

# Technology Skills Analysis

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stack  
overflow

Analysis of  
2019 Stack  
Overflow  
Developer  
Survey

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# OUTLINE

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- Executive Summary
- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
- Conclusion
- Appendix

# EXECUTIVE SUMMARY

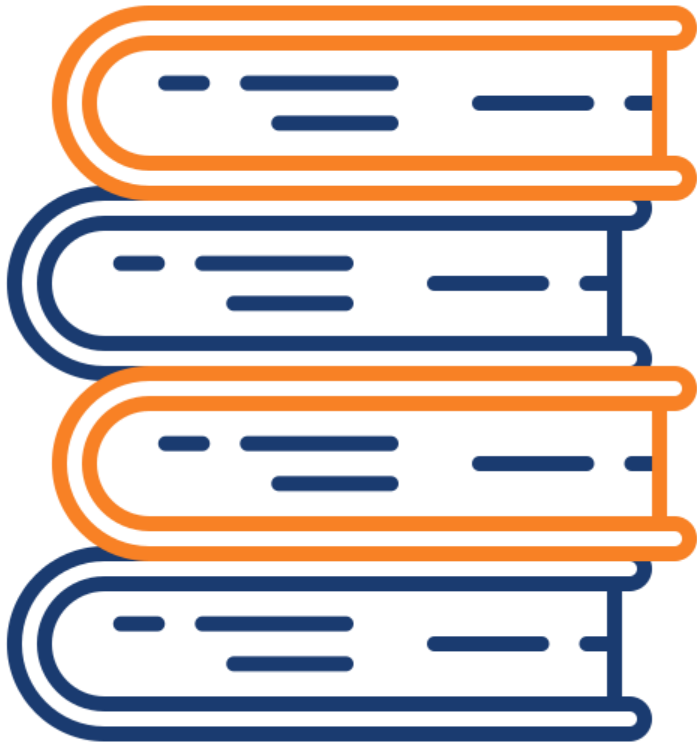
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- The following slides will give insight into trends on emerging skills as provided by a combination of job postings, training portals, and surveys.
- The data collected provides insights into areas including:
  - Current Technology Use
  - Future Technology Trends
  - Demographics
- The following insights should help identify future skills requirements to remain competitive and keep pace with the current technology trends

# INTRODUCTION

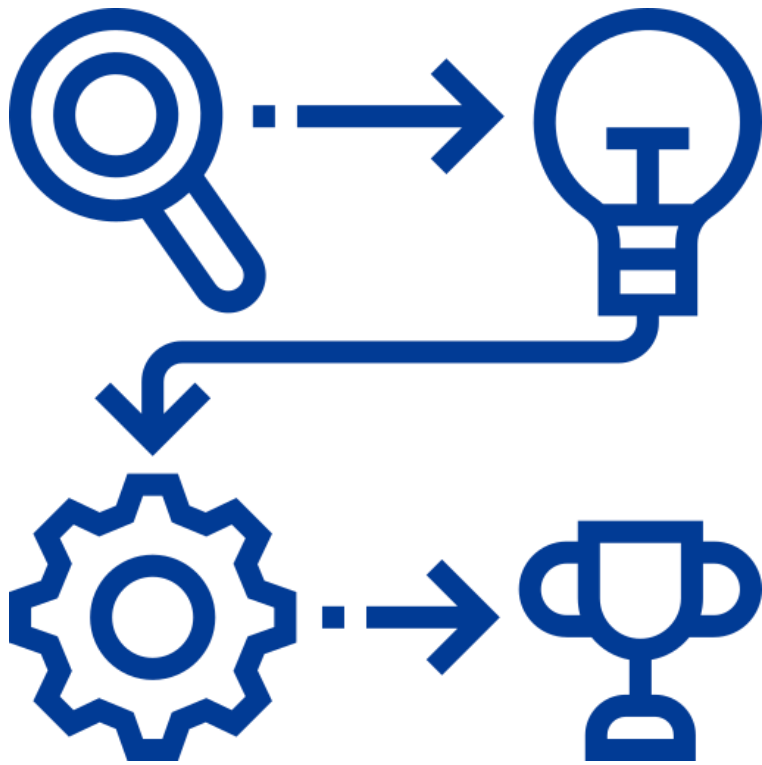
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- An analysis of the 2019 Stack Overflow Developer Survey provides valuable insight into current and future technology trends.
- This analysis should be useful for IT consultants, organizations with an IT focus, and job applicants in the IT field.
- We will analyze **programming language trends** for when the survey was taken and predict future language trends.
- We will analyze **database trends** for when the survey was taken and predict future database trends.
- We will analyze **platform and web frame trends** for when the survey was taken and predict future trends.

# METHODOLOGY

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- **Data Sources:**
  - 2019 Stack Overflow [Developer Survey](#)
- **Data Wrangling:** Datasets were cleaned using SQL and Python *pandas*. Cleaning methodology consisted of:
  - Identifying and removing duplicate rows
  - Finding and imputing missing values
  - Normalizing the data
- **Data Analysis:** Python *pandas* used to :
  - Find how the data is distributed
  - Identify and remove outliers
  - Finding correlation
- **Data Visualization:** IBM Cognos dashboard created to show:
  - Current Technology Use
  - Future Technology Trends
  - Demographics

# RESULTS

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The following slides analyze:

