Zaheer Mir Mengal Ali

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Education

Queen Mary University of London — Penultimate Year
BSc (Hons) Computer Science - 1st Class Honours - 84% — *London, UK*

Twyford CofE 6th Form — Sept. 2022 – Aug. 2024
A-Levels: Physics - A , Mathematics - A, Computer Science - B — *London, UK*

Projects

Custom Operating System | *C, x86 Assembly* — Nov. 2025

- Built a bootable x86 operating system kernel from scratch with keyboard interrupt handling, VGA text output, and user input processing
- Configured the PIC and implemented an IDT to manage hardware interrupts after entering 32-bit protected mode, providing support for I/O operations
- Utilised QEMU to emulate hardware environments, streamlining kernel testing and improving development efficiency

Flight Optimization | *Python, Node.js, React Typescript, Fast API* — Aug. 2025

- Developed a full-stack flight optimization platform that analyzed itineraries spanning 2 to 6 cities, and displayed the most affordable routes in real time
- Designed a FastAPI backend to fetch and parse flight data from RapidAPI, implementing response caching to eliminate redundant API calls during route optimization
- Automated route optimization by evaluating all city permutations and comparing flight prices across dates, reducing manual research time from 25 minutes to under 1 minute

Fiction Folder | *JavaScript, Firestore, HTML/CSS* — Jun. 2025

- Developed a social cataloging web app for tracking anime, films, and TV shows, integrating OMDb, ANIList, and TVMaze APIs for unified content search
- Built a messaging feature and friend recommendation system using Firestore listeners to connect users with similar favourites, supporting more than 30 concurrent members
- Deployed the frontend and backend on Vercel and Render, ensuring reliable communication and less than 1 second response times

Maths Ludo Application | *Java, SQL, Swing* — Nov. 2023

- Developed a desktop tutoring application that turned maths practice into a fun, interactive board game for KS2 students
- Built a Swing interface and SQL backend for secure logins, teacher dashboards, and classroom performance tracking
- Introduced a dice roll mechanic linked to student performance and an in-game currency system, increasing learning participation by 30%

Experience

Mathematics Tutor — Mar. 2025 – Present
Mathnasium — *London, UK*

- Taught 4+ KS2 to KS3 students simultaneously, each working on different mathematical topics, while managing individual progress and engagement
- Simplified complex logical concepts into clear, relatable explanations, improving student comprehension and engagement
- Adapted explanations and pacing to each student's ability level, increasing performance across assessments by up to 30%

Computer Science Tutor (Volunteer) — Oct. 2022 – Jan. 2023
Twyford CofE 6th Form — *London, UK*

- Delivered structured lessons on programming fundamentals and algorithmic problem solving for groups of 10 students, strengthening their understanding and confidence in Computer Science
- Guided students through practical debugging and code analysis exercises, helping them develop independent problem solving and error resolution skills, which raised their average grades from a 4 to a 6

Skills

Languages: Java, Python, C, JavaScript, HTML/CSS, Typescript, SQL
Full-Stack: React, Node.js, MongoDB, FastAPI, Firebase
Developer Tools: Git, GitHub, Linux, QEMU, Make
Spoken Languages: English - Fluent, Urdu - Fluent, Mandarin - Conversational