



# Emerging Skills Trends in the IT Sector: A Data Analysis

Omar Severini

August 2024

# OUTLINE

---



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

# EXECUTIVE SUMMARY

---



- To stay competitive in the fast-changing global IT sector, **it's essential to keep up with evolving technologies**. This report, through data analysis, highlights current and projected trends in developers' skill requirements.
- While traditional web development languages like **JavaScript, HTML/CSS, and SQL** remain crucial, there is a clear trend towards languages that support newer technologies and paradigms, such as **Python, TypeScript, Go, and Kotlin**. This shift likely reflects the increasing demand for skills in data science, AI, mobile development, and large-scale application development. As a result, professionals and organizations should consider focusing their training and recruitment efforts on these emerging languages to stay competitive in the evolving tech landscape.
- There is a clear and growing interest in NoSQL databases like MongoDB and Redis. This shift aligns with the increasing complexity and scale of modern applications, which require more flexible data solutions. Additionally, niche databases like Elasticsearch, MariaDB, and Firebase highlight the importance of choosing the right database for specific use cases, emphasizing that one size does not fit all in the world of data management. Organizations should consider this landscape when planning their database strategies, ensuring they adopt the technologies that best fit their needs and future-proof their operations.
- The collected data shows that the software developer profession remains predominantly **male**, with a very small representation of women. Additionally, the profession is primarily concentrated in North America, India, and Europe.

# INTRODUCTION

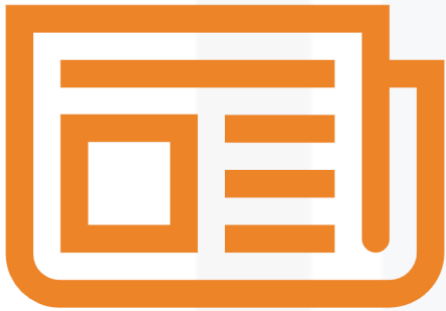
---



- To identify future trends, it is crucial to focus on the core skills that developers are currently using and the tools they wish to specialize in. The goal of this analysis is to answer the following questions:
  - **What are the most in-demand programming languages?**
  - **What are the most sought-after database skills?**
  - **What are the most popular IDEs?**
- Understanding these key areas will provide valuable insights into the evolving technology landscape and help guide training and development efforts for professionals aiming to remain competitive.

# METHODOLOGY

---



- **Data collection**
  - Git Hub Job postings API
  - IBM Training portal
  - 2019 Stack Overflow Developers Survey
- **Data Wrangling**
- **Exploratory Data Analysis**
- **Data Visualization**
- **Dashboard:**
  - Trends and Patterns Identification

