# Analysis of Emerging Technology Skills and Trends in the Global IT Sector


Presented By

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# OUTLINE

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

# EXECUTIVE SUMMARY

- **Objective:** Analyze global developer survey data to uncover trends in tech skills, tools, and aspirations.
- **Tools Used:** Python (Pandas, Seaborn), IBM Cognos Analytics for data cleaning, visualization, and dashboarding.
- **Key Insights:** ReactJS and PostgreSQL are highly desired; age, education, and geography influence developer preferences.
- **Visuals:** Dashboards include pie charts, bar graphs, bubble plots, and maps segmented by demographics.
- **Impact:** Supports data-driven decisions in tech hiring, education, and workforce development.

# INTRODUCTION

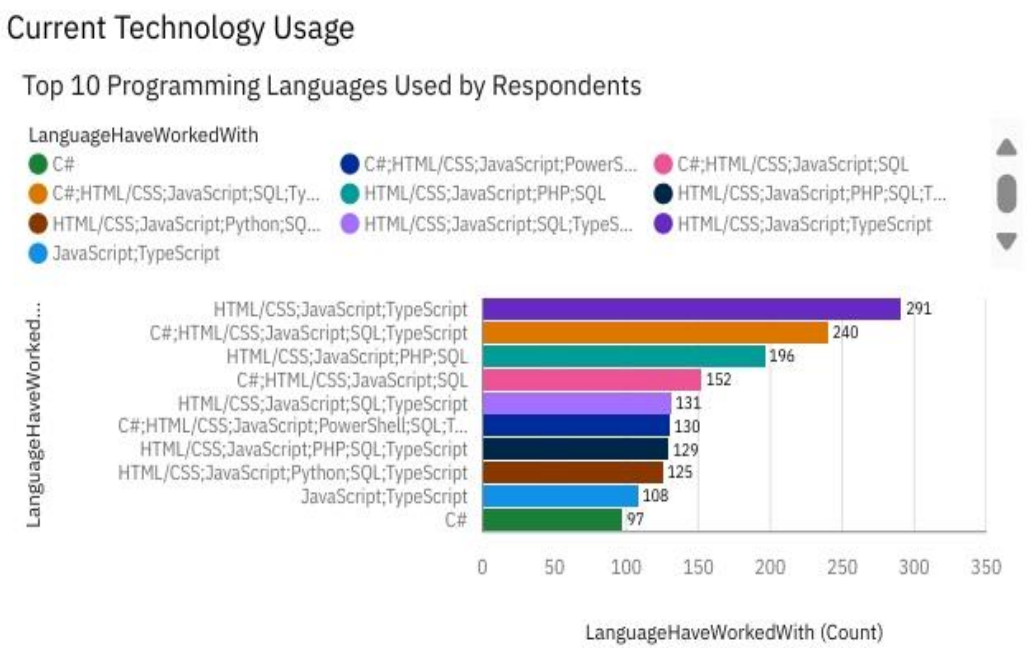
- To analyze global developer survey data and uncover trends in technology usage, learning goals, and demographics.
- The following inquiries were investigated using the data:
    1. Which programming languages are most in demand today?
    2. What are the most in-demand database skills?
    3. What popular IDEs or Web frames are there?
- Delivers segmented insights to support data-driven decisions in tech education, hiring, and workforce planning.

