

WRITE ACTIVITY FOR SUGARIZER

Introduction

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Languages: Hindi (Native), English

Location: I currently live in New Delhi, INDIA. My current timezone is UTC+05:30. I intend to work from 9:30 AM to 10:00 PM which can be adjusted to 8:00 AM to 11:30 PM in case of urgent work which is further adjustable as per the requirements of the mentors.

Degree : B.Tech

Major : Computer Science Engineering

Institute : Guru Gobind Singh Indraprastha University

Resume : [Resume](#)

My Motivation

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

I have always been intrigued by the field of web development and the kind of immense potential it offers to the individual. During the course of my B.Tech(Bachelor in Technology) in Computer Science, I worked on various projects and internships, but I believe that a learning experience through Google Summer of Code would be irreplaceable and provide me an opportunity to work and learn from well experienced mentors.

- Why did you choose Sugar Labs ?

I have always believed in contributing towards the betterment of society and I feel that being a part of Sugar Labs would enable to do so as the organisation enhances the educational system at its roots.

- Why do you want to work on this particular project ?

I chose write activity for sugarizer because the tech stack being used, aligns with my skill set, i.e. it is based on javascript. When I came across this project on the ideas page, I found it really intriguing and thus, commenced my research regarding it, while also interacting on

the mailing list seeking guidance from the mentors. I have developed an interest for this project and would like to work upon it during the tenure of Google Summer of Code.

It would provide me a great opportunity to apply the skills that I have learned, while also learning from well experienced mentors on the journey.

- What are your expectations from us during and after successful completion of the program ?

I have always aspired to be a part of this programme and I expect it to be a great learning experience which would not only enhance my technical skill set but also add some soft / interpersonal skills to my arsenal. During the course of the programme I expect the organization to be approachable and an active mail thread on which discussions regarding the project could take place.

Open Source Contributions :

<https://github.com/techspaceusict/infox18> -InfoXpression is the annual techno-cultural fest of University school of Information and Communication Technology.

It is based on nodejs , express , ejs and mongodb and various interesting js libraries

Here are some of my contributions -

<https://github.com/techspaceusict/infox18/pull/40>

<https://github.com/techspaceusict/infox18/pull/37>

The complete list of my contributions to this organisation can be found [here](#)

Awards

- Won HackNsut 19 hackathon organised by **IEEE** at NSUT , Delhi (Formerly NSIT)
- Runner up at Webquickie (12 hour web development hackathon) at BPIT , Delhi

I have been contributing to open source for more than 2 years and have created a number of creative and interesting projects and can be tracked from my github [account](#) .

Some of my work Samples :

[Cocoberry](#) : Cocoberry is india's first and leading frozen yogurt brand . It is PHP based project . I did internship here last summer vacations and worked with a team to complete the project . I worked both on backend and ui . We worked as per timeline set by the Client . I learnt here how to work in a time bound environment in an efficient manner .

Animal Vcare : It is a Cross platform mobile application built using Flutter and allows user to share information about stray animals including location , images and a small description.

Allow users to login , continue as guest and search for animals (filtering based on location) they want to help and make a request to the original publisher .

I developed this application during my winter vacations and is also published on playstore .

<https://play.google.com/store/apps/details?id=com.ashish.vcareanimal>

Suvidha Home : It is a Apartment management system . it consists mobile Application for the resident of the apartment and administrator Portal(Vue.js and google cloud and cloud firestore based) .I did internship here in my winter vacations and learnt how to manage to work on a production level project having large number of active users .

<https://suvidhahome.com/>

<https://play.google.com/store/apps/details?id=com.sunshinesuvidha.sunshinesuvidha>

About My Project

What are you making ?

We would create Write Activity for Sugarizer with the Following set of features :

- Text formatting on characters (font change, bold, italic, underline, foreground/background color , font size , alignment , Cut , Copy ,Paste , linking , unlinking)
- Allow undo , Redo , Subscript , superscript , Strikethrough , Special characters , equations , horizontal line , Increase indent , decrease indent
- Text formatting on paragraphs (Right align , Center align , Left align , Justify , blockquote)
- Lists : Allow user to have both numbered and ordered list
- Embedded Image Handling : Allow users to upload image from their device and also allow to provide link to the image . User will also be able to edit image with features like crop , resize , float left , float right .
- Tables Handling : User will be allowed to add tables by just selecting the number of rows and columns through a select dropdown in toolbar . In addition to that we will allow users to import tables from a csv file and style them further using the styling features of the activity . This will help the user to create tables in less amount of time and easily .
- Scaling : Allow different level of zooming on a scale of 0-100 % as an option to the user to further enhance the user interaction.
- Allow Spell check of all the text entered by the user using [nanoscript javascript spell check](#) .
- Add Word count to help count total number of words
- We would be adding a feature which would allow the user to hear the contents of the Write Activity using [HTML5 text to Speech](#) tool. It would enhance the user experience of the project .
- Sugarizer storage: load/save content into the Journal .

