



IBM Data Analyst Capstone Project

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OUTLINE



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- Methodology
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 - Visualization – Charts
 - Dashboard
- Discussion
 - Findings & Implications
- Conclusion
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EXECUTIVE SUMMARY



- Although Python is gaining popularity, why Javascript remain the trend among programming languages?
- The Databases' trends is a continuously changing environment
 - Today MySQL is the most popular, but tomorrow PostgreSQL is
 - Can any database remain at the top of the list?
- Windows and Docker compete for taking the first spot from Linux, as the most preferable platform for work
- Is React.js going to be the top WebFrame for work?
- Interesting observations about the demographics of the Stack Overflow developers

INTRODUCTION



- Which is the most popular programming language?
- Databases, a high volatile field...
- It is interesting to view the "Demographics" section of our sample
 - The Gender parameter:
 - The Age parameter
- Categorize popular programming languages by other sources:
 - GitHub job postings
 - Average Annual Salary

METHODOLOGY



- Retrieve data from the source/csv files
- Build a dashboard with Cognos Dashboard Embedded(CDE)
- Create the diagrams for the research
- Examine the diagrams from the different tabs
 - The "Current Technology Usage" (Tab1)
 - The "Future Technology Trend" (Tab2)
 - The "Demographics" section (Tab3)
 - Cross-examine the Tabs 1 & 2 and write my findings
 - Examine the Tab 3 for interesting patterns and observations

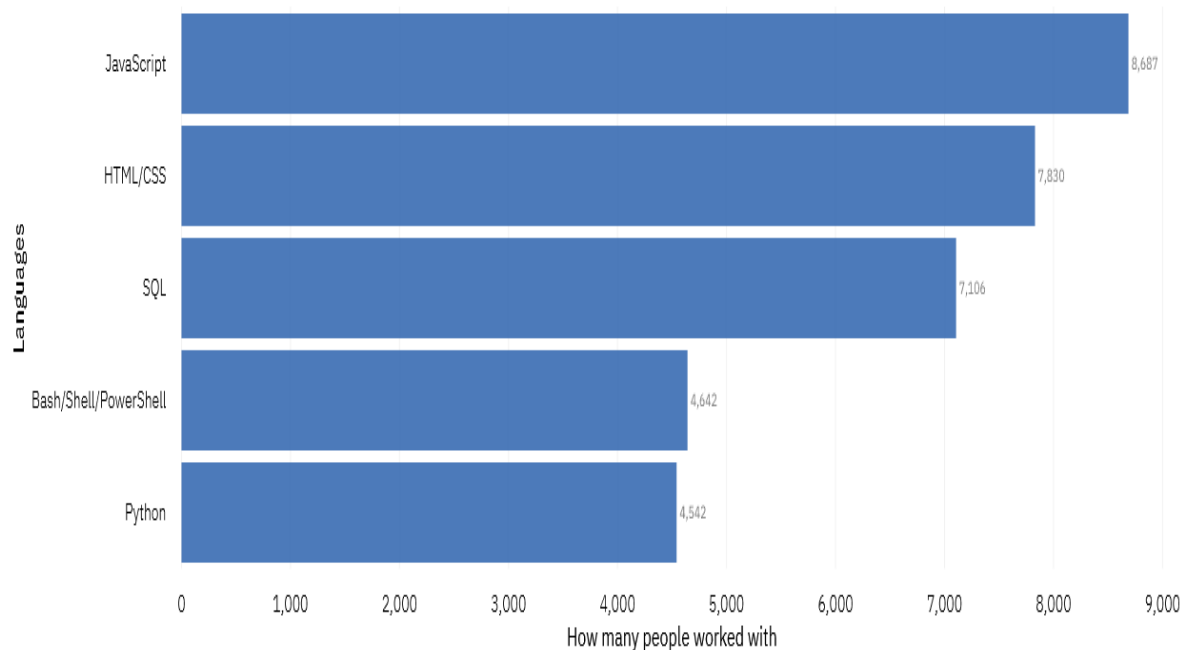
RESULTS

- From the research on the first tab, "Current Technology Usage", and the second tab, "Future Technology Trend", I discover that:
 - Javascript is and will be the trend among the programming languages.
 - MySQL is the most preferable database now, however the next year PostgreSQL will take this position.
 - Linux will continue to be the dominant platform for work, but in the next year will have a strong competition from Docker.
 - JQuery is the most popular among the different WebFrames, however React.js will be the most popular the next year.
- From the research on the last tab, "Demographics", I conclude that:
 - The range of the age (with respondents over 10,000) is 16 to 65. Also, the highest number of respondents is 28 years old (Appendix)
 - The area with the highest concentration of respondents is United States (39,154,240), followed by India (11,136,594), United Kingdom (10,346,562), Germany (9,395,597) and Canada (5,098,804)
 - The percentage of women within the sample is extremely low (6.3% so 8,813,130) and it should be consider for future research (Appendix)

