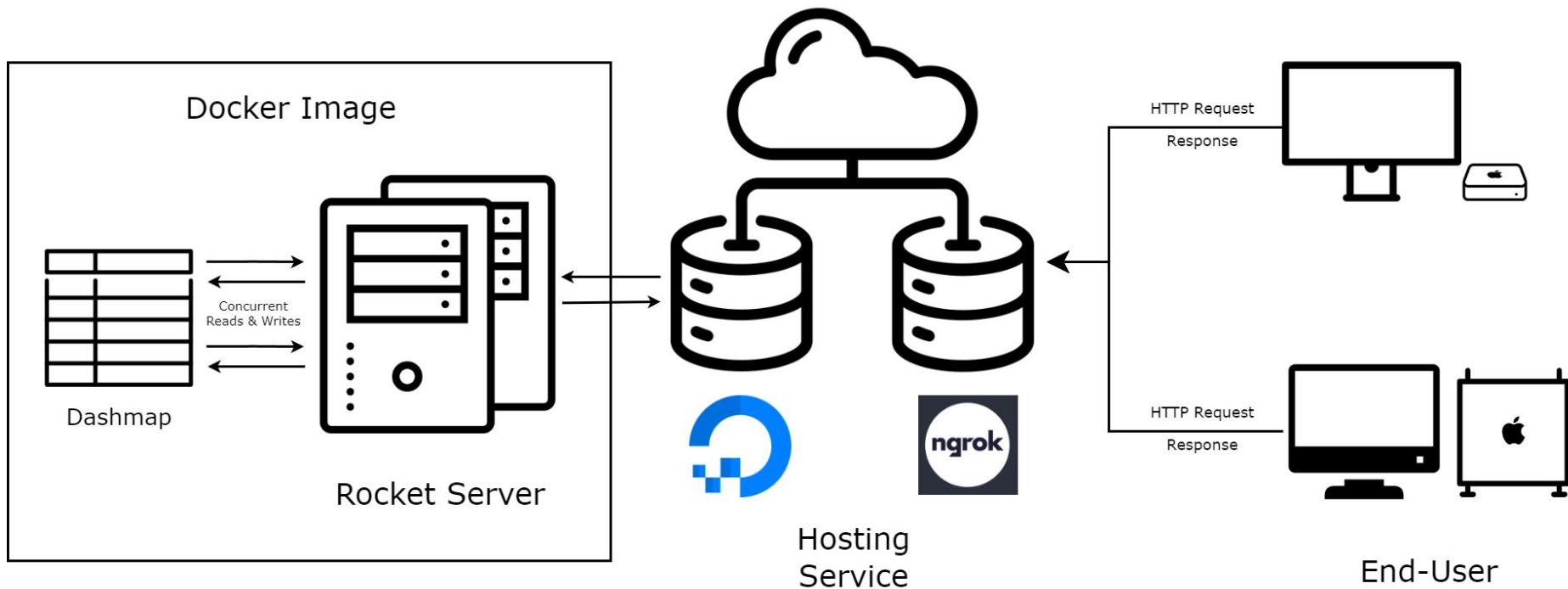
Shorten Types

- Number - Random number key generator.
- Christmas - Christmas themed key generator that generates random meaningful sentences.
- Emoji - The generated key will be a string of random emojis.

Tracker

- Pasting the shortened URL in the search bar outputs the number of clicks for that URL.
- The website linked to the URL is also displayed.

Architecture Diagram



Key Language Components Used



- **Shared State Concurrency** - (Atomic reference counting with Mutex to lock the Data)
- **Native UTF-8 Support** (Lets us use emojis as url without any need for external string libraries like C/C++)
- **Cargo** - For package and dependency management.
- **Dash Map** - (It's a thread safe Hashmap Implementation with send and sync traits.)
- **Rocket Framework** - (Not a language feature) to server the requests.
- **Monads** - the return types of all the methods which service requests are wrapped in a wrapper called **Result< Some(t) , Err(T) >**
- **Traits** - (All custom structures have some traits depending upon the types they comprise of)



Thankyou!

Feel free to ask questions.