



# Emerging skills and technologies

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# Table of Contents



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

# Executive Summary



- This presentation will present the analysis report that investigates the emerging skill set and technologies of the IT industry.
- The primary aim of the analysis is to identify the emerging trends in the IT industry pertaining to -
  - Programming languages
  - Databases
  - Software platforms (IDEs)
  - Web frames
- The current trends are also analyzed for comparison with expected future trends.

# Introduction



- The main purpose of this analysis is to keep up with the changing tools used in the IT industry.
- This practice is necessary to identify and hire future employees and train current employees in these tools to keep them up to date.
- The required data is collected from various sources -
  - Job postings
  - Training portals
  - Surveys

# Methodology



- The required data for analysis is collected from
  - GitHub jobs
  - IBM website
  - Stack Overflow
- The information on the number of job postings for software tools was extracted by accessing GitHub Job APIs
- The information on the annual salaries of professionals working with certain software tools was accessed by web scrapping the IBM website.
- The required data set for this analysis comes from a survey conducted by Stack Overflow which they have open sourced.

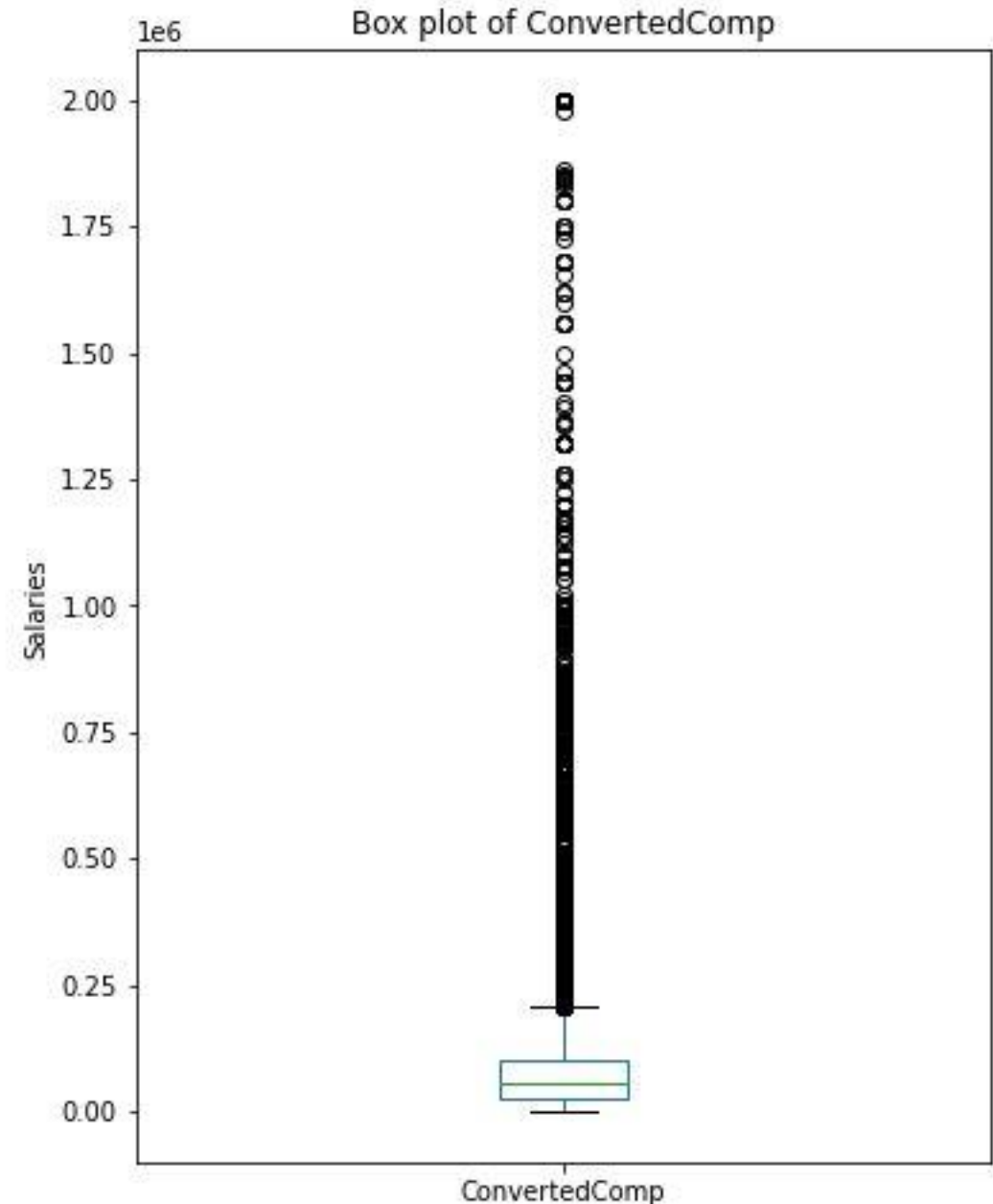
# Methodology



- Once the data is collected, data wrangling is performed to -
  - Find missing values
  - Find duplicate values
  - Remove duplicates
  - Determine the missing values
  - Normalize the data
- After the data set is cleaned, an exploratory analysis is conducted to identify distribution of data, outliers in any fields and correlations between different fields.
- The data is visualized to view the distribution of data, relationship between different fields, comparison and composition of data.
- Finally dashboards are created to identify trends.

