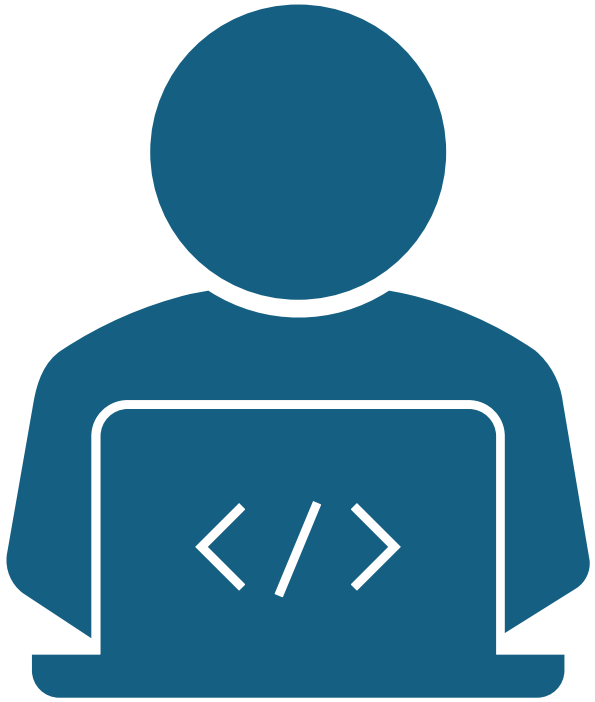


Business Intelligence | Data Analytics

By: Asma’a Hakami

April 10, 2025

Title: Anticipated Programming Language and Technology Trends

Subtitle: Based on Developer Survey Analysis

OUTLINE

- **Outline**
- Executive Summary
- Introduction
- Methodology
- Programming Languages Trends
- Database Trends
- Dashboards
- • Current Technology Usage
- • Future Technology Trends
- • Demographics
- Insights from Dashboard
- Overall Findings and Implications
- Conclusion
- Appendix & Unique Contributions

EXECUTIVE SUMMARY

- Python remains the most desired language for the future, driven by its role in AI, data science, and automation.

• PostgreSQL is the most desired database, reflecting a shift toward modern, scalable SQL solutions.

• JavaScript, HTML/CSS, and C# retain significant presence due to web and enterprise development.

React, AWS, and Next are leading technologies across frameworks and cloud platforms.

• Full-stack and cloud-native profiles are the most in-demand in the market.

• Most respondents are aged 25–34 with at least a bachelor’s degree.

INTRODUCTION

- **Purpose: Analyze global developer trends in programming languages, databases, and frameworks to inform future direction.**

- **Target Audience:**
- **Aspiring and current developers**
- **Hiring managers and tech recruiters**
- **Educators and training institutions**
- **Business and tech decision-maker**

- **Value:**

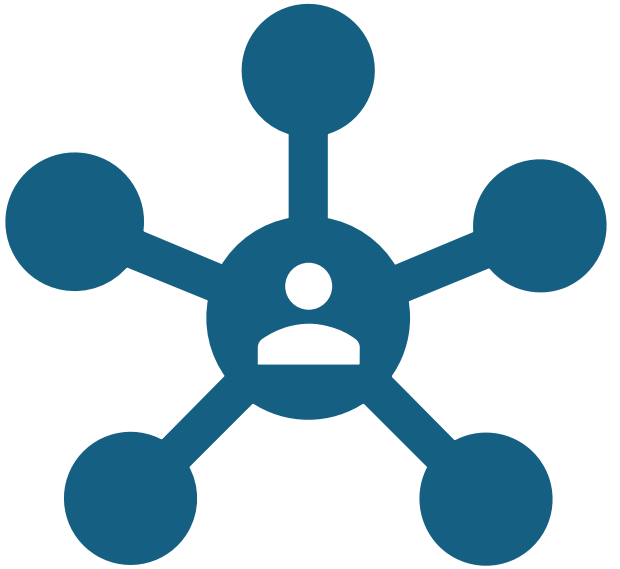
- **Helps align learning and hiring strategies with future demand**
- **Provides data-driven insights into emerging technologies**
- **Tools Used:**
- **Looker Studio**

METHODOLOGY

- **Data Source**: Developer survey dataset provided within the course.

- **Data Collection**: Thousands of global responses, covering age, education, coding activity, and tool usage.

- **Data Wrangling Steps**:
- Cleaned for duplicates and formatting errors
- Grouped tools into top 10 categories based on usage and desire for next year
- Visualized trends using Looker Studio dashboards
- Coded findings into theme-based categories: Languages, Databases, Frameworks, Platforms



Dashboards – Results

• Technologies most used now align closely with those most desired next year.

• Developers consistently favor open-source, scalable tools across categories.

• Cloud computing skills are increasingly central to developer toolkits.

Demographics – Results

- 41% of respondents are between 25–34 years old.
- 72% of participants have a Bachelor's or higher degree.
- Most respondents code professionally and as a hobby, indicating strong engagement.

RESULTS

Programming Languages – Results

- JavaScript is the most used language overall.
- Python ranks second in current usage and is the most desired for the future.
- HTML/CSS, SQL, and C# remain foundational skills.
- Rust and Go are gaining popularity, indicating interest in performance-based development.

RESULTS

Databases – Results

• PostgreSQL is both the most used and most desired database, surpassing MySQL.

• MongoDB and SQLite are rising due to flexibility and lightweight deployment.

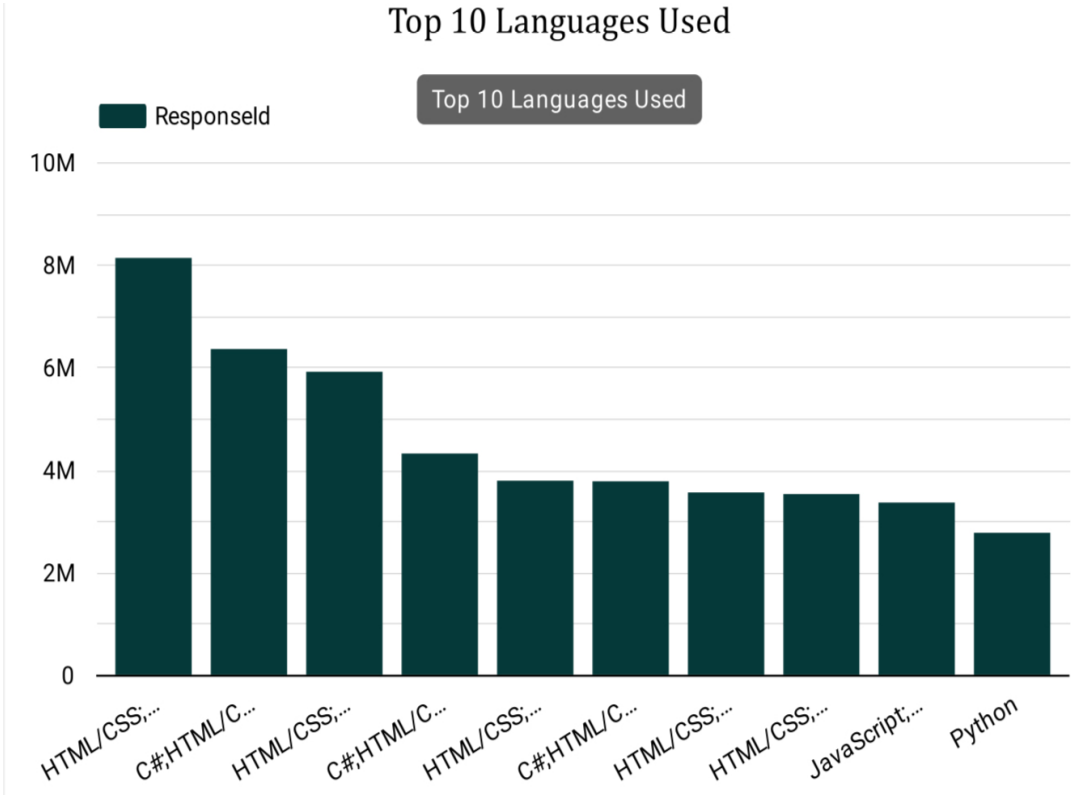
• Microsoft SQL Server remains relevant in enterprise settings.

