Analyzing Emerging IT Skills

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OUTLINE

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

- **Methodologies**
  - Data collection
  - Data wrangling
  - EDA analysis
  - Visualization
  - Dashboard creation
- **Key findings**
  - **JavaScript** emerged as the dominant programming language respondents worked with.
  - Rising popularity and demand towards the usage of **Python**.
  - Significant **gender** imbalance, with men representing a dominant 93.7% in listings.

INTRODUCTION

- **Context**
  - Recently joined a leading global IT firm known for its innovative IT solutions and a team of talented IT consultants.
- **Objective**
  - This project aims to analyze data to predict future skill requirements that will keep our organization competitive in the market.
- **Scope**
  - Uncover top in-demand programming languages.
  - Discover the most popular database skills.
  - Reveal the relevant integrated development environments (IDEs).

METHODOLOGY

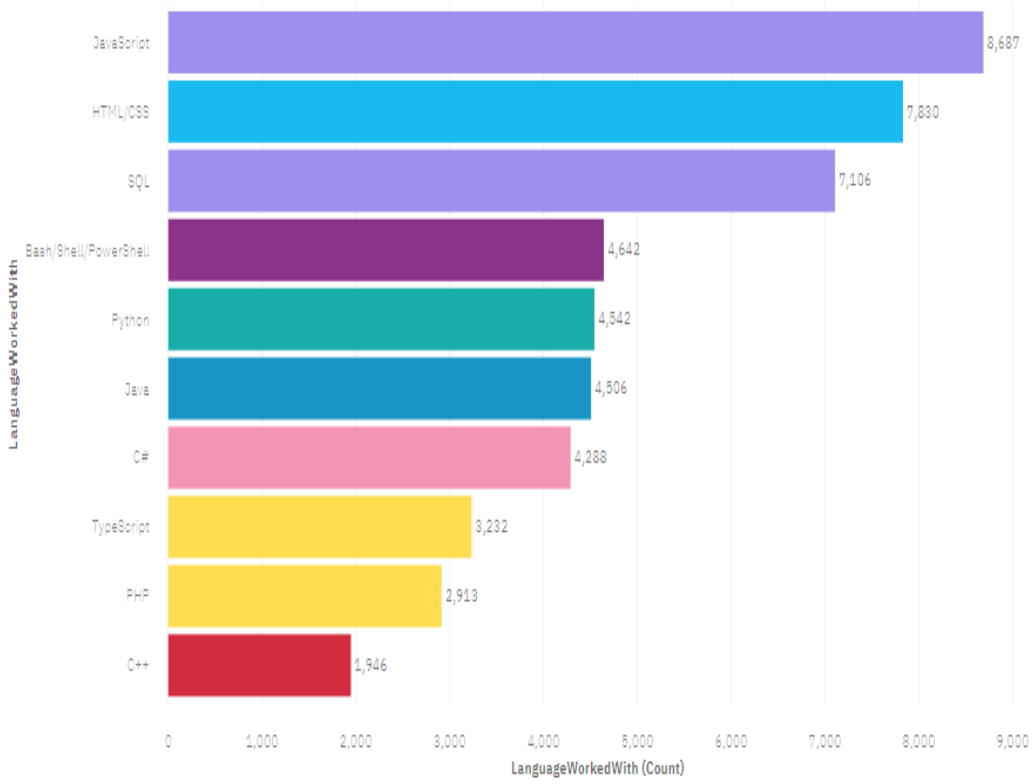
- **Data collection**
  - Subset of Stack Overflow Developer Survey 2019
- **Perform data wrangling**
  - Removed duplicates and imputed missing values
  - Data normalization to improve data integrity
- **Perform exploratory data analysis (EDA)**
  - Used seaborn visualizations to find outliers
- **Perform data visualizations using SQL**
  - Highlighting trends, relationships, and distribution
- **Creating three dashboards using Cognos**
  - Current Technology Usage, Future Technology Trend, and Demographics

RESULTS

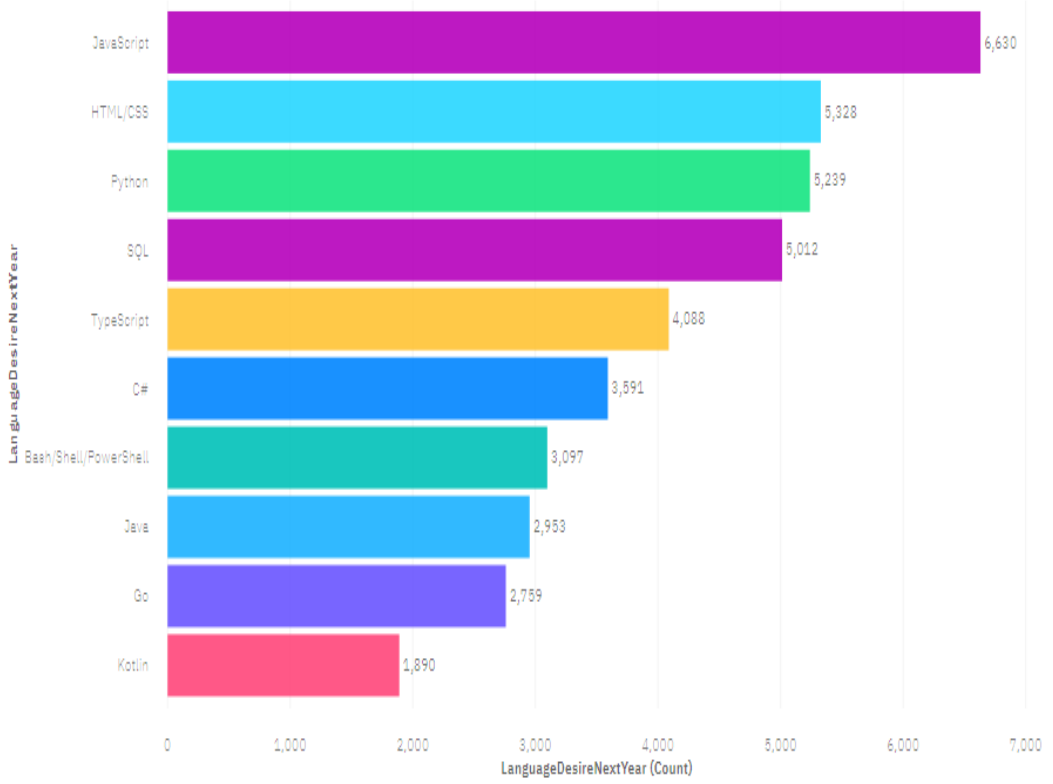
- JavaScript is the most popular current year and desired next year language.
- Python, DynamoDB, Docker, and React.js have the highest growth.
- MySQL is the most popular current year and PostgreSQL is the most desired next year.
- Men dominate the listings at 93.7%, majority aged 22-35, and have a bachelor's degree.
- Linux is the most popular OS in tech.
- jQuery is the current year most popular web framework.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

