

GSoC '18 Project Proposal

Sugar Labs: Just say no to GTK+ 2

About You

What is your name?

My name is Yash Agrawal and I am a 2nd-year undergraduate student at Indian Institute of Technology Roorkee.

What is your email address?

yagrawal900@gmail.com

What is your Sugar Labs wiki username?

yashagrawal3

What is your IRC nickname on irc.freenode.net?

yashagrawal3

What is your first language? (We have mentors who speak multiple languages and can match you with one of them if you'd prefer.)

My first language is Hindi but I am equally proficient and fluent in English.

Where are you located, and what hours (UTC) do you tend to work? (We also try to match mentors by general time zone if possible.)

Location: Varanasi, Uttar Pradesh, India

Timezone: UTC +5:30 India Time Zone

Working Hours: I tend work in two shifts IST 2:00 PM to IST 6:00 PM and IST 12:00 AM to IST 5:00 AM, I am also flexible for meeting anytime with prior notice.

Have you participated in an open-source project before? If so, please send us URLs to your profile pages for those projects, or some other demonstration of the work that you have done in open-source. If not, why do you want to work on an open-source project this summer?

I have developed a passion for programming and web development in my freshmen year and from then, most of my time goes into reading and writing software. I have been contributing to open source regularly in past few months but as a part of GSoC, this would be my first

time contributing to a big open source project. The fact that the code written by me would impact and be used by a large number of people really excites me.

I have been trying to contribute in the small ways I could, by having all my projects on GitHub so that others can benefit from the same and trying to fix minor bugs that I can. GSoC provides a good platform to dive right into the middle of open source development with the opportunity to work in big open source projects with the core developers. This makes me excited and eager to participate in it.

I have been working with Sugar Labs for last three months and it has been a great learning experience for me. I chose this particular project because it is very well aligned with my interests and most of the previous work that I did for Sugar Labs. Other than that, this project provides a good opportunity to apply my learnings on a practical scale.

Some of my contributions to open source organizations:

Pull requests for bug fixes(Sugar Labs):

<https://github.com/sugarlabs/XOlympics/pull/10>

<https://github.com/sugarlabs/stick-hero-activity/pull/13>

Pull requests for GTK+ 3 port(Sugar Labs):

<https://github.com/sugarlabs/iknowPeru/pull/2>

<https://github.com/sugarlabs/jumble-activity/pull/5>

<https://github.com/sugarlabs/pointillism/pull/4>

<https://github.com/sugarlabs/cellgame/pull/2>

<https://github.com/sugarlabs/iq-activity/pull/7>

<https://github.com/sugarlabs/jamath-activity/pull/7>

Pull request merged in EvalAI(Cloud-CV):

<https://github.com/Cloud-CV/EvalAI/pull/1115>

There are also some of my personal projects that I did for learning purpose, those can be found on my GitHub profile: [yashagrawal3](#)

About your project

We are looking for projects that will enhance the Sugar Learning Platform. Please consider how your project will have impact on children learning.

What is the name of your project?

‘Just say no to GTK+ 2’

Describe your project in 10-20 sentences. What are you making? Who are you making it for, and why do they need it? What technologies (programming languages, etc.) will you be using?

As the project description says “GTK+ 2 and GStreamer 0.10 are end of life. We need to upgrade the remaining activities with these dependencies.”, we need to upgrade the Sugar activities to maintain its support and get security update on various platforms. The movement from PyGTK to PyGObject API means no more maintenance of it. GTK+ 3 is a major new version of GTK+ that breaks both API and ABI compared to GTK+ 2, which has remained API- and ABI-stable for a long time. The main purpose of this project is to port dependencies of 25 Sugar activities from “GTK+ 2 and GStreamer 0.10” to “GTK+ 3 and GStreamer 1.0”. The task will be accompanied by updating to the latest version of sugargame and Sugar Toolkit. GTK+ 3 introduced many changes to improve UI by providing a number of new widgets, switches, toolbars etc.

A lot of other changes have also been introduced, to name a few: Use of Cairo for Drawing, Use of GtkBox, Removal of HippoCanvas library and many more. All these are documented [here](#). Most of the Sugar activities are heavily dependent on GTK+. Sugar Labs has been on a long time quest to keep up with the GTK+ porting requirement. With GTK+ 4 round the corner, the same thing has to do be done again in coming years. This project also aims to provide new developers platform where they can do their job easily and help maintain Sugar support of activities. Many changes were also made in GStreamer 1.0 which will also be implemented in this project.

I will be maintaining and upgrading all required dependencies of the 25 proposed activity to the latest and release-ready state. I will be fixing all its bugs and warning. I will be following all the steps necessary before releasing an activity, i.e. maintaining NEWS file, updating README file, reviewing all pull requests.