Frameworks & Platforms – Results

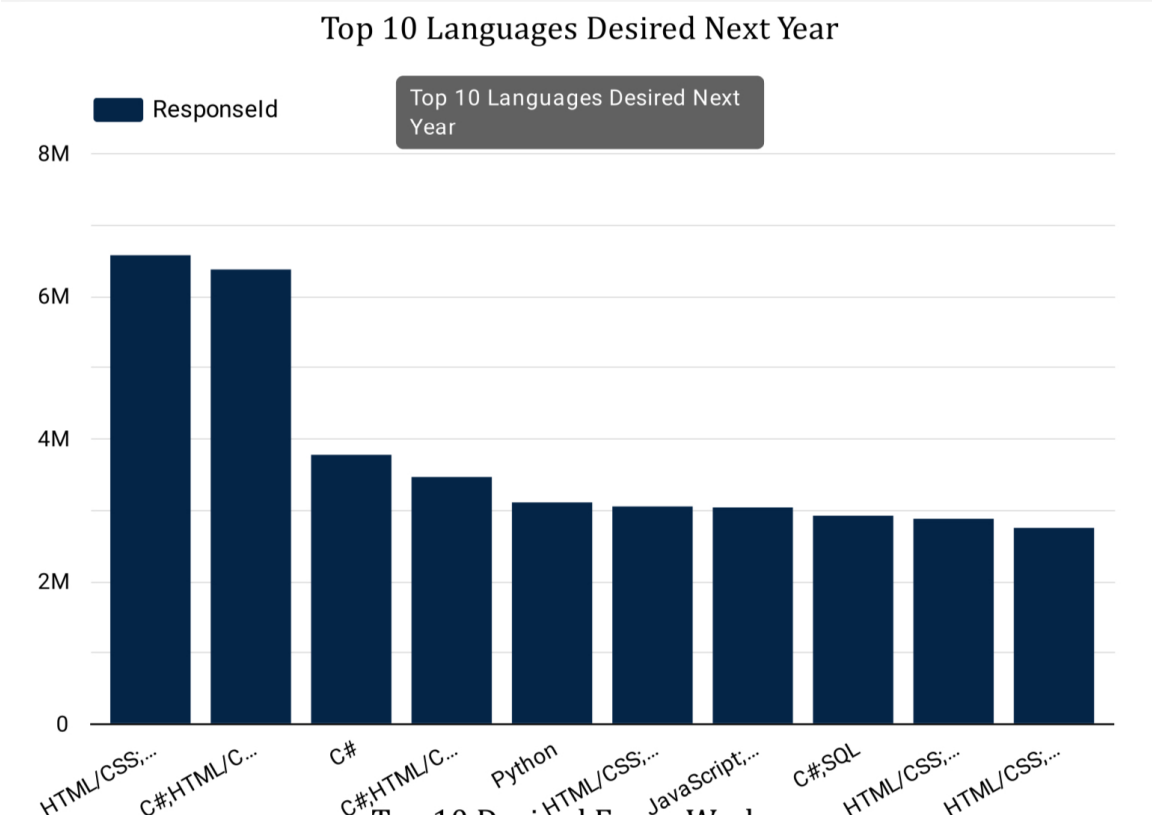
- React leads current and future framework preferences.
- AWS is the most used platform, with Azure and Google Cloud closely following.
- Next.js and Vue.js show strong demand growth in frontend development.

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Top 10 Programming Languages (Current)

- JavaScript
- Python
- HTML/CSS
- SQL
- C#
- Java
- TypeScript
- Bash/Shell
- C++
- PHP

Implications:

- JavaScript remains dominant due to its central role in web development.
- Python's wide usage highlights its adaptability in multiple domains.
- Traditional languages like Java and C# are stable in enterprise environments.

PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Top 10 Most Desired Programming Languages (Next Year)

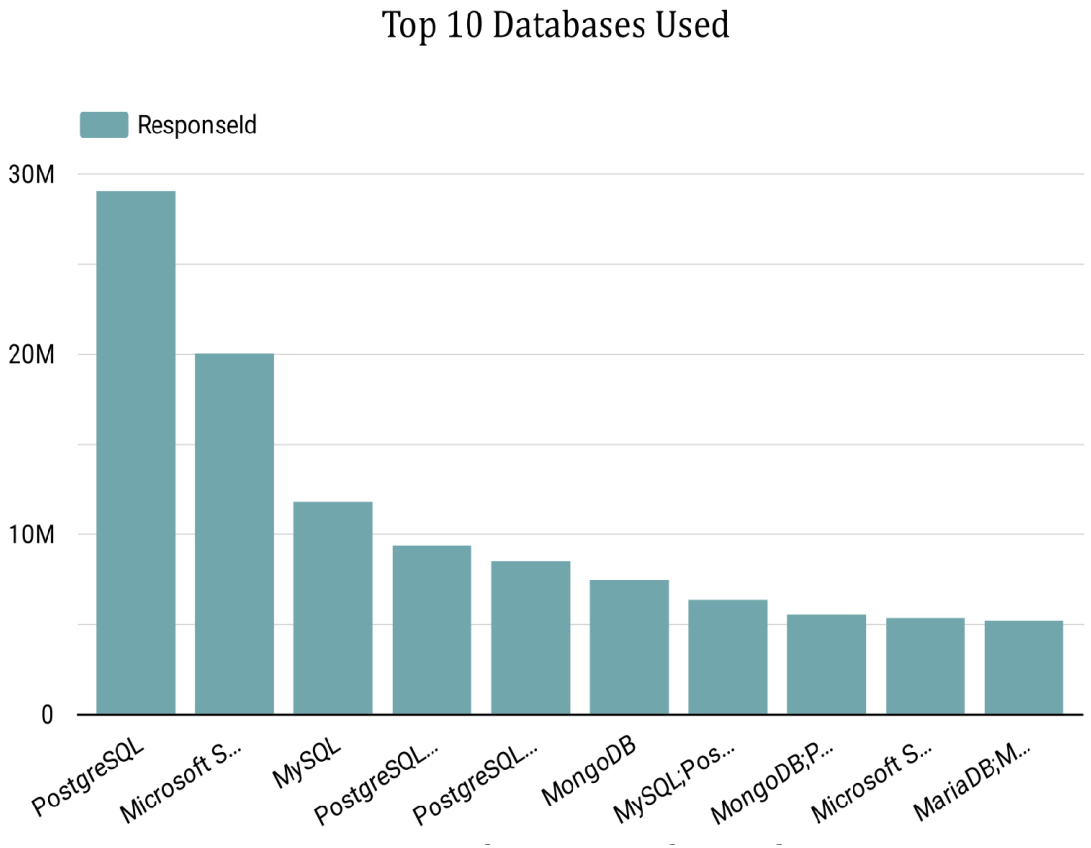
- Python
- HTML/CSS
- JavaScript
- C#
- SQL
- TypeScript
- Rust
- Go
- Java
- C++

