



CAPSTONE PROJECT: ANALYSIS AND VISUALIZATION OF SURVEY DATA

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8/12/2024

OUTLINE



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

EXECUTIVE SUMMARY



- Data Collection:
- Data Wrangling:
- Exploratory Data Analysis
- Data Visualization
- Dashboard Creation

INTRODUCTION



- **Technology Trends in Software and Web Development: A Global Developer Perspective**
- **Purpose of the Analysis**
- Identify Key Skills in Demand:
- Future Skill Requirement:
- Human Resource Analysis:
- **Audience:**
- Programmers:
- IT Industry Leaders:
- Computer Science Students:

METHODOLOGY

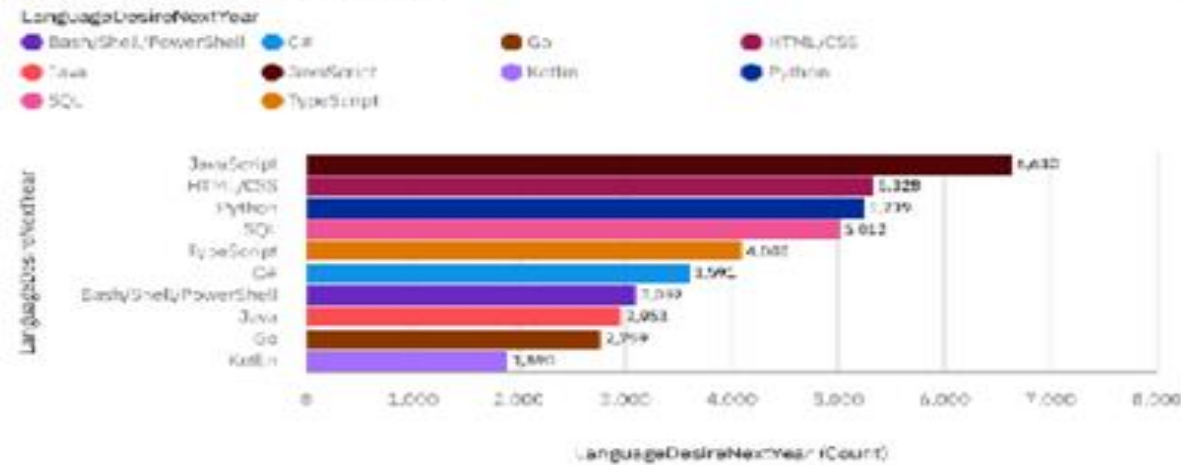


- Data Collection (Sources) •
- Programming languages annual salary •
- Data Wrangling •
- Data Exploration •
- Data Cleaning •
- Data Visualization •
- IBM Cognos •
- Presentation

