

# IBM DATA ANALYST CAPSTONE PROJECT:

Analysis on Emerging Technology Skills & Trends

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# OUTLINE

- Executive Summary
- Introduction
- Methodology
- Results
- Discussion
- Conclusion
- Appendix

# ***EXECUTIVE SUMMARY***

- From AI and automation to the metaverse and beyond, the future is powered by code.
- Programming languages and databases are the building blocks of innovation, and the landscape is rapidly evolving.
- This presentation will delve into the hottest trends in the programming world, highlighting the languages and databases you need to know to stay ahead of the curve.

# **INTRODUCTION**

- The Presentation's purpose will give insights to the responsible business' stakeholders, in effective decision making upon IT Consulting Services;
- Answering the right questions, namely which are the current and immerging technologies in the market will drive the company to identify future skill requirements, utterly making the provided services more effective and precise;
- Along the presentation, ideas and recommendations will be provided, based on the implementing Data Analysis techniques.

# METHODOLOGY

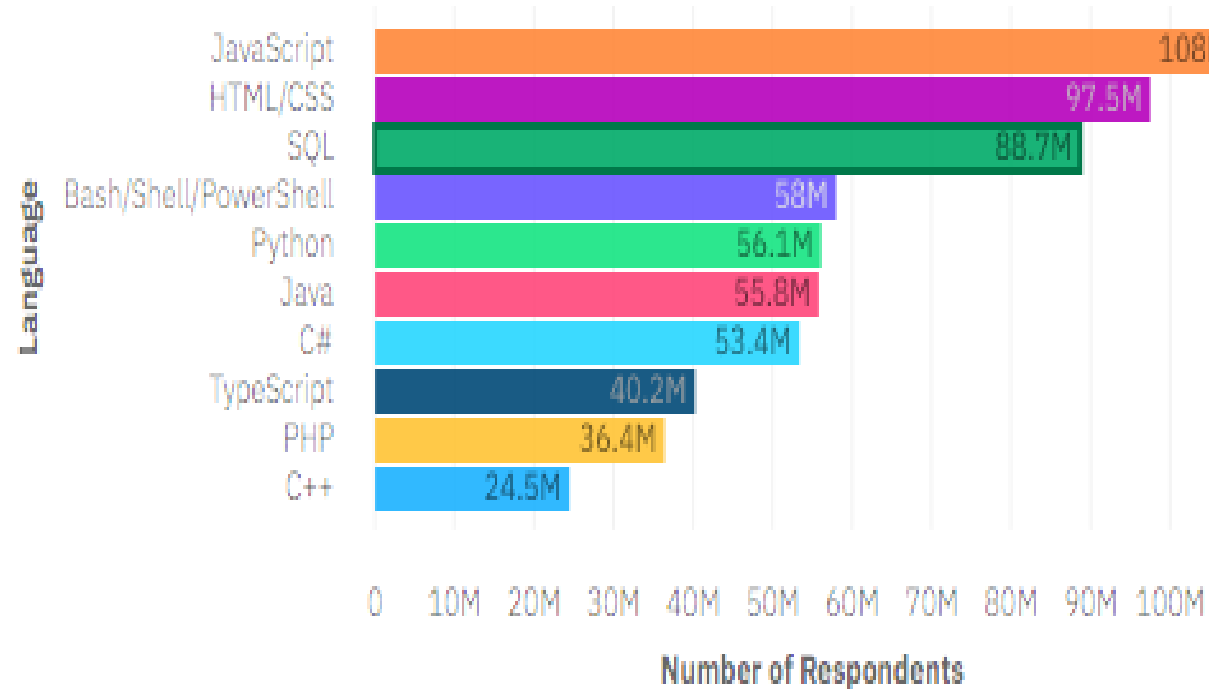
- Data in several formats, such as the number of jobs currently available for different technologies and for different places, were gathered using Github jobs API on python.
- To obtain the names of the programming languages and their yearly wages, the IBM website was scraped. The dataset from a 2019 Stack Overflow developer survey was download and saved.
- Python was used to clean and analysis the data. To assess the distribution of data, the presence of outliers, and the correlation between various columns in the dataset, an exploratory data analysis was carried out.
- Charts, graphs, and dashboards were create using python and Cognos analytics to visualize the data. All the python analysis were carried out on Jupyter notebook through visual studio.

