Annual analysis of in demand programming skills

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INTRODUCTION

- Our research is meant to understand the technology usage and future learning intentions of today's tech professionals. By analyzing survey data, we intend to provide insights that inform educational institutions, tech companies, and individuals planning their career paths in technology.

Executive Summary

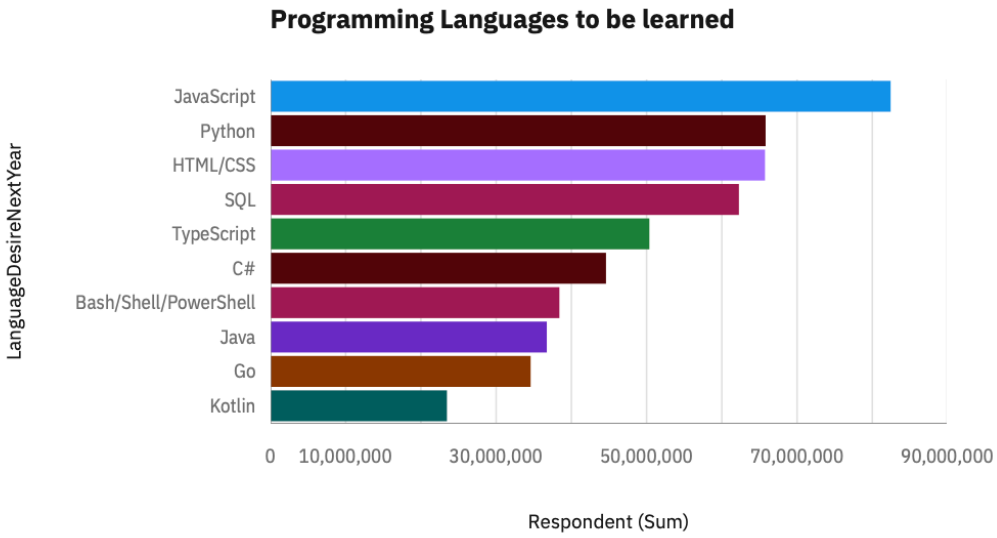
- The data was collected through an online survey targeting tech professionals globally. The survey covered various aspects, including databases, programming languages, web frameworks, platforms, and demographic information. The responses were aggregated and analyzed to identify patterns and trends.
- We collected our survey data by Accessing API's and deploying web scraping techniques
- We then used a common **Regional Database management System** upon using notorious python libraries such as **NumPy, Matplotlib & Seaborn** for the purpose of analysis, and visualization of our data.
- After this I prepared an interactive visual dashboard of our data using Cognos Analytics

Methodology

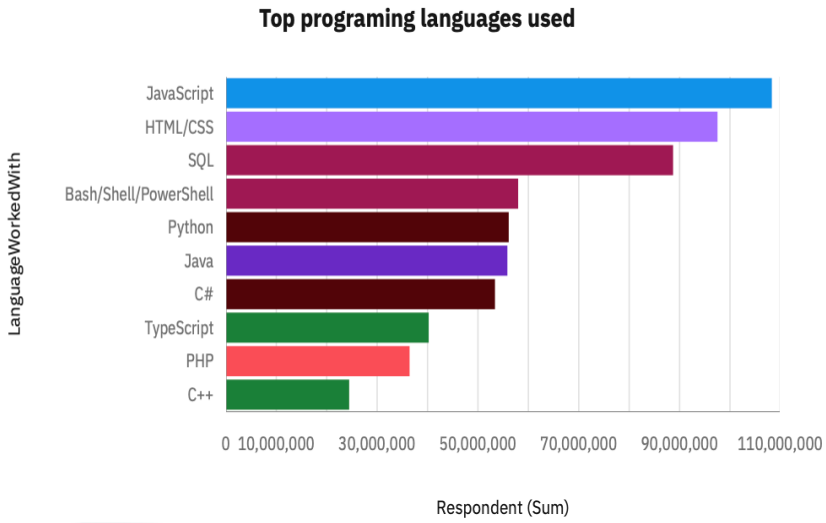
- **Me and my team set out to identify trends that paint a picture of the Web frameworks, Databases, and Programming languages that will be required in the coming years by employers.**
- We started to gather data by accessing API's and deploying web scraping techniques of Surveys, Job postings along with other sources. Upon gathering our data we had to clean it of missing or duplicate values by utilizing data wrangling techniques such as **NumPy**
- Upon gathering and cleaning our data we utilized common python libraries to analyze our data and visualize it. **NumPy** for data manipulation, **Matplotlib & Seaborn** for data visualization. We then loaded our data into MySQL which is a common RDBMS in order to zoom in on distributions, relationships, compositions and comparisons of specific datatypes
- Upon exporting our data frames to a csv-file we loaded our data into Cognos analytics to illustrate it in a way that is more comprehensive and interactive