RESULTS

Future Technology

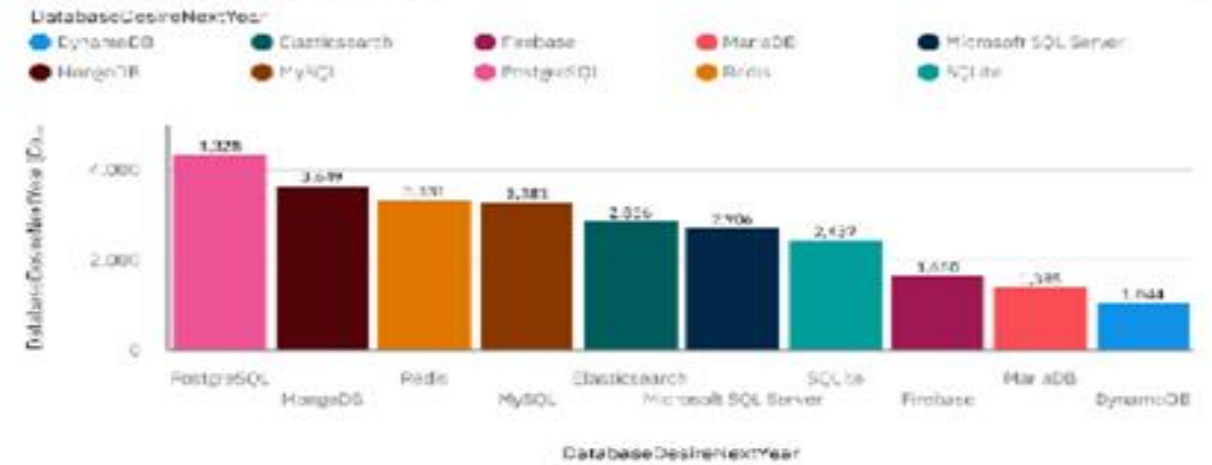
Top 10 Language Desire Next Year



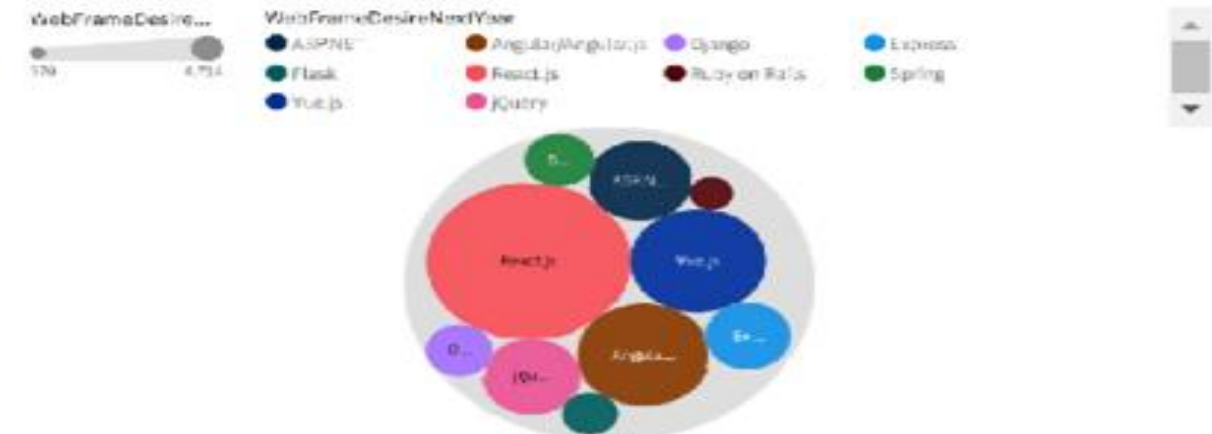
Platform Desire Next Year



Top 10 Database Desire Next Year



WebFrameDesireNextYear hierarchy colored by WebFrameDesireNextYear and sized by WebFrameDesireNextYear



PROGRAMMING LANGUAGE TRENDS

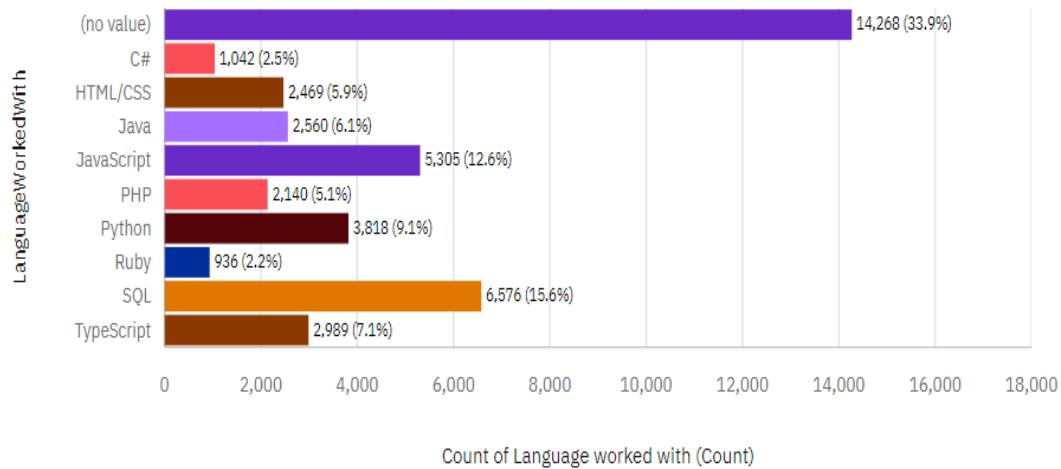
Current Year

Next Year

Top 10 Programming Languages Used by Developers

LanguageWorkedWith

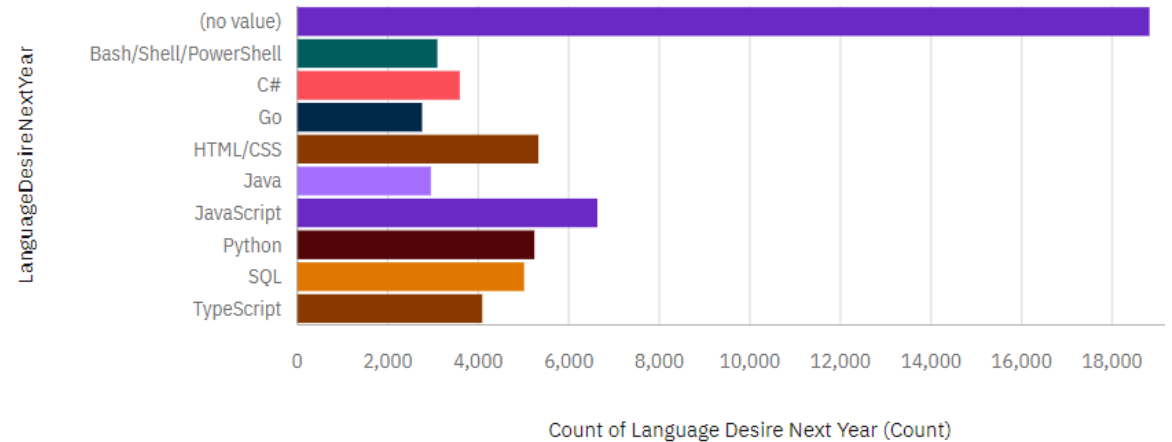
(no value)	14,268 33.9%	C#	1,042 2.5%	HTML/CSS	2,469 5.9%	Java	2,560 6.1%
JavaScript	5,305 12.6%	PHP	2,140 5.1%	Python	3,818 9.1%	Ruby	936 2.2%
SQL	6,576 15.6%	TypeScript	2,989 7.1%				



