Hmelnitskiy Anton

Personal Information

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I'm first-year student of the Department of Radio Engineering and Computer Technology (DREC) at the Moscow Institute of Physics and Technology (MIPT, Phystech). I completed Ilya Dedinsky's C development course, where I gained skills in managing large projects, debugging, and code optimization. My most interesting projects include a translator from my own language to assembler, a differentiator that generates a LaTeX book, and projects focused on low-level code optimizations. I also have experience in Python and have worked on lab reports involving graph plotting and approximation.

Main Projects

❒ **Language**

C NASM Translation

Developed a translation system that converts from code on my language to binary tree and next to NASM. Consists of FronEnd, BackEnd and includes parser, lexical analyzer and translator to assembler with standard library.

❒ **Differentiator**

C Python GraphViz LaTeX

Created a tool that differentiates expressions and generates a LaTeX book. The generated logs (in addition to GraphViz) contain randomly generated jokes, plotted graph using Matplotlib. I parse expression, create binary tree, differentiate it and write to .tex file.

❒ **Hash Table**

C Assembler SIMD Perf

Project of hash table creation with research of working speed. In this project I worked with profilier(Perf), analyzed distributions of different hash functions and used low level optimizations like SIMD, assembler inserts and aligning to increase speed of hash table.

❒ **Mandelbrot set**

C SDL AVX

Visualized the Mandelbrot set using SDL/SDL2, comparing different pixel processing functions. I measured FPS and execution time using rdtsc(), and compared various optimization combinations : standard, with merged pixels, and with AVX instructions with GCC's -O0 and -O3 optimizations.

Hard Skills

Programming languages : Python, x86 Assembler, C.
Other languages : Markdown, dot, HTML, LaTeX, MS Office, LibreOffice.
Tools : Git, Make, CMake, Perf, EDB, IDA.
Libraries : SDL/SDL2, Matplotlib, GraphViz.
Languages : Russian(Native), English(B1).

Soft Skills Communication, responsibility, motivation, creativity.

Hobby Table tennis, volleyball, board games, watching movies, listening to music.