Stack Overflow Developer Survey 2019

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Ha Noi, 29/06/2023

IBM Developer

SKILLS NETWORK

OUTLINE

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- Methodology
- Results
  - Visualization – Charts
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- Discussion
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EXECUTIVE SUMMARY

- **Currently Technology Trend**
  - Top10 Language that the developer currently working.
  - Top 10 Database that the developer currently working.
  - Platform that the developer currently working.
  - Top 10 Web frame that the developer working.
- **Future Technology Trend**
  - Top 10 Language that the developer desire to work on next year.
  - Top 10 Database that the developer desire to work on next year.
  - Platform that the developer desire to work on next year.
  - Top 10 Web frame that the developer desire to work on next year.
- **Demographic**
  - Respondent classified by Gender
  - Respondent count by Countries
  - Respondent count by Age
  - Respondent count by Gender, classified by EdLevel

INTRODUCTION

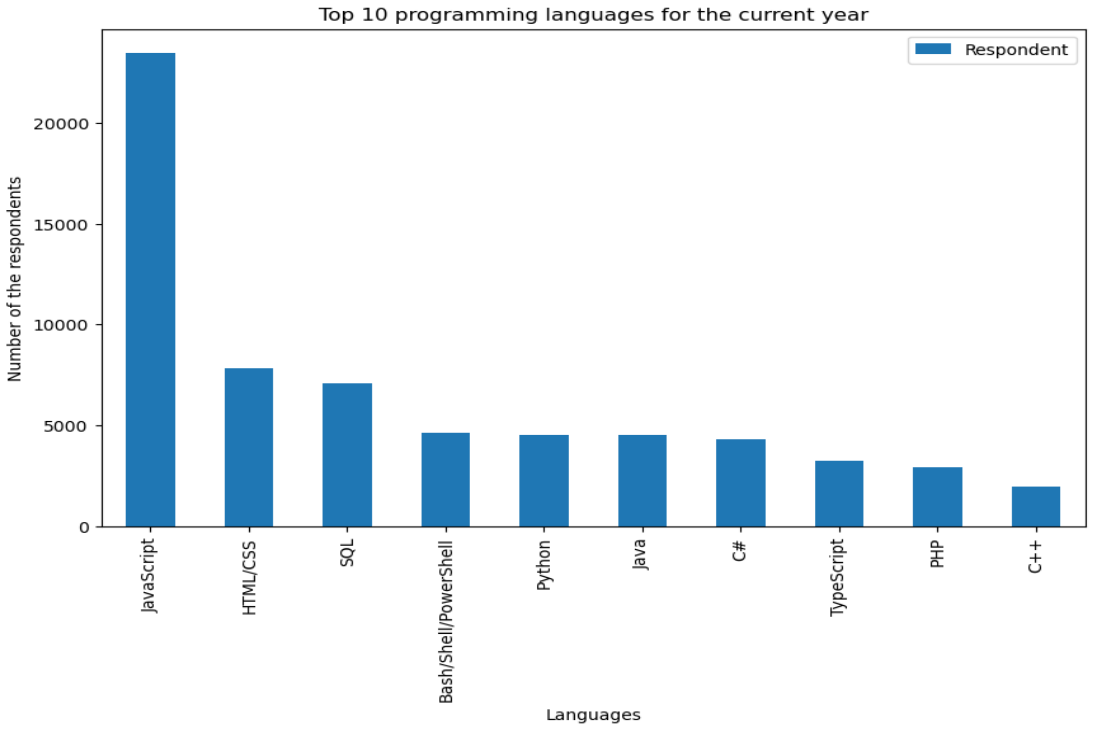
- Nature of the analysis
  - The analysis of the Stack Overflow Developer Survey 2019 aims to gain insights into the preferences, demographics, and opinions of developers worldwide. It involves examining the survey responses collected from a large number of participants and extracting meaningful information to understand the current state of the developer community.
- States of the problem
  - Data collection
  - Data processing and cleaning
  - Descriptive analysis
  - Inferential analysis
  - Comparisons and benchmarks
  - Identifying challenges and opportunities
- States questions for the analysis
  - What is the demographic distribution of the survey participants based on factors such as age, gender, geographical location, and educational background?
  - Which programming languages and technologies are most commonly used by developers?
  - Are there any emerging technologies or programming languages that developers are interested in adopting?