Top 10 Languages Developers Desire to Learn Next Year

LanguageDesireNextYear

(no value)	18,825 32.7%	Bash/Shell/PowerShell	3,097 5.4%	C#	3,591 6.2%
Go	2,759 4.8%	HTML/CSS	5,328 9.3%	Java	2,953 5.1%
JavaScript	6,630 11.5%	Python	5,239 9.1%	SQL	5,012 8.7%
TypeScript	4,088 7.1%				



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

- There is a high demand for JavaScript and Python.
- Developers expressed interest in learning JavaScript, HTML/CSS, and Python.
- SQL remains a fundamental language for database management.

Implications

- Future Learning Trends, towards web development and programming languages.
- Growing Interest in Web Technologies, indicating a continued focus on web development fundamentals.

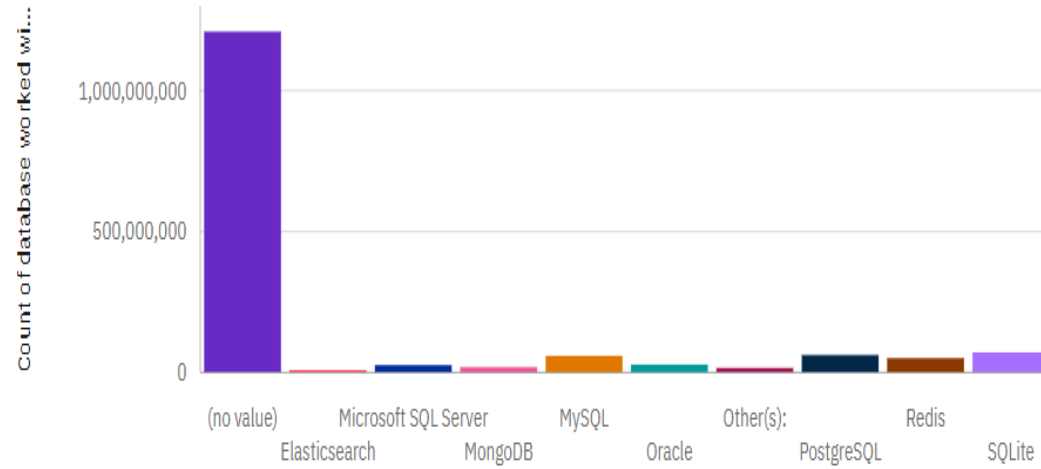
DATABASE TRENDS

Current Year

Top 10 Databases Used by Programmers

DatabaseWorkedWith

(no value)	1,209,600,375 78.3%	Elasticse...	7,969,250 0.5%	Microsof...	25,225,500 1.6%
MongoDB	18,009,250 1.2%	MySQL	58,420,250 3.8%	Oracle	27,264,875 1.8%
Other(s):	15,562,000 1%	PostgreS...	61,244,000 4%	Redis	50,105,875 3.2%
SQLite	70,844,750 4.6%				

