



# Technology Industry Trends Analysis

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# OUTLINE

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

# EXECUTIVE SUMMARY

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- **2019 Stack Overflow Developer Survey:**
  - Currently most popular:
    - Language: JavaScript
    - Database: MySQL
    - Web Framework: jQuery
    - Cloud Service: AWS
    - Platform: Linux
  - Most desired to learn by developers:
    - Language: JavaScript
    - Database: PostgreSQL
    - Web Framework: Angular
    - Cloud Service: AWS
    - Platform: Docker
  - Respondents of survey are primarily men in the United States with a Bachelor's or Master's degree

# INTRODUCTION

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## Purpose

- Analyze current trends and possible future trends in the technology industry

## Questions

- Which technologies are the most popular?
- Which technologies do employees in the industry have a desire to learn?
- What are the demographics that make up the technology industry?

# METHODOLOGY

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## Data Sources *(provided by IBM Skills Network)*

- 2019 Stack Overflow Developer Survey – csv file formats
- 2019 Stack Overflow Developer Survey– SQLite file format

## How Data was Used

- Performed exploratory/statistical analysis
- Created Python visualizations
- Created an IBM Cognos Dashboard to visualize industry trends

# Technologies Used

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- Programming/Querying Languages:
  - Python
  - SQL
- Tools/Software:
  - Jupyter Notebook
  - IBM Cognos
  - Microsoft Excel (See Appendix)
- Python Modules:
  - Pandas
  - Matplotlib
  - Seaborn
  - Sqlite3
  - Requests (See Appendix)
  - Openpyxl (See Appendix)
- Web Frameworks:
  - Flask (See Appendix)

# RESULTS

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## Data Organization

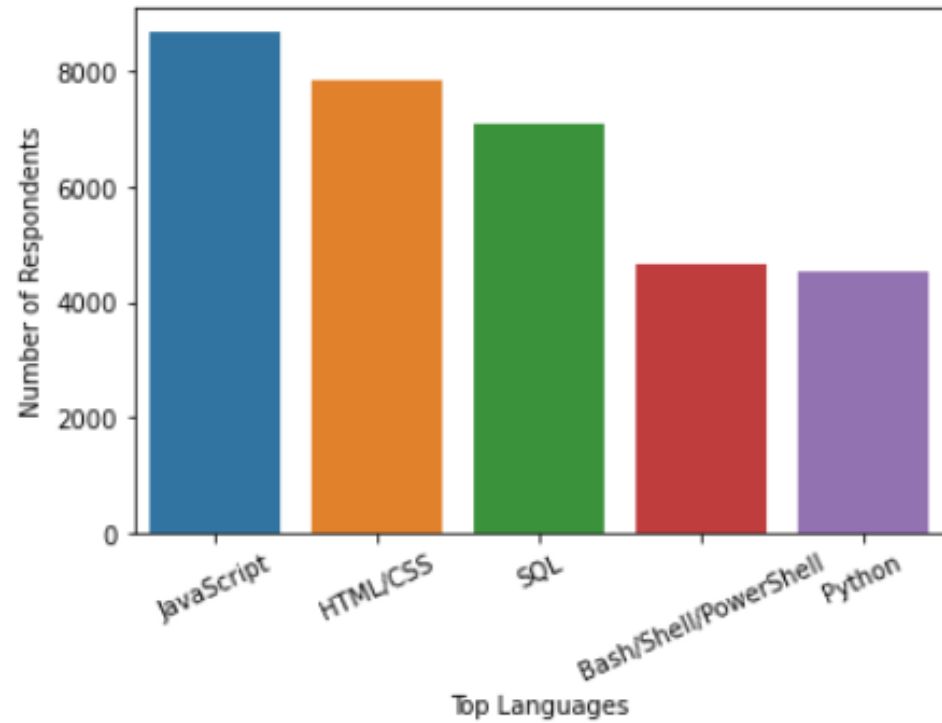
- Preliminary exploratory data analysis was performed on csv data using Python
- SQLite file was read in as a Pandas dataframe using DB-API connection
- csv data was imported into IBM Cognos to create Dashboard