METHODOLOGY

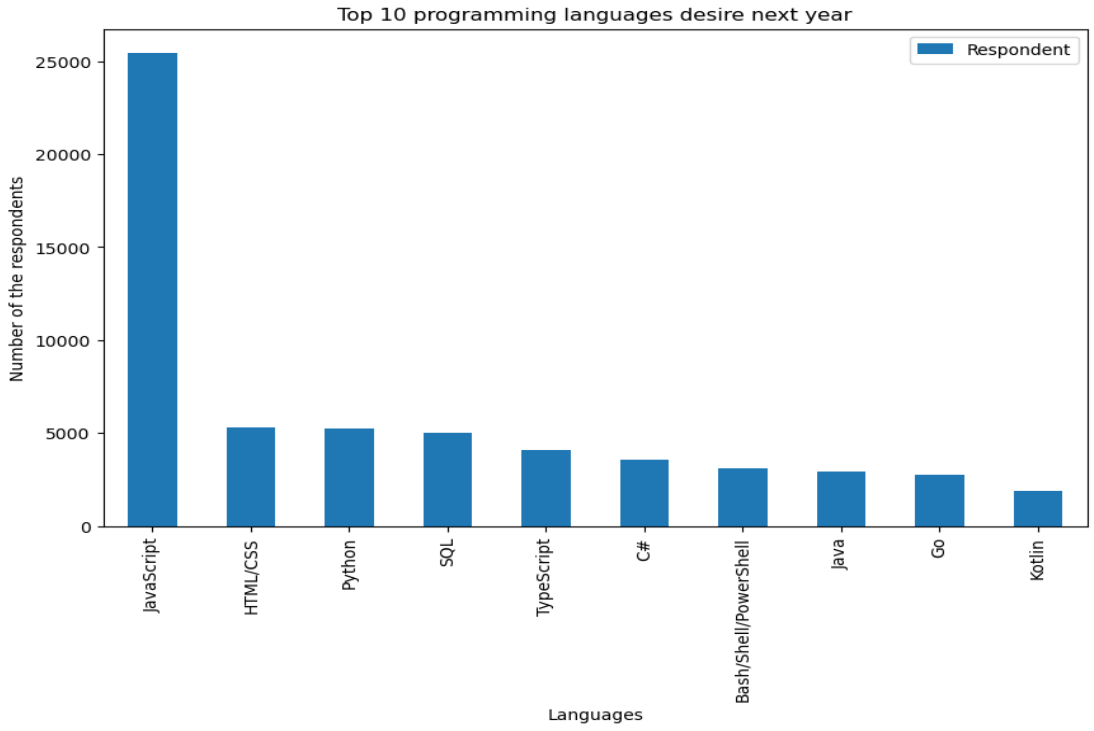
- Survey Design
- Sampling
- Data Collection
- Data Cleaning and Preprocessing
- Data Analysis
- Quality Control
- Reporting

PROGRAMMING LANGUAGE TRENDS

Current Year



Next Year



PROGRAMMING LANGUAGE TRENDS - FINDINGS & IMPLICATIONS

Findings

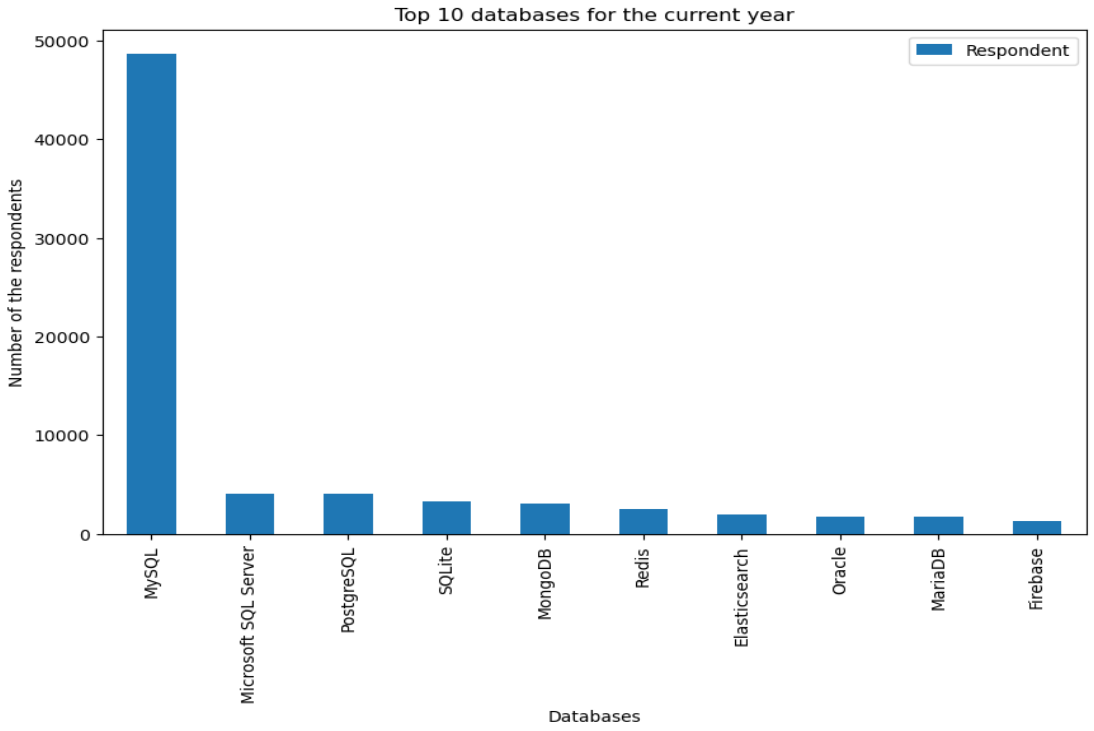
- The data shows that among the respondents, JavaScript is the most commonly used programming language, followed by HTML/CSS and SQL. Python, Java, and C# also have a significant presence in the programming landscape. These findings highlight the popularity of web development languages and the importance of data management with SQL.
- The data indicates that among the respondents, JavaScript is the most desired programming language for the next year, followed by HTML/CSS and Python. SQL and TypeScript also remain popular choices. This highlights the continued relevance and demand for web development languages and data manipulation skills.

