Petru Brahă

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Education

"Alexandru Ioan Cuza" University — Iași, România
Bachelor's degree in Computer Science — *Sep. 2023 – June 2026*

"Mihai Eminescu" High School — Iași, România
Baccalaureate diploma in Mathematics And Computer Science — *Sep. 2018 – June 2022*

Projects

"YP compiler" | *Teamwork, C++, Bison, Flex* — Nov. 2024 – Feb. 2025

- Molded a custom compiler that reads, parses, and executes source code written in a specialized C-like syntax, utilizing Flex for text recognition
- Performed source code translation into executable instructions, demonstrating a strong understanding of abstract syntax trees and low-level concepts, using C++ and Bison
- Included innovative features, like complex arithmetic expressions, classes, and local functions, showcasing proficiency in data structures and algorithms
- Refined error handling and edge-case detection, improving on problem-solving and attention to detail, by running extensive experiments
- Acquired hands-on experience with compiler construction, strengthening technical knowledge in software engineering, system design, and parsing procedures
- Completed the project, guiding my team in the development, by effectively working with a version control system

"RR application" | *C, C++, Network Engineering* — Nov. 2024 – Feb. 2025

- Coded an open-source application that clients can query about trains' schedules for their location/time, applying the client-server paradigm
- Constructed the server application, assuring high transmission speed, by implementing a pre-threaded execution and I/O multiplexing
- Designed the transport protocol, assessing high speed and data correctness, exploiting TCP and UDP in their best use cases
- Gathered resources to maintain the server accessible 24/7, resembling a realistic, public, and functional service, by utilizing a remote shell provided by my university
- Compiled a C++ program that randomly generates the trains' routes employing a powerful pseudo-random number generator, Mersenne Twister
- Finished the project, documentation, and further features before the deadline, recording optimal time management by consistently developing daily

"VD library" | *C++, GoogleTest, OpenGL* — June 2024 – Oct. 2025

- Created data manipulation programs, resulting in ten complex data structures, by considering an object-oriented approach and the SOLID principles
- Ensured their efficiency, improving their execution time by at least 30%, by applying complexity analysis
- Attained project's portability with 100% of POSIX systems, by using C's standard calls and class templates
- Embraced test-driven development, delivering robustness to the library, by composing varied test cases
- Defined all possible error states, accomplishing competent error handling and developing troubleshooting skills, by employing the standard exceptions and the usage of the debugger
- Achieved version control to track the progress, accepting Git's technology
- Succeeded in drawing a GUI, assuring a simple, clean, visual explanation of the queries for users, by adopting the OOP's design patterns and shaders from OpenGL

Technical Skills

Languages: Assembly Language(x86), C, C++, Java, SQL, Bash, PowerShell, R
Technologies: Git, Makefile, Flex, Bison(Yacc), HTML, CSS, LaTeX
Libraries: GoogleTest, GMock, OpenGL, Standard Template Library