# CAPSTONE PROJECT

18.07.2024

IBM Developer

SKILLS NETWORK

# OUTLINE

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- Introduction
- Methodology
- Results
  - Visualization – Charts
  - Dashboard
- Discussion
  - Findings & Implications
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# EXECUTIVE SUMMARY

- On a worldwide scale, there are many different programming and database languages in use, making it desirable to steadily learn new ones
- This is also true for platforms in use
- However, most popular languages can be identified: JavaScript, HTML/CSS and Python for programming languages and MySQL and PostgreSQL for RDBMS
- Looking at the respondents…
  - 93,5% were male
  - Bachelor's degree is by far the most common education level
  - Most come from the US, followed by India and western Europe

# INTRODUCTION

- The 2019 Stackoverflow Developer Survey asked for technologies in use, technologies desired to learn and information about the developers' background (e.g. education, location, experience)
- In this presentation, we focus on the programming and database languages
- Information about platforms, web frames and the respondents themselves complete the report

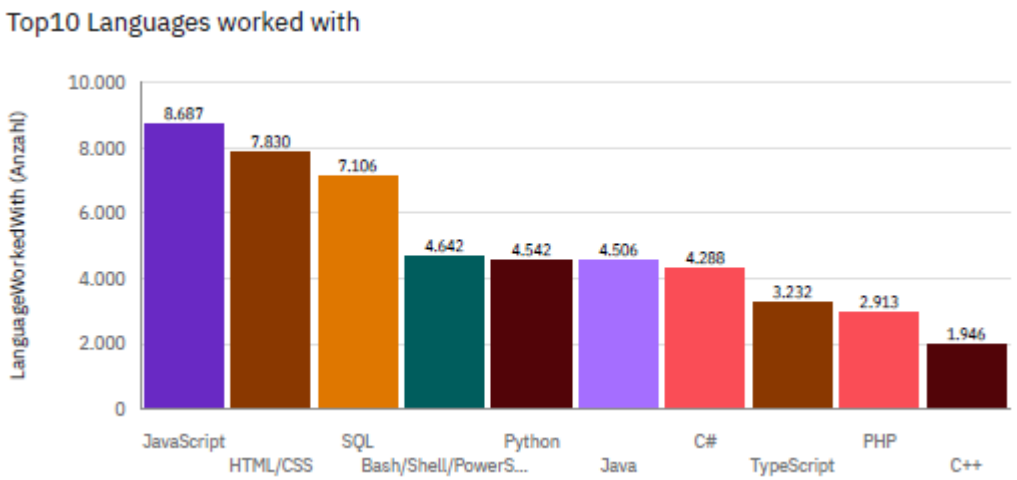
# METHODOLOGY

- Data is based on the 2019 Stackoverflow Developer Survey
- Data was stored in an RDBMS to allow querying
- The querying was performed in Python using SQLite andits SQL Magic statements
- This allowed exploratory data analysis using the libraries Pandas and Numpy as well as visualization using the libraries Matplotlib and Seaborn
- Findings were then transferred into a web-based Dashboard using IBM Cognos Analytics