Implications

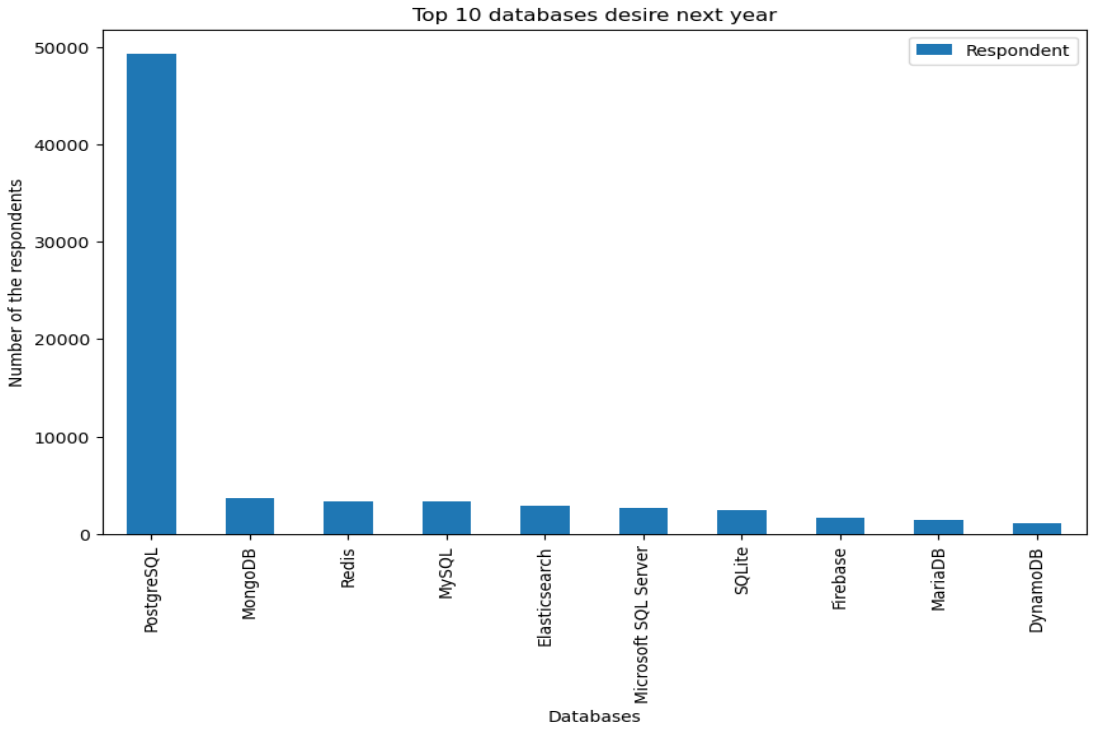
- As JavaScript, HTML/CSS, and SQL are widely used, it is crucial for developers to have a strong understanding of these languages to excel in web development and data manipulation tasks. Python, Java, and C# also maintain a significant user base, indicating their relevance in various application domains. Learning and gaining proficiency in these languages can open up opportunities for developers to work on a wide range of projects and collaborate effectively with other developers.
- The high demand for JavaScript, HTML/CSS, and Python suggests that developers with expertise in these languages will have ample opportunities in the near future. Additionally, the popularity of SQL and TypeScript indicates the importance of database management and frontend development skills. Aspiring developers should consider focusing on these languages to align their skill set with industry demands and increase their employability. Exploring emerging languages such as Go and Kotlin may also be beneficial to stay ahead in the evolving programming landscape.

DATABASE TRENDS

Current Year



Next Year



DATABASE TRENDS - FINDINGS & IMPLICATIONS

Findings

- Based on the data provided, it can be observed that developers rely on various databases for their work. MySQL appears to be the most popular choice among respondents, followed by Microsoft SQL Server and PostgreSQL. The popularity of these databases reflects their wide usage and established presence in the industry.
- According to the data provided, PostgreSQL emerges as the most desired database for the next year among respondents, indicating its growing popularity and strong demand. MongoDB and Redis also demonstrate significant interest, highlighting the increasing relevance of NoSQL databases. MySQL and Elasticsearch retain a strong presence, while Microsoft SQL Server and SQLite are also desired by developers for future use.