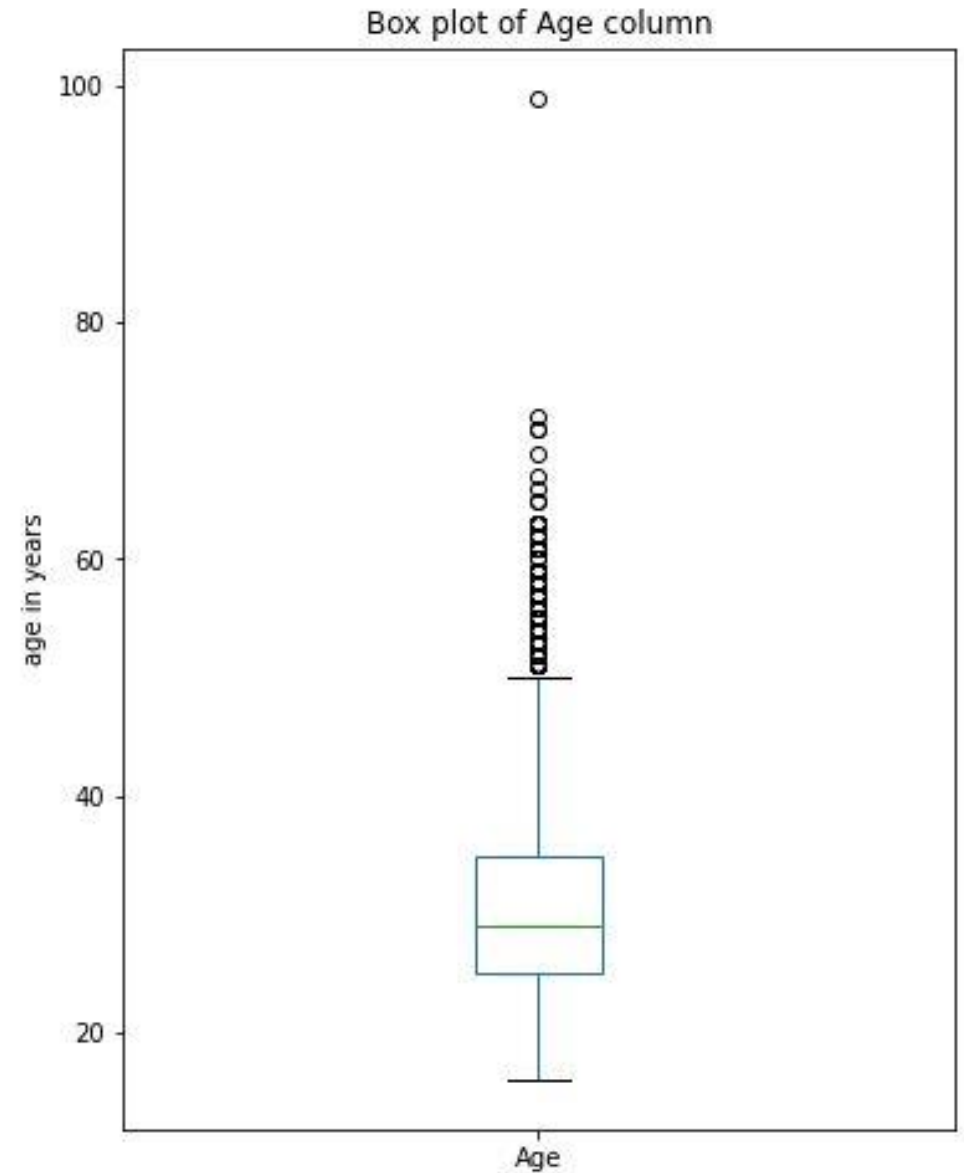
# Result

- After data wrangling, the following observations were made –
  - Most respondents earned salaries within 250,000 USD



