

IBM Data Analyst Capstone Project



Sarthak Ball

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OUTLINE

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



EXECUTIVE SUMMARY



- ▶ This presentation will show the current and future trends of Programming Languages, Databases, Platforms and WebFrames.
- ▶ Relevant skills required in the field of IT and business consulting are everchanging and evolving continuously.
- ▶ It is important to identify the future trends for the skills requirement to remain competitive and keep up the pace with changing technologies.
- ▶ Overall, the aim in identifying the future skills requirements and trends is to help the firm make more informed data driven hiring and decisions.

INTRODUCTION



- ▶ Analyze technology trend in software web development among developers around the world.
- ▶ Purpose of this analysis
 - ▶ Identifying top programming languages, databases, platforms and webframes skills in demand.
 - ▶ Identifying skill requirement for the future.
 - ▶ Identifying human resource gap in industry
- ▶ Audience for this presentation
 - ▶ Current and aspiring developers
 - ▶ HR professionals
 - ▶ IT industry leaders.

METHODOLOGY



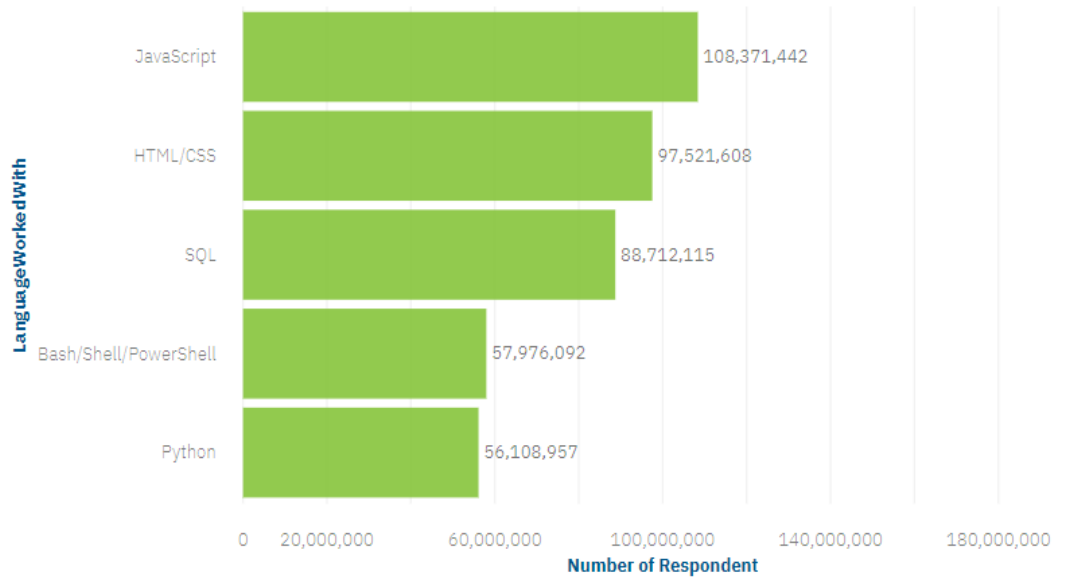
- ▶ Data Collection Sources
 - ▶ Stack Overflow Developer Survey 2019
 - ▶ Github Job Postings
 - ▶ IBM website
- ▶ Data Wrangling
- ▶ Data Exploration
- ▶ Data Cleaning
- ▶ Data Visualization
 - ▶ Python matplotlib
 - ▶ IBM Cognos

