GSoC 2025 Proposal: Interactive Math Game for Sugar Labs

Personal Information

Name: Hil Vasoya

Email: hilvasoya5114@gmail.com

GitHub: https://github.com/HilV5114

Time Zone: India Standard Time (GMT+5:30)

Synopsis

This project aims to develop an interactive math game for the Sugar Learning Platform.

The game will focus on improving mathematical skills for young learners through engaging, problem-solving activities.

By leveraging Sugar's collaborative and open-source nature, this project will provide an immersive educational experience.

Benefits to the Community

- Make learning math fun and engaging through interactive challenges.
- Encourage critical thinking and problem-solving skills.
- Utilize Sugar's collaboration features, allowing students to learn together.
- Be fully open-source and customizable, enabling educators to adapt it to their curriculum.

Deliverables

1. Game Design & Features:
   - Number Puzzles Solve equations by dragging and dropping numbers.
   - Shape Explorer Learn geometry by building and identifying shapes.
   - Fraction Adventure A visual way to understand fractions using animations.
   - Math Challenges Timed quizzes with varying difficulty levels.
   - Multi-language support, gamification, and offline support.
2. Sugar Integration:
   - Built as a Sugar Activity, following Sugar's design principles.
   - Collaboration Feature: Multiplayer learning experiences.
   - Integration with Sugar Journal to track progress.
   - Activity Sharing through the Sugar network.

Technical Details

- Frontend: Python with PyGTK
- Game Engine: Pygame for animations
- Data Storage: JSON for saving progress
- Agile development approach with modular coding

Timeline

Community Bonding (May-June 2025): Engage with the community, finalize scope.

Phase 1 (June-July 2025): Develop core game mechanics and UI.

Phase 2 (July-Aug 2025): Integrate Sugar features, refine gameplay.

Final Weeks (Aug 2025): Testing, bug fixes, documentation.

Future Work

- Expanding the game library with more advanced math concepts.
- Introducing AI-based adaptive difficulty.
- Enabling teacher dashboards for tracking student progress.

Why Me?

I am passionate about both game development and education technology.

My experience in Python, Unity, and game design makes me well-suited for this project.

I am eager to contribute to open-source learning tools and excited to collaborate with the Sugar Labs community.

Conclusion

This project will create an engaging math learning experience that seamlessly integrates with Sugar, making math fun and accessible for young learners. With the support of the Sugar Labs community, this interactive game can enhance learning worldwide.