# ***RESULTS***

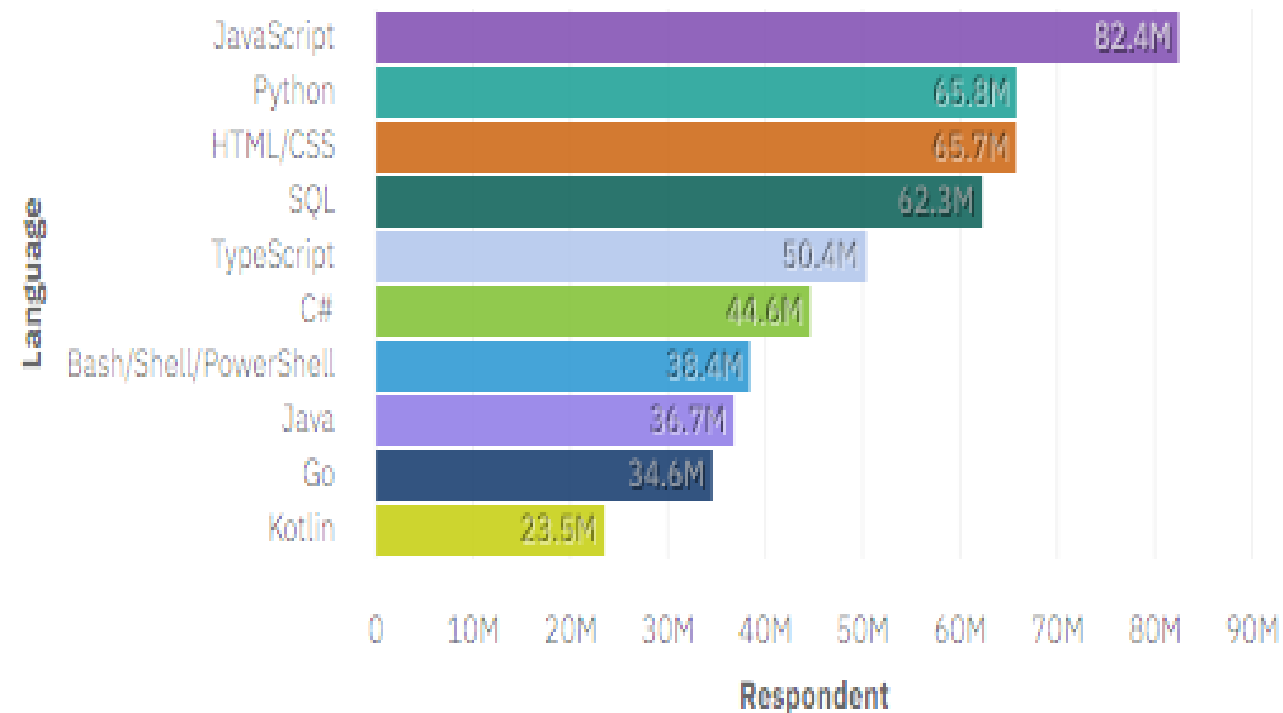
- Visualization – Charts
- Dashboard

# PROGRAMMING LANGUAGE TRENDS

Top 10 programming Language for current year



Top 10 programming Language for next year



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# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- JavaScript is top trending language in the world
- Python and TypeScript are becoming more and more popular
- HTML/CSS and SQL still has great portion in language usage trend

