

GSoC'22 Project Proposal

Sugar Labs: Maintenance/bug fixes for Music Blocks 3

Kushal Shah

Basic Details

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Resume: ([Link](#))

Your First Language:

My first language is English. I am **proficient** in **speaking, writing, reading** and **understanding English, Hindi, Gujarati** and have basic understanding of **German**.

Location and Timezone:

Location: Mumbai, Maharashtra, India

Timezone: Indian Standard Time (UTC+5:30)

Communication:

For the duration of Google Summer of Code program and further project contributions to Sugar Labs, I will be comfortable working on the below mentioned time:

UTC 05:00 - UTC 08:00 (IST 10:30 - IST 13:30)

UTC 08:30 - UTC 14:00 (IST 14:00 - IST 19:30)

UTC 16:00 - UTC 19:30 (IST 21:30 - IST 01:00)

I can start my day 2 hours early or late if it helps to communicate with other

developers and mentors. I will also be reachable anytime through my Mobile No. and Email.

About Myself and Education Details

I am a **final year undergraduate student** pursuing a **Bachelor of Technology in Information Technology Engineering** from [Sardar Patel Institute of Technology \(SPIT\)](#), Mumbai University, Mumbai, India. I am also pursuing a **Minor degree in Management** from [S.P. Jain Institute of Management and Research \(SPJIMR\)](#), Mumbai.

I was introduced to the world of Programming and Software Development in my first year itself with **C**, **Python** and **JavaScript** programming languages. Since then, I have explored various fields such as **Web Development, Data Structures, Algorithms, Computer Architecture, Operating Systems, Artificial Intelligence and Machine Learning**. I have always been passionate about the field of computer science. I have accumulated an overall **CGPA of 9.22 out 10** in my academics as a student. Over the past **2 years**, I have gained professional experience in the IT industry through **internships** in **software development** and also working as a **part-time software development programme instructor**. I have gained valuable insights into the practical application of my academic knowledge. I have also participated and won various Hackathons, recently being Hack This Fall 3.0 by the MLH community. I have honed my skills in programming languages such as **JavaScript, Python, Java** and **Solidity** and have worked on a range of technologies and frameworks such as **Node.js, Express Js, Vue Js, Django, Flask and MongoDB**.

I have always used **Git and Github** as a version control system and a platform to showcase all my created software projects. I have been using Git and Github since my 2nd year and am very familiar with all its commands. I started my journey towards opens source contributions through **Music Blocks** project by **Sugar Labs** and **Meshery** project by **Layer5**, a Cloud native Computing Foundation (CNCF) organization.

Internship Experience and Research Projects

Other than my academics I have kept my focus towards learning practical applications of the software and programming technologies and frameworks I learn through my **Research Work** and **Industrial Internship** experiences.

Research Project - Dynamic Sign Language Recognition and Emotion Detection using MediaPipe and Deep Learning

(Link - <https://ieeexplore.ieee.org/document/9984592>)

The research proposes a **dynamic sign language recognition and emotion detection (DSLRED) model** that uses **MediaPipe's holistic pipeline** along with an **LSTM network** which also classifies the emotion on a person's face into one of seven categories, using **deep convolutional neural networks**. The results shows that the **proposed model** achieved an **accuracy of 98.95%** and can effectively convey emotions and sentences in sign language, independent of the signer who performed the actions in the training data

The research was published in **13th International Conference on Computing Communication and Networking Technologies (ICCCNT)** by **IEEE** organization ([Link](#)). The detailed research paper and its findings could be found on the following Link - <https://ieeexplore.ieee.org/document/9984592>

Internship Experience -

- [Software Development Engineering Intern at Wohlig Transformations Pvt. Ltd.](#) (InOffice - Mumbai, Maharashtra, India from January, 2022 - July, 2022)

As a software development intern, I gained valuable experience working on client and research-based projects. I received training on various **technologies** and **project management tools like Jira, Slack, ClickUp, MS Teams** and many more before being assigned to a team of full-stack developers. My focus was on working with **JavaScript** and **JavaScript frameworks**, including **NodeJS, ExpressJS, and VueJS**, as well as optimizing queries and aggregates in the **MongoDB database**. Throughout my internship, I learned about industry standards, efficient code writing, practical implementation of **Agile Methodology** and collaborative teamwork. I also improved my communication skills and

contributed to resolving technical bugs in the e-sports and fantasy gaming application. This led to a user base increase from **200,000 to over 300,000**, resulting in additional revenue for the organization.

- **Software Engineering Program Instructor at [Pride Educare](#)**
(InOffice - Mumbai, Maharashtra, India from July, 2022 - Present)

My efforts are focused on the curation and **development of course content and modules** in the field of **software engineering**. My objective as an instructor is to ensure that each student enrolled in the course attains the necessary skills to become a full stack developer within the IT industry. The course content covers a wide range of topics, ranging from fundamental to **advanced concepts in data structures and algorithms**, as well as **front-end technologies** such as **HTML, CSS, WordPress, .NET, JavaScript, and the ReactJs framework**, in addition to **back-end programming** languages such as **Java, Python, PHP, C#, and C++**. Furthermore, the course content incorporates database learning in MySQL.

My responsibilities as an **instructor** entail teaching software programming course modules for over **20 hours per week to an average batch size of 15 students**

Share links, if any, of your previous work on open source projects

I got introduced to open source projects and community in my third year of undergraduate studies. For the first time I got to be a part of an open source community and organization named [Layer 5](#), a **CNCF organization**, through a **Hackathon**, in which my team won the **second prize** and we were offered to join their **slack channel**. Upon joining the slack channel and in the daily call I was introduced to the team of maintainers and mentors of the organization. They also briefed me about their undergoing projects such as [Meshery](#), [GetNightHawk](#), [Service Mesh Performance](#) and Image Hub.

This gave me a pathway to start my journey of Open Source contributions. For the Layer5 and Meshery project I was able to successfully solve 2 good first-timers issues and send a pull-request for the same.

