Guess The Word

Sketch! Guess! Be the Best!

BASIC DETAILS

Name : Kushagra Nigam
E-mail : kushagra1998@gmail.com
Github : kushagra98
First Language : English
Location : Gurgaon, India
Timezone : India Standard Time(GMT+5:30)
Links to work :
https://github.com/matthewsamuel95/ACM-ICPC-Algorithms/pull/989
- Added some of the algorithms required in the ACM-ICPC programming contest.
- Mo's Algorithm and Matrix Exponentiation.
- The code was self written in a precise form to use in the contest.
https://github.com/sugarlabs/sugar/pull/828 (Issue #827)
- When you log on to Sugar, and log back in to your Ubuntu. The GNOME desktop cursor theme is replaced by the Sugar cursor theme.
- Fixed this issue with some research.
https://github.com/kushagra98/8-bit-simulator-JC-62-machine-
- Created my own repository of simulation of 8 bit microprocessor(JC-62 machine) using Python Tkinter(GUI)
- A Program to show how the flow of data takes place within the registers of the CPU
- Inspired by the working of the 8085 processor

Resume : https://drive.google.com/file/d/1tzidrSQ2JJ4btPWcuiSwTo0BFfArrwzr/view

MOTIVATION:

What is my motivation to take part in Google Summer of Code?

I have acquired a lot of skills while preparing for the ACM-ICPC programming contest. Last year(2018) my team competed in the online(first) round of the contest and secured a rank of 109 out of 3000 teams and were through to the regionals which were held at Amritapuri (Asia site). While practising so many problems over the years, I have gained handful of experience in various Data Structures and Algorithms. I'm through with the concept of Object Oriented Programming and hence I want to apply my skills in the real world problems. When I can solve problems created by the users, why can I not solve the problems which exists naturally. This struck my mind and hence I joined the Open-Source community. The only motive I have in my mind is to be resourceful, creative and collaborative to the world.

Google Summer of Code is the most ideal approach to figure out how to function in an open source network where you have various individuals from various parts of the world working and contributing collaboratively. It binds the top notch organisations under one roof with quality mentors to help you. Working with these organisations is always a bliss.

It is really an exposure to great learning and research. I'm excited to showcase my skills and acquire some more, hence be a part of GSoC'19.

Why did I choose Sugar Labs?

To be very honest, I got to know about the Sugar Labs through GSoC organisations. While I was searching for the organisations and reading about their motives, visiting their site,I truly adored how the community has built up an alternate learning stage for the children. I really enjoyed exploring different types of Sugar activities. The educational opportunities provided for the youngsters is great. With the excitement to explore, I headed towards Suga Labs' GitHub page. I explored how Sugar works. I learned how to work with activities. I created a mock activity (Thanks to authors of "MAKE YOUR OWN SUGAR ACTIVITIES!"). I worked upon errors. It was delightful.

With the similar vision in my mind I headed towards the sugar-devel discussion with the idea of a new activity that invokes learning with fun. It turned out a great experience over here, so many people with so much enthusiasm and quality mentors to react quickly and affirmatively on each and everything. I was a new comer to this community but answers and ideas from the mentors made it feel like I'm an older part of it.

Coming on the technologic side, the majority of the codebase of Sugar Labs is build on Python. I have been coding on python for 3 years. This project is entirely based on Python and its frameworks like PyGtk, PyGame, socket programming etc. which is the most compelling reason for me to choose Sugar Labs.

I see so much potential in Sugar Labs and hence it will be great to be collaborating for it.

Why do I want to work on this particular project?

This new activity creates competition and invokes fun with learning. It will help children to socialise and get out of their introvert nature. Children always love playing games, games help develop minds and skills from early age, so to make learning through games is what I want to create for them. Detailed motto of this activity is written under the project details.

A lot of work has to be implemented over the project. Like creating a UI for the application(PyGtk or PyGame), creating a network for people (multithreading, socket programming), working with classes(OOPS), working on real time drawing(open-CV or PyGame), working with Sugar artworks, creating database of words, working with different python libraries, converting the standalone python project to Sugar activity, etc. will make my journey exploring and full of learning.

Last but not the least I want to work on this project because it is purely based on Python and its various libraries, which I'm used to. Python - being an open-source project itself, developers have made it very easy to code.

What are my expectations from Sugar Labs during and after successful completion of the program?