PROGRAMMING LANGUAGE TRENDS

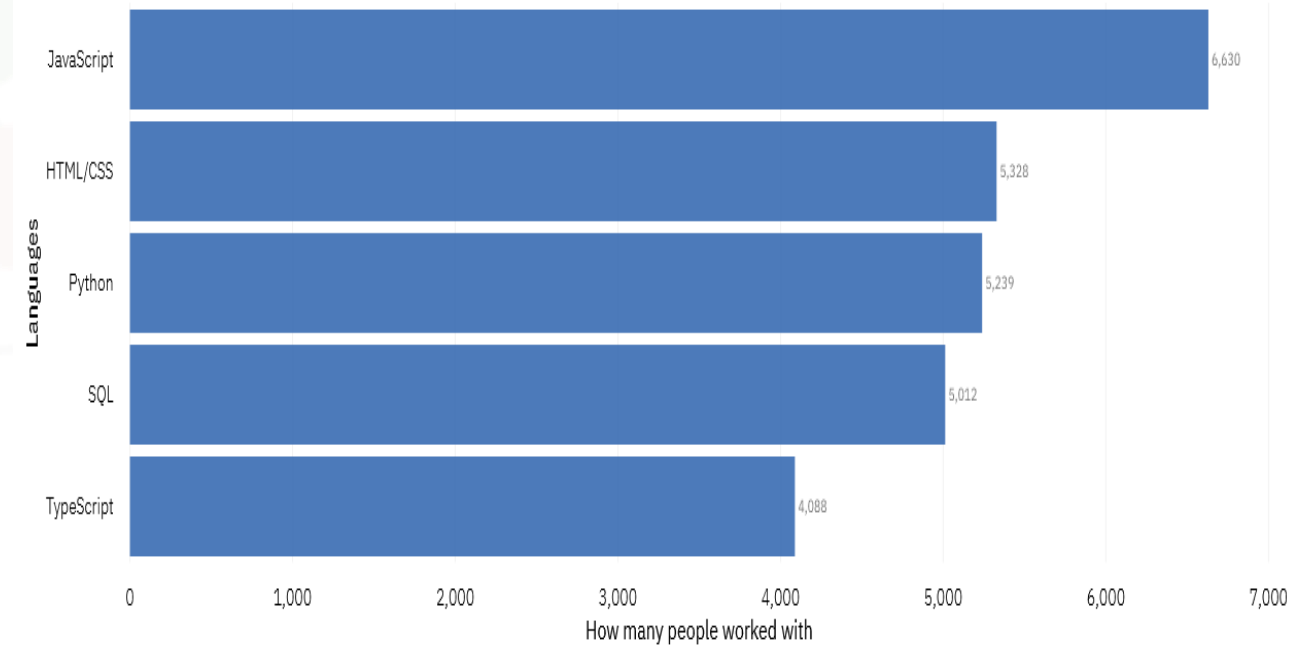
Current Year

Top 5 Programming Languages for work



Next Year

Top 5 Programming Languages for Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- JavaScript and HTML/CSS are in the first and second place of both charts respectively
- Python and SQL also remain in the Top 5 list
- In the Future Technology chart, HTML/CSS has a small gap (111 people) from the next language Python
- Bash/Shell/Powershell falls 3 spots, from 4th to 7th
- TypeScript rises from 8th to 5th

