

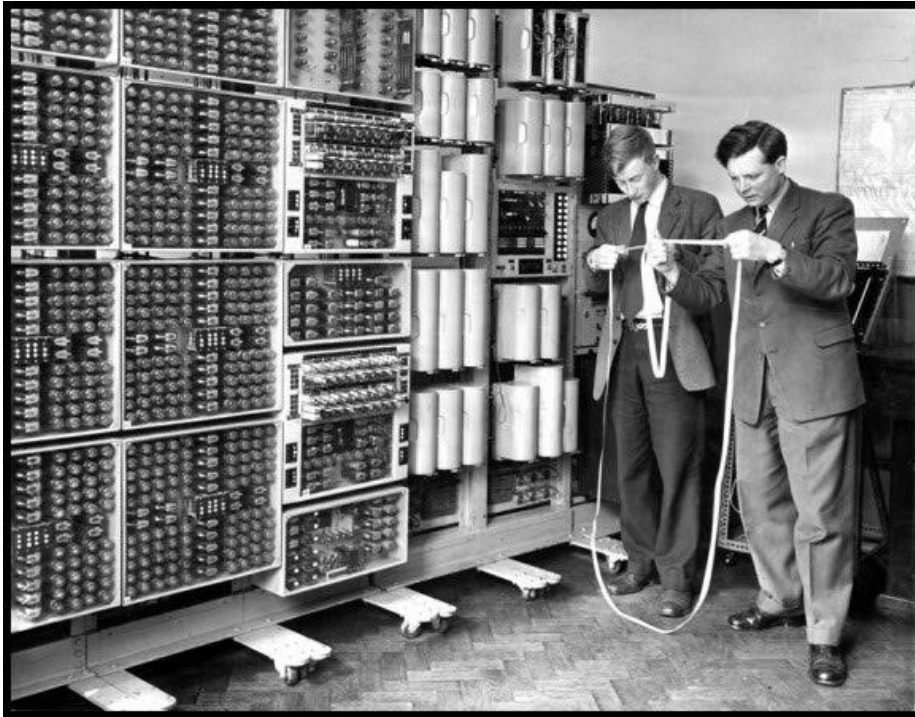


# Current and Future Trends in Software Development

Raana Shah  
March, 2024

# OUTLINE

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

# EXECUTIVE SUMMARY

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- The Stack Overflow Annual Survey signposts the future direction of software development and how our Company can best position itself to take advantage of those markers
- Javascript and HTML still hold top spots, but Python is catching up fast
  - Most developers want to continue working with Rust and Python
  - Redis and Postgre SQL retain their positions but MongoDB is of great interest to developers
  - Windows still has nearly half the OS market share
- People of color and women continue to be underrepresented amongst developers
- Many developers aren't regularly contributing to open source projects

# INTRODUCTION

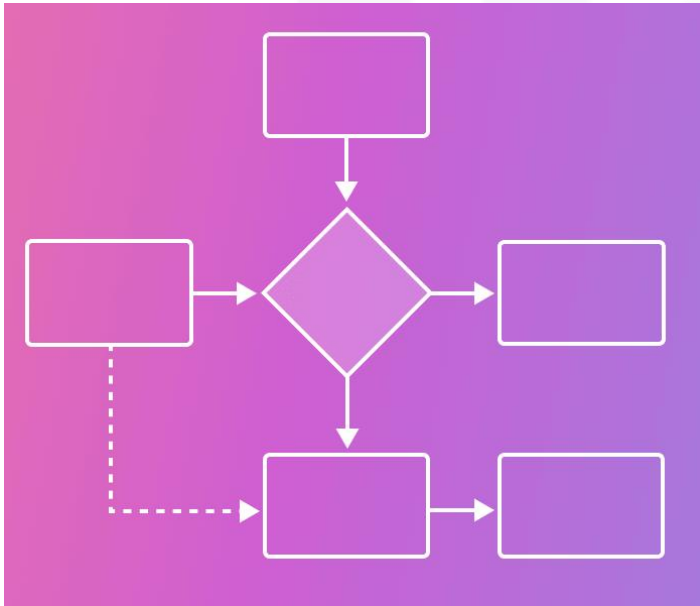
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- Hiring and retaining the best developers is a major requirement in a very competitive market
- Understanding the direction of future software development is integral to building a company that is prepared and provisioned for growth
- Properly targeted internal training and development programs will help improve employee job performance
- Looking at Asia for fresh talent might be of value, especially
  - India
  - China

# METHODOLOGY

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- Used webscraping and APIs to download and format the raw Survey data
- Cleaned and normalized the dataset ready for analysis, removing duplicates and missing values
- Examined the data, removing outliers that might skew conclusions. Checked for correlations and commonalities
- Used various visualizations to search for patterns and trends in the dataset
- Created a Dashboard highlighting important information and insights (link is located towards the end of this presentation)