- Programming Languages
- Databases
- Web Frames
- Platforms

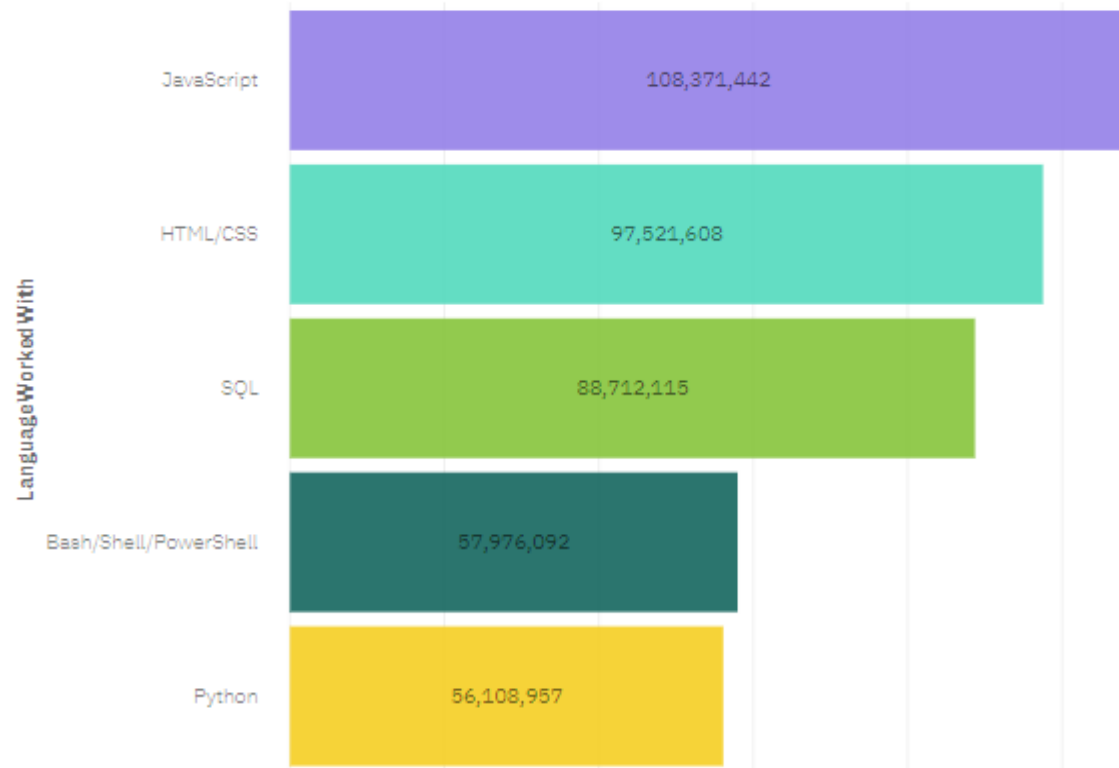
They are arranged in Top 5 lists using Bar Charts for 2019 and the “Next Year” (2020)

The findings and implications follow the bar charts to give insights into what the data is showing

# PROGRAMMING LANGUAGE TRENDS

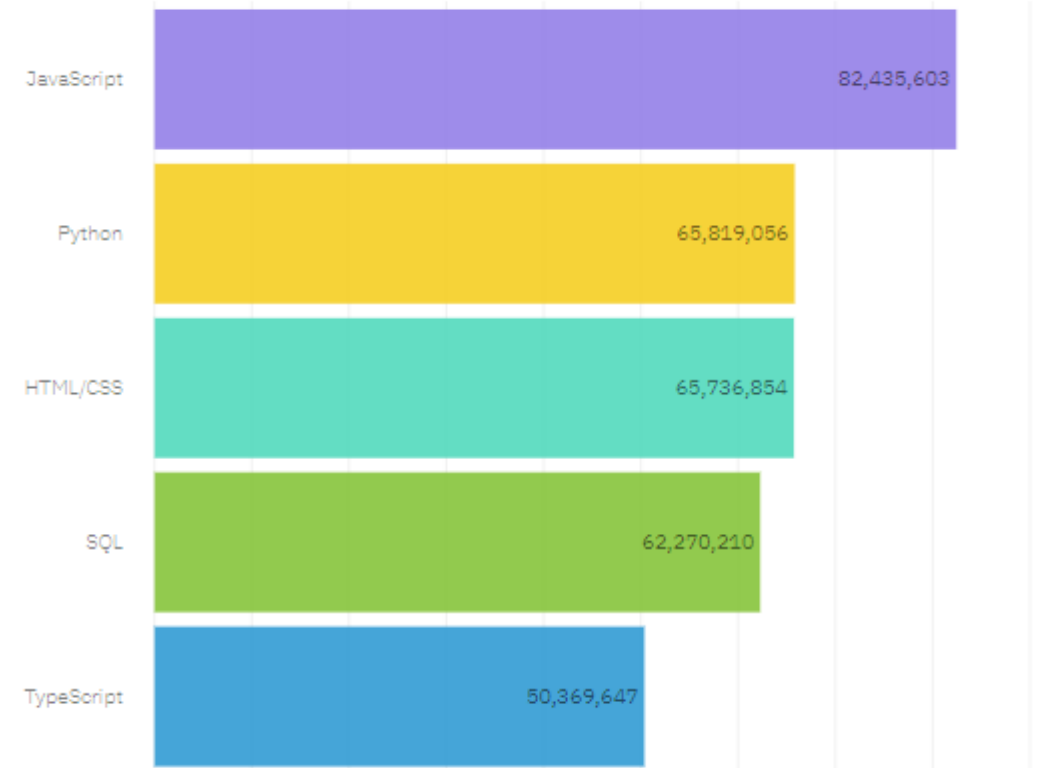
2019

Top 5 Programming Languages



Next Year

Top 5 Languages Desired Next Year



# PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

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## Findings

- Javascript is the current leader in programming language used and is also the most desired language for the next year.
- Python was the 5<sup>th</sup> most used language in 2019 but the 2<sup>nd</sup> most desired for the next year.
- Bash/Powershell was 4<sup>th</sup> most used language but failed to make the Top 5 for most desired language next year