The support of the mentors have been great till date. I want the same support during and after the completion of the project. In my own country, schools are investing so much on their technology buying paid learning software for the development of children, where on the other hand Sugar is a free platform. I would love to make Sugar reach more people and get popular, so schools can save money and utilise the power of Sugar. Moreover I would suggest that the community should start working on projects specific to a country. Example a "Manga reader app" can be created to capture Japanese minds. Looking forward to meet new people at Sugar Labs with likely vision of creating new opportunities for children.

PROJECT DETAILS

What am I making:
"Guess the Word" is a new activity/game for the Sugar platform. This activity makes student think, analyse and react.

How this activity works?
- Each of the student who is playing will get their turn with a word appearing on their screen. They will be provided with a certain time limit (say 30 seconds) to draw the sketch of the respective word on their screen with the help of a paintbrush accessible by the mouse.
- Rest of them (who are the part of the game) will watch the ongoing drawing on their respective screen to guess what is being drawn.
- For the players who are guessing can take at the most two hints, using a button, to reveal a letter of the word per hint.
- There will be guessing area right beside the drawing area where students can type and submit their guessed words.
- After each round the right spelling of the word will be displayed on all screen with definition.

Scoring :
- One who is drawing : A score of +1 for each of the right guess. A bonus score of +5 if everyone in the game answers.
- One who is guessing : A score of +2 for the right guess. A bonus of +5 if one answers it first.
- Hints : Deducts a score of -1 per hint. Only possible if the score is greater than 1.
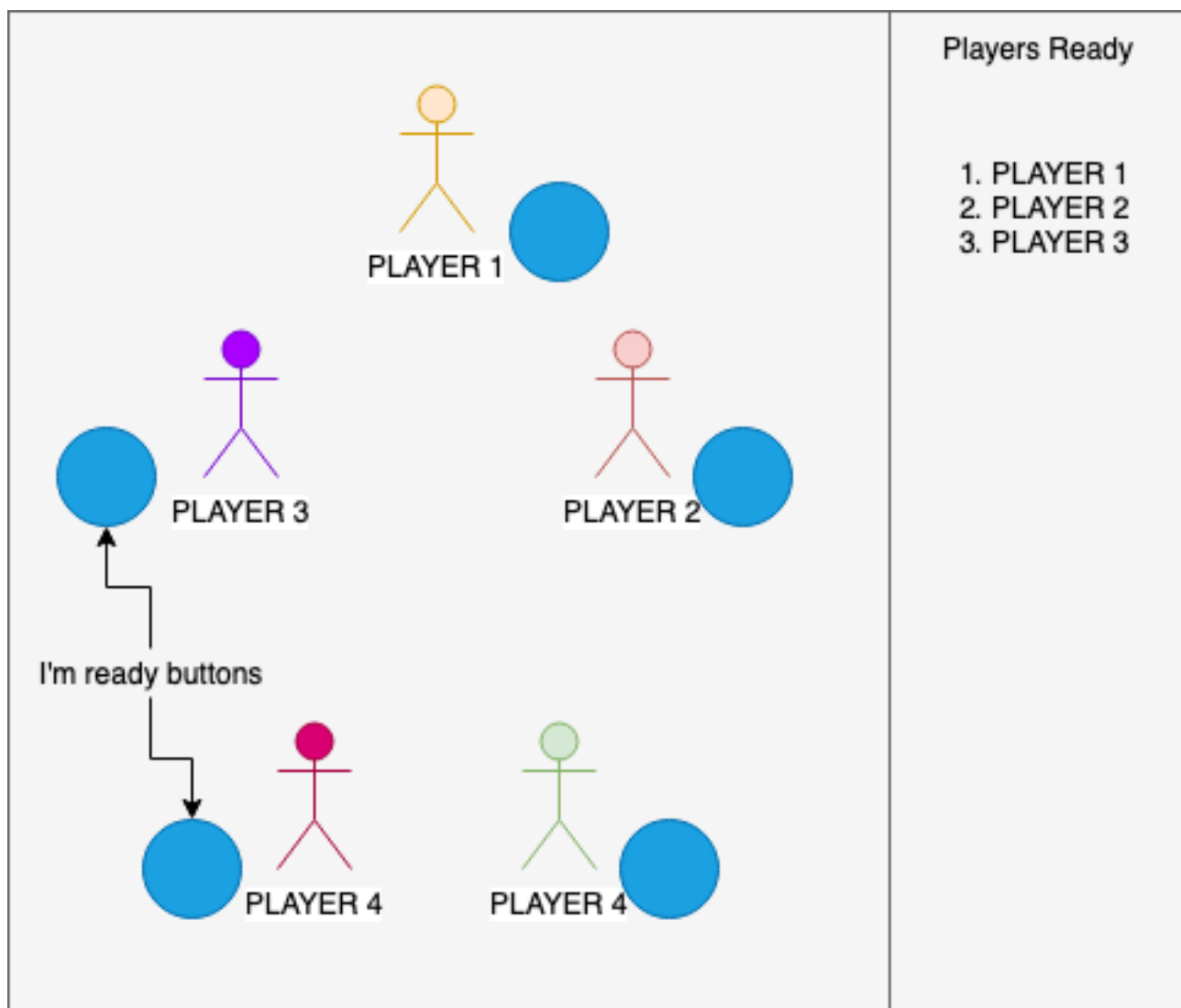
Motto of the game :
- <u>Group playing</u> : Socialise yourself with others. Create a network to play with others or join a network of already created game.
- <u>Sketching skills</u> : How fast you can draw within the time limit to convey your word so as to earn your reward.
- <u>Guessing Skills</u> : How fast you can guess the ongoing drawing, to score higher than others.