## Analysis

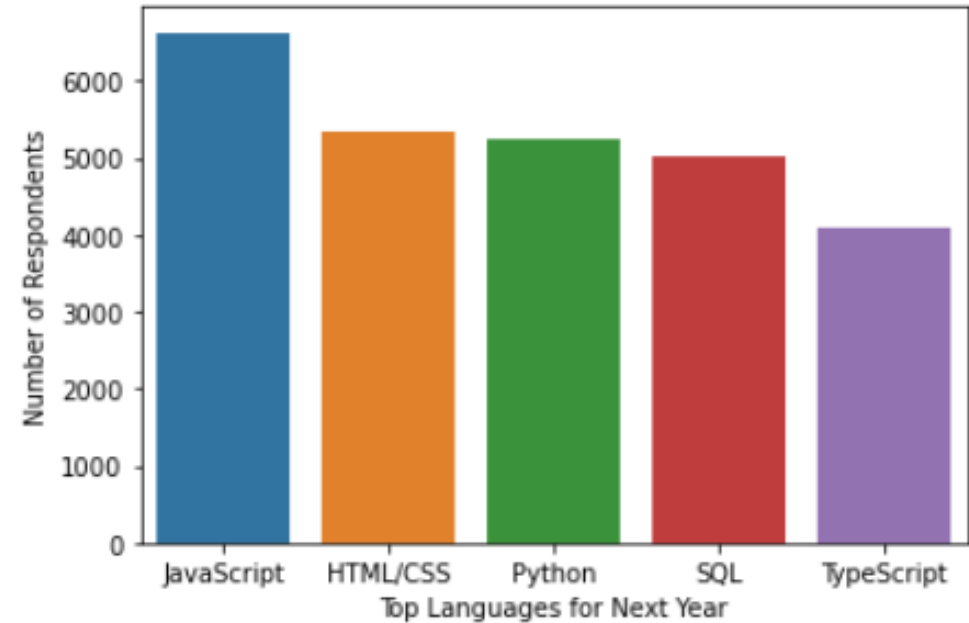
- Pandas dataframes were used to perform exploratory data analysis and to create visualizations using Pandas, Matplotlib, and Seaborn libraries.
- IBM Cognos Dashboard was made to visualize current/future trends and demographics trends according to the Stack Overflow developer survey

# PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year





# PROGRAMMING LANGUAGE TRENDS: FINDINGS & IMPLICATIONS

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## Findings

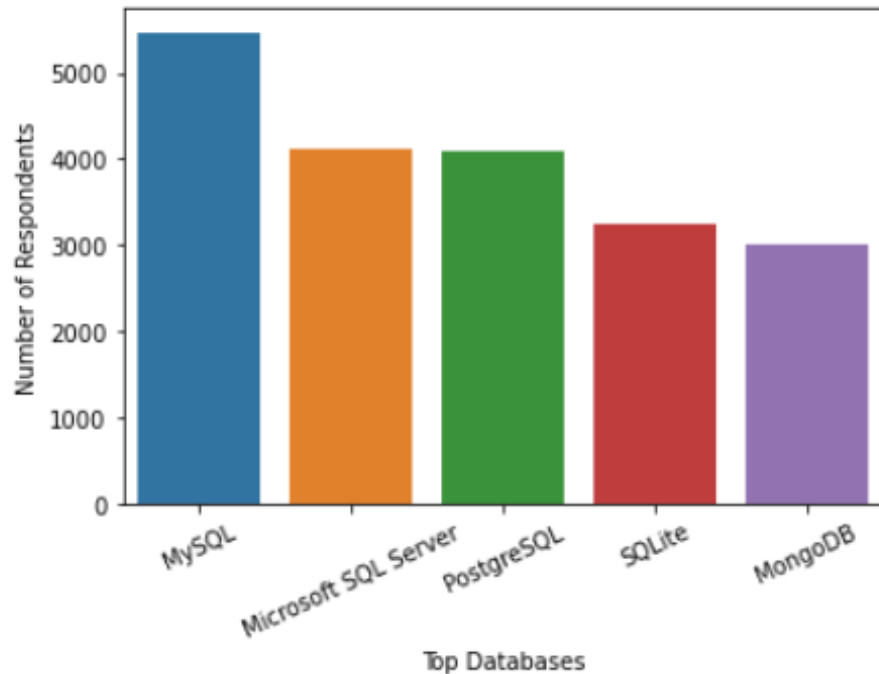
- JavaScript is the most popular language
- JavaScript is the language that developers desire to learn most
- Python is the 3<sup>rd</sup> most desired language to learn
- SQL is the most popular querying language
- TypeScript is a language that many developers want to learn, but is not amongst the top 5 most used languages

