



Technology Industry Trends Analysis

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OUTLINE



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EXECUTIVE SUMMARY



- **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



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



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

- 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

Data Organization

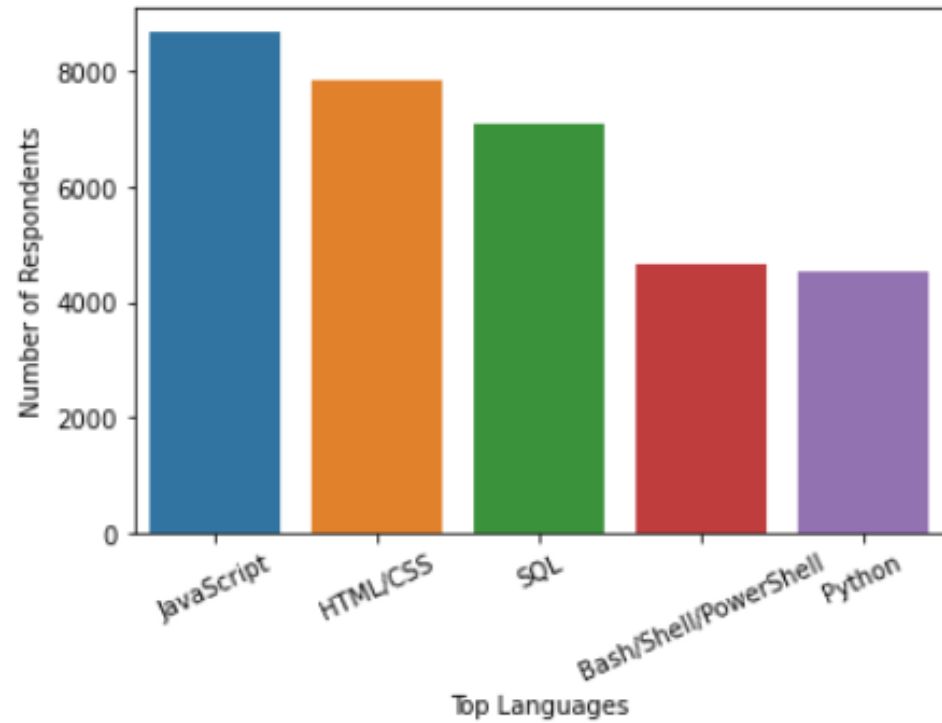
- Preliminary exploratory data analysis was performed on csv data using Python
- SQLite file was read in as a Pandas dataframe using DB-API connection
- csv data was imported into IBM Cognos to create Dashboard

Analysis

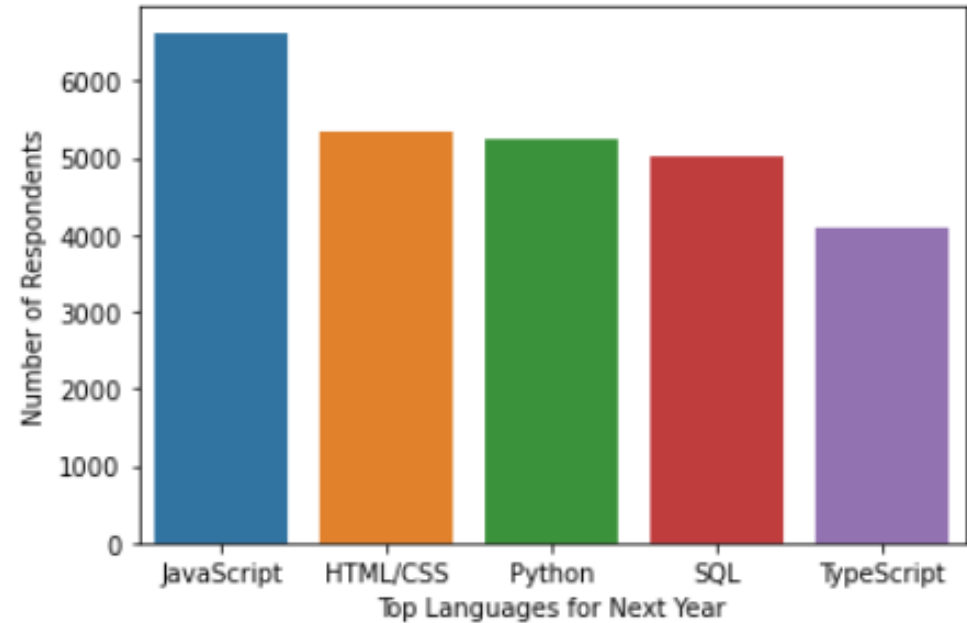
- Pandas dataframes were used to perform exploratory data analysis and to create visualizations using Pandas, Matplotlib, and Seaborn libraries.
- IBM Cognos Dashboard was made to visualize current/future trends and demographics trends according to the Stack Overflow developer survey

