
sugar
labs



Port Sugar and core activities to Python 3

29.03.2020 (Draft Proposal)

Basic Details

- **Full Name** - Jui Pradhan
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- **GitHub Username** - JuiP
- **Languages** - Marathi, Hindi and English (fluent in speaking), Gujrati (can understand but not speak)
- **Location** - Mumbai, India || Hyderabad, India
- **Timezone** - Indian Standard Time (GMT+5:30)

Education Details

Currently pursuing B.E. in Computer Science and Msc. in Economics from Birla Institute of Technology, Pilani ,Hyderabad Campus. I am in my second year. Along with my compulsory C.S courses, I have taken up Machine Learning as an elective. I am comfortable working with Java, Python, R, C and C++.

In the current semester,I have also taken up 'Critical Pedagogy' as an optional course. This might come in handy for deciding if a new activity actually holds a high pedagogical value or when choosing an activity to work on.

Besides, I have worked as a Software Developer and a Technical Assistant for the Official Online University Student Portal. Details about the same have been provided below under projects.

Work -

I. Code

I spent my freshman year working on code challenges, organising and participating in Algorithm based challenges. I have been programming in Java since high school and have implemented a very basic model of Hotel Reservation- Room booking and charges.

II. Projects

★ Working with **statistical analysis and data extraction**. I have worked on 3 projects under university professors. These are minor projects for educational purposes which are done in R.

★ **Official Online University Student Portal- Timetable Division**

I am a part of the team that manages this portal. This portal records the attendance of all students in the biometric tab. All the recorded lectures of classes are uploaded and maintained on Impartus. All official announcements, assignments and grade sheets are uploaded on CMS by teachers. I am currently maintaining CMS (I am the administrator for the website- <https://td.bits-hyderabad.ac.in/moodle/>) My work involves uploading new course content before the semester begins and managing the course content over the semester for more than 400 courses.

III. Open Source Projects

I was new to the Open Source Community. Working with SugarLabs has been a great experience so far and I look forward to contributing more to SugarLabs.

Right Fit -

<ul style="list-style-type: none"> ✓ you have a GitHub profile with a history of commits, pull requests, and issues in our project, other projects, or personal projects, ✓ you have contributed to our project before the application period, 	<p>GitHub profile - JuiP</p> <p>Merged Commits- https://github.com/search?q=is%3Apr+author%3AJuiP+org%3Asugarlabs&type=Commits</p> <p>All Open and closed Pull requests- https://github.com/search?q=is%3Apr+author%3AJuiP+org%3Asugarlabs&type=Issues</p> <p>Issues- All the issues I have raised before the application deadline are mentioned below.</p> <p>PR's and commits before the application period- #913 sugar - (open) WIP #12 sugarchess - merged #8 paths -(open) collaboration fix left otherwise ready to merge #5 Paths -(open) Ready to merge #1 Bulletinboard - (open) A lot of work needed #5 sugar-tools - (closed) merged into PR- #4, which closes issue #4 Sugar-tools</p>
<ul style="list-style-type: none"> ✓ you are patient to apply every suggestion during a pull request review ● you don't just say yes and do something because a mentor says so ● your conversation with us is more than the topic you are working on, but flows naturally to any topic 	<p>I think the comments on my PRs rightly demonstrate that suggestions are applied wherever required. The second and the third point however, I would leave it to be assessed by mentors.</p>

<ul style="list-style-type: none"> ✓ you care about our project beyond the specific task you are working on; ✓ you care about changes to documentation, ✓ tests, releases, issues ✓ you work on a project our community needs, regardless of your personal interests, 	<p>About Documentation, I plan to improve the documentation and add docs which I think might help new contributors greatly. It is elaborated in the plan later.</p> <p>About issues, tests and releases- Testing and raising issues is important for any project. Issues raised before the deadline of 31st March:</p> <p>#819 Sugar - Observed as mentioned in the sugar-devel mails Status- Open</p> <p>#13- Sugar-live-build Status- closed This issue was also referenced in sugar-devel mails</p> <p>#13 Sugarchess Status-open</p> <p>Paths Activity- Status: open #9 , #7 , #6 (closed)</p> <p>Linked Issues- #4 Sugar-tools</p>
<ul style="list-style-type: none"> ✓ you are able to have a proper technical discussion; and understands the value of the discussion in itself 	<p>I feel, the comments demonstrate the point to an extend</p> <ul style="list-style-type: none"> - #13- Sugar-live-build - PR #8 - PR #21
<ul style="list-style-type: none"> ✓ you don't remain ignorant of our software or what our project does 	<p>I have been working on 3 activities lately,</p> <ul style="list-style-type: none"> - Paths - Sugarchess - Bulletin Board <p>The issues raised and the comments in my PRs effectively showcase that I understand how the activities work and know how to test the activities I have been working on.</p> <p>Moreover, I understand that for SugarLabs to extend support globally, it is important to add translations, even if it seems like a boring non-coding job. I plan to add translations.</p>