# RESULTS

---

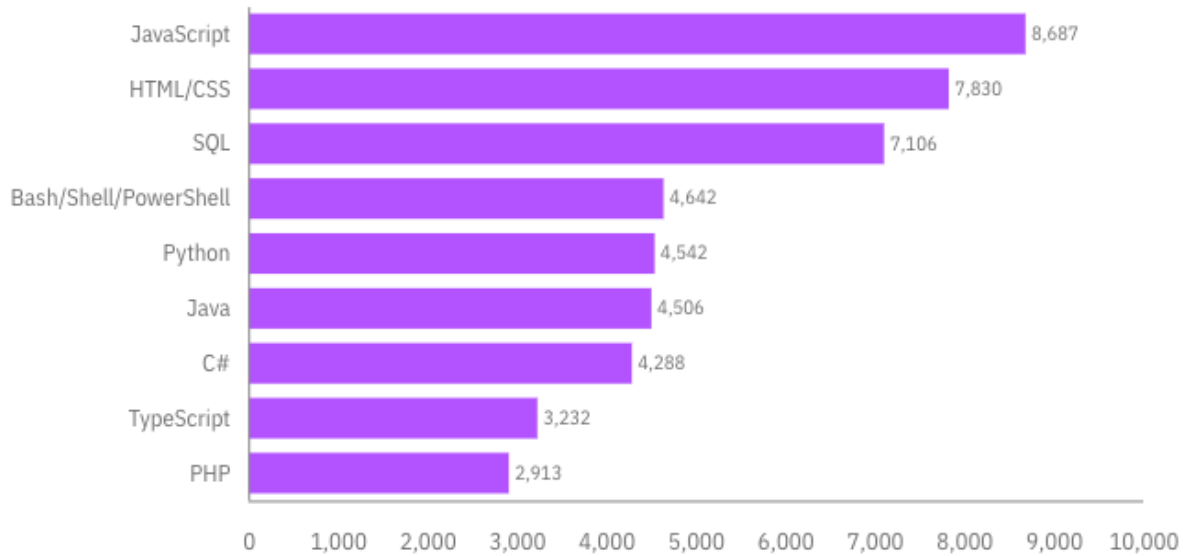


**Skills**  
Network

# PROGRAMMING LANGUAGE TRENDS

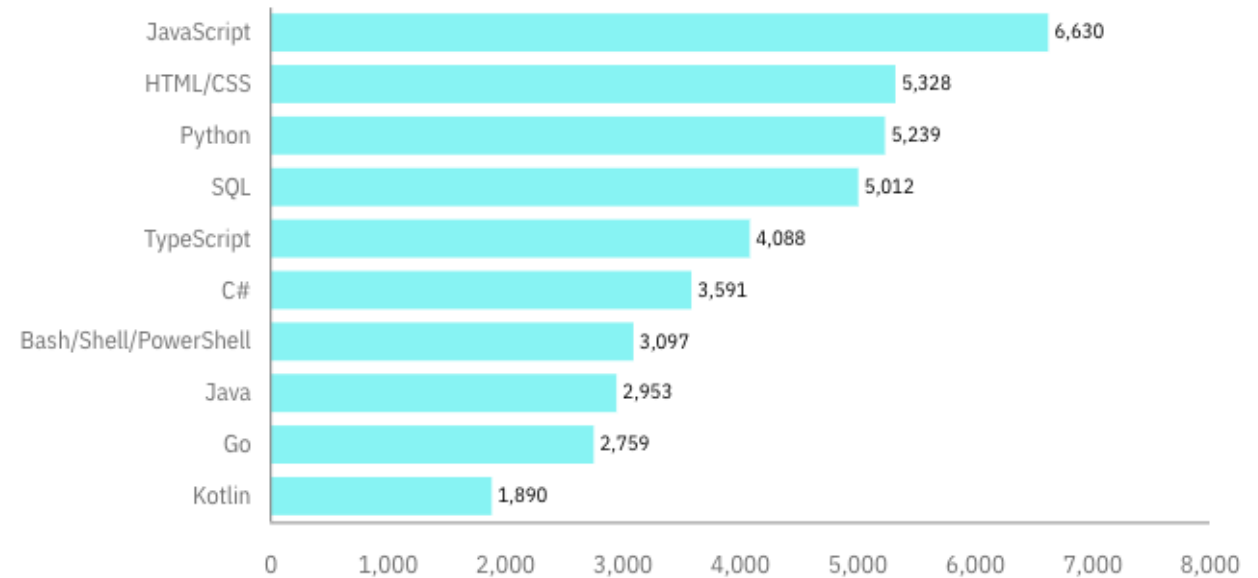
## Current Year

Top 10 Programming Languages Developers Use in 2019



## Next Year

Top 10 Programming Languages Developers Want to Learn in 2020



# PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

---

## Findings

- Popularity of JavaScript
- HTML/CSS Consistency
- Python's Rising Popularity
- Decline in Interest for Bash/Shell/PowerShell

## Implications

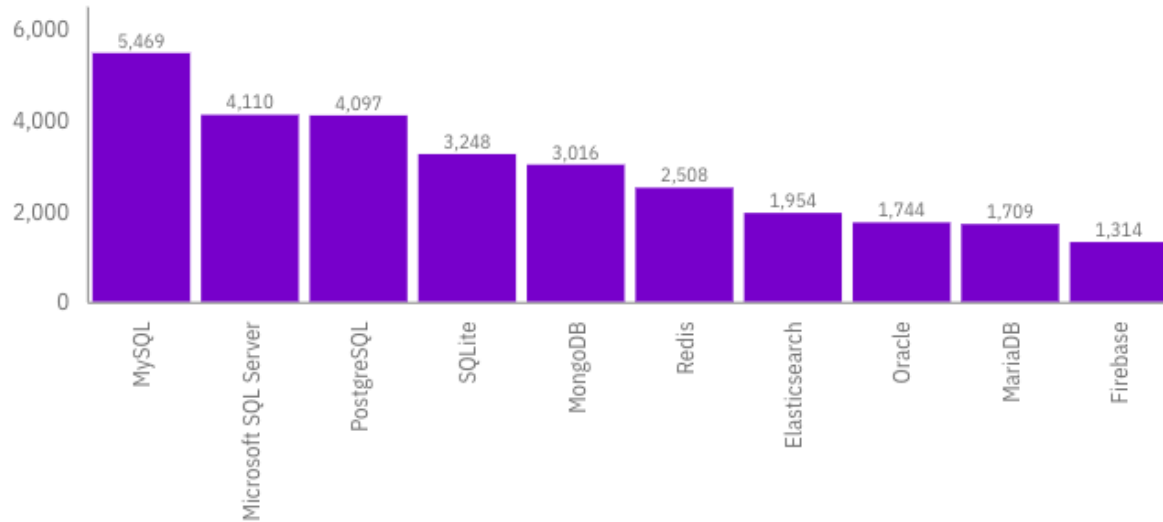
- JavaScript's versatility and its critical role in web development
- HTML/CSS is essential for web development, ensuring its persistent relevance
- Python's growing popularity can be attributed to its simplicity and broad applications in data science, AI, machine learning, and web development



