

State of the FOSS (Fortran Open Source Software)

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Hello

- Reader (Education) in Computer Science / Software Engineering
- Research interests in software processes, legacy systems, development practice, refactoring, software quality and computing education (including professional development)
- Software fanatic and lazy FOSS developer



COLLABORATORS AND THANKS

- Austen Rainer (QUB)
- Alexander Nolte (Eindhoven UT and Carnegie Mellon)
- Northern Ireland High Performance Computing (NI-HPC)

QUESTION: WHAT THE FOSS?

- Can we gain a quick insight into the Fortran open source ecosystem?

Methodology

- Mining github
 - Metadata
- Cloning and analysing repositories
 - Commit history
- Combined rudimentary analysis

Warning: this is early quick work and perhaps not as sound as it should be.

HEADLINE DATA

Language	Total Repositories
Fortran	40,187
Python	21,323,013
Java	18,663,261
COBOL	6,796
Go	1,937,300

AUTHOR ANALYSIS

Language	Average Authors	% with Multiple Authors
Fortran	13	89.9083%
Python	60	98.9701%
Java	42	98.7083%
COBOL	2	54.0434%
Go	58	99.7976%

COMMIT/HISTORY ANALYSIS

Language	Average Commits per Repo	Average Commits per 1000 Repos	Average Days Between First and Last Commit	Average Days Since Last Commit
Fortran	1,146	28.52	2400	920
Python	3,041	0.14	2080	323
Java	2,310	0.12	2667	924
COBOL	38	5.59	286	1410
Go	2,626	1.36	2627	312

LICENCE ANALYSIS

Language	% with Licence	% of Licences FOSS	% of Licences GPL	% of Licences MIT
Fortran	80.49%	69.31%	26.19%	21.19%
Python	94.80%	82.63%	9.51%	33.92%
Java	86.57%	86.75%	7.47%	14.27%
COBOL	32.25%	85.71%	23.40%	41.95%
Go	97.84%	87.37%	4.41%	37.37%

HEADLINE DATA

Language	Total Repositories	Repositories in Sample	% of Repositories in Sample	Error Rate	Average Stars	Average Watchers	Average Forks	Average Stars per 1000 Repos
Fortran	40,187	1,020	2.53813%	3.82%	75	75	32	1.87
Python	21,323,013	1,020	0.00478%	4.80%	19683	19683	2953	0.92
Java	18,663,261	1,020	0.00547%	8.92%	8946	8946	2100	0.48
COBOL	6,796	1,020	15.00883%	0.59%	10	10	2	1.47
Go	1,937,300	1,020	0.05265%	3.14%	11279	11279	1249	5.82

CONCLUSIONS

- Fortran shows mixed indicators
- When adjusted for sample size some of them are quite positive
- There's more gold in them there repositories, yarr!

Thank You Questions?

Find my socials and
contact info below or
scan the QR code



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