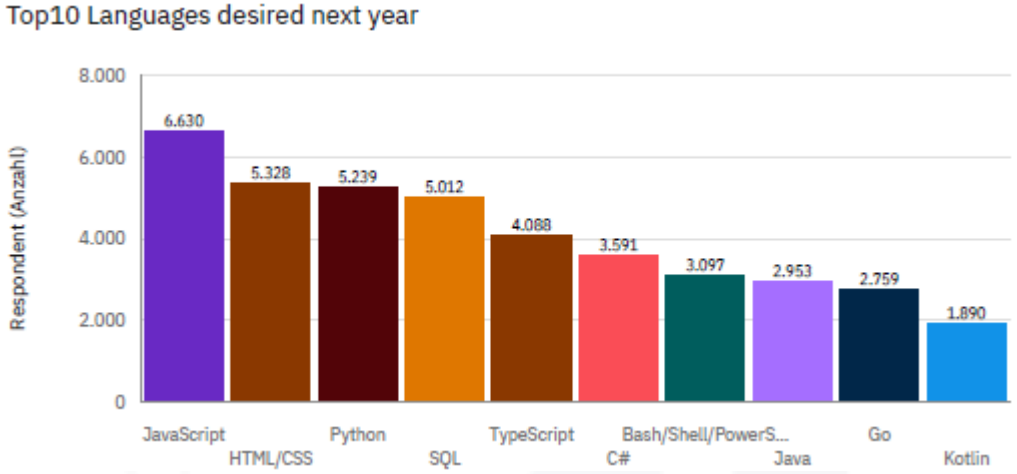
# RESULTS

# PROGRAMMING LANGUAGE TRENDS

## Current Year




## Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

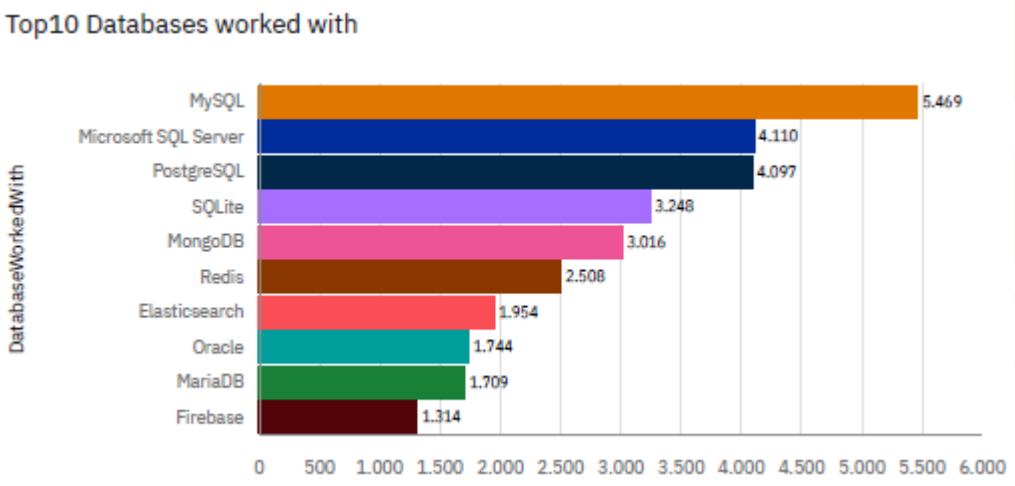
- JavaScript and HTML/CSS remain the most favorite languages
- Kotlin and Go are on the rise
- C++ becomes less desirable to learn

## Implications

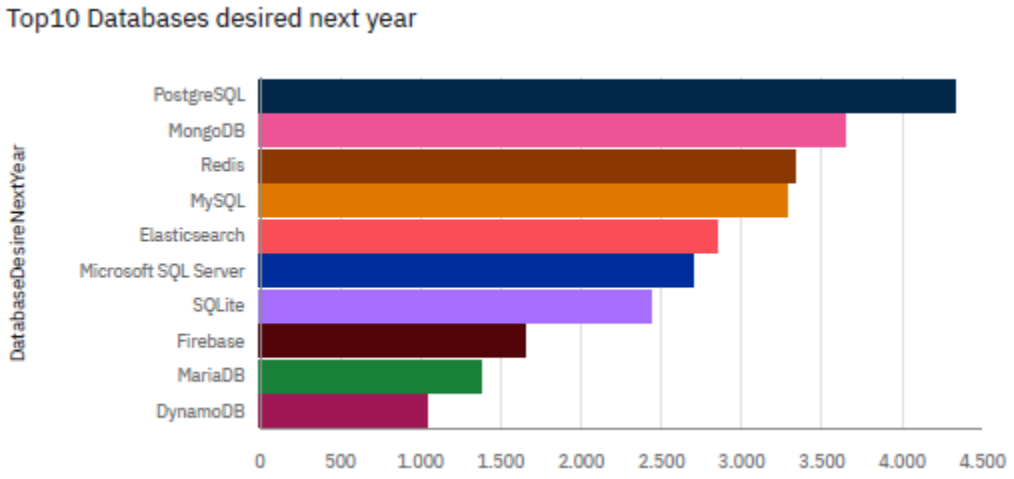
- JavaScript, HTML/CSS and Python are likely to remain top choices for learning programming languages
- The numerical distribution of languages suggests that developers use more than one language
- Broadly positioned learning offers (e.g. online courses) should focus on the languages most asked for