## Implications

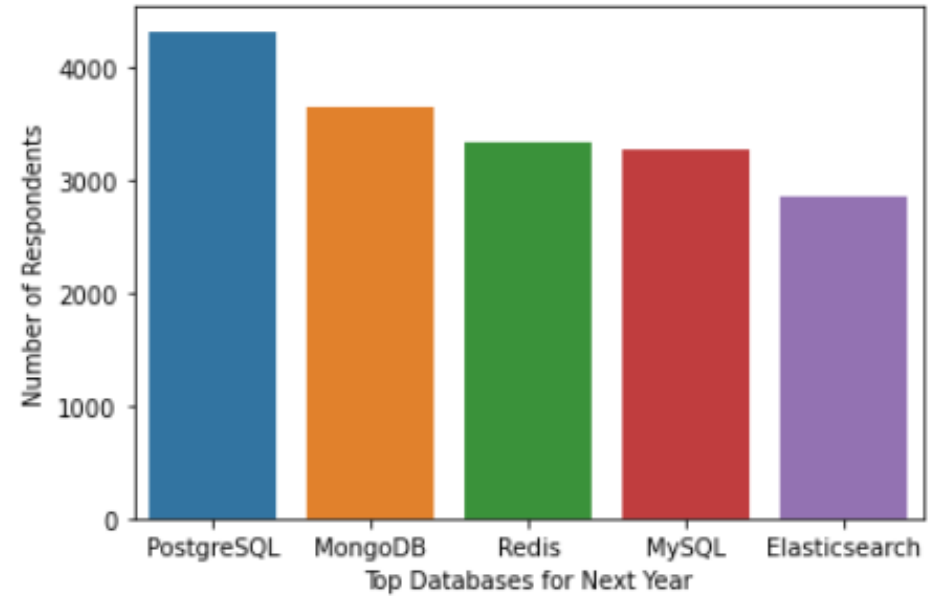
- Since JavaScript, HTML, and CSS are the most popular languages, then many of the respondents in the survey do front-end development
- Many respondents also want to learn front-end development since JavaScript, HTML, and CSS are the most desired to learn
- TypeScript is a language that may be increasingly sought after in the technology industry

# DATABASE TRENDS

Current Year



Next Year



# DATABASE TRENDS: FINDINGS & IMPLICATIONS

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## Findings

- MySQL is the most used database
- PostgreSQL is the database that respondents desire to learn most
- MongoDB is the most used and desired document-based database
- More respondents are wanting to learn document-based (NoSQL) databases like Redis and Elasticsearch

## Implications

- PostgreSQL may become a more popular database of choice in the future versus MySQL and Microsoft SQL Server
- NoSQL databases may be increasing in popularity
- MongoDB may be the NoSQL database that is increasing in popularity most

# DASHBOARD

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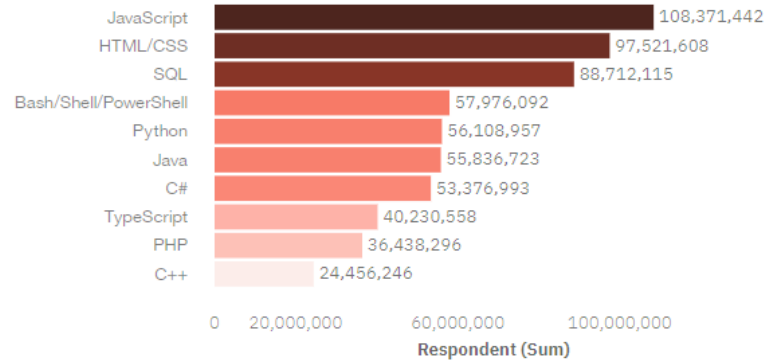