Implications:

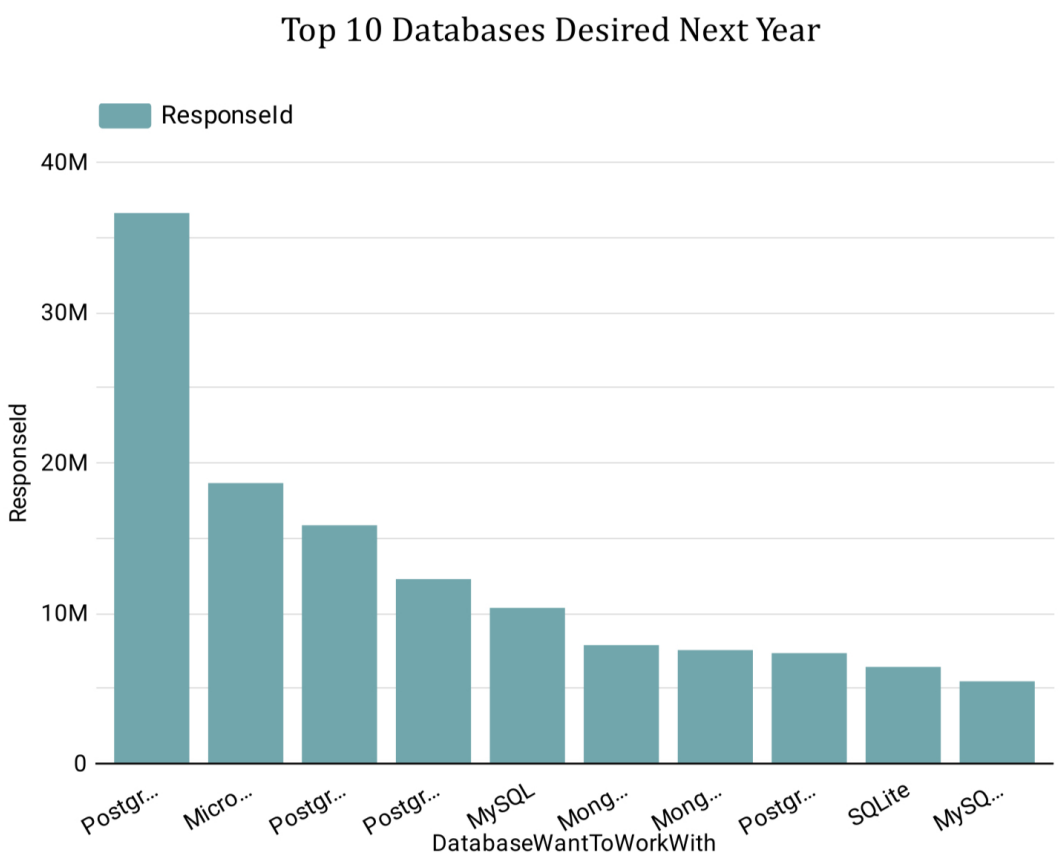
- Python's lead suggests ongoing growth in data science and backend automation.
- Rust and Go emerging in backend and systems programming reflect demand for speed and safety.
- TypeScript's popularity continues to grow alongside large-scale frontend apps.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Database Trends (Current Use)

- PostgreSQL
- MySQL
- Microsoft SQL Server
- MongoDB
- SQLite
- Redis
- MariaDB
- Oracle
- Firebase
- Elastic search

Implications:

- PostgreSQL's rise shows preference for powerful open-source relational systems.

- MongoDB and Redis reflect the move to flexible NoSQL and in-memory solutions.

DATABASE TRENDS - FINDINGS & IMPLICATIONS

Top 10 Most Desired Databases (Next Year)

- PostgreSQL
- MongoDB
- MySQL
- SQLite
- Microsoft SQL Server
- Redis
- Oracle
- Firebase
- MariaDB
- Elasticsearch

Implications:

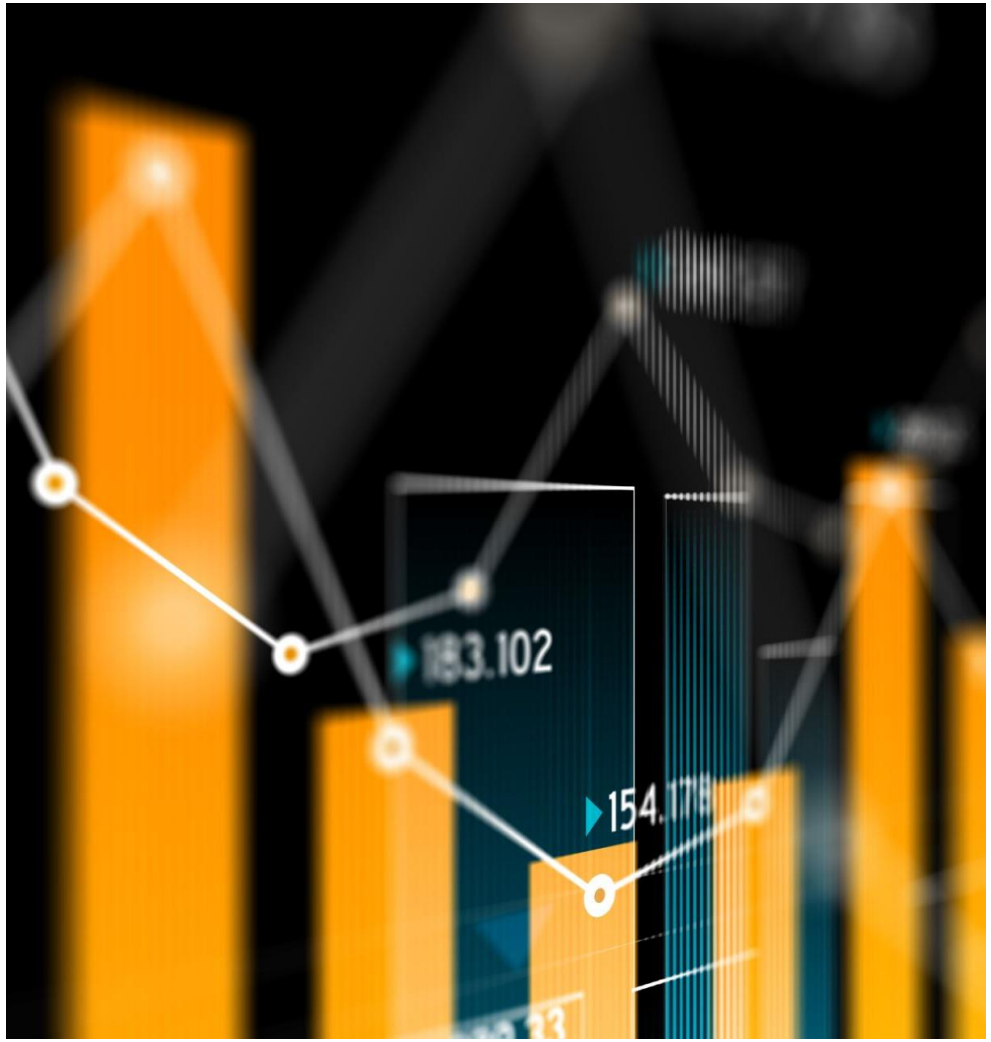
- PostgreSQL tops both current and future usage—ideal for modern application architectures.