- Export feature: Allow user to export the content in word(.docx) , Open document format (.odt) , Rich Text Format (.rtf) , Plain text (.txt) , PDF document (.pdf) , Web page (.HTML) format
- Multi user environment : Multiple users will be able to edit same document in real time using sugar presence framework .
- Cross Platform : The activity will have same functionality and behaviour on any browser (Chrome, Firefox, Safari) and any platform (Android, iOS, Windows, Linux, MacOS) supported by Sugarizer.
- Localisation : The activity will be fully localised like other sugarizer activities using web110n library
- Full Screen mode : User will be able to enter full screen mode on clicking full screen button and exit by again pressing it .
- The User interface of the activity will have Sugarizer look & feel . We will use Sugar toolbar and palette to show the features of the activity .
- Autosave : All the content present inside the text editor will be autosaved in journal after every change in the content . This will help user to save his data if he forgets to properly exit the activity or in case of any other circumstances .
- Offline availability : All the features will work seamlessly without the requirement of any internet connection which will help to run this activity even in remote areas where internet connection is not available easily .

IMPLEMENTATION

Some Existing Major text editors :

Quill : Quill is a free, open source WYSIWYG editor built for the modern web. It supports all major modern browsers . It has support on stack and github. The major issue I found in it was lack of official support for tables.

TinyMCE : It is also open source Licensed under LGPL . It has all major features required for editing the content . It has great documentation and an active community. It is not completely free and is API key based.

CKEditor : It is also open source and an easy to use rich text editor . It also has large active community. It has some minor cross browser platform issues.

WebODF : It is also open source . It has a major drawback the community is not active anymore.

Reference - [here](#).

[Sun Editor](#) : It is also an open source editor. It has all major features required for the project. The major issue is it has a very thin community.

I have also contributed to this editor [here](#) .

Froala : It is also an open source editor with active and large community . It also has all major features required for the project .It has good documentation and has a very good performance .It is available for all major frameworks. Although it is open source, but the professional support is paid.

Conclusion : I feel the best way moving forward is to create our own purely javascript based rich text editor without reliability on any other text editor. Our editor would take inspiration from these editors in terms of functionality and coding style. The major advantage of doing it will be having a high scale of customisation as per the needs of the project. It would be easier to maintain and do changes to it as per our requirements in future also .

How to create own rich text editor ?

We can take inspiration from the method used by major text editors like [TinyMCE](#) and [CKEditor](#) . Here is the method used by these editors :

1. We will Dynamically create an iframe and place the editable content within that iframe's document .
2. Set the iframe to be editable either by setting its document's `designMode` property to "on" or by setting its `<body>` element's `contentEditable` property to true.
3. Add buttons of all the required features at the Sugar toolbar and palette that will act on the content within the iframe . All browsers supply an `execCommand()` method for doing a number of these actions .

I have tried to implement a basic rich text editor with some major features [here](#) purely based on HTML/CSS and JS .

Load/save in journal : All the content in the editor will be in HTML/CSS form only . This HTML/CSS can be easily fetched from the iframe that will be used with the help of javascript which will be converted into string using `JSON.stringify()` which will stored in journal datastore as text using `setDataAsText()` .

Table Handling : Creating tables Dynamically and Editing content in them can be easily worked out using javascript . We can take inspiration in table handling using any existing text editor . [This](#) is code of it's working in [SunEditor](#) . For export/import to csv of table elements we will use [this](#) approach .

Multi user Environment : We would integrate Sugarizer presence framework to share activity on the network so that multiple users would be able to edit the same document at one time . We will take inspiration for multi user from google Docs where the cursor of the user will be stroke colour of the xo icon of the user . If there are multiple users at a time then we will see

multiple cursors of different colours based on the xoicon's stroke color on the screen at different locations based on the where the position of the user's are .

Word counter : [This](#) approach will help to add this feature

Text to Speech : We can use [HTML5 text to Speech](#) tool .

Spell Check : We can use [nanoscript javascript spell check](#) .

Image Handling : After uploading an image it will be converted into canvas element which will be converted into a data uri which can easily stored in the journal . The data uri will be converted back to image file on loading a previously saved document from journal . Image styling will also be done using [jquery-cropper](#) .