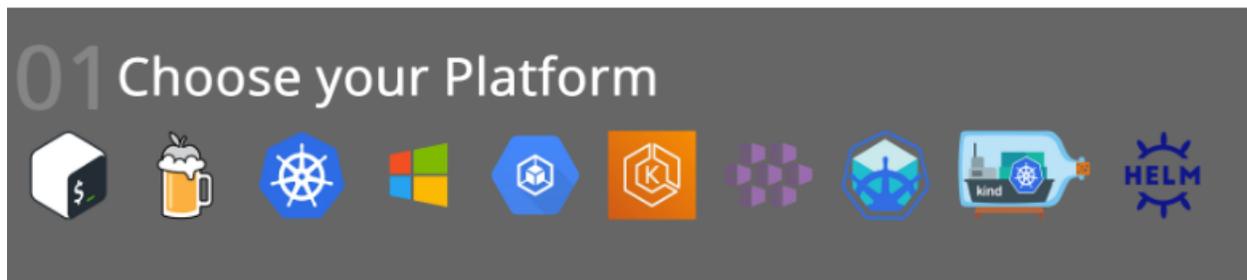
[Pull Request - #499](#) Status: Merged

Description - The PR solves issue [#3634](#), which is to **add a clickable link to Layer 5 image in meshery.io** website, so as to navigate from [meshery.io](#) to [layer5.io](#). The same had to be checked in all environments as mentioned below -

- Host OS: Mac Linux Windows
- Meshery Server Version: stable-v
- Meshery Client Version: stable-v
- Platform: Docker or Kubernetes

[Pull Request - #505](#) Status: Merged

Description - The PR rectifies the installation commands of meshery for various platforms. To solve this issue I had to verify and check the installation commands as mentioned in [Getting Started](#) section of meshery.io for installation of meshery.



While solving these issues I got acquainted with various platforms and got to know about different **OS environments** and most importantly, the **code base, various code files and coding standards** to be followed while working with an open source project.

I have also worked on my personal projects for learning purposes and participated in Hackathons developing technical solutions for different problem statements while working in a team. Following are links to some of my projects, contributions and commits I've made -

- <https://github.com/shahkushal38/secure-patrons-backend/commits/production>
- <https://github.com/shahkushal38/stock-sentiment-backend/commits/master>
- <https://github.com/shahkushal38/gRPC-Node-Framework>

Details of my other contributions can be found on my Github profile [here](#).

I have worked extensively with **JavaScript** and its frameworks including **Node JS, Express JS, Vue JS and React JS** to name a few, while working and developing codes on these projects. Moreover, I have used **JavaScript** as core programming language during my internship gaining a professional experience in it, while working on **JIRA tickets** related to feature addition, bug/issue solving for the project and sending a PR for it.

Convince us that you will be a good fit for this project, by sharing links to your contribution to Sugar Labs

I joined the **Sugar Labs** community in **March, 2023** with a motive to know more about their projects and understand them. I got very interested in the project **Music Blocks** and especially by the statements -

“All musicians are subconsciously mathematicians.” — Monk

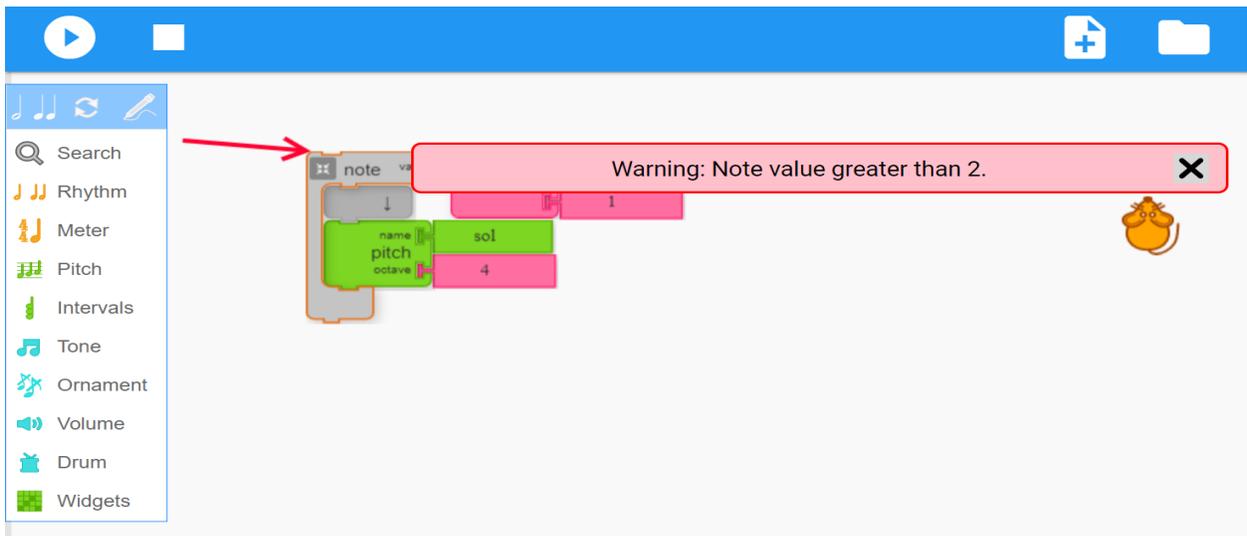
“Music is a hidden arithmetic exercise of the soul, which does not know that it is counting.” — Leibniz

Since I'm a **lover** of **Mathematics** and **music** I found Music blocks truly is a collection of manipulative tools for exploring musical and mathematical concepts in an integrative and fun way along with being an visual programming language.

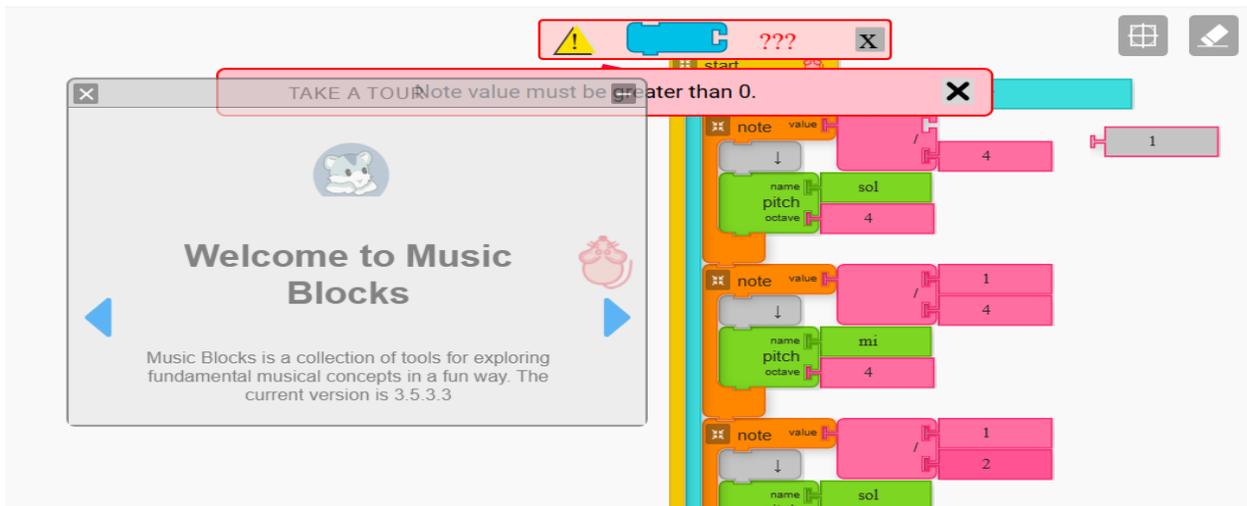
To get started with Music Blocks, I **explored** the **web application** with hands-on experience of it. Also went ahead and **cloned** the Music Blocks **github repository** to run it on my local server. While experimenting with Music Blocks I found an **open issue on github #3066** (dismissing an error message `removeArrow()` is not found) and was required to be solved.

