

# IBM Data Analyst Capstone Project: Trends Analysis in software development worldwide

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# OUTLINE

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

# EXECUTIVE SUMMARY

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- To be competitive in the global IT sector, it's essential to keep up with the ever-changing technologies. This report uses data analytics to highlight current and projected trends in the need for skills related to programming languages, databases and other technologies. It also studies the demographics of professionals in the technology sector.
- Data was gathered from a Stack overflow survey, IBM site, and Github job postings. It was collected, cleaned, subjected to exploratory data analysis, and visualized on dashboard.
- The findings showed that Javascript and PostgreSQL are currently the most popular language and database respectively and are anticipated to be so in the future.
- Furthermore, majority of the survey respondents are between the age of 25 and 34, and are from the USA.



# INTRODUCTION

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- This presentation report uses data analytics to highlight current and projected trends in the need for skills related to programming languages, databases, platforms and web frames.
- The survey data consists of various questions related to professional experience, coding activities, tools, technologies, and preferences and responses from developers with different professional backgrounds, educational levels and geographic locations.
- The presentation aimed to identify emerging and future skill requirements.
- The following inquiries were investigated using the data:
  - Which programming languages are most in demand?
  - Which database technologies are currently most sought after?
  - Which Integrated Development Environments (IDEs) are the most popular?



# METHODOLOGY

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- Scraped internet websites, accessed APIs, and worked with datasets like the latest Stack Overflow Developer Survey in various formats such as .csv files, Excel sheets, and databases.
- After gathering the data, applied data-wrangling techniques to prepare the data for analysis.
- Once the data is prepared, employed statistical techniques to analyze the data, identifying key trends and insights.
- Synthesized the findings using IBM Cognos Analytics to create a dashboard that visualizes the results.