## Implications

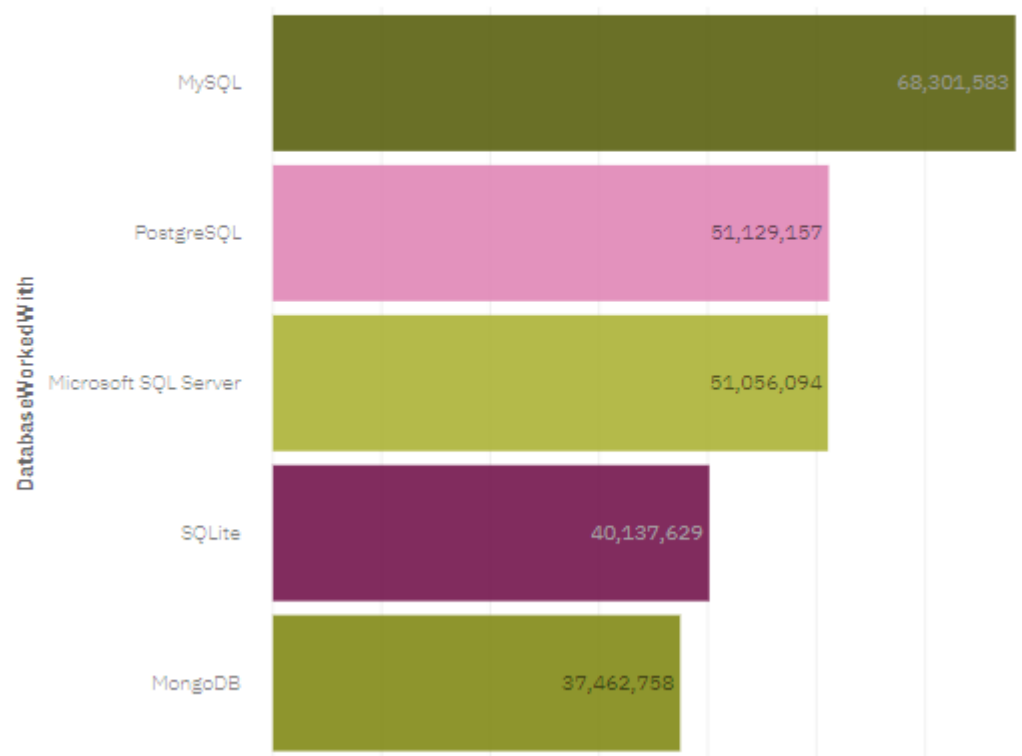
- Javascript should remain the leading programming language for the foreseeable future
- Python has a significant increase in desire to work with, and should climb to a popularly used language very soon
- Bash/Powershell seem to be losing popularity and are being replaced with languages such as Typescript



# DATABASE TRENDS

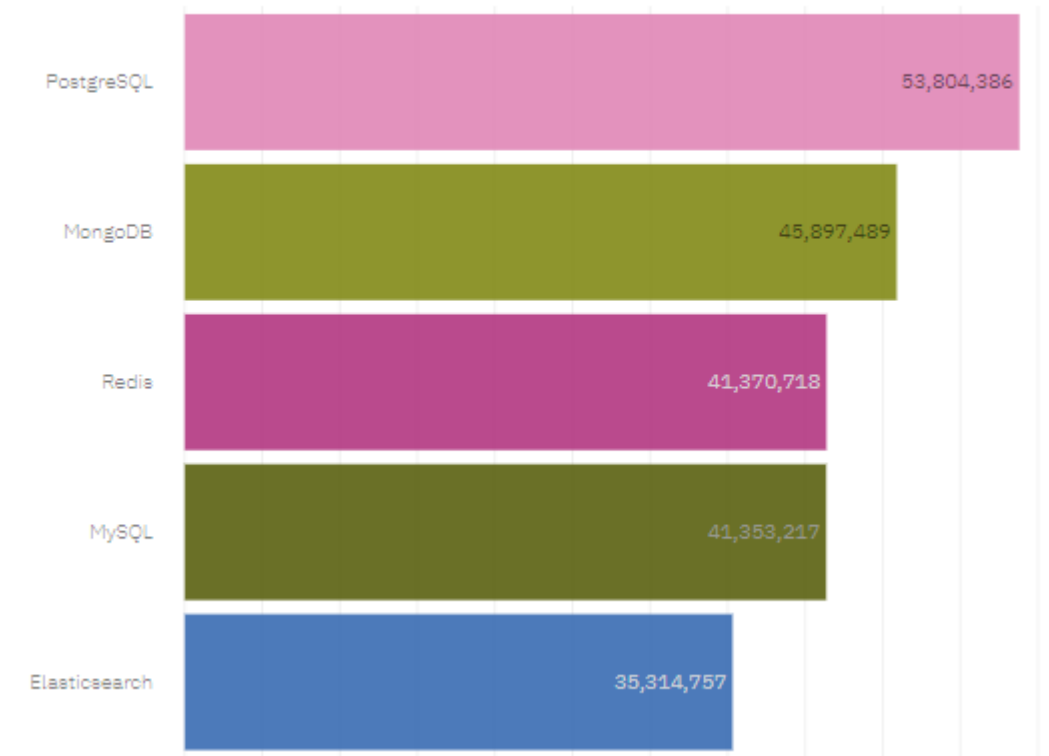
## 2019

Top 5 Databases Worked With



## Next Year

Top 5 Databases Desired Next Year



# DATABASE TRENDS – FINDINGS & IMPLICATIONS

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## Findings

- MySQL was the leading Database for 2019 but had lower desirability for the next year
- PostgreSQL and Mongo DB were Top 5 databases worked with and both climbed in desirability for the next year
- SQLite and Microsoft SQL Server did not make the desired database list for the next year, replaced instead by Elasticsearch and Redis