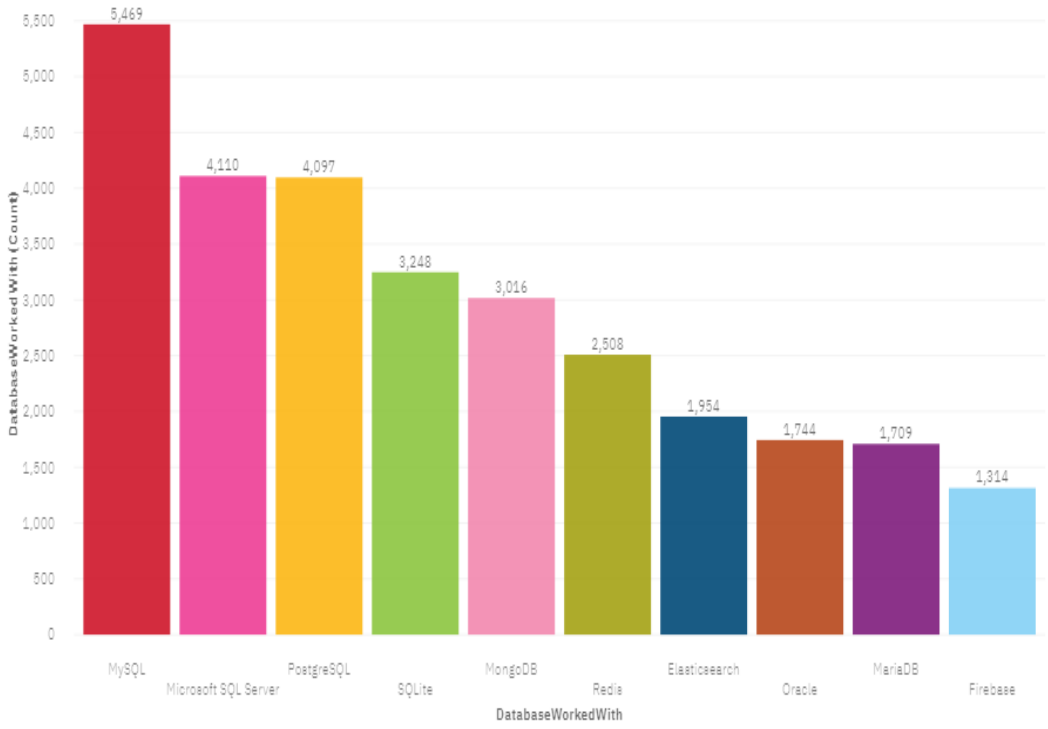
- Python saw a significant rise in its rank from the current to the next year.
- Kotlin and Go entered the top 10 list for the first time, indicating emerging trends.
- PHP and C++ no longer feature in the “current year” top 10 list, hinting at a possible decline in popularity.