# DATABASE TRENDS

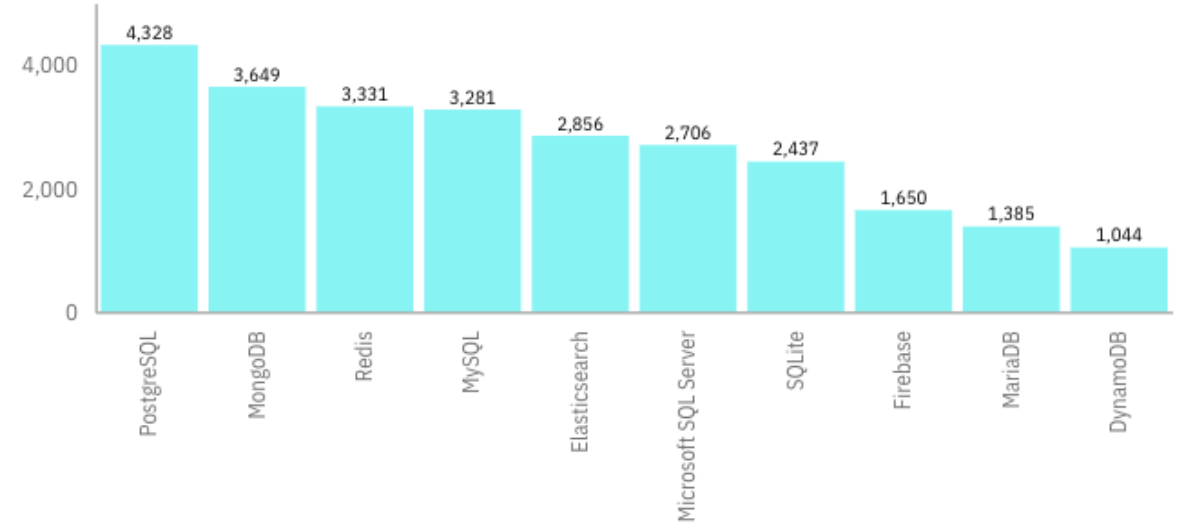
## Current Year

Top 10 Databases Developers Use in 2019



## Next Year

Top 10 Databases Developers Want to Learn in 2020



# DATABASE TRENDS - FINDINGS & IMPLICATIONS

---

## Findings

- MySQL Dominance
- Rising Popularity of NoSQL Databases
- Niche but Important Databases

## Implications

- While traditional RDs continue to dominate the market, there is a clear and growing interest in NoSQL databases
- The presence of MongoDB and Redis reflects the increasing demand for flexible, schema-less data storage solutions
- Niche databases like Elasticsearch, MariaDB, and Firebase highlight the importance of choosing the right database for specific use cases