# METHODOLOGY

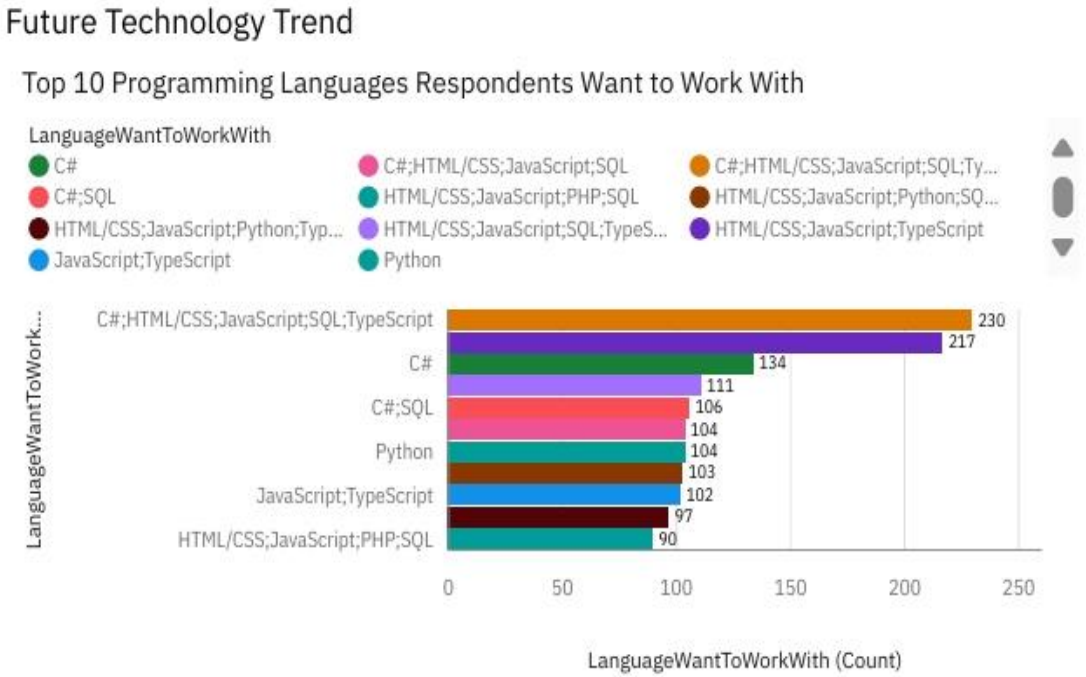
- **Data Collection:** Used real-world developer survey data sourced from Skills Network Labs and IBM datasets.
- **Data Cleaning:** Applied Python (Pandas, NumPy) to handle missing values, filter outliers, and standardize formats.
- **Visualization:** Created segmented plots using Matplotlib and Seaborn to highlight trends across age, education, and geography.
- **Dashboarding:** Built interactive dashboards in IBM Cognos Analytics to present insights through maps, charts, and filters.

# PROGRAMMING LANGUAGE TRENDS

## Current Year




## Next Year



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

## Findings

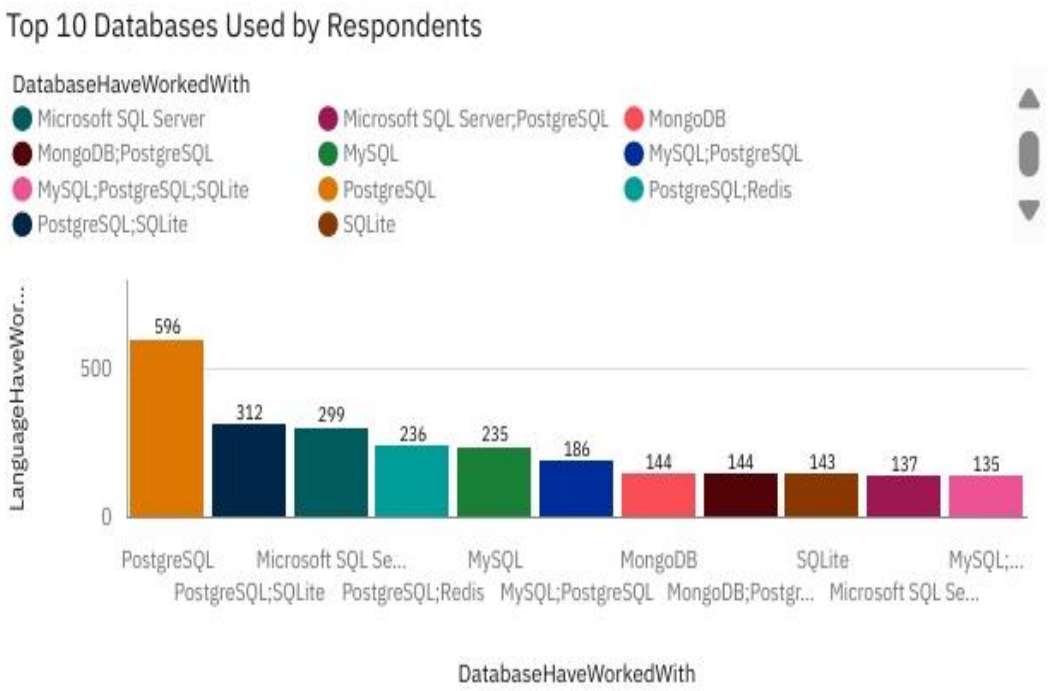
- **Most Used Currently:** JavaScript, HTML/CSS, SQL, Shell languages, and Python dominate current usage among developers.
- **Future Demand:** JavaScript, HTML/CSS, Python, SQL, and TypeScript are projected to be the most desired languages in upcoming years.
- **Python's Rise:** Python is expected to surpass SQL in demand due to its versatility in AI, ML, and data science applications.