Implications

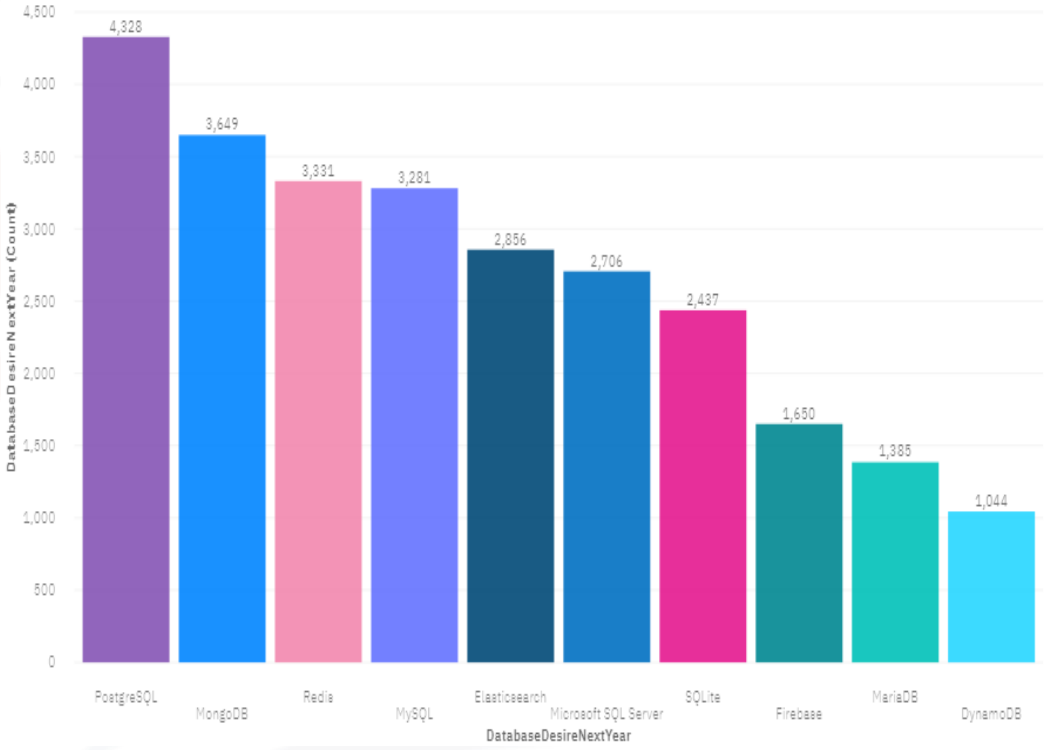
- To stay ahead, organizations should amplify their training initiatives around Python.
- Recruiters should look for talents skilled in Kotlin and Go for future tech development needs.
- Organizations should reconsider investments centered around PHP and C++.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- PostgreSQL's move to the top indicates a growing preference for its advanced capabilities and features.
- MySQL's drop in ranking, hints at changing industry trends.
- DynamoDB entered the top 10 list for the first time while Oracle exited, suggesting a preference for cloud-native solutions.

Implications

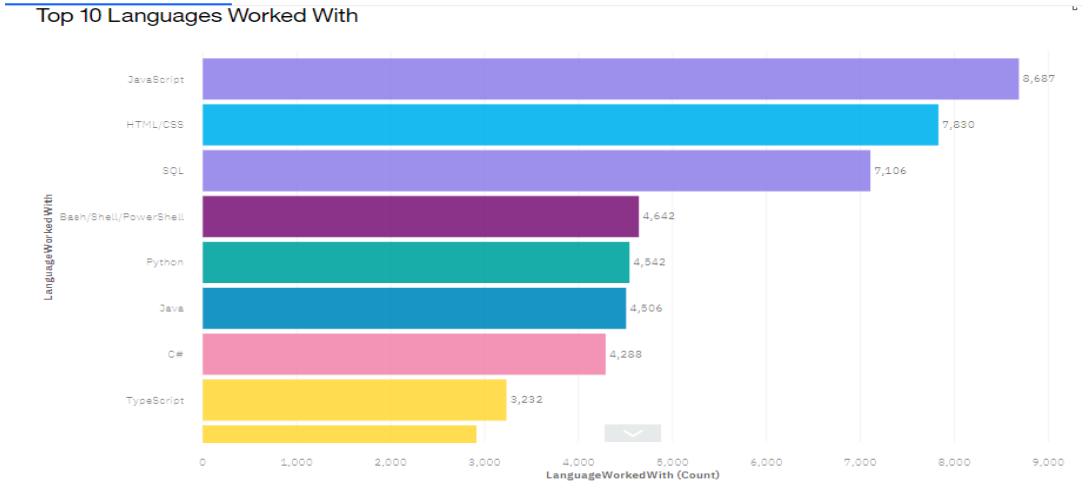
- Organizations might benefit from switching to feature-rich databases like PostgreSQL.
- Organizations should re-evaluate their investments in databases that may be losing relevancy.
- Organizations should consider switching to cloud-native databases like DynamoDB by AWS to remain scalable.