From then I started working towards this issue, **understood** the **code** and the usage and **working** of **multiple .js files, libraries, modules, plugins, widgets and activity** used and configured to build this project. I was also in constant interaction with mentor Walter Bender, who guided me proper way to solve the issue, as I tried with various approaches to solve.

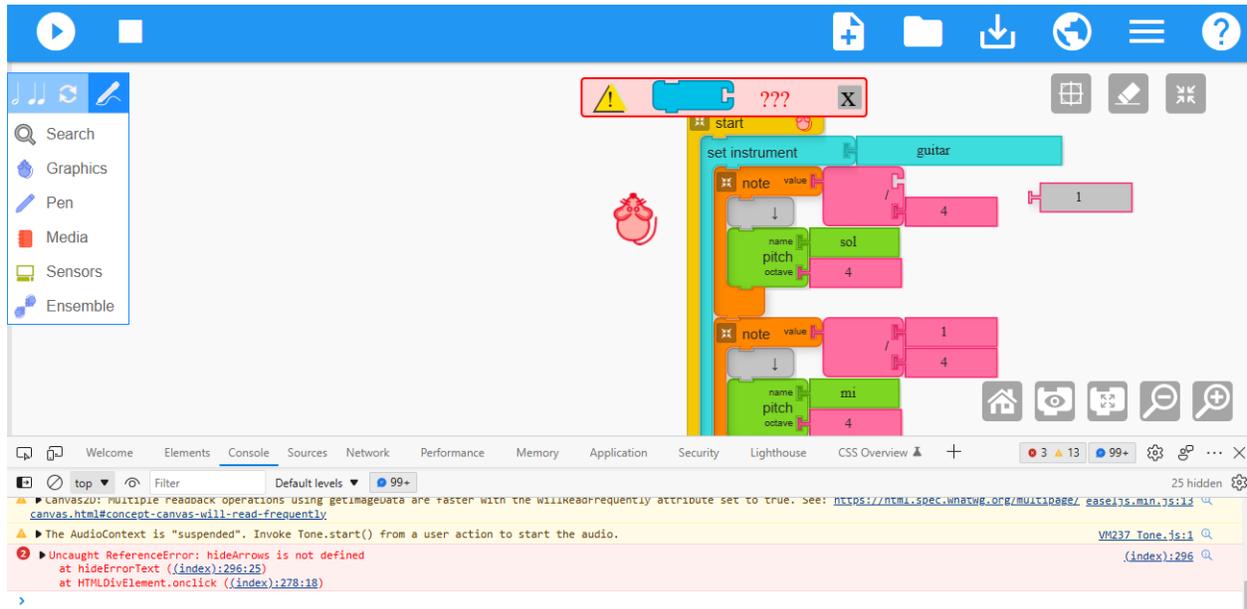
Upon understanding the issue [#3066](#) - wherein upon clicking cross button in the error message, the red coloured arrow should also be removed



I was able to generate this as the outcome by **adding onClick Event Listener** to activity.js file as shown in this **Pull Request #3222** - Arrow with the error message



After the message has been removed even arrow gets dismissed



Finding this as the correct solution to the above issue and finding the PR getting merged gave me confidence that I can go ahead and solve further issues for Sugar Labs and Music Blocks. Currently I have also started working towards issue [#3078](#)

From the Google Summer Code Idea's list, I find myself as a good fit for the **Project Idea - [Maintenance/bug fixes for Music Blocks 3](#)**. Through this program I would love to solve all the issues mentioned in [low-hanging fruit - list of issues](#) out of which I have solved 1 and am working towards others. Moreover, I just don't want to be restricted to the mentioned list of issues, I would also like to take up issues having major priority and our in need of the hour to be solved at the earliest so as to **make our Music Blocks platform perform seamlessly** and is **highly interactive** for its **users** especially **children** who are learning the **concepts of music and mathematics** through **Music Labs**.

Prerequisites for Project:

As given in Idealist. I have **strong experience** in **Javascript** and its framework development such as **Node js**, **Express Js**, **React js** and **Vue js** along with **HTML5** and **CSS3**. Other than this I am already **familiar with the Music Blocks** codebase and have **merged commits** to the repository.

I am a full-stack developer with professional experience in JavaScript. I have already worked on many projects using JavaScript and its frameworks. Following are some of my major projects related to JavaScript -

- **gRPC-Node-Framework**

Github - [Link](#)

In this project developed a framework for replacing RESTful web services with [gRPC](#) (Google Remote Procedure Calls) Service protocols using proto buffers to integrate gRPC services with NodeJs JavaScript framework. GRPC based RPC services help in achieving scalability, overcoming latency, efficient load balancing in projects while drastically reducing the request-response time of an API by almost 7-10 times.

Technologies Used - JavaScript, NodeJs, ExpressJs, MongoDB

- **KYC Verified CrowdFunding Solution - Secure Patrons**

Github - ([Front-End Link](#)) ([BackEnd Link](#)) ([Devpost](#))

Developed a sustainable hybrid model of decentralized crowdfunding application backed with a centralized KYC (Know Your Customer) system solving the problem of user trusts and abiding by government compliances and regulations, which was missing in traditional web3 blockchain application. Developed solidity Smart Contracts using ERC-20 Token standards and deployed using truffle node module in React Js.