Deliverables

- 25 well-maintained activity on GitHub
- A newly released version of those on activities.sugarlabs.org

I am making this for Students, Teachers and all those who use Sugar platform. After Ubuntu and Fedora drop their support for GTK+ 2, many activities will stop working. This project will provide some of their favorite activities a long-term support with better performance. This will improve their learning process also. It is equally important for the organization as well, the code is distributed between old GTK+ 2 and newly ported GTK+ 3, this project will provide a sense of uniformity among all activities which will be more welcoming for any new contributor.

Most part of the coding will be done in Python, GTK+ 3/PyGObject API and GStreamer 1.0

Activity Selection

For selecting activities to port, I made a [porting-list](#) of all activities on GitHub that require a port to GTK+ 3. There are around 70 activities that need porting. I have tested almost all of the following activity on Ubuntu 17.10 and/or Fedora 28 SoaS. All the activities having Fedora support were given priority. I have selected only those activity which are on github.com/sugarlabs.

The activities were selected on following grounds:

- Has strong pedagogical basis
- Popular on activities.sugarlabs.org
- Comes preinstalled with Fedora SoaS
- Redistributed by Debian and Ubuntu
- Redistributed by Fedora
- Are games great for learning

S.No.	Activities name		S.No.	Activities name
1	Record		14	Block Party
2	Turtle Confusion		15	StarChart
3	Turtle Flags		16	SocialCalcActivity
4	Ajedrez		17	Flip Sticks
5	I Can Read		18	Kiwix
6	I Know My ABCs		19	Pilas
7	Moon		20	Diccionario Spanish Guarani
8	TamTamSuite		21	Adivinanzas
9	Falabracman		22	FoodForce2
10	PyEyes		23	Erikos
11	Jigsaw Puzzle		24	GoGo
12	Colgadito		25	Cuidarme
13	Convert			

What is the timeline for development of your project? The Summer of Code work period is from mid-May to mid-August; tell us what you will be working on each week. (As the summer goes on, you and your mentor will adjust your schedule, but it's good to have a plan at the beginning so you have an idea of where you're headed.) Note that you should probably plan to have something "working and 90% done" by the midterm evaluation (end of June); the last steps always take longer than you think, and we will consider canceling projects which are not mostly working by then.

1	April 23, 2018 - May 6, 2018	Hiatus due to exams and moving back to home from college for vacations.
2	May 7, 2018 - May 13, 2018	<ul style="list-style-type: none"> Go through official Gnome documentation of GTK+ (3 and 4) Since most of the activities follow the same code structure, design a workflow for me for porting
3	May 14, 2018 - May 20, 2018	<ul style="list-style-type: none"> Start porting activities to GTK+ 3 Port activities 1-5 Fix bugs for Debian, Ubuntu and Fedora platform
4	May 21, 2018 - May 27, 2018	<ul style="list-style-type: none"> Port activities 6-10 Fix bugs for Debian, Ubuntu and Fedora platform
5	May 28, 2018 - June 3, 2018	<ul style="list-style-type: none"> Discuss with mentors for any changes or modification Make activities 1-10 release ready Release first 10 activities
6	June 4, 2018 - June 14, 2018	<ul style="list-style-type: none"> Port activities 11-15 Fix bugs for Debian, Ubuntu and Fedora platform
	Phase 1 Evaluation	
7	June 15, 2018 - June 24, 2018	<ul style="list-style-type: none"> Port activities 16-20 Fix bugs for Debian, Ubuntu and Fedora platform
8	June 25, 2018 - July 1, 2018	<ul style="list-style-type: none"> Discuss with mentors for any changes or modification Make activities 11-20 release ready Release next 10 activities
9	July 2, 2018 - July 12, 2018	<ul style="list-style-type: none"> Port activities 20-25 Fix bugs for Debian, Ubuntu and Fedora platform

	Phase 2 Evaluation	
10	July 13, 2018 - July 22, 2018	<ul style="list-style-type: none"> • Discuss with mentors for any changes or modification • Make activities 21-25 release ready • Release last 5 activities
11	July 23, 2018 - July 29, 2018	<ul style="list-style-type: none"> • Release all other activities which were not released due to testing delay • Add documentation for the things to be added, wherever required, to help new contributors to contribute to the project.
12	July 30, 2018 - August 5, 2018	Make final submission and discuss future prospects with the community.

Testing and Reviewing

I plan to write weekly blogs about the activity that I have ported and keep Sugar community updated with by posting it sugar-devel mailing list. To keep up with 25 activities goal, we will have almost 10 days to test 10 activities. There is also also a buffer week(July 23, 2018 - July 29, 2018) for all those activities which were not released because of testing delay or any difficult bug to solve.