# RESULTS

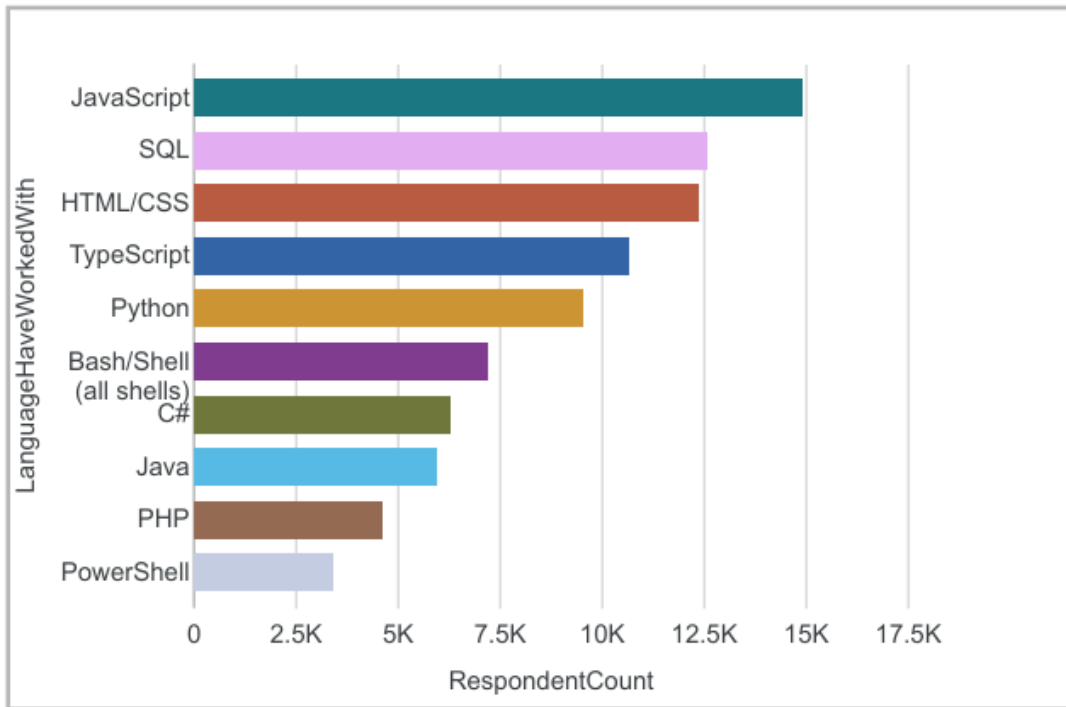




# PROGRAMMING LANGUAGE TRENDS

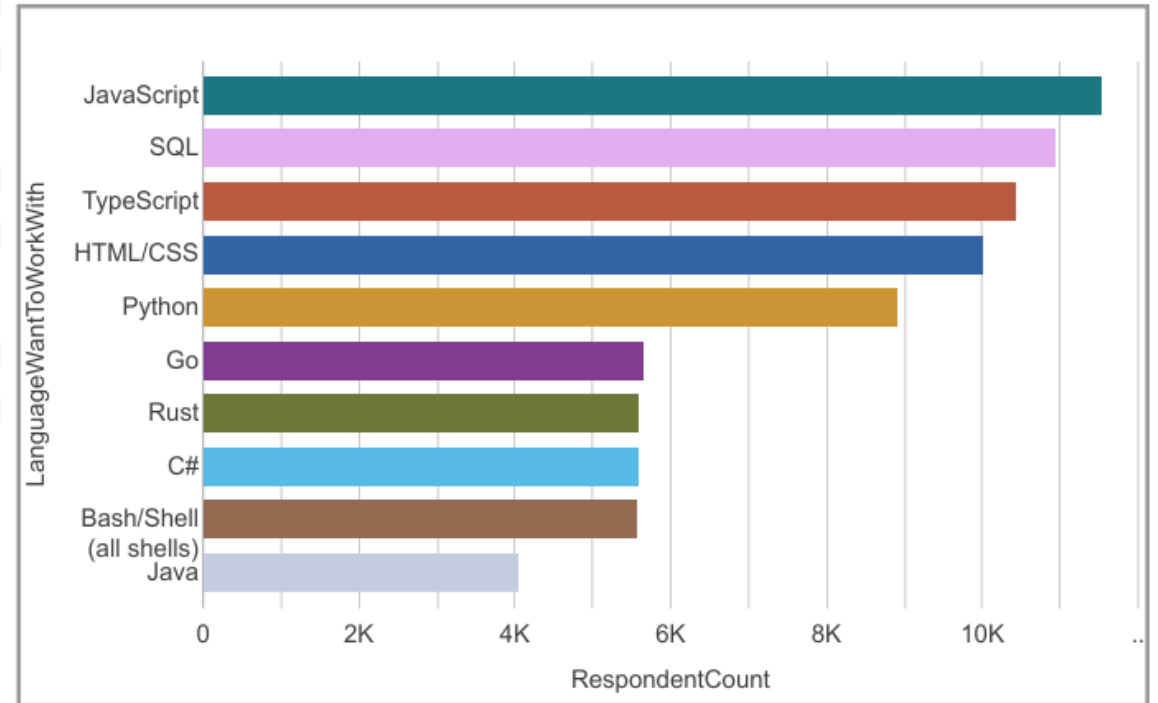
## ► Current Year

Top 10 Languages Used



## ► Next Year

Top 10 Languages Desired Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- Javascript, SQL, HTML/CSS, TypeScript and Python are the most used languages currently.
- Javascript, SQL, TypeScript, HTML/CSS and Python in this order will be the most used languages next year and future years.
- TypeScript will have more demand than HTML/CSS next year.

## Implications

- Javascript and HTML are used for web development which means that web development as a tech skill has the highest demand, especially as TypeScript is getting viral.
- TypeScript is getting viral because of its ability to enhance code quality, improve developer productivity, and mitigate potential errors.
- SQL is still the most relevant languages for data professionals. It is important for aspiring data analysts, scientists, business analysts etc to have SQL skills.