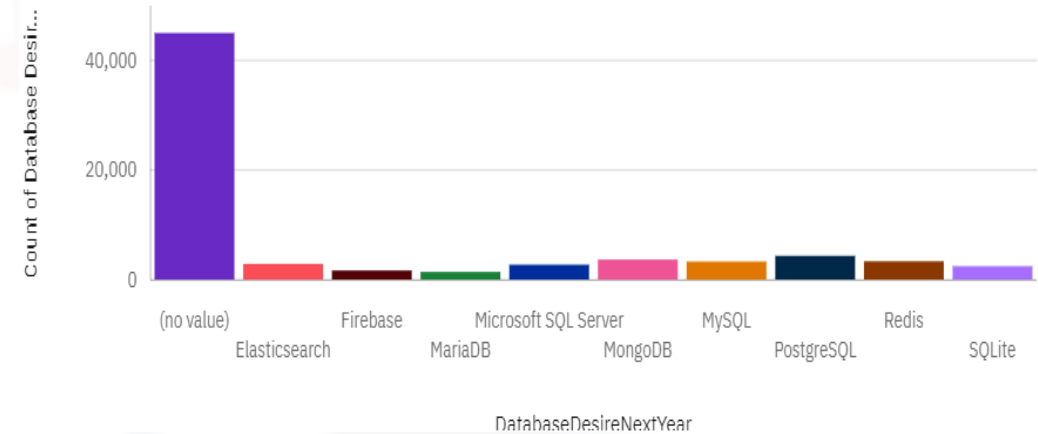


Next Year

Top 10 Databases Developers Desire to Learn Next Year

DatabaseDesireNextYear

(no value)	45,014 63.7%	Elasticsearch	2,856 4%	Firebase	1,650 2.3%
MariaDB	1,385 2%	Microsoft SQL Se...	2,706 3.8%	MongoDB	3,649 5.2%
MySQL	3,281 4.6%	PostgreSQL	4,328 6.1%	Redis	3,331 4.7%
SQLite	2,437 3.5%				



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- The most commonly used database by developers are SQLite, PostgreSQL, and MySQL.
- Developers are increasingly interested in learning databases like PostgreSQL, MongoDB, and Redis.
- The popularity of PostgreSQL, MongoDB, and Redis indicates that these databases might become more prominent in future projects.

Implications

- Skill development focus, which may influence educational programs, online courses, and training sessions to focus more on these databases.
- Open source adoption, Organizations may need to consider the advantages of open-source databases.
- Innovation in database management.

DASHBOARD



<The GitHub link of the Cognos dashboard goes here.>

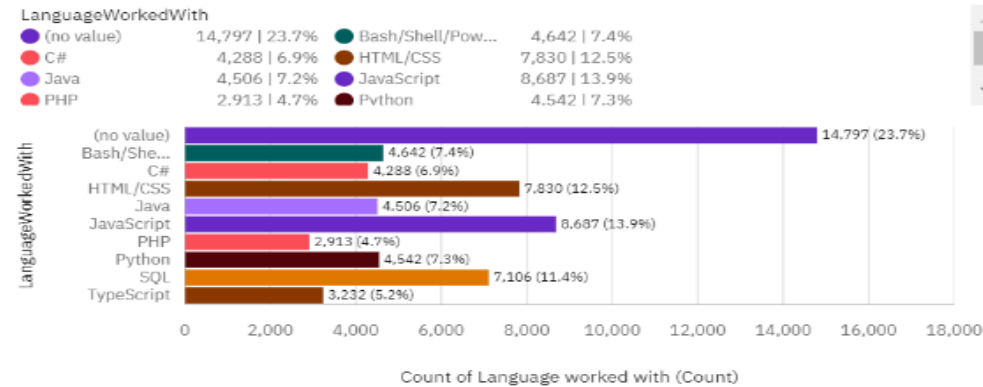
https://github.com/S199726/Sharon-Kioni/blob/main/_%20Capstone%20Project.pdf