# DATABASE TRENDS

## Current Year




## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

## Findings

- MySQL is the database system most worked with
- PostgreSQL becomes more important
- Oracle becomes less important while DynamoDB is on the rise

## Implications

- PostgreSQL is likely to become the most used database language over time
- Both SQL and NoSQL databases remain relevant, with NoSQL databases probably closing the usage gap further

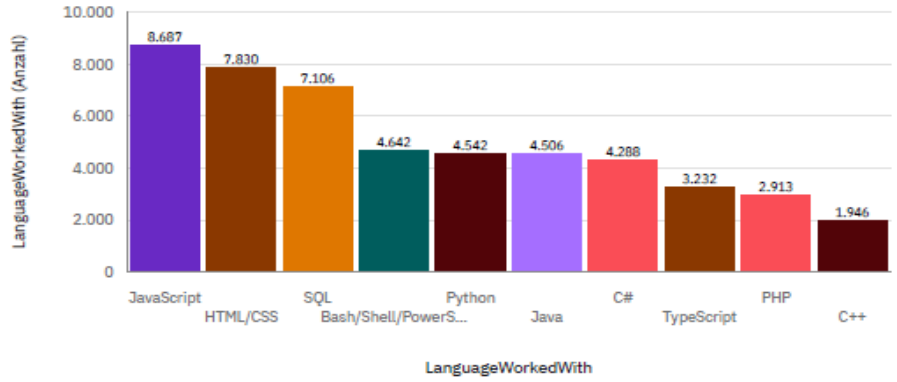
# DASHBOARD

[Click here for the Cognos dashboard at GitHub]