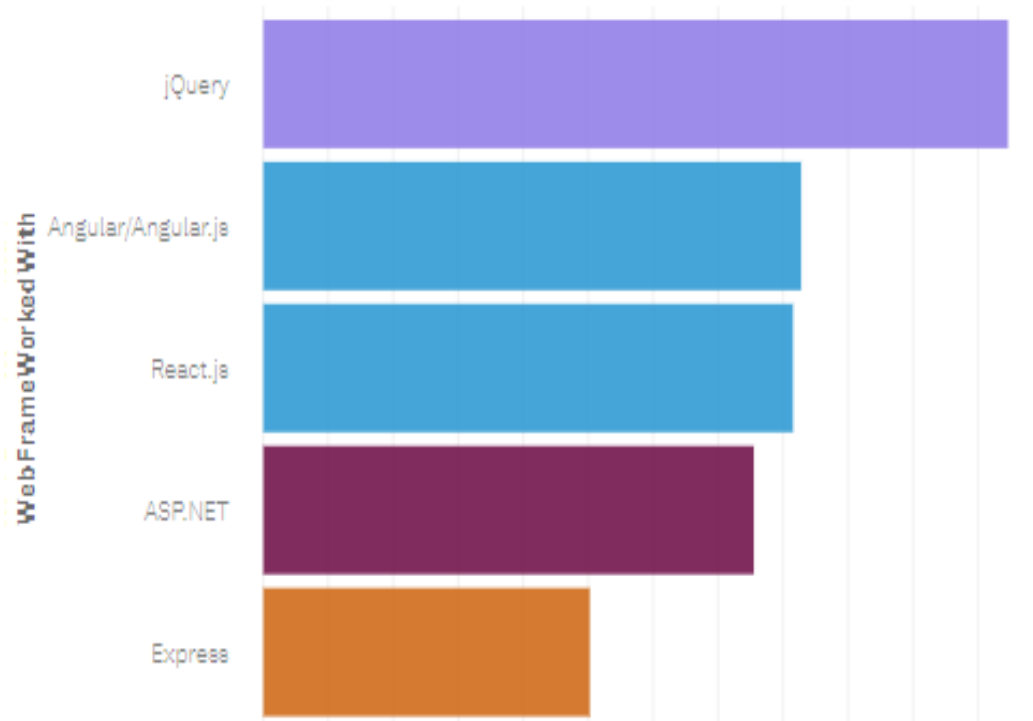
## Implications

- Though MySQL led in database used in 2019, a few other databases have replaced MySQL as the most desired database to use
- PostgreSQL and MongoDB desirability results imply they are the future of databases
- Microsoft SQL Server and SQLite are not as popular and may be replaced by emerging databases such as Elasticsearch and Redis

# WEB FRAME TRENDS

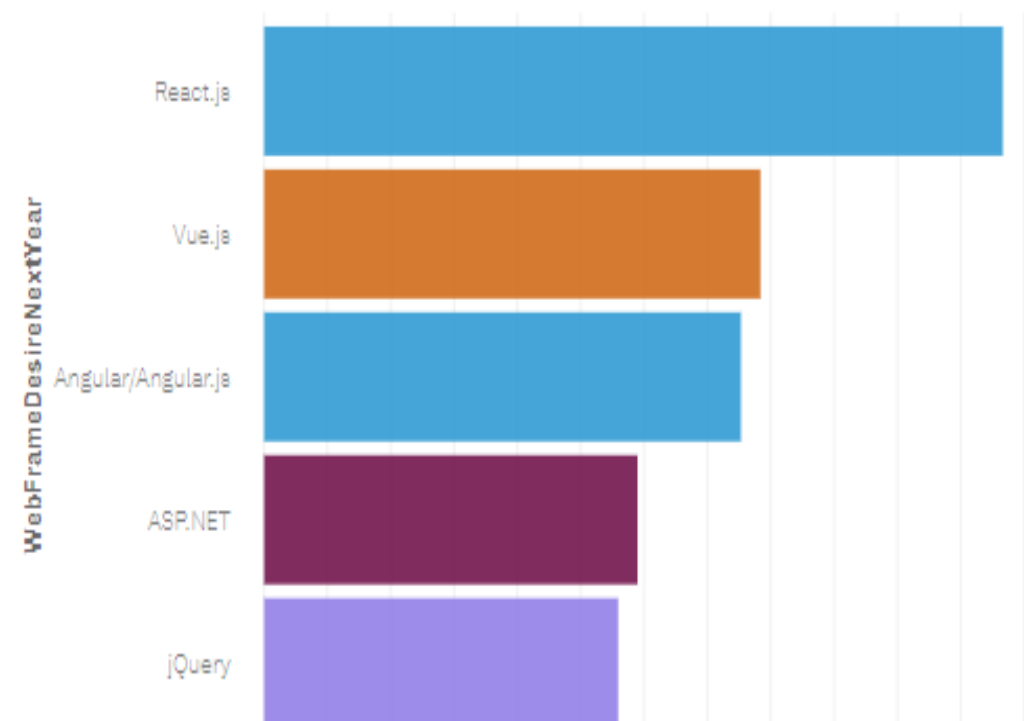
2019

Top 5 Web Frames Worked With



Next Year

Top 5 Web Frames Desired Next Year



# WEB FRAME TRENDS – FINDINGS & IMPLICATIONS

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## Findings

- React.js was the 3<sup>rd</sup> most worked with Web Frame and the 1<sup>st</sup> most desired Web Frame to work with
- jQuery was the most worked with Web Frame in 2019, but only the 5<sup>th</sup> most desired Web Frame to work with for the next year.
- Express was the 5<sup>th</sup> most worked with Web Frame, but failed to make the top 5 list for desired web frames to work with