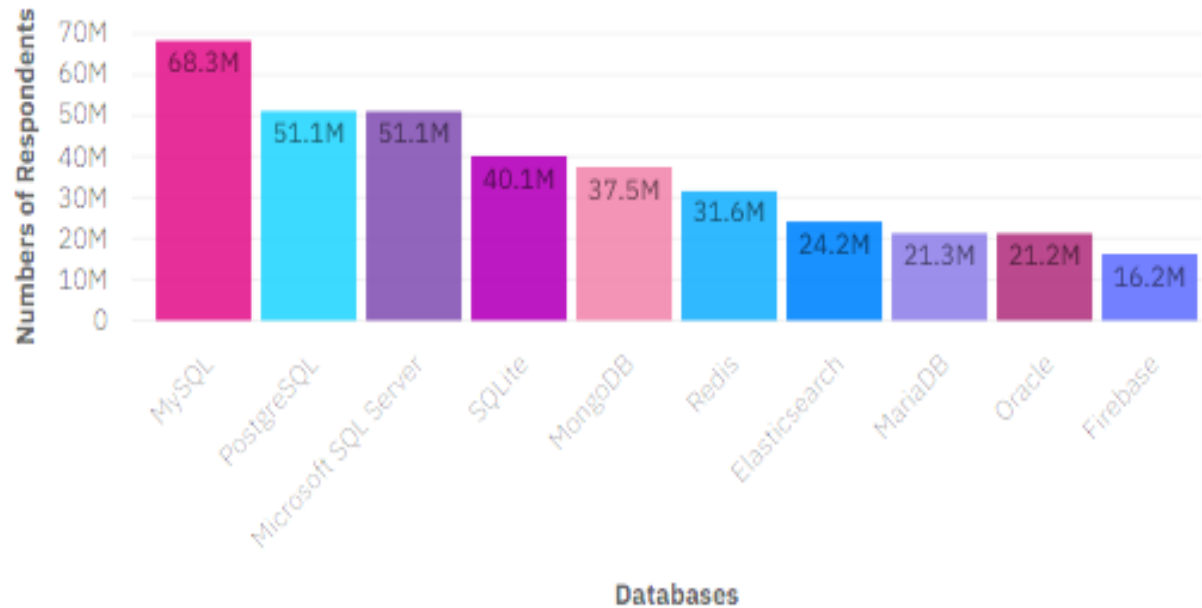
## Implications

- Web developments and Web developers are still in high demands
- JavaScript and TypeScript are crucial to learn for developers
- Python is the new trending language, especially popular in AI fields