## Implications

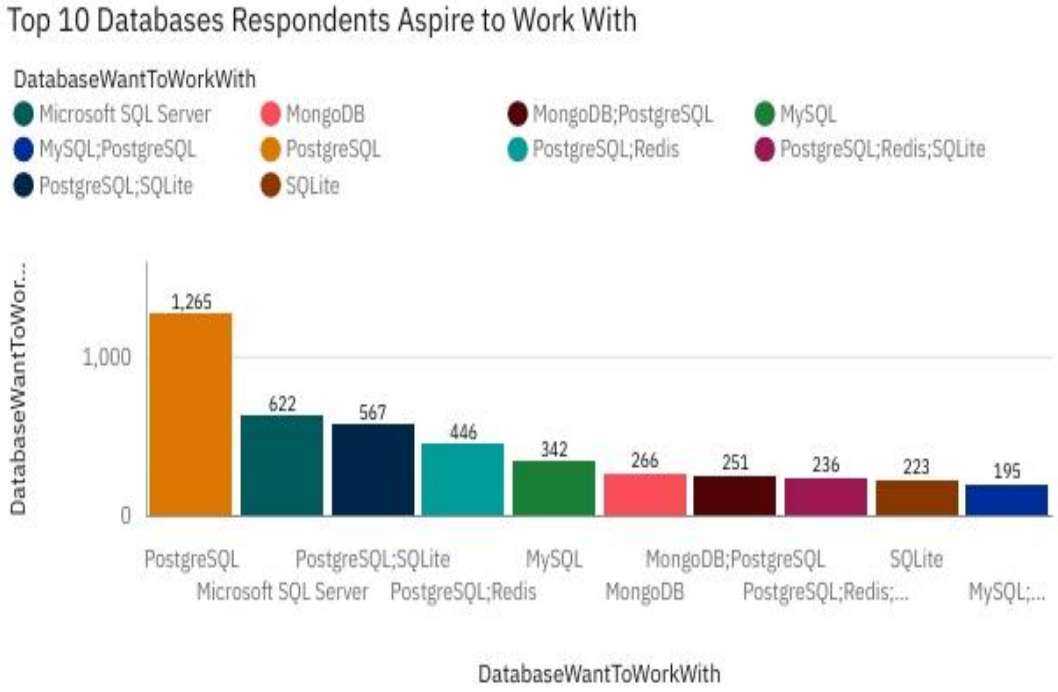
- **Web Development Leads:** High usage of JavaScript, HTML/CSS, and TypeScript signals strong demand for web development skills.
- **AI/ML Growth:** Python's rising popularity reflects the expanding need for AI and machine learning expertise across industries.
- **SQL Still Essential:** Despite Python's growth, SQL remains a foundational skill for data professionals—critical for analysts, scientists, and business intelligence roles.

# DATABASE TRENDS

## Current Year




## Next Year



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

**Findings**

- **Current Usage:** MySQL, Microsoft SQL Server, PostgreSQL, SQLite, and MongoDB are the most widely used databases among developers.
- **Future Demand:** PostgreSQL, Redis, SQLite, MySQL, and Elasticsense are projected to gain popularity in the coming years.
- **Emerging Tools:** Redis and Elasticsense are relatively new but show strong growth potential in the IT space.

