

Google Summer of Code 2025 Proposal: Math-Game for Sugar Labs

Personal Information:

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- Programming Skills: Python, JavaScript, HTML/CSS

Synopsis

This proposal aims to develop an engaging and interactive math-based game for Sugar Labs, an open-source learning platform focused on providing educational tools for children.

The project will be designed to help young learners develop fundamental arithmetic and problem-solving skills in a fun, gamified environment.

Benefits to the Community

- Engagement & Learning: A well-designed math game can make learning arithmetic concepts enjoyable and interactive.
- Accessibility: The game will be developed in a way that is compatible with Sugar's ecosystem, ensuring it is accessible to all users.
- Open-Source Contribution: The project will align with Sugar Labs' mission of providing free and open-source educational tools.
- Localization Support: The game will be adaptable to different languages and difficulty levels to support a global audience.

Deliverables

1. Game Mechanics:

- A math-based puzzle or adventure game with levels that challenge students with arithmetic and logic problems.
- Multiple game modes, such as time-bound challenges, practice mode, and competitive multiplayer mode.

2. User Interface:

- A child-friendly and intuitive interface designed using Sugar Labs' UI guidelines.
- Interactive elements, animations, and rewards to enhance engagement.

3. Integration with Sugar Labs:

- The game will be developed as a Sugar activity.
- Ensure seamless integration with Sugar's journal for progress tracking.

4. Code Documentation & Tests:

- Well-documented code for future contributors.
- Unit tests to ensure stability.

Technical Details

- Primary Language: Python (with PyGTK for UI, if applicable)
- Game Engine: Pygame or Web-based (HTML5 + JavaScript)
- Data Storage: JSON or SQLite for saving progress
- Version Control: Git (hosted on GitHub or GitLab)

Timeline

Community Bonding Period (May 20 - June 17, 2025):

- Familiarize myself with the Sugar Labs codebase and community.
- Engage with mentors and refine the project scope.
- Study existing Sugar activities to ensure compatibility.

Phase 1 (June 17 - July 15, 2025):

- Develop core game mechanics and implement a prototype.
- Basic UI design and integration with the Sugar environment.
- Initial testing and feedback collection.

Phase 2 (July 15 - August 12, 2025):

- Implement additional features such as levels, hints, and difficulty scaling.
- Optimize performance for low-resource devices.
- Conduct usability testing and bug fixing.

Final Weeks (August 12 - August 19, 2025):

- Polish UI and add final touches.
- Write documentation and finalize code.
- Submit final evaluations and ensure a stable release.

Future Work

- Implement more advanced mathematical concepts.
- Develop a multiplayer mode (if not completed during GSoC).
- Improve accessibility features, such as text-to-speech support.
- Encourage future contributors to build on the project.

Resources Required

- Access to Sugar Labs' documentation and development environment.
- Mentor guidance for best practices in educational game development.
- Community feedback to ensure the game meets users' needs.

Why Me?

- Passionate about both mathematics and game development.
- Prior experience with Python and Pygame.
- Enthusiastic about open-source contributions and learning.
- Strong problem-solving skills and the ability to work independently.

References

1. Sugar Labs Developer Guide: <https://developer.sugarlabs.org/>
2. Previous Sugar Activities: <https://activities.sugarlabs.org/>
3. Pygame Documentation: <https://www.pygame.org/docs/>

Conclusion

This project will provide an engaging and educational tool for children using the Sugar platform, helping them improve their math skills through play. I am excited to contribute to Sugar Labs and help build a game that makes learning fun and accessible!