Basic Details

- Full Name: Massimo Nicastro (name and surname)
- Email: m.nicastro5@studenti.unipi.it
- GitHub Username: GAMinsect
- First Language: Italian
- Location and Timezone: Italy CET (GMT +1)
- Previous opens source project: https://github.com/GAMinsect/Alt-Season-Index
- First contribution to Sugar Labs: https://github.com/sugarlabs/sugargame/issues/22

Project Details

- I will be making the **Math Games** idea proposed for this GSOC: https://github.com/sugarlabs/GSoC/blob/master/Ideas-2025.md#math-games
- Math games and puzzles can help to sharpen thinking skills and logical reasoning at all ages, meaning that adding this experience to sugar labs would make it more interesting for other ages other than children.
  And especially in the latter, starting to develop those skill at a young age, can help them tackle more challenging topics in their life, especially in the field of STEM
- To Develop Math Games I will use the following technologies:
  - VS Code and Python for the coding Part
  - VirtualBox, to run Ubuntu and Sugar Labs

Timeline

May 8 - June 1 (Community Bonding Period)

- In this phase I'll get more confident with tools like Pygame, GTK, Sugargames, and Sugar Lab custom assets
- I will also establish the channels that I will use to communicate with my mentor

June 2 - July 14 (Phase I)

- In those 7 weeks I plan to develop the first three games of the Math Quiz Idea
- week 1-4 (included): Four Color Map and Broken Calculator (one after the other)
- week 5-7: Soma Cubes

July 21 - August 25 (Phase II)

- In the remaining 5 weeks I want do to the last 4 games
- week 1: Fifteen Puzzle
- week 2: Euclid's Game
- week 3: Odd Scoring
- week 4: Make an Identity
- I have allocated a one-week of buffer in case I need to allocate more time to the development of one activity.

As it can be seen, between Phase I and Phase II, I have a 1 week gap, that is to compensate for any inconveniences that might arise during the coding process

In all of the Activities the workflow that i expect to use is:

- Spend 1-2 days writing the component that my game will have and how to implement it codewise, and create a To do list of those components.
- Then spend the 2 days coding the actual ideas with PyGame and once done, spend the other 2 days porting it with sugargame, at every step i check the components done on my to do list
- Leave the last days for some tweak, if needed
- The To do list will be implemented using a Google docs shared with the mentor
- At each step of this workflow I'll keep contact with the mentor, to reduce the risk of reinventing the wheel, in case the component I'm trying to develop has already been done.

FINAL CONSIDERATION

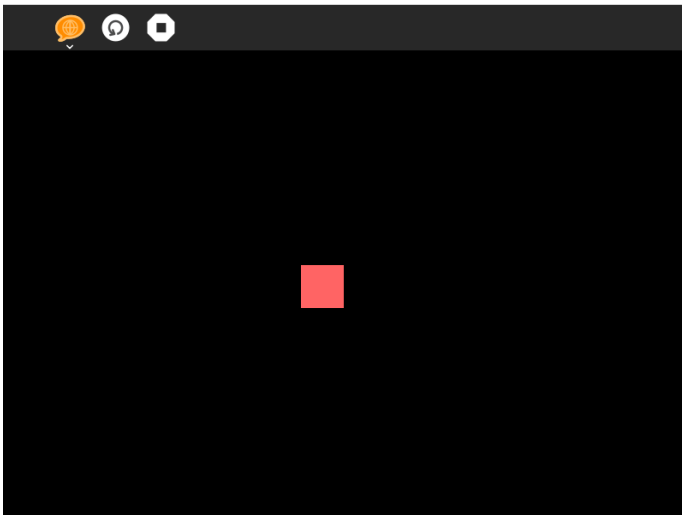
I'm expecting to work 6 hours a day 7 days a week, which, for a standard 12 weeks duration, would yield a total of: 504 hours, which is more than the expected 350, however from mid May to end June I will have exams, so in this period I will work less than the 6 hours a day expected.
That is also the reason why In the first half I'm planning to only do 3 projects, while in the other half 4.

After the end of GSOC, I'm planning to continue to contribute to Sugar Labs, all the way up to the end of the year. After all, the concept of developing games is something that has always excited me, and if those games can make a child develop its skill, even better.

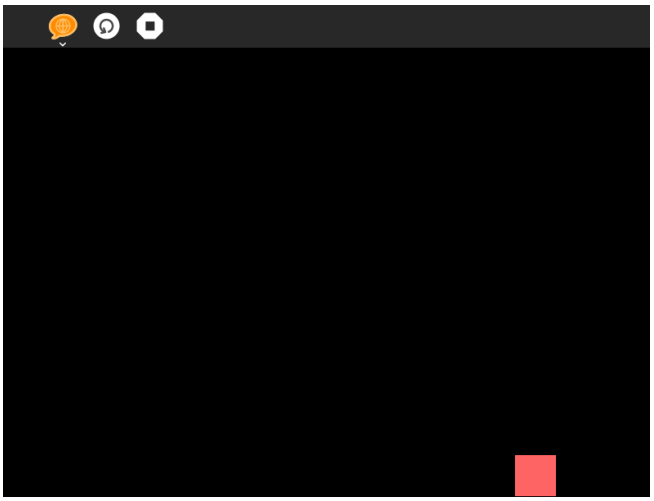
EXPERIENCE

Here are some of the things that I have done in about a couple of days to familiarize myself with the tools and to convert a PyGame into an activity using sugargame

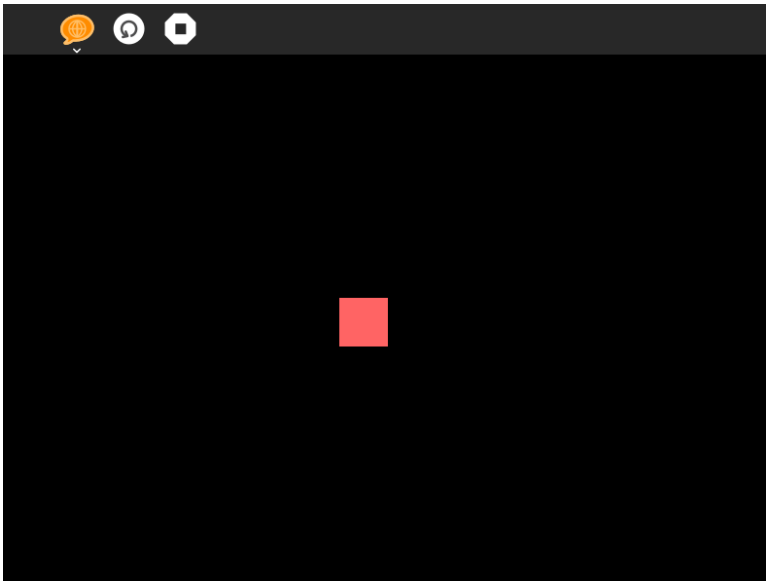
We start with a simple red square that can move in all 4 directions:



When it touches the border it becomes green and it gets teleported at the start



After that we can press the restart button to get the red square again



This game while simple has allowed me to better understand how to convert a PyGame into an activity, and to better understand the GTK event handler