**Implications**

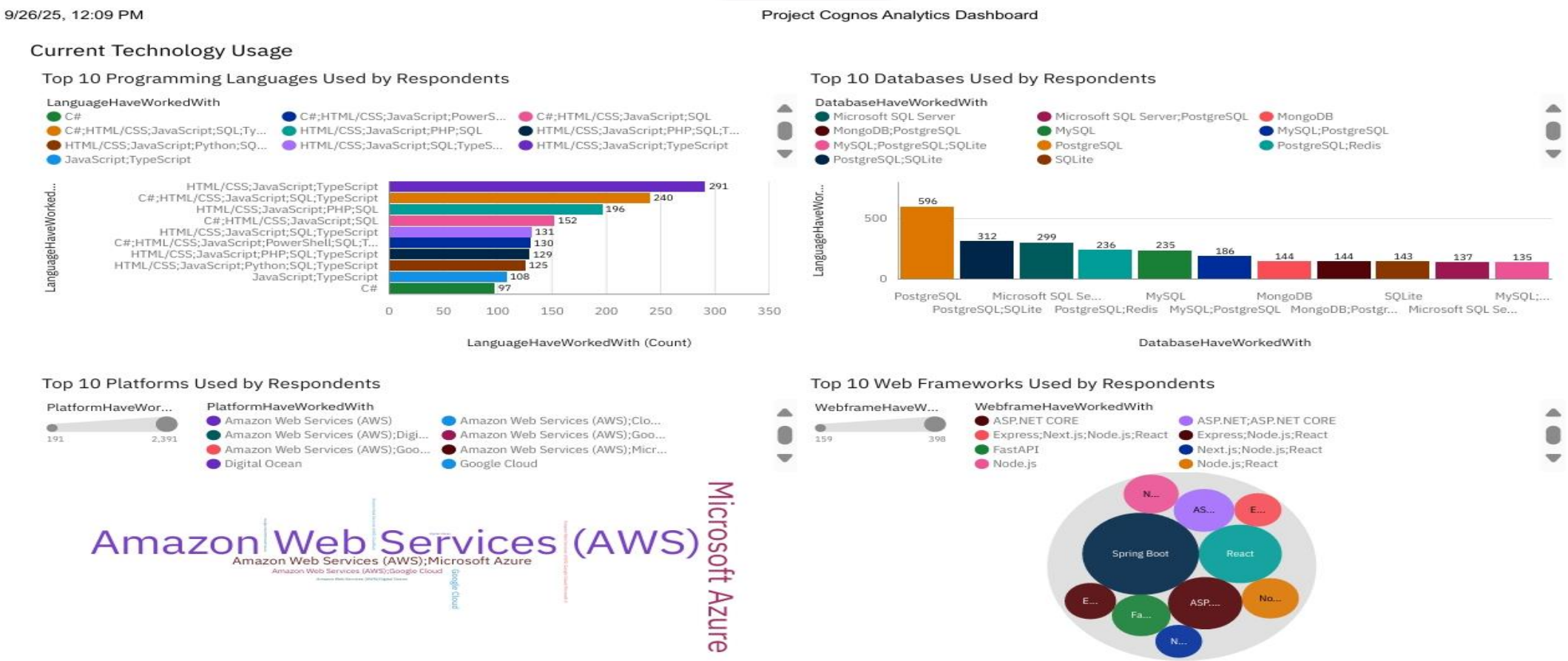
- **SQL Still Dominates:** SQL-based databases remain essential for data professionals, especially in analytics and business intelligence roles.
- **Open Source Preference:** Companies increasingly favor open-source databases like PostgreSQL and Redis for flexibility and cost-efficiency.
- **Decline of Oracle SQL:** Oracle SQL is notably absent from the top 5, suggesting a gradual decline in its industry relevance.