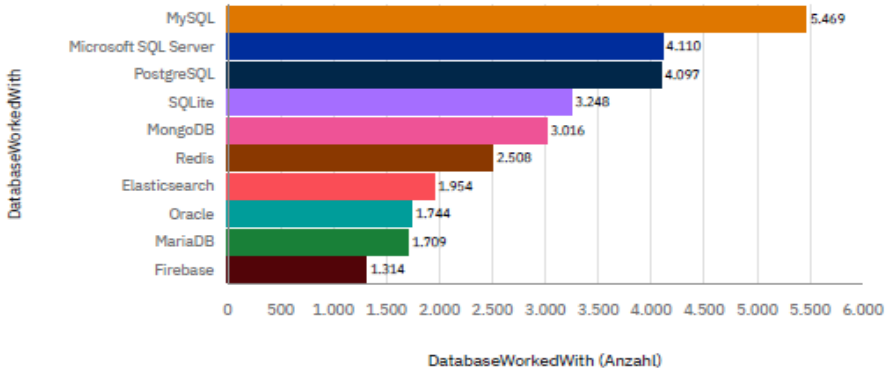
# DASHBOARD TAB 1

Current Technology Usage

Top10 Languages worked with




Top10 Databases worked with



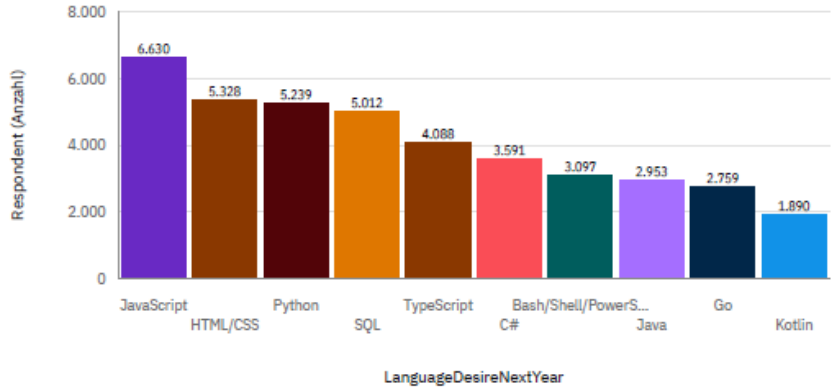

Platforms worked with

Top 10 Web Frames worked with

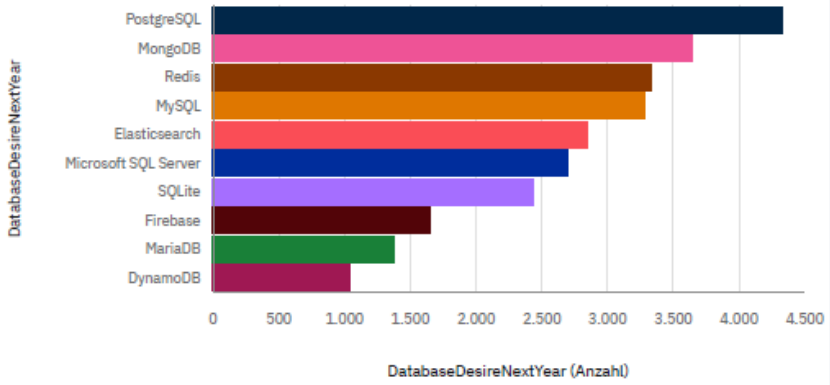
# DASHBOARD TAB 2

Future Technology Trend

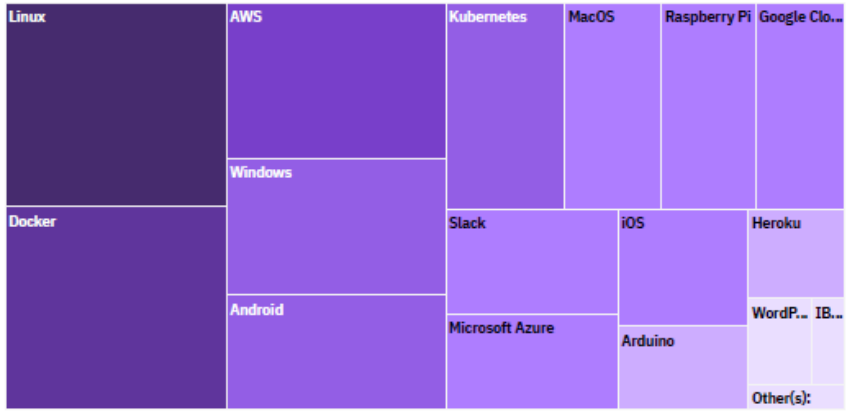
Top10 Languages desired next year



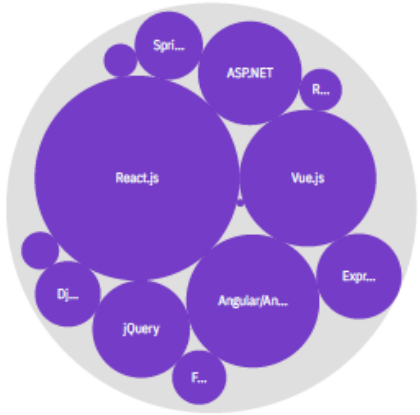

Top10 Databases desired next year




Platform desired next year



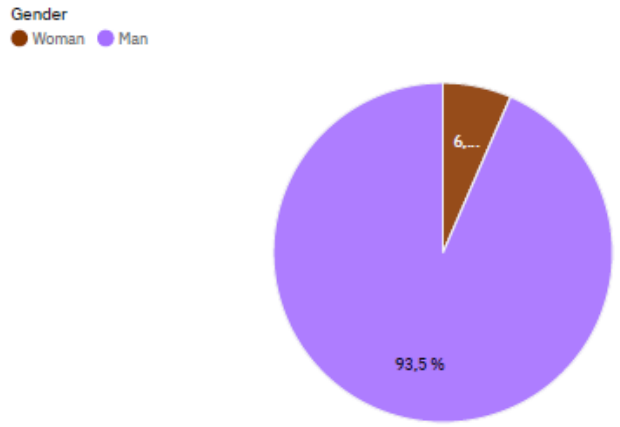

Web Frames desired next year



