EZZ NASR

Full Stack & Embedded Systems Engineer

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SUMMARY

Third-year Computer Engineering student (Computer Communications and Artificial Intelligence, Alexandria University) specializing in Backend Engineering, with working knowledge of Full Stack Development, Embedded Systems, System Design, Databases, and APIs. Designed and shipped a production ERP system currently used by a 20-employee manufacturing company. Builds API-first, modular backend systems (FastAPI, REST, SQL) paired with React frontends, and extends the same system-thinking approach into embedded hardware. Preparing for AWS Certified Cloud Practitioner and training on the ICPC competitive programming track.

TECHNICAL SKILLS

Languages: C, C++, Python, Java, JavaScript, SQL

Backend & APIs: FastAPI, REST API design, CRUD systems, authentication, PDF generation, service-based/modular architecture, business logic layering, API-first development

Frontend: React, Vite, HTML5, CSS3, responsive design

Databases: SQLite, PostgreSQL, relational design, normalization, foreign keys, indexing, migrations, transactional integrity

Embedded Systems: ESP32, Arduino, NFC (PN532), sensor integration, KiCad (PCB design), Falstad (circuit simulation)

Tools & Platforms: Git, GitHub, VS Code, LaTeX, Node.js, npm, GCC, GDB, MinGW, Cloudflare Tunnel, Vercel

EXPERIENCE & PROJECTS

Factory ERP — Full Stack Developer *2025 – Present*

Independent project, deployed in production for a 20-employee manufacturing business

- Designed and Developed a full enterprise resource planning System spanning 6 core modules (customer, supplier, inventory, order tracking, invoicing, financial reporting
- Architected a modular, service-based backend (React → FastAPI → SQLite → PDF Generator) with a thin-route, strong-business-logic design pattern 15+ REST endpoints across 5 service modules
- Delivered employee management, cost analysis, store credit, customer balances, supporting payroll and cost tracking for the business's full 20-person staff.
- System is in active daily use by the client company, replacing manual spreadsheet-based operations processing 200+ invoices to date

Invoice App V2 — Full Stack Developer *2024 – 2025*

Published open-source project with tagged GitHub releases

- Engineered a three-generation invoice management system, evolving from a command-line tool to a desktop GUI to a full React + FastAPI web application with 97+ commits across the three architectural generations
- Implemented 4 Table relational Schema (customer, products, order, order Details) + tax logic, profit calculations, and invoice history
- Built PDF export, interactive HTML invoice previews, order lookup, and a configuration-driven inventory tracking option
- Applied lessons in frontend/backend separation, API design, state management, and packaged as a standalone ~500MB Windows exe

NFC Smart Lock — Embedded Systems Developer *2024*

Hardware-up home-automation access control system

- Designed a custom PCB in KiCad using a star topology, sized for concealed installation in doors and drawers
- Verified power paths through Falstad circuit simulation prior to manufacturing
- Programmed interrupt-driven C++ firmware on an ESP32 integrating a PN532 NFC reader and a servo-actuated lock
- Implemented multi-method authentication via NFC tags, contactless cards, and Apple Pay

EDUCATION

Alexandria University — B.Sc. Computer Engineering *Expected 2028*

Specialization: Computer Communications and Artificial Intelligence

Relevant coursework: Data Structures and Algorithms (C), Computer Organization, Logic Design 1 & 2, Control Systems, Programming 0–1

CERTIFICATIONS & PROGRAMS

- AWS Certified Cloud Practitioner
- DEPI Scholarship (Digital Egypt Pioneers Initiative), Ministry of Education — Accepted & Graduated

ADDITIONAL

- Competitive Programming: ICPC/ECPC track training — arrays, sorting, binary search, STL, graphs, trees, dynamic programming, greedy algorithms, number theory
- Coursework tools: Matrix Wizard (matrix operations), Inference (automated rules-of-inference proofs), Engineering Prep Year (study resource hub)