



# Google Summer of Code

Proposal

**Organization:** Python Software Foundation



**Sub-Organization:** Python Argentina



PyZombies



Basic information			
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Education			
College	Universidad Central de Venezuela	Major	Computer Science
Expected Graduation	2021	Degree	Bachelor of Science

## Background and experience

I have experience as a software developer using different programming languages, however, my biggest strength is working on Python, with more experience using the Django framework to web development, additionally, I have been developing my bachelor thesis using Python with Django Rest Framework, it is focused on the development of a Proof of Concept of a micropayment engine with bitcoin using the lightning network (to reduce fees) and text messaging, without the need for a smart device, in that project I am working follow high standards of coding and developing with unit tests to test all code.

I consider myself an enthusiast of Open Source. Last year I started to contribute to small projects and be more proactive in FOSS communities. I participated in the OpenSource Day of the Grace Hopper Celebration virtual conference 2020<sup>1</sup>, contributing to Techtonica a nonprofit that provides free tech training with stipends and job placement to women and non-binary adults with low incomes. In addition I participated as well as in the Hacktoberfest 2020<sup>2</sup> a program sponsored by DigitalOcean and other companies where all the month of October they invite people to make 4 Pull Requests to Open-Source projects, throughout the month I contributed to various projects including Python Ecuador. Since that experience, I researched programs focused on FOSS and I found GSoC.

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<sup>1</sup> <https://ghc.anitab.org/programs-and-awards/open-source-day/2020>

<sup>2</sup> <https://hacktoberfest.digitalocean.com/>

## Contributions

During the contribution period, I started contributing to open issues on Wagtail, a Django subcommunity, and later I focused on PyAr. All of these contributions include open issues by the community and open issues by myself.

### [Python Argentina - PyZombies](#)

Contribution	Issue	Pull Request	Status
Fix starbuzz python exercise	<a href="#">#61</a>	<a href="#">#64</a>	[ACTIVE]
Translating Lectures to Spanish	<a href="#">#22</a>	<a href="#">#66</a>	[ACTIVE]
Adding Interactive assignments. Adapt assignments to use Runestone's ActiveCode	<a href="#">#20</a> and <a href="#">#7</a>	<a href="#">#71</a>	[ACTIVE]

### [Python Argentina - CDpedia](#)

Contribution	Issue	Pull Request	Status
Remove hardcoded 'es' language from URL string	<a href="#">#357</a>	<a href="#">#373</a>	[MERGED]
Improve logging of index creation in debug mode	<a href="#">#325</a>	<a href="#">#376</a>	[MERGED]
Meta! El código, comentarios y docstrings tienen que estar todos en inglés	<a href="#">#184</a>	<a href="#">#382</a>	[ACTIVE]
Issues reported	Issue		
Update the year in copyright	<a href="#">#383</a>		

### [Python Argentina - OpenLex](#)

Contribution	Issue	Pull Request	Status
Actualización del Readme, gitignore y remueve archivos .pyc	-	<a href="#">#22</a>	[MERGED]

### [Wagtail](#)

Contribution	Issue	Pull Request	Status
Allow search custom fields on a custom user model	<a href="#">#6853</a>	<a href="#">#6915</a>	[ACTIVE]

### [Anita B Org - Bridge in tech backend](#)

Contribution	Issue	Pull Request	Status
Docs: Add link to zulip stream in CONTRIBUTING.md	<a href="#">#229</a>	<a href="#">#259</a>	[MERGED]
Fix tests failing on github actions	<a href="#">#262</a>	<a href="#">#263</a>	[MERGED]

## Past contributions

As I described above, I am an Open Source enthusiast and have contributed to projects in the past and below are the highlights, however you can see all my activity on my Github profile

### [Techtonica - Keyboard Shortcuts Practice](#)

Contribution	Issue	Pull Request	Status
[jQuery] Replace CSS toggle class with built-in function	<a href="#">#99</a>	<a href="#">#135</a>	[MERGED]