Technologies Used - JavaScript, ReactJs, Solidity, Python, Flask

I have been doing web and mobile applications development for the last 2.5 years. This is just not an exhaustive list of all the projects. I have also participated and won various Hackathons and Coding competitions.

I have secured [All India Rank \(AIR\) 27at MSCI Developer Challenge India](#) and recently in the month of February, 2023, I won two prizes - [Best Project Built using 5ire Labs](#) and [Best Project Built Using ApyHub](#) at Major League Hacking (MLH) official Hackathon, [Hack this Fall 3.0](#) for our project KYC Verified CrowdFunding Solution - Secure Patrons.

HackerRank MSCI

About the Contest About MSCI FAQ Leaderboard

RANK	INSTITUTE
24	IIIT Bangalore
Maitri Vora	
RANK	INSTITUTE
25	Sardar Patel Institute of technology
Suraj Ajay Dwivedi	
RANK	INSTITUTE
26	Jaypee Institute of Information Technology
Kushal Shah	
RANK	INSTITUTE
27	Sardar Patel Institute of Technology
Shubham Goel	
RANK	INSTITUTE
28	Sardar Patel Institute of Technology
Umesh Kumar	
RANK	INSTITUTE
29	Jawaharlal Nehru University

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Hack This Fall season 3

KARNATAKI UNIVERSITY KUIF OFFICIAL 2023 SEASON

CERTIFICATE OF ACHIEVEMENT

This certifies that

Kushal Shah

has won the **Best Project Built Using ApyHub Prize** at Hack This Fall 3.0, a 36-Hour In-person Hackathon held from 3rd Feb to 5th Feb 2023 at Karnavati University, Gandhinagar.

S. H. Dayalwal
Siddharth Dayalwal
Lead Organizer, Hack This Fall

Sponsored by: storyblok 5ire

Verify at <https://verification.gemmyar@kui.ac.in/229ca42-d9f4-4189-803c-ab4c320a9f6>

Hack This Fall season 3

KARNATAKI UNIVERSITY KUIF OFFICIAL 2023 SEASON

CERTIFICATE OF ACHIEVEMENT

This certifies that

Kushal Shah

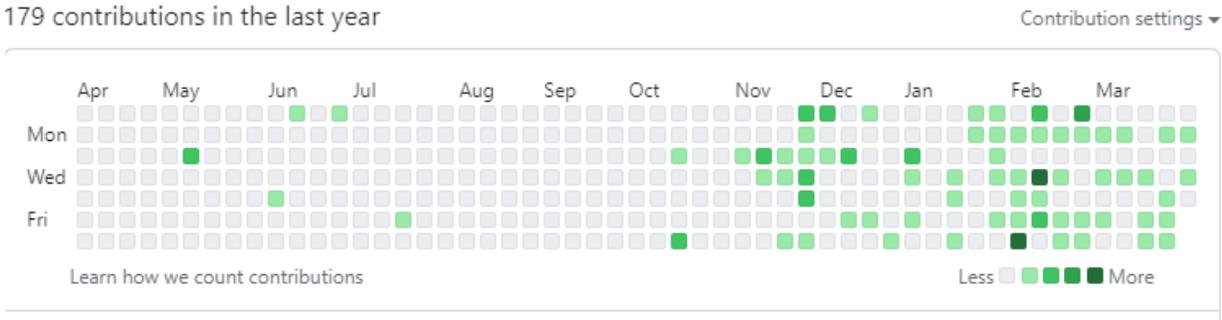
has won the **3rd Best Project Built Using 5ire Labs Prize** at Hack This Fall 3.0, a 36-Hour In-person Hackathon held from 3rd Feb to 5th Feb 2023 at Karnavati University, Gandhinagar.

S. H. Dayalwal
Siddharth Dayalwal
Lead Organizer, Hack This Fall

Sponsored by: storyblok 5ire

Verify at <https://verification.gemmyar@kui.ac.in/771c1d7c-7d10-4ed3-af12-400d0712609>

I have always been using Github for maintaining all my projects. In the last year itself I've made **179 contributions** in the form of commits and pull requests to my various projects. More of my project work can be found on my Github profile [here](#).



Since I joined Sugar Labs Matrix communication channel I made up my mind to only apply to Sugar Labs for Google Summer of Code 2023, because of the community relations and the work carried out by this organization. Here everyone discusses and develops as a team and everyone's opinion matters. It really makes me feel at the peak when I know that my work is going to contribute to the social cause and will impact society in a positive manner.

Project Details

What are you making?

The main aim of the project is to **maintain Music Blocks 3.0** and **solve a number of small bugs/regressions** that would be worth fixing in order to provide a **reliable, seamless and efficient system** without any annoyances.

For this project I will -

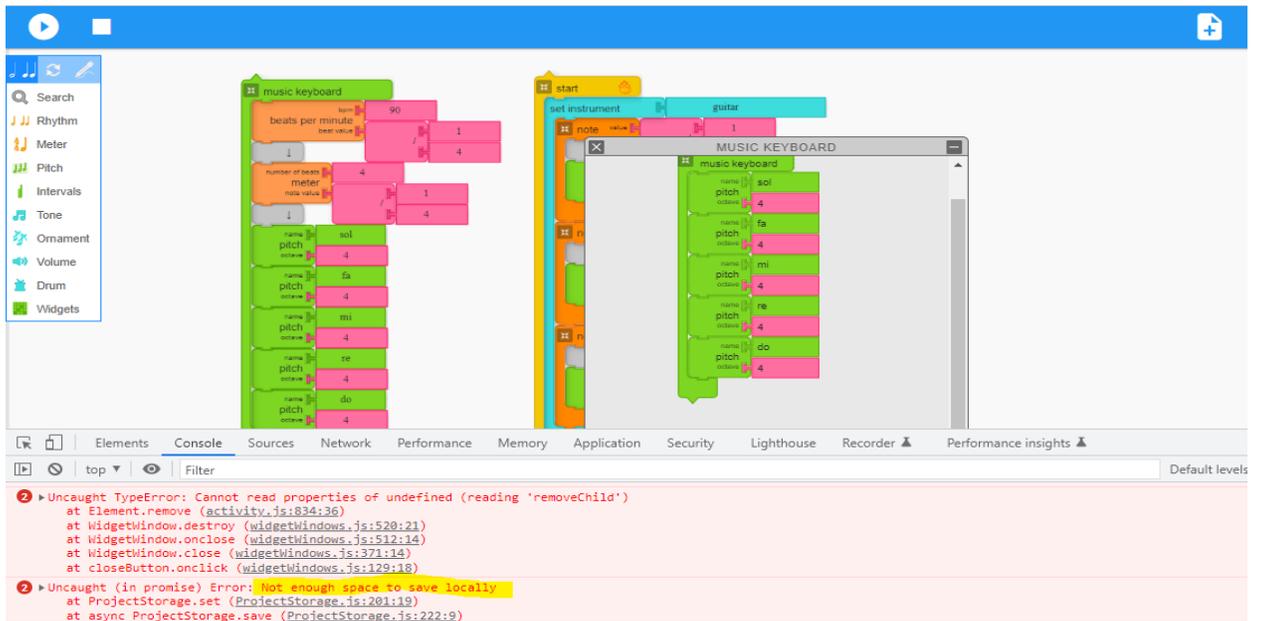
- I will **close all the issues** listed in [low-hanging fruit](#) list of issues.
- Sort the **issues** as per **priority** assigned, which I'll take up at the earliest and solve it in the initial weeks of Google summer of code Program, so that we have ample time to **test the code in production**.
- Since, the coding period for GSoc begins from May, 2023 and ends in August, 2023 I will have ample time to work on the issues that are not mentioned in the list, such as the **issues related to Japan** and **Issues for enhancement and design**.
- My main aim in this project is to not add new features but to **keep running the current version efficiently**. Hence, my main goal for this project will be to complete as many issues ([Link](#)) I can, during and after the GSoc'23 program