PROGRAMMING LANGUAGE TRENDS

Next Year



Current Year



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PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

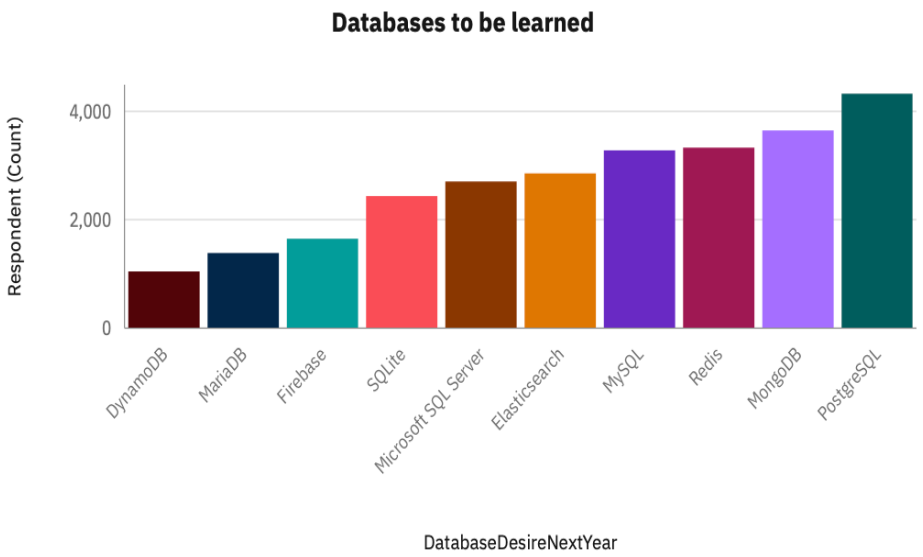
- TypeScript, while currently less used compared to languages like JavaScript and Python, shows a strong interest for future learning. This indicates a growing trend towards adopting TypeScript, likely due to its features that enhance JavaScript.Python is becoming increasingly popular
- Python and HTML/CSS are among the top languages currently in use and are also highly desired for future learning. Python, in particular, shows a significant presence in both charts, highlighting its importance in modern programming.
- JavaScript is the most widely used programming language currently, with the highest number of respondents indicating its usage. It is also the top language that professionals intend to learn in the future, indicating its continued dominance and relevance in the tech industry.

Implications

- Educational institutions and training programs should place a strong emphasis on JavaScript, given its widespread current use and high demand for future learning. This will help meet the needs of tech professionals and the industry.
- Given the high current usage and future learning interest in Python and HTML/CSS, there should be continued and enhanced focus on these languages in both formal education and professional development programs.
- As TypeScript gains popularity, educational institutions and companies should incorporate it into their training programs. Providing resources and courses on TypeScript can help professionals upgrade their skills and meet the industry's evolving needs