**[Link to IBM Cognos Dashboard:](#)**

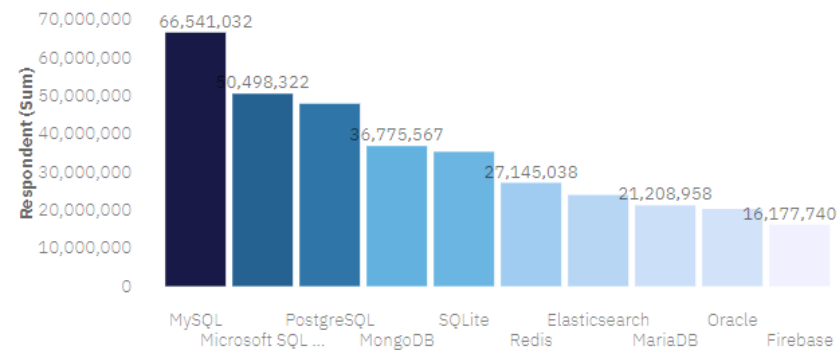
[Click here to view](#)

# DASHBOARD TAB 1

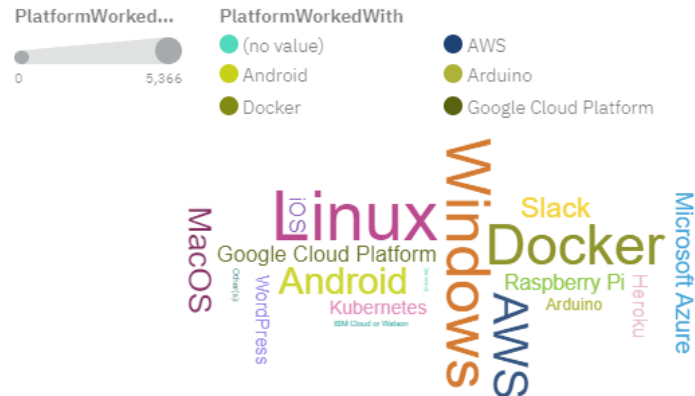
Top 10 Languages Used



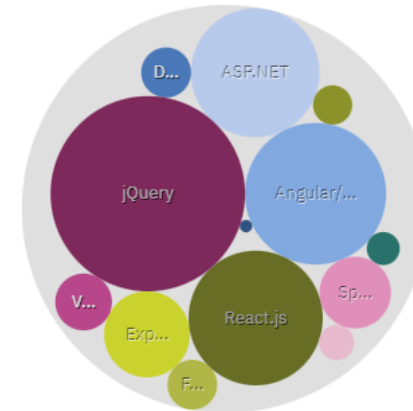
Top 10 Databases Used



Most Popular Platforms

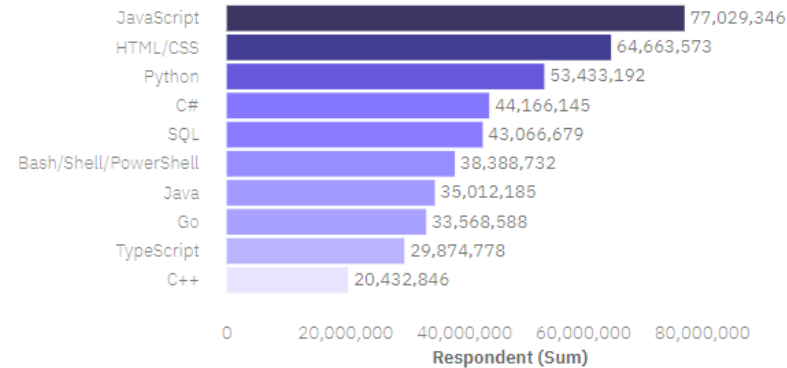


Most Popular Web Frameworks

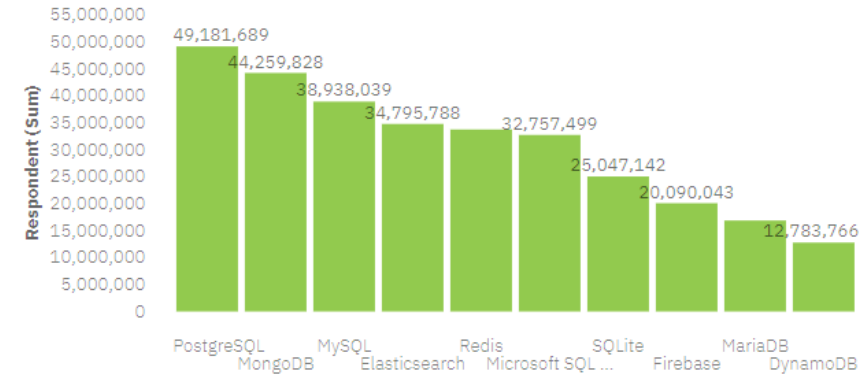


# DASHBOARD TAB 2

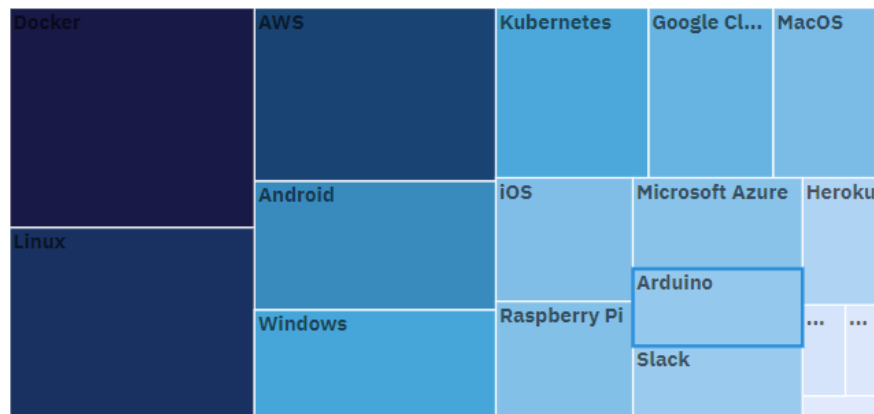
## Top 10 Desired Languages



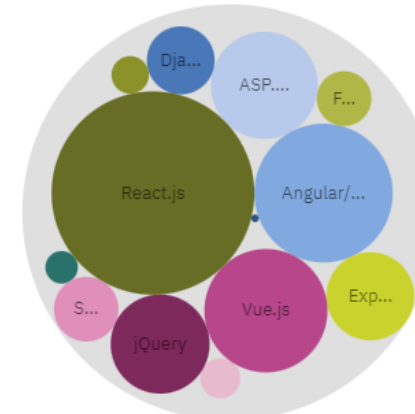
## Top 10 Desired Databases



## Most Desired Platforms



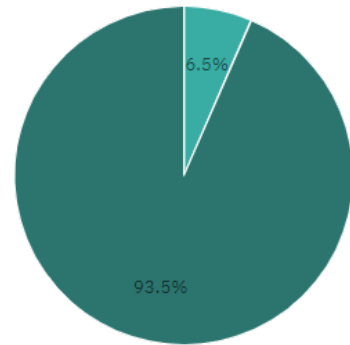
## Most Desired Frameworks



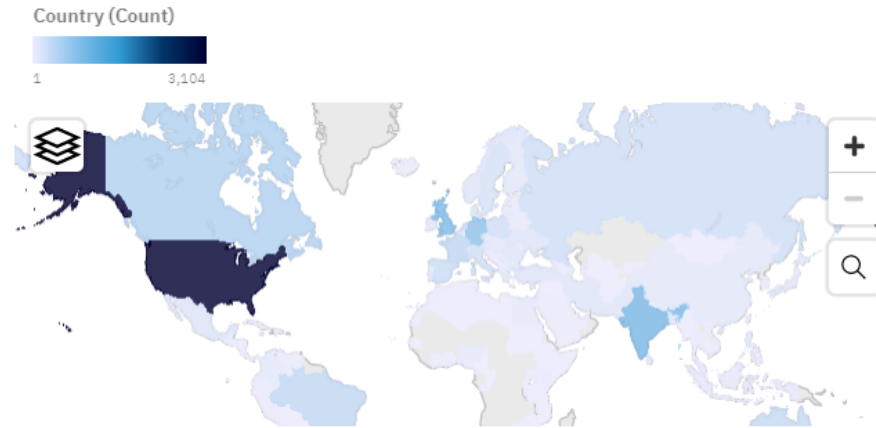
# DASHBOARD TAB 3

## Gender of Respondents

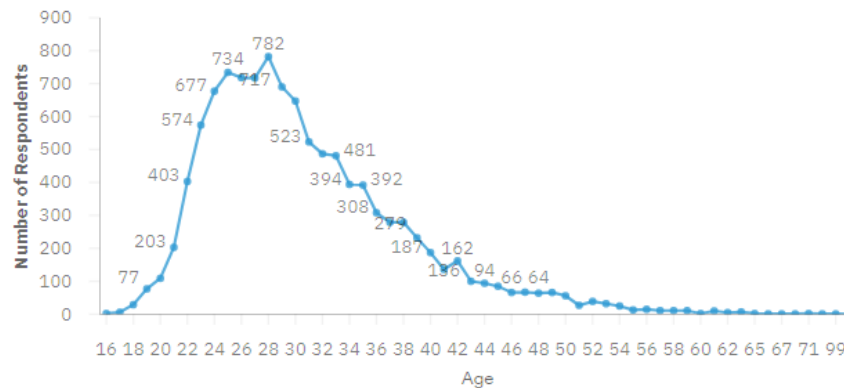
Gender  
● Woman ● Man



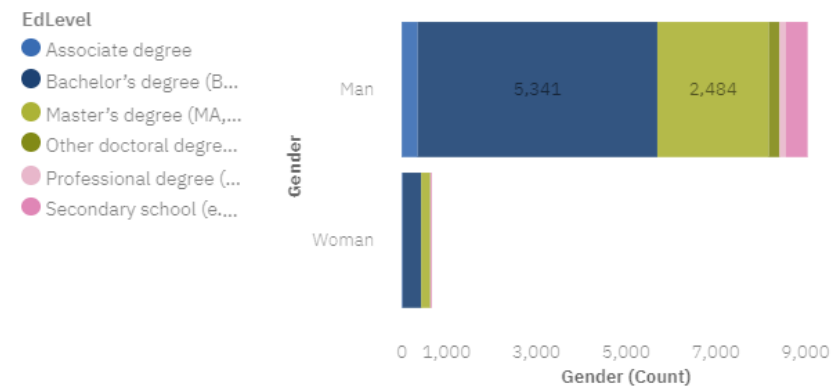