List of Issues for Google Summer of Code Program

In this section I have list down all the issues I will solve during the Google Summer of code 2023 program and even if after that -

1) [#3127](#) - Break note output from Musical Keyboard up into separate action blocks

From the description mentioned in the issue above, I identify that keyboard widget having notes **more than 50** needs to be **separated** into **different action blocks** of **at most 50** notes, as in the current scenario **browser issue** occurs, where the project is **not able to save locally** as seen from image below



To solve this issue, changes will be required in `_save()` function of `js\widgets\musickeyboard.js` file

The screenshot shows the Visual Studio Code editor with the `musickeyboard.js` file open. The `_save` function is highlighted with a red circle. The function is defined as follows:

```

this.addKeyboardShortcuts();
};
this._save = function () {
  this.processSelected();
  const newStack = [
    [0, ["action", { collapsed: false }], 100, 100, [null, 1, 2, null]],
    [1, ["text", { value: _("action") }], 0, 0, [0]],
    [2, "hidden", 0, 0, [0, selectedNotes.length == 0 ? null : 3]]
  ];
  // This function organizes notes into groups with same voices.
  // We need to cluster adjacent notes with same voice to wrap
  // "settembre" block . eg, piano-do piano-re piano-mi
  // guitar-fa piano-sol piano-la piano-ti --> piano-[do re mi]
  // guitar-fa piano-[la ti]
  this._clusterNotes = (selectedNotes) => {
    let i = 0;
    const newNotes = [];
    let prevNote = DEFAULTVOICE;
    while (i < selectedNotes.length) {
      if (i == 0) {
        newNotes.push([i]);
        if (selectedNotes[i].noteOctave[0] != "drumnull") {
          prevNote = selectedNotes[i].voice[0];
        }
      } else if (selectedNotes[i].noteOctave[0] == "drumnull") {
    }
  }
}
  
```

Here, my approach would be to **create a new action block** with a **unique name** having a maximum 50 notes while **maintaining the series of notes** as decided by the user in the keyboard widget. The code snippet -

```
const newStack = [
  [0, ["action", { collapsed: false }], 100, 100, [null,
1, 2, null]],
  [1, ["text", { value: _("action") }], 0, 0, [0]],
  [2, "hidden", 0, 0, [0, selectedNotes.length == 0 ? null
: 3]]
];
```

`["text", { value: _("action") }]` needs to be changed to javascript array for unique action blocks `["text", { value: _("action"+`[0]`)}]` and the logic of save function needs to be modified to achieve the desired results.

2) [#3078](#) - **Remix titles are backwards in Japanese**

The issue can be understood from the image below.



To solve the issue grammatically, I intend to make changes to the `js\toolbar.js` file by **altering the save HTML settings for language Japanese** as mentioned in the if condition of the highlighted code snippet.

```

411 let savePNG;
412 let saveWAV;
413 let saveSVG;
414 let saveLY;
415 let saveABC;
416 let saveMXML;
417 let svgData;
418
419 if (this.activity.beginnerMode) {
420   if (this.language === "ja") {
421     saveButton.onclick = () => {
422       html_onclick(this.activity);
423     };
424   } else {
425     saveButton.style.display = "block";
426     saveButtonAdvanced.style.display = "none";
427
428     saveButton.onclick = () => {
429       saveHTML = docById("save-html-beg");
430       saveHTML.onclick = () => {
431         html_onclick(this.activity);
432       };
433     };
434
435     savePNG = docById("save-png-beg");
436     svgData = doSVG(
437       this.activity.canvas,
438       this.activity.logo,
439       this.activity.turtles,
440       this.activity.canvas.width,
441       this.activity.canvas.height,
442       1.0
443     );

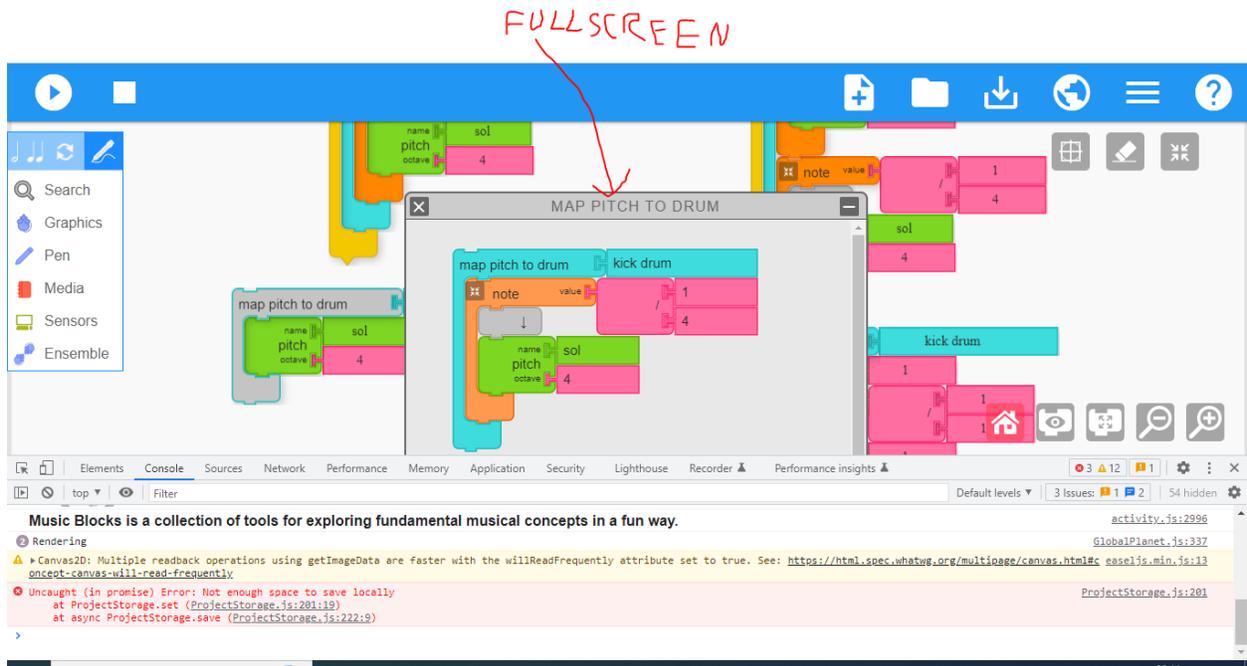
```