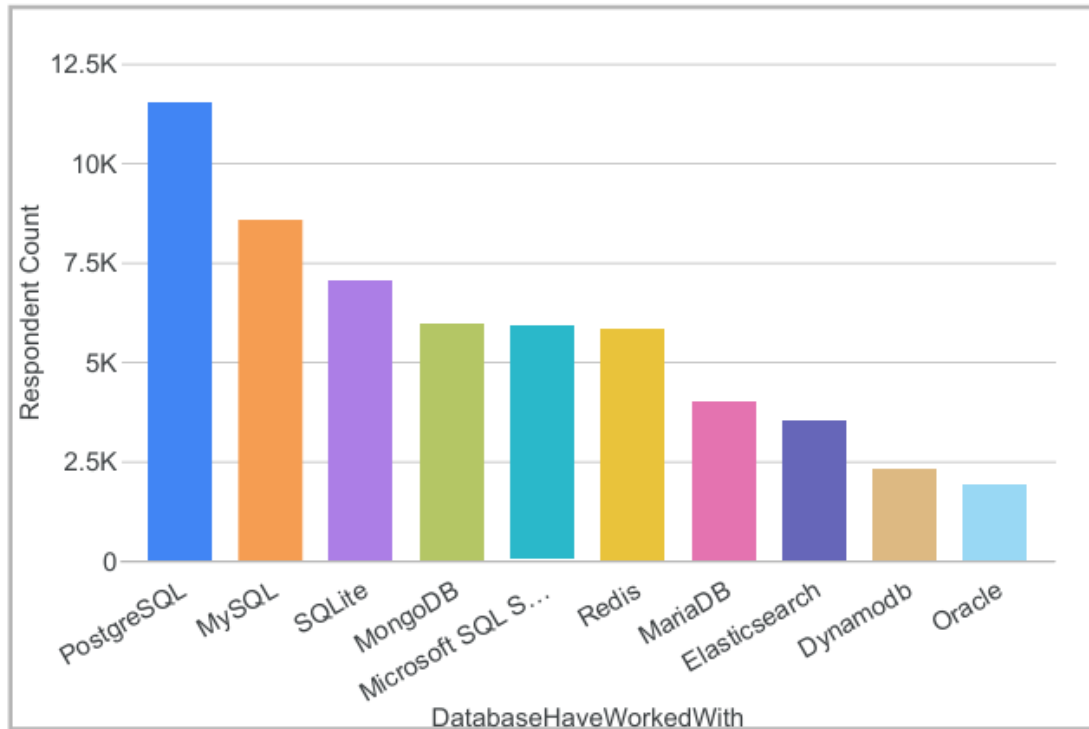




# DATABASE TRENDS

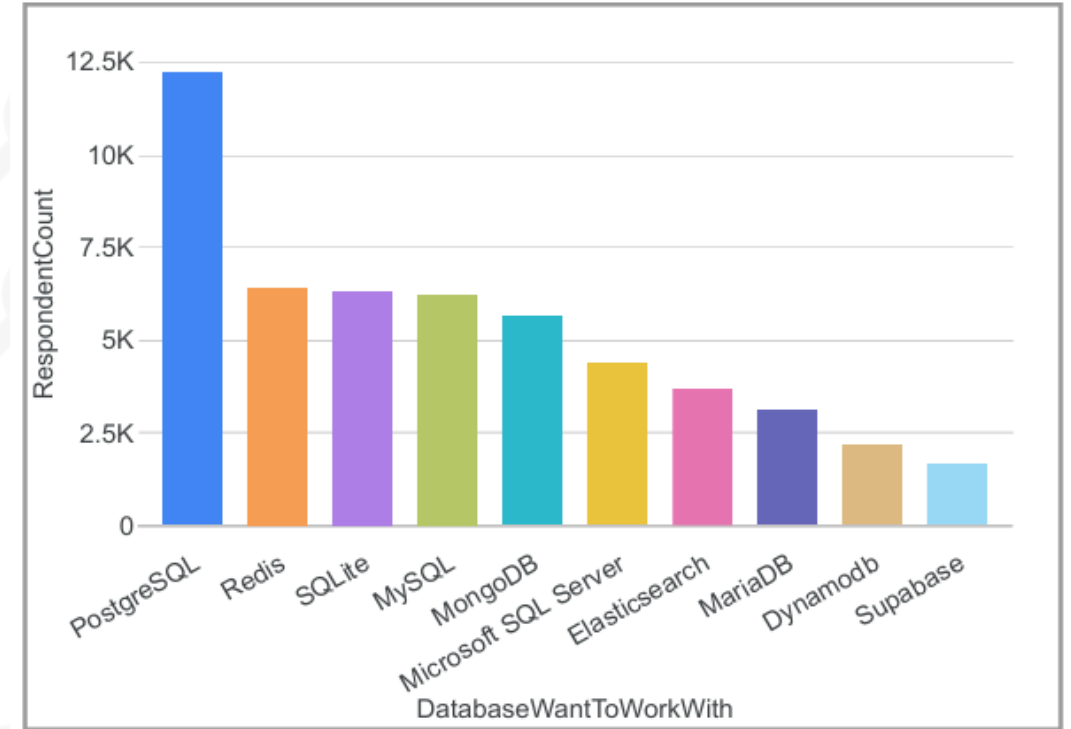
## ► Current Year

Top 10 Databases Used



## ► Next Year

Top 10 Databases Desired Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

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## Findings

- PostgreSQL, SQL, SQLite, MongoDB and Microsoft SQL Server are the most used databases currently.
- However PostgreSQL, Redis, SQLite, MySQL and MongoDB are projected to become more popular in the future.
- Redis is relatively new and set to gain more traction in the IT space.

## Implications

- SQL is still a top tool to watch out for data specialists.
- Companies still prefer open source databases.
- Oracle SQL was the least 10 used databases and not among the top 10 databases projected for the future which means it is losing relevance as time passes.
- Redis will gain traction due to its fast and efficient in-memory data store often used for caching, session storage, and real-time data processing



# DASHBOARD

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The GitHub link of the Cognos/Looker Studio dashboard:



## **Cognos:**

<https://github.com/Adewumi-lab/Testrepo/blob/main/Survey%20Data%20IBM%20Cognos%20Dashboard.pdf>

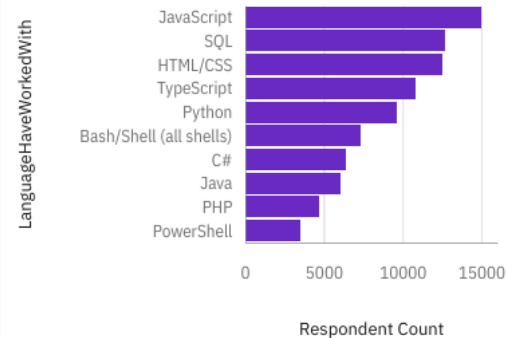
## **Looker:**

<https://github.com/Adewumi-lab/Testrepo/blob/main/Survey Data Google Looker Dashboard.pdf>