Time Commitment

My summer vacations are from 6 May to 13 July. The official GSoC period is from 14 May to 5 August. I can easily give 40-50 hours a week until my college reopens and 30-40 hours a week after that. On Saturdays and Sundays there is no college and on Wednesdays, I have only 2-hour session. I intend to complete most of the work before my college reopens. Other than this project, I have no other commitments/vacations planned for the summers. Also, I do not have any internships this summer.

Convince us, in 5-15 sentences, that you will be able to successfully complete your project in the timeline you have described. This is usually where people describe their past experiences, credentials, prior projects, schoolwork, and that sort of thing, but be creative. Link to prior work or other resources as relevant.

I have been an active contributor to Sugar Labs organization for the past three months, so I am very comfortable with working on Sugar environment and am quite familiar with Sugar codebase. In past months, I learned a lot about GTK+, pygame libraries, Sugar Toolkit, Cairo, Pango, and now feel very confident working with it. I have over 40 pull requests merged during this phase out which most of them were port to GTK+ 3, so I am pretty experienced also. I was also invited to join Sugar Labs organization on GitHub as Pull Request reviewer and merger.

I wrote my first line in python code around 5 years ago and has been love with it since then. I have made from simple apps like library management in school to highly complex Django app for startups. I am also familiar with many python libraries like numpy, pandas, matplotlib that are essentially used in data science.

Following are a few of my works which are not directly related to this project but depicts my app development skills:

Cosax

- Freelance Project: Developed a platform for an online virtual bridge to connect your idea and your team to discuss startup ideas with entrepreneurial minds.
- Developed the backend of it Django 1.10
- Developed the frontend in Angular2

Expectations IITR

- As a part of campus group Geek Gazette, I developed a website that introduces our college to the freshers
- Built on Javascript/JQuery, SASS/LESS

StaringBot

- Staringbot is an autonomous object detecting bot. It has the ability to detect the object moving in front of him.
- It uses OpenCV2 for Image Processing for detection of an object

There are also a number of minor projects that were developed by me as side projects and learning exercises. Those can be found on my GitHub profile: [yashagrawal3](https://github.com/yashagrawal3)

You and the community

If your project is successfully completed, what will its impact be on the Sugar Labs community? Give 3 answers, each 1-3 paragraphs in length. The first one should be yours. The other two should be answers from members of the Sugar Labs community, at least one of whom should be a Sugar Labs GSoC mentor. Provide email contact information for non-GSoC mentors.

This project is important to Sugar Labs community because through this project we ensure the continuation of and proper functioning of over 25 activities in Sugar environment. These activities are used by children and teachers for learning purposes and we don't want activities to suddenly stop working in the coming days. These activities will be of no use as soon as Debian/Ubuntu or Fedora drops their support for GTK+ 2. This also brings a certain amount of urgency with Ubuntu 18.04 and Fedora 28 just right the corner. Considering Impact of this project on Sugar Labs Developer community, this will increase the uniformity and consistency in the codes of various activities, which will result in a more welcoming environment for new developers. Considering future prospects, GTK+ 4 is also just around the corner, we will have to deal with same hassle in coming years, of course, the transition of GTK+ 3 to GTK+ 4 is going to be much simpler than GTK+ 2 to GTK+ 4. Also, I intend to go through GTK+ 4 documentation to write my code in the best possible manner which will make the transition to GTK+ 4 an easier task.

This project will also work in coordination with 'Port to Python 3' project. The fact that the support for Python 2 will be dropped in coming years and no more bugs/security fixes goes on to prove the importance of this project. GTK+ itself being written in Python 3, writing activities in Python 3 where GTK+ is used makes a good practice. With the help of this project, our aim to provide long term support to Sugar activities will actually be fulfilled. Also the fact that uniformity in code, it will make their task also easier.

Walter Bender(walter.bender@gmail.com): As the world changes, Sugar cannot stand still. If the platforms we depend upon drop support for the version tools we are using, then we have to either take over maintenance of these tools ourselves – a task we are not resourced to do – or, as proposed, update our work so that it remains compatible. The migration to GTK-3 is critical.

What will you do if you get stuck on your project and your mentor isn't around?

If the mentor is not available, basically google and StackOverflow is the place to go, if remained unanswered, I'll go to IRC #sugar or sugar-devel list for help. If even that doesn't work out, I have some of great developer friends and seniors, who are always there to help.