DATABASE TRENDS

Next Year



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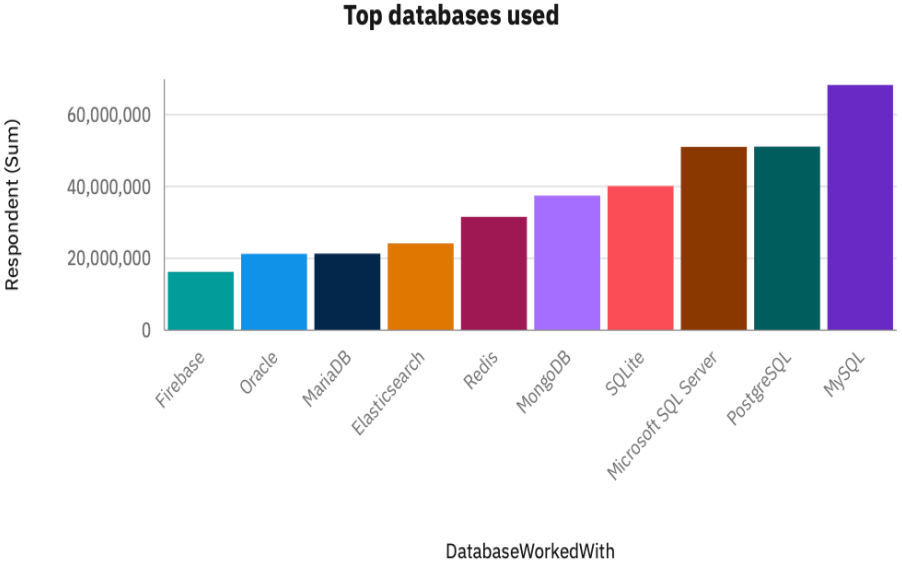

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DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL and MySQL are the most desired databases to be learned by tech professionals, with PostgreSQL having the highest count of around 4,000 respondents and MySQL also being highly sought after
- MySQL is currently the most used database, followed by Microsoft SQL Server, each with significant usage among respondents
- Redis and MongoDB are among the top databases both for current usage and future learning intentions, indicating a growing interest and continued relevance in the industry.

Implications

- Educational institutions and training providers should focus more on PostgreSQL and MySQL in their curriculum, given the high demand for learning these databases among tech professionals.
- Tech professionals looking to enhance their career prospects should consider gaining expertise in MySQL and PostgreSQL, as these skills are both highly used and desired for future learning.
- Tech companies and educational institutions should allocate more resources towards training and development in Redis and MongoDB, as these databases show strong current usage and future learning interest, indicating their growing importance in the tech landscape.

Cognos Analytics Dashboard HTML

<https://github.com/Jon1co/IBM-Data-Analytics-Capstone-Assignment/blob/main/Module_5_dashboard_capstone%20assignment.pdf.>