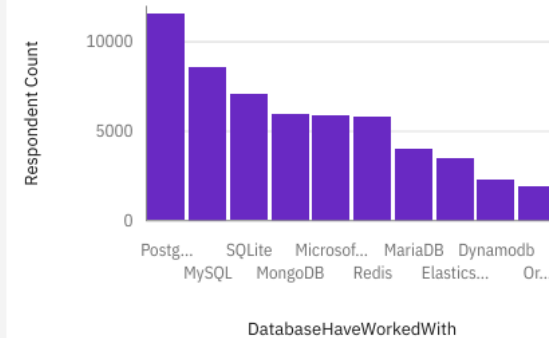
# DASHBOARD TAB 1

## Current Technology Usage

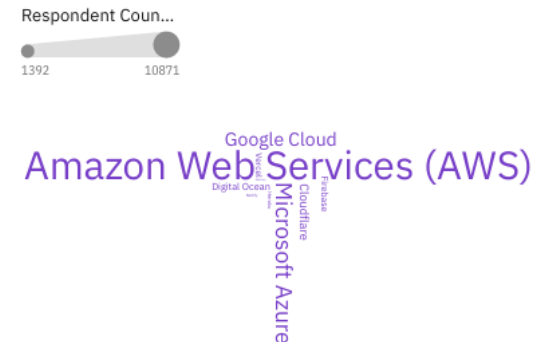
Top 10 LanguageHaveWorkedWith



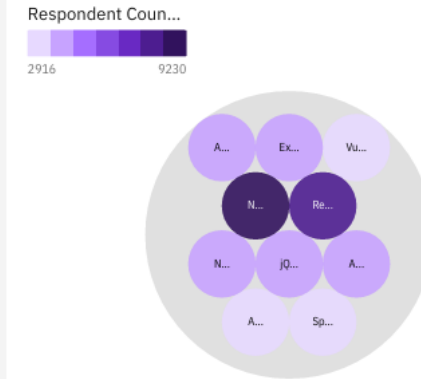
Top 10 DatabaseHaveWorkedWith



Top 10 PlatformHaveWorkedWith



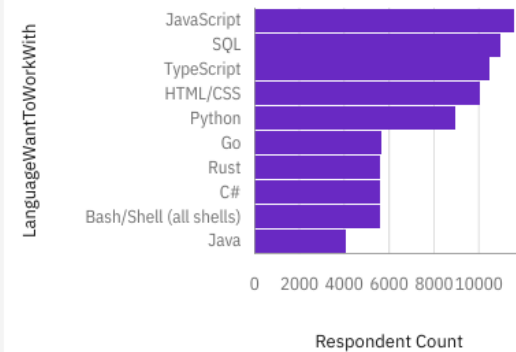
Top 10 WebFrameHaveWorkedWith



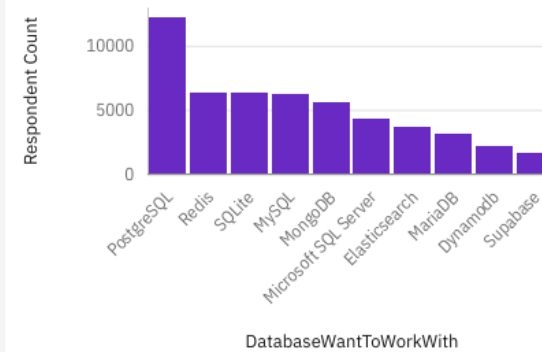
# DASHBOARD TAB 2

## Future Technology Trend

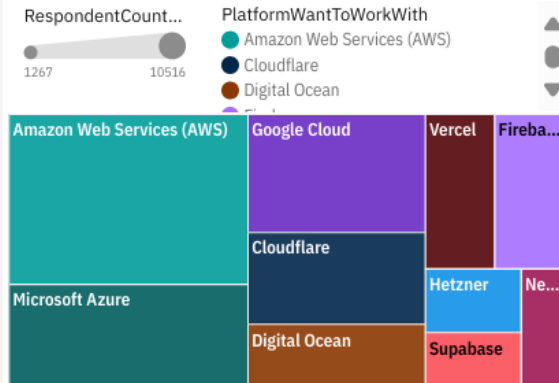
Top 10 LanguageWantToWorkWith



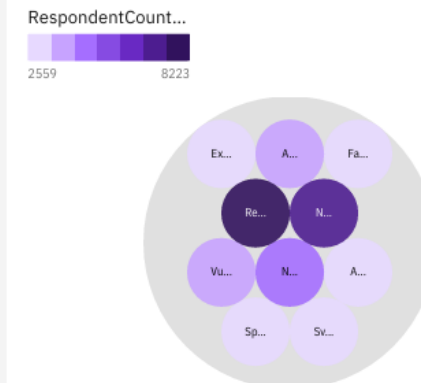
Top 10 DatabaseWantToWorkWith



Top 10 PlatformWantToWorkWith



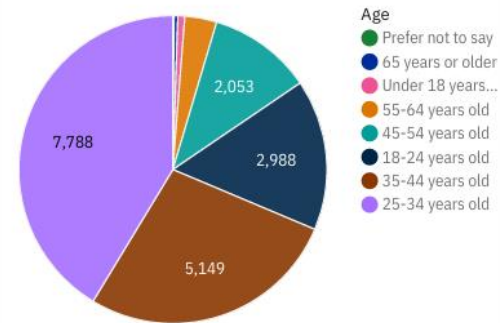
Top 10 WebframeWantToWorkWith



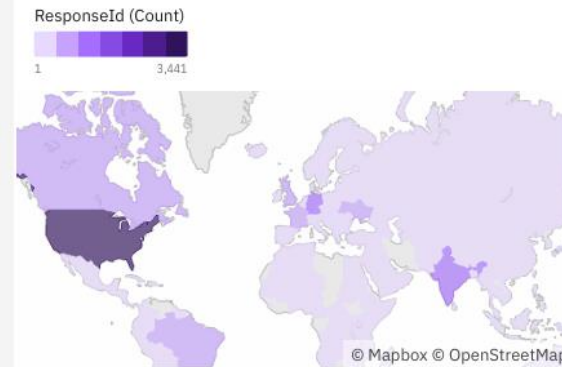
# DASHBOARD TAB 3

## Demographics

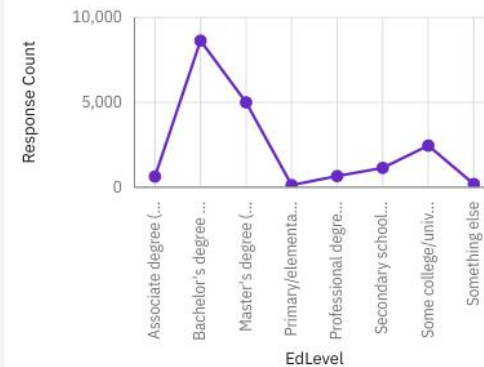
Respondent distribution by Age



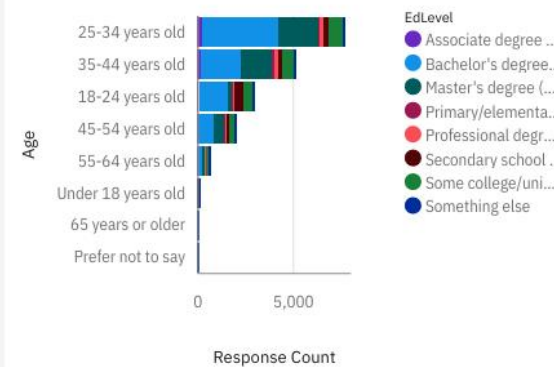
Respondent Count by Country



Respondent distribution by Formal Education Level



Respondent Count by Age, classified by Education Level





# DISCUSSION

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- Upskilling in the Technology sector.
- How to get more people between the age range of 18 to 24 years old to be more interested in IT skills.
- More tech education, access and development in less developed regions in South east Asia, South America, Africa and some parts of Europe.
- Is completing a bachelor's or master's degree really a requirement
- How relevant will Oracle be in the future?

# OVERALL FINDINGS & IMPLICATIONS

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## Findings

- Most people in the IT field have a Bachelor's degree.
- Web development languages are the most popular and on-demand tools in the IT sector currently.
- The tech sector is filled with majorly young people under 40 years old.
- Most respondents want to learn PostgreSQL and Redis next year.

## Implications

- Web development is still a very lucrative skill.
- People should try to earn up to a bachelor's degree to increase their chances in the IT world.
- Less developed countries need more access to tech trainings and education.