3) [#3066](#) - dismissing an error message removeArrow() is not found

The issue has been solved by me and [Pull Request](#) for the same has been **accepted** and **merged**. More on this issue can be found in this [section](#) above.

4) [#3034](#) - Frame resizing after saving png removes project image [Chrome]

As per the issue, **Pitch Drum** and **temperament** help floating window needs to be **scaled to full screen mode**, and occupy the whole screen as shown in image below.



As a solution in `js\widgets\temperament.js` the value of `this.scaleNotes` and `this.scale` is needed to be manipulated and observed for fullscreen mode while calling `buildScale(this.scale)` function. Same for Pitch Drum in `js\widgets\pitchdrummatrix.js`

5) [#2645](#) - Better Faux Pickup Support

For fixing this issue, I will have to **research** more on **LilyPond** and its working. The information I could gather from Music Blocks [Documentation](#) for **creating tuplets** and **Lilypond blocks** gives me an understanding of LilyPond blocks being **embedded scheme expressions** that can be used anywhere irrespective of the platform.

As per my understanding of the codebase `notationPickup()` function line no. - 343 to 364 needs to be modified in the `js\notation.js` file for fixing the issue.

6) [#2630](#) - Add JSDoc style documentation

Through this issue I **propose** to add **JSDoc API with the linter** so that documentation of our code is maintained. It will help in documenting things like

modules, namespaces, classes, methods, method parameters, and so on for our Javascript Application. An **example of JSDoc style** documentation in our code is shown below -

```
/**
 * Adds a pickup.
 *
 * @param turtle
 * @param {number} factor
 * @returns {void}
 */
notationPickup(turtle, factor) {
  if (factor === 0) {
    return;
  }
}
```

The same shall be applied to each js file in our codebase. I have previously had an experience of integrating Airbnb style guide to esLint for linting and maintaining uniformity in code. Hence, I feel that with research and taking reference from JSDoc [documentation](#), I shall add JSDoc style to our code documentation.

7) [#2462](#) - **Stereo Design Considerations**



The above figure shows a **mono audio file** containing only a **single channel**.



The above figure shows a **stereo audio file** containing **two different channels**

By default the **audio is mono in chrome**, as described by an issue raised by **Mozilla** - [Link](#). So to solve the issue of sound only going through a single channel in the short-term, one approach could be to **implement a warning system** that **alerts** the user if all of the sound is going through a single channel. This can be achieved by **analyzing the stereo features** of the audio file and **checking if the panning is centered** or if it's hard-panned to either the left or right channel. WebRTC tool could also be used for the same as I researched from this problem [Link](#) on stackoverflow.

Additionally, the **system** could provide some **guidance** on how to **adjust the panning** to achieve a more **balanced sound**.

In the long-term, a more **comprehensive solution** could be developed to **automatically adjust the panning** to ensure that the sound is evenly distributed across both channels. This could involve **implementing an algorithm** that **analyzes the stereo features of the audio file** and automatically adjusts the panning to **ensure** that it's **centered** or **evenly distributed**.

Overall, by implementing a warning system to alert users to potential issues with the panning of their audio files, and by developing a more comprehensive solution in the long-term, we can ensure that **users** have a **better experience** with the **stereo features** of the Music Blocks project.

8) [#2403](#) - Add more documentation for some context menus

As per the issue I need to add documentation in this [guide](#) for the following topics -

- documentation for **"my blocks" palette**
- documentation for the **block context menu** (copy/delete/remove/help etc.)
- describing the **behavior of the right-click context menu** by adding an **illustration** and **explanation** of it

For the above points reference can be taken from the [file](#).

9) [#2330](#) - Record and Generate Lilypond/ABC (Under Play)

The issue requires us to follow the **logic of running lilypond** and figure out how to **enable it without triggering the suppressOutput mechanism**.

This requires a good knowledge of Lilypond to start with along with referring to their [documentation](#).

For this issue we can **export as a LilyPond file** by clicking on the "Export" button and selecting "LilyPond" as the file format. This will generate a LilyPond file that you can then **compile into a PDF** or other format using **the LilyPond software**.

