Report on in-demand Software Development Skills

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OUTLINE

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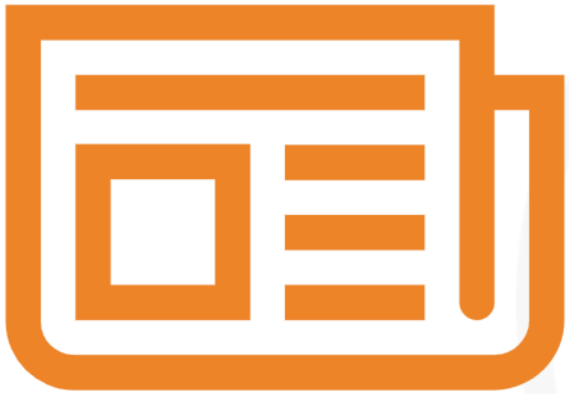
EXECUTIVE SUMMARY

- Python is predicted to be the most popular language in the future
  - C and Java are declining in popularity
  - Rust and Go are growing in usage
- PostgreSQL is the most popular database system and is predicted to grow even further in usage
  - Popular NoSQL options include MongoDB, Redis and DynamoDB
  - SQLite and MySQL are predicted to fall in usage slightly
- AWS is the leading cloud platform, with Microsoft Azure in second and GCP in third

INTRODUCTION

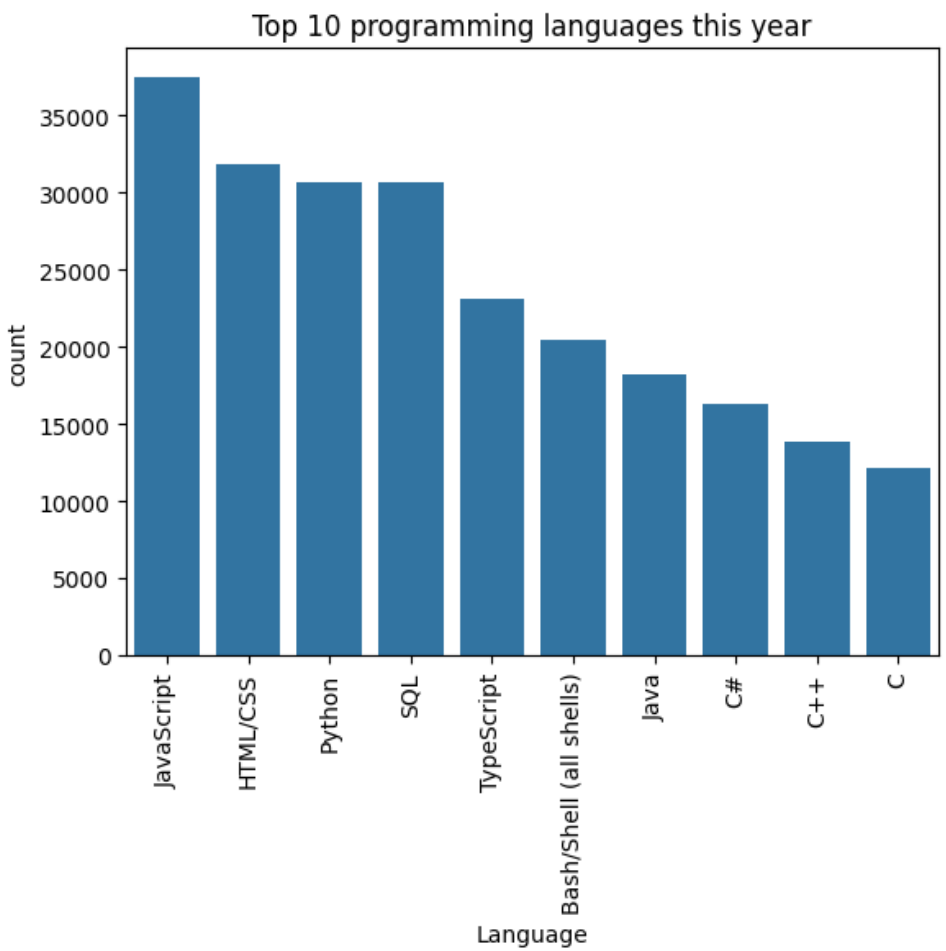
- This report is aimed at both developers and businesses seeking to understand trends in software development
- You will understand more about technologies that are popular currently and how this is predicted to change
- You will also learn more about trends in the job market