DASHBOARD TAB 1

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Current Technology Usage

Top 10 Programming Languages Used by Developers

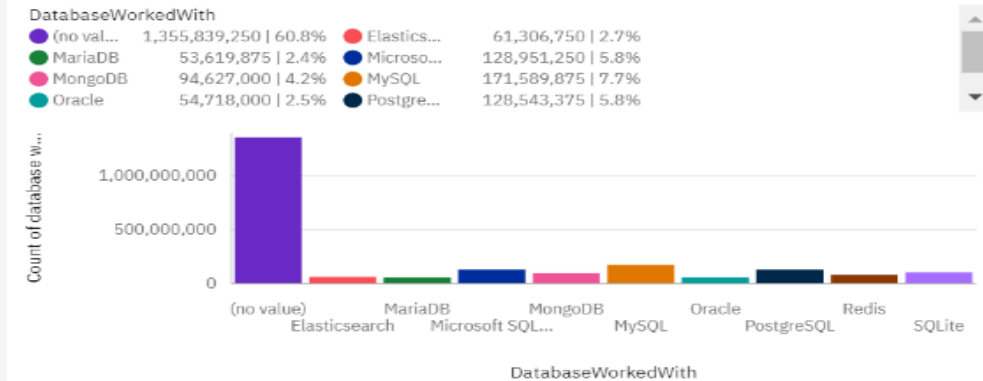


Platform Used by Developers

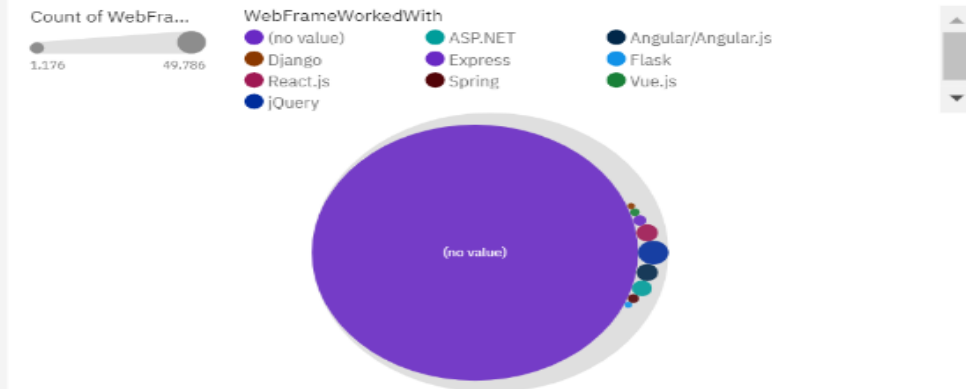


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Top 10 Databases Used by Programmers



Top 10 Web Frameworks Used by Developers



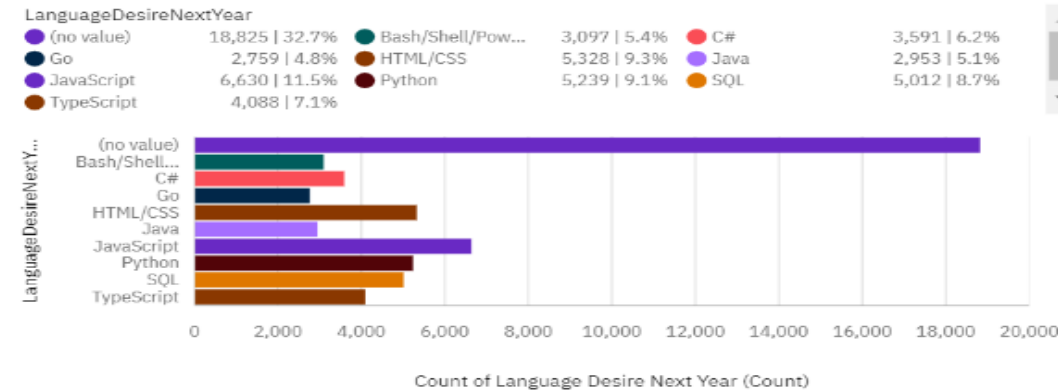
DASHBOARD TAB 2

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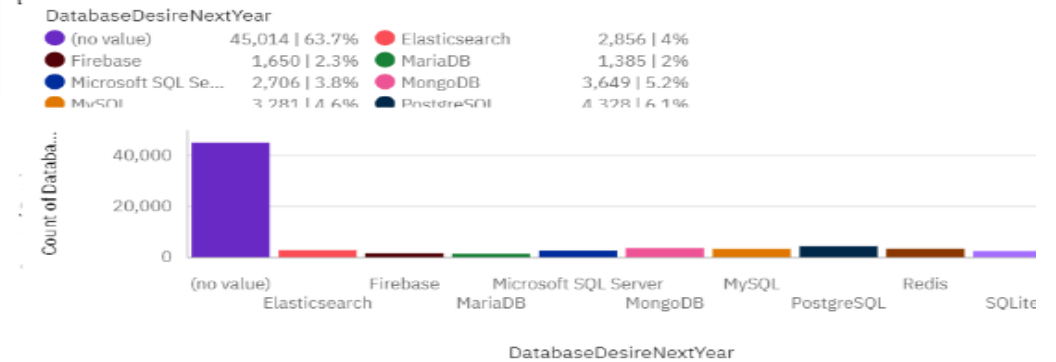
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Future Technology Trend

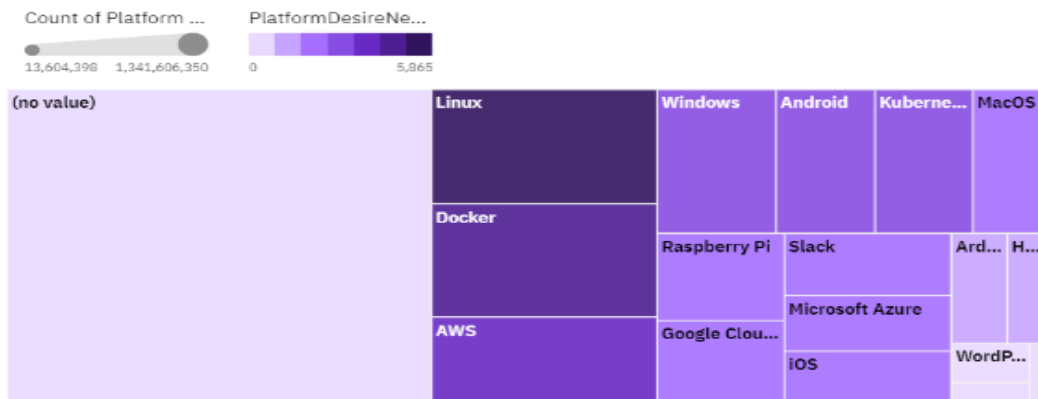
Top 10 Languages Developers Desire to Learn Next Year



