

# Muhammad Zain

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## EDUCATION

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**University of Calgary**  
*Bachelor of Science in Software Engineering*

September 2022 – April 2027 | Calgary, AB

## TECHNICAL SKILLS

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- **Programming Languages:** Java | Python | C++ | JavaScript | SQL | HTML/CSS | RISC-V Assembly | LaTeX
- **Frameworks & Tools:** React | Node.js | Next.js | Flask | Qt (C++) | Java Swing | Tailwind CSS | Arduino
- **Databases & Tools:** MySQL | SQLite | Query Optimization (Indexes) | Git/GitHub | CMake | Vercel

## PROJECTS

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### CityX Subway Display System

*Java, Swing (FlatLaf), MySQL, REST APIs, JLayer, Multithreading*

- Engineered a real-time subway display with animated train tracking, rotating ads, and live weather/news updates.
- Orchestrated a modular Swing **CardLayout UI** with multithreaded control for seamless **10-second** ad↔map transitions.
- Designed a MySQL ad scheduler with indexed relevance rules, **accelerating query performance** and eliminating redundant lookups.
- Integrated wttr.in API and JLayer announcements with caching, retries, and fallbacks, ensuring **reliable updates**.

### Flight Operations Manager

*C++17, Qt, MVC, SQLite/CSV, Data Visualization*

- Programmed a Qt desktop application to manage flights, passengers, and schedules within a scalable MVC structure.
- Built an interactive seat map with validation, conflict detection, and class pricing for **precise passenger assignments**.
- Optimized data lookups and storage, reducing query time by **~40%** on **500+ passenger datasets**.
- Resolved segmentation faults and stabilized workflows to maintain **99.9%** uptime during extended operations.

### TechVista Inc

*React, Flask, SQLite, REST APIs, Responsive UI*

- Delivered a full-stack store with authentication, product catalog, cart workflows, and a responsive animated UI.
- Implemented Flask REST endpoints with validation, error handling, and **parallel request processing** to improve performance.
- Crafted reusable React components with hooks/context, **reducing load times** and enhancing state handling.
- Introduced profile dropdown with cart preview and guarded actions, **strengthening UX** and securing guest sessions.

### Art Museum Data Manager

*Python, MySQL, SQL Scripting, Role-Based Access Control*

- Structured a fully normalized MySQL schema for artworks, artists, loans, and staff with strict referential integrity.
- Programmed a Python CLI to provision accounts and manage secure role-based access for admins and employees.
- Enforced business rules with trigger-based SQL safeguards for updates, deletions, and overdue loan returns.
- Automated SQL scripts to seed data, create roles, and generate reports, **streamlining workflows**.

## WORK EXPERIENCE

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### Best Buy Canada

*Mobile and Smart Living Advisor*

May 2023 – September 2024 | Calgary, AB

- Delivered tailored smart home and mobile solutions, increasing customer retention by **20%** via consultations and demos.
- Achieved **\$70K+ monthly revenue** through solution-based selling and resolving complex device compatibility issues.
- Ranked **#2 in team performance**, closing **55+ telecom activations** per month and reducing returns by **15%**.

### AKHSS Science & Commerce Olympiad

*Project Lead*

October 2019 – December 2019 | Karachi, PK

- Directed the Laser Li-Fi project, showcasing high-speed light-based data transfer and securing **3rd place in Physics** among nationwide competitors.