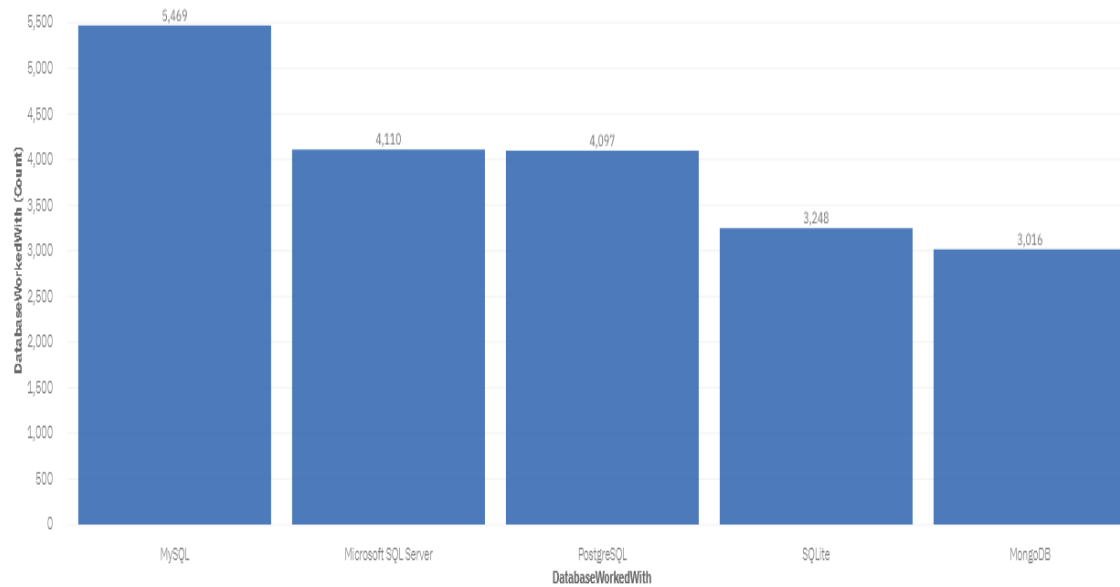
Implications

- Javascript (1st,1st) HTML/CSS (2nd, 2nd), Python (5th, 3rd) and SQL (3rd, 4th) remain the most popular programming languages.
- Python is expected to gain the 2nd place in the next years
- TypeScript gains popularity in the working environment

DATABASE TRENDS

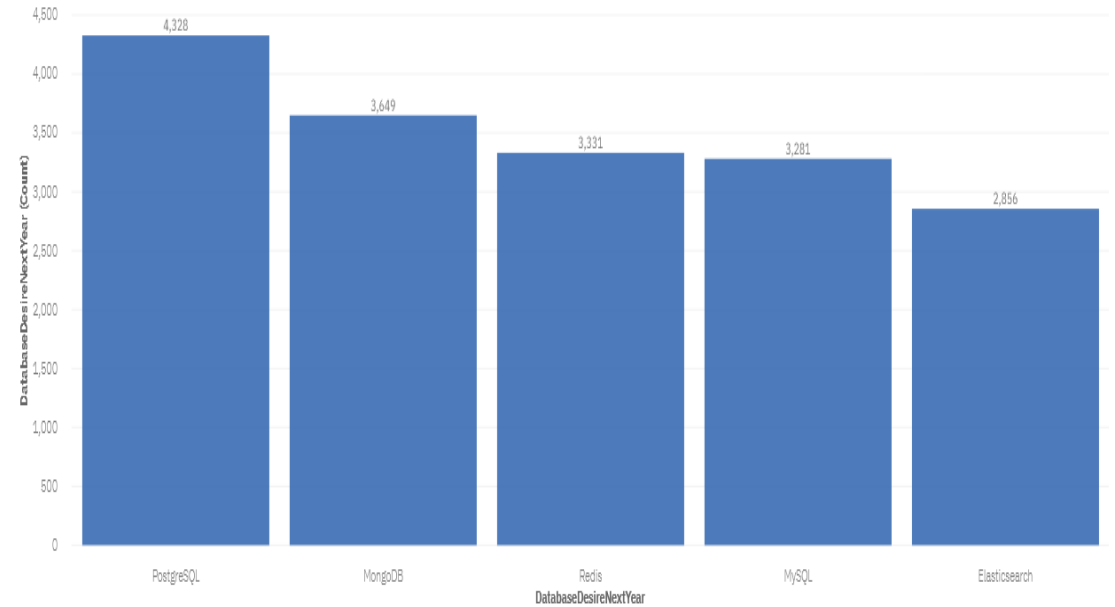
Current Year

Top 5 Databases for work



Next Year

Top 5 Databases for Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Many differences between the two charts
- However, PostgreSQL, MongoDB and MySQL remain in the Top 5 list
- PostgreSQL, MongoDB, Redis and Elasticsearch gain higher spots
- The top 2 MySQL (1st) and Microsoft SQL server (2nd) fall to 4th and 6th position respectively
- SQLite drops from the Top 5

Implications

- Strong volatility in the database trends, which are expected to be completely different next year
- PostgreSQL becomes the most popular database (4,328 people), however with lower number from the previous one (MySQL, 5,469 people)
- MongoDB (5th, 2nd), Redis (6th, 3rd) and Elasticsearch (7th, 5th) gain popularity

DASHBOARD



[Cognos Dashboard](#)