# DASHBOARD

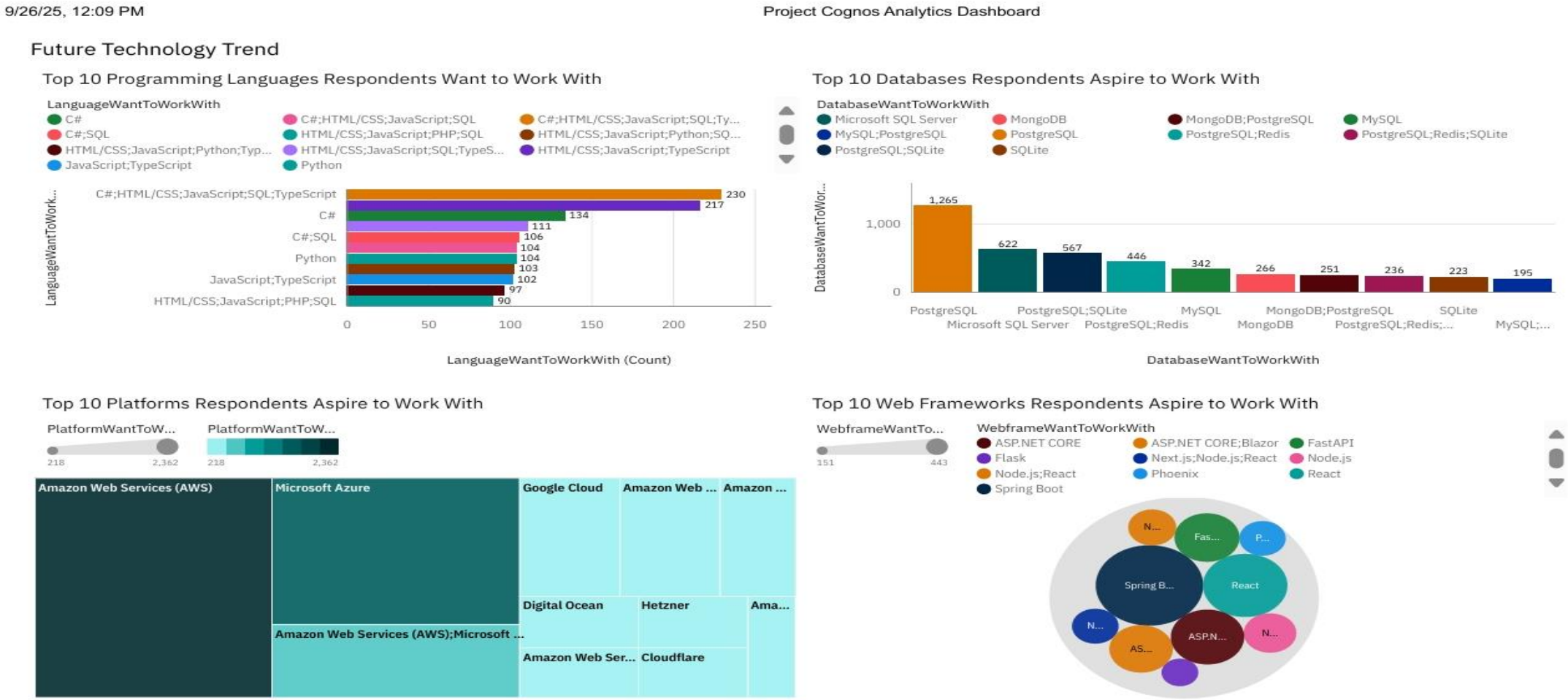
The permanent link of the Cognos dashboard:

https://github.com/meghana-mathad/Ibm-Data-Analyst-Capstone-Project.git

# DASHBOARD TAB 1



# DASHBOARD TAB 2



# DASHBOARD TAB 3

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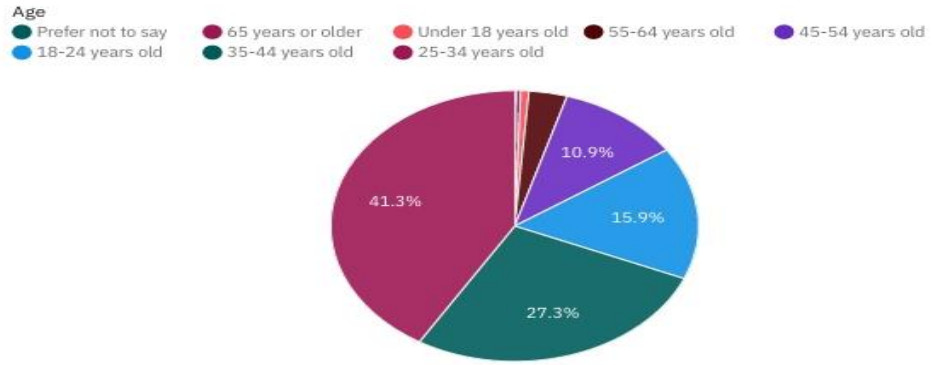
Project Cognos Analytics Dashboard