# Result

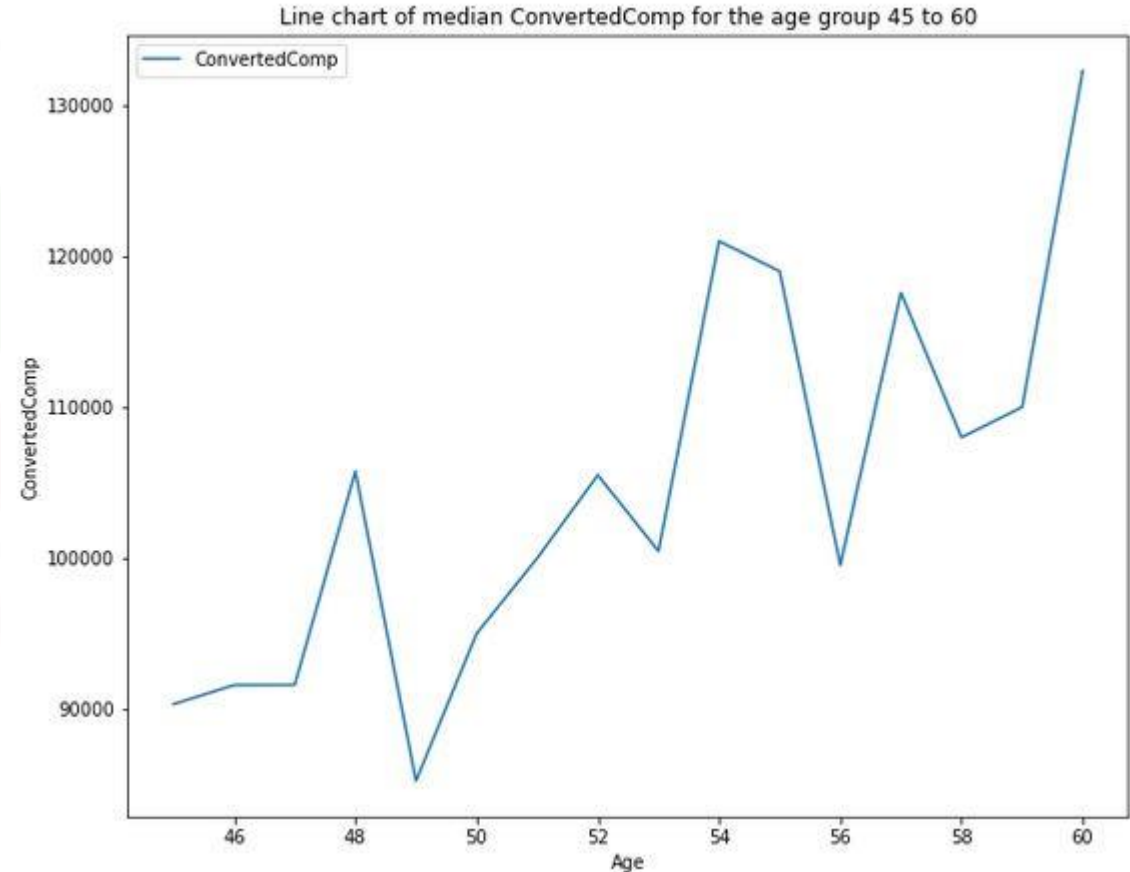
- After data wrangling, the following observations were made –
  - Most respondents were from 20 to 45 years of age





# Result

- After data wrangling, the following observations were made –
  - There is a positive correlation between the salary and age of the respondent.
  - This makes sense as the respondent is older in age, the more experienced he/she is, hence a higher pay cheque.



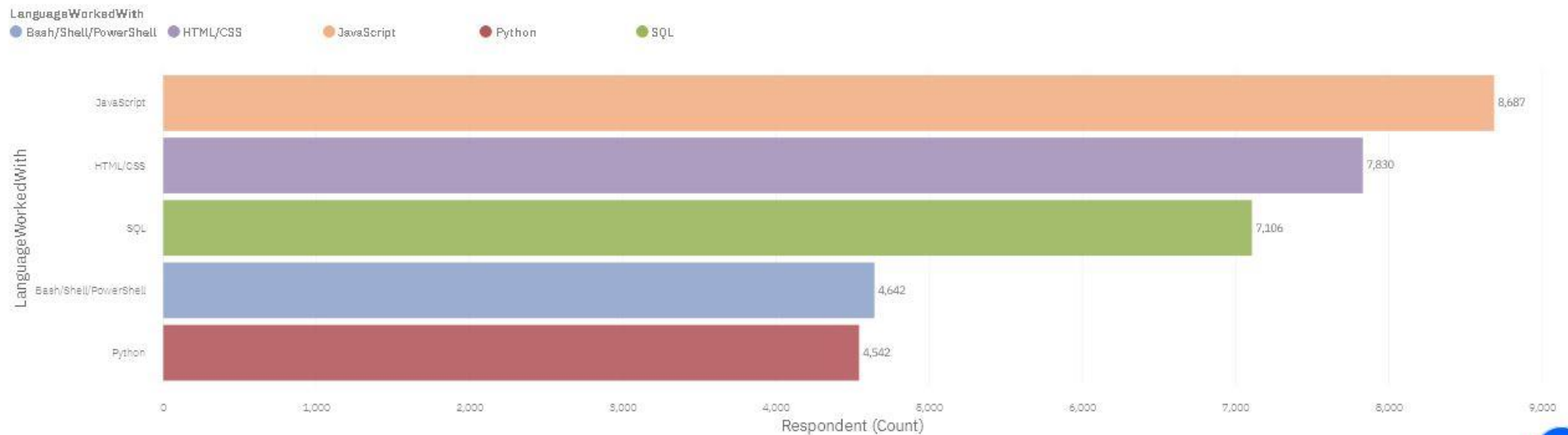
# Result

- After data wrangling, the following observations were made –
  - The below table gives the correlation between different fields from the data set.
  - And once again we see that Age has the strongest correlation with salary (ConvertedComp)

	<b>Respondent</b>	<b>CompTotal</b>	<b>ConvertedComp</b>	<b>WorkWeekHrs</b>	<b>CodeRevHrs</b>	<b>Age</b>
<b>Respondent</b>	1.000000	-0.019354	0.010878	-0.016221	0.005293	0.002180
<b>CompTotal</b>	-0.019354	1.000000	-0.063561	0.004910	0.017007	0.006337
<b>ConvertedComp</b>	0.010878	-0.063561	1.000000	0.034351	-0.088934	0.401821
<b>WorkWeekHrs</b>	-0.016221	0.004910	0.034351	1.000000	0.038935	0.032032
<b>CodeRevHrs</b>	0.005293	0.017007	-0.088934	0.038935	1.000000	-0.012878
<b>Age</b>	0.002180	0.006337	0.401821	0.032032	-0.012878	1.000000