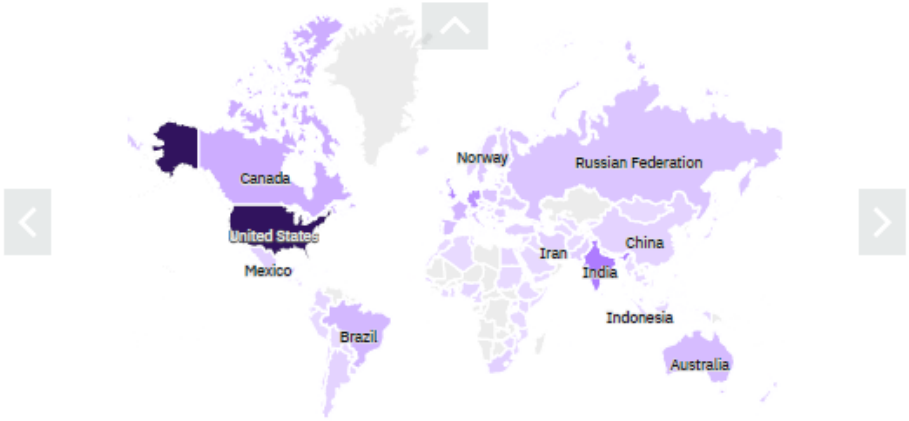
# DASHBOARD TAB 3

Demographics

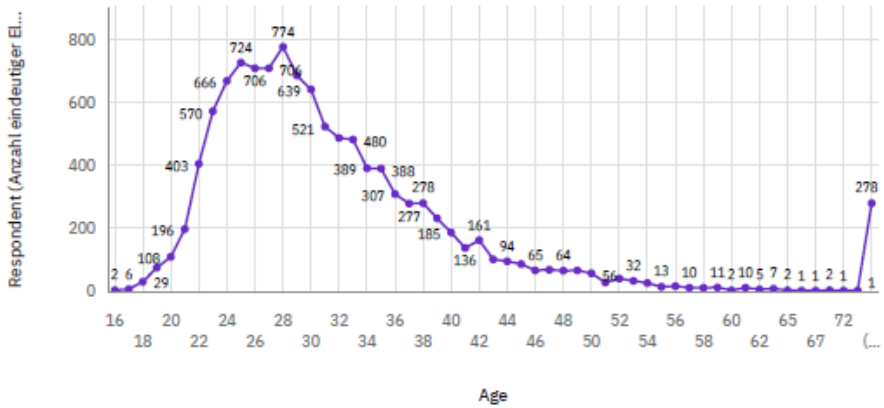
Respondent classified by Gender



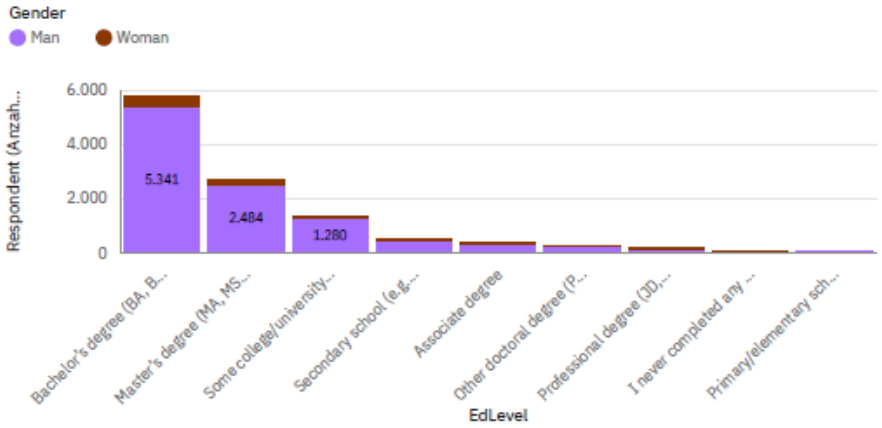

Respondent Count for Countries




Respondent Count by Age




Respondent Count by Gender, classified by Formal Education Level



# DISCUSSION

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- JavaScript is the most popular programming language, going along with React.JS as the upcoming most relevant webframe
- For database languages, NoSQL databases gain relevance
- The field of languages remains highly diverse