Implications

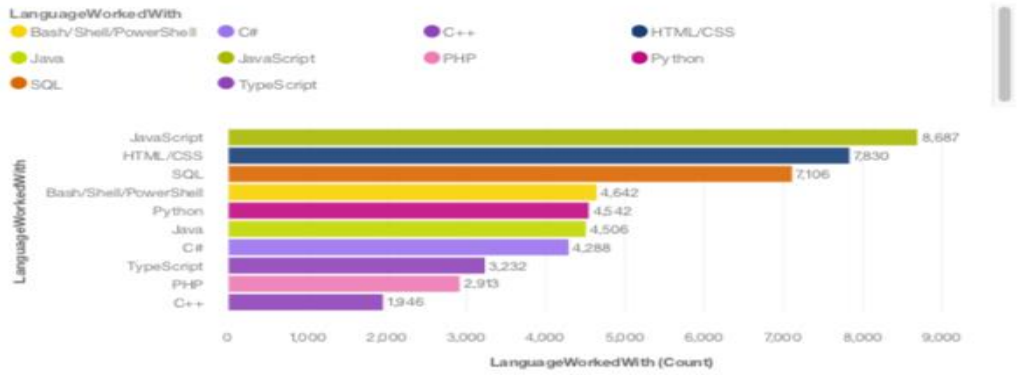
- The popularity of MySQL, Microsoft SQL Server, and PostgreSQL suggests that developers are primarily focused on traditional relational databases for their work. However, the presence of other databases like MongoDB, Redis, and Elasticsearch indicates a growing interest in alternative database technologies that cater to specific use cases such as document storage, caching, and search functionality. Developers may benefit from expanding their knowledge and skills in these emerging database technologies to meet evolving industry demands.
- The preference for PostgreSQL as the top desired database suggests that developers are recognizing its robust features, scalability, and compatibility, making it a preferred choice for future projects. The growing interest in MongoDB and Redis indicates a continued shift towards NoSQL databases, which offer flexibility and efficient handling of unstructured data. Developers should consider acquiring skills and knowledge in these desired databases to stay competitive and meet the evolving needs of the industry. Additionally, maintaining proficiency in established databases like MySQL, Microsoft SQL Server, and SQLite remains crucial as they continue to be relevant options for various applications.

DASHBOARD

<https://eu-de.dataplatform.cloud.ibm.com/dashboards/212d3e1a-7dc1-4276-952c-46139d549fb8/view/6503c62a04972fc06cf0e6e407907d042866775ce4bbd005d6817b4959667497a86d4593c8794b59de175466f7ee155f9f>

DASHBOARD TAB 1

Top 10 LanguageWorkedWith



Top 10 DatabaseWorkedWith

PlatformWorkedWith

Top 10 WebFrameWorkedWith

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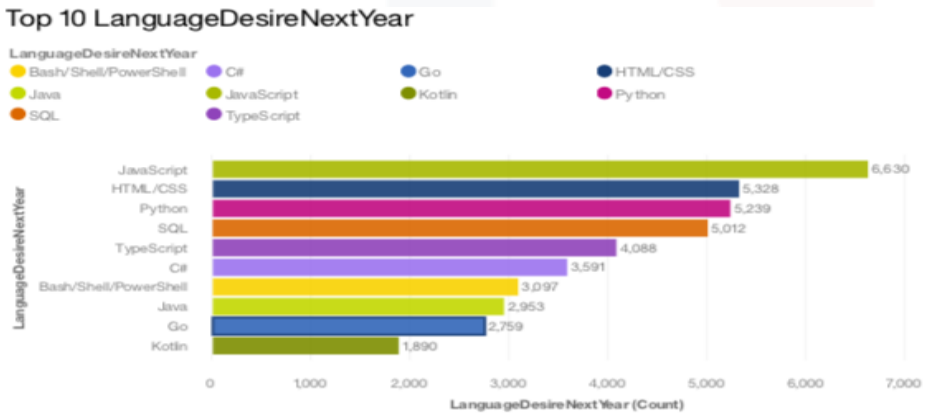
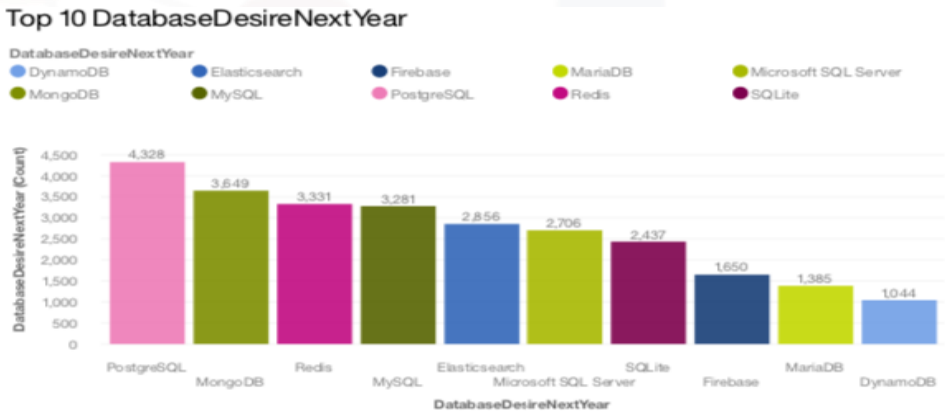
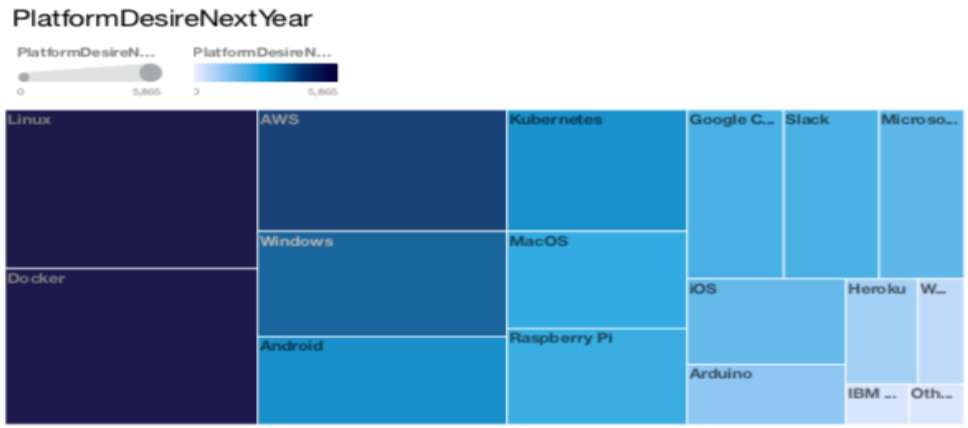
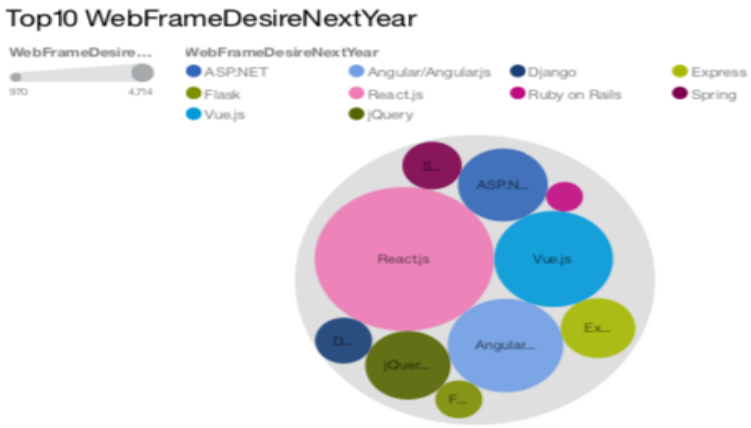
SKILLS NETWORK