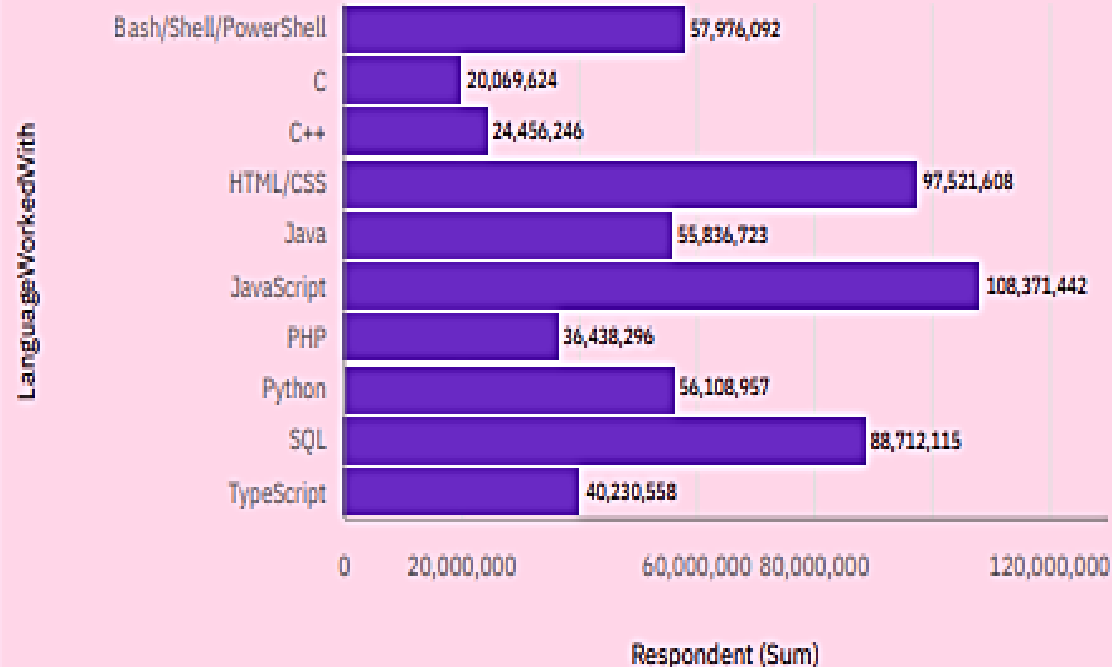
# RESULTS

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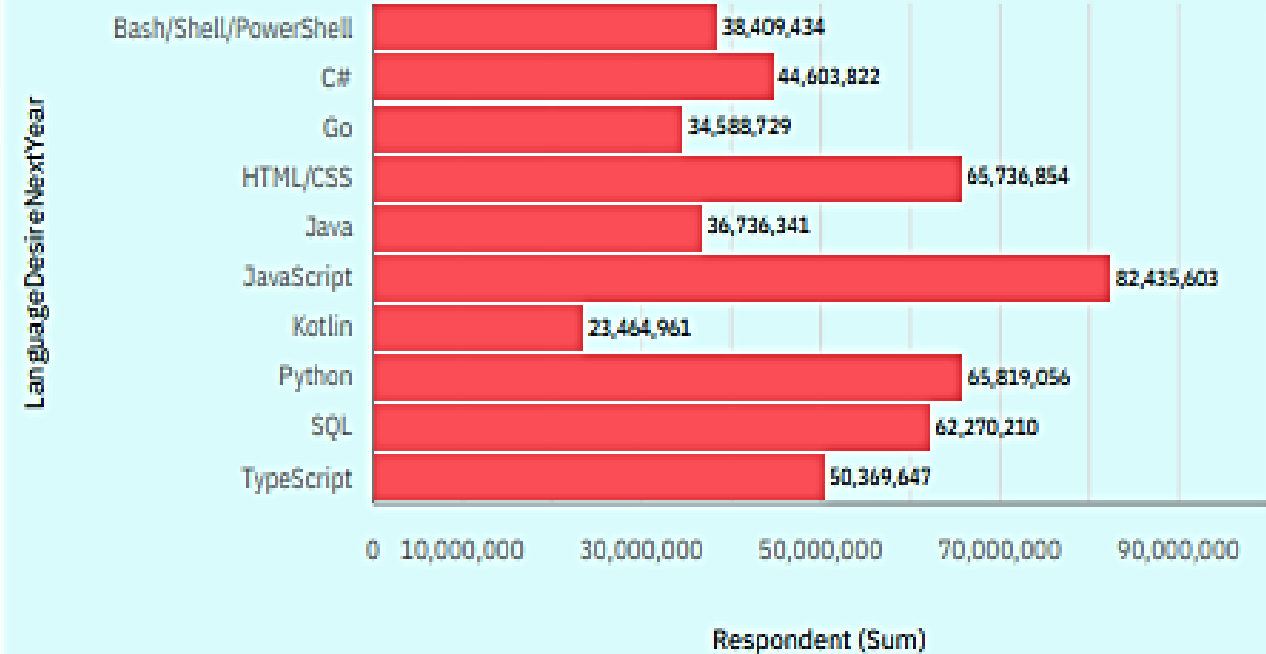


# PROGRAMMING LANGUAGE TRENDS

## Top Ten Languages Used



## Top Ten Languages Desired



# PROGRAMMING LANGUAGE TRENDS – FINDINGS & IMPLICATIONS

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## Findings

- Javascript is strong and projected to stay so
- Python is showing excellent growth
- C and C++ seem to be making way for C#
- New programming languages show up in future trends