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS: FINDINGS & IMPLICATIONS

Findings

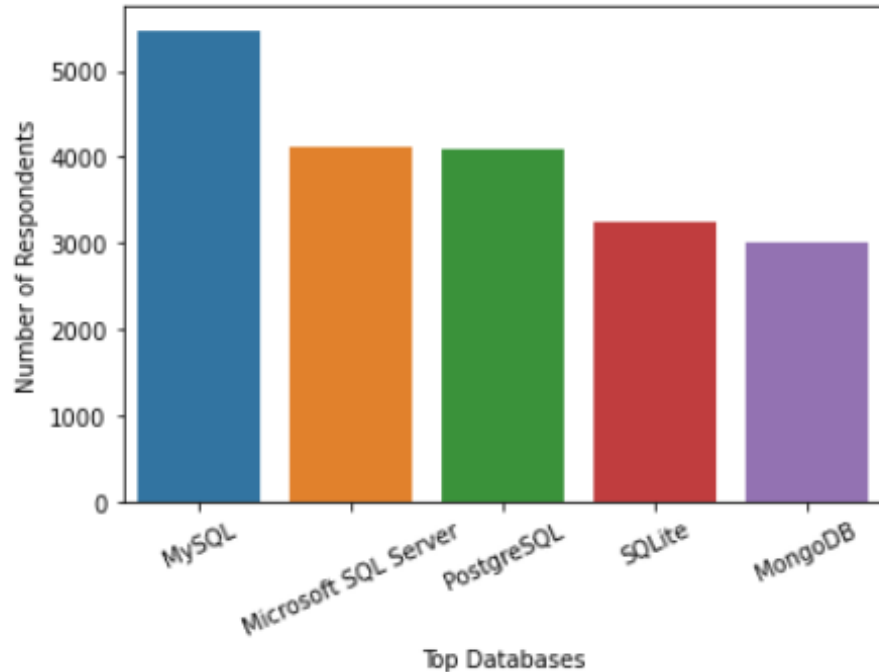
- JavaScript is the most popular language
- JavaScript is the language that developers desire to learn most
- Python is the 3rd most desired language to learn
- SQL is the most popular querying language
- TypeScript is a language that many developers want to learn, but is not amongst the top 5 most used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

Implications

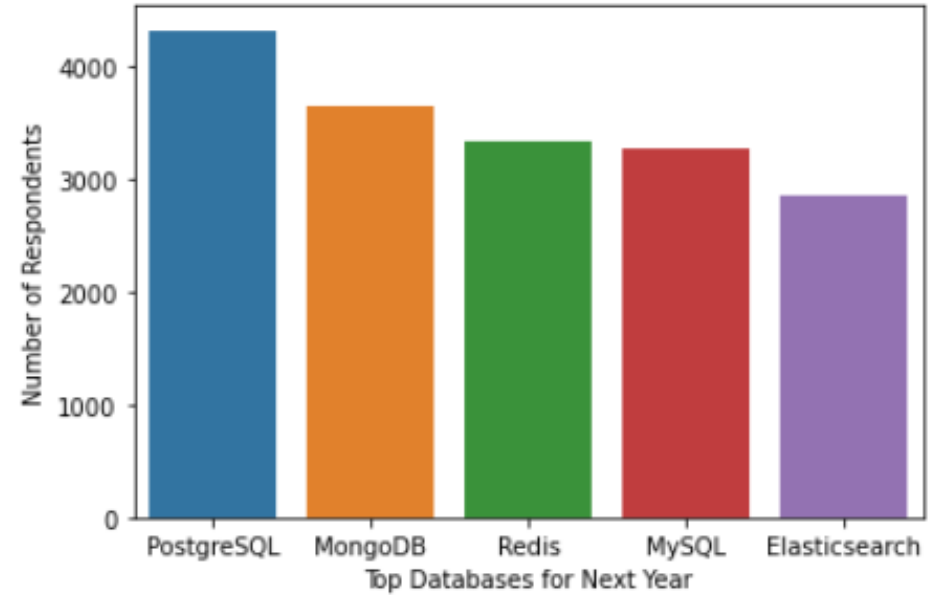
- Since JavaScript, HTML, and CSS are the most popular languages, then many of the respondents in the survey do front-end development
- Many respondents also want to learn front-end development since JavaScript, HTML, and CSS are the most desired to learn
- TypeScript is a language that may be increasingly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