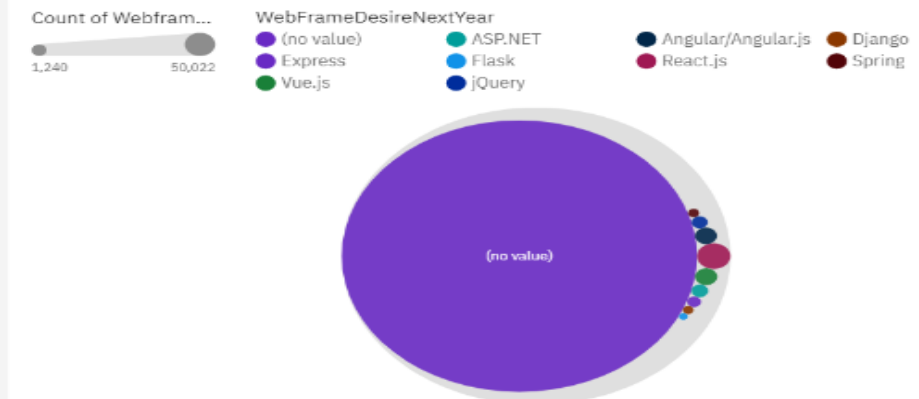
Top 10 Databases Developers Desire to Learn Next Year



Top Platforms Developers Desire to Learn Next Year



Top 10 Web Frameworks Developers Desire to Learn Next Year



DASHBOARD TAB 3

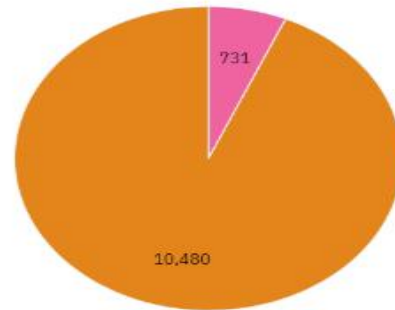
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Capstone Project

Demograpgics

Respondents Classified by Gender (Man vs. Woman)

Gender
Wo... 731 | 6.5% Man 10,480 | 93.5%

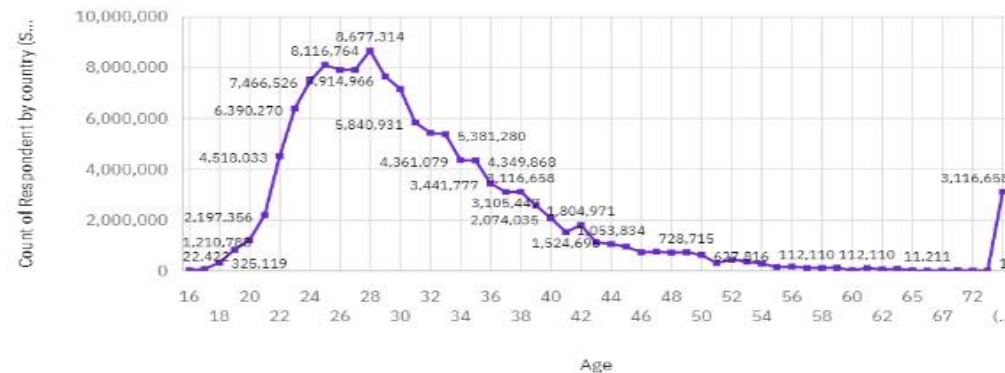


Respondent Count by Country

Count of Respond...
11,211 34,283,238

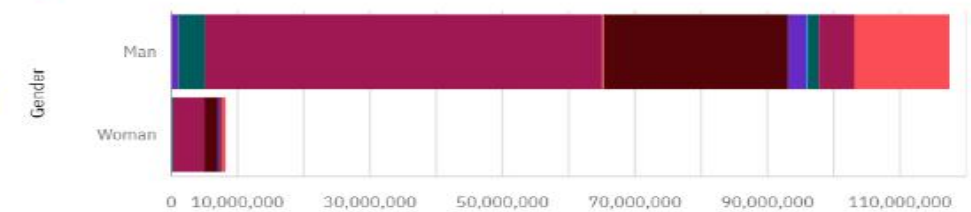


Respondent Count by Age



Respondent Count by Gender, Classified by Formal Education Level

EdLevel
(no value) 1,221,999 | 1% Associate d... 4,226,547 | 3.4% Bachelor's ... 64,496,883 | 51.3%
I never com... 302,697 | 0.2% Master's de... 29,989,425 | 23.9% Other docto... 2,870,016 | 2.3%
Primary/ele... 291,486 | 0.2% Professional... 1,704,072 | 1.4% Secondary s... 5,672,766 | 4.5%
Some colle... 14,910,630 | 11.9%



DISCUSSION



- Data collected from Stack Overflow's annual Developer Survey is one of the most extensive and detailed studies of programmers globally.
- Although the results may not encompass the entire developer community, the survey gathers insights from nearly 90,000 developers

OVERALL FINDINGS & IMPLICATIONS

Findings

- High Demand for Versatile; **Programming Languages:** JavaScript, Python, and SQL; **Databases:** SQLite, PostgreSQL, and MySQL.
- Focus on Web Development and Data Management: Web technologies such as HTML/CSS.