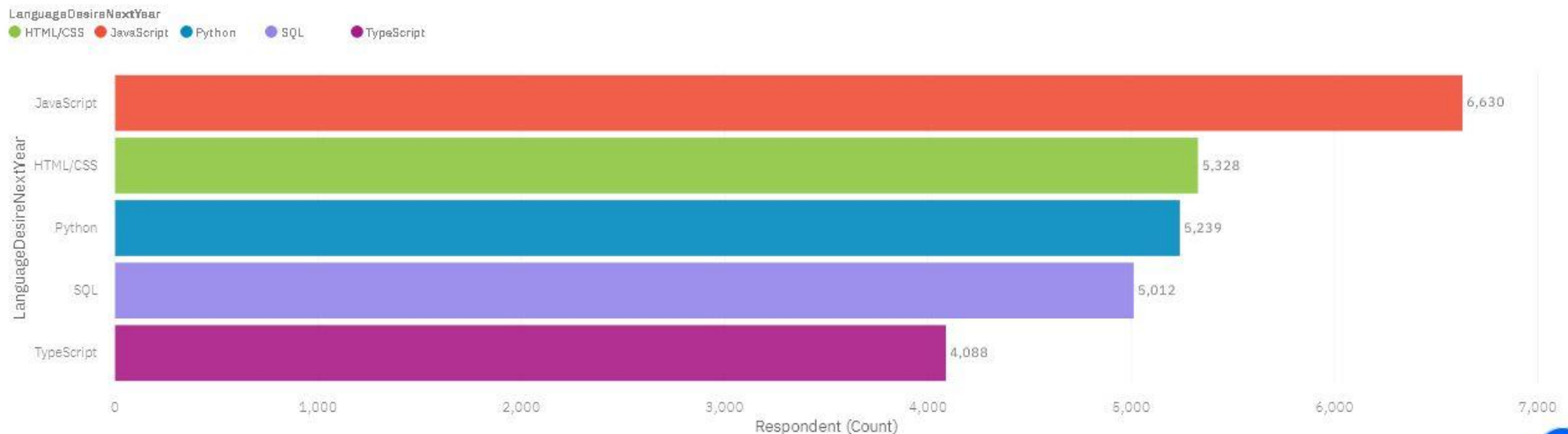
# Programming language trends

## Top 5 programming languages for the current year



# Programming language trends

## Top 5 programming languages for the next year



# Programming language trends – Findings & implications

## Findings

- Java script and HTML/CSS remain the most in demand programming language
- Increasing number of professionals want to learn python and type script

## Implications

- Hiring and training professionals in Java and HTML will remain a top priority
- Hiring and training professionals in python can help the company keep up with market trends

# Database trends

## Top 5 databases for the current year

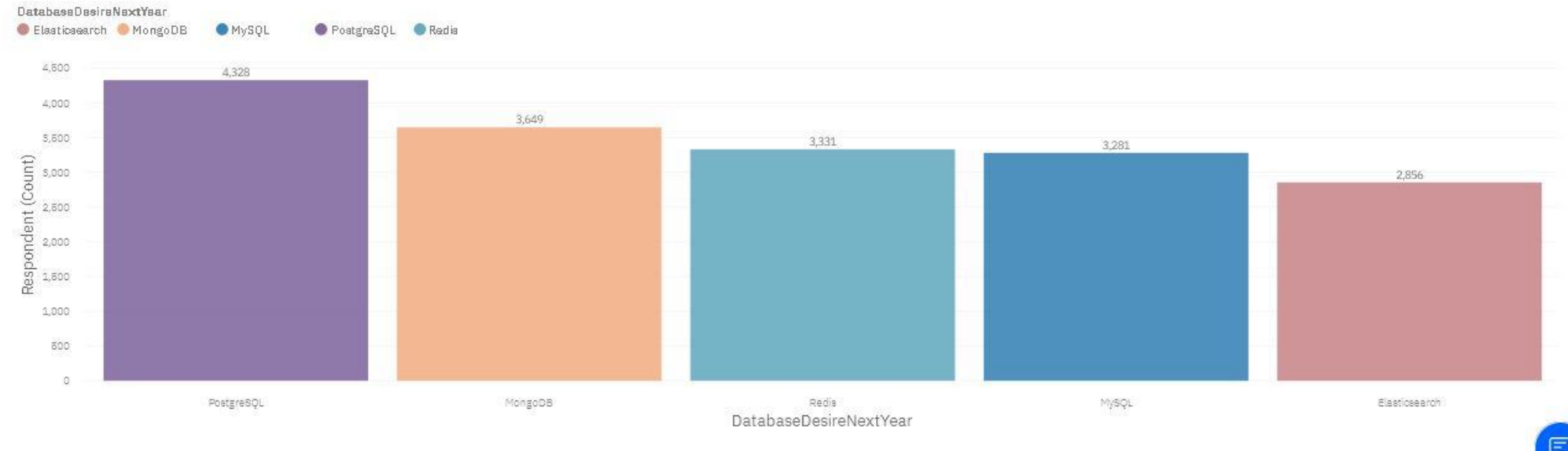
DatabaseWorkedWith

Microsoft SQL Server MongoDB MySQL PostgreSQL SQLite



# Database trends

## Top 5 Databases for the next year



# Database trends – Findings & implications

## Findings

- MySQL is the most widely used database
- Increasing number of professionals want to work with PostgreSQL and MongoDB

## Implications

- Hiring and training employees in MySQL will remain as it is, since most employees already work with MySQL.
- Hiring and training employees in PostgreSQL and MongoDB must be a priority henceforth.