Here is the code showing implementation

```
JS img-datauri.js x
1 function toDataURL(src, callback, outputFormat) {
2   // Create an Image object
3   var img = new Image();
4   // Add CORS approval to prevent a tainted canvas
5   img.crossOrigin = 'Anonymous';
6   img.onload = function() {
7     // Create an html canvas element
8     var canvas = document.createElement('CANVAS');
9     // Create a 2d context
10    var ctx = canvas.getContext('2d');
11    var dataURL;
12    // Resize the canvas to the original image dimensions
13    canvas.height = this.naturalHeight;
14    canvas.width = this.naturalWidth;
15    // Draw the image to a canvas
16    ctx.drawImage(this, 0, 0);
17    // Convert the canvas to a data url
18    dataURL = canvas.toDataURL(outputFormat);
19    // Return the data url via callback
20    callback(dataURL);
21    // Mark the canvas to be ready for garbage
22    // collection
23    canvas = null;
24  };
25  // Load the image
26  img.src = src;
27  // make sure the load event fires for cached images too
28  if (img.complete || img.complete === undefined) {
29    // Flush cache
30    img.src = 'data:image/gif;base64,R0lGODlhAQABAIAAAAAAAP///ywAAAAAQABAACAUwAOw==';
31    // Try again
32    img.src = src;
33  }
34 }
```

Export content to printable format : Most major rich text editors uses some API or js libraries to convert the data present in PDF format . For example CKEditor and TinyMCE uses [Api2Pdf REST API](#) (We can also use the same in our custom editor)

Also npm packages such as [html-pdf](#) can also solve the problem

There is one more way do implement it using Client side javascript PDF generation tool [jsPDF](#) .

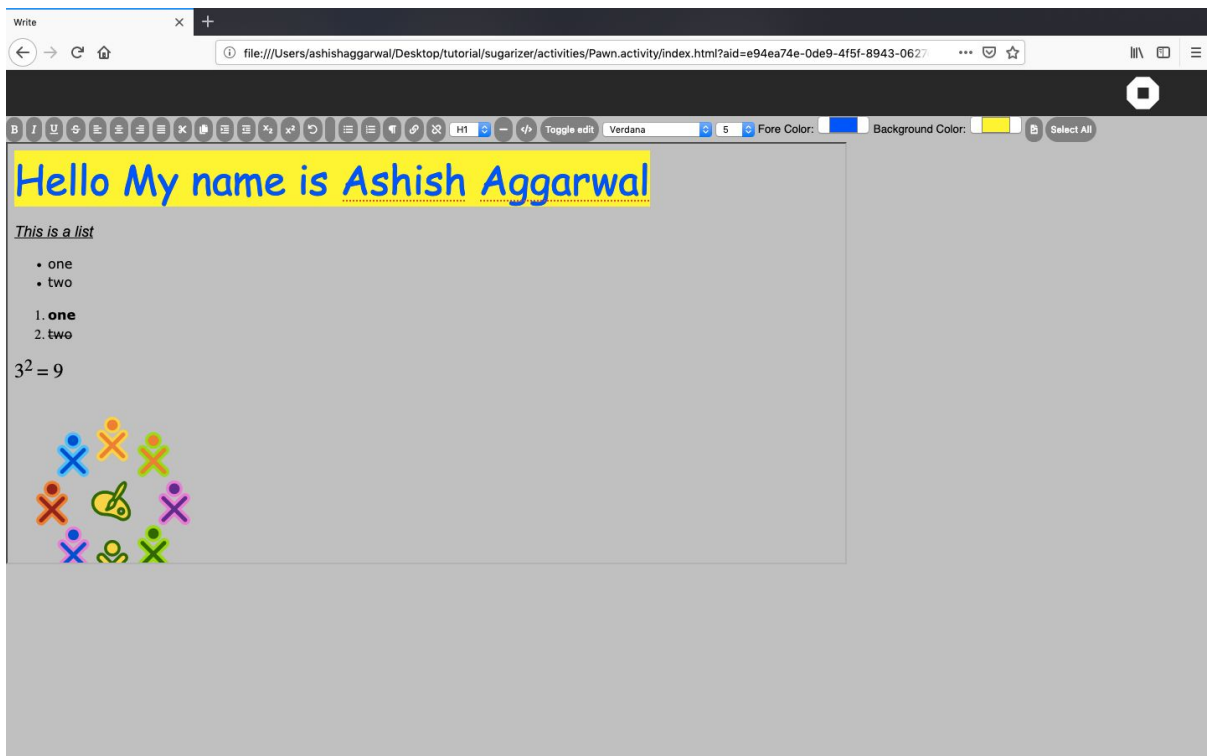
Export content to editable format : Majority of previously existing text editors supports only convert to html format . However we can have export to txt , Open XML word documents , HTML.