## Locations of Respondents



## Age of Respondents



## Education Level by Gender



# DISCUSSION

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- As a developer, it may be important to learn to incorporate the following technologies according to this survey:
  - JavaScript
  - React.js
  - PostgreSQL
  - AWS
  - Docker



# OVERALL FINDINGS & IMPLICATIONS

## Findings

- Currently most popular:
  - Language: JavaScript
  - Database: MySQL
  - Web Framework: jQuery
  - Cloud Service: AWS
  - Platform: Linux
- Most desired to learn by developers:
  - Language: JavaScript
  - Database: PostgreSQL
  - Web Framework: Angular
  - Cloud Service: AWS
  - Platform: Docker
- Demographics: Respondents are primarily men in the United States with a Bachelor's or Master's degree

## Implications

- JavaScript is a popular language with a high potential to continue this trend in the future
- Linux is the most used platform since it is an open-source, light-weight, and high-speed operating system
- Docker is a platform that many survey respondents want to learn indicating the rise in popularity of DevOps and containers/microservice architectures
- Most employees in the tech industry are males who have at least a bachelor's degree

# CONCLUSION

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- JavaScript, React.js, PostgreSQL, Linux, AWS, and Docker technologies have a high potential to become more popular in the future
- JavaScript, jQuery, Linux, and MySQL are reliable technologies that are frequently used today
- The technology industry is dominated by a disproportionate number of males versus females

# Future Analysis

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- The following additional information can provide further insight:
  - Which technologies are most popular in certain regions
  - Which programming languages do developers find to be the most readable/versatile/performant
  - Detailed comparison between popular cloud services

