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# These Are the Top Languages for Enterprise Application Development

*And What That Means for Business*

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**CLOUD**  **FOUNDRY**

Enterprises are now free to deploy a polyglot programming language strategy thanks to a decrease in emphasis on which language developers must use. As companies transition from legacy software to more agile, flexible technologies, it is easier for development teams to find the right tool for the right job. Cloud-native practices enable developers within large companies to pick their preferred language or, more importantly, the language that best supports their functional needs. All of this can be accomplished while minimizing the historically heavy operational burden of supporting a variety of development languages. As a result, application development and operational teams are able to move faster together.

What does this mean for business? Large organizations are no longer restricted by the need to hire a developer fluent in any specific language. While development teams may certainly prefer a specific language, they may be comprised of multilingual developers capable of programming in multiple languages. This widens the pool of available talent for businesses looking to build out their development teams—what company these days is not trying to do this?

More and more, businesses are employing a polyglot (and a [multi-platform](#)) strategy to meet their exact needs. The flexibility of cloud-native practices enables this movement away from a monolithic approach and towards a world of computing that is flexible, portable and interoperable. Adopting a multilingual approach is yet another step towards improving a business' velocity—when it comes to development, production and capital.

Through years of industry research<sup>1</sup>, Cloud Foundry Foundation has tracked the languages used most frequently for application development among enterprise developers worldwide. While there is consistency among which languages are the most popular across the enterprise developer landscape, there are certain languages which are particularly dominant among specific audiences—based on region, company size, and more.

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<sup>1</sup> See Methodology at end of document.

## Now We're Talking

Over the last nine months, Java and JavaScript<sup>2</sup> have remained the two dominant languages in the enterprise developer landscape throughout two rounds of research. Industry research firm RedMonk published language rankings in March 2018 that also placed Java and JavaScript at the top tier of development languages—corroborating our findings that Java is alive and well.

In contrast to our findings, however, RedMonk found Python and PHP used more frequently than C# and C++, but only marginally. Indeed, RedMonk's Stephen O'Grady writes that "the numerical ranking is substantially less relevant than the language's tier or grouping."

Overall, IT Decision Makers (ITDMs) report using over 25 total languages—but over half of those languages are used so infrequently as to receive a single digit percentage. In November 2017, ITDMs reported their language preferences, the top six of which are used a significant portion of the time, while many other languages being used for application development are employed at lower rates.

The ordinal ranking and clear separation between Java and JavaScript and all other languages was even more stark in research from March 2018.

LANGUAGE	NOV 2017	MAR 2018	NOV-MAR
Java	57	58	+1
JavaScript	54	57	+3
C++	45	46	+1
C#	28	26	-2
Python	30	25	-5
PHP	22	22	--
VB.NET	19	17	-2
C	19	16	-3
Visual Basic 6	18	16	-2
VBA	16	15	-1
Perl	16	12	-4
Ruby	9	7	-2
Swift	6	6	--
Typescript	5	5	--
Objective-C	6	5	-1
Assembly	6	4	-2
Matlab	7	4	-3
R	4	3	-1
Scala	5	3	-2
Go	3	2	-1
Groovy	3	2	-1
Haskell	2	2	--
CoffeeScript	2	1	-1
Lua	3	1	-2
Other	3	3	--

<sup>2</sup> JavaScript is needed for many web applications. Question did not differentiate between server-side JavaScript (i.e.: Node.js) and browser-based use of the language.

These results show Java and JavaScript maintain their dominance in March 2018 at 58 percent and 57 percent respectively. At the second tier, C++ stands alone, with a nominal increase in usage from 45 to 46 percent. The March data reveals a small dip in Python usage from 30 to 25 percent, putting it on virtually the same level as C# (26 percent) and PHP (22 percent)—a third tier of developer languages used.

With the exception of Python, all the change between research from March 2018 and November 2017 can be considered within the margin of error. That said, there did seem to be an indication of some market consolidation as, despite small increases for Java, JavaScript and C++, almost all the other developer languages saw small decreases, meaning fewer ITDM respondents selected multiple options as an answer.