# DASHBOARD

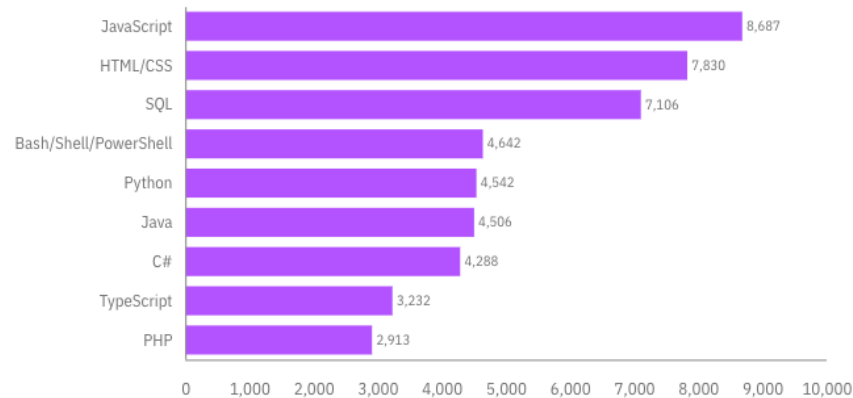
---



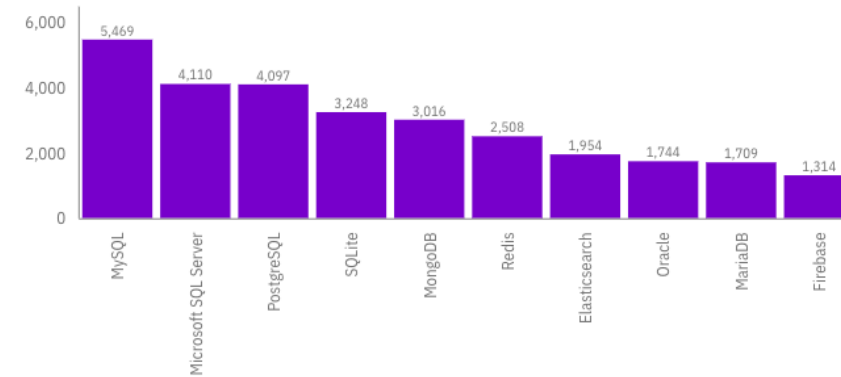
## IBM Cognos - Stack Overflow Developers Survey Analysis