	<p>(See adding translations in the project plan) Already added translations to project- Paths</p> <p>Also, I feel testing is an important step to make sure sugar is usable by children, without interruption and errors.</p>
<ul style="list-style-type: none"> ✓ you are interested in our community and follow our code of conduct and guidelines ✓ you always write in public, and never write to a mentor in private unless the mentor has asked for that, 	<p>Mailing an entire list of people was surely a new thing for me. I have made sure to reply all when replying to mails. Though as a new contributor, I did send personal mails which I later shared on sugar-devel.</p> <p>I understand that asking questions on the mailing list is a better idea as it benefits all who might have similar doubts.</p>
<ul style="list-style-type: none"> ✓ you keep working with our community even if you are not accepted ✓ you don't ask for help to write a proposal 	<p>I really do hope I get an opportunity to be a GSoC participant at SugarLabs. Nonetheless, SugarLabs is a great community to work with. I have become familiar with SugarLabs code base and look forward to contributing more. It is now easier to contribute, given the familiarity with its code and packages.</p>
<ul style="list-style-type: none"> • you can engage in tight feedback loops around design discussions in proposal drafts, 	<p>I haven't really done that yet.</p>
<ul style="list-style-type: none"> ✓ you don't just fix issues, but you also get involved in other people's work. 	<p>Until 31st March, I have reviewed/got involved in the discussion over 2 PRs: Cookie-search #21 geotonky #4 sugar-tools #4</p> <p>I look forward to test and review more changes.</p>

Project Details -

➤ What are you making ?

Port Sugar and core activities to Python 3

➤ How will it impact Sugar Labs ?

The support for python 2 is being withdrawn, hence it is important to port to python 3. Python 3 is not necessarily backwards compatible with code written for Python 2. The other big difference is the behavior of code, its semantics and the presence/absence of big libraries only for one of the two versions. Thus, it is important to fix regressions that occur due to port to python3.

➤ Technologies to be used:

The Major part of the project will involve coding in **Python** and the use of **TelepathyGLib**, **GLib**, **GObject**, **six**, **python3-coverage** package and **Gtk+3** libraries. Porting will also involve the use of a **2to3** python port tool.

➤ Plan for porting the activities to Python3

Steps I will follow to port activities to Python3-

1. Check if the chosen activity is ported to Gtk+3.
2. Check if it has been ported to python 3
 - Yes- then make sure "exec = sugar-activity " has been changed to "exec = sugar-activity3 "
 - No- Then follow the below mentioned steps
3. The activity needs to be ported to python 3
4. First testing if the activity is working as expected
 - Test if all the features in the activity are working as expected. If not, try fixing them before the port to python 3 to ensure that the issue is not due to the python3 port.
 - Check for errors or tracebacks in the logs
 - Check for noise in the log
 - Next, check collaboration:
 - The joiner can join with no errors in the log.
 - The activity can be seen as a shared instance in the journal.
 - Check if the same game board is shared and any moves on one game board are reflected in the other.
 - If collaboration between 2 works as expected, test for 3. (optional)
 - If the activity uses collabwrapper, then update collabwrapper with latest changes and then test collaboration again.
 - Check for Tracebacks and errors or warnings in the logs. If there are, fix them before port.
 - During all these tests also check [Coverage](#) .
 - If it has a collaboration method that uses ExportedGObject then port to collabwrapper before porting to python3.