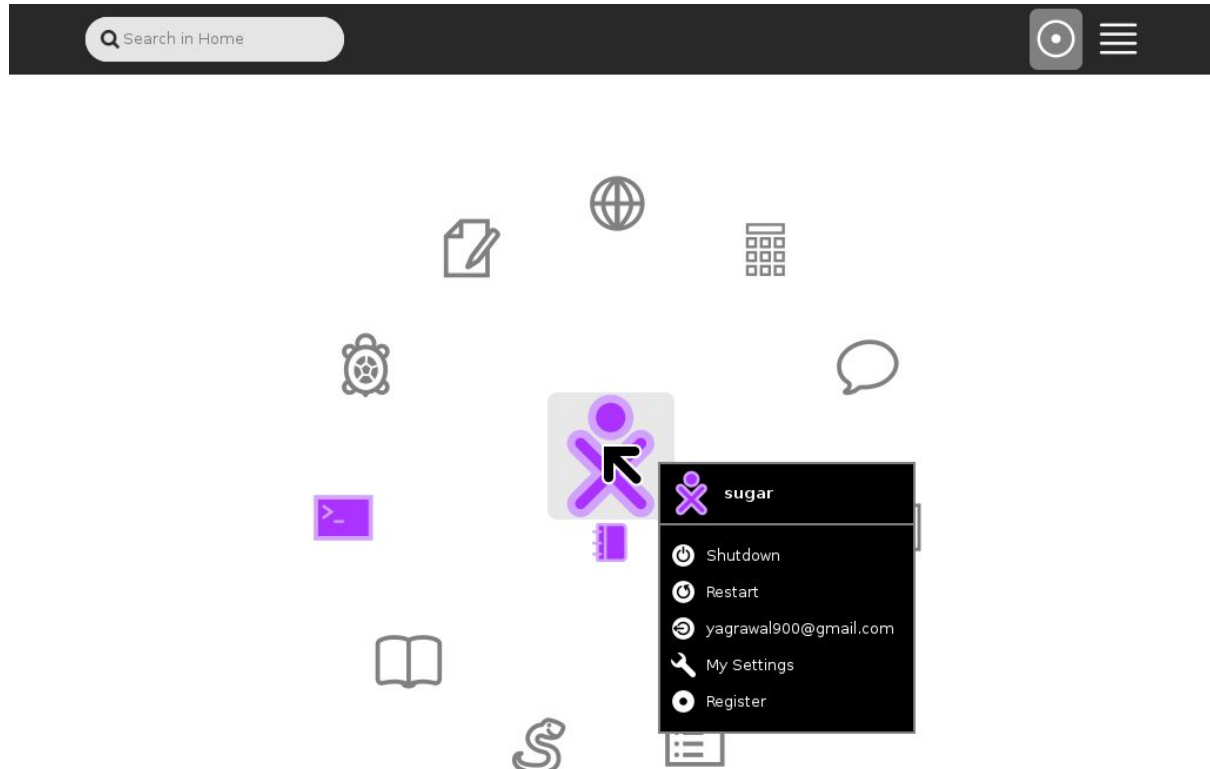
How do you propose you will be keeping the community informed of your progress and any problems or questions you might have over the course of the project?

I intend to write a weekly blog, as was suggested by Sugar Labs community, to keep my mentors informed. I will also use IRC and mailing list to keep developer community updated on my progress.

Miscellaneous

We want to make sure that you can set up a [development environment](#) before the summer starts. Please do *one* of the following:

Task 1: Send us a link to a screenshot of your Sugar development environment with the following modification: when you hover over the XO-person icon in the middle of the Home view, the drop-down text should have your email in place of "logout".



Task 2: Send us a link to a pull request or merge request you have made on a Sugar or Sugar activity bug. It's normal to need assistance with this, so please visit our IRC channel, #sugar on irc.freenode.net, and ask for help.

<https://github.com/sugarlabs/buttons-and-scissors-activity/pull/17>

Pull requests for GTK+ 3 port:

<https://github.com/sugarlabs/reversi-activity/pull/2>

<https://github.com/sugarlabs/iknowIndia/pull/4>

<https://github.com/sugarlabs/appel-haken-activity/pull/2>

View the list of all my commits in Sugar Labs [here](#)

Describe a great learning experience you had as a child.

Maths has always been my favorite subject, and I always love the fact that there are so many ways to look at a simple problem. During my school days, my mathematics teacher always kept us excited by doing various kind of fun learning activities to start a new topic. One of it was when he started teaching Quadratic Equations. In the first class, he told about its general equation, coefficients and its plot, I didn't understand all of it. Next day, he brought a laptop with a software(GeoGebra kind of) to demonstrate us how the actual plot varies with coefficients of the quadratic equation. Suddenly we weren't clueless about what a parabola is and could imagine it changing its shape in our head with a change in coefficient.

Is there anything else we should have asked you or anything else that we should know that might make us like you or your project more?

How often do you participate in Developer Team Meeting and how often do you communicate with the community?

I am regular on Sugar development team meeting. I try to attend all meeting to keep myself updated with what other people in the community are doing and what are some new topics of discussion. This way I can contribute to Sugar Labs in much more effective manner and it also gives a sense of belonging to a community.