

# Abdallah Aloush

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## Education

**Alexandria University**, BS in Computer and Communications Engineering 2018 – 2023  
 • GPA: 3.2/4.0

## Experience

**Mandatory Military Service**, Egyptian Armed Forces July 2024 – Sept 2025

**Back End SWE Intern**, TrianglZ LLC Feb 2023 – Apr 2023

- Built multiple verification endpoints using Ruby on Rails, resulting in a more efficient verification process.
- Implemented authorization policies using Pundit, enforcing compliance with data access rules.
- Wrote and maintained API documentation using Swagger, resulting in fewer integration errors.
- Contributed to a CRUD API using **Ruby on Rails**, gaining hands-on experience in Backend workflows.
- Performed database migrations, allowing the support of new API features and ensuring data preservation.

## Projects

### Relational Database Management System (Graduation Project)

Rust

- Designed an SQL parser and developed logical and physical query planning systems capable of handling multiple inner joins, sorting, filtering, and grouping operations.
- Architected a storage engine featuring optimized buffer utilization, incorporating Hash and B+ Tree indexes, and supporting variable-length relation attributes.
- Implemented support for dynamic schemas encompassing various data types and relational constraints.

### Gym Management System

Java

- Implemented a user-friendly GUI using JavaFX for adding, modifying, and managing users' data.
- Adhered to Test-Driven Development (TDD) methodologies within our team to ensure the system's integrity and conduct ongoing regression testing while collectively implementing new features.
- Used several OOP design patterns, including Singleton and Factory patterns, resulting in a readable and extensible code base.

### Multithreaded Server-Client

Python

- Designed a multithreaded HTTP server, maintaining a persistent connection for each client.
- Implemented a heuristic timeout algorithm, preventing the server from being overloaded.
- Designed and implemented a simple client, allowing more robust testing of the server.

### Mathematical Expression Interpreter

C

- Built a stack-based infix-to-postfix converter, improving expression evaluation efficiency.
- Stored evaluated expressions in a BST, enabling faster variable lookup.

### Datastructures and Algorithms Implementations

Implementations of several commonly used Algorithms and Datastructures using C

- Designed an in-memory dictionary utilizing BST, enabling quick spelling checks and corrections.
- Designed a sorting algorithms benchmark app, enabling clear comparison of algorithms efficiency.

### Operating Systems Projects

Collection of projects, simulating different parts of the OS and experimenting with POSIX threads on linux

- Multithreaded matrix multiplication and merge sorting
- Built a simulator for FIFO, LRU, CLOCK, and OPTIMAL page replacement algorithms, tracking and comparing page faults across test cases.
- Designed a producer-consumer system with multiple roles (producers, counters, collectors), using semaphores to coordinate shared resources.

- Created a simplified shell supporting command parsing, execution, background processes, and process termination logging.

### **Car Rental**

Express and Nodejs

- Website that interface with MySQL and allows renting cars.

### **Fruit Ninja game clone**

Java

- Used several OOP design patterns including Singleton, Factory, and Strategy, resulting in a more extensible code.

## **Skills**

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**Programming Languages:** C | Rust | Python | SQL | Java | JavaScript

**Web frameworks:** Ruby on Rails | Express

**Tools:** Git | OOP | Datastructures | Algorithms | Design Patterns

## **Extracurricular Activities**

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### **Loyal Victorians**

- Best media member of the science and engineering fair committee.
- Head of Media in the Graduation Ceremony Organizing Committee.

## **Courses**

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**College:** Programming | Datastructures | Discrete Math | Algorithms | Operating Systems | Database Systems | Computer Networks | Computer and Network Security | Software Engineering

## **Certifications**

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**Fundamentals of Back End Engineering by Hussein Nasser**