DASHBOARD TAB 1/Current Technology Usage

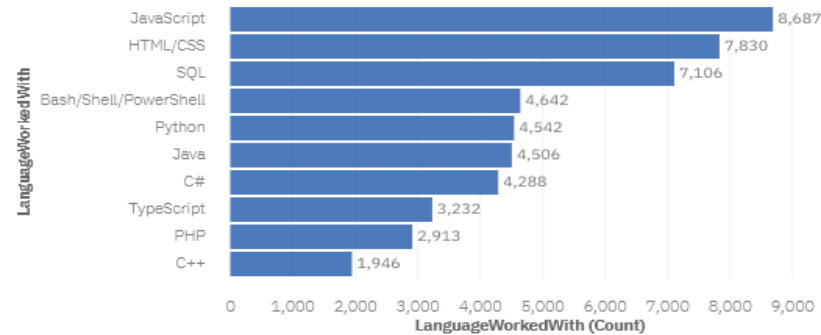
Filters

Current Technology Usage

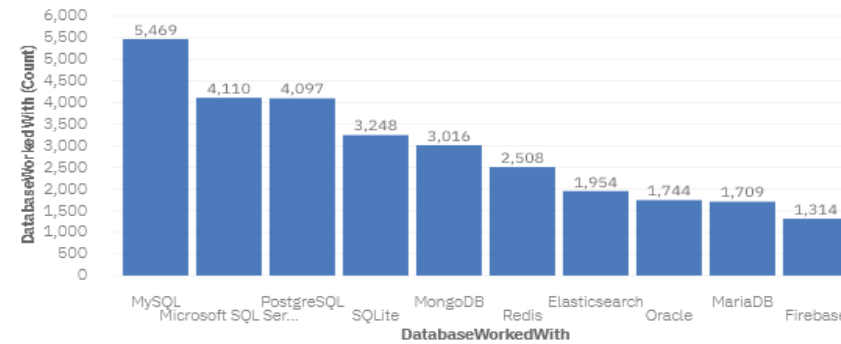
Future Technology Trend

Demographics

Top 10 Programming Languages for work



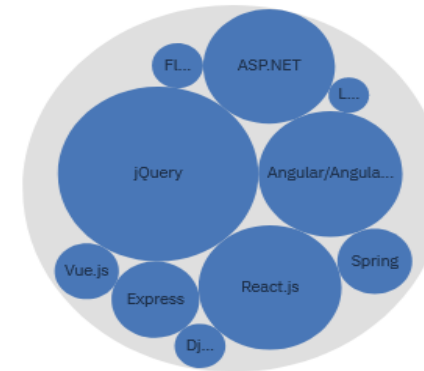
Top 10 Databases for work



Platforms for work



Top 10 WebFrames for work



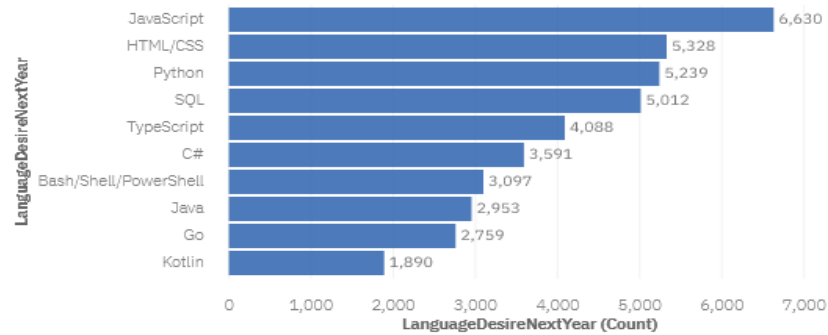
powered by IBM Cloud Pak for Data

DASHBOARD TAB 2/Future Technology Trend

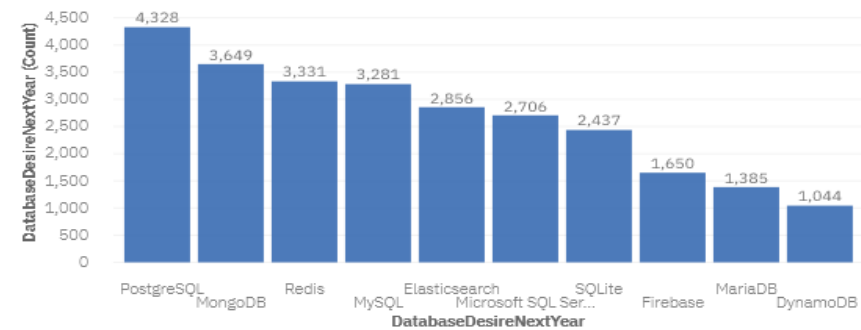
Filters

Current Technology Usage Future Technology Trend Demographics

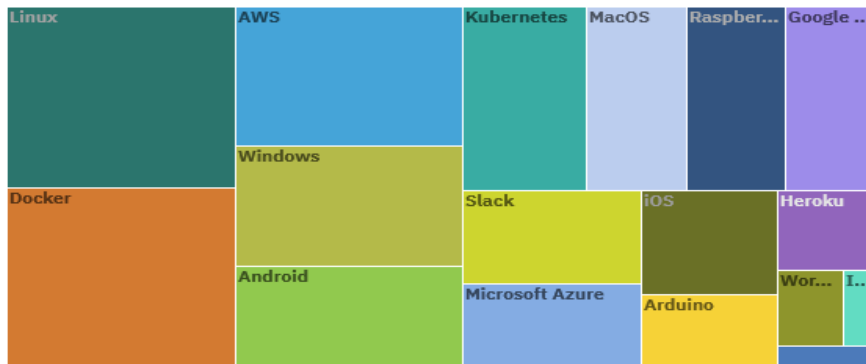
Top 10 Programming Languages for Next Year



