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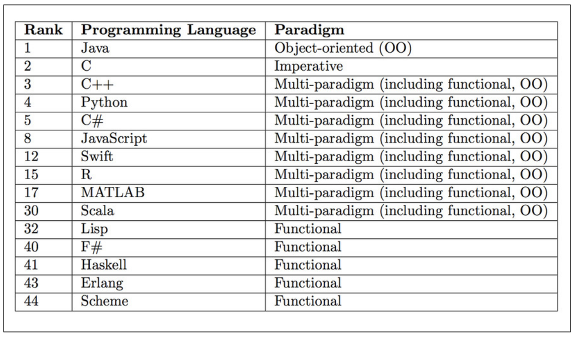
Subject Area	Software and Systems

If Functional Programming Is So Great, Why Isn’t Everyone Using It?



Rank	Programming Language	Paradigm
1	Java	Object-oriented (OO)
2	C	Imperative
3	C++	Multi-paradigm (including functional, OO)
4	Python	Multi-paradigm (including functional, OO)
5	C#	Multi-paradigm (including functional, OO)
8	JavaScript	Multi-paradigm (including functional, OO)
12	Swift	Multi-paradigm (including functional, OO)
15	R	Multi-paradigm (including functional, OO)
17	MATLAB	Multi-paradigm (including functional, OO)
30	Scala	Multi-paradigm (including functional, OO)
32	Lisp	Functional
40	F#	Functional
41	Haskell	Functional
43	Erlang	Functional
44	Scheme	Functional

Figure 1: The TIOBE Index Ranking 2017

Introduction:
Functional programming has been considered to be an answer to many of the problems faced by software engineering today, especially in academic circles. Nevertheless, the large-scale adoption of functional programming in the mainstream of industry has been sluggish. The popularity of functional programming languages is shown in figures 1 and 2. The main aim of this project was to find out why functional programming has not been adopted as widely as anticipated, and to suggest measures that could increase its use in industry. There are a lot of different opinions on this topic, but no broad study looking at different aspects of the problem.

Procedure / Result: In order to get rid of speculations and ill-founded opinions, the extent to which functional programming is being used in various industrial, commercial and practical settings as well as the advantages and disadvantages of using functional programming in these settings was systematically evaluated. Reasons why the use of functional programming has been limited, especially in areas where its advantages are found to be clear, were proposed and investigated. And finally, measures that could be taken to increase the benefit gained using functional programming in various industrial, commercial and practical settings were proposed, discussed and prioritised.

Result: The technical report presents the results of the meta-study conducted on multiple aspects of the functional programming paradigm and its representative languages. It does so by identifying key issues responsible for the weak adoption of functional programming, and, more importantly, by proposing and evaluating measures that should positively influence the usage of functional programming languages in industrial, commercial and practical settings.

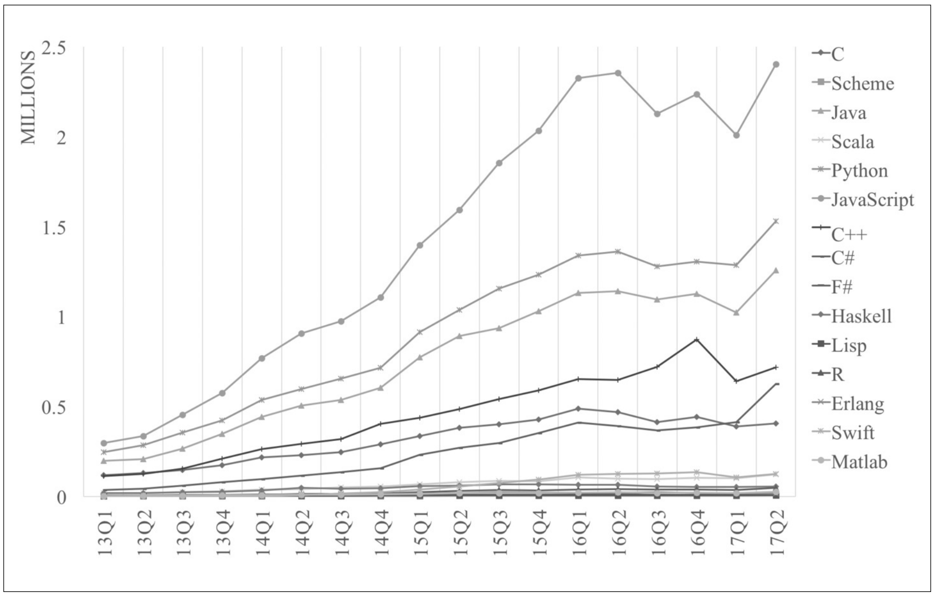


Figure 2: Active GitHub Repositories per Quarter

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