RESULTS

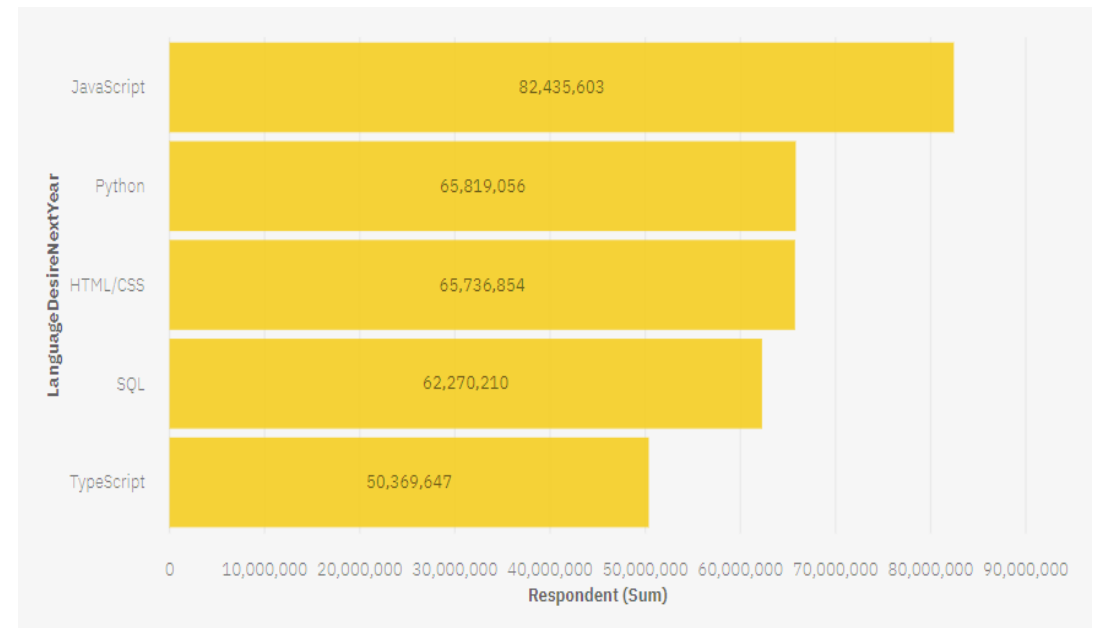
- ▶ After the analysis of data, following observations were made:
 - ▶ Most of the respondents were from 20 to 45 years of age.
 - ▶ There is a positive correlation between Salary and Age
 - ▶ There is also a positive correlation between Salary and Working hours per week.
- ▶ Other results from data analysis are visualized below in forms of charts.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

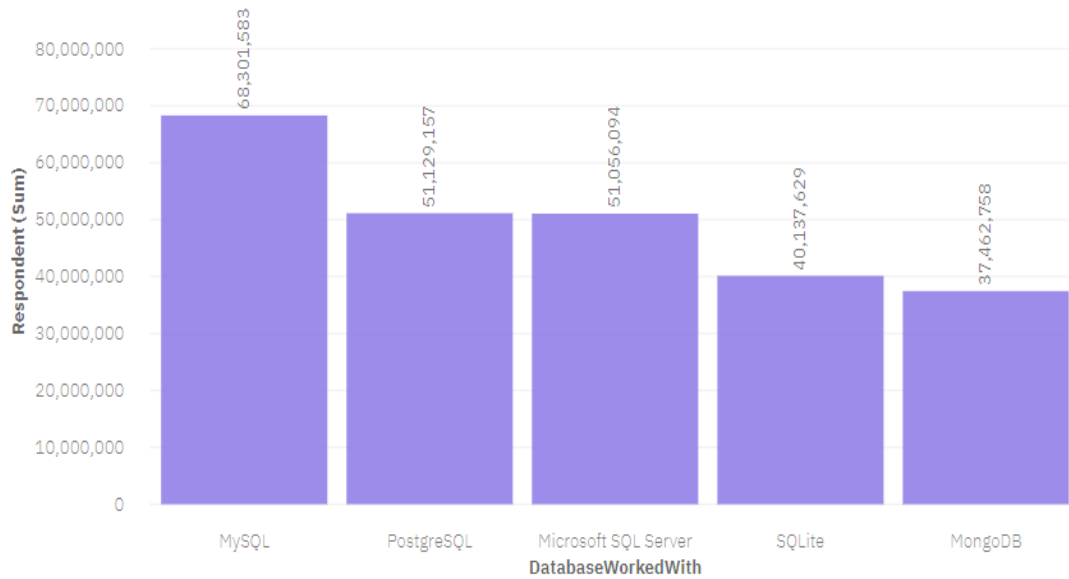
- ▶ JavaScript and HTML/CSS were the most popular in 2019 and will likely remain so the following year.
- ▶ SQL was popular in 2019 and will likely remain so.
- ▶ Increasing interests in Python and TypeScript.
- ▶ Decreasing interest in PowerShell/Bash.