# CURRENT TECHNOLOGY USAGE

Top 10 Programming Languages Developers Use in 2019



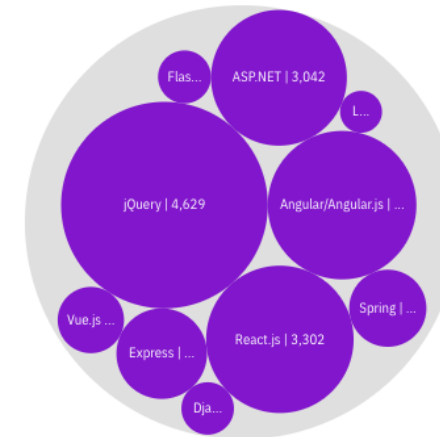
Top 10 Databases Developers Use in 2019



Top 10 Platforms Developers Use in 2019

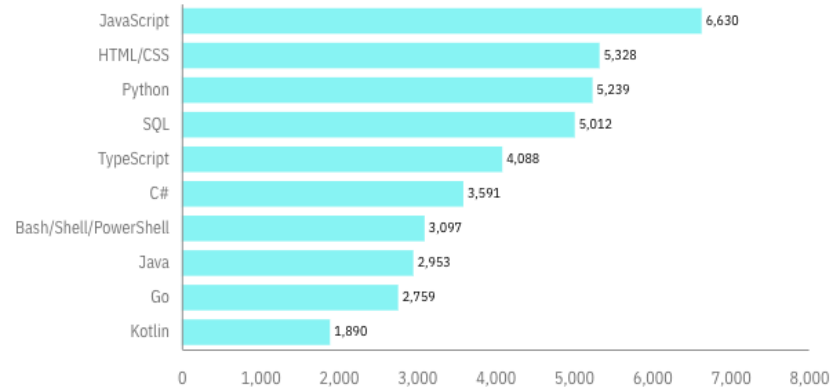


Top 10 Web Frameworks Developers Use in 2019

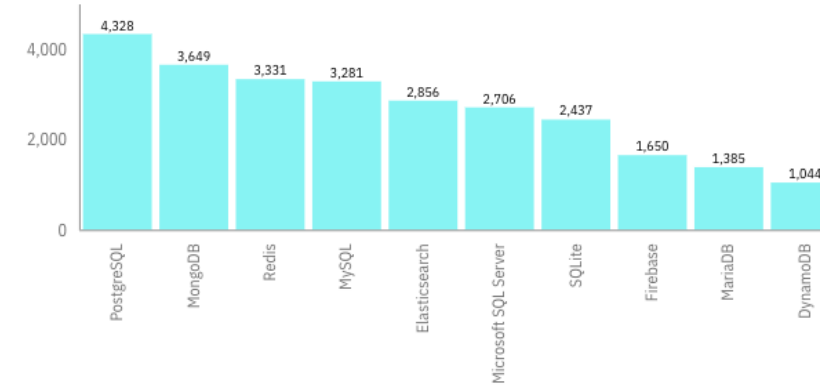


# FUTURE TECHNOLOGY TREND

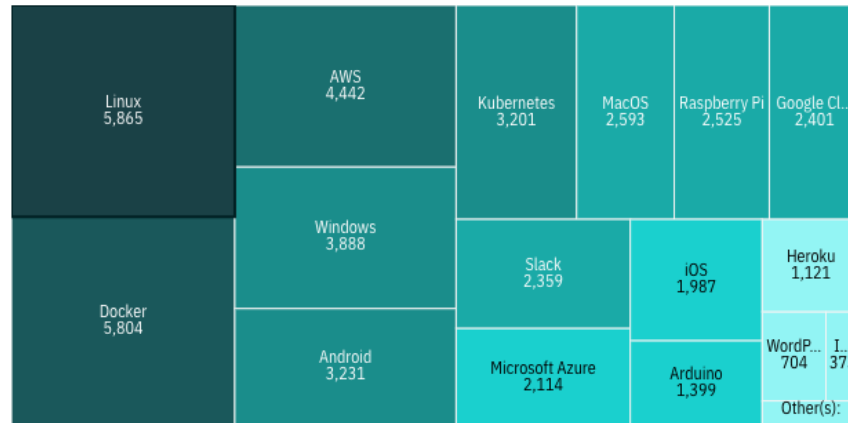
Top 10 Programming Languages Developers Want to Learn in 2020



Top 10 Databases Developers Want to Learn in 2020



Top 10 Platforms Developers Want to Learn in 2020



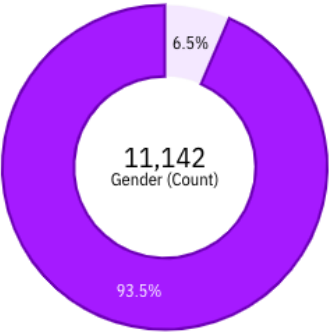
Top 10 Web Frameworks Developers Want to Learn in 2020