5. Ready to port to python 3 - Run `2to3 -w -n *.py`
6. Now check for all other points mentioned in [Python-porting-guide](#)
7. Once complete, retest all the points which were tested for the python2 branch.
8. Additional Check points:
 - ❑ Check for any differences in the display, mostly display shifts or distortions are caused by the differences in how '/' works in Python2 vs Python3. i.e. Check for integer divisions that have become floating points. Other differences in button press and release may also be caused due to this.
 - ❑ Check for other changes observed (compare test python2 branch to test python3 branch)
 - ❑ Also ensure the sprites.py code is similar to the code of other activities' sprites.py which have been maintained. Any major differences like using `rect[0]`, `rect[1]` or using `rect.x`, `rect.y` need to be fixed. There are a lot of reasons to have similar code, it is easier to maintain. Also check for similar files which have been recently updated, to maintain similarity in code - Apply all the **required** changes.

Important note:

(Things I noticed which might be useful in the workflow)

- ★ For any chosen Activity, check if the submodules/folders are a part of the sugar GitHub repositories. There may be some activities which are the derivatives of other activities. It is important to use the updated versions of these activities.

Example-

- Amazonas-tortuga is a derivative of Turtle-art ([Refer](#))
 - There are activities that use sugarypycha (chart activity)
 - Collabwrapper is maintained independently.
 - Sugargame is also maintained independently.
- ★ Few Activities are very similar to activities which are maintained.

Example-

- The bulletinboard activity which has not been maintained is very similar to the Portfolio activity which is updated recently.
- View slides- The user interface is very similar to the core Read activity, and much code is borrowed from that activity. Viewslides activity has not been updated for a long time however, read activity has many bug fixes and feature additions since then.

There may be more such activities. For such closely related activities, comparing code of the activity maintained is important. Borrowing the updated code and **related**, **required** features will make both the activities easy to maintain.

- ★ The activities which have not been updated since a decade have a 'keep error' which relates to the **write_file** method that made an exception that was [handled here](#) rather than logged again. Find a way to fix this and apply it to all activities which have not been updated for a long time.

➤ Plan for adding more translations -

1. I plan to add as many translations as possible for the languages-
2. Submit translations to <https://translate.sugarlabs.org/>- English, Hindi and Marathi
3. Add suggestions only- Gujrati
4. Refresh pot file, remove empty .po files and fetch new translations from <https://translate.sugarlabs.org/>
5. Create a PR and merge.
 - ★ Add translations to those activities first which are ready for release.

I am familiar with how the translation bash works (sugar-tools) and how to use it. As mentioned earlier I have also contributed to fix an issue [#3](#).

➤ Plan for Documentation -

1. Add more details in Port to Gtk+3

Example-

```
self.window.set_flags(gtk.CAN_FOCUS)
self.window.set_can_focus(True)

pixbufloader = gtk.gdk.pixbuf_loader_new_with_mime_type('image/png')
pixbufloader = GdkPixbuf.PixbufLoader.new_with_mime_type('image/png')
```

I plan on adding these changes before the coding period begins and keep updating docs as and when required.

2. Add documentation for adding new translations and refreshing the pot files.
3. Documentation for porting from GObject to GLib with a link to the Projects Tab
4. For testing changes made to sugar - [Refer](#) add this along with other required details.
5. Documentation on Port to Collabwrapper - important for activity that uses ExportedGObject.

6. Documentation for testing collaboration.

Also adding to this documentation, debian related method to setup a Virtual Network on a Virtual Machine.

Also add other documentation when required.

Activities -

Here is the status of the **Honey Activities** as noted by me on 24-03-2020. It is easier to work when the activities which need work are known. Apart from these activities there are many activities which need to be ported to python 3. As of 2020-02-25 there are 175+ matches for the code pattern "`exec = sugar-activity`" in org:sugarlabs. I will choose the activities as suggested by mentors or choose activities which have a high pedagogical value. Not porting such activities will make them unusable as the support for python2 is dropped.

Note: The activities shown below from the honey activities set may not be the only ones I will be working on (Sharing the image just as a reference I have been using). As rightly said by the mentors, it is difficult to estimate the time needed for activities. Different activities demand different amounts of time and priority to be ported first.

Key: **Green**- Work completed. **Red**- Work not done **Yellow**- Open PRs, to be reviewed, Tested and merged. **Blue**- Readme does not use markdown.