- MongoDB continues to attract developers working on flexible, document-based systems.

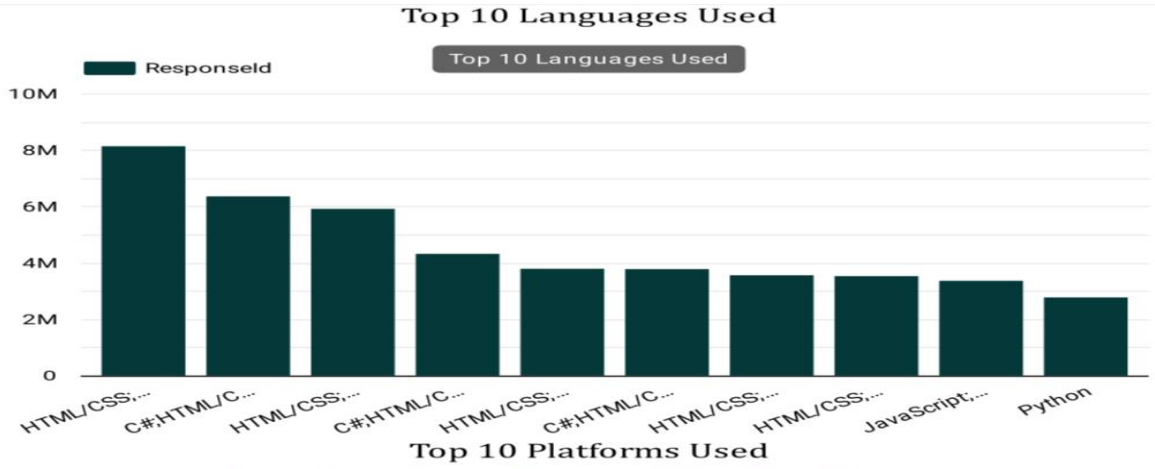
- SQLite shows increasing interest for mobile and embedded use.

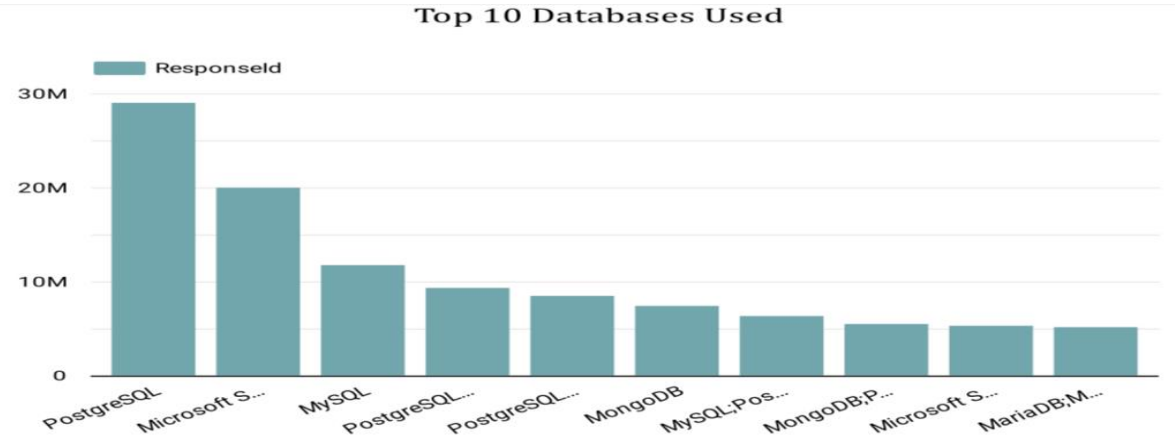
< https://github.com/asmaa-hakmi/BI-peojects.git >