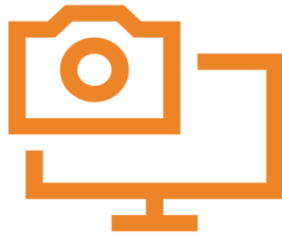
# CONCLUSION

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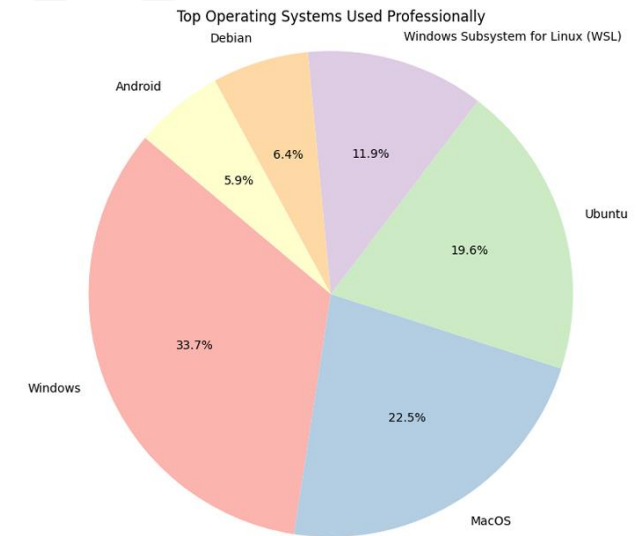
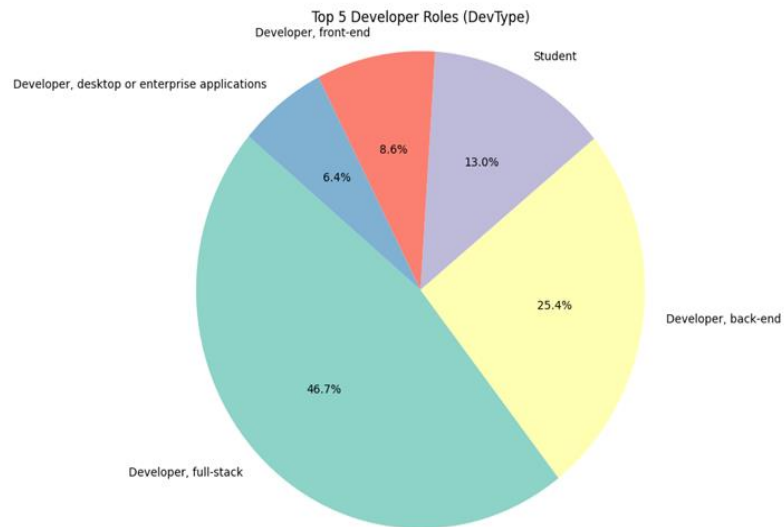
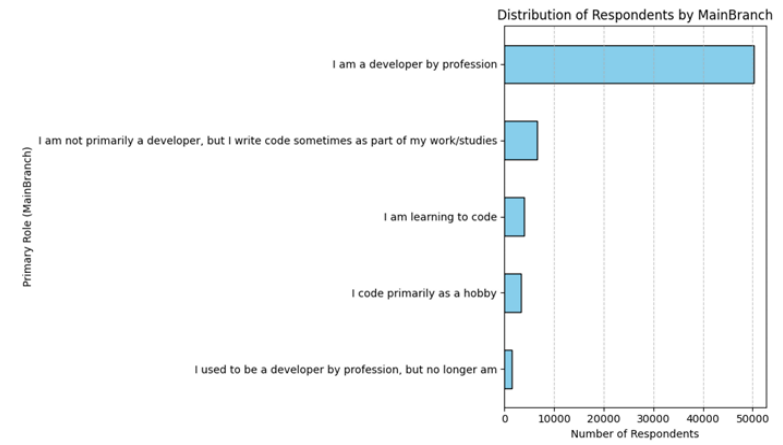
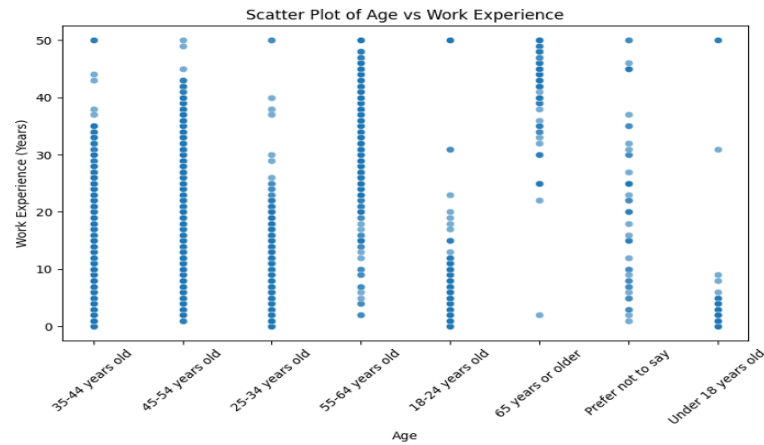