## Implications

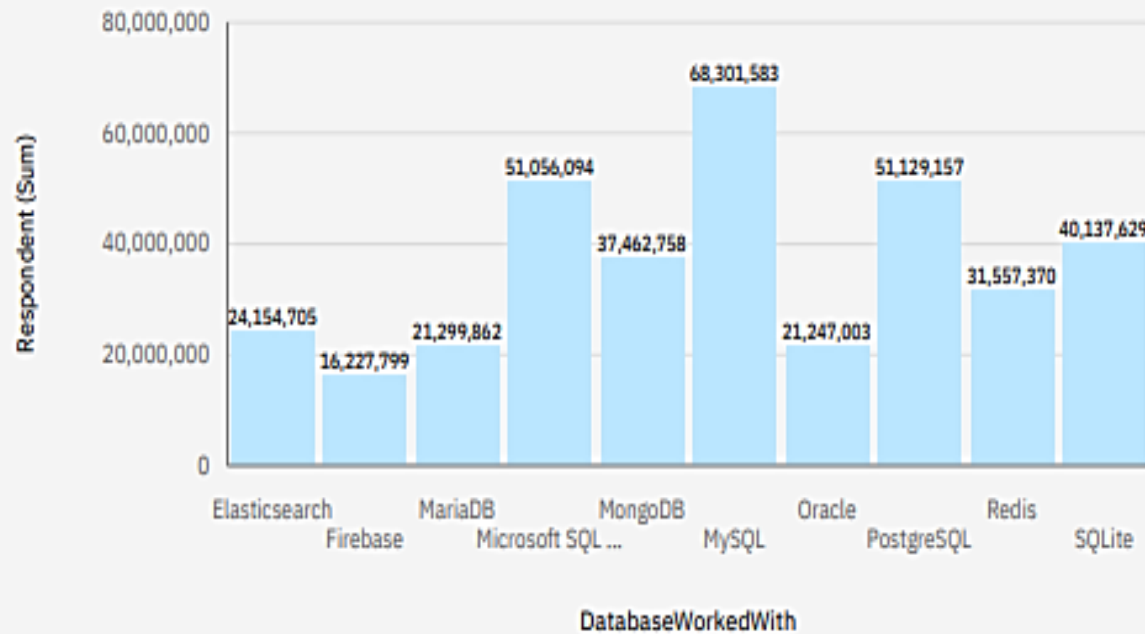
- Python is going to be a major player in future coding and software development
- Versatility and use cases of languages like Kotlin and Go need to be examined
- Continuing to work with Javascript is prudent



# DATABASE TRENDS

## Top Ten Databases Used

2



## Top Ten Databases Desired

6



# DATABASE TRENDS – FINDINGS & IMPLICATIONS

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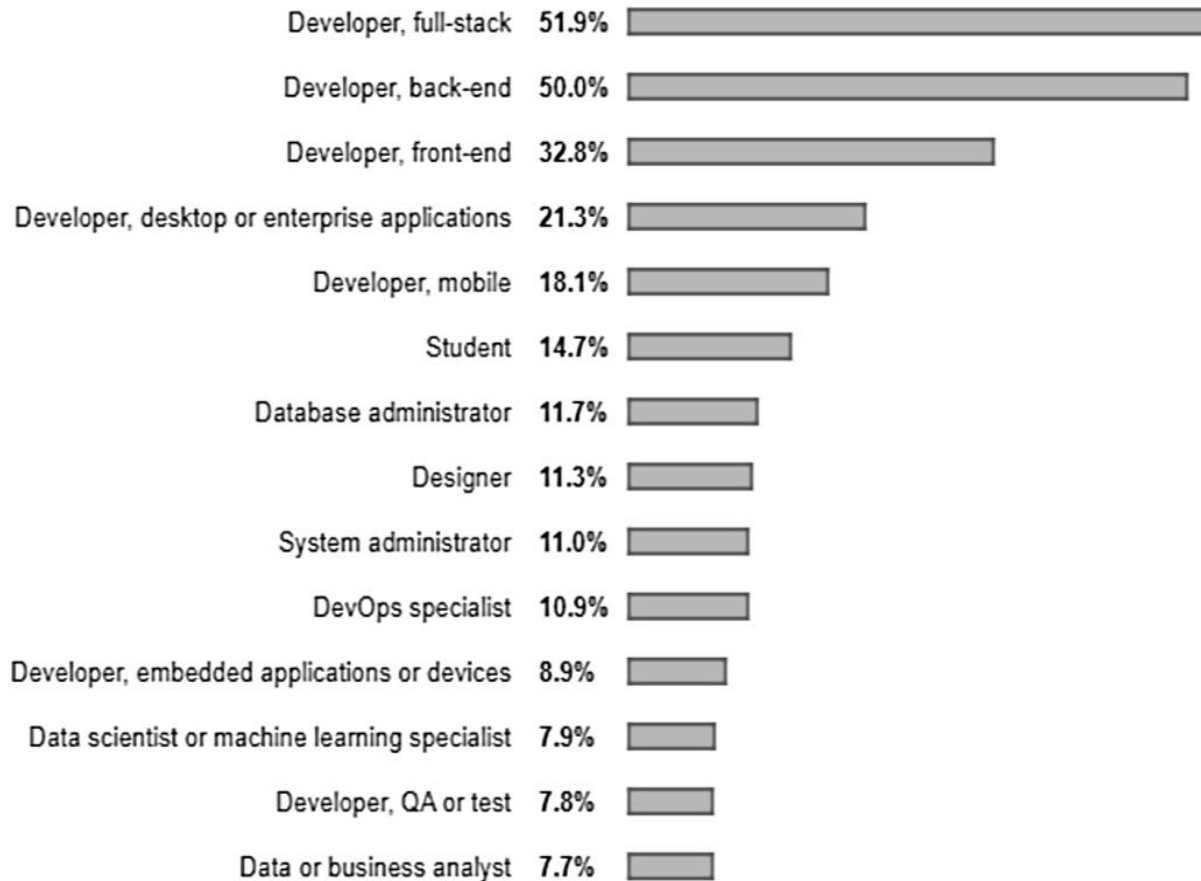
## Findings

- Mongo DB and Postgre SQL are showing great future growth
- Oracle seems to be falling out of favour
- Redis and Elasticsearch also show good potential
- MySQL and SQLite show some decline

## Implications

- Increased interest in NRDBs led by MongoDB and Redis needs to be evaluated for improved flexibility and scalability prospects
- Relational Database market's movement towards Postgre SQL and away from Oracle implies that cost is becoming a greater factor in choice of DB