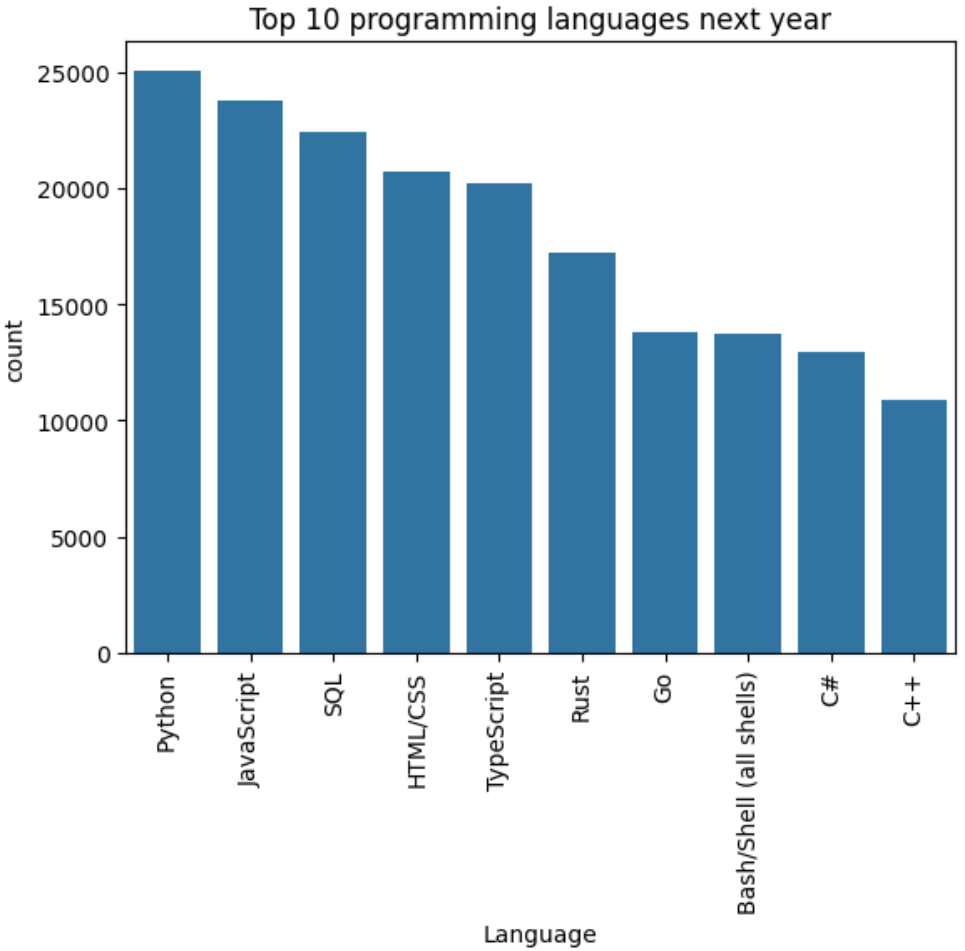
METHODOLOGY



- Data was collected via many sources such as:
  - Scraping internet websites
  - Accessing APIs
  - Stack Overflow Developer Survey
- Data was stored in:
  - CSV files
  - Excel spreadsheets
  - SQL Databases
- Data Wrangling process included:
  - Removing or replacing duplicate and empty values
  - Correcting errors, outliers and inconsistencies

PROGRAMMING LANGUAGE TRENDS





PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

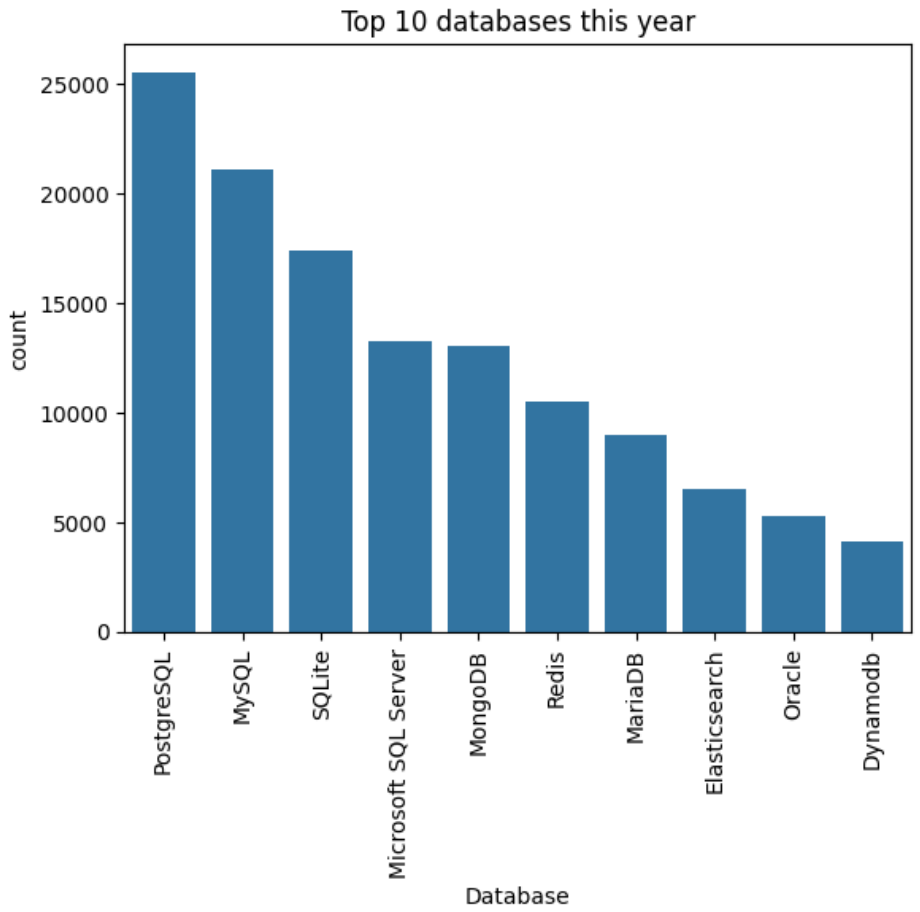
Findings

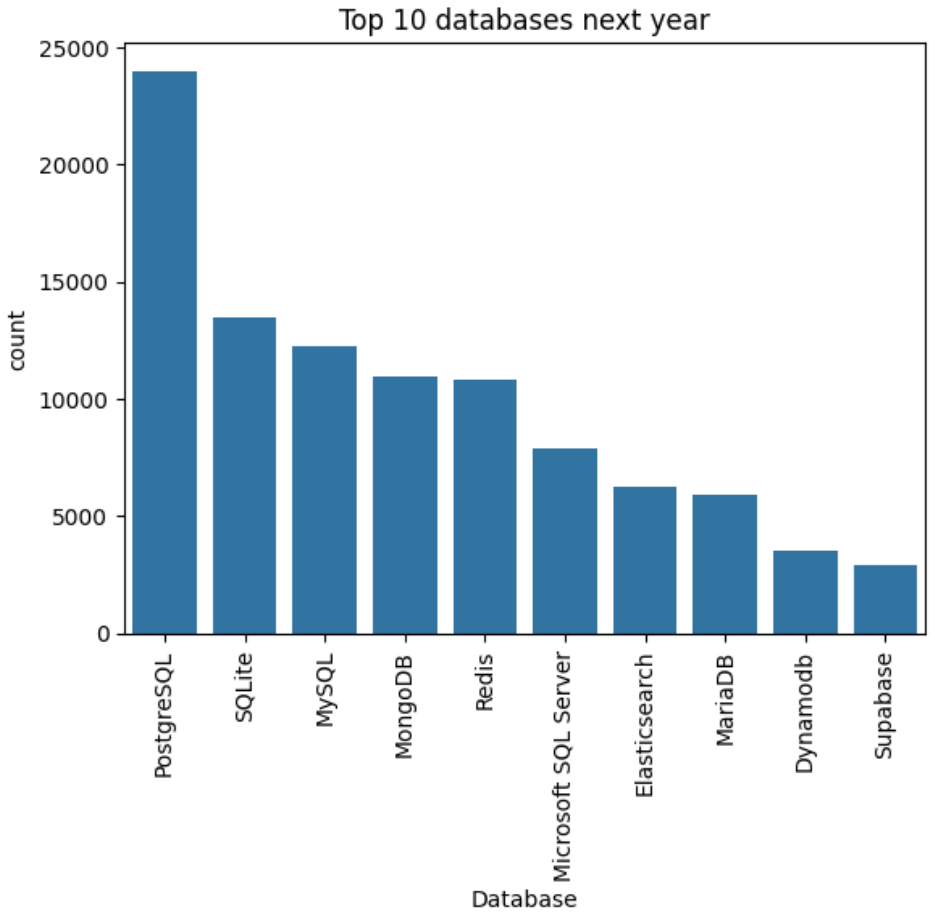
- Top languages are predicted to stay the same – Javascript, HTML/CSS, Python, SQL and TypeScript have consistent demand both this year and next
- Older languages are predicted to fall in usage – Java and C are no longer top 10 languages
- Modern languages such as Rust and Go are rising in popularity