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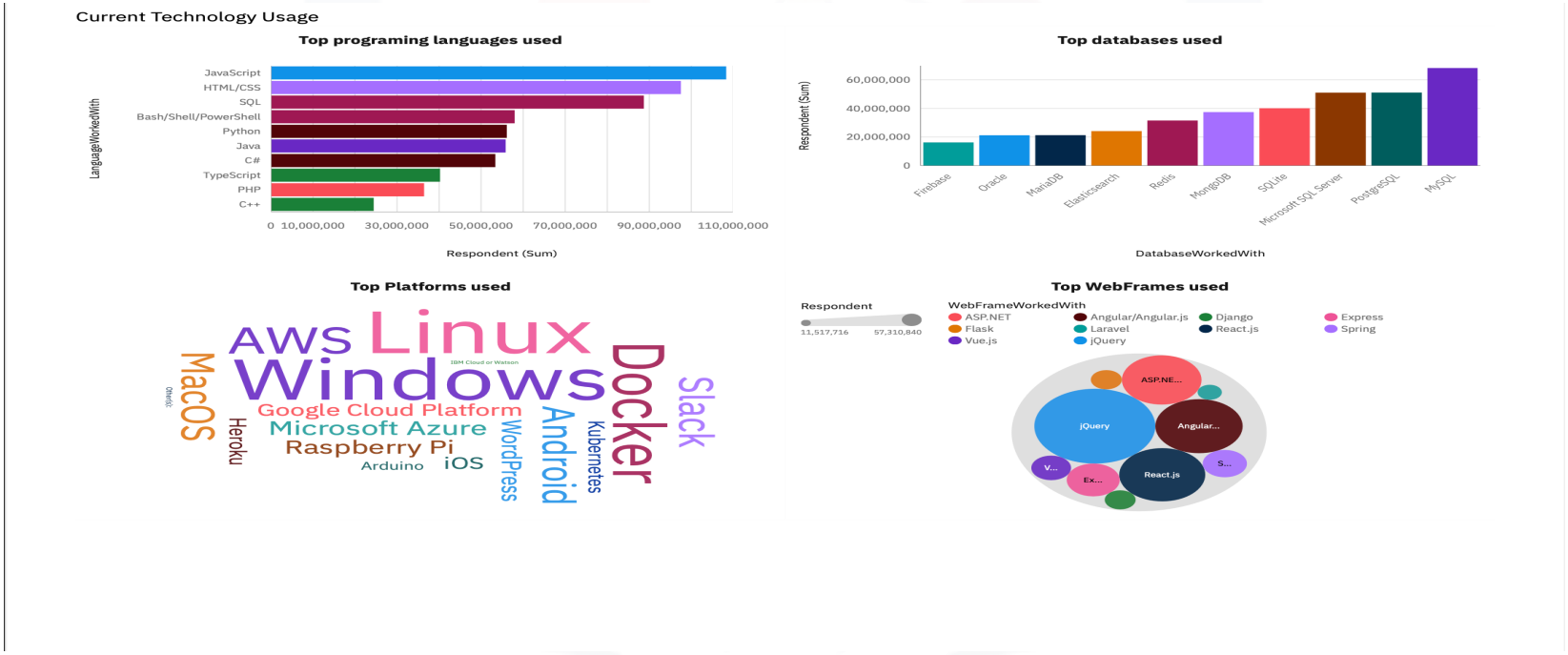