10) [#2255](#) - Octave Flip works backward for Temperament's Custom Pitch Pie Menu

The issue of the **octave flip** working backward for the Temperament's Custom Pitch Pie Menu can be solved by **changing the logic that handles octave flipping**. Here's a **possible approach** to solve this issue:

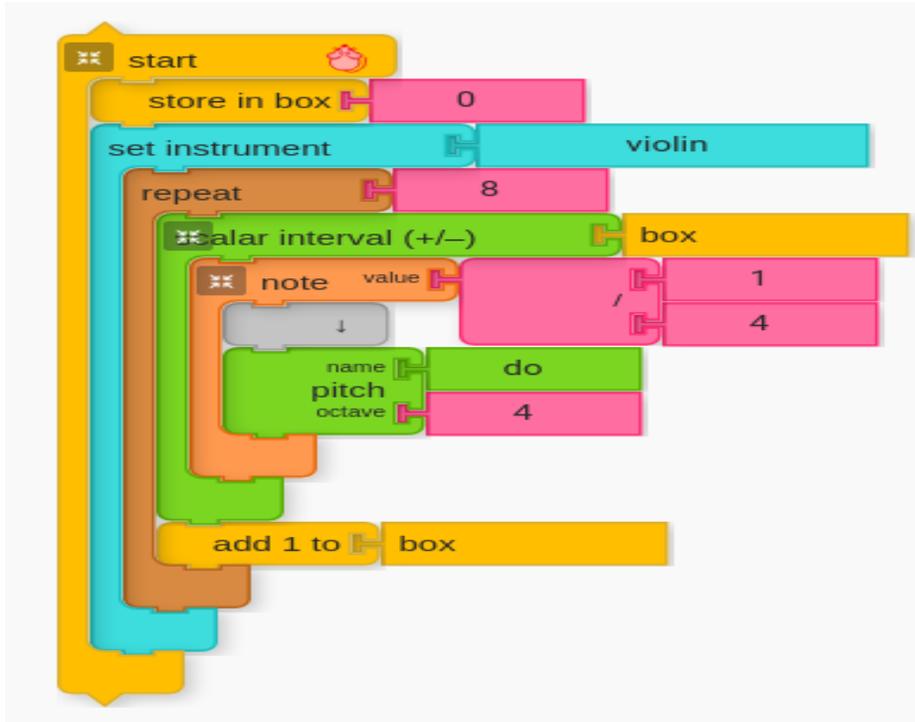
- **Identify the source of the problem:** The first step is to identify the code that handles the octave flipping logic for the Temperament's Custom Pitch Pie Menu. The **code** may be **located** in the **Temperament Widget** or in a separate **module** that **handles pitch** and octave calculations.

- **Change the logic for octave flipping:** The logic for **octave flipping** needs to be modified to work as expected. Instead of requiring the user to go down in pitch to tick the octave up, the **octave flipping** should be **reversed** so that **ticking up in pitch increases the octave** and ticking down decreases it. This can be done by **reversing** the **condition** that checks for octave flipping.
- **Test the solution:** Once the logic for octave flipping has been changed, the solution needs to be **tested** to ensure that it works as expected. This involves **testing the Temperament's Custom Pitch Pie Menu using different pitches and octaves** to ensure that the flipping behavior is correct. The "electronic synth null null undefined" error/warning should also be investigated and resolved if it is related to this issue.
- **Release the update:** Once the solution has been tested and verified, it can be released to **users** as an **update** to the **Temperament Widget** or the module that handles pitch and octave calculations.

By changing the octave flipping logic to work as expected and testing the solution thoroughly, the issue of the octave flip working backward for the Temperament's Custom Pitch Pie Menu can be resolved.

11) [#2209](#) - print current interval

The issue can be solved by using a **data-structure** which will store the output for each node to be printed in a sequential manner. As show from the image below -



As per the **expected result**, each node contains one output that needs to be printed on the screen as shown -

Perfect Unison
 Major Second
 Major Third
 Perfect Fourth
 Perfect Fifth
 Major Sixth
 Major Seventh
 Perfect Octave

The **output** for each node gets **printed at regular intervals**, it gets **stored sequentially** in a data structure. According to me, the most suitable data structure can be an **array of strings**. This will also **help in to concatenate information for chords with more than two notes** eg - (e.g. "Major Third and Minor Third and Perfect Fifth" for Do, Mi, Sol)

12) [#2053](#) - star in auxiliary menu should change state on click

To **resolve the issue** where the star in the auxiliary menu of Music Blocks does not change state on click, we can follow these steps:

The **first step** is to identify the code that handles the star icon in the auxiliary menu. Then we **update the click event listener** so that it **changes the state of the star** when clicked. The listener should toggle the state of the star between filled and unfilled, depending on its current state.

Once the **state of the star** has been **changed** by the **click event listener**, the program needs to be updated to **reflect the new state**. This may involve updating the **UI to show a filled or unfilled star, or storing the state of the star in a variable or database**.

Once the code has been updated, the **solution** needs to be **tested** to ensure that it works as expected. This **involves clicking on the star icon in the auxiliary menu** to see if it changes state correctly, and verifying that the state of the star is saved and reflected correctly in the program.

By **updating the click event listener on the star icon**, updating the program to reflect the new state, and testing the solution thoroughly, the issue of the star in the auxiliary menu of Music Blocks not changing state on click can be resolved.

Finally, above are all the list of issues along with **my analysis** and a **naive approach** which I would use to **get started with solving these issues** during the program. I will also be in **constant interaction** with my **mentors** for this project, who can **guide me better** on solving these issues to achieve a common goal of **maintaining Music Blocks** so as to keep it running **reliably** and **efficiently**.

Other than the above list of issues, as mentioned in Idealist - [Low-hanging fruit](#), I will **understand** and **undertake** a few **open issues** which I feel are more important to solve to make the **Music Blocks system reliable**. Some of these issues are mentioned here -

- [#2994](#) - **Student Loses Project Twice** (this issue is same as [#2749](#))
- [#2767](#) - **Identify and/or fix high-level inconsistencies**
- [#2040](#) - **Peculiar Tie Output Lilypond**

- All major issues related to Lilypond such as - [#2039](#) , [#2036](#), [#2035](#) and [#1352](#)

How will it impact Sugar Labs?

The **Music Blocks project** is a **visual programming language** designed to teach children how to **create music**. If **issues** related to this project are **solved**, it will **positively impact Sugar Labs** in several ways:

- 1) **Improved User Experience:** By solving the issues related to Music Blocks, Sugar Labs will be able to **offer a better user experience to children** who are using the platform. This **will increase the usability** of the platform and attract more users.
- 2) **Increased Adoption:** A better user experience and more attractive platform will lead to increased adoption of Sugar Labs by **schools, educators, and parents**. This will help **Sugar Labs achieve its mission of providing quality education to children worldwide**.
- 3) **Better Reputation:** By providing a more **stable and reliable platform**, Sugar Labs will improve its reputation in the education industry. This will help it attract **more funding and partnerships with other organizations**.
- 4) **More Contributions:** By solving issues related to Music Blocks, Sugar Labs will attract more contributions from the open-source community. This will help the **platform grow and evolve** more quickly.

Overall, solving issues related to Music Blocks project will have a **positive impact** on Sugar Labs by improving the **user experience, increasing adoption, building a better reputation, and attracting more contributions**.

