

Mathguesser by Ātriņi

Our project is meant to improve interest in mathematics by involving competition in the learning process. This code is meant to be a multiplayer "math duel" between two students (online multiplayer not yet implemented). The student who gives the answer furthest from the real answer loses HP. The duel continues until a player runs out of HP.

Nowadays, artificial intelligence has become a part of our lives, providing us fast, effective solutions for routine tasks, so we decided to implement it in our educational game, to evaluate the correctness of students' answers, simulate their opponents, and help to understand how to solve problems in mathematics. This may result in wrong explanations, so we are planning to control the answers of the AI assistant more strictly in the future.

The game is built with Python using Tkinter library, featuring a modern UI and several integrated modules:

- User system with registration, login, rating, and statistics stored in JSON.
- Multiple difficulty levels and topic selection (Algebra, Geometry, Combinatorics, Number Theory).
- AI opponent for practice and a training mode with hints, points, and solution explanations.
- Dynamic interface with custom widgets (modern buttons and entries) and smooth transitions.
- Gamified feedback – visual HP bars, points, and rating adjustments after each duel.

This project aims to make learning math more engaging and interactive through competition, visual design, and intelligent feedback.

Link to the GitHub repository with the code of our prototype without multiplayer:

<https://github.com/E-Gulbis/mathguesser>

Link to the pitch video:

<https://failiem.lv/f/eqq64hk6dt>

Team members:

- Ernests Gulbis (leader),
- Pāvels Baks (author of the idea, researcher, and pitch-maker),
- Mihails Ivanovs (the brilliant voice in our pitch video),
- Maikls Nikonovs, and Markuss Kiulis (programmers).