### [Python Ecuador - Webpage](#)

Contribution	Issue	Pull Request	Status
Agregar issue template para actualizar partes de la guía/web	<a href="#">#214</a>	<a href="#">#242</a>	[MERGED]

### [Mattermost - Server](#)

Contribution	Issue	Pull Request	Status
[MM-25408] Improve the grammar on Account Creation Screen	<a href="#">#15927</a>	<a href="#">#15978</a>	[ACTIVE]

**Sub-Organization:** PyAr

**Project:** PyZombies

**Mentors:** @reingart, @eamnau

## Abstract

PyZombies is a project started by Python Argentina (PyAr) with the main purpose of creating a MOOC in Spanish to start programming using Python. PyZombies is based on *Python para Zumbies*<sup>3</sup>, a free course to learn the basics of Python in Portuguese. It was created by professor Fernando Masanori, and it taught over 70K students, and currently has more than 500k reproductions on Youtube.

## Detailed project

PyZombies proposed a web application to present all the content of the course, theory and practical exercises, following the syllabus of *Python para Zumbies*. This web application intends to be an interactive book, in which the student can be able to run the exercise and get feedback about it.

All the lectures and exercises are an interactive tutorial developed with Runestone<sup>4</sup>, an open-source library to create book interactives, it has a web Python interpreter. Every practical exercise will be made following Test-Driven Development (TDD), focused on the output provided to the students and make it a valuable experience for them.

The structure of PyZombies is following the syllabus mentioned above, but I propose that the structure should divide each theme into a lecture and quiz. The lecture should have theory concepts with guided exercises. On the other hand, the quiz should have questions to evaluate concepts of theory with practical exercises.

Currently, the course has some lessons with all theory content but there are not any practical exercises inside it. Furthermore, there are 2 main lectures that need to be done from scratch: *MVP* and *Hackendo Facebook*.

In the first one, the exercise needs to be changed because, due to the limitations of the web Python interpreter, not all the core functionalities of Python are developed,

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<sup>3</sup> <https://www.pycursos.com/python-para-zumbis/>

<sup>4</sup> <https://runestone.academy/>

specifically the library `tkinter` used to create user interfaces should be changed for use native html forms.

The second one, has the same limitations but with another problem, the Facebook API has changed a lot since the course was originally created, for that reason, it is no longer possible to make requests so easily without having an authentication token, therefore the exercise could not be done in the correct way, then, it must be changed but maintained the same purposes.

The current issues of the project are:

- There are still quizzes that do not have the exercises adapted with the element of Runestone `activecode`.
- The lectures do not have the exercises at the end.
- There are no quizzes to review the theoretical concepts.
- There are broken links of some images and others that Runestone can not be read.
- Due to the limitations of the Python interpreter used by Runestone, some of the exercises should be refactored.
- The version of Runestone is outdated.

## Project Goals

In order to launch a MVP of PyZombies, I must resolve these issues of the project, specifically I plan in the internship focus in reach these goals below:

1. Finishing and improving the exercises inside the lectures.
2. Adapting the assessment of MVC to use the element of Sphinx to provide native html forms and remove the use of library `tkinter` because the interpreter does not support it.
3. Adding the quizzes or assessment to evaluate the theoretical concepts.
4. Update the version of Runestone.
5. Refactor the exercise *Hackeando Facebook con Python* to use a public API REST <https://github.com/public-apis/public-apis> to accomplish the objective of the exercise of integrating with a third-party API.

## Technologies and skills

- **Programming Language:** Python 3.X
- **Markup Languages:** Markdown, reStructuredText, and Sphinx for documentation generation.
- **Python Packaging:** Setuptools, Virtualenv
- **Testing and code styling:** Pytest, Unittest, Black
- **Version Control:** Git, GitHub
- **Other tools:** Runestone

## Minimum expected results

- Complete the exercises inside lectures.
- Review, adapt, and add to quizzes up to 15 exercises.
- Restructured the index and the titles of each section using reStructuredText.
- Fix all errors of code inside the project.
- Adapt the all exercise to work with the interpreter **Skulpt** using in Runestone.