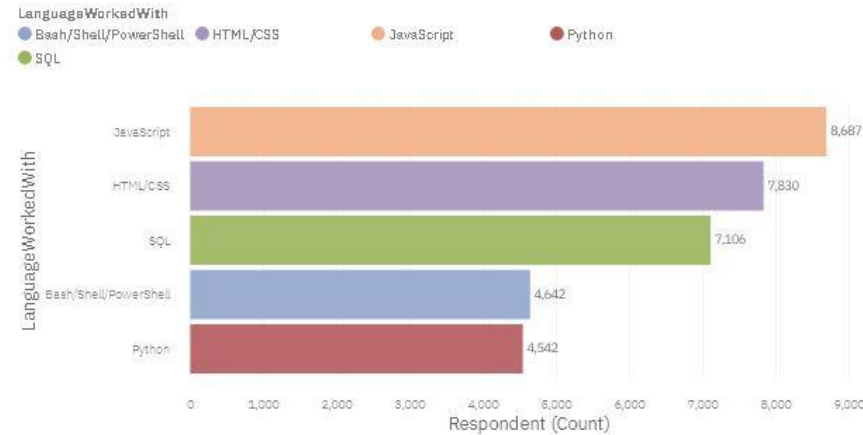
# Dashboard



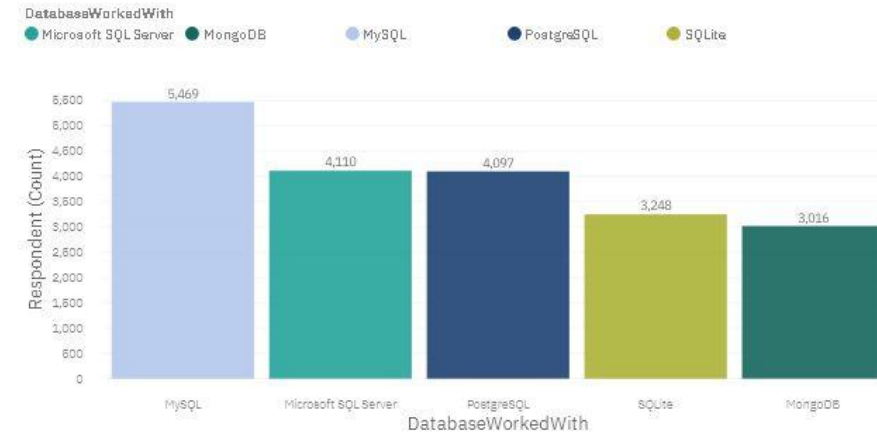
- The below link will take you to the Dashboards created on Cognos Analytics for this presentation –
  - [Click here](#)

# Dashboard – Current technology usage

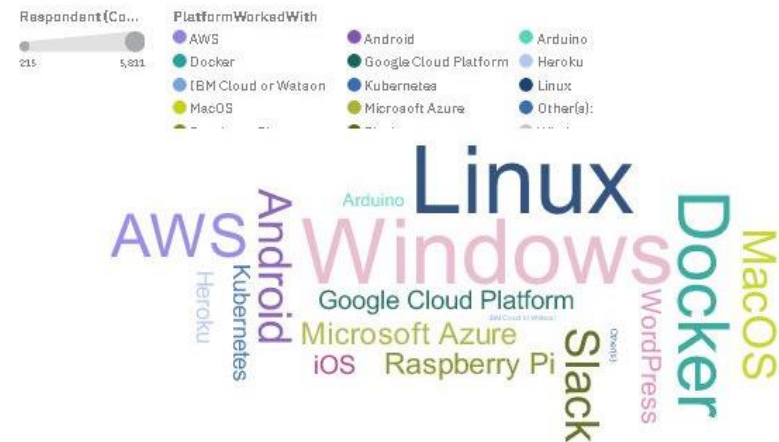
Top 5 programming languages for the current year



