

Mohammed Hussein

Tech Lead | Senior Software Engineer | Distributed Systems

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PROFILE

Tech Lead and senior software engineer who takes systems from the client conversation through to production. Distributed systems, multi-tenant SaaS, real-time platforms and payment rails, delivered across concurrent client engagements while coordinating teams and vendors in Canada, the United States, India, China and the MENA region. I own architecture, delivery and the infrastructure it all ships on, load-test my work to failure and publish the numbers, and threat-model my own systems from the attacker's side before anyone else does.

SKILLS

Languages: JavaScript, TypeScript, Python, SQL, Lua, Bash, C++, PHP

Data & Messaging: PostgreSQL, MongoDB, Redis, Apache Kafka, MySQL, SQLite, SQLAlchemy

Backend & APIs: Node.js, Express, REST, gRPC (protobuf, streaming), GraphQL (Apollo, DataLoader), WebSocket (Socket.IO), TCP, Django, FastAPI, Laravel

Frontend: React, Next.js, Vue.js, PWAs, TanStack Query, Tailwind

Infrastructure & DevOps: Docker, Kubernetes (HPA, probes, rolling and canary deploys), Terraform, GitHub Actions CI/CD, AWS, Caddy/Nginx, Linux, Git

Observability: Prometheus, Grafana, OpenTelemetry, Jaeger, structured logging

Testing: Jest, Testcontainers, Pact (contract testing), k6 (load testing), chaos testing, supertest

Architecture: Offline-first sync, outbox pattern, event-driven architecture, saga orchestration, idempotency, optimistic concurrency, multi-tenancy, RBAC

Security: Threat modelling, OWASP API Top 10, BOLA, mass assignment, JWT hardening, rate limiting, secrets management, penetration testing (Kali Linux, eJPT curriculum)

Leadership: Technical direction, client discovery and requirements workshops, cross-border team coordination, mentoring, code review, sprint planning, incident ownership

EXPERIENCE

Vodex IT Solutions

2025 – Present

Tech Lead | Senior Software Engineer

Baghdad, Iraq

- **Technical leadership.** Lead end-to-end system design across multiple concurrent client platforms: translate business requirements into architecture, service boundaries, domain models and delivery plans. Set technical direction on transport, database and consistency choices, then bring the team through it and review the code that results.
- **Delivery and team coordination.** Plan sprints, manage scope and risk, mentor engineers, review code and designs, and drive alignment across backend, frontend and UI/UX so the delivered product matches business rules rather than approximating them.
- **Infrastructure and DevOps ownership.** Own deployment and production environments across client platforms: server configuration, CI/CD, release and rollback, environment and secrets management, domains and TLS, monitoring and incident response including out-of-hours recovery.
- **Client ownership.** Run requirements workshops directly with technical and non-technical stakeholders and turn the output into specifications engineers can build from. Own customer success and account relationships through recurring stakeholder meetings covering integration, timelines and SLAs.
- **International coordination.** Work with partners, vendors and engineering teams across Canada, the United States, India, China, Egypt, Algeria and Saudi Arabia. Mapped an overseas manufacturer's proprietary IoT lock protocol with their engineers before integration was possible, and directed an external ERP vendor's engineering team in another country through a bidirectional integration, specifying what their side needed to expose and agreeing the contract in both directions.
- **Performance and reliability.** Diagnosed and fixed a production marketplace responding in roughly six seconds, cutting it to two through database profiling and index work rather than by adding hardware. Take ownership during production incidents and critical downtime to restore service and keep client operations running.
- **Security architecture.** Design systems with role-based access control, authorization enforced at the query layer, analytics, event-driven notifications and parity across web and mobile surfaces.
- **Selected platforms delivered:**