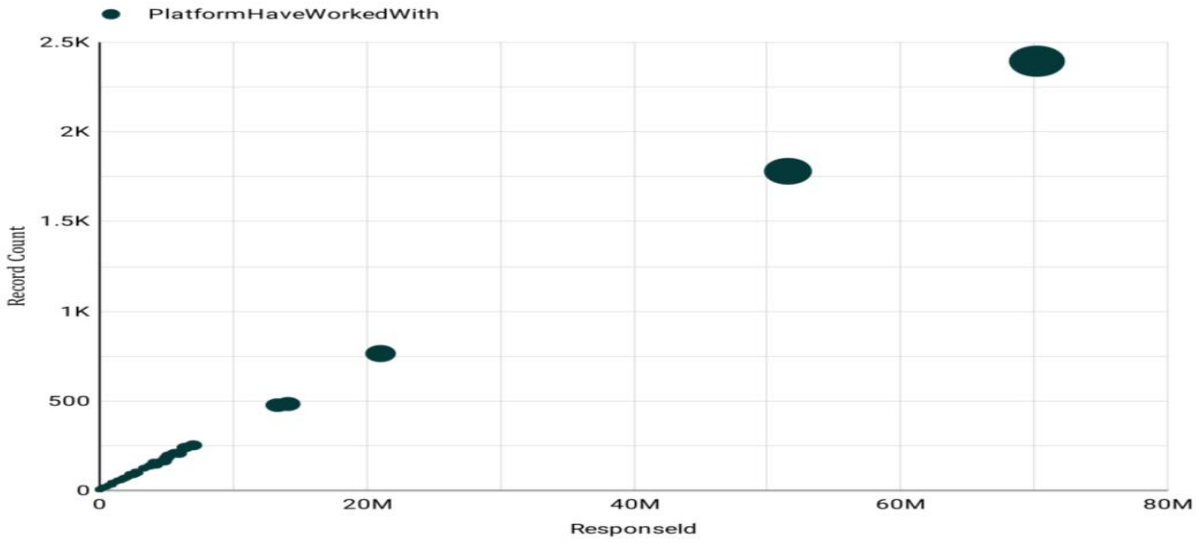
DASHBOARD



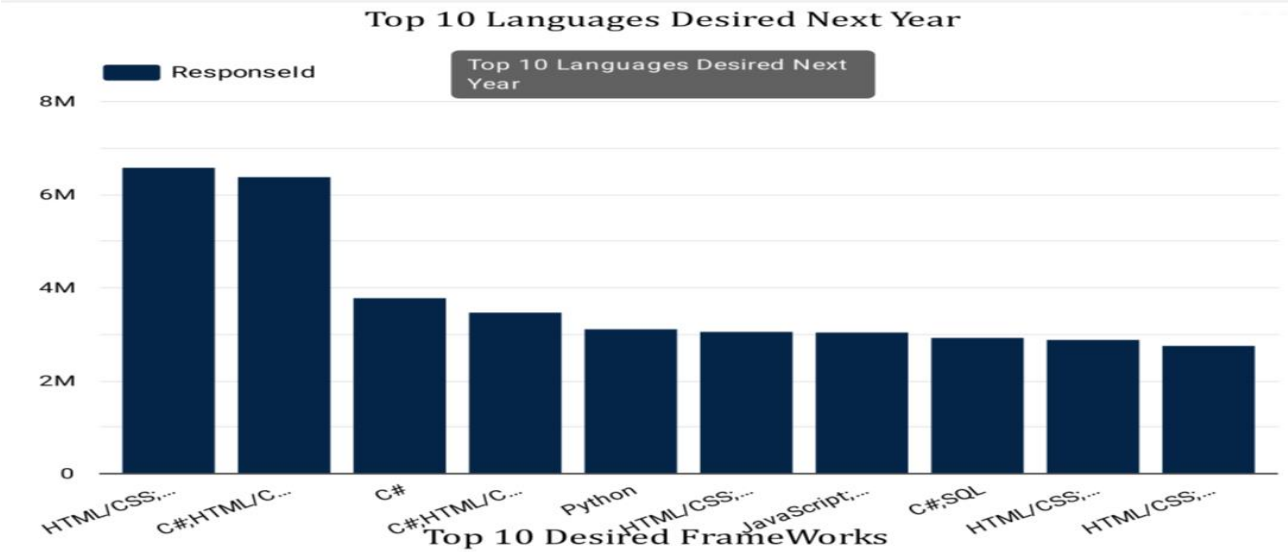
DASHBOARD TAB 1-
Current Technology Usage