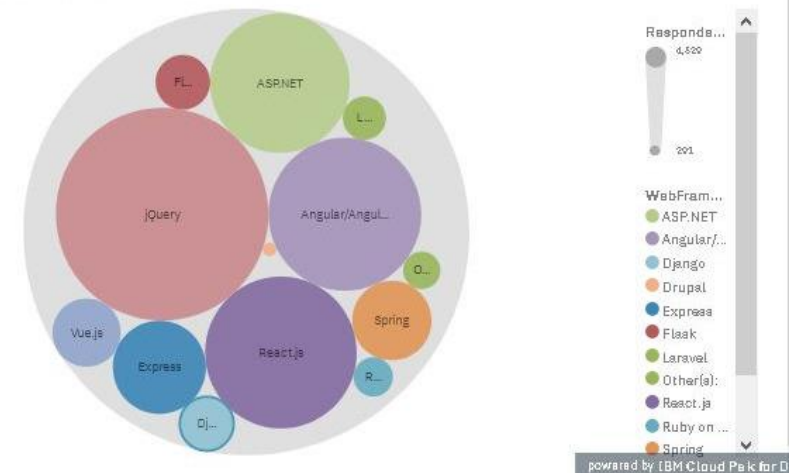
Top 5 databases for the current year



PlatformWorkedWith

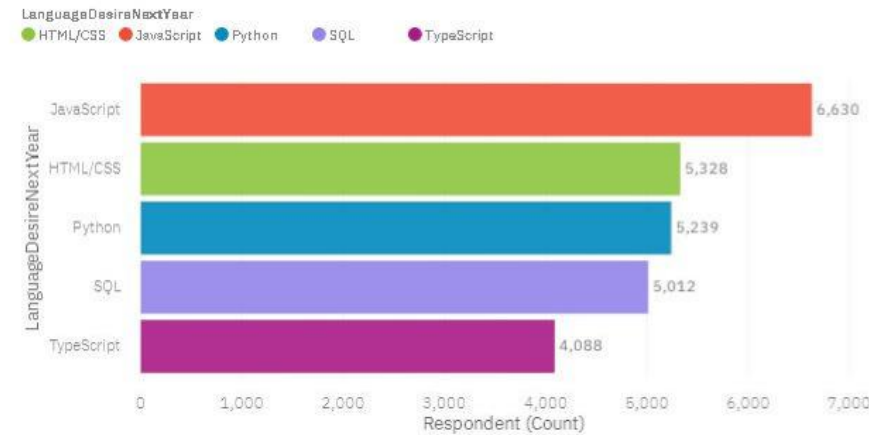


Top 10 WebFrameWorkedWith

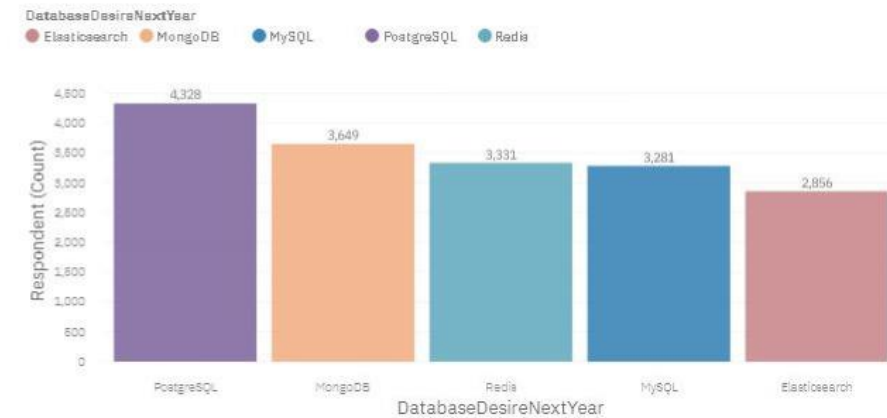


# Dashboard – Future technology trend

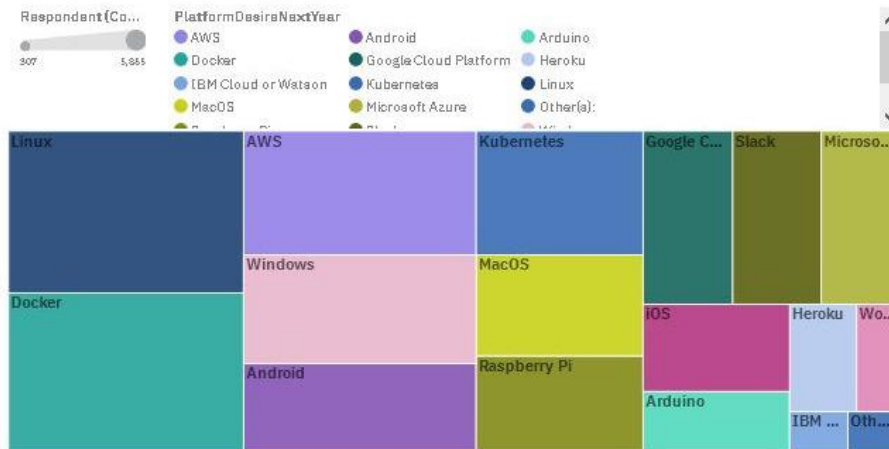
Top 5 programming languages for the next year