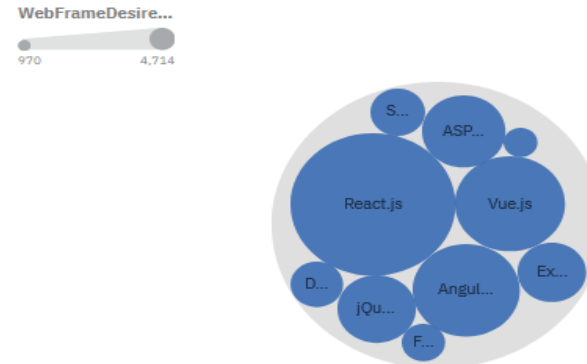
Top 10 Databases for Next Year



Platforms for Next Year



Top 10 WebFrames for Next Year



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DASHBOARD TAB 3/Demographics

Filters

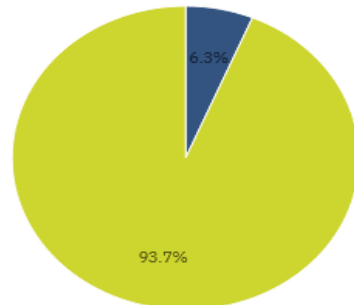
Current Technology Usage

Future Technology Trend

Demographics

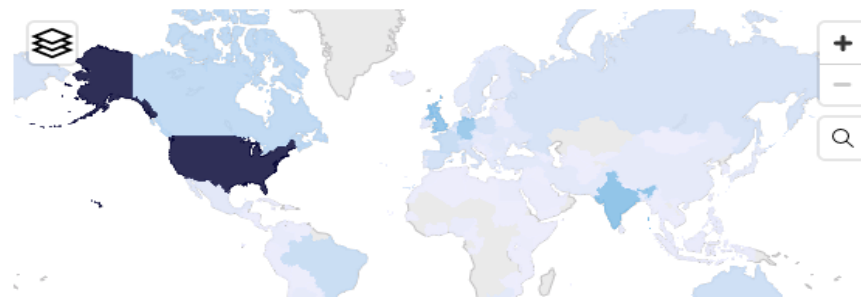
Respondents classified by Gender

Gender
● Woman ● Man

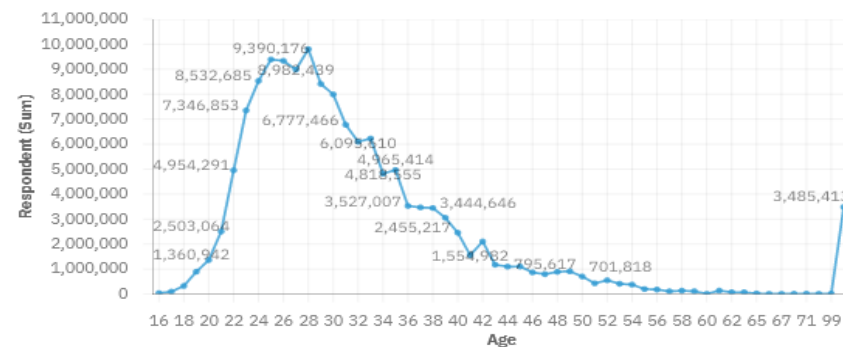


Number of Respondents by Country

Respondent (Sum)
865 39,154,240

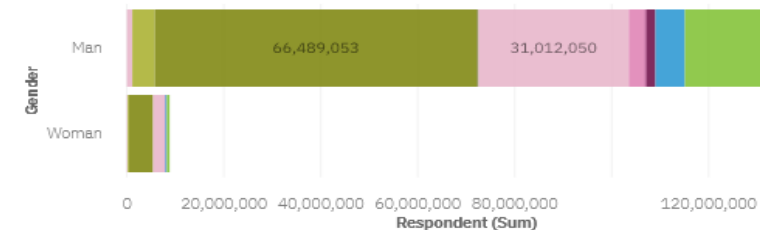


Number of Respondents by Age



Respondent's Formal Education Level by Gender

EdLevel
● (no value) ● Associate degree
● Bachelor's degree (BA, BS, B.E... ● I never completed any formal ...
● Master's degree (MA, MS, M.E... ● Other doctoral degree (Ph.D, E...