# APPENDIX

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## Additional Analysis

### Data Sources

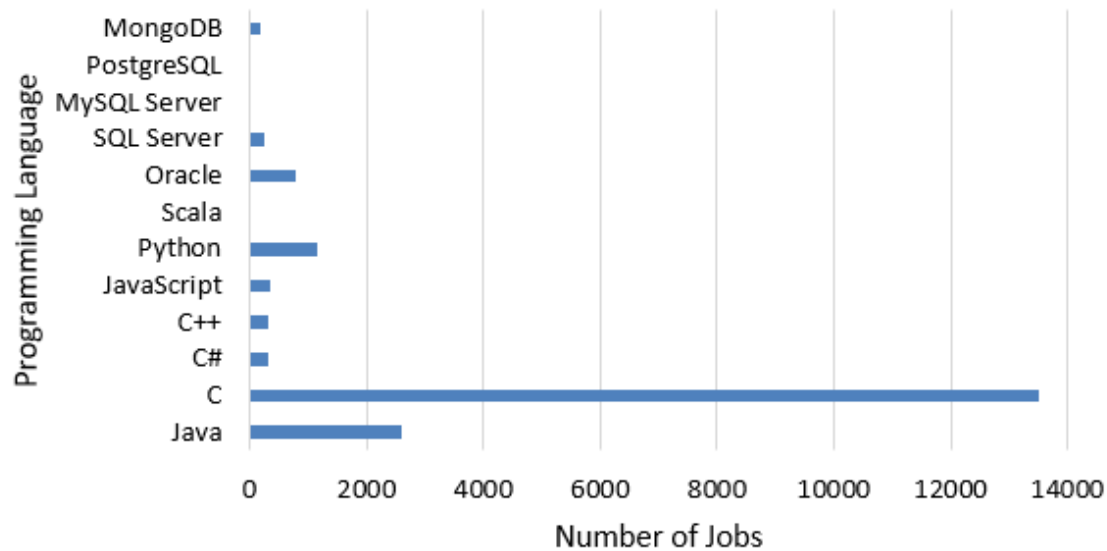
- Naukri.com Kaggle Jobs Dataset – json format
- IBM Webpage with Programming Language Data – HTML

### How Data was Used

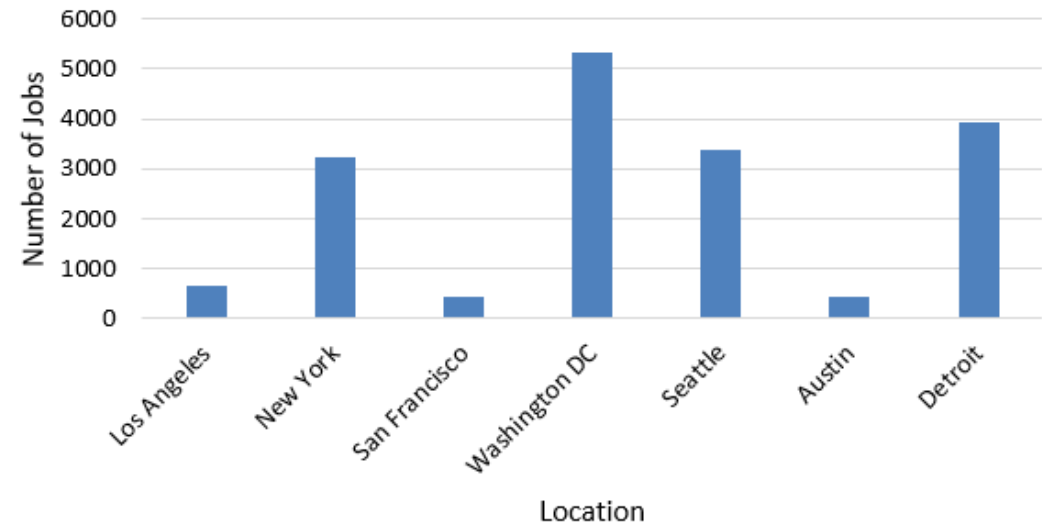
- Created an API and used API to store Kaggle data in an excel spreadsheet using Python
- Performed web scraping on IBM Webpage and store scraped data in csv file

# JOB POSTINGS

Number of Jobs by Programming Language



Number of Jobs by Location



# POPULAR LANGUAGES

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