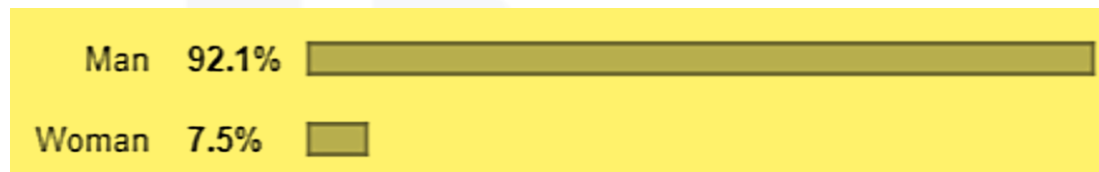
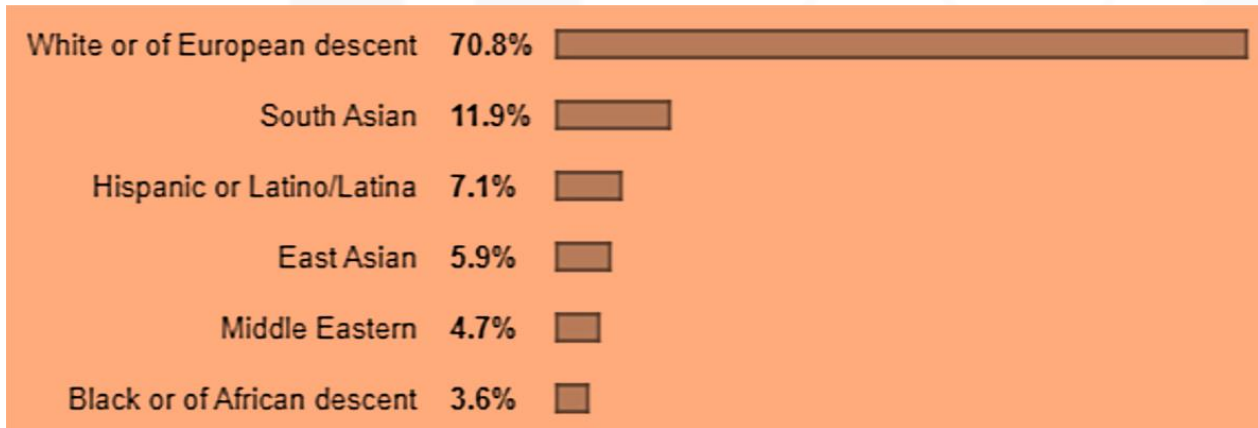
# DEVELOPER MARKET



- Numbers skew heavily towards greater availability of full-stack and back-end developers
- Data Scientists and Analysts show more limited supply

# DEVELOPER PROFILE

- Survey results bear out the imbalance in representation of females and minorities in this sector
- Potential for increased participation leading to an expansion in the Developer Market remains high



# DASHBOARD

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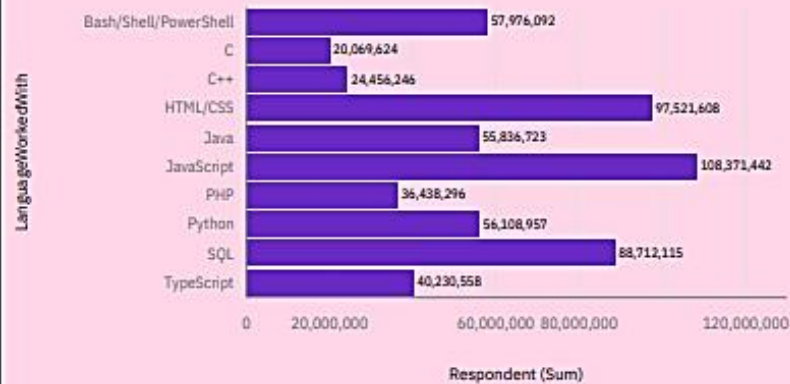
[https://github.com/schumitgf/IBM-Data-Analyst-5/blob/main/Capstone%20Dashboard%20\(RS\).pdf](https://github.com/schumitgf/IBM-Data-Analyst-5/blob/main/Capstone%20Dashboard%20(RS).pdf)