What technologies (programming languages, etc.) will you be using?

The Major part of the project will involve coding in the **core JavaScript programming** language, with this I will also work with **HTML5** and **CSS3** as per the requirements of the tasks/issues to **match the UI enhancements**

Timeline

Break down the entire project into chunks and tell us what will you work on each week.

Days	Tasks
Pre GSoc April 4, 2023 - May 4, 2023	<ul style="list-style-type: none"> ➤ Familiarize myself with the Music Blocks code, its architecture and file system. ➤ Continue working on the current issue #3078 (mentioned in the above list at no. 2 position) which I have taken up to complete. ➤ Stay connected with the community and contribute to Sugar Labs
Community Bonding Period May 4, 2023 - May 29, 2023	<ul style="list-style-type: none"> ➤ Discuss on the list of issues to be solved with the mentors and the team and discussing their priority ➤ Understand their approach and desired output for each of the issues to be solved ➤ Also, go through the merged and in-progress PR's for various issues to have a better understanding and discuss doubts related to it with mentors. ➤ Thoroughly revise and revisit the documentation of JavaScript and explore the tech stack required for project to help myself with strong coding knowledge
Week 1 May 29, 2023 - June 4, 2023	<ul style="list-style-type: none"> ➤ Close the issue #3078 (mentioned in the above list at no. 2 position) ➤ Start working and complete #3127 (mentioned in the above list at no. 1 position)
Week 2 June 5, 2023 - June 11, 2023	<ul style="list-style-type: none"> ➤ Start working and complete issue #3034 (mentioned in the above list at no. 4 position)

<p>Week 3 June 12, 2023 - June 18, 2023</p>	<ul style="list-style-type: none"> ➤ Understand the working of LilyPond and explore the LilyPond Software ➤ Start working towards issue #2645 related to LilyPond (mentioned in the above list at no. 5 position)
<p>Week 4 June 19, 2023 - June 25, 2023</p>	<ul style="list-style-type: none"> ➤ Complete the issue #2645 and undertake another issue related to LilyPond - #2330 (mentioned in the above list at no. 9 position) and complete it by the same week
<p>Week 5 June 26, 2023 - July 2, 2023</p>	<ul style="list-style-type: none"> ➤ Understand the JSDoc Style documentation and JSDoc Style API. ➤ Understand the guides, README and documentations provided by Music Blocks ➤ Start working on the issue #2630 (mentioned in the above list at no. 6 position)
<p>Week 6 July 3, 2023 - July 9, 2023</p>	<ul style="list-style-type: none"> ➤ Complete the issue #2630 and start working on another issue related to documentation - #2403 (mentioned in the above list at no. 8 position)
<p>Mid Term Evaluation July 10, 2023 - July 16, 2023</p>	<ul style="list-style-type: none"> ➤ Work towards understanding Mono and Stereo audios and complete issue #2462 (mentioned in the above list at no. 7 position)
<p>Week 7 July 17, 2023 - July 23, 2023</p>	<ul style="list-style-type: none"> ➤ Complete the issue #2255 (mentioned in the above list at no.10 position)
<p>Week 8 July 24, 2023 - July 30, 2023</p>	<ul style="list-style-type: none"> ➤ Complete the issue #2209 (mentioned in the above list at no.11 position) ➤ Complete the issue #2053 (mentioned in the above list at no.12 position)
<p>Week 9 July 31, 2023 - August 6, 2023</p>	<ul style="list-style-type: none"> ➤ By this time, I would have completed all tasks/issues mentioned in low-hanging fruit list of issues mentioned in GSoC idealist and I can start working towards other open Issues. ➤ Start working towards completing other open

	issue related to Lilypond such as - #2039 , #2036 , #2035 and #1352
Week 10 August 7, 2023 - August 13, 2023	➤ Continue with working towards the above issues related to LilyPond.
Week 11 August 14, 2023 - August 20, 2023	<ul style="list-style-type: none"> ➤ Start towards working these issues - #2994, #2767 and #2040. ➤ If these issues are not completed on time, I can extend the deadline and push myself hard to complete it within the extended deadlines.
Final Evaluation August 21, 203 - August 28, 2023	<ul style="list-style-type: none"> ➤ Cleanup and wrap up the work for final documentation. ➤ Provide a documentation or blog of the list of activities I have completed during the program and share my learning experiences of the same.

So, following this timeline, I will be able to **submit my final work product with extra features** before the deadline i.e. before August 28, 2023. Thus in the worst case, I will still be able to **solve** the **required** [low-hanging fruit](#) list of enhancement-tasks, issues and bugs before the deadline.

How many hours will you spend each week on your project?

Being a final year student I will have my final semester examination ended by 15th May, 2023. After that, I will have 1.5 months to work on the project before my full-time job starts, that is from July, 2023. In this **1.5 months** I intend to work **45-50 hrs per week** and complete all the tasks with decreasing order of priority. **After that from July onwards**, I can devote **20-30 hrs per week** for the project and **complete all the tasks well within the deadline** of September, 2023 for Google Summer of Code. My full-time job is one of the major reasons to choose a low difficulty project with 150 hours Project Length.

How will you report progress between evaluations?

I will be active on **GitHub** and will make regular pull requests to the **Music Blocks** Repository while interacting with the mentors, so anyone in the organization can view my progress. Thus, **my progress will always be reported thoroughly on GitHub**. I am also planning to **write weekly or fortnightly blogs** as a readme to my Github so as to **share my experiences, learnings** and post updates about my progress, obstacles being faced, and their solutions. Moreover will be **reachable anytime** through **matrix communication channel, e-mail, whatsapp** or **video call** on a **daily basis**.

Discuss your post-GSoC plans. Will you continue contributing to Sugar Labs after GSOC ends?

I am planning to **continue working** on the project after the program ends. I would want the **Music Labs 3.0** project to be so **stable** and **reliable** to the user providing a **seamless** and **efficient experience** for **music building**.

After this project, I also would like to **contribute** to **Music Labs 4.0** enhancing and adding features to the product for better user experience and services. I am **amazed by the community relations** and the work carried out by this organization. I really want to **enhance my skills** and put them to use to give back to the community. I aim to **develop mentorship skills** and the ability to guide others and try to give back to the community by **mentoring** and **guiding others**. I hope to mentor future GSoC students.

I am looking forward to contributing to Sugar Labs this summer season.
Kind Regards.