

Mahmoud Muhammad Bayoumi

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[LinkedIn](#) | [GitHub](#) | [LeetCode](#) | [HackerRank](#) | [CodeForces](#)

Junior Software Engineer | Java Backend Developer

A highly motivated and fast-learning Java backend developer with a strong foundation in Spring Boot, RESTful API development, and database integration. Proficient in Java, with hands-on experience in Spring Boot, JPA, Hibernate, and microservices architecture. Skilled in problem-solving, data structures, and system design. Passionate about building scalable, API-driven backend systems and continuously improving my expertise through hands-on projects and certifications.

CORE PROFICIENCIES

- Java Backend Development
- Problem Solving & Data Structure
- SQL & NoSQL
- Spring boot & Microservices
- Clean Code & best Practices
- RESTful APIs & integration
- OOP (Object Oriented Programming)
- Documentation
- Linux & Bash Scripting

PROFESSIONAL EXPERIENCE

Techurity, Maadi
Software Engineer

Jul 2024 – Present

- Designed and developed an integrated **Fleet Management and Rental System** using **Spring Boot** and **MariaDB**, incorporating real-time data and IoT integration for scooter rentals.
- Architected a **scalable backend** by translating a comprehensive ER diagram into a **robust Java entity structure**, supporting complex functionalities like **geofencing**, **MQTT API integration**, and **real-time tracking**.
- Developed **repositories and service layers** for seamless database interactions, ensuring efficient and optimized data retrieval.
- Integrated **vendor APIs via service classes** to support critical operations like **scooter tracking**, **power control**, **analytics**, and **remote management**.
- Implemented **role-based security** using **JWT/OAuth2**, ensuring secure access control for admin and employee roles.
- Optimized **system performance** by applying **best practices in caching**, **query optimization**, and **API efficiency**.

Projects

Fleet Management System (Spring Boot, Java, JPA, MariaDB)

- Developed a confidential fleet management system using **Java**, **Spring Boot**, and **MariaDB**, focusing on security and compliance.
- Designed and implemented a scalable **microservices** architecture to handle fleet tracking, rental operations, and geolocation-based services.
- Integrated **real-time vendor APIs** for retrieving IoT data such as scooter location, battery health, and status updates.
- Implemented QR code-based rental activations, enabling secure and seamless scooter rentals.
- Ensured secure transactions through **JWT-based** authentication, role-based access control (RBAC), and encrypted data storage.
- Optimized database performance with **indexing**, **caching**, and **query optimization** techniques to handle large-scale operations.

Library Management System

- Developed a **RESTful API** for managing books, patrons, and borrowing records using **Spring Boot** and **JPA**.
- Implemented **CRUD operations** and endpoints for **borrowing/returning books**, ensuring proper transaction handling.
- Added **input validation and exception handling** for robust error responses.
- Integrated **H2 in-memory database** for lightweight and fast testing.
- Wrote **unit tests with JUnit and Mockito** to validate endpoint functionality.
- Created **Postman documentation** for API interaction and testing.

EDUCATION

Bachelor of Electronics and Electrical Communication Engineering

PHI,6 OCTOBER | Grade: V. Good | Major: Communication Engineering

Graduation Project: FOTA (Firmware Over The Air)

- Developed a **FOTA system** using **STM32F (Bluepill), ESP32, Firebase, and Node-RED**.
- Implemented and tested **wireless firmware updates** in an **obstacle avoidance car**.
- Designed and integrated a **real-time backend** for **firmware management over Wi-Fi**.
- Ensured seamless **hardware-cloud communication** for efficient firmware deployment.

VOLUNTEERISM / COMMUNITY LEADERSHIP

ENACTUS – Community Leadership & Innovation

- Partnered with ENACTUS to contribute to **social, environmental, and economic projects**.
- Delivered **engaging presentations** to communicate project goals and impact.
- Collaborated with teams to **develop and promote innovative solutions**.

Technical Skills

- | | | |
|---------------|-------------------|------------------|
| - Java | - RESTful APIs | - Postman |
| - Spring Boot | - MySQL / MariaDB | -Linux |
| - JPA | - JWT & OAuth2 | - Bash Scripting |
| - Hibernate | - Git/GitHub | |
| - OOP | - Clean Code | |

Certificates

[Problem Solving basic \(HackerRank\)](#) [C# basic \(HackerRank\)](#) [Java basic\(Hackerrank\)](#) [SQL basic\(Hackerrank\)](#)

Language Skills

- Arabic: Native
- English: Upper intermediate