Automatic Detection of Pseudo-tested Methods using Python and Pytest

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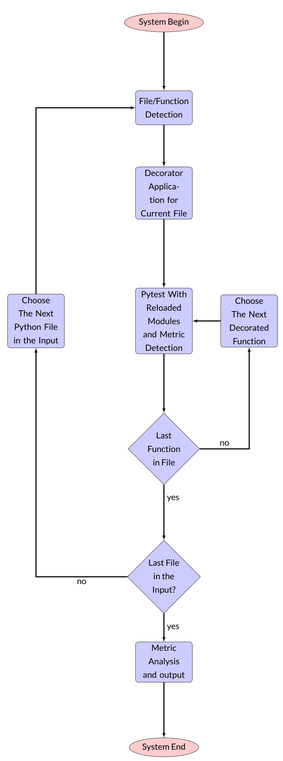
Introduction

Software systems are very large and complex. Due to this, modern Python programs are difficult to test due to the lack of type safety. This could cause a psuedo-tested methods to exist in Python programs. A psuedo-tested method is method that is tested, but which passes regardless of the output of a function. Function-Fiasco helps determine how much of the code is adequately tested and provides a metric that is more representative of the actual conditions of the system.

Implementation



Function-Fiasco is an automatic tool that detects pseudo-tested methods in Python progams.

Scan the QR Code to visit our GitHub page

Preliminary Results

	System Name	State Cov	Function Cov	NUMM	NUMTM	Fiascoed	Pseudo	NUMTTM	UC	Change
1	Hashids-Python	0.97	0.94	16	15	10	8	7	0.44	0.50
2	Bleach	0.48	0.41	368	152	8	2	150	0.41	0.00
3	Pycco	0.77	0.86	22	19	6	5	14	0.64	0.22
4	Howdoi	0.78	0.95	20	19	2	0	19	0.95	0.00
5	Flashtext	0.81	0.33	42	14	7	4	10	0.24	0.09
6	Honcho	0.85	0.69	58	40	7	5	35	0.60	0.09
7	Maya	0.90	0.50	88	44	13	3	41	0.47	0.03
8	Gator	0.99	0.86	92	79	54	30	49	0.53	0.33
9	Hatch	1.00	0.56	134	75	14	6	69	0.51	0.05
10	Nikola	0.67	0.44	732	319	16	9	310	0.42	0.02

Function-Fiasco has detected pseudo-tested methods in Python programs.

Future Work

Function-Fiasco has many features that need implementation which include:

- Further type fuzzing capability
- Parameterized test observation
- Updated Coverage Types

Function-Fiasco will continue to test systems for pseudo-tested methods.

Conclusion

Pseudo-tested methods are an issue that exist in Python based systems. Function-Fiasco can detect such methods that may lead to unexpected issues. Function-Fiasco can aid in the implementation of Python systems.

Get Involved

If you would like to get involved, submit bugs to the issue tracker on our GithHub project, or submit a pull request to aid in the implementation.

Acknowledgements

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