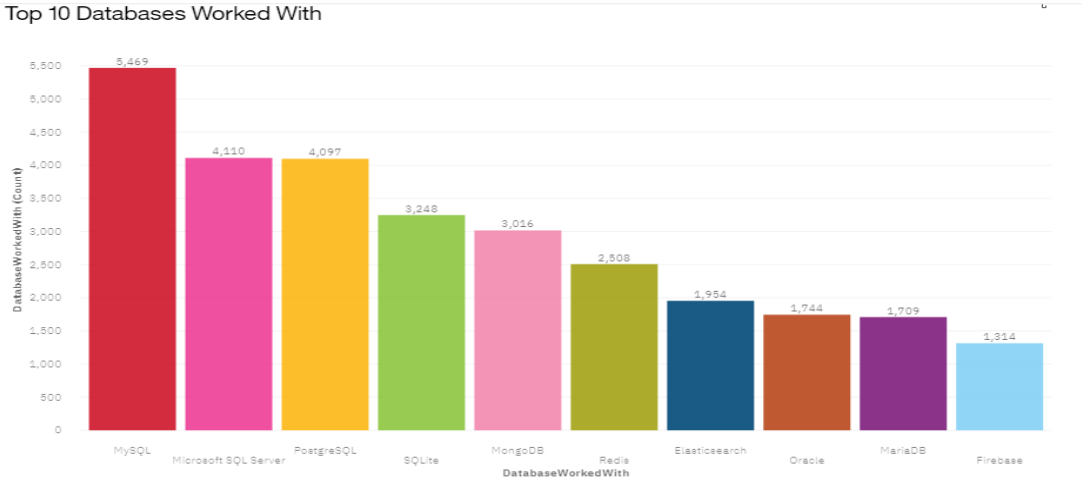
DASHBOARD

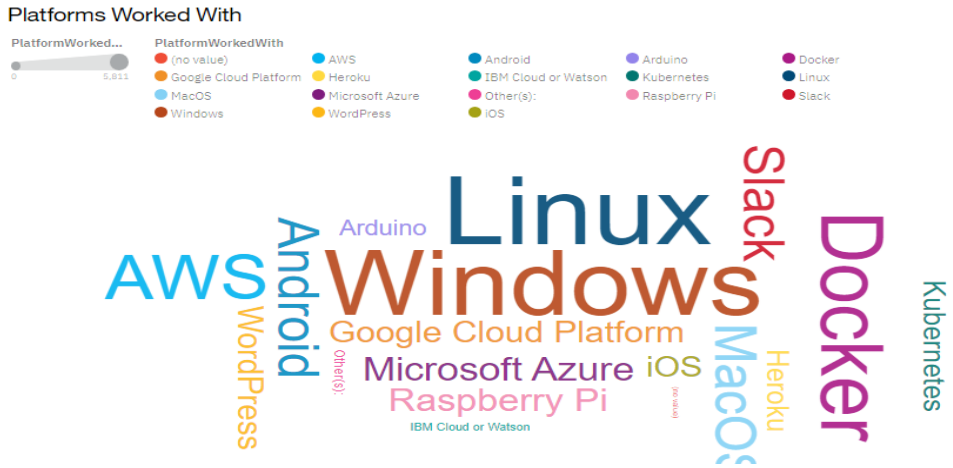
Cognos Dashboard Link

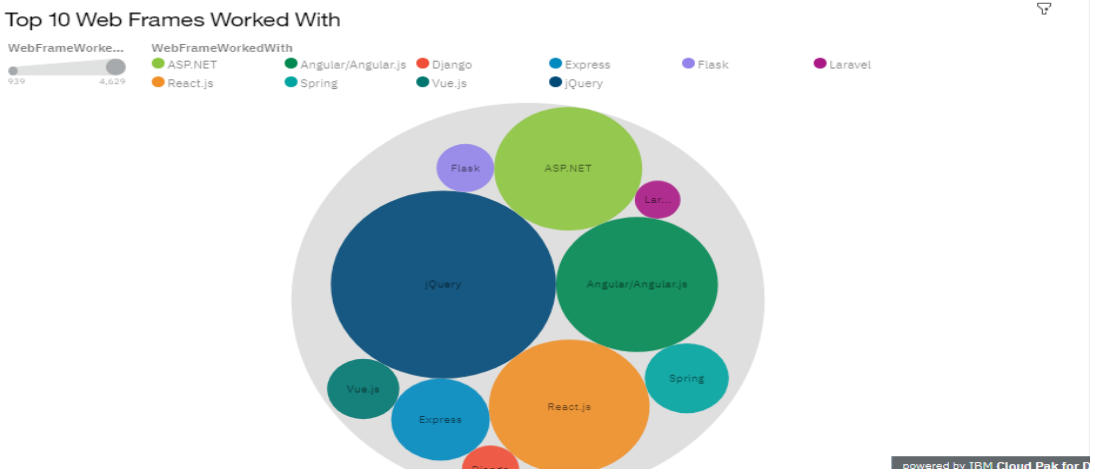
DASHBOARD TAB 1

CurrentTechnologyUsage | FutureTechnologyTrend | Demographics









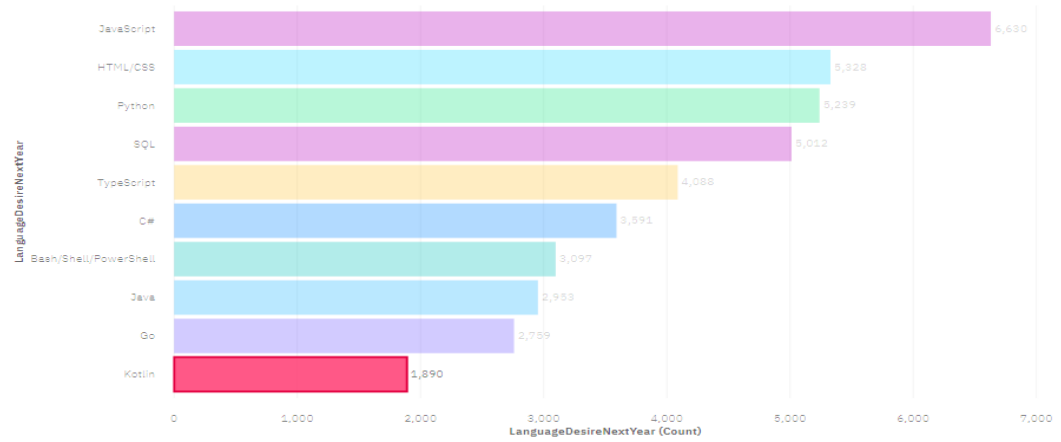
IBM Developer

SKILLS NETWORK

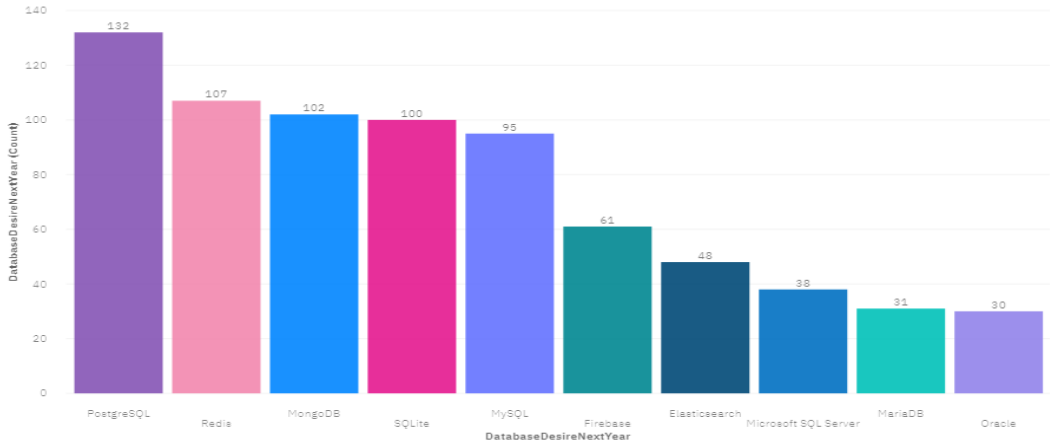
DASHBOARD TAB 2

CurrentTechnologyUsage | FutureTechnologyTrend | Demographics

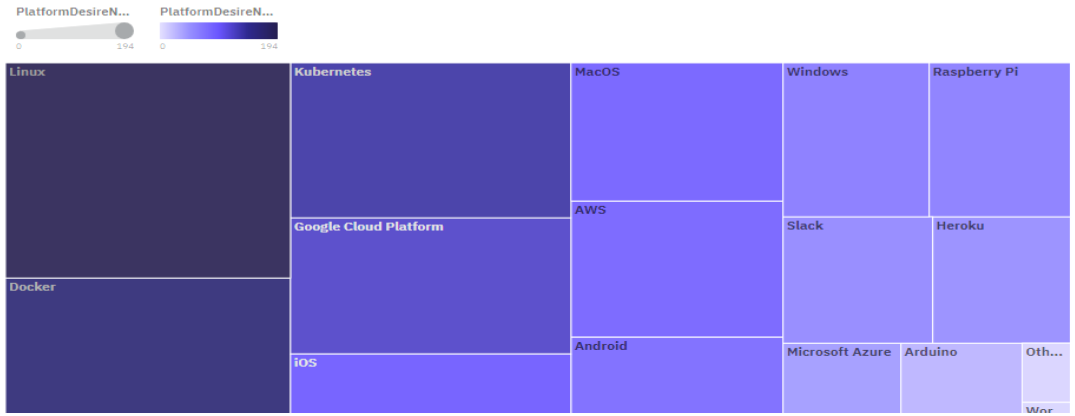
Top 10 Language Desire Next Year



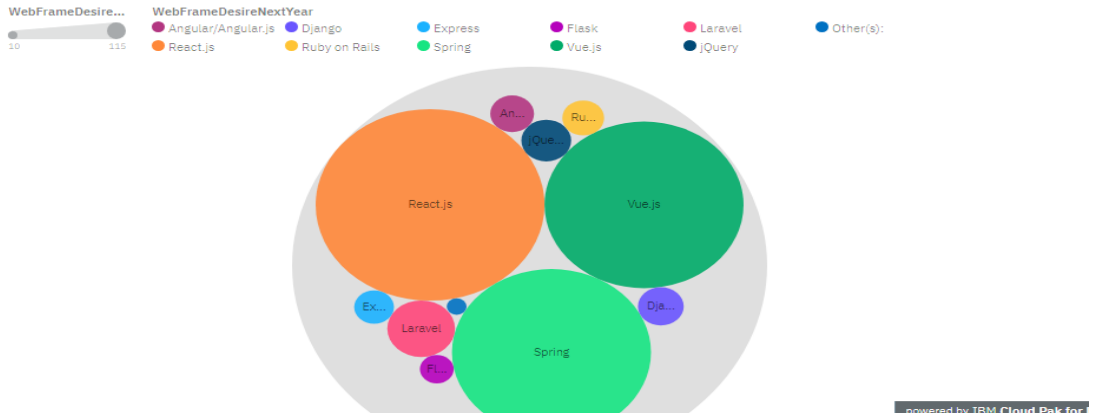
Top 10 Database Desire Next Year