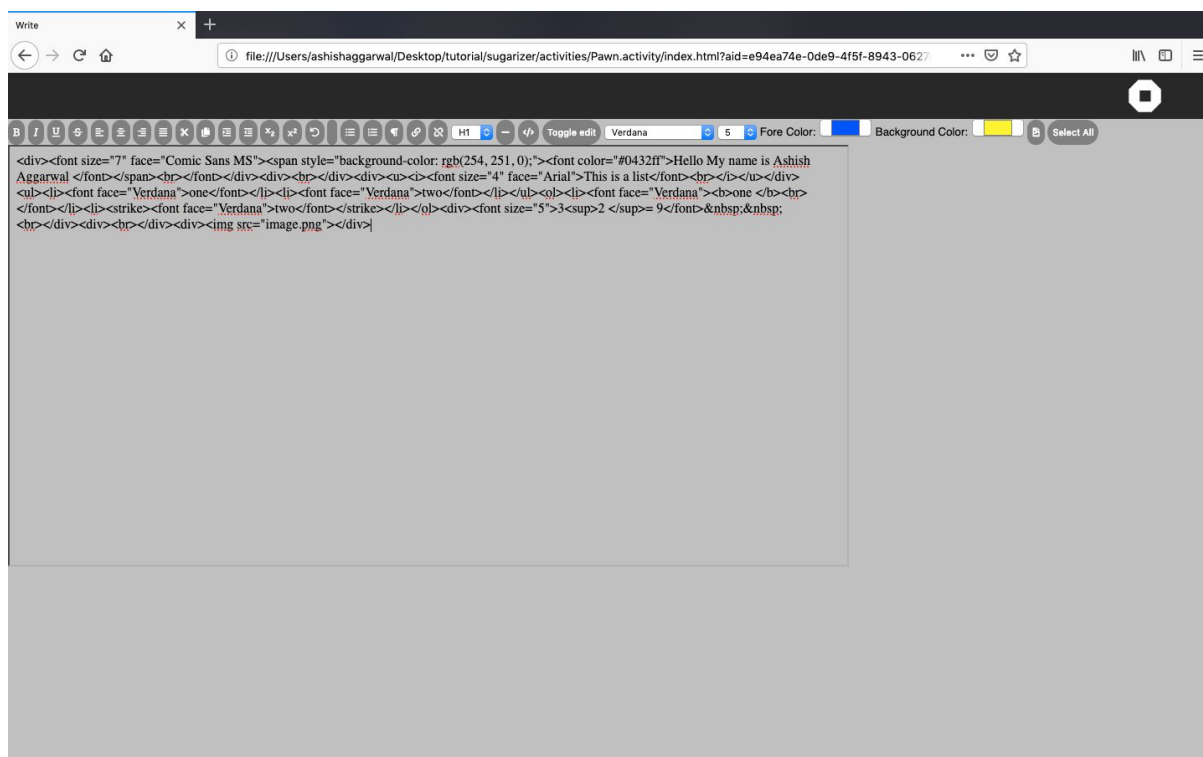
For txt and HTML : Best way to do this is through [FileSaver.js](#) and [Blob](#)
A more advanced way would be [StreamSaver.js](#) in case of extremely large files (greater than 2gb) .

For doc : We can use jquery word export plugin [here](#) .
Also we can use [MariGold.OpenXHTML](#)

For RTF : We can use [this](#) type of approach and Blob to get RTF files

A simple integration in sugarizer :





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

We will be using HTML/CSS , javascript and sugar web libraries

How will it impact sugar labs ?

The mentioned project would have a great impact on Sugar Labs as an organization. With the presence of an interactive text editor, it would enhance the user experience along with expanding the horizons of the project.

Students would not only be able to use this rich text editor but also learn new and interesting things along the way.

Various new activities can be created incorporating this Writer, which would help in increasing student engagement with the software and thus enhancing the learning experience.

This Writer would be available globally throughout the project, and thus adding to the extensive list of features of the organisation.

It would remove the dependency on third party text editors, and provide a fully customised and efficient text editor for the organisation making it less dependant on third party libraries.

This tool would mark the commencement of the phase of growth of this organisation to newer dimensions and much more would follow afterwards.