- <u>Vocabulary Skills</u> : You need to know the meaning of the word to draw it as well as its right spelling to guess it. Say a student knows that an "apple" is being drawn, however he does not know its spelling and guesses it as "aple" will not be awarded.
- <u>Analytical skills</u> : People should storm their brain and can break the word into two parts to make it simple to draw. Example if someone has to draw a "cupcake" he can draw a "cup" and a "cake" which is easier to draw and convey the full word.
- <u>Artistic skills</u> : How fast you can think and draw to convey your word.
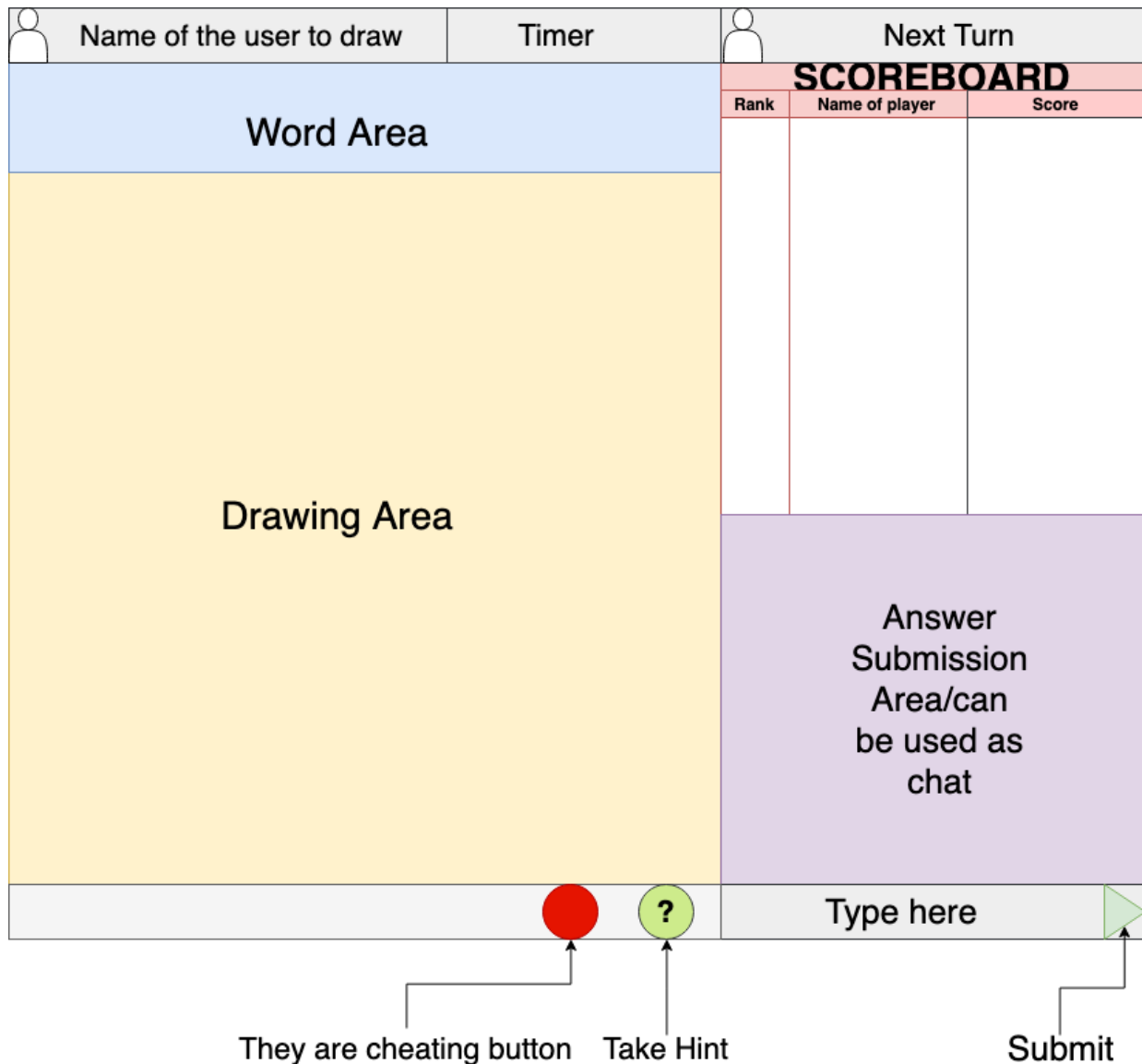- <u>Competition</u> : Whoever gets the highest score wins!

