

Alexander Prospal

Cleveland, OH

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Education

Bachelor of Science in Computer Science (AI Minor, Math Minor) Expected Graduation: May 2028
Case Western Reserve University, Cleveland, OH

Bachelor of Arts in Economics (Quantitative Methods Track) Expected Graduation: May 2028
Case Western Reserve University, Cleveland, OH

Honors Diploma Graduated: 2024
Campus International High School, Cleveland, OH

Projects

Secure Password Manager Application CSDS 344: Computer Security

- Designed and implemented a secure password management system in Java to store, retrieve, and manage user credentials through a structured MVC architecture
- Developed a data model to encapsulate password objects with controlled access, validation logic, and persistent storage handling
- Implemented file-based data persistence to securely load and save encrypted credential data across sessions
- Built a JavaFX-based graphical user interface with multiple controllers to handle user authentication, password listing, and CRUD operations
- Enforced input validation and separation of concerns between application logic, data model, and UI controllers to ensure maintainability and security

Theater Inventory Database System CSDS 341: Intro to Database Systems

- Designed and implemented a fully normalized relational database in PostgreSQL to manage costumes, props, performers, and show assignments for a theater organization
- Defined primary keys, foreign keys, composite keys, and referential integrity constraints to enforce data consistency and eliminate redundancy (3NF schema design)
- Wrote advanced SQL queries including multi-table joins, grouping and aggregation, nested subqueries, and constraint-based filters to answer operational and reporting questions
- Developed a Python application layer with a command-line interface to connect to the database, execute parameterized queries, and safely process user input
- Implemented realistic business logic such as inventory tracking, availability checks, and summary statistics through structured query design and controlled transaction handling

Personal Portfolio Website (prospal.dev) Ongoing

- Designed and developed a responsive personal website to showcase academic projects, technical skills, and professional experience
- Implemented a modular front-end structure using HTML, CSS, and JavaScript with a unified component-based layout
- Focused on clean UI/UX design, accessibility, and cross-browser compatibility across Safari, Chrome, and Firefox
- Deployed and maintained the site using Git-based version control and GitHub Pages hosting
- Continuously iterate on design, performance optimization, and content structure to reflect current technical work

Technical Skills

- **Programming Languages:** Python, Java, SQL, R, HTML, CSS, JavaScript
- **Tools & Technologies:** Git, PostgreSQL, JavaFX, Flask
- **Computer Science Concepts:** Machine Learning, Algorithms, MVC Architecture, Database Design (3NF), Encryption/Decryption, Security Fundamentals
- **Mathematics:** Linear Algebra, Statistics, Discrete Mathematics

Relevant Coursework

- **Computer Science:** Machine Learning, Algorithms, Database Systems, Computer Security, Data Visualization (R)
- **Mathematics:** Linear Algebra, Statistics, Discrete Mathematics
- **Economics:** Microeconomic Theory, Macroeconomic Theory

Leadership & Professional Strengths

- Strong written and verbal communication skills developed through technical presentations and collaborative academic projects
- Detail-oriented and highly organized; experienced balancing multiple rigorous coursework tracks simultaneously
- Comfortable working independently and in team environments to meet deadlines and project requirements
- Professional, adaptable, and able to maintain composure under pressure