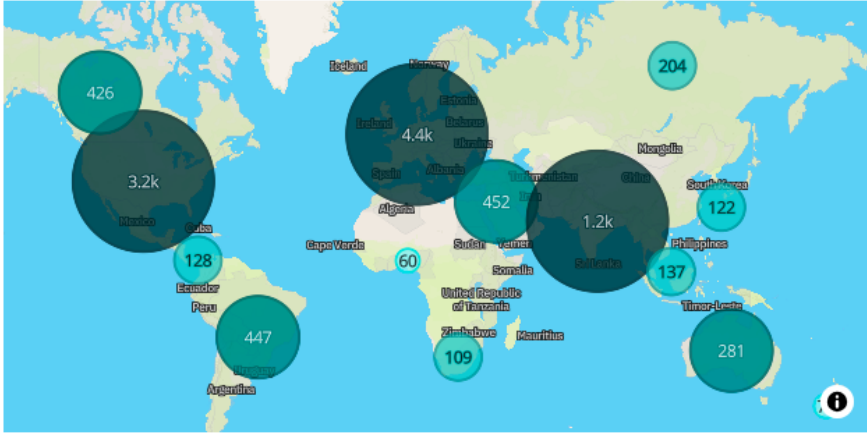
# DEMOGRAPHICS

Developers Classified by Gender

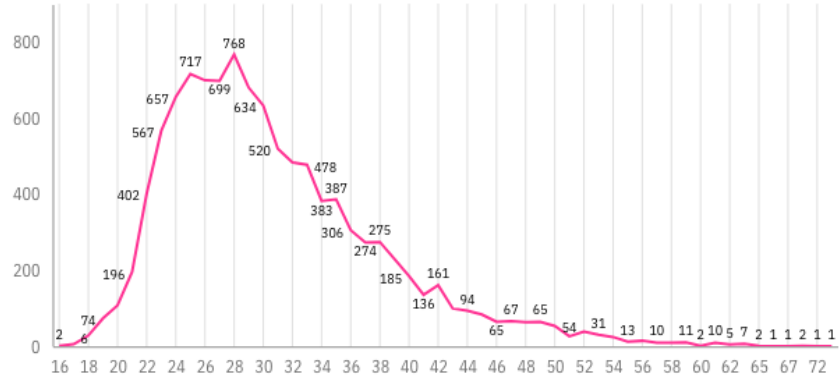
Gender  
Woman Man



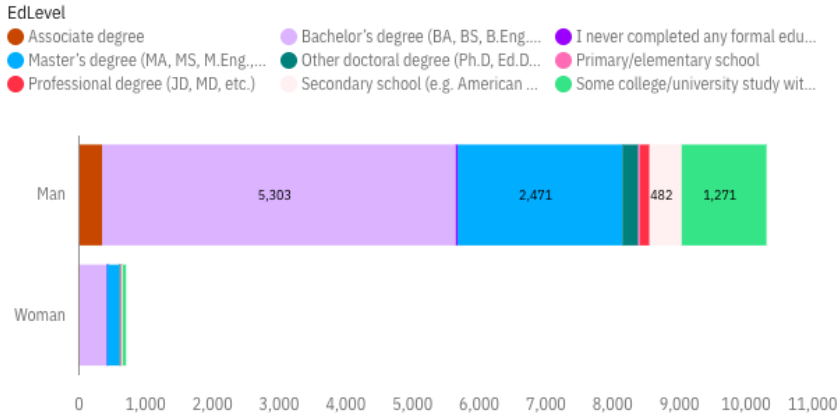
Developers Distribution by Country



Developers Grouped by Age



Developers' Education Levels Analyzed by Gender



# DISCUSSION

---



- **Future Trends**
- **Regional Concentration**
- **Diversity and Inclusion**
- **Cultural and Structural Barriers**
- **Personal Experiences and Perspectives**

# OVERALL FINDINGS & IMPLICATIONS

---

## Findings

- JavaScript, HTML/CSS, and SQL continue to be fundamental
- Python, TypeScript, Go, and Kotlin are gaining traction
- MySQL remains dominant in the market
- IDEs that support emerging languages and databases will be increasingly important
- Gender Representation

## Implications

- Focus on Emerging Languages
- Professionals should diversify their skills beyond traditional relational databases
- Adapt Recruitment Strategies
- Continuous Learning
- Adaptation to Change
- Gender Diversity Initiatives