## Stretch goals

If everything goes fine and I am left with some time I would like to spend time implementing another goal, such as deploying to a server or coordinate to deploy to *Runestone Academy* and activate all functionalities of Runestone using a database to save the record of students and their progress, this is a goal that would be perfect to use the course a massive way.

## Proposal Timeline

Period	Tasks
<b>Student Application</b> <i>Mar 29 - Apr 13</i>	<ul style="list-style-type: none"><li>• Setup the development environment.</li><li>• To familiarize with community practices and processes.</li><li>• To familiarize myself with Runestone.</li><li>• Ask mentors questions about the PyZombies project to understand its purpose, status and expectations.</li><li>• Fix and report issues projects of the organization.</li></ul>
<b>Community</b>	<ul style="list-style-type: none"><li>• Finishing up the pending issues from the application</li></ul>

<b>Bounding</b> May 17 - Jun 07	<p>period.</p> <ul style="list-style-type: none"> <li>• Set up the blog that I will use to record my experience and activities.</li> <li>• Coordinate with the project's mentors the way to communicate.</li> <li>• Establish with the mentors' guidance the work methodology to use during the development of the PyZombies project in order to correctly achieve the objectives set.</li> <li>• Use the available tools in Github (such as issues, milestones, phases, and projects) to help the establishment of the work methodology.</li> <li>• Review the original course to get any other valuable information missing.</li> <li>• Collect and report to mentors all information about exercises, lectures, quizzes, and images that I am going to add/change to the course.</li> </ul>
<b>Official coding phase starts</b>	
<b>Week 1</b> Jun 7 - Jun 11	<ul style="list-style-type: none"> <li>• Restructured the order of the lectures, quizzes and assessments, renaming its title and updating the index.</li> <li>• Start updating the version of Runestone and verify that it works with the <i>Continuous Integration</i>.</li> <li>• Apply a library linter to validate the all reStructuredText files.</li> <li>• Work on the lecture 1 to lecture 5</li> <li>• Add the exercises inside each lecture with the automatically graded using the unittest.</li> </ul>
<b>Week 2</b> Jun 14 - Jun 18	<ul style="list-style-type: none"> <li>• Work on the revision lectures, adding others to complement the existent.</li> <li>• Refactor the code inside in the revision lectures resolving the issues.</li> </ul>
<b>Week 3</b> Jun 21 - Jun 25	<ul style="list-style-type: none"> <li>• Work on the quiz 3 to quiz 14</li> <li>• Refactor the code adding more unittest to each exercise</li> </ul>
<b>Week 4</b> Jun 28 - Jul 02	<ul style="list-style-type: none"> <li>• Work on the quiz Extra1 and quiz Extra 2.</li> <li>• Add quizzes to review theoretical concepts.</li> </ul>
<b>Week 5</b> Jul 05 - Jul 09	<ul style="list-style-type: none"> <li>• Begin to adapt the MVC lecture, removing all the codes that are using the interpreter that doesn't support it.</li> </ul>
<b>Week 6</b> Jul 12 - Jul 16	<b>Phase 1 of evaluation</b>
	<ul style="list-style-type: none"> <li>• Show to mentors the code with the lecture 1 to 5, the revision lectures, and the quizzes finished.</li> <li>• Resolves any issues reported by the mentor in the</li> </ul>