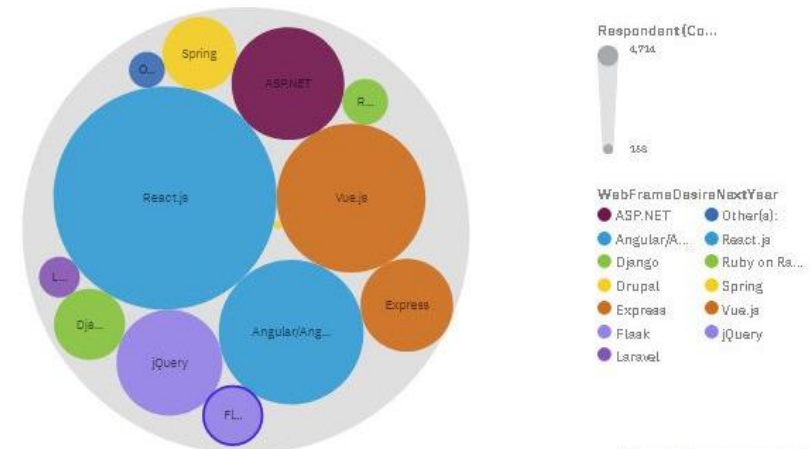
Top 5 Databases for the next year



PlatformDesireNextYear



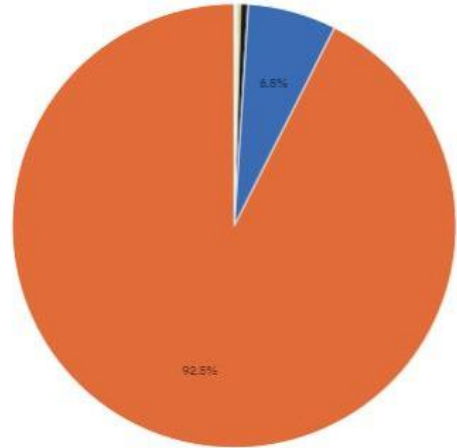
Top 10 WebFrameDesireNextYear



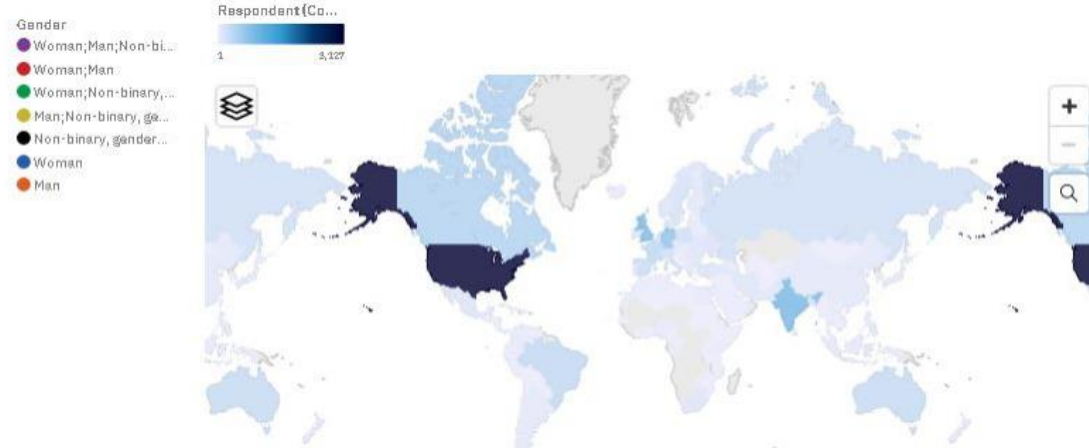
powered by IBM Cloud Pak for D

# Dashboard – Demographics

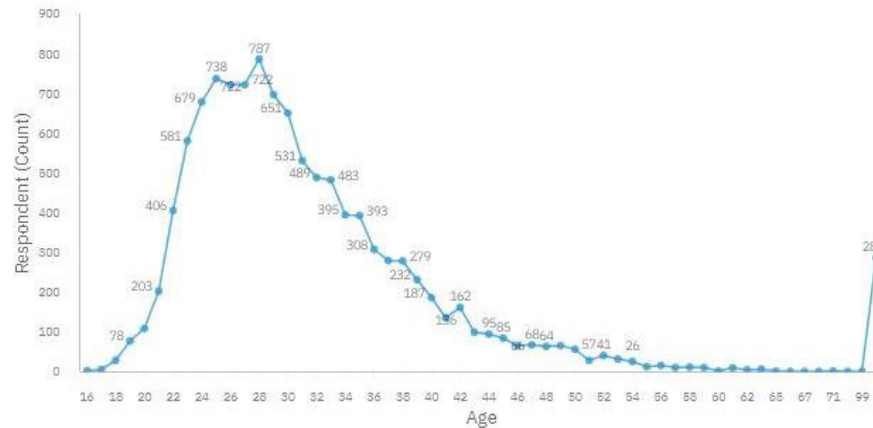
Respondent classified by Gender



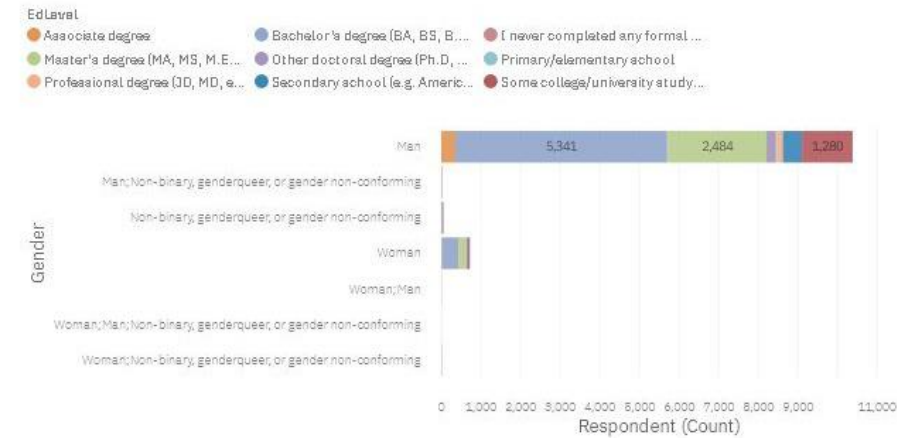
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



powered by IBM Cloud Pak for Data

# Discussion



- The main purpose of the analysis is to identify emerging technology trends in the IT industry.
- The trends have been analyzed and visualized.
- Most respondents earn within 250,000 USD and are from 20 to 45 years of age, this observation confirms the relevance of our analysis.
- It is also important to note that most respondents are men and from the United States of America.