## Demographics

### Respondent Distribution by Age




### Respondent Count by Country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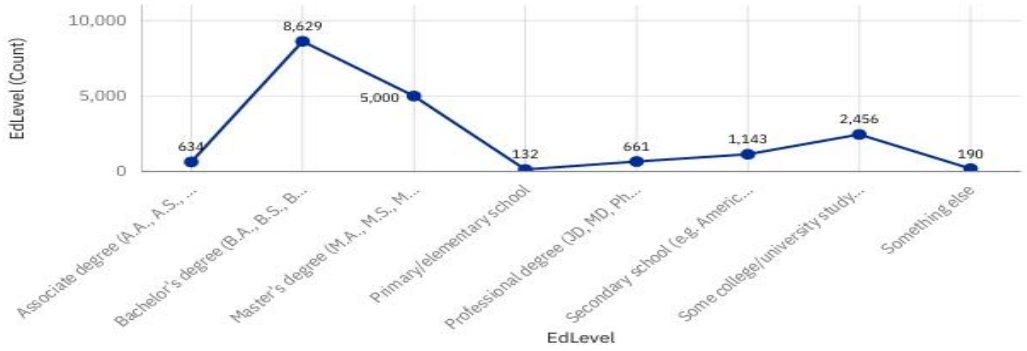
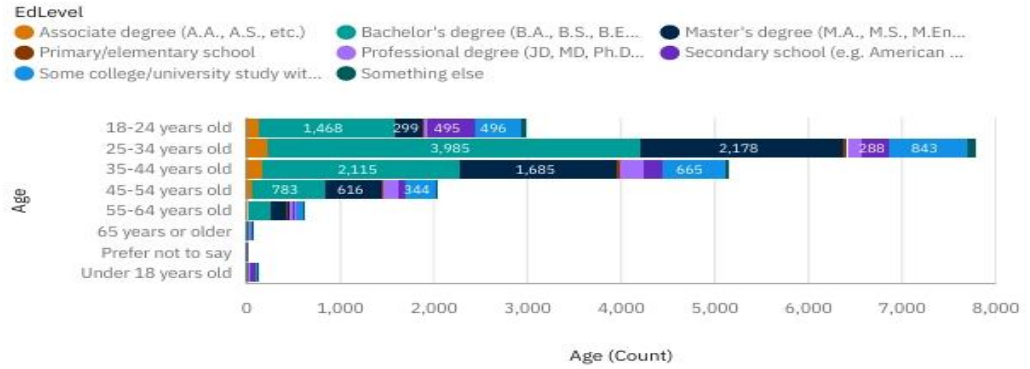



### Respondent Count by Age and Education Level



# DISCUSSION

- **Upskilling is essential** to stay relevant in the fast-evolving tech landscape.
- **Gender gap remains wide** in the IT sector—calls for inclusive education and hiring.
- **Advanced degrees** (Master's/PhD) may not be mandatory for tech success.
- **Mobile development is rising**, with Kotlin gaining popularity among developers.
- **Tech access is uneven**, especially in parts of Southeast Asia, South America, and Africa.
- **Oracle SQL's relevance is declining**, as open-source databases gain traction.

# OVERALL FINDINGS & IMPLICATIONS

## Findings

- **Web development tools** like JavaScript, HTML/CSS, and SQL are the most widely used and desired across respondents.
- **Most professionals hold a Bachelor's degree**, with a majority under the age of 40.
- **PostgreSQL and ReactJS** are the top technologies respondents want to learn next.

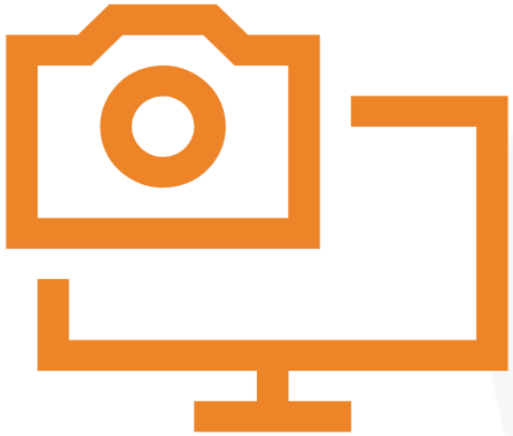
## Implications

- **Web development remains highly lucrative**, making it a strategic skill for career growth.
- **Young, self-taught professionals** are shaping the future of tech—flexible learning paths matter.
- **NoSQL and open-source databases** are gaining traction, urging data professionals to diversify their skills.

