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. Passionate about optimizing performance, writing clean code, and collaborating on open-source projects.

EDUCATION

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

October 2022 – July 2027

Grade: Excellent (GPA: 3.9) **(first on class)**

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

RESEARCH EXPERIENCE

Query Optimization and Indexing Strategies (2nd Place, TCCD Research Day) | 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

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
- 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

- Architected a crawler fetching 30 pages/sec with URL normalization and deduplication
- 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
- Containerized with Docker Compose for horizontal scaling

Shellify Terminal Shell (C, Make) | April 2025

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

- Built a Unix shell supporting pipelines, I/O redirection, and quoted arguments
- Utilized dynamic path resolution and process group control

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 in-game chat mode allowing up to 2 players to exchange messages

Jobesta (React - Node.js - Express - PostgreSQL - WebSocket) | December 2024

Demo: https://jobesta.ahmedsobhy.net • Repository: https://github.com/AhmedSobhy01/jobesta

- Developed a freelance marketplace with job posting, bidding, real-time messaging, secure payments, and project tracking with 20+ RESTful API endpoints in Express

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

Watch Party Website (Node.js - WebSocket - VueJS) | June 2024

Demo: https://party-streaming.ahmedsobhy.net • **Repository:** https://github.com/AhmedSobhy01/watch-party

- Developed a synchronized movie-watching platform supporting 10+ users per room with real-time chat and emoji reactions using WebSocket, supporting offline/online streaming with multiple subtitle tracks

AES Encryption using Verilog on FPGA (Verilog) | May 2024

Repository: https://github.com/AhmedSobhy01/AES-Verilog

- Implemented AES-128/192/256 encryption/decryption modules in Verilog, synthesized on Cyclone V utilized 5,739 logic elements (10%), and 802 registers

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

NASA Space Apps Hackathon | October 2024

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

- Designed and shipped an interactive 3D web app in 24 hours, allowing users to explore 3 fictional exoplanets with guided learning paths
- Designed and delivered a 3D interactive learning experience using Three.js, guiding students across three fictional exoplanets through animated environments and content slides

CERTIFICATIONS

Fundamentals of Backend Engineering (Udemy) | September 2024

- Learned the fundamentals of backend engineering, including communication design patterns and protocols, gained understanding of operating system fundamentals, including threads, processes, and asynchronous I/O in Linux
- Explored key backend technologies such as HTTP/1.1, HTTP/2, HTTP/3, gRPC, WebRTC, WebSockets, and TLS 1.2/1.3

SOFTWARE SKILLS

Programming Languages: C, C++, Python, JavaScript, PHP, Verilog
Frameworks: Node.js/Express, React.js, Vue.js, Laravel, Tailwind CSS, Bootstrap
Databases: MySQL, PostgreSQL, MongoDB, SQLite
Tools: Docker, Linux, Git, WebRTC, WebSocket

SOFT SKILLS

Time Management	Communication Skills	Conflict Resolution	Teamwork

LANGUAGES

English - Fluent	Arabic – Native Language