

ZAIN MUNIR

Backend Software Engineer

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Karachi, Pakistan

PROFESSIONAL SUMMARY

Results-driven Backend Software Engineer specialising in scalable microservices, RESTful APIs, and middleware services using Node.js, TypeScript, and NestJS. Proven track record of decomposing monolithic architectures, implementing JWT/OAuth2 authentication with RBAC, integrating enterprise systems and third-party payment gateways, and deploying cloud-native services on AWS. Experienced in EdTech and e-commerce domains with a strong focus on system performance, security, API documentation (Swagger/OpenAPI), and production reliability.

EXPERIENCE

Software Engineer — Backend

Jan 2023 – Present

SimpliEd | Karachi, Pakistan

- Designed and implemented a scalable NestJS middleware layer to mediate secure communication between mobile/web clients and enterprise backend systems, enforcing authentication guards, request validation (class-validator/class-transformer), payload transformation, and centralised error handling across all service boundaries.
- Implemented JWT-based stateless authentication and role-based access control (RBAC) across all microservices using Passport.js and express-jwt; applied security best practices including Helmet HTTP headers, express-rate-limit, XSS sanitization, and NoSQL injection prevention to harden every API surface.
- Authored and maintained comprehensive API documentation using Swagger/OpenAPI (swagger-autogen, swagger-ui-express) across 100+ endpoints, maintaining versioned API contracts that accelerated mobile developer and third-party integration.
- Architected a universal payment-receiving microservice enabling any bank to integrate online payment processing with minimal configuration.
- Built a standalone NestJS async job-processing microservice with 40+ Bull Queue processors covering invoice and result-card PDF generation (Puppeteer), FCM push notifications, SMS dispatch, automated attendance marking, admission workflow automation, and data-integrity checks — fully decoupling all async workloads from the main API server.
- Engineered a dedicated NestJS webhook-receiver microservice with request-rate throttling, Redis caching, and Helmet security hardening to reliably process inbound payment callbacks from banking partners.
- Decoupled a tightly coupled legacy codebase into independent microservices, improving scalability, deployability, and team autonomy.
- Executed full data migration from legacy systems to the new platform with zero data loss.
- Configured production server environments with PM2 process management, structured request logging via Winston (daily log rotation), and application performance monitoring via New Relic APM with OpenTelemetry distributed tracing; performed root-cause analysis and production troubleshooting to maintain high availability.

- Collaborated closely with mobile developers, functional consultants, and infrastructure teams during design, development, testing, and deployment phases; conducted peer code/design reviews to enforce coding standards and reduce technical debt.

Software Engineer — Backend

Sep 2022 – Dec 2022

Alpha Mu Digital Ventures | Karachi, Pakistan

- Built web scraping APIs using Python and FastAPI to extract and aggregate product data from multiple e-commerce platforms at scale, implementing async concurrency for parallel requests and rate limiting to avoid target-platform throttling.
- Developed a data migration microservice to transfer records from Firebase to PostgreSQL, ensuring full data integrity and referential consistency.
- Designed PostgreSQL database schemas and data models for migrated e-commerce product and pricing datasets, applying normalisation, referential integrity constraints, and efficient indexing for production query performance.
- Built asynchronous data-transformation and deduplication pipelines to sanitise and normalise scraped product records before persistence, reducing downstream data quality issues.
- Implemented structured error handling, retry logic, and request-level logging across FastAPI scraping services to ensure stability and observability in production.
- Optimized legacy API endpoints through query refactoring and Redis caching, significantly improving response times under load.
- Containerized and deployed microservices to AWS using AWS Copilot, streamlining the deployment and CI/CD process.

Software Engineer — Backend

Dec 2019 – Aug 2022

Queno | Karachi, Pakistan

- Led the decomposition of a monolithic application into a microservices architecture, substantially improving system scalability and independent deployability of services.
- Designed and managed database schemas across MongoDB and PostgreSQL for financial, student, and payment data models, ensuring referential integrity, efficient indexing, and optimised query performance under production load.
- Implemented JWT-based authentication and role-based access control (RBAC) for student, parent, and admin user roles across all microservices.
- Integrated ForeePay and BlinQ payment gateways for online transactions, and QuickBooks API as an enterprise finance system integration for automated financial record-keeping, bridging transactional payment data with institutional ERP reporting.
- Built a finance microservice generating real-time balance sheets and income statements for institutional financial reporting.
- Developed a student fee management microservice to automate payment workflows and minimize billing discrepancies.
- Implemented a high-throughput invoice PDF generation microservice capable of producing bulk documents on demand.
- Designed a plug-and-play payment-receiving microservice supporting easy integration by any partnering bank or payment provider.
- Enforced RESTful API design standards with structured input validation, consistent error responses, and Redis-based caching to improve throughput and reduce redundant database queries across high-traffic endpoints.

TECHNICAL SKILLS

Languages:	JavaScript (ES6+), TypeScript, Python
Frameworks & Libraries:	Node.js, NestJS, Express.js, FastAPI, Passport.js, Swagger/OpenAPI
Databases:	MongoDB, PostgreSQL, MySQL, Redis, Firebase
Security:	JWT, OAuth2, RBAC, Helmet, express-rate-limit, XSS Sanitization, NoSQL Injection Prevention
Cloud & DevOps:	AWS (Copilot, EC2, S3), Docker, CI/CD Pipelines, PM2, Winston, New Relic, OpenTelemetry
Architecture & Patterns:	Middleware Architecture, Microservices, RESTful APIs, Event-Driven Architecture, Enterprise Integration Patterns, Queue-Based Systems (Bull Queue), Real-Time (Pusher)
Integrations:	ForeePay, Blinq, QuickBooks (ERP/Finance), OpenAI, Firebase (FCM), SMS & Email Services, Puppeteer (PDF)

EDUCATION

Master of Science in Computer Science & IT (MSCSIT) 2021 – 2023

NED University of Engineering and Technology

Key Courses: Advanced Analysis of Algorithms, Advanced Operating Systems, Software Project Management, Machine Learning, Deep Learning, Natural Language Processing, Advanced Database Techniques, Cloud Computing, Cryptography & Network Security, Data Mining

Bachelor of Science in Computer Science (BSCS) 2016 – 2019

University of Karachi — UBIT

Key Courses: Data Structures & Algorithms, Object-Oriented Programming, Database Systems, Operating Systems, Computer Networks & Data Communications, Software Engineering, Discrete Mathematics, Artificial Intelligence, Compiler Construction, Web Technologies

LANGUAGES

English — Professional Proficiency | **Urdu** — Native