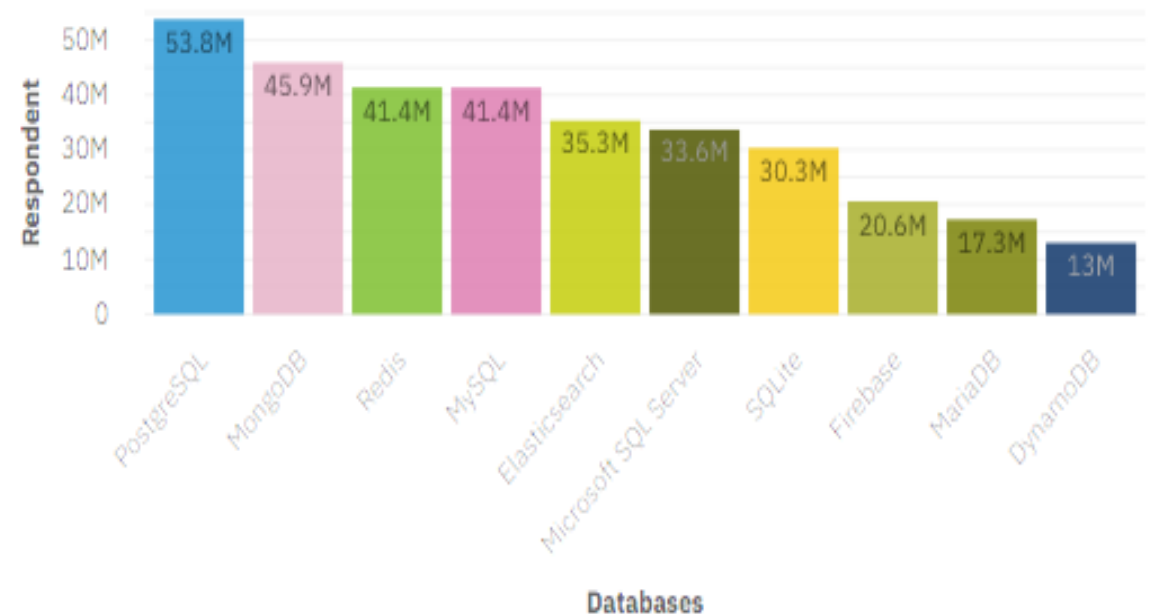


# DATABASE TRENDS

## Top 10 Databases for current year



## Top 10 Databases for next year



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# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Finding

- MySQL is the most popular database
- There are still a lot of companies using Microsoft SQL Server
- MongoDB and Redis are the most favorable NoSQL database

## Implication

- Open-source databases like MySQL are still preferable
- Software development and Big Data technology still requires SQL
- NoSQL databases will make an impact for relational databases

# DASHBOARD

**The permanent link of the Cognos dashboard:**

- <https://eu-de.dataplatform.cloud.ibm.com/dashboards/d54db0f4-7676-4213-b409-547d3f30e3f5/view/0f67ff031b922ce269dcc4e4079f29537836265bb1bb8606d6d37b490c317897f33a42c7c87c4d0bdc440761f3be400acf>

