AHMED MOHAMED SOBHY

COMPUTER ENGINEERING STUDENT

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ABOUT

An innovative and enthusiastic computer engineering student. Dealt with computers since childhood and have always been obsessed with technology. I am constantly seeking new challenges and opportunities to improve my skills and knowledge. I am skilled in **C++** and **Python**, with strong interests in system design, performance optimization, and writing clean, maintainable code.

EDUCATION

Cairo University, Faculty of Engineering - B.Sc. Computer Engineering

October 2022 - July 2027

Grade: Excellent (GPA: 3.9) (first in class)

Relevant Coursework: Algorithms & Data Structures, Database Systems, Microprocessors, Operating Systems

EXPERIENCE

Software Engineering Intern - Siemens Digital Industries Software

July 2025 - August 2025

- Collaborated with the R&D team on (HDS)[™], a creation tool and IDE for VHDL and Verilog design
- Resolved multiple customers reported bugs and implemented feature enhancements using C++ and TCL
- Led efforts to upgrade the HDS compiler from Visual Studio 2008 to Visual Studio 2019, ensuring compatibility while maintaining stability of extensive legacy codebases
- Improved software performance and maintainability by modernizing build processes and refactoring critical modules

Freelance Full-Stack Web Developer

July 2023 - November 2024

- **Bokinn:** a multi-tenant hotel reservation system for managing bookings across multiple hotels with centralized administration. Developed features for booking management, availability tracking, and role-based access control
- IFoundIt (Lost & Found Website): Startup project in Egypt enabling users to report and recover lost items
- Custom Exam Platform: Fully custom online testing system with secure authentication and results tracking

RESEARCH EXPERIENCE

Query Optimization and Indexing Strategies (2nd Place, TCCD Research Day) (Python - SQL) | December 2024

Repository: https://github.com/AhmedSobhy01/query-optimization-research

- Benchmarked 7 SQL query types like multi-JOIN, GROUP BY, LEFT JOIN IS NULL on datasets up to 10M rows
- Analyzed impact of 5 indexing strategies and 3 memory configurations on execution time
- Performed ANOVA and Tukey HSD to identify statistically significant differences in index-query pairs
- The study provided recommendations for improving query performance based on dataset size and query type

PROJECTS

Redis Clone (C++ - Make - Networking) | Aug 2025

Repository: https://github.com/AhmedSobhy01/redis-clone

- Built a lightweight Redis clone with in-memory key-value storage, sorted sets, and TTL support
- Designed non-blocking I/O event loop for handling concurrent clients
- Implemented binary client-server protocol with serialization and error handling

Kernalyze Operating System Simulation (C - Make) | May 2025

Repository: https://github.com/AhmedSobhy01/kernalyze

- Simulated 3 CPU scheduling algorithms (Round Robin, SRTN, HPF) with accurate preemption and built a buddy memory allocation system handling dynamic memory requests with efficient coalescing to minimize fragmentation
- Used interprocess communication using POSIX semaphores, shared memory, and message queues for reliable coordination

Sherlook Search Engine (Java - Spring Boot - React - Tailwind CSS - Docker) | May 2025

Demo: https://sherlook.ahmedsobhy.net • Repository: https://github.com/AhmedSobhy01/sher-look

- Indexed 6,000 HTML docs into SQLite in < 2 min using parallel analyzers and batching
- Built TF-IDF PageRank ranking pipeline: cold-cache 20-50 ms, warm-cache < 5 ms

Brick Breaker Game in 8086 Assembly (8086 Assembly - DOSBox-X) | December 2024

Repository: https://github.com/AhmedSobhy01/brick-breaker-assembly

 Built classic Brick Breaker game in 8086 Assembly with 3 power-ups (extra paddle, multi-ball, speed boost) and ingame chat mode allowing up to 2 players to exchange messages

WebRTC Video & Audio Chat (WebRTC - WebSocket - Node.js - React - MongoDB) | September 2024

Demo: https://webrtc-video-chat.ahmedsobhy.net • Repository: https://github.com/AhmedSobhy01/webrtc-video-chat

 Created a peer-to-peer video/audio chat app built on WebRTC technology allowing users to create/join private rooms, supporting up to 20 simultaneous rooms with < 300 ms latency

Digit Classifier (Python - TensorFlow - React) | August 2024

Demo: https://digit-classifier.ahmedsobhy.net • Repository: https://github.com/AhmedSobhy01/digit-classifier

- Trained a TensorFlow neural network achieving 98.31% accuracy on the MNIST test set (model size: ~ 3MB)
- Exposed prediction endpoint via FastAPI in a Docker container and a React frontend allowing users to draw digits

Apartments Management System for Hotels (Laravel - VueJS - Tailwind CSS) | October 2023

Demo: https://arms.ahmedsobhy.net

• Built multi-language, role-based platform managing apartment units with integrated analytics dashboard with 5 interactive charts showing occupancy rates, state distributions, and monthly income/expense breakdowns

HACKATHONS & COMPETITIONS

ICPC ECPC Qualifications - Collegiate Programming | August 2025

Participant; ranked 97th place (Top 100) among collegiate teams • Certificate

NASA Space Apps Hackathon | October 2024

Demo: https://exocreate.vercel.app • Repository: https://github.com/AhmedSobhy01/exocreate • Certificate

• Designed and shipped an interactive 3D web app in 24 hours, allowing users to explore 3 fictional exoplanets with guided learning paths and delivered a 3D interactive learning experience using Three.js

SOFTWARE SKILLS

Programming Languages: C, C++, Java, Python, JavaScript, TCL, PHP, Verilog **Frameworks:** Node.js/Express, React.js, Vue.js, Laravel, Tailwind CSS, Bootstrap

Databases: MySQL, PostgreSQL, MongoDB, SQLite

Tools: Docker, Linux, Git, Perforce, Networking, gRPC, WebRTC, WebSocket

SOFT SKILLS

Time Management	Communication Skills	Conflict Resolution	Teamwork
LANGUAGES			

English - Fluent Arabic – Native Language