MOHAMED ABDALGADER

Backend Engineer (Java / Spring Boot)

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SUMMARY

Backend Engineer focused on designing and building REST APIs and backend systems using Java and Spring Boot. Experienced in relational and NoSQL database design (PostgreSQL, MongoDB), caching strategies using Redis, and event-driven architectures using Apache Kafka.

Built multiple backend systems including multi-service architectures, authentication systems, and URL processing platforms with emphasis on concurrency safety, idempotency, and fault-tolerant design. Contributor to GraphHopper open-source routing engine with improvements in routing logic and edge-case navigation handling.

TECHNICAL SKILLS

- **Languages:** Java, TypeScript, JavaScript, Python, C++
- **Backend:** Spring Boot, Spring Cloud, Spring Security, Spring Data JPA, Hibernate, REST APIs
- **Distributed Systems:** Apache Kafka, Event-Driven Architecture, Saga Pattern, Idempotency, Microservices
- **Databases:** PostgreSQL, MongoDB, Redis
- **Cloud & DevOps:** Docker, Kubernetes, GitHub Actions
- **Observability:** Prometheus, Grafana, Micrometer
- **Testing:** JUnit, Mockito, Testcontainers
- **Security:** OAuth2, JWT

Engineering Experience

- **GraphHopper Routing Engine (JAVA)** **[GITHUB PR #1]** + **[GITHUB PR #2]** + **[GITHUB PR #3]**

  Technologies: Java, GraphHopper Core, OpenStreetMap Data, JUnit

  - Improved turn instruction accuracy at complex intersections by redesigning fallback logic using OpenStreetMap destination tags.
  - Fixed data inheritance issue causing incorrect road naming in roundabouts, improving real-world navigation correctness.
  - Developed geometry-based routing adjustments to handle Y-forks and motorway exits.
  - Added unit tests to prevent regression in routing logic.

PROJECTS

- **CrateMind - Event-Driven Grocery Delivery Platform [GITHUB]**

  Technologies: *Java, Spring Boot, Apache Kafka, PostgreSQL, Kubernetes, Docker, Microservices, JUnit*

  - Designed a **multi-service architecture (order, inventory, packing, delivery services)** communicating through Apache Kafka events.
  - Implemented **idempotent consumers** to safely handle duplicate event delivery in distributed messaging scenarios.
  - Built retry-safe event processing logic to ensure system resilience under service failures.
  - Applied optimistic locking in inventory service to handle concurrent update scenarios and prevent race conditions.
  - Containerized and deployed a multi-service system using Docker with Kubernetes orchestration for service isolation.
- **LinkGuard - Secure URL Expander & Analytics [GITHUB]**

  Technologies: *Java, Spring Boot, PostgreSQL, React, Redis, Docker, GitHub Actions, JUnit*

  - Built REST API using Spring Boot for URL expansion and redirection handling.
  - Implemented Redis caching layer for frequently accessed URLs, reducing repeated database reads under load.
  - Designed analytics tracking pipeline for recording and aggregating URL usage events.
  - Built CI/CD pipeline using GitHub Actions for automated testing and deployment.
- **Fintech Wallet - Round-Up Investment Platform [GITHUB]**

  Technologies: *Java, Spring Boot, Spring Security, Spring Data JPA, PostgreSQL, Docker, JWT, REST API*

  - Built secure REST APIs for transaction processing and user account management.
  - Implemented JWT authentication with role-based access control (RBAC) for user separation.
  - Designed asynchronous processing flow for round-up calculations triggered by transactions.
  - Applied optimistic locking to ensure data consistency during concurrent financial updates.
  - Documented API contracts using OpenAPI for frontend integration.

EDUCATION

Ain Shams University B.Sc. Computer Science — July 2026

CERTIFICATIONS

- Web Secure Coding: Cyberus ASU
- Java: Hacker Rank

Languages

- **Arabic** Native
- **English** Fluent