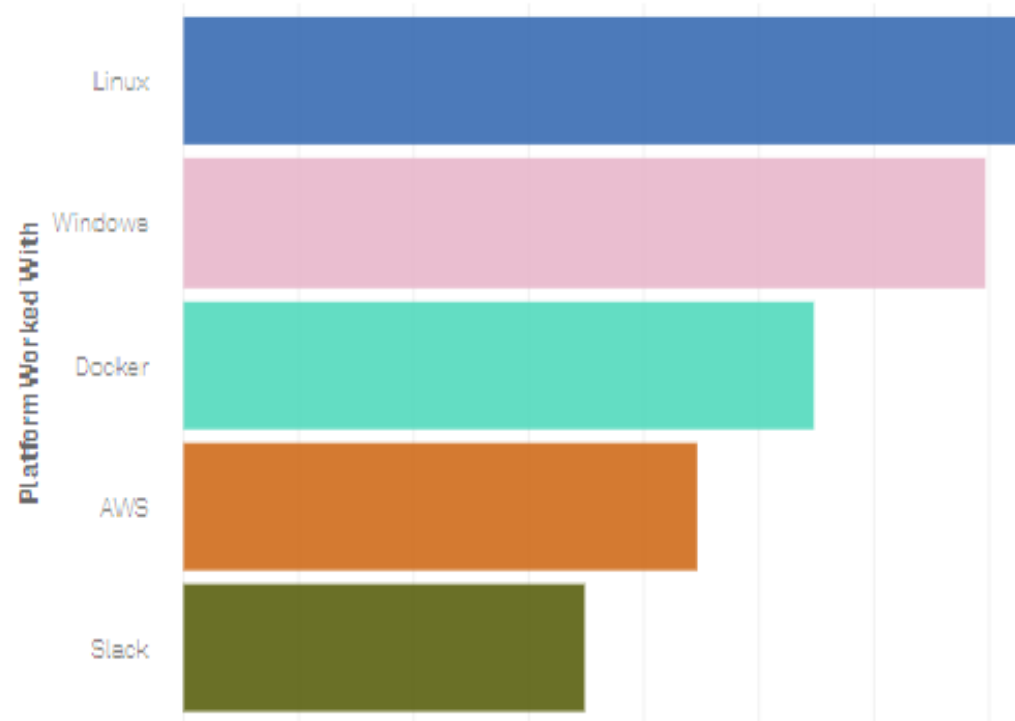
## Implications

- React.js and Angular.js are consistent in usage and desirability, and should lead the web frame area for the near future
- jQuery is quickly losing favorability and may not be as in demand in the near future
- Express seems to have lost favor and is being replaced with emerging web frames such as Vue.js

# PLATFORM TRENDS

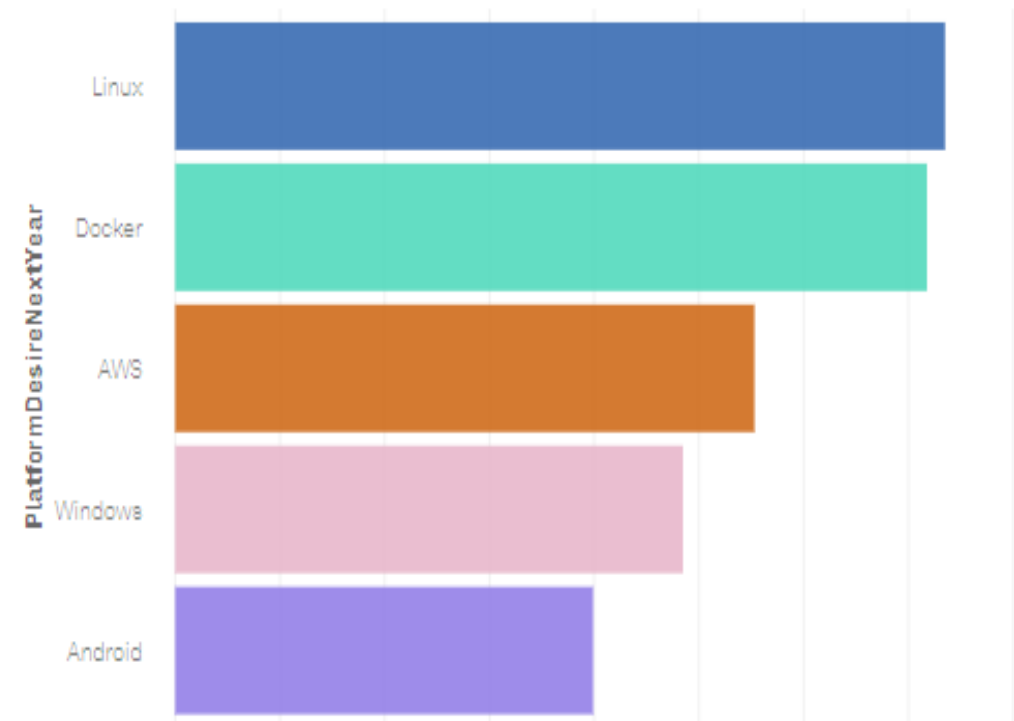
2019

Platform Worked With



Next Year

Platforms Desired Next Year



# PLATFORM TRENDS – FINDINGS & IMPLICATIONS

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## Findings

- Linux led the list as the most used platform and the most desired platform to use for the next year
- Windows was the 2<sup>nd</sup> most used platform in 2019, but only the 4<sup>th</sup> most desired platform to work with for the next year
- Slack made the top 5 for platforms used, but was replaced in the desirability top 5 by Android

## Implications

- Linux seems to be the staple for platforms and should continue to lead the way in both usage and desirability to work with
- Popular platform Windows is losing its desirability in favor of other platforms such as Docker and AWS
- Slack seems to be losing desirability to other platforms that aren't being used as much such as Android

# DASHBOARD

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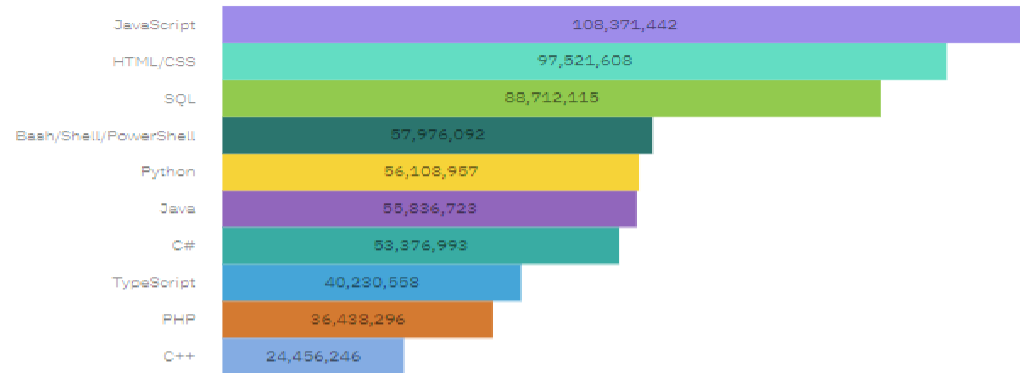
An interactive dashboard was created to help visualize the survey respondents regarding:

- Current technology use
- Future technology trends
- Demographics

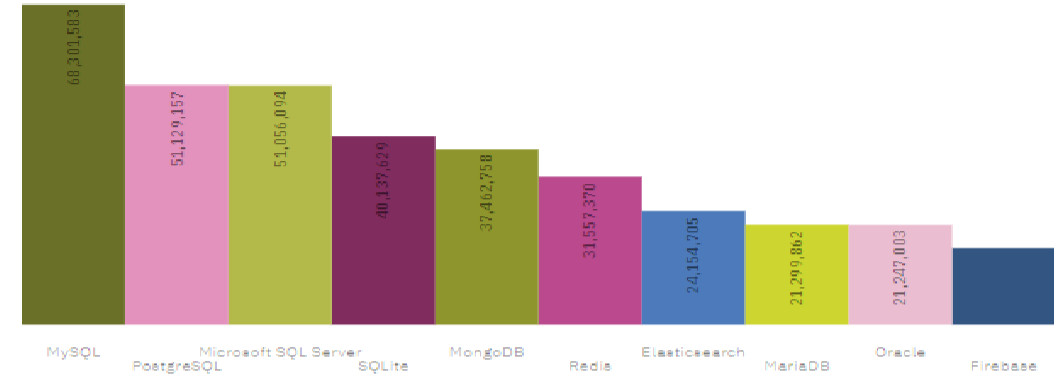
To access the dashboard, [click here](#).

# CURRENT TECHNOLOGY USE DASHBOARD

### Top 10 Language Worked With



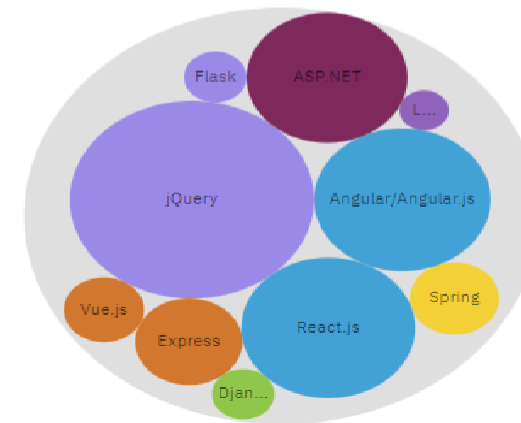
## Top 10 Databases Worked With



Platform Worked With



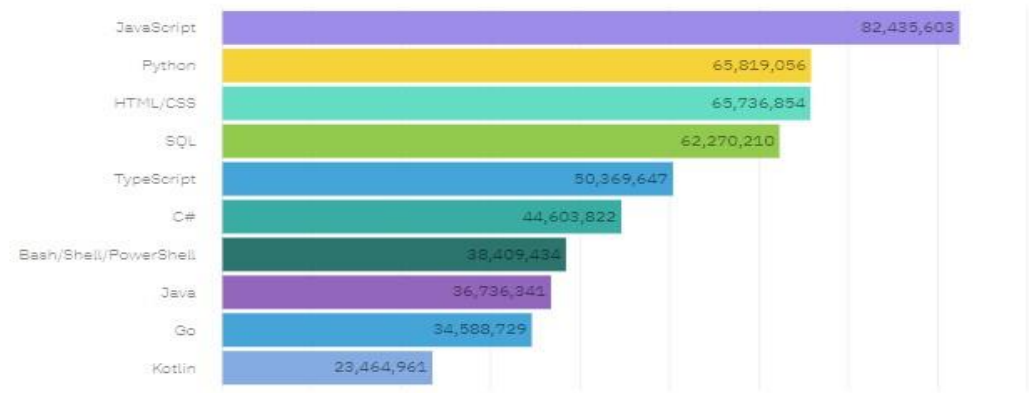
## Top 10 Web Frames Worked With



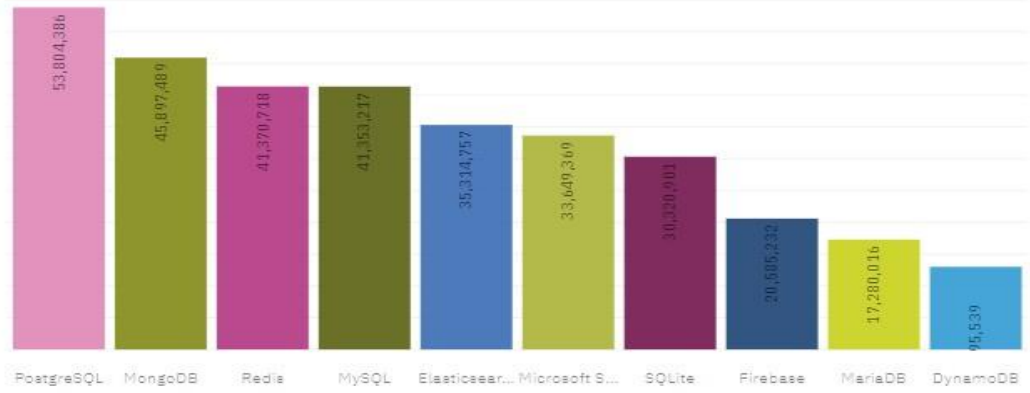


# FUTURE TECHNOLOGY TREND DASHBOARD

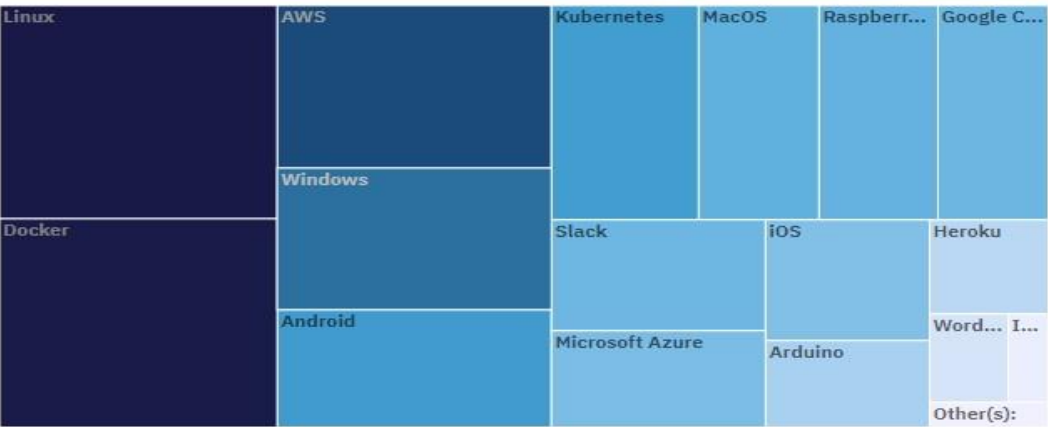
Top 10 Languages Desired Next Year



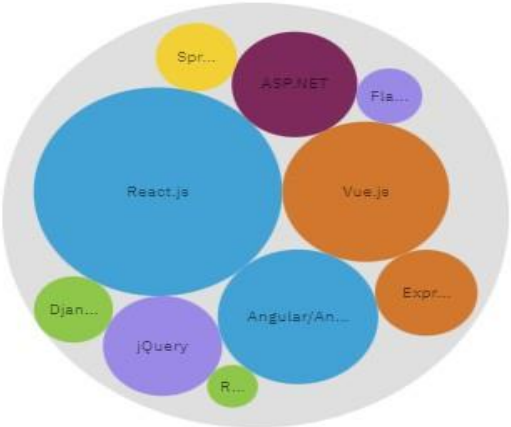
Top 10 Databases Desired Next Year



Platforms Desired Next Year



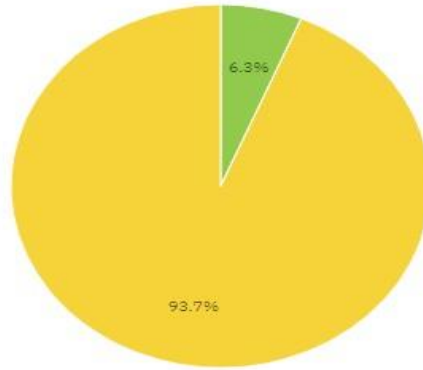
Top 10 Web Frames Desired Next Year



# DEMOGRAPHICS DASHBOARD

## Respondent Classified by Gender

Gender  
● Woman ● Man

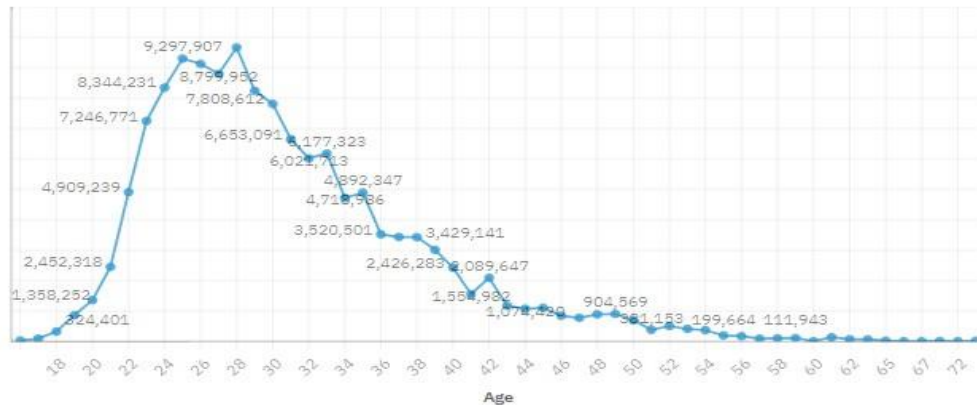


## Respondent Count for Countries

Respondent (Sum)  
865 38,170,292



## Respondent Count by Age



## Formal Education Level by Gender

Gender - EdLevel

● Man | Associate degree ● Man | Bachelor's degree (BA, ... ● Man | I never completed any f...  
● Man | Master's degree (MA, M... ● Man | Professional degree (JD, ... ● Man | Secondary school (e.g. A...  
● Man | Some college/university... ● Woman | Associate degree ● Woman | Bachelor's degree (B...  
● Woman | I never completed an... ● Woman | Master's degree (MA, ... ● Woman | Professional degree (...  
● Woman | Secondary school (e.... ● Woman | Some college/univer...



# DISCUSSION

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- The data analyzed has given some insights into:
  - What are the top programming languages in demand?
  - What are the top database skills in demand?
  - What are the most used and desired platforms?
  - What are the most used and desired web frames?
  - What are the demographics of developers (that responded to the survey)?
  - What are the education levels of developers?

# OVERALL FINDINGS & IMPLICATIONS

A closer look at the Demographics Dashboard

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## Findings

- Respondents to the survey were overwhelmingly men
- Respondents to the survey overwhelmingly from United States
- Respondents to the survey were mostly between the ages of 22-34

## Implications

- Some of the information we have analyzed have a male bias
- Some of the information we have analyzed has a United States bias
- Some of the information we have analyzed have an age bias