Implications

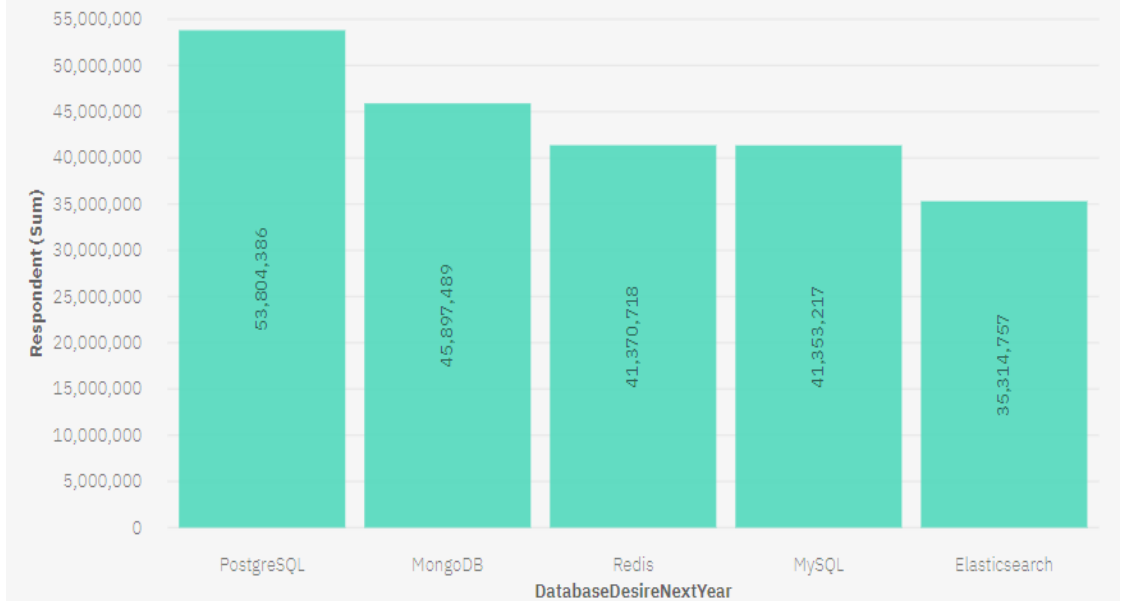
- ▶ Web development is still in high demand, and JavaScript and HTML/CSS remain the dominant languages—however, TypeScript may catch up in the future.
- ▶ SQL remains the preferred language for big data storage and querying—it's not likely to go away anytime soon.
- ▶ Python's rising popularity likely reflects the growth of AI and ML work.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- ▶ SQL Databases were most popular in 2019, MySQL being on top of the list.
- ▶ PostgreSQL is gaining interest among all other SQL Databases as it is most desired database for next year.
- ▶ MongoDB and Elasticsearch are gaining rapid interest.

Implications

- ▶ Open-source databases like MySQL are still preferable
- ▶ NoSQL database programs are gaining popularity, which likely reflects a growing need to handle non-relational and unstructured data.
- ▶ Employers should hire more people skilled in MongoDB, Redis, Elasticsearch and less people skilled in MySQL, Microsoft SQL server.

