Diego Alejandro Páez Porras

Chiquinquirá, 154640 • alejandrofullstack@proton.me • +57 322 877 3139

Education

Universitary Corporation Minute Of God
B.Sc. in Systems Engineering
Colombia - Boyacá
Expected graduation: January 2029

Experience

School Heroes of Boyacá's Bridge
Software Developer
Boyacá, Colombia
2025

- Designed and developed a web platform to automate institutional academic processes.
- Implemented grade management systems with validation and persistence workflows.
- Automated the generation of digital academic reports.
- Optimized administrative workflows through custom software solutions.
- Integrated relational databases for secure academic data management.
- Improved operational efficiency through process digitalization.

Private Programming and Mathematics Tutor
Independent Academic Tutor
Remote/ Presential
2020 – 2025

- Delivered personalized instruction in programming and mathematics.
- Taught programming fundamentals, data structures, and algorithms.
- Introduced advanced software engineering concepts.
- Introducir conceptos avanzados de ingeniería de software
- Trained students in backend development with Golang.
- Taught distributed systems design and inter-service communication using Protocol Buffers.
- Implementar comunicación entre servicios utilizando Protocol Buffers
- Adapted complex technical concepts to different learning levels.

Projects

Redis Clone — In-Memory Storage Engine

Golang | 2024 – Present

- Designed and implemented an in-memory storage engine inspired by Redis, focused on studying high-performance systems.
- Built a concurrent TCP server to handle multiple client connections efficiently.

- Implemented a custom version of the Redis Serialization Protocol (RESP) for message serialization and deserialization.
- Developed a lexer and parser to interpret Redis-like commands (SET, GET, INCR, INCRBY).
- Designed a typed in-memory storage layer based on hash maps, optimized for fast access.
- Implemented safe handling of primitive data types using Go generics and type sets, avoiding the use of `any`.
- Developed a comprehensive automated test suite with 100% coverage, ensuring correctness of parsing, command execution, and system consistency.
- Analyzed and reproduced core Redis architectural principles, prioritizing simplicity, efficiency, and low coupling.
- Documented the internal design, architecture, and technical decisions in a detailed technical article.
  Related Article: https://alejandro.buzz/projects/redis

Monkey Programming Language — Full Interpreter

Golang | 2024 - 2025

- Fully implemented the Monkey programming language following the design presented in 'How to Write an Interpreter' by Thorsten Ball.
- Developed a lexer for lexical analysis and a recursive descent parser to generate the Abstract Syntax Tree (AST).
- Implemented an interpreter capable of evaluating expressions, statements, and control structures.
- Designed an environment and scope system for variable binding and function execution.
- Implemented first-class functions and closures.
- Implementar funciones de primera clase y closures.
- Implemented semantic and syntactic error handling.
- Validated correctness through extensive automated testing.
  (https://github.com/dyxgou/interpreter)

Custom Neovim Distribution — Development Environment

Lua, Neovim | 2022 - Present

- Designed and maintained a custom Neovim distribution focused on performance, modularity, and developer experience.
- Implemented a modular and extensible configuration architecture using Lua.
- Managed plugins using lazy.nvim, optimizing startup time and resource usage.
- Configured advanced LSP integration, autocompletion, formatting, and static analysis.
- Customized workflows for Golang, JavaScript/TypeScript, and systems development.
- Tuned color schemes, keybindings, and UI components to maximize productivity.
  (https://github.com/dyxgou/nvim)

Skills & Interests

Technical Skills:
 Backend development with Golang, TCP servers, concurrency, protocol design, parsing (lexer/parser), ASTs, interpreter implementation, automated testing, in-memory storage systems, Linux.

Tools & Frameworks:
 Golang, Astro, Next.js, Fiber, TypeScript, Docker, Arch Linux, MongoDB, PostgreSQL, Neovim, lazy.nvim, Git, GitHub.

Languages:
Spanish (Native), English (Native).

Interests:
Distributed systems, programming language design, developer tooling (DX), software architecture, performance, automated testing, open source, continuous learning.