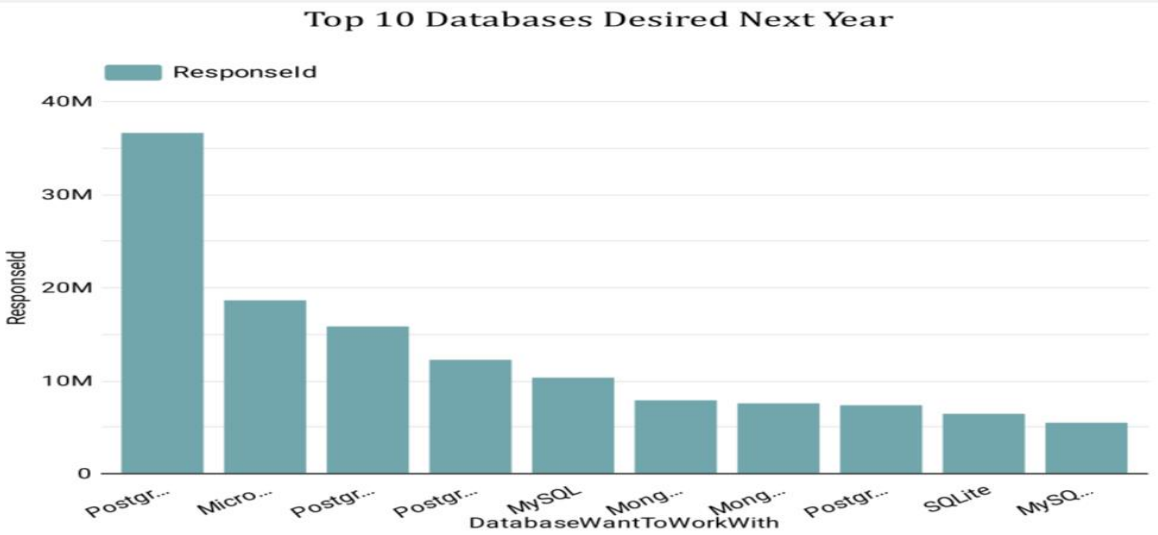


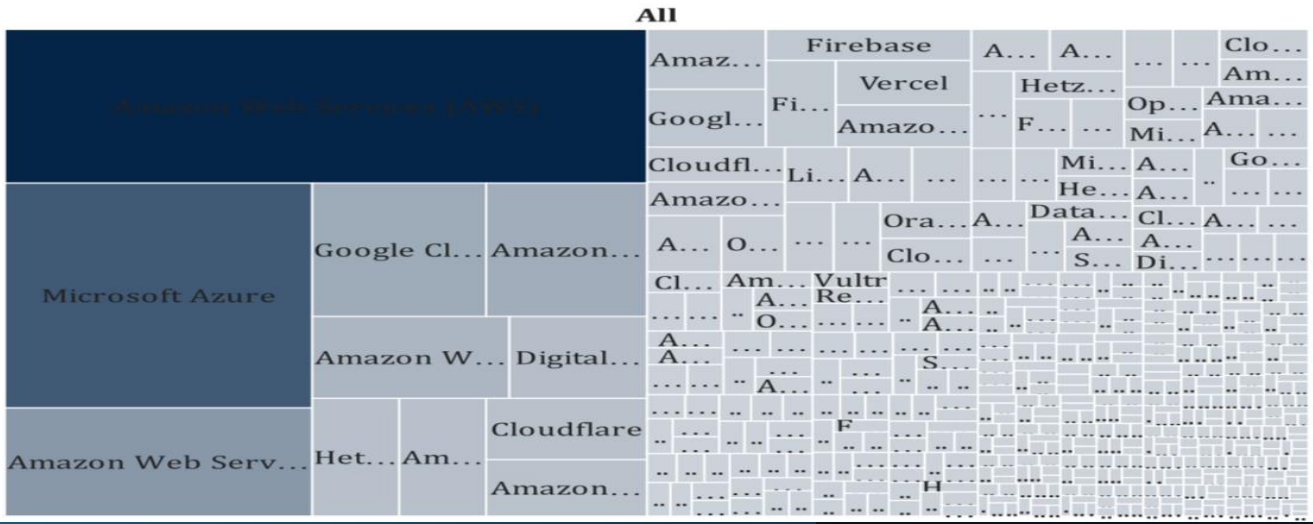


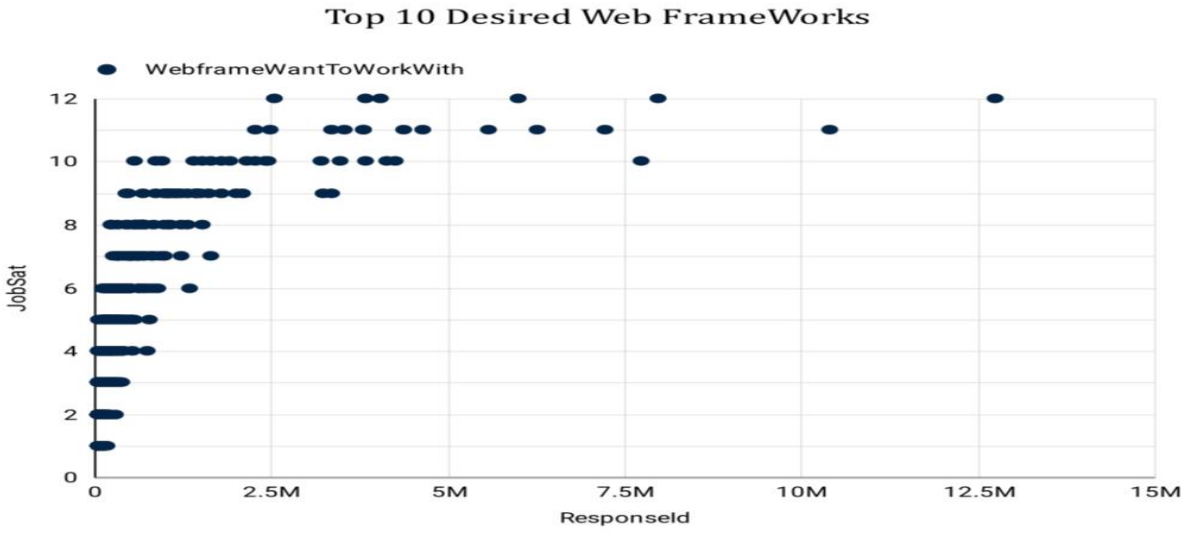


DASHBOARD TAB 2 - Future Technology Trends



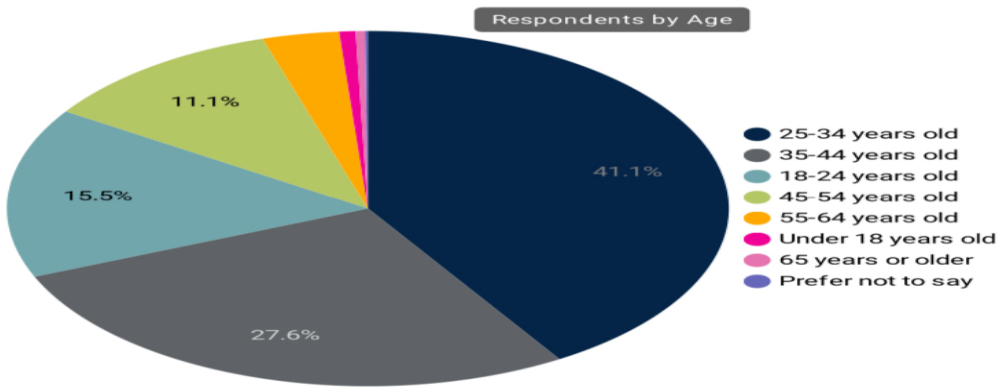




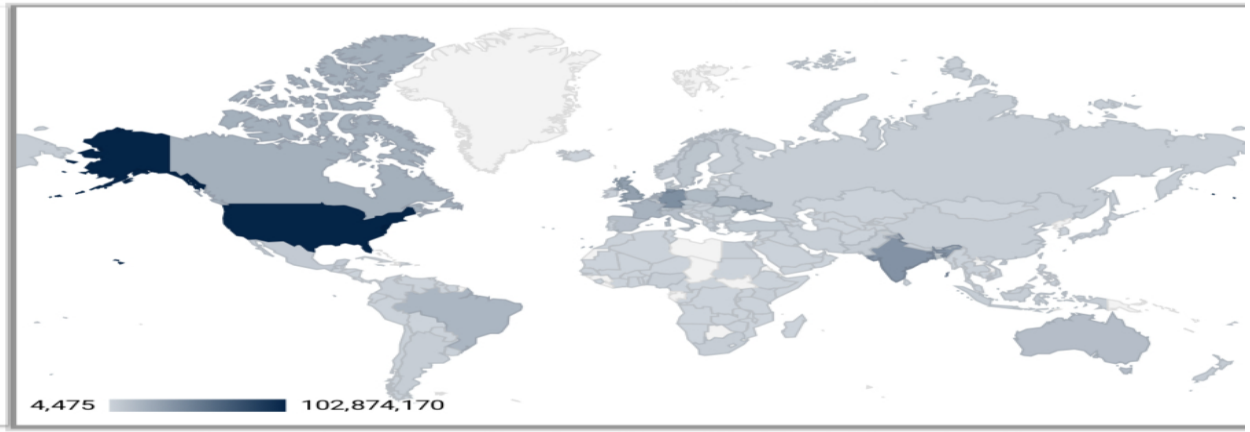


DASHBOARD TAB 3 - Demographics Overview

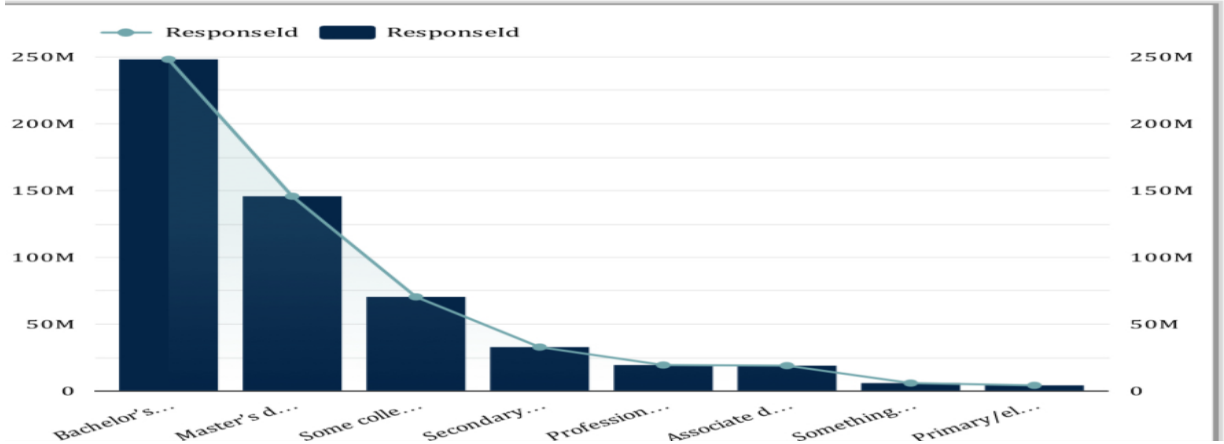
Respondents by Age



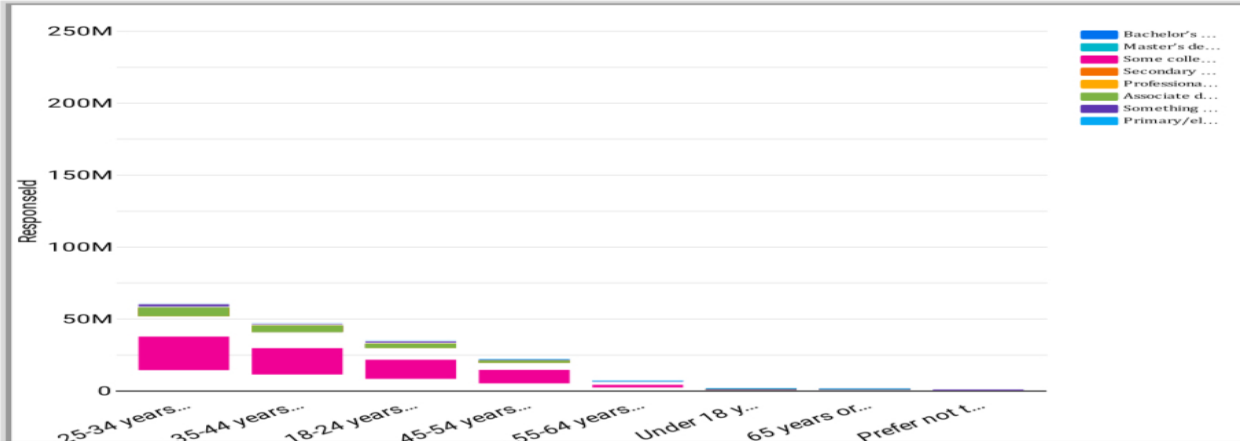
Respondent Count by Country



Respondent Distribution by Education Level



Respondent Count by Age, Classified by Education Level



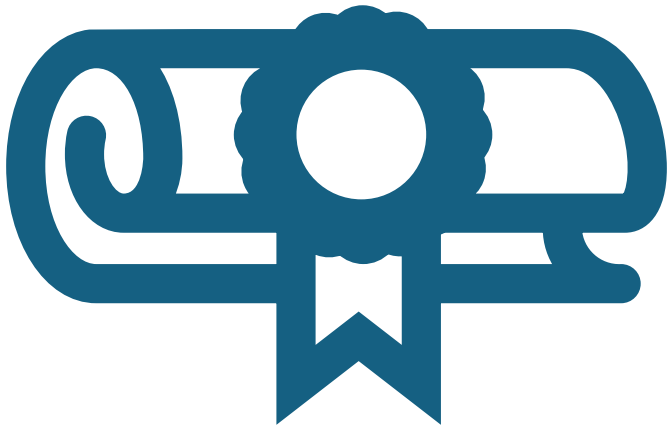
DISCUSSION

- Most respondents code for both professional development and as a hobby.

- Highest engagement is among 25–34-year-olds with a bachelor's degree.