Implications

- Learning programmers should focus on a core of Javascript, HTML/CSS, Python, SQL and TypeScript – this will apply to most job postings
- Programmers should consider adopting growing languages such as Rust and Go
- Businesses still using legacy systems built on Java and C should consider switching to more modern languages to access a larger recruitment pool

DATABASE TRENDS





DATABASE TRENDS - FINDINGS & IMPLICATIONS

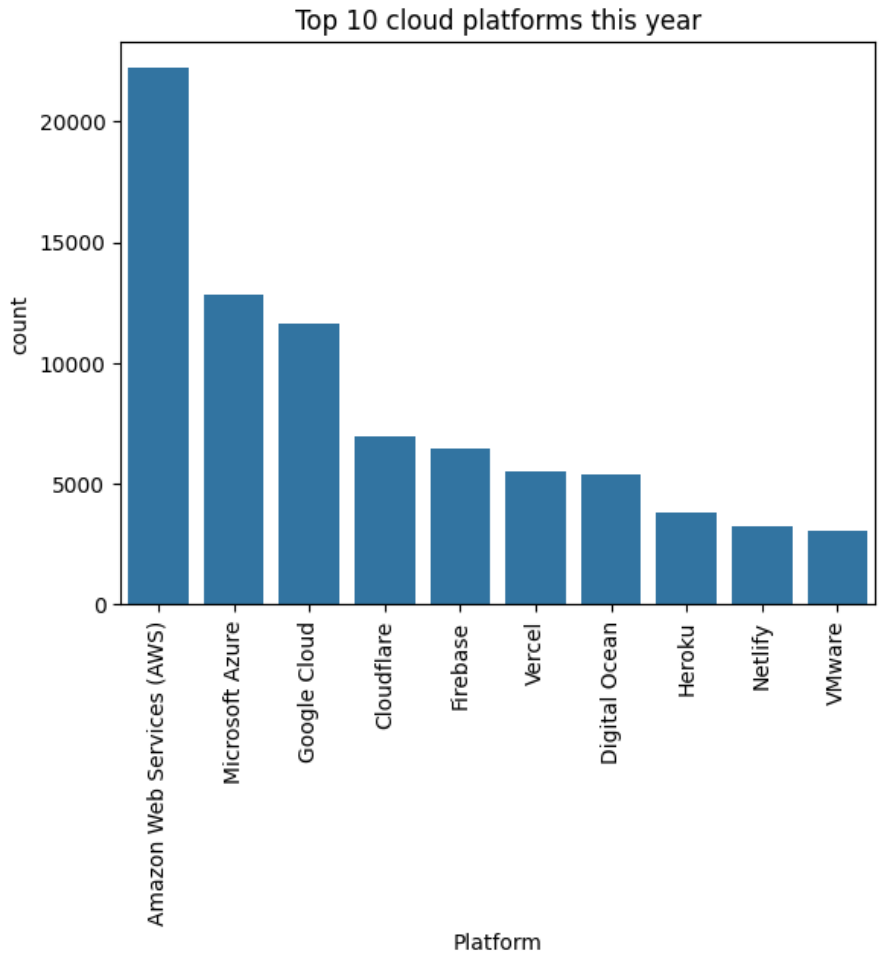
Findings

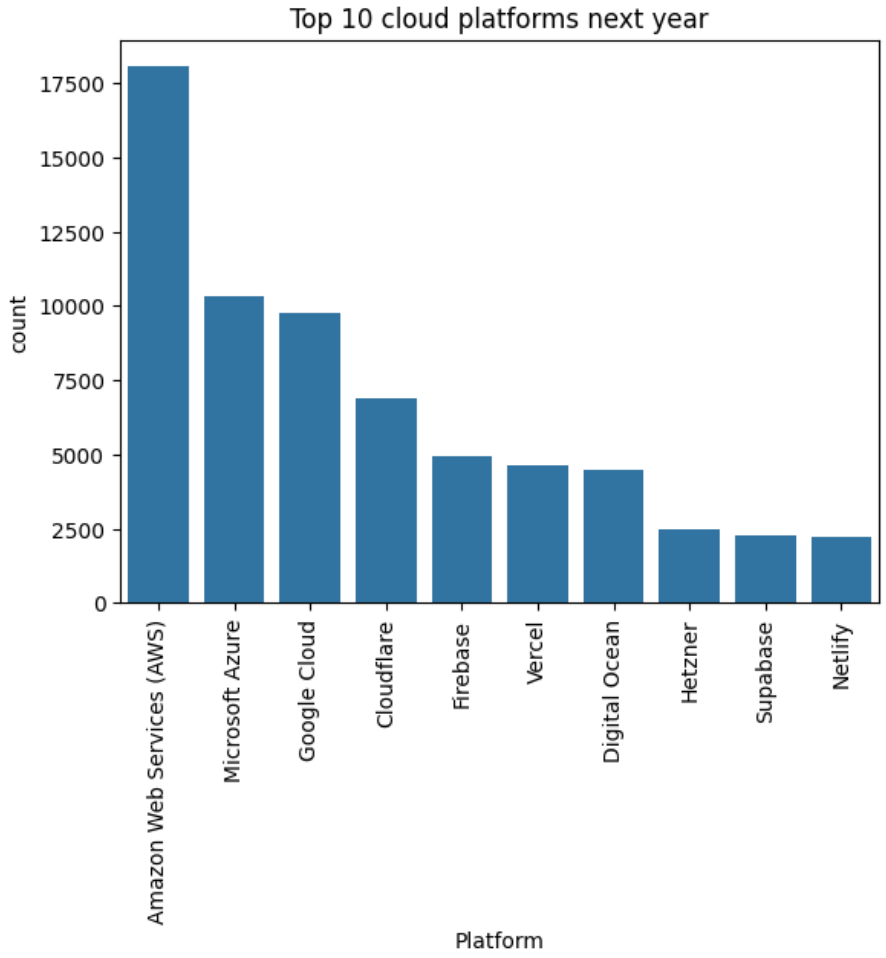
- PostgreSQL dominates anticipated usage – almost double the next most desired language to work with
- SQL systems (PostgreSQL, SQLite, MySQL) are consistently used more than NoSQL systems (MongoDB, Redis, DynamoDB)
- Oracle is predicted to significantly fall in usage – no longer in the top 10