- Vehicle rental platform terminating raw TCP for cellular IoT locks alongside HTTP and WebSocket in one pipeline, with server-side geofencing and per-minute wallet billing. Field tested on real vehicles.
- Freelance marketplace with escrow: 37 collections, an eight-state deal machine holding real money between three parties, four production surfaces.
- Multi-tenant restaurant operating system across four surfaces (customer ordering, driver dispatch, owner dashboard, point of sale) on one tenant-scoped backend.
- E-commerce and ERP backend on GraphQL, chosen so the client could reconfigure storefront layout from the dashboard without an engineer, over an inventory ledger with a single mutation point.
- Multi-tenant CMS and billing platform: one backend serving many client websites, each defining its own content types, permissions and subscription.
- Hardware retail platform with bidirectional ERP sync, 124 endpoints across 17 collections, six roles, and nine written integration guides.
- Tourism discovery platform with GeoJSON spatial indexing and a merged proximity query across three heterogeneous venue types.
- Hotel property management system with 21 interlinked models sharing one guest identity across hotel, gym and restaurant so cross-subsidiary charges reach a single folio; omnichannel retail unifying online and in-store till sales behind one order model with multi-warehouse inventory.
- Enterprise e-commerce with ERP integrations (Odoo, Aliphia, nextERP), AI modules and financial analytics for international clients; retail investment platform with gated identity verification and ledger-derived balances; at-home healthcare marketplace; course marketplace; secure voting application.
- **Inherited systems.** Review and refactor large existing codebases: took over an eighteen-model TypeScript and SQL platform, migrated the stack, and delivered it with sixteen models and full endpoint documentation.
- **Consulting at inception.** Advise on scope, feasibility and sequencing at project start, which is where most delivery risk is actually decided.

Rehla IQ

2024 – 2025

Software Engineer

Node.js, Express, MongoDB, Stripe, AWS

- Led **backend** development as the sole engineer for a travel and booking platform, responsible for writing, debugging and testing new and existing codebases.
- Managed **DevOps**: AWS infrastructure, server maintenance and update cycles to keep the platform stable.
- Wrote a **Bash automation** that collapsed a recurring AWS task **from two to three hours down to minutes**.
- Optimised database performance and implemented changes to keep the system scalable under growth.
- Designed and built a custom **payment gateway** on Stripe, integrated with the company bank accounts.
- Owned the company's **security** effort: identified vulnerabilities and implemented hardening across data and transaction paths.
- Supported the frontend and mobile teams on backend integration through regular working sessions.

GameWise

2025 – 2026

Co-founder, Product and Engineering

Baghdad, Iraq

- Co-founded and led product and engineering: defined the vision, roadmap and technical architecture across backend, frontend and DevOps while aligning delivery with business goals.
- Built a **three-sided marketplace** serving players (B2C), individual sellers (C2C) and retail shops (B2B) to maximise reach and network effects.
- Scaled a buyer-facing catalogue past **180,000 products**, kept continuously synchronised against a third-party supplier API.
- Engineered the supplier synchronisation as a **bounded worker pool** with connection reuse, exponential backoff and cursor overlap, so clock skew between two systems cannot silently drop products.
- Built **multi-currency pricing** resolved by request origin with a tiered exchange-rate fallback, with money truncated rather than rounded at the payment boundary so a customer is never charged above the displayed price.
- Integrated a **payment gateway** end to end with automated digital key delivery after settlement, so a purchase completes with no manual step.
- Shipped a **B2B store dashboard** with sales analytics, advanced invoicing and a revenue-share model, plus C2C seller tools for hardware, accessories and physical media.
- Owned the delivery lifecycle end to end: architecture, database design, API integration, code review, performance and security hardening, CI/CD, hosting, observability and incident response.
- Established the community pillar: a showcase for local game developers, interactive player spaces, and events and tournaments.

Wensaa

Co-founder

2024 – 2025

Baghdad, Iraq

- Led the end-to-end development of a ticket booking platform for events and workshops: backend and frontend architecture, database design and API integration.
- Built payment processing with **Qcard and Zain Cash**, with security and performance treated as first-order concerns rather than later passes.
- Built a **QR-based ticket scanning** flow in Vue.js and Node.js for fast validation over a secured API.
- Owned coding, debugging, hosting and optimisation, and took part in the strategic discussions defining the product.
- Worked with marketing to align features and user experience with what the market actually wanted.

Earthlink

Networking Intern

2025

Baghdad, Iraq

- Hands-on CCNA networking fundamentals and MikroTik device configuration on live ISP infrastructure.

Middle Technical University

Volunteer, Technical Support and Event Management

2023 – Present

Baghdad, Iraq

- Teach first-year students to program and track their progress through an online community I set up and run.
- Diagnose and resolve student computer problems by walking them through identifying the fault rather than only fixing it.
- Sole manager of the university Touch Typers Tournament, online and in person.
- Lead event manager for a **hackathon**: logistics, team coordination, and resolving internal and external conflicts through to a successful event.