Things to keep in mind :
- It may happen that person writes the spelling of the word in the drawing area.
- He/she may even speak the word in public.
- It is taken care by providing a "They are cheating button" to report these players.
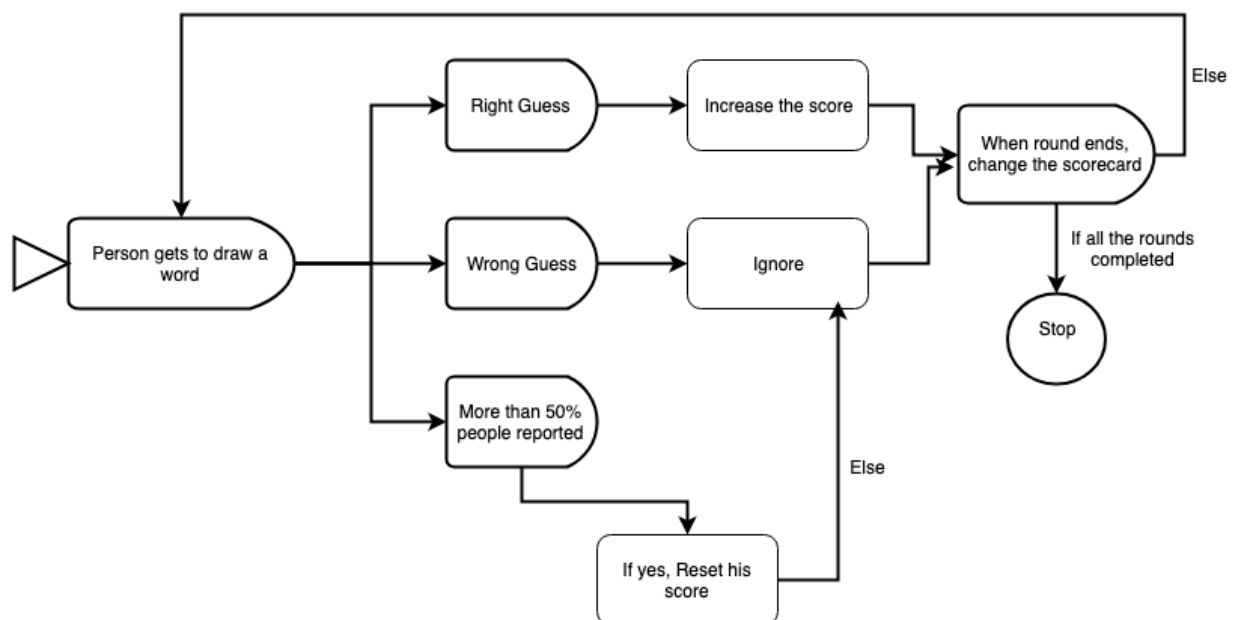- If 50% of the payers playing reports the player, his score resets to 0.

Tentative layout of the main screen :

Tentative layout of the gameplay screen :

Name of the user to draw	Timer	Next Turn

Word Area

Drawing Area

SCOREBOARD

Rank	Name of player	Score

Answer Submission Area/can be used as chat

🔴 ❓   Type here ▷

They are cheating button   Take Hint   Submit

Flowchart of the working of the game :

Person gets to draw a word

Right Guess → Increase the score

Wrong Guess → Ignore

More than 50% people reported

If yes, Reset his score

When round ends, change the scorecard

Else

If all the rounds completed

Stop

Else

How will it impact Sugar Labs?