Implications

- Both businesses and programmers should be considering PostgreSQL – currently in demand and predicted to hold a larger share of usage
- Beginner programmers could prioritise learning SQL over NoSQL – SQL has more application
- Businesses using Oracle Systems might consider switching early before Oracle specialists become harder and more expensive to find

CLOUD PLATFORM TRENDS





CLOUD TRENDS - FINDINGS & IMPLICATIONS

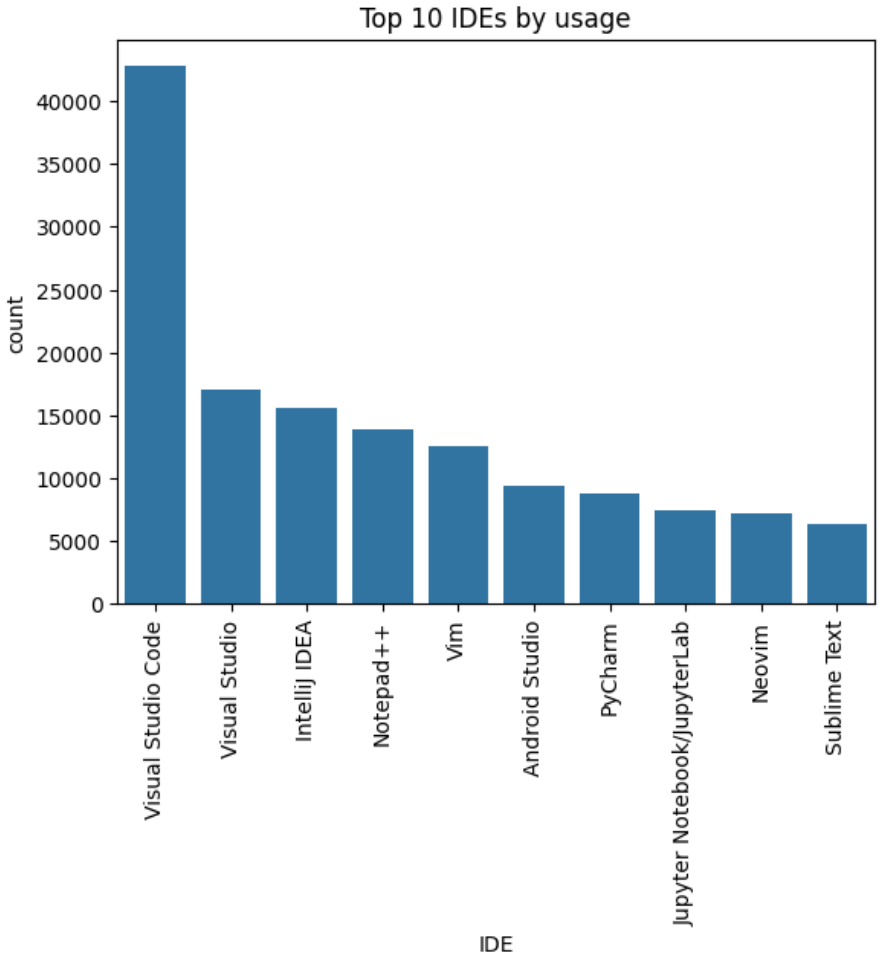
Findings

- The top cloud platforms are largely predicted to stay the same next year
- AWS is the clear favourite – it dominates both current and anticipated usage
- Large scale platforms (AWS, Azure and GCP) are used more frequently than lightweight platforms, however Cloudflare is predicted to grow slightly

Implications

- Businesses using any of the big three platforms (AWS, Azure and GCP) shouldn't feel the need to switch – usage is predicted to stay the same
- Both startups and beginner programmers should consider using AWS – high usage currently and in the future
- Solo developers or small teams can still use popular lightweight platforms like Cloudflare and Firebase