# CONCLUSION

- **Staying updated is essential**—technology trends shift rapidly, demanding continuous learning.
- **Web development and Python** remain dominant skills, with growing demand in AI and data science.
- **Open-source tools like PostgreSQL and Redis** are gaining traction, signaling a shift from legacy systems.
- **Tech access and education** must expand globally to bridge gaps in less developed regions.

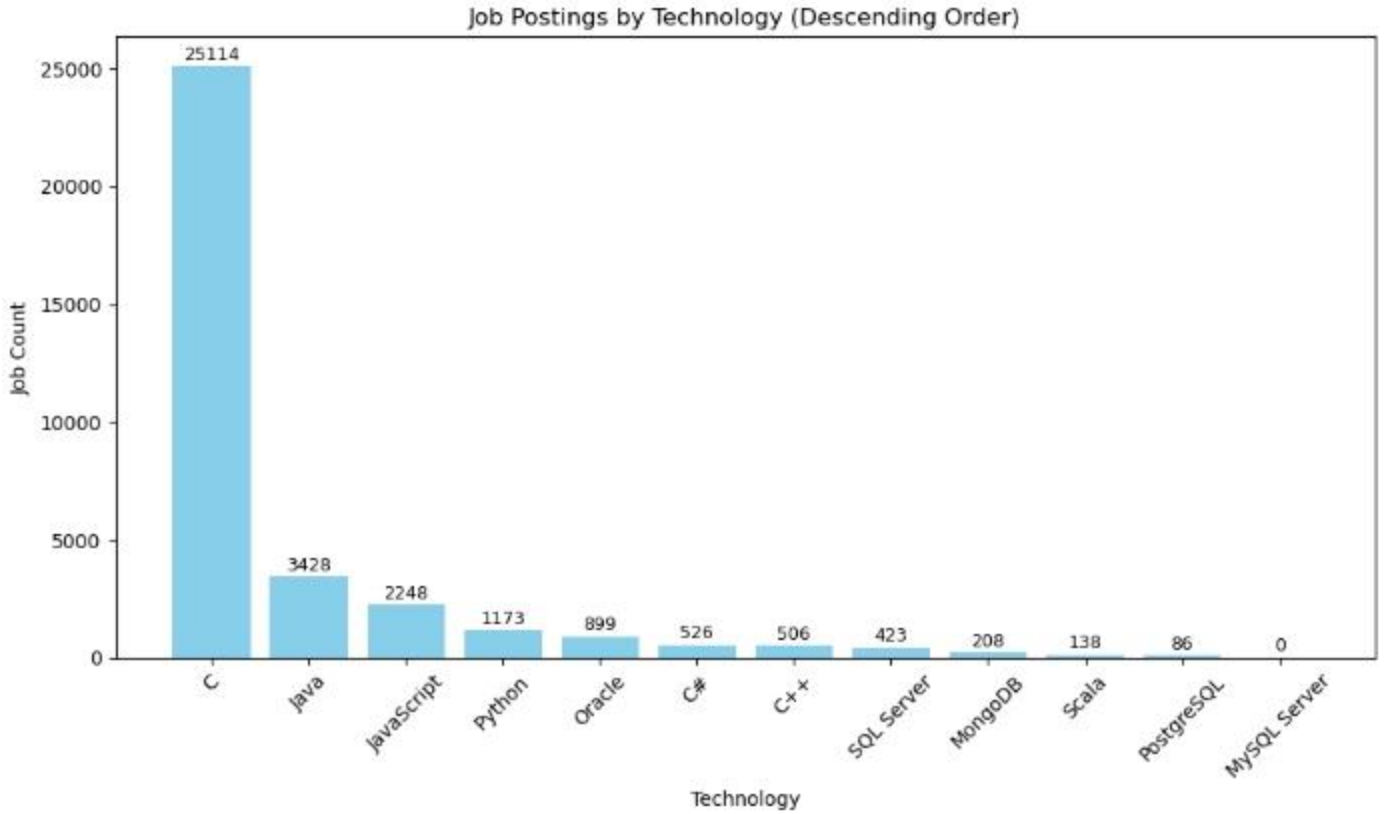