# DASHBOARD TAB 1

## Current Technology Usage

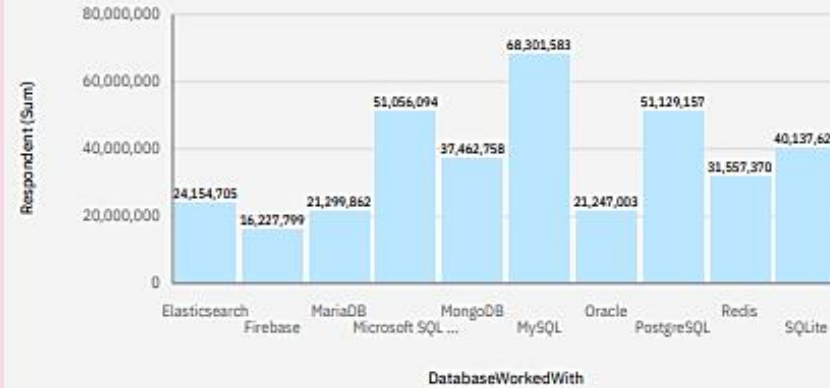
### Top Ten Languages Used

1



### Top Ten Databases Used

2



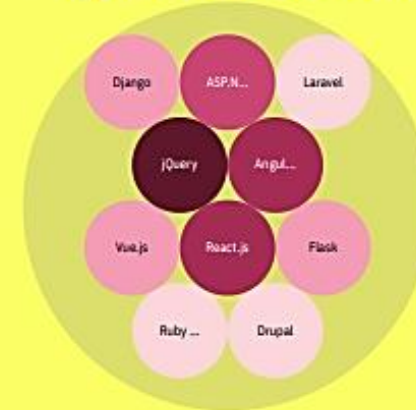
### Platforms Used

3



### Top Ten Web Frames Used

4

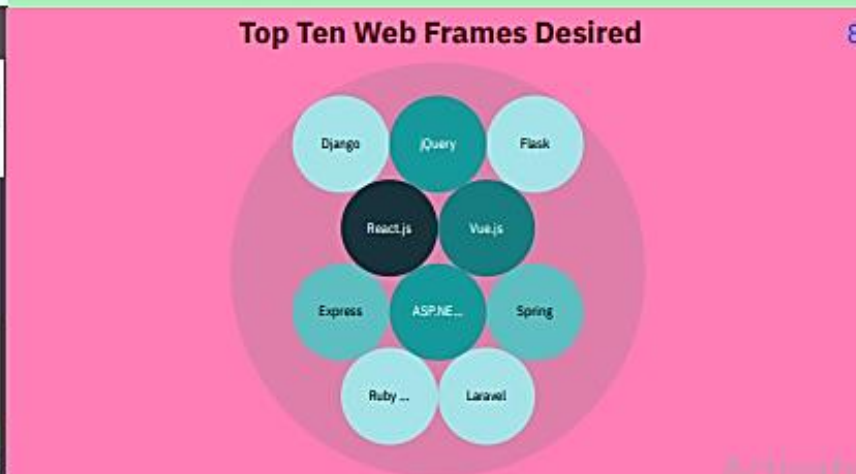
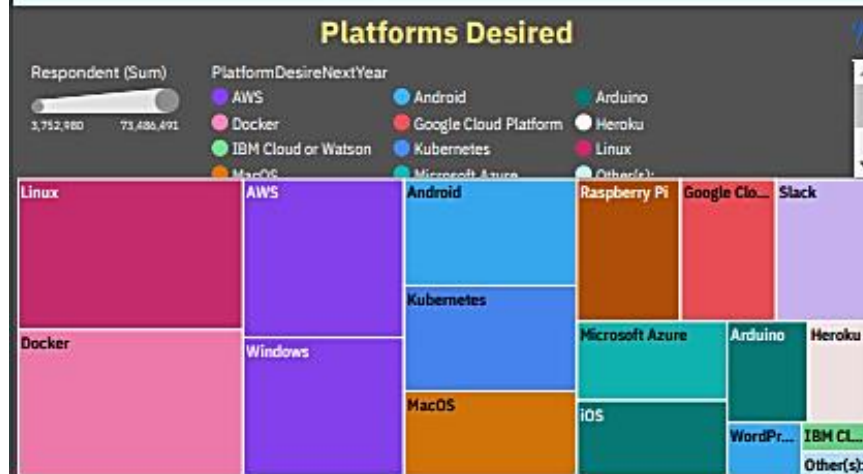
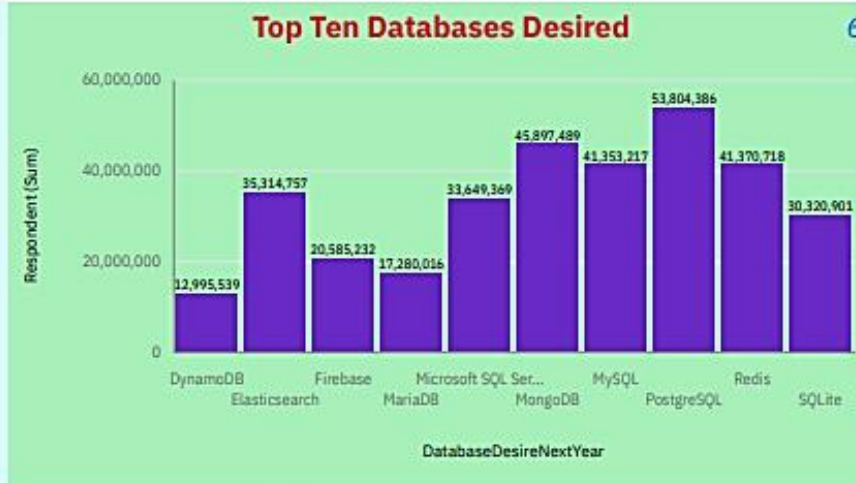
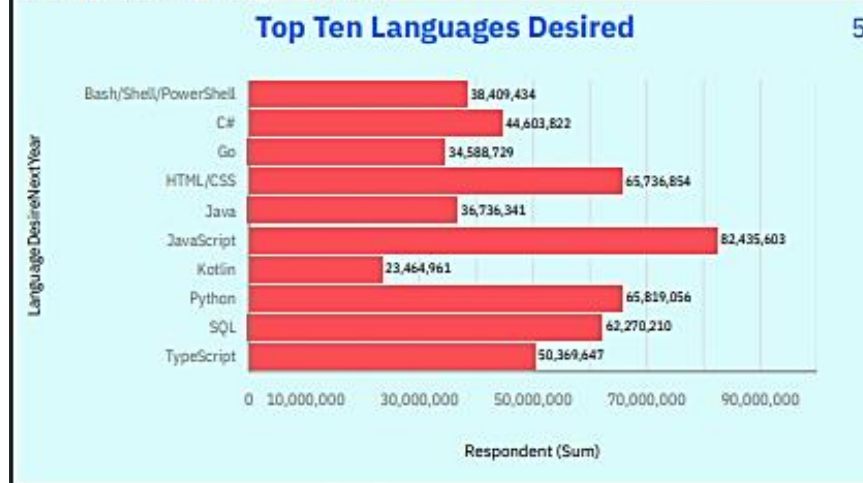