Implications

- Skill Development, learn emerging technologies and broaden your skill set.
- Career Opportunities stay versatile in both relational and NoSQL databases.
- Continuous Learning keep up with trends.

CONCLUSION

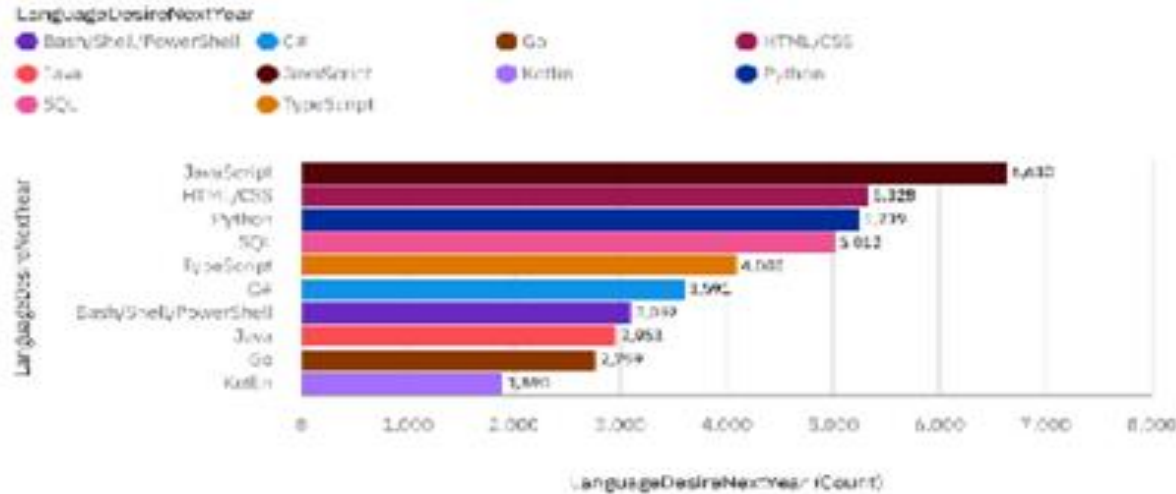


- **JavaScript's Dominance and TypeScript's Rising Popularity:** JavaScript continues to be the most widely used programming language, while TypeScript is rapidly gaining momentum among developers.
- **Evolving Database Preferences:** MySQL remains the most commonly used database, but there's a noticeable decline in the adoption of Microsoft SQL Server and SQLite, with growing interest in PostgreSQL and MongoDB.
- **Demographic Shifts:** The developer community is largely young and male, with a significant presence in developed countries. There's also a trend toward younger developers who often lack postgraduate education.
- **Global Market Polarization:** The distribution of developers by location and gender reflects broader industry trends, indicating a global polarization.