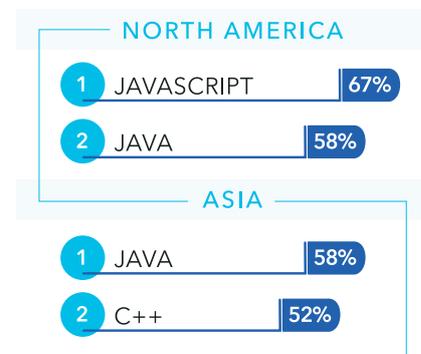


## Who's Talking Too?

So which languages are preferred by specific audiences?

In general, the larger the company, the more languages used. Therefore, we see above average usage of Python and C# among very large enterprises compared with the rest of respondents, as these companies are using multiple languages. This current embrace of multiple languages is something of a new phenomenon as, historically, larger companies have practiced tighter control over processes, particularly in production. As mentioned earlier, this polyglot approach is enabled by the move toward cloud-native practices.

In North America, a full two thirds of ITDMs report using JavaScript, followed by Java at 58 percent. In Asia, the majority reports using Java (58 percent) and C++ (52 percent), before conforming to the overall rankings. Europe has no particular differentiation as a region; it is very consistent with the overall trends, although Germany has less application development using C++ compared to Java and JavaScript, even though the ordinal rankings hold constant.



Private cloud users are very consistent with the overall trends, with an even slightly greater separation between Java and JavaScript from other developer languages. Multi-cloud users report using more developer languages, but the majority uses Java and JavaScript, followed by 50 percent saying they use C++.

On the other hand, users on a single cloud mostly use Java (57 percent) and do not have another developer language that is used by a majority, including JavaScript used by 47 percent vs. 57 percent overall.

## Say What

Among developers, there is consistency of choice when it comes to the top tier languages chosen for application development. In the nine months between surveys, the same six languages remained at the top of the heap, broken into three distinct groups, with Java and JavaScript far ahead of the pack. C++ occupies the second tier, while the third tier is comprised of C#, Python and PHP. These findings remained consistent between two rounds of surveys conducted in 2017 and 2018.

While there are many languages in play, there is a slight consolidation over time for how many languages are chosen, suggesting that developers are focused on selecting their best option rather than open evaluation.

Upon closer examination of the data, it's evident that both Java and JavaScript are nearly identical in terms of usage across development teams either already using or planning to use cloud-native architecture. The data shows these two languages are the preferred choices for companies developing cloud-native applications.

### The Language of Business

As we look toward a [multi-platform future](#) and continue to predict cloud-native trends based on our conversations with developers worldwide, it stands to reason that Java and JavaScript are the preferred languages in the developer community. That said, enterprises are using more languages in tandem than ever before as they exercise their newfound flexibility in cloud-native practices. As businesses continue to fine-tune their development strategy, they will seek the right tool for the right job—and the right development teams to write the future of cloud-native.

## A MULTILINGUAL STRATEGY



IMPROVES BUSINESS VELOCITY

ENABLES FLEXIBILITY, PORTABILITY  
AND INTEROPERABILITY

ATTRACTS THE BEST DEVELOPERS

## Methodology Note

Since 2015, ClearPath Strategies, a strategic consulting and public opinion research firm, has conducted Cloud Foundry Foundation's Global Perception Study (GPS), a series of deep-dive research on topics critical to cloud and developers. The results in this report come from the seventh round of this global quantitative and qualitative research in that series.

The qualitative portion of the GPS consisted of six focus groups conducted in February 2018 in three locations with enterprise developers—two groups each in China, Europe, and the United States. These developers were heavily screened based on size of company (enterprise), awareness of cloud computing and specific products, and tools used.

The quantitative portion of the GPS consisted of a global survey of IT Decision Makers from March 19th to 28th. The survey consisted of 601 respondents from a leading global online panel provider. Respondents were selected from the panel provider based on geographic and role-based quotas, as well as screening questions based on role in IT, decision-making role, company size, and how long they have been in IT. Selected respondents were further screened based on self-reported IT knowledge and attentiveness to survey questions. These interviews were distributed across four major IT Decision Maker roles: Developers, Ops, IT manager and Line of Business.