IDE ANALYSIS



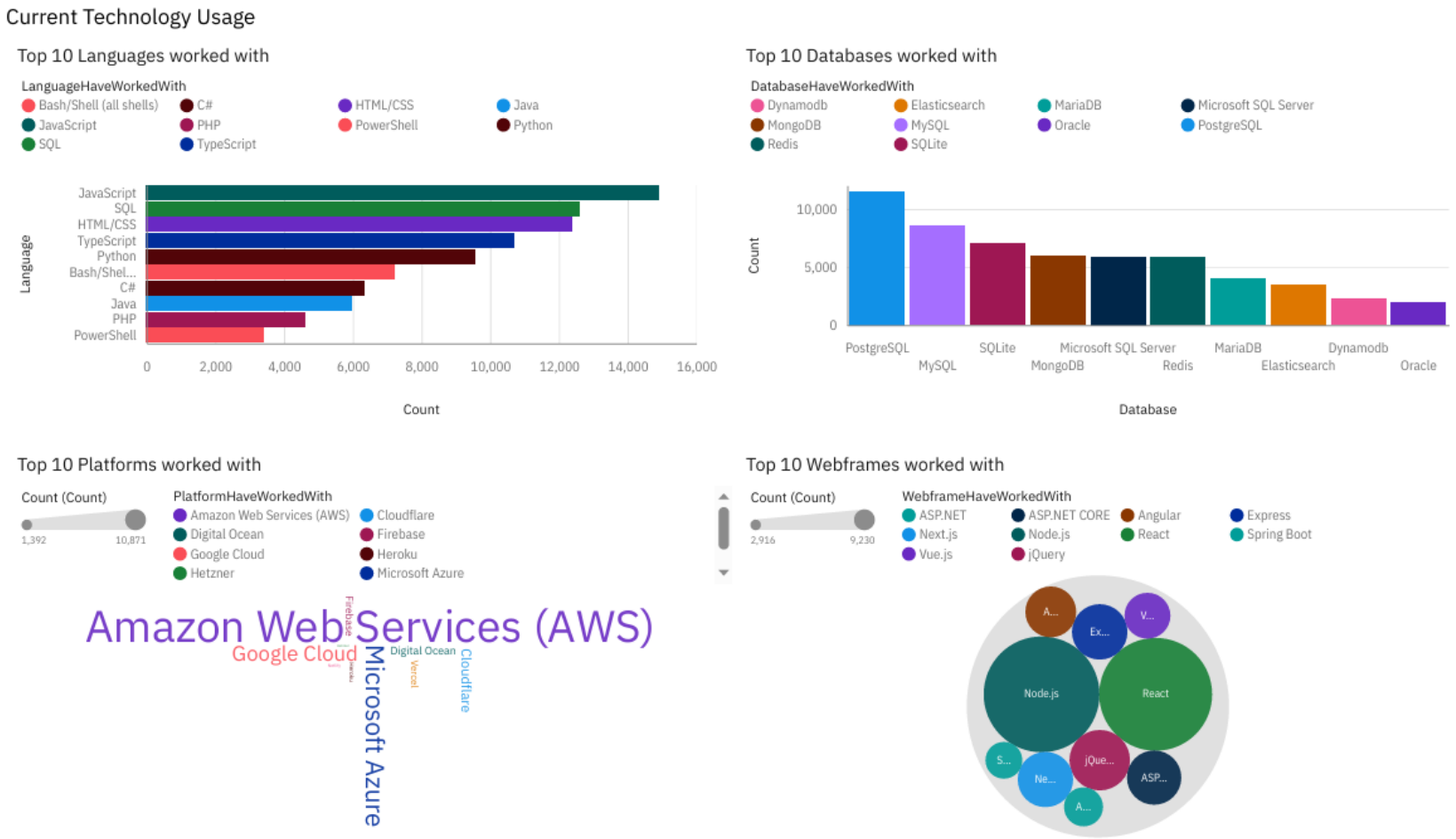
- The clear favourite IDE is VS Code, used twice as much as the next most popular IDE
- This reflects the versatility and ecosystem of VS Code, can be used with many languages with numerous extensions
- Other popular IDEs are more specific (Visual Studio for .NET, Jupyter for Data Science)
- Starting programmers should consider VS Code as a starting environment, then branch into others based on their language/industry

DASHBOARD

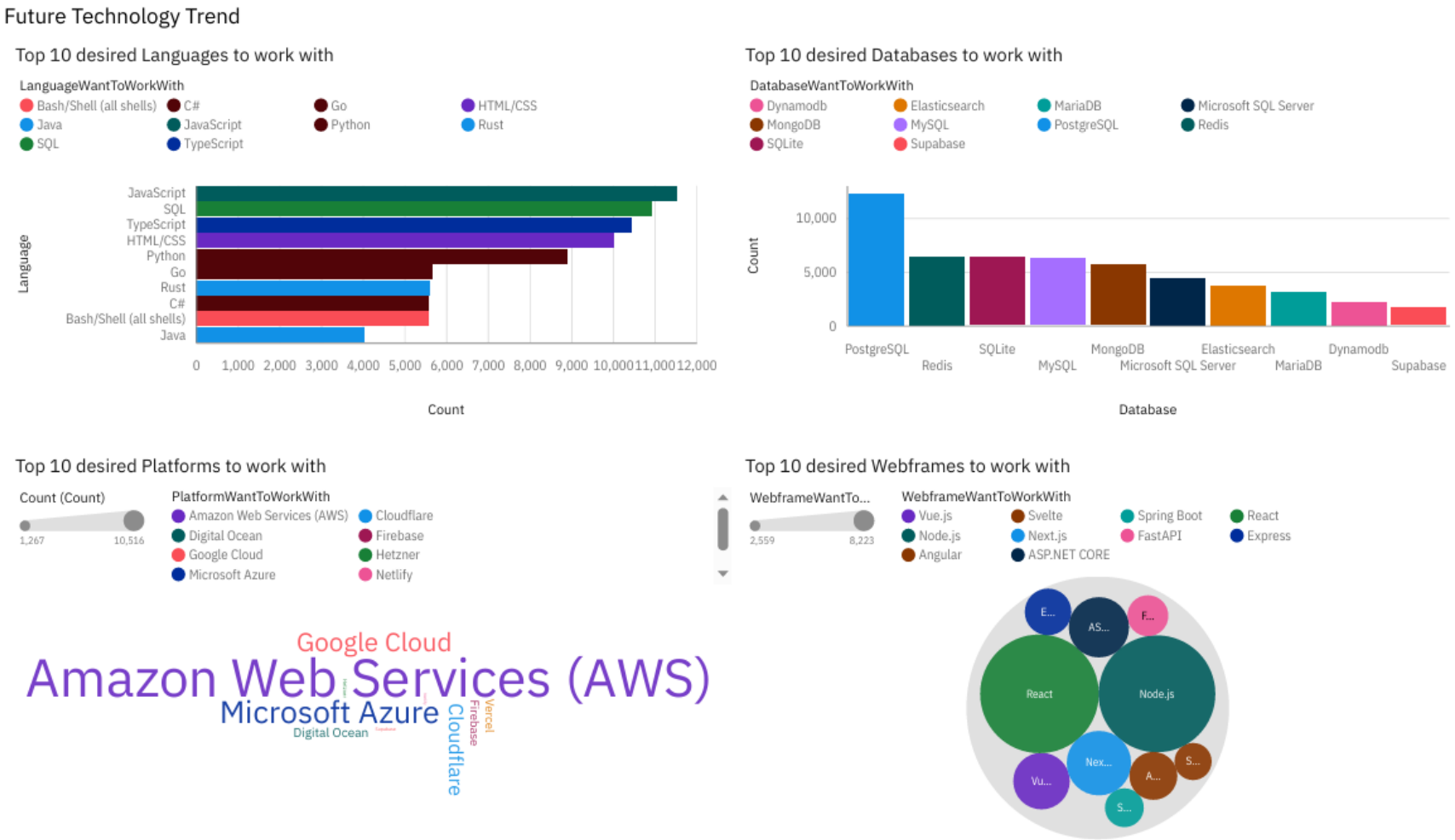
A Dashboard to display the analysis of the StackOverflow developer survey is available at:

https://github.com/esencela/IBMDataAnalystProfessionalCertificateCapstone

DASHBOARD TAB 1



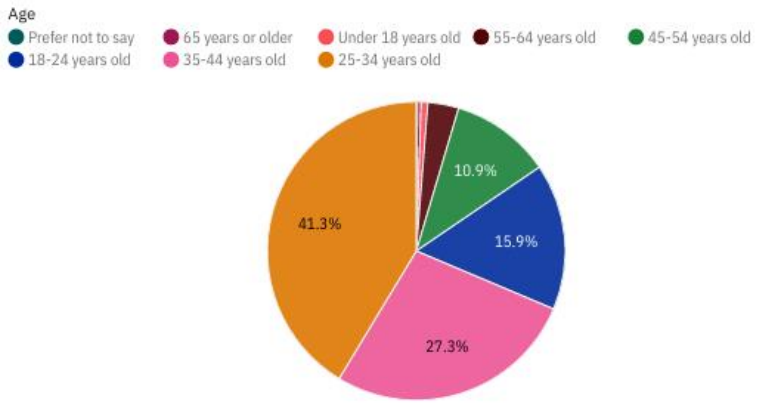
DASHBOARD TAB 2



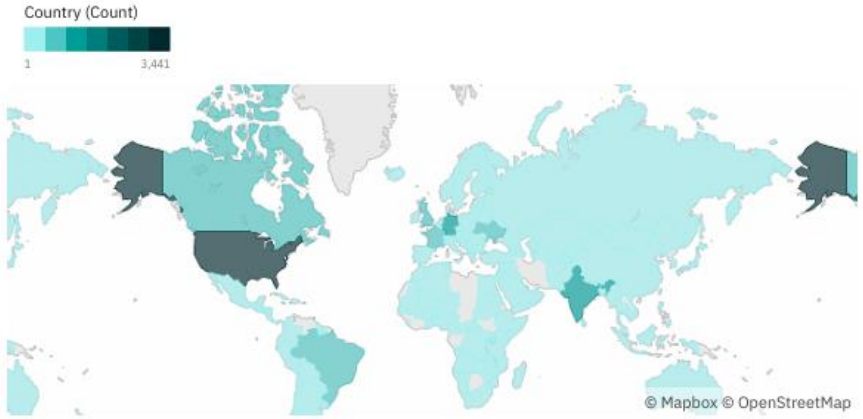
DASHBOARD TAB 3

Demographics

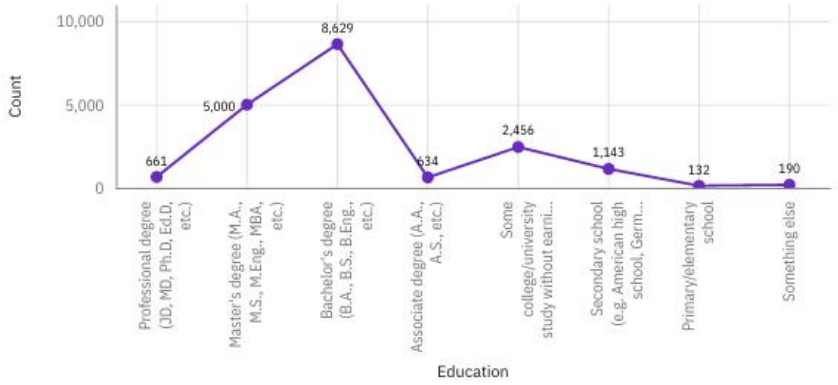
Respondent Distribution by Age



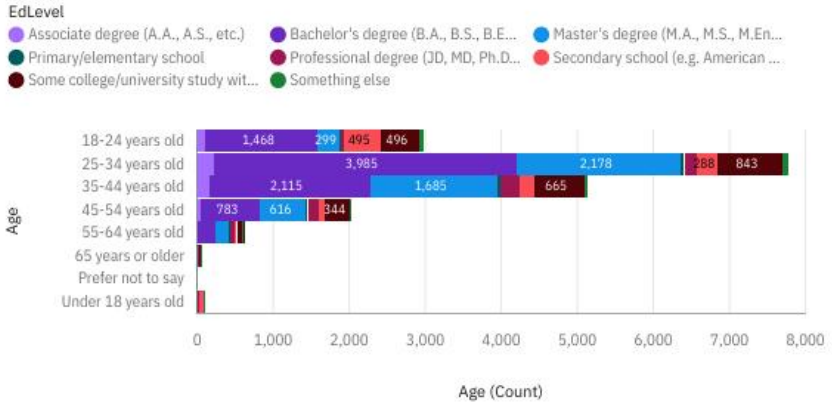
Respondent Count by Country



Respondent distribution by Education Level



Respondent Count by Age, colored by Education Level



DISCUSSION

- The most popular languages (Python, JavaScript, SQL, HTML/CSS & TypeScript) are not predicted fall in usage
- Older languages such as C and Java are declining in usage
- Languages like Rust and Go are predicted to rise in popularity
- PostgreSQL and AWS dominate database and cloud computing respectively

OVERALL FINDINGS & IMPLICATIONS

Findings

- The most popular languages are here to stay (Python, Javascript, SQL) while older languages are slowly being replaced by more modern languages
- PostgreSQL dominates databases, both currently and in the future
- While AWS is the clear leader in cloud platforms, usage is not predicted to change significantly