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS: FINDINGS & IMPLICATIONS

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

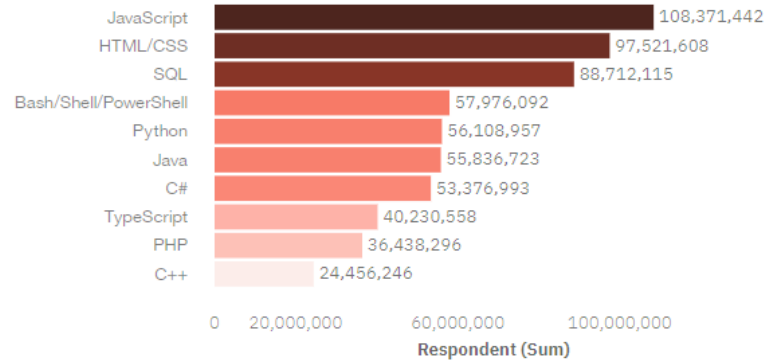


[Link to IBM Cognos Dashboard:](#)

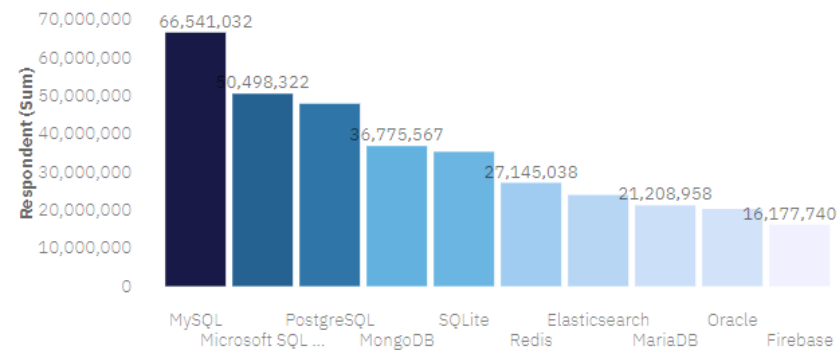
[Click here to view](#)