Platform Desire Next Year



Top 10 Web Frame Desire Next Year



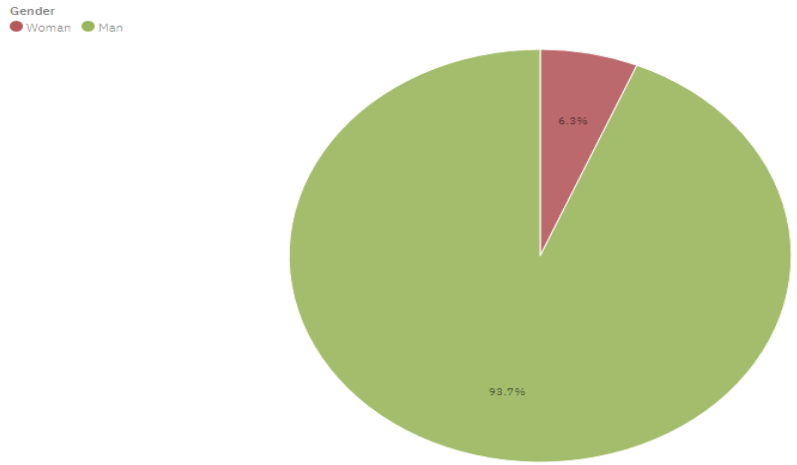
IBM Developer

SKILLS NETWORK

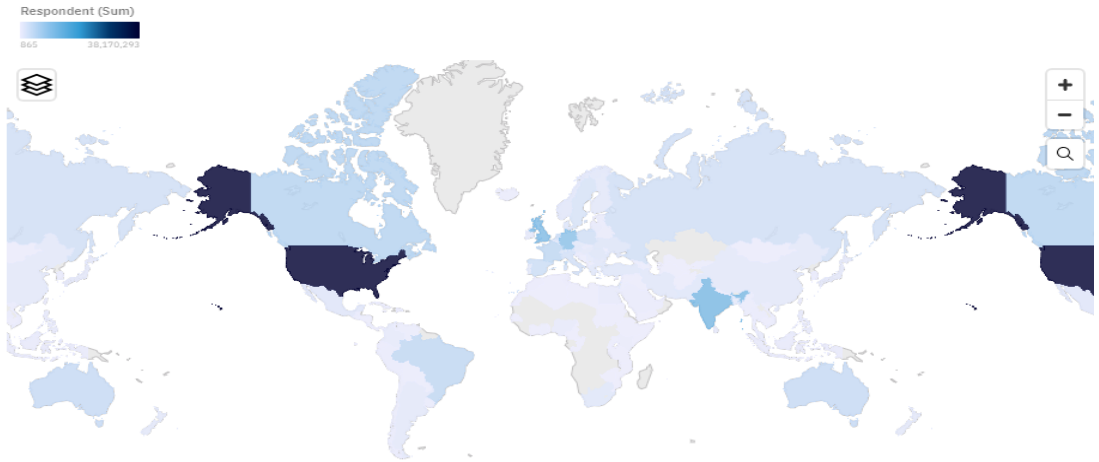
DASHBOARD TAB 3

CurrentTechnologyUsage | FutureTechnologyTrend | Demographics

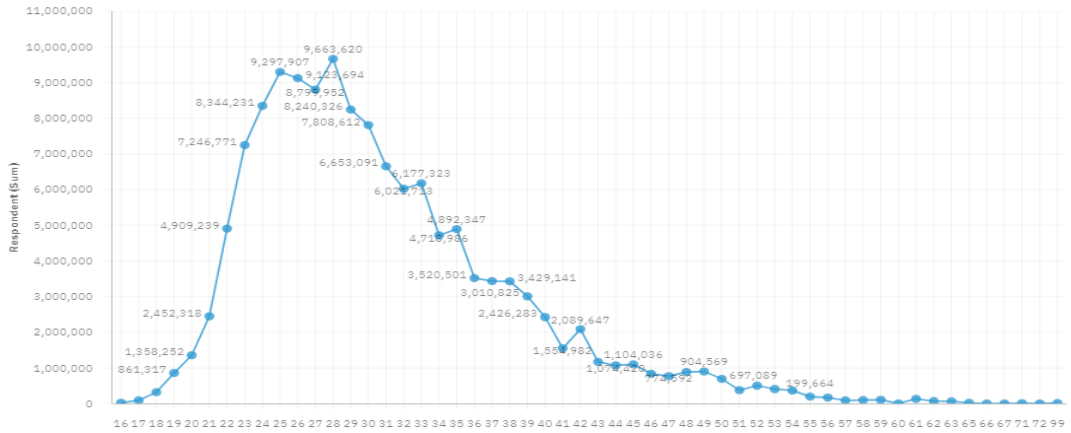
Respondent Classified by Gender



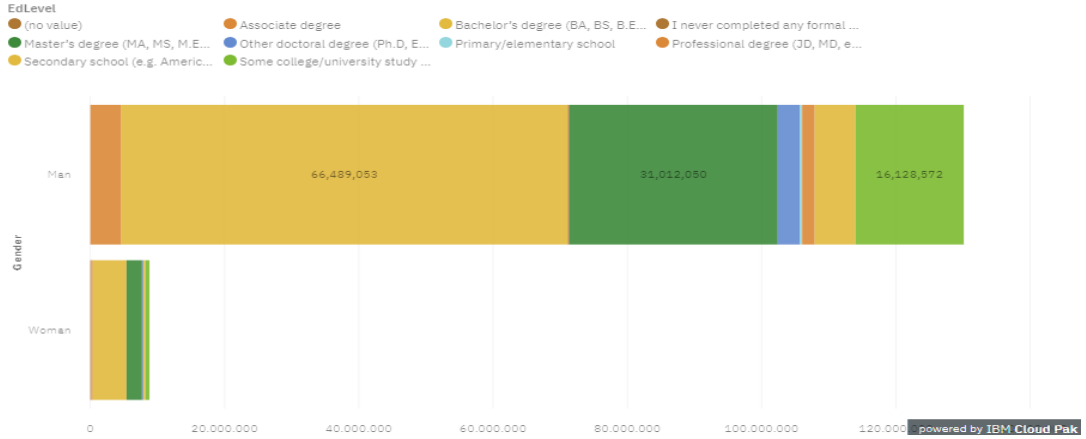
Respondent Count by Age



Respondent Count by Age



Respondent Count by Gender, Classified by Formal Education Level



DISCUSSION

- How might advancements in cloud computing influence the observed shifts in popularity of programming languages, databases, platforms, and web frameworks?
- What strategies might effectively promote gender diversity in tech? Within the sectors of programming, cloud computing, etc., which show the most pronounced gender disparity?
- Are younger tech talents showing a particular inclination towards specific programming languages or platforms? What factors might be driving these preferences?
- How does gender representation vary across different educational backgrounds? Is there a correlation between higher education levels and tech preferences?