	evaluation <ul style="list-style-type: none"> <li>Continue adapting the MVC lecture, using an element of Sphinx.</li> <li>Make the evaluation of the mentor.</li> </ul>
<b>Week 7</b> <i>Jul 19 - Jul 23</i>	<ul style="list-style-type: none"> <li>Finish the lecture MVC, and begin to adapt the exercise <i>Hackeando Facebook</i>.</li> <li>Select the Rest API to use for changing the <i>Hackeando Facebook</i> exercise.</li> </ul>
<b>Week 8</b> <i>Jul 26 - Jul 30</i>	<ul style="list-style-type: none"> <li>Continue changing the <i>Hackeando Facebook</i> exercise.</li> <li>Use the Runestone element <b>activecode</b> to make exercise interactive and automatically graded using unittest.</li> </ul>
<b>Week 9</b> <i>Aug 02 - Aug 06</i>	<ul style="list-style-type: none"> <li>Finish the exercise <i>Hackeando Facebook</i> using calls to API REST.</li> </ul>
<b>Week 10</b> <i>Aug 09 - Aug 13</i>	<ul style="list-style-type: none"> <li>Complete all documentation missing</li> <li>Update the GitHub repository with more information about the project and information on How to contribute that could help new people who want to collaborate.</li> <li>Resolve any issues pending before the final week.</li> </ul>
<b>Final Week</b> <i>Aug 16 - Aug 23</i>	<ul style="list-style-type: none"> <li>Make the final evaluation of the mentor.</li> <li>Submit the project to Google system.</li> </ul>
<i>Aug 23 - Aug 30</i>	<b><i>Final phase of evaluation</i></b>
<i>Aug - 31</i>	<b><i>Results announced</i></b>

The Python Software Foundation has in addition a blogging schedule with the deadlines of each post that students must publish on the PSF blog during the program. There are two types of posts, **Blog Posts** and **Weekly Check-Ins**.

Therefore, the proposed timeline of the publications would be the following:

Jun 7	Jun 14	Jun 21	Jun 28	Jul 05	Jul 12	Jul 19	Jul 26	Aug 02	Aug 09	Aug 16	Aug 23

	Publish the Weekly Check-in in the PSF Blog
	Publish a Post in the PSF Blog

## Future work

The development of PyZombies and my contributions to this project does not stop with the GSoC 21. Once the internship is finished, I intend to continue working on it in my spare time. Some features and tasks which I hope to work on after GSoC are:

- **Resolve or report bugs:** after my work for GSoC is completed one task that I plan to do regularly, because is the best way to maintain the project up to date.
- **Help to publish the recording videos:** in discussion with the mentors, they were told that a future contribution would be to record videos to help the students during the course, so it could be great to publish them in the course.
- **Improving or adding more exercises/assessment:** although one the objectives set is, finish the current exercises and assessments, this task would consist of being in constant iteration of the exercises/assessments according to the feedback of the students.

## Why PyZombies project?

Nowadays, learning programming has become a global skill for many reasons, can be considered as the skill of the 21st century<sup>5</sup>. It has become so important that in fact several countries have added teaching programming as a requirement and recognize its importance<sup>6</sup>. Currently there are many resources to learn, however, not all are open source or they are not in Spanish and from my own experience when I started programming, having a resource such as the proposed MOOC in Spanish I consider it very valuable and would help to introduce new people from all over Latin America to the world of programming, a goal that aligns with my purposes because I know how programming can positively influence to young people.

## Why me?

My experience with Python makes me a great candidate because I can successfully code and design course content as well as develop it to be interactive.

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<sup>5</sup> <https://ec.europa.eu/digital-single-market/en/coding-21st-century-skill>

<sup>6</sup>

[https://intef.es/wp-content/uploads/2018/04/Informe\\_INTEF\\_After\\_the\\_reboot\\_Computing\\_Education\\_Abril\\_2018.pdf](https://intef.es/wp-content/uploads/2018/04/Informe_INTEF_After_the_reboot_Computing_Education_Abril_2018.pdf)

I was a teaching assistant for two years in my college and I have experience managing academic courses and establishing academic content so it is a great advantage when designing any academic course, additionally, I could see closely how the teaching programming to young people influences in a positive way since I was a teacher volunteer in one NGO called SoyMujer and I had grateful of establishing a programming course for girls around 12 to 18 years old from a low-income neighborhood in my city (see pictures 1 and 2) and that way contributing to the community.



Image 1



Image 2

## Other relevant information

This is my first time applying into the GSoC and I do not plan to contribute to another organization. I am in my last year and I no longer have exams or other university commitments, this gives me ample time to code, spending around 20 hour per week during the internship.