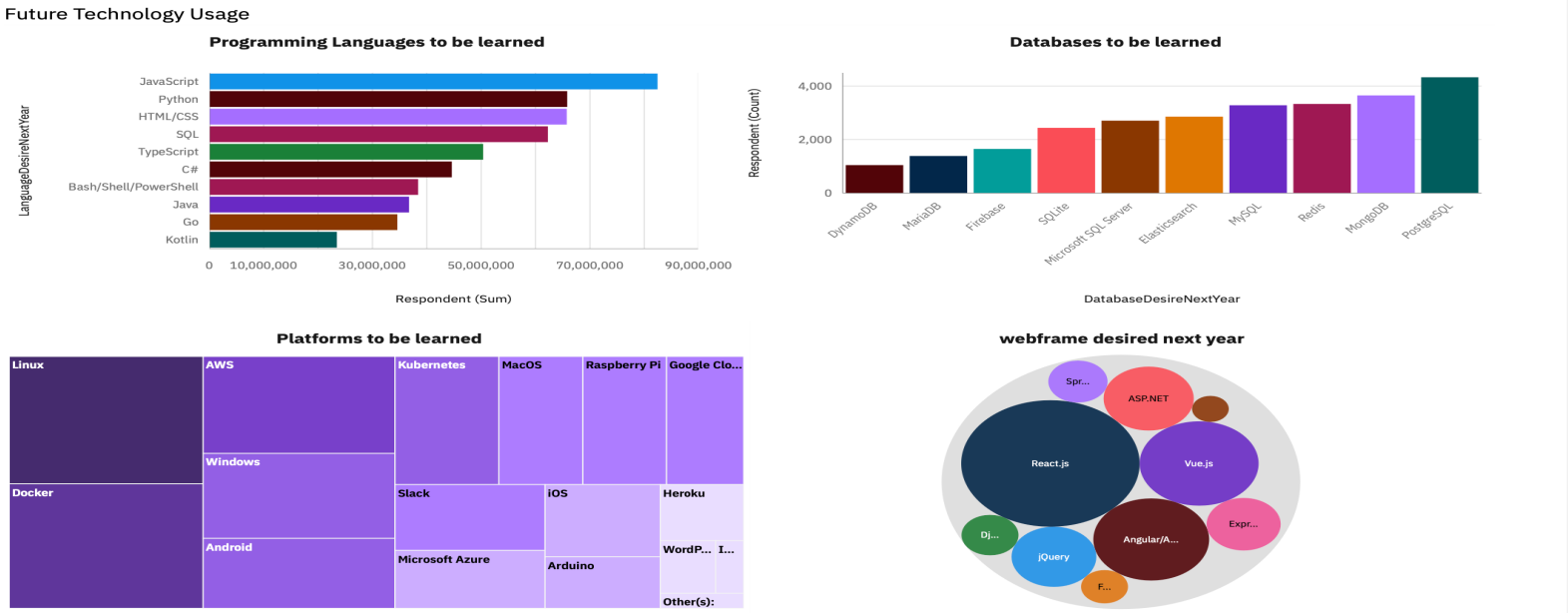
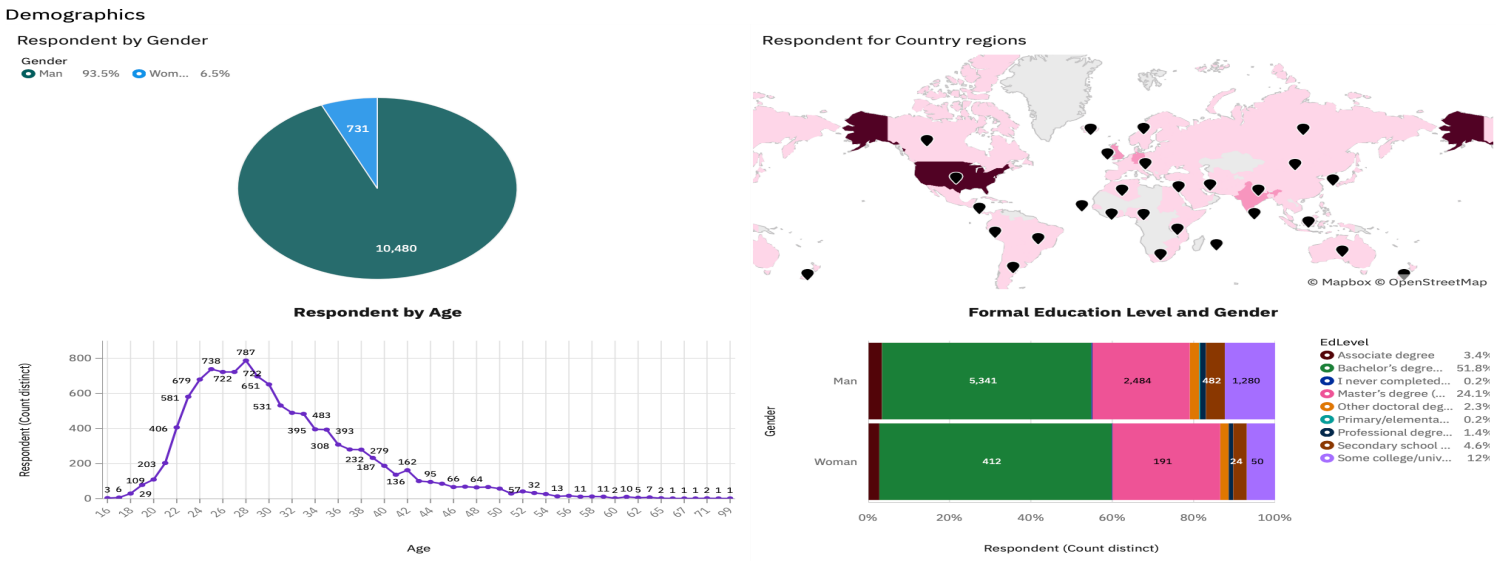
Current Technology usage