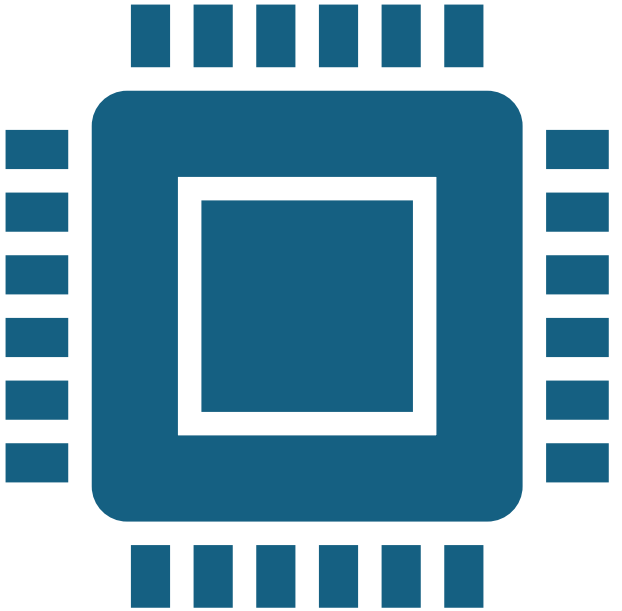
- Tools like React, PostgreSQL, and AWS are prevalent across both current use and future aspirations.

- Shift toward full-stack, cloud-native tools is evident from cross-category data.

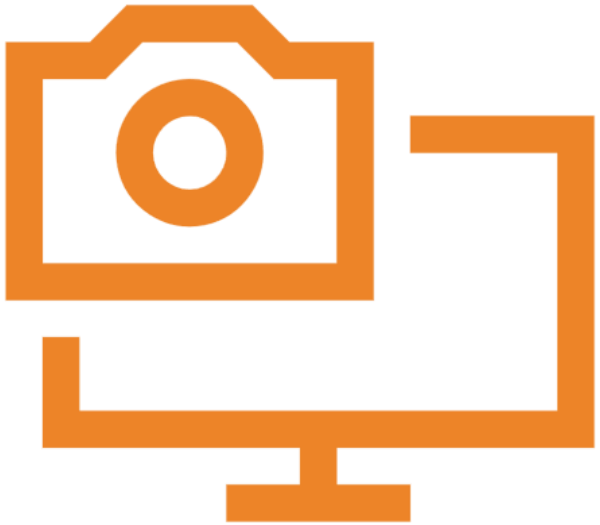


CONCLUSION

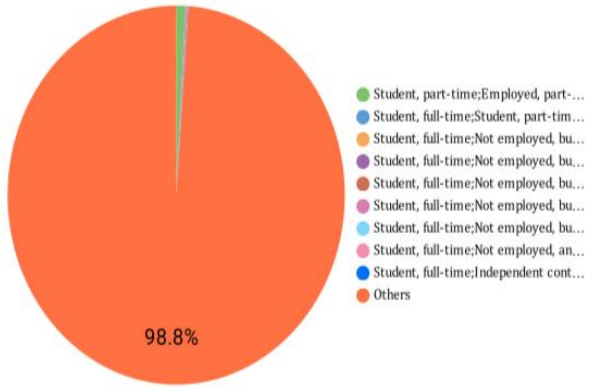
- Python is the most desired programming language for the upcoming year.
- PostgreSQL is the preferred database, reflecting modern application needs.
- React and AWS dominate their categories, shaping future tech stacks.
- Full-stack profiles with cloud experience are highly valued in the job market.
- Developers should focus on a combination of programming fluency, data handling, and cloud tools.