Computiq

Cisco Course Assistant

2025

Baghdad, Iraq

- Assisted students with Cisco course questions and technical issues, in person and through a Discord community.
- Ran weekly follow-ups tracking progress and comprehension, supervising students from Baghdad and other provinces across Iraq.
- Handled administrative tracking and progress reporting.

PROJECTS

Sanad, Offline-First Field Operations Platform | *Node.js, PostgreSQL, Kafka, Redis, Kubernetes*

2026

- A backend for delivery teams that work offline for hours then sync. The hard problem is not the sync, it is arbitrating conflicts when a delivery made offline arrives after the office has already reassigned the job. Built on one rule: **physical truth outranks administrative intent**, with equal-rank collisions escalated to a human rather than guessed.
- **Distributed systems**: outbox pattern so a state change and its event commit together, at-least-once delivery with idempotent consumers for exactly-once effects, saga orchestration with compensating actions, optimistic concurrency on row versions, one transaction per mutation so a single stale item cannot roll back a day of field work.
- **Three protocols, deliberately**: REST at the edge, gRPC between services (protobuf, server-streaming, deadlines, typed business rejections), GraphQL for dashboard reads with DataLoader batching to eliminate N+1.
- **Infrastructure**: multi-service deployment on Kubernetes with horizontal pod autoscaling driven by a leading metric, liveness and readiness probes, canary deploys with automated rollback, Terraform, and CI/CD gated on tests, secrets scanning and static analysis.
- **Security**: BOLA closed at the query layer, mass-assignment allowlist evaluated before arbitration, offline auth via scope-inverted tokens, token-bucket rate limiting as an atomic Redis Lua script.
- **Testing**: **115 tests across six layers** (unit, contract via Pact, integration via Testcontainers, API, chaos, load via k6). Load-tested to failure, diagnosed a connection-pool exhaustion that queued silently rather than erroring, fixed it, and re-measured: failure rate 44.7% to 20.2%, throughput up 38%.
- Running it end to end surfaced **seven real defects** the passing suites had missed, including tracing instrumentation that caused silent write loss. Deployed with the observability stack public and read-only. [Write-up](#) | github.com/theCaesar/Sanad

Space Biology Knowledge Engine | *Node.js, Express, MongoDB, embeddings, RAG*

2025

- Built at the NASA Space Apps Challenge: semantic search over a research corpus using embeddings, retrieval-augmented chat across the top matching papers, expert and student summarisers, study-card generation, and a resilient CSV importer.
- Competed concurrently with a Fintech Hackathon across the same three days.
github.com/theeCaesar/Nasa-Hackthon

Performance Monitor | *Node.js, Socket.IO, Express, React* 2024

- Real-time full-stack application tracking operating system and IoT device metrics across many machines.
- Built a **scalable server** using the cluster model and multi-threading to handle many concurrent reporting agents, with a React client and a Node agent both kept in sync over sockets.

Redis-Only Marketplace | *Node.js, Redis, Express, Lua* 2024

- Built a full marketplace backend using Redis as the only datastore, for a fast in-memory experience.
- Designed authentication and authorization with **atomic Lua scripts** to resolve concurrency races that a read-then-write sequence cannot.

Further case studies, technical write-ups and the full project archive: mohammed-hussein.me

EDUCATION

Middle Technical University	Iraq, Baghdad
<i>Cybersecurity Technology Engineering Department</i>	<i>2023 – Present</i>

COURSES, CERTIFICATIONS & COMPETITIONS

Penetration Testing Student (eJPT curriculum), INE	2025
Offensive security training: network exploitation, web application attack surface, and the reconnaissance to exploitation workflow.	

CCNA 200-301, Complete Course (Jeremy's IT Lab)	Jan. 2024 – Mar. 2024
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Career Preparation Academy, IREX	Apr. 2024 – Jun. 2024
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NASA Space Apps Challenge	2025
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Fintech Hackathon	2025
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Built and pitched a multi-sided fintech marketplace: onboarding for buyers, sellers and shops, transaction flows, seller payout logic and analytics, with compliance and conversion-focused UX. Run in parallel with the NASA challenge over the same three days.

Maker's Tamkeen	2025
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The HurryApp Hackathon	2024
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