Future Technology Usage



Demographics



OVERALL FINDINGS & IMPLICATIONS

Findings

- PostgreSQL and MySQL are the most desired databases to learn in the future, with a strong current usage as well. These databases are central to both present and future tech landscapes.
- JavaScript is the leading programming language both in current usage and future learning intentions. Its versatility and widespread application across different types of development make it the top choice among tech professionals.
- Python is not only heavily used but also in high demand for future learning. TypeScript, while currently less used, shows a significant interest for future learning, indicating a trend towards adopting enhanced JavaScript-based development.

Implications

- Educational institutions should prioritize teaching PostgreSQL, MySQL, JavaScript, Python, HTML/CSS, and SQL. These technologies are critical for both current job roles and future career advancements in the tech industry
- There should be an increased focus on emerging technologies like TypeScript. By integrating these into the curriculum, educational providers can ensure that professionals are prepared for future industry demands.
- Companies should invest in continuous training and development programs that cover both widely used and emerging technologies. This approach will help maintain a skilled workforce that is adaptable to technological advancements.

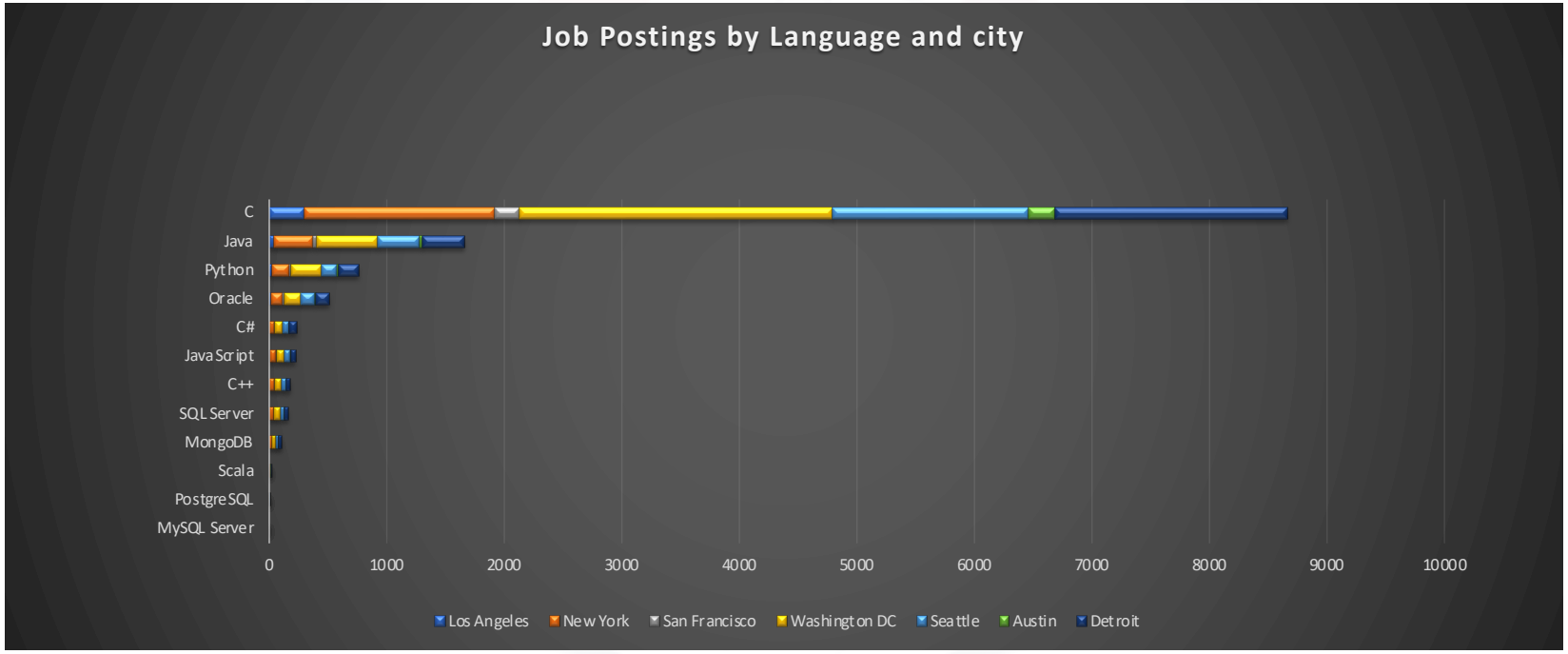
CONCLUSION

- The programming language “C” is in greatest demand
- Sample Findings suggest that men are going to continue to comprise the tech industry
- Most developers have at least an undergraduate degree
- Java script is the most utilized language and will remain that way into the future.
- Although this data derives significant meaning in application to the United states, the next survey should aim to elicit a higher participation rate from the rest of the world