DASHBOARD TAB 2



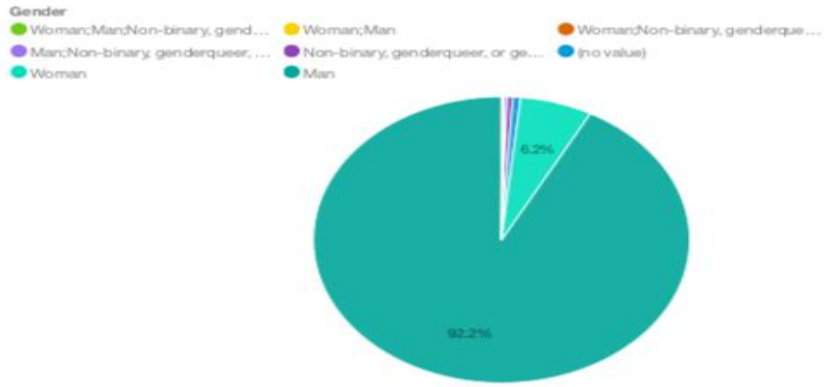




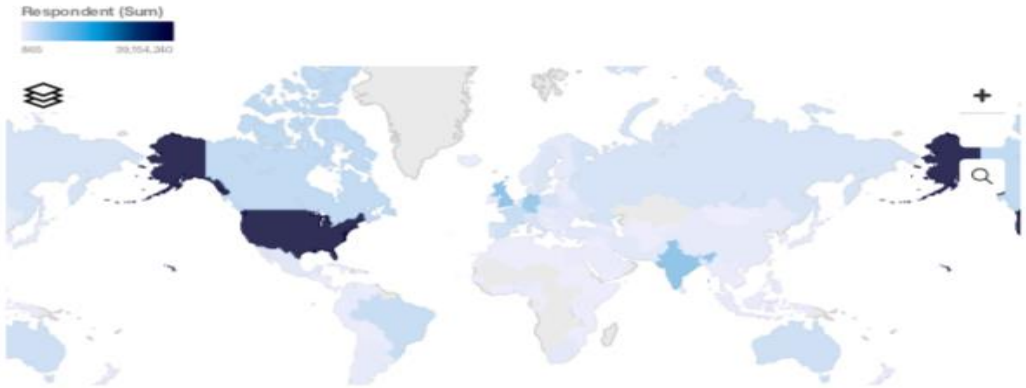


DASHBOARD TAB 3

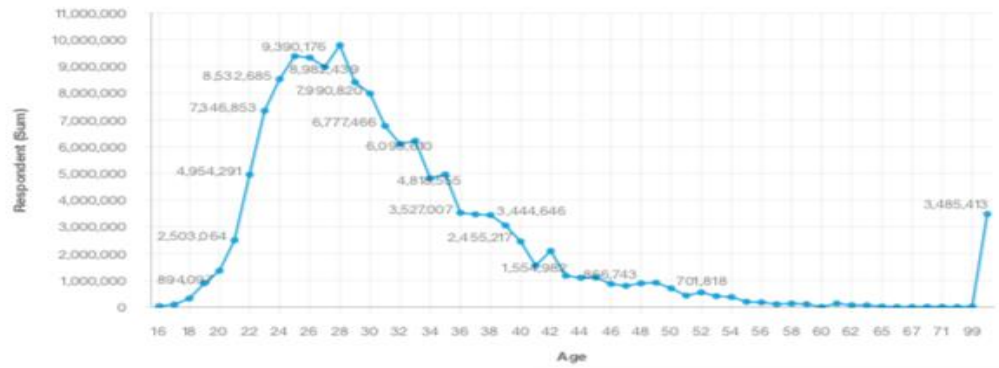
Respondent classified by Gender



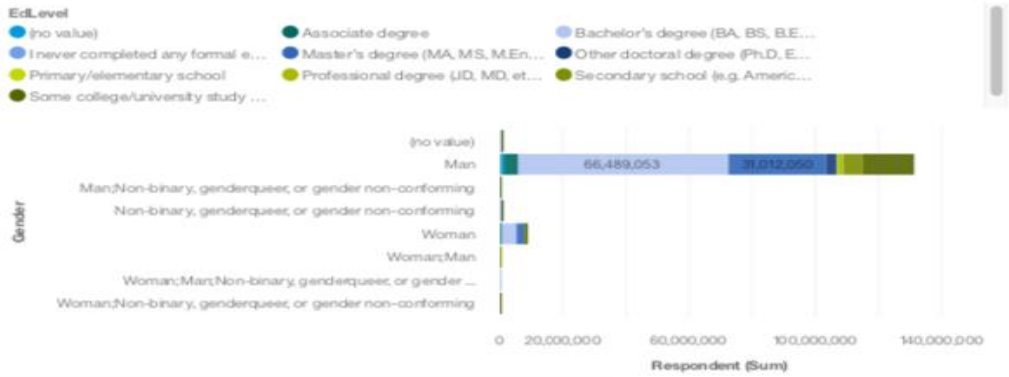
Respondent Count for Countries



Respondent Count by Age



Respondent Count by Gender, classified by Formal Education Level



OVERALL FINDINGS & IMPLICATIONS

Findings

- Popular languages: Bash/Shell/PowerShell, C#, and C++, these languages have a strong presence in the programming community and are likely to continue being popular choices for developers.
- Declining languages: Assembly, due to the availability of higher-level languages that offer greater abstraction and productivity.
- Growing interest: Dart, Elixir, and F#. Developers might see them as viable alternatives or niche languages that offer unique advantages.
- Niche languages: Clojure, Erlang, and F#, they continue to attract dedicated developers who value their specific features or paradigms.

Implications

- The popularity of Bash/Shell/PowerShell, C#, and C++ indicates their continued importance in various industries.
- The increasing interest in Dart, Elixir, and F# suggests that these languages might be gaining traction in emerging fields or domains.
- Clojure, Erlang, and F# cater to specific use cases or communities.
- As languages evolve and new ones emerge, developers should consider learning and adapting to stay relevant. Exploring popular languages like C#, C++, and Bash/Shell/PowerShell can help developers remain competitive, while also considering emerging languages like Dart, Elixir, and F# can open up new opportunities.

OVERALL FINDINGS & IMPLICATIONS

Findings

- The popularity of MySQL can be attributed to its long-standing presence in the industry, its open-source nature, and its versatility in handling various types of applications and workloads.
- Microsoft SQL Server's popularity can be attributed to its strong integration with Microsoft's ecosystem and its robust features for enterprise-level database management.
- MongoDB's popularity can be attributed to its flexibility in handling unstructured data and its scalability for handling large-scale applications.
- On the other hand, databases like Cassandra, Couchbase, DynamoDB, Elasticsearch, Firebase, MariaDB, and Oracle also have significant usage, but their counts are comparatively lower than the top three. Each of these databases has its own unique strengths and use cases.

Implications

- Developers and organizations should consider their specific requirements and use cases when selecting a DBMS. Each database has its own strengths and weaknesses, and choosing the right one can greatly impact the performance, scalability, and overall success of the application.