Activate



# DASHBOARD TAB 2

## Future Technology Trend



# DASHBOARD TAB 3

## Demographics

### Respondents by Gender

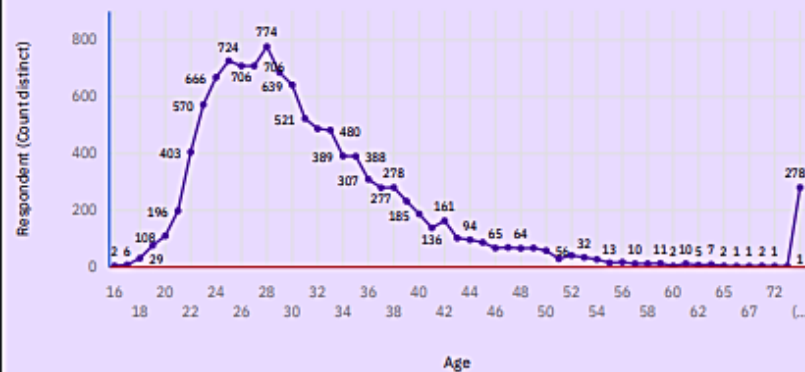
Gender  
Woman Man



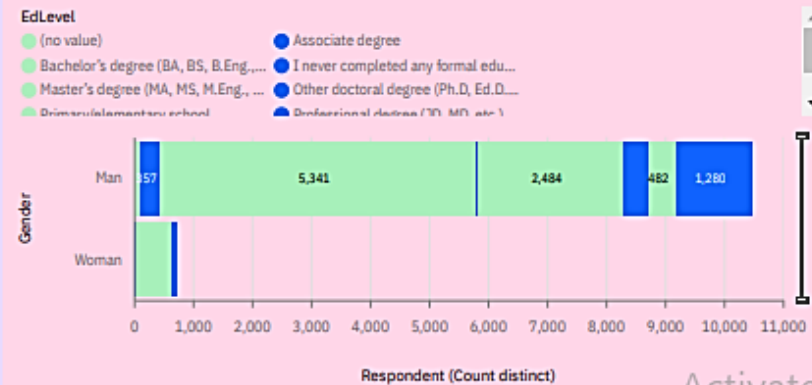
### Respondents by Country



### Respondents by Age



### Respondents by Education & Gender



# DISCUSSION

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The Stack Overflow Annual Survey, with over 90,000 participants representing 160+ countries throws up a lot of very interesting data. The complete Survey Results are available on the website should you wish to take a look at them.

# OVERALL FINDINGS & IMPLICATIONS

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## Findings

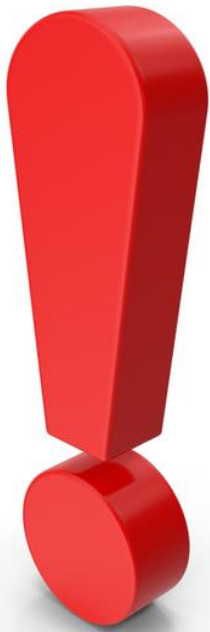
- Higher Salaries and greater Job movement for Developers
- Emerging Developer Supply in Asia and Africa
- The startling rise of Python
- Gender and Ethnic imbalance
- Increased interest in NRDBs

## Implications

- Increasing Job satisfaction is going to be a very important retention and recruitment tool
- Non-traditional markets are poised to add more and more fresh talent to the pool of developers, opening up Training and Development opportunities
- Python is going to be one of the most used coding languages going forward