# CONCLUSION

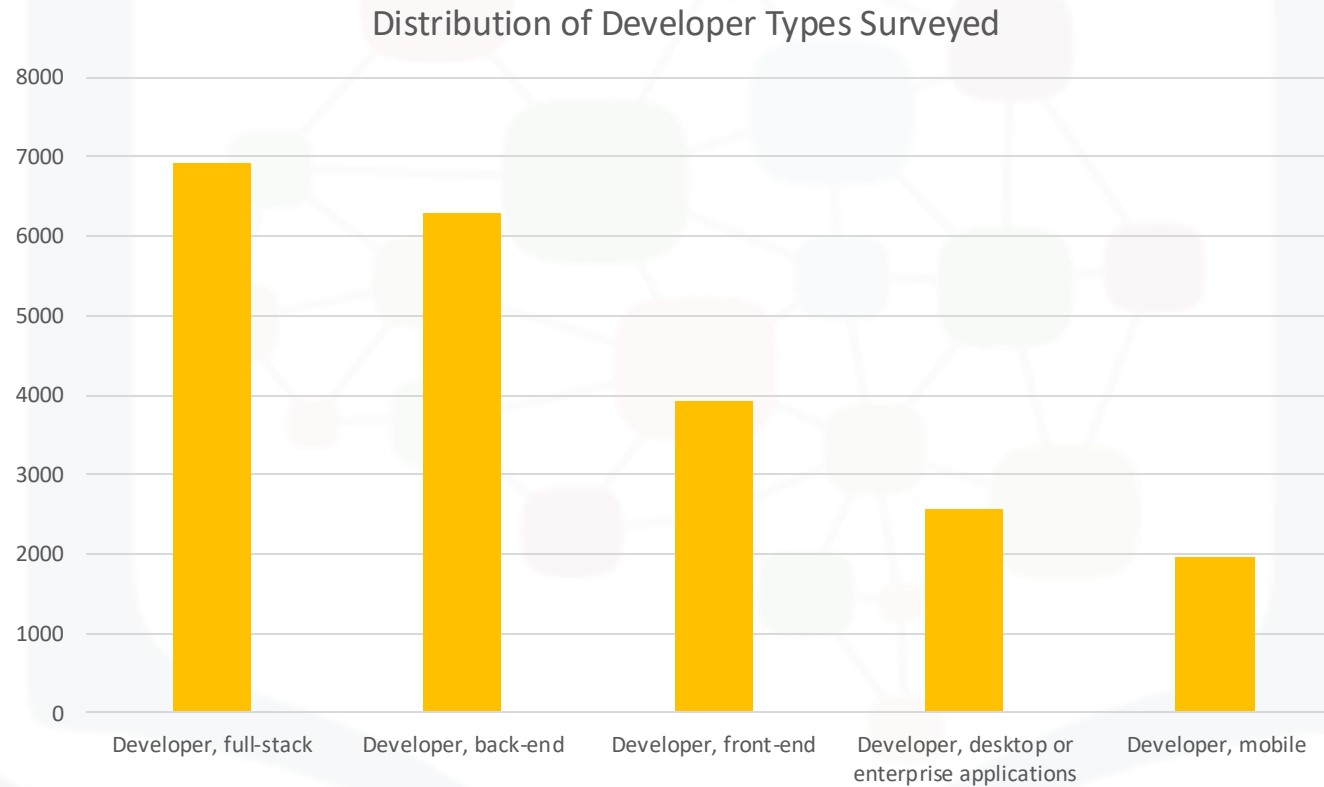
---

- **Emerging Technologies are Shaping the Future**
  - **Evolving Database Landscape**
  - **Professional Development Needs**
- **Addressing Gender and Geographic Imbalances**
  - **Continuous Learning is Essential**