# DASHBOARD

## TAB 1

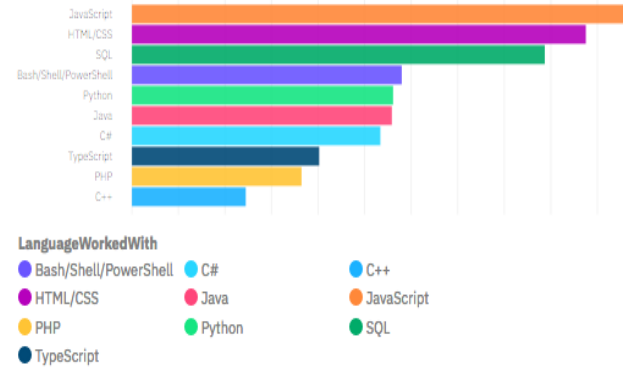
Current Technology Usage

Future Technology Trend

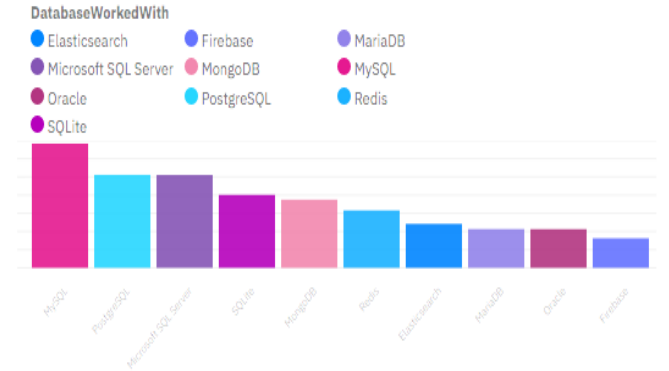
Demographics

Filters

Top 10 Language Worked With



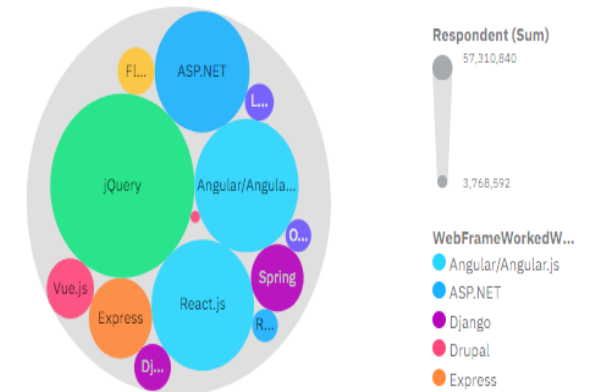
Top 10 Database Worked With



Platform Worked With

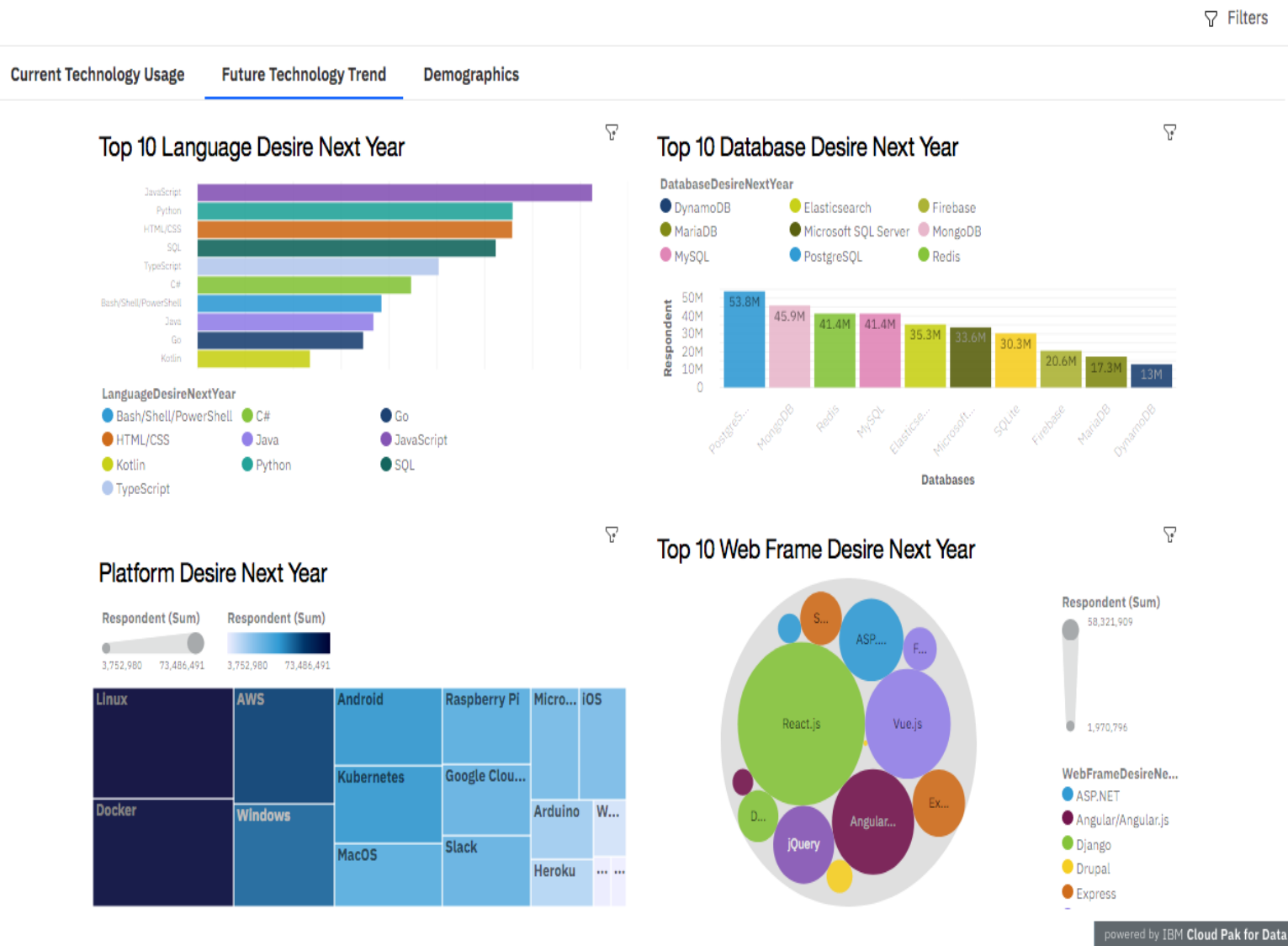


Top 10 Web Frame Worked With



# DASHBOARD

## TAB 2



# DASHBOARD TAB 3

Current Technology Usage

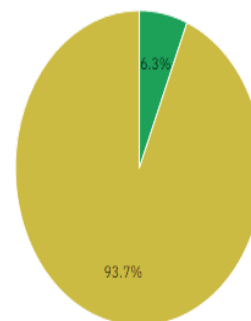
Future Technology Trend

Demographics

Filters

Respondent classified by Gender

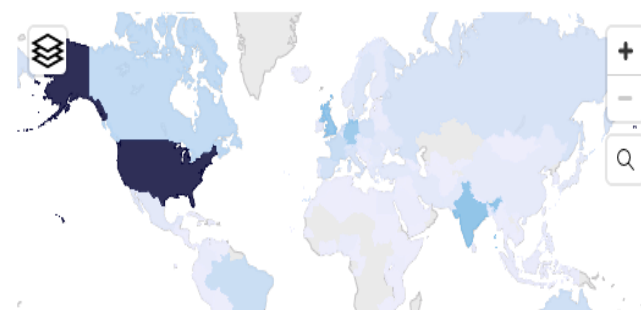
Gender  
● Woman ● Man



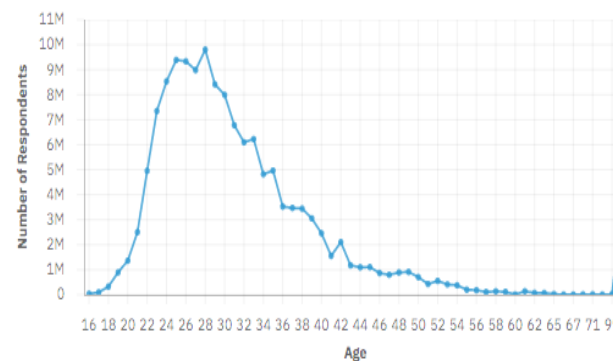
Respondent Count for Countries

Respondent (Sum)

865 39,154,240



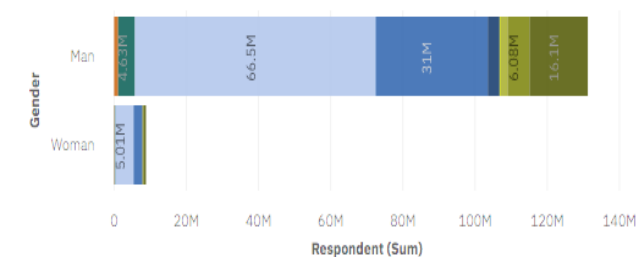
Respondent Count by Age



Respondents by Formal Education Level

EdLevel

● (no value) ● Associate degree  
● Bachelor's degree (BA, BS, B.E...) ● I never completed any formal ...  
● Master's degree (MA, M.F., M.E.) ● Other doctoral degree (Ph.D., E...



# DISCUSSION

- Upskilling in the technology sector.
- How do we close the wide gender gap in the technology sector.
- Is completing a master or doctorate degree really a requirement.
- The increasing demand for mobile development as kotlin is getting popular.
- More tech education access and development in less developed regions in south east Asia, south America, Africa and some parts of Europe.
- How relevant will Oracle SQL still in the future.



## Findings

- Technology trends changes every year
- USA is the top technology country
- There are extreme gender and age discrimination
- Docker and AWS are the most popular platform

## Implications

- Programmers should always follow the latest technology trends
- More countries should have the equal chance to be exposed to new technology
- Gender and Age should not be one of the concerns or benefits of Employment

# OVERALL FINDINGS & IMPLICATIONS

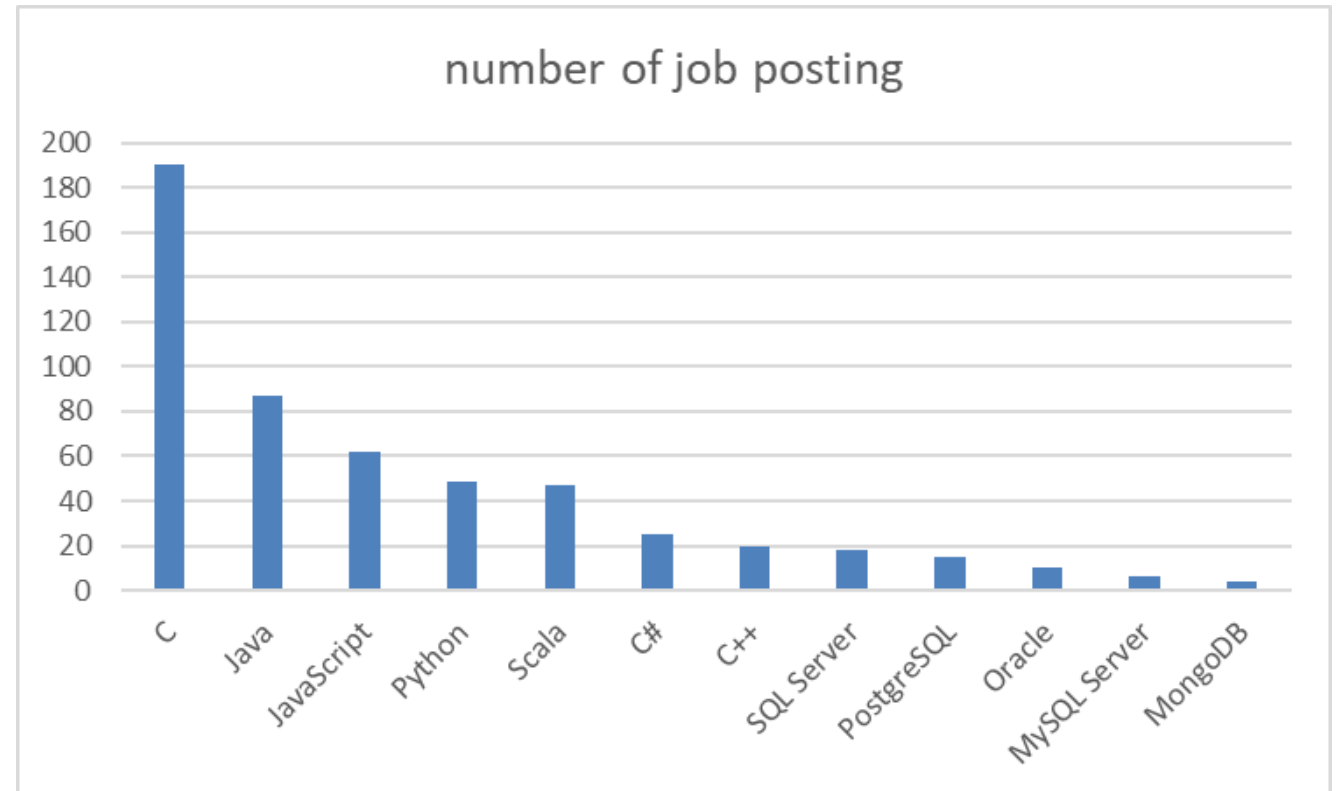


# CONCLUSION

- Offering educational programs to the staff that is already established into the company.
- Providing them with the adequate tools to upscale their knowledge in the up-to-date technologies.
- Making rearrangements & prioritizing technologies that are on demand.

# APPENDIX

- Chart presenting the job posting data collected using GITHUB job API.



# APPENDIX

- Chart presenting popular languages and their annual salary the data was collected through web scraping GITHUB jobs data.

