

# Mohamed Fathy Salah | Backend Engineer

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[portfolio](#) [linkedin](#) [GitHub](#) [LeetCode](#)

## Experience

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- **BackEnd Engineer, Luciq** Feb 2026 – Present  
*Tech Stack: Ruby, Go, MySQL, Redis, Click House, Elastic Search, Kubernetes, Docker, AWS, Jenkins, Kafka, Sidekiq*
- **BackEnd Engineer, EFG Holding** (1 year 11 months) Apr 2024 – Feb 2026  
*Maintained and enhanced 17 microservices with a strong focus on performance, scalability, security, and consistency.*  
*Tech Stack: .NET, SQL Server, MongoDB, Redis, RabbitMQ, Python, Microservices, Clean and Layered Architecture*
  - **Payment Service Optimization:** Reduced execution time by:
    - \* Resolving a race condition caused by concurrent row inserts.
    - \* Parallelizing client payments for improved throughput.
    - \* Optimizing algorithm complexity to  $O(n \log n)$ .
    - \* Limiting database interactions to two trips: one for read and one for update.
  - **Rule Engine Optimization (ValU):** Improved execution time by 350
    - \* Precompiling rules, keys, and formulas.
    - \* Using lazy evaluation for conditional logic.
    - \* Replacing multiple key resolutions with a single compiled execution path.
    - \* Optimizing rule definitions, keys, and stored procedures.
    - \* Vertically slicing large tables to isolate infrequently used columns.
    - \* Rewrote the entire service by separating business logic into .NET code and moving dynamic configurations to the database, reducing the 95th percentile execution time from 70 seconds to 2 seconds.
  - **Distributed Transactions:** Implemented the Saga Pattern for consistent distributed transaction management across services.
  - **Database Optimization:**
    - \* Replaced inefficient N+1 queries with optimized single-query operations.
    - \* Added Redis caching to reduce DB load and response times.
    - \* Created targeted indexes and applied table slicing to enhance performance.
    - \* Cut database load by 70% and reduced API response time by 40%.
  - **Data & Workflow Migration:**
    - \* Automated the migration of old Elsa workflows.
    - \* Transformed 100,000+ unstructured records from Excel and Word documents into structured relational data prior to go-live.
  - **Team Contributions:**
    - \* Led code reviews and enforced best practices.
    - \* Mentored junior developers on architecture and coding standards.
    - \* Applied OWASP-aligned security practices across services.
    - \* Authored internal scripts to automate repetitive daily tasks, improving team efficiency and consistency.

## Skills

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- **Programming Languages:** C# (Proficient), Go (Proficient), Ruby, C++, TypeScript, Python.
- **.NET Ecosystem:** .NET, ASP.NET Core, Entity Framework Core, Dapper ORM, LINQ,

MassTransit, SignalR, xUnit, Moq.

- **Web & API Development:** RESTful APIs, HTTP, WebSockets, gRPC, GraphQL, HTML, CSS.
- **Databases:** SQL, SQL Server, PostgreSQL, SQLite, MongoDB, Redis, MySql, Click House.
- **Message Brokers & Eventing:** RabbitMQ, MassTransit, Event-Driven Architecture, Pub/Sub Messaging, Kafka, Sidekiq.
- **Architecture & Design:** Microservices, Modular Monolith, Layered, Hexagonal, Onion, Clean Architecture, SOLID Principles, Design Patterns, Test Pyramid, Object-Oriented Programming (OOP).
- **DevOps & CI/CD:** Git, GitHub, GitHub Actions, Docker, Kubernetes, OpenShift, Azure DevOps.
- **Linux & Scripting:** Bash scripting, systemd, Linux development environment.
- **Computer Science Foundations:** Algorithms, Data Structures, Race Condition Debugging, Caching Strategies.
- **Security:** Familiarity with OWASP best practices for secure software development.
- **Soft Skills:** Communication with stakeholders, Team collaboration and mentoring, Rapid adaptability, Problem-solving, Critical thinking, Effective time management.
- **Languages:** Arabic (Native), English (Proficient - C2).

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### Projects

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- **Maskan** .NET, C#, PostgreSQL, ReactJS, Tailwind, AWS EC2, CI/CD, Contabo VPS  
Multi-tenant real estate management web application for brokers, featuring role-based access control, browser caching strategies, CDN integration, and compliance with OWASP security best practices; supports 5,000+ unique visitors per month and includes real-time user notifications for matching property requests.
- **Circle** TypeScript, React Native, Sqlite, Expo  
cross-platform expense management application for personal-external-group expenses-incomes-transfers, featuring an optimized algorithm for minimal settlement plans.
- **E-Commerce VTON** TypeScript, Express, Python, FastAPI, Machine Learning, 3D Modeling, MongoDB, Next.js, NATS, Kubernetes, CI/CD  
Event-driven microservice platform for virtual garment shopping.
- **Healthy Meal** TypeScript, Apollo GraphQL, PostgreSQL, OAuth, Jest, CI/CD  
Meal planning system based on preferences, ingredients, and body shape.

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### Education

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- **Benha University** B.Eng. in Computer Engineering (GPA: 4.0 / 91%) Sep 2017 – Jun 2022

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### Awards

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- Ranked 1st in Bachelor (2022)
- Ranked **118th** 2021 & **21st** 2022 in ECPC Qualification & **30th** in ACPC Qualification 2022
- **EF SET Certificate**

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### Courses & Books

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- **.NET 8 Microservices:** ASP.NET Web API, Docker, RabbitMQ, gRPC, YARP Gateway
- **Network Engineering:** Low latency and high throughput backend design
- **Node.js + React Microservices:** E-Commerce microservice app
- **Database Systems (CMU) | Performance Engineering (MIT)**
- Clean Code | Code Refactoring | Design Patterns | DS & Algo Made Easy
- **Awesome Low Level Design | Awesome System Design**