Implications

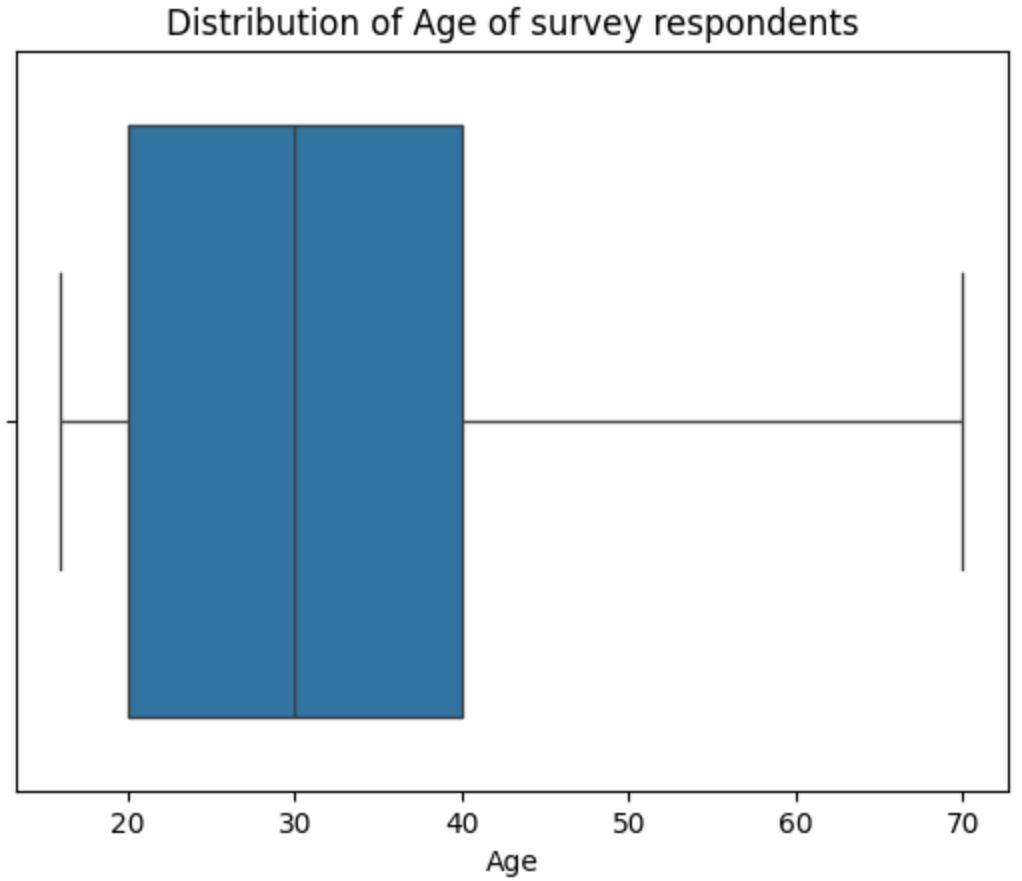
- New programmers and startups should be well versed in the most popular languages
- Programmers using older languages might consider learning more modern technologies
- Businesses already heavily invested in cloud computing should not feel the need to switch platforms for the foreseeable future

CONCLUSION

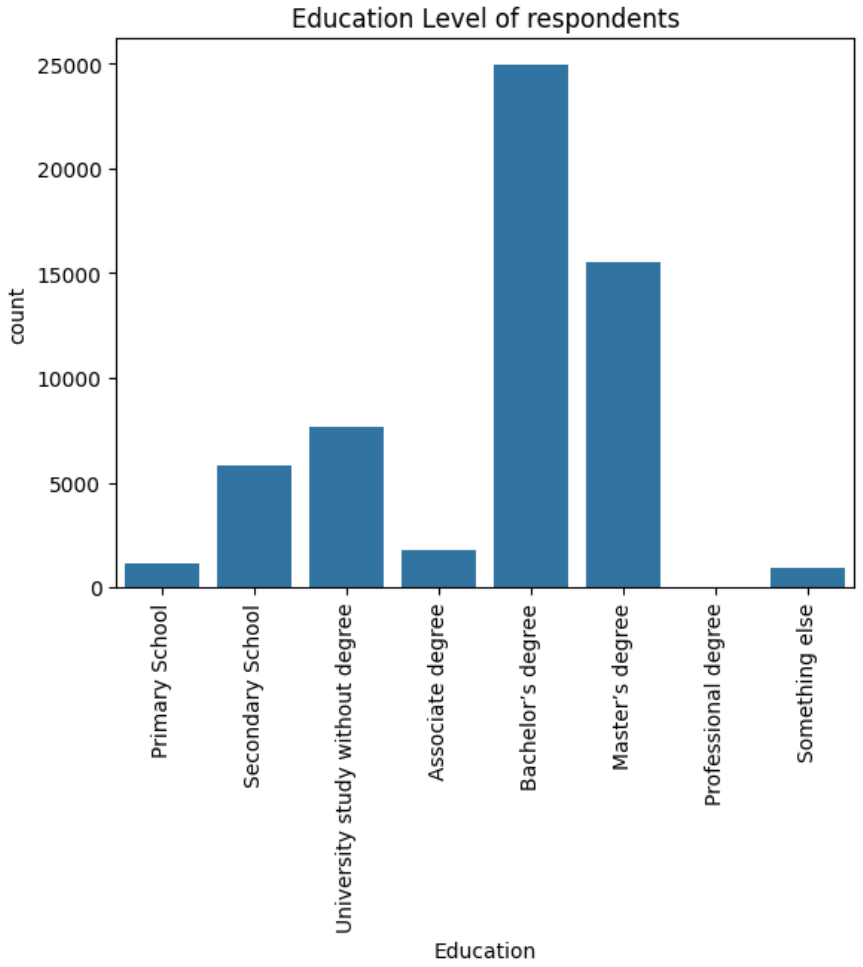
- In conclusion, the technologies in software are changing in subtle ways
- Older technologies are slowly being phased out by new technologies
- The largest technologies continue to dominate the market
- Individuals and businesses who position themselves well will find recruitment easier

APPENDIX

- As we see in the plot, the median age of all respondents is around 30
- Most respondents are between the ages of 20 and 30
- Some respondents are up to 70 years old