## Implications

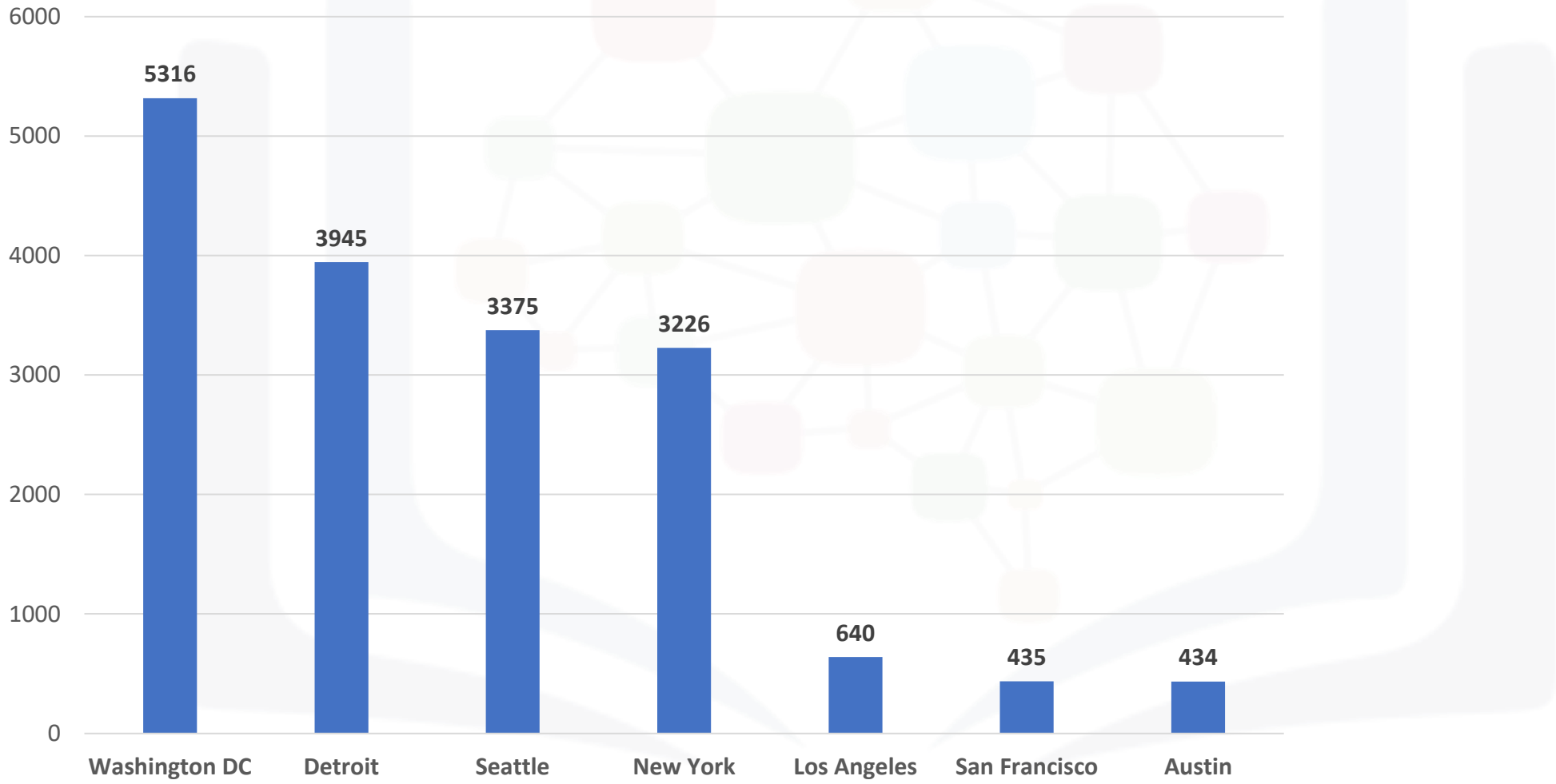
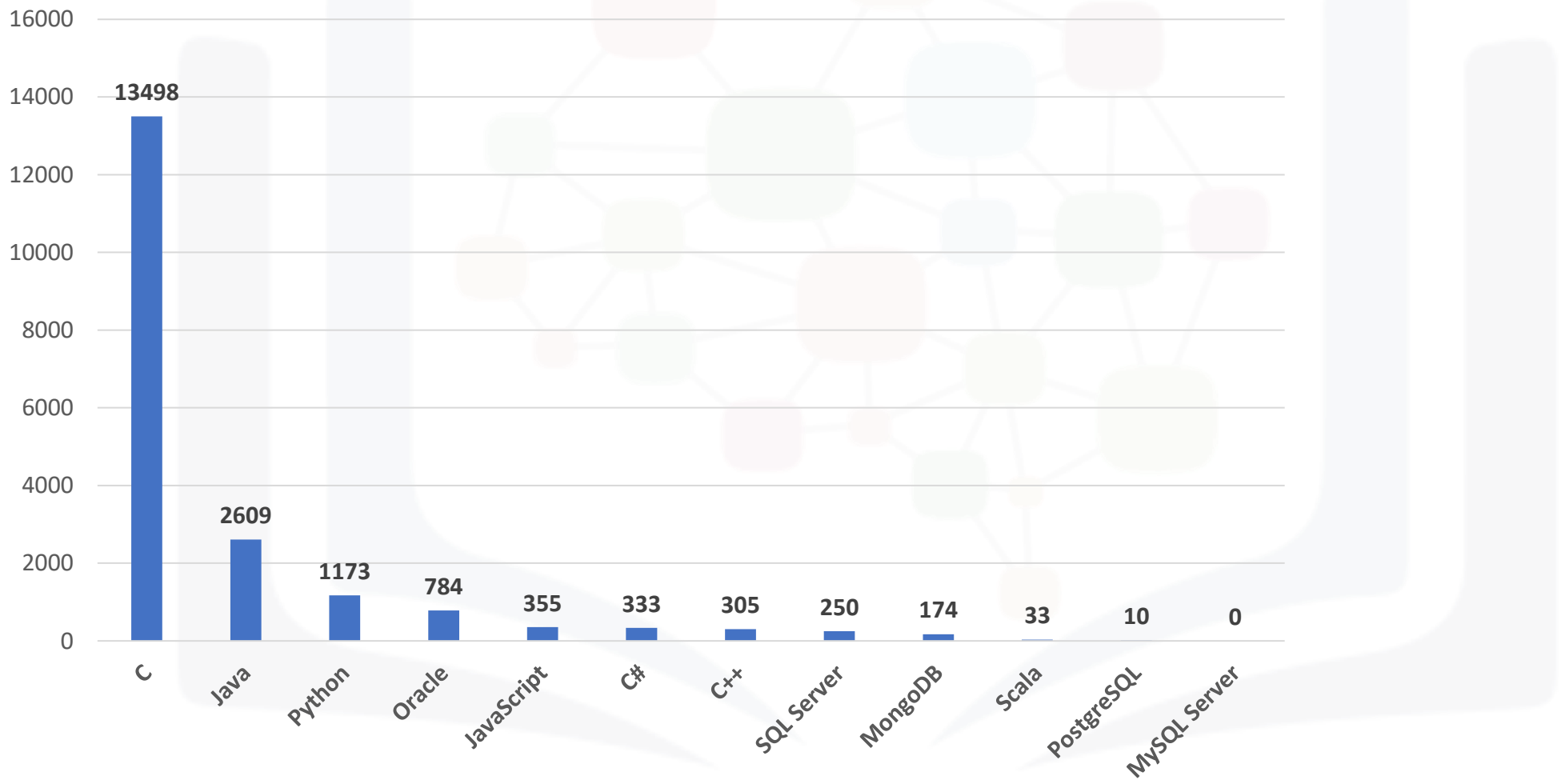
- Web Developers should ground their knowledge on JavaScript
- When working with databases, learning NoSQL DBs seems increasingly relevant
- The language(s) of choice remain highly dependent on the requirements of the businesses they are used in; however, the most popular languages are a good starting point

# CONCLUSION

- There is not one answer to the question as to which language or technology to choose – this is true for programming and database languages as well as platforms and webframes
- When becoming a developer, however, there are top languages and technologies each that make a good starting point:
  - JavaScript and HTML/CSS for web development
  - Python for object-oriented programming and Data Science
  - PostgreSQL and MySQL for database usage
  - Linux, AWS, Microsoft, Docker, Kubernetes for platforms
  - React.JS for webframes

# APPENDIX

# JOB POSTINGS



# POPULAR LANGUAGES