The picture is a screenshot of an excel file which will be updated as and when working.

ACTIVITY NAME	PYTHON 3	GTK+3	COLLABWRAPPER	TELEPATHYGLIB	README FILE
Abacus:	Green	Green			Green
AmazonasTortuga:					
AnalyzeJournal:	Red	Green			Green
Bounce:	Red	Yellow			Green
BulletinBoard:					
Cardsort:	Green	Green			Green
CartoonBuilder:	Yellow	Green	Yellow	Yellow	Red
Chart:	Green	Green			Green
Clock:	Green	Green			Green
ColorDeducto:	Yellow	Green	Red	Yellow	Blue
Colors:	Red	Red	Red	Red	Red
CookieSearch:	Yellow	Green	Yellow	Yellow	Green
Deducto:	Green	Green	Red	Green	Green
Develop:	Orange	Orange			
Dimensions:	Yellow	Green	Yellow	Yellow	Green
Distance:	Red			Yellow	Green
Erikos:	Yellow	Green			Green
Finance:					
Flip:	Green	Green	Green		Red
FlipSticks:	Red	Yellow			Blue
FollowMe:	Green	Green			Red
FotoToon:	Green	Green			Green
FractionBounce:	Green	Green			Green
GCompris:	Orange	Orange			
GeoGebra:					
GetBooks:	Yellow	Green			Green
GetIABooks:	Yellow	Green			Green
Gnuchess:	Green		Green	Green	Blue
Help:					
IRC:					
Implode:	Green	Green			Green
InfoSlicer:					
JokeMachine:					
Labyrinth:	Red	Green			Blue
LetterMatch:	Green	Yellow			Green
Letters:	Green	Green			Green
LocoSugar:	Red	Green			Green
Maze:	Green	Green		Green	Green
Measure:	Green	Green			Blue
Memorize:	Green	Green	Green		Green

Port Sugar and Core Activities to Python 3

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Moon:					
MusicKeyboard:	Green	Green			Green
Napier:					Red
Numbers:	Red				Green
Nutrition:	Green				
Paint:	Green				Red
Paths:					
PeriodicTable:	Green	Green			Green
Physics:			Green		
Poll:			Red	Green	
Portfolio:			Green		Green
Puklanapac:	Yellow				
ReadETexts:	Green			Green	
Recall:	Red		Green		Red
Record:	Green		Red	Green	Green
Reflection:	Yellow		Yellow	Yellow	Red
Ruler:	Red	Green			Green
SimpleEnglishWikipedia:					
SliderPuzzle:	Red	Green	Red	Green	Red
Sliderule:	Green				Red
Snow:	Green				
SocialCalc:					
Speak:	Green	Green			Green
Spirolaterals:					
StarChart:	Yellow	Yellow			Red
StopWatch:	Green				Green
Story:	Green				Green
StoryBuilder:					
TamTam*:					Blue
Triples:	Green	Green			
TurtleArtMini:					
TurtleConfusion:					
TurtlePond:					
TypingTurtle:	Green	Green			
ViewSlides:	Red	Green			
Visualmatch:					
Words:					
Yupana:					
xoEdito					

Timeline

5 May, 2020 to 31 May, 2020	<ul style="list-style-type: none"> • Review the Sugar source code changes since 0.112 that were made for porting to Python 3 • Design tests and iterate until the tests have sufficient coverage for the code changes identified • Also, go through the merged and in-progress port pr's to have a better understanding and discuss doubts related to it with mentors.
1 June, 2020 to 10 June, 2020	<ul style="list-style-type: none"> • Port remaining activities to TelepathyGlib and collabwrapper.(May include other related work as suggested by mentors.) • Add / Improve Port to Collabwrapper documentation.
11 June, 2020 to 13 June, 2020	<ul style="list-style-type: none"> • Test and fix the errors related to collaboration, for activities. • Apply suggestions if required on the PRs opened during 1st June- 10th June.
14 June, 2020 to 22 June, 2020	<p>Follow the plan as mentioned for porting activities to python3 and also port to the latest Sugargame.</p>
23 June, 2020 to 26 June, 2020	<ul style="list-style-type: none"> • Test and fix the errors related to python3 port and sugargame for activities. • Fix python 3 regressions • Apply suggestions if required on the PRs opened during 14th June- 22nd June.
27 June, 2020 to 28 June, 2020	<ul style="list-style-type: none"> • Go through official documentation of six . • Go through previous work done on porting sugar-toolkit-gtk3 to Python 3 using six . • The regressions seen may be a result of not fixing warnings like #437 and also other changes, work on identifying them.