APPENDIX

Future Technology

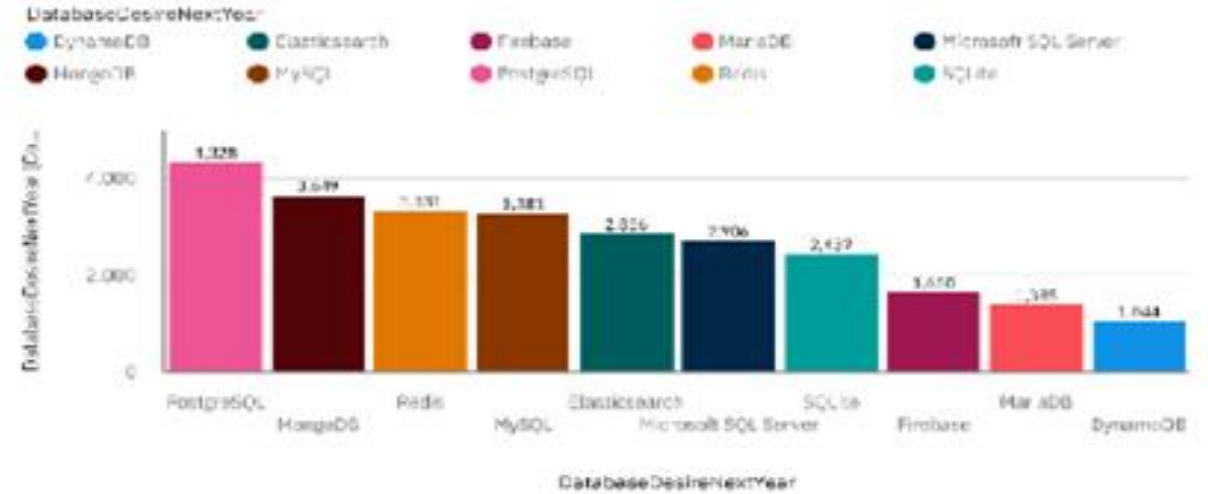
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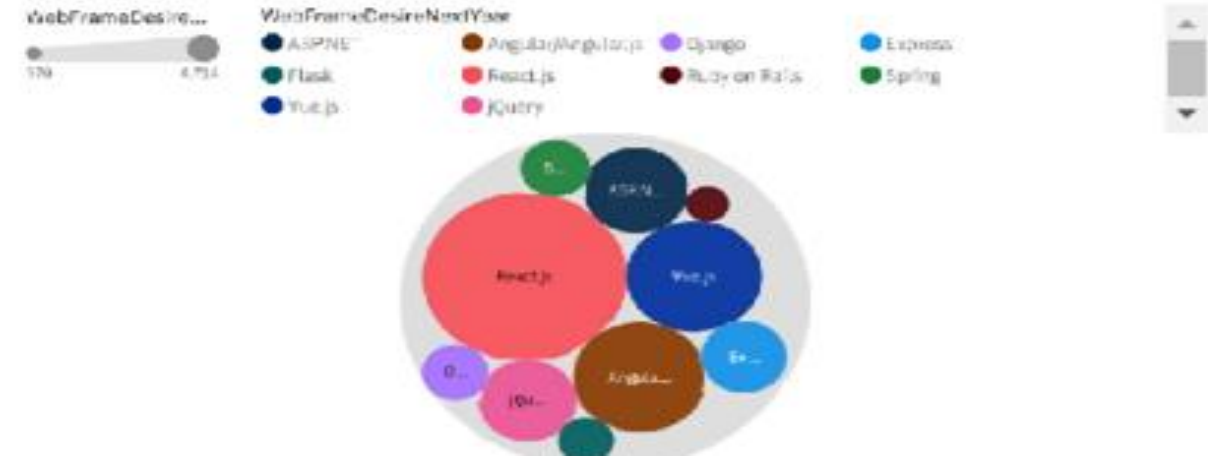
Platform Desire Next Year



1 Top 10 Database Desire Next Year

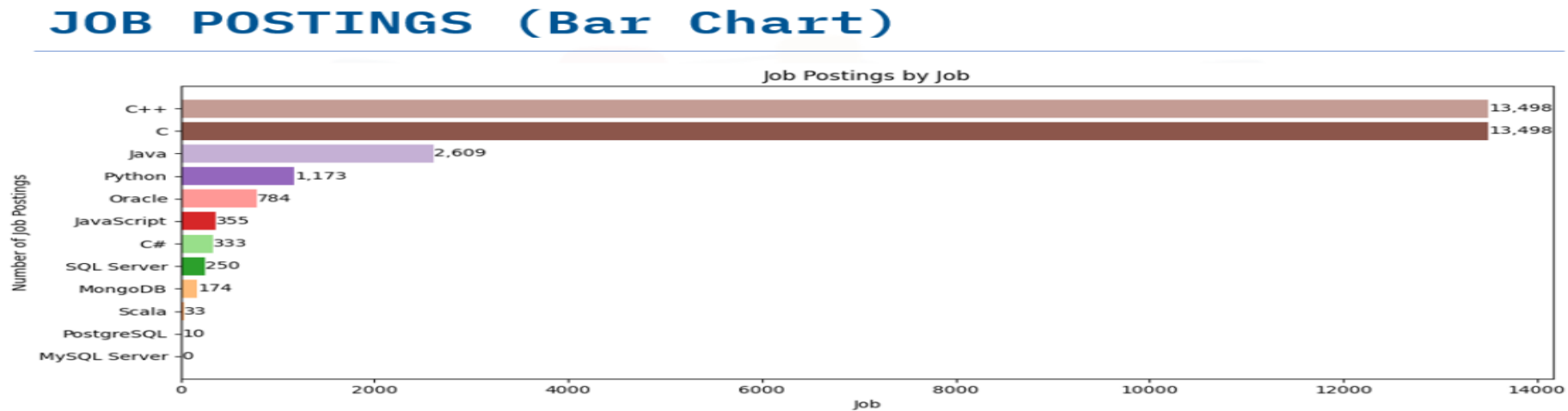


WebFrameDesireNextYear hierarchy colored by WebFrameDesireNextYear and sized by WebFrameDesireNextYear



JOB POSTINGS

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.



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 of salary.

POPULAR LANGUAGES (Bar Chart)