- MySQL and Microsoft SQL Server continue to dominate the market, indicating their widespread adoption and reliability. Organizations that rely on these DBMSs can benefit from the large community support, extensive documentation, and availability of skilled professionals
- The popularity of MongoDB suggests a growing demand for handling unstructured data and scalability. Developers working with applications that require flexible data models and the ability to handle large amounts of data may consider MongoDB as a suitable option.
- The lower counts of databases like Cassandra, Couchbase, DynamoDB, Elasticsearch, Firebase, MariaDB, and Oracle indicate that they are less commonly used compared to the top three. However, they still have their own niches and offer specific advantages for certain use cases. Organizations with specific requirements that align with the strengths of these databases should explore them as potential options.

OVERALL FINDINGS & IMPLICATIONS

Findings

- Linux is the most widely used platform among the given options, with a significant number of respondents (41,193) reporting that they rely on it in their current work. Linux's popularity can be attributed to its open-source nature, flexibility, and widespread use in various domains, including server management, development, and scientific computing.
- AWS and Docker are the most commonly used. AWS has a substantial user base, with 3,588 respondents currently relying on it. Docker, a containerization platform, is also highly popular, with 4,378 respondents indicating its usage. This reflects the increasing trend towards containerization and the need for efficient application deployment and management.
- Android is the clear leader with 2,693 respondents relying on it. This is not surprising given the widespread adoption of Android devices and the prominence of the Android operating system in the mobile app development industry.

Implications

- The importance of Linux skills in the job market and emphasizes the need for professionals to have a strong understanding of Linux-based systems.
- The popularity of AWS and Docker indicates the growing significance of cloud computing and containerization technologies.
- Android's popularity as a platform suggests that there is a continued demand for mobile app development.
- The widespread use of Docker and Kubernetes showcases the increasing adoption of containerization and the need for efficient application deployment and management.This trend highlights the importance of skills related to DevOps and containerization technologies for professionals in software development and deployment roles.
- The presence of multiple platforms and cloud services in both the current and desired platforms reflects a growing trend of hybrid cloud and multi-platform strategies. Organizations are likely adopting a combination of platforms to meet their specific requirements.