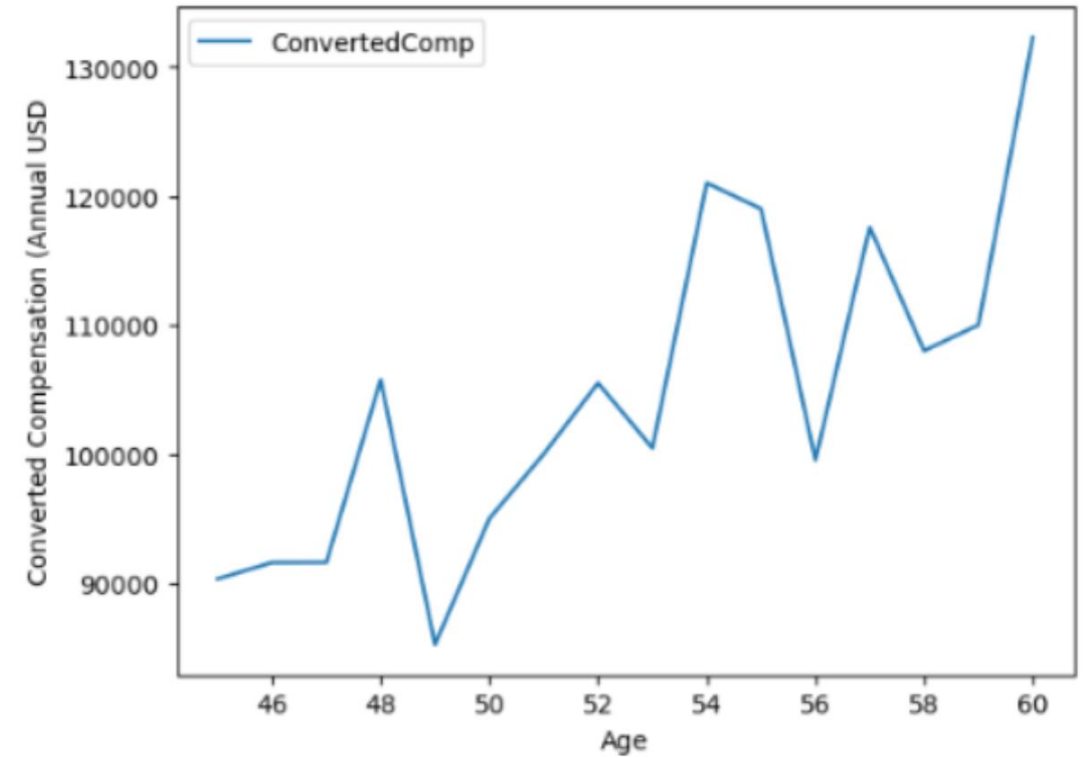
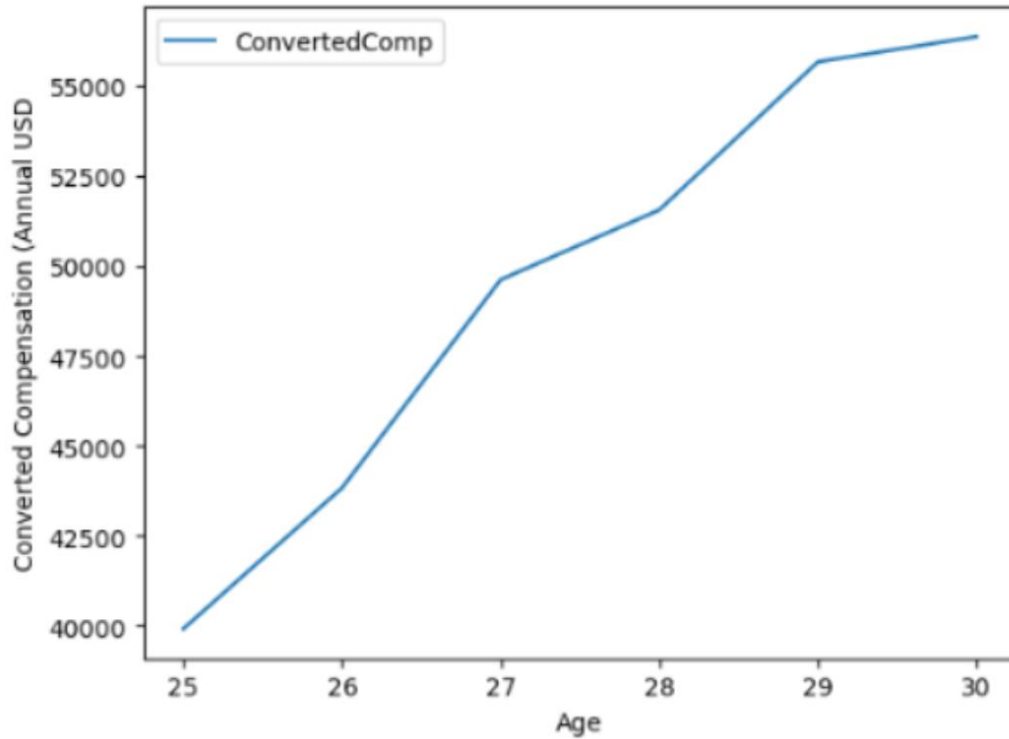
# CONCLUSION

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- The rate of change in this sector is very high, and requires close monitoring
- Growing global demand for developers and analysts can spur opportunities for marginalized groups
- Companies across all sectors need to keep up with the advances in programming and new software if they wish to compete
- Innovation and Adaptation are an integral part of success in today's world