DASHBOARD TAB 1

Top 10 Languages Used



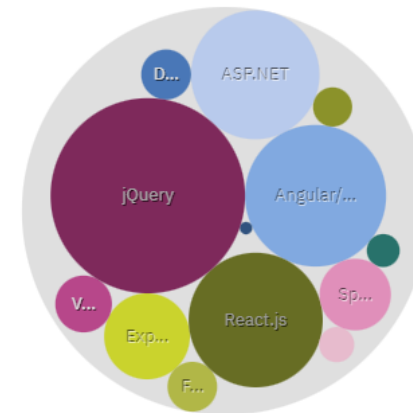
Top 10 Databases Used



Most Popular Platforms

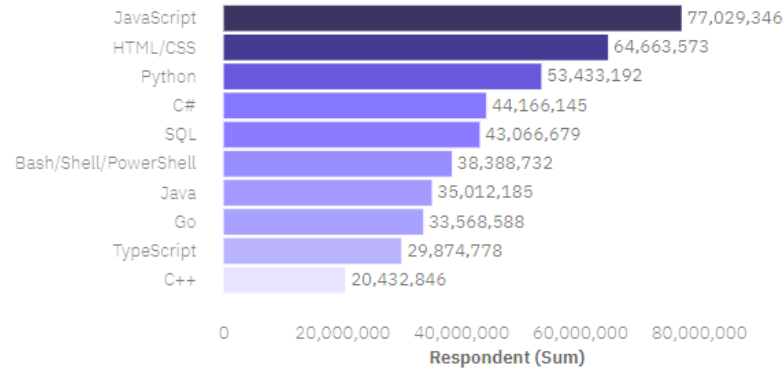


Most Popular Web Frameworks

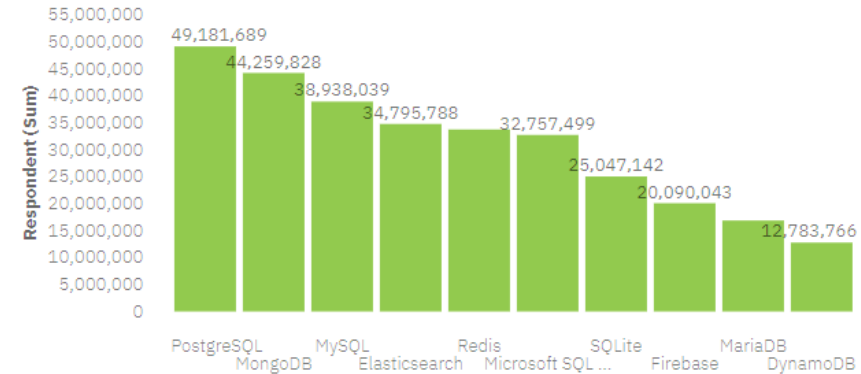


DASHBOARD TAB 2

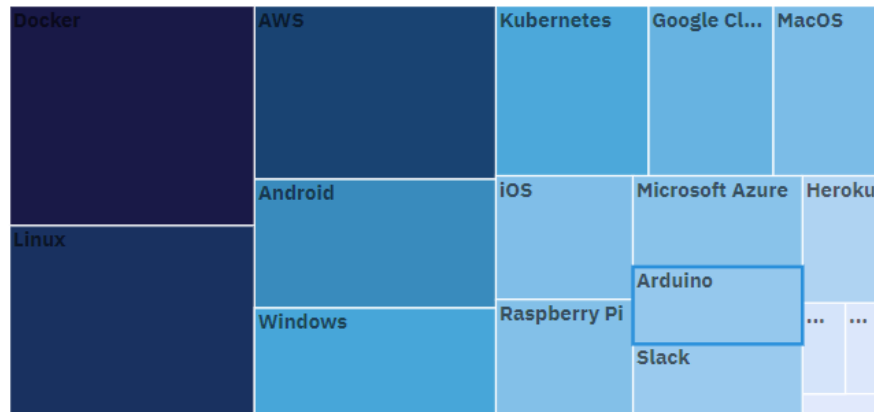
Top 10 Desired Languages



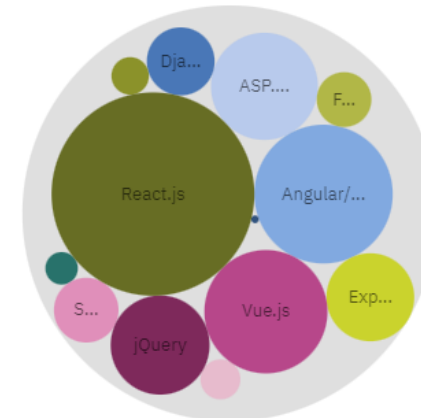
Top 10 Desired Databases



Most Desired Platforms



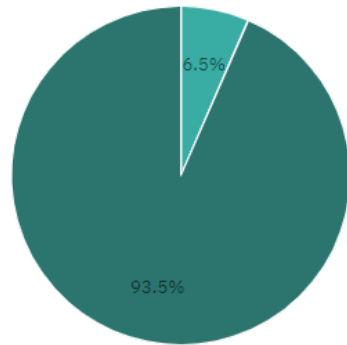
