

# Software Fault Localization as a Service (SFLaaS)

Qusay Idrees Sarhan, Hassan Bapeer Hassan, and Arpad Beszedes

{sarhan, beszedes}@inf.u-szeged.hu

Department of Software Engineering, University of Szeged.

## Objective

In this paper, we offer a tool named SFLaaS for locating faults in programs written in Python. The tool is provided as a service rather than as a plugin or a command-line tool to be installed, thus it can be accessed anytime and from anywhere.

## SFLaaS User Interface

Our proposed tool supports different important features in fault localization. Using our tool could help developers find faults in their programs efficiently.

### SFLaaS: Software Fault Localization as a Service

Upload your python files and submit to show the testing results.

Upload files:

Upload your program here  
 No file chosen

Upload your test cases here  
 No file chosen

Or write your program here:

main.py	test_main.py
1	1
2	2

Select Ranking Method:

Select Formula:

User defined formula

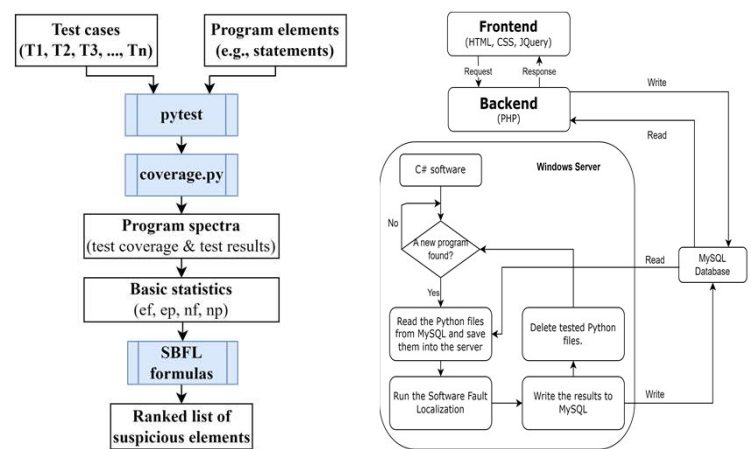
Results:

YOUR PYTHON CODE	RESULT
1	

	tarantula	ochiai			
	#	Ranks	Suspiciousness scores	Program elements	
1	def mid(x, y, z):	1	1.5	0.833	mid_function.py:6
2	m = z	2	1.5	0.833	mid_function.py:7
3	if y<z:	3	3.0	0.714	mid_function.py:4
4	if x<y:	4	5.0	0.5	mid_function.py:2
5	m = y	5	5.0	0.5	mid_function.py:3
6	elif x<z:	6	5.0	0.5	mid_function.py:13
7	m = y	7	8.5	0.0	mid_function.py:5
8	else:	8	8.5	0.0	mid_function.py:9
9	if x>y:	9	8.5	0.0	mid_function.py:10
10	m = y	10	8.5	0.0	mid_function.py:11
11	elif x>z:				
12	m = x				
13	return m				

## How Does SFLaaS Work?

The tool employs Spectrum-Based Fault Localization (SBFL) to help Python developers automatically analyze their programs and generate useful data at run-time to be used to produce a ranked list of potentially faulty program elements (i.e., statements).



The front-end interface allows users to submit their Python programs to be debugged. The back-end of the application retrieves the results and displays them to the user.

## How to Access SFLaaS?

SFLaaS can be accessed via:

<https://sflaas.daxazi.com/>

## Conclusion

SFLaaS is a localization tool for Python programs. It is implemented with many helpful and practical characteristics to aid developers in debugging their programs. Various seeded Python programs have been executed to assess the functionality of the tool, and the results showed that it can be easily used to locate faults in the subject programs.