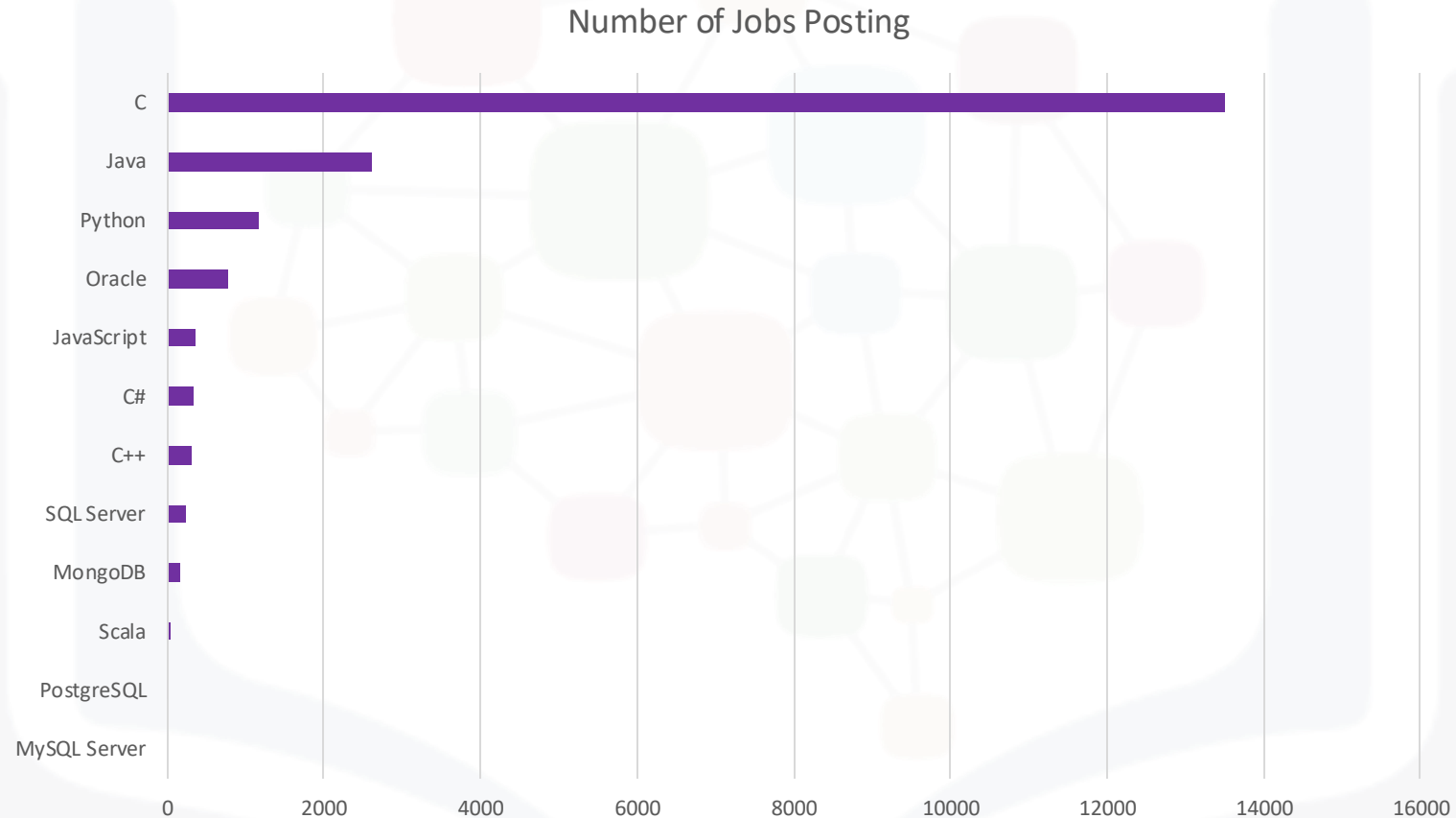
# APPENDIX

---



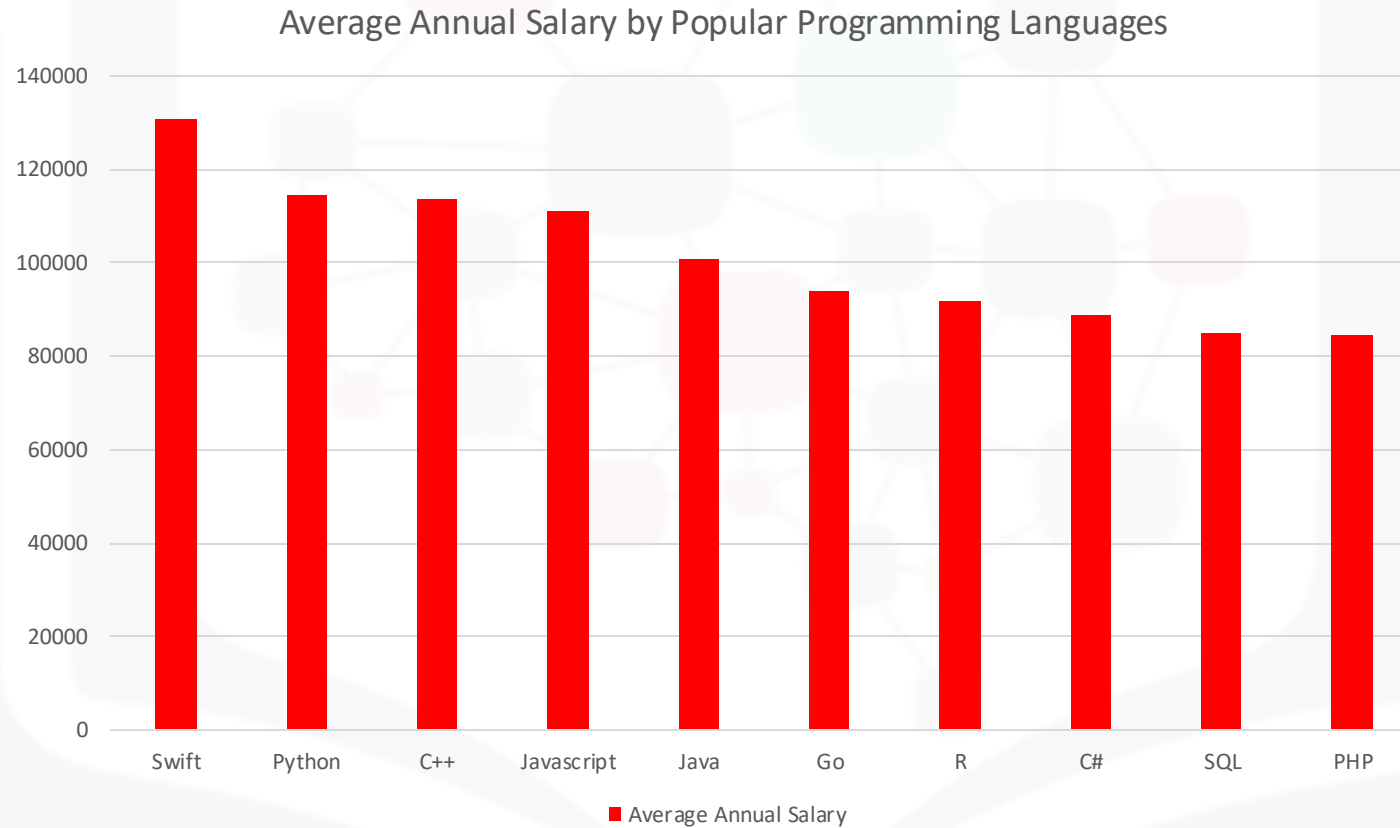
Source: [https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m4\\_survey\\_data.sqlite](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/LargeData/m4_survey_data.sqlite)

# JOB POSTINGS



Source: <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DAO321EN-SkillsNetwork/labs/module%201/Accessing%20Data%20Using%20OAPs/jobs.json>

# POPULAR LANGUAGES



Source: [https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming\\_Languages.html](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DA0321EN-SkillsNetwork/labs/datasets/Programming_Languages.html)