State budgetary educational institution “School No. 1158” in Moscow

Project activities Conference “Engineers of the Future” Directions “IT”

Topic: Solving linear Diophantine equations in two variables.

Completed by: Babin Timofey 10 “T”

Introduction:

**Diophantine equation** is an equation (usually with several unknowns) whose solution is sought in integers (sometimes in natural numbers).

**Linear Diophantine equation with two unknowns** is an equation of the form Ax+By = C, where A,B,C are given non-zero integers, x and y are unknown integers.

Relevance:

Simplify work with Diophantine equations and optimize workflow in various fields. For example:

1. molecular physics
2. organic chemistry
3. Various computer algorithms (RSA decryption)
4. Development of complex technical systems

Target of work:

Implementation of algorithms for solving linear Diophantine equations in two variables according to the initial coefficients, as well as further derivation of answers of a general form.

Object of research:

Processing Linear Diophantine equations and their algorithms (mathematical laws) for implementation in machine code.

Tasks:

1. Obtaining odds.

2. Search for a private solution.

3. Output of the entire solutions.

Implementation stages:

1. Research on the topic of Diophantine equations
2. Thinking through the implementation plan, finding the main points of support
3. Implementation of machine code by researching methods for solving a mathematical problem
4. Preparation of documentation and report execution
5. “Grinding” the code and optimizing it to improve performance