IT IS IMPORTANT TO STAY UPDATED IN THE TECH SECTOR AS TRENDS KEEP CHANGING OVER TIME.



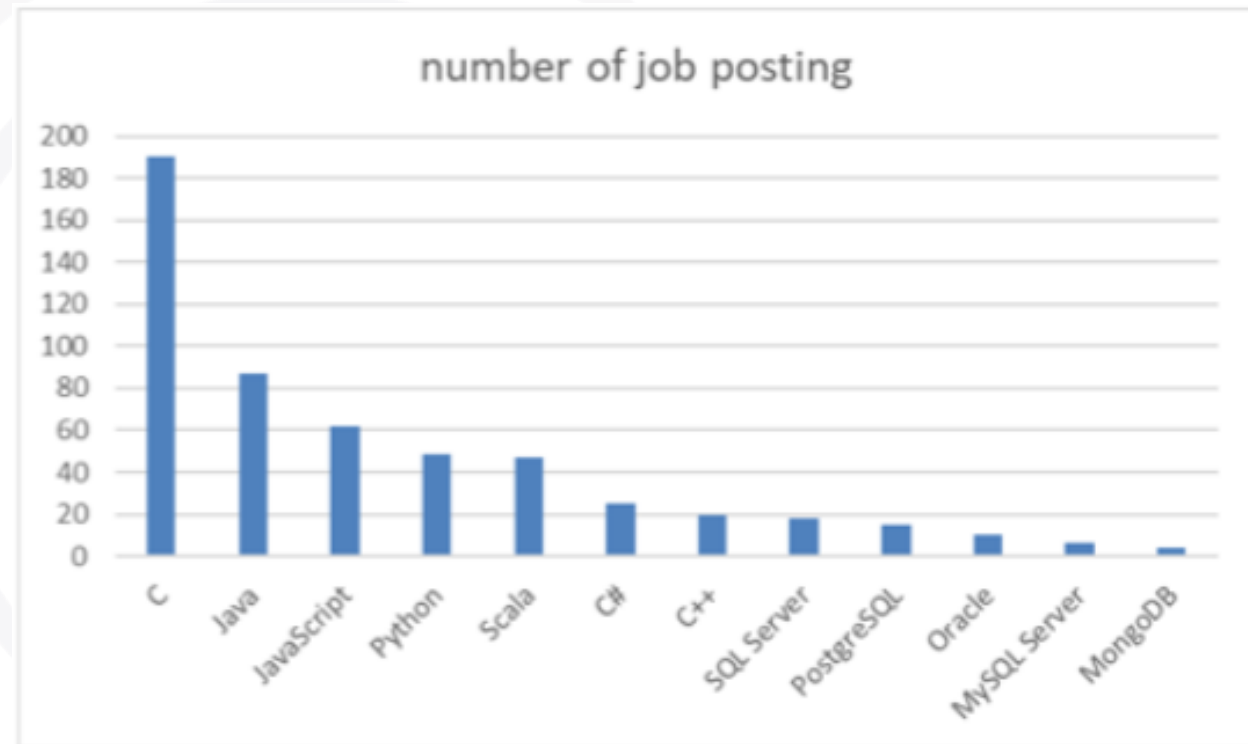


# APPENDIX



# JOB POSTINGS

Bar Chart presenting the job posting data collected using Job API.



# POPULAR LANGUAGES

Bar Chart displaying popular languages and their average annual salary. The job postings data was collected through web scraping the GitHub jobs data and saved in a csv file.