# APPENDIX



**Bar Graphs Showing :**

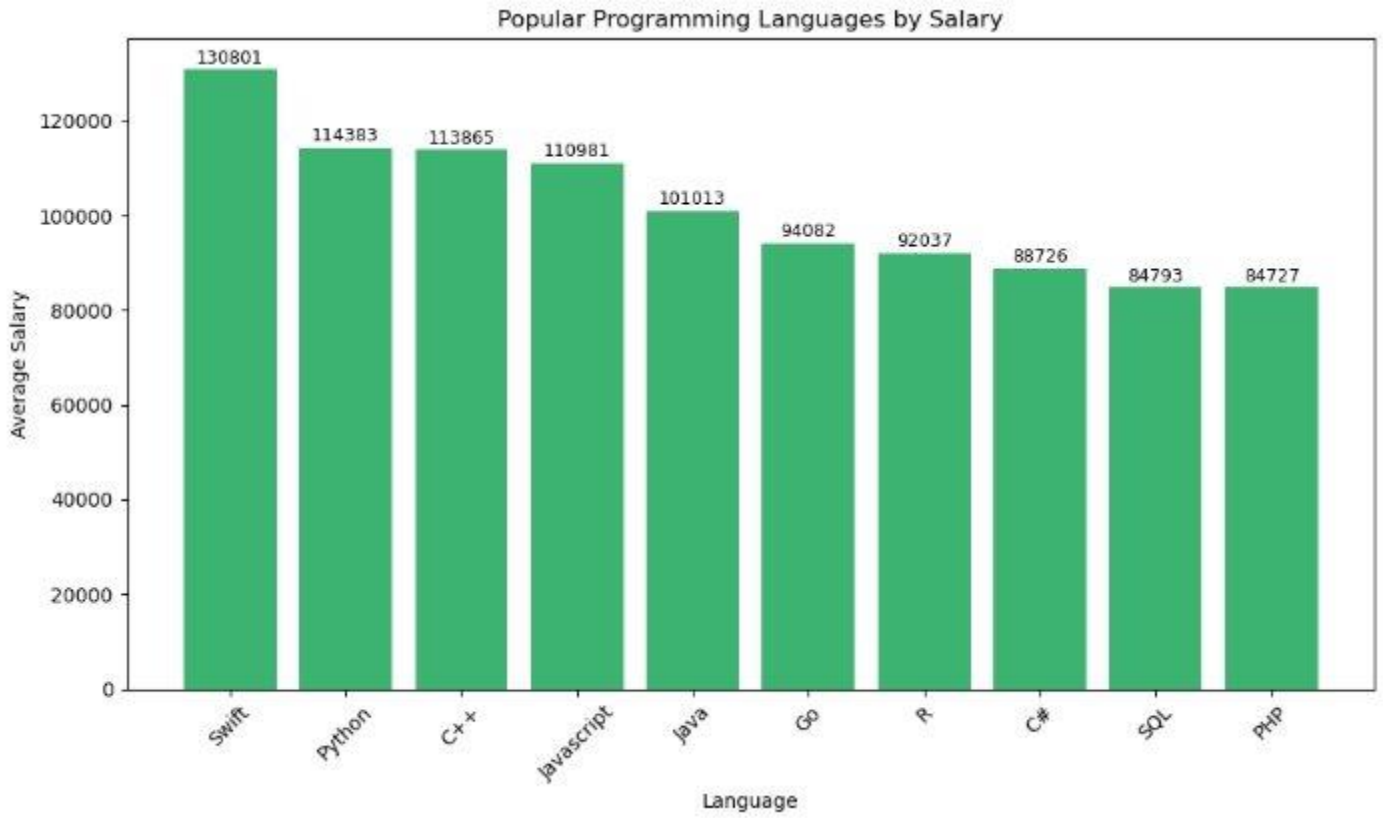
- Job Postings by Technology (Descending Order)
- Popular Programming Languages by Salary (Descending Order)

# JOB POSTINGS




Bar chart presenting the Job Postings by Technology (Descending Order) data collected using Github Job API.

# POPULAR LANGUAGES




Bar chart displaying popular languages and their average annual salary. The data was collected through web scraping the Github jobs data.