Most Desired Frameworks



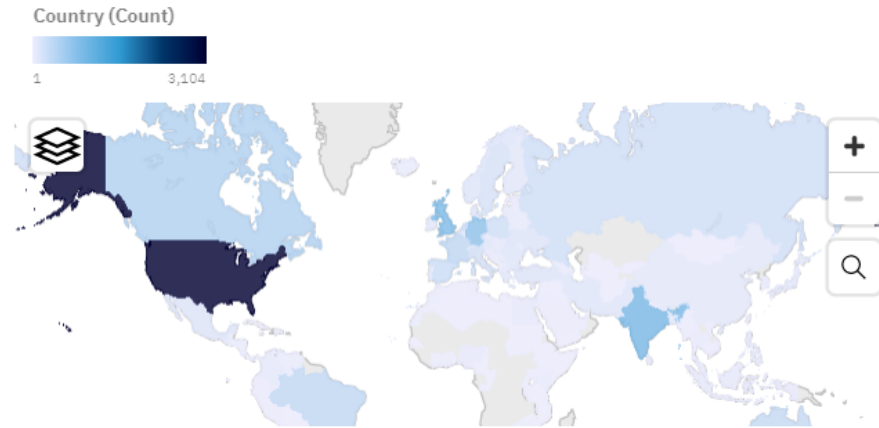
DASHBOARD TAB 3

Gender of Respondents

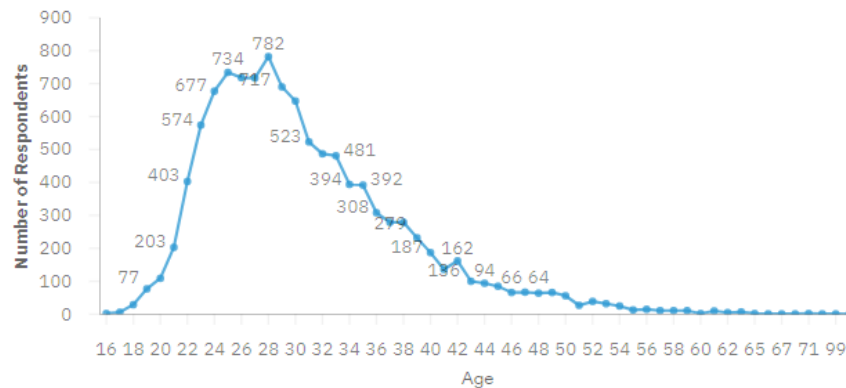
Gender
● Woman ● Man



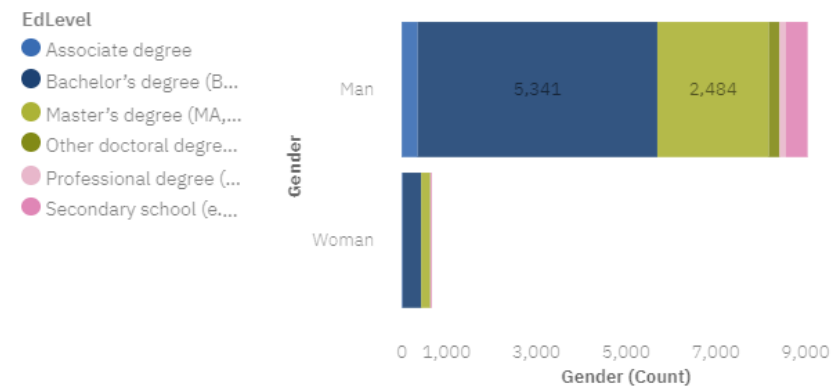
Locations of Respondents



Age of Respondents



Education Level by Gender



DISCUSSION



- 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
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 - 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