Compensation and Age

	Respondent	CompTotal	ConvertedComp	WorkWeekHrs	CodeRevHrs	Age
count	9703.000000	9.703000e+03	9703.000000	9664.000000	7612.000000	9493.000000
mean	12501.007317	7.241139e+05	59883.208389	41.864782	4.737455	30.695860
std	7235.627217	7.186806e+06	43394.336755	24.613489	4.420472	7.346625
min	4.000000	0.000000e+00	0.000000	3.000000	0.000000	16.000000
25%	6237.000000	2.000000e+04	24060.000000	40.000000	2.000000	25.000000
50%	12571.000000	6.300000e+04	52704.000000	40.000000	4.000000	29.000000
75%	18787.500000	1.150000e+05	85574.500000	42.000000	5.000000	34.000000
max	25141.000000	3.900000e+08	209356.000000	1012.000000	99.000000	99.000000

JOB POSTINGS



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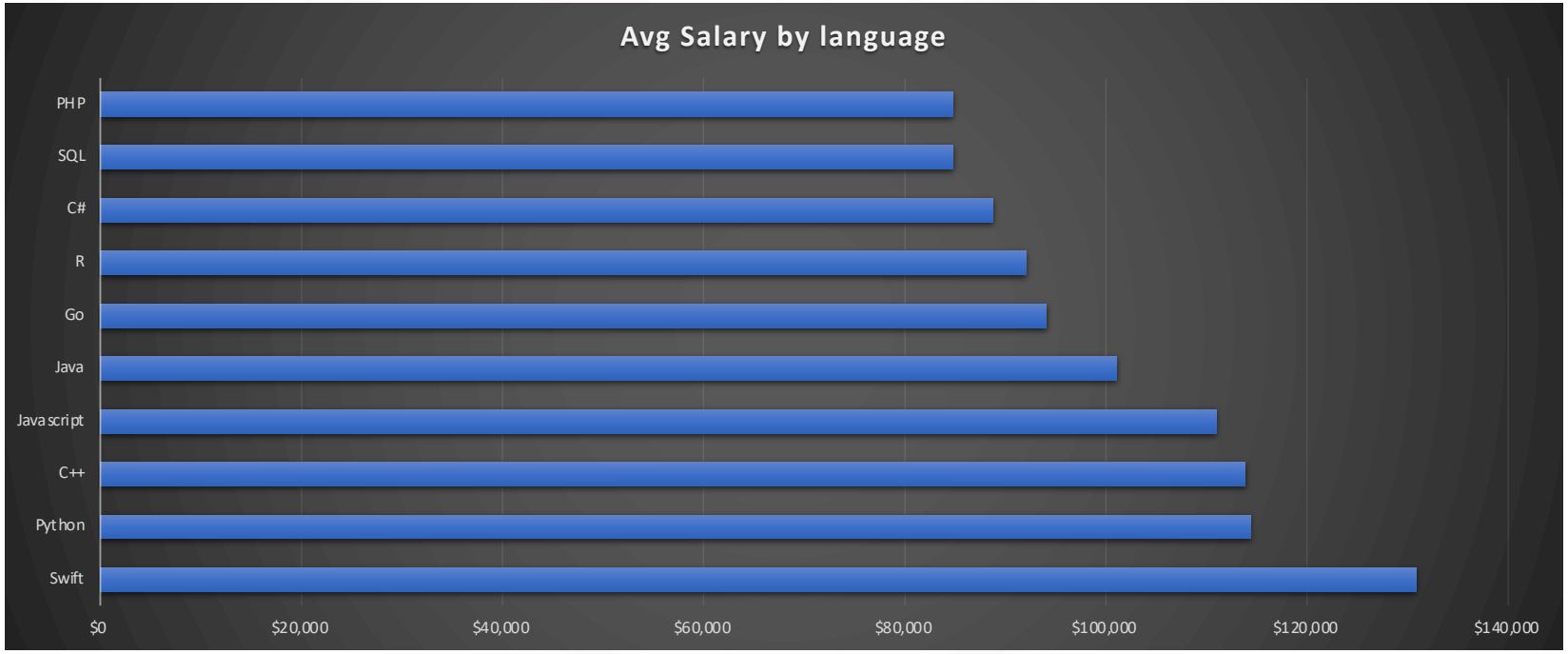
POPULAR LANGUAGES



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