29 June, 2020 to 3 July, 2020	<ul style="list-style-type: none"> • Discussing changes with mentors before phase one evaluation . • Also check for the work that needs to be done to fix regressions in Sugar, the Toolkit, and the Datastore - go through the related issues.
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Phase one evaluation (deadline- July 3)

4 July, 2020 to 11 July, 2020	Complete the port work remaining for the toolkit and fix warnings, regressions, test and merge. (May include other related work as suggested by mentors.)
12 July, 2020 to 14 July, 2020	<ul style="list-style-type: none"> • Go through the previous work done in porting Sugar-datastore to python 3. Relevant- PR #18 • Test and raise issues on Sugar-datastore if I don't plan on fixing the issues. • Discuss the changes applied to sugar-toolkit-gtk3 with mentors.
15 July, 2020 to 29 July, 2020	<ul style="list-style-type: none"> • Complete the port work remaining for the Sugar-desktop, along with fixing few regressions. • Or Port more activities to python 3 (May include other related work as suggested by mentors.)
29 July, 2020 to 31 July, 2020	Discussing changes with mentors before phase two evaluation .

Phase two evaluation (deadline- July 31)

1 July, 2020 to 4 Aug, 2020	<p>Complete the port work for remaining activities to python 3, also check for PR's on python3 port which have been open for a long time.(opened by other contributors)</p> <ul style="list-style-type: none"> → For the open PRs with no updates for more than 6-7 months either close the PRs or discuss with mentors. → Review open PR, suggesting changes and work on getting the PRs merged, so that the activities are finally ported to python3. <p>(May include other related work as suggested by mentors.)</p>
5 Aug, 2020 to 18 Aug, 2020	<ul style="list-style-type: none"> ● Check coverage of activities and apply tests till satisfactory results. ● Review and test already ported activities. Fix bugs, errors and warnings. ● Refresh pot file and also add new translations. ● Make all the changes necessary for the activities to be in a release ready state. (discuss with mentors)
19 Aug, 2020 to 23 Aug, 2020	<ul style="list-style-type: none"> ● Review the entire work done during summers and make necessary documentation . ● Release activities. ● Improvements to sugar docs.
24 Aug, 2020 to 30 Aug, 2020	<p>Make final submission and discuss future aspects with mentors and the community, which will include:-</p> <ul style="list-style-type: none"> ● Discussion on porting work remaining to be done other than this project. ● Reviews from the entire community regarding the impact of this project, for drafting better instances, if required in the future.

If targets mentioned in the timeline are completed before or the timeline leaves me with some free time for some reasons then I will involve myself in :

- Porting other activities to python 3.
- Testing Sugar activities
- Addressing open PRs by other contributors- testing and reviewing code
- Test latest Sugar releases

- Solving general issues and contributing to the code base.

Working Schedules:

Due to the COVID-19 lockdown in India, I'm not sure when my college resumes. It is highly probable that my summer vacations will be postponed and the semester exam (10-12 days) might be conducted in June or July. The exact dates and exam schedules remain unknown to me as of now. I will be compensating for those days before the coding period starts or work for extra hours on the remaining days. The current COVID-19 situation and the uncertainty of events will not deter me from completing the goals set.

I am comfortable working for 7-8 hours per day (for compensating I may also work for 8-9 hours each day). I have no prior commitments during summers. After college reopens on 1st August I will continue working for 5-6 hrs a day.

Reporting Progress between evaluations

I have planned to write weekly Blogs, inspired from previous GSoC participants. Besides, I plan on reporting tasks related progress via mail or as comments on the PR I will be working on.

Post GSoC plans

I plan to continue contributing to SugarLabs. Honestly, the green dots on my GitHub account amuse me :) I look forward to becoming a member of SugarLabs and also mentor other open-source programs for Sugar Labs (like GCI). [I have noticed [@pro-panda](#) who is now a GSoC mentor, was a GSoC participant -really inspiring! :)]