OVERALL FINDINGS & IMPLICATIONS

Findings

- React.js is the most popular web framework among developers. It is the top choice for both current usage and desired usage in the future.
- ASP.NET, Angular/Angular.js, Django, Express, Flask, and Laravel also have a considerable presence in terms of current usage, although their popularity seems to be slightly lower compared to React.js.
- Angular/Angular.js, Django, and Express show positive growth, with an increase in the number of developers who aspire to work with these frameworks. React.js remains the dominant choice
- Drupal, Ruby on Rails, and "Other(s)" have relatively lower usage and desired usage numbers compared to the previously mentioned frameworks.

Implications

- React.js has established itself as a popular and widely adopted web framework in the developer community. Its versatility, performance, and extensive ecosystem have contributed to its dominance. Developers who want to stay relevant and meet market demand should consider acquiring skills and experience in React.js.

OVERALL FINDINGS & IMPLICATIONS

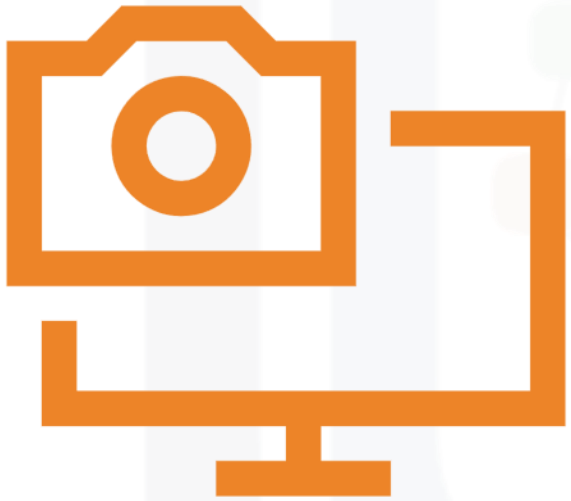
Findings

- The majority of respondents identified as men (10480), followed by women (731), and non-binary, genderqueer, or gender non-conforming individuals (63). A small number of respondents identified with multiple gender identities.
- Argentina and Australia have the highest number of respondents, with 71 and 285 respectively. These countries have a significant representation in the dataset. Bangladesh, Albania, and Austria also have a relatively high number of respondents, with 57, 12, and 88 respectively. Several countries have a smaller number of respondents, ranging from 2 to 5. These countries include Afghanistan, Algeria, Armenia, Azerbaijan, Bahrain, and others.
- There is an increasing trend in the number of respondents as age progresses from 16 to 25. The highest number of respondents is observed in the 25-year-old age group, indicating a higher participation rate from individuals in this age bracket.