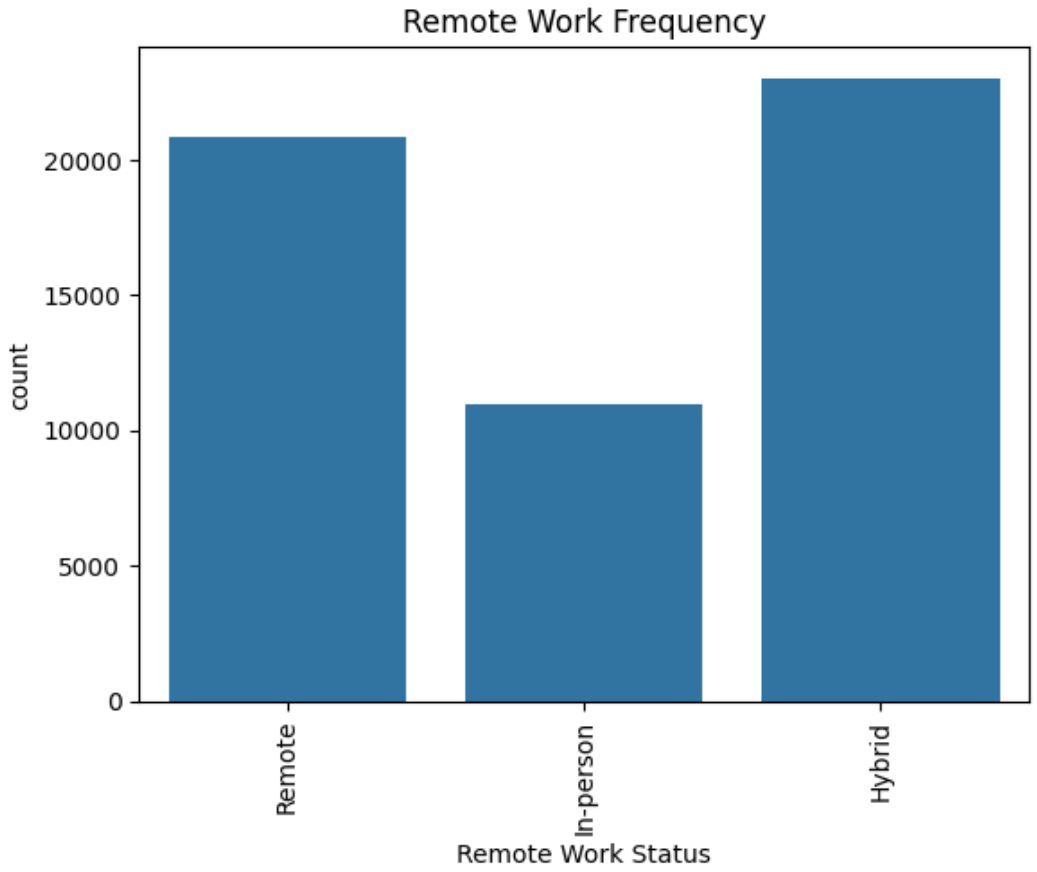
APPENDIX



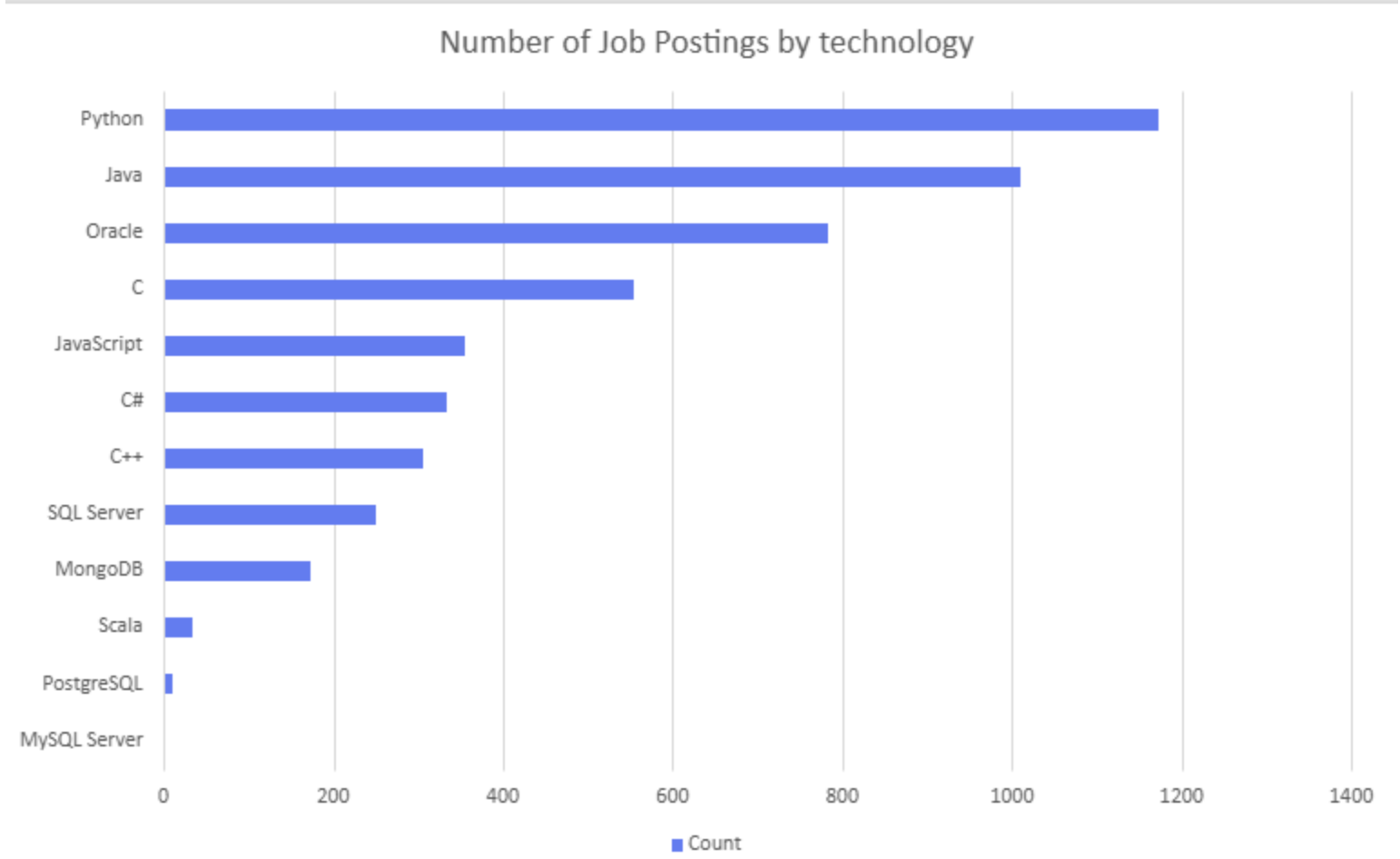
- We can see that most respondents either hold a bachelor's or a master's degree
- Professional degrees are very rare, indicating that they are not necessary for software development
- There is good early interest in software development from primary and secondary school

APPENDIX

- Remote work is prevalent in software, as most respondents are either in fully remote or hybrid roles
- However, there are still roles that are in-person full time



JOB POSTINGS



POPULAR LANGUAGES