DISCUSSION



- Even though Python continuously gains popularity, still it remains behind Javascript and HTML/CSS
- The Database field will continuously change each year due to the similarities of each database.
- In the previous slide and the appendix, we can see the extremely low percentage (6.3%) of women in the respondents.
- The higher concentration of the respondents are from US, India and United Kingdom.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Javascript and HTML/CSS remain top 2 programming languages
- PostgreSQL and MongoDB are the new top 2 databases
- Linux is first in the category "Platforms for work"
- React.js is the new top webframe for work

Implications

- Python rises in popularity and probably takes the second place in the next year
- The continuously changing of the Database trends
- Docker and AWS gain the 2nd and 3rd positions respectively
- React.js takes the first place from JQuery, which drops in the 5th spot of preference

CONCLUSION



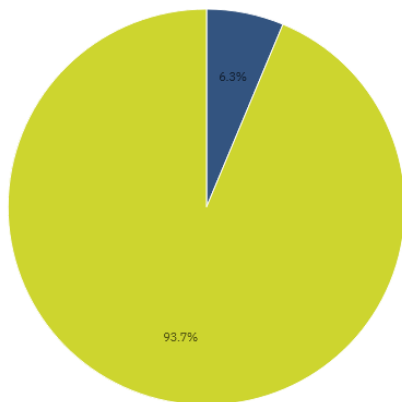
- Javascript remains the most popular programming language
- PostgreSQL took the first place from MySQL, as the most preferable database
- People choose Linux platforms for their work
- React.js is the new trend in WebFrames
- Only 6.3% of the respondents in Stack Overflow are women, which is a interesting subject for future research
- Using the Appendix, there are some interesting observations about job posting demand and average salary

APPENDIX

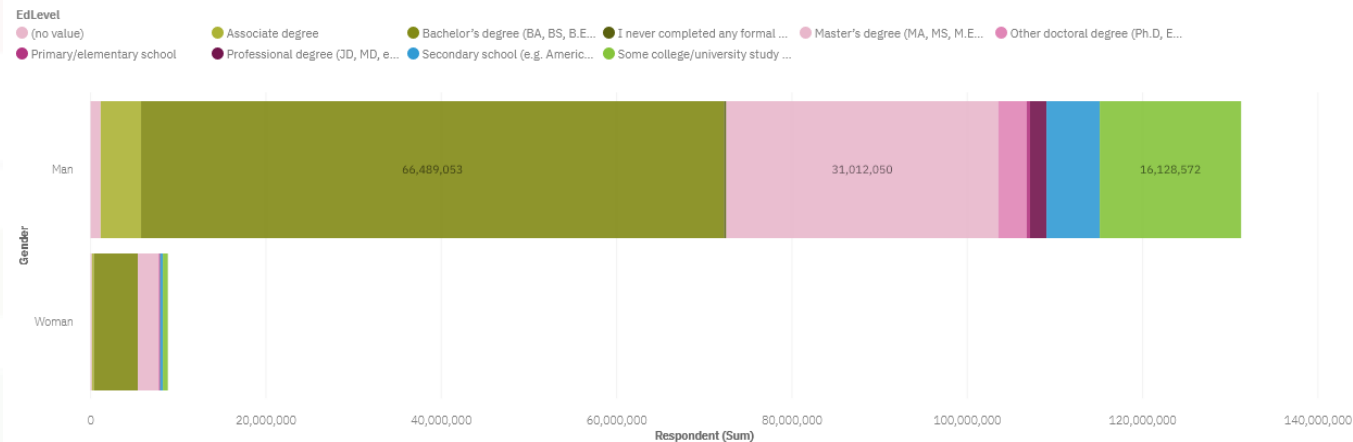


Respondents classified by Gender

Gender
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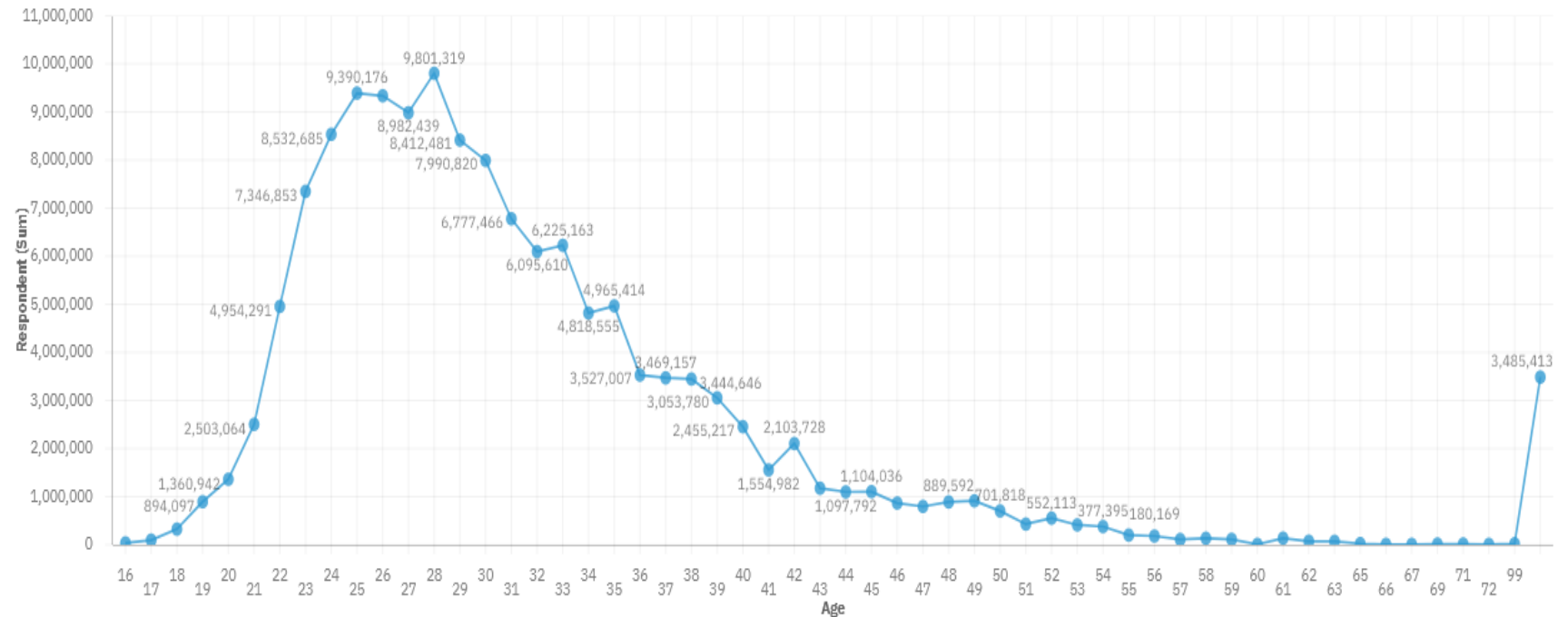
Respondent's Formal Education Level by Gender