Implications

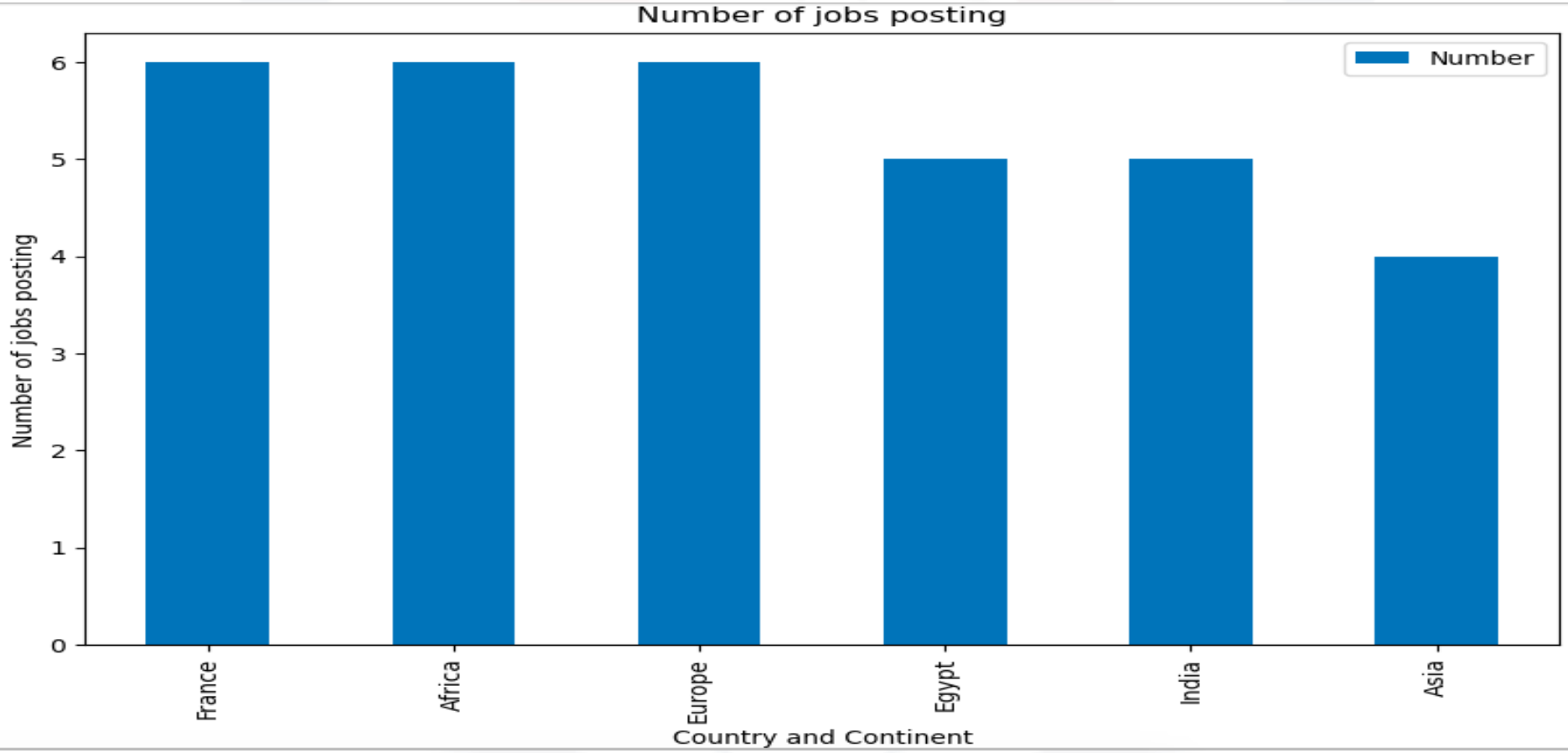
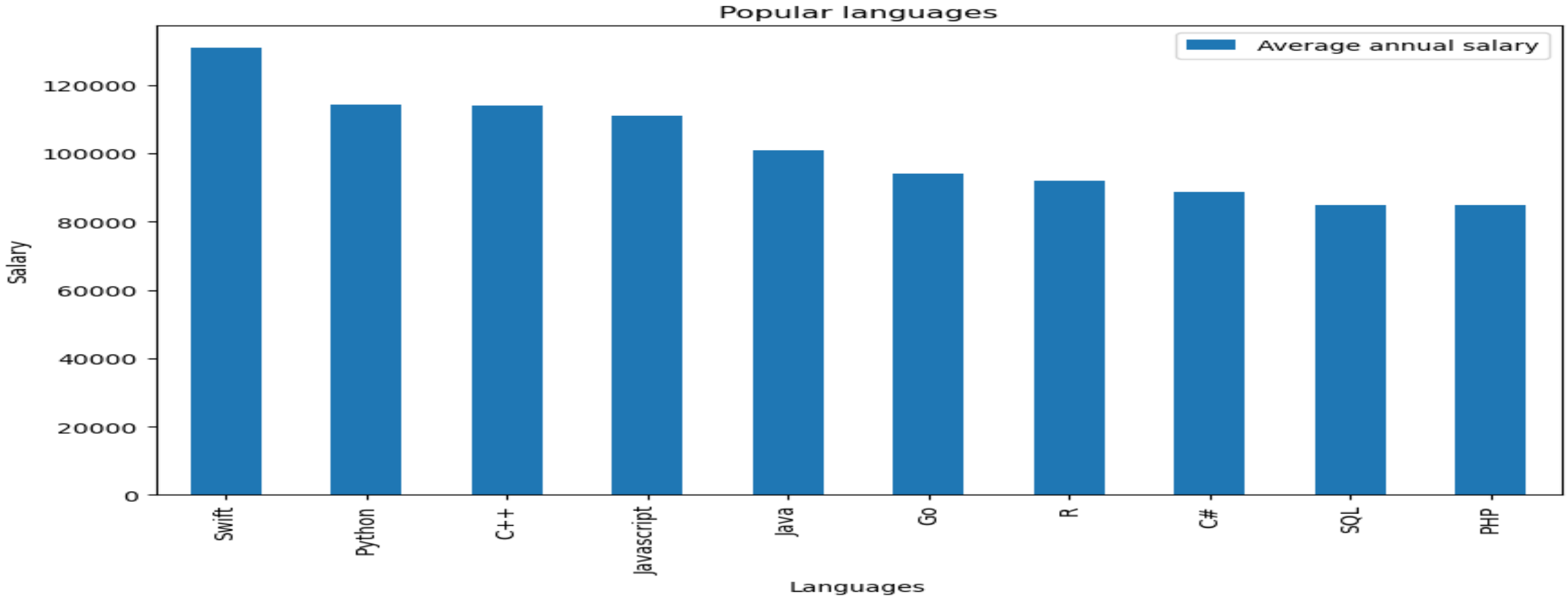
- The data highlights the presence of individuals who identify outside of the traditional binary gender categories (man or woman). The number of respondents identifying as non-binary, genderqueer, or gender non-conforming (63) indicates the need for recognizing and respecting a diverse range of gender identities.
- The data provides valuable insights into the perspectives of respondents from different countries. It highlights the importance of considering geographic representation, promoting inclusivity in research, and acknowledging the influence of cultural contexts when drawing conclusions and making implications based on the data.
- The data reveals a positive relationship between age and the number of respondents, with older age groups exhibiting higher participation rates. The implications highlight the need for targeted sampling, careful data interpretation, consideration of age-related biases in research design, and the potential for further investigation.

APPENDIX



- Job Posting
- Popular Languages

JOB POSTINGS



POPULAR LANGUAGES