# APPENDIX

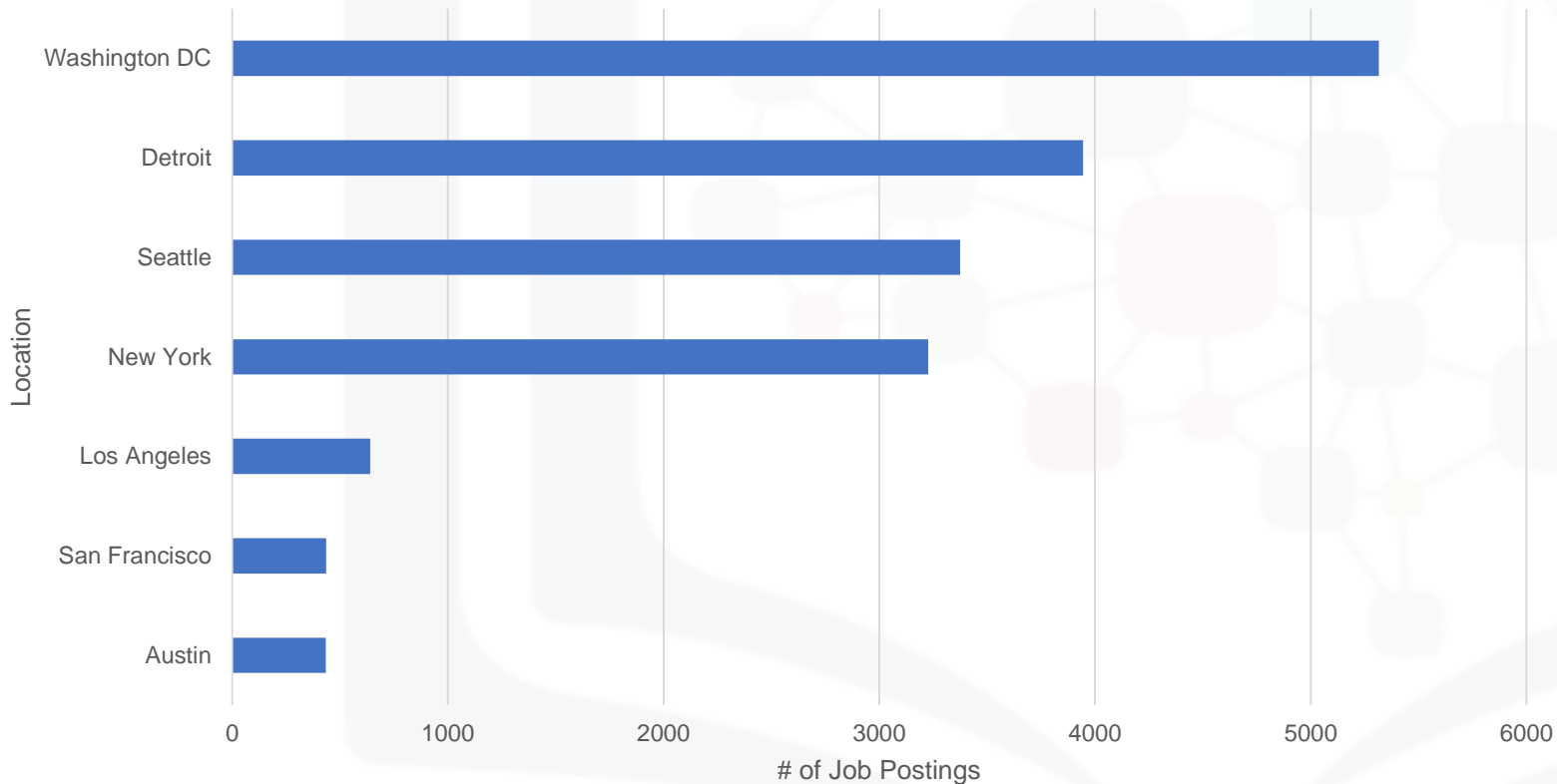


An interesting addendum was the contrast between the steady upward trend with Compensation for the group between 25-30 yrs of age, and the fluctuation in the same for the 45-60 yr age group.



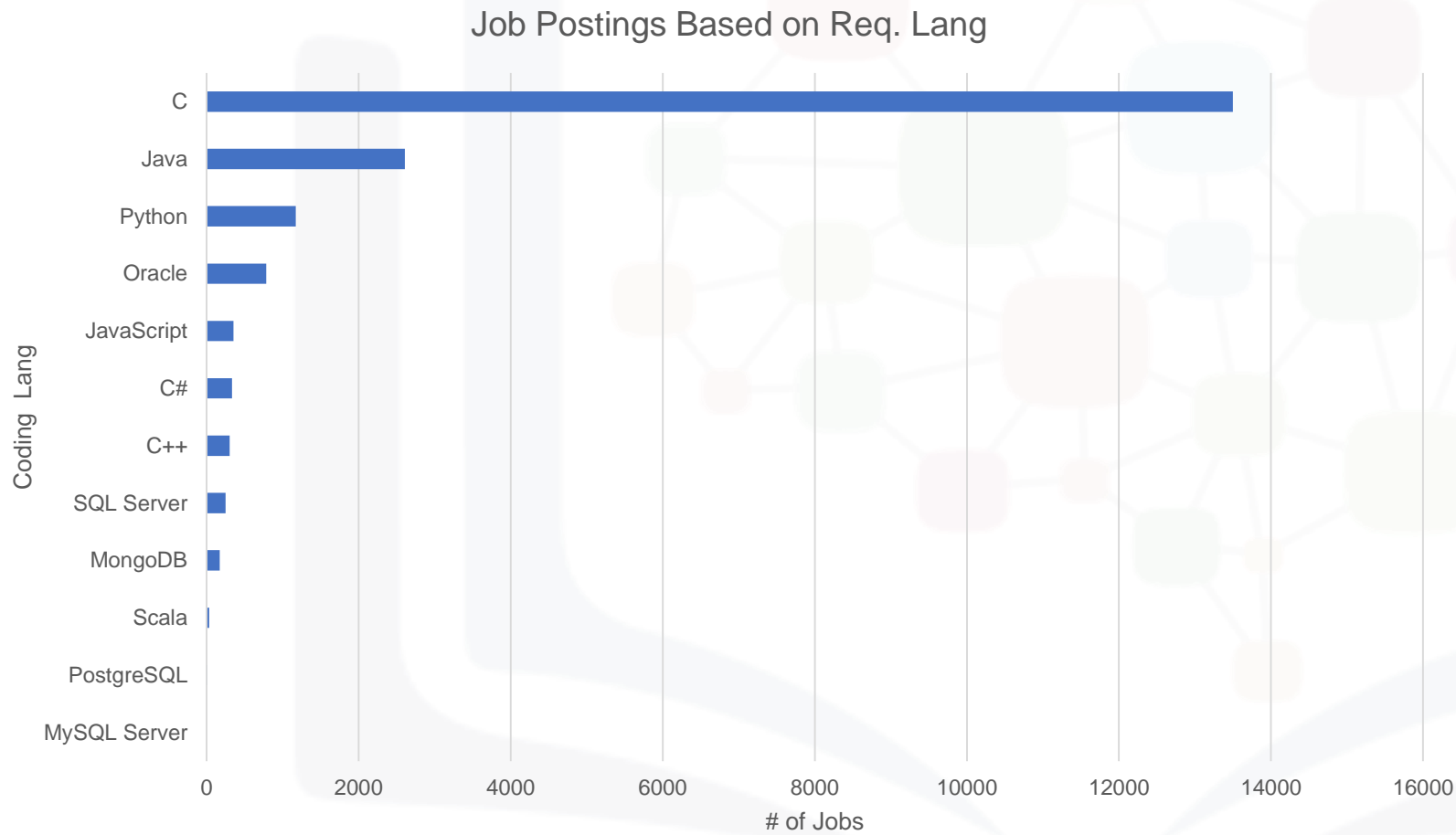
# JOB POSTINGS BASED ON LOCATION

Job Postings based on Location



In Module 1 you have collected the job posting data using Job API in a file named “job-postings.xlsx”. Present that data using a bar chart here. Order the bar chart in the descending order of the number of job postings.

# JOB POSTINGS BASED ON POPULAR LANGUAGES



In Module 1 you have collected the job postings data using web scraping in a file named “popular-languages.csv”. Present that data using a bar chart here. Order the bar chart in the descending order.

*Thank You For  
Your Time*