- 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

- 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



Additional Analysis

Data Sources

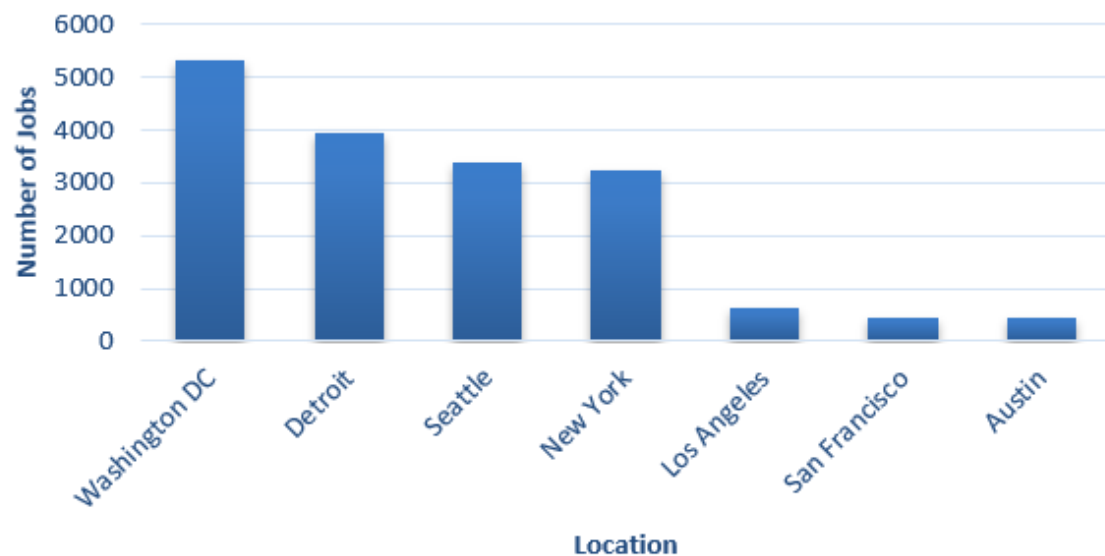
- Naukri.com Kaggle Jobs Dataset – json format
- IBM Webpage with Programming Language Data – HTML

How Data was Used

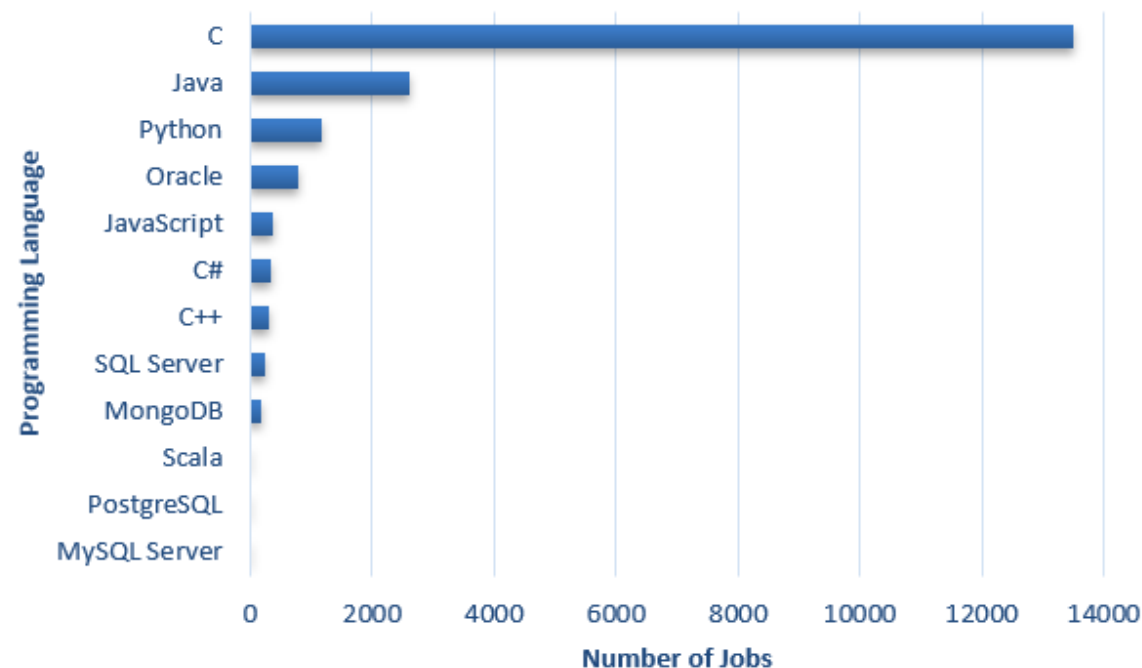
- Created an API and used API to store Kaggle data in an excel spreadsheet using Python
- Performed web scraping on IBM Webpage and store scraped data in csv file

JOB POSTINGS

Number of Jobs by Location



Number of Jobs by Programming Language



POPULAR LANGUAGES