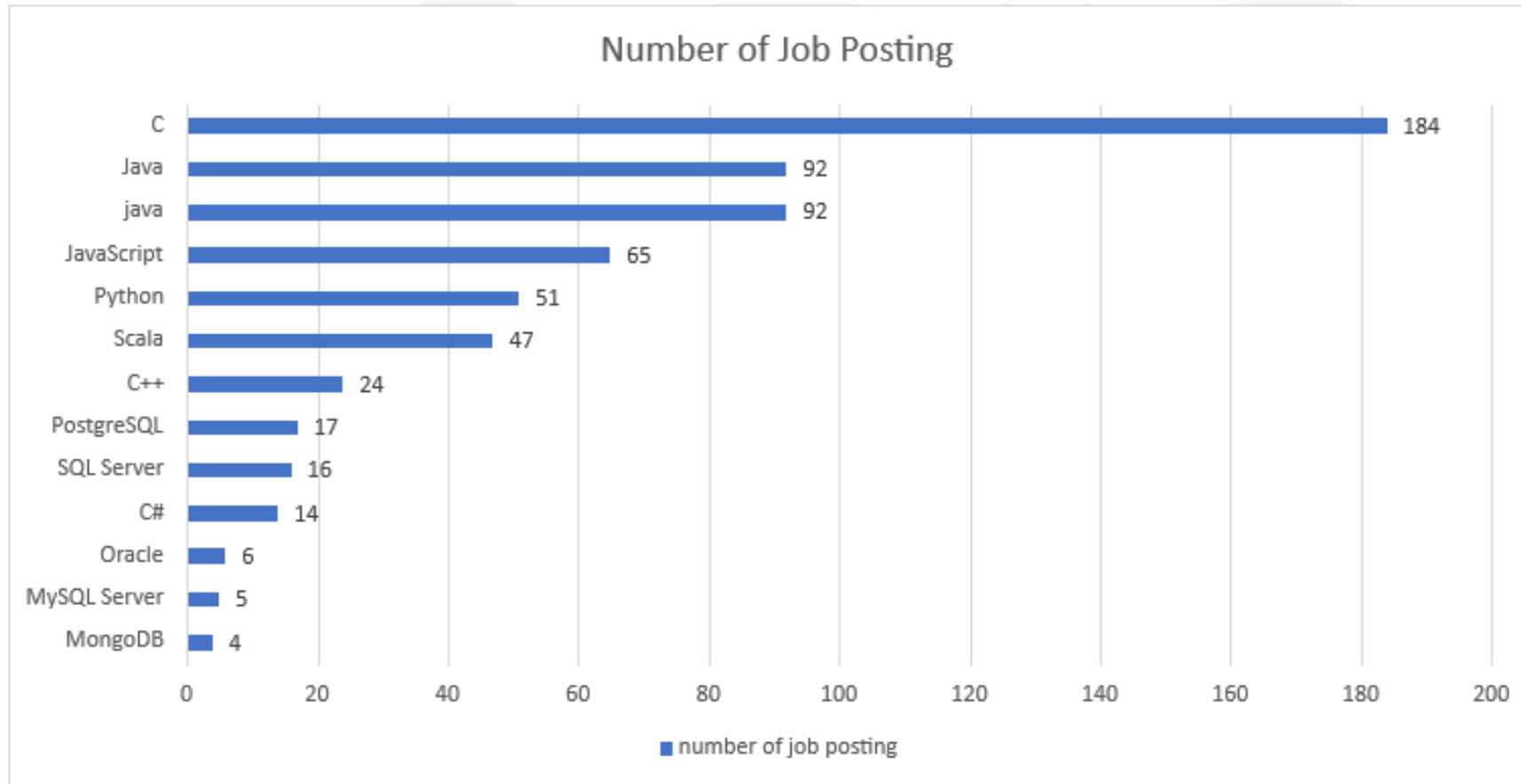
APPENDIX



Number of Respondents by Age

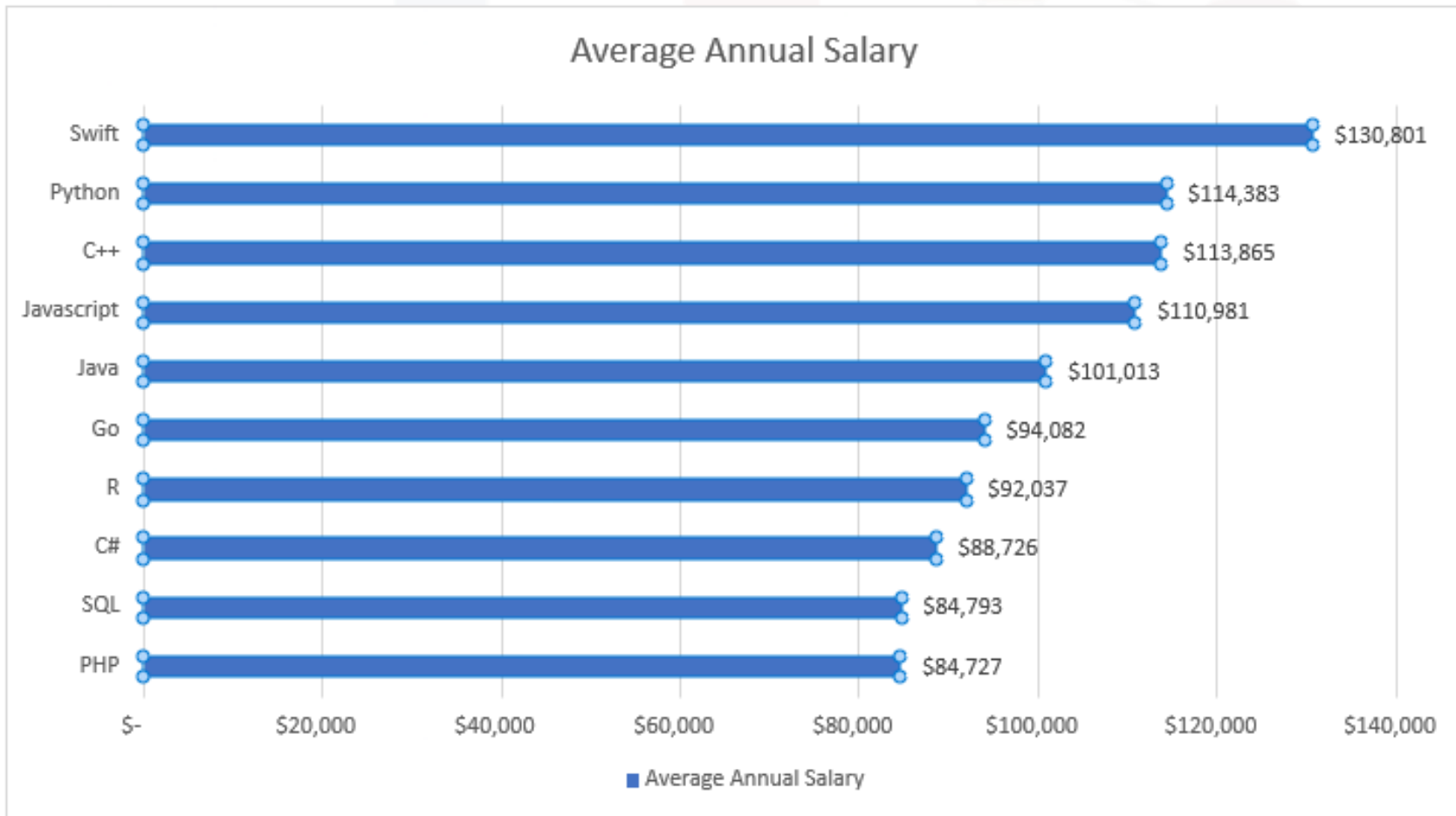


GITHUB JOB POSTINGS



The chart shows that the language with the most job postings is C, and should be consider in future analysis.

POPULAR LANGUAGES



The chart shows that the language with the highest average salary is Swift, and should be consider in future studies.

Thank you for your time