Timeline

DURATION	TASK
6 May - 27 May	<p>Explore the technologies that will be used in creating Write activity</p> <p>Setting up the development environment and project structuring</p> <p>Discussion with mentors and community about the method to be used to implement each feature</p>
27 May - 2 June	<p>Create a new basic Activity in Sugarizer and name it as write activity .</p> <p>Add Basic Structures such as Textarea and Sugarizer Toolbar</p> <p>Download icons and fonts required in the activity and save them in project</p>
2 June – 9 June	<p>Add text formatting ie Bold , Italic , underline , font size and style , strikethrough , Linking/Unlinking , Alignment , Cut , paste , foreground/background colour and add UI for all these changes</p>
9 June – 16 June	<p>Undo , Redo , Subscript , superscript , Strikethrough , Special characters , equations , horizontal line , Increase indent , decrease indent and add formatting on paragraphs (Right align , Center align , Left align , Justify , blockquote) and add UI for all these changes .</p> <p>Add formatting on lists (unordered and ordered) and add UI for it .</p>
16 June – 23 June	<p>Add Embedded Image Handling to the Editor and add resizing and styling features Required .</p>
24 June – 28 June	<p>Phase 1 Evaluation (Created a Basic Text formatting Editor with image handling with Sugarizer like UI).</p>
28 June – 5 July	<p>Add Table handling with export/import CSV and add UI for it .</p>
5 July – 12 July	<p>Add Text to Speech , Word count , Spell check and Zooming Modules and Changes as per Mentor feedback</p>

12 July – 22 July	Add Export to Various formats feature and add UI for it
22 July – 26 July	Phase 2 Evaluation (progress - Added Images , tables , speech , wordcount , spellcheck modules and Export to various formats).
26 July - 2 August	Add load/save data to journal and add network Sharing for multiple user through presence framework and add UI for it and Testing the workflow .
2 August –9 August	Add localisation , UI , Polish , Documentation and UX improvements and Testing workflow
9 August - 16 August	Buffer Week
16 August - 19 August	Review Documentation and prepare for final evaluation
19 August - 26 August	Final Evaluation (progress - Import from various formats , Journal connectivity and Documentation)

I will be needing a break for about 9 days in the month of May for my end Semester exams, which I will cover up by chipping in some extra hours daily after the exams.

- Also discuss your plans after the GSOC period ends. Do you plan to continue working on the project after GSOC ends ?

I would continue to work on this project post the completion of my GSOC tenure as an active contributor so as to keep in touch with the updates and also guide new contributors. I wish to apply as a mentor next year in this organisation and work towards the growth of this organisation.

- Mention how much time will you spend each week working on your project

I would be able to spend 42 hours a week on this project during the tenure. I would be working on, but not limited to the proposed objectives. I would be working 6 hours/day as an average and would be willing to work more if the project demands. My main aim would be to stick by the timeline and perform all the mentioned tasks efficiently.

I have no other internship or projects to do during GSOC period and I will be committed to the completing the project throughout the tenure .

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

I have been majorly contributing to sugar labs since February . Here are some links
To the pull requests and issues .

SugarLabs Contributions

Pull requests -

[Sorting added in classroom , user and journal views \(77 \)](#)

[Improve Record activity to see picture in real time \(275 \)](#)

[Bring Consistency in language of users issue \(35 \)](#)

[Create a class room with a name in space \(26 \)](#)

[Fixed error in dashboard when deleting a user \(25 \)](#)

[Added Missing message string in dashboard on delete \(24 \)](#)

[Created documentation for Macosx \(31 \)](#)

[video tutorials created for creating activities on sugarizer \(281 \)](#)

[Users and classroom add route crash fixed \(71 \)](#)

[create new user with space in name \(32 \)](#)

[Add Size column in journal view \(67 \)](#)

[Classroom and user page crash fixed \(57 \)](#)

[added No user or classroom found message \(44 \)](#)

[Convert classrooms and users to CSV \(70 \)](#)

[size column in journal view bug fixed \(94 \)](#)

[localisation added in size column in journal view \(104 \)](#)

[User role and search class translation added \(113 \)](#)

[Private and select tag of journal translation issue \(132 \)](#)

[added tooltip localisation in classroom views \(136 \)](#)

[Added localisation for translating language select box \(146 \)](#)

[Added localisation for the language of user \(145 \)](#)

[Classroom select combo box in user view UX and localisation \(150 \)](#)

[Show journal of all users \(122 \)](#)

Issues -

[users . classroom add route crash \(69 \)](#)

[Classroom and User page crash \(56 \)](#)

[Allow sorting on various views in Dashboard \(50 \)](#)

[show no result found message \(39 \)](#)

[Consistency in language of users \(33 \)](#)

[Add filtering to speaker Activity \(273 \)](#)

[Not able to access journal of all users \(111 \)](#)

[private and shared select tag of journal translation issue \(131 \)](#)

[Page navigation problem on language switching \(142 \)](#)