# Overall findings and implications

## Findings

- Java scrip, HTML/CSS and MySQL remain the most in demand tools
- Increasing number of professionals want to learn python, type script, PostgreSQL and MongoDB
- Linux, Windows and Docker are the most commonly used software platforms
- React, AngularJS and JQuery are the most commonly used Web frameworks

## Implications

- Hiring and training professionals in Java, HTML and MySQL will remain a top priority
- Hiring and training professionals in python, PostgreSQL and MongoDB can help the company keep up with market trends
- Professionals used to Linux and windows, and proficient in React and JQuery are preferred

# Conclusion



- All in all the analysis indicates the following tools to be the most in demand software applications –
  - Programming languages -
    - JavaScript
    - HTML/CSS
    - Python
  - Databases -
    - PostgreSQL
    - MongoDB
    - MySQL
  - Software Platforms -
    - Windows
    - Linux
    - Docker
  - Web Frameworks -
    1. JQuery
    2. React
    3. AngularJS



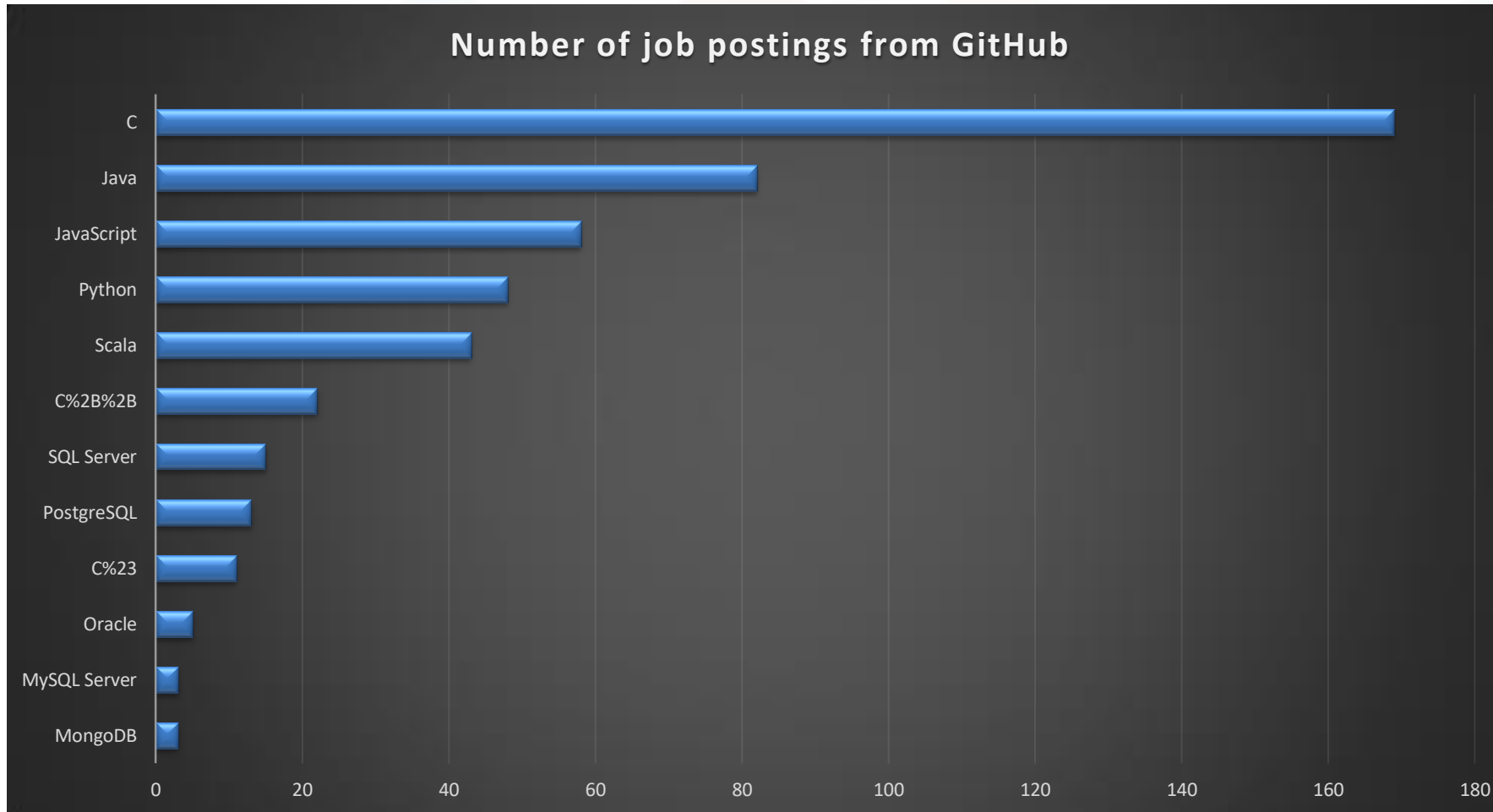
# Appendix



- There are some interesting observations from the GitHub job postings and the popular languages data set that is worth noting.



# GitHub job postings



- GitHub job postings data has something to add
- The number of job postings for C and Java are the highest, although C wasn't in the top 5 programming languages in the analysis

# Popular programming languages



- From the popular programming languages data, we see that professionals who work with Swift, python and C++ are the highest paid
- This piece of information is interesting as Swift and C++ weren't in the top 5 programming languages in the conducted analysis