OVERALL FINDINGS & IMPLICATIONS

Findings

- There's a significant shift in user preference, with certain technologies like Python, PostgreSQL, Docker, React.js seeing a rise.
- The tech industry displays pronounced gender disparities with men overwhelmingly dominating the listings at 93.7%
- New entrants, such as Kotlin, Go, DynamoDB, Ruby on Rails and exits such as PHP, C++, Oracle, and Laravel can indicate a shift in technological landscape and emerging tech innovations.

Implications

- Organizations should offer training programs and hire talents based on technologies that are gaining traction.
- Organizations and educational institutions should address the gender gap and ensure inclusive hiring practices.
- Organizations should reconsider investments in software that supports emerging languages and platforms.

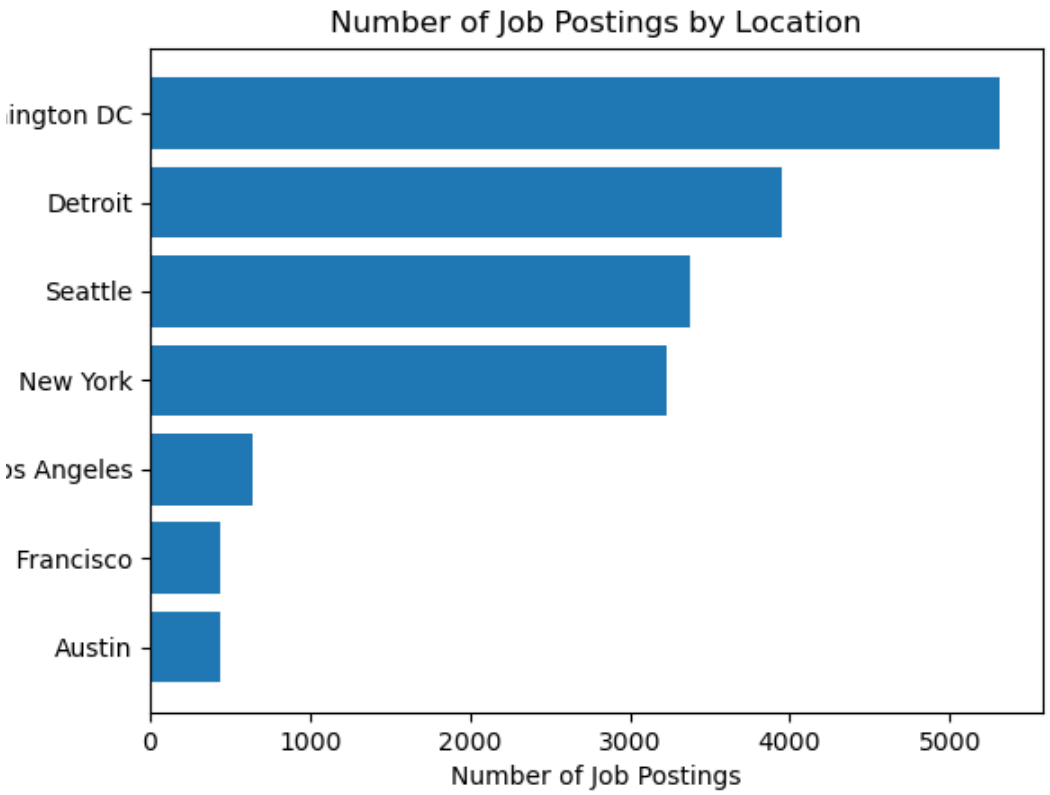
CONCLUSION

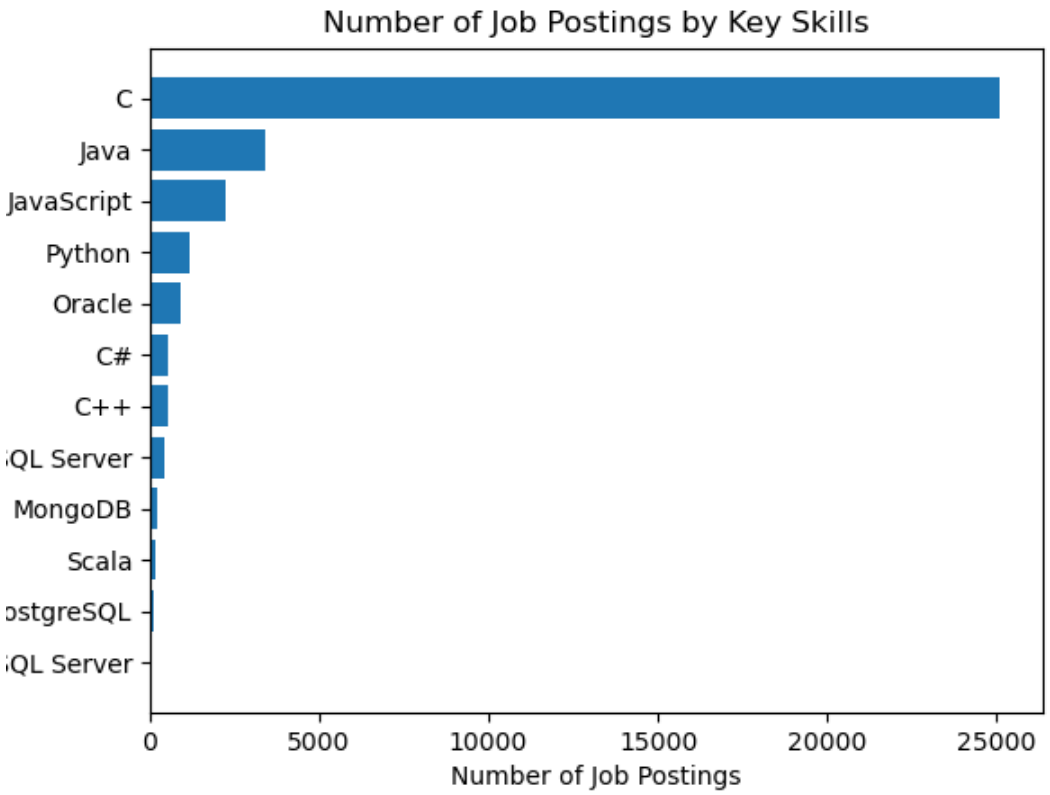
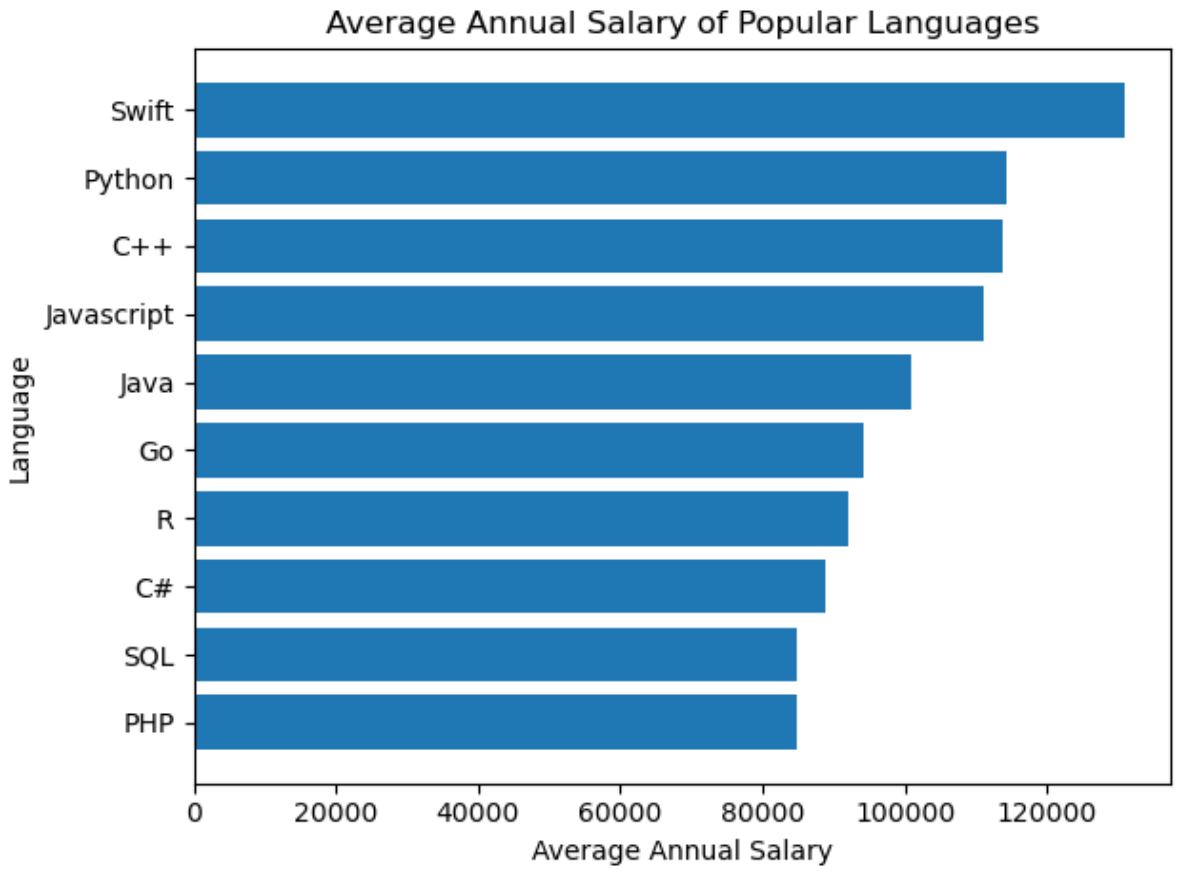
- Adaptive Landscape
  - The tech industry is continuously evolving, the preference for certain languages and platforms also shifts. Staying updated with trends is imperative for organizations and professionals.
- Technology Investments
  - Preference shifts can lead to investment reconsiderations in technologies to adopt, phase out, and train in. Monitoring industry trends helps organizations anticipate future requirements.
- Need for Diversity
  - Addressing the gender and geographic disparity can introduce diverse perspectives in tech and lead to richer innovations.
- Cloud Service Providers
  - The growth of cloud-native technologies and databases reveals a trend toward cloud-centric solutions. Shifting to cloud supported technologies can help organizations become more scalable and competitive and future-proof.

APPENDIX

count
I am a developer by profession
I am not primarily a developer, but I write code sometimes as part of my work
0
2000
4000
6000
8000
10000

JOB POSTINGS





POPULAR LANGUAGES