

# Zackaria Mamdouh

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## EDUCATION

**City University of New York Queens College** May 2024  
*Bachelor in Computer Science, Minor in Biology*

## COURSEWORK

**Courses:** Object-Oriented Programming, Data Structures & Algorithms, Database Systems, Software Engineering, Internet & Web Technologies, Cloud Computing, Computer Architecture, Theory of Computation, Linear Algebra, Artificial Intelligence

## SKILLS

**Languages:** C/C++, Python, Java, JavaScript/TypeScript, HTML/CSS, React, SQL,  $\text{\LaTeX}$   
**Tools:** Git/GitHub, Unix Shell, VS Code, SQL, NOSQL, AWS, Google Cloud, Debugging, IT skills  
**Frameworks:** React, Node.js, Flask, JUnit, WordPress, Material-UI, FastAPI  
**Libraries:** pandas, NumPy, Matplotlib

## PROJECTS

**Pokemon Java Database Connectivity** [CODE](#) February 2024

- Led a team in a three-database integration project, successfully managing over 1,000 Pokémon entries and improving data retrieval efficiency by 40%. Established JDBC connections to manage and manipulate complex data sets.
- Crafted advanced SQL queries utilizing Common Table Expressions (CTEs), aggregate functions, and cross-database joins to perform intricate data analysis and retrieval, enhancing the query efficiency and data accessibility.
- Designed and implemented a robust data validation framework, ensuring data integrity across the three integrated databases.

**Inventory Management** [CODE](#) July 2024

- Developed an Inventory Management Application using Next.js and Material-UI, enabling users to efficiently add, remove, and manage inventory items with a responsive design. Integrated Firebase for real-time database management.
- Implemented user-friendly features including manual and image-based item addition, inventory search, and item sorting by name, quantity, or date added.
- Deployed and maintained the application using Vercel, ensuring seamless updates through continuous integration and delivery (CI/CD).

## EXPERIENCE

**Headstarter AI** | *Fellow* July 2024 – September 2024

- Developed an advanced AI chatbot using Next.js and Express.js, leveraging GPT-4 Turbo API to enhance natural language processing capabilities and create a responsive, user-friendly interface.
- Built an AI-driven inventory management system with Firebase Firestore, enabling real-time updates and efficient data management.
- Oversaw and delivered multiple AI and software engineering projects, showcasing strong technical expertise, problem-solving skills, and effective time management throughout the fellowship.

**Technical Interview Prep CodePath** | *Fellow* June 2024 – August 2024

- Mastered algorithmic techniques and problem-solving strategies, enabling efficient and structured approaches to complex coding challenges commonly encountered in technical interviews.
- Gained in-depth knowledge of key data structures such as arrays, linked lists, and trees, and learned to apply algorithms like dynamic programming and graph traversal in practical scenarios.
- Engaged in multiple mock interviews to hone communication skills and build confidence, resulting in the ability to articulate coding solutions effectively under pressure.

**The Child Center of New York** | *Group Leader* October 2022 – June 2024

- Developed and instructed a Python programming curriculum, achieving a 40% increase in coding proficiency among 30+ students within a 2 year period. Curriculum covered topics such as basic operators, basic functions, and basic data structures.
- Provided comprehensive homework assistance in Algebra, Geometry, and advanced problem-solving techniques, helping students grasp complex mathematical concepts, improve their analytical skills, and achieve higher academic performance.