A resourceful activity into the database gives a lot of strength to Sugar. This activity targets the group of small children as well as senior graders. The activity is a mixture of showcasing artistic skills and your vocabulary skills. Activities which provide learning through games are always preferred. Moreover the activity is composed of so many programming components(as discussed above). People can utilise its code to derive other useful activities.

What technologies (programming languages, etc.) will I be using?
- Coding Langauge : Python
- User Interface : PyGtk3+ and PyGame
- Object Oriented (classes)
- Socket programming for creating a chat room.
- Sugar Artworks
- Open-CV to use mouse as paintbrush. It can also be done through PyGame.

Timeline

May 6 - May 26	**Community Bonding Period :** • I would like to interact with my mentors and know more about their ideas towards this project. • To discuss if there is any technology change required. • I have my university examination during this time, they will be ending on 24th. • Will start by creating a repository where I'll push all the changes I make during each week. • I'll kick-start my project as soon as my university exams end.
WEEK 1 (May 27 - June 2)	**Creation of UI :** • Creating the first screen of the game which displays all the players connected and whether they are ready to play or not. • Creating the play screen of the game placing the labels, buttons, timer, scoreboard etc and other UI ideas as discussed with the mentors during the bonding period. • Connecting each of the buttons with a single python file which has to be coded later.

WEEK 2 (June 3 - June 9)	• Submitting the above done work with the mentors for the review. • Applying the changes if required. (2days) **Create a program for the participation of players :** • To use socket programming and build a program to connect users on the network. • When users connect to the game they will be tempted to write their nickname.
WEEK 3 (June 10 - June 16)	**Connecting the UI with the networking program :** • Connection of the UI with the network. • Coding "I'm ready" button. • If everyone in the joined network is ready then everyone should get the gameplay screen.
WEEK 4 (June 17 - June 23)	**Coding of the buttons :** • The submit button will display the word in the guess area. If the word is right, nickname corresponding to it will get the score. • Coding of the scoreboard to display the score. • Creation of database of words, which comes to display at random. • Coding of the 30 second timer. • Coding of the hint button to reveal a letter. • Coding of the "They are cheating" button and to check if reports are not greater than 50%.
WEEK 5 (June 24 - June 30)	**Phase 1 Evaluation (4 days):** Deliverables : • Front screen and gameplay screen UI. • Connected with backend. • Gameplay screen only comes, after everyone is ready. Last 2 days of week : Continue coding all the buttons and complete any backlog work (if left).
WEEK 6 (July 1 - July 7)	**Start working with the drawing area :** • Use mouse to draw in drawing area. • See if the drawing gets displayed at all screens in real time.
WEEK 7 (July 8 - July 14)	Talk to mentors and get a review of the project so far. **Checking the code flow :** • The word should only be visible to the one who has to draw. • "They are cheating" button should only be accessible by those who are guessing. • Hints should only be accessible to guessers if and only if their scored is more than 1. • Timer works perfectly fine and hence you cannot sketch after that.

Week 8 (July 15 - July 21)	**Working on the next turn and the next round :** • Creating the code of transition from one turn to another. (Giving a break of 10 sec between each turn of player. • Looping it again after each successful round. • Test run of application. • Finalising the standalone python project.
WEEK 9 (July 22 - July 28)	**Phase 2 Evaluation 2 (4 days):** Deliverables : • A standalone python project of "Guess the Word" Last 2 days of week : Fixing any errors (if any)
WEEK 10 (July 29 - August 4)	**Conversion of project to Sugar activity :** • Creating toolbar for the activity. • Port this project to Sugar.
WEEK 11 (August 5 - August 11)	**Test my sugar activity :** • Test run of the activity on Sugar with different participants on the network. • Start using sugar artworks.
WEEK 12 (August 12 - August 18)	**Start of sugar artworks continued :** • I know without the artworks it feels boring. • Last week but not the least, I ll replace my python buttons with sugar artwork symbols and colours. • Test run of activity. • Finalisation of the project.
WEEK 13 (August 19 - August 25)	**Final Evaluation :** Deliverables: • Final activity "Guess the word". • Project report.

How much time will I be able to contribute to this project?

I'll work for 35-40 hours a week to produce a neat and clean activity. Moreover I'll try to finish my week's work as soon as possible so that I can go through some of the issues with the tags errata on GitHub and try to solve them.
I will be writing a week to week blog of what I did and what I learnt over the period of GSoC.
After completion of this activity, I would love contributing more to Sugar Labs. I m always up for exchanging healthy ideas and quality discussions.