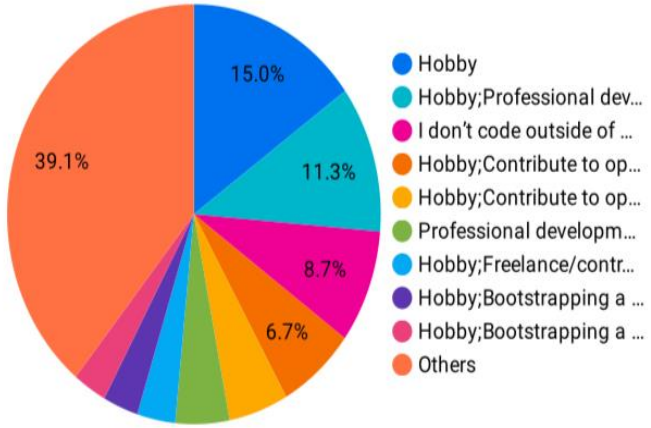
APPENDIX

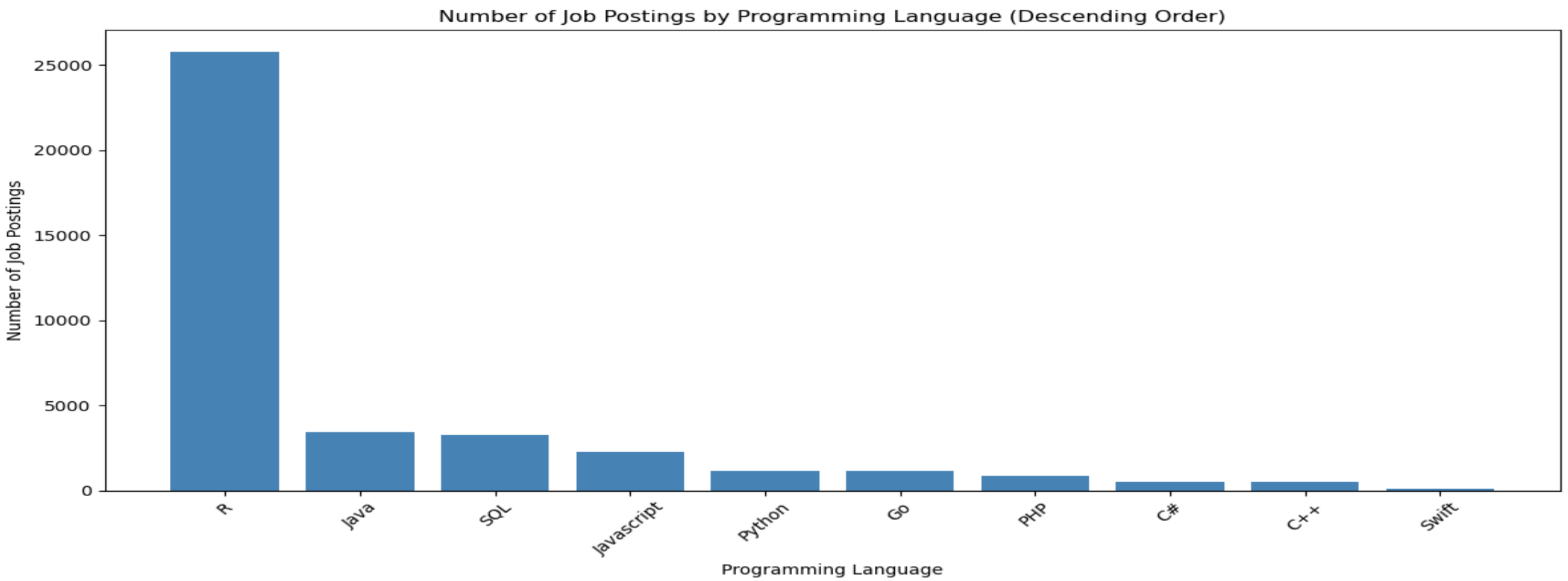


Emoloyment Status Distribution

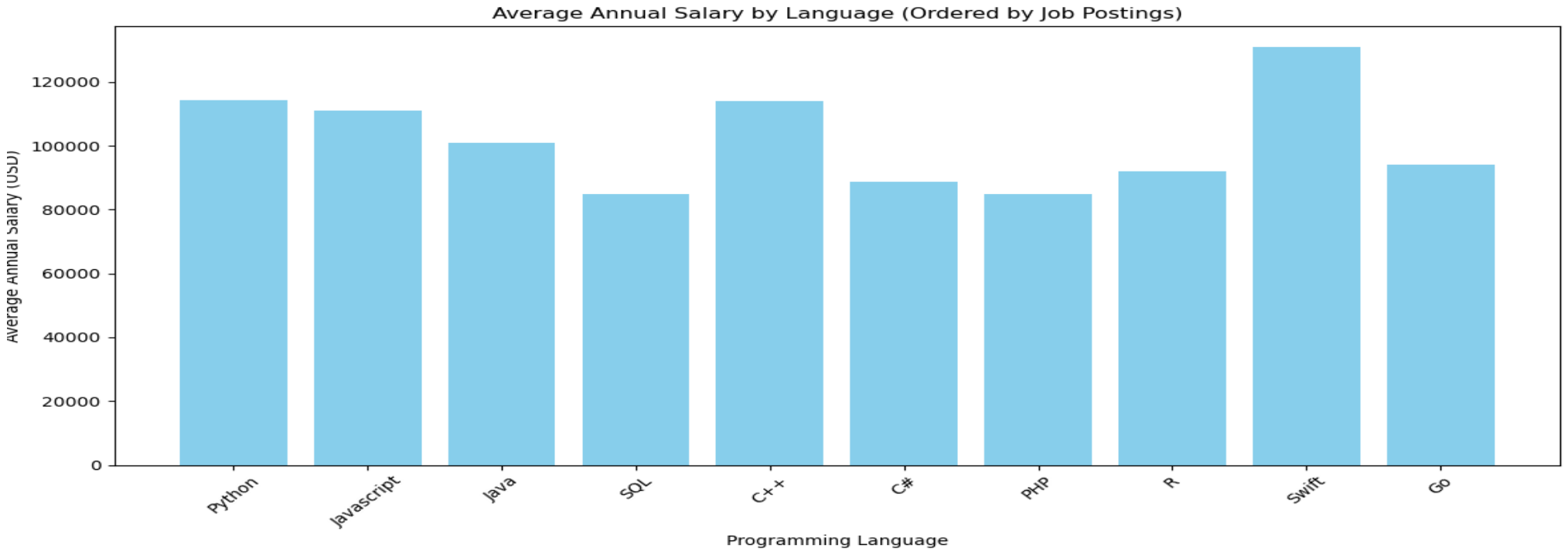


CodingActivities by ResponseId





JOB POSTINGS



POPULAR LANGUAGES