

Diego Alejandro Páez Porras

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Experience

School Heroes of Boyacá's Bridge

Chiquinquirá, Boyacá

Freelance Developer

June - 2025 – March - 2026

- Designed and developed a web platform to automate institutional academic processes.
- Implemented grade management systems with validation and persistence workflows.
- Automated the generation of academic digital reports.
- Optimized administrative workflows through custom software solutions.
- Integrated relational databases for secure academic data management.
- Improved operational efficiency through process digitization.
- Documented the platform's architecture and technical decisions in a written case study published at [alejandro.buzz/projects/learning](#)

Private Programming and Mathematics Tutor

April - 2020 – June - 2025

- Providing personalized instruction in programming and mathematics.
- Taught programming fundamentals, data structures, and algorithms.
- Introduce advanced concepts of software engineering.
- Trained students in backend development with Golang.
- Taught distributed systems design and inter-service communication using 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 de-serialization.
- 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 internal design, architecture, and technical decisions in a detailed technical article. Related Article: [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 for the Interpreter.
- Implemented semantic and syntactic error handling.
- Documented the interpreter's design and implementation in a technical article published at alejandro.buzz/projects/language.

Education

Universitary Corporation Minute Of God

Colombia, Boyacá

Currently pursuing B.Sc. in Systems Engineering

Skills & Interests

Technical:

- Go (Golang) backend development and concurrent systems.
- High-performance API and microservice architecture.
- REST API design and backend service engineering.
- PostgreSQL, SQLite, and database schema design.
- Linux server administration and production deployments.
- WebSocket and TCP server implementation.
- Full-stack development with Astro and TailwindCSS.
- DevOps workflows, CI/CD pipelines, and environment configuration.
- Git-based development and collaborative workflows.
- SEO-optimized and performance-focused web applications.

Language:

- English (Full Professional Proficiency)
- Spanish (Native Speaker)

Interests: Distributed systems, systems programming, software architecture, programming language design, developer tooling (DX), performance engineering, open source.