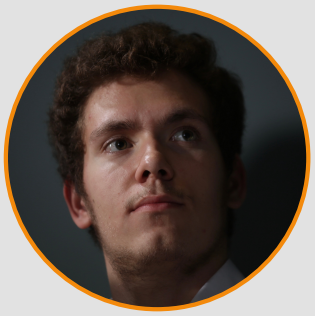

DOLGOV ALEXANDER

1st year graduate, 18 years old

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KetchuppOfficial

STRENGTHS

Responsible | Pedantic | Stress-resistant | Inquisitive | Communication skills | Quick learner

SKILLS

Programming languages:

C | x86-64 assembly

Tools:

make | git | valgrind | gdb | kcachegrind | graphviz

Other skills:

LaTeX | Markdown

LANGUAGES

Lang 1: Russian (native)

Lang 2: English (B2/C1)

EDUCATION

Moscow Institute of Physics and Technology | DREC

2021 – 2025 — Dolgoprudny, Russia

- GPA: 8.13/10
- GPA in Informatics: 8.0/10.

1ST SEMESTER PROJECTS

Stack |

October 2021

1. Implementation of stack
2. Two levels of security: canary protection and data hashing

Processor |

October - November 2021, January 2022, June 2022

1. Part 1: Assembler. Supports proprietary instructions and genearates executable binary file
2. Part 2: Virtual processor. Executes programs written on proprietary assembly
3. Part 3: Disassembler. Makes .txt file with assembly code after analyzing binary file

Doubly linked list |

November 2021

1. Cache friendly doubly linked list
2. Supports graphic dump by Graphviz

Binary tree (aka "Akinator") |

November 2021

1. Builds a binary tree based on its description from .txt file
2. Mode 1: Works like a wide known game Akinator
3. Mode 2: Gives the description of a character if his name is in the data base
4. Mode 3: Compares two characters from the data base
5. Supports graphic dump by Graphviz

Differentiator |

December 2021, June 2022

1. Analyzes .txt file with a math function of one or many variables and makes a binary expression tree of this function
2. Makes trees for partial derivatives of the function
3. Trees are visualized by Graphviz; program makes .tex file with the initial function and its partial derivatives

2ND SEMESTER PROJECTS

ParaPF: para print function |

March 2022

1. Small assembly implementation of standard C function printf
2. Supprots %b format specifier for binary output

Mandelbrot set optimization |

April 2022

1. Renderer of the Mandelbrot set
2. Optimized with Intel instrinsics

Alpha blending optimization |

April 2022

1. Blends two .bmp pictures
2. Optimized with Intel instrinsics

Hash table |

April - May 2022

1. Quality of 7 hash functions was examined
2. Hash table search was boosted by x86-64 assembly and Intel Intrinsics

Binary translator |

May 2022

1. Translates binary code generated by the proprietary assembler (a part of "Processor" project) into x86-64 machine code
2. Machine code executes just after compilation without making ELF as in JIT compilers

SPHERE OF INTEREST

1. Toolchain, formal languages
2. Processor architecture
3. Object-oriented programming in C++