DASHBOARD



The following link contains the full, interactive Cognos dashboard summarizing (a) **Current Technology use**, (b) **Future Technology trend**, and (c) **Demographics** of the survey respondents:

[Click here to open Cognos Dashboard](#)

Current Technology Usage

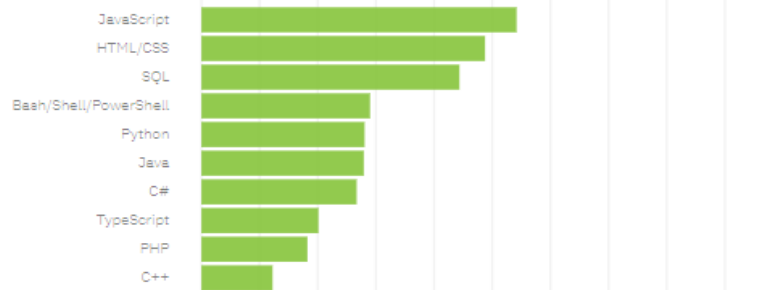
Current Technology Used

Future Technology Trend

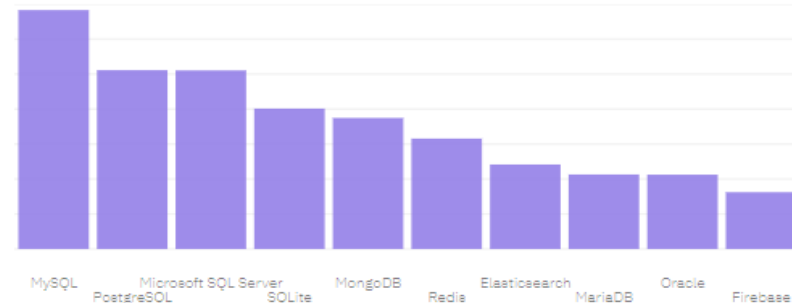
Demographics



Top 10 Languages Currently Used



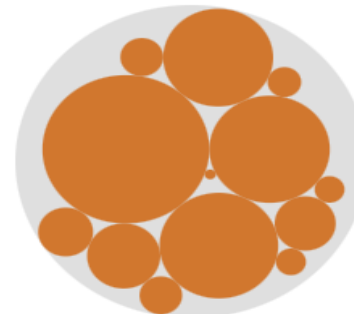
Top 10 Databases Currently Used



Platforms Mostly Used



Top 10 Webframe Currently Used



Future Technology Trends

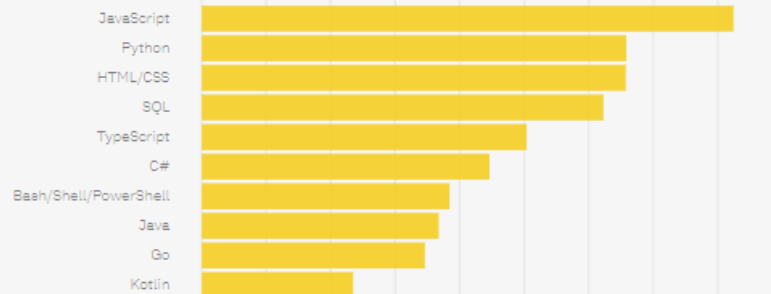
Current Technology Used

Future Technology Trend

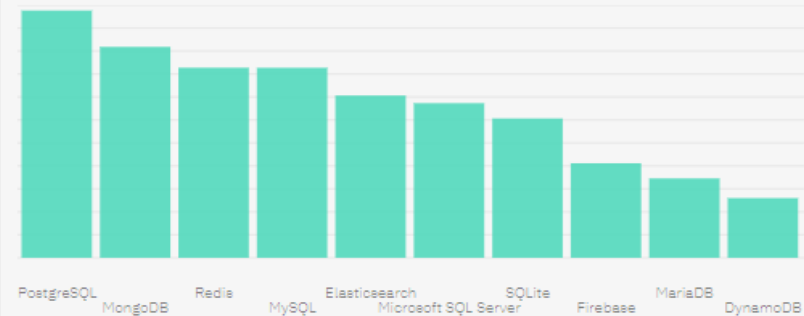
Demographics



Top 10 Languages Desired for Next Year



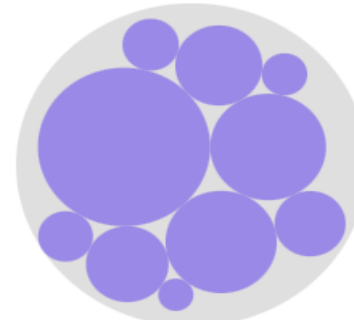
Top 10 Databases Desired for Next Year



Platforms Desired for Next Year



Top 10 Webframes Desired for Next Year



Demographics

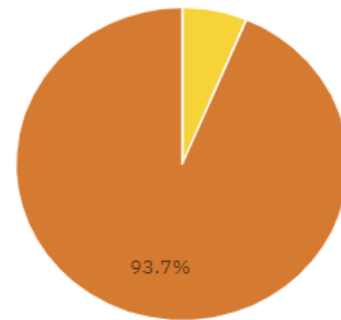
Current Technology Used

Future Technology Trend

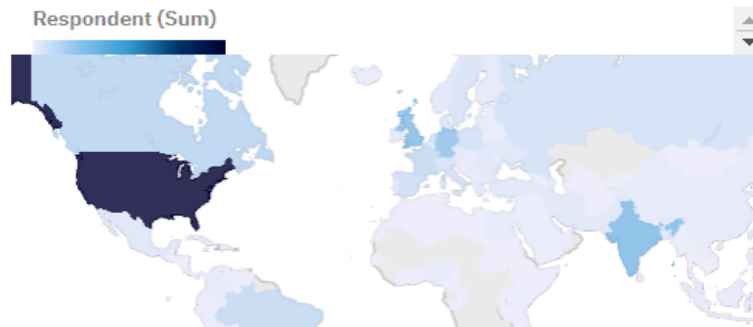
Demographics



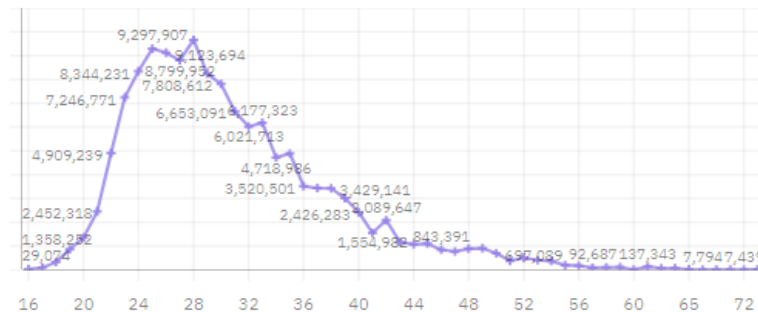
Respondent Classified by Gender



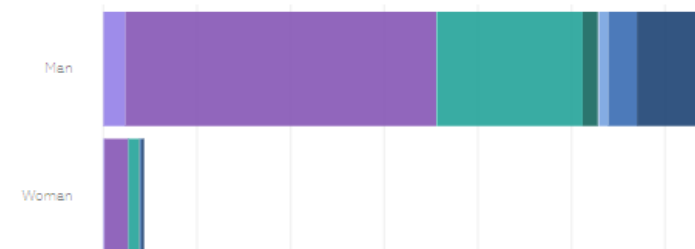
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



DISCUSSION



- ▶ The main purpose of this analysis is to identify the emerging technology trends in the field of IT industry.
- ▶ The data from the survey was analyzed and the trends are visualized.
- ▶ The survey shows that most of the respondents are men.
- ▶ Most of the respondents are from United States of America.

OVERALL FINDINGS & IMPLICATIONS

Findings

- ▶ **Programming Languages** - TypeScript is gaining significant interest and python continues to grow as well.
- ▶ **Databases** - PostgreSQL, MongoDB, Redis and Elasticsearch are on the rise.
- ▶ **Platforms** - Docker and AWS are on the rise as Linux holds its ground firm and Windows is dropping.
- ▶ **WebFrames** – React.js and Vue.js are gaining interest while jQuery is losing interest.

Implications

- ▶ Hiring and training professionals in Python, HTML/CSS, JavaScript and SQL remains top priority. Employing people skilled in Typescript will help.
- ▶ Hiring and training professionals in PostgreSQL, MongoDB, Redis will help the company to keep up the pace with the competition.
- ▶ Employing people skilled in Linux/Docker/AWS and proficient in React.js will be a good move.

CONCLUSION



- ▶ Hiring peoples skilled in technology that are in trend in near future will help the company to stay ahead of the competition.
- ▶ Upskilling current employees and providing the proper training about new technologies is also a good move.
- ▶ Make adjustments in staff for those skills no longer in demand.

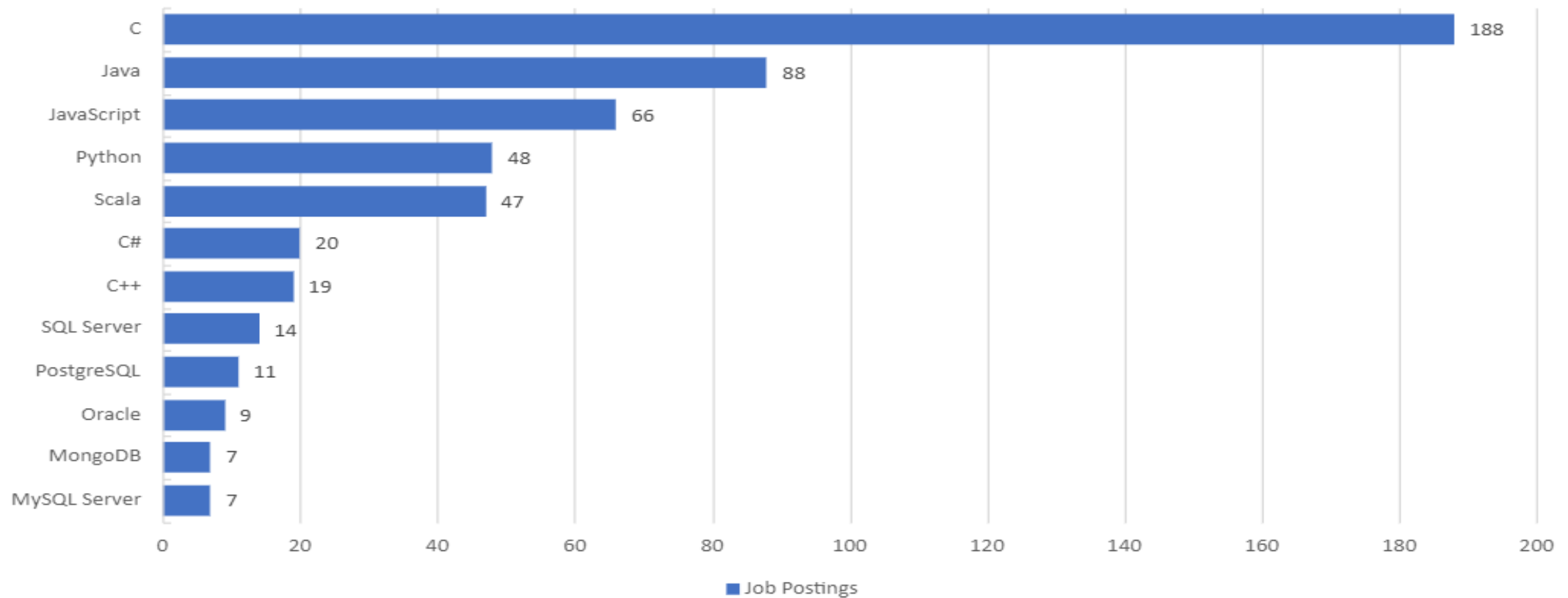
APPENDIX



- ▶ There are some interesting observations seen from the dataset gathered from Github which shows the number of job postings for different programming languages and databases.
 - ▶ Job posting for C and Java are still high even though C wasn't in Top 5 Programming Languages.
- ▶ Another dataset shows some popular programming languages with their annual average salary which shows Swift and Python are among the highest paying jobs.

JOB POSTINGS

Github Job Postings



POPULAR LANGUAGES