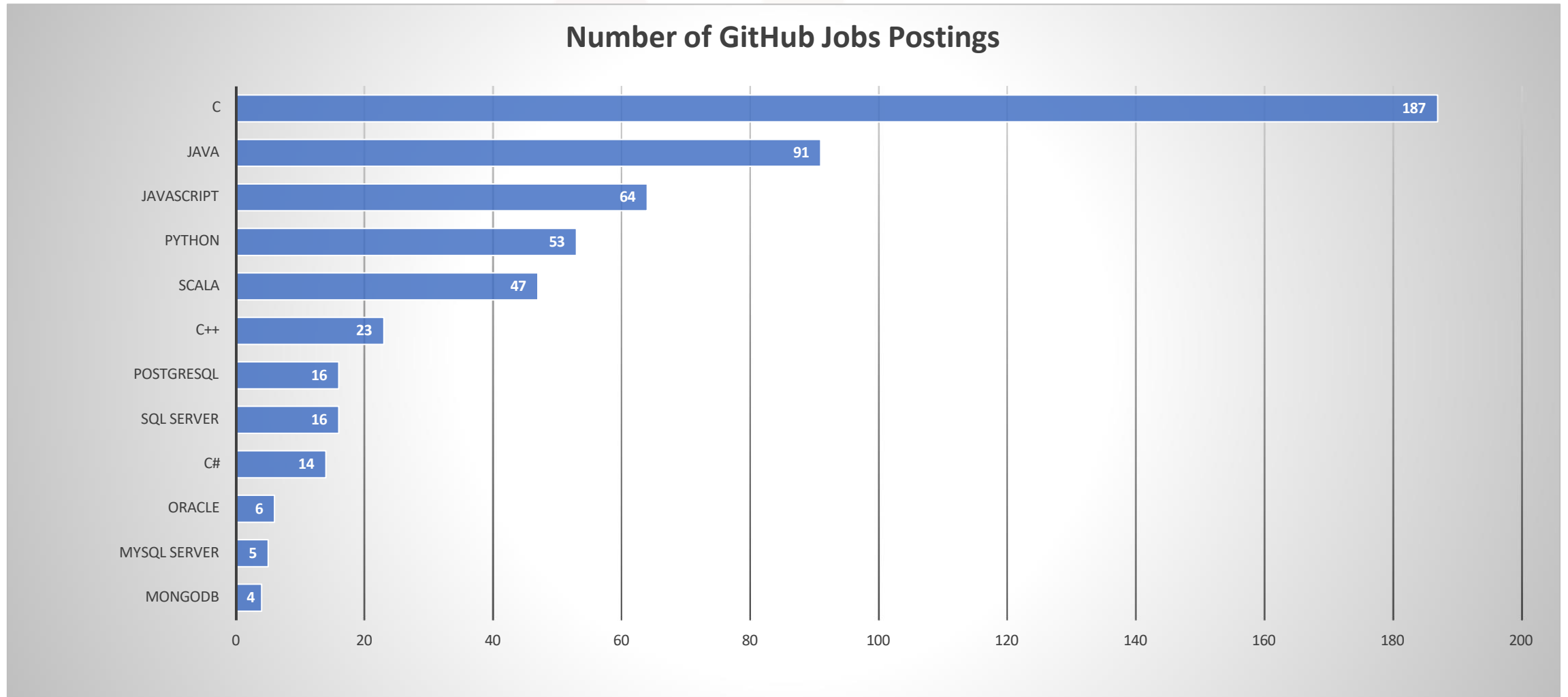
# CONCLUSION

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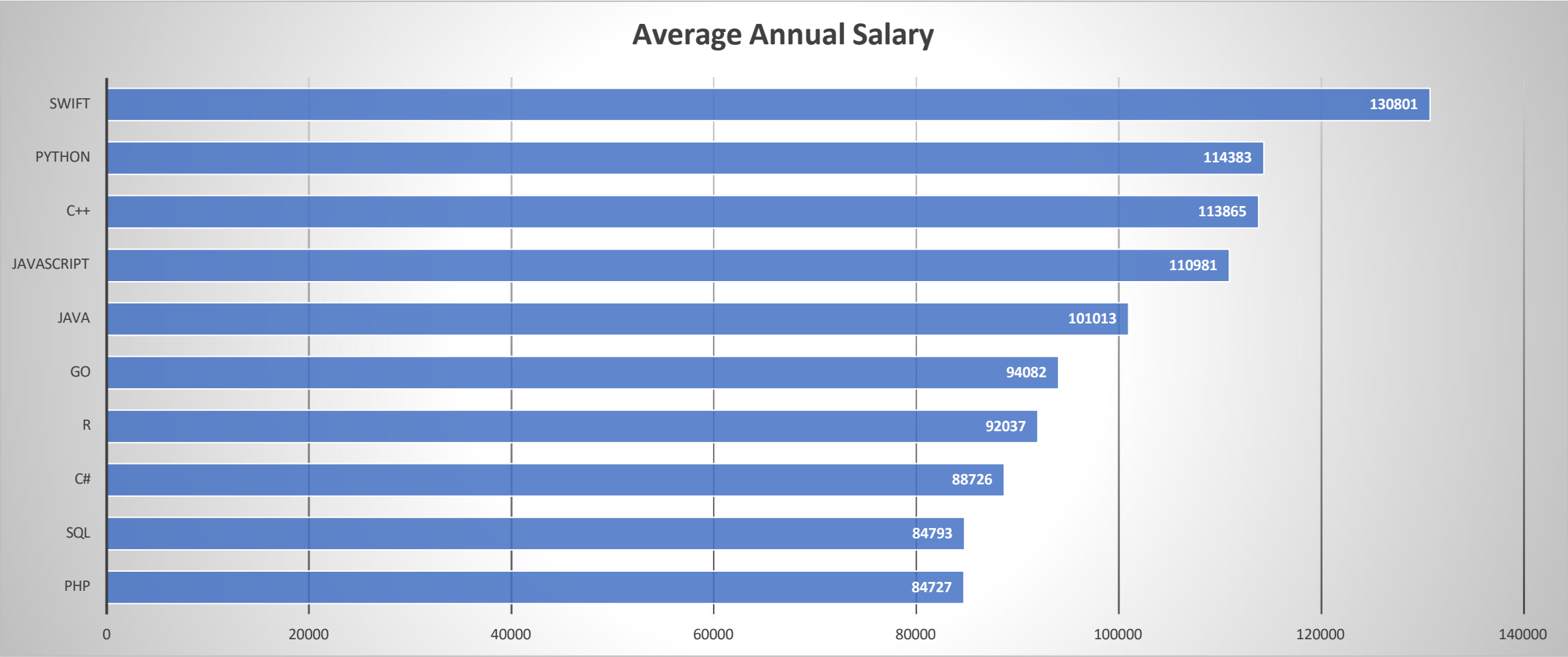
- Javascript is the most used and desired programming language
- Linux is the most used and desired platform
- MySQL is the most used database, but other databases, such as PostgreSQL are more desirable to work with
- Though jQuery is the most used Web Frame, React.js seems to be the future of Web Frames as it is both highly used and highly desired

# APPENDIX A: GITHUB JOB POSTINGS



Data Source: IBM's GitHub Jobs API, April 2022

# APPENDIX B: POPULAR